

Nordic Smart Government

Roadmap for realisation of the Nordic Smart Government ecosystem
DRAFT 11 March 2020

Draft version

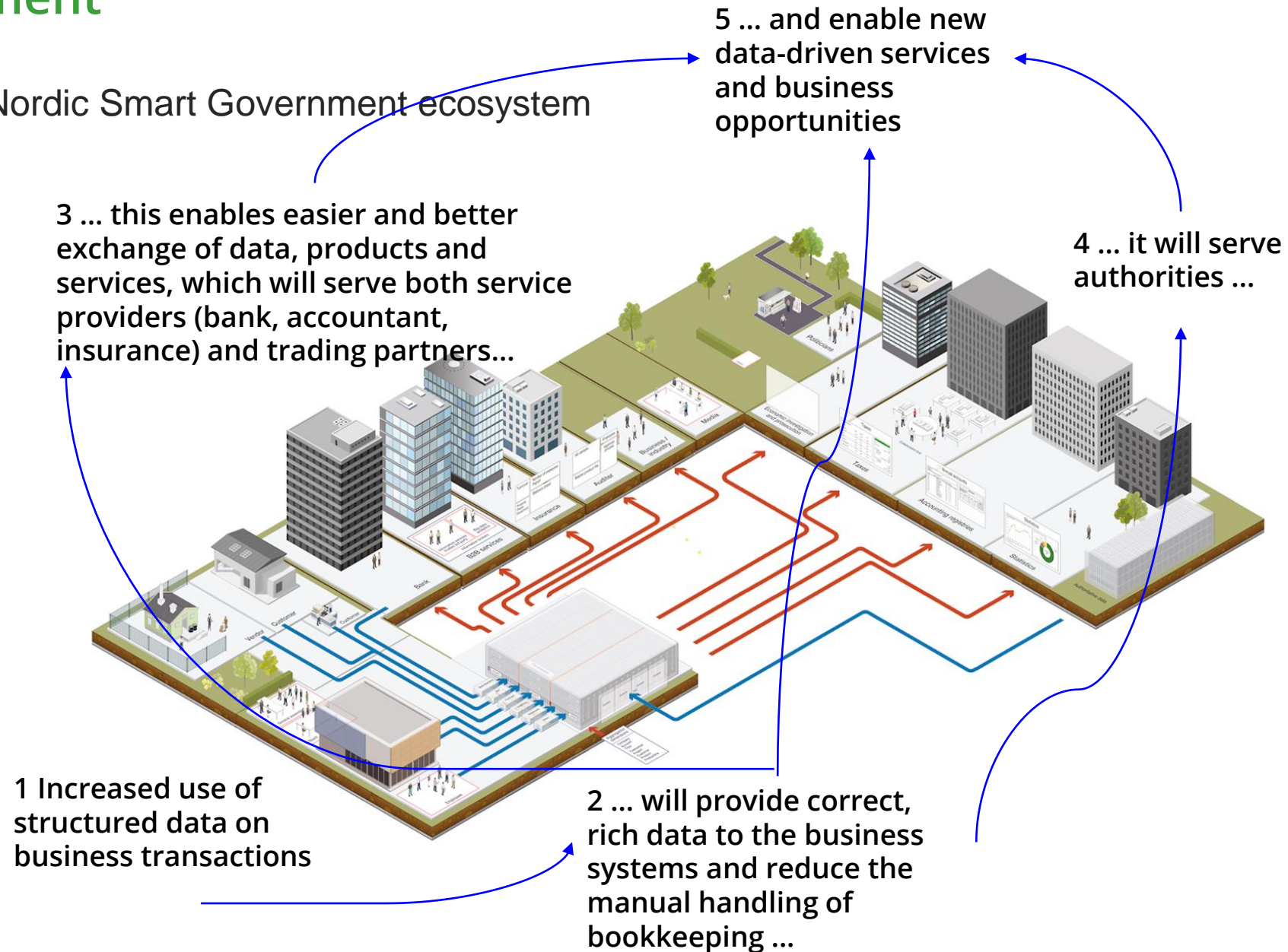


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Please contribute to making this an even better roadmap by commenting in the present draft.
Deadline for comments: 24th of March 2020

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

Nordic Smart Government serves the The Nordic Prime Ministers ambition of making the Nordic region the most integrated region in the world.

The aim is to reduce barriers within our region and increase collaboration and understanding between businesses in order to support Nordic welfare and growth.

Specifically, NSG 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

The Nordic development of digitalisation should follow the ethical [guidelines](#) set out by *The EU Presidency Conference on Data Economy* taking place in Helsinki November 2019. The guidelines may be further developed when needed. See also the [NSG User principles](#).

The benefits of Nordic collaboration include:

- By synchronizing national developments and initiatives, we steer the common Nordic business environment towards interoperability, synergy is exploited, and momentum maintained.
- By collaborating, knowledge is shared, and technology and resources can be utilized to achieve a better quality in deliverables in a more cost-effective way.
- By establishing the Nordic region as a digital frontrunner in creating value from business data, we also lead the way for the European Union
- By creating a Nordic governance of the ecosystem, we can support common Nordic principles for transparency, trust, sustainability and safeguarding of democratic rights.
- By helping SMEs become more competitive and better suited for international competition, we strengthen the Nordic market presence globally – and a common Nordic market will be more robust than each national market on its own.

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 for businesses, public authorities and society by making real-time business data usable and accessible across the region in an automatic, consent-based and secure manner. Nordic Smart Government is thus a driver for making the region the most integrated in the world, which is the ambition of the Nordic Prime Ministers. In the Nordic region, two million small businesses comprise more than 90 percent of our enterprises, and they form a cornerstone in our societies and to our future welfare.

For many years, the Nordic governments have been creating digital services and digital reporting both in order to simplify life for the small businesses and to increase compliance with government requirements. Despite this, the coordination and collaboration on digital development has been limited, both across the public sector as well as with the private sector. Thus, governmental self-service solutions and proprietary digital business systems are not sufficiently aligned today. This forces for example the SMEs to spend resources on typing in the same data over and over, in order to report to different authorities. Furthermore, for SMEs who usually cannot afford customised digital business systems, their own business data remain analogue and unavailable for digital exchange, and therefore largely unproductive.

It follows that even though Nordic businesses are among the most digital in Europe, their workflows are inefficient, as they are forced to use various incompatible data formats and systems that cannot easily exchange information business to business, nor business to government. The businesses are doing time-consuming paperwork related to sales and purchase – which is at the core of what all businesses do. These analogue workflows can be replaced by digital processes employing structured business data.

The use of digital orders, invoices and receipts, instead of paper, e-mails and pdf's, will save time and provide SMEs with structured data for automated accounting, tax compliance by design, government reporting, and a multitude of new services, such as cash flow overview, better credit access, etc. This necessitates that digital systems and services processing business data – both private systems and government solutions – are interoperable* and support the creation of a digital ecosystem based on real-time financial data.

NSG represents a change for the Nordic region's work with digitalisation

The Nordic collaboration on Smart Government was initiated by the Nordic business registries in 2016. With co-funding from Nordic Innovation, the idea of automating business reporting was further developed by conceptualizing an open ecosystem for an automated, secure and consent-based flow of structured and standardized business data which may be utilized and accessed by public and private stakeholders.

In May 2018, the third phase of NSG started when the programme for defining the requirements for enabling the ecosystem was launched by the [Nordic Ministers of Business](#). In this phase, NSG has grown to one of a kind in the Nordic region, involving more than 15 government authorities from all five Nordic countries. In this third iteration, the Nordic business registries, tax and statistics authorities and others have explored the great potential of structured business data, shared via interoperable systems in real-time. The conclusions and overall recommendations of the collaborative work is presented in this roadmap. The Business registries are responsible for the roadmap as programme partners.

** Interoperability is the property that allows for the unrestricted sharing of resources between different systems*

Introduction to Nordic Smart Government: Common vision and goals

Stakeholders: The Nordics are ready to take digitalisation to a new level

Numerous stakeholders in the Nordic region have over the last years 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 has been very positive, and the general consensus is that stakeholders across regions and sectors believe in the vision and wish to take part in the realisation.

The roadmap presents a vision and direction for future Nordic digitalisation, involving collaboration and co-creation with the private sector.

The NSG roadmap is a strategy for realising the vision. NSG is not an attempt to build a new Nordic infrastructure, but to align existing and new digital systems and services, and to make access of data across the region possible. The roadmap thus states a long term ambition and gives direction for Nordic digitalisation and collaboration in the many years to come. The roadmap proposes six core areas to work on over the next three to four years. In these areas stakeholders are invited to participate in co-creation to ensure an efficient and aligned development to the benefit of all parties.

The NSG organisation has defined the capabilities of both public and private systems and actors which are needed for making business data usable and accessible. These capabilities are detailed in the appendix. Moreover, the collaboration has identified around 100 possible actions which can be employed in order to implement the capabilities. These are shortly described in the appendix.

Implementation: Joint Nordic collaboration and national initiatives

In order to achieve synchronised development and common services across borders, some of the actions are best done in Nordic collaboration. At the same time, it is important to acknowledge that the Nordic countries are different in terms of existing infrastructure, public services and ongoing developments. Thus, what are relevant actions on a national level also depend on national situations, opportunities and resources.

To align and integrate at the Nordic level, a governance model and a organisational setup must be established, which can define common actions, develop Nordic building blocks, and coordinate national authorities and private actors. The organisation should have dedicated resources available for this work.

Private actors, such as business system vendors and other service providers, are essential to the realisation of NSG, as they have to adopt common standards and adjust to accommodate data sharing. Therefore, such private parties will be invited to co-creation and further prioritisation of actions. Recommendations on actions are likely to evolve with new opportunities, technology, and market developments. The work and progress will therefore be evaluated every year, 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.

Nordic governments must define the framework for change, take responsibility for necessary regulatory amendments and standardization, lead the change process and engage in co-creation with the private market. This does not mean that everything is going to be co-creation - but that e.g. planned digital development adjust to common standards, and thus ensure a common direction. This will not necessarily entail extraordinary investments.

Today's challenges: Current situation for 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 and the administration of their finances. 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 should use digital transactions documents to save time

SMEs want to get credit easily

SMEs want to know if a business partner is trustworthy

SMEs face barriers when switching systems

SMEs want easy control of cash flow and liquidity

SMEs want easy access to new markets

These findings are all connected to the same basic problems: Transactions that are handled via paper documents, systems that cannot exchange data, and a general tendency in public sector digitalisation of developing isolated solutions and failing to coordinate and truly simplify the basic business administration processes.

The Pains of Nordic SMEs

A majority of the SMEs use their evenings and sometimes weekends to do administrative work, mainly involving manually punching data between systems and reporting to the government. A majority of the punching is caused by poor interoperability between systems. The manual punching 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 punching 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, 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)

Today's challenges: Current situation for the Nordic SMEs

The following further explains the challenges that SMEs face today in their day-to-day processes and administration of their finances.

Use Case 1: SMEs should use digital transaction documents to save time

The majority of SMEs still send their invoices on paper or PDF. SMEs spend a lot of time manually punching prices, numbers, and product information in these transaction documents. Since the data is not yet fully digitalised, information is lost, and data cannot flow digitally in real-time.

Use Case 2: SMEs want to get credit easily

Credit assessment processes are slow today because SMEs do not have real-time insight to their current financial situation. Current evaluation processes are too expensive, causing much manual work for both SME and bank or credit institution, and might not in the end give the relevant up-to-date information to the creditors. Small loans are often denied to SMEs because the profitability for the credit institution is too low, not because the SME is at risk. The lack of timely credit assessment data weakens time-to-market for SMEs and even obstructs short-term growth.

Use Case 3: SMEs want to know if a business partner is trustworthy

SMEs have a limited overview of their trading partners' current financial situation. It is difficult to reliably check whether a new customer or supplier has liquidity or is in fact a fraudulent business. Not much updated information is available or easily interpretable for SMEs who want to know their partners.

Use Case 4: SMEs face barriers when switching systems

SMEs have a hard time switching business systems because their data cannot be moved between systems. There is limited adoption of good quality standards that can be used for moving structured business data. This also hinders the development of innovative new solutions based on business data. The lack of common standards makes it hard for SMEs to buy add-on services from other suppliers. The market for data-driven services is inhibited due to the lack of access to data, and there is a risk of vendor lock-in effects.

Use Case 5: SMEs want 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. Lacking an updated overview, SMEs cannot make informed decisions.

Use Case 6: SMEs want easy access to new markets

Cross-border business in the Nordic region is a hassle due to high administrative burdens, and SMEs may lack the confidence to scale to other Nordic markets. SMEs might not know the formal requirements and the regulation that applies in cross-border trading, i.e. are uncertain if they include all required details (especially related to VAT) when invoicing Nordic trade partners. There is also lack of knowledge about the benefits of digital transaction documents when going Nordic, as SMEs do not know how to use existing digital solutions for cross-border trading.

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How to solve today's challenges

Six overall solutions are suggested to solve the challenges that SMEs face today and to create a digital ecosystem based on real-time financial data:

Nordic Smart Businesses use digital business documents

In order to reduce costly manual operations and get high-quality, structured data, the SMEs need to increase their use of digital business documents such as e-invoices e-orders etc. in standardised formats. An increased use of digital business documents will create a fundament for structured and standardised business data, which will make trade across the Nordics easier, make it possible to automate bookkeeping and reporting, and will give the SMEs a near real-time insight into their financial situation. This will make a data-driven society possible.

SMEs use Open Accounting business systems

Business systems should enable third-party access to financial transaction data and thereby create an innovative platform, increase competition in the market and make it possible for customers to shop complementary services. Regulation is required to ensure that business systems can be accessible. Whereas the banking sector, after Payment Services Directive 2 (PSD2), have standardized access to bank account information in real time, the same is not the case for financial data. The sharing of transaction-level data must comply with privacy and trade regulations.

SMEs are born digitally

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.

Easy compliance and know-your-customer services for SMEs

Know your partners! To reduce risk and transaction costs, SMEs need easy ways of assessing whether their vendors, customers or other partners can be trusted. Today, public authorities have increasing data about non-compliant companies. Data and algorithms from business registries could facilitate the SMEs, banks and creditors when they need to check their business partners across the Nordic region. Since every SME is someone else's partner, the need is also to be able to show that you can be trusted.

Simplified reporting and statistics for SMEs

The benefits of the digital reporting is lost when the total amount of reporting requirements is endlessly increasing in a non-coordinated way. The Nordic governments need to work hard to coordinate the reporting requirements and other requirements imposed on the SMEs, both nationally and across the Nordic countries. Authorities should align their demands and thereby create data sets that are detailed enough for statistical purposes and comparable for benchmarking in specific industries, while not revealing sensitive data.

Product information

Today, product information in orders and invoices varies in content and level of standardisation. To ensure manageable and credible information flows of non-financial product information, product data must be standardized and made available in the digital transaction documents (not least in digital orders and digital catalogues). The Nordic region could lead the way,

How to solve today's challenges: Recommendations

Since 2018, NSG has been working on developing recommendations for realising a digital ecosystem based on real-time financial data. This work has resulted in the following general recommendations, which in each case must be adapted to specific national contexts:

SMEs use digital business documents

There are several ways to regulate regarding this recommendation. In general, amendments may be needed to increase digital business document adoption, as there is a lack of incentives to use the digital document formats (e-orders, e-invoices, and e-receipts). The introduction and use of these business documents could eventually be supported by law, and/or supported by broad partnerships between business system vendors, business associations for SMEs and relevant sectors (i.e. accountants or credit institutions), and government authorities.

SMEs use business systems with Open Accounting enabled

Business systems should enable third-party access to financial transaction data with consent from the SME who owns the data. The sharing of data should comply with privacy and trade secret regulations. Open Accounting will improve interoperability and portability, and restrictions to the storage of business document data. Storing data in digital form should be allowed by law. If necessary, interoperability and portability should be regulated.

SMEs are born digitally

Registration of a new company can ensure that it has digital systems that ensure consistency, digital processing of business documents and compliance with law. This will increase the use of business systems will ultimately increase the adoption of business documents.

Easy compliance and know-your-customer services for SMEs

Government authorities (or private actors) should provide validation and warning services helping SMEs to operate in a secure and compliant business environment

Simplified reporting and statistics for SMEs

Automated reporting should be enabled and supported by law. To lessen the administrative burden of SMEs, authorities must be able to share data between authorities.

Product information

Standards for product codes should be identified and developed, and the use of product codes from common product registries should be widespread in digital business documents. Relevant sectors should adopt and support standardized e-catalogues and governments could lead the way in e-commerce by promoting e-commerce in general and demanding the use of e-catalogues in public procurement.

Nordic Smart Government

New digital services depends on access to data in a fair and competitive market

Moving the SMEs work processes from paper and excel sheets to digital business systems will increase the amount of structured business data. [EY \(2017\)](#) has calculated the potential value of real time business data in the Nordic region to be 24,8 - 27,5 billion EUR. This is based on new services becoming possible when standardised data are employed in the sales and purchase processes of the small nordic businesses.

There is an increasing interest in these data among several actors. Today, banks and business system vendors are developing services beyond their traditional business domain, and thus offer integrated services: banks offer bookkeeping services, and banking and credit services are offered by digital business system vendors and their partners. Moreover, there are entrepreneurs offering new data based services based on product data, salary data etc.

The development of new services is dependent on access to business data. With the *Payment Service Directive* (PSD2) banks are obliged to make business data related to payments available (Open Banking). These data are attractive to the digital business systems vendors, who process sales and purchase transactions, bookkeeping and accounting. However, the business systems are not required to open accounting data in the same way as banks are under the Open Banking directive. The business system vendors define the contractual terms governing data sharing of SMEs' data. This means that SMEs can only decide with whom they share their business data, from a vendor-defined list of possible service providers. The questions of format, level of detail and timeliness differs from business system to business system.

SMEs are very different in their business operations, and thus have different interests and needs which are best accommodated by industry specific services or other customised services. Their interests are thus likely to be best accommodated by efficient competition in the market - which is dependent on interoperability and access to data in order to deliver specialised services.

Sharing business data 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. In the NSG vision, sensitive information should always be protected. The majority of business data, which is not affected by GDPR, should in principle shareable by the SME who owns the data, and thereby benefit that SME.

Moreover, it is valuable to employ artificial intelligence to provide customised services to the SMEs. Thus NSG wishes to ensure ethically responsible use of artificial intelligence in accordance with the EU Commission's guidelines.

While new business models arise with access to data, this data may also contribute to disrupting existing business models. Digital business services replace manual bookkeeping and accounting services. Likewise, auditing practices are changing. Automated flows of standardised real-time data increase the quality of data, as manual typing is eliminated. Artificial intelligence may be employed for audits and control measures, and traditional auditing processes are expected to change.

Benefits of NSG

Nordic Smart Government is going to create value and new opportunities for several stakeholders in the following years to come in the Nordic countries. The Nordic ecosystem will mainly benefit the business system vendors, government authorities, SMEs and financial service providers, but other stakeholders in the NSG ecosystem will also reap the benefits.

The benefits of structured business data for SMEs

- Less manual punching 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
- Traceability of products and materials is enabled (e.g. chemicals, waste, etc)

Benefits for government authorities

- Business system vendors would be key players in the automation of government reporting. Compliance by design will make it easier to report correctly, and increase transparency
- 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 policy can be developed in a timely manner
- National Statistics Agencies can simplify the process of obtaining business data by enabling reporting directly from the business systems

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 loans.
- When it becomes easier, safer, and thereby more profitable to provide liquidity to SMEs, financing will increase and more frequently end in the hands of the SMEs and entrepreneurs with the best potential chance of paying back and growing their business. The liquidity boost coupled with reduced credit risk stimulates the economy of the Nordics.
- Insights into real-time transactional data also 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 with the same data as the credit risk assessments.

Nordic Smart Government

NSG Proof of Concepts and Prototypes

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 in 2019 demonstrate the feasibility of

- Real-time data used in credit assessments
- Know-Your-Customer and network risk services
- Standard Business reporting
- Automated account posting
- A common language for auditing
- Automated calculations of VAT in domestic/cross-border trading
- 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.

The PoCs used the NSG reference implementation [documented on GitHub](#).

Digitalism Challenge

The Finnish NSG team, together with Aalto University, hosted and defined the [Digitalism Challenge 2019](#), with around 100 students participating in the final pitching event. Prototypes were developed by 14 teams in three thematic categories. The themes of the challenges included facilitating business activities and new services that can be built by making use of real-time structured financial data within agriculture and micro-brewing industries.

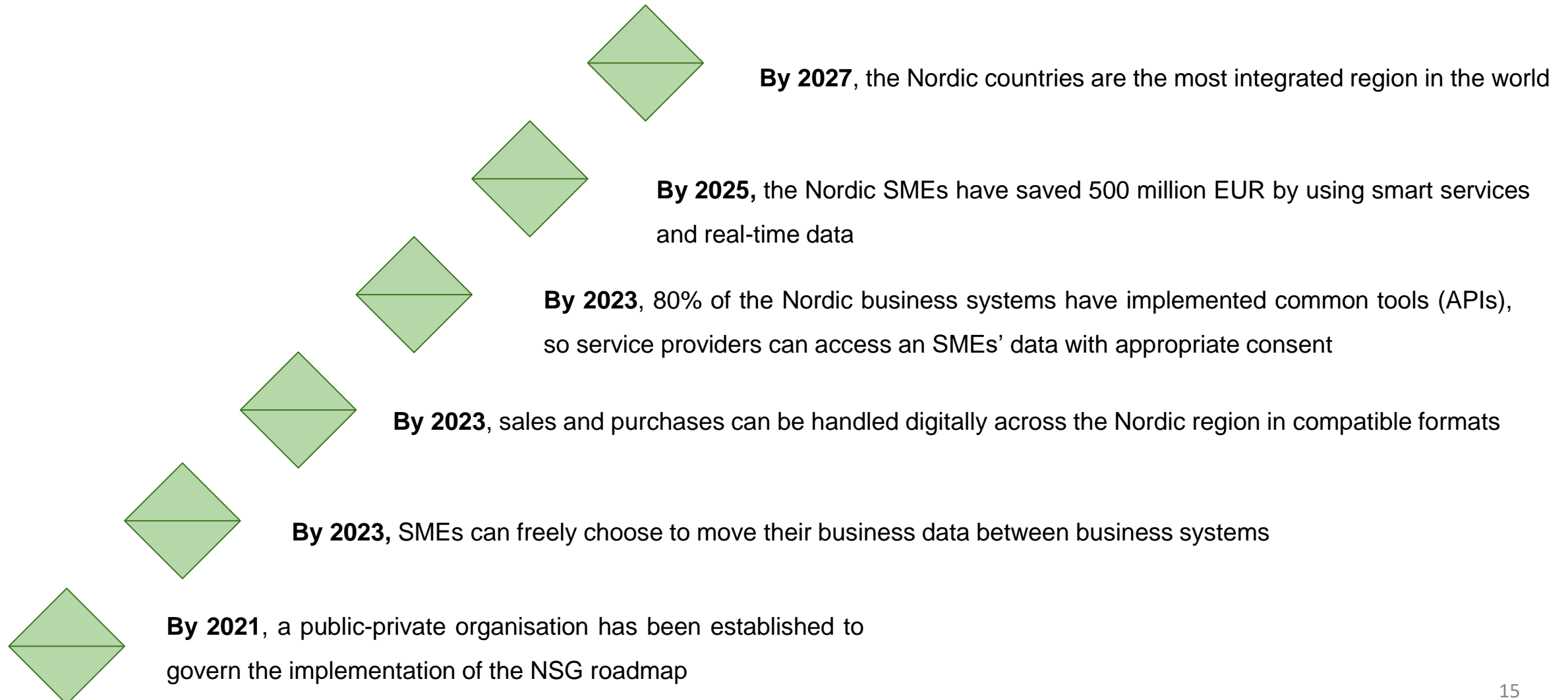
Copenhagen FinTech - The Nordic Sandbox Challenge

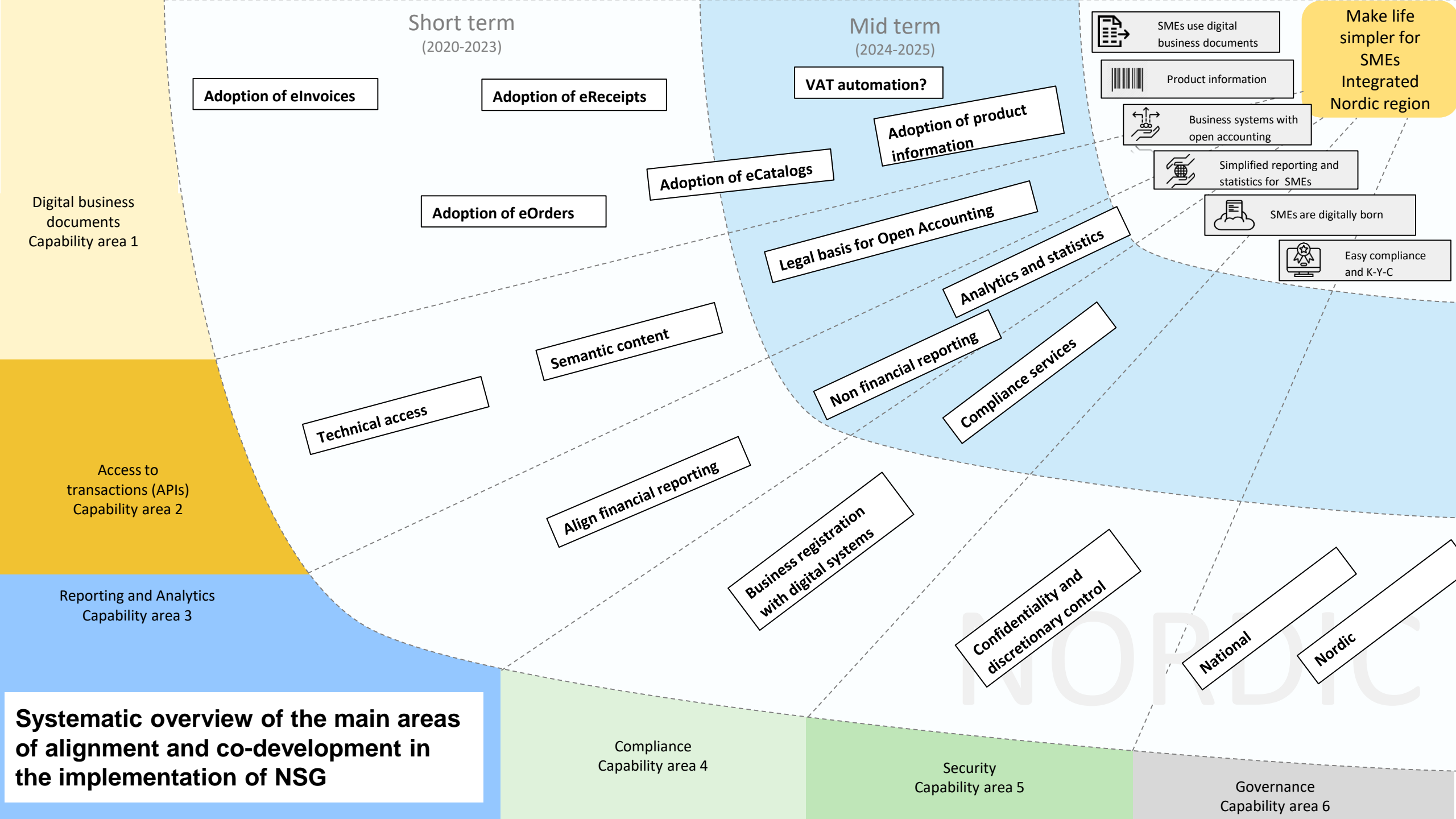
All of the central concepts explored by NSG relating to B2B services driven by real-time data flows were covered by the participants. Two winners were found between the eight contestants in the challenge. One winning PoC showed how simple accounting ought to be with better automation, while the other 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. Read more about the Copenhagen Fintech Challenge [here](#).



Milestones





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) and push for the use of e-orders, e-invoice, e-receipts, and e-catalogues
- Implement common tools (APIs), so service providers can access SMEs data with given consent
- Integrate with Nordic-wide systems for powers and mandates
- Offer standard contract terms, empowering SMEs to use whatever business systems and combine services according to their needs
- Adopt national chart of accounts

SMEs should...

- Use digital business systems and services
- Use e-orders, e-invoice, e-receipts and e-payments
- Share data with trusted parties to get better services

Government authorities should...

- Make public procurement digital by using e-orders, e-invoice, e-receipts, and e-catalogues
- 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
- Make business registry data freely available
- 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 services and systems when data is standardised
- 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 real-time data

Implementation: Collaboration, Changes, and Co-creation

Implementation - Governance in public-private partnership

Realisation of NSG is dependent on many actors making changes. Changes are generally needed in the business operations of any actors. Changes are needed in the business models of the service providers, the SMEs workflows, technical systems as well as in regulation. Crucial to the changes are Nordic business system vendors. The dialogue with them has revealed that the market is generally positive towards the vision, and the business system vendors wish to take part in the realisation of NSG.

In order to make an efficient implementation, a Nordic public-private governance body with a Board and a secretariat must be set up. The Board should work on prioritisation of tasks and support co-creation in the implementation phase. The recommendations, milestones and actions of the roadmap need to be assessed annually and revised continuously by this governance organisation and the national authorities.

The governance of the ecosystem should be established with the aim of ensuring coordination between the various stakeholder groups, synchronize national and Nordic initiatives and actions, and work together on communication and the development of solution building blocks. Furthermore, there is a need to establish a strategy on how to influence standardizations and regulations on an EU-level.

National developments must be coordinated and decided on nationally, in order to support the common vision. Moreover it is necessary to assure coherence on Nordic-national level.

Co-creation

Private actors must invest in developing existing systems and services, and they must also invest in new services to gain from the NSG recommendations on digital business documents, Open Accounting, and so forth.

Access to data is crucial in order to develop new services. NSG 3.0 has set up a digital environment for testing the data flow of Open Accounting. This test environment will be available to the private actors for innovation, co-creation, and agile trial runs in the next phase of NSG.

Co-creation is necessary to ensure value. Co-creation with market actors is also needed in order to detail how to utilize and benefit from a better flow of data in sales and purchase processes.

On a national level, it is recommended to set up partnerships to increase the uptake of eDocuments (e-order, e-invoice and e-receipts) among business systems as well as SMEs.

Recommendations and activities are likely to develop with new opportunities and experience. Thus, the roadmap appendix with capabilities and actions is not a static document but is likely to evolve.

Budget and the possible common Nordic infrastructure for accessing data across the region

The budget for implementing NSG will be scaled, according to the available funding.

At the minimal level, NSG will ensure some alignment of national infrastructure and coordinate standardisation at a Nordic level. Coordination is handled by the Board of the public-private organisation and its secretariat. This organisation will also monitor the Nordic markets and technological developments related to business data and data sharing. Moreover, it will be responsible for communication. This may include the set-up of an online community for co-creation and yearly summits.

A medium-level implementation will include basic solution building blocks that can be reused in all the Nordic countries. These building blocks will ensure cross-border data flows and facilitate processes in which businesses operate with other Nordic businesses. For instance, e-ordering and e-catalogues should be used in the whole region and data should be shared in a uniform way.

A full implementation will give more shared value for both SMEs, private actors and national authorities, by providing several common interoperable services, higher quality of data and higher levels of security.

The next page provides an overview of these three budget versions.

To ensure data flow across the Nordic region (B2B) and compatibility in cross-border public services (B2G), a number of infrastructural building blocks need to be in place in the years to come. The first prerequisite is common definitions of data and a well-defined [architectural overview](#). With this, Nordic business registries and other authorities could begin developing the common building blocks and thus make it possible to easily access data across the region. Examples may include:

- Common e-addressing services
- Standards for e-orders and e-catalogues
- Nordic powers/mandates lookup service
- Common integrity models and immutability mechanisms for eDocuments
- Interoperable core chart of accounts for each country
- Nordic transformation services between national document and account formats
- Mechanism for anonymizing aggregated data before analysis
- Establishing and indexing reference registries for product codes and information models on products (ensuring digital flows of data on products)
- Nordic trust-increasing government services and KYC data sharing between public and private actors

Proposed budget - draft

Minimum Implementation Estimated cost: 27 million DKK

- Nordic organisation, secretariat, and public/private governance model: 9,6 million DKK
- Monitoring market: 0,8 million DKK
- Communication 3,3 million DKK
- Segmentation of SMEs and analysis of industry specific needs and benefits 0,8 million DKK
- Aligning common Nordic infrastructure, including standardization work, common semantic model 12,5 million DKK

Medium Implementation Estimated costs: 37 million DKK

- Governance organisation increased to 12,1 million DKK
- Common Nordic infrastructure increased to 20 million DKK total, including:
 - Common eAddressing services 4 million DKK
 - Increased use of standardised e-orders and e-catalogues 3 mio DKK
 - Nordic powers/ mandates lookup service 5,5 million DKK
 - Common semantics, endpoints, and APIs 7,5 million DKK

Full implementation includes:

- Common integrity models and immutability mechanisms for e-documents
- Interoperable core chart of accounts
- Nordic transformation services between national document and account formats
- Mechanism for anonymizing aggregated data before analysis
- Establishing and indexing reference registries for product codes and information models on products (ensuring digital flows of data on products)
- Nordic trust-increasing government services and KYC data sharing between public and private actors

Full implementation Estimated costs: 51 million DKK

Future perspectives: non-financial data can be efficiently shared in real time

Information about products and production beyond the financial data is increasingly in demand by different stakeholders, such as business partners, creditors, government, investors and consumers. In the years to come it will be decisive in competition, as social, environmental, and climate responsibility has an increasing economic importance. This is clearly stated also in the EU commission's draft Action Plan on Circular Economy which says that .."as by 2030, only safe, circular and sustainable products should be placed on the EU market".

This 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, as orders, NSG delivers a basis for efficiently sharing not only of financial data, but also non-financial data.

These perspectives are further elaborated in this [memorandum](#).

Today, product information in orders and invoices varies in content and level of standardisation. To ensure manageable and credible information flows of non-financial product information, it needs to be standardized and available through business transaction documents e.g. e-orders.

Correct accounting, in turn, is based on information on what kind of products and services are being purchased and sold. Product information may be relevant to various accounting procedures, and this information is therefore needed on orders and subsequently on invoices. Product information is thus today within scope of NSG, but product information must be structured, standardised, and be widely used before systems can utilize this data in real time.

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.

Nordic collaboration in NSG 3.0 (2018-2020)

The five Nordic Business Registries are contract partners of Nordic Smart Government 3.0 (2018-2020). The work so far has been performed in collaboration between 18 Nordic government organisations, participating in the work to varying degrees.



- The Brønnøysund Register Centre, Norway
- The Norwegian Tax Authority
- The Norwegian Statistical Agency
- The Norwegian Digitalisation Agency



- Iceland Revenue and Customs
- The Icelandic Statistical Agency
- The Icelandic Ministry of Finance and Economic Affairs
- The Icelandic Ministry of Industry and Innovation



- The Danish Business Authority
- The Danish Tax Authority
- Statistics Denmark



- The Swedish Companies Registration Office
- The Swedish Tax Authority
- The Swedish Statistical Agency



- The Finnish Patent & Registration Office
- The Finnish Tax Authority
- State Treasury
- Statistics Finland

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 fulfill the vision of NSG and ensure the implementation of the capabilities. The actions are a menu of ideas, and needs to be assessed for relevance in each country.

The six capability areas in the diagrams (see graphic presentation on page 13) 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, 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 and Nordic level.

Table of contents - preliminary

- Graphic presentation of draft recommendations of national initiatives and actions (Nordic + each national diagram)
- The Nordic diagram (found above, p. 13)
- 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 pending)

- Capabilities (link: https://docs.google.com/document/d/1v5iHELL30p5A41vbJFJY7HvaT5g6OTDS5LH2Lp_vXSQ/edit#heading=h.5voykp1iiqj7)
- Bundled actions (link: <https://docs.google.com/document/d/1rOcJD6S7utMRrCxulBMHQS9ZlrFG3Vnc-JA1SBaUuhA/edit#heading=h.g3g4iihcee6>)
- Architectural overview (link: <https://docs.google.com/presentation/d/1xHgceW3yoA6UGHYOqLb0IMUTfZL2BXOu/edit#slide=id.p10>)
- Rulebook (link: <https://docs.google.com/document/d/1iTLZR1YtafqPuplfucNFCaJRZIREG4Nv5NFZR7LUf2c/edit>)
- Proofs of Concepts explored in the course of NSG 3.0 (link: <https://docs.google.com/document/d/1kyCRr2Q0OLDXvqsVz7Xwj7ekffpaZ0ao71Bya2ly9PA/edit>)
- Short reading guide with reference to all other main deliverables, which will be published on the website (pending)

Draft version /
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