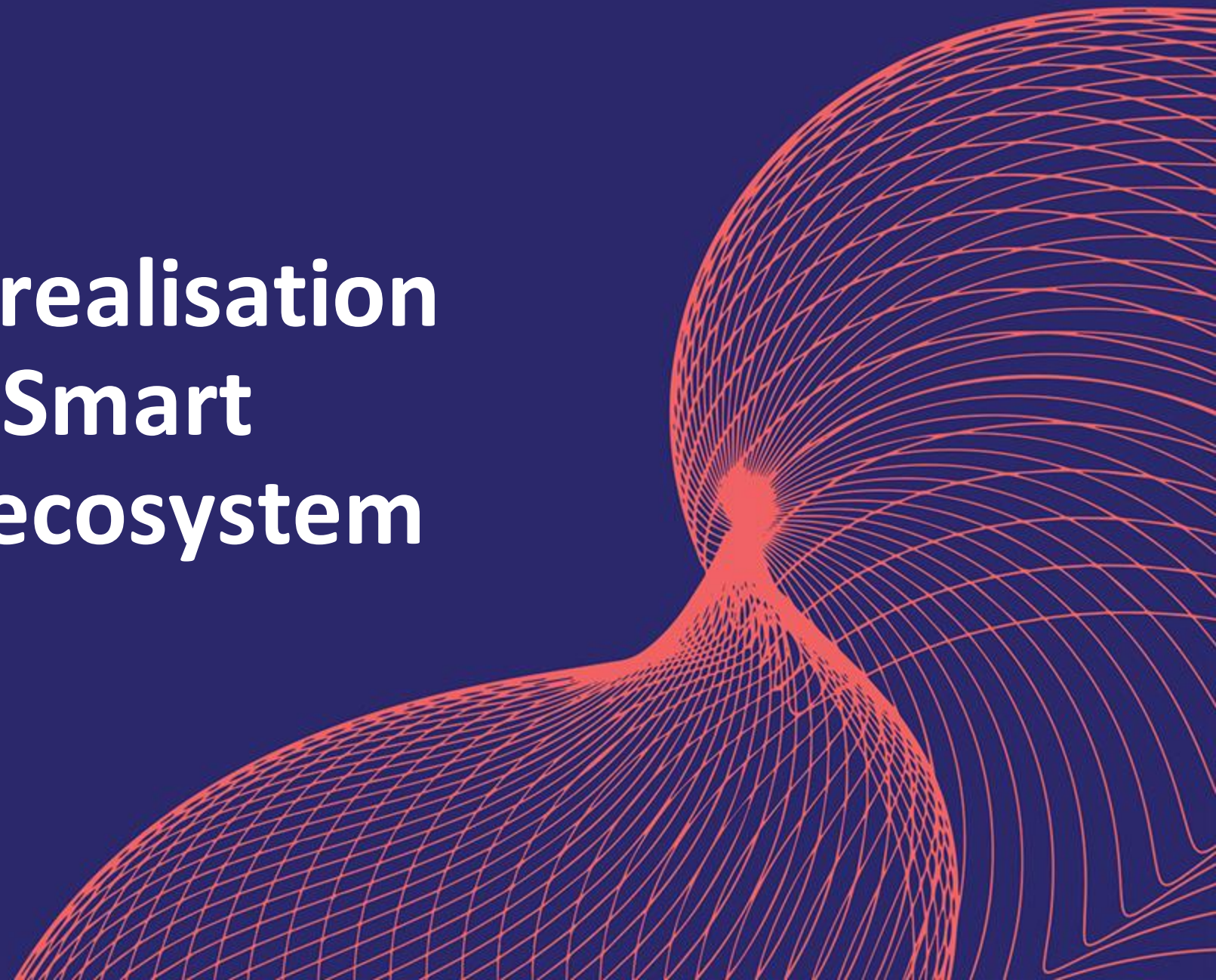
Nordic Smart Government Roadmap

- Roadmap for Realisation of the Nordic Smart Government Ecosystem
- Implementation Plan 2021 -2024



Nordic Innovation

Roadmap for realisation of the Nordic Smart Government ecosystem



NORDIC SMART GOVERNMENT

The two million small and medium-sized enterprises (SMEs) in the Nordic region comprise more than 90 percent of our businesses. The SMEs thus form cornerstones in our societies and for our future welfare.

The vision of Nordic Smart Government is to create value for these SMEs by making real-time business data accessible and usable for innovation and growth.

By 2027, with new products and optimised services based on real-time business data, the potential value across the Nordics is estimated to be around 14 billion EUR annually (EY 2017)

The Nordic Prime Ministers' ambition: Making the Nordic region the most integrated region in the world

The Governments in the Nordic region have a common vision of making the Nordic region the most integrated and sustainable region in the world by 2030.*

The collaboration on Nordic Smart Government (NSG) supports this vision by setting the framework for aligning the digital infrastructure between businesses, service partners and authorities, in order to make life easier for businesses in the Nordics.

Moreover, NSG works at reducing barriers within the Nordic region and between our businesses, and to enable innovation and growth through the fair use of business data and a more coherent digital development – thereby integrating the region even further.

The Nordic market is a substantial market for all Nordic countries, with inter-Nordic trade accounting for roughly 20% of each country's exports. Nordic integration is increasingly relevant and important to our economies.

Therefore, NSG aims at making it simple to send and receive e-invoices and e-receipts between Nordic businesses, and to make it easier to deliver digital services in other Nordic countries, and thus increase competition and the digital and data-driven service level for the SMEs.

* The common vision was adopted by the Nordic Prime Ministers on August 20, 2019: https://www.norden.org/en/declaration/our-vision-2030

Nordic Smart Government seeks to realise the *Nordic-Baltic declaration on digitalisation* (2017) which sets out the following policy goals to make the region a digital frontrunner:

1. Strengthening the ability for digital transformation of our governments and societies, especially by creating a common area for cross-border digital services in the public sector
2. Strengthening the competitiveness of our enterprises through digitalisation
3. Enhancing the digital single market in the Nordic-Baltic region

Though the Nordic region is one of a kind, the vision of NSG aligns very well with the European vision of a Digital Single Market and supports the business-related EU Data Strategies, including "A Fair and Competitive Digital Economy" and the strategies for EU-wide interoperable data spaces. NSG is also dedicated to the general ethical guidelines set out by The EU Presidency Conference on Data Economy, taking place in Helsinki in November 2019.

The Nordic collaboration on Smart Government is not working independently, but is drawing on many strategies, programmes, projects and networks for insights, inspiration and alignment (see the reference list here).

Nordic Innovation

NSG is co-financed by Nordic Innovation. Nordic Innovation is an organisation under the Nordic Council of Ministers.

Introduction to Nordic Smart Government

The vision of Nordic Smart Government is to create value by making real-time business data accessible and usable for innovation and growth across the region in an automatic, consent-based and secure manner.

Sales and purchases – trading – is at the core of what all businesses do. This is where business data arise. Trading involves a number of administrative processes to the companies, including e.g. placing an order, sending an invoice, collecting receipts, bookkeeping, accounting and reporting. Today, these tasks are to a large extent done manually and /or with manual interruptions, typing or writing information from one system into another, or from one piece of paper into another. For example, most of the invoices that SMEs receive are either PDFs attached to an e-mail or in paper form, and the SMEs must manually type the information from the invoice into the SME's business system – if they use digital business systems at all.

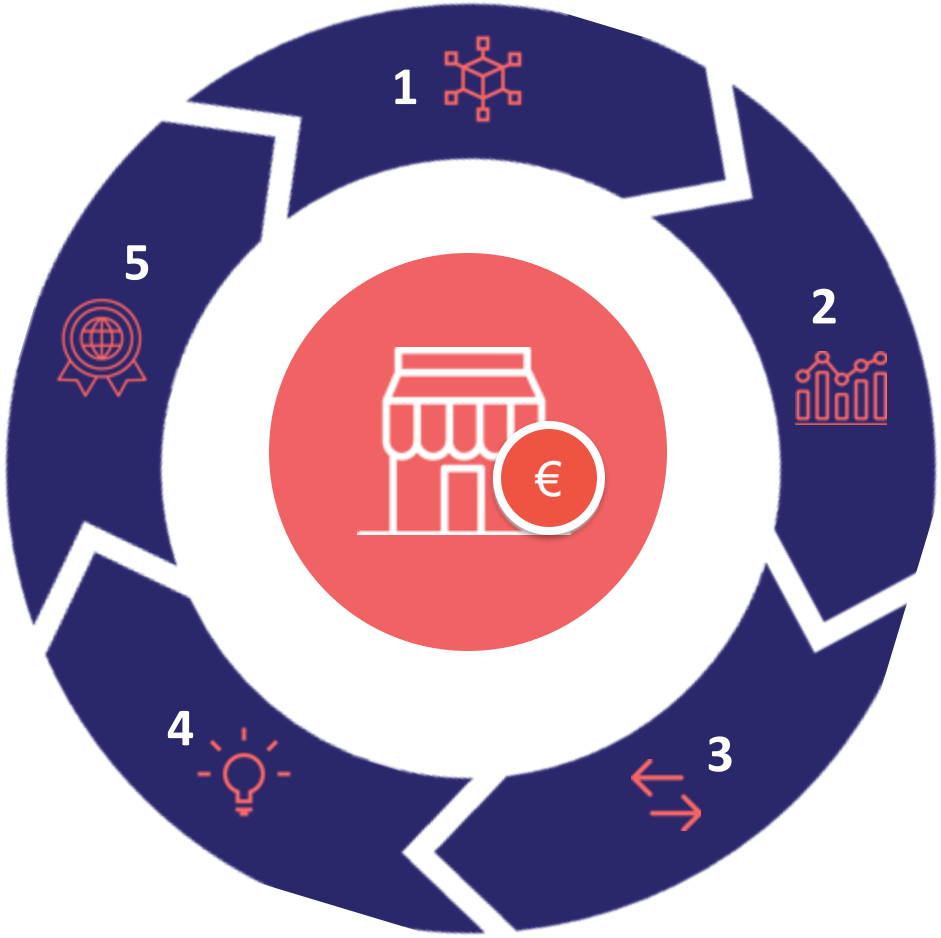
The business data in sales and purchase processes contain information about the specific business transactions: information on the product or service, quantity, size, VAT, date, buyer or seller, payments, and accounting information etc. In general, however, digital business systems are not sufficiently aligned, so data cannot be automatically reused between these systems.

NSG wishes to align the digital business systems, so buyer and seller more easily can exchange business documents and reuse data automatically in orders, order confirmations, invoices, payments confirmations, receipts, etc. There is a great potential if this business data from sales and purchases could be reused directly and automatically, both for government purposes (e.g. reporting) and for trusted 3rd party service providers, such as for example creditors.

Real-time business data is a source of innovation and growth. EY (2017) has estimated the total value of this data-driven innovation to be in the range of 24,8-27,5 billion euro annually in the Nordic region. New services enabled by real-time data include instant cash flow overview, better credit access and increased liquidity, better analysis, benchmarking, and monitoring of sectors and industries, as well as improved traceability of products.

However, the SME's own business data today remains mostly analogue and unavailable for digital exchange and new services, and thus cannot inform and aid the SME when making business decisions. Nordic Smart Government has united authorities and stakeholders to agree upon standards and compatible formats for data, so structured data can flow between systems and services, making sales and purchase administration more efficient for the SMEs, and to increase automation in government reporting and enable new services. This will integrate Nordic markets and benefit both SMEs and providers of business systems and data-driven services.

The Vision of Nordic Smart Government



1 Increasing the use of structured business data in transactions

2 … will provide a higher quality of real-time business data that businesses can utilise while reducing the manual handling of bookkeeping.

3 This enables easier and better exchange of data, products and services, which will serve both service providers (bank, accountant, insurance) and trading partners…

4 … it will enable new data-driven services and business opportunities …

5 …. and serve authorities.

NORDIC SMART GOVERNMENT

The NSG Roadmap: A Strategic Plan and Recommendations

A roadmap is a strategic plan that defines a goal or desired outcome and includes the major steps or milestones needed to reach it. The NSG roadmap shows the way for realising the NSG vision, and it defines the requirements necessary for this. The governments' task is to create a framework for aligning the digital infrastructure in the Nordic region, and the framework is presented in this roadmap. Thus the roadmap of NSG sets a direction for Nordic digitalisation and collaboration over the coming years, involving also development in co-creation with the private sector, as well as with relevant standardisation and governance bodies. The roadmap should not be read as a five-year plan set in stone, but more as an agile strategy showing the potential value of NSG and identifying possible actions to realise value, step by step.

The Nordic countries have different legislations and varying digital maturity in the market, and each government must therefore set a particular course for reaching the waypoints of this roadmap. Some countries may need or prefer legal amendments, while others may tread a voluntary path towards the vision of NSG. In order to increase integration in the region, the national developments should to some extent be synchronised and the road should be traversed in a continued Nordic collaboration. To save development costs, digital solutions and experience can be shared and systems extended to support the alignment, where possible.

In six particular areas, each Nordic government should take needed actions. These so-called *capability areas* are visualized in the diagram on slide 7. The capability areas include many discrete elements (technical, legal, and/or organisational changes and actions). The areas comprise over 100 possible actions, which may be employed in order to implement the capabilities. These are shortly described via the link on "Bundled Actions" provided in the appendix (see slide 25).

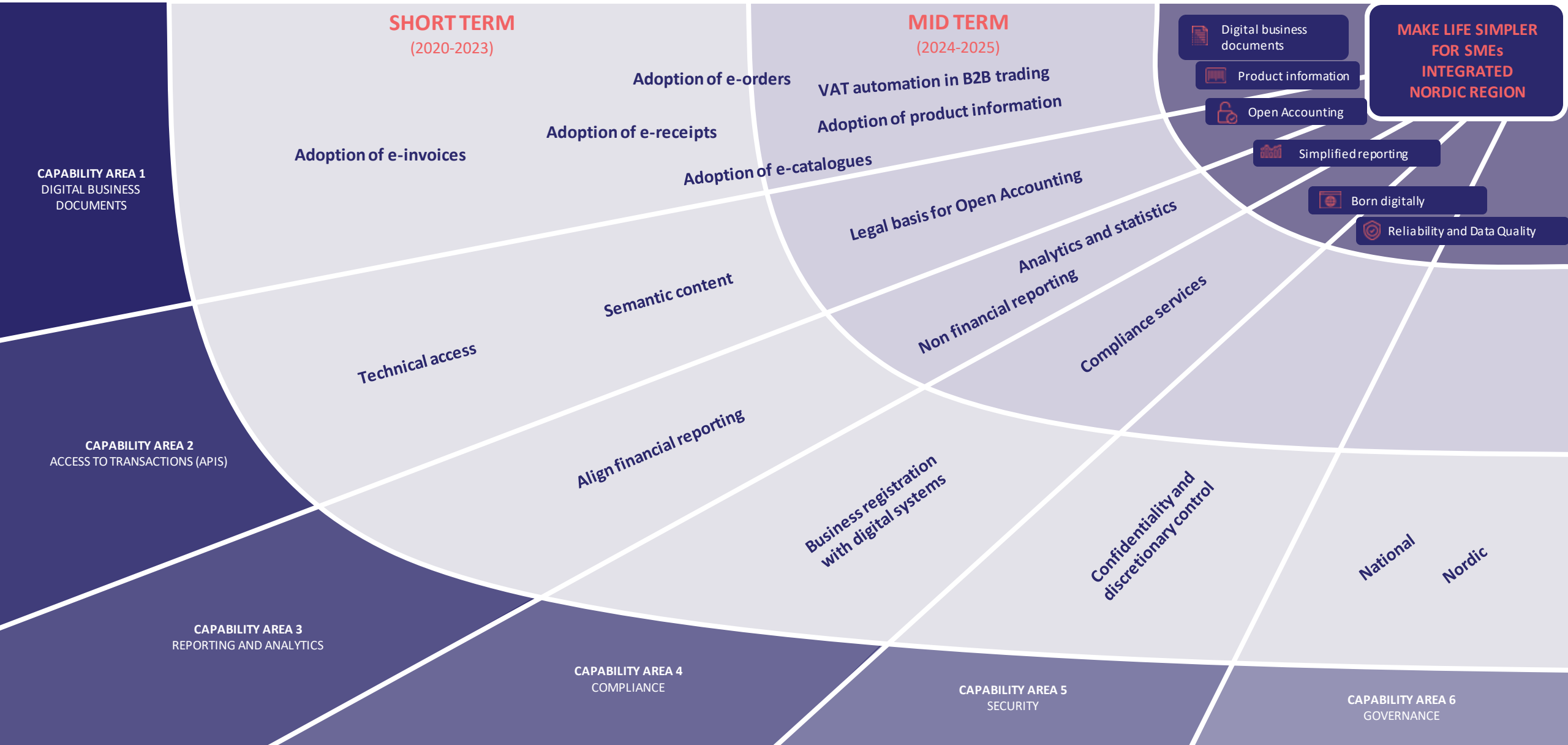
The actions necessary to achieve each of the steps might vary from country to country. When relevant, new services can be developed in collaboration between several countries, serving both national needs and solving cross-Nordic challenges at the same time.

"Capability" is a technical term, but this roadmap translates it into easy-readable descriptions of solutions that relate to capabilities. The solutions are presented further down (slides 11-16), including recommendations for implementing actions and regulation. The diagram on the following slide merely offers an approximate visualisation of the steps that need to be taken for each of the five solution described on slide 11-16. Stakeholders are invited to participate in co-creation to ensure an efficient and aligned development to the benefit of all parties.

The developments and changes will take several years. Note that the timeline in the diagram is not accurate, but depends on varying degrees of standardisation and existing national solutions and services. Milestones and choice of actions are also subject to annual evaluations, revisiting the prioritisation and funding.

Main areas of alignment and focus areas for realising the ecosystem

Timing and activities are approximate, and subject to yearly evaluation and prioritisation



Milestones

- **By 2021,** a public-private advisory board has been established to support the implementation of the NSG roadmap
- **By 2022,** 70% of the Nordic SMEs use a digital business system
- **By 2023,** SMEs can freely choose to move their business data between business systems
- **By 2023,** sales and purchases can be handled digitally by default in compatible formats across the Nordic region
- **By 2023,** 80% of the Nordic business systems have implemented common tools (APIs), so service providers can access an SME's data with appropriate consent
- **By 2024,** 80% of the invoices sent in the Nordics are digital
- **By 2025,** the Nordic SMEs have saved 500 million EUR by using smart services and real-time data
- **By 2027,** the Nordic countries are the most integrated region in the world

Challenges experienced by the Nordic SMEs

In 2019, the NSG programme conducted workshops and in-depth interviews with 50 SMEs across the Nordic countries. The aim was to identify barriers and obstacles experienced by SMEs in their day-to-day processes. The findings and possible solutions have been explored in dialogues with actors that have SMEs as their customers, e.g. business systems vendors and other third-party services.

Key findings (detailed on the next page):

- SMEs work with paper based processes – even if they use digital tools
- SMEs cannot transfer their accounting data and choose new services
- SMEs lack information on potential business partners' trustworthiness
- SMEs experience time-consuming credit assessments
- SMEs lack an overview and easy control of cash flow and liquidity
- SMEs are uncertain about formal requirements when going Nordic

These findings are all connected to the same basic problems: Transactions that are handled via paper documents, systems that cannot exchange data, and a tendency in public sector of developing stand-alone solutions that do not fully accommodate the basic business administration processes.

Based on workshops and interviews, NSG has identified user needs and formulated user principles to guide the future work. The purpose is to ensure that the SMEs' needs are prioritised, increasing the likelihood of support for the NSG vision. The NSG User Principles are found here.

The Pains of Nordic SMEs

SMEs often do administrative work in evenings and weekends. This also involves hours spent on manually typing data into digital self-service systems when reporting to the government. Much typing is necessitated by poor interoperability between systems. The manual typing also results in errors that would be avoided if administrative tasks, such as bookkeeping and reporting, were automated to a higher degree. The manual work of typing hinders the SMEs in getting real-time insights into their current financial situation. They often worry about whether they have money to pay their employees, about their liquidity, and how they are doing compared to competitors.

Testimonials from in-depth interviews:

"I've heard since 1983 that everything is going to be simpler, but so far it has only become more complicated" (SME, NO)

"I wish I had an instant overview of my business financial statement" (SME, DK)

"Systems that could help are too expensive and it takes too much time to switch from the old systems to new ones" (SME, FI)

"I need a strategic overview of liquidity, VAT and the accounts when I have a need for major investments" (SME, DK)

Exploring the Challenges of the SMEs

The following further explains the challenges that SMEs face today in their day-to-day business administration

Case A: SMEs work with paper-based processes in daily transactions

The majority of Nordic SMEs still send their invoices on paper or PDF, and spend time on manually typing in prices, numbers and product information during sales and purchases. Since these inefficient workflows are not yet fully digitalised, information is lost or cannot be transferred to other systems, and data cannot flow digitally in real-time.

Case B: SMEs cannot transfer their accounting data and choose new services

SMEs vary a lot and have different needs. Contrary to the bigger companies, SMEs cannot usually afford the costs of tailormade digital business systems that meet their exact needs. Although many business systems provide a platform for add-on services, the SMEs' choice of data-driven services is limited to the services available on each vendor-specific platform. Each platform usually use proprietary and largely incompatible data formats. A related challenge appears when an SME wants to switch to another business system, because transaction and accounting data cannot readily be moved between systems and service providers. Therefore, there is a risk of vendor lock-in effects.

Case C: SMEs lack information on potential business partners' trustworthiness

SMEs have a limited overview of their trading partners' current financial situation. It may be difficult to reliably check basic facts about a new customer or supplier, or to in fact a fraudulent business. Not much updated information is available or easily interpretable for SMEs wanting to know their Nordic partners.

Case D: SMEs experience time-consuming credit assessments

SMEs do not have easy access to real-time information about their financial situation, nor do they have formats for easily sharing credit relevant information. Current credit assessment processes are time-consuming, causing much manual work for both the SME and the bank or the credit institution. This makes it difficult or costly to obtain smaller loans and the total amount of liquidity in the market to support growth is limited.

Case E: SMEs lack an overview and easy control of cash flow and liquidity

It is time-consuming to get an adequate and timely overview of the economic situation, when calculations are done using Excel and manually collected data. SMEs that rely on paper-based processes cannot readily benefit from existing advanced tools that may help them stay on top of their day-to-day situation and analyse their performance. Lacking an updated overview and easy handling of the latest data, it is difficult for SMEs to make informed decisions.

Case F: SMEs are uncertain about formal requirements when going Nordic

Cross-border business in the Nordic region involves extra administration for the SMEs, and they are uncertain about which formal requirements and regulations that apply in cross-border trading. They worry about whether they do things correctly, for example report to the right authorities, or if they get the VAT right when invoicing Nordic trade partners. Many SMEs lack knowledge about administration and compliance when trading or doing business in another Nordic country.

Six solutions to support the Vision of NSG



Digital Business Documents



Open Accounting
Sharing Bookkeeping Data



Digital Product Information



Reliability and Data Quality



Born Digitally



Simplified Reporting

Solution 1: Increase the Adoption of Digital Business Documents



Background and purpose

High-quality data is the foundation for a future ecosystem of data-driven services. Data is generated in the daily business processes of sales and purchases, but to get the benefits of high-quality, structured data, SMEs must use digital business documents (such as e-orders, e-invoices, e-receipts, etc.) in standardised formats. This will reduce manual and paper-based processes and save time for SMEs.

The existing European digital infrastructure, network and standards used for invoices in public procurement is also suited for business-to-business transactions. The use of digital business documents in this format and network makes trading across the Nordics easier, and the high-quality data from the transactions can be used in the SME's digital business systems instantly. This enables higher degrees of automated bookkeeping and simplifies reporting to governments, and may give the SMEs a near real-time insight into their financial situation. Digital business documents will provide the foundation for a data-driven business environment.

Recommendations for increased adoption of digital business documents

The Nordic countries have all implemented digital invoices in public procurement, but other digital document types (such as receipts or orders) either lack widely accepted standards or are only adopted in a few industries. Standardisation bodies and government authorities should continue work in this area and support the transition for Nordic SMEs.

Legal amendments may be needed eventually to increase digital business document adoption, because there is a lack of incentives currently to use the digital document formats. The introduction and use of these documents should be supported by broad partnerships between business system vendors, business associations for SMEs and relevant sectors (i.e. accountants or credit institutions), and government authorities.

Increased use of business systems will contribute to increased adoption of digital business documents. In addition, the business registration process could, from the very start, guide a new SME towards selecting business systems which supports digital business documents and the European infrastructure for transporting these documents.

Solution 2: Open Accounting – Sharing Bookkeeping Data

Open Accounting

Background and purpose

Open Accounting is a secure way to give service providers access to an SME's financial information from bookkeeping. Open Accounting enables the SMEs to voluntarily share their data from digital business documents with third parties of their choice. This is done through standardised content and interoperable APIs. APIs are interfaces for sharing data between digital systems, and interoperability means that different systems can communicate.

For example, a smart warehouse management app could connect to any business system and read the latest transactional data to calculate and check the current stock of products. An SME might also connect their business system to their bank during a credit assessment process, enabling direct read-only access to the bank's system. In both cases, the SME avoids the hassle of manually exporting tables and setting up spread sheets to deliver data and stay updated.

The purpose of Open Accounting is to create a competitive market for innovative solutions and services to the benefit of the SMEs. Standardisation reduces the development costs and makes new services usable with together with other systems and services. With the existing, non-standardised practices for data sharing, a new service or application must virtually be built from scratch when connecting to a business system. With the interoperability provided in the future by standard APIs, this cost is greatly reduced, and the SMEs will have access to a wider selection of services utilising their data.

Open Accounting also enables portability, which means that historic data can be transferred from one system into another system. It means that the SMEs can also change service provider, which is a necessity to a competitive market.

Recommendations for increasing the use of Open Accounting

To the benefit of the SMEs, the business systems should enable third-party access to financial transaction data, with consent from the SME who owns the data. The data should be structured in a standardised way, with harmonised definitions of accounting data. Today, several file formats exist (e.g. SAF-T and XBRL-GL) which are useful for defining accounting data. These are already used for audit purposes and for portability (that is, for transfer of data between systems).

Private and public actors may prefer voluntary paths for delivering standardised data sharing among businesses and third parties, finding a compromise that respects current business models of business system vendors and third parties such as banks. If necessary, interoperability and portability could be regulated.

The sharing of data should comply with privacy and trade secret regulations, and must not compromise GDPR (the General Data Protection Regulation), which requires confidentiality and protection of sensitive personal information. However, GDPR affects only a very limited set of business data, where sensitive information should always be protected.

The data sharing described here is limited to standard ways of accessing and reading accounting information in business systems, but not creating or updating accounting information.

Solution 3: Digital Product Information included in Business Documents



Background and purpose

In business documents, product information describes the basic type of a product or service: a windowpane, an apple, or a slab of concrete. For any company, detailed information about traded goods or services is necessary in business and production processes. Accounting and VAT calculations are based on the products and services that are being purchased and sold. Many small companies, even when using digital business documents, make invoices that include free-text descriptions without product codes. Detailed and structured product information is often lacking, preventing the development of automated accounting and VAT postings. In addition, machine-readable product information and codes in e-order confirmations, e-invoices, or e-receipts may be used directly by different applications. For example, this reduces manual administration in warehouse management.

In a wider sense, product information is in increasing demand among many stakeholders and is relevant in green procurement processes, where data on environmental impact, product lifecycle and material consumption are required. This will also enable digital traceability and improve auditing of green data, and make the transition to a greener and circular economy more data-driven.

Recommendations for standardisation and increased adoption

Today, product information in orders and invoices varies in content and level of standardisation. To be digitally manageable and to enable automation, information about products and services must be standardized and machine-readable. Product information in e-orders, e-invoices and e-receipts should be based on e-catalogues and used consistently across the digital business documents.

Implementing product information across many industries will likely be a long-term process. Many good starting points for standardisation already exist today internationally and in the Nordics. Existing global product registries and their standards, for instance, should be identified, indexed, and possibly developed. The use of product codes from existing data pools and common product classification registries (e.g. UNSPSC) should be widespread in digital business documents. Such codes enable business systems to retrieve additional product information from registries and catalogues, and eventually to automate e.g. VAT calculations and reporting.

Relevant sectors especially in e-commerce should adopt and support standardized e-catalogues with product codes linking to additional sources of product information and use adequate product information in e-order confirmations. Governments could lead the way in e-commerce by promoting e-commerce in general and demanding the use of e-catalogues in public procurement.

Solution 4: Access to Data Services to verify Reliability and Data Quality

Reliability and Data Quality

Background and purpose

Realising NSG is dependent on high quality bookkeeping data. Unless the data is correct and reliable, they can not be used in automated processes and shared with confidence in real time. Reliable bookkeeping data, can be supported by public registries, such as verification of the identity of business partners, through registration number and business register data provided by a Nordic business register. Governments, by their role in society, have authoritative information about businesses and on events throughout the lifespan of a business that is relevant for verification purposes.

Explicit solutions for ensuring quality and authenticity is especially important for cross-border trade, where the parties can not rely on knowledge about national systems and culture to make qualified assumptions. Quality data verified by public registries is also crucial in order to achieve correct Annual Reports as well as correct tax calculations and statistical reporting.

One situation to be addressed is the honest mistakes, when invoice is issued, resulting in low quality data in a document (e.g. erroneous registration number, old addresses, typing errors in bank account numbers in invoices) creating a need for manual procedures at the receiving end. Such mistakes can be reduced by business system providers making use of real time public data accessible via APIs, such as business registry data (registration number, addresses), bank account data and eligibility for VAT in the functionality they offer to the SMEs.

National solutions exist in varying degrees, often for public procurement. Similar solutions must be available to businesses in general, and also work cross-border in order to achieve the vision of NSG. The Governments are in a key position to offer access to public data to increase the quality of the bookkeeping data and make it simpler for the SMEs to operate.

Recommendations for increasing reliability and quality of data

The government's role is to create a framework for fair competition among honest businesses. This can be achieved by sharing public data efficiently in the ecosystem. Nordic businesses have the same need as governments, in reducing their risk. Thus, public data for this purpose is in demand by digital business system providers, which can provide better services to their customers. With this kind of data and services, the SMEs can improve the quality of the bookkeeping, reduce acceptance of orders from fraudulent parties and avoid accepting false invoices.

Expand and harmonise existing national solutions: Some national solutions exist, but data services must also work cross-border in order to achieve the vision of NSG, an integrated region where e-invoices can be sent across the region and automatically be included in the bookkeeping processes and data shared with other parties. It is therefore necessary to assure that digital business system providers can employ government data from the whole region, and not only at national level. Governments should harmonize these services across the Nordics, making it just as easy to verify data from a subcontractor or vendor in Finland as a domestic Swedish partner.

Open Government Data as a starting point: The information which has a relevant public interest should be made available for services to the SMEs and their business systems. Within the limits set by national law and political context, the data should be shared for private parties to build services.

Beyond open government data: A future exploration with the participants in the ecosystem should be performed where possible new data that reduce manual corrections, increase automation and reduce risks are identified. Some of the information may be considered non-open, and the need for and possibility of sharing other data is subject to further investigation, e.g. bank account verification. A legal analysis framed by political context should be performed.

Solution 5: SMEs are Born Digitally



Background and purpose

Today, SMEs grow into the digital domain, but new companies should from the very start use digital systems that ensure consistency, digital processing of business documents and support compliance with law. Increased use of business systems will contribute to increased adoption of digital business documents, and ultimately enable new types of services and service providers.

Recommendations for tying together early-stage life events of businesses

The SME should be guided to "do the right thing" from the beginning. The first life-events of a company must be tied together digitally by a range of actors, not only business registries and tax authorities. All the relevant actors have a stake in the seamless and compliant digital birth of a company (the bank, the national ID provider, the business system, and sector-specific authorities regulating food production or environmental security, etc.), and all may benefit from reduced re-entering of information.

A fully digital, integrated process for the establishment and registration of a company in the national business registry would also make it possible to offer a tailor-made setup of the business: Depending on the business' intended industry, the registration process can guide the SME about the requirements (for instance necessary certifications or approvals) that must be in place in order for the business to be compliant.

Solution 6: Simplified Reporting



Background and purpose

SMEs make several different kinds of financial reports to authorities, but the basis of such reports is always the business transactions. For example, reporting VAT to tax and reporting net sales or import/export figures to the national statistics agency is based on the very same transactional data from sales and purchases. While the data source is the same, the burdens related to calculation and submission process is quite different from one authority's solution to another.

Recommendations for re-using structured business data in reporting

Automated reporting should be enabled and supported by law. The government should keep track of all reporting requirements imposed on SMEs, and make sure to coordinate the reporting requirements between agencies with similar needs. This coordination dialogue should also include the business systems vendors so that reporting requires the least amount of effort for all parties.

To lessen the administrative burden of SMEs, authorities must implement the "once-only" principle. Lessening burdens also requires that authorities align implicit and explicit requirements on SMEs, such as data formats and standards. By promoting a standard chart of accounts, automation and simplified bookkeeping may be enabled. Turning to reporting in surveys for statistical analysis, authorities should align their demands and thereby create data sets that are both detailed enough for statistical purposes and comparable for benchmarking in specific industries, while not revealing sensitive data.

Benefits of Nordic Smart Government - for many Stakeholders

Numerous stakeholder have been presented to NSG. SMEs, business system vendors, auditors and accountants and other value-adding services like banks, credit institutions and other IT service providers have engaged with the vision and its possibilities. Their feedback have been very positive, and stakeholders across the region and sectors wish to take part in the realisation of NSG.

Benefits for Nordic Smart Businesses

- Less manual typing and a higher degree of automation
- Higher data quality overall, better control of errors and changes in ordering and procurement processes
- Real-time overview of business profitability, cash flow, and product stock
- Simplified reporting and sharing of data with e.g. creditors
- Customised services for e.g. industry-specific needs and credit assessments
- Traceability of products and materials is enabled (e.g. chemicals, waste)

Benefits for business system vendors

- An expanded market where more SMEs would use business systems
- Business system vendors act as key players in the automation of government reporting. Stable regulation for reporting directly from business systems means less risk and a predictable future.
- With better interoperability between business systems and value-added services, the SMEs get a wider range of data-driven services available. Each business system can thereby cater to the needs of different types of SMEs

Benefits for service providers in the financial sector

- With structured data, banks will be able to better assess their SME customers' credit risk in a simple and fast way. This way, banks can provide more accurate financing and reduced costs of loans for business customers
- Insights into real-time transactional data enables credit institutions to assess the risk of an SME that relates to its network of customers and suppliers.
- Costly and mandatory know-your-customer assessments may in part be handled using the same interfaces for accessing data as used in credit risk assessments

Benefits for government authorities

- The process of obtaining business data is simplified by enabling reporting directly from the business systems
- Compliance by design will increase correct and timely reporting
- Secure chains of real-time structured business data makes it possible to increase process automation and decrease manual errors
- Market developments can be monitored in real-time by authorities, and new data-driven policy can be developed in response to crises as they unfold

Other societal benefits include

- When it becomes less costly to provide credit to the SMEs, financing will increase and pricing of credits will become realistic as risk assessments are better. The increased liquidity stimulates the economy of the Nordics
- With further Nordic integration it becomes easier to trade across the region, which benefits the Nordic societies at large

NSG Proof of Concepts and Prototypes - Demonstrating Benefits

In 2019, NSG has invited a range of external stakeholders and Nordic government authorities to contribute to developing Proofs of Concepts (PoCs) and prototypes. The PoCs developed demonstrated the technical feasibility of

- Real-time data used in credit assessments
- Know-Your-Customer and network risk services
- Standard Business reporting
- Automated account posting
- Automated calculation of VAT
- Auditing based on standard transactional data
- Conversion service (SAF-T -> XBRL) making various report types compatible
- Direct extraction of business data for statistical surveys
- Real-time analytics dashboard

These PoCs also demonstrate how the following three building blocks

1. a standard chart of accounts / standard mapping,
2. a standard representation of accounting entries and
3. a taxonomy for financial reports,

in conjunction can automate and digitalise financial reporting.

Please note that realising the benefits of the PoCs in real-life contexts is dependent on multiple factors, and that the PoCs also identified the challenges of today's legal environments and technical setups.

The PoCs used the NSG reference implementation documented on GitHub, showing how Open Accounting APIs may be implemented in business systems, enabling access to transactional business data.

Digitalism Challenge

The Finnish NSG team, Aalto University, and Accenture hosted the Digitalism Challenge 2019, with around 100 students participating in 14 teams. The focus was on business activities and new services that can be made by use of real-time structured financial data within agriculture and micro-brewing industries. A solution for the farmers demonstrated they can be provided with a software that accesses the data and uses it to provide them with features they need in their daily work, such as easy stock management, self-monitoring of production and reporting. Farmers can check the current stock quantity for a product, order new products, book the ordered products into the stock from structured e-order confirmation and book the usage of the product out of the stock with the mobile app.

Nordic Data Sandbox Challenge

All of the central concepts explored by NSG relating to B2B services driven by real-time data flows were covered by the participants in the Nordic Sandbox Challenge (hosted by Copenhagen Fintech Lab). Two winners were found between the eight contestants in the challenge. One winning PoC showed how simple accounting ought to be with increased automation, while the other winner showed that e-invoices flowing in real-time could improve the accuracy and time-to-market of credit assessments considerably. The NSG reference implementation and test data were used by challenge participants.



NORDIC SMART GOVERNMENT

Copenhagen Fintech

Implementation: Major changes for Stakeholders

Realising the Nordic Smart Government recommendations will require action and major changes for several stakeholders.

Business systems should…

- Adopt EU-wide common standards (PEPPOL), connect to the European eDelivery network, and thereby push for the use of e-documents * (such as e-orders, e-invoice, e-receipts, and e-catalogues)
- Implement common tools (APIs), so service providers can access SME's data with given consent
- Integrate with Nordic-wide systems for eIdentity, powers and mandates
- Offer standard contract terms, empowering SMEs to use whatever business systems and combine services according to their needs
- Promote national standard chart of accounts where one exists, and connect the core elements of the national chart of accounts to each other in a common minimal Nordic chart of accounts

To become Nordic Smart Businesses, SMEs should…

- Use digital business systems and services
- Use e-documents*
- Share data with trusted parties to get better services

* = e-documents, as currently defined by the OpenPeppol organisation, are e-invoices, e-catalogues, e-orders, e-despatch advice, e-credit notes, e-reminders and e-receipts. The choice of OpenPeppol as the default for e-documents does not imply that other document types or EDI-solutions are considered irrelevant.

Government authorities should…

- Support innovation and the creation of new services by providing data related to businesses via open APIs
- Make business registry data freely available in a secure manner
- Support and implement common identity and e-address mechanisms
- Make public procurement digital by using e-documents*
- Work towards enabling standardised digital reporting to authorities directly via business systems and ensure compatibility in reporting demands
- Standardise national chart of accounts with Nordic harmonisation and push for increased adoption of chart of accounts
- Clarify different parties' rights and obligations with regards to business data through terms and conditions in standard contracts (based on dialogue with different actors on the market)
- Define a guideline for data ethics in this field, and define the terms for making data available for analytics and artificial intelligence. These terms and the ethic guidelines provide the frame for developing smarter public and private services with respect for the SMEs

Service providers should…

- Create new systems/services once data are standardised and made available
- Accountants and auditors will have to digitise and automate key areas of their core business
- Banks and credit institutions must provide new services based on available real-time data from both business systems and from public registries

Implementation and Governance

To realise NSG, it is necessary to bridge the many ongoing developments across the Nordics and to establish efficient collaboration between private and public stakeholders is crucial. Governments must define the framework for change, take responsibility for necessary regulatory amendments and standardisation, lead the change process and engage in co-creation with the private market.
Private actors, such as business system vendors and other service providers, are essential as they have to adopt common standards and adjust to accommodate data sharing. Like the authorities, private actors must also invest in developing existing systems and services, and they must also invest in new services to benefit from the NSG recommendations.

National developments must be coordinated and decided upon nationally, while still maintaining coherence between Nordic and national levels. The government authorities participating in NSG 3.0 are thus expected to lead further developments relating to the solutions and capabilities identified. A major task for them in the implementation phase is the alignment of national initiatives, standards and infrastructure.

In order to make an efficient implementation, a Nordic steering group with a secretariat and public-private advisory board must be set up. The public-private advisory board will provide counsel to the steering group on opportunities and challenges in the market, which is necessary to synchronise development and to increase Nordic integration. The steering group will be responsible for alignment and strategic prioritisation of common Nordic initiatives and public investments, and alignment with the national developments.

The governance of NSG should be established with the aim of ensuring coordination between the various stakeholder groups. It will be necessary to synchronise national and Nordic initiatives and actions, ensure alignment with stakeholders in the field of Pan-European standardisation, and work together on communication and the development of cross-border services. One example of this is common API services.
An important aspect of this collaboration will be aligning and coordinating a strategy on how to influence standardisation work and regulatory initiatives at the EU level.

Recommendations on actions are likely to evolve with new opportunities, technology, and market developments. The work and progress will therefore be continuously evaluated, and new insights will be accounted for in order to adjust prioritisation of the work. Accordingly, the present roadmap is a proposal for working together in the years to come, and for moving forward in the same direction in order to realise the potential of digital investments.

Future perspectives: Green Business Data can be shared in Real Time

Information about products and production - beyond financial data - is increasingly in demand by different stakeholders, such as service providers, creditors, government authorities, investors, and consumers. Green data is in demand due to increasing public awareness and attention, and in the years to come, this attention will be decisive for businesses as well. Green data will be a parameter for competition, and social, environmental, and climate responsibility can be expected to have an increasing economic importance.

The EU commission's draft Action Plan on Circular Economy states that "as of 2030, only safe, circular and sustainable products should be placed on the EU market". Demonstrating sustainability, for example, will require substantial non-financial information to be efficiently shared, audited and reported through supply chains and to the market.

By supporting processing of structured product information in the digital business documents (in particular in digital orders), NSG delivers a basis for efficiently sharing not only financial data, but also non-financial data.

With further development of structured and standardised data, we can achieve better transparency of environmental, climate and social conditions in the economy. The infrastructure envisioned in NSG offers a basis for efficient sharing of these data as product information – integrated with core economic data in e-documents. Unless the non-financial data are structured and standardised, it is likely to become an extreme burden for the Nordic SMEs to transform to the new climate agenda. With new reporting demands, auditing and control will become difficult, and it will become costly to avoid fraud.

These perspectives are further elaborated in this "Memorandum on Non-Financial Business Data For SMEs in the framework of Nordic Smart Government" from Center for Circular Economy.





NORDIC SMART GOVERNMENT

Nordic Collaboration in NSG 3.0 (2018-2020)

The Nordic collaboration on Smart Government was initiated by the Nordic business registries in 2016. The idea of automating business reporting was further developed by conceptualising an open ecosystem for an automated, secure and consent-based flow of structured and standardised business data which may be utilised and accessed by public and private stakeholders.

The Nordic Ministers of Business launched the third phase of NSG in May 2018. The overall task for the programme was to define the requirements for enabling the ecosystem. To this end, a programme organization, involving 18 government authorities from all five Nordic countries, was established. The work has been performed in collaboration, with the institutions participating in the work to varying degrees. The conclusions and overall recommendations of the collaborative work is presented in this roadmap. The five Nordic Business Registries are contract partners of Nordic Smart Government 3.0 and are responsible for this roadmap.



DENMARK

- The Danish Business Authority
- Statistics Denmark



SWEDEN

- The Swedish Companies Registration Office
- The Swedish Tax Authority
- Statistics Sweden



NORWAY

- The Brønnøysund Register Centre
- The Norwegian Tax Authority
- Statistics Norway
- The Norwegian Digitalisation Agency



FINLAND

- Finnish Patent and Registration Office
- Finnish Tax Administration
- State Treasury
- Statistics Finland



ICELAND

- Iceland Revenue and Customs
- Ministry of Finance and Economic Affairs
- Ministry of Industry and Innovation
- Statistics Iceland

The Benefits of Nordic Collaboration

This roadmap is the result of four years of unique Nordic collaboration under the leadership of a common Nordic steering group consisting of the General Directors of the five Nordic Business Registries.

NSG builds on national strengths and the collaboration has brought together people with different competences and experiences in an open and innovative setup. The programme organisation set up in 2018 to develop the roadmap, has almost doubled in size from around 30 persons in the start, to include more than 50 persons from more than 15 governmental organisations. The work has been carried out in working groups across countries and institutions, in a semi-agile set up with weekly virtual meetings and common digital workspaces.

By working together in this way, the responsibility and ownership for NSG is shared. This is a great asset to further Nordic integration. The common experience is that the Nordic countries in collaboration can do more and do better than each country could do on its own. NSG has also influenced and contributed to national initiatives in the area, such as the Real Time Economy in Finland and Automatic Business Reporting in Denmark.

The add-on achieved only by Nordic collaboration is a dedicated engagement for furthering Nordic integration where businesses can operate easily across borders.

Additional core value emerging from the NSG collaboration includes:

- By supporting compatible digital standards, it becomes easier to automate processes and to do business cross-borders in the Nordics, which contributes to growth.
- By aligning standards across the region, it also becomes easier for the service providers to offer services in a larger Nordic market, and thus increase the services available and the competition for the benefit of both the service providers, the Nordic SMEs and the region as a whole.
- By helping Nordic companies become more competitive and better suited for international competition, the Nordic market presence is strengthened globally – and a common Nordic market will be more robust than each national market on its own.
- By utilising the business data for the benefit of SMEs and other parties, the Nordic region, already being a digital frontrunner, may also lead the way for the European Union with a fair and beneficial use of business data.
- By making a Nordic model for the shared development of the common digital ecosystem, core Nordic principles of transparency, trust, sustainability, and the safeguarding of democratic rights are supported.

Introduction to Appendix

The appendix of this roadmap further details the vision and recommendations of NSG. First, the roadmap appendix visualises the recommendations on national levels and on a common Nordic level in a set of diagrams. These diagrams show a timeline of the main blocks of actions relevant in each national setting, and across the Nordics. The actions found in the diagrams are organised according to capabilities - high-level stable concepts describing the function or ability that actors must achieve in the ecosystem.

The capabilities may be implemented in various ways. NSG 3.0 has proposed a number of actions for businesses, business systems, government and others, to fulfil the vision of NSG and ensure the implementation of the capabilities. The actions are a menu of ideas, and need to be assessed for relevance in each country.

The six capability areas in the diagrams (see graphic presentation on slide 7) and the underlying capabilities of NSG come from assessing the vision and the drivers and needs of different stakeholders.

1. Digital business document adoption - the standardisation and implementation of digital invoices, receipts, orders and bank account statements and the adoption of them in business-to-business transactions.
2. Availability of transaction level information - in order to support sharing data with partners, portability, and audit. Includes common representation of transactions.
3. Reporting and analytics - reports and access to aggregated data and understanding the data across businesses.
4. Compliance - making sure the businesses have compliant digital systems and have the information they need to be trade securely. This includes data services to check validity and quality of business documents and verify basic data related to their trading partners.
5. Data protection and security - making sure data is well protected across the value network, restricting access, safeguarding data, maintaining availability and provide traceability.
6. Governance of the ecosystem at national and Nordic level.

Appendix - Table of Contents

- Graphic presentation of draft recommendations of national initiatives and actions:
  - Common Nordic diagram (found above, slide 7)
  - Deep link for the Finnish Diagram (draft) here
  - Deep link for the Icelandic diagram (draft) here
  - Deep link for the Swedish diagram (draft) here
  - Deep link for the Danish diagram (draft) here
  - Deep link for the Norwegian diagram (draft) here
  - Deep link for the Legal Amendment Uniform Timeline here

- Capabilities: https://docs.google.com/document/d/1v5iHELL30p5A41vbjFJY7HvaT5g6OTDS5LH2Lp_vXSQ/edit#heading=h.5voykp1iiqj7
- Bundled actions: https://docs.google.com/document/d/1rOcJD6S7utMRrCxulBMHQS9ZIrFG3VNc-JA1SBaUuhA/edit#heading=h.g3g4iihhcee6
- Legal analysis report: https://drive.google.com/file/d/1FVIzKi9XPU0cWygVJPdR2uO3z0nL_E4K/view
- Legal amendments presentation: https://drive.google.com/file/d/1CIOUqgCsc9Cyk0AHHujIfado6WwJg-HN/view
- Architectural overview: https://docs.google.com/presentation/d/1Xqha6N4obIordSzdNWuts0uRvivmot3ZXte_i1zOKvY/edit#slide=id.p1
- Rulebook: https://docs.google.com/document/d/1iTLZR1YtafqPuplfucNFCaJRZlREG4Nv5NFZR7LUf2c/edit
- Proofs of Concepts explored in the course of NSG 3.0: https://docs.google.com/document/d/1kyCRr2Q0OLDXvqsVz7Xwj7ekffpaZ0ao71Bya2ly9PA/edit
- User Principles: https://docs.google.com/document/d/1el5mM_cf-mg72a6dyms4AFKllhE4alG4Tk3MgqyHpXc/edit#
- Short reading guide and index of all main deliverables: https://docs.google.com/document/d/1eAmtm7TMJXFULoJb4fQH7dYlgjoazrh3g2eKZzhFVjQ/edit

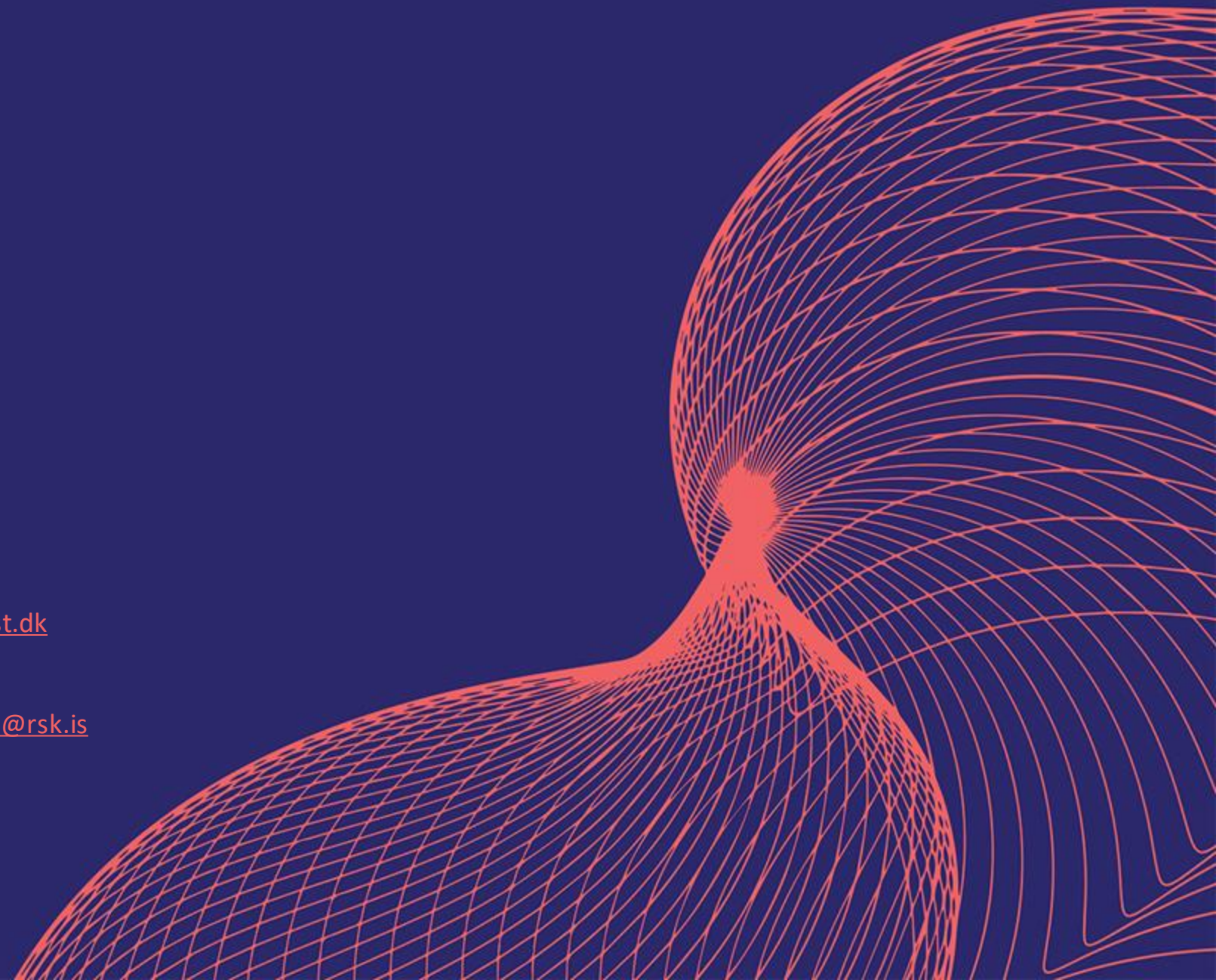
NORDIC SMART GOVERNMENT

Nordic Innovation

For further information, please contact the Programme Management Organisation:

Kjersti Lunde, Programme Manager, kjelun@erst.dk
Franck Mertens, franck.mertens@prh.fi
Håkon Olderbakk, hakon.olderbakk@brreg.no
Linda Rut Benediktsdóttir, Linda.Benediktsdottir@rsk.is
Nina Brede, nina.brede@bolagsverket.se

www.nordicsmartgovernment.org



NORDIC SMART GOVERNMENT

Nordic Smart Government - Appendix of Deliverables

Version 0.4, October 26, 2020

Index of Deliverables

1. Capabilities – link - p. 2-29

2. Bundled Actions – link – p. 30-63

3. Legal Analysis report – link – p. 64-76

4. Legal Amendments – link - p. 78-86

5. Architectural overview – link – p. 87-96

6. Rulebook - link – p. 97-111

7. Proofs of Concepts explored in the course of NSG 3.0 – link – p. 112-125:

8. User Principles – link – p. 126-131

Reading Guide

The present appendix to the NSG roadmap further details the vision and recommendations of NSG.

The appendix consists of all major deliverables produced for public review during NSG3.0 (2018-2020).

The appendix documents flesh out the Roadmap (link), and they are ordered in a gradually more detailed way, so that the reader unfamiliar with NSG should begin from the top of the index list:

First, the overall vision and the architectural principles are explained in the document on Capabilities. The capabilities may be implemented in various ways. The second document contains a number of proposed actions for businesses, business systems, government and others, to fulfil the vision of NSG and ensure the implementation of the capabilities. The actions are a menu of ideas and need to be assessed for relevance in each country. Third, the legal aspects of these capabilities and actions at a general level are reviewed. Connected to this, a set of possible legal amendments are listed. The specific or generic solution architecture for services is presented in the Architecture overview, referencing the previous documents. The so-called Rulebook then explains the future transaction and bookkeeping/accounting procedures (that will be in place given the achievement of the capabilities and infrastructure), seen from the perspective of a company. Many services will be enabled by the capabilities and infrastructure, and these are presented in the list of Proofs of Concepts. Finally, the general user principles are enumerated. The User Principles should guide the development of the necessary infrastructure and services, so that services are created with the user in mind.

For a graphic presentation of the roadmap, capabilities and actions, please consult the set of diagrams below. These diagrams visualise recommendations on national levels and on a common Nordic level, placed on a timeline of the main blocks of actions relevant in each national setting, and across the Nordics. The actions found in the diagrams are organised according to capabilities - high-level stable concepts describing the function or ability that actors must achieve in the ecosystem.

Diagrams: Graphic presentation of draft recommendations of national initiatives and actions:

- The Nordic diagram
- Deep link for the Finnish Diagram (draft) here
- Deep link for the Icelandic diagram (draft) here
- Deep link for the Swedish diagram (draft) here
- Deep link for the Danish diagram (draft) here
- Deep link for the Norwegian diagram (draft) here
- Deep link for the Legal Amendment Uniform Timeline here

Links to deliverables of NSG2.0:
www.nordicsmartgovernment.org/#knowledge

Online documentation of code

- GitHub documentation of Reference Implementation
  https://github.com/nordicsmartgovernment/nordicsmartgovernment
- GitHub documentation of Showroom
  https://github.com/nordicsmartgovernment/showroom
- GitHub - Archimate repository of NSG
  https://github.com/nordicsmartgovernment/SA_NordicSmartGovernment

Nordic Smart Government – Deliverable 1: Capabilities of the NSG digital ecosystem

1 Executive summary

This document describes eight areas that need special attention to achieve an effective sharing of financial data in near real time. The areas span the processes of exchanging business documents to reporting to government.

Exchange of business documents like invoices, orders and receipts between business partners are still largely done using pdf and paper. The uptake of e-invoicing in business-to-business (B2B) has not followed the same speed as in public procurement where there is an EU regulation in place. This situation creates a set of obstacles for further automation, creates lead time in the use of the transaction data for financial overview and external use of data. Broadly speaking adoption of e-invoices, e-receipts and e-orders is a prerequisite for the effects promised by NSG. Specific actions are suggested to increase the level of e-invoices in B2B. Special attention is given to the use of product information in e-invoices, e-orders and e-receipts. Classification of products and services traded is one basis for correct bookkeeping, and becomes an important basis for taxation, international VAT and reporting to sectoral public bodies. In addition, product information plays a crucial role when it comes to analysis whether we are talking about market analysis, official statistics or research. The lack of machine-readable product information in invoices substantially reduces the use of the financial data downstream. Actions to increase the use of product information may have to be taken sector by sector.

A business should know who it trades with and to whom an invoice is paid. In the digital world the possibilities to handle fraud schemes and act on early warnings is much higher, but it requires common infrastructure and services. Emerging technologies and more radical approaches can be taken in order to ensure integrity and trust.

Access to real time financial transactions is a big issue today. There are several examples of new innovative services e.g. between banks and accounting systems. The services require near real time access to customers' accounting systems. However, *technical interoperability* is still a problem. There are also huge differences between the countries where portability formats have been in place for a long time in Sweden, there is no similar formats in Denmark, Finland and Iceland. National adoption also varies.

A regulation is required to ensure that business systems can be accessible *(legal interoperability)*. While in banking after Payment Services Directive 2 (PSD2) there are standardized access to bank account information in real time, the same is not the case for financial data.

Sharing data across organisations require clear and unambiguous interpretation of the data. The lack of this common understanding leaves room for misunderstandings, wrongful decision making and makes portability difficult. This goes for business documents, transactions and aggregated reports. Common understanding (*semantic interoperability*) is achieved by standardizing the content and meaning across countries and formats. In addition, national registries must be commonly understood in order for the information to be interpreted correctly. Furthermore, the status of the data must be clearly understood, e.g. if an invoice is received, accepted, has entered bookkeeping or books have been closed.

Financial data available in real time calls for secure and robust infrastructure for accessing the data, and make sure confidentiality, integrity and availability is taken care of. Protecting the data calls for understanding what transactions include trade secrets and personal information, and making sure only authorized users have access to these data. It also requires robust national building blocks for authentication and authorization with Nordic interoperability, and using this when accessing the SMEs data in the business systems. Sharing of SMEs data will need the ability to control the access, and hence

user to consent of the sharing of transactions, but also to retract the consent. The data must not be compromised in any way, and unauthorized and unintentional change of the data must be avoided. Furthermore, the availability of present and historical data must be ensured. Also, as a part of security, all changes must be recorded since decisions will be made based on the data.

SMEs are obligated by law to report to the governments. Currently financial reporting (annual report and tax- and vat-reporting) is not fully automated, but the more machine-readable business documents becomes the more ability there will be to automate the reporting. When it comes to reporting to other public agencies, much more can be automated especially when product information is available. Reporting formats across Nordics should be harmonized and using an international standard like XBRL should be used.

Analytical functions over transactional data includes an SME benchmarking itself against its sector, official statistics, and research which often requires historical data from the SME. Currently the availability of analytical data use is very sparse, and in practice is reduced to analysing historical annual accounting or tax reporting data. Making micro-aggregates of the transactions is a prerequisite for answering hypothesis on days and weeks old data. Micro-aggregates must also be able to filter out sensitive data.

Governance needs to be established on national, Nordic and European level. Handling stakeholders, road maps, communication and development of solution building blocks must be coordinated. There should also be a clear strategy on how to influence standardizations and regulations at the EU-level.

2 The vision of NSG

The vision of Nordic Smart Government is to make life simpler for SMEs in the Nordic region and make the Nordic region the most integrated in the world.

The programme expects an outcome with increased and more efficient use of financial data in public and private sectors.

To achieve this, the digital solutions need to be a part of the digital ecosystem supporting real-time transactional data exchange between a variety of systems and authorized parties. The ecosystem needs to support automated processes to increase data quality.

User principles has been described to highlight the changes from an SME's point of view which forms the base of identifying what needs to be changed in the handling of the data in the *business system*.

2.1 Objective of this document

This document takes a top-down approach to identify what capabilities are needed by SMEs, their supporting business systems, third party services and national solution building blocks in a NSG enabled future, and will serve as a basis for actions and road map.

The document contains narrative details on how end users; entrepreneurs (SMEs), accountants and others, who need to know about the main idea of using efficiently standardized, structured data. The focus is mainly on transactions, eInvoices, eReceipts, eOrders, eBank account statements, actual bookkeeping entries and their minimum content for enabling sharing with third parties, and mandatory reporting to government and needs for the entrepreneur's own internal business reporting. All the needed standards and technical requirements are found via links to the other documents.

2.2 Definitions used in this document

The definitions in use here can be found in the NSG common vocabulary. Note especially the following definitions

- SME - small and medium sized enterprise based on the EU definition, the main user group for NSG.
- Financial data - information about a company that tells you about its financial health and performance. It's used by both internal management as well as outside stakeholders, such as investors and government regulators.
- Transaction - an event involving an interchange of goods, money or services between two or more parties.
- Business document - Business documents refers to several types of documents which has different sections and content including quotation, purchase order, invoice, delivery note, returns note, credit note, statement etc. When here talk about business documents, we are exclusively meaning digital business documents (eDocuments), i.e. NOT paper or pdf. Business documents (from product catalog to delivery receipt) are all defined in the UBL 2.0 or UBL 2.1 standard.
- Proof of transaction (Voucher) - a piece of evidence, which proves that a certain event or transaction is carried out, often referring to business documents as invoice, receipts etc.
- Entry - a method used to record all individual transactions made by a company into its account in the Accounting Records using Debits and Credits.
- Account - a record in an accounting system that tracks the financial activities of a specific asset, liability, equity, revenue, or expense.
- Enterprise (Architecture) - TOGAF requires that we define the *enterprise* as in the scope of our architecture, not to be confused with enterprise as our user, i.e. the SME. In this document, in the context of enterprise architecture, *enterprise* is the entire ecosystem of the Nordic Smart Government.

2.3 Conceptual model

The definitions above is described with the following relations (to be read from left to right)

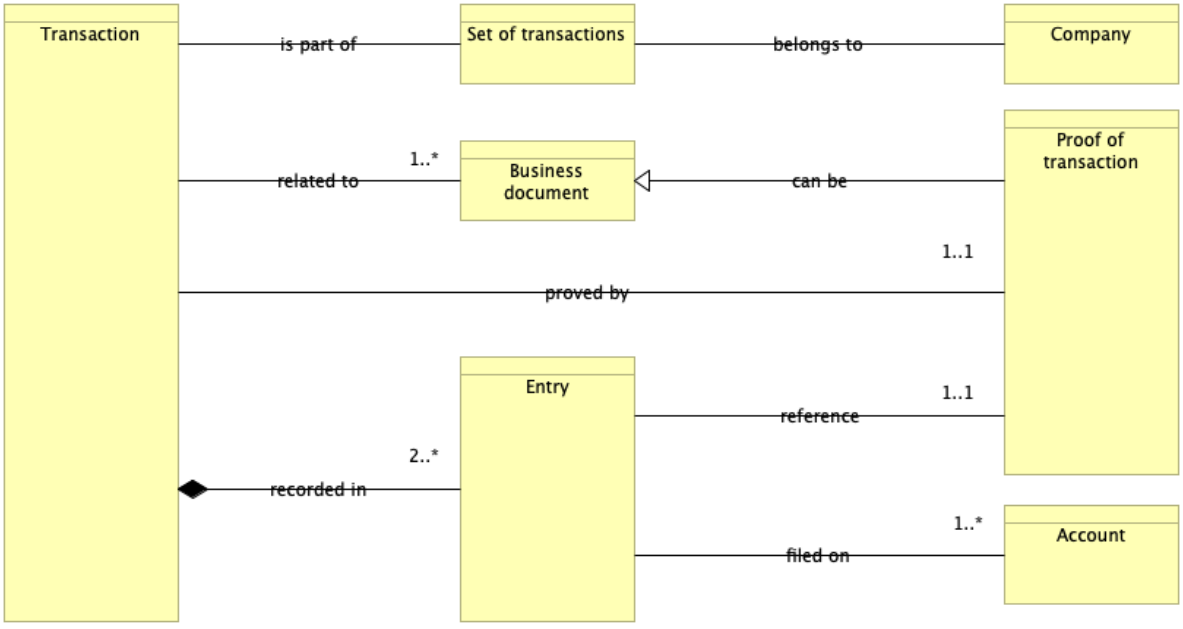


Figure 1. Model of the key concepts in this document

2.4 What is a capability?

In the standard for describing enterprise architecture, TOGAF, capability is defined as

> *A business capability is a particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome.*

A capability is a high-level stable concept of what an enterprise does, independent of the organization, structure, process, people and domain. The point is to capture the "what" rather than the "how", "where" and "who". The capabilities are relatively static because you are defining the 'what'. In general, it should be written in the form "the ability to do x".

2.5 How do we capture the capabilities in NSG?

The challenge of capability planning for the NSG ecosystem is the size of it. Hence, we need to avoid going into details of capabilities that we do not want to affect. The decomposition of a capability allows for a very high-level view, while detailing some capabilities into more detailed levels.

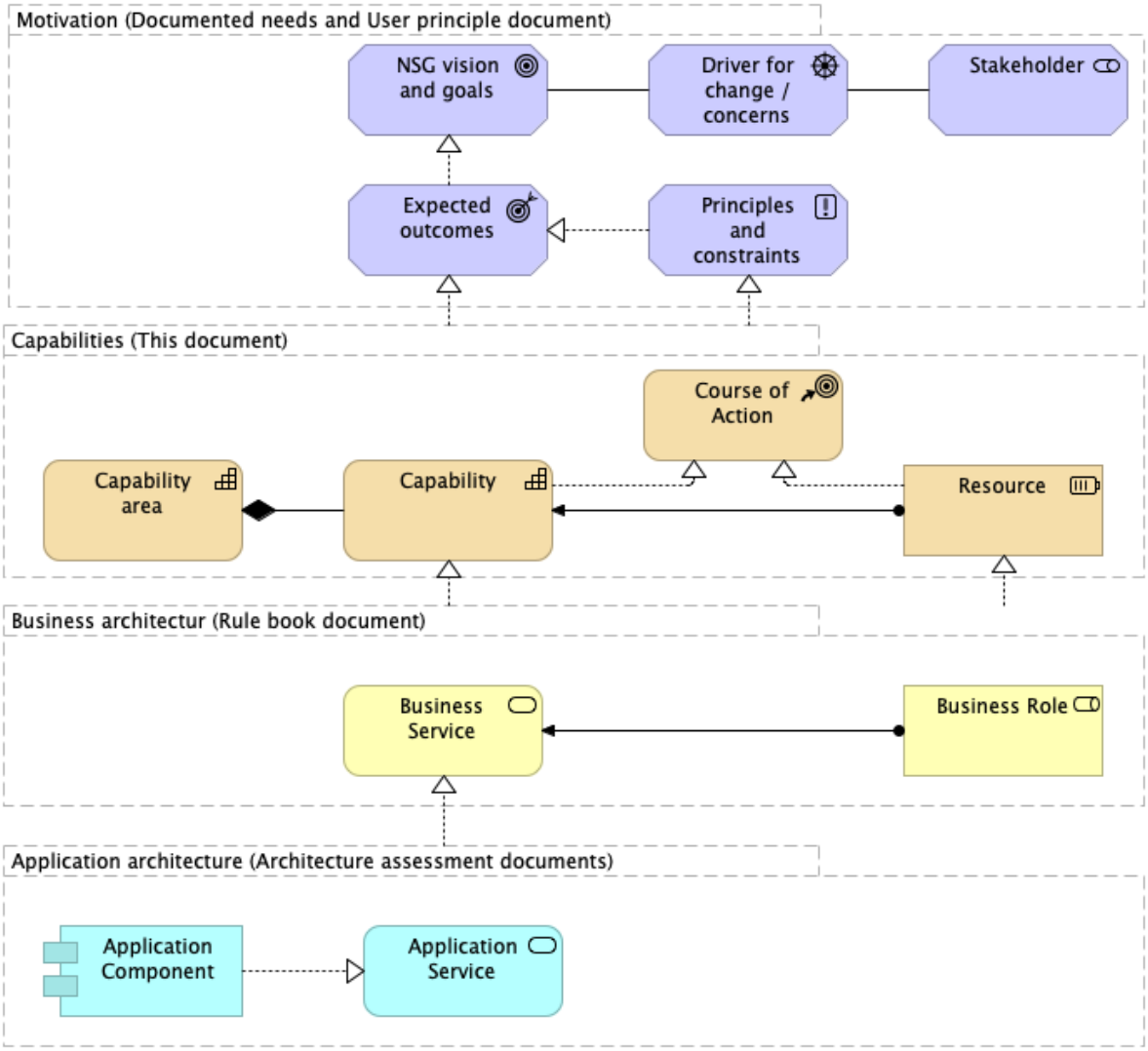


Figure 2. The diagram illustrates the generic model used in the capability modeling other documents.

The method of decomposition is as follows

1. The vision of NSG, creates a need for change (goal) and a preferred outcome for the stakeholders. This is defined first (blue). This is based on visions, stakeholder analysis, needs from stakeholders and WP work (e.g. a legal analysis, structure data assessment).

2. Second step (scope of this document) is to identify what capabilities that needs to be in place and improved, i.e. what ability and capacity we need in the new ecosystem, and do an assessment of these to produce a number of possible courses of action by identifying possible resources needed. Each country will be able to assess these courses of actions in order to create a national implementation roadmap.

3. Third step (outside the scope of this document) describes how a business capability is delivered, in the form of Business Services. Business Services are necessary to deliver the Product requested by a Business Actor. The Rulebook document describes the business functions and the following business processes.

4. Fourth step (outside the scope of this document) is to implement these requirements on the applications (light blue).

The following chapter breaks the vision down into sequential process steps in order to structure the capabilities needed to fulfill the vision.

3 The process of gathering and use of financial information

Seen from the Enterprise there is a simplified process

- getting the digital business documents split into three steps
  - order
  - invoice
  - receipt
- bookkeeping - manage detailed transactions
- sharing transactional data for business purposes
- sharing aggregated data for reporting, statistics and analytics

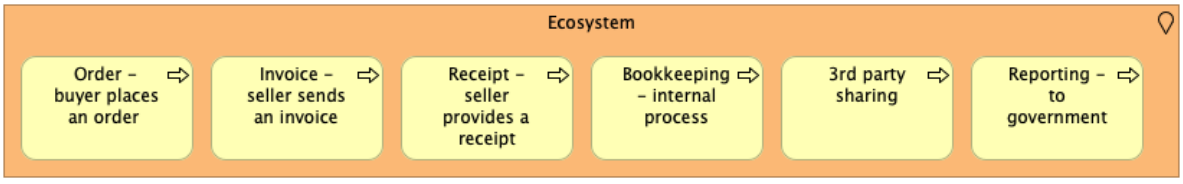


Figure 3. Simplified data flow process

These processes in the previous chapter give way to six capability areas that can be addressed by the NSG. The six capability areas and the underlying capabilities comes from assessing the vision and the drivers and needs of different stakeholders.

1. Digital business document adoption. The standardisation, acquisition of digital invoices, receipts, orders and bank account statements and the adoption of them in business-to-business.
2. Availability of transaction level information - in order to support sharing data with partners, portability, and audit. Includes common representation of transactions.

3. Reporting and analytics - reports and access to aggregated data and understanding the data across businesses.
4. Compliance - making sure the businesses have the resources they need to be compliant . Including ensuring services that check validity and quality of business documents and parties e.g. to prevent fraud
5. Data protection - making sure data is well protected across the value network, restricting access, safeguarding data, maintaining availability and provide traceability
6. Governance of the ecosystem at national, nordic and EU-level.

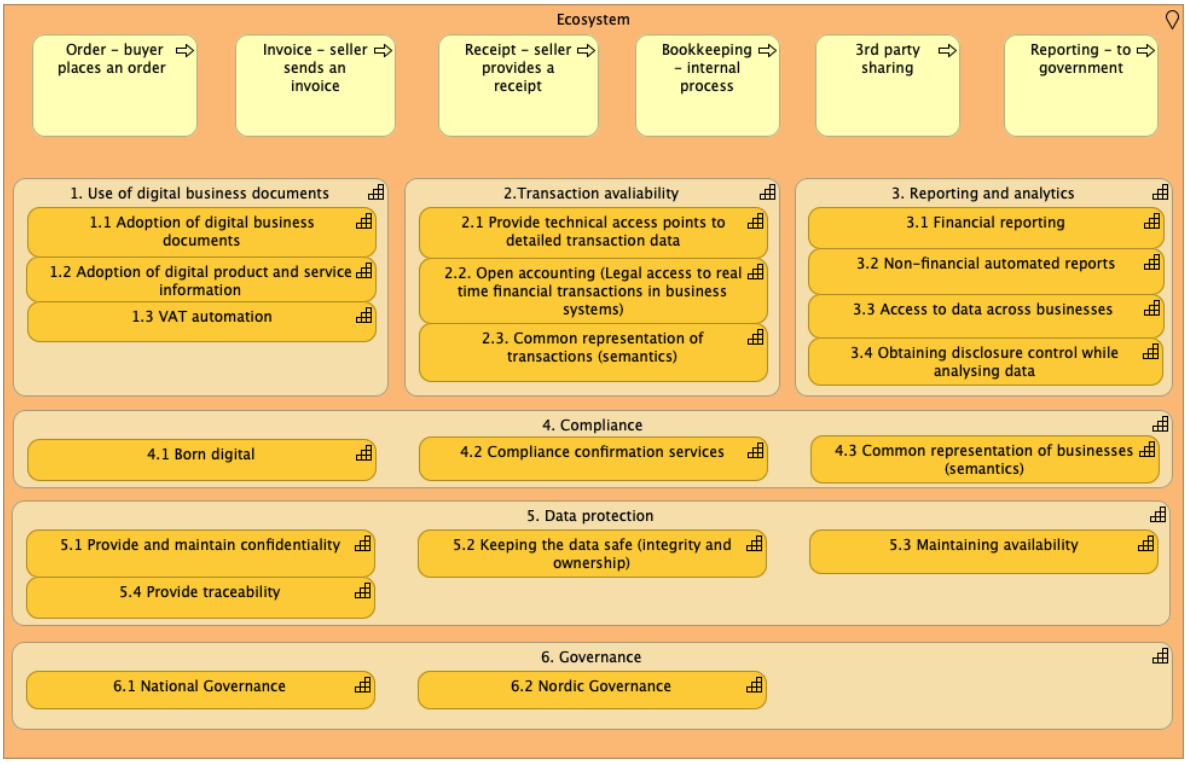


Figure 4. The six capability areas of NSG falls into the five business activities

In the following chapters, the capabilities are described, and possible actions to fulfill the capabilities are discussed. All actions are described in detail in the description of proposed actions. A complete overview with national assessment of the actions points is described in a separate spreadsheet. Note also that there is also a list of unqualified proposed actions, where new actions can be suggested.

4 Capabilities

4.1 Capability area 1: Use of digital business documents

Structured data is essential to enable the vision of Nordic Smart Government since it helps businesses do data driven business, i.e. makes better use of their data and automation.

Capability area 1: Ability to capture and process invoices, receipts, orders and bank statements digitally, ensure the validity and quality of data in the digital business documents, and ensure their adoption in B2B

4.1.1 Capability 1.1 Adoption of digital business documents

The fulfillment of the NSG vision requires that digital business documents for invoices, receipts and orders to be fully standardised and adopted in B2B, and product information to be added to the documents for further downstream processing. There must be an extensible defined set of supported document types, and the ecosystem must be indifferent to which type of digital business document it is handling.

The alternative scanning process is both expensive, error prone, not extensible and loses a lot of valuable information. Pdfs sent by e-mail does not provide a sufficient solution.

Capability 1.1 Ability to capture and process all digital business documents like invoices, receipts, orders and bank account statements digitally

External drivers for adoption of invoices are the Directive 2014/55/EU on electronic invoicing in public procurement. Steps have been taken for European common standards and infrastructure, e.g. standardisation work in CEN (semantic model EN-16931) and infrastructure and specification work in OpenPeppol. In Finland the European directive will be implemented in all existing formats (Finnvoice) and B2B eInvoices will also have to follow the directive. The other Nordic countries will implement the PEPPOL infrastructure and e-invoices in public procurement (B2G). It should also be mentioned that other eInovice formats are in use like Svefaktura and bigger companies in certain industries are largely requiring EDIFACT or the BEAst formats.

For invoices the issue here is adoption. An assessment of status of standardisation and adoption of eInvoices and other digital documents are for each country has been made, and shows that there is a lack of oversight and good data on how digital business documents implementation is developing in the Nordic countries. Still, it is a fairly good picture that B2B adoption is slower than expected.

Standardisation has taken place through with ISO 20022 for digital bank account statements. The adoption here seems high, though complaints about variations in implementation of the standards has been mentioned.

The business system vendors and the accounting associations in the Nordic countries have all expressed support for increased adoption of digital documents. Increase in adoption of eInvoice, other forms of payment (like cash, card purchases and mobile payments) should be structured, and in the longer run remove the physical and pdf receipts which is seen as a source for error.

Measurements on moving paper receipts to digital form have been very slow. In Germany a law on mandatory paper receipts was put in place january 1st 2020 and has met resistance. The same resistance has been seen in Norway where a proposal was put forward some years ago.

NSG recommends that business systems shall comply with existing mandated data interfaces and definitions already defined as standards accepted in the Nordic region (PEPPOL E-delivery). Generally this capability does not require business systems to be in the cloud, on premise systems can also be supported.

To address the increased adoption there are possible actions by Business system (e.g. technical adoption), Regulation (e.g. requirements to reduce the amount of paper documents), and standardisation (e.g. making e-receipts standardised and available).

Possible actions to achieve the capability

A1 (phase 1). Adoption of eInvoices: Complete the implementation of eInvoice standard implemented in all business systems (2021)

eInvoices are largely implemented in public procurement, but there is not much adoption in the business-to-business actions these days. Actions are needed for all business systems to comply with the standards, communicate the business case to the end users, and market the feature to the customers. Regulatory actions may be needed that mandate public sector to send eInvoices to customers that can receive it. The following actions can be executed on a national level.

1.1.1 Compliance with CEN semantic model EN-16931 for invoices [Business systems]
1.1.2 Complete the implementation of the OpenPeppol BIS specification (send and receive invoices) [Business systems]
1.1.3 Nordic-level digital phone book of eDoc-formats

A2 (phase 2). Adoption of eInvoices: Incentives, marketing and forums (2021)

1.1.4 Develop a future vision and business case for how these changes can positively affect actors such as accounting firms and their services [Government]
1.1.5 Market the eInvoice feature to their customers. E.g. recommend the sending of an eInvoice if the customer is able to receive it (Business Systems)
1.1.6 Encourage business system vendors to create the solutions needed for accounting firms to implement eDocuments for their clients (Business Systems)
1.1.7 Encourage application providers to develop trial apps for specified needs to show in practice, the benefits from receiving eInvoices (Government)
1.1.8 Encourage accountants to use and promote eDocuments solutions and develop new services based on near-real-time structured data towards their customers. (Government)
1.1.9 Communicate and promote the business case to the SMEs and larger companies (Government)
1.1.10 Incentives for receiving eInvoices - Authorities send only eInvoices if the receiver is able to receive them (Government)
1.1.11 Implement a public-private partnership eDocument forum (Government)
1.1.12 Identify sectors that are ahead in using a fully digital procurement process and develop communication material with their input (e.g. building industries, food industries). (Government)
1.1.13 Incentives for promoting structured data (Government)

A3 (phase 3). Adoption of eInvoices: Extend regulations and initiatives beyond public procurement for B2B (2023)

In electronic invoices, the receiver benefits the most. Most SMEs are uneducated about the benefits of eInvoicing or they lack know-how on how to start using eInvoices. By creating incentives and building mechanisms that favor the sending of eInvoices instead of paper or pdf-files, we are likely to see faster adoption without actions required from the receiving part. The following actions can be executed on a national level.

1.1.14_Create incentives in when governments require payments e.g. extending the payment deadline for businesses that can receive an eInvoice (Government)
1.1.15_Change the regulation of invoice-fee to create incentives for eiInvoice (Government)
1.1.16 Seller has the option to only send / sends (by system default) an eInvoice, if the receiver is able to receive them (Government)
1.1.17 Buyer can demand an eInvoice (Government)
1.1.18 Making eInvoicing mandatory in the Nordics (Government)

C1. Adoption of eReceipts: Receival of eReceipts possible in all business systems (2023)

Most receipts are printed on paper today (winter of 2019/2020). The handling of paper receipts is costly and inefficient. A standardized, cross-border network would enable substantial savings during bookkeeping and, if done correctly, it would make auditing much easier. In addition, the buyer could use the product information in different business reporting. eReceipts must be delivered directly from point-of-sales (POS) systems

1.1.19 Standardize the semantic content of eReceipts (Standardization)
1.1.20 Implement eReceipt specification in OpenPeppol network (Business system)
1.1.21 Implement receiving eReceipts in Business systems (Business system)
1.1.22 Implement mapping and routing from national eReceipts systems to the OpenPeppol network (Government, Access point)
1.1.23 Implement eReceipts in public procurement (Government)
1.1.24 Make a business case for eReceipts (Government)
1.1.25 eReceipts are legally valid vouchers (in countries where this is not yet the case) but already implemented in each country.
1.1.26 Evaluation of mandatory eReceipts
1.1.27 Digital first for receipts
1.1.28 eReceipts from banks for their service fees
1.1.29 Evaluation of regulation on standards

C2. Adoption of eReceipts: Implemented for PoS-systems (2026)

The full adoption of eReceipts requires all PoS (point-of-sales) and future payment (e.g. mobile payment) systems to be able to produce them. The traditional PoS system vendors are currently not that country-specific, so implementing the ability for them to create the (nordic/EU) standard eReceipt interface might not be that difficult. The mobile payment service providers are generally one in each country.

1.1.30 Mobile payment services sends eReceipts in B2B (Mobile payment systems)
1.1.31 Implement eReceipts for all PoS-systems - are able create them (POS systems)
1.1.32 Have an eReceipt follow the Credit/debit card transaction flow (Payment provider)

D1. Adoption of eOrders (2024)

Applicable business systems should be able to produce, send, receive and to consume standard electronic orders and order confirmations, as well as being able to acquire and to make use of standard electronic product catalogues. This will create automatization possibilities of e-orders and eCatalgues, and reduce errors and mistakes in orders and invoices. E-catalogues increases the possibilities of efficient and real time warehouse management. The adoption of eOrders and eCatalogues is a prerequisite for increased use of structured product information which again leads to automated reporting.

1.1.32 Compliant with eOrdering BIS format based on the on the CEN WS/BII Profile 28 Ordering (Business systems)
1.1.33 Implement in OpenPeppol BIS Orders and Order confirmations in Business systems (Business systems)
1.1.34 Implement eOrders in Public Procurement (Government)
1.1.35 Identify sectors that are reliant on EDIFACT
1.1.36 Order/order confirmation considered as a proof of transaction to be used as basis for book-keeping

D2. Adoption of eCatalogues (2027)

The catalogs support the process for suppliers to send a catalogue to buyers, which then will be used for ordering. Catalogues are used as basis for maintenance of information about products and services and terms that apply. Catalogue helps automating the purchasing process followed by an order and an invoice, leading to entire purchasing process running from sourcing, ordering and invoicing to payment.

1.1.37 Compliant with eCatalog BIS format (Business systems)
1.1.38 Implement in OpenPeppol BIS eCatalog for Business systems (Business systems)
1.1.39 Implement eCatalogues in public procurement (Government)
1.1.40 Start active discussion with food agencies and food industry to promote e-catalogues, product catalogs and e-orders
1.1.41 Promoting usage of standard eCatalogue in eCommerce/webshop solutions and eOrdering/ eInvoicing systems

4.1.2 Capability 1.2 Adoption of digital product and service information

The vision requires that ability to capture, structure and making product information from sales and purchases digitally available.

Capability 1.2 Ability to make use of additional linked sources like product information.

External drivers include mobile banking, EU BIS billing 3.0 has a placeholder for individual lines, e.g. EAN codes. However, it contains too little information to be relevant for circular economy.

The business systems must provide the ability to process all content of digital business documents, including product information. The structured product information is available to the business system from the vendors' ordering system or similar. Legislation could be an instrument when adoption is increased.

Possible actions to achieve the capability

E1. Adoption of digital product and service codes (2023)

Product codes provide the means to consume much more data from the business documents when there's a way to acquire standard metrics from product catalogues or registries based on these codes. There are various codes that can be used, e.g. EAN code, EU Harmonized System codes, or other standard product and service category codes (UNSPSC for example). Furthermore, product codes are a prerequisite for access to detailed product information.

1.2.1 Include and process product and service codes in the business document specifications [Standardization]
1.2.2 Discover product and service information/codes and access services providing additional information about the product or service - addressing [Product and service catalogues]
1.2.3 Ordering systems must make use of standardized product and service codes [Business systems]
1.2.4 Enforce the use of product and service codes in the supply chain [Government]
1.2.5 Enforce a best practice for use of product and service codes in eInvoicing [Government]

E2. Adoption of digital product and service information (2027)

The full benefit of common product and service codes is only materialized when there is a common semantic model for product information, and when this information is easily accessible. Having product information available will increase the automation of non-financial reporting, and digitalization in general.

1.2.6 Product catalogues should be used with standardized product codes to provide access to machine readable descriptions of product information that can be used throughout the supply chain. Product codes must be mapped to general codes; UNSPSC and Customs code [Business systems]
1.2.7 Synchronize the processes regarding requiring product information to make sure product information is digital before encouraging and demanding it [Government]
1.2.8 Standardize a common mandatory set of product information, and make this standard flexible enough that it may be extended with sector-specific information and/or information necessary for compliance [Sectors]
1.2.9 Research the benefits of using product catalogues based on industries that are further ahead in using this information (Government)
1.2.10 Build on the value of the Nordic market for developing solutions for product information
1.2.11 Business case showing the possibilities for traceability and sustainability in the food industry

4.1.3 Capability 1.3 VAT automation

Capability 1.3 Ability to automate the calculation of VAT

***F1. VAT automation between businesses and business systems* - study the possibilities (2023)**

NSG VAT PoC showed that there is data that can be extracted from the electronic business documents and that data might enable transaction-based automation of VAT calculation in business systems, even in cross-border trading.

Further work is needed at national and NSG level to reach the benefits. The purpose of the cooperation is to promote the use of structured information and to ensure that the requirements of VAT are correctly accounted for in a controlled transition.

1.3.1 Enable to have enough information on domestic level (codes & rules)
1.3.2 Enable to have enough information on cross-border level (codes & rules)
1.3.3 Study the possibilities to utilize product information in VAT automation between business systems

F2. VAT automation between businesses and business systems - proceeding towards the goal (2026)

1.3.4 Progress in line with the options and possibilities studied earlier eg. proceed towards the goal set by implementing.

4.2 Capability area 2 Availability of detailed information (transactions)

Capability area 2:

Ability to make detailed information (transactions) available

4.2.1 Capability 2.1 Provide technical access points to detailed transaction data

The vision requires that the business must be able to provide access to detailed transaction data. The ability will also enable portability, financial auditing and detailed reporting. Furthermore, the vision requires this access to span the Nordic countries.

The transactional access must be indifferent to in which format the digital business documents are being carried.

Capability 2.1:

Ability to provide authenticated users technical access points to a business' detailed transactional data.

An internal driver from Finland is the program on Real Time Economy and the following TALTIO project that produced many mappings between different digital business document standards (formats) and the XBRL GL taxonomy. Finnish translations to the taxonomy contents was also produced.

Value added services call for access to real time data about companies' performance and financial situation. Business services also mention the need for easier and instant access of the financial overview of the business situation of their customers and suppliers in order to give credit terms and invest.

Possible actions to achieve the capability

J1. Enable standardized access to business systems transactional data - (technical interoperability) (2023)
System integration nowadays is always a customization due to lack of standard API and in most countries the lack of standard representation of business transaction data. With standardisation in these areas, we can enable integrations without customisation and portability of business data. This area is parallel and complementary to the below K1 and K2.

2.1.1 Establish a standardised service, API, for accessing transactional data about a business [Business systems, Government]
2.1.2 Establish use of a standardized role based authorization service and user consent based service for the businesses to grant access to different parties to read/write data (B2B, B2G) [Business systems, Government]
2.1.3 Implement a standardised format for transferring detailed bookkeeping data between systems (portability) [Business system vendors, Government]
2.1.4 Provided a service to find the actual lookup access points for a business - eAdressing [Government]

4.2.2 Capability 2.2 Real time lookup

The vision requires access to current data. Financial information should be accessible through lookup services.

Data is to be accessed at the source, i.e. the business system. Hence there must be a mechanism for addressing the source by the identity of the organisation. Furthermore, the lookup services require high availability access to the services that provides the business transactions. The content of the service will vary depending on the needs of the consumer.

The changeability and life cycle of the APIs is important, e.g. to support different formats and versioning.

Capability 2.2

Ability to lookup an organisation's financial data

External drivers include Directive 2015/2366/EU on payment services in the internal market (PSD2) and open banking. This opens up the structured access to bank services. PSD2 puts requirements on banks to provide services through APIs. Though not required by this directive, the capability in question here is a parallel where transactions are made available by the source.

An internal driver from Finland is the program on Real Time Economy.

Possible actions to achieve the capability

J2. Open accounting - enable access to business systems transactional data - (legal interoperability) (2023)

2.2.1 Require a lookup service to be available - similar to PSD2 directive Account Information Service Provider (AISP) for banks [Government]

2.2.2 Harmonize bookkeeping laws between the Nordic countries to accept the same treatment of accounting artifacts in all counties (storage, online access and transfer from paper to electronic form) [Government]

4.2.3 Capability 2.3 Common representation of transactions (semantics)

There is a need for common representation of business transaction information across business systems. The representation will be used for portability, reporting, querying and lookup of transactions. As the business documents comes in a series of formats, there needs to be a clear mapping of the semantics of the business documents to the target representation format.

Capability 2.3

Ability to have a common representation language for transactions across business systems

Metadata is generally divided into

- *Business metadata* focus on the meaning of data, quality and regulations.
- *Technical metadata* focus on the format and structure of data.
- *Operational metadata* that focus on the management of data.

In this context we are focusing on the business metadata, the semantics. See also capability 3.3 Common representation of businesses, which is the common representation of the business itself.

An external driver for this capability is OECD-developed framework for SAF-T, and national interoperability and portability specifications like the Swedish SIE. Another driver is the global work on financial reporting in XBRL, and the need for drilling down to the details in transactions which is known as XBRL GL taxonomy for presenting transaction level data.

Portability and use of data for reporting, querying and extracting transactions calls for an ability to have a common representation of business transactions.

There are two principle ways forward to interoperable solutions. Either one common semantic model,

The operational metadata is required to properly manage, distribute and secure the data. It focuses on the descriptive and administrative metadata that assist in managing a data asset. It includes information like *data provenance*, *data archival*, *data privacy*, *governance*, and *processing/life cycle* metadata including logs, data sharing and update rules, and statistics.

Possible actions to achieve the capability

K1. Standardize content of business system transactional data (semantic interoperability) (2023)
The transactions of SMEs are being used in external services to get credit and for benchmarking purposes. Full portability would also make it possible to for the SMEs to switch from one business system to another. However, though there are national standards in two Nordic countries, there is no common Nordic understanding of what the data means. This creates misunderstandings and increases integration costs, and generally reduces the set of services available to a business. Actions are needed to create a common Nordic standard to be implemented in all business systems.

2.3.1 Select a common standard as the core for the semantic representation of transactions [Government]
2.3.2 Base delivery model on the common representations, and provide access to this as well as the national selected standard [Business system vendors, Government]
2.3.3 Provide the mapping between national selected transaction standard and the common reference data model for transactions [Nordic and national governance]
2.3.4 Publish general recommendations for structured data)

K2. Standardize content of business data (semantic interoperability) (2026)
This further standardization will also lower the barrier for switching between business systems. One such important area of standardization is the chart of accounts. Using the same chart of accounts or, lacking that, a mapping between different charts, will enable data portability and analysis.

2.3.5 Ensure a common Nordic semantics in supplemental information to the transaction (e.g. business activities, categorization, product information etc.) in order to make comparative analysis (CEN, GS1 or other standardization organization)

M. Standardize the life cycle of transactional data (semantic interoperability) (2024)
As business documents are being used as soon as they are being accepted by the SME, it is important that the quality of the information is well understood. This life cycle information must be exposed with the transactional data.
2.3.6 Make sure transactions are sufficient described for the target processes (Business system and data users)

K3. Align national accounting law (2026)
There are some differences in the laws governing the accounting and bookkeeping that act as ultimate barriers to a common market for business systems and accounting services. These should be removed by harmonization.

2.3.7 Create mappings between the different national standard charts of accounts (Government, Accounting associations)

4.3 Capability area 3: Reporting and analytics

Capability area 3:

Ability to perform predefined reports on the data and perform on demand analytics functions on the data

Reporting in this context is generally means reporting obligations to the government. However, it may also include applications for funds and aid e.g. agricultural crop damage aid.

Current reporting based on financial data can be separated into categories.

1. Financial reporting which typically is sent to Tax administrations and Registry of Annual Accounts.
2. Demands for transparency and non-financial reporting (related to product information).

This capability area assumes the achievement of capability 3.1.

This capability area differs from capability 3.1 in that capability 3.1 refers to transactional data, while capabilities 5.3 and 5,4 deals with financial reports at aggregated levels.

Micro data represent a unique resource for economic and social development. Countries and businesses at the forefront of harvesting and exploiting micro data will have an advantage in today's international competitive environment. The Nordic countries are uniquely positioned to become worldwide leaders, basically because of the coverage of information obtained in administrative registers, and the fact that businesses are uniquely identified in registers covering tax, payroll, accounts, banking information etc. The possibility to harvest microdata for research and analytics inside the ecosystem of sharing business transactions will add significant value and reduce the response burden from a vast amount of surveys and research. It is a unique opportunity to outline a capability for research and analytics from the beginning of the NSG ecosystem.

To be able to reuse data on business transactions for analytical and research purposes, privacy must be built into the solutions from the start, and disclosure control must be proven to obtain trust in such a way that user consents for the use of data for research and analytical purposes should not be necessary.

4.3.1 Capability 3.1 Financial reporting

Capability 3.1 Ability to create and send financial reports based on bookkeeping data

The annual financial reporting is already a capability delivered by business systems, national solution building blocks and public administration.

Businesses call for a simplified reporting from SMEs to authorities.

Some of the long-term drivers in financial reporting are *automation*, *XBRL*, *corporate disclosure of Environment, Social and Governance (ESG) aspects.*

Nationally, the Danish, Swedish and Finnish business authorities offers or will offer reporting solutions where business systems upload XBRL files.

External drivers include that the ESMA announced that starting in 2020, public companies that prepare consolidated IFRS financial statements will provide them in the European Single Electronic Format *inline XBRL*.

Possible actions to achieve the capability

R1. Generate and automate financial reports (2022)
With sufficient standardization of transaction data, most or all financial reports may be automated. In order for this to work, the transaction data must be coded using a well-known chart of accounts. Current legislation does not enable this. There are still manual steps involved.

3.1.1 Provide a service that can deliver financial reports to authorities with definitions [Government, Business systems]
3.1.2 Implement and adopt a Standard chart of accounts / referential chart of accounts [Business systems]
3.1.3 Implement the Once Only Principle by harmonizing reporting demands from tax and business registries (also statistics in some cases) [Government, Business systems]
3.1.4 Provide access to automated financial reports for business-internal purposes (e.g. prognosis) and to external partners [Business systems]

4.3.2 Capability 3.2 Non-financial automated reports

Capability 3.2 Ability to automate reports based on financial and supplemental data e.g. product information

External drivers include UN sustainability development goals.

On top of capability 3.2, ability to lookup an organisation's financial data, a variety of non-financial aggregated use cases may be derived.

With access to transactional data that is further aggregated, the SME may transfer this data to other business services outside of the business system proper, for the internal use of the SME or for external parties.

Examples of "traditional" external business services could be credit-giving processes or audit processes. Here, auditors and credit institutions demand other reports (for specific periods or more detailed) than the annual reports provided to authorities.

Internal use may be performance analytics where an application could harvest continuously updated reports to facilitate the life of SMEs by visualizing and demonstrating the financial status of the SME, show the company's liquidity or VAT debt in near real-time, or extract and visualize other key point indicators.

This capability area assumes the achievement of capability 4.1 and 4.4 - data should be delivered from business system to a business service with consent or by contract, and access to data should be retractable. Moreover, the business system must log the source of the event.

Possible actions to achieve the capability

R2. Automated regulatory non-financial reporting
When product information is standardized and stored in central registries for referencing and lookup, a number of interesting use cases may be implemented with limited effort, e.g. sustainability reporting (ecological footprint), social responsibility reporting, materials used in construction etc.

3.2.1 Provide access to automated non-financial reports (e.g. based on product information and services sold or bought) [Business system vendors]

4.3.3 Capability 3.3 Access to data across businesses

There is a common need to be able to access data across businesses. This could for instance provide benchmarking in a specific sector or sales analysis for specific products as well as for research and statistical purposes on any information object obtained within the business transactions and bookkeeping information. Furthermore, the need for providing standard reports addresses the same challenges, and also the need for deriving stable and timely indicators at different levels and across business domains.

Access to aggregated data ("micro aggregates") for reporting, statistics and analytics" process should in general be open for all.

Capability 3.3 Ability to access data across businesses in order to do analytics

Preconditions to achieve the capability

Establish key principles for the development and usage of the analytical platform

- Make privacy first and continuously demonstrate privacy measures
- Separate clearly between the ability to undergo a legal control, and the ability to derive information for secondary purposes.
- Avoid the need of user consents for research and analyses

The key driver is the possibility to harvest detailed, timely data covering a well-defined and large population of businesses. The capability should embrace the needs of empirical research, forecasting, set up of key indicators, benchmarking and business analysis related to entrepreneurship and innovation and market analysis, only by differentiating access and authorisation control.

The analytics will be based on data in a widely distributed system, and a solution is required to harvest or collect the data into a system that can perform the actual analysis.

Possible actions to achieve the capability

S. Enabled support for analysis and statistics based on "real-time" data
Micro data represent a unique resource for economic and social development. Countries and businesses at the forefront of harvesting and exploiting micro data will have an advantage in today's international competitive environment. The key driver is the possibility to harvest detailed, timely data covering a well-defined and large population of businesses. This milestone embraces the needs of empirical research, forecasting, set up of key indicators, benchmarking, business and market analysis. There are major potential benefits in this area, related to entrepreneurship, innovation and research.

3.3.1 Focus on the information needed - micro aggregates, network (Business systems)
3.3.2 Keep historical data at sufficient level
3.3.3 Understand and scope with the boundaries (sample bias etc)
3.3.4 Accessibility, conditions to provide for fast and differentiated access
3.3.5 Implement a system that can collect relevant data from the distributed systems, and perform analysis
3.3.6 Perform analysis like market opportunities and benchmarking
3.3.7 Service for accessing historical annual accounts for a sector or geography

4.3.4 Capability 3.4 Obtaining disclosure control while analysing data

The system should be able to provide access to data for research and analyses while ensuring sufficient disclosure control to protect business privacy demands.

Capability 3.4 Obtaining disclosure control while analysing data

A researcher can, because of requirements specific to a project and by application according to the conditions of law or regulation, be granted access to analyse individual, detailed data. Normally one condition is that the data are de-identified, but not completely anonymized. This procedure takes time and are often costly.

To be able to give instant access to data we need either that the data itself is anonymized, or to ensure that the output (the result of the analysis) is anonymized.

Anonymization of data means either aggregation, or different types of syntetication of data. In both aspects, noise is added or accuracy is reduced from the data to disclose information about the units observed. This type of preprocessing before analysis reduces the flexibility of combining data needed to get useful results.

Anonymisation of outputs means that you add noise on the fly to the output result of the analysis. The data itself is real observation on unit level, but no one get access to the data at this level. All access is provided via controlled metadata and all outputs are controlled according to the specific method used, the size of the population addressed by the analysis etc. This type of processing output reduces the variety and to some extent the peak ability of using analytical tools or methods. On the other hand, the volume and coverage of data will to some extent reduce the consequence of lack of functionality. The Norwegian service www.microdata.no show an example of how this can be done.

There are also a number of other emerging methods and technologies that address this problem, like the work on differential privacy, multi-party computation etc.

By entering this ecosystem, the business should state a general accept to allow for the reuse of data under the conditions maintained by this capability.

Possible actions to achieve the capability

T. Disclosure control while analysing data

To be able to give instant access to data data itself needs to be anonymized, or there must be ways to ensure that the output (the result of the analysis) is anonymized. Anonymization of data means either aggregation, or different types of synthetication of data. By entering this ecosystem, the business should state a general accept to allow for the reuse of data under the conditions maintained by this capability.

3.4.1 Implement access to data differentiated by a commonly defined classification of sensitivity based on information value assessment (see also 5.2.3 and 5.2.4) [Business systems]
3.4.2 Allow for automated, trusted processes that harvest data that are used to produce the basis for controlled secondary use (see also 5.1.5) [Business system vendor]
3.4.3 Establish common services that manage (store or extract on the fly) aggregation of individual data, and/or provide dynamic disclosure on output results [value added service, government]
3.4.4 Establish common services for continuous harvest of data or common reports used to update key indicators [value added service, government]

4.4 Capability area 4: Compliance

Compliance in this regard involves having systems that reduce the risk of non-compliance when it comes to various local and international regulations like Know Your Customer (KYC).

Capability area 4

Ability to be in compliance with law and regulations and avoid being part of or victim of fraud

4.4.1 Capability 4.1 Born digital

The SME should have the ability to be digital from the day of registration. In our context this means that they should have business systems in place that support the capabilities of digital business documents and open accounting.

Capability 4.1

Ability to be born digital with compliant business systems

B. Increase SMEs use of digital business system - and ability to exchange digital business documents

The usage of digital business systems, especially accounting systems, is of great importance in order to be able to store and make use of the structural business documents. These systems should at minimum level fulfill the legal requirements relevant to the functions the system provides (e.g. to be compliant with accounting directives and VAT laws), but also make the business operations more efficient. Actions that will increase the use of business systems will ultimately increase the adoption of business documents, given actions described above (in A1 and A2). Furthermore, the exchange of data is

dependent on APIs delivered by the business systems (see J below). The following actions can be executed on a national level, but 1.1.10 and 1.1.11 should be coordinated on the Nordic-level.

4.1.1 Demand a certain group of companies to use digital accounting systems. E.g. remove the minimum capital requirement for limited companies, but demand a digital accounting system [Government]
4.1.2 Making sure business system (accounting system) fulfill a set of requirements [Government]
4.1.3 Enable registration of business directly from business systems (accounting system, banks or other) ("born digital") [Government, Business systems]
4.1.4 Business registration process should be changed so that businesses are encouraged to be digital, e.g. enable registration in the OpenPeppol SMPs [Government]

4.4.2 Capability 4.2 Compliance confirmation services

Businesses are subject to regulatory compliance (e.g. KYC), and essential to controlling the design is the validity, completeness and accuracy of the data used to execute the control.

This comes into play in different areas.

The validity of data in e-Receipts and e-Invoices is important to prevent fraud. Both fraud in creating false invoices, and receipts. Furthermore prevent using them more than once to verify expenses.

Phantom trading partners (fictitious corporate entities), supplies (never delivered) and fraudulent invoices are reason for Accounts Payable fraud.

Preventing tax fraud relates to the ability to cross-checking the outgoing invoices of the seller with incoming invoices of the buyer.

The ability to verify the account number is needed. E.g. that it has been changed from the previous invoice, and hence being able to control fraud.

This validity is also relevant for further use in the banks and credit institutions.

Traceability refers to trace a product from order, shipment and payment.

Finland together with Norway and Sweden have suggested to test European Blockchain Infrastructure (EBSi)/Distributed Ledger Technology (DLT) to improve this question, and address the suggested actions in this capability.

Capability 4.2
Ability to make sure that the data supports for compliance by design, e.g. to prevent fraud.

External drivers include the European Parliament and Council directive (EU) 2015/849 of May 20th, 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing. Another driver includes the concept of "secure chain" from OECD.

The business systems have also put forward a wish for a service for identifying "serious" actors across the nordic countries. The availability of public registry data (business registry, bankruptcy data, and annual account data) about trading partners has been mentioned, and to require the operators transmitting documents to verify at least their own customers before transmitting.

Possible actions to achieve the capability

G. Integrity in the business document exchange

This ability needs to be addressed and discussed to determine which way to ensure the integrity of the business document exchange. There will be different suggestions for solutions which will be dependent on other capabilities.

4.2.1 Access to a digital business documents validation services that check that necessary contents are present and used codes etc. are correct [Business systems]

4.2.2 Insist that the digital business document stays entirely unchanged for both the originator and the receiver (meaning that exactly the same physical document must be found on both sides on request) in order to make sure that a voucher is only used once. This enables automated checks (based on hash calculations) [Government]

H. Integrity by not having to exchange documents

Modern technologies provide means to ensure the integrity and the immutability of data in distributed systems. Today, laws demand that a proof of transaction (a voucher) must be stored for a number of years as a copy for both parties of the business transaction. A possible way in the future could be to have the details of the transaction only in one place if the legal side would allow this.

4.2.3 Enforce a system where sales documents are not sent at all, but stored in one place and being referenced. Eliminates the challenges of having two different copies at each end [Government]

4.2.4 Legal changes to remove the need to store and archive copies of vouchers [Government]

I. Trusted services that enable and increase secure business

The business documents are the basis for all downstream automation. Therefore, at the moment of creating a business document such as an invoice for a new customer, an SME may need to or want to perform various checks to ensure that the trading party exists, is VAT registered, is operating in a serious manner etc. The services can be delivered by government or third parties.

4.2.5 Access to a service that checks the validity of a bank account number against the company number [Business system vendors, Government]

4.2.6 Access to a service that checks for VAT-registration [Government]

4.2.7 Access to a service that checks the “seriousness” of a company (taxes paid, vat paid, annual accounts delivered) [Business system vendors, Government]

4.2.8 Access to a service that checks that trading partners really exist before sending documents (is registered in business registries) [Government]

4.2.9 Access to a service or subscription that provides a warning function related to well-known suspicious or fraudulent activities [Value added service]

4.2.10 Implement warning services for factual events about a business (gov. data: forced proceedings, persons not allowed to do business) [Government]

4.2.11 Test the European Blockchain Infrastructure (EBSi)/Distributed Ledger Technology (DLT) to improve this question, and address the above actions in this capability

4.4.3 Capability 4.3 Common representation of businesses

There is need for adding data about the ecosystem itself, e.g. structural information about all actors/businesses etc. And to some extent what type of process or events that has led to the creation of a specific type of information (object).

Capability 4.3

Ability to have a common representation of businesses

Product information, i.e. type of commodities sold or purchased etc. is needed as statistical classifications to make comparable analysis in the ecosystem. This information exists elsewhere in administrative registers etc., whereas the identifying codes are used in the transactions.

Possible actions to achieve the capability

L. Common representation of base registry data on businesses (semantic interoperability)
The goal should be for a system developer in one Nordic country to be able to interpret information from base registries in all Nordic countries without special understanding of national terminology etc.

4.3.1 Create a common nordic representation about a business (e.g. business core model, Nace classification - branch codes) [Government]
4.3.2 Implement a common nordic representation about businesses for business registry services [Government]

4.5 Capability area 5: Data protection

Capability area 5

Ability to protect sensitive data

Security and trust are important cornerstones for the NSG ecosystem. There is a need to ensure that the infrastructure and building blocks are secure and robust. This can only be achieved by analyzing and designing the security features of the infrastructure from the beginning of the development phase to achieve security by default and by design. The usage of a new model for distributing information will not only require that the right information is distributed at the right time but also that it is correct and that only authorized actors can access it, whenever they need it. Furthermore, the system must adhere to numerous legislations regarding information security.

In this document security defines three objectives of security: Provide and maintain confidentiality, integrity, and availability. Each objective addresses a different aspect of providing protection for information.

These three objectives need to be balanced from many perspectives:

- from a *business process* perspective: requirements on the information beside the actual information content in messages and packages
- from *information lifecycle* perspective: how information is used in processes from its creation until deletion. This includes accessing, processing and transformation, storing and transferring of information
- from *information management* perspective: how information is managed, stored, and accessed.

Managing the balance from these perspectives over time requires:

- identification of information and their value
- identification of threats and risks
- defining information security principles
- making and following risk management plans

4.5.1 Capability 5.1 Restrict access to data (Confidentiality)

The business systems should have the ability to restrict access to their data.

Capability 5.1 Ability to provide and maintain confidentiality

Confidentiality is the ability to protect information from being accessed by unauthorized parties. The business system must also have the ability of classification of information to ensure that the user of the system can control the sensitive data.

A way to explain it is that if a bank statements or other information that is considered as business secrets is accessed by someone who is not authorized to see the information the consequences could be that the information is spread on social media or other public websites. It would create irreparable damage and the security breach would be a failure to maintain confidentiality.

The ability to control access to information/data (**Authorization**) is an ability to c*ontrol that the consumer of data is allowed to get the data from the business system.* One of the Architectural Principles is "Protect user data" and one of the Desired Attributes are 'Data sharing is controlled by the originatoŕ (discretionary access control). Therefore, the data have to be fully controlled by the user (in this case, the 'user' can be an individual person or an organization). Authorization needs to specify access rights and privileges at different levels. The access mechanisms should be flexible and adaptive to the needs of the information owner. There might be need of agents, i.e. a confirmed representative of the user, which in itself will require mechanisms for passing access rights further. Information should initially, and generally, not be accessible by others than the information owner itself. This ability should be implemented in Business systems, supported by authorization/power of mandates building blocks.

The ability to ensure the authenticity of users (**Authentication**) is the process of verifying the identity of consumers/organizations and that it is correct. Authentication of an information consumer in a business system is necessary to make sure that only an intended consumer gets access to the system and information within. The capability can be nationally delivered by an independent authentication building block.

Authentication capabilities on a larger scale are typically implemented using a trusted 3rd party i.e. a government eID provider (a public Authentication Solution Building Block) or a private authentication solution e.g. Bank-ID. Implementation of authentication in business systems can be a question of federations, in this context national or Nordic. Several different national or EU legislations or initiatives will affect NSG, which is why this has to be considered.

In an exchange of information, data gets distributed to several players. This inevitably means that data is copied with a risk that data will differ between the actors over time. A basic defense to security breaches is to have an ongoing monitoring process with automated and systematic auditing to detect and stop advanced threats. The aim is to prevent a data breach. There will be a need of data retention for security purposes i.e. audit trails and logging. There is also a need to establish who has the right to audit, how the historical data can be secured and for how long it can be stored for that purpose.

It becomes important to be able to signal which version of data is being transmitted, e.g. if data is only accepted, recorded in bookkeeping or closed books. An example is that decisions were made on a certain version of the data. It may then be important to download this particular version of the data in order to show the decision basis. So there may be a need to retrieve historical data.

Another need is to be able to signal protection class on data.

The producer may also need to know the purpose of the access in order to do an access logging. Furthermore, the producer may want to know which organization or even individual has requested the information. By clarifying responsibility for logging between parties, a so-called "audit trail" can be made possible without too much information is logged with each party (audit record) (See traceability above).

Possible actions to achieve the capability

N1. Solution building blocks to maintain confidentiality
Each Nordic country needs to handle these abilities regarding national needs and maturity. This will, in some countries, probably be regulated on certain levels. Furthermore, there are probably different projects or assignments already in place both on a national as well as a European level. In order to enable cross-border functionality the mandates might have to be harmonized.

5.1.1 Provide authorization by power and mandates to secure discretionary access control and a lookup service for that [Business systems, Government]
5.1.2 Provide authorization through user's consent in B2B [Business systems]
5.1.3 Provide authentication of a company (eID for businesses) [Business systems]
5.1.4 Ensure that the data is kept safe and not compromised so that business secrets unwillingly are not not shared with wrong parties [Business systems]
5.1.5 Identify what is public information and define scenarios that typically is a business secrets [By industry or country]
5.1.6 Recognize parts of information that could be considered as a business secret, insider information and highly sensitive data like person's health [Business system vendor]

N2. Maintain confidentiality at access point
Business systems must provide some kind of access restriction of their data services. This is probably already implemented in most Nordic countries and wouldn't be any problem.

5.1.7 Restrict access to their data services [Business systems]

4.5.2 Capability 5.2: Keeping the data safe (integrity and ownership)

Capability 5.2 Ability to provide and maintain integrity

Integrity refers to the ability to ensure the authenticity of information. The source of the information has to be genuine and the system has to ensure that the information is not altered in any way or gets corrupted.

The system must have *integrity* to prevent unauthorized or unintentional change of information. The information must be protected to ensure that it is not compromised in any way. It is a matter of trust and security where signing can be used, which means that changes in an amount of information can be detected. The method is based on cryptography and can be used in everything from detecting changes in an amount of information to legally binding digital signatures.

From the Desired Attribute "Strong enforcement of data integrity", it is important that there are suitable mechanisms for supporting data integrity. This could include encryption, access control, digital signatures and others.

If data is to be reused by a third party, this party may want to make sure that the data is not distorted on the way. This can be achieved by labeling the data as originating (Signing above).
Requirements for compliance by design should furthermore be put into regulations similar to privacy by design or mapping between them.

Possible actions to achieve the capability

O. Maintain integrity at access point
Business data must not be compromised, and sensitive data must be protected. Providing authorization and securing the data would already be taking care of in the current business systems, and shouldn't be any problem. However, the question of defining what is considered to be trade secrets and how that is to be recognized is a more complex question. Different stakeholders have to be involved in these actions.

5.2.1 Provide solutions to ensure that the data is not altered without authorization, e.g. business document exchange, transaction lookup and during portability [Business systems]
5.2.2 Ability to sign to ensure inadmissibility [Business systems]

4.5.3 Capability 5.3: Maintaining availability

Capability 5.3 Ability to maintain availability

Availability means that the information is accessible for authorized users. The business system should not shut down unwillingly to legitimate users due to lack of availability.

The data should not be erased or destroyed without a backup function. The data should be available when needed. When a system is decommissioned or business system become corrupt, its information must still be available.

Possible actions to achieve the capability

P. Availability of the transactions in the business system
Maintaining availability of business data is important in a distributed system, as well as detecting unforeseen disruptions and protection from hacking. Logging should already be implemented in current business systems. However, the question is how much standardisation is needed? The question of how information can be secured if a system is getting out of business e.g. bankruptcy, needs to be discussed.

5.3.1 Provide robustness, monitoring requirements, and effective backup functions to detect unforeseen disruptions. Standard archiving method. [Business systems]
5.3.2 Information must be made available from other sources if system is decommissioned [Business systems]

4.5.4 Capability 5.4: Provide traceability

Capability 5.4 Ability to provide traceability

Traceability is the capability to trace something and is the ability to verify history, location or application of an item through recorded identification. Depending on needs, this can vary from single events (e.g. writing to a file) to complex event chains. Traceability is always reactive. Analysis of information to predict ongoing or future events is not part of traceability. Traceability requirements are often domain specific due to legal requirements.

To ensure integrity, the ecosystem needs *logging* and other more advanced mechanisms for *non-repudiation.* The ability of keeping the data safe, i.e. the confidentiality, integrity of data, availability and the traceability of its use, is important to the businesses.

Possible actions to achieve the capability

Q. Traceability and logging in business system
The challenge here is not to enable logging for this purpose, but to determine who should have access to it and where to store the information.

5.4.1 Enable management of user's consent with ability to recall consent [Government]
5.4.2 Make sure exposed API have traceability with a logging function (minimum requirement) to be able to trace the source of events [Business system vendor]

4.6 Capability area 6 - Governance

Capability area 6: Ability to govern the successful road map implementation at national, nordic and EU levels.

4.6.1 Capability 6.1 - National governance

Capability 6.1 Ability to govern communication and implementation of road map at national levels

On the national level, NSG has created reference groups, and are benefiting from a set of various groups and associations to obtain an understanding of the needs and changes that goes into the national roadmaps. There is also inside NSG a communicational governance. However, when the project is finished these activities needs to be put into a sustainable governance. Furthermore, there need to be a governance of the implementation of the national road maps.

In order to achieve the benefits of the digital ecosystem governance of global information management is needed. Traditionally these governance-models are specific for certain use cases (statistics, tax etc.), but has to be generalised for all use cases / public and private.

Possible actions to achieve the capability

U1. Permanent Governance for Nordic Smart Government: National

Each country needs to have governance in place to implement the road map and follow up on country specific actions. This involves establishing a governance plan, stakeholder engagement plan, and making sure that the right resources are involved

6.1.1 Establish national stakeholder governance [Government]
6.1.2 Establish governance of implementation of road map on a national level [Government]
6.1.3 Establish national governance of use-case specific global information standards [Government]
6.1.4 Collaboration between authorities on collection of data from businesses (Government)

4.6.2 Capability 6.2 - Nordic governance

Capability 6.2

Ability to govern and coordinate communication, strategies and development of solution building blocks at Nordic level

There are no direct regulatory bodies at the Nordic level, however the Nordic Council of Ministers and the Nordic Council are an inter-governmental cooperation which shares the vision of an integrated Nordic region. Working with harmonizing policies, they are considered very important for future policy governance.

There is also need for coordination of infrastructure development (or SBBs). Currently there are coordination efforts in bodies like the *Nordic Institute for Interoperability Solutions (NIIS)* established to "ensure the development and strategic management of X-Road and other cross-border components for e-government infrastructure." which includes Estonia, Finland and Iceland.

At the EU level we already have the CEN and OpenPeppol as standardization and infrastructure bodies. The best way to get Nordic recommendations to an EU level recommendation is to have an influence on different bodies at EU-level.

The Nordic secretary should be a collaboration between the authorities and the private sector. The main tasks can be

- Monitor market development
- Synchronise regulatory changes
- Harmonised communication to important stakeholders, e.g. business systems vendors

Possible actions to achieve the capability

U2. Permanent Governance for Nordic Smart Government: Nordic

Nordic governance is needed to follow the milestone plan and if all countries are going to be ready where the milestone was set. Nordic governance is needed to adjust the milestone plan if needed. Nordic governance is also needed for any Nordic-level standard or definition we decide to implement.

6.2.1 Standardize and implement statistics on business to business eDocument implementation and adoption in the Nordics
6.2.2 Establish governance and coordination of SBBs and services at Nordic level (Government)
6.2.3 Establish a Nordic secretary to identify key parameters to monitor on a Nordic level (Gov.)
6.2.4 Establish a plan for regulatory decisions that needs to be taken to EU-level
6.2.5 Establish a plan for standardization priorities to be taken to CEN and others (Government)
6.2.6 Establish a plan for infrastructure development to be taken to OpenPeppol and others (Government)

Nordic Smart Government – Deliverable 2: Bundled Actions - Description of possible actions

This document contains a **bundling** of proposed actions for businesses, business systems (ERP vendors), government and others, to fulfill the vision of NSG. The actions are a **menu of ideas,** and needs to be assessed for relevance in each country.

The bundles are supposed to deliver into three phases; short term (2020-2023), mid-term (2024-2025) and long term (2026-2027).

Short term **bundles** (2020-2023) are:

- Adoption of eInvoices - implementation in business systems, incentives, marketing and forums and extending regulations beyond public procurement for B2B
- Adoption of eReceipts - Receival of eReceipts in all business systems
- Adoption of standardized digital service and product codes, -information and catalogs
- Standardize access to business systems transactional data (technical interoperability)
- Standardize content of business system transactional data (semantic interoperability)
- Generate and automate financial reports
- Born digital - SMEs use of digital business system
- Integrity in the business document exchange
- Trust services to enable and increase secure business
- Common representation of base registry data on businesses (semantic interoperability)
- Maintain confidentiality and availability of business system
- Permanent Governance for Nordic Smart Government: National and Nordic level

A1 (phase 1). Adoption of eInvoices: Complete the implementation of eInvoice standard implemented in all business systems (2021)

eInvoices are largely implemented in public procurement, but there is not much adoption in the business-to-business actions these days. Actions are needed for all business systems to comply with the standards, communicate the business case to the end users, and market the feature to the customers. Regulatory actions may be needed that mandate the public sector to send eInvoices to customers that can receive it.

1.1	Compliance with CEN semantic model EN-16931 for invoices (Business Systems) In order to send and receive invoices digitally with the same understanding of the fields in the invoices, the Business systems needs to support the EN-16931 developed by CEN which are implemented with the Peppol BIS (see below).. The European Standard establishes a semantic data model of the core elements of an electronic invoice. This action does not imply that you must use the OpenPeppol BIS version, only that the semantics must be shared, i.e. the CEN information model. Nordics: Semantic interoperability is achieved at the nordic level. However technical interoperability with OpenPeppol BIS specification and national access to the Peppol Network exchange must also be in place for eInvoices to be exchanged between countries.

1.2	Complete the implementation of the OpenPeppol BIS specification (send and receive invoice) (Business Systems)

In countries where public procurement has led to B2B use of the PEPPOL-compliant infrastructure, the completion of this implementation in the business systems is important to create adoption, and implement technical interoperability. This includes both in sending eInvoices and receiving them.

Nordics: Action 1.1.1 could be a way to bridge existing national (or international) standards with the BIS specification, the preferred way will however be to adopt the OpenPeppol BIS specification.

1.3 Nordic-Level Digital Phone Book of eDoc-formats

There is a need to ensure capability lookup for all potential recipients of digital business documents in the Nordic Countries to ensure the recipients are capable of receiving a specific document type (invoice, order, receipt etc) before sending it.

Nordics: The Nordic solution must support lookup across the different national solutions, e.g. the Norwegian ELMA. As far as possible, it should build upon the existing building blocks of Peppol and TOOP.

(Proposal for Legal Amendment 6.2)

A2 (phase 2). Adoption of eInvoices: Incentives, marketing and forums (20xx)

1.4 Develop a future vision and business case for how eDocuments adoption can positively affect actors such as accounting firms and their services (Government)

Focus the NSG vision on the various stakeholders; especially the accounting firms and their services. Benefits include lessen their work, taking away punching and paper handling and automating mandatory reporting (their todays living) and providing new services based on real-time standard structured data and compliance services.

Nordics:

1.5 Market the eInvoice feature to their customers. E.g. recommend the sending of an eInvoice if the customer is able to receive it (Business Systems)

The implementation of eInvoicing functionality in business systems is high. Still the market adoption is slow.

Promote the use of eDocuments to SMEs based on findings from use cases and through trial solutions being developed. And clarify the use cases for the use of structured data and the benefits that they will bring.

The feature needs to be fully explained and the marketing of the feature to the SME must be done. The business system vendors should market the feature of being able to receive eInvoices, e.g. register their clients in OpenPeppol SMPs. This does not imply a requirement to receive invoices electronically, but will enable the sender to send electronically if he chooses to do so, reducing cost on both sides.

Nordics:

1.6 Encourage business system vendors to create the solutions needed for accounting firms to implement eDocuments for their clients (Business Systems)

The accounting firms hold an important role in making the shift from paper and pdf invoices to electronic invoices. Business systems have the functionality in place, and should be encouraged to work with the accounting firms to make the shift.
Suggestions could be based on services for business segments that won't buy their current services.

Nordics:

1.7 Encourage application providers to develop trial apps for specified needs to show in practice, the benefits from receiving eInvoices (Government)

Without any examples of new tools, specially designed for small businesses the end users cannot be convinced. NSG should promote the sandbox for them to work with.

Nordics:

1.8 Encourage accountants to use and promote eDocuments solutions and develop new services based on near-real-time structured data towards their customers. (Government)

The accounting firms hold an important role in making the shift from paper and pdf invoices to electronic invoices. Understanding challenges to their existing business models and the opportunities is crucial (See 1.1.4).

Nordics:

1.9 Communicate and promote the business case to the SMEs and larger companies (Government)

Visma and Nordic Smart Government have produced two business cases for adoption of eInvoicing for the SME. The business case for the SME adoption eInvoices is sound, but it needs to be communicated to the SMEs and their main advisors, including the accountants. And other benefits should be communicated in a practical way since money savings are still individually so small, that it doesn't tempt to change things.

Nordics:

1.10 Incentives for receiving eInvoices - Authorities send only eInvoices if the receiver is able to receive them (Government)

The EU directive for public procurement is implemented in all Nordic countries. As Nordic governments are large producers of invoices themselves (various taxes, service payments etc.) they should also themselves send eInvoices.

Nordics: Norway has this regulation in place, and in Finland from 1.4.2020.

(Proposal for Legal Amendment 1.1.1)

1.11 Implement a public-private partnership eDocument forum (Government)

Implement a public-private partnership eDocuments (eInvoice, eReceipt, eOrder, eCatalog) forum comprised of e.g. government agencies, banks, business system providers, messaging services, accounting associations in each country. The goal being to promote all eDocuments in the business community and develop country specific initiatives for their implementation. (Finnish model)

Nordics: National

1.12 Identify sectors that are ahead in using a fully digital procurement process and develop communication material with their input (e.g. building industries, food industries). (Government)

Some sectors are very mature in digital procurement processes, and can provide valuable insight for development and adoption.

Nordics:

1.13 Incentives for promoting structured data (Government)

Government support for development projects that promote the use of structured data. Support in developing solutions that interact with government agencies.

Nordics:

A3 (phase 3). Adoption of eInvoices: Extend regulations and initiatives beyond public procurement for B2B (2023)

In electronic invoices, the receiver benefits the most. Most SMEs are uneducated about the benefits of eInvoicing or they lack know-how on how to start using eInvoices. By creating incentives and building mechanisms that favor the sending of eInvoices instead of paper or pdf-files, we are likely to see faster adoption without actions further required from the receiving part than technical support for eInovoices (1.1.1 and 1.1.2).

1.14_Create incentives in when governments require payments e.g. extending the payment deadline for businesses that can receive an eInvoice (Government)

When sending eInvoices from the government, they could allow longer payment deadlines than when invoices are sent on pdf or paper. E.g. the government can look up in the SMP-register if the receiver is there he gets 30 days to pay, if not there he gets a paper invoice to pay in 7 days.

Nordics:

(Proposal for Legal Amendments 1.3.2)

1.15 Change the regulation of invoice-fee to create incentives for eInvoice (Government)

Some countries have regulations related to invoice-fees, for instance that it has to be agreed upon in advance. For some actors, invoice-fee covers the cost of manual invoicing, hence there is no incentives for the seller to send an electronic invoice. Different ways of regulating invoice fees could create incentives for the transition to digital business documents. A general ban on invoice fees would for instance give an incentive for the seller to send the invoice as eInvoice. A ban on invoice fees could create a "pull" from the buyers, demanding eInvoices. For the regulation to be successful, it should be able to give incentives toward digital business documents, such as e-Invoices, and not just digitalised paper-invoices (PDF by e-mail).

The regulation does not necessarily have to apply to SMEs, but for instance to all companies of a certain size, as the larger companies (telco, energy, insurance etc) are the source of many of the transactions the SMEs must bookkeep.

Nordics: Consider a common Nordic regulation of invoice fees that gives incentives for the businesses to use digital business documents.

(Proposal for Legal Amendments 1.3.4)

1.16 Seller has the option to only send / sends (by system default) an eInvoice, if the receiver is able to receive them (Government)

Requirement that the seller always can send eInvoices if the receiver is able to receive them, e.g. receiver is registered in an SMP-register. This is a right for the seller. Require the SMP-register to be open for simple Non-peppol API lookups.

Nordics:

(Proposal for Legal Amendments 1.1.2)

1.17 Buyer can demand an eInvoice (Government)

Requirement that when the buyer supports receiving eInvoices, suppliers must send invoices in electronic format. When sending an invoice all business systems are required to look up the customer in the SMP-register. If the customer is there, the business system shall send an eInvoice rather than paper or pdf. This can take away the pain for receivers not having to deal with incoming paper.

Nordics: Regulation coming into force in Finland in April 2020.

(Proposal for Legal Amendments 1.1.3)

1.18 Making eInvoicing mandatory in the Nordics (Government)

If the proposed recommendations are not effective enough to accomplish the sufficient penetration of eInvoices, mandatory eInvoicing needs to be evaluated. This legal requirement has been implemented in e.g. Italy.

Implement a legislation making B2B e-documents mandatory once standardisation has been completed, giving businesses a predefined transition time. The European VAT directive influences the possibilities of legislation in the EU member states since it gives companies the right to use paper invoices. This problem has however been circumvented in Italy and France is working in the same direction.

In the cases in Italy and France it's because they have a big VAT-gap to handle. In the Nordic countries it's a rather small VAT gap and incentives to propose a law from tax perspective it may not be the way to go forward in the Nordics because of lack (or different status) of that incentive.

Nordics: In Finish e-invoice law (241/2019) the receiver has the right to receive an e-invoice upon request. Iceland has a similar allowance in it's regulation on e-invoices (505/2013) where the receiver of the invoice can choose it's format.

(Proposal for Legal Amendment 1.1.4)

C1. Adoption of eReceipts: Receival of eReceipts possible in all business systems (2023)

Most receipts are printed on paper today (winter of 2019/2020). The handling of paper receipts is costly and inefficient. A standardized, cross-border network would enable substantial savings during bookkeeping and, if done correctly, it would make auditing much easier. In addition, the buyer could use the product information in different business reporting.

1.19 Standardize the semantic content of eReceipts (Standardization)

So that the whole procurement process is covered by the same standard.

CEN/TC-434 is working on eInvoices to make a semantic model for electronic receipts based on EN 16931-1:2017, and the syntax-binding based on UBL 2.1. There is a separate standard by Object Management Group (OMG) ARTS Digital Receipt DR standard.

Nordics: The ARTS eReceipt is in use in Sweden, and Finvoice eReceipts in Finland, both in small amounts

1.20 Implement eReceipt specification in OpenPeppol network (Business system)

The OpenPeppol network should implement a BIS specification for the eReceipt standard.

Nordics:

1.21 Implement receiving eReceipts in Business systems (Business system)

When eReceipt specification is in place in the OpenPeppol network, the business systems should implement the specification for receiving them. Also registration of their businesses in the SMP.

Nordics:

1.22 Implement mapping and routing from national eReceipts systems to the OpenPeppol network (Government, Access point)

If POS systems are not sending standardized eReceipts over the Peppol network, but to a local or national solution, a separate mapping between national or local format to OpenPeppol BIS specification must be in place if the recipient wants to receive on standard format. The routing to a Peppol service provider must also be in place.

Nordics:

1.23 Implement eReceipts in public procurement (Government)

Government agencies should promote the usage of electronic business documents by implementing eOrders, eCatalogues and eReceipts in their own procurement process, making the whole process digital. Governments have been leading the way with regard to eInvoices and should continue to do so with eReceipts.

Nordics: Regulation on electronic public procurement will take effect in Denmark in 2021. Other countries have not yet made the use of other documents than eInvoices obligatory.

(Proposal for Legal Amendments 1.2.2 (both B2G and G2B) and 1.2.4)

1.24 Make a business case for eReceipts (Government)

Make a business case for e-receipts based on different use cases i.e. time saved in handling documents in sales and procurement processes, using e-receipts instead of paper or PDF for employee expenses and small companies that do much of their buying over the counter. Calculations has been done for this business case in Finland.

Nordics: Collaboration.

1.25 eReceipts are legally valid vouchers (in countries where this is not yet the case) but already implemented in each country.

All Nordic Countries has legal opening for accepting digital receipts as equal to paper receipts, but it is not necessarily clearly stated that a certain type of digital receipts fulfills the requirements of a receipt, and SMEs might be in doubt when the receipts origins from vendors

in another country.

As part of establishing a Nordic standard for eReceipts, it would be beneficial to have a clear either in the law or as a legally valid statement that the standard fulfills requirements for a legally valid voucher, and that it is valid across the Nordic countries.

Nordics: Synchronise a an official statement clarifying the general legal validity across the Nordic countries of the future Nordic standard for eReceipts when it is ready to be used.

(Proposal for Legal Amendments 1.2.1)

1.26 Evaluation of mandatory eReceipts

Nordics:

(Proposal for Legal Amendments 1.2.5)

1.27 Digital first for receipts

If a seller has the capability of sending eReceipts, and the buyer has the capability of receiving eReceipts, the default should be to use eReceipts, with no need for other arrangements or agreements prior to the transaction. This must also apply to cross-border transactions in the Nordics.

Nordics: A common regulation in the Nordic countries

(Proposal for Legal Amendments 1.2.3)

1.28 eReceipts from banks for their service fees

Banks should include a eReceipts for their service fees. Today banks draw the cost of some of their services directly from the customers they are just charged to the account and states it at the monthly or annual bank-statement. Bookkeeping such costs demands specialised and normally manual work-flows. By issuing eReceipts, the SMEs would be able to benefit of the automatisation offered by their business systems for correctly bookkeeping the costs, and the business systems would not need to develop and maintain costly specialised workflows for the banks service fees..

Nordics: A common regulation in the Nordic countries

(Proposal for Legal Amendments 1.3.5)

1.29 Evaluation of regulation on standards

Related to the need for legal regulation of standards for other document types

Nordics:

(Proposal for Legal Amendments 1.3.5)

C2. Adoption of eReceipts: Implemented for PoS-systems (2026)

The full adoption of eReceipts requires all PoS (point-of-sales) and future payment (e.g. mobile payment) systems to be able to produce them. The traditional PoS system vendors are currently not that country-specific, so implementing the ability for them to create the (nordic/EU) standard eReceipt interface might not be that difficult. The mobile payment service providers are generally one in each country.

1.30 Mobile payment services sends eReceipts in B2B (Mobile payment systems)

As future payment systems in Business-to-business move from cash registries point-of-sales systems to mobile payment solutions the proof of payment either must follow the payment with more structured data, or a eReceipt needs to be generated from the mobile payment service platform. This will require mobile payment solutions to also capture and transmit product information.

Nordics:

1.31 Implement eReceipts for all PoS-systems - are able create them (POS systems)

Point of sales (POS) systems should be able to send standardized eReceipts over the Peppol network, directly or through a service provider. If the eReceipt is going cross border or other BIS demander, this network should be used. Otherwise local providers could be used.
This infrastructure requires eAddresses, and should be defined in standardisation process.

Nordics:

1.32 Have an eReceipt follow the Credit/debit card transaction flow (Payment provider)

Most companies have some level of reimbursement support via "Expense" solutions today. Having an eReceipt follow the credit/debit transaction flow would improve the efficiency or possibly automate the matching the card transaction to an eReceipt later. Part of standardisation process.

Nordics:

D1. Adoption of eOrders (2024)

Applicable business systems should be able to produce, send, receive and to consume standard electronic order and order confirmation, as well as being able to acquire and to make use of standard electronic product catalogues. This will create automatization possibilities of e-orders and eCatalgues, and reduces errors and mistakes in orders and invoices. E-catalogues increases the possibilities of efficient and real time warehouse management. The adoption of eOrders and eCatalogues is a prerequisite for increased use of structured product information which again can support automated reporting.

1.32 Compliant with eOrdering BIS format based on the on the CEN WS/BII Profile 28 Ordering (Business systems)

The OpenPeppol BIS order specifications describes variations of the order process; order only, and order with confirmation or rejection, and is based on the CEN WS/BII profile 28 Ordering. The business systems should support these specifications.

Nordics:

1.33 Implement in OpenPeppol BIS Orders and Order confirmations in Business systems (Business systems)

The business system should register their customers in appropriate SMP in order to implement the use of eOrdering documents. All elements are in order and invoice definitions. This is meaningful only for SMEs, who could shorten and hasten their processes and report cash flow and stock management. Could be very efficient in web shops.

Nordics:

1.34 Implement eOrders in Public Procurement (Government)

Government agencies should promote the usage of electronic business documents by implementing eOrders, eCatalogues and eReceipts in their own procurement process, making the whole process digital. Governments have been leading the way with regard to eInvoices and should continue to do so with eOrders.

Nordics: Regulation on electronic public procurement will take effect in Denmark in 2021. Other countries have not yet made the use of other documents than eInvoices obligatory.

(Proposal for Legal Amendments 1.3.3)

1.35 Identify sectors that are reliant on EDIFACT

Research their needs towards eDocuments that are currently not met within the OpenPeppol BIS documents specifications and work towards fulfilling that so they can move over. A project of this sort is starting in Iceland to facilitate the retail industry moving from the EDIFACT standard

Nordics: Coordination

1.36 Order/order confirmation considered as a proof of transaction to be used as basis for book-keeping

ith payment definitions, it equals with invoice.

Nordics:

(Proposal for Legal Amendments 1.3.1)

D2. Adoption of eCatalogues

The catalogs support the process for suppliers to send a catalogue to buyers, which then will be used for ordering. Catalogues are used as basis for maintenance of information about products and services and terms that apply. Catalogue helps automating the purchasing process followed by an order and an invoice, leading to entire purchasing process running from sourcing, ordering and invoicing to payment.

1.37 Compliant with eCatalog BIS format (Business systems)

The OpenPeppol BIS eCatalog formats supports a process for suppliers and web shops to be basis for ordering eOrdrering and eCatalogues should be mandatory for all web shops to send a catalogue to buyers. The format supports different ways of referring to products and services.

Nordics:

1.38 Implement in OpenPeppol BIS eCatalog for Business systems (Business systems)

The business system should register their customers in appropriate SMP in order to implement the use of eCatalog documents.

Nordics:

1.39 Implement eCatalogues in public procurement (Government)

Government agencies should promote the usage of electronic business documents by implementing eOrders, eCatalogues and eReceipts in their own procurement process, making the whole process digital. Governments have been leading the way with regard to eInvoices and should continue to do so with eCatalogues.

Nordics:

1.40 Start active discussion with food agencies and food industry to promote eCatalogues, product catalogs and eOrders

In order to automate reporting of used materials in production and to enable near-real-time traceability, governments should start active discussion with food agencies and food industry to promote e-catalogues, product catalogs and eOrders.

Nordics: Coordinated

1.41 Promoting usage of standard eCatalogue in eCommerce/webshop solutions and eOrdering/ eInvoicing systems

Webshops and eCommerce are heavy users of orders and is a good place to start when implementing eCatalogs and eOrders.

Nordics: Nordic level action, hopefully global

E1. Adoption of standardized digital product and service codes (2023)

Product codes provide the means to consume much more data from the business documents when there's a way to acquire standard metrics from product catalogues or registries based on these codes. There are various codes that can be used, e.g. EAN code, EU Harmonized System codes, or other standard product and service category codes (UNSPSC for example). Furthermore, standardized product codes are a prerequisite for access to detailed and standardized product information.

2.1 Include and process product and service codes in the business document specifications (Standardization)

The catalogs contain identifiers products and services, and should be used in digital business documents. Generally there is a placeholder for the identifier in the BIS 3.0 format.

Nordics: This should be a Nordic or global effort

2.2 Discover product and service codes and access services providing additional information about the product or service - addressing (Product and service catalogues)

The product and service identifiers should be discoverable and route to a service for looking up information about the product or service.

Nordics: This should be a Nordic or global effort

2.3 Ordering systems must make use of standardized product and service codes (Business systems)

The ordering and invoice issuing systems should include product and service codes in the business documents.

Nordics: This should be a Nordic or global effort

2.4 Enforce the use of product and service codes in the supply chain (Government)

Even though standardization, guidelines and even system support is in place there will be a need for adoption efforts towards the product and service owners.

Nordics:

2.5 Enforce a best practice for use of product and service codes in eInvoicing (Government)

The guidelines and norms for how to use product and service codes in eInvoicing this should be developed, and implemented by the business systems in close dialog with catalog providers.

Nordics:

E2. Adoption of product and service catalogs, digital product and service information (2027)

The full benefit of common product and service codes is only materialized when there is a common semantic model for product information, and when this information is easily accessible. Having product information available will increase the automation of non-financial reporting, and digitalization in general. Product catalogues (not to be mistaken as e-catalogues) are standardized registers consisting of more detailed information about individual products.

2.6 Product and service catalogues/registries should be used with standardized product and service codes to provide access to machine readable descriptions of product and service information that can be used throughout the supply chain. Codes must be mapped to general codes; UNSPSC and Customs code (Business systems)

Products and services in catalogs should contain standardised global classification in order to map these to be used for domestic VAT rates, customs and non-financial reporting automation. Including mapping to customs codes in the orders will enable automatic handling for customs.

Nordics: Nordic level action, hopefully global

2.7 Synchronize the processes regarding requiring product and service information to make sure product and service information is digital before encouraging and demanding it (Government)

Ensure that product and service data sheets are digital available before they are required to be included into the eOrder, eCatalogs and other business documents. This is to ensure that there is sufficient information to automate from in the business systems e.g. for non-financial reporting, warehouse management etc. and not only for government financial reporting.

Nordics: Nordic level action

2.8 Standardize a common mandatory set of product and service information, and make this standard flexible enough that it may be extended with sector-specific information and/or information necessary for compliance (Sectors)

When product and service information are digitally available, there should be a standardisation effort in order to enable automation and use in eCatalogs. This would require that certain characteristics must be defined and standardized.

Nordics: Nordic level action, hopefully global

2.9 Research the benefits of using product catalogues based on industries that are further ahead in using this information (Government)

Nordics: Finnish building industry's digital product catalogue. Norwegian building industry will have digital product information in place in 2022.

2.10 Build on the value of the Nordic market for developing solutions for product information

Focusing on the value for the Nordic market as a whole will give more incentives as the Nordics is a bigger market, more opportunity for both seller and buyer.

Nordics: Collaboration

2.11 Business case showing the possibilities for traceability and sustainability in the food industry

Focused business case for the food industry should be developed showing the value in traceability and sustainability. Public bodies like food agencies should be involved in this.

Nordics: Collaboration

F1. VAT automation between businesses and business systems - study the possibilities (2023)

NSG VAT PoC showed that there is data that can be extracted from the electronic business documents and that data might enable transaction-based automation of VAT calculation in business systems, even in cross-border trading.

Further work is needed at national and NSG level to reach the benefits. The purpose of the cooperation is to promote the use of structured information and to ensure that the requirements of VAT are correctly accounted for in a controlled transition.

3.1 Enable to have enough information on domestic level (codes & rules)

ssibilities are studied by gathering more information in each country about the existing ocess of sending and receiving eInvoices and how VAT reporting (VAT codes and rules) done based on eInvoices on a domestic level.

There are not only VAT codes that enable the right VAT-taxation. It's also important that the automation is started in the customer's environment and that tax agencies contribute in the company's environment with rules and information that can help the the company paying the right VAT.

Nordics: National action, collaboration at Nordic level

3.2 Enable to have enough information on cross-border level (codes & rules)

ssibilities are studied by gathering more information in each country about the existing ocess of cross-border sending and receiving of eInvoices and how VAT reporting (VAT des and rules) is done based on eInvoice. See also 1.3.1.

Nordics: National action, collaboration at Nordic level

3.3	Study the possibilities to utilize eDocuments product information in VAT automation between business systems Nordics: National action, collaboration at Nordic level

F2. VAT automation between businesses and business systems - proceeding towards the goal

3.4	Progress in line with the options and possibilities studied earlier eg. proceed towards the goal set by implementing. Nordics:

J1. Enable standardized access to business systems transactional data (technical interoperability) (2023)

System integration nowadays is always a customization due to lack of standard API and in most countries the lack of standard representation of business transaction data. With standardisation in these areas we can enable integrations without customisation of business data (interoperability). This will also enable a more efficient market where the customers may choose to leave their service provider and choose freely new services. Minimize vendor lock-in. This area is parallel and complementary to the below K1 and K2 (semantic interoperability).

1.1	Establish a standardised service, API, for accessing transactional data about a business (Business system, Government) A standardized API means that a specification is developed, and all business system vendors implement the same specification for accessing the transactional level data for a business. An example specification has been developed in the NSG reference implementation. The lookup services (APIs) must be able to identify the format and version of the content. Nordics:

1.2	Establish use of a standardized role based authorization service and user consent based service for the businesses to grant access to different parties to read/write data (B2B and B2G) (Business system, Government) Transaction level access by authorized parties. See also the services in 5.1.1, 5.1.2 and 5.1.3. Nordics:

1.3	Implement a standardised format for transferring detailed bookkeeping data between systems (portability) Full portability may be out of reach, however efforts transfering the complete set of business documents and business document based bookkeeping entries between systems should be a

first goal. Note that actual portability will be limited and dependent on target system being able to make them fit into their process support.

Nordics:

1.4 Provided a service to find the actual lookup access points for a business - eAdressing (Government)

A central service to lookup by organisation number the endpoint where you can access the business' transactional data. Typically the endpoint provided by the business system of the business.

Nordics: Coordinated at the Nordic level

J2. Open accounting - enable access to financial transactions in business systems - (legal interoperability) (2023)

Legal actions need to be taken to enable the SME to use his information freely. This also includes actions to harmonize the treatment of transactional data in the nordic countries.

2.1 Require a lookup service to be available - similar to PSD2 directive Account Information Service Provider (AISP) for banks (Government)

Create an innovative platform to increase competition in the market and make it possible for customers to shop complementary services. Note that sharing transaction level data here must uphold the privacy and trade regulations.

Nordics: Coordinated at the Nordic level

(Proposal for Legal Amendments 3.3 (interoperability), 3.4 (portability))

2.2 Harmonize bookkeeping laws between the Nordic countries to accept the same treatment of accounting artifacts in all countries (storage, online access, and transfer from paper to electronic form) (Government)

Bookkeeping leads to financial statements and also are the basis of income taxation and VAT. Actions here are discussed in the legal amendments especially the actions "SMEs can store business data in electronic form freely within the EU, or at least in the Nordics", and "SMEs can store business data in electronic form, even if it was originally received on paper"

Nordics: Coordinated at the Nordic level

(Proposal for Legal Amendments 3.1 and 3.2 (storage electronically and abroad))

2.3 GDPR Recommendations for SMEs (Government) Nordics: (Proposal for Legal Amendments 5.1)

2.4 Bookkeeping acts should favor digital solutions Bookkeeping regulation should be written in a way, where the use of electronic formats are encouraged and the use of paper format is kept to a minimum") Nordics: (Proposal for Legal Amendments x.x)

4.5 Industry specific agreements while awaiting ecosystem-wide standard Standard Contract Terms. Nordics: (Proposal for Legal Amendments 2.1)

K1. Standardize content of business system transactional data (semantic interoperability) (2023)

The transactions of SMEs are being used in external services to get credit and for benchmarking purposes. Full portability would also make it possible for the SMEs to switch from one business system to another. However, though there are national standards in two nordic countries, there is no common nordic understanding of what the data means. This creates misunderstandings and increases integration costs, and generally reduces the set of services available to a business. Actions are needed to create a common nordic standard to be implemented in all business systems.

3.1 Select a common nordic standard as the core for the semantic representation of transactions (Government) There are several standards established for this today, mostly national or national adaptation of international standards. There are however currently no interoperable semantic standards for transactions. A stepwise approach starting with a common minimum subset in the Nordics based on business document based transactions, and their bookkeeping entries, then extending to more complex value chain. All specifications must be based on a business process that already exists in several, if not most, business systems. Nordics: Collaboration at the Nordic level, international collaboration

3.2	Base delivery model on the common representations, and provide access to this as well as the national selected standard (Business systems, Government) As national standards exist today, and are implemented in business systems, an practical approach is to make sure that the common representation can be transformed to the national standards. Proof-of-concepts have been made to verify this approach. Nordics: Coordinated at the Nordic level

3.3	Provide the mapping between national selected transaction standard and the common reference data model for transactions (Nordic and national governance) The mappings in 5.1.2 must be made available to all free of charge in order to reduce the need for handling two representations in business systems. Nordics: Coordinated at the Nordic level

3.4	Publish general recommendations for structured data) In Nordic level we (NSG agencies) should agree and publish general recommendations for structured data; taxonomies and infrastructure for sending and receiving eOrders, eInvoices and eReceipts. General taxonomies to exchange data between companies could help give stability and trust in the market opening up opportunities for further development.

K2. Standardize content of business data (semantic interoperability) (2026)

This further standardization will also lower the barrier for switching between business systems. One such important area of standardization is the chart of accounts. Using the same chart of accounts or, lacking that, a mapping between different charts, will enable data portability and analysis.

3.5	Ensure a common nordic semantics in supplemental information to the transaction (e.g. business activities, categorization, product information etc.) in order to make comparative analysis (CEN, GS1 or other standardization organization) This action contains creating a common semantics for a minimum set of product and service information to be available for product and service catalogs. There are several sectorial efforts in this space to build upon, and it is likely that this will be executed in several steps related to business activity and sector. Nordics: Coordinated at the Nordic level

M. Standardize metadata for transactions (semantic interoperability) (2024)

As business documents are being used as soon as they are being accepted by the SME, it is important that the quality of the information is well understood. This life cycle information must be exposed with the transactional data.

3.6	Make sure transactions are sufficient described for the target processes (Business system and data users) As transactions will be used in real time it is important to describe enough information for the consumer to be able to process them. This includes the status of the transaction (e.g. not-accepted, authorized, entered, reconconciled, ...) in bookkeeping. Nordics: Coordinated at the Nordic level

K3. Align national bookkeeping law (2026)

There are some differences in the laws governing bookkeeping that act as ultimate barriers to a common market for business systems and accounting services. These should be removed by harmonization.

3.7	Create mappings between the different national standard charts of accounts (Government, Accounting associations) A first approach will be to harmonize the account classes (upper levels) between countries. Posting to this upper-levels may give a sufficient overview in another country's chart of account. Mapping each individual account may prove to be difficult. Nordics: Collaboration at the Nordic level

R1. Generate and automate financial reports (2022)

With sufficient standardization of transaction data, most or all financial reports may be automated. In order for this to work, the transaction data must be coded using a well-known chart of accounts. Current legislation does not enable this. There are still manual steps involved.

1.1	Provide a service that can deliver financial reports to authorities with definitions (Government, Business systems) Enable machine-machine electronic reporting for annual accounts and annual tax reporting from the business systems. This is a receiving service from the authorities. The semantics of the elements in the report must be published. Nordics: National, but coordinated between countries

1.2	Implement and adopt a Standard chart of accounts / referential chart of accounts (Business systems) There is no common Nordic Standard Chart of Accounts as of today. Benefits for this must be investigated. Nordics: Starts national, but should be coordinated Nordic

1.3 Implement the Once Only Principle by harmonizing reporting demands from tax and business registries (also statistics in some cases) (Government, Business systems))

The reporting demands from business registries and tax administrations should be combined to one filing.

Nordics: National

1.4 Provide access to automated financial reports for business-internal purposes (e.g. prognosis) and to external partners

The internal financial reports should be standardized, automated and shared with business internal purposes and by APIs for external partners using users' consent.

Nordics:

1.5 Possibility to file every report to government electronically

Nordics:

(Proposal for legal amendments 4.1)

1.6 Remove physical signing of filings

Nordics:

(Proposal for legal amendments 4.2)

1.7 Enabling reporting from business systems

Nordics:

(Proposal for legal amendments 4.3)

1.8 Mandatory sharing of data between public authorities

Nordics:

(Proposal for legal amendments 5.2)

1.9	Documents filed in English accepted [Could also be related to the need for harmonising bookkeeping law] Nordics: (Proposal for legal amendments 6.1)

R2. Automated regulatory non-financial reporting (2025)

When product information is standardized and stored in central registries for referencing and lookup, a number of interesting use cases may be implemented with limited effort, eg. sustainability reporting (ecological footprint), social responsibility reporting, materials used in construction etc.

2.1	Provide access to automated non-financial reports (e.g. based on product information and services sold or bought) Non-financial reporting for sustainability and materials reporting ect. is relevant for business internal and future reporting. With a high potential of automation. Nordics: should be coordinated Nordic to meet EU demands, making life easier for all Nordic SMEs

S. Enabled support for analysis and statistics based on “real-time” data (2025)

Micro data represents a unique resource for economic and social development. Countries and businesses at the forefront of harvesting and exploiting micro data will have an advantage in today’s international competitive environment. The key driver is the possibility to harvest detailed, timely data covering a well defined and large population of businesses. This milestone embraces the needs of empirical research, forecasting, set up of key indicators, benchmarking, business and market analysis. There are major potential benefits in this area, related to entrepreneurship, innovation and research.

3.1	Focus on the information needed - micro aggregates, network (Business systems) Normally, we define microdata as a piece of information that relates uniquely to an individual unit (like a person or a business) at a certain time within a population or ecosystem. Examples of such information are annual salary, turnover, financial status etc. These microdata, which are considered confidential, are in fact aggregates over a large amount of transaction data inside and between businesses and persons. More or less any research and analytical need as of today, will be met by providing data at the level of the micro-aggregates, or even further aggregates into domains, time spans, geographic areas etc. For each individual analytical purpose, there is usually no need to look up data at the level of transactions. For analytical purposes, the various information that identifies the different units is not needed. What is important, is to be able to identify and couple observations of characteristics and events over time to the same unit. The need for pseudo identification should be discussed as a means to improve privacy control on the secondary use of data. Nordics:

3.2 Keep historical data at sufficient level

The most important part of analytics is to perform empirical analysis on data over time. A major part of the secondary use of data will benefit from never ending time series. This means that while data at transaction level often should or could be deleted after a specific period of time, according to law or regulations, the harvested data for analytics should never be deleted. One actor with the same interest is the national archives. To be able to achieve this, the need for some kind of stability of which information objects at what level that should be available should be maintained.

This requirement also addresses the need that data harvested for secondary usage, could be linked and enriched by historical data kept from actors like our national statistical institutes, business registers etc. from the beginning of this enhanced ecosystem.

Nordics:

3.3 Understand and scope with the boundaries (sample bias etc)

There is always a challenge to provide enough metadata, to be able to understand the limitations of what insights you can actually derive from the data.

Creating an ecosystem dedicated to SMEs, also constitutes an analytical bias around the proportion of SMEs as of all businesses. This sub-population of all businesses must be clearly defined, across the countries involved. In addition to defining and describing the main actors involved, any business within the scope of NSG (i.e. SMEs) will do business with large companies, in a way outside the ecosystem. This makes the understanding of the effect of the sample bias created by the definition of the types of businesses in the ecosystem even more challenging.

The bias of the ecosystem is not a problem when doing analysis within the population of the ecosystem (network issues, limited studies of specific types of business etc). But it constitutes a need that someone should describe and keep track on analysis and aggregated figures derived from this ecosystem, compared to the grand total within the economy. This could be an example of tasks taken care of by national statistical institutes.

Nordics:

3.4 Accessibility, conditions to provide for fast and differentiated access

Especially within research, but relevant for all actors doing analyses, some key issues concerning access to data for analysis will apply.

Ease of access; one access point for all requests, sufficient metadata to understand how your needs can be fulfilled and sufficient tools and other measures to perform analysis

Confidentiality and access permissions; access to data for analysis must not depend on individual user consents, and conditions to get access for researchers and analysts must be equal across borders.

Traceability; It should be possible to trace usage, and (re)confirm the analytical conclusions made.

Nordics: should be coordinated tightly at Nordic level

3.5 Implement a system that can collect relevant data from the distributed systems, and perform analysis

The business systems should be able to expose the micro-aggregates for harvesting by a system dedicated to analysis.

Nordics: should be coordinated tightly at Nordic level

3.6 Perform analysis like market opportunities and benchmarking

Analysis to be performed by the system in 3.3.5 includes benchmarking a business against its geography and sector. Another is to show market opportunities in the sector against other locations.

Nordics: should be coordinated tightly at Nordic level

3.7 Service for accessing historical annual accounts for a sector or geography

ccessing historical annual accounts over time is important for statistics and research.

Nordics: should be coordinated tightly at Nordic level

T. Disclosure control while analysing data (2025)

To be able to give instant access to data we need either that the data itself is anonymized, or to ensure that the output (the result of the analysis) is anonymized. Anonymization of data means either aggregation, or different types of syntetication of data. By entering this ecosystem, the business should state a general acceptance to allow for the reuse of data under the conditions maintained by this capability.

4.1 Implement access to data differentiated by a commonly defined classification of sensitivity based on information value assessment (see also 5.2.3 and 5.2.4) (Business systems)

A common classification scheme of sensitivity needs to be defined based assessing the potential consequences resulting from a compromise to the confidentiality, integrity and/or availability of the information.

Nordics: should be coordinated tightly at Nordic level

4.2 Allow for automated, trusted processes that harvest data that are used to produce the basis for controlled secondary use (see also 5.1.1) (Business system)

Access to trusted harvesting processes should be based on authorization by powers and mandates and not by users' consent, i.e. there should be a legal basis for accessing data for secondary use.

Nordics: should be coordinated tightly at Nordic level

4.3 Establish common services that manage (store or extract on the fly) aggregation of individual data, and/or provide dynamic disclosure on output results (Value added service, Government)

e end user analytics services must allow for dynamic disclosure of output results.

Nordics: should be coordinated tightly at Nordic level

4.4 Establish common services for continuous harvest of data or common reports used to update key indicators (Value added service, Government)
Key indicators must be updated in common reports.

Nordics: should be coordinated tightly at Nordic level

B. Increase SMEs use of digital business system - born digital (2022(23))

The usage of digital business systems, especially accounting systems, is of great importance in order to be able to store and make use of the structured business documents. These systems should at minimum level fulfill the legal requirements relevant to the functions the system provides (e.g. to be compliant with accounting directives and VAT laws), but also make the business operations more efficient. Actions that will increase the use of business systems will ultimately increase the adoption of digital business documents, given actions described above (in A1 and A2). Furthermore, the exchange of data is dependent on APIs delivered by the business systems (see J below).

1.1 Demand a certain group of companies to use digital accounting systems. E.g. remove the minimum capital requirement for limited companies, but demand a digital accounting system (Government)

Incentives or requirements for digital accounting systems are likely to improve both compliance to law, and given the features implemented for instance in eInvoicing, increase the company's use of electronic business documents. The action could be applied for all company forms and sectors, or be implemented for companies in a sector with high risk or high volume of eInvoices. One possible incentive is to remove the capital requirement for these limited companies - in the belief that digital business systems is a better protection for liabilities, than capital requirements.

This has previously been posed by the SME community that the capital requirement for limited companies should be further reduced or removed, especially for companies with few employees and low turnover. The argument has also been that it is no capital requirement for branches of foreign companies (e.g. the Norwegian NUF) and if the authorities prefer limited companies over branches this difference should be eliminated.

The opposing argument against removing the capital requirement for limited companies is that the entrepreneur is not personally liable for the company's debt and obligations. The entrepreneur's only risk lies in losing his paid-up equity, and creditors therefore have few abilities to return their outstanding if there are no assets in the company.

Nordics: Finland has already removed the minimum capital requirement for limited companies, which removes the incentive here.

(Proposal for Legal Amendments 6.4)

1.2 Making sure business system (accounting system) fulfill a set of requirements (Government)

Minimum requirements should be listed for business systems that are accepted for incentives or requirements. It should be used to decide how to check/audit etc. E.g. one requirement is sending and receiving eInvoices, and integrated support for electronic forms of all business documents, which are easy to validate in transmitting networks.

Nordics:

1.3 Enable registration of business directly from business systems (accounting system, banks or other) ("born digital") (Government, Business systems)

Establish a service where a company can be registered through a digital service (API).
This will move the ability to register a business into banks and accounting systems, which will also allow the register of the business' accounting system in the SMP.

Nordics:

1.4 Business registration process should be changed so that businesses are encouraged to be digital and enable registration in the OpenPeppol SMPs (Government)

This will effectively demand all businesses to have a contract with a Peppol access point provider.

Nordics:

G. Integrity in the business document exchange (2023)

This ability needs to be addressed and discussed to determine which way to ensure the integrity of the business document exchange. There will be different suggestions for solutions which will be dependent on other capabilities.

2.1 Access to a digital business documents validation services that check that necessary contents are present and used codes etc. are correct (Business system vendors)

Public validation services for the various business documents needs to be in place especially for the sender of the document

Nordics: Coordinated at the Nordic level, for Peppol documents at the Peppol infrastructure level.

2.2	Insist that the digital business document stays entirely unchanged for both the originator and the receiver (meaning that exactly the same physical document must be found on both sides on request) in order to make sure that a voucher is only used once. This enables automated checks (based on hash calculations) (Government) The integrity of a business document is important for a number of reasons. To confirm that the document is valid it must exist at both the seller and buyers end. The business document can only be used in one entry. An automated integrity checks could be based on hash calculations posted in distributed ledgers. Nordics: Coordinated at the Nordic level

H. Integrity by not having to exchange documents (2026)

Modern technologies provide means to ensure the integrity and the immutability of data in distributed systems. Today, laws demand that a proof of transaction (a voucher) must be stored for a number of years as a copy for both parties of the business transaction. A possible way in the future could be to have the details of the transaction only in one place if the legal side would allow this.

2.3	Enforce a system where sales documents are not sent at all, but stored in one place and being referenced. Eliminates the challenges of having two different copies at each end (Government) The business documents may not be transferred between business partners at all, but rather stored as a proof of transaction at the creators side, or in a distributed ledger .The creation of the transaction in the bookkeeping system is still created by the message or event of a invoice, receipt or order, but the proof is not kept but reference with global identifiers. Nordics: Coordinated at the Nordic level

2.4	Legal changes to remove the need to store and archive copies of vouchers (Government) The need to store and archive vouchers needs to be removed if action 4.2.3 comes into play. Nordics: Coordinated at the Nordic level

I. Trust services that enable and increase secure business (2023)

The business documents are the basis for all downstream automation. Therefore, at the moment of creating a business document such as an invoice for a new customer, an SME may need to or want to perform various checks to ensure that the trading party exists, is VAT registered, is operating in a serious manner etc. The services can be delivered by the government or third parties.

2.5	Access to a service that checks the validity of a bank account number against the company number (Business system vendors, Government) Establish a lookup-service for general use that can validate if a particular bank account is owned by the organization number. Nordics: We should be able to handle international

account numbers as well in order for a Finnish company to validate a Danish company. Effects: reduce invoice fraud and unfair competition in working life.

Nordics: Coordinated at the Nordic level

(Proposal for Legal Amendments 6.3 Automated Nordic-Level Bank Account number and owner validation check)

2.6 Access to a service that checks for VAT-registration (Government)

It should be easy to look up an registered company by their organization number to verify that they are registered for VAT.
Effects: reduce invoice fraud and unfair competition in working life.

Nordics: Coordinated at the Nordic level

2.7 Access to a service that checks the "seriousness" of a company, e.g. are taxes paid etc. (Business system vendors, Government)

Establish a lookup service for serious companies i.e. whitelist (alternative for well-known unserious companies i.e. blacklist). Effects will be reduced invoice fraud and unfair competition in working life. For example to create effective and efficient methods for government-wide controls to counter fraud, regulatory violations and crime in working life.

Nordics: Coordinated at the Nordic level

2.8 Access to a service that checks that trading partners really exist before sending documents (is registered in business registries) (Government)

To create an built-in function in the business system to check if a company really exists. Based on lookups in business registries.
Effects: reduce invoice fraud and unfair competition in working life.

Nordics: Coordinated at the Nordic level

2.9 Access to a service or subscription that provides a warning function related to well known suspicious or fraudulent activities (Value added service)

To create an built-in warning function in the business system to highlight that something could be wrong about a particular transaction, and some manual action is needed to ensure that the business partner is serious. The function is supported by third-party services identifying suspicious events. A simple analogy could be the identification of phone numbers used by phone scams.

Nordics: Coordinated at the Nordic level

2.10	Warning service for factual events about a business (Government) Subscription based machine readable events for businesses. Includes forced proceedings, persons not allowed to do business. Nordics: Coordinated at the Nordic level

2.11	Test the European Blockchain Infrastructure (EBSi)/Distributed Ledger Technology (DLT) to improve this question, and address the above actions in this capability Test if and how the European Blockchain infrastructure (EBSi)/Distributed Ledger Technology (DLT) can be used as a real-time based Trust network to reduce or diminish credit risk going abroad. This action will include lookups as mentioned above e.g. peppol address ok and identified, bank account ok and identified, vat identifier (VATID) ok and in force, taxpayer id (TINID) ok and in force, CustomsID ok and in force, no tax debt, annual report lodged, company key persons ok etc. Nordics: Coordinated at the Nordic level

L. Common representation of base registry data on businesses (semantic interoperability) (2021)

The goal should be for a system developer in one Nordic country to be able to interpret information from base registries in all Nordic countries without special understanding of national terminology etc.

3.1	A common representation about a business (e.g. business core model, Nace classification) Each business has commonalities in their registration in the business registries or supplementary registries; e.g. legal name, organizational nace-code, legal addresses etc. Actions for standardizing across the EU has already been progressing through IS-A^2 (Registered Organization Core Vocabulary) BRIS and the more recent work by TOOP. Nordics: Collaboration at the Nordic level

3.2	Implement a common nordic representation about businesses for business registry services (Government) Implementation of the common representation (5.2.1) has to be implemented in each individual business registry service. Nordics: Coordinated at the Nordic level

N1. Solution building blocks to maintain confidentiality and discretionary control of access to information (2025)

Confidentiality requires that sensitive data must be protected. Defining what is considered to be personal, business and trade secrets and how that is to be recognized is a complex question. Each Nordic country needs to handle these abilities regarding national needs and maturity. This will, in some countries, probably be regulated on certain levels. Furthermore, there are probably different projects or assignments already in place both on a national as well as a European level. In order to enable cross-border functionality the mandates might have to be harmonized.

1.1 Provide authorization by powers and mandates to secure discretionary access control and a lookup service for that (Business systems, Government)

The ability to control access to information involves both permissions and authorization. The data has to be fully controlled by the user, which can be an individual or an organisation. To ensure that information isn´t accessed without permission there is a need to control the permissions. Moreover, the authorization by power and the mandates have to be clear. It is a way to allow a user to authorize someone to act on behalf of a company or organization and to ensure that a specific person has been authorized for that purpose. This way the user has control that the consumer of data is allowed to get the data from the business system. Authorization needs to specify access rights and privileges at different levels.

This ability should be implemented in Business systems, supported by authorization/powers and mandates building blocks. Furthermore, in order to enable cross-border functionality, the description of mandates need to be harmonized.

There are already a standardisation efforts going in ISA^2 Power and mandates. And also connected to the eIDAS infrastructure.

Nordics: Coordinated at the Nordic level

1.2 Provide authorization through user's consent for discretionary access control in B2B (Business systems)

The necessity to be sure that access is granted for the person you want to give access to and no one else. The access mechanisms should be flexible and adaptive to the needs of the information owner. Information should initially, and generally, not be accessible by others than the information owner itself but in some cases; there will be a need to pass access rights further i.e. an agent. Furthermore, there could be other occasions the owner is willing to let another party access the data and then the access needs to be granted for only the person you want to give access to.

Nordics: Coordinated at the Nordic level

1.3 Provide authentication of a company (eID for businesses) (Business systems)

To ensure the authenticity of users the identity of the consumer/organization needs to be verified. Authentication of an user in a business system is necessary to make sure that only an intended consumer gets access to the system and information within.

The capability can be nationally delivered by an independent authentication building block.

Authentication capabilities on a larger scale are typically implemented using a trusted 3rd party i.e. a government eID provider (a public Authentication Solution Building Block) or a private national authentication solution e.g. BankID. Implementation of authentication in business systems can be a question of federations, in this context national or Nordic.

The 2014 eIDAS regulation aims to ensure that people and businesses can use their own national electronic identification schemes to access public services in other EU countries where eIDs are available. The STORK project proposes a solution to make it easy for citizens to access the concerned public service online wherever they are located, whether using a smart card or a virtual ID number.

Nordics: Coordinated at the Nordic level. Several different EU legislations or initiatives will affect NSG, why this has to be considered.

1.4 Ensure that the data is kept safe and not compromised so that trade secrets unwillingly are not shared with wrong parties

The data has to be kept safe and not compromised within the business system or under transportation. Recipients must be able to determine that received information has not changed. Furthermore, the recipient should be able to decide who sent the information.

Nordics: should be coordinated Nordic

1.5 Identify what is public information and define scenarios that typically is a trade secrets

Some information will be considered as open data or basic data. The challenge is to identify which information that should be classified as business secrets or trade secrets.

Nordics: should be coordinated Nordic

1.6 Recognize parts of information that could be considered as a trade secret, insider information and highly sensitive data like person's health

The challenge is to identify which information that should be classified as business secrets or trade secrets. Another dimension is to secure that sensitive information is recognized as well as information that can be considered as insider information.

Nordics: should be coordinated Nordic

N2. Maintain confidentiality at access point (2020)

Business systems must provide some kind of access restriction of their data services. This is probably already implemented in most Nordic countries and wouldn't be any problem.

1.7	Restrict access to their data services (Business systems) The business system needs functionality to restrict access to their data services. Nordics: National level

O. Maintain integrity at access point (2022)

Business data must not be compromised and recipients must be able to determine that received information has not changed. Furthermore, the recipient should be able to decide who sent the information. Providing authorization and securing the data would already be taking care of the current business system, and shouldn't be any problem. Different stakeholders have to be involved in these actions. The system has to have a building block for signing and hashing to ensure repudiation.

2.1	Provide solutions to ensure that the data is not altered without authorization The ability to ensure that the data is not altered is a crucial ability needed. It should only be possible with authorization. (Business systems) Nordics: should be coordinated Nordic

2.2	Ability to sign to ensure inadmissibility (Business systems) Documents that are signed electronically have all the same legal protections as those that are signed with a pen. An e-signature solution must be highly reputable and meet the highest standards of technical integrity. Nordics: should be coordinated Nordic

P. Availability of the transactions in the business system (2022)

Maintaining availability of business data is important in a distributed system, as well as detecting unforeseen disruptions and protection from hacking. This is the ability to make information available when needed. Logging should already be implemented in current business systems. However, the question is how much standardisation is needed? The question of how information can be secured if a system is getting out of business e.g. bankruptcy, needs to be discussed.

3.1	Provide robustness, monitoring requirements, and effective backup functions to detect unforseen disruptions. Standard archiving method. (Business systems) This ability is the infrastructure for communication between the system that needs to be standardized. All incoming nodes need time synchronization for logging to work. The situation today is probably standardized in different ways and the challenge is to agree on a standard and to ensure that information is secured for the future. The data should be available when needed which means that the system must be up and running 24/7 to secure the availability. The data has to be protected against malicious code. Nordics: should be coordinated Nordic. International standards

3.2	Information must be made available from other sources if system is decommissioned (Business system) To have the ability to trace an intruder there is a need to have robust backup functions in place. However, special requirements need to be made for the protection of security logs. Furthermore, there is a need for harmonisation on which logs to store and how long they can be stored before deletion. Requires providing a logging function to be able to trace an intruder and backup functions for that purpose Nordics: should be coordinated Nordic. International standards

Q. Traceability and logging in business system (2024)

The challenge here is not to enable logging for this purpose, but to determine who should have access to it and where to store the information.

4.1	Enable management of user's consent with ability to recall consent (Government) From a business perspective this is important and the functionality is important for the user to ensure that the user is in control of the information. The consent in a business agreement should relate to logging the actual transfers. Logs have to be harmonized and Contract and logs must follow special regulatory demands related to how long they can be stored etc. Nordics: some international coordination exists: ISO technical committee for audit services works here; it is related to privacy initiatives and metadata control; it is MyData-ish, in a sense

4.2	Make sure exposed API have traceability with a logging function (minimum requirement) to be able to trace the source of events (Business systems) From a business perspective this is important and the functionality is important for the user to ensure the source of events. Nordics:

U1. Permanent Governance for Nordic Smart Government: National (2020)

Each country needs to have governance in place to implement the road map and follow up on country specific actions. This involves establishing a governance plan, stakeholder engagement plan, and making sure that the right resources are involved

1.1.	Establish national stakeholder governance (Governance) To achieve the vision, the roadmap and actions in it needs a systematic and sustainable stakeholder engagement approach. Nordics: Coordinated in the Nordics

1.2	Establish governance plan of implementation of road map on a national level (Governance) The implementation of the roadmap needs to be governed in a program where projects/actions include the stakeholders and balance of cost and benefit/stakeholder value. Nordics: Coordinated in the Nordics

1.3	Establish national governance of use-case specific global information standards (Government) Some actions will need specific coordination with global information standards. Nordics: Coordinated in the Nordics

1.4	Collaboration between authorities on collection of data from businesses (Government) Governments in each country should collaborate with all agencies that collect information from companies and agree on standards, semantics and means to collect data. Standardized way of working across the Nordics. (No bundle on this yet?) Nordics: Coordination

U2. Permanent Governance for Nordic Smart Government: Nordic (2020)

Nordic governance is needed to follow the milestone plan and if all countries are going to be ready where the milestone was set. Nordic governance is needed to adjust the milestone plan if needed. Nordic governance is also needed for any nordic-level standard or definition we decide to implement. The best way to get Nordic recommendations to an EU level recommendation is to have an influence on different bodies at EU-level.

2.1	Standardize and implement statistics on business to business eDocument implementation and adoption in the Nordics There is a lack of statistics on the development of digital business documents in the Nordics. There should be a harmonized approach and monitoring of this. Nordics: Coordination

2.2	Establish governance and coordination of SBBs and services at Nordic level (Government) Several of the identified national solution building blocks (SBBs) and services should be coordinated between the countries. Identifying and coordination of requirements and developments of these will be an important task of a permanent nordic governance body. Nordics: All

2.3 Establish a Nordic secretary to identify key parameters to monitor on a Nordic level (Government)

A secretary at for a governance body should be in place to identify key parameters of progress, monitor and coordinate the stakeholders.

Nordics: All

2.4 Establish a plan for regulatory decisions that needs to be taken to EU-level

Some actions are best regulated at the EU Commission level. The plan for which actions and how to address this needs to be managed by the nordic governance body.

Nordics: All

2.5 Establish a plan for standardization priorities to be taken to CEN and others (Government)

Some actions are best addressed at the standardization level, and should be lifted directly to the CEN or to CEN by the national ISO body. There may also be other international standardization bodies in question, e.g. XBRL, OECD, W3C and ISA[2].

Nordics: All

2.6 Establish a plan for infrastructure development to be taken to OpenPeppol and others (Government)

Special set of actions regarding specification of business documents should be addressed to the OpenPeppol community. However other sectoral bodies are also relevant here e.g. EDIFact, BEAst etc.

Nordics: All

Nordic Smart Government – Deliverable 3: Legal Analysis (KPMG FINLAND)

Introduction to the Legal Analysis Report

This legal analysis report is to identify and analyse the key national legislation of the Nordic countries that concern the key legal instruments governing the flow, transfer, format and sharing of business data and the related enablers and barriers.

The goal of the legal research is to present relevant information concerning the Nordic Smart Government 3.0 project and identify possible needs for changes in related legislation (i.e. finding the right arguments for recommendations for future legislative work).

Background

Nordic Smart Government is about a vision of fully automated administrative processes, bookkeeping and reporting of business data from SMEs to government authorities and other relevant parties. The Trade Register and Tax Authorities in Finland, Sweden, Norway, Denmark and Iceland have established a Nordic Smart Government 3.0 program (hereinafter "NSG"). The aim of the program is to simplify and enhance the functioning and activities of small and medium sized enterprises (hereinafter "SMEs") in the Nordics.

The program aims to accomplish an ecosystem, which enables the full automation of the exchange of business data from SMEs to other companies and to authorities. The aim of the program is furthermore to create a common digital business area across the Nordic borders where the business data can flow automatically, in a secure way and in real time. The vision is that business data may flow from businesses to businesses and from businesses to authorities. In relation to the NSG project, a stakeholder analysis was conducted in the Nordic countries in order to identify the stakeholders' needs and interest in Smart Government. Based on the stakeholder analysis, the majority of the interviewed stakeholders are of the view that their country is mature and ready for Smart Government.

In the stakeholder analysis, benefits are rated higher than obstacles and risks. Especially increased efficiency is seen as a positive factor arising from Smart Government. Also access to data and improved data quality as well as new business opportunities were considered as positive factors.

Obstacles identified include the lack of incentives for SMEs, reluctance to share information and administrative burden. Furthermore, political support and the need to change the legislation and policy on data collection were identified as necessary. Despite the fact that stakeholders are in general positive towards the Smart Government vision, they also identified some obstacles and risks that need to be addressed to secure the successful implementation of Smart Government. The main risks identified in the stakeholder analysis focused on data privacy, lack of trust, lack of clarity on ownership and accessibility of data and issues in surveillance and finally issues in governance and financing.

Chapter 1. Legal landscapes for SMEs

Terminology used in legal analysis

Stakeholders:
Stakeholders are limited to SMEs and confederations of industries, public agencies including tax agencies and business registries, government and politicians, banks and insurance companies and organisations representing them and service providers of IT infrastructure and business systems, data service providers, data security experts, auditors, accountants and organisations representing auditors/accountants.

Small and medium-sized enterprises (SMEs):
Small and medium-sized enterprises (SMEs) are non-subsidiary, independent firms which employ fewer than a given number of employees. SMEs include micro, small and medium-sized enterprises. The most frequent upper limit designating an SME is 250 employees as in the European Union. The second definition may also take into account the turnover and balance sheet of the company.

Business data:
Data is limited to billing data, accounting data and data from digital communication with businesses such as data included in e-invoices, e-receipts, -orders and e-order confirmations. This includes data both in paper and electronic form. The term ''business data'' will be used for the abovementioned data in the report.

Business data systems:
Business data systems are the relevant systems where business data is processed and stored.

Third party:
Third party is an entity or individual that is an outsider to an interaction that is primarily between two other entities, for example a business partner of the interaction's other party.

Data portability:
Data portability is the ability to transmit data from one system to another.

Interoperability:
Interoperability is the property that allows for the unrestricted sharing of resources between different systems. The goal of interoperability is to allow for the presentation and processing of information in a consistent manner between different business data systems, regardless of their technology, application or platform. In order to have full interoperability on the content of the document, the format or language used in the document and the method of transmission of the document have to be compatible. For example interoperability is relevant when SMEs use different systems for the processing of their invoices or share data between each other. Interoperability envisages data portability.

Automated reporting:
Automated reporting is the act of delivering reports containing relevant business information with only a few, if not any, manual steps in reporting. The data can be read automatically from the data sources, leaving the information unchanged.

Domains of law that impact SME data

SMEs are subject to varying degree of applicable legislation that impacts their business data environment.

Monetary transaction related regulations

The requirement to authenticate and confirm the parties of a transaction in accordance with e.g. anti-money laundering regulations and the PSD2 Directive apply to all companies.

Personal data and privacy

The processing of business data containing personal data is limited by data protection legislation. The processing, for example sharing of business data must have a valid legal basis and must be limited to what is necessary for the purposes of processing. The privacy of natural persons has to be protected.

Competition law

The sharing of business data could be prohibited under competition laws if such sharing could harm the effective competition or otherwise result in a significant prevention, restriction or distortion of competition.

Cybersecurity regulations

Especially companies that carry out processing of data for the public sector are affected by the technical and organisational requirements related to the processing of data. Cybersecurity related provisions also set boundaries to the transfer of data across certain borders.

Contract law

The principle regarding the freedom of contract allows business partners to agree on the sharing of data, as long as the requirements of other domains of laws are complied with.

Tax and payments

The reporting of tax related data to the authorities set certain boundaries to the SMEs, e.g. use of e-invoices in relation to value added tax related invoices. There are limitations in the format and ways of reporting.

The processing of data by authorities

Many authorities are bound by specific regulations regarding the processing of data regarding e.g. the format of data, data security and openness of data.

Means of achieving the NSG vision

The NSG vision can be achieved through different forms of regulation – some of which involve more costs than others. Furthermore, the method of regulation affects the incentives for the relevant parties to engage in practices aimed at fulfilling the NSG vision.

Cost of regulating

In general, the drafting of new legislation or amending existing laws requires more time and costs compared to administrative decisions and guidance issued by authorities. Especially in relation to supranational legislation, the costs of drafting legislation can become considerable in addition to the need to find common acceptable and feasible content for the legislation. On the other hand, purely national legislation can be incompatible with the legislation of other countries and act as a barrier to the fulfilment of the NSG vision in a cross-border context.

Method of regulation

The regulations through which the NSG vision can be achieved can take various different forms. The existing European level and national standards (e.g. invoicing standards) have to also be taken into consideration when deciding on the appropriate method of regulation.

1. Binding regulations
The regulations can be binding for the relevant stakeholders in which case the stakeholders cannot agree otherwise contractually. The binding nature of the regulations would help to ensure that the negotiation power of the SMEs does not affect their ability to share business data. Binding regulations also increase legal certainty.
However, the binding nature of regulations can result in a less flexible business environment and legal framework. The updating of legislation could become a challenge as technology and business needs of companies are constantly evolving.

2. Non-binding regulations with financial incentives
Alternatively, the regulations could be implemented as non-binding to the stakeholders containing financial incentives for SMEs to comply with the regulations (such as possible tax reliefs or streamlined reporting duties). However, with financial incentives it is necessary to consider that some of the SMEs might consider financial incentives as less significant than others (i.e. where the financial status of a particular stakeholder is strong). This might result in uneven application of the regulations. Furthermore, the equal treatment of the stakeholders must be ensured if financial incentives are to be introduced.

3. Voluntary regulations
The regulations can also be of voluntary nature. This could result in increased flexibility but on the other hand would also reduce legal certainty as businesses would be free to agree otherwise. The lack of SMEs' negotiation power is also present in case of voluntary regulations and is likely to set a challenge.

Means of achieving the NSG vision: example
SMEs and companies in general act in accordance with legal requirements, incentives and choices.

[insert picture]

Chapter 2. Data Ownership in Business Systems

SME ownership over its data in business systems

SMEs typically use service providers in the processing of their business data, and share the business data with their business partners. SMEs' ability to share their business data is restricted both by laws and the practical limitations of the software used for processing of business data.

Data ownership – what does it mean?
Laws do not typically designate an "owner" for data. It is more accurate to describe that a company has:

1) obligations to produce data for legal reasons (bookkeeping data, compliance data, financial reporting data, employment data);
2) obligations in relation to keeping, storing and securing the data of which the company is in possession;

3) obligations to deliver certain data for public authorities;
4) obligations that limit how the data can be legally used by the company; these obligations arise from several laws, such as competition law, privacy laws and accounting laws.

This means that the company can de described as the “owner” of certain data produced by it to run its business legally. While the company has the ability do decide how it uses data “owned” by it, the use of data is always restricted by existing laws. Consequently, the ability of a company to make the decision to share data is limited by existing laws. Whether the company wants to disclose, share data or further transfer data to another party is dependent of the laws the company has to comply with, such as data protection, trade secrets and intellectual property related legislation. When the use of data is restricted by law, a company can not make a decision on the use that would violate the restrictive law.

In addition, a company might not own data in its possession if, for instance, the company provides data storage or accounting services, and as a result, the data of other companies is in its possession. Likewise, the same data may belong to multiple companies, like an invoice copy may belong to both the sender and the recipient.

Example: A company has a reason to keep its financial (business) data for several different purposes: bookkeeping, statistics, analytics, future prospects. This data is prepared by the company in addition to it being a product of the company’s activities. The data can thus be considered to be owned by the SME.

Example: If a company wants to share its invoice data containing personal data to its business partners for the purposes of demonstrating how it processes invoices, the company must establish a legal basis for the sharing of data and comply with other data protection requirements.

SME ownership over the business data

Business data is typically a category of data that belongs to the company itself and where the company is “owner”. As such, the SME is able to decide on the ways and means of processing the data for book keeping, accounting, financial management and other business purposes, as long as such processing does not violate laws. This means that the company is able to decide on where, by whom and how the data is processed and stored.

Sharing of business data and related legal risk

An SME is likely to share business data with others when conducting its business activities. This could include third parties in addition to the business partners of an SME. If an SME wants to share data to parties outside the original business transaction, a case-by-case assessment is necessary.
An SME could in the midst of business activities send an invoice to another SME for the services provided; the recipient SME wants to share the invoice information with a third party who is not a party to the original business transaction. This could occur in situations where the unpaid invoice of a company may be transferred from the invoicing business partner to a third party company for debt collection purposes. In this case the sharing of such business data is likely to be acceptable as there is a legitimate purpose for the
sharing of data.

Example: A company can freely decide who they pick as their bookkeeping data provider and make a contract with this service provider. The company can choose between different service providers based on e.g. price, location of data and other factors.

Example: An SME would want to provide its data to third parties via an electronic interface. Some of the sales data includes pricing information and some of the invoicing data may have contact person names on it. Sharing pricing information parties that are not related to the original transaction may violate competition law and sharing invoicing data may violate data privacy laws, depending to whom the data

is shared. While the SME is owner to the data, the SME may have difficulties in assessing what data can be shared and to whom.

SME transaction costs in relation to data management and sharing

SME financial management and business systems
The storage of business data can be carried out by the SME by itself or by a third-party service provider. Transferring from one service provider to another can in practice be burdensome as the SMEs might not have the power to decide on the use of the business data. This raises transaction costs for the SMEs.

Financial management and business systems
Various legislative instruments may include requirements concerning the storage of business data, such as where the data should be stored or in what form the data shall be stored in order to fulfil mandatory legislative requirements. Limitations in this respect typically mean that there may be limitations in legislation that business data may only be stored in the domicile of the company/other factual limitations to storage such as a requirement to keep copies of the original documents.

The storing of business data can be carried out by an SME by itself or by a third-party service provider to which the SME has outsourced for example its bookkeeping and/or accounting. Even when a company owns the data, the company may not have the power to fully decide over its use. A company's ability to organise financial management and the processing of the company's data depends on the different business system solutions offered on the market. Regardless of whether the company decides to buy business systems for managing transaction data in-house or use a third-party service provider to perform for the whole financial management function (such as contracting all accounting to an outside service provider), the company is always limited by the business systems and services available to the company in the market.

Interoperability of business systems and structure of the data
The structure of data in business systems is vastly not regulated, as business systems typically have their proprietary data architecture. This means that transferring the data from one system requires a high effort and a lot of manual work. This migration is typically done to only very limited data, meaning that a lot of information is lost.

Transferring from one service provider to another
Even when an SME owns the data, the SME may not have the power to decide over its use. In other words, the SME may not be able to demand the return of the bookkeeping data from the accountant in the format desired by the SME.

For example, when an SME changes its accountant, there are no provisions in legislation on whether the previous accountant is legally obliged to share the business data of the SME with the new accountant and/or return the business data to the SME. Another example is a situation where an SME changes its bookkeeping system provider and wants the previous bookkeeping system provider to transmit the SME's business data to another bookkeeping system provider's business data system.

Example: When an SME changes its service provider of accounting services, the legislation does not state whether the SME has the right to have the data transferred or returned and in what format. Furthermore, the agreement between the SME and its accountant might not cover these matters.

Example: A certain bookkeeping program could be able to collect the data attributes it decides and make for example analytics in the platform on the basis of the data provided by the SME. If the SME would change its service provider, all this analytics data would be lost.

The lack of comprehensive regulation on the sharing of business data means that parties are free to agree on the terms of the sharing of business data. This creates transaction costs that are a disincentive to an efficient data sharing economy.

Negotiation power in contracting
As the sharing of business data between companies is in many parts not regulated, companies are free to agree on the terms concerning the sharing of business data. In practice this means that parties will use contractual terms in defining the scope of sharing business data.

System providers tend to have more bargaining power than SMEs due to their market power and as a result the scope of the sharing of business data is defined by the system providers to a large extent. For instance system providers for bookkeeping data and invoices can set limitations on what types of data and in what structure and format they return to the SMEs or to other relevant parties. The matter is further complicated by the fact that there are is not much regulation on whether the service providers (such as accountants) have to return business data to SMEs or other relevant parties.

In relation to the system and service providers, the vendor lock-in effect in practice hinders the effective switching between service providers and data migration by the SMEs. In order to avoid vendor lock-in, SMEs would need to have a legal access to data in an interoperable, structured format that would permit an easy transfer from one business system to another.

Legal risk in relation to the lack of negotiation power in contracting
As the parties are free to define the contractual terms for the scope of sharing of business data, there is the possibility that contractual terms are not favourable to the SMEs and can even expose SMEs to legal risks. System providers typically include limitations of liability to their contractual terms, and in general the terms can also be unfavorable to the SMEs in relation to the SMEs' business data.

Transaction costs
Transaction costs are fees incurred during the process of purchasing or selling a good or service – on top of the price of the product that is changing hands, such as legal fees. Transaction costs may also refer to a fee that a bank, broker or other financial intermediary charges.

Migration costs to a new service provider can also be considered as transaction costs.

In order to manage business data, SMEs have to invest time, money and effort. There transaction costs arise because data portability and the overall management of data ownership and sharing between SMEs and service/system providers is not regulated. Transaction costs are typically heavily felt by SMEs, and are likely to hinder the adoption of new working methods and measures.

Example: Transaction costs to an SME related to business data could be re-negotiating (and related technical and legal costs) an agreement to enable the free transfer of data to another system.

The lack of comprehensive regulation on the sharing of business data means that parties are free to agree on the terms of the sharing of business data. This creates transaction costs that are a disincentive to an efficient data sharing economy.

Typical problems that cause transaction costs in relation to data
The assessment of whether a data transfer is legally allowed:

- It is difficult for an SME to assess whether they are allowed to share data to another party.

- When the data is shared, the SME would typically need to verify that the recipient is a party to the original transaction (or has another legal reason to receive data).

Problems related to interoperability:
- Without a common data structure, the migration of data from one data architecture to another is very expensive and requires substantial work.

The service provider's contractual terms do not provide for the usability of data:

- Service provider may reserve the right to only export data in a certain structure.
- The data (even though owned by the SME but processed in the service provider's systems) that can be exported and given to the SME is limited.
- The service provider may not provide an electronic interface for sharing data.

Example: The SME might not know if it is allowed in the midst of selling its business to another to share its invoicing data which contains large amounts of personal data. The SME will have to assess whether some of the data should be hidden from the receiver and this causes manual work, both in the assessing and hiding the data and potentially asking for an external opinion to the matter.

Example: A third party might request invoices or other bookkeeping material from the SME in midst of a business deal. The SME would have to review if they can share this data in question with the requesting third party; contact the other party, make necessary reviews to the data and send it to the third party.

The General Data Protection Regulation (''GDPR'') sets out the framework for processing personal of data which may be included in business data.

The compliance risks arising from the GDPR
The GDPR exposes companies to compliance risks as a result of the administrative obligations arising from the regulations as well as monetary penalties and other sanctions for non-compliance. The level of compliance risk affects the incentives for SMEs to engage in data processing activities.

Limitations arising from the GDPR related to the sharing of personal data
The GDPR poses for example the following limitations on the sharing of business data:

- Both the SME sharing and transferring the personal data and SME receiving the personal data as a data controller must have a legal basis for the processing of personal data.

- The SME processing personal data as a controller must define a purpose for each separate data processing activity and must not process personal data for incompatible purposes. Processing of personal data for incompatible purposes requires the consent of each data subject which can be challenging to obtain.

- In relation to sharing business data (that includes personal data), SMEs should ensure that they only share such data that is relevant for the purposes of processing and that the appropriate safeguards are followed in the transfer and sharing of data.

- The SME sharing the personal data must inform the data subjects about the sharing of this data. The recipient SME has to inform the data subjects about the processing of the personal data unless certain exceptions under the GDPR apply. The rights of the data subjects must also be fulfilled by the SMEs acting as controllers.

Example: Because of the possible lack of knowledge and resources at SMEs, the personnel at SMEs might not be as educated on GDPR matters as they should. This might lead to lacking procedures or non-compliance if e.g. the personnel does not know what to do in the situation of a data breach.

Example: SMEs are typically aware of the sanctions involved in personal data processing activities and can be therefore very cautious in their processing, thinking all personal data has to be deleted once it is no longer needed according to the GDPR. This could lead to unnecessary deletion of data and non-compliance as some personal data should be stored for a certain amount of time in accordance with e.g. employment legislation.

The General Data Protection Regulation (''GDPR'') sets out the framework for processing personal of data which may be included in business data.

Practical implications of the limitations arising from the GDPR on sharing of personal data

- SMEs often face uncertainty over whether the transfer or disclosure of personal data is lawful due to the fact that the GDPR is in parts ambigious and only a limited amount of legal praxis and guidance regarding the interpretation of the GDPR is currently available.

- In practice the provisions of the GDPR apply to various types of business data containing personal data such as bookkeeping material. The broad definition of personal data has to be taken into consideration (i.e. if it is possible to identify a person indirectly through the data in question, it is considered to be personal data).

- SMEs also face uncertainty over what types of data and how much data they are allowed to process, taking into consideration the fact that only personal data that is necessary for the purposes of processing is acceptable.

Conclusion on the limitations of the GDPR on the sharing of personal data

As SMEs can find it challenging to define what processing of personal data is allowed, SMEs can as a result refrain from sharing any data or share excessive amounts of data. There is a need for sector specific guidance from the regulators in order to assist SMEs in complying with the data protection legislation while sharing data in accordance with the NSG vision.

Example: A company's invoices might include personal data that is sensitive by nature, such as performed medical procedures to a certain patent.

Companies should consider whether this type of information can be transferred to a third-party service provider.

Other domains of law with an indirect legal effect on sharing business data

In addition to the limitations arising from data protection legislation, the following domains of law set limitations to the sharing of business data.

Laws on trade secrets

Legislation concerning trade secrets can limit the sharing of business data when the business data contains trade secrets as defined in applicable legislation. Business partners often use contractual mechanisms such as non-disclosure agreements to limit the sharing of data. SMEs are often in the weaker negotiating position and as a result are not able to decide on the sharing of the business data in the same lengths as their business partner.

Intellectual Property Laws
In general, copyright protection grants the originator of the work an exclusive and assignable legal right for a fixed number of years to use the work (for instance modify, distribute etc.). As a result, copyright can limit the right to publication and dissemination of works. However, business data comprising of documents such as invoices or receipts do not in general appear to qualify as works protected by the copyright legislation.

Protection for databases and catalogues is provided when great amounts of information or data are produced and processed. In general, database protection does not protect individual information elements or non-essential parts of the database. In case the database or catalogue protection applies, the right holder may allow the use of the database or catalogue. This is however subject to contractual arrangements and could prerequisite negotiation power.

Patent protection is not likely to apply to information and data contained in documents as such without the requirements of patent protection being fulfilled (an invention must be novel, inventive and industrially applicable).

Contract law
In addition to legislative requirements, the parties to a contract may determine the other obligations such as confidentiality clauses. These may limit the sharing and transferring of especially business data containing personal data.

Competition Law
Competition law can limit the sharing of business data between different companies. The sharing of business data is prohibited if the sharing forms part of an agreement or concerted efforts having their object the prevention, restriction or distortion of competition or which results in a significant prevention, restriction or distortion of competition.

This could take place for instance if the sharing of business data could affect prices, discounts, margins or other trading conditions. The nature of the business data shared might affect the analysis (i.e. whose business data is shared, the content of the business data etc.). The possible exemptions to the prohibition would require a case-by-case analysis and focus on the improvements and benefits arising from the sharing of business data.

Conclusion
Trade secret legislation and contractual confidentiality obligations might set limitations to the sharing of business data. The issue of contractual obligations is highlighted due to the fact that SMEs often lack negotiating power with business partners. Intellectual property rights are mostly relevant in the form of database or catalogue protection but this type of protection requires that the business data has been put into a database or catalogue.

Competition laws can place limitations on the sharing of business data but this requires a case by case analysis and it is possible that exemptions to the competition law prohibition to share certain business data apply. The resulting legal framework is ambiguous especially in relation to competition law and can prevent SMEs from sharing their business data even where this would be permissible as such.

Enablers and Barriers

Enablers for the fulfilment of the NSG vision

The current legislation concerning business data does not prevent a common ecosystem, which enables the full automation of the exchange of business data from SMEs to other companies and to authorities as the legislation is mostly technology neutral and provides flexibility for the sharing of business data.

No laws for interoperability or data portability

There is no legislation setting limits for interoperability nor data portability (besides data protection legislative norms). In addition there is no specific legislation on the ownership of business data and this leaves room for interpretation favorable for SMEs.

Storage abroad allowed subject to safeguards

SMEs in all of the Nordic countries are free to store their accounting data outside of their country subject to certain additional measures. In some of the Nordic countries, the legislation sets time limits on how long accounting data can be stored abroad.

Electronic VAT reporting allowed
Reporting VAT related matters can be done in electronic format by the SMEs. However automation of the VAT reporting process in the sense of interoperability of the systems of the SMEs and the Tax authorities exists in Norway Finland and Denmark. In Norway the data can be transferred from some of the business systems into the national platform. In Denmark, an Application Programming Interface (API) has been developed that allows companies to submit their VAT returns directly from the company's accounting system to the Tax Administration's system. In Finland VAT returns can be formed in a business system and transferred to FTA automatically through TYVI service.

Sharing of data between authorities possible in some countries
There is no uniform approach in the Nordic countries for sharing of data between authorities. In Finland, authorities are obliged in the near future to share data in certain situations. Again in Sweden legislation limits certain sharing of data between authorities. Sharing of data can facilitate more streamlined processing of SMEs' matters at the authorities and lessen the administrative work of SMEs when they only have to file the relevant documents to a single authority.

No laws for interoperability or data portability

Storage abroad allowed subject to safeguards

Electronic VAT reporting allowed

Sharing of data between authorities possible in some countries

Barriers
Barriers for the fulfilment of the NSG vision

The current legislation concerning business data does not contain rules on interoperability and data portability for SMEs' business data.

Furthermore, there are no perceived incentives for SMEs to share business data electronically. The lack of automated reporting and uniform standards for business data also place limitations on the fulfillment of the NSG vision.

Lack of interoperability and data portability
As there is no legislation obliging the relevant business system providers to use systems that are interoperable, there is a lack of incentives to develop interoperability. Furthermore there is no legislation in place guaranteeing that SMEs can transfer their business data from one service or system provider to another. This means in practice that it is up to the negotiation power of an SME to ensure the transfer of business data.

Lack of incentives to use electronic form in transfer of business data between SMEs
While in general the relevant legislation permits the use of electronic business data, there are no perceived incentives for the relevant stakeholders to have their business data in electronic form.

Lack of automation of reporting
While in general SMEs can file relevant business data in electronic format to the authorities, there is in general lack of automation of reporting from SMEs business data systems to the systems of the authorities. The reporting by SMEs is normally either manually inserting the files to the platform of the authority or sending files to the authority in some other manner.

Lack of uniform standards and requirements for business data
In general there are no uniform standards for business data such as e-receipts, e-orders etc. In some of the participating countries there are also language requirements for some of the business data. However, e-invoicing has uniform standards.

High transaction costs that prohibit development
The lack of regulation on the ownership and sharing of data between SMEs and service/system providers creates uncertainty for SMEs. In addition, negotiating a contract on these matters can result in transaction costs for SMEs.

Lack of interoperability of business systems

Lack of incentives to use electronic form between SMEs

Lack of automation of reporting

Lack of uniform standards and requirements for business data

High transaction costs that prohibit development

Methodology

The legal analysis has been conducted across the Nordic countries to identify and analyse the key national legislation of governing the flow, transfer, format and sharing of business data and the possible legal barriers and enablers concerning the flow and transfer of business data.

Agile project

The participants to the legal analysis were the KPMG offices from the Nordic countries with KPMG Finland in charge of coordinating the work and the NSG Project Team with participants from Finland, Iceland, Norway, Sweden and Denmark with the Finnish Patent and Registration Office coordinating the work.
The project was managed in sprint meetings held in Skype that were organised on three-week intervals. The sprint meetings were used as a forum to present and discuss the various topics and deliverables prepared by KPMG during the project, such as initial findings and content of the report. The amount of sprint meetings was four (4). In addition to sprint meetings, live meetings were organised throughout the project in Helsinki (including the kick-off meeting and the final meeting). The amount of live meetings was five (5).

Collaboration model in creating the NSG 3.0 legal study report
The report was created in joint collaboration by the NSG project team, the NSG Stakeholder Group and KPMG offices in each of the target countries. The project was led and legal study compiled by KPMG Finland, the lead counsel in the legal review project. The project was started by outlining the set of questions scoping the legal study by the NSG Project Team and KPMG joint collaboration. Based on the initial legal questions, the NSG Stakeholder Group provided a short overview of applicable legislation, which was transferred to KPMG to create a basis for the legal review. After this initial input, KPMG executed the rest of the regulatory study to create the contents for this report.

The NSG Stakeholder Group:

- Finnish Tax Administration
- Finnish State Treasure
- The Federation of Finnish Technology Industries
- Danish Business Authority
- Danish Tax Agency
- Brønnøysund Register Centre
- Norway Tax Authority
- Norwegian Directorate for Digitisation
- Norwegian Association of Auditors
- Icelandic Ministry of Industries and Innovation
- ICEPRO
- Icelandic Financial Authority
- The Internal Revenue
- Swedish Companies Registration Office
- Swedish National Agency for Public Procurement
- Sweden's municipalities and county councils

- Swedish Tax Authority

- Swedish Agency for Digital Government

KPMG offices
KPMG Finland send the competence hand overs to the local KPMG offices (Iceland, Norway, Denmark and Sweden) which prepared in-depth legal analysis of each country. KPMG Finland together with the co-operation offices complied the legal analysis for the final report.

The legal analysis mainly covers laws, regulations and decrees published in the official legislative sources. Administrative interpretations, case law, trade customs and soft law are secondary sources within the scope of the report and are only covered where relevant.

Nordic Smart Government – Deliverable 4: Legal Amendments

1. Introduction

Purpose of the Legal amendment document
The purpose of the legal amendment document is to propose possible solutions to overcome the legal barriers described in the legal analysis. The barriers are described in more detail in the legal analysis (above).

Proposed recommendations are categorized as either "Soft Law" or "Hard Law" to describe the recommended instrument to overcome the specific barrier. See the slide: "Soft law vs Hard Law" for a description of the difference between the two categories.

Proposed solutions (recommendations) may need to be analyzed further in depth, before being initiated (Soft Law and Hard Law).

How to read the document?
Recommendations are categorised into 6 categories
5 of the categories are barriers described in KPMG's legal analysis, and the 6th category consists of enablers (for realizing the NSG vision). A single recommendation can affect several barriers, but each recommendation is only described once. Therefore, we suggest reading the document starting from the beginning.
All recommendations are written on a Nordic level.

Differences between the current situation in each country (2020) are described in the compliance table.
If a country is already compliant, no action concerning the recommendation is needed.
If a country is not compliant, the country is encouraged to take the actions needed to comply.
NSG operates on a cross-Nordic level, therefore, WP1a Legal does not consider it the role of NSG to give country-specific recommendations to legislative amendments, as each country is better able to do this.

Soft law vs Hard Law
Soft Law:
Definition: Quasi-legal instruments that do not have legally binding force or has legally binding force that is weaker than the binding force of traditional law (so called, "Hard Law").

E.g. non-binding agreements, resolutions, declarations, statements, commitments, principles, code of practice, actions plans, recommendations, non-treaty obligations, codes of conduct, guidelines, communications, circulars etc.

Hard Law:
Definition: Legal instruments and laws that have a legally binding force – rights and responsibilities.

E.g. treaties, international law, international agreements, international conventions, customary laws, resolutions etc.

2. Overview of recommendations:

Timeline suggested from the legal perspective

[insert picture]

3. Barriers

Barrier 1:

Lack of incentives to use electronic form

There are no legal, financial or other external incentives for SMEs to use electronic form, besides incentives due to possible less administrative burdens for the SMEs

Regulation, demanding mandatory use of electronic form, is an option, but it has been decided by WP1a Legal to focus on other ways of overcoming the barriers, as regulation is considered time-consuming and resource-demanding

The need for regulation demanding mandatory use should be evaluated later on, e.g. when other of the mentioned recommendations have been complied with

To spread the use of electronic form (and automate processes and achieve interoperability and portability), some of the main building blocks are: 1) eInvoices, 2) eReceipts, 3) other electronic business documents

As the mentioned electronic documents may differ, when it comes to regulation and maturity (e.g. eInvoices and eReceipts), the recommendations to Barrier 1 are categorized as follows: 1) eInvoices 2) eReceipts and 3) Other recommendations concerning electronic business documents (e.g. eOrders and eCatalogues)

[insert picture on eInvoice recommendations here]

Recommendations concerning eInvoices

Recommendations will not go into depth on how the recommendations should be implemented in each Nordic country.

Sending and receiving invoices are handled separately in the mentioned recommendations, as they involve different approaches

<u>Description of recommendations</u>

To start with, the recommended legal amendments concerning eInvoices, set requirements in regards to the public sector, meaning, if SMEs want to do business with public authorities (as seller/buyer), then SMEs must be able to send, and are encouraged to receive, eInvoices.

Secondly, to expand the use of eInvoices (without making it mandatory), a recommendation is to make it possible for buyer to demand an eInvoice (see here KPMG's legal analysis)

If the proposed recommendations are not effective enough to accomplish a sufficient expansion of the use of eInvoices, it is recommended that mandatory eInvoicing be evaluated

Possible means of creating additional incentives (see section 1.3):

For invoices B2G: Have eInvoices be paid earlier (reference to Australia's 5-day-rule)

For invoices G2B: Give additional time, before invoice has to be paid, when receiving an eInvoice

[insert picture on eReceipts recommendations here]

Recommendations concerning eReceipts
Definition of eReceipt: To put it short, the difference between eInvoices and eReceipts is that eReceipts are used mainly, when the payment is done at the same time as the purchase.

eReceipts are used in the same situations as ordinary paper receipts, but eReceipts are in an electronic, structured data format.

Handling paper receipts is a very time-consuming process for SMEs - eReceipts, on the other hand, reduces the time needed for processing the purchase receipts.

eReceipts are based on structured data (just as the eInvoice, but the standards may differ) flow electronically from the seller's system to the receiver's system, and the receiver can e.g. choose to receive the eReceipt on an app (etc.).

Infrastructures for eReceipts already exist, but the use of eReceipts varies from country to country.

See architectural description of eReceipts, here:
https://docs.google.com/presentation/d/1heLCMF63i8ajqvS6-C9bXVvi_7t_E5Hz/edit#slide=id.p43

Description of recommendations
eReceipts should be considered equal to paper receipts (valid receipt/voucher)

Authorities can increase the use of eReceipts by early adoption of the necessary capabilities for sending and receiving eReceipts - Later, eReceipts may be the only receipt accepted by authorities

Seller is obligated to send an eReceipt, if the seller can send an eReceipt, and the buyer can receive an eReceipt - e.g. through system default

If the proposed recommendations are not effective enough to accomplish a sufficient expansion of the use of eReceipts, it is recommended that mandatory use (receiving) of eReceipts, by the authorities, be evaluated. The last action would be an evaluation of making eReceipts mandatory in the Nordics.

[insert picture on Other recommendations here]

1.3 Recommendations concerning eOrders and eCatalogues

Description of recommendations

eOrders and eCatalogues (1.3.1 and 1.3.3)
Currently, the invoice or the receipt is the main carrier of structured data related to the transaction, with detailed regulation on what information has to be present. As the digitalisation of the procurement-processes continue for both the public and private sector, there are big benefits in increasing the adoption of standards for eOrders and eCatalogues, as it is the first indication of a transaction, and it can give access to detailed product information. The recommendations include both ensuring orders as basis for documenting a transaction, as well as standardisation and adoption.

Economic incentives (1.3.2 and 1.3.4)
In Australia the government will now pay an invoice within five days, when receiving it as an eInvoice, which creates economic incentives for sending an eInvoice. But as eInvoicing is already mandatory B2G, it might not be needed in the Nordics - although it might help businesses' liquidity. Similarly, to increase

the adoption of eInvoices, the authorities could extend due dates, when sending eInvoices, or apply fees when having to send non-eInvoices to buyers

Most often, banks do not send invoices or receipts in connection to their fees, which makes it necessary for businesses to do manual steps in their bookkeeping (1.3.5). Economic incentives were included even though probably they wouldn't be very effective (neither B2G nor G2B relation):
B2G eInvoicing is already mandatory in every NSG-country, so financial incentives were not considered to make any difference in this relationship.
G2B invoices: there are only a handful of cases where relationship between government and business works this way (government as a supplier), so this recommendation wouldn't be very effective, especially when government favours eInvoicing by default. If this is not the case in some country, it is still possible to consider the use of these financial incentives.

Barrier 2:

Lack of common standards and requirements for business document data

In general, there are no uniform standards for business data, such as eReceipts, eOrders etc. However, eInvoicing has an uniform standard: eInvoices have been standardized to a sufficient level with EN 16931-1 standard. The use of this standard is mandated through EU legislation since 2019, for invoices sent to public institutions. This model - standardization backed by mandated use to public institutions - might be a way forward. However, no other standard is sufficiently mature yet

There are suitable standards for most business document types, and there are ongoing efforts to standardize the missing document types. The receiver of a document should have the right to specify the format of the document - as long as that format belongs to an open standard. Still, the use of these standards is not regulated by any legislation

The KPMG report (legal analysis) pointed out the lack of SME's negotiation power concerning the common standards: "System providers tend to have more bargaining than SMEs due to their market power and as a result the scope of the sharing of business data is defined by the system provider to large extent." Because the SMEs are lacking the negotiation power, we recommend expanding the use of common contract terms & conditions. In some of the participating countries there are also language requirements for some of the business data.

[insert picture on Standards and Terms & Conditions recommendations here]

Recommendations concerning standards and terms & conditions

Standards and terms & conditions
2.1 Clarifying different parties' rights and obligations with regards to business data through terms and conditions in standard contracts through a dialogue with different actors on the market

2.2. Evaluation of regulative need for standards of other business documents than eInvoices (e.g. eReceipts, eOrders and eCatalogues)

Industry specific agreements will be the best available option, until there is an ecosystem-wide standard that can meet the minimum requirements for each business document type (2.1).

As there is no legislation concerning standards of other electronic business documents than eInvoices, it must be evaluated if there is a need to regulate the use of other standards as well. At this point of

time it's not possible to give any special recommendations on how to regulate the standards, as the standardization process is still ongoing (2.2).

Barrier 3:

Lack of interoperability and portability
- and restrictions to the storage of business document data

Interoperability:
Interoperability is defined as the capability of two or more functional units to process data cooperatively.

There are various formats of electronic documents. This creates a barrier in trade, when parties are not able to either send or receive the format available of the other party. Contractual agreements between companies and their bookkeeping systems (etc.) may in some cases prevent the sharing of companies' bookkeeping data to third party providers (add-on providers).

Portability:
Portability is defined as the capability of a program to be executed on various types of data processing systems without converting the program to a different language and with little or no modification.

Contractual agreements between companies and their bookkeeping systems (etc.) may prevent the transfer of a companies' data from one system to another system, e.g. when changing bookkeeping system provider.

Storage of business document data - e.g. bookkeeping data:
Companies, in certain countries, are not allowed to always store their business data, e.g. bookkeeping data, in an electronic format. Companies, in certain countries, are not allowed to store their business data outside their own country (may differ between paper and electronic format).

Interoperability demands structured data. Recommendations concerning the use of structured data are covered in section 1 and 2. The sharing of data to third parties is not covered in this section (see 'Barrier 5: Sharing Data to Third Party').

Recommendations concerning interoperability, portability and storage of business document data

[insert picture on Interoperability recommendations here]

Data storage and data portability ("Open Accounting")
3.1 SMEs can store business data in electronic form, even if it was originally received on paper
3.2 SMES can store business data in electronic form freely within the EU, or at least in the Nordics
3.4 Give right to portability (companies) or prohibit "blocking" (system providers) of business data in business systems
3.5 Bookkeeping regulation is based on "Digital First" principle

Description of recommendations 3.1, 3.2, 3.3., 3.4 and 3.5

Store business data in electronic form (3.1):

Much of the value of using digital business systems is to reduce the need for filing and storing paper. In some countries there is still a requirement to store the business documents in their original form.

Storing business data abroad (3.2):
Legislation that requires business documents to be stored within each country's own borders is a barrier for companies operating across the Nordics - also for the business system providers that wish to deliver their services in other countries. Solving the latter issue would be beneficial for the competition in the business system market in the Nordic region.

Right to interoperability and portability (3.3 and 3.4):
The KPMG report (legal analysis) clearly states that uncertainties related to ownership, and what rights the SMEs have, in combination with the lack of negotiation power for the SMEs, is a barrier. Clarifying, through legislation, the necessary rights to interoperability and portability of bookkeeping data, for instance modelled on the PSD2-regulation (concerning bank data), is therefore one of the most important means, if we are to succeed with the vision of Nordic Smart Government. For more info on "Open Accounting", see the initiative description.

Bookkeeping regulation favouring electronic format (3.5):
Bookkeeping regulation should be written in a way, where the use of electronic formats is encouraged, and the use of paper format is kept to a minimum.

Barrier 4:

Lack of automation of reporting

Reporting to public authorities
Companies, in certain countries, are not obligated (and sometimes not able) to report electronically to their public authorities. Some of the reporting to public authorities is only possible to do in paper format.

Physically signing filings
Companies, in certain countries, are obligated to physically sign their reported filings, which makes it impossible to automate the process of reporting to public authorities.

Reporting from business system
Today, it differs from country to country, and public authority to public authority, whether companies are able to report directly from their business systems to the public authorities - This is inconvenient for companies and creates a barrier for automating their reporting process.

Recommendations concerning automated reporting

Automated reporting

4.1 All reporting to authorities should be able to be done in electronic form
4.2 Remove requirements for physically signing filings, when it does not fulfill a legal requirement and/or can be replaced with a "digital stamp" to prove that it is the company filing
4.3 Companies should be able to report to public authorities directly from their business systems

<u>Description of recommendations</u>

Electronic reporting to public authorities (4.1)

To enable automation of reporting to public authorities, SMEs must be able to report electronically to public authorities in the first place

Removing physical signing of filings (4.2)
Removing requirements for physically signing filings is important, because physical signing hinders the development of automated reporting. Legal requirements can be replaced with a "digital stamp" to prove that it is the company filing

Enabling reporting from business systems (4.3)
Companies should be able to report to public authorities directly from their business systems

Barrier 5:

High transaction costs that prohibit development

Interoperability solves the communication between different systems. This barrier concerns the right to access information from different systems.

As SMEs can find it challenging to define what processing of personal data is allowed, SMEs can as a result refrain from sharing any data or share excessive amounts of data. There is a need for sector specific guidance from the regulators in order to assist SMEs in complying with the data protection legislation, while sharing data within the NSG vision

Further work on this subject should be done. National data protection agencies should be invited to participate.

Recommendations concerning high transaction costs that prohibit development

High transaction costs that prohibit development

5.2 Public authorities should have the ability to share information in-between them in order to ease the reporting burden of companies

Write recommendations for GDPR
With regards to sharing information to third parties, other than public authorities, GDPR is viewed as a possible barrier

The legal situation needs to be clarified in order to reduce uncertainty. This could be done in cooperation with the data protection agencies (DPAs) in each country

In cooperation with the industry and the DPAs in the Nordic countries, existing business practices, related to sharing and re-using business system data that possibly involves personal data, should be analysed and the legal basis described

New ways of achieving the same goals should then be analysed with regards to whether the same legal basis applies or not, and whether the new practice has negative or positive consequences for data protection, compared to the existing practices

Description of recommendations

Increased sharing of data between public authorities
Clarify what legal basis is sufficient for sharing data between authorities. E.g. if two authorities each have the legal basis for processing the same data, does that mean they can share the data with each

other? If so, are there limitations, such as only for purposes that are positive for the businesses, or only if the businesses are informed or asked to approve the sharing, or that there exists means for the businesses to get insight in the sharing and protest. Ultimately, sharing of data between public authorities must only be done in ways that does not threaten, but ideally improve, the trust Nordic SMEs have in government.

This recommendation also includes the need for clarifying the role and responsibilities for both the "producer" ("source") and the "consumer" of the data. E.g. can the producer decide not to prioritise sharing with another authority, even when there is a legal basis for the sharing?

It might also include giving specific public authorities responsibility for certain types of data
This would lead to single source for data of each type, and double reporting and mismatching information, at different authorities, would be avoided. Public authorities need to have legal basis to access the data shared

4. Enablers

[insert picture here]

The KPMG-report has identified the four enablers in the list.

The **first enabler** is related to the fact that there is a "green field" with regards to regulation of data ownership, interoperability and portability. This creates an opportunity to establish a coordinated legislation across the Nordic countries. The relevant recommendations related to this enabler is primarily the recommendations on Open Accounting / portability and interoperability, listed in the section on barrier 2.

For the **second enabler** there is a related recommendation in the section on barrier 3, i.e. recommendation 3.2, to ensure that all countries consider storing data in the other Nordic countries equally good to storing the data in the country, where the business operates.

The **third enabler** opens for both providing solutions for electronic VAT-filing, directly from the business systems, as well as increasing the adoption of existing solutions. See recommendations on barrier 4.

The **fourth enabler** identifies an area, where there are differences in the Nordic countries, and where there are possible benefits from sharing (more) data between the different authorities. This is addressed in recommendation 5.2, part of barrier 5.

In addition, we have identified some enablers, which are more general and do not (necessarily) tackle any of the above-mentioned barriers, specifically. Still, these enablers are considered helpful/supportive for achieving NSG's vision. Some of these enablers might require legal amendments. See below.

6.1 Authorities should accept filings of business documents in English
6.2 A Nordic interconnection of national registries (overview of businesses' capabilities re. electronic formats)
6.3 Evaluate possibilities for a Nordic-level structure to check whether a company and a bank account, on an eInvoice, match X = compliant, / = partly compliant
6.4 Evaluate the possibility to require companies to have a bookkeeping system (e.g. born digital)

Additional recommendation: Allow order to be proof of transaction.

Authorities should accept filings of business documents in English
Requirements to use country specific language can constitute a barrier for doing Nordic cross-border trade and offering systems and services, related to bookkeeping, across Nordic borders

National endpoint registries for companies send/receive capabilities
Each Nordic country should have a national registry with information on which electronic formats (business documents) a company can send and receive. To secure that Nordic companies are able to send and receive electronic business documents with each other, it is a prerequisite that companies know, what formats other companies are able to receive and send. These registries should eventually be interconnected to support Nordic cross-border trading.

Evaluate possibilities for a Nordic-level structure to check whether a company and a bank account, on an eInvoice, match
As part of the efforts on anti-money laundering and anti-terror financing, banks are required to be able to respond to inquiries on whom their customers are (e.g. KYC - Know Your Customer). It is also a legitimate need for those who are paying invoices to be able to verify that they are transferring money to an account that actually belongs to the company they are buying from

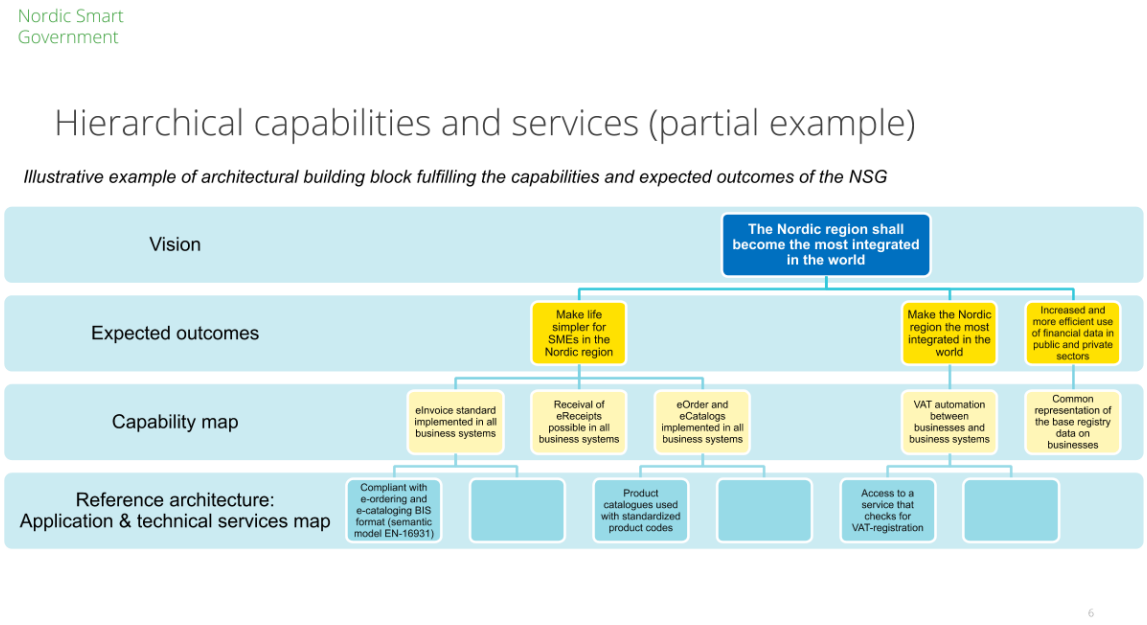
"Born Digital"
Ensuring new companies are using digital business systems from the beginning, will help elude a situation where the companies later have to consider a greater "digital transformation", and increases the amount of companies that benefit from digital processes, e.g. from sending and receiving electronic business documents (in other words, rich and high-quality data from the beginning).

Nordic Smart Government – Deliverable 5: Architectural Overview

[insert pictures from
https://drive.google.com/file/d/1QoTvRaxEVhwHZ7OepmZV1GSeKRN3AgJS/view?usp=sharing]

Executive Summary

The Architecture overview is meant to be a high-level presentation of the necessary architectural building blocks and enablers to support the Nordic Smart Government interoperable ecosystem. This overview is formulated to bind the more detailed architectural documents together and derived from identified architectural capabilities.
It focuses on the collection of application services that organizations share as a set of common goals and collaborate to provide specific services to customers regardless of the technology ownership or operational models and geographical distribution.



Architectural Principles in a nutshell

Principle 1: Build on open existing standards
Principle 2: Use clearly defined, global semantics
Principle 3: Protect user data
Principle 4: Built to evolve
Principle 5: Use secure building blocks
Principle 6: Enforce data portability

These principles are meant to guide the effort of selecting and implementing the different technical mechanisms that will form the NSG solution.
They may be used as guidelines before selection and/or implementation, or as a checklist after a choice has been made.

Summary of the actors and the infrastructure

The following slides illustrate the logical application services and standards for the actors and infrastructure within the NSG ecosystem. These illustrations are not meant to be comprehensive blueprints for implementations and there can be other possible solutions for the same needs.

The application services will be realised by concrete physical services. These may be provided by private operators, government agencies and/or be mapped to existing solutions.

Actors and infrastructures have goals and steps that correspond to the actions numbered in the headline. These numbered actions may be found in the Capabilities and business processes of the NSG ecosystem document (the first deliverable of this appendix).

Readiness for adoption indicated on a scale of low-medium-high:

High means that standards and technology exist today, but that implementation is not yet completed
Medium means at least one necessary component is missing, but there is a path to implementation
Low means that the prerequisites to implementation are ill-defined or difficult to meet

eInvoices

Nordic Smart Government

Readiness of eInvoices

Goal

Actions are needed for all business systems to comply with the standards. Suggested standard is Peppol BIS.

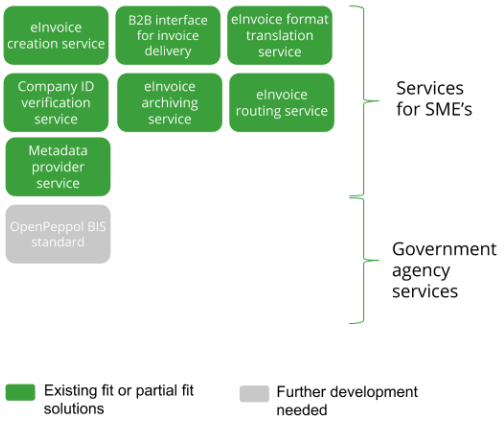
Steps

- Compliance with eInvoice BIS format
- Complete the implementation of the OpenPeppol BIS standard
- Market the eInvoice feature to their business system clients
- Promote and communicate the benefits to SME's
- Extend the regulation from public procurement to demand sending of invoices from public sector
- Create incentives in public procurement
- Require that when the customer supports eInvoices, suppliers must sent invoices in that format

Readiness for adoption: High

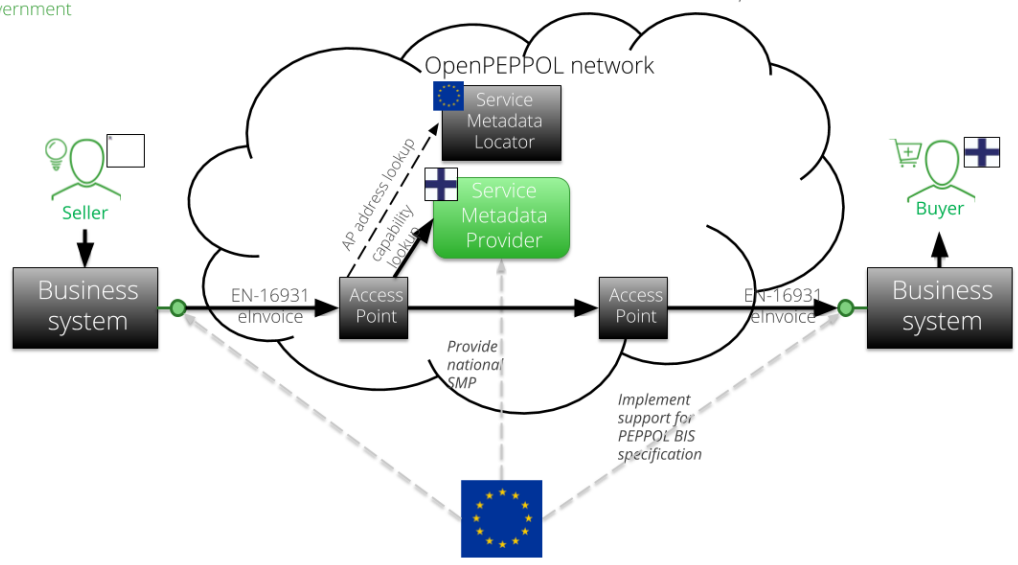
- Existing technical services for einvoicing in general are widely spread
- Common standard EN 16931-1 already decided by EU

Possible Applications or technical services required



Nordic Smart Government

Readiness of eInvoices (continued): Fully developed eInvoice infrastructure – actions 1.1.1 – 1.1.3 ,1.1.9



2020-02-13

eReceipts

Nordic Smart Government

Readiness of eReceipt

Goal

A standardized, cross-border network for sending and receiving eReceipts for bookkeeping and auditing purposes.

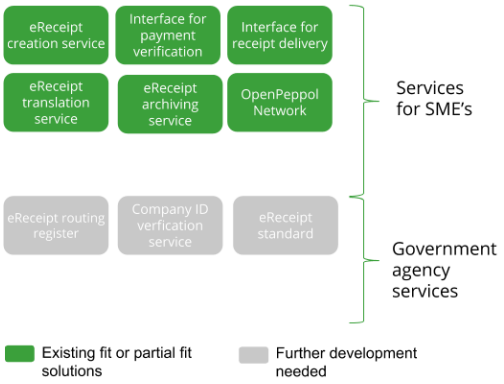
Steps

- Standardize the content of eReceipt
- Implement eReceipt in OpenPeppol network, connecting to the PoS
- Implement eReceipts in Business systems
- Implement mapping and routing from national eReceipts systems to the OpenPeppol network
- Mobile payment services send eReceipts

Readiness for adoption: Medium

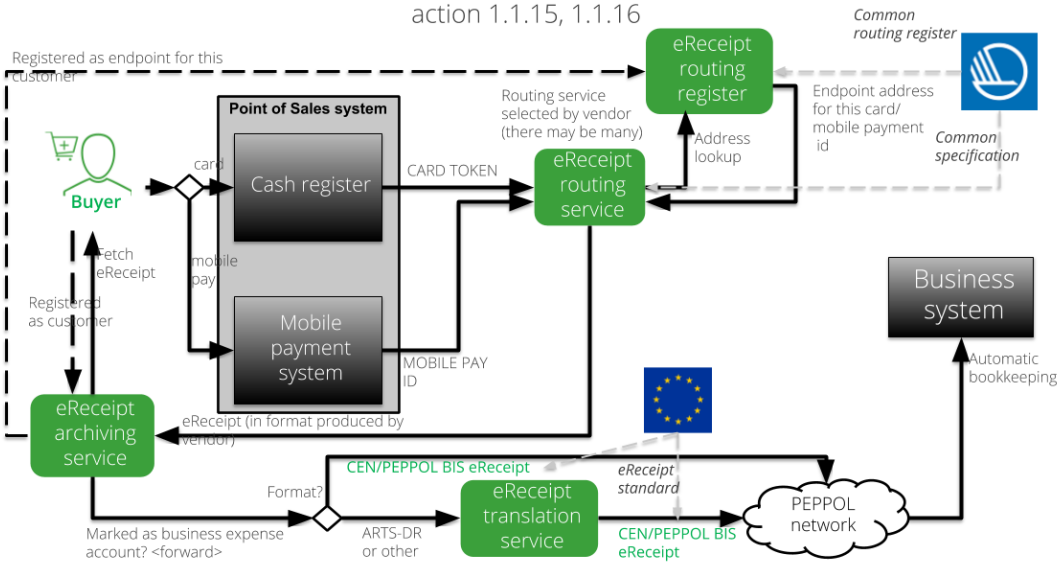
- Several networks exist but interoperability and portability needs to be improved (4-corner model)
- eReceipt standardization is ongoing

Possible Application or technical services required



Nordic Smart Government

Readiness of eReceipt (continued): Mapping and routing of eReceipts – action 1.1.15, 1.1.16



Digital Product Codes

Nordic Smart Government

Readiness of Digital Product codes

Goal

- There are various codes that can be used, e.g. EAN code, EU Harmonized System codes, or other standard product and service category codes (UNSPC for example)

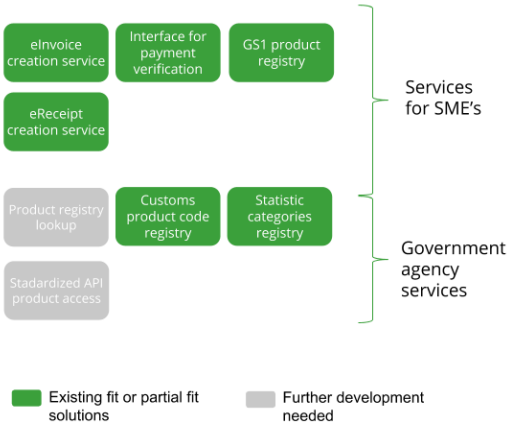
Steps

- Include and process product information/codes in the business documents
- Discover product information/codes and access services providing additional information about the product.
- Ordering systems must provide product codes
- Enforce the use of product codes in the supply chain
- Enforce a best practice for use of product codes in eInvoicing

Readiness for adoption: Low

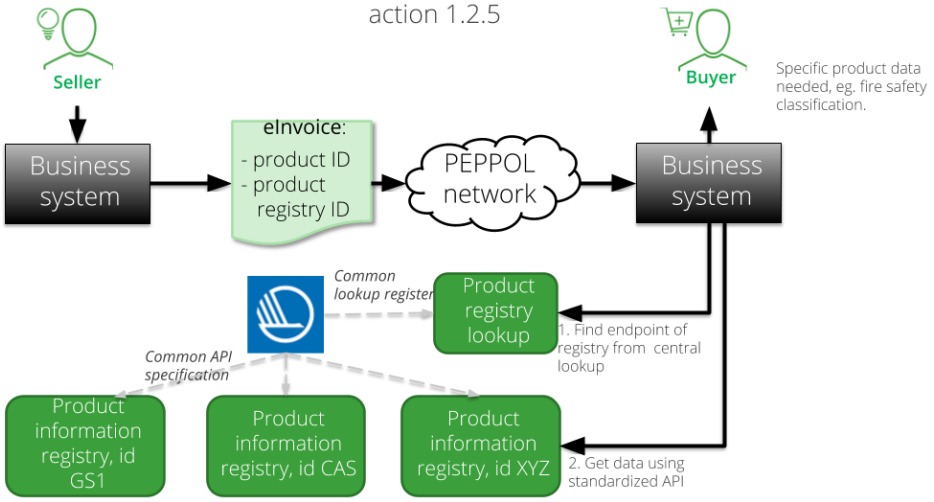
- There is a plethora of product code standards and registries, with different uses and scope
- Harmonization requires a lot of work

Possible Application or technical services required



Nordic Smart Government

Readiness of Digital Product codes (continued): Product information lookup – action 1.2.5



Immutability of Business Documents

Nordic Smart Government

Readiness of Business Document immutability

Goal

- Ensure integrity for business documents and prevent tampering
- Prevent illicit double use of business documents

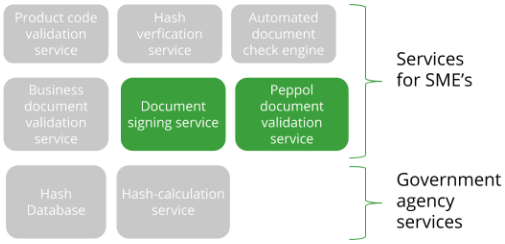
Steps

- Provide access to digital business documents validation services that check that necessary contents are present and used codes etc. are correct
- Provide services that register usage of business documents (eg. eReceipts) in order to make sure that a document is only used once. This enables automated checks (based on hash calculations)

Ready for adoption: medium

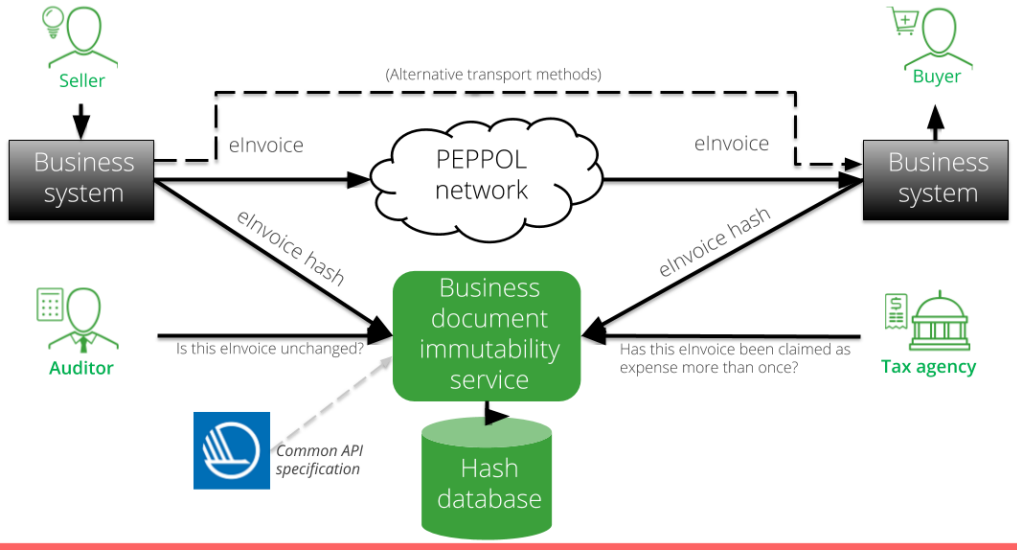
- Existing solution for signing and validation exist and emerging technologies are maturing
- Common services and interoperability is missing

Possible Application or technical services required



Nordic Smart Government

Readiness of Business Document immutability (continued): Business document immutability – action 1.3.2



Storing of references to documents

Nordic Smart Government

Readiness of Store references to documents

Goal

- Using digital proofs of transaction instead of current process of storing paper vouchers for a number of years as a copy for both parties of the business transaction

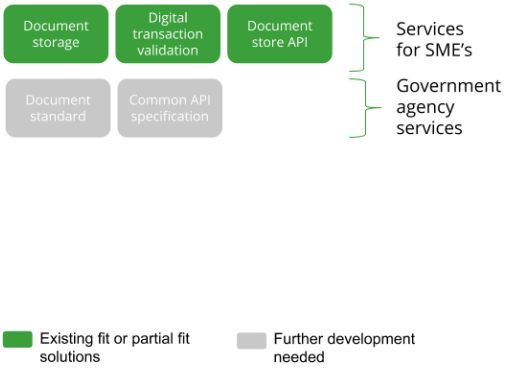
Steps

- Enforce a system where sales documents are not sent at all, but stored in one place and being referenced. Eliminates the challenges of having different copies at each end
- Legal changes to remove the need to store and archive copies of business documents

Ready for adoption: low

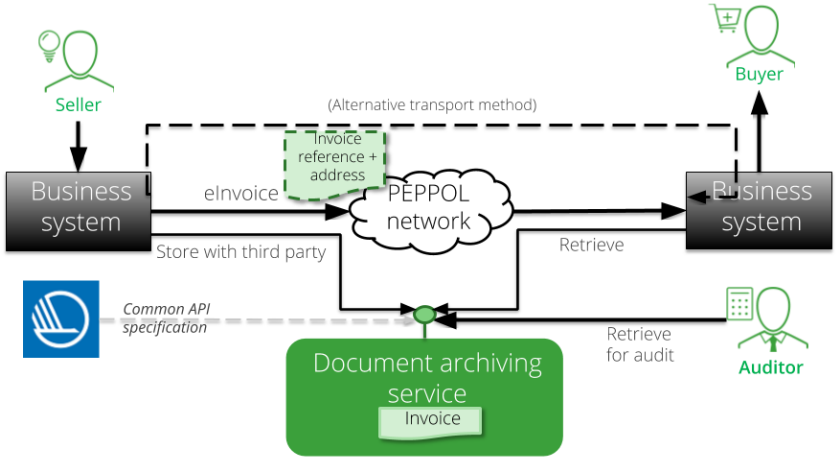
- The Nordic countries have different legal requirements in this area and some allow changing of documents after transmission
- There are technical solutions for secure off-site storage, eg. in distributed networks, but standards are lacking

Possible Application or technical services required



Nordic Smart Government

Readiness of Store references to documents (continued): action 1.3.3



2020-02-09

Trusted government services for secure business

Nordic Smart Government

Trusted government services for secure business

Goal

SME may need to or want to perform various checks to ensure that the trading partner exists, is registered for VAT and has payed taxes.

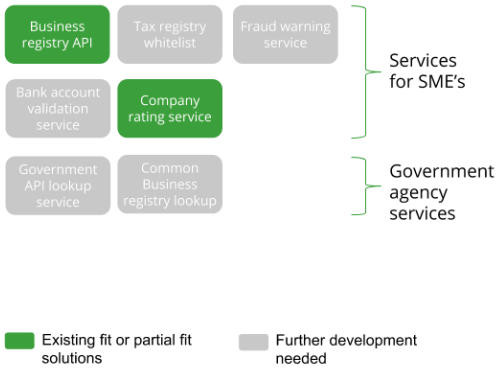
Steps

- Access to a service that checks the validity of a bank account number against the company number
- Access to a service that checks for VAT-registration
- Access to a service that checks the "seriousness" of a company (taxes paid, VAT paid, annual accounts delivered)
- Access to a service that checks that trading partners really exist before sending documents (is registered in business registries)
- Access to a service that provides a warning function related to well known "fraud companies" or the bank account number that is used could also be relevant.
- Implement warning services for factual events about a company (gov. data: forced proceedings, persons not allowed to do business)

Ready for adoption: high

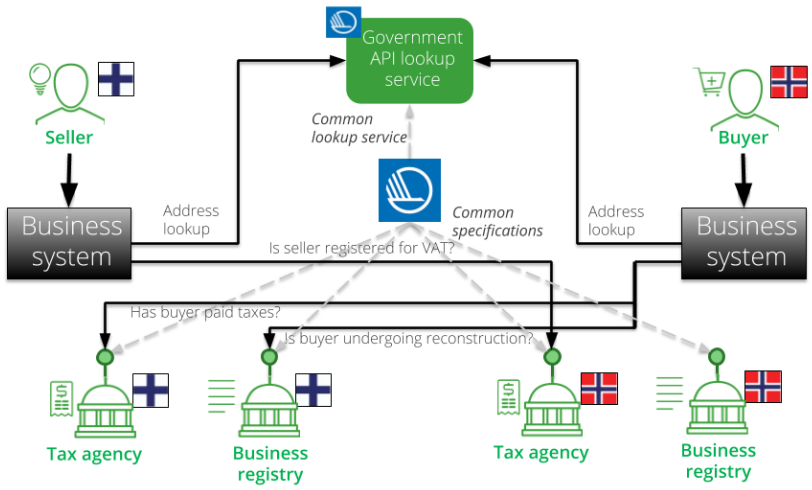
- Common Nordic business registry lookups and API's are missing which are technically quick to implement
- Connecting the data points with validation and lookup services can be used to provide legitimacy checks

Possible Application or technical services required



Nordic Smart Government

Trusted government services for secure business (continued) – action 1.3.6 – 1.3.8



Business System API and eAdresssing

Nordic Smart Government

Readiness for Business system API and eAddressing

Goal

Enable standardized ways for integration while supporting portability of business data without customization

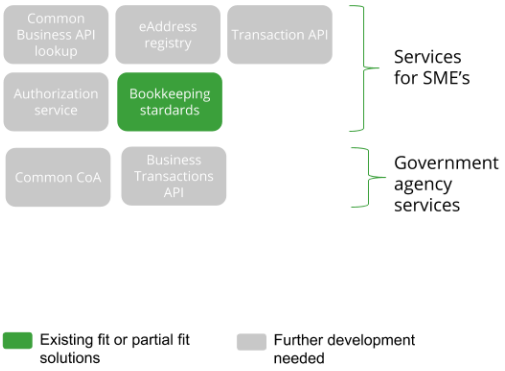
Steps

- a standardized service, API, for accessing transactional data from a business
- a (standardized) role based authorization service for the businesses to grant access to different parties to read/write data
- implement a standardized format for transferring detailed bookkeeping data between systems (portability)

Ready for adoption: low

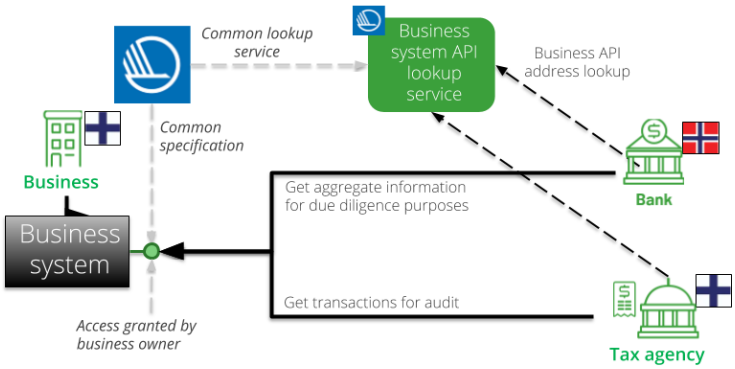
- Bookkeeping standards are implemented by the business systems, but implementation is nation-specific and not Nordic.
- Lack of a common chart of accounts hampers portability
- Common business services are not fully interoperable and need further development in services supporting portability

Possible Application or technical services required

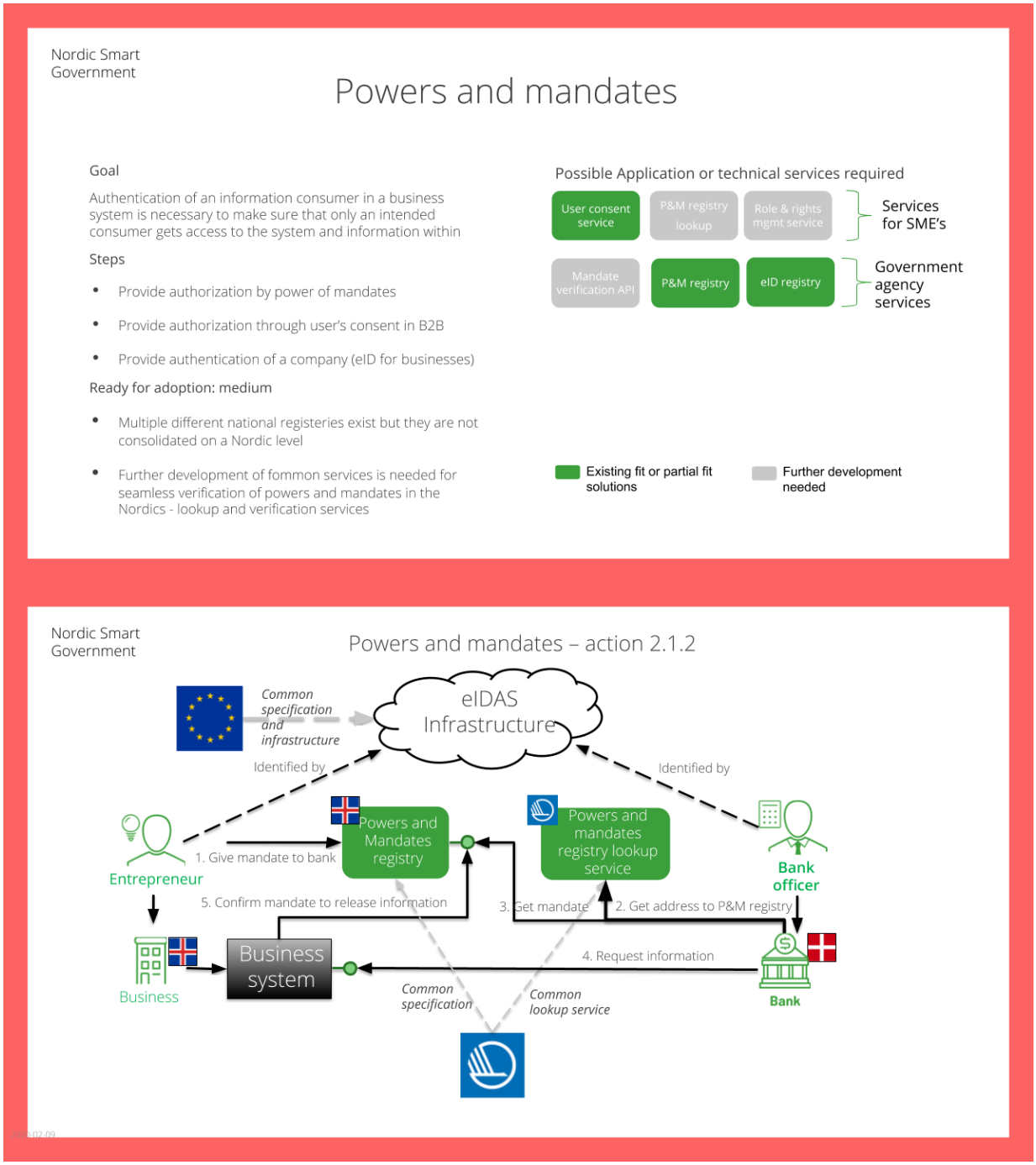


Nordic Smart Government

Business system API and eAddressing (continued) – action 2.1.1, 2.2.2



Powers and Mandates



[inserted pictures from
https://drive.google.com/file/d/1QoTvRaxEVhwHZ7OepmZV1GSeKRN3AgJS/view?usp=sharing]

Nordic Smart Government – Deliverable 6: Rulebook

Version:
https://docs.google.com/document/d/1iNrxX4NL3urII5bsRKEauUlLUgGdixUWAGX6zVuyj8o/edit#heading=h.jninravwc2mn

Introduction
The Rulebook describes the core business processes in which financial data and product information is transmitted, managed, stored and used, and suggests "rules" that these processes should follow in the future, in order to help SMEs benefit from the data to a higher degree than today. Thus, the focus of the descriptions in the Rulebook is the "to be" situation, and the elements described in the Rulebook does therefore not necessarily reflect the "as is" situation in the SMEs.

Based on the descriptions and suggested rules a number of action points have been formulated. The action points can be activities the SMEs, business system vendors or authorities need to do to help create more value from the data. As well as action points, the Rulebook suggests a number of use cases, showing the benefits of the data to the SMEs if they follow the "rules".
The Rulebook is concerned with the behavior of SMEs and therefore the SMEs are a natural part of the target group. However, the processes and details described in the document are not necessarily something that SMEs are aware of in their everyday doings. The content of the Rulebook is therefore foremost meant to form the basis for a constructive dialogue with the advisors of SMEs, such as bookkeepers and accountants, business system vendors and application providers, who play a crucial role in delivering the benefits to the SMEs.

The Rulebook is separated into three main parts that go into detail with different business processes. The main parts are:

- Document-producing events
- Document-receiving events
- Bookkeeping and accounting

1 Document-producing events
The first part of the Rulebook considers the processes of selling goods and services and the documents that are generated. We take the creation and sending of a sales invoice as our starting point. This process is important because the format and content of the invoice determines how the buying business can handle the invoice and the data that will be available to the buyer. The processes of sales receipts and purchase orders are also considered. We seek to establish a set of ground rules that suppliers should follow in order to support the customer in the NSG ecosystem. Furthermore, this will benefit the supplier as well since suppliers are also buyers.

1.1 Sales invoicing
A sales invoice is a voucher that is prepared whenever a company requests payment from a customer for goods or services delivered. The invoice contains important information about the delivered good/service, such as a description and seller's product code and/or EAN code, quantity, price and terms of payment etc.
Standard eInvoices have certain qualities, requirements, and embedded functions important to the NSG ecosystem, i.e. it enables automatic handling of the invoice for the receiving business. Therefore, as a rule, whenever it is possible, the supplier should send eInvoices. This is treated in depth below:

1.1.1 Application producing the eInvoice file

The eInvoice application produces the eInvoice file and transmits it to the customer, while the data of the invoice must simultaneously be transferred to the seller's own accounting system. It might also be that the invoice is being created in the same system in which case the transmission to the business' own accounting system is invisible.
The produced eInvoice must comply with domestic VAT laws when specifying VAT, and on the content side should meet the demands of European Norm and thereby also the EU eInvoice directive 2014/55 although this norm is mandatory only in B2G invoicing. This is suggested because European Norm ensures that the content of the invoice meets the reporting needs of the business.

1.1.2 Sellers eCommerce system

If the seller uses an eCommerce system, where the buyer can make an order of selected goods, the seller should be able to produce an eOrder confirmation. The eOrder confirmation standard should contain also all necessary payment information and accepted as a voucher instead of invoice. In this case, an invoice is not needed for payment and bookkeeping and the process could be more efficient and faster.
The applications providing the eOrder or eOrder confirmation should use a similar standard structure related to either eInvoice or eReceipt.

Suggested rules:
Each invoice should be validated during the first step into the transmitting network to produce qualified eInvoices.
An eOrder or an eOrder confirmation should contain the same information about partners, sold goods/services and payment as an eInvoice (and follow the same standard).
If the ordered purchase is paid in eCommerce, buyer should receive a receipt.
An eOrder confirmation with payment terms acts like an open invoice.

Use case:
Using eOrder confirmation instead of an eInvoice in ordering event, the buyer receives information as he orders and is then able to upload information into his system much faster than with eInvoices, which are normally made and sent after delivery.

Accepting order and order confirmation as vouchers in bookkeeping has several advantages:

- buyer can ensure correct product information and references to products in catalogs,
- buyer can use product information in production and reporting even before the actual products have arrived buyer is able to use information in cash flow estimates earlier
- buyer has more benefit of a detailed document for the further processing than the seller and therefore has more incentives to adopt and demand structured data formats that can be read by the systems
- the buyer can add reference-information in the order to be used in the further processing, like for instance mapping to detailed accounts, automatic acceptance to pay etc.

1.1.3 eInvoice transmission

There are different infrastructures available for transmitting eInvoices, depending on the originating country. To ensure interoperability between the countries, a pan-European association (today joined by Singapore, Australia and New Zealand) has developed a common European transport infrastructure, called eDelivery, for transmitting eInvoices as well as a number of other electronic business documents. eDelivery is maintained and developed by the public-private European organisation Peppol (formerly OpenPEPPOL), and the business documents that can be transmitted through eDelivery are PEPPOL business documents. eDelivery is widely used in B2G trading in the Nordics, but eDelivery also supports

the needs of businesses that trade B2B. Therefore, as a rule, whenever it is possible, the supplier should use services compliant with the PEPPOL infrastructure.

The company creating eInvoices has to make an agreement with a service provider for transmitting the sales eInvoices to the customers. In eDelivery, service providers form a network where seller and buyer each can use their preferred service providers who then handle the transmission (in a so-called four-corner model). Service providers are required to validate and enable transmissions to other service providers, maintaining integrity and the standards of the transmitted documents.
If the company uses a business system vendor, who offers eInvoice transmission service or who has an agreement with another service provider, the company does not have to make their own agreement with a service provider.

1.1.4 Invoice content

1.1.4.1 Customer information

Customer information is needed to transmit the invoice to the right receiver and address it to the responsible person or relevant order so the invoice can be handled further. Customer information also contains information about delivery address and agreed payment and other terms.

Each seller should know and add information concerning VAT handling in cases where the customer is not domestic and in cases where the customer does not operate under the standard local VAT laws. VAT category codes are tools to indicate these specific cases. These codes are also used in the domestic market to separate certain special handlings of VAT (e.g. used goods, exempt goods, or exempt sectors). Using VAT category codes and VAT rates in the invoice, sellers and buyers can collect the data for VAT reporting automatically from invoices. The categories within the EU VAT union are defined here.

1.1.4.2 Invoice line information

Suggested rules:
Customer information of companies should be available from public registers in structured form.
Use case:
Entering a new customer's information into a sales system could be automated and avoid possible misspellings or lacking information.

There are various things that can be specified about products in an invoice row, depending on the buyer's needs. In general, SMEs needs for product details are quite limited, although essential for determining product profitability or to fulfill reporting demands of used products in production processes. In addition various taxes (excise tax) besides VAT are collected based on sold or used goods, so data describing the products/services are necessary to enable correctly automated tax reporting.

Mandatory contents for invoice lines from the Semantic data model of the core elements of an electronic invoice:

- Invoice line ID
- Item name
- Invoiced quantity
- Invoiced quantity unit of measure code
- VAT rate (mandatory in domestic trade)
- VAT category code
- Invoice line net price without VAT

- Total price without VAT

see also https://docs.peppol.eu/poacc/billing/3.0/bis/#_item_information

1.1.4.3 VAT information at row level

Mandatory requirements for product information are set in VAT laws. In an invoice there must be a description (at least a name) of the bought goods or/and services, the amount of goods/service, their VAT rate, VAT category code, delivery date (various delivery dates by product lines) and price without/with VAT. The same rules concern invoice and receipt (except delivery date) and order/order confirmation, if the order confirmation is also due to payment and covering the actual invoice. EU regulation enables member states to allow companies (SMEs) to choose from two main rules to pay VAT; delivery based or payment (cash-based VAT).

1.1.4.4 Multiple measurements

There are no strict rules, how to describe the measurement of goods. Often the only measurement field is the amount of invoiced items, which is mandatory, and the measurement for the individual product package is mentioned only e.g. in the description of the product. It is impossible to use this kind of measurements in product calculations. In the invoice line it is possible to give several different measurements; one package measure, transportation measure and warehouse measure.

1.1.4.5 One package measure

Net Content (the quantity of the product in the package along with the unit measure typically printed on the label for the selling market). This measure is needed for different product calculations e.g. usage of material.

Suggested rules:
Item identifier (seller's/buyer's/standard product code or ID) should be used always to identify the product to be used in reports and calculations.
Product classification code (optional), should be used according to selected standard

- Product classification code could define VAT rate in buyers country
- Product classification codes could be used to separate other taxes collected based on sold goods (seller) or refunded according purchased goods or services e.g. energy tax or excise taxes (buyer)

One package measure

- Net Content (the quantity of the product in the package along with the unit measure typically printed on the label for the selling market). This measure is needed for different product calculations e.g. usage of material.

Net content (the quantity of the product inside the package) is a very valuable measurement for calculations, and should be mandatory. Measurement fields could be repetitive to enable other needed measures (packed on pallets for transportation).

Use cases:
Sending eInvoices to your customers is a good service because the customer can automate processes of acceptance, reporting and bookkeeping. Also, if net content is available in a structured way in the eInvoice, it can form the basis of reports about stock balance and project calculations by the customer.

1.1.5 Invoice information in user's own system

Detailed information from each sales eInvoice should be stored in the seller's business system. This information may be used to combine and relate invoice data for categorization or analysis, such as tracking different customers' history, or an analysis of the profitability of specific products or customers. The group of sales transactions are usually named as "sales journal" in the bookkeeping system. Payments, with their own detailed information, have been reconciled with invoices and form their own journal in bookkeeping.

1.1.6 Self-billing

Self-billing is used in some industries, where the buyer measures and qualifies products delivered and defines pricing due to results. The buyer produces invoices as self-billing and sends the documents to the seller and pays the invoice amount to seller's bank account. The seller is in the current situation dependent on the buyer's system, and receives normally paper or pdf documents from the buyer. Self-billing is typical in the food industry, e.g. produced fish, meat, grain and milk are measured, qualified and priced by the seller company.

Suggested rules:
The buyer should also use eInvoicing in Self-billing cases compliant with European Norm
Use case:
A seller would be able to upload sales information into his own sales system and use detailed data about the products and customers in his own sales reporting and bookkeeping.

1.2 Sales receipts

When selling over the counter, invoices are not normally issued. Instead, the Point-of-sales (POS) system produces receipt to the customer. Like eInvoices, standard eReceipts have certain qualities, requirements, and embedded functions important to the NSG ecosystem, i.e. it enables automatic handling of the receipt in the customers business system. This is treated in depth underneath:

1.2.1 Content of receipt

Receipts are vouchers of purchased and paid goods or services. There might be country specific legislation for receipts due to prevent fraud. Regulation defines the mandatory content of receipt. The business buyer is not able to deduct paid VAT according to VAT legislation, if the receipt doesn't meet the regulation.

POS systems register all sales into the seller's business system in digital form. Derived from the registration of the sales, receipt is printed to the buyer. The address ID is entered into the credit card information by the card issuer and with the other information added to the eReceipt. The actual credit card number is delivered hidden in the shop's system. E.g. in a paper receipt the middle digits of the card number is hidden. Only the authorised companies can deliver the payment information to the card issuer companies. Every eReceipt has its own receipt ID, which is also delivered with the payment to the card issuer. This ID is used to reconcile receipt and payment. In cash payments, there are solutions to read address ID from QR code or barcode.

Suggested rules:
Every sales system e.g. POS system or other solutions should be able to store the company customer's eReceipt's delivery ID in the eReceipt. Delivery ID guides the eReceipt to the buying company's service provider who in turn forwards it to the buying company. Delivery ID doesn't contain information about the actual buyer.
B2B eReceipts should be delivered to the customers using a similar infrastructure as in B2B eInvoice transmission
The eReceipt's content should be standardized on European level like the European Norm for eInvoices.
Use case:
The buyer could upload eReceipt file into his business system in structured form without manual work and could also use automation in booking and reporting.

1.2.2 Payment information in receipt

Each receipt contains information about the payment, bank card, credit card, cash. In business use, all the receipts are also vouchers and in card payment cases must be reconciled with credit card company's invoice or bank account transaction.

The European Cards Stakeholders Group (ECSG), the association promoting cards harmonisation in the Single Euro Payments Area (Single Euro Payments Area) publishes the Single Euro Payments Area Cards Standardisation Volume. In the Volume book 2- 'Functional Requirements' Requirement T92 is found, which describes the minimum receipt information.

> *Req T92: The POS system shall provide a transaction receipt to the Cardholder after a successful authorisation process. The transaction receipt may be combined with the sales receipt.*

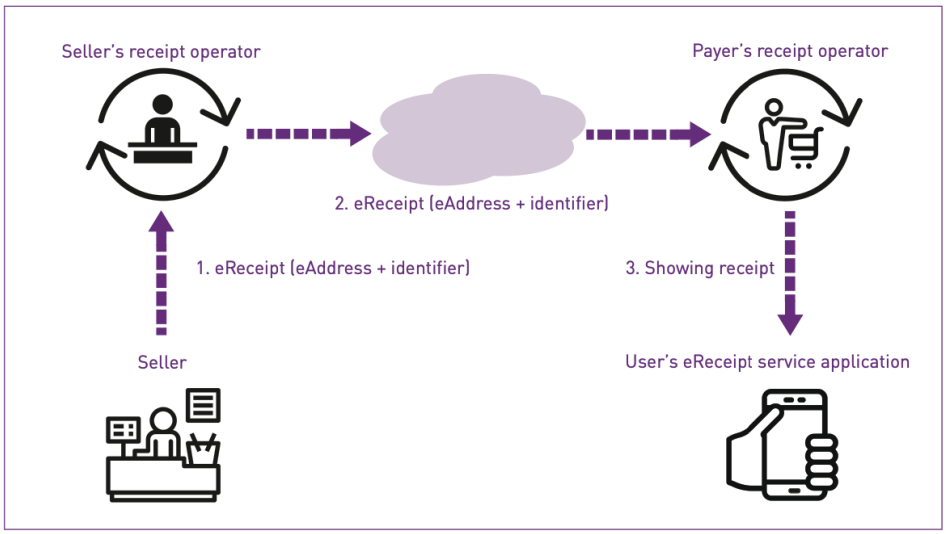
The following are the minimum data that shall be provided. The sequence of the data elements provided is not mandatory. Additional data may be provided but is out of scope of this document.

- Transaction Date and Transaction Time
- Transaction Amount and Transaction Currency
- Truncated PAN
- Payment Brand name
- Acceptor name and location
- Transaction Reference number
- The Card Service, e.g., 'Payment'
- Transaction Result, e.g., 'Approved'

Information on card payment data required on the receipt can be found in SEPA Cards Standardisation Volume: https://www.europeanpaymentscouncil.eu/news-insights/news/ecsg-publishes-new-version-sepa-cards-standardisation-volume-effective-today

1.2.3 Transmission infrastructure

eReceipts transmission infrastructure is under development and there are only some examples of built infrastructures. The picture below is an example from Finland, where eReceipts already are in use. The picture is from a guidelines document made by the RTECO project and it is describing the process delivering eReceipt from seller to buyer via service providers. In addition to this process, there is another process for payment, where the payment information is carried from the seller to the card issuer and the actual payment from buyer to seller via card issuer.



Link to the eReceipt guidelines document:

https://teknologiateollisuus.fi/sites/default/files/file_attachments/2018_ekuitti_eng_sisus_vedos_6_0.pd

1.3 Archiving vouchers from sales

Companies are obliged to archive all bookkeeping material and all the mandatory reports for a number of years, depending on local legislation. In case the bookkeeping material is archived by e.g. accounting firm, the seller company might be responsible to archive sales documents separately. Audit trail must be fulfilled. All the transactions and aggregated figures found in mandatory reports must link back to the eDocuments via the audit trail. Local legislation differs concerning mandatory reports and mandatory archiving timelines.

Suggested rules:
eInvoices, eOrder confirmations, eReceipts and payments should be archived in their xml format with a tool to visualize the content
Use case:
If there is a need to verify buyers and sellers documents, the eInvoice or eOrder with invoice information in structured original format contains all the detailed information delivered between seller and buyer.

1.4 Purchase order and seller's order confirmation in eCommerce

Buyer can make a purchase order via seller's website, ordering portal or using their own purchase ordering system. Seller makes an order confirmation with delivery date/s and gives the information to the buyer. The order confirmation should consist of all the mandatory information required for invoices. In this case purchase invoices are not needed and the order confirmation will be handled as a voucher and be the basis for the payment. Structured eOrder and eOrder confirmation can enable automation in procurement processes and bookkeeping.

Suggested rules:
In case of orders there should be a possibility to add bookkeeping account information already during the ordering for automation in procurement process
Use case:
The person who makes the order usually also accepts and gives account number/dimensions to the transaction. The received eOrder confirmation or eInvoice based on eOrder information can automatically be accepted and booked to the dimensions and bookkeeping accounts given before.

2. Document-receiving events

The SME when performing business processes related to the purchase of goods/services – what the document-receiving SME will have to do to fulfill its role in the future ecosystem, as consumer of another stakeholder's documents.

2.1 Purchase invoices

2.1.1 Application for receiving invoices

All the incoming invoices have to be accepted before payment. Acceptance can be done using an application, which enables different combinations of acceptance rules. In addition the application can provide features to add bookkeeping information to the invoices either adding account numbers and possible dimensions manually or using automation. Automation can also be used even to accept invoices, which have based on orders already accepted. The application can also provide the process to archive electronic invoices in structured form.

2.1.2 Acceptance

Each purchase invoice or receipt must be accepted by a person (or automated system), who has the authorization to do so. Often it is the person responsible for ordering goods or services. Without acceptance, invoices should not be forwarded to the payment procedure. There are several acceptance models from one person, only to two persons or chain of persons due to responsibilities. Most micro-SMEs have very simple rules; normally the owner has the task of accepting invoices. With eOrders, eInvoices and eReceipts, more automated acceptance flows are enabled (if the received eInvoice matches the fields of the original eOrder, for example).

Suggested rules:
Vendor information should be used from received structured invoice instead of system's built in vendor register, which is updated manually. In this way, all changes will be stored without manual update and could be compared with the official registries.
Vendor information should be verified against business registry data.
As for the payment and the bank account number to be paid, there should be extra procedure to check if the bank account number is well-known in fraud context or changed from the previous invoice.
There should be a control of the vendors company ID to check that the company really exists or is well-known in fraud context.
Received accepted invoices should be stored with their detailed row information.
Use case:
Detailed information from accepted eInvoices could be used by different applications for cash flow estimates, stock management, product reports, VAT reporting, etc.

2.1.3 Accounting automation

After being accepted, purchase invoices/receipts are turned into bookkeeping vouchers.
SMEs often have several periodically repetitive transactions, such as material purchases, phone, insurance, rent, cleaning bills etc. The bookkeeping information is often or always the same for these types of transactions, and could easily be automated according to vendor or product information.

In orders, there are fields for accounting references to be given (added by buyer) or in sales invoices (added by seller). In the case of eInvoices/eOrders, the accounting references may be read by the system and bookkeeping entries may be automatically created based on this information. Accounting entries must include date, voucher number, description, account number and money amount. Minimum content due to VAT legislation is: product name, amount, VAT rate, price and date of delivery/invoice/receipt.

Suggested rules:
Accounting automation in VAT bookings should be based on suggestions from information in eDocuments about VAT category codes and VAT rates. Suggestions need to be controlled, changed, if needed and accepted before reporting by company's representatives.

2.1.4 Product information

See the above descriptions of sales invoices and content. The purchase invoice is a sales invoice for the party that has created it so same mandatory rules for content apply.
There is furthermore a need for product classification codes, which could be used in purchase invoices for other tax (excise tax) reporting purposes than VAT. Governments have decided to collect product specific tax or compensate enterprises in various taxations, e.g. energy or transportation costs. In these cases, there should be a possibility to add codes during the acceptance flow, so that data for reporting and refund applications is stored correctly.

Suggested rules:
The acceptance systems should provide a possibility to add product classification code to the invoice line
Use case:
Product classification codes could be used to collect information about purchased goods for possible compensation from government e.g. energy tax.

2.2 Receipts (purchase)

Companies pay smaller and instant purchases e.g. travel expenses by credit card or bank card and possibly mobile payment. Received receipts are vouchers to be entered into bookkeeping.

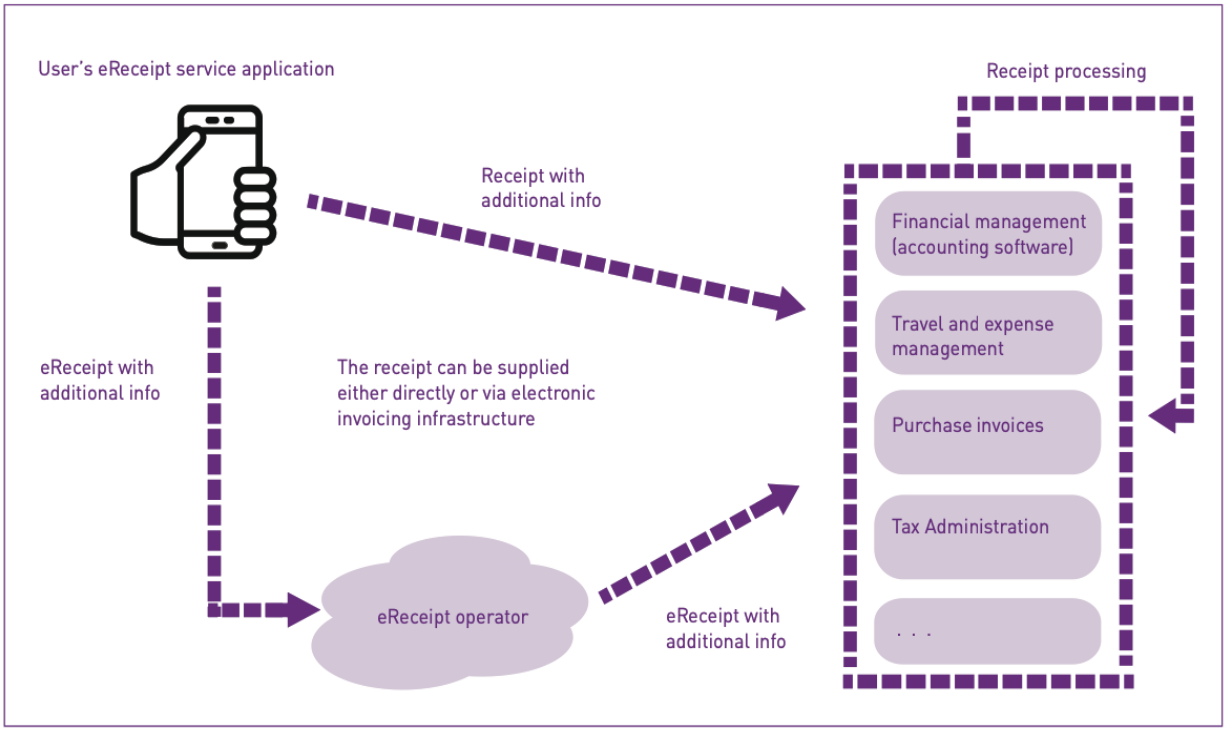
Suggested rules:
Buyer should be able to receive electronic eReceipt in standard structured form.

2.2.1 Buyers' process to start receiving eReceipts

1. Select payment method (credit card, bank card)

2. Choose the service provider for transmitting eReceipts, add eAddress(delivery ID) to buyer's payment system (credit card etc.) and enable buyers system to process eReceipts; acceptance, store and booking etc.

3.Enable to reconcile eReceipts with bank account payments (bank account related cards) or credit card companies eInvoices. Reconciling can be automated by using eReceipt's identifier code in credit card invoice or bank account transaction.
Received eReceipts should be accepted as company's business transaction, acceptance resembles the process of invoice acceptance, but differs due to payment. eReceipts are already paid and they have to be matched with the payment information in credit card company's invoice or bank account payment information. The eReceipt standard should provide identification information from the payment process to enable automatic reconciliation. The picture below is from the document eReceipt Guidelines made in RTECO project in Finland. (link to document, see Sales eReceipt)



2.3 Payment transactions or bank account statements

Bank account transactions are an essential part of business and content of bookkeeping material.

Some banks are offering electronic bank account statements or payment information in structured form. In SEPA area banks follow the SEPA ISO standard, but only part of taxonomy is mandatory and there are a lot of differences between the banks.
Bank account statements or payment transactions can be downloaded as xml-files through APIs into business systems to be refined to bookkeeping entries and payments to receivables or payables. These electronic bank account transactions enable several possibilities to automate accounting processes.

SEPA ISO standard enables the use of RF payment reference to reconcile receivable payments. RF payment reference is included in the sales eInvoice structure's payment information part and should be used in payment information, when recording the payment. The seller company receives all the RF payments separately to be uploaded in the business system. Normally RF reference consists of customer number and invoice number and a check digit. It can be used as a barcode also.

Suggested rules:
In order to facilitate automated accounting for electronic bank account transactions, the banks should send electronic receipts of their own service fees or loans and provide the information using standard.
RF payment reference should be used to automate receivables reconciliation by companies.

2.4 Transaction transfers from other systems

Business systems might consist of several independent applications, which transfer information between each other using file transfers. These file transfer definitions are usually made customised to fulfill the needs of each individual transfer. E.g. payroll system is usually isolated from the accounting system. Payroll system produces information to bookkeeping and also possibly to calculations and business analytics. Information transfers between systems and applications should follow standard.

Suggested rules:
API exporting the transactions should support XBRL GL taxonomy or other international taxonomy e.g SAF-T.
There should be mapping between transmitting taxonomies to enable conversions between.

3 Stock management

Companies who trade or produce goods have to keep books of the goods in stock. Delivered, purchased goods should be booked into the stock management system with information about product; ID, name, delivery date, amount of goods and price per unit without VAT. Sold goods or goods taken into the production process should be booked out of the stock management system with information about product; ID, name, delivery date and amount of goods.

Value of stock can be counted by different methods; FIFO (first in, first out), LIFO etc. by products. The value of stock must be booked in bookkeeping at least into the financial statements. The value of stock should meet the real value of the goods either lowering the prices or booking goods out of the stock. List of the goods in stock should be attached to the bookkeeping material of financial statements.

Value of stock is important information for business; how much money is tied-up in goods, the correct sales margin can be counted only with the real value of stock.

Suggested rules:
Stock management transactions should be collected from structured eOrder confirmation, eInvoice or eReceipt by choosing the products to be booked into stock or out of stock. For production there should be dedicated application to book goods out of stock to the production process.
Use cases:
The value of stock could be counted in real time.
Simple stock management could help SMEs to lower costs by reducing unnecessary orders.

4 Bookkeeping and Accounting

Bookkeeping is the system that consists of all information defined in bookkeeping laws. Part of the bookkeeping information must be entered manually directly into the bookkeeping system from voucher describing the transaction e.g. adjustments, depeciations etc. and part of the entries are formed in other systems following bookkeeping laws.
Adjustments, corrections or debreciations must be described in vouchers (called often memo vouchers /general ledger voucher) or in the system inside the entered transaction description, if there is room enough to give all the needed information. The description and/or calculations must be available in

audit. Sometimes these are related to invoices adjusted to next period, in these cases description space is normally enough.
Using structured invoices, receipts, orders and payment transactions, bookkeeping entries are formed or given in the systems, which are handling structured transactions data and are then automatically part of bookkeeping (sub bookkeeping systems).
In bookkeeping all the transactions are categorized according to the bookkeeping laws by account numbers. All transactions are divided between profit & loss and balance sheets. Profit & loss report or side of transactions are reset every financial year and the result is entered into a balance sheet to add or decrease equity. Very often taxation is also based on bookkeeping information.

4.1 Accounting entries

Accounting entries derived from one voucher are divided between debit (+) and credit (-) and the sum of these entries must be zero. Basic rules are for sales credit, purchase or costs is debit, increase in assets debit, increase in liabilities and equity is credit.

4.2 VAT

In each document concerning VAT, there must be a summary of VAT amounts by VAT rates in local sales and by VAT category codes in some special cases. If there is cross-border sales, it must be divided into categories according to the customer's country and sold items (EU goods, EU services, sales to the third countries) using VAT category codes.
VAT bookings in to bookkeeping are collected mainly from VAT summaries in the invoices. Account numbers for the payable and deductible VAT amounts can be set as default. These bookings can be automated due to the strict rules and should be easy to do right/correct regarding VAT bookings.
If the invoice consists of some special VAT handling (VAT category codes), information can be on invoice total VAT breakdowns and on individual invoice row VAT breakdowns. To handle VAT codes correctly, the reporting application must recognise VAT category codes. All kinds of VAT should be able to report directly from transactions, although reporting should be checked, completed and accepted by the company's representative.

4.3 Corrections

In the case of error or mistake in bookkeeping entry already stored in the business system there should be a process to correct. The correction process should cover it by a nullifying entry and a new correct entry. However, the original entry should be stored as well. The original and nullifying entries can be hidden in normal reporting, but could be seen when needed.

4.4 Adjustments and depreciations

Adjustments and depreciations are purely accounting entries. These accounting entries are company's internal transactions and are added to the bookkeeping to adjust reports to meet the reporting periods actual situations. These entries should be documented by separate vouchers or in the description of accounting entries.

4.5 Archiving transactions

Archiving of accounting information is mandatory in all countries, but regulations differ. Archiving concerns bookkeeping documents, financial statements and vouchers.

Suggested rules:
All the bookkeeping entries should be archived in an electronic way using standard structure and interface, which gives auditors and other (authorised) stakeholders a possibility to analyse data in many different ways and different purposes.
XBRL GL is one example of taxonomies to cover all kinds of transactions in accounting in standard electronic format.
Use cases:
In case of changing the business system, all the transactions and eDocuments/vouchers in the current system could be transferred to the new system and used in comparison to the coming years.

4.6 Chart of accounts

A chart of accounts is a listing of the names and numbers of the accounts that a company has identified and made available for recording transactions in its general ledger. In most countries a company has the flexibility to tailor its chart of accounts to best suit its needs, including adding accounts as needed. In some countries a certain chart of accounts is mandated to be used in order to make the accounting data more understandable for different stakeholders, accountants, auditors, etc.
Within the chart of accounts, you will find that the accounts are typically listed in the order of balance sheets and profit and loss reports.

Balance Sheet Accounts

- Assets
- Liabilities
- Owner's (Stockholders') Equity

Income Statement Accounts

- Operating Revenues
- Operating Expenses
- Non-operating Revenues and Gains
- Non-operating Expenses and Losses

Within the categories of operating revenues and operating expenses, accounts might be further organized by business function (such as producing, selling, administrative, financing).

In addition to chart of accounts there are needs to report separately departments, product lines, etc. These are normally handled with separate dimensions which are used along with the actual account no. Using multiple dimensions might cause errors and business systems can provide a possibility to store allowed combinations as e.g. organization chart.

Standard charts of accounts are used in some countries. They are normally designed in collaboration with public and private partners. The main goal is to standardise reporting towards authorities and also make business reports more comparable inside the country. To enable standard chart of accounts in Nordic countries, several legislations should be harmonized, concerning e.g. bookkeeping, tax, business.

Suggested rules:
Standard chart of accounts should consist only of the mandatory accounts to fulfill the needs for detailed information according bookkeeping, tax and business legislation. Businesses needs could be solved using sub accounts or dimensions along with the main account in chart of accounts.
Use cases:
Mandatory reporting could be standardized and would be comparable within businesses and industries.

4.7 Extracting data and making e.g. industry specific reports
By using structured data from eOrders, eInvoices and eReceipts that are stored at row level, you will be able to extract e.g. product data and create reports at any detailed level. Reports intended for public authorities, for different kinds of associations, as well as reports for internal use can be created automatically and without the use of manual setups and solutions.

Suggested rules:
Structured data from received documents should be stored in details, e.g. invoice/order/ receipt row level containing information about purchased products.
Use cases:
Mandatory reporting of purchased and consumed products in the production process could be created utilizing structured data directly from the business system or stored transactions by the SME and could be checked by the authority.
Using due date information from sales and purchase eOrders and eInvoices, cash flow estimates can be automatically updated continuously.

[1] The international tax themes are http://www.unece.org/trade/untdid/d08b/tred/tred5305.htm and https://service.unece.org/trade/untdid/d13b/tred/tred5153.htm

https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Registry+of+supporting+artefacts+to+implement+EN16931

Nordic Smart Government – Deliverable 7: Proofs of Concepts

Purpose

The present document provides an easy-to-access overview of the many ways that the exchange of real-time financial business data may benefit SMEs and enrich the future ecosystem of digital services that NSG envisions.

Decision-makers may use the Proof-of-Concepts (*PoCs*) described in this document as concrete examples of the value of NSG, explained in practical terms through the described use cases.

This document textually demonstrates the current state of the Proof-of-Concepts that NSG (in Work Package #4) has worked on, and lists a set of solution descriptions which have been considered, but not prototyped, tested or developed. The document provides an overview and in some cases also references to other NSG documents, such as Capabilities, Architecture, etc.

Disclaimer:

The real-life **examples** mentioned in the following should not be seen as endorsements of specific service providers, but rather show the feasibility and document the existing implementations of some of the described Proof-of-concepts.

Index

PoCs for Credit Institutions

PoC #1: Credit assessment with real-time data
PoC #2: KYC (Know Your Customer) network analysis for credit risk assessments
PoC #3: Factoring and invoice-based loan types

PoCs for SMEs

PoC #4: Automated account posting
PoC #5: Automatic VAT in domestic and cross-border trading
PoC #6 Business Assistant
PoC #7 Real-time Analytics Dashboard
PoC # 8 Automated inventory and eOrder management
PoC # 9 Extracting information on consumption
PoC # 10 Benchmarking service
PoC # 11. Portability by Design

PoCs for auditing and statistics

PoC #12: A common language for auditing
PoC #13: Direct extraction of business data for statistical surveys

Concept #1

1. Credit assessment with real-time data

The concept in a nutshell:

The business systems used by SMEs should be capable of providing consent-based access to structured data for credit institutions and business partners, with a high level of details pertaining to each transaction (e.g. shipped orders, unpaid invoices, payment due dates). Access to details about all transactions would enable quicker credit cycles, more competitive rates and terms, and minimize paperwork related to credit assessments for both SMEs and credit institutions

To perform accurate credit assessments, banks and credit institutions want updated and trustworthy data on the customers applying for credit. This demand is twofold: A need for updated real-time financial data (to check current developments in a client-company's finances), as well as a need to supplement the aggregated figures of annual financial statements with reports on recent periods, including more detailed data for greater accuracy. There could also be a need to construct an overview corresponding to an annual statement where none exists (in the case of newly started companies).

Credit institutions often supplement the publicly available annual financial statements with assorted business intelligence from 3rd party information brokers. For many kinds of small enterprises, there might not be public financial statements, or the data found in registries may lack sufficient detail and historical reach to facilitate credit assessment. Start-ups which have only begun growing thus face a demand to provide many figures for credit institutions (e.g. order backlogs, profits and loss for the latest periods, estimates of cost, and forecast).
Without readily available structured data, loan-giving processes may drag out and require much manual case-handling. However, SMEs often need liquidity quickly in order to grow. Time-to market is essential: Getting a new client or bidding for public tenders means that the SME needs to gear up, get more man-power, ensure the stocks are well-supplied, etc.

NSG can improve the conditions for SMEs seeking credit by

providing a specification of APIs that business systems must maintain, enabling creditors access to detailed financial data at the level of transaction, in a continuously updated flow or on demand, and in a structured format which is common to all customers no matter the business system used (see the NSG Capability Documentation)

The assumptions of this concept

- a system for managing consent and the duration of the creditor's access to relevant financial data (see the document on national building blocks of roles and mandates)
- data must be valid, accurate, and any tampering must be traceable
- SMEs must accept algorithm-based monitoring of their transactions in certain situations to get credit

Concept #2

2. Know-Your-Customer (KYC) network analysis for risk assessments

The concept in a nutshell

With access to detailed transactional data from the bookkeeping of a SME, it is possible to set up models for rating the network risk profile of that SME. With such a model, banks and credit institutions may assess how dependent an SME applying for credit is upon individual trading partners, or how likely they are to default because of the networked risk of relying on few clients. Furthermore, anti-money laundering processes may be automated.

In many cases, SMEs depend on selling products or services to a limited range of customers. Similarly, in some cases a SME depends on one or few suppliers to stay in business. In such scenarios, if the SME wants access to credit, the credit institution must incorporate an Know-Your-Customer (KYC) assessment of the network risks of the SME to accurately predict the customer/supplier dependencies of the client-company

The demand for KYC assessments is also great in relation to credit given to SMEs with much foreign trading, because of EU anti-money laundering directives. To ensure due diligence, banks are obliged to keep an eye on the transactions. By continuously tapping into the transactional patterns of such SMEs and developing models for monitoring the trade, the credit institutions may better direct their transparency procedures towards certain kinds of transaction as it happens, rather than imposing large restrictions on all credit applicants, and instead minimize the demands for SME documenting and reporting their trade.

NSG can enable KYC network analysis for risk assessments by

providing a specification of APIs that business systems must maintain, enabling creditors easy access to detailed financial data at the level of transaction, in a continuously updated flow or on demand, and in a structured format which is common to all customers no matter the business system used (see the NSG Capability Documentation)

The assumptions of this concept

- a system for managing consent and the duration of the bank's access to relevant financial data (see the document on national building blocks of roles and mandates)
- data must be valid, accurate, and any tampering must be traceable
- SMEs must accept algorithm-based monitoring of their transactions in certain situations to get credit, ie. if they work in high-risk sectors or with foreign trade partners that merits due diligence measures

Examples of the KYC/due diligence from NSG's Nordic Sandbox Challenge found here / *risika.dk* and *enin* - https://challenges.dk/da/ide/indsend-ide-126

Concept #3

3. Factoring and invoice-based loan types

The concept in a nutshell

With direct access to any business system's invoicing data, a credit institution can evaluate all outstanding/unpaid invoices and offer credit to a SME accordingly. The same access may be used as basis for credit types which are based on single invoices, or for factoring (in which an invoice debt is instantly partly paid by a third party, shifting or filling a liquidity gap for a SME)

Short-term liquidity is often a problem for SMEs. Often, receiving a large order from a customer also means gearing up and investing before the ordered product or service can be delivered. This is a typical use-case for invoice-based loans, or invoice-buying (a practice called *factoring*): Fixing the cash flow in the short term.

Factoring and invoice-based loans exist today, but the developers of platforms providing liquidity in this way struggle with getting the right (transaction-level) data in the right way. They may need a different set of integrations for each bookkeeping system used by the SMEs seeking credit, as well as different transformation modules for reading "traditional" paper or PDF invoices. All of this drives up the cost for offering such services.

NSG can enable easier access to invoice-based loan types by

providing a specification of APIs that business systems must maintain, so that banks and third-party providers can easily get detailed financial data at the level of transaction, in a continuously updated flow, and in a structured format which is common to all customers no matter the business system used (see the NSG Capability Documentation)

The assumptions of this concept

- a system for managing consent and the duration of the bank's access to relevant financial data (see the document on national building blocks of roles and mandates)
- data must be valid, accurate, and any tampering must be traceable
- SMEs must accept algorithm-based monitoring of their transactions in certain situations to get credit

Examples of existing solutions, in which credit is given based on unpaid invoices
Buffer - https://www.spv.no/bedrift/laane-og-finansiere/buffer)
Tradeshift - https://tradeshift.com/supply-chain-finance
MoneyFlow - https://moneyflow.io/

Concept #4

4. Automated Account Posting

The concept in a nutshell

SMEs and entrepreneurs have little love for day-to-day handling and bookkeeping of invoices and receipts. Such processes can be automated to a high degree, with the adoption of digital transaction documents and smart business systems.With automation in place, the SMEs are less dependent on manually updating the books in order to get an updated view of their finances.

Most established business systems and many start-ups are beginning to deploy machine learning and artificial intelligence to simplify the bookkeeping processes of SMEs. The current state of the art of this technology revolves around scanned images of receipts and invoices. The next step of the future, however, exchanges paper-based transaction documents with well-structured digital documents and deploys algorithms that not only read and digitize documents, but also harvest the data from various fields and post the data to the relevant accounts.

With such algorithms, plus some process for handling exceptional documents and an initial customization of the company's specific accounting rules, SMEs may gain access to near real-time accounting. The benefits of real-time accounting for SMEs are many, including better overview of VAT debt and liquidity gaps, less time spent on manual paperwork, zero time wasted on scanning receipts, and better grounds for any informed decisions.

In the future, as automation of accounting processes is disseminated and adopted, standardization work in the area of charts of accounts becomes more important and valuable. Once transactions are allocated to a machine-readable core chart of accounts (complying with standardized semantics), larger portions of common reporting obligations to authorities can take place automatically. At the same time, automatically updated accounting entries also enable applications running in near real-time that can provide an accurate view of finances to the SME. While auditors and accountants are still needed in this scenario, less preparation and manual checking of receipts and invoices will be needed.

NSG can enable the increasing automation of account posting and aggregation of reports by recommending a common semantic model for representing transactions and account structures, and based on this model maintain a mapping between national implementations of chart of accounts (see the NSG Capability Documentation)

Examples of automated account posting
Fabric.ai - https://fabricai.fi/
OrangeBooks - https://orangebooks.co/how-it-works

Concept #5

5. Automatic VAT in domestic and cross-border trading

The concept in a nutshell

VAT is a transaction-based tax, so every single incoming and outgoing invoice in principle requires the SME to decide correct VAT treatment for each single line on the invoice. This means considerable administrative burden for SMEs, especially when trading cross-border. The accounting and reporting for cross-border trades makes VAT handling more complex. As first steps, the burdens found in domestic transactions could be reduced with rule-based, automated calculation of VAT, based on the use of structured invoices both by seller and by purchaser. To reduce the burdens caused by cross-border transactions, more work and clarifications are required.

The Nordic countries each have complex VAT legislation and many Nordic SMEs are uncertain about the correct reporting of VAT when trading cross-borders. In principle, however, the structured data from eInvoices could help SMEs comply with the most common VAT schemes, both domestic and international.

The NSG PoC on VAT

The VAT PoC described a model automated treatment of VAT based on structured eInvoice data. The Proof of Concept was tested with the database and data developed for the NSG Reference Implementation. In this test environment, a full year's worth of synthetic (but realistic) eInvoices for a Danish catering company was stored. The dataset of invoices comprised both domestic transactions and transactions with companies in the Nordic countries.

The test comprised three parts. First, all the domestic transactions were tested against national VAT filing requirements. Second, cross-border transactions were tested against the VAT filing requirements. Third, certain improvements to tax category codes were added to the data set, and with these amendments, the appropriate tax rate for cross-border transactions were tested again against VAT filing requirements.

Findings of the PoC

Even though the tested company was a fictive company and the variation of the synthetic invoices was rather limited, the main result is that in domestic transactions, the current semantic model of the eInvoices could considerably lift the administrative burden of deciding the correct VAT rate. Considering SMEs, most of the domestic transactions are labelled with the domestic VAT standard rate, and the purchaser has a right to deduct the input VAT. This means much of the manual case-handling currently required in the VAT handling process could be skipped by SMEs using eInvoices. Special VAT schemes, like the marginal VAT schemes, exemptions, and restrictions on input deductions, currently require manual case-handling. Also, certain invoice requirements (exemptions and marginal schemes) cannot be technically fulfilled because of the eInvoice data structure. In order to avoid manual case-handling in these situations and to fulfil the invoice requirements, certain changes to the semantic model are required.

NSG could enable a greater degree of automated VAT handling in cross-border trading by pushing for revisions in the eInvoice data structure of the Peppol BIS 3 format, which is the recommended common format at the time of writing. The revisions must support VAT-

compliance by design, and so many actors must join forces and agreed upon the common ground to push forward requirements concerning cross-border trading situations, where SMEs and authorities today face some case-handling and reporting challenges. We do not need to have a perfect model, but we must have a roadmap to improve semantic models into the direction that serve actual business needs.

Concept #6

6. Digital Business Assistants

The concept in a nutshell

With high-quality real-time data, many tasks and business processes do not need to be handled manually on a daily basis by SMEs. Instead, digital assistants with pre-defined roles and duties can monitor real-time data streams and only notify the SME when manual intervention is needed for decisions or handling exceptional situations. The rule-based routine work related to financial data, which today may be handled by secretaries, accountants or even close relatives of the company owner, can be automated and set up to be handled by a programmable, event-sensitive and schedule-based digital assistant.

Digital business assistants can perform basic account posting the moment an invoice reaches the SME's business system. This is done via customized rules. When invoices are received which do not fit into the rules set up, the assistant notifies the SME and asks how the document should be handled.

Short examples of other basic assistant functionalities include 1) automated inventory handling, where the digital assistant takes care of replenishing the warehouse and orders new supplies when running low, and 2) a price tracker assistant that notifies the SME when competitors advertise prices below pre-defined thresholds, giving the SME the chance to respond to market changes.

NSG can enable digital business assistant applications tailormade for SMEs by

providing a specification of APIs that business systems must maintain, so that third-party IT service providers can retrieve information directly from the SMEs business system, in a structured format which is common to all SMEs no matter the business system used, and build smart solutions on top of that data (see the NSG Capability Documentation)

Concept #7

7. Real-time Analytics Dashboard

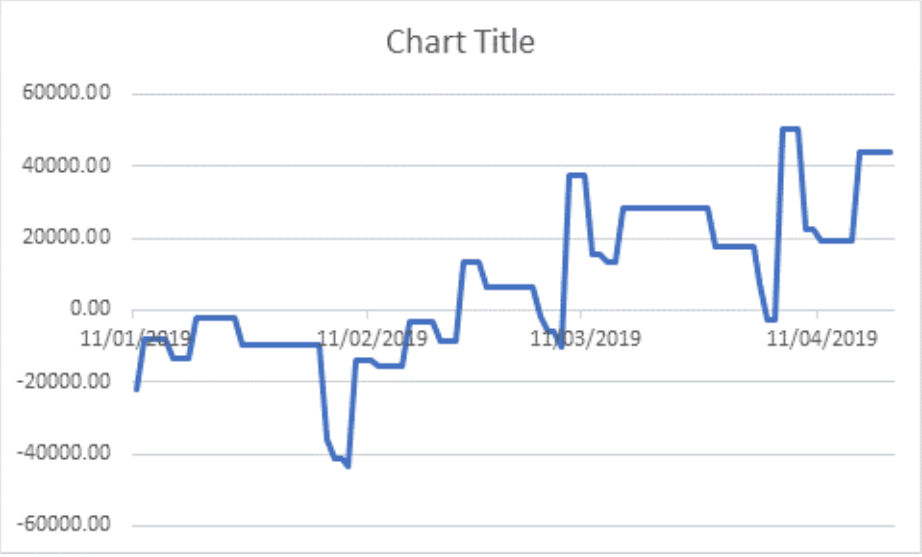
The concept in a nutshell

SMEs often lack a real-time view of their finances, because business transaction documents sent on paper or pdf are not uploaded into the bookkeeping system on time (if a system is used at all). This sometimes leads to liquidity crisis for the SME who have not prepared for the unforeseen expenses, and that might in turn lead to unpaid debt and unnecessary bankruptcies.

If all business documents were digitalized, the structured data found in the documents could be handled in real-time and allow companies to be in control of their finances at all times. Just by having the invoice data available in a standardized structured format, a simple system can be used to predict the change in cash flow for any given date in the future. Such a system, visualized in the form of a dashboard, could help SMEs understand their liquidity needs and help them avoid defaults or even bankruptcies.

Realization of the PoC

A free database tool (called BaseX) which allows you to query data from XML documents was used to load the synthetic data created in the NSG project and stored in the NSG reference implementation. The PoC was repeated for the data represented in XBRL GL (business transactions) and as UBL-formatted purchase and sales invoices directly. In the PoC, we did not include payments for salaries or calculation of VAT debt/receivables. A simple query was created which calculates the daily sum of receivables minus the payables for any given days in the future. The result was then saved as a CSV file, and then a graph was created from the data using basic functionalities in Excel (see sample below).



NSG can enable real-time overview for SMEs by pushing for adoption of eInvoices B2B.

Concept #8

8. Automated inventory and eOrder management

The concept in a nutshell

Tedious counting of items in the warehouse and unnecessary updating of databases and file exports could be made obsolete. Instead, the moment a company receives an invoice and confirms that the goods have been received, the inventory management system should automatically be updated. Likewise, when an order has been successfully placed, the inventory should also instantly update the current stock.

Example - **pitch from the *Digitalism Challenge* in Helsinki, October 2019**

In the Digitalism Challenge 2019, hosted by the Finnish NSG Team and Aalto University, the runner-up team called Team Quantum presented a cloud-based solution for reporting and stock management in organic farming. The proposed solution, dubbed "*The Corganic Ecosystem – a cloud-based solution for reporting and stock management in organic farming"*, exemplifies the potentials of automated inventory:

The solution:

- *an application that fills the needs of farmers and regulating authorities*
- *a shared database that records transactions in the organic farming sector*
- *a shared between farmers, authorities and other related organizations*
- *data is extracted and imported automatically*
- *the main source of data are eInvoices, but*
- *the application allows the user to scan barcodes or QR codes on the products, too*
- *the solution makes manual reporting obsolete by introducing real-time supervision*

Key benefits:

- *easy stock management*
  automatically computed from the transaction data in the database
  the farmer can check current stock quantity from the mobile version of the software
  the farmer can also update the stock in the mobile app

- *automated reporting*
  authorities have their own software to access the data in the database
  continuous supervision of the ecosystem
  automated real-time VAT-reporting
  daily task list: list of all the reporting duties the farmer must do manually

- *predictive analytics for better business decisions*
  based on aggregated data from all participants in the ecosystem
  current trends in the industry
  tailored recommendations

Concept #9

9. Extracting information on consumption and costs of goods for internal or external purposes

The concept in a nutshell

Instead of storing information in separate systems to meet requirements for inventory management of specific products, the SME may generate a report directly from bookkeeping data with a specific view of the product information. The bookkeeping data is accessed via an API, which may be accessed by an external party based on consent from the SME. The report can serve both internal and external purposes. Examples include keeping track of consumed fertilizers, or documenting the use of pesticides or building materials in construction. With the right data obtained directly and continuously from the source (the bookkeeping), the life of the SME is simplified, and human errors of interpretation and typing are greatly reduced.

Businesses of all sizes, including the SMEs, need to monitor consumption of various goods, and many must also document their use of certain goods for the authorities. Today, many businesses use separate systems to monitor goods and manage the warehouse on the one hand, and to create internal and external reports on the other. Given the current political interest in sustainability, circular economy, and transparent supply chains, it is likely that requirements for reports with environmental data (such as carbon emissions or waste) is likely to increase dramatically.

Examples of documentation needs

- Keep track of consumption of fertilizers and fertilizers in stock
- Keep track of consumption of medicine applied for animals
- Keep track of consumption and stock of pesticides
- Documentation of materials applied in constructions

The concept requires information in the invoice lines with product codes and/or machine readable descriptions.

Example - pitch from the *Digitalism Challenge* in Helsinki, October 2019

Team T pitched FarM, a mobile app with the slogan “We handle the smart, you handle the farm”. The core data of the app was a combination of real-time bookkeeping data from eInvoices and eReceipts (continuously updated in a business system database) plus data from a centralized real-time stock/warehouse management database.

On the financial side, the functionality of the app would allow farmers to do real-time profitability calculations and automate VAT calculations. On the production side, the app would constantly update stock levels during farming activities, and record data on animal and field profiles. The app would thus provide a link between the supplies bought and used in the production (e.g. fertilizer or fodder) and the production output (e.g. harvested crops or livestock). Thus, the FarML app would enable farmers to add information about traceability to each product’s invoice row. Traceability of goods used in farming is important and there are various governmental demands for reports to the agricultural and environmental authorities, detailing each animal group’s and field’s data.

Later releases for FarML would include support for sensors in greenhouses or milking machines linked to the app, as well as speech recognition that allows farmers to input data with voice

commands (e.g. update data straight to the system, or search information from the connected databases) while doing farm tasks.

Like concept #7, both concept #8 and concept #9 will be enabled if SMEs adopt eInvoices and eReceipts.

Concept #10

10. Benchmarking and Real-time Insights

The concept in a nutshell

It is time-consuming to get an adequate overview of the economic situation, as most of the calculations are done using excel and manually collected data. Without updated data, SMEs cannot make informed decisions, and service providers of SMEs (such as industry benchmark services or accountants) cannot assess the SME's current situation correctly and help accordingly. With real-time data, however, SMEs may benchmark their current financial situation and their products and services against similar companies.

With updated understanding of the current financial situation, the SME can plan ahead and make informed decisions. One aspect of making informed decisions is understanding the market, and being able to assess and compare with other relevant actors in the market. Another aspect of informed decision-making is having the right help at the right time. Even the best advisors and accountants may not be able to provide accurate financial advice, if they are working with outdated data.

Which changes must be implemented to reach this vision:

- SMEs must share data with their trusted service providers
- Service providers gain access to standardized transaction data from business systems
- Standard data representation for business transaction/accounting data is used
- Service providers (i.e. Insurance companies) will have to digitise and automate new areas of their core business

NSG can enable real-time benchmarking applications for SMEs by

providing a specification of APIs that business systems must maintain, so that third-party IT service providers can retrieve information directly from the SMEs business system, in a structured format which is common to all SMEs no matter the business system used, and build smart solutions on top of that data (see the NSG Capability Documentation)

Concept # 11

11. Portability by Design

The concept in a nutshell

With standard interfaces that consist of standard data representation for business transaction data together with standard APIs, we can achieve interoperability between business systems by design. Businesses could choose the best fitting systems based on their own needs and use them seamlessly together. Businesses will also be able to switch from one business system to another more easily once data can be easily exported and imported in a standard format. For the system developers, there would be no maintenance or development of custom interfaces when more resources are free to be spent on productive functionalities.

Today, a lack of standard interfaces between business systems has led to a heap of customized interfaces to be maintained for system vendors that are paid by the business users in the end. Building and maintaining customized interfaces is also an extra cost for the businesses to be paid that often presents an obstacle big enough to hinder the usage of business systems that could greatly benefit the business.

Realization of the PoC

A reference implementation of the standard APIs together with synthetic business transaction data was produced in the NSG project. The standard APIs support two standards to present business transaction data: XBRL GL and SAF-T. The reference implementation of NSG natively supports XBRL GL as a data format simulating a business system, whereas the (real) Norwegian accounting system provider AccountFlow natively supports SAF-T.

In the PoC, the standard APIs were used to simulate the integration and changing of accounting systems by

- requesting the business transaction data from the reference implementation in SAF-T and loading it to the AccountFlow system (simulating the process of changing the accounting system)
- requesting the business transaction data (dummy data) from the AccountFlow system in XBRL GL and loading it to the reference implementation

Concept #12

12. Direct extraction of business data for statistical surveys

The concept in a nutshell

Instead of filling out burdensome surveys and questionnaires from national statistical agencies, a SME may use a microservice that generates a report directly from bookkeeping data, ready to be retrieved by the statistical agency. The statistical agency thus simplifies the life of sampled SMEs and gets the right data directly from the source, removing human errors of interpretation and typing

SMEs of various sectors must report to statistical agencies for a range of (random-sample) surveys. Much of the data requested by such authorities is created via the business processes of buying and selling, and can thus be calculated and reported with .

As a minimal test case, the Swedish Statistical Agency SCB has tested out how the reporting of net sales can be retrieved directly from a SME's business system and used by the Swedish Statistical agency for use in an actual business survey. This PoC used the NSG reference implementation to simulate a real-time reporting of business statistics. This means that the reporting of net sales could be continuously updated and retrieved, resulting in a perfect data series for statistical use.

The perspectives of this PoC goes further: The method used could be used for testing out other simulations of real-time reporting apart from net sales. Adjacent use cases for government authorities include EU-Intrastat reporting, early-warning systems, fraud detection, and more.

The method, briefly described:
The Swedish Statistic "Net revenue"-taxonomy has been mapped to the reference implementation's account mapping document. Based on the mapping information, a machine readable version of this mapping was produced, and a small service to generate the XBRL-instance documents containing net sales information based on the transaction level data was developed.

NSG can lift the burden of statistical surveys on SMEs by

providing a specification of APIs that business systems must maintain, so that statistical agencies can retrieve information directly from the SMEs business system, in a structured format which is common to all SMEs no matter the business system used (see the NSG Capability Documentation)

Concept #13

13. A common language for auditing

The concept in a nutshell

Tax administrations and different audit service companies perform audits with proprietary data formats, acquiring data from the audited companies in costly and laboursome processes. By using a common format and a common reporting language for extracting the audit data, both tax auditors and private auditors can save time, increase data quality, enable automation of processes, and avoid countless custom integrations.

Business system integration is difficult today and costly, and there is a strong lock-in effect as companies can't change system without significant cost. Most of the time spent for auditing is spent acquiring and molding the data to fit the process needs.

Realization of PoC in Finland: During the winter 2018-2019, The Finnish Tax administration, KPMG, and Fennoa (accounting software company) explored and proved the usability of XBRL-GL as a data format to be used as basis for auditing and tax auditing. An actual company (with revenue around 7 million euros), using the Fennoa accounting system, agreed to let their accounting entries be extracted in XBRL-GL format and forwarded this to Tax administration and KPMG for auditing.(see the NSG Capability Documentation)

Results

- XBRL GL may be used in audit data collection
- Using XBRL GL was considered to be relatively easy
- User should get familiar with the XBRL GL data content descriptions
- Cost of usage are not significantly higher in comparison to creating other interfaces and they are non-recurring
- Standard chart of accounts would improve the data usability and understandability even further

Benefits of a common auditing language

- Enables automation in auditing processes for several actors at once
- Enables machine learning and the usage of AI in both the data molding and auditing processes
- Standard data structures decrease costs, and increase the data quality and interoperability

Other experiences - Norwegian and Swedish standard auditing formats:
In 2020, the OECD-developed format SAF-T is implemented in Norwegian business systems and made mandatory for larger companies. This legislation requires the business systems to provide transfer of transaction information into a standard audit file. In Sweden, a format called SIE has been developed and maintained for similar purposes.

Nordic Smart Government – Deliverable 8: User Principles

Purpose: Guidelines, not requirements

NSG User Principles are high level principles reflecting the user needs, i.e. the needs of the SMEs, in an ideal way. The User Needs has been identified through User Journey work, and validated in the dialogue with other stakeholders, such as Business System Vendors. The purpose is to ensure priority is given to the SMEs needs, in order to increase the likelihood of support and adoption of the NSG Vision. The principles serve as *guidelines* for the work in NSG. The Principles *must not* be read a set of requirements meant to be implemented 100 % by NSG.

NSG User Principles

#	ID	User Principle
1	[TROOP]	(The Real Once Only Principle) I never manually enter information that is already maintained digitally by someone else, like the producers, vendors or the government
2	[NORDIC-ABILITY]	When I buy and sell goods and services I don't need to make any special arrangements when my trade-partners are in another Nordic country
3	[AUTOMATABILITY]	I rarely perform manual steps related to inventory, book-keeping, bank-transactions, VAT- or other government reporting, unless I choose to verify or alter the proposals from my systems
4	[PORTABILITY]	If someone offers me a better deal or improved service, migrating to new service providers for services like bookkeeping, inventory, reporting etc is just as easy as changing operator for my cell phone
5	[ALL-GREEN]	Someone can assure me as well as my existing and potential customers, business-partners and investors, that everything is OK with regards to my duties towards the Government, mother Earth and my employees. And I need to be able to verify that the same goes for all my business partners.
6	[MYDATA]	I am in control of all the transaction and financial data of my business, and empowered to re-use and share the data when I have the need, and I know who is accessing what information, on what legal basis (my consent or government legislation), when and for what purpose. And I can trust my service providers' information security so that no-one get unauthorised access to the data either while in my systems or during transactions.
7	[CHERRY-PICKING]	I can pick and choose among the best of breed, and use as many business systems by different providers simultaneously as I like, due to the interoperability of the systems, without having to pay for customized integrations
8	[1GOV]	When I pay for upgrades of my business systems, I expect improved functionality, not just a set of updates required to stay compliant with new and complex requirements from the Government
9	[OVERVIEW]	At any time I have an updated view of the financial situation of the company, including reliable forecasts for the coming weeks, so that I know whether I will be able to pay the salaries or the VAT next week

NSG User Principles – Detailed

#	1
ID	**[TROOP]**
Principle	(The Real Once Only Principle) I never manually enter information that is already maintained digitally by someone else, like the producers, vendors or the government
Motivation	See motivation in documentation of Theme 2 - Manually Re-Entering Data from the Iceland-session on the User Journeys:
Consequence	• Data that is transferred in transaction documents, such as invoices and receipts must be digital and in accordance with standard(s) that enable the re-use of data • For data that is not relevant or suitable for transferring via transaction documents, it must be possible to access the data, typically by reference, for instance in a product catalogue through the use of product ID Example: When receiving new products for her store, from the electronic business transaction documents the owner gets access to digital data such as product ID, name, quantity, price, VAT-codes, total price, total VAT. These are sufficient for updating inventory, paying the invoice, paying VAT. In addition the system can access more detailed information about the vendor, the producer and the product by reference. For instance what allergens are part of the product, certifications, picture, etc. Automated re-use of data requires that the definitions of the data, the semantics, are documented and well understood, as there will be no person involved to "translate" between different definitions. See also capability Capabilities and business processes of the NSG ecosystem, area 5: Common interpretation.

#	2
ID	**[NORDIC-ABILITY]**
Principle	When I buy and sell goods and services I don't need to make any special arrangements when my trade-partners are in another Nordic country
Motivation	The ambition of making the Nordic Region the best integrated region in the world, and the NSG Vision as a means to achieve this ambition. The level of digitisation and automation within the different Nordic Countries should not lead to cross-border business becoming more difficult.
Consequence	Co-ordination across the Nordic countries on all levels of interoperability; legal, organisational, semantic and technical

#	3
ID	**[AUTOMATABILITY]**
Principle	I rarely perform manual steps related to inventory, book-keeping, bank-transactions, VAT- or other government reporting, unless I choose to verify or alter the proposals from my systems
Motivation	Reduce the amount of time wasted in society today when performing manual tasks where there is a potential for automatisation
Consequence	Requires that all transaction data are available digitally, well structured, clearly defined and with high quality, as a result of TROOP. Furthermore, the possible value of such data must not be limited that the Government ensures the relevant regulation is co-ordinated and clear, and that the systems incorporates the regulation and learn from earlier transactions

#	4
ID	**[PORTABILITY]**
Principle	If someone offers me a better deal or improved service, migrating to new service providers for services like bookkeeping, inventory, reporting etc is just as easy as changing operator for my cell phone
Motivation	Ensure that SMEs can choose new service providers, with a minimum of effort, so that they have access to the best services at any time. This will avoid possible “lock in”-effects, and is therefore also of high importance to ensure a well-functioning market for business systems in the Nordic region. Another motivation is when a business would like share their data with for instance research-projects. This does not exclude the possibility for business system vendors to offer special deals for long-term contracts, as seen for instance for cell phone pay plans today. But the information about the “total cost”, and terms for ending the contract before the date should be made clear in a similar way.
Consequence	Identify or possible develop and maintain a shared information model of the different services, for instance bookkeeping, as a reference model for the exchange between two different systems, and make clear guidelines and possibly legal regulations to ensure the SME has the power to benefit from the technical portability. The latter is also related to the MyData-principle.

#	5
ID	**[ALL-GREEN]**
Principle	Someone can assure me as well as my existing and potential customers, business-partners and investors, that everything is OK with regards to my duties towards the Government, mother Earth and my employees. And I need to be able to verify that the same goes for all my business partners.
Motivation	SMEs are generally worried about what they have forgot to do or which deadlines they might have missed. Some prefer to use an accounting service instead of doing the bookkeeping themselves, just to sleep better at night. SMEs are also interested in avoiding trade-partners that are not compliant with regulation or the customers expectations, and similarly they are interested in proving their good behaviour to both trade-partners and customers. More specifically, the need to show that a business is GREEN is becoming more and more important, for investors, customers and trade partners alike, as seen in the radical growth of interest in Environmental, Social and Governance-reporting (ESG-reporting).
Consequence	In general, all government effort to help the SMEs move from paper and pdf in the business transaction documents, and extending the documentation with high quality product information, is a prerequisite to enable high quality ESG-reporting with as low cost as possible, see also the TROOP-principle. Furthermore government must make available status information such as due dates, for individual or categories of companies, and whether formal requirements are met, and try to warn the SME in advance, instead of issuing penalties after. For information that the government can not share openly, companies must be able to share the information if they choose to, in a way that ensures the integrity, or signal that such information exists, see also the MyData-principle.

#	6
ID	**[MYDATA]**
Principle	I am in control of all the transaction and financial data of my business, and empowered to re-use and share the data with whoever I want, when I have the need, and I know who is accessing what information, on what legal basis (my consent, fulfilment of contract, government legislation), when and for what purpose. And I can trust my service providers' information security so that no-one get unauthorised access to the data either while in my systems or during transactions.
Motivation	This principle is related to the "portability"-principle and the "cherry-picking"-principle, and is the general principle of being able to share data with the business-partners, service providers, consultants etc, and at the same time staying on top of the totality of the sharing of data -- similar to services offered by for instance Google to see which third party apps and services have access to what data, when you approved it etc.
Consequence	Requirements for interfaces (APIs) that lets the SMEs share their data in a secure manner with other parties, including a service that gives the SME an overview of who has accessed what data, when and for what purpose, and possibly withdraw consents. The government must document their legal basis for accessing information in a structured way that can be combined with log-information in such a service.

#	7
ID	**[CHERRY-PICKING]**
Principle	I can pick and choose among the best of breed, and use as many business systems by different providers simultaneously as I like, due to the interoperability of the systems, without having to pay for customized integrations
Motivation	SMEs would like to be able to choose the system or service that serves their need in the best possible way, and not be limited by the systems or services they are already using. The choice of bank should not limit the choice of accounting system, or vice-versa. As with portability, this principle is also highly related to enabling a well-working market for business systems in the Nordic region.
Consequence	"Cherry Picking" is meant as a less technical term for "interoperability". The principle is related to the principles "portability" and "MyData" and requires that the interfaces for integrating services and sharing data should be available for all parties on similar terms, i.e. avoid exclusivity clauses.

#	8
ID	**[1GOV]**
Principle	When I pay for upgrades of my business systems, I expect improved functionality, not just a set of updates required to stay compliant with new and complex requirements from the Government
Motivation	Despite the fact that the Government has been saying for 20 years or more that it is making life easier for businesses, SMEs experience the opposite, and that in order to stay compliant with the steady stream of complex regulation, they are forced to pay for upgrades or start using new modules in their business systems
Consequence	The Government needs to do the hard work of keeping its requirements well-coordinated, limited and simple. Someone in the government has to have the responsibility for keeping track of the total amount of requirements, to what extent the requirements are open for automated fulfillment based on existing data (see TROOP and AUTOMATABILITY) or demands manual operations, as well as keeping and open record of the requirements and the estimated consequences for the SMEs.

#	9
ID	**[OVERVIEW]**
Principle	At any time I have an updated view of the financial situation of the company, including reliable forecasts for the coming weeks, so that I know whether I will be able to pay the salaries or the VAT next week
Motivation	Historically bookkeeping was something that was done out of the motivation of keeping an overview of costs, income, assets etc. Knowing the current situation of the business is one of the key concerns of any business. As a result of the bookkeeping data being the basis of taxation, the need for an updated overview has been replaced with a need for a bulletproof documentation of the transactions, leading to delays in the bookkeeping, while waiting for someone to find the receipt.
Consequence	The principle is related to the TROOP-principle, as it requires the data about transactions to be transferred in “real time”, electronically and in a structured way, so that the business systems are always up to date with the latest transactions.

NORDIC SMART GOVERNMENT

Implementation Plan 2021-2024



Content

- Foreword: Increasing the competitiveness of Nordic SMEs
- The Nordic Added Value
- Executive summary

Part 1: Introduction

1.1 Programme Data
1.2 Public Sector Programme Participants
1.3 Vision and Mission
1.4 Current situation
1.5 Challenges experienced by Nordic SMEs
1.6 Mission: Automatic flow of real time Business data
1.7 The NSG* Ecosystem
1.8 NSG 4.0: A Nordic Change Programme
1.9 Scope
1.10 Technology principles

Part 2. Overview Capabilities and Milestones

2.1 Capabilities and Milestones
2.2 Overview of Roadmap Capabilities
2.3 Roadmap Milestones 2021-27
2.4 High level progress plan with Critical Milestones
2.5 NSG 4.0 Milestones 2021-22
2.6 NSG 4.0 milestones 2023-24

Part 3. The six solutions areas - organised in three work streams

3.1 Three work streams for the six solution areas
3.2 -3.7: Use Cases and deliverables with Key performance indicators; Internal dependencies and Core elements for achieving Nordic alignment

Part 4. Programme Governance

4.1 Roles and competences
4.2 Organisation
4.3 National teams, responsibilities and Nordic alignment
4.4 Working methods
4.5 Main activities 2021
4.6 Collaboration with private actors
4.7 Risk Assessment and Mitigation
4.8 High-level budget and funding principles

Part 5. Appendix

5.1 Appendix

* NSG - Nordic Smart Government

Foreword: Increasing the competitiveness of the Nordic SMEs

There are about 2 million SMEs in the Nordic region. They comprise of more than 90 pct. of our businesses, and thus form cornerstones in our societies and foundation for our future welfare. The Nordic societies and businesses have high levels of digital innovation, digital competences and application of digital services,* which give us a competitive advantage in the data economy. However, as the digital services are employing different incompatible data formats, even digital SMEs still struggle with administrative processes, handling paper-based invoices or electronic invoices with different standards, both when they operate within a country as well as across the Nordic region. There is a huge potential in connecting digital systems and services, both on national and Nordic level, so that information can be used more efficiently without typing data manually, from one system into another.

The true gem is the value that lies in the utilisation of structured and standardised business data. This can be realised by using compatible formats of business documents when buying and selling goods and services – which is achieved when the businesses use compatible electronic invoices, receipts, orders, catalogues etc. By making digital systems and services interoperable, sharing and using data efficiently in a Nordic governmental and business context, the Nordic SMEs will be supported as product management, orders, invoicing, bookkeeping, reporting and inventory management can be done in near real-time in connected systems.

Cross-border collaboration has become increasingly important as our trade and markets have become more international. The Nordic market is substantial for all the Nordic countries, and inter-Nordic trade accounts for about 20 pct. of the export.

Therefore, it is important that SMEs can easily handle electronic invoices and receipts, not only within national borders, but also across the Nordic region.

Efficient sharing of real-time business data can be applied in new tools and services for the Nordic SMEs. This will provide the SMEs with better services such as real-time overview of cash flow and liquidity and quicker credit assessments. The potential value for SMEs in new services has been estimated to be 14 billion EUR annually by 2027 (EY 2017). This includes access to smaller loans and thus a higher amount of liquidity in the market.

An important part of a well-functioning and viable market is, that the customer can freely change service provider and choose new services. This is dependent on the interoperability of systems and services, and the possibility to bring the users data from one system and into a new system (portability). This will promote the uptake of data services among the SMEs, their digital transformation and use of data is expected to strengthen our businesses, and their ability to transform, adapt and meet new challenges. Furthermore, it will support the development of government services and system, thus enhancing the reporting and use of data.

Interoperability and portability will also allow service- and systems providers to enhance their business and make it easier for new entrants on the market and support specialization. This is positive for the innovation, growth and international competitiveness of the Nordic fintech and business service industry. Hence creating mutual benefit for both SMEs as well as an advanced market also for service and systems providers specialization.

NORDIC SMART GOVERNMENT

*DESI 2020: The European Commission Digital Economy and Society Index

The Nordic added value: Strong collaboration is the key to further integration

The collaboration on Nordic Smart Government was started by the General Directors of the Nordic Business Registries in 2016. With the support from Nordic Innovation a strong collaboration in NSG has been established. The collaboration now includes all Nordic Tax Authorities and an increasing number of other authorities. We have pooled our competencies and built on our different national strengths.

In dialogue with key stakeholders, we have achieved a common vision, aims and solutions to our common challenges. In 2020 we proposed a common Roadmap for realising a Nordic ecosystem for sharing of business data. The Roadmap was politically agreed upon by the Nordic Ministers for Trade and Industry on 1 September 2020. With this agreement we have a strategic plan for alignment and synchronization of our efforts. The collaboration is unique, both in terms of the close collaboration, the high strategic importance it has among the partners, the extent of the work and the benefits, not only for SMEs, but for all stakeholders. General stakeholder feedback is that NSG is valuable and important, and they wish to take part in the realisation.

NSG is now entering a new phase, where Nordic business and tax authorities together have founded a strong governmental commitment and partnership to realise the vision of becoming a digitally integrated region. The implementation of the Roadmap requires a closer collaboration with private actors. A successful implementation requires changes in systems and services – and not least in SMEs administrative processes and practices.

We are thus dependent on strategic collaboration on a high level with key actors representing the SMEs and other private and public actors which are significant players in this field.

It is therefore necessary to develop and professionalise the organisation and communication, so that we are able to lead the transformation. On a more tangible level, financial support for Nordic collaboration is necessary to establish the new Nordic organisation with professional tools to support communication, documentation, finance co-creation of deliverables, travels and meetings.

Ultimately, it is our cooperative spirit that will help us realise the Nordic Prime Ministers' vision of becoming the most integrated region in the world and becoming a frontrunner for the European community on fair and efficient share and use of business data. By working together in our region, we can test international standards and European building blocks for interoperability and efficient cross border data flows, and we can agree on principles for interoperability, standardisation and joint formats. This requires strong commitment and close collaboration between public authorities, SMEs and key stakeholders from the Nordic region.

With Nordic funding we can keep focus on interoperability standards and cross-border perspective in the design and promotion of digital services and prevent that new digital barriers arise when SMEs are doing business across borders.

The Nordic added value, is in effect working together on the Nordic level, leveraging on the support by the Nordic Council of Ministers and Nordic Innovation. Bottomline, this is important for our economies.

Executive Summary (1/2)

Political decision to launch the NSG Roadmap (2021-27)

On 1 September 2020 the Nordic Ministers for Trade and Industry approved the *Roadmap for realisation of the Nordic Smart Government ecosystem* (2021-27). The Nordic Ministers decided to continue the investments in Nordic Smart Government and allocated 27 MDKK for implementation of the Roadmap in 2021-24 (norden.org). The NSG Roadmap is the conclusions of NSG 1.0, 2.0 and 3.0, which defines the requirements which enable the NSG ecosystem.

This application covers the first implementation period, from 1st March 2021 to 30th June 2024, which is the first implementation phase of the Roadmap.

The vision of NSG is to create value for the SMEs by making real-time business data accessible and usable for innovation and growth across the region, in an automatic, consent-based and secure manner. The NSG Roadmap defines the milestones which are identified as required to realise the vision:

- By 2021, a public-private advisory board has been established to support the implementation of the NSG roadmap
- By 2022, 70% of the Nordic SMEs use a digital business system
- By 2023, SMEs can freely choose to move business data between business systems
- By 2023, sales and purchases can be handled digitally by default in compatible formats across the Nordic region systems
- By 2023, 80% of the Nordic business systems have implemented common tools (APIs), so service providers can access an SME's data with appropriate consent
- By 2024, 80% of the invoices sent in the Nordics are digital
- By 2025, the Nordic SMEs have saved 500 million EUR by using smart services and real-time data
- By 2027, the Nordic countries are the most integrated region in the world

The six solution areas in the Roadmap:

The six solution areas are defined to realise the value for the SMEs embedded in the vision. The solution areas have the SMEs needs and working processes in focus. The six solution areas are:

1. *Increase the Adoption of Digital Business Documents*
2. *Digital Product Information included in Business Documents*
3. *Open Accounting – Sharing Bookkeeping Data*
4. *Simplified Reporting*
5. *SMEs are Born Digital*
6. *Access to Data Services to verify Reliability and Data Quality*

The application describes for each solution area:

- Scenario
- Deliverables;
- Key Performance Indicators
- Internal dependencies and
- Core elements for achieving Nordic interoperability

These are fundamental requirements to reach the milestones and to realise the benefits of the six solution areas. In addition, supplementary milestones have been added for the programme period. The application describes the Nordic organisation needed, as well as working methods and collaboration models with private sector.

Executive Summary (2/2)

NSG 4.0 is a Change Programme

NSG 4.0 has in focus the changes required to share and use business data, which include regulatory, behavioral, structural and technical changes. As such, this is not an IT implementation project, but a complex programme involving many actors, in public and private sector and not the least the Nordic SMEs.

NSG 2.0 and 3.0 have proved the concepts of automatic real time flow of business data between SMEs, public authorities and private service providers; the value for the SMEs; and defined the requirements needed for enabling the data flows. This is all collected in the Roadmap and its appendix, and thus provides the basis for implementation in NSG 4.0.

The work ahead is complex and is dependent on close collaboration with the stakeholders in the ecosystem. At the core of this work are campaigns to increase the SMEs use of digital business documents, Nordic pilots with service providers to detail requirements for exchange of data and first implementations to kick-off the market. The pilots are based on cross-Nordic user journeys and involves SMEs in tests and evaluations. The outcome is documentation and recommendations for development of new services in the market, in particular for the SMEs. This will be followed up by mobilisation of the SMEs to employ the new opportunities.

Much of this mobilisation must be done on the national level, but cross Nordic interoperability also requires a Nordic organisation which is transparent and can work smoothly and professionally across countries, languages and institutions.

Nordic integration through coordinated national implementation

Reaching the roadmap milestones and the additional milestones in this application is dependent on the national engagement and the successful implementation on national level. The role of the Nordic collaboration and organisation is to ensure interoperability and synchronisation in development across national implementations of the Roadmap. This involves establishment of Nordic working groups collaborating in the common activities to ensure necessary actions and services to enable Nordic interoperability. Success is dependent on national implementation. Therefore, each country will, or have established, a national team responsible for implementation of a national action plan aligned with the NSG Roadmap milestones.

Budget

- Total budget: 101,7 MNOK
- Funding applied for: 38,2 MNOK
- National co-funding: 63,5 MNOK

This application is made on the basis of:

- The NSG Roadmap
- Collaboration in work groups, digital programme meetings and reviews in Q3-Q4 2020
- Recommendations from the Expert Panel (2020)
- Evaluation of NSG 3.0 (EY 2020)

Part 1: Introduction

- Programme Data and Public Sector Programme Participants
- Vision and Mission
- Current situation
- Challenges experienced by Nordic SMEs
- Mission: Automatic flow of real time Business data
- NSG Ecosystem
- NSG 4.0: A Nordic Change Programme
- Scope: Six solution areas
- Technological principles

1.1 Programme Data

Title: Nordic Smart Government 4.0

Start / end: 1 March 2021 – 30 June 2024 (40 months)

Funding applied for: 38,2 MNOK / Co-funding: 46,5 MNOK

Programme partners:

The Danish Business Authority

The Finnish Tax Administration

The Danish Tax Agency

The Norwegian Tax Administration

The Swedish Tax Agency

Iceland Revenue and Customs

The Brønnøysund Register Centre, Norway

The Finnish Patent and Registration Office

The Swedish Companies Registration Office

In collaboration with other government authorities and private sector.

Steering Group and Programme Owners:

Katrine Winding, General Director, The Danish Business Authority, Chair

Markku Heikura, General Director, The Finnish Tax Administration

Thomas Hjortenberg, Deputy Director General, The Danish Tax Agency

Nina Schanke Funnemark, General Director, The Norwegian Tax Administration

Katrin Westling Palm, General Director, The Swedish Tax Agency

Snorri Olsen, General Director, Iceland Revenue and Customs

Lars Peder Brekk, General Director, The Brønnøysund Register Centre, Norway

Antti Riivari, General Director, The Finnish Patent and Registration Office

Annika Stenberg, General Director, The Swedish Companies Registration Office

Change Advisory Board: Acts on behalf of the Steering group concerning request for change. Chaired by The Danish Business Authority.

Programme Management: Programme Manager from The Danish Business Authority, in collaboration with the Programme Management Organisation (PMO), consisting of the five national team leads.

National team leaders are responsible for the national development. Formal national agreements are subject to national need.

1.2 Public sector programme participants in the implementation of the NSG Roadmap



DENMARK

- The Danish Business Authority
- Statistics Denmark
- The Danish Tax Agency



SWEDEN

- The Swedish Companies Registration Office
- The Swedish Tax Agency
- Statistics Sweden



NORWAY

- The Brønnøysund Register Centre
- The Norwegian Tax Administration
- Statistics Norway
- The Norwegian Agency for Public and Financial Mgm
- The Norwegian Digitalisation Agency



FINLAND

- Finnish Patent and Registration Office
- Finnish Tax Administration
- State Treasury
- Statistics Finland



ICELAND

- Iceland Revenue and Customs
- Ministry of Finance and Economic Affairs
- Ministry of Industry and Innovation
- Statistics Iceland

Private participants will be presented as part of the programme initiation. Other Government authorities are welcome.

1.3 Vision and mission

The Nordic Prime Ministers have a common vision of making the Nordic region the most sustainable and integrated region in the world by 2030.*

NSG supports this vision by setting the framework for aligning the digital infrastructure between businesses, service partners and authorities, in order to make life easier for businesses in the Nordics. On 1 September 2020, the Nordic Ministers of Business and Industry approved and launched the *Roadmap for realisation of the Nordic Smart Government ecosystem* (2021-27)** and decided to continue the investments in Nordic Smart Government (norden.org).

The vision of NSG is to create value for the SMEs by making real-time business data accessible and usable for innovation and growth across the region, in an automatic, consent-based and secure manner.

The core idea is that structured and standardised business data can be shared automatically and thus replace burdensome manual handling of data exchange. This involves alignment of digital systems and services, as opposed to digital silos, and therefore collaboration across sectors using the business data.

The mission is thus not to implement a centralised IT-system, but to enable and facilitate a transformation of the Nordic ecosystem and business processes, both nationally and across the Nordic borders.

* The common vision was adopted by the Nordic Prime Ministers on August 20, 2019.

** Roadmap for realisation of the Nordic Smart Government ecosystem

Keywords and significant markers:

- Collaboration across borders and sectors based on common interests
- Focus on SME business scenarios and benefits
- Reuse of concepts, solutions etc. and loosely coupled building blocks
- Government driven standardisation
- Market driven implementation
- Technology neutral interoperability
- Future proof results
- Based on values shared by Nordic countries: openness; trust and collaboration
- Agility, peer reviews and continuous adjustments and alignment

Preconditions for success:

- Active stakeholder involvement
- National commitment and participation
- Public private partnership
- National and Nordic pilots and cross border testing

1.4 Current situation: Buying and selling is a chain of manual processes in more or less digital silos - and they are rarely compatible

ORDER



Buyer places an order by e-mail, phone or online

INVOICE



Seller sends an invoice – paper, PDF, sometimes electronic invoice

RECEIPT



Normally only in paper format – e.g. when you buy something directly in a shop

BOOKKEEPING



Typically manual bookkeeping, which is prone to errors and lack of up-to-date overview

3RD PARTIES



Other relevant business information – e.g. credit information, or bank statements – is typically compiled and sent manually

REPORTING



Reporting to authorities – e.g. VAT filing– is to a large extent done manually

1.5 Challenges experienced by the Nordic SMEs - as identified in NSG 3.0

In 2019, the NSG programme conducted workshops and in-depth interviews with 50 SMEs across the Nordic countries. The aim was to identify barriers and obstacles experienced by SMEs in their day-to-day processes. The findings and possible solutions have been verified in dialogues with banks, business systems vendors and other third-party service providers, whose customers are SMEs.

Key findings

- SMEs work with paper-based processes – even if they use digital tools
- SMEs cannot transfer their accounting data and choose new services
- SMEs lack information on potential business partners' trustworthiness
- SMEs experience time-consuming credit assessments
- SMEs lack an overview and easy control of cash flow and liquidity
- SMEs are uncertain about formal requirements when going Nordic

These findings are all connected to the same basic problems: Transactions that are handled via paper documents, systems that cannot exchange data, and a tendency in the public sector of developing stand-alone solutions that do not fully accommodate the basic business administration processes.

Based on workshops and interviews, NSG has identified user needs and formulated user principles to guide the future work. The purpose is to ensure that the SMEs' needs are prioritised, increasing the likelihood of support for the NSG vision. The NSG User Principles are found here.

The Pains of Nordic SMEs

SMEs often do administrative work in evenings and weekends. This also involves hours spent on manually typing data into digital self-service systems when reporting to the government. Much typing is necessitated by poor interoperability between systems. The manual entries also result in errors that would be avoided if administrative tasks, such as bookkeeping and reporting, to a higher degree were automated. The manual work of typing hinders the SMEs in getting real-time insights into their current financial situation. They often worry about whether they have money to pay their employees, about their liquidity, and how they are doing compared to competitors.

Testimonials from in-depth interviews:

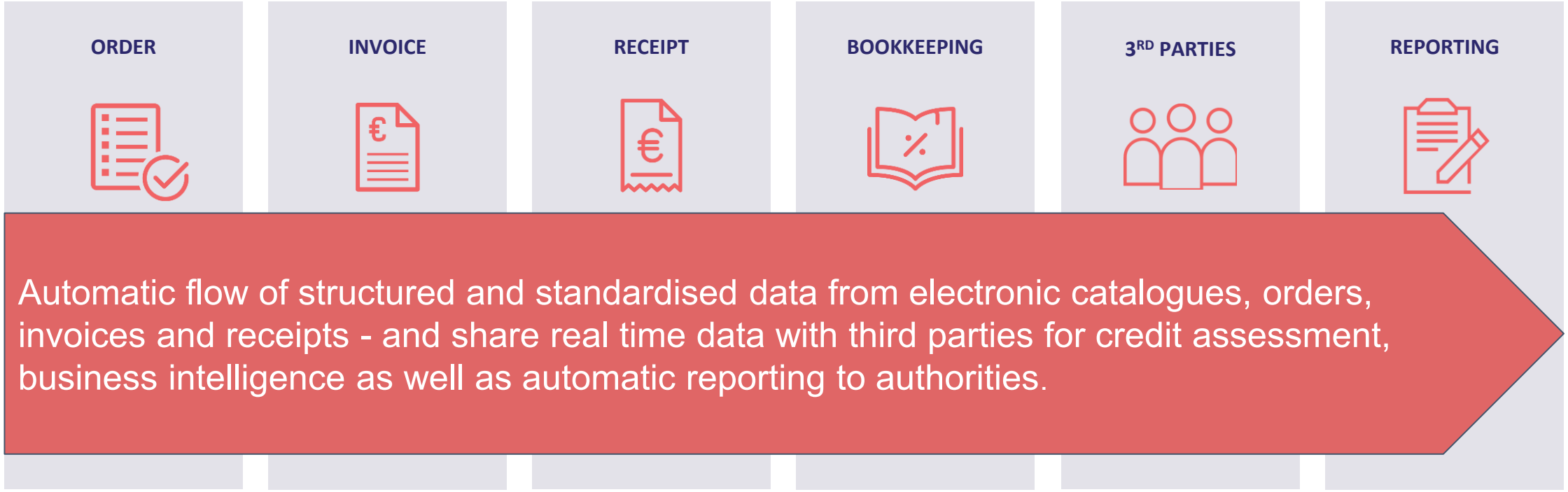
"I've heard since 1983 that everything is going to be simpler, but so far it has only become more complicated" (SME, NO)

"I wish I had an instant overview of my business financial statement" (SME, DK)

"Systems that could help are too expensive and it takes too much time to switch from the old systems to new ones" (SME, FI)

"I need a strategic overview of liquidity, VAT and the accounts when I have a need for major investments" (SME, DK)

1.6 Mission: Automatic flow of real time business data by aligning the the digital systems in an ecosystem, in order to make business data accessible and usable across the Nordics



1.7 The NSG Ecosystem: Distributed systems and decentralised data

The NSG ecosystem is not a platform, but an open system and service environment covering actors in both public and private sector.

The NSG ecosystem will enable more automatic sharing and utilisation of structured data in a secure way. The SMEs should be in control of their data and have the legal and technical means to share their data in an easy and secure manner, to the benefit of the SMEs.

The data is not contained in closed systems, or in one central database, but is distributed in various systems and services. Efficient and secure exchange of data presupposes that the systems and services have implemented the relevant standards and capabilities.

Systems, services and actors will be dynamic and vary over time and are likely to be part of other ecosystems as well.

The ambition of Nordic integration means that data and services should be accessible across borders.

In order to identify specific needs to enable interoperability and realise solution areas, pilots will be developed together with private and public actors. This will assure identification of dependencies, handling of prerequisites and ensure coherence across services.

Framework, building blocks and standards deriving from initiatives on EU, Baltic and Nordic level will be applied in the ecosystem.

The NSG ecosystem requires a governance framework for coordination and collaboration between stakeholders and interaction between systems and services to ensure necessary alignment.

This includes*:

- Description of actors, services and systems
- Stakeholder management
- Communication, material and processes for mutual interaction
- Cooperation model
- Rules, Legal framework and standards
- Agreements
- Fair data principles
- Architectural principles and architecture
- Capability requirements
- Audit schemes and certification, when applicable
- Development strategies and plans
- Value creation model and benefits realisation

*Necessary elements, but not necessarily sufficient

1.8 NSG 4.0: A Nordic Change Programme to realise the NSG-Ecosystem

The NSG Roadmap is a strategic plan for interoperability which sets milestones, defines capabilities and proposes a set of actions for aligning the digital infrastructure in the Nordic region to realise benefit for the SMEs and the stakeholders.

The NSG Roadmap has in focus the alignment of national initiatives and on benefitting from reuse and enforcement of ongoing pan-European standardisation activities as well as digital infrastructure already implemented on a national level in the Nordic countries. It sets a direction for Nordic digitalisation and collaboration over the coming years. It involves development in co-creation with the private sector, as well as with relevant standardisation and governance bodies. It aims at building, together with stakeholders, a future-proof and flexible ecosystem for both national and cross border business interaction, collaboration and service exchange.

NSG 4.0 is thus a strategic change programme, rather than an IT implementation project. Focus is on the changes required to share and use business data, which include regulatory, behavioral, structural and technical changes.

Participants from all Nordic countries and more than 10 authorities have worked together over the last months of 2020 to describe and plan the realisation of the Roadmap, as described in this application.

Programme characteristics:

- Originated from the Nordic Smart Government collaboration (2016) and based on the *Roadmap for realisation of the Nordic smart Government ecosystem*, with its appendix and other deliverables made in the collaboration.
- The Roadmap is focusing on the requirements needed to enable the Nordic SMEs to share and use their data in a secure, efficient and consent-based manner.
- The underlying thesis is that Nordic collaboration creates better conditions for national success and is necessary for alignment.
- The activities aim at integrating, aligning and synchronising development on a Nordic level, and the creation of a common Nordic motivation for national decisions and national implementation.
- The success of the programme relies on national implementation, planned, managed and executed nationally, with respect of national circumstances, as well as aligned with the Nordic Smart Government implementation strategy.
- The success relies on a developing and changing market for business systems and services, with new products and adaptation over time, which support development of cross border services and motivate service providers to expand their services both within and beyond the Nordic market
- Pilots and first implementations are used to demonstrate how and to incentivise the market to move in the direction envisioned
- Close collaboration with the private sector is essential for the outcome of NSG 4.0. Campaigns for mobilisation of SMEs will be applied, progress will be monitored and incentives for change will be considered.

1.9 Scope: The Roadmap identifies six solution areas to support the realisation of the vision



Digital Business Documents

High-quality data is the foundation for a future ecosystem of data-driven services. Data is generated in the daily business processes of sales and purchases, but to get the benefits of high-quality, structured data, SMEs must use digital business documents (such as e-orders, e-invoices, e-receipts, etc.) in standardised formats. This will reduce manual and paper-based processes and save time for SMEs.



Product Information

Many small companies, even when using digital business documents, make invoices that include free-text descriptions without product codes. Detailed and structured product information is often lacking, preventing the development of automated accounting and VAT postings. In addition, machine-readable product information and codes may be used directly by different applications, for example in warehouse management.



Open Accounting

Open Accounting is, by use of standardised content and interoperable interface solutions, a secure way for the SMEs to voluntarily give service providers access to financial information from their bookkeeping. Open Accounting also enables portability, ie the transfer of historic data from one system into another, which means it will be easier for SMEs to change service provider without losing historic data. Open Accounting will thus increase the consumers' protection, foster innovation and competition.



Simplified Reporting

SMEs make different kinds of financial reports to authorities, but the basis of such reports is always the business transactions. For example, reporting VAT to tax and reporting net sales or import/export figures to the national statistics agency is based on the very same transactional data from sales and purchases. While the data source is the same, the burdens related to calculation and submission process is quite different from one authority's solution to another.



Born Digital

Today, SMEs grow into the digital domain, but new companies should from the very start use digital business systems that ensure consistency, digital processing of business documents and support compliance with law. Increased use of business systems will contribute to increased adoption of digital business documents and ultimately enable new types of services and service providers.



Reliability and Data Quality

Realising NSG is dependent on high quality bookkeeping data. Unless the data is correct and reliable, it cannot be used in automated processes and shared with confidence in real time. Governments, by their role in society, have authoritative information about businesses and that is relevant for verification purposes. Reliable bookkeeping data can be supported by public registries, such as verification of the identity of business partners through registration number and business register data.

1.10 Technology principles

Nordic Smart Government is based on the following principles regarding technology:

- Apply and support Pan-European standardisation activities and commonly used standards, such as (but not limited to) CEF (*Connecting Europe Facility*), CEN (*The European Committee for Standardisation*) and Publication Office standardisation activities and UBL (*Universal Business Language*), Peppol (*Pan-European Public Procurement Online*) and GS1 (*an international standardisation organisation for business communication*) semantic models and standard formats.
- Establishment of a flexible and future proof interoperability structure, based on building blocks for business data, transaction, security and back-end integration.
- Exploiting existing digital solutions, data formats, e.g. message exchange infrastructures, as a starting point for cross border alignment and interoperability.
- Respect of national sovereignty: Necessary national implementations are subject to national decision.

The aim is to enable Nordic interoperability by employing architecture flexible enough to interconnect current national infrastructures regardless of their technological platform, open enough to cater for implementation of new technological solutions and simple enough to provide affordable off the shelf solutions to small and medium sized enterprises.

This implies defining, designing and implementing essential building blocks required to implement cross border interoperability in the Smart Government ecosystem.

The widespread use of other formats for eg invoices, such as EDIFACT and Finvoice, is recognised and expected to be in continued use. Interoperability does not mean that only one standard can be applied, as mapping ("translations") can be done between different formats. Mapping requires continuous maintenance - a change in one standard will induce changes in the mapping. It is therefore important to limit the number of standards and formats applied to reduce the risk of mistakes.

The aim is to facilitate an alignment of national initiatives of digitalisation, based on coexistence of existing and future implementations. An alignment respecting technological deviance and national standards without compromising on quality, security and business value will be sought applied.

The key to succeed this alignment is:

- Clear distinction between the different interoperability layers
- Building blocks as basis for implementation
- High level of security, as required to protect confidentiality and data integrity, and avoid loss of information
- Use of open standards and free of charge specifications
- Transparent and predictable change management of specifications in production

Part 2. Overview Capabilities and Milestones

- Capabilities and Milestones
- Overview of Roadmap Capabilities
- Roadmap Milestones 2021-27
- High level Progress plan with Critical Milestones
- NSG 4.0 Milestones 2021-22
- NSG 4.0 milestones 2023-24

2.1 Capabilities and Milestones

The Roadmap presents capabilities and main areas of alignment from 2020-27, as well as milestones for the same period. This is presented in the next two slides, and thereafter additional milestones for the next phase (2021-24) are presented. The critical timeline summarises the milestones from the roadmap and highlights the critical dependencies to reach these.

Capabilities

As stated in the Roadmap, the capability areas include many discrete elements (technical, legal, and/or organisational changes and actions). The areas comprise over 100 possible actions, which may be employed in order to implement the capabilities (presented in the *Bundled actions* in the appendix of the Roadmap)

"Capability" is a technical term, but the roadmap translates it into easy-readable descriptions of solutions that relate to capabilities. The diagram on the following slide merely offers an approximate visualisation of the steps that need to be taken for each of the six solution areas

The actions necessary to achieve each of the steps might vary from country to country.

Milestones in the Roadmap 2021-27

The primary target group of this programme is the Nordic SMEs. Thus, to monitor the success of the programme, some major milestones/targets are expressed as e.g. percentage of uptake of solutions and services. These are milestones in the Roadmap. Some of the milestones express direct results of the NSG collaboration, other milestones are targets which we need to reach in order to realise the vision, such as a high number of SMEs using digital business systems. This is obviously a goal which cannot be achieved by NSG public partners alone, but as many other needed changes, must be pursued in collaboration with private parties.

High level Progress plan with critical milestones

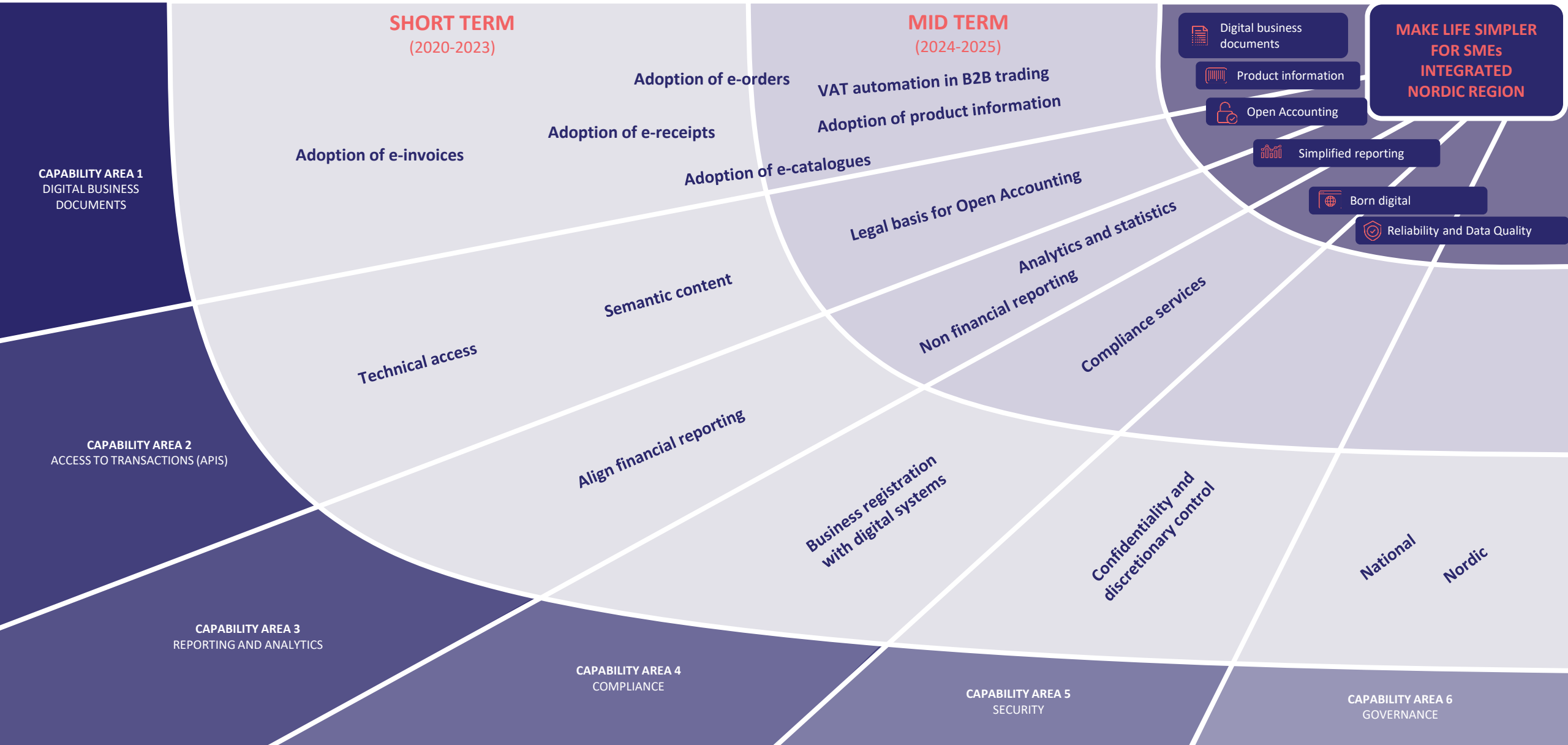
To measure the progress in programme activities year by year.

Milestones 2021-24 (NSG 4.0 programme)

The SMEs use of services is dependent on a developing market, and to push this development, pilots and first implementations are important. Pilots demonstrate what is needed to implement new services, and first implementations are first movers in the changing market, towards increasing interoperability and automation.

Several milestones are defined for the solution areas to monitor the progress of the deliverables.

2.2 Overview of the Roadmap capabilities and main areas of alignment needed to reach real time interoperability at the Nordic level *Timing is approximate, and subject to yearly evaluation and prioritisation*



2.3 Milestones in the Roadmap (2021-27)

- **By 2021,** a public-private advisory board has been established to support the implementation of the NSG roadmap
- **By 2022,** 70% of the Nordic SMEs use a digital business system
- **By 2023,** SMEs can freely choose to move their business data between business systems
- **By 2023,** sales and purchases can be handled digitally by default in compatible formats across the Nordic region
- **By 2023,** 80% of the Nordic business systems have implemented common tools (APIs), so service providers can access an SME's data with appropriate consent
- **By 2024,** 80% of the invoices sent in the Nordics are digital
- **By 2025,** the Nordic SMEs have saved 500 million EUR by using smart services and real-time data
- **By 2027,** the Nordic countries are the most integrated region in the world

2.4 High level Progress plan with Critical Milestones

2021

- SET UP A COLLABORATIVE STEERING MODEL
- SET UP PROJECT TEAM FOR EACH WORK STREAM
- SET UP A PROGRAMME SECRETARIAT
- SET UP A PUBLIC-PRIVATE ADVISORY BOARD
- CLARIFY KEY DELIVERABLES FOR EACH WORK STREAM
- NATIONAL GOVERNANCE FOR NORDIC ALIGNMENT
- PROCESS MODELS BASED ON USER JOURNEYS

2022

- MAP NATIONAL STANDARDS TO PEPPOL IMPLEMENTATION
- DEVELOP PLAN TO ENSURE INTEROPERABILITY OF SIGNIFICANT BUSINESS DOCUMENTS
- IDENTIFY ACTIVITIES FOR DIGITAL PRODUCT INFORMATION
- PILOTS: E-ORDERS & CATALOGUES , OPEN ACCOUNTING
- STANDARDS FOR ACCESSING STRUCTURED ACCOUNTING AND BOOKKEEPING INFORMATION
- CONCEPT AND STANDARD INFORMATION MODEL FOR ACCESSING BUSINESS REGISTER INFORMATION
- PRELIMINARY GUIDELINES FOR SELECTED CROSS BORDER TAXATION

2023

- RECOMMENDATIONS FOR INTEROPERABILITY AND NATIONAL IMPLEMENTATION
- INTEROPERABILITY BETWEEN NATIONAL CHARTS OF ACCOUNT FOR ANALYTICS
- DATA CATALOGUE TO VERIFY RELIABILITY AND DATA QUALITY
- ACCESS TO BUSINESS REGISTER AND TAX INFORMATION ACROSS BORDERS
- ACCESS TO VERIFICATION OF BANK ACCOUNT

2024

- IMPLEMENTATION OF STANDARD NORDIC MACHINE INTERFACE FOR ACCESS TO PUBLIC AUTHORITATIVE INFORMATION
- VALUE-CREATION: AUTOMATIC EXTRACTION OF DATA FOR DOCUMENTATION AND REPORTING
- VALUE-CREATION: AUTOMATIC CALCULATION AND VAT REPORTING FOR SELECTED AREAS
- VALUE-CREATION: ACCESS TO CRITICAL MASS OF INFORMATION ON TRANSACTIONS FOR ANALYTICS AND RESEARCH

2.5 Milestones 2021-22

By Q2 2021,

- **Nordic public-private partnership in place**
  - A Nordic public-private advisory board has been established
  - Nordic Public-private cooperation model established to develop pilots and services together
- **Programme organisation set-up implemented**
  - Communication organisation and channels established
  - National teams affirmed

By Q4 2021,

- **Analysis and principles in place**
  - Analysis on alignment of B2G reporting with business processes on national and Nordic level initiated
  - Fair Data Principles recognised by public and private stakeholders
  - Digital process model for SME start up and registration is delivered in at least Finland, Iceland, Sweden and Norway
  - Nordic interdependencies for SMEs born digital identified
- **Strategies developed**
  - Strategy for required infrastructure implementation for Peppol compliance agreed
  - Strategy for implementation and dissemination of product information developed
- **Pilot plans and pilots in place**
  - Pilot implementation plans for product information in place
  - Nordic Peppol network compliance demonstrated
  - First accounting system doing automatic verification of bank-account number belonging to a company [NO]

By 2022,

- **Nordic target state for more effortless reporting established**
- **Preliminary guidelines for selected cross border taxation based on product information in place**
- **Pilot accomplished for accessing standardised and structured product information by SME in B2B-transactions in selected sectors**
- **First implementation in production for**
  - eOrders and eCatalogues in all Nordic countries
  - Open Accounting with at least one book-keeping system
  - Open Accounting based reporting to Government
  - Open Accounting based credit service
  - End-user registration service for SMEs provided by private actor
  - Financial sector digital services for confirming financial information
- **Services established**
  - National business registries in three countries offer standard Nordic machine interface providing official data about the registered business applicable for instance in KYC and checking of business partner [NO, DK, FI]
  - Minimum set of digital services (e.g. APIs) that supports registration available from selected business registries

2.6 Milestones 2023-24

By 2023

- **Business interoperability capability implemented in at least two Nordic countries**
  - VAT and tax registration and information on tax debts available in at least two countries
  - SMEs can freely choose to move business data between business system

- **Nordic Interoperability in place**
  - Sales and purchases can be handled digitally by default in compatible formats across the Nordic region
  - First Implementation of cross border use of eReceipt in place
  - First value added service benefiting from cross-Nordic interoperability in Open Accounting
  - Product look-up capabilities is in production and used by business systems across the Nordics
  - Services for verifying bank account belonging to a company in four out of five Nordic Countries available
  - National business registries in all Nordic countries offer the standard Nordic machine interface
  - Public data from other relevant governmental agencies included in processes across the Nordic countries
  - High level interoperability between national charts of account established across the Nordics for analytics

By 2024

- **Programme result institutionalised and in production**
  - Revised guidelines for selected cross border taxation based on product information in place
  - SMEs given green light for starting operation when all requirements are met
  - Automatic calculation and VAT reporting, including cross border trade, enabled for selected areas
  - Enabled access to critical mass of information on transactions for analytics and research
  - Plan for next phase of the NSG Roadmap implementation (2024-27)

Part 3. The six solution areas - organised in 3 work streams

- Three work streams for the six solution areas
- Use Cases and deliverables
- Key performance indicators
- Internal dependencies
- Core elements for achieving Nordic alignment

3.1 The six solution areas in the Roadmap will be organised in three work streams. This is to ensure sufficient coherence and alignment, handling of dependencies and reducing risks.



Digital Business Documents



Digital Product Information



Open Accounting Sharing Bookkeeping Data



Simplified Reporting



Born Digital



Reliability and Data Quality

3.2 Increase the Adoption of Interoperable Digital Business Documents



Scenario

SMEs can send and receive invoices and receipts, and issue and receive orders to and from their Nordic trade partners in a way that makes it possible to automatically process for e.g. bookkeeping, payment, and VAT-calculation. The automation helps SMEs to have real-time updates on their bookkeeping and financial status, simplify reporting to governments and to ensure up-to-date forecast of inventory and payments. The use of digital business documents will also save time for the SMEs, as well as give them the opportunity to work with data-driven business development.

Deliverables:

- A roadmap on how to ensure interoperability of significant business documents to common European standards (UBL/BIS3 format)
- Mapping of the national standards to PEPPOL implementation
- Prioritised overview of formats in scope for piloting
- Cross-border pilots for prioritised formats
- Outcome reports & recommendations from pilots
- Implementation of eReceipt in standard eInvoice format
- National Adoption Plan for prioritized business documents

Key Performance Indicators

By 2022

- 70% of the Nordic SMEs use a digital business system
- 50% of digital business systems are able to process cross-border eInvoices

By 2023

- 50% of digital business systems are able to process cross-border eReceipts

By 2024

- 80% of invoices sent in the Nordics are digital
- 20% of receipts sent in the Nordics are digital

Internal Dependencies

- The product information solution area relies on digital business documents to be widespread.
- Automated calculation of VAT in business systems and the possibility to develop VAT reporting is dependent on usage of digital business documents with good quality structured data

Core elements for achieving Nordic interoperability

- On time interoperability on Nordic level, [near real time data exchange]
- National eAddress registry/ service for endpoint lookup
- Document standards needed to be compatible with European standards
- Interoperability with the Peppol eDelivery network
- Low-cost implementation and operation for SMEs

3.3 Digital Product Information included in Business Documents

Product Information

Scenario

SMEs can across the Nordic borders use standardized product IDs in business documents they receive for automatic calculation of VAT, product specific fees, inventory etc., but also in documents connected to e.g. e-orders, e-catalogues that they send to their customers. Standardized information on products also enables SMEs to automatically fulfilproduct-specific documentation and reporting requirements on e.g. pesticides, chemicals, goods in food production

SMEs can easily add green data on e.g. ecological or FSC certificates to their e-invoices and other e-documents. The tagging of this additional data is integrated in the invoicing process, together with other types of transparent green data, such as Total Cost of Ownership. The business systems have integrated tools that allow SMEs to comply with non-financial reporting requirements on e.g. the waste directives related to EU Circular Economy.

Deliverables

- Analysis and documentation of the current situation
- Mapping of selected cross border tax implications
- High-level ambitions and strategic roadmap for implementation and dissemination
- Stakeholder map and implementation plans for the pilots
- Pilot outcome publication
- Implementation of product look-up capabilities in business systems

Key Performance Indicators

By 2022

- Pilot accomplished for accessing product information
- Preliminary guidelines for cross border taxation based on product information in place

By 2023

- Product look-up capabilities is in production and used by business systems across the Nordics

By 2024

- 50% of the SMEs can apply standardised and structured product information through their business systems

Internal Dependencies

- Use of standardised digital business documents
- Supports Simplified reporting
- Supports Open Accounting

Core elements for achieving Nordic interoperability

- On time interoperability on Nordic level
- Commonly agreed methodology and process for labelling required at Nordic Level (preferable aligned at European level)
- Alignment with ongoing European standardisation activities
- Peppol BIS alignment and collaboration

3.4 Open Accounting – Sharing Bookkeeping and Transactional Data



Scenario

SMEs can provide third parties, banks, trade partners and public authorities access to real-time bookkeeping information, ie. transaction data as well as aggregated data. The data is delivered in a standardized and structured format which enables automated processes with banks, brokers, auditors and other service providers, hence offering the SMEs better services at a lower cost. The transfer of standardised transaction data enables the SMEs to change service provider and business system, without loosing essential historical data

Deliverables:

- Analysis of initiatives similar to Open Accounting, i.e. Open Banking/PSD2
- Risk Analysis for the core use cases
- Define Nordic target state for Open Accounting
- Formulate Fair Data Principles relevant for Open Accounting for core use cases, based on existing principles (national and EU)
- Standardisation: Methods, formats, and security-mechanisms (including authentication and authorisation mechanisms) for accessing structured accounting and bookkeeping information (standard APIs)
- Design and plan for further development of the Nordic ecosystems support for Open Accounting, including interoperability between national formats and charts of accounts, validation service, lookup-service, authentication, authorisation and consent
- Pilot implementations:
    - Open Accounting by one business system
    - interoperability based on Open Accounting; a value added service consuming data through Open Accounting mechanisms, preferably credit service
    - portability based on Open Accounting

Key Performance Indicators

By 2022

- First Implementations in place
- First transfer of data between two bookkeeping systems (portability)

By 2023

- Open Accounting available to minimum 25 % of SMEs
- 80% of the Nordic business systems have implemented common tools, enabling service providers to access SME's data with appropriate consent

By 2024

- 50% of SMEs can freely choose to move their business data between business systems, seamlessly (portability)
- businesses can seamlessly and simultaneously use different kinds of business systems from different vendors (interoperability)

Internal Dependencies

- Simplified Reporting and the milestone of pilot-implementation of Open Accounting based reporting to National Statistical Institute
- Enable simplified reporting using open accounting principles.
- Digital business documents in standardised format applied

Core elements for achieving Nordic interoperability

- Nordic standard for access to machine readable transaction data
- National eAddress registry/ service for endpoint lookup
- Mechanisms for authentication and authorisation, including mechanisms for providing consent

3.5 Simplified Reporting

Simplified Reporting

Scenario
SMEs can automatically aggregate and report accurate information on e.g. annual accounts and tax declaration to public authorities using standardized exchange of information (e.g. through API connections) and data formats in the companies' business systems. This reduces manual filing of reports, errors and misunderstandings.

SMEs can also give access to public authorities to extract data for e.g. statistical surveys, analytics and, in a longer perspective, research, from their business systems. Automation, including mutual information and rule sharing, ensures accuracy and quality of data and enables better policy-making based on up-to-date, detailed data about the current business situation, e.g. when unforeseen disturbances in the economy occurs, such as the current Covid-19 pandemic.

Deliverables:

- Pilot implementation of reporting to statistics for at least one report, based on Open accounting
- Compiled list of existing reports where manual forms can be replaced by use of Open Accounting
- Pilot for Tax authorities to expose taxonomies, standards and rules concerning VAT
- Analysis of B2G-reporting requirements for alignment with business processes, B2B reporting, and recommendation for simplified reporting

Key Performance Indicators

By 2021

- National governance for alignment of reporting requirements established

By 2023

- High level interoperability between national charts of account established across the Nordics for analytics

By 2024

- Automatic extraction of data for documentation and reporting of financial information and information on products, enabled for selected areas
- Automatic calculation and VAT reporting, including cross border trade, enabled for selected areas
- Enabled access to critical mass of information on transactions for analytics and research

Internal Dependencies

- Supported by Open accounting
- Digital product information required for automatic VAT calculations

Core elements for achieving Nordic interoperability

- Business confidentiality must be secured.
- Standard Business Reporting
- Identity, power and mandate management
- Coordinate VAT with digital documents and product information

3.6 SMEs are Born Digital



Scenario

SMEs can be established and registered digitally in one coherent process, where the companies receive guidance regarding requirements in order for the businesses to be compliant. The SMEs also receive confirmation that they have fulfilled the different steps identified throughout the start-up and registration process, and are ready to go into operations. The result of the registration process is a digital company, with all the relevant capabilities available to benefit from the NSG Ecosystem, i.e. sending and receiving digital business documents, access to product information, Open Accounting mechanisms for easy and secure sharing of data etc.

Deliverables

- Overall process model and solution architecture for minimum NO, FI, SE and IS, including legal analysis.
- Analysis of inter-dependencies across the Nordic countries.
- Checklist for capabilities needed by SMEs at start-up to enable the NSG ecosystem.
- Necessary services for registration, from relevant parties (e.g. Business Register, Tax Authority, banks), provided through standardized machine-to-machine interfaces.
- Implementation plans, guidelines and services for businesses delivering the start-up process as a digital solution for SMEs.

Key Performance Indicators

By 2021

- Digital process model for start-up and registration is delivered in at least Finland, Iceland, Norway and Sweden

By 2022

- First financial sector digital services confirming financial information
- First end-user registration service for SMEs provided

By 2023

- Public services from other relevant governmental agencies included in process
- Services for 3rd party confirmations available

By 2024

- SMEs are given green light for starting operation when all requirements are met
- In FI, SE, IS and NO: At least 70% of new SMEs are born digital, with no extra steps needed

Internal Dependencies

- Supported by Open Accounting and Digital Business Documents
- Supports Reliability and quality data

Core elements for achieving Nordic interoperability

- Reuse of existing Nordic, Baltic and EU-initiatives (e.g. BRIS/SDGR/DE4A/ NOBID)
- Further needs for cross border support must be estimated.

3.7 Access to Data Services to verify Reliability and Data Quality

Reliability and Data Quality

Scenario

SMEs can validate their trading partners' bank account and VAT registration information in integrated business systems. SMEs can also evaluate their national and Nordic trading partners in terms of financial stability and reliability, using official information on their business enterprise, i.e. legal registration, business status, VAT and tax registration and payment, overview of shareholders and board members, as well as the business change history.

Deliverables

- Recommendation on which information to make available, based on use cases and analysis of importance and availability
- Nordic concept- and information model for the recommended information elements, based on related EU-work (BRIS, TOOP-project, SDGR)
- Specification of standard Nordic machine interface for the different information sources
- Implementation of the standard Nordic machine interface, relevant for Business Registries, Tax Authorities and Banks
- "Data Catalogue", including lookup-service to where you can access the actual data

Key Performance Indicators

By 2021

- National business registries in three countries offering standard Nordic machine interface

By 2023

- Services for verifying Bank-account belonging to a company implemented in four out of five Nordic countries
- National business registries in all Nordic countries offer the standard Nordic machine interface
- VAT and tax registration and information on Tax debts available in two countries

By 2024

- 60 % of SMEs have access to functionality utilising authoritative information from public and private sources when doing cross-border business

Internal Dependencies

- Supports SMEs are Born Digitally and Simplified reporting
- Access to up-to-date information about Beneficial Owners might require solution for online books for shareholders, provided as part of "Born Digital"

Core elements for achieving Nordic interoperability

- Reuse of existing Nordic, Baltic and EU-initiatives (e.g. BRIS/SDGR/DE4A/ NOBID)
- Real time integration cross-border

Part 4. Programme Governance

- Roles and competences
- Organisation
- National teams, responsibilities and Nordic alignment
- Working methods
- Main activities 2021
- Collaboration with private actors
- High-level budget and funding principles

4.1 Roles and competences

Key principles:

The overarching principles in the organisation of Nordic Smart Government 4.0 programme activities are to facilitate progression and quality of outcome by competence based delegation of roles and responsibility.

Cross nordic coordination, communication and dissemination of results are core element in succeeding, and the need for strong skills at within these areas is evident. This need will be met by programme management, delivery management and secretary functions, populated with required skills. Much of the success lies in the ability to support the alignment of all activities to avoid development in silos and especially to facilitate governance and communication cross Nordic and cross solution areas.

Key competences needed:

- Collaborative mindset
- Understanding of private sector drivers and services
- Programme management, administration, controlling and reporting
- Solution management and technical alignment
- Strategic communication and mobilisation
- Workstream leadership (chairs and co-chairs)
- Strategic vision and leadership for development and implementation
- Business domain, operational, legal and technical expertise

Key factors required to succeed:

- Strong programme management organisation with communications and leadership skills as well as strong IT-development experience
- Good interaction skills, planning and practical cooperation skills
- In-depth knowledge of the European environment regarding electronic documents and cross-border transactions
- Thorough understanding of digitalisation processes and change management in public and private environments
- High level of professional expertise in the national teams as well as in the shared workgroups
- Adequate amount of time for key resources is allocated
- Close collaboration between end users, service providers and government authorities

Required toolset and support mechanism

- Process methods and tools for competency mapping in use
- Stakeholder collaboration model
- Communication process methods and tools, easy to access

4.2 Organisation

Key principles:

The organisation is based on experience from the previous NSG collaboration, recommendations provided by the Expert panel assigned to the NSG 3.0 programme by Nordic Innovation, as well as the evaluation of the organisation, communication and culture of NSG 3.0 (EY 2020).

Working closely in a cross-border, cross-institutional, cross public-private sector, as well as in an interdisciplinary set-up, requires on the individual level, a strong collaborative mindset and engagement to realise common goals.

The core principles for organising the programme are as follows:

- The programme is governed in collaboration; with a Nordic Programme Management Organisation (PMO) consisting of national team leads and the Programme Manager
- The Programme will apply a Change Management Framework, as eg. ADKAR (Awareness, Desire, Knowledge, Ability and Reinforcement)
- The organisation must support progress and Nordic alignment, as well as ownership and implementation on national level
- Active engagement of stakeholders in private and public sector
- The working groups must be organised, sized and populated in order to ensure progression and quality of work, preferable counting few, but dedicated resources
- Expert panels and public reviews must be performed to ensure technical quality, business value, legality, and commitment

Organisational units required to succeed:

- Steering Group
- Change Advisory Board
- Public-Private Advisory Board
- Programme management and administration
  - Programme Manager
  - Programme Management Organisation (National team leaders)
  - Operations office: Communication manager, solution architect & technical support manager, programme administration, controller and secretary
- Three work stream teams organised according to solution areas:
  - Chair and 2-3 co-chairs for each work stream, from different countries
  - Specialists from relevant business domains
  - Involvement of relevant private and public actors
- Review teams: various experts from public and private sector
- National teams with national team leaders

Required toolset and support mechanism

- Nordic collaboration and publication platform
- Shared platform for reporting, resource allocation and progress monitoring
- Consolidated registration of resources, cost and expenses covered by the programme

4.3 National teams, responsibilities and Nordic alignment

Key principles:

Reaching the roadmap milestones and the additional milestones in this application is dependent on the national engagement and the successful implementation on a national level.

Therefore, each country will, or have established, a national team responsible for the national implementation of the roadmap aligned with the common Nordic efforts. This is necessary in order to reach cross-Nordic interoperability.

The national teams are responsible for:

- Provision of national action plans aligned with the roadmap milestones
- Alignment and quality assurance of national pilots documentation and execution
- Provision of yearly short report on progress and challenges, as well as risk and mitigative actions

The national team leader is member of PMO and reports to the programme manager and national superiors as decided by each country.

Required commitments needed to succeed:

- Establishment of national teams with sufficient resources and right competences
- Team members working in the relevant Nordic and national activities to assure efficient sharing of knowledge

Required toolset and support mechanisms

- Reporting templates
- High level risk mitigation strategy and escalation path
- Tools relevant for nationally decided activities

4.4 Working methods

Key principles

User journeys: are applied to identify actual needs of the SMEs and other stakeholders.

The cross border perspective: is essential in all types of activities for the NSG 4.0.

Agile: Development of specifications and artefacts will be organised in a semi-agile set-up, as NSG 4.0 will adapt the methods applied in NSG 3.0. All draft deliverables will be presented for open reviews with experts from both public and private sector, thus ensuring relevant and competent feedback. Retrospective evaluations of working methods will be performed to ensure efficient work processes.

Pilots: Proof of concepts has already been conducted in NSG. Now production pilots will be prioritised, as the detailed requirements for exchange of data must be described and documented before implementation. Pilot work means testing data flows and mechanisms, in order to detail requirements. As the NSG ambition is to ensure uptake of new services, the general ambition is to make pilot which result in documentation which is ready for production.

Transparency: Is essential to efficient, creative and trust-based collaboration and change. Working documents, reviews, documentation and results will be public.

Working language: English. All working documents and publications are in English, if not otherwise agreed upon.

Procedural requirements needed to succeed:

- Results developed in the programme will be publicly available free of charge
- Crossborder user journeys for SMEs as basis for pilot activities
- Standardised submission of results
- Periodically submission of cost and time spent
- Periodically standardised reporting of progress, risk and issues
- Consolidated documentation and management of risk and issues
- Notification principles based on openness and efficiency
    - Request for review based on push not pull
    - Dissemination of results based on pull not push
    - Access to centralised publication as distribution principle

Required toolset and support mechanisms:

- Open work space to be implemented for development and maintenance of specifications
- Showroom and reference implementation for pilots and communication
- Collaboration platform for sharing work in progress, request for information, preliminary results
- Tool for centralised registration of time and cost
- Detailed overview of the Nordic landscape of NSG related standardisation and digitalisation activities

4.5 Main activities 2021

Phase 1 (3 months)/ 2021:

Implementation of programme administration, organisation and communication

- Mobilisation: Organisation set-up with chairs and working groups, CAB, PMO, national teams and Advisory Board.
- Kick-off and onboarding of programme participants
- Administrative structure in place: reporting, budget, risk, secretariat
- Cross Nordic information sharing system and agile management toolbox defined, documented and implemented, including digital community for co-creation and reviews in place
- Planning of phase 2

Stakeholder management

- Stakeholder management and communication plan in implementation: Mobilisation/onboarding of public and private actors, including digital NSG-community,
- Model for monitoring of market developments in place
- Model for monitoring and influencing on the surrounding landscape in place: EU, OECD, Nordic, Nordic-Baltic, etc
- Strategy for coordination of initiatives on EU-level eg. regulatory needs regarding Open Accounting
- Kick-off with stakeholders

Phase 2 (3 months) / 2021:

Plan and prepare analysis, development, piloting and implementation

- Analysis to establish overarching principles and models initiated
- Strategy and plans to ensure uptake and transfer of digital business documents in place
- Pilot strategies and plans in place
- Introduction to pilot activities and expected outcome published
- Acquisition of external resources in place
- Programme Meeting with retrospective and review
- Advisory Board meeting and review
- Planning of phase 3

Establishment of National initiatives and collaboration foras

- National governance model in place
- Meeting strategy, frequency and collaboration model in place
- Strategy for national implementation, depending on national circumstances, e.g. need for pilots and dissemination of building blocks

4.6 Collaboration with private actors

Key principles:

A successful and valuable result of Nordic Smart Government 4.0 is dependent on a high level of participation and contribution from private actors, and a structured approach for involving private actors, as well as other public sector bodies, in all kinds of project activities. Vital to this collaboration are service providers and SMEs.

NSG 4.0 will facilitate a playground and an environment as a basis for development of well-functioning services in the Nordic market.

Private actors participate on a voluntary basis. The programme will, in general, not finance such participation directly.

General involvement and knowledge sharing will be handled through establishment of national and Nordic reference groups and advisory boards and open reviews.

Direct participation in programme activities will be open for any private actor, and NSG 4.0 will be fully transparent and share all results derived from the programme openly - to anyone interested.

Pilot participation is organised in independent groups at national or Nordic level and will not be funded by the programme. Development of specifications and shared components used in more than one pilot can be partly funded by the programme, given that they are made public available (open Source) and that immaterial property rights (IPR) for those are held by the programme.

Required activities needed to succeed:

- Identification of all stakeholders and segmentation.
- Create awareness and support amongst decision makers through conferences, publications, dialogues and meetings
- Create a digital NSG development hub (community) where stakeholders by agreeing on shared principles, can be involved in co-creation: pilots, technical discussions, reviews, considerations on business value etc.
- Facilitate knowledge sharing between the actors during piloting, building on trust building activities and guidance from national and Nordic management

Required toolset and support mechanisms:

- Test environment (reference implementation) and showroom established in NSG 3.0
- Structured methodology and organisation for development, piloting and test
- Centralised publication of quality assured specifications and guidelines

4.7 Risk assessment and mitigation (1/2)

Risk analysis, evaluation and mitigation will be conducted periodically both at national and Nordic level. Major risks are reported to the steering group. Below are the essential elements in the risk documentation and an overview of risks identified. Risk ownership, status and responsible actor will be included in the NSG 4.0 risk template as well.

Risk	Consequence if it occurs	Mitigation	Proba-bility (1-5)	Conse-quenc e (1-5)	Risk value
Involvement and/or contribution from public and/or private actors is insufficient or too late	The market develops in various directions on Nordic level, without employing common standards and formats. Thus, interoperability is not achieved and benefits for the SMEs are not realised.	Immediate start-up of NSG 4.0 with sufficient resources. Professional involvement of private actors in the Advisory Board and in the work. Timely and clear communication, efficient digital working space in place for collaboration and transparency, aligned between Nordic and national level.	2	5	10
Recommended solutions not compliant with GDPR and EDPB (European Data Protection Board) recommendations	Personal information is accessible or transferred to a third country (outside EEA) without adequate level of data protection of privacy and integrity (e.g. in solutions and by cloud services with ownership in the US)).	Recommendations are GDPR compliant and adequate safeguard measures must be implemented according to recommendations from EDPBs. Raise awareness among public and private actors.	2	5	10
Work streams not sharing the same vision	Deliverables are not aligned	Sufficient resources in the Nordic organisation and high attention and close collaboration between workstream chairs and PMO.	2	5	10
Insufficient allocation of key resources	Deliverables not up to standard and/or not on time. Private actors are implementing slowly. Milestones are not reached.	Precise requirements. Commitment from participating organisations.	2	5	10

4.7 Risk assessment and mitigation (2/2)

Risk analysis, evaluation and mitigation will be conducted periodically both at national and nordic level. Major risks are reported to the steering group. Below are the essential elements in the risk documentation and an overview of risks identified. Risk ownership, status and responsible actor will be included in the NSG 4.0 risk template as well.

Risk	Consequence if it occurs	Mitigation	Proba-bility (1-5)	Conse-quence (1-5)	Risk value
Onboarding process ineffective	Slow start-up process. New participants are not productive.	Well prepared descriptions of programme environment, activities and expectations. Sufficient communication.	2	4	8
Security breaches decrease trust in digitalisation and data sharing	Not sufficient trust from Nordic SMEs in the digital systems and data sharing, and the benefits for SMEs are not realised	Ensure attention on security aspects by both system vendors and SMEs.	2	4	8
The national implementation is not aligned with the Nordic	The Nordic integration is limited and cross border trade is not made easier	Active monitoring of national implementation plans	2	4	8
SMEs do not apply NSG capabilities	SMEs do not experience the value of NSG	Monitor the uptake. Campaign for the benefits of applying digital business documents. Minimise direct transaction costs for digital business documents. Engage business system providers, large corporations, service providers and banks in marketing of benefits for SMEs. Other compliance mechanisms, as found appropriate on national level.	2	4	8

4.8 High-level budget and funding principles

Key budget principles for funding:

Programme runs over 40 months - expected 1 March 2021 - 30 June 2024

30 working months for PMO and working groups.

Covered by NI-programme funds are:

- Nordic management, Nordic communication and coordination
- Consultants for common Nordic communication, analysis, infrastructure components and documentation

Covered by NI-funds as well as own contribution are:

- National management and participation in PMO, chairs and co-chairs
- Nordic meeting costs (e.g. programme meetings, PMO and chair meetings)
- Travel costs
- Development of specification and shared open-source components

Covered by own contribution:

- National teams, mainly working hours
- National implementation pilots and building blocks, as needed

Distribution of budget between the Nordic countries and authorities is dependent on the actual allocation of human resources.

Total Budget: 101,7 MNOK

All numbers in MNOK.

Budget Item	NI funded	Own contribution
Salaries incl. overhead	24,1	60
External services	9,5	0
Equipment and material	,5	,5
Travels and meeting	3	2,0
Communication	1,1	1
Total in million NOK	**38,2**	**63,5**

Without Nordic funding of the Nordic collaboration, there is no organisation to ensure Nordic interoperability and further integration - and the vision will not be realised.

1 full time man year is rated 1 MNOK - same in all countries.

Budget details

Salaries

ITEM	Estimate (MNOK)
Programme manager*	3,0
Central organisation and secretariat*	6,0
Communications manager*	3,0
PMO in five countries	5,1
Chairs for three work streams	3,0
Two co-chairs per work stream	4,0
TOTAL	**24,1**

- PMO-members are national team leads and are responsible for coordination on Nordic level. Funded with 50 pct from NI programme funds and expected to spend 70 % of their time on NSG.
- Chairs and co-chairs are managing the work streams and are expected to spend minimum 60 pct. of their time on NSG, on both Nordic and national efforts. 40 pct is funded from NI programme funds.
- Own experts and project assistants in the works streams are covered by own national contribution.
- National implementation requires activities dependent on national circumstances and total national own contribution is expected to be beyond budget estimate.
- External costs are subject to more detailed project plans in the work streams and thus are likely to be adjusted within the total budget frame.

* 100 pct Nordic roles are 100 pct financed by NI-programme funds.

External costs

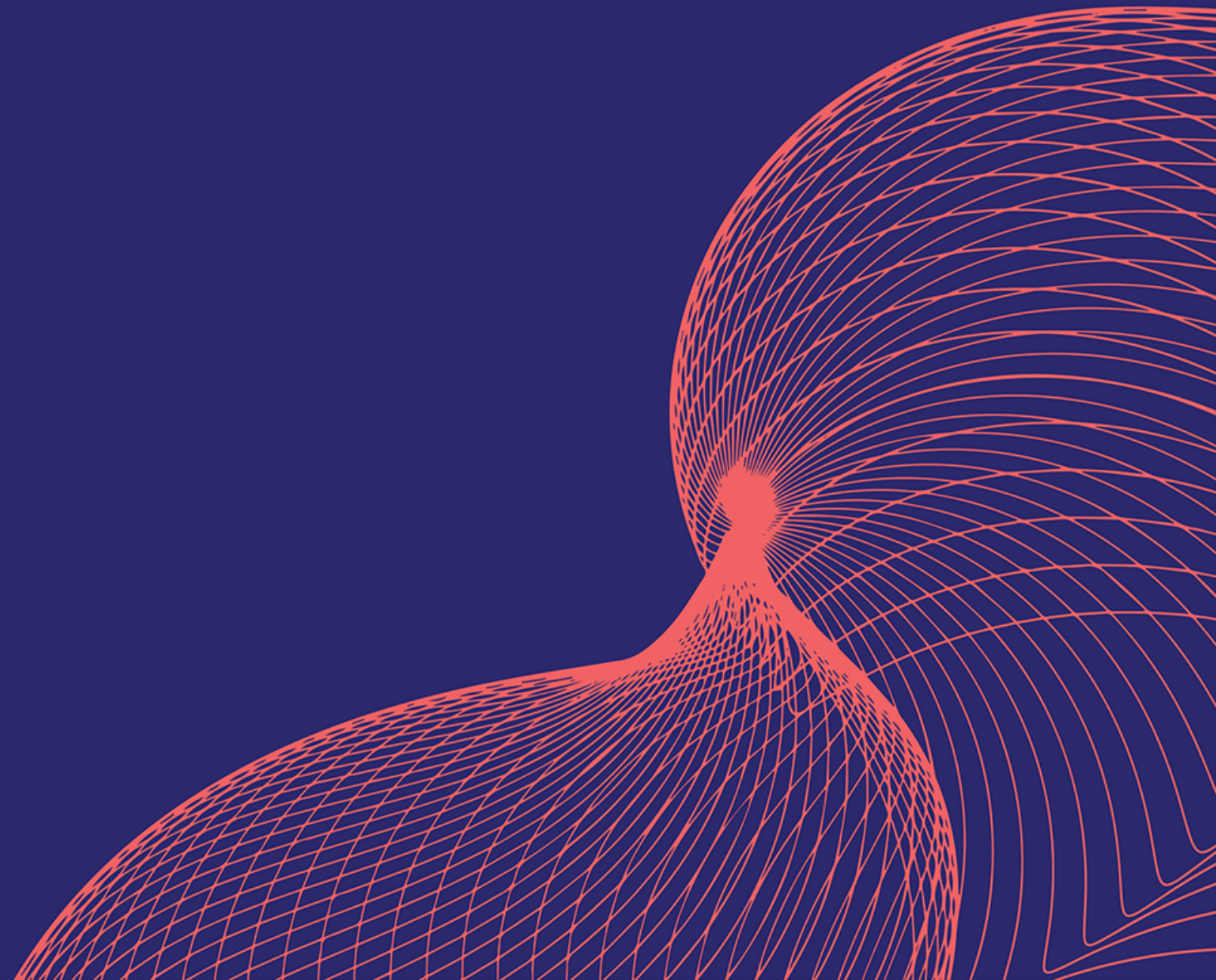
ITEM	Estimate (MNOK)
External Agility coach	0,8
Occurring external costs	0,3
Expert audits	0,6
Promotion material - Digital documents	0,3
Development and mapping of standards	3,2
Study on product catalogues	0,3
Study of PSD2 for Open Accounting	0,6
Analysis of consent mechanisms	0,4
Nordic information models and lookup services	1,1
Reference implementation	1,4
Assist first implementations	0,5
TOTAL	**9,5**

Part 5. Appendix

5.1 Appendix

- NSG Roadmap: https://nordicsmartgovernment.org/sites/default/files/2020-11/Samlet%20NSG%20roadmap%20og%20appendix_0.pdf
- Expert panel recommendations 2020: https://docs.google.com/presentation/d/19khf6UcujNV-elbvPfnRReaWN1b8J6Ha/edit#slide=id.p1
- Evaluation of NSG 3.0 (EY 2020): https://nordicsmartgovernment.org/sites/default/files/2020-11/201006%20Evaluation%20NSG%20Report%20Final%20%28002%29_0.pdf

NORDIC SMART GOVERNMENT



www.nordicsmartgovernment.org