

# Nordic Smart Government & Business

2021–2024  
FINAL REPORT



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# Executive summary

## Introduction and background

The Nordic Smart Government & Business (NSG&B) programme 4.0 embodies a vision set by the Nordic Council of Ministers to make the Nordic region the world's most integrated and sustainable region by 2030.

The Nordic countries are some of the most digitalised countries in the world, however, if digitalisation efforts are not coordinated across countries, national digitalisation efforts can end up creating barriers for cross-border trade between the 2 million small- and medium sized Nordic businesses. For the Nordic region to be integrated and sustainable there is a need to coordinate and develop digital infrastructure and solutions that are interoperable and cost-effective to use across businesses, systems and countries.

On this background, the NSG&B programme was started in 2016 by the business registry authorities of the Nordic countries with an aim to make real time business data accessible and usable for innovation and growth across the Nordic region in an automatic consent-based and secure manner. Since then, in total of 21 government agencies from across the Nordic countries have been involved in the programme. Collaboration with the private sector has been a cornerstone of the initiative, featuring numerous pilot projects, strategic meetings and dialogue days aimed at gaining input and direction to the work. From 2021-2024 the programme entered its implementation phase, and this report will cover this period of the cooperation.

## Overall results

The field of real time economy - automatic business data and reporting – is regulated nationally as well as by the EU. All five Nordic countries have ambitious digital policies. There is cooperation in the EU, in the Nordic Council of Ministers, and government agencies in the field have set up cooperation forums with stakeholders.

However, there has been no regulatory mandate connected to the NSG&B programme as such. Instead, the NSG&B programme has focused on identifying those areas, where national policies align and can benefit from cooperation, including areas where new EU regulation is set to be implemented nationally. In these selected areas, the NSG&B programme has been a cooperation "laboratory" where national experts have worked closely together in working groups to find out how to best implement interoperable solutions that can work in all Nordic countries

The NSG&B programme has applied a decentralised model, where cooperation is focused around these common areas - while leaving the parts of national implementation up to the countries themselves to set their specific standards, regulations and pace of implementation accordingly. This has resulted in a pragmatic working model where cooperation has been able to focus on the areas that hold the most *Nordic added value* and leaving others for national implementation. This has also meant that the NSG&B work has been adjusted to the policy development in the individual countries, as well as in the EU. In areas where the EU has put forward new efforts such as e.g. the EU Digital Identity (eWallet) and the European Commission's proposal VAT in the Digital Age – ViDA, the NSG&B work has thus shifted into contributing to the EU efforts in these areas.

In the cooperation, the *interoperability* of the different national standards and methods has been key. This means that the countries do not need to have the exact same standards or work with the same regulations if the different systems can work together and are compatible in these cross-border situations. It has been very important that the NSG&B solutions have the potential to be interoperable on an EU-level and not limited for Nordic or national purposes only.

A focus in the NSG&B programme has been on the *cross-border* use cases of real time economy - automatic business data and reporting. Focusing on cross-border situations has been a valuable method for finding new solutions and contributing to the national implementations of upcoming EU regulations, that also very much centre around digitalisation of cross-border business data and reporting within the union. The NSG&B programme has thus led to a range of contributions to the EU efforts in areas such as cross-border VAT (ViDA), high quality data in the eWallet and automatic collection of green data (the EU directive, Corporate Sustainability Reporting Directive, CSRD).

Thus, the guiding principles for the *working method of the NSG&B programme* have been:

- Focus on addressing *cross-border* use cases of trade transactions and reporting to authorities
- Focus on *interoperability* across countries in areas where there is a common understanding of rules and terms. Moreover, it has been important that solutions should have the potential to be interoperable on an EU-level and not limited for Nordic or national purposes only.
- Solutions that are digital, seamless, automatic, secure & consent-based

Based on addressing some of the most important cross-border situations facing the Nordic SMEs, the NSG&B national experts together with private partners in the working groups have made a range of new possibilities available for the market as well as EU initiatives to implement further.

Some of the main results of the programme for Nordic SMEs are in the following three areas:

- Possibilities for further automation of cross-border trade and reporting
- Possibilities for cost-effective access to structured data cross-border
- Possibilities for access to national digital services - cross-border digital identification

The results under each area are summarised below.

## **Possibilities for further automation of cross-border trade and reporting**

- **Possible to automate sales & purchases with companies from other Nordic countries across different ERP-systems:** Earlier it was not possible to send eInvoices and other eDocuments across borders in the Nordic region. Instead, companies had the option of exchanging pdf-invoices or building their own electronic processes internally or set up tailor made systems with trading partners. In 2024, NSG&B has now demonstrated a possible setup for automating these processes cross-border in the Nordic countries and across different service providers and simulating ERP-systems. The national infrastructures in all five countries now can be set up to handle this feature using the Peppol Network. If implemented, this can enable an automation of electronic documents involved in trade between Nordic companies (the so-called eDocuments). If implemented,

this means that Nordic companies can have an automated bookkeeping process for sales and purchases managed directly from their existing bookkeeping systems when they trade with other Nordic companies. This has the potential to save time and money by cutting out a range of manual administrative tasks. However, while the NSG&B has done the groundwork demonstrating the pilots in this field, the implementation of these features is still needed to achieve the potential.

- **Test ideas for automatic collection and exchange of green data in ERP-systems and other services - working across systems and across countries.** With the increasing amount of reporting requirements due to the EU Corporate Sustainability Reporting Directive (CSRD), companies need systems for automating their climate data. The NSG&B has started to test a method for the national infrastructures of eDocuments to include the climate data of products and services using the Peppol format for all Nordic countries for selected cross-border use cases regarding the climate footprint of business travel in the Nordic countries. If implemented, this means that companies can have the possibility to automate their climate data collection directly from their existing ERP-systems – that notably also can work across ERP-systems and countries – due to the interoperability of this simulated solution.
- **A method for automation of cross-border VAT reporting (ViDA).** The 2022 ViDA proposal from the European Commission comes with a mandate to further automate VAT-reporting on cross-border trade within the EU, and the NSG&B has successfully conducted a pilot on how to generate automated reporting in this field. If implemented, this can make it possible for companies to report cross-border VAT automatically and directly from their ERP-systems or service providers. Furthermore, the NSG&B has provided suggestions for how to support the further digitalisation of cross-border VAT processes by ensuring correct automated assigned VAT Category Codes and easing the VAT refund application for purchases in another country.

## Possibilities for cost-effective access to structured data cross-border

- **Possible for easier "translation" of companies' financial income statements across the Nordic region that can contribute to more cost-effective benchmarking analysis of businesses: A Nordic vocabulary.** In 2021 and still today, companies can use different terms for financial income statements in their annual reports, because there are different types of formats and terms for annual reports in the different countries. Until now, there has been no coherent guideline from authorities on how to translate the various financial income statements between these different methods. There can be substantial work involved with analysing and benchmarking the financial performance of individual companies, that now to some extent can be mitigated by this new guideline in the field. In 2024, the NSG&B has finalised a *Nordic Vocabulary* – a common Nordic vocabulary for financial information, that for instance can be used to improve and ease the process of examining companies' eligibility for loans and investments across the Nordic region.
- **Possible for easier and more cost-effective access to public registry data of Nordic companies directly from inside ERP-systems and other services.** In 2021 and still today, there is data available from the national business registries in the EU, however, the current common registry for businesses in the EU (BRIS) is only intended for individual lookups, has lower quality data and is not scalable. This is because national business registries have different standards and formats, which increase costs for developers to build APIs and integrations connecting the data from each national registry to

ERP-systems and other services. Based on the NSG&B Nordic Vocabulary of financial statements, the NSG&B has developed a common Nordic API that includes data from Nordic business registries into one API (instead of e.g. five different APIs). If implemented, this can lower costs of third-party developers and ERP-systems and can provide basic company data directly into ERP-systems for Nordic companies that are interoperable and structured in the same way. This data can for instance come into use, when one company has to write an invoice to another company in which the company address and other basic information is automatically filled out by the ERP-system instead of manually typing it into the invoice. This common Nordic API can be expanded to include more areas and more countries. In principle, this semantic model and the API could be used as an MVP on a whole-of-EU API or other types of solutions that includes the national business registries from all of the EU-countries into one. If implemented, this could function as a "BRIS" for machine-readable structured, high-quality data or as data in an eWallet. Moreover, NSG&B has been in dialogue with the Semantic Interoperability Community<sup>[1]</sup> (SEMIC), that develops solutions to help European public administrations perform seamless and meaningful cross-border and cross-domain data exchanges to reuse the model and add it to the EU Core Vocabulary.

## Possibilities for better access to national digital services - cross-border digital identification

- **Exploring possibilities for a cross-border digital identification - eWallet:** In 2021 and still today, it is not necessarily possible to access the different digital government services for businesses and citizens, if you are not a resident having a digital ID of the country in question. NSG&B has tested a digital solution enabling a citizen in one Nordic country to establish a company in another country in a remote, digital and secure manner. There was developed a **pilot for mutual ID recognition**, where two countries accepted each other's national IDs for logging into digital services. Alongside this work, the European Commission put forth plans of an eWallet for citizens and businesses in the European Union coming into force in 2024. The NSG&B work in this field has been carried into the EU Commission's so-called Large Scale Pilot projects, which are building prototypes and testing everyday use cases of this new EU Digital Identity Wallet.
- **Contributing with structured data to the EU Digital Identity Wallet:** An important part of a new EU Digital Identity Wallet would be that companies have an EU Company Certificate, containing a basic set of information about companies, available free of charge in all EU languages. This requires that basic company information is available in interoperable structured formats cross-border. On the basis of the NSG&B common semantic model for basic company information, The NSG&B has contributed directly to the EU Commission's Large Scale Pilot - the European Consortium Wallet - showing how basic company information from the national registries in the Nordic countries can be integrated into one structured format, the common Nordic API, where this information can be exchanged via a back-end API into the eWallet.

Common for the NSG&B results of all three areas is that they are all on the level of core framework conditions. The cooperation has been driven by the government agencies for business, the agencies for business registries, and tax agencies and focused on the core national digital

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1. SEMIC, 2024, Issue on Signatory rights GitHub, <https://github.com/SEMICeu/Core-Business-Vocabulary/issues/48>

infrastructure that constitute the pillars of the wider ecosystem. The NSG&B has thus made the groundwork for new possibilities for cross-border interoperable solutions to be built and taken into use by market actors - ERP-systems, developers and the companies themselves. Moreover, these cross-border possibilities on a Nordic level have been taken further as models for whole-of-EU solutions such as the upcoming eWallet for the EU, as well as models for the cross-border VAT area (ViDA-proposal), and the green data area (CSRD).

These above selection of results from the programme, could not have been done by market actors alone, or by individual countries alone. These are examples of the added value of having all the relevant Nordic government agencies to work together with market actors to deliver a setup that enables cross-border and cross-system digitization contributing to lowering overall administration and transaction costs of the Nordic SMEs and Nordic markets as well as the EU Single Market.

## Achievements on the NSG&B Roadmap Milestones

The NSG&B programme has made efforts towards realising the vision of an integrated and digitalised Nordic region, achieving six of the eight outlined milestones from 2021. The progress was facilitated by initiatives across four key solution areas – Digital Business Documents and Product Information, Open Accounting and Simplified Reporting, Born Digital, and Reliability and Data Quality. Contributions from national and European initiatives, along with active involvement from external market actors, have been important in advancing these efforts.

Here is an overview of how the milestones have been met and the challenges encountered:

- **Establishment of a public-private advisory board:** The NSG&B Nordic Advisory Board as well as national advisory boards have been set up and contributing in setting the overall strategic direction of the programme.
- **Adoption rate of digital business systems among SMEs:** According to the national surveys conducted, the use of digital business systems among businesses is: ~79% in Sweden, ~80% in Finland and ~83% in Iceland. In Norway, it is mandatory for all businesses to do their tax declaration using a digital business system, and in Denmark, a certified digital bookkeeping system has been made mandatory for all businesses with more than DKK 300,000 in sales for two consecutive years from 2025 onwards.
- **Enabling data mobility between systems:** This milestone was achieved mainly through the solutions delivered by market actors such as system vendors.
- **Standardisation of digital sales and purchase processes:** Achieved a high degree of standardisation by using Peppol BIS and Peppol Network, making sales and purchases more efficient across the region.
- **Implementation of common data access tools:** Based on the fact that all main system providers of bookkeeping-, digital business- and ERP-systems in the Nordic region have APIs and other solutions available for SMEs to share their data with third parties, it can be concluded that this milestone is met.
- **Increase in the proportion of digital invoices:**
  - **Goal:** By 2024, 80% of invoices sent in the Nordics are digital.
  - **Current Status:** Partially met. National surveys indicate Finland has a leading role with 93.2% adoption, followed by Norway at 77% and Iceland at least 75%, while Sweden and Denmark lag behind at approximately 58% and 56%, respectively.

- **Cost savings achieved by SMEs through smart services and real-time data:**
  - **Goal:** By 2025, save EUR 500 million for Nordic SMEs.
  - **Current Status:** Savings are expected to exceed the goal due to NSG&B and national initiatives:
    - **Denmark:** Predicted to save EUR 400 million annually from 2025 due to new legislation.
    - **Finland:** Estimated savings of EUR 2.5 billion by 2030 from using structured procurement messages. Estimation of savings is based on calculation made by professor Tomi Dahlberg from University of Turku. Achieving these savings requires that utilisation rate of procurement messages is about 50%.
    - **Iceland:** eInvoices sent to the government are estimated to be saving EUR 10 million per year.
    - **Norway:** Significant digital progress points to potential substantial savings, though no official estimate is available.
    - **Sweden:** Improved e-invoice usage is expected to lead to major cost reductions, although no official estimate is available.
- **Progress towards making the Nordic region the most integrated in the world by 2027:**
  - **Goal:** Become the world's most integrated region.
  - **Current Status:** The NSG&B programme has significantly advanced the Nordic Council of Ministers' 2030 strategy for a *"competitive Nordic region that promotes green growth based on knowledge, innovation, mobility, and digital integration"*. The programme supports high-quality, accessible and automatic sharing of SME data across borders in a secure, consent-based manner through:
    - Enabling possibilities for automatic cross-border invoicing and other eDocuments, reducing the time spent on manual administration.
    - Developing a Nordic vocabulary for financial statements to lower the long-term costs of financial information, enhance transparency and level the competitive playing field in Nordic markets.
    - Implementing an API solution providing access to basic standard data from Nordic registries that can be expanded as needed to increase trust to facilitate, for example, business analyses and comparisons for investors and partners.

Overall, the NSG&B programme has made a lasting impact on the development of national digital solutions and infrastructure that are interoperable and relevant within the broader Nordic region, the EU and globally.

## Challenges and external factors

The NSG&B 2021-2024 programme encountered several challenges and was influenced by a variety of external factors:

- **Differences between countries:** While the Nordic countries share many similarities in their approach to digitalisation, they also have distinct differences, including investments in various standards which pose challenges to achieving interoperability. In addition, each country has its own national legislation, complicating the uniform implementation of changes and making it difficult to achieve harmonisation across the region.
- **EU Directives:** All relevant EU legislation in the field of the Single Market is integrated into the European Economic Area (EEA) Agreement so that it applies throughout the whole of the EEA, that include all Nordic countries. However, each country must interpret and implement their own national solutions that comply with these EU directives. This process necessitates careful alignment and can lead to varied implementations across different countries.
  - The NSG&B has been focused on developing and testing common standards and formats that are some of the core framework conditions. SMEs and system providers have been involved in testing these pilots, which has been an efficient way of validating the benefits and obstacles of the operational models, as well as the costs of implementation. However, external parties that have not been directly involved in the work can experience that the results achieved are not at the stage, where they are currently offered in the market and can be integrated directly into their systems and taken to use at this point, because the solutions still need to be adopted by system providers more widely.

## Impact of NSG&B deliveries on national and EU initiatives

The NSG&B programme has enhanced cooperation and knowledge sharing among Nordic countries. Its results lay a strong foundation for furthering the work on interoperability across borders. It has been important that solutions should have the potential to be interoperable on an EU-level and not limited for Nordic or national purposes only. Areas that can benefit from NSG&B's work on semantics and digital business documents include:

- **European Commission's proposal - VAT in the Digital Age (ViDA):** If implemented, NSG&B's pilot on how to fully automate VAT-reporting can make it possible for companies to report cross-border VAT automatically and directly from their ERP-systems. Moreover, NSG&B's standardised eDocuments can improve VAT system efficiency and compliance.
- **eIDAS2 Implementation:** NSG&B's interoperability solutions (semantics and national APIs) support secure cross-border digital identity and trust services.
- **The EU Core Vocabulary:** The NSG&B has been in dialogue with the Semantic Interoperability Community (SEMIC), that develops solutions to help European public administrations perform seamless and meaningful cross-border and cross-domain data exchanges, to reuse the model and add it to the EU Core Vocabulary. This means that the NSG&B work on signatory rights can be a standard for signatory rights in the EU Core Vocabulary.

- **The Corporate Sustainability Reporting Directive (CSRD):** NSG&B's pilots on including environmental product information in eCatalogue using the Peppol Network and eReceipts can be an example of how to facilitate compliance with the new CSRD reporting requirements. See more work on this in the Green eDocument project in the below section.
- **Digital Product Passport:** Structured data, regarding environmental information as input to different processes that use eDocuments, can improve product information tracking and reporting across supply chains.
- **eFTI (Electronic Freight Transport Information):** Standardised eDocuments information as input to custom processes can increase freight transport efficiency and transparency.
- **Data Space Development:** NSG&B's semantic models can enable secure and efficient cross-sector data sharing. NSG&B eDocuments create opportunities to link processes to semantic content in external databases.
- **The EU's Large Scale Pilots Projects e.g. EU Digital Identity Wallet Consortium (EWC):** NSG&B's semantic models and national APIs can support the data sharing use cases of the wallet.
- **Open Data Directive and High Value Data Set:** NSG&B's semantic models and national APIs can support the data sharing between countries.
- **Interoperability Europe act:** NSG&B's contributions in the interoperability area can support the implementation of this act.
- **EU directive on the use of digital tools and processes in company law (New Company Law):** NSG&B's semantic models can support the implementation of this law.
- **National initiatives e.g. the Finnish Real Time Economy (RTE) programme and the Swedish Standard Business Reporting (SBR) Project:** Advances in open accounting benefit this initiative, regulatory and technical analyses have clarified the possibilities and responsibilities of the various stakeholder groups within open accounting.

These examples demonstrate how NSG&B's achievements can be applied to enhance future projects and initiatives.

## Perspectives for continued cooperation

The NSG&B programme has laid the groundwork for continued development in several key areas. The overall denominator is to focus on *cross-border interoperability* in the following three areas:

1. **Expand development and use of eDocuments for trade between Nordic companies**  
Enhancing the use and adding features and cross-border interoperability of digital business documents is critical for improving data quality and reducing the administrative burdens on SMEs. This effort can support the automation and interoperability of environmental reporting but also various other compliance requirements across the region. Future projects can build on the NSG&B specifications and interoperability efforts to automate core business administration.
  - A spin off of the NSG&B work has been to continue the work on including environmental product information into eDocuments to help automate CSRD reporting for companies. The pre-project is called Green eDocuments and is financed under Nordic Council of Ministers. A group of Nordic experts on eDocuments has been conducting workshops in Autumn 2024 to be concluded with

a separate report of the findings in the beginning of 2025. The idea is to continue the cooperation in this field in 2025 and beyond.

- Another spin off is the Peppol ViDA pilot that is building on the NSG&B's ViDA pilot. The pilot is to demonstrate that the Peppol eInvoice format specifications (based on the EN 16931 European Standard for eInvoices) and the Peppol Network, as the transmission method for the exchange of eInvoices and other related business documents, can be used to meet the expectations of all parties affected by eInvoicing and Digital Reporting Requirements (DRR) under ViDA.

2. **Give access to high value datasets for Nordic companies**

Continued advancements in semantic frameworks are essential for ensuring the interoperability of data across the Nordic countries. This ongoing work will be crucial for aligning with EU standards and responding effectively to the new reporting requirements. Future initiatives must prioritise the expansion and refinement of semantic models to maintain compatibility and efficiency in cross-border data exchanges.

3. **Coordination of EU-work**

Given the strong position of the Nordic countries in the area of interoperability of national digitalisation efforts, it is important that there is alignment with EU policy development, the national implementation of EU directives and the technical solutions.

These strategic priorities will guide subsequent cooperation between the organisations that have participated in NSGG&B. The continued cooperation ensures that the legacy of the NSG&B programme continues to influence and enhance the digital transformation across the Nordic region. The transition to new project organisations offers an opportunity to capitalise on the successes of the NSG&B programme and address the challenges with renewed focus and resources.

# Foreword

In today's rapidly evolving business landscape, digitalisation stands as a main driver of growth and scalability. Recognizing its potential, businesses and national governments alike are formulating ambitious digitalisation strategies aimed at harnessing the potential of technology to foster innovation and efficiency.

When these strategies are aligned across businesses and borders, they foster initiatives that can streamline business administration and unlock significant savings in time and resources. This is particularly true in the realm of cross-border trade, where complex administrative processes can hinder progress.

The Nordic Smart Government & Business Program (NSG&B), implemented by the tax and business registry authorities of Iceland, Norway, Sweden, Finland, and Denmark from 2021 to 2024, is a testament to create value for small and medium-sized enterprises by making real time business data accessible and usable for innovation and growth across the region, in an automatic, consent based and secure manner.

Central to our efforts the last four years is the pursuit of digital interoperability ensuring that various digital systems can work seamlessly together across different processes, trading partners, and regulatory frameworks.

By reflecting on our achievements against the benchmarks set in our Implementation Plan of 2021 we deliver this report to provide a comprehensive overview of the tangible deliverables and the extent to which we have met our initial expectations.

NSG&B can conclude that we have achieved significant milestones and that every success is a result of development and cooperation between all stakeholders in the market.

We extend our heartfelt gratitude to Nordic Innovation for its essential financial and strategic support, as well as to all stakeholders whose invaluable insights, testing, and feedback have enriched the program. Your contributions form the foundation of our ongoing commitment to create a simpler, more efficient, and safer business environment for the 2 million small and medium-sized enterprises across the Nordic region.

Signed by the Steering Group of The Nordic Smart Government and Business Programme.

Sincerely,

*Katrine Winding*  
Chair & Director General,  
Danish Business Authority

*Antti Riivari*  
Director General,  
Finnish Patent and  
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*Christel Tennfjord Halsen*  
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*Some of the national experts participating in the NSG&B programme for a meeting in Iceland, May 2024.*

*Source: NSG&B, 2024.*

# About the final report

## Purpose of the report

This is a final report for the NSG&B programme 4.0 from 2021-2024. The purpose of the report is to document the results and wider impact of the programme. This is done by comparing the results of the programme to the application – the *Implementation Plan 2021–2024*.

## Programme impact and external factors

In the Implementation Plan there are a set of roadmap milestones, critical milestones as well as scenarios for each of the four working groups to work towards, and this report will go through the roadmap milestones and scenarios for each of the four working groups to measure the programme's deliverables and have an impact on these.

The roadmap milestones are on a societal level, and the scenarios from 2021 for each of the four areas are also quite broad. This means that several *external factors* - such as technological developments, market developments and regulatory developments in EU countries and the five Nordic countries, for example – can have an impact on the relevance and progress of these roadmap milestones and the scenarios for the four areas in question.

The four solution areas that the working groups have addressed, are outlined in four separate chapters. Here, the NSG&B programme contribution is outlined as well as a brief overview of the market, tech, regulatory and country-specific factors that have influenced the area in 2021–2024.

## How to read the report

The report is structured with an introduction chapter consisting of an executive summary, a foreword by the Steering Group of the programme, some background about the programme and setting the scene of the area. Then, the chapters for each working group – each solution area – that the programme has focused on are covered. Lastly, there is a chapter on the roadmap milestones as well as the conclusions and next steps for further cooperation. Please note that the chapters are contributed by different stakeholders. This leads to some variations in terms of definitions and context etc. across the report as a whole.

If interested in the concrete deliverables and the progress on the technical work of the programme, it can be recommended to read the relevant chapter as well as the appendix on the four specific areas to get an overview of the area and the work done in this area. Here, the background, purpose of the work, the results such as pilots, MVP, white papers, lessons learned and the next step for each area are provided, for example.

If interested in the overall development of digitalisation in the Nordics the past four years, it can be recommended to read the introduction chapter as well as the roadmap milestones to get an overview.

If interested in the programme as such and whether it has lived up to initial expectations from 2021, it can be recommended to read the development regarding the scenarios from 2021 compared to 2024 in the four working group chapters as well as the overview of the nine scenarios in the [appendix](#).

# Introduction

The Nordic cross-border cooperation programme on business data, Nordic Smart Government & Business, was started in 2016 by the five business registry authorities in the Nordic countries together with co-financier and partner, Nordic Innovation. The programme vision, the relation to the Nordic Prime Ministers' vision and the NSG&B setup for the 2021-2024 period are outlined below.

## NSG&B vision

The vision of the NSG&B programme 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.*

*Business data* is the collective information related to a company and its operations. The transactions related to sales and purchases are at the core of business data. Business transactions involve several processes, including sending and receiving orders, invoices and receipts as well as bookkeeping, accounting and reporting to the government, for example. Increasingly over the years, these processes have shifted from being done manually to gradually being tech supported and moving towards automation. Thus, these processes have been improved by the private sector – from system vendors and other suppliers of various platforms and integrations, for example. Improvements are constantly being made, and now the market for affordable, integrated business systems have made it possible to automate all business processes.

While the SMEs can automate most of these processes by themselves, there are certain processes that rely on the digitalisation of government and trading partners.

The NSG&B vision points to the importance of enabling possibilities for SMEs to share data that is high quality – meaning it needs to be structural, real-time and usable for businesses, accessible and automatic; shared and stored in a consent-based and secure manner.

## The core idea

Sales and purchases – trading – is at the core of what all businesses do. It is in these core processes where business data arise. When the programme was launched in 2016, trade consisted largely of a chain of non-standardised and manual processes that took place in digital silos like placing an order, sending an invoice, managing accounting and reporting to authorities.

The Nordic countries all have ambitious national initiatives in the field of digitalisation. However, perhaps due to each country having their own national starting point, the solutions are not by default setup for *cross-border* transactions. Thus, being a cooperation between the five Nordic countries, the NSG&B focus is on *cross-border* data sharing.

From the start of the programme, great potential was identified for the Nordic companies to realise as well as for the Nordic region if silos were mitigated and an *interoperable* digital infrastructure was established. An infrastructure that supported an automatic flow of structured

and standardised data from electronic catalogues, orders, invoices and receipts, and enabled businesses to share data in real time with and through third-party providers of systems, integrations and other platforms.

To achieve interoperability of business data across Nordic countries – and beyond – there needed development on the interoperability in the following areas:

- Trust services like e-identification, digital signatures, digital stamps and trusted time services
- eDocuments like e-catalogues, e-orders, e-waybills, e-invoices, e-receipts, e-payments and e-salaries
- eReporting, such as digital financial reporting, digital tax returns, digital customs declarations, digital statistical reporting, etc.
- Technical infrastructure and services ensuring interoperability and making the exchange of the digital documents possible in a secure and traceable manner.

Cross-border interoperability in these areas can provide benefits such as:

- Lowering the administrative and transaction costs as well as accelerating decision-making in daily business operations
- Fostering the use of standardised and digital business documents as well as financial reporting;
- Enhancing the quality of the data transferred and enabling the use of once-only -principle;
- Accelerating automation and streamlining of processes of all service providers - public and private – surrounding the daily business events and reporting of businesses.
- Limiting the possibilities for committing fraud and tax evasion.

The programme's milestones and activities have been designed to support the core idea of establishing an interoperable digital infrastructure for the Nordic region by working in these areas.

## **Supporting the vision of the Nordic Prime Ministers and Nordic Innovation**

In 2019, the Nordic Prime Ministers adopted the common vision of making the Nordic region the most integrated and sustainable region in the world by 2030. The Nordic Council of Ministers has a range of cooperation committees in a broad range of areas. Among other things, the Nordic countries work together on business, energy and regional policies in order to promote continued positive growth in the region. The Nordic Council of Ministers for Sustainable Growth consists of ministers responsible for business, energy and regional policy. Nordic Innovation is an institution under the Nordic Council of Ministers in this area, and it supports the Nordic Prime Ministers' vision and focus on making the Nordics a pioneering region for sustainable growth by promoting entrepreneurship, innovation and competitiveness.

The NSG&B programme has been funded by Nordic Innovation and has been one of many programmes to support this vision. This vision of the Nordic region being the most integrated region in the world by 2030 is one of eight roadmap milestones for the programme, and the NSG&B contribution to this vision is outlined in the roadmap chapter and the appendix for this

roadmap milestone number 8. The NSG&B programme has contributed to this by building the framework for an interoperable digital infrastructure between businesses and governments in order to create value for the businesses in the Nordic region.

## About the NSG&B programme 2021-2024

The NSG&B programme is funded by the government agencies and by Nordic Innovation, and the business registries of each country are the contracting parties. The Nordic Smart Government programme was started in 2016 by the five business registry authorities in the Nordic countries. In the past 8 years, the programme has evolved through different phases wherein more government agencies and external stakeholders have been involved in the programme.

### Implementation phase – deliver value to Nordic SMEs

The first part of the programme starting in 2016 was about identifying shared interests, and the cooperation was focused in one working group. From 2021, in this end phase of the programme, four working groups involving a total of 21 different government agencies have been able to deliver results that companies can benefit from directly as well as the groundwork for further long-term cooperation improving the Nordic business environment. This report will cover the NSG&B 4.0 period of 2021-2024.

### NSG&B setup 2021–2024

The overall framework for the work is outlined in the *Roadmap 2021-2024* and the *Implementation Plan 2021-2024*.

#### Roadmap 2021–2024 <sup>[2]</sup>

The final report from NSG 3.0 consists of eight overall milestones and a description of the six solution areas of NSG&B 3.0 (now, four solution areas) and an appendix of deliverables from NSG&B 3.0. The final report for NSG 3.0 was then used as a roadmap for the following project period of 2021-2024. The NSG 3.0 report was the basis for the application for NSG&B 4.0.

#### Implementation plan 2021–2024 <sup>[3]</sup>

The NSG&B 4.0 application consisted of an introduction with an outline of the state of play, an overview of capabilities and milestones, expected deliverables and detailed KPIs of each solution area, and setup for the governance of the project including budgets. In this way, the application was a proposal for how to implement the Roadmap, and after its approval by Nordic Innovation, it was named Implementation Plan 2021–2024.

## Organisation

The organisational setup has been set up to facilitate a collaboration that is cross-border, cross-institutional, cross public-private sector as well as interdisciplinary. The organisation of the NSG&B 4.0 has been set up based on experiences from the previous NSG programmes 1.0-3.0.

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2. NSG&B Roadmap 2021-2024, 2021, [https://nordicsmartgovernment.org/sites/default/files/2023-02/Roadmap-realisation-Nordic-Smart-Government-ecosystem\\_WA.pdf](https://nordicsmartgovernment.org/sites/default/files/2023-02/Roadmap-realisation-Nordic-Smart-Government-ecosystem_WA.pdf)
  3. NSG&B Implementation Plan 2021-2024, 2021, [https://nordicsmartgovernment.org/sites/default/files/2023-02/NSG-Implementation-plan-2021-2024\\_WA.pdf](https://nordicsmartgovernment.org/sites/default/files/2023-02/NSG-Implementation-plan-2021-2024_WA.pdf)

The NSG&B 4.0 has been set up with a Steering Group, a Change Advisory Board, a Nordic Advisory Board and the four technical working groups. The work in the four technical working groups has been mandated and coordinated by the Change Advisory Board that has been reporting to the high level Steering Group.

## Steering Group

The Steering Group consisted of directors from the government authorities and has set the overall strategic direction of the programme and its focus areas. This has ensured that focus areas are aligned with national priorities as well as the overall trends and upcoming regulations on an EU-level.

## The NSG&B Nordic Advisory Board

The Nordic Advisory Board has representatives from business organisations, academia, accounting and system providers in the Nordics. They have provided counsel to the Steering Group on overall market trends as well as providing feedback on areas for future cooperation. The member organizations are outlined below.

**Table 1:** Members of the NSG&B Nordic Advisory Board

Country	Organisation
Iceland	Confederation of Icelandic Enterprises
Iceland	Bifröst University in Iceland
Denmark	The Danish Chamber of Commerce
Denmark	CPH FinTech
Norway	Confederation of Norwegian Enterprise
Norway	Nordic Accountant Federation
Norway	IKT-Norway
Sweden	The Swedish Federation of Business Owners
Sweden	Swedish Bankers Association
Sweden	Nordic Federation of Public Auditors
Finland	Accountor Finago
Finland	Federation of Finnish Enterprises
International	Peppol

## Change Advisory Board

The Change Advisory Board has consisted of government representatives from the participating authorities and has been the executive steering body for approving the projects in the four working groups and for the internal programme coordination.

## Four working groups

As stated above, to achieve the *interoperability of business data across Nordic countries* (and beyond), there needs to be work carried out on interoperability in a range of areas:

The NSG&B divided its work in these areas into four technical working groups with experts from government agencies, system providers and companies. The four working groups are:

1. **NSG&B Working Group on Digital Business Documents & Product Information (SA-A)**

The working group on *Digital documents and Product information (SA-A)* - in short the *eDocuments working group* - has contributed to the work regarding eDocuments, eReporting (VAT area and CSRD area) and technical infrastructure area. They have addressed the challenge of enabling data sharing that is structural, accessible and automatic as well as being done in a consent-based, secure manner that can be done for cross-border trade.

2. **NSG&B Working Group on Open Accounting & Simplified Reporting (SA-B)**

The working group on *Open Accounting & Simplified Reporting (SA-B)* has focused on improving the quality of financial statements and the interoperability of data by establishing a common Nordic framework and vocabulary for the financial income statements of annual reports. However, access to transactions and bookkeeping is not included here.

3. **NSG&B Working Group on Born Digital (SA-C)**

The working group on *Born Digital (SA-C)* has focused on making the digital services for business life cycle events – planning, starting, running and closing a company - accessible and automatic, with the login to these services being consent-based and secure, while also working in cross-border situations.

4. **NSG&B Working Group on Reliability and Data Quality (SA-D)**

The working group on *Reliability & Data Quality (SA-D)* has focused on improving the quality and interoperability of data from the national business registries. Regarding access to private company data, the main system providers for digital bookkeeping systems in the Nordics have different kinds of solutions and standards for different purposes. The NSG&B working group has not addressed this directly. Instead, the working group has focused on facilitating access to public data and has developed an API solution offering access to data from registries across the Nordics showing seven attributes of the basic standard data of companies, which can give SMEs access to this information directly from within their ERP-system to be used in their daily business operations, e.g. invoicing. If implemented, this common API for the Nordic business registries can be used as a foundation for the cross-border sharing of high value data sets; it can also be used as a model for a common API encompassing the data of different European national registries.

## **Internal programme coordination**

The programme management and administration are carried out by a secretariat in coordination with the Programme Manager, national team leads, a communication manager and an implementation manager.

## **Adding *Business* to the programme name**

In February 2022, the programme added Business to its name to highlight the aim of the programme, which is to create value for the two million small and medium-sized businesses in the Nordic region. The cooperation, however, was still structured as a cooperation between the government agencies, but an external NSG&B Nordic Advisory Board was established to set the direction and follow-up on the deliverables, and stakeholders were directly involved on the technical level in working groups for surveys as well as developing and testing the programme deliverables.

# Digital Business Documents and Product Information: Solution Area A

## Summary

While the SME can automate many processes themselves using their digital business systems, there are certain processes that rely on the digitalisation of government and trading partners. The Nordic countries all have ambitious national initiatives in the field of digitalisation, but perhaps due to their national starting point, some of the solutions are not by default setup for *cross-border* transactions. eDocuments are the digital documents for each step of the transactions between companies, being produced in digital bookkeeping systems (ERP-systems).<sup>[4]</sup> This NSG&B working group on Digital documents and Product information – in short – eDocuments (SA-A) – has explored the area and identified the Peppol network<sup>[5]</sup> to work as a common format for all Nordic countries, and it has conducted a range of successful pilots regarding cross-border transactions by exchanging eDocuments between digital business systems on the Peppol network. If implemented, it means that businesses in one Nordic country can send an automatic eInvoice as well as use eOrders and eCatalogues to another business in another Nordic country, and that can save time on manual administration.<sup>[6]</sup> For the eReceipts, the NSG&B has done a specification based on Peppol BIS using additional item property fields to include eReceipt specific information, and this solution works cross-border in the Nordics. These pilots and MVPs are done in close cooperation with – and carried out by – Nordic system providers and companies. This chapter goes into detail about these pilots, the possible benefits for Nordic SMEs and the future work in the area.

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4. Definition of eDocuments: "*any transactional document which is exchanged between trading partners in an electronic format and manner. Distinct from PDF or image files, e-documents are machine readable and typically exchanged via software or online platforms rather than email. E-document types include, but are not limited to: purchase orders, invoices of various types, credit/debit notes, correction invoices, dispatch advice, goods receipt notes, payment instructions.*" (Pagero, 2020, <https://www.pagero.com/blog/what-is-an-e-document>). See more in the abbreviation list.
  5. PEPPOL (Pan-European Public Procurement Online) is a non-profit organisation based in Belgium with the purpose of establishing a common and standardised infrastructure for digital exchange of business documents. A PEPPOL Authority is a department within the public authorities of each PEPPOL country and, currently, there are 17 participating Peppol authorities, mainly in European countries, but in the past years, Japan, Singapore, New Zealand, Australia and Japan have joined. The primary purpose of the PEPPOL Authority is to approve new PEPPOL Access Points, which typically are ERP-system providers, that enable their customers - the companies - to send eInvoices and other eDocuments on the Peppol network (Peppol, 2024, <https://peppol.org/about/for-end-users/>). See more in the abbreviation list.
  6. Definition of eInvoice: "*Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice (eInvoice) is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing, as defined in Directive 2014/55/EU.*" (European Commission, 2024, <https://ec.europa.eu/digital-building-blocks/sites/display/DIGITAL/What+is+eInvoicing>). See more about the different types of eDocuments in the abbreviation list.

## Background

The NSG&B working group on eDocuments focus on the digital documents related to the day-to-day transactions in a company, e.g. sending and receiving orders, invoices and receipts as well as bookkeeping, accounting and reporting to the government. Increasingly over the years, these processes have shifted from sending PDF invoices and other PDF attachments by e-mail to gradually being tech supported and moving towards full automation. While the SME can automate most of these processes by themselves using the various digital business systems on the market, there are many of these processes that rely on the digitalisation of government and the trading partners of the SME.

The system providers deliver a range of digital business systems that perhaps can work internally in the company, but they are not necessarily compatible with the business systems of their trading partners, thus when it comes to sales and purchases, there can still be a range of manual processes to do for the SME. Paradoxically, this type of digitalisation without interoperability between the different digital systems tends to benefit the larger companies at the expense of the SMEs because the SME would typically need to comply with the larger trading partner's system. This can, for some SMEs, result in a situation, in which the SME should access, for example, 20 different platforms in order for them to send invoices to their 20 different trading partners.

On a European level, EU countries have worked on the interoperability of these various eDocuments. Member states have implemented the EU eInvoicing directive since 2019 focusing on one of the core eDocuments – eInvoicing – for public procurement.<sup>[7]</sup> Moreover, the European Committee for Standardization (CEN) has different committees (TC434, TC440) that work on developing common eDocuments standards.<sup>[8]</sup> One of the formats of eDocuments that is used globally with 17 participating authorities is the Peppol network that has specified eDocuments from tender to invoice.

## Reflections on the scenario from Implementation Plan 2021

In the NSG&B Implementation Plan in 2021, the stated scenario for 2024 for this working group area was that: *"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 bookkeeping, payment and VAT-calculation, etc. SMEs can use **standardised product IDs** across the Nordic borders in the business documents they receive for the automatic calculation of VAT, product specific fees, inventory etc., but also in documents connected to e-orders, e-catalogues that they send to their customers, etc."...also including "...product-specific documentation on pesticides, chemicals, goods in food production or green data on, for example, ecological or FSC certificates."*

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7. European Commission, 2024, <https://ec.europa.eu/digital-building-blocks/sites/display/DIGITAL/What+is+eInvoicing>.

8. The CEN group - TC434 can be found here: StandICT.eu, <https://standict.eu/standards-repository/working-group/cen-c-434-electronic-invoicing>, 2024. The CEN group TC440 can be found here: CEN, 2024, <https://www.cenelec.eu/areas-of-work/cen-cenelec-topics/public-procurement/cen-tc-440-electronic-public-procurement/>

The NSG&B working group on eDocuments has focused its efforts on enabling the automatic transactions of the eDocuments between the different ERP-systems that SMEs use. For SMEs, this would be particularly beneficial because they would not need to comply with a range of different procedures from their different trading partners, they would in principle only need to click to accept eInvoices (and other eDocuments) in their ERP-systems once, and then their B2B sales and purchases would automatically be documented and accessible in their ERP-system irrespective of their trading partners' systems. Another benefit is that machine readable eDocuments could be a vehicle for the automatic data collection of product information - including environment information and VAT that both have long-term potentials of enabling automated reporting to authorities.

The working group on eDocuments has worked with the following three overall topics that are outlined below and more detailed on the NSG&B website:

1. [Interoperability of eDocuments – using eInvoicing, eCatalogue, eOrder and eReceipt cross-border](#)
2. [Including environmental information in eDocuments](#)
3. [Contributing to the digitalisation of VAT processes](#)

## The NSG&B contribution

### 1. Interoperability of eDocuments – using eInvoicing, eCatalogue eOrder and eReceipt cross-border

#### Challenge

eInvoicing, eReceipts, eCatalogue and eOrder are so-called structured electronic documents that can be sent from one ERP-system to another, and both the seller and buyer will have a transparent process with common data formats.<sup>[9]</sup> The Peppol network has the prerequisites for these eDocuments and the transmission between the buyer and seller on a global basis - at this point for 17 countries - because it offers a well-specified format and distribution path. However, the different digital business systems are not all fully aligned with Peppol in all aspects. The eDocument working group has delivered the documentation of the eInvoice, eCatalogue and eOrder pilots using Peppol BIS and Peppol Network as well as eReceipts for cross-border use in the Nordic region which is outlined below and in detail on the NSG&B website.

#### Contribution

##### Using eInvoice cross-border – pilot October 2021 – February 2022

The purpose of this pilot was to verify that the eInvoice format BIS Billing (the Peppol Business Interoperability Specification) and credit note can be used cross-border between ERP-systems in the Nordic countries and that the information is according to the Peppol format requirement. Ten SMEs from all Nordic countries having an ERP-system with Peppol BIS billing 3.0 participated in the pilot. The result was a verification that it is technically feasible to send and receive eInvoices via the Peppol network directly from one company's ERP-system to another company's ERP-system located in another country. However, the pilot did show some loss of data quality due to the differences among business systems.

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9. See [appendix](#) for further definition of the various types of eDocuments.

### **Using eCatalogue and eOrder cross-border – pilot February 2022 – June 2022**

For the eCatalogue and eOrder pilot, the goal was to verify that the Peppol-formats connected to eCatalogue and eOrder can be used cross-border between Nordic countries and that the information (content) is according to the standard format requirements. Nordic SMEs and system providers participated in the pilot that successfully used eCatalogue and sent eOrders cross-border in the format of Peppol BIS cross-systems.

### **Using e-Receipts cross-border – pilot February 2022 – April 2024<sup>[10]</sup>**

In 2021, Eurocard did a survey on the use of different receipt management processes in Nordic companies showing that 58% of companies use paper or photo/scan solutions and 42% of companies use some type of digital system for receipt management.<sup>[11]</sup> There is a growing market offering a range of digital systems for companies in this area, and increasingly companies are using these digital systems. However, not all systems are in an open, structured eReceipt format that is interoperable with the systems of other companies. The working group did a pilot on the use case of business travel where an employee in one Nordic company goes on a business trip to another Nordic country. It was tested that a hotel company and a taxi company sent an eReceipt to the employee's company. On the taxi eReceipt, payment information, identification of the car, pickup location and end location and the number of kilometres driven were all included, thereby enabling the systematic collection of environmental data along the way. The pilot successfully completed a transfer of an eReceipt from a seller's system via the Peppol Network to the buyer's system and into the buyer's travel system, and then made the eReceipt available to the employee for reimbursement. The companies (merchants) having digital solutions for eReceipt can gain additional benefits from holistic, verified data, like getting more attractive, flexible short term financing options, relevant marketing opportunities etc. eReceipt might also bring additional value in controlling the grey- /shadow economy, estimated to be around 20% of EU GDP on average. Even small impact would be significant as a preventative method, not to mention the potential for forensic auditing etc. functions. While the NSG&B focus on B2B use cases, B2C (or even C2C) use cases can be taken into consideration moving forward.

## **2. Including environmental product information in eDocuments**

### **Challenge**

Businesses need to comply with a range of new requirements related to the new EU-regulation on CSRD and Ecodesign.<sup>[12]</sup> The format of eDocuments can be used to include environmental information for each product.<sup>[13]</sup> This can be used to ease the administrative burden of data collection and footprint calculations as well as make green procurement easier. The NSG&B working group on eDocuments has worked to include environmental information in its pilots as listed below. This can be seen as a first limited test on an interoperable format that works cross-border for environmental data, but it has not been piloted for a broader scope, and more work is required for the eDocuments to support the implementation of the European Union CSRD directive.

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10. Find the eReceipt user story and specification here - NSG&B, 2024, <https://nordicsmartgovernment.org/ereceipt-specification>
  11. Eurocard, 2021, <https://eurocard.com/expense-handling-services/smart-receipts/report-2021/>
  12. European Commission, 2024, [https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting\\_en](https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en)
  13. The forthcoming EU legislation on digital product pass (DPP) underlines the perspectives of including product information into eDocuments. (DIGITALEUROPE, 2024, <https://www.digitaleurope.org/projects/digital-product-passport/>). Moreover, the Global Product Classification is relevant regarding this (Global Product Classification, 2024, <https://www.gs1.org/standards/gpc>).

## Contribution

### Including environmental product information in eCatalogue

The pilot on eCatalogue (as outlined above) was also a test on whether the format was able to serve as a “vehicle” for carrying environmental information about the purchased product. The product in the eCatalogue pilot contained three different types of data describing the environmental footprints including environmental labelling of goods and CO<sub>2</sub>-emissions, and a link to an external database detailing the relevant footprints. The Peppol BIS eCatalogue format was then used to carry information about the environmental footprint at the product level in the eCatalogue. The test demonstrated that these formats are capable of carrying such information and it is possible for the other party to use that information as structured information.

### Including environmental product information in eReceipts<sup>[14]</sup>

Along with the payment information on the eReceipt pilot for a taxi drive purchase, the identification of the car, pickup location and end location as well as the number of kilometres driven were included, thereby enabling the systematic collection of environmental data along the way.

### A tool for the collection of standardised product data more broadly<sup>[15]</sup>

In relation to setting up the collection of standardised product data more broadly, an international classification system for products and services established by the United Nations UNSPSC (United Nations Standard Products and Services Code) can be used. The use of UNSPSC-codes in different fields in electronic invoices gives companies possibilities for structured data collection. The NSG&B working group has developed a tool for SMEs to find the correct UNSPSC-code for different products and services.

## 3. Contributing to the digitalisation of VAT processes

### Challenge

It is mandatory for businesses to report and pay VAT in their home country. However, when businesses trade cross-border, there are different VAT obligations depending on where you buy from or sell to as well as whether you are trading goods or services. The European Commission published its ViDA-proposal (VAT in the Digital Age) in 2022 which is a comprehensive reform aimed at modernising and streamlining VAT processes across the European Union to address the challenges posed by digitalisation and the platform economy.<sup>[16]</sup> The contributions of the NSG&B working group include suggestions for how to implement the ViDA-proposal nationally as well as to address the cross-border VAT issues which are outlined below.

### Contribution

#### Guidance for system providers - correct VAT TAX Category Codes and VAT rates

It is mandatory to include the correct VAT on an invoice, and there is a set of VAT TAX Category Codes that should be used to state the correct VAT category as well as VAT rate for each product or service in an invoice. There are separate VAT category codes for domestic sales, exports and

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14. Find the eReceipt specification and user story here - NSG&B, 2024, <https://nordicsmartgovernment.org/ereceipt-specification>

15. Find the tool for collection of standardised product data - UNSPSC (in Norwegian & English) here: Direktoratet for forvaltning og økonomistyring (DFØ), 2024, <https://anskaffelser.no/verktoy/analyseverktoy/sokeside-standard-klasifiseringskoder-unspsc>

16. European Commission, 2024, [https://taxation-customs.ec.europa.eu/taxation/value-added-tax-vat/vat-digital-age\\_en](https://taxation-customs.ec.europa.eu/taxation/value-added-tax-vat/vat-digital-age_en)

intra-community trade and they are typically set up by default for the business in its ERP-system and in its VAT reporting. If codes are reliable and precise, this procedure can be done automatically. If codes are unreliable and too general, VAT handling requires manual work in many situations in order to apply the correct VAT method for the invoice. In order for systems providers to use similar codes for similar situations, such as export and intra-community supply, the eDocument, the working group has produced a VAT guideline for cross-border transactions as well as a recommendation to the EU.<sup>[17]</sup>

### **Easing the VAT refund application for products or services purchased in another country.<sup>[18]</sup>**

Businesses are entitled to a VAT refund of purchases for taxable operations. In many cases, ERP-systems handle the VAT refund of domestic purchases automatically or semi-automatically. However, for businesses that purchase goods or services in another country, a special VAT Refund application may be required for the business to get their refund. This VAT Refund procedure is typically a manual procedure.

Using eReceipts, VAT information for these purchases could be made more accurate and support the digitalisation of the VAT refund process, potentially reducing the manual workload for VAT refund applications.

It is challenging to test the use case for VAT refund on eReceipts because, currently, only a limited number of sellers use eReceipts. The working group on eDocuments has delivered a process and a draft VAT refund specification for the use cases of business employees' travel purchases.

Based on Nordic countries' application forms and xml files from the EU, the working group has created a machine-readable application form (xml) where either an invoice or eReceipt can be used as documentation for the application. This has been sent for review in Nordic Tax Authorities. The VAT refund specification and VAT refund user story can be found on the NSG&B website.

For future work, it can be suggested to pilot the submission of applications from an applicant system. Moreover, it will require adjustment of existing travel expense systems and bookkeeping systems on the business side as well as systems on the government side to automate these types of refund applications from businesses. It should be noted, however, that in the current refund application form, there is information that businesses need to fill in, which is *not* included in eReceipts, and this needs to be adequately addressed.

### **Reporting of transaction data to the tax authorities – aligning with the ViDA proposal<sup>[19]</sup>**

The working group on eDocuments has done a pilot on how data from invoices can be collected and reported to tax authorities in an automated and secure way that is aligned with the European Commission's ViDA proposal. The starting point was the concept of *Continues Transaction Control*, CTC, which can be developed within the Peppol network.

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17. NSG&B, 2024, <https://nordicsmartgovernment.org/vat-guideline-cross-border-transactions>

18. Find the VAT refund specification here: NSG&B, 2024, <https://nordicsmartgovernment.org/guidelines-and-specifications> and the employee business travel use case here: NSG&B, 2024, <https://nordicsmartgovernment.org/get-started-use-digital-solutions-based-on-standard-e-documents>

19. Find the NSGB ViDA report specification here - NSG&B, 2024, <https://nordicsmartgovernment.org/vida-report-specification>

## Pilot 1 – the creation of a “ViDA report” to the tax authorities on the basis of a Peppol invoice

The purpose of the pilot was to use the existing information on a Peppol invoice sent through the Peppol Network as a basis for reporting to tax authorities as could be required in the ViDA proposal. The content to be reported included the data mentioned in the article 263 of the VAT Directive proposal. Furthermore, the correct use of VAT codes and rates in transactions was tested. The pilot successfully included 60+ transactions and demonstrated that it is possible to automate ViDA reporting in this way using the current Peppol network. The feedback was that the quality of VAT codes and rates should be improved in the invoice so that the ViDA report does not contain the same weaknesses as a recapitulative statement at the moment. This was then addressed in the follow-up pilot (below).

## Pilot 2 – enhancing the “ViDA Report”

In this second part of the ViDA-pilot, the objective was to improve the ViDA Report and to test more aspects of data and perspectives both cross border and domestic. The pilot included all Nordic tax authorities together with five service providers representing one country each. Besides e-invoices, this pilot also captured credit notes, where a sent credit note must refer to a former sent invoice (debet). ViDA Reports were created for both invoices (debet) and credit notes. This pilot delivered ViDA reports both in cross-border- and domestic invoice transactions and thus the exchange of several hundred eDocuments – Invoices, electronic credit notes and ViDA reports.

As the first pilot, the second pilot also pointed to a need for improving the quality of VAT codes and rates in the invoice so that the ViDA report does not inherit errors. The Peppol Authority and tax authorities of each country can support the work of the service providers and SMEs to register the correct VAT category codes in the invoice. Here, the NSG&B guide for SMEs and accountants on VAT codes and rates in Peppol-documents can help with better mapping, and validation that can increase the quality of VAT codes and rates.<sup>[20]</sup> However, both pilots showed that, despite the need for increasing the data quality, it is possible to automate ViDA reporting in this way using the current Peppol network as an infrastructure or vehicle for this exchange. Automation of VAT reporting comes with benefits of faster and more efficient processes in companies and authorities, potentially with a higher degree of data quality.

## Conclusion

In sum, the NSG&B working group on eDocuments has explored the following areas: 1) Interoperability of eDocuments – using invoicing, eCatalogue eOrder and eReceipt cross-border, 2) Including environmental product information in eDocuments and 3) Contributing to the digitalisation of VAT processes. The working group has identified the Peppol network to work as a common format for all Nordic countries regarding eDocuments such as invoice, eOrders and eCatalogue. For the eReceipts the NSG&B has done a specification based on Peppol BIS using additional item property fields to include eReceipt specific information. This solution works cross-border in the Nordics.

The result of these NSG&B pilots is that, if implemented, businesses in one Nordic country can have an automated trade process with another business in another Nordic country using their existing ERP-system. These pilots and MVPs are done in close cooperation with – and carried out by – Nordic system providers and companies, which are key for the future work of putting these automated processes into use in companies.

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20. NSG&B, 2024, <https://nordicsmartgovernment.org/vat-guideline-cross-border-transactions>. See appendix for details in this area.

Moreover, the eDocument format can be used as a vehicle for including additional *product information*, and with the increasing amount of reporting requirements on the climate footprint of businesses in the CSRD regulations, the working group has successfully demonstrated that the climate data of products can be included in eDocuments such as eInvoice and eCatalogue, for example.

For companies using these digital processes there can be significant cost savings and possibly reduced CO<sub>2</sub> emissions, while empowering holistic digital value chain and creating new data - driven ecosystems, including but not limited to CSRD reporting, digital product passport, etc. For instance, the companies having digital solutions for eReceipt can gain additional benefits from holistic, verified data, like getting more attractive, flexible short term financing options, relevant marketing opportunities, etc. eReceipt might also bring additional value in controlling the grey- / shadow economy, estimated to be around 20% of EU GDP on average. Even small impact would be significant as a preventative method, not to mention the potential for forensic auditing etc. functions. While the NSG&B focus on B2B use cases, B2C (or even C2C) use cases can be taken into consideration moving forward.

Finally, the ViDA proposal from the European Commission comes with a range of changes and possibilities for member states to further automate VAT-reporting on cross-border trade within the EU, and the working group has successfully conducted a pilot on automated VAT-reporting that is integrated into these above trade processes using eDocuments. Furthermore, the working group has provided suggestions for how to support the further digitalisation of cross-border VAT processes by ensuring correct automated assigned VAT Category Codes and easing the VAT refund application for purchases in another country.

The initial scenario in this area that was set up in 2021 for the Implementation Plan of SMEs - to have automated processes using eDocuments - is indeed possible because of the efforts of this NSG&B working group and the national efforts in the Nordic countries that have facilitated that eDocuments can work for cross-border trade in the Nordics using Peppol - and potentially beyond the Nordics as well. However, while possibilities for SMEs exist, the implementation of these new core business processes remain to be rolled out to achieve the benefits of this scenario on a societal level.

**Table 2:** Overview of deliverables from the NSG&B working group SA-A Digital documents and Product information: purpose & result, impact and next step.

Deliverable	Purpose & result	Impact for businesses	Next step/future work
<b>1) Interoperability of eDocuments – pilots on cross-border use of eInvoicing, eCatalogue, eOrder and eReceipt</b>			
Using eInvoice cross-border User story: <a href="https://nordicsmartgovernment.org/invoice-user-story">https://nordicsmartgovernment.org/invoice-user-story</a>	eInvoice: Cross border transactions between the Nordic countries. Aim to ensure that all countries should have service providers that can send invoices digitally between Nordic countries so that Nordic SMEs can more easily digitise their processes. Focus on quality in invoice content, especially VAT information.	Streamline and automate business administration processes	Increase the number of service providers that can send and receive cross border based on the standard format and the Peppol Network. Motivate all SMEs to use systems.
Using eInvoice cross-border User story: <a href="https://nordicsmartgovernment.org/invoice-user-story">https://nordicsmartgovernment.org/invoice-user-story</a>	Cross border transactions between the Nordic countries. A goal wherein all countries should have service providers that can send orders and order responses digitally between Nordic countries so that Nordic SMEs can more easily digitise their processes. Focus on quality in order and order response content, especially VAT information.	Same as above	Increase the number of service providers that can send and receive cross border based on the standard format and the Peppol Network. Motivate all SMEs to use systems.
Using eCatalogue cross-border User story: <a href="https://nordicsmartgovernment.org/catalogue-user-story">https://nordicsmartgovernment.org/catalogue-user-story</a>	Cross-border transactions between the Nordic countries. A goal wherein all countries should have service providers that can send catalogues digitally between Nordic countries so that Nordic SMEs can more easily digitise their processes and increase their competitiveness through the easier presentation of their goods and services. Focus on quality in catalogue content, especially VAT information and environmental information.	Same as above	Increase the number of service providers that can send and receive cross border based on the standard format and the Peppol Network. Motivate all SMEs to use systems.

<p>Using e-Receipts cross-border User story: <a href="https://nordicsmartgovernment.org/ereceipt">https://nordicsmartgovernment.org/ereceipt</a></p> <p>eReceipt specification: <a href="https://nordicsmartgovernment.org/ereceipt-specification">https://nordicsmartgovernment.org/ereceipt-specification</a></p>	<p>The purpose was to prove that buyers can automate travel and cost claim processes by using eReceipt data.</p>	<p>Providing a setup for automating SMEs employees business travel in Nordics. The companies (merchants) having digital solutions for eReceipt can gain additional benefits from holistic, verified data, like getting more attractive, flexible short term financing options, relevant marketing opportunities etc.</p>	<p>More eReceipts from sellers are needed so that buyers will update their systems.</p> <p>While the NSG&amp;B focus on B2B use cases, B2C (or even C2C) use cases can be taken into consideration moving forward.</p> <p>eReceipt might also bring additional value in controlling the grey- /shadow economy, estimated to be around 20% of EU GDP on average. Even small impact would be significant as a preventative method, not to mention the potential for forensic auditing etc. functions.</p>
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<p>List of service providers that have the NSG&amp;B cross-border features: <a href="https://nordicsmartgovernment.org/sending-e-documents-across-the-nordic-borders">https://nordicsmartgovernment.org/sending-e-documents-across-the-nordic-borders</a></p>	<p>List of ERP-system providers and other service providers that have the option of sending eDocuments cross borders.</p>	<p>Easier for SMEs to find providers that have cross-border features included.</p>	<p>Increase the number of service providers on the list.</p>
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## 2) Including environmental information in eDocuments through eCatalogue and eReceipt pilots

<p>Including environmental product information in <a href="#">eCatalogue</a> User story: <a href="https://nordicsmartgovernment.org/catalogue-user-story">https://nordicsmartgovernment.org/catalogue-user-story</a></p>	<p>The pilot on eCatalogue (as outlined hereinabove) was also a test on whether the format was able to serve as a "vehicle" for carrying environmental information about the purchased product.</p> <p>The test demonstrated that these formats are capable of carrying such information and it is possible for the other party to use that information as structured information.</p>	<p>Can be used by SMEs to automate data collection in their existing ERP-systems, also working for their cross-border trade in the Nordics.</p>	<p>Implementation in ERP-systems; Nordic authorities can facilitate the inclusion of other types of green data - and do this for the full chain of eDocuments; Nordic authorities can work to implement this model on an EU level.</p>
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<p>Including environmental product information in <u>eReceipts</u>  User story:  <a href="https://nordicsmartgovernment.org/ereceipt">https://nordicsmartgovernment.org/ereceipt</a>  eReceipt specification:  <a href="https://nordicsmartgovernment.org/ereceipt-specification">https://nordicsmartgovernment.org/ereceipt-specification</a></p>	<p>Along with the payment information in the eReceipt pilot (see above) for a taxi drive purchase, the identification of the car, pickup location and end location as well as the number of kilometres driven were included, thereby enabling the systematic collection of environmental data along the way.</p>	<p>Same as above</p>	<p>Same as above</p>
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<p>A tool for collection of standardised product data more broadly (the UNSPSC-tool)  <a href="https://anskaffelser.no/verktoy/analyseverktoy/sokeside-standard-klassifiseringskoder-unspsc">https://anskaffelser.no/verktoy/analyseverktoy/sokeside-standard-klassifiseringskoder-unspsc</a></p>	<p>The NSG&amp;B working group has developed a tool for SMEs to find the correct UNSPSC-code for different products and services.</p>	<p>The use of UNSPSC-codes in different fields in electronic invoices gives companies possibilities for structured data collection.</p>	<p>Implementation in SMEs</p>
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### 3) Contributing to digitalisation of cross-border VAT reporting

<p>VAT guide for system providers  - correct VAT TAX Category Codes and VAT rates   Guideline:  <a href="https://nordicsmartgovernment.org/vat-guideline-cross-border-transactions">https://nordicsmartgovernment.org/vat-guideline-cross-border-transactions</a></p>	<p>Based on findings in the pilots, SA-A developed a guideline for VAT codes and rates with the aim of increasing quality.</p>	<p>Increased quality</p>	<p>Implementation in systems</p>
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<p>Reporting of transaction data to the tax authorities - aligning with the ViDA proposal<sup>[21]</sup></p> <p>Pilot 1 – the creation of a “ViDA report” to the tax authorities on the basis of Peppol eInvoice</p> <p>Pilot 2 - enhancing the “ViDA Report”</p> <p>User story:</p> <p><a href="https://nordicsmartgovernment.org/vida-report">https://nordicsmartgovernment.org/vida-report</a></p> <p>ViDA report specification:</p> <p><a href="https://nordicsmartgovernment.org/vida-report-specification">https://nordicsmartgovernment.org/vida-report-specification</a></p>	<p>Purpose to pilot cross-border invoice, folder specified content from invoice to a separate format ViDA report and send to the tax authorities. Purpose to support automatic VAT reporting for Nordic SMEs.</p> <p>All Nordic tax authorities have received a ViDA report in their own access point to be able to analyse, control and increase the quality of VAT codes and rates. Phase II of the pilot is also to send the credit note that is mapped to the ViDA report credit note in order to be able to correct the ViDA report. Correct VAT and UNSPSC code for goods and services per line for easier reporting of VAT for goods and services to the EU.</p>	<p>Can support Easier VAT reporting and less of reporting burdens.</p>	<p>Implement the process in the Nordic countries based on the ViDA report specification and the Peppol Network</p>
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<p>Easing the VAT refund application for products or services purchased in another country</p> <p>VAT refund specification and VAT refund user story can be found here:</p> <p><a href="https://nordicsmartgovernment.org/guidelines-and-specifications">https://nordicsmartgovernment.org/guidelines-and-specifications</a></p> <p><a href="https://nordicsmartgovernment.org/get-started-use-digital-solutions-based-on-standard-e-documents">https://nordicsmartgovernment.org/get-started-use-digital-solutions-based-on-standard-e-documents</a></p>	<p>The purpose was to do a VAT refund specification that is quality assured by experts in the Nordic countries and to do a VAT refund over the Peppol network.</p>	<p>Simplify a manual process. Increase quality in the process. Streamline the Nordic SMEs refund process.</p>	<p>Implement the process in the Nordic countries based on the VAT refund specification and the Peppol Network. To pilot the submission of applications from an SME's system (that is an applicant for VAT refund).</p>
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21. Find the NSGB ViDA report specification here - NSG&B, 2024, <https://nordicsmartgovernment.org/vida-report-specification>

## Perspectives for continued cooperation

On the basis of the NSG&B deliverables listed above, future cooperation in this area can aim to further specify and develop the digital infrastructure for cross-border trade in the Nordic region. This can be done by focusing on further developing the interoperability of the eDocuments using the Peppol network by developing the specifications and data quality, including working on how to include environmental product information in eDocuments in an interoperable way. This work has the potential to contribute to the national implementation of the EU regulations in the area, most notably contributing to the future implementation of a ViDA-proposal and the CSRD regulation.

Therefore, this working group has agreed to proceed working in this area with a pre-project on *Green eDocuments*, funded by the Nordic Council of Ministers, Committee for Sustainable Growth, for Autumn 2024, to explore how to include a selected set of green data – the CO<sub>2</sub>e – into selected types of eDocuments in an interoperable way that can be accessible directly from SMEs ERP-systems and work for cross-border trade in the Nordic region.

# Open Accounting & Simplified Reporting: Solution Area B

## Summary

The NSG&B working group on Open Accounting and Simplified Reporting has explored the diverse ways of reporting, formats and terminologies used in reporting and bookkeeping across different countries. Their research indicates that companies must adapt to varied national reporting requirements, creating administrative burdens. To address these challenges, the working group has developed a semantic model that facilitates interoperability by allowing financial statements to be "translated" across different systems without altering the original terms used by each country. This semantic model can be integrated into a unified Nordic API-gateway, aiming to standardise financial information access and promote a common financial vocabulary.

The report details additional challenges in three main areas: developing a common Nordic vocabulary for financial statements, addressing VAT reporting as well as exploring broader bookkeeping and reporting challenges in the Nordics.

## Background

Simplified reporting involves streamlining the process of financial and regulatory reporting by reducing complexity and redundancy, thus making it easier for businesses to comply with the governmental requirements. Open accounting as a concept refers to the practice of making financial bookkeeping data more accessible and transparent, enabling easier data sharing and reporting between different entities.

Today, the integration of advanced digitalisation in reporting and bookkeeping enhances financial management through high accuracy and efficiency. The regulatory environment supports this by requiring clear and timely financial disclosures, which helps companies stay compliant and minimises the legal risks. The focus on systematic bookkeeping also curtails financial discrepancies and improves the overall business performance. However, challenges arise from the need to better integrate existing business data with the reporting requirements to ease the reporting burden and improve data quality. The main challenges of the whole area are:

- **Data Consistency and Structure:** Varying needs for data across different authorities lead to inconsistent requests for the same data, causing burdensome reporting processes.
- **Access and Openness of Data:** There is notable variability in how data can be accessed among Nordic countries, which complicates the application of uniform standards. The openness of registry data is also not uniform in all countries, which causes challenges for the businesses operating in the Nordics.
- **Use of Standards:** The implementation and definition of standards vary by country, and standards are not always used comprehensively or consistently.

- **Cross-border Data Handling:** Handling unstructured data and managing cross-border situations present significant challenges due to differences in the national standards and regulations.
- **Legislative Variability:** The differences in the legislation, such as the application of reverse charge VAT, cause an additional burden for companies operating cross-border in the Nordics.

It is noteworthy that these challenges are quite universal and do not affect just the Nordic region. The open accounting concept is especially hard to implement if standardisation and legal access to data is lacking.

The primary stakeholders in the area are the companies themselves, which must report to various authorities overseeing their activities for both internal and external accounting purposes. Other significant external stakeholders include users of this information, such as the auditing sector, analysts, financial sector and credit rating agencies. Furthermore, software companies that develop accounting and reporting solutions for businesses are key stakeholders, as are participants in the accounting sector. The main challenges for stakeholders are very similar as listed above and the use of standards in a standardised manner is particularly valuable for them, as this helps improve processes throughout the financial data chain.

## Reflections on the scenario from Implementation Plan 2021

The NSG&B Implementation Plan from 2021 outlines a future where SMEs provide real-time bookkeeping information (i.e. transaction and aggregated data) to third parties, banks, trade partners and public authorities in a standardised, structured format. This format facilitates automated interactions with various service providers, enhancing services while reducing costs. SMEs can easily switch service providers and business systems without losing vital historical data, automate accurate reporting to public authorities on matters like financial statements and tax declarations through standardised information exchange (e.g. via API connections), and allow public data access for statistical analysis or research. Automation promotes data accuracy and quality, aiding in effective policymaking, especially in crisis situations like the COVID-19 pandemic.

While some countries already possessed some of these capabilities by 2021, challenges remain in achieving the necessary data standardisation and interoperability, particularly with concerns over trade secrets, data access and consent management. Variations in administrative cultures and political environments across Nordic countries further complicate the uniform implementation of this vision.

The main challenge of interoperability was explored in more detail. Based on surveys and dialogue with stakeholders, the work was primarily focused on the following areas which are affected in cross-border situations:

1. [Interoperability challenges of financial statements – a common Nordic vocabulary/semantic model](#)
2. [Interoperability challenges in the VAT reporting area](#)
3. [Challenge of differing degrees of digitalisation of reporting](#)

# The NSG&B contribution

## 1. Interoperability challenges of financial statements - a common Nordic vocabulary/semantic model

### Challenge

Nordic SMEs increasingly operate across borders, requiring seamless financial information exchange, particularly for trade partner assessment. XBRL reporting in Finland, Denmark and Sweden has streamlined some government reporting for SMEs, improving financial statement comparability and reducing the overall costs despite the implementation expense. However, lack of standardisation and documentation on local accounting differences complicates cross-border exchanges. The EU Accounting Directive aims to harmonise financial statement preparation for SMEs but allows flexibility in calculating figures, simplifying disclosure requirements and reducing the administrative burdens and costs.

### Contribution

The SA-B working group created a model using common API definitions and a reference taxonomy based on the xEBR core reference taxonomy<sup>[22]</sup> in order to exchange financial statements in a structurally coherent form while documenting the local legal differences. This approach aims to harmonise the presentation of national financial statements, although interpretation must consider the varying legislation and accounting rules.

Besides financial statements, SA-B experts explored other high-value datasets, including company information and accounting documents, to enable cross-border data applications with socio-economic benefits. The EU Open Data Directive encourages using existing standards for machine-readable company information, benefiting SMEs by providing free, trustworthy data.

The outcomes from the NSG&B financial statement group include semantic mappings of Nordic financial statement concepts and API definitions for exchanging financial statements. The XBRL-JSON format<sup>[23]</sup> was chosen for its extendability, and a pilot use case tested the developed specifications using synthetic data, supporting business ID proofs, signatory rights verification and financial risk assessments. These efforts aim to help Nordic SMEs exchange and benefit from open financial information, supporting government process automation and enhancing credit and trade partner evaluations.

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22. The xEBR core reference taxonomy is a standardized framework developed as part of the xEBR (European Business Register) initiative. It provides a common structure for defining and exchanging business and financial data across European business registers.

23. XBRL-JSON is a format for representing XBRL (eXtensible Business Reporting Language) data in JSON (JavaScript Object Notation), which is a lightweight data interchange format. XBRL is widely used for digital business reporting, such as financial statements, regulatory filings, and other structured business information, while JSON is a popular format for transmitting data between web servers and browsers. The XBRL-JSON format was developed to make XBRL data easier to work with in modern web technologies and applications.

## 2. Interoperability challenges in the VAT reporting area

### Challenge

Cross-border data exchange commonly occurs in day-to-day business transactions in the Nordics, with value-added tax (VAT) reporting being the most significant issue. The working group examined VAT reporting from an SME's perspective, analysing the journey from registration to tax return completion. Reverse charge VAT, where businesses must calculate and pay their home country's VAT on certain purchases, was identified as a major pain point. This area lacks international common rules and is governed by national legislation, complicating cross-border transactions.

Engaging accountants and financial managers through surveys and interviews revealed that reverse charge VAT significantly affects Nordic businesses. It is particularly challenging for SMEs, which may not know when to apply it. Moreover, eInvoices often lack sufficient information, and structured eInvoices are not widely used. Small businesses with occasional foreign trade face the largest reporting burden due to inexperience in handling reverse charge VAT.

### Contribution

The working group created guidance on eInvoice content, distributed to project agencies for national sharing as the VAT in the Digital Age Directive advances. This EU directive supports transitioning from manual to digital invoicing for cross-border trade. The NSG&B SA-A working group pilot on reporting directive content provides a strong implementation basis. National improvement areas were identified, and input was given to the Nordic Tax Administrations' cooperation forum. These efforts aim to reduce the reporting burden in cross-border situations by minimising manual accounting tasks.

## 3. Challenge of differing degrees of the digitalisation of reporting

### Challenge

The varying levels of digitalisation and differing national practices in the Nordics impose significant burdens on companies, requiring them to adapt to multiple reporting regimens. An analysis by the working group highlighted substantial differences in taxonomy-based reporting structures and digitalisation levels across Nordic countries. The group noted that cultural and political approaches to standardisation and automation vary widely, with some countries focusing on legal development and others on collaborative, compliance-by-design methods.

Continuous stakeholder engagement revealed that the adoption of modern accounting systems is crucial for enhancing digital reporting capabilities. Stakeholders called for legislative guidance and support to standardise accounting systems and promote the use of digital business documents. Despite existing good standards, their inconsistent application hinders interoperability. Key expectations from stakeholders include harmonising legislative frameworks across countries, providing better guidance on new reporting obligations, reassessing outdated requirements and ensuring the availability and quality of registry data. A unified approach by Nordic agencies could enhance interoperability, ease business partner assessments and effectively address future reporting needs.

## Contribution

The analysis of Nordic accounting and reporting practices highlighted significant disparities in digitalisation, standardisation and automation across these countries. The project examined the taxonomy-based reporting structures and the use of structured data, revealing technological, cultural and political differences. The key challenges include varying national legislation, uneven digital implementation and the inconsistent use of standards. Increased cooperation is essential to build interoperability in semantic, technical, administrative and legal areas.

National pilots, such as Statistics Norway's use of the SAF-T file for statistical queries and Finland's Real Time Economy (RTE) project on Accounting and Audit Vocabulary, demonstrated successful strategies for reducing reporting burdens and bridging technical standards. Future cooperation should focus on advancing interoperability in the identified areas to create more efficient, unified and transparent reporting and accounting practices in the Nordic region.

## Conclusion

The main challenges that remain in this field are the lack of structured business document data and high-value datasets like financial statements, particularly affecting cross-border interoperability due to the absence of a common baseline in the Nordics. Agencies and private sector actors need to promote interoperability across semantic, technical, administrative and legal aspects, with each country enhancing its capabilities based on its strengths. It has been proved in the NSG&B work that it is possible to develop a semantic model that will make it easier to share the different levels of data cross-border.

Progress is being made as the vision from the original application scenario is gradually realised through efforts by private and public sectors. While implementation varies by country and administrative culture, the focus remains on advancing semantic and technical interoperability. This allows countries to maintain their standards while improving business operations in the Nordic region. However, going forward, it is important to note that data sharing and interoperability across borders are not a one-off task, but rather more of a continuous work to keep up with development.

**Table 3:** Overview of the deliverables from the NSG&B working group on Open Accounting & Simplified Reporting: purpose & result, impact and next step.

Deliverable	Purpose & result	Impact for businesses	Next step/future work
<b>1) Interoperability challenges of financial statements - a common Nordic vocabulary/semantic model</b>			
Semantical model mapping file Semantical model API specifications	Advance interoperability of financial data	Lessened need for the mapping of individual actors Common API specification to access business registry data	Continue mapping of financial information Take the work to XBRL community
<b>2) Interoperability challenges in the VAT reporting area</b>			
Reverse charge VAT end report	Mitigate reporting burden for SMEs	Better services from agencies in the future	Communicate the results and take national actions according to the report
<b>3) Challenge of differing degrees of digitalisation of reporting</b>			
SA-B synthesis report	Understand what is needed in the future	Better services from agencies in the future	Disseminate the information in the agencies

## Perspectives for continued cooperation

The key challenges include differences in the semantics of financial information, inconsistent application of standards and restricted access to vital registry data. Varying semantics reduce information quality and increase manual labour, necessitating ongoing semantic work for seamless data translation across standards. Inconsistent national standards hinder data interoperability, complicating business operations and data quality. Moreover, limited access to registry data makes assessing trading partners difficult. To address these issues, Nordic agencies must align on common data structures and make registry data more accessible, considering EU developments like digital wallets and high-value datasets directives. Based on the above highlighted challenges, the suggestions for further development addressing the above challenges are as follows:

## **Continue the mapping of national registries' data**

Agencies should continue to map relevant data elements from the registry data, which are of interest to the ecosystem actors, and then bring the identified data elements forward into the semantic work, which can make them interoperable in terms of content. It is important to determine for all datasets whether the data is fully structured and freely available.

## **Helping stakeholders comply with new reporting requirements and continue national development**

VAT in the Digital Age (ViDA) exemplifies progress by standardising digital reporting and invoicing for real-time VAT data on intra-community transactions, and it allows states to impose invoicing without prior tax authority authorisation. With increased sustainability reporting demands due to the CSRD, cooperation between Nordic authorities is crucial to manage the growing complexity and data requirements.

National development should continue to facilitate the use of accounting information and simplify reporting, focusing on interoperability and legislative cooperation, including EU-level influence. Once necessary interoperability elements are established, the Nordic region can advance real-time accounting data sharing through channels like digital wallets, supported by digital business identities.

## **Continue semantic work and participate in mapping with XBRL-Europe**

Agencies should continue semantic work, participate in XBRL Europe mapping, and expand the Finnish RTE project's Accounting and Audit Vocabulary experiment to include more data elements. This collaboration will enhance semantic skills, improve interconnected services for Nordic businesses and address the technical interoperability challenges.

# Born Digital: Solution Area C

## Summary

All Nordic countries have digital services for business events, but national digital IDs are required to access these services. The NSG&B working group completed a pilot where two countries accepted each other's national IDs for the logon.<sup>[24]</sup> However, with the introduction of the EU's eIDAS2,<sup>[25]</sup> which promises a unified digital identity solution across EU countries, further rollout of the cross-border login solution was halted. eIDAS2 is expected to address key digital capabilities, such as cross-border identities and data sharing.

A significant insight from the work within Born Digital is that the digitalisation and distribution of events are crucial for the digital ecosystem. Sharing company events enables automated processes, reducing the need for SMEs to manually navigate requirements. Instead, requirements can be met through the automated interactions initiated by triggering events, with users performing actions within their preferred digital workspaces. In 2024 Norwegian Tax Administration did an experimentation on this concept, which implements this new type of interaction.

This chapter details the challenges and work done in the following areas and outlines the work done in the following areas: 1) Born Digital Maturity Survey; 2) Born Digital Process Model, 3) Digital capabilities, 4) Virtual Finland experimentation, and finally the status on the automatic notification of events in the 5) Born Digital concept experimentation.

## Background

SMEs face challenges both in understanding their obligations towards public authorities and also how to comply with them efficiently. SMEs should have access to digital services that help them identify and comply with the legal requirements. Born Digital implies that SMEs will have the appropriate digital capabilities from the start.

Starting digitally reduces the administrative burdens for SMEs and eliminates the need to transition later. The digital setup should involve all stakeholders, including business registries, tax authorities, banks and sector-specific regulators. The ecosystem should facilitate efficiency and consistency through information reuse.

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24. *Case Nordic Smart Government & Business: enabling cross-border company data sharing in the Nordics using dataspace*, Virtual Finland, 2023 – see appendix

25. The EU regulation 910/2014, known as eIDAS Regulation ("electronic Identification, Authentication, and trust Services"), is a European regulatory framework that establishes a set of rules and standards for electronic identification and trust services in the member countries of the European Union.

# Reflections on the scenario from Implementation Plan 2021

In the NSG&B Implementation Plan from 2021, the following expectations were set for the Born Digital working group:

- *“SMEs can be established and registered digitally in one coherent process where the companies receive guidance regarding the requirements 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.”*

A fully digital process for company establishment and registration helps guide SMEs through compliance requirements based on their industry. This is outlined in the NSG&B Implementation Plan 2021, which expects SMEs to establish and register digitally in a coherent process, receiving guidance and confirmation of compliance steps.

The Born Digital working group explored achieving this digital foundation, which supports SMEs throughout their lifecycle, facilitating interaction with public and private entities.

Key elements identified for a digital SME ecosystem include:

- **Portal Services:** Platforms like AltInn.no, Verksamst.se, Virk.dk, Suomi.fi and Island.is facilitate communication with the authorities but need better coordination and unified processes.
- **Interoperability:** APIs for government and private services, like Norway’s company registration interfaces, allow the integration of services such as banking and accounting. The PSD2 EU directive also supports this by enabling banking data sharing. There are similar APIs under development and in early phases in the other Nordic Countries.
- **Regulations:** Mandates for digital systems, such as Denmark’s bookkeeping law,<sup>[26]</sup> require businesses with significant sales to use approved digital systems. Norway enforces digital reporting, but Sweden, Finland and Iceland currently do not have a regulation that mandates the use of digital business systems.
- **Digital Event Sharing:** Event-driven ecosystems allow businesses to respond to relevant events. Norway, Sweden and Denmark are developing national infrastructures for sharing events.
- **Secure Digital Identification:** eIDAS2 regulation will enhance digital IDs and verifiable credentials, enabling secure, consent-based information sharing. Nordic countries are preparing for these capabilities, although current national IDs lack cross-border functionality.

Ongoing efforts in Nordic cooperation and EU regulations aim to create interoperable digital capabilities, benefitting SMEs and enhancing the region’s digital maturity.

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26. Folketinget (Danish Parliament), 2022, [https://danishbusinessauthority.dk/sites/default/files/2023-10/the-danish-bookkeeping-act-19052022\\_WA.pdf](https://danishbusinessauthority.dk/sites/default/files/2023-10/the-danish-bookkeeping-act-19052022_WA.pdf) & Danish Business Authority, 2024, <https://danishbusinessauthority.dk/requirements-digital-standard-bookkeeping-systems>

## NSG&B contribution in the field

The Born Digital working group demonstrated that starting a company digitally in one Nordic country while based in another is possible with cross-border digital trust services, but further exploration is deferred in anticipation of eIDAS2.

The group experimented with automated interactions based on company events, aiming for authorities to proactively engage with businesses. They also explored communication through existing business workspaces like accounting and banking systems.

The areas explored by the working group include are on a high level described below with challenges and contributions:

### 1. Challenge of Born Digital Maturity Survey:

#### Challenge:

A survey was conducted in 2021–2022 as one of the first deliveries to gain insights into the digitalisation level of Nordic SMEs. The purpose was to have a better understanding of the business and market level of digitalisation as well as the corresponding needs and requirements set for government digital services in the Born Digital area, also the results of the survey was used to evaluate the possibilities to improve cross border serviced. The following challenges were identified:

- **Scope and Purpose:** Understanding the digitalisation level of Nordic SMEs to determine the most important tasks for the Born Digital area.
- **Assessment of Digital Maturity:** Evaluating registration processes, legal frameworks, technical infrastructure and willingness to digitise among key stakeholders.
- **Execution Method:** Conducting the survey primarily as a desktop exercise, validated with inputs from system vendors, accountants, auditors and other stakeholders.
- **Content Determination:** Agreeing on relevant areas to include in the survey and creating a template.
- **Completion Process:** Team members from each country completed the survey using existing documentation and by reaching out to the relevant organisations.
- **Paper-Based Registration:** Although rarely used, paper-based registration is still accepted in all Nordic countries.
- **Cross-Border Digital IDs:** The lack of approved cross-border digital IDs hinders fully digital business processes across Nordic borders, forcing manual processes, e.g. sending PDFs.

#### Contribution:

The following contribution was delivered in this area:

- **Survey Execution:** Gained insights into digitalisation on the level of Nordic SMEs and that they are willing and able to use digital services.
- **Insights Provided:** The results used to evaluate the possibilities of improving cross-border services and understanding the digital maturity of each country, compiled and grouped by country (Denmark, Finland, Iceland, Norway and Sweden), showing a high level of digitalisation among Nordic SMEs.

- **Digital Business Registration:** All countries offer digital business registration by default through national gateways.
- **Data Exchange:** Norway and Sweden offer APIs for data exchange relevant to registration.
- **Trusted National eIDs:** National gateways are accessible with trusted national eIDs.
- **Data Sharing and Collaboration:** Data from registries is shared with companies, citizens and public authorities through APIs and look-up services. The similarities among Nordic countries provide a strong basis for cross-border collaboration on business registration.

## 2. Challenge of Born Digital Process Model:

### Challenge:

All Nordic countries, with the possible exception of Iceland, have models for the company lifecycle as well as activities and services for supporting companies in their lifecycle stage. The main focus of the work has been the establishing phase, but other stages in the company's life cycle are still relevant. The challenges found based on this are:

- **Establishing Phase Focus:** The main focus has been on the establishment phase, but other stages in the company's life cycle also need digital infrastructure and services.
- **Lack of Integration:** Existing digital services across the Nordic countries are not part of an integrated process and often require manual processes, lacking the reuse of information.
- **Support for Dissolution:** Digital support for dissolving companies is almost non-existent, except for some guidance.

### Contribution:

The following contribution was delivered in this area:

- **The Lifecycle Models:** The Born Digital Process Model defines the need for digital infrastructure and services throughout the company lifecycle based on national models.
- **Exploration Phase:** Identified the main concerns and digital service needs during the exploration phase, including public and private sector services.
- **Establishment Phase:** Defined the necessary digital services and infrastructure for formalising a new company, involving public and private sector touchpoints.
- **Running Phase:** Highlighted the digital services supporting the operation of a registered company, including transaction processing, invoicing and reporting.
- **Dissolution Phase:** Identified the digital services needed for ending a company's operations, including public and private sector support for bankruptcy and record archiving.
- **Holistic View:** Emphasised the benefit of digitalisation every step of a business's life cycle, providing a comprehensive approach to digital infrastructure and services.

### 3. Challenges of Digital capabilities:

#### Challenge:

On the basis of stakeholders' meetings and input from national experts, the work group has identified and prioritised a set of challenges and digital capabilities that an SME should have in order to get the benefits of being a part of a national and Nordic digital ecosystem. They are:

- **Identification and Prioritisation:** Determining and prioritising the digital capabilities necessary for SMEs to benefit from the national and Nordic digital ecosystem.
- **Provision of Capabilities:** Balancing the provision of these capabilities between public infrastructure and services, and private services and solutions.
- **Integration of Business Events:** Understanding the importance of digital sharing of business events as a key enabler for ecosystem interaction.
- **Adapting to New Regulations:** The initial work on digital capabilities was done without knowledge of the upcoming eIDAS2 regulation, which addresses many identified capabilities.

#### Contribution:

The following contribution was delivered in this area:

- **Key Digital Capabilities:** Identified essential digital capabilities for SMEs, including digital and structured company information, accounting data, secure digital identities and compliance verification.
- **Digital Sharing of Business Events:** Recognised the potential of publicly sharing business events to enable required actions within the ecosystem.
- **Impact of eIDAS2:** Acknowledged that the eIDAS2 regulation will address several identified capabilities, emphasising its importance for future digital infrastructure and business scenarios.

### 4. Challenges of Virtual Finland experimentation:

#### Challenge:

Born Digital teamed up with the Virtual Finland project<sup>[27]</sup> to perform an experiment on how to digitally register a company across borders. The purpose of this experimentation was twofold:

1. Make a digital solution for ensuring that a citizen in one Nordic country could be able to establish a company in another country in a remote, digital and secure manner.
2. To make company information available cross border in the Nordics.

The experiment also identified the following challenges:

- **Cross-Border Registration:** Company registration processes become paper-based when registering from a different Nordic country, making cross-border digital registration challenging.

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27. See more information on the Virtual Finland website - [www.thevirtualfinland.fi/en/frontpage](http://www.thevirtualfinland.fi/en/frontpage)

- **Data Sharing:** Ensuring that company information is available across borders in a secure and digital manner.
- **Interoperability:** Identifying and standardising key business data for interoperability across different Nordic countries.
- **Feasibility of Data Consenting:** Testing data consenting mechanisms, which require further development to be practical for future use.
- **Lack of Integrated Services:** Absence of a unified portal or service entity that supports multiple national and regional authorities as well as private operators for company establishment.
- **Mutual ID Recognition:** Ensuring that national digital IDs can be accepted cross-border for logging into digital services.

## Contribution:

The following contribution was delivered in this area:

- **Digital Solution for Cross-Border Registration:** Developed a digital solution allowing citizens to establish a company in another Nordic country remotely, securely and digitally.
- **Prototype Implementation:** Conducted an experiment on cross-border company data sharing involving Finland, Norway, Sweden and Iceland.
- **Standardisation of Business Data:** Identified and standardised key business data (e.g. company business extract, beneficial owners, signatory rights) for better interoperability.
- **Data Productisation and Dataspace:** Demonstrated that business data can be easily shared from its original source using data productisation and a dataspace, paving the way for future self-sovereign and wallet-based solutions.
- **Pilot for Mutual ID Recognition:** Successfully completed a pilot where two countries accepted each other's national IDs for logging into digital services.
- **Findings on Similarities:** Showed that Nordic information requirements and processes are similar enough to allow information sharing and reuse across borders in dataspace with standardised data products.

## 5. Challenges of Born Digital Experimentation:

### Challenge:

The Born Digital work group has focused on creating a more user-friendly start-up process that will create compliant and digitally enabled SMEs. There is room for radical improvement of how companies are handled by the public and private sector if we change the interaction patterns between the companies and their environment and the following challenges has been identified in this process as:

- **Complexity in Starting a Business:** Navigating the complex web of public requirements, leading to insecurity about compliance and deterring business startups.
- **Current Interaction Patterns:** Businesses must search for the right authorities, applicable regulations and correct forms, creating administrative burdens.
- **Responsibility Perception:** Changing the perception that companies alone are responsible for understanding and acting on their responsibilities.

- **Cross-Border Registration:** Ensuring a digital solution that allows a citizen in one Nordic country to establish a company in another country securely and remotely.
- **Unified Digital Infrastructure:** Creating a common infrastructure for interaction and data sharing that supports the whole company lifecycle.
- **Implementation in One Country:** Deciding to experiment in Norway using AltInn as a hub for communication and event sharing.

## Contribution:

The following contribution was delivered in this area:

- **Proactive Authority Engagement:** Proposed a model where authorities approach businesses based on business events, ensuring "compliance by default".
- **Experimentation in Norway:** Created and tested a conceptual model in Norway using AltInn v3 for event sharing and digital dialogues.
- **Event-Driven Architecture:** Utilised event-driven architecture to enable efficient interaction between authorities and businesses.
- **Assurance of Compliance:** Provided businesses with assurance that they comply with the requirements by submitting correct and complete information.
- **Reduced Administrative Burdens:** Aimed to reduce administrative burdens and achieve more efficient interaction between authorities and businesses.
- **Public and Private Collaboration:** Involved multiple public and private actors in the experiment, including Tax Administration, Brønnøysund Register Centre, Digitalisation Directorate and various banks.
- **Ongoing Projects:** Identified ongoing and planned projects to continue the work if the experiment is successful.
- **International Interest:** Expected the outcomes to be of interest and value beyond the Nordics, contributing to the development of government services globally.
- **Similar Initiatives in Other Nordic Countries:** Highlighted similar projects in Denmark and Sweden, with Sweden using third-party providers to assist in business establishment while complying with the national and local laws and regulations.

## Conclusion

The work on the "Born Digital" solution for the public sector's digital services to SMEs has progressed from conceptual exploration to developing a practical model aimed at creating a well-functioning digital ecosystem for SMEs. The primary focus has been on digitalisation and automating core business processes to simplify the lives of SMEs. Through these efforts, the working group has transitioned from high-level considerations to a working model, which has been validated through experimentation in Norway and the Virtual Finland experimentation.

The model is based on the following assumptions:

- Both public and private entities participate in a common digital ecosystem that shares events, information and services, enabling process automation.
- All companies possess a minimal set of digital capabilities.

- The digital infrastructure supports event-driven services that proactively engage with SMEs, ensuring seamless and timely interactions.
- Services are designed with a life-cycle perspective, supporting SMEs through all stages of their business journey.

By adhering to these principles, a digital environment can be created where SMEs can thrive, benefitting from automated, efficient and user-friendly processes that reduce administrative burdens and enhance compliance.

This model can facilitate achieving the initial scenario in this area that was set up in 2021 for the *NSG&B Implementation Plan* of SMEs being able to be established and registered in one coherent digital process, including guidance on compliance, and having SMEs that are fully digital with automated business administration processes.

**Table 4:** Overview of deliverables from the NSG&B working group on Born Digital: purpose & result, impact and next step.

Deliverable	Purpose & result	Impact for businesses	Next step/future work
<b>1) Maturity survey</b>			
Survey results of digital maturity of Nordic countries See appendix	Create a common understanding of a common starting point and the national differences	Understanding their current situation helps agencies develop relevant services	Used in subsequent work
<b>2) Process model</b>			
Process model See appendix	Understand what types of digital services are relevant based on the company life-cycle stage	Enables better services for companies	Support more areas of the company life-cycle
<b>3) Digital capabilities</b>			
Description of digital capabilities of Nordic countries See appendix	Define the capabilities needed and how to achieve them	Support for new and better services	Implement the components needed to support the capabilities, e.g. eIDAS2
<b>4) Virtual Finland experimentation</b>			
Report on the Virtual Finland experimentation See appendix	Demonstrate how cross-border digital processes can be implemented	Better support for cross-border activities	Implementing the relevant EU regulations and directives
<b>5) Born Digital experimentation</b>			
Report + working prototype See appendix	Validate that a new interaction patterns are viable and provides the assumed benefits	Peace of mind and less administrative burden	Go from experimentation to the actual implementation

## Perspectives for continued cooperation

There are several key areas where continued collaboration could be highly beneficial:

- **Refining and Implementing the Model:** Expanding the validated model from the Norwegian experimentation to other Nordic countries will help create a unified approach, ensuring all Nordic SMEs can benefit from a consistent digital ecosystem.
- **Facilitating Cross-Border Flow:** Enhancing the cross-border flow of events, information and services will provide value and increase interoperability among Nordic countries. This will simplify the administrative processes for businesses operating across borders.
- **Advancing eIDAS2:** Continuing work on eIDAS2 to leverage digital capabilities needed by SMEs based on a common European legal and technical framework. This will help create robust digital services while avoiding vendor lock-in, ensuring SMEs can access the best solutions available.

By focusing on these areas, future cooperation can ensure that the Born Digital initiative continues to evolve and provide tangible benefits for SMEs across the Nordic region. The successful implementation of these strategies will lead to a more integrated, efficient and user-friendly digital ecosystem for businesses.

# Reliability and Data Quality: Solution Area D

## Summary

The main challenges in the field of providing Nordic SMEs access to high quality data from the national business registries was that the registries had created different API standards, which increased the cost of API integration for the third party developers of these integrations. Furthermore, the existing common registry for businesses in the EU is only intended for exchange of information between the business registries in the EU, for individual look-ups, has lower quality data and is not scalable.

The NSG&B working group SA-D has addressed this challenge by exploring how Nordic tax & business registries can provide information that takes into account the requirements of high value data sets in compatible formats across the different national registries within the Nordics. This work is building on the NSG&B working group on Simplified Reporting and Open Accounting (SA-B) and its work on the common Nordic Vocabulary for the financial statements.

The NSG&B working group SA-D has developed a common Nordic semantic model for business information in English. The model can be used for different purposes and one example is an API solution offering access to data from registries across the Nordics showing the core attributes of basic standard data of companies (e.g. name, address, etc.) which can enable third party actors to create services that makes comparisons and analysis of businesses easier across Nordic region for possible investors, business partners, etc. This API can be used, for example, by ERP-systems or other platforms, enabling SMEs to access this basic company information directly from their ERP-systems. Thus, building on the common semantic model created by NSG&B, the APIs in this field have been unified. The ability to receive this information about suppliers or customers from other Nordic countries can contribute to the goal of making the Nordic region the most integrated region in the world and this semantic model can be reused for other purposes such as an example for the EU work in the area regarding eIDAS 2 regulation and the eWallet.

## Background

High data quality is the foundation for effective transactions between businesses in order to obtain trust in the business information exchange. Everything starts with basic business information that is open and available and the EU has defined High Value Datasets<sup>[28]</sup> (HVD) as datasets that hold significant potential for socio-economic and environmental benefits as well as innovative services. The High Value Datasets aim to provide maximum value to their users and will be able to be used free of any technical, legal or financial barrier. This requires data that is machine-readable in common or interoperable formats. The EU Open Data Directive<sup>[29]</sup> that was last amended in 2019 requires member states to make its data publicly available, including data from the national business registries.

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28. High Value Datasets: European Union EUR-Lex, 2024, [Implementing regulation - 2023/138 - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2023.019.01.0043.01.ENG), [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2023.019.01.0043.01.ENG](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2023.019.01.0043.01.ENG)

29. Open Data Directive: European Union EUR-Lex, 2024, [Directive - 2019/1024 - EN - psi directive - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019L1024), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019L1024>

The EU has worked on a common solution in this area over the years, and it has created a common business registry called BRIS. However, currently, data is not available in machine-readable formats on an EU level and national business registries each have their own standards and formats for APIs increasing the costs for system providers and third party developers.

eIDAS 2 regulation<sup>[30]</sup> aims to update this regulation and notable initiatives in the eIDAS 2 include: 1) universal digital identity wallets; 2) streamlined cross-border access to national services, 3) enhanced data protection measures where individuals are endowed with greater autonomy over their data. The EU Digital Wallet<sup>[31]</sup> (EUDIW) and other components within the eIDAS 2.0 ecosystem aims to apply these digital cross-border solutions for data across Europe, and the European Wallet Consortium<sup>[32]</sup> (EWC) is one of four large scale pilots that are testing different use cases for this wallet. However, it requires that the data in this wallet is of high quality - meaning interoperable cross-border in machine-to-machine readable formats.

The NSG&B working group in the area has thus addressed the demand for high value datasets, the challenges of the current BRIS solution and provided a contribution to how EU member states can implement the eIDAS 2 regulation, including how to include national high value data into the upcoming EU wallet. The challenges and how the NSG&B group has addressed these are outlined in more detail below.

## Reflections on the scenario from Implementation Plan 2021

The SA-D working group has stated the following scenario for the area in the 2021 Implementation Plan: *"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"*.

The working group focused on exploring ways of most effectively providing access for these types of data cross-border and in a secure, cost-effective and integrated way. The types of data that was intended to be included were thus; verification of bank account and VAT registration as well as access to the national registries that typically include the following data on businesses: legal registration, business status, (VAT and) tax registration and payment, overview of shareholders and board members as well as the business change history.

The NSG&B working group had to address the following two main challenges in the area as outlined in more detail below:

1. Challenge of access to high level data on EU level: the existing common registry for businesses in EU is only intended for individual look-ups, has lower quality data and is not scalable.
2. Challenge of different solutions and standards on national business registries that increase costs.

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30. The EU regulation 910/2014, known as eIDAS Regulation ("electronic Identification, Authentication, and trust Services"), is a European regulatory framework that establishes a set of rules and standards for electronic identification and trust services in the member countries of the European Union.

31. EU Digital Identity Wallet, European Union, 2024, [EU Digital Identity Wallet Home - EU Digital Identity Wallet - \(europa.eu\), Home, https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/EU+Digital+Identity+Wallet+Home](https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/EU+Digital+Identity+Wallet+Home)

32. EU Digital Identity Consortium, 2024, [EUDI Wallet Consortium, https://eudiwalletconsortium.org/](https://eudiwalletconsortium.org/)

# The NSG&B contribution

## 1. Challenge of access to high level data on the EU level

### Challenge

The EU has created a common terminology - the Business Registers Interconnection System - BRIS. BRIS is a system for the exchange of information between the business registers and is using the EU Core Business vocabulary via the website [e-justice](https://e-justice.europa.eu)<sup>[33]</sup> where everybody can search for a company in all EU countries. Limited liability companies in EU countries are included, but it does not include sole proprietors/sole traders/self-employed persons. It offers a list of documents like annual reports that you can download as PDFs. Each country decides if downloading a document costs a fee or not. However, the webpage does not currently have a payment solution in place. The problem is that this BRIS data is not structured, it can only be used for individual look-ups and cannot be integrated into ERP-systems and other services. Furthermore, there are gaps in the EU core vocabulary related to business information for instance the information and terms around signatory rights. Further specifying the EU core vocabulary and the quality of the data that is available from the national registries and other actors are thus a foundation for the further work with eIDAS 2.0 as well as an EU Wallet. In sum, BRIS, the existing common registry for businesses in the EU, is only intended for individual look-ups, has lower quality data and is not scalable.

### Contribution

The NSG&B working group on Reliability and Data Quality has focused on finding the best way to enable data based on a system-to-system approach where the data is standardised, structured and machine-readable. The basis for this is to have a common vocabulary for the various national terms in the area. The working group on Reliability & Data Quality has thus been able to use the work of the NSG&B working group on Open Accounting and Simplified Reporting, which has developed a common Nordic Vocabulary of financial statements. The task for the working group on Open Accounting and Reporting has then been to take this Nordic Vocabulary and connect the relevant data from the national registries into an interoperable format across the Nordic registries. This has been done by developing a common Nordic API solution that ERP-system or third party developers can use to build into their systems or services, so that SMEs directly can access this high quality data from their existing ERP-systems for instance.<sup>[34]</sup> The API solution is described in more detail in the appendix.

## 2. Challenge of different standards on national business registries that increase costs

### Challenge

As outlined in the EU Open Data Directive, member states are required to make relevant data publicly available, including data from the national business registries. EU countries as well as Nordic countries all have national business registries, but this has been done using different

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33. e-justice.eu, 2024, [European e-Justice Portal - Business registers – search for a company in the EU \(europa.eu\)](https://e-justice.europa.eu/489/EN/business_registers_search_for_a_company_in_the_eu?clang=en), [https://e-justice.europa.eu/489/EN/business\\_registers\\_search\\_for\\_a\\_company\\_in\\_the\\_eu?clang=en](https://e-justice.europa.eu/489/EN/business_registers_search_for_a_company_in_the_eu?clang=en)

34. NSG&B, 2024, "Reliability and data quality and the future ahead | Nordic Smart Government and Business", <https://nordicsmartgovernment.org/node/4133>

standards for their APIs etc. This means that third party developers of these ERP-system integrations would have to develop separate integrations for each country, which makes the cost of these integrations higher than they could have been if countries used the same standards or had a higher degree of interoperability. The costs are then passed on to the SMEs making access to high quality data and digitalisation more expensive than it otherwise could be.

The working group collected input from stakeholders for which types of data that are currently missing or needed in more detail - from the current BRIS as well as from national registries (that are the sources of BRIS).<sup>[35]</sup> Some of the most requested information from stakeholders are:

1. Information on signatory rights so that system providers can be able to provide correct information to the customers in order that documents to be digitally signed are sent to the right person. Moreover, it will help auditors to check the validity of a contract because it is crucial to understand the role of each party involved. Another perspective is that it will make it possible to verify that the right person has access to the data, which can be relevant for administrators from a tax authority or a banking association.
2. Information on beneficial owners to ease the KYC - know your customer process.
3. Verify that an organisation or business is registered for VAT so that an auditor can carry out an audit check and see that the company has paid the correct VAT. Another reason was to be able to check if the company fulfils its obligations and to be able to charge correct VAT.
4. Be able to give a power of attorney to an agent with specified permission so that a third party, for instance an external auditor or accountant, can act with an authorisation from the business.

## Contribution

The NSG&B has worked to include existing national registry data into the one common Nordic API. The NSG&B API on Nordic business information as outlined above can contribute to providing access in interoperable formats across the Nordics. The working group has used the input from stakeholders and has managed to include the following data from the national business registries in the Nordics: 1) Basic company information; 2) Signatory rights; 3) NACE codes (as part of Activity); 4) Tax information, 5) Data as a Service.

The NSG&B work has been presented for the Semantic Interoperability Community<sup>[36]</sup> (SEMIC), who develops solutions to help European public administrations perform seamless and meaningful cross-border and cross-domain data exchanges. Discussions with SEMIC have identified an interest of the work and they have initiated a meeting with the aim to reuse the model and add it to the EU Core Vocabulary. This can make the NSG&B standard for signatory rights a part of the EU Core Vocabulary.

## Conclusions

Access to high value data is important for a range of different digital services for SMEs, but data from national business registries are not currently available in structured formats across the EU countries, there are gaps in the EU vocabulary for the different national terms and the

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35. See the input here - NSG&B, 2024, "Reliability and data quality and the future ahead | Nordic Smart Government and Business", <https://nordicsmartgovernment.org/node/4133>

36. SEMIC, 2024, Issue on Signatory rights GitHub, <https://github.com/SEMICEu/Core-Business-Vocabulary/issues/48>

differences in formats of the national registries make the available national APIs costly to develop and offer to the SMEs. The EU has worked in this area with the BRIS website, and most notably with the eIDAS 2 regulation, including how to include national high value data into an eWallet.

The NSG&B working group SA-D has contributed in the field by developing a common Nordic semantic model that can be used for different purposes. Furthermore, an API solution has been created offering access to data from registries across the Nordics showing the core attributes of basic standard data of companies (e.g. name, address, etc.) which can enable third party actors to create services that makes comparisons and analysis of businesses easier across Nordic region for possible investors, business partners, etc.

This API can be extended to include additional information, such as the signatory rights of a business, and can be integrated with ERP systems or other platforms. This enables SMEs to directly access this information from their ERP systems. Moreover, the ability to receive information about suppliers or customers from other Nordic countries supports the goal of making the Nordic region the most integrated in the world. It can also serve as a model for the EU's work on the eIDAS 2 regulation and the eWallet initiative.

The Nordic API on business information can enable the SMEs to validate their national and Nordic trading partners in terms of financial stability and reliability, using official information in their business enterprise, i.e. legal registration, business status,<sup>[37]</sup> thus achieving the initial scenario in this area that was set up in 2021 for the Implementation Plan.

Signatory rights are about understanding which individual in the company has been legally authorised to represent a company. Signatory rights can be given to a person alone or jointly with other persons which have a specific role in a company. This will be important to SMEs when doing business with other business representatives and can be seen as part of the Power of Attorney mentioned in the new EU company directive.<sup>[38]</sup> It also is of value for service providers building services for knowing your customer (KYC) process. Furthermore, the semantic model for signatory rights as part of EU Core Vocabulary can be used for the future EU Digital Company Wallet.

However, this requires some future work in ERP-systems or third party developers to build an integration for this, enabling SMEs to access this information directly in their ERP-system when sending an invoice, for example.

Furthermore, the semantic model can be expanded to incorporate information from additional sources, such as Tax Administrations and private market participants. In addition, the semantic model can be repurposed for other technical solutions and utilised by third parties to develop value-added services. In principle, this semantic model and the API could be used as an MVP on a whole-of-EU API or other technical solution that includes the national business registries from all of the EU-countries into one. This would function as a BRIS for machine-readable high quality data or as one of the services in a eWallet.

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37. Short explanatory movie on Nordic Smart Government & Business: [NSG&B, 2024, Reliability and data quality | Nordic Smart Government and Business](#),  
38. Further expanding digital tools and processes in company law: European Commission, 2023, [EUR-Lex - 52023PC0177 - EN - EUR-Lex \(europa.eu\)](#)

**Table 5:** Overview of deliverables from the NSG&B working group on Reliability & Data Quality: purpose & result, impact and next step.

Deliverable	Purpose & result	Impact for businesses	Next step/future work
<p>A common Nordic semantic model for company information</p> <p>See more info on all deliverables here:  <a href="https://nordicsmartgovernment.org/node/4133">https://nordicsmartgovernment.org/node/4133</a></p>	<p>The purpose was to have a common definition in English. The focus was to cover all types of companies registered at the business registries authorities. This includes sole traders. Furthermore, it should be machine-readable and possible to be used by system vendors or other service providers.</p> <p>The result was a common Nordic semantic model which included following information:</p> <ol style="list-style-type: none"> <li>1. basic company information (seven attributes)</li> <li>2. NACE codes</li> <li>3. Tax information (VAT registration J/N and VAT-number)</li> <li>4. Signatory rights</li> </ol>	<p>SMEs can directly access this high quality data from their existing ERP-systems.</p> <p>The solution can be used by different service providers for increasing reliability and trust in the ecosystem.</p>	<p>Continuing adding new attributes.</p> <p>Discuss with the EU if the developed semantic model can be integrated to the EU semantic business models.</p>
<p>Way of working for developing semantic model</p>	<p>The purpose was to build an interoperability platform by:</p> <ol style="list-style-type: none"> <li>a. finding a way to recognise the specific concepts needed and to define them</li> <li>b. create a common vocabulary with references to other external existing data vocabularies like EU Core Vocabulary and others</li> <li>c. to create an application profile for the Nordic API</li> </ol> <p>The result was that the terminology and the common vocabulary has been created as a common Nordic semantic model that can be reused for different purposes.</p>	<p>The way of developing the semantic model has already been proved valuable for the EUDI wallet and can be further developed after upcoming needs.</p> <p>Different solutions can be created based on information provided by the Nordic business registries authorities which will raise trust between SMEs.</p>	<p>By continuing working together the digitalisation and cooperation on the Nordic level can move forward by adding new attributes. This will increase the interoperability for the market as well as the public authorities which will raise the trust and increase quality.</p> <p>Discussion on which other information can be provided from the business registries authorities according to the upcoming EU directives and regulations.</p>

<p>National APIs based on a common Nordic semantic model</p> <p>See more info on all deliverables here:  <a href="https://nordicsmartgovernment.org/node/4133">https://nordicsmartgovernment.org/node/4133</a></p>	<p>The purpose was to create a common Nordic API solution that ERP-system or third party developers can use to build into their systems or services.</p> <p>The result was that an API was created which included data from the national registries of the Nordic countries on:</p> <ol style="list-style-type: none"> <li>1. Basic company information (seven attributes)</li> <li>2. NACE codes</li> <li>3. Tax information (VAT registration J/N and VAT-number)</li> <li>4. Signatory rights</li> </ol>	<p>SMEs can directly access this high quality data from their existing ERP-systems and validate and verify their upcoming business partners.</p>	<p>ERP-systems/other system providers implement this common Nordic API into their systems.</p>
<p>PoC: EU Company Certificate</p> <p>Using the common Nordic semantic model to provide information for an EU Company certificate.  Company Certificate related to the work in EU Identity Wallet (EUID - Large scale pilot).</p> <p>See more info on all deliverables here:  <a href="https://nordicsmartgovernment.org/node/4133">https://nordicsmartgovernment.org/node/4133</a></p>	<p>The purpose was to validate that the semantic model can be used for the EU Company certificate.</p> <p>The result was that the information is exchanged as a back-end API into the wallet.</p> <p>The NSG&amp;B SA-D working group has delivered the PoC to the European Wallet Consortium, Large Scale Pilot (EWC-LSP) for testing.</p>	<p>This will be important for the future EUID wallet.</p>	<p>Besides the EU Company certificate, the EWC-LSP need to investigate how a Power of Attorney shall be added. When doing that, they aim to reuse the NSG&amp;B work on Signatory rights.</p>
<p>Stakeholder discussions including a dialogue day</p>	<p>The purpose was to collect information and requests from the stakeholders on what is needed in the economic ecosystem.</p>	<p>If the authorities can contribute with good solutions it will benefit ERPs, system providers, service providers and the SMEs.</p>	<p>API implementation and integration. Further dialogue with stakeholders and continuing the semantic work and modelling.</p>

\*Note that all deliverables are gathered below and adhere to the same overall project of a common Nordic API.

## Perspectives for continued cooperation

The Nordic cooperation in finding common definition and terminology for business information has proved to be successful. The basis to have a common vocabulary, the Nordic Vocabulary, enables a data based on a system-to-system approach where the data is standardised, structured and machine-readable. From now on, building on a common semantic model created by NSG&B, the APIs are unified and the semantic model can be reused for other purposes as well when data needs to be accessible from the business registers authorities.

There are several potential areas and data points to exploit where future cooperation would be fruitful. It would not only increase the interoperability within the Nordics but also within the EU.

- Consolidate the Signatory rights model and continue discussions with SEMIC and EU with the aim to make it part of EU Core Vocabulary.
- Automatic sustainability reporting. Investigate how Corporate Sustainable Reporting Directive (CSRD) can be related to semantic work and data elements needed. The aim is to find common understanding of the data and change the forum from local to non-local.
- Shareholder information. Investigate if and how shareholder information can be standardized, which would help the future KYC process tremendously. The aim is to make a draft of a data model and, in length, an API.
- Power of Attorneys. Reusing the work of Signatory rights and investigate how other representatives can be added.

All of the above areas could be reused and contribute to the upcoming EU Company Digital Identity Wallet needed for verified credentials and attestations of attributes.

# NSG&B roadmap milestones

## About the roadmap milestones

In the NSG&B Implementation Plan 2021-2024, there is outlined a set of roadmap milestones. The roadmap milestones are quite broad societal level milestones that are derived from the NSG&B vision of creating 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.*

## The 8 roadmap milestones

The 8 roadmap milestones from the NSG&B Implementation Plan 2021–2024 are as follows:

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

## The purpose of the roadmap milestones

In the NSG&B Implementation Plan, the roadmap milestones are set up to monitor the success of the programme, e.g. regarding the percentage of uptake of solutions and services. Some of the milestones express direct results of the NSG collaboration, other milestones are targets which are needed to reach in order to realise the vision, such as a high number of SMEs using digital business systems. It is stated that *"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"*.

Thus, the roadmap milestones are setup as a "proxy" in order to include the wider ecosystem effects of the programme, but the progress on these milestones cannot be attributed to the programme alone but must be seen in a wider context of factors - tech, regulative, market development in each of the countries as well as on an EU and global level even.

In the appendix, each of the roadmap milestones are examined, and for each milestone there is described: the NSG&B contribution, the market and tech trends as well as country-specific initiatives or events that have contributed to the progress for each milestone. In the below sections there is a summary of this, and thus the further definitions and details can be found in the appendix.

The roadmap milestones each refer to different time periods in 2021-2027. Thus, for some of the milestones, it is possible to document only the likelihood of achieving the milestones and what the NSG&B contribution has been in this regard.

## An overview of the eight NSG&B roadmap milestones

**Table 6:** Overview of the eight NSG&B roadmap milestones

Eight roadmap milestones	Result
<p><b>1. By 2021, a public-private advisory board has been established to support the implementation of the NSG roadmap</b></p>	<p>✓</p> <p>The NSG&amp;B Nordic Advisory Board was set up, and national advisory boards are set up in the field as well.</p>
<p><b>2. By 2022, 70% of the Nordic SMEs use a digital business system</b></p>	<p>✓</p> <p>The milestone that in 2022, 70% of the Nordic SMEs use a digital business system, can be considered to be met in 2024, however, with some methodological reservations.</p> <p>According to Eurostat, shares of Nordic SMEs that use any digital business system range between 43-69%, and a bit higher - from 49-73% - for ERP systems. However, national surveys show different results ranging from 79% in Sweden, around 80% in Finland and 83% in Iceland. Moreover, in Norway, it is mandatory for all businesses to do their Tax Declaration using a digital business system, and in Denmark a certified digital bookkeeping system has been made mandatory for all businesses with more than DKK 300,000 in sales for two consecutive years from 2025 onwards.</p> <p>NSG&amp;B has contributed by adding to the cross-border features of having a digital business system - in particular a digital bookkeeping system.</p>
<p><b>3. By 2023, sales and purchases can be handled digitally by default in compatible formats across the Nordic region.</b></p>	<p>✓</p> <p>If this milestone is defined as SMEs having the possibility to handle their sales and purchases digitally by default in the Nordic region, then the milestone is met. However, going a step further, if the milestone is defined as SMEs in practice doing their transactions fully automated using a compatible format as the Peppol network, then this practice is not widespread at this point.</p>

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**4. By 2023, SMEs can freely choose to move their business data between business systems.**

✓

This milestone has been met due to a combination of market solutions combined with the valuable NSG&B contribution of a "translation" of financial terms between the Nordic countries and combined efforts of the Finnish RTE project with the AAV-model. This can, for example, lower the costs of changing from one business system to another for the individual SME, and it can contribute to long-term competition and the integration of the Nordic market in this field.

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**5. 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.**

✓

Based on the fact that all main system providers of bookkeeping ERP-systems in the Nordic region have APIs and other solutions available for SMEs to share their data with third parties, it can be concluded that this milestone is met. Market & tech development has been contributing to this milestone because APIs are now a mainstream component of most systems and platforms globally. National business registries in the Nordic countries all allow for API-integrations so the market can develop different services for SMEs. The NSG&B Nordic API can be expanded and make use of the work concerning the translation of financial terms, so that there is an easy and safe-to-use way of comparing and accessing Nordic companies basic data, compliance and publicly available financial performance.

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**6. By 2024, 80% of the invoices sent in the Nordics are digital**

**Partly met**

If we define the milestone as being about the very ability to automate these business administration processes, then the Eurostat indicator for *eInvoices that are suitable for automatic processing* should be a good fit for this milestone. According to this, Finland and Norway meet this milestone in 2023. Notably, the past five years have seen a 20 percentage points increase in the share of companies that send eInvoices in Finland, Norway and Sweden. As part of Swedish Bolagsverket's efforts on eInvoicing they have conducted a range of interviews with companies. An example of the progress on eInvoicing and its savings potential is a company that has increased the percentage of eInvoices from 14% to 67%, aiming to reach 95% by 2024. If they achieve this goal, they are expected to save nearly 200,000 SEK excluding VAT this year, with a savings of between 1.50 and 7.00 SEK per invoice. In addition to the direct cost savings, there is also a significant savings in work hours. Each paper invoice takes at least 5 minutes to process, equating to a cost of approximately 83 SEK per invoice, based on an hourly wage of 1,000 SEK. If the company processes, for example, 10,000 invoices annually, the transition to e-invoicing could result in additional savings of over 800,000 SEK per year in labor costs alone. Market & tech development has been contributing to this milestone by offering possibilities for eInvoicing in digital ERP-systems. While Nordic countries have efforts to expand use of eInvoicing, there is not currently any requirement for businesses to *use* these features, as such a mandate would require a derogation from the VAT directive. The currently ongoing revision of the VAT directive - VAT in the Digital Age (VIDA), can result in a repeal of this restriction, allowing all EU members to introduce mandatory e-invoicing. NSG&B has contributed to this milestone by its work on supporting interoperable eDocuments in the Nordics.

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**7. By 2025, the Nordic SMEs have saved EUR 500 million by using smart services and real-time data**

✓

This milestone points to 2025, thus we can only point to estimations at this point. In Finland, the estimated benefits of a fully up and running real time economy ecosystem are approximately 6 billion euros annually (roughly 0.5% of the GDP). Estimation is based on external studies commissioned by the RTE program, interviews with public and private actors and experiments implemented in the RTE program. In Denmark, the cost-savings of digital bookkeeping and annual reporting is estimated to approximately 400 million euros annually. Furthermore, it should be noted that, according to a study referred to be the OECD ([Tax Administration 3.0](#)), decreasing administrative work in SMEs increases business activity by 4%. In 2026, there will be a fuller picture of actual savings coming from the Danish Bookkeeping Act, that can be used to quantify this 2025 milestone.

Based on the estimation from 2022 alone, however, that Danish SMEs are to save close to EUR 400 million annually by 2025, it can be expected that the rest of the Nordic region will have savings for well more than EUR 100 million in 2025, thus reaching this milestone of EUR 500 million in annual savings in the Nordic region in 2025. The savings potential could thus be expected to be more than EUR 500 million annually, but these are estimates for 2025, and it remains to be documented in full-scale on a national and Nordic level what the actual savings amount to.

Market & tech development has been contributing to this milestone by constantly offering new and improved solutions on smart and real time data. In the context of the NSG&B programme, focus has been on digitalisation and automation of core business processes and most concretely in bookkeeping systems.

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**8. By 2027, the Nordic countries are the most integrated region in the world**

**Difficult to measure**

This milestone points to 2027, and it is only possible to point to the NSG&B contributions to this vision at this point.

The NSG&B programme has contributed to the Nordic Council of Ministers' 2030 vision; and specifically the strategic priority of a *"competitive Nordic Region, that will promote green growth in the Nordic region based on knowledge, innovation, mobility and digital integration"* by enabling SME data sharing that is of high quality, accessible and automatic; shared and stored in a consent-based and secure manner as well as working in cross-border situations.

On a more broad note, the NSG&B programme has had a long-term contribution to the developing of national digital solutions and infrastructure in a way that is interoperable and makes sense in relation to existing and upcoming initiatives in the other Nordic countries, in the EU and in the rest of the world.

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## Conclusion on the eight roadmap milestones

In total, it is concluded that **six of the eight milestones have been met** at this point in 2024, since it is not clear at this point whether 80% of invoices in the Nordic region are eInvoices at this point – and whether the Nordic region is indeed the most integrated in the world – is beyond the scope for this report.

## **A clear increase in SMEs having a digital bookkeeping system & using eInvoices**

There is a clear increase in the percentage of SMEs having a digital bookkeeping system and SMEs that use eInvoicing in the Nordic region. It should be noted, however, that progress is measured by a range of Eurostat indicators and contrasted with national surveys in the area, however, the direction and trend of progress on these milestones are clear – all Nordic countries experience a high rise in the percentages of SMEs having a digital bookkeeping system and using eInvoices (roadmap milestones 2 and 6).

## **The necessary conditions are in place for digitalisation to continue**

Moreover, it is concluded that the necessary technological conditions are in place for SMEs to take into use, these being that there are possibilities available for sales and purchases to be handled digitally by default in compatible formats across the Nordic region; and that SMEs can freely choose to move their business data between business systems and are able to give access to their business data in ERP-systems to third parties using APIs or more simple user logins (roadmap milestone 3, 4, 5).

Regarding the broader milestones of saving SMEs EUR 500 million annually and the Nordic region being the most integrated in the world, we can point to estimations at this point. In Finland, the estimated benefits of a fully up and running real time economy ecosystem are approximately 6 billion euros annually (roughly 0.5% of the GDP). Estimation is based on external studies commissioned by the RTE program, interviews with public and private actors and experiments implemented in the RTE program. In Denmark, the cost-savings of digital bookkeeping and annual reporting is estimated to approximately 400 million euros annually. In 2026, there will be a fuller picture of actual savings coming from the Danish Bookkeeping Act, that can be used to quantify this 2025 milestone. Moreover, it should be noted that, according to a study by the OECD ([Tax Administration 3.0](#)), decreasing administrative work in SMEs increases business activity by 4%.

## **The long-term contribution**

Regarding the Nordic Council of Ministers' 2030 vision that is the overarching vision in this field, the NSG&B programme has contributed to the strategic priority of a "*competitive Nordic Region, that will promote green growth in the Nordic region based on knowledge, innovation, mobility and digital integration*" by enabling SME data sharing that is of high quality, accessible and automatic; shared and stored in a consent-based and secure manner as well as working in cross-border situations. Lastly, on a more broad note, the NSG&B programme has had a long-term contribution to the developing of national digital solutions and infrastructure in a way that is interoperable and makes sense in relation to existing and upcoming initiatives in the other Nordic countries, in the EU and in the rest of the world.

In the appendix there is an overview of the eight roadmap milestones and the different contributions from external factors, national efforts and from the NSG&B programme.

# Conclusion

The Nordic Smart Government programme was started in 2016 and this report has covered the NSG&B 4.0 period in 2021–2024.

The vision of NSG&B 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* and has focused on enabling SMEs to share data that is high quality in structured formats, accessible and automatic; shared and stored in a consent-based and secure manner.

The NSG&B has focused on four broad areas of cooperation:

- Digital Business Documents & Product Information (SA-A)
- Open Accounting & Simplified Reporting (SA-B)
- Born Digital – the digital services for businesses of government services (SA-C)
- Reliability and Data Quality (SA-D)

The purpose of the report has been to document the results and wider impact of the programme. This has been done by comparing the results of the programme to the application, by going through the vision and the roadmap milestones as well as scenarios for each of the four working groups to measure the programme's deliverables and impact on these. The roadmap milestones are on a societal level, and the scenarios from 2021 for each of the four areas are quite broad as well.

## Scenarios from the 2021 Implementation Plan

Thus, there are several *external factors* - such as technological developments, market developments and regulatory developments in EU countries and the five Nordic countries - that have had an impact on the relevance and progress of these roadmap milestones and the scenarios for the four working group areas in question.

In the appendix, there is included an outline of the scenarios for the programme that were set in 2021 – and in the NSG&B contribution to these by 2024. It shows that three out of nine scenarios can be considered to have been achieved, four are partly met dependent on how to measure them, and one has not been met. However, the progress that have been made is due to a combination of market and tech development, national efforts and a contribution from the NSG&B programme all pulling in the same direction. SMEs have more possibilities to automate most of their core administrative processes, e.g. eDocuments, many life cycle events and change service providers, however a common challenge is that implementation in the core business administration processes in SMEs remain to materialise in full scale societal level benefits.

When it comes to access to high quality data, SMEs indeed have better possibilities today than in 2021, for example with the new Nordic API that if implemented in ERP-systems - can give SMEs direct access to trading partners info in their ERP-systems. However, when it comes to data exchange of these data with third parties and governments and doing this cross-border, the main challenge remains which is a lack of structured business document data and high-value datasets like financial statements. This is particularly affecting cross-border interoperability due to the

absence of a common baseline in the Nordics. Agencies and private sector actors need to promote interoperability across semantic, technical, administrative and legal aspects to achieve these scenarios, and this work is a long-term continuous cooperation work and cannot be done in one take. For instance, a scenario that is not met at this point is that SMEs can give access to public authorities to extract data for statistical surveys, analytics and, in a longer perspective, research, from their business systems, for example.

## Main results of the programme

The main results of the NSG&B programme are in strengthening the cross-border interoperability of business data in the Nordic region in the following three main areas:

### Possibilities for further automation of cross-border trade and reporting

1. Possible to automate sales & purchases with companies from other Nordic countries across different ERP-systems
2. Test ideas for automatic collection and exchange of green data in ERP-systems and other services – working across systems and across countries.
3. A method for automation of cross-border VAT reporting (ViDA).

### Possibilities for cost-effective access to high quality structured data cross-border

1. Possible for easier "translation" of companies' financial income statements across the Nordic region – *a Nordic vocabulary*
2. Possible for easier and more cost-effective access to public registry data of Nordic companies directly from inside ERP-systems and other services – *a Nordic API and a possible contribution for a standard format for structured data on signatory rights for the EU Core Vocabulary*

### Possibilities for better access to national digital services/cross-border digital ID – eWallet

1. Exploring possibilities for a cross-border *digital identification*.
2. Contributing with *structured data* to the EU Digital Identity Wallet

It should be noted that to implement the results of the programme for end-users, it is necessary to involve the system providers further in the continued cooperation to apply the different areas of implementation created, such as the utilization of official registers through common Nordic APIs or the use of Peppol eDocuments as a basis for transaction-based VAT reporting or ESG reporting. With the participation of system providers, it would also be possible to engage large companies and their SME-clients as adopters. Afterward, the results and validated operational models could be disseminated to other accounting firms and SMEs.

## The roadmap milestones

The eight roadmap milestones from the NSG&B Implementation Plan in 2021 were set up to monitor the success of the programme as the percentage of uptake of solutions and services, for example. However, in examining the progress on these milestones, it is clear that the progress on these milestones cannot be attributed to the programme alone, but it must be seen in a wider context of factors – tech, regulative, market development in each of the countries as well as on an EU and even global level.

In total, it is concluded that six out of eight milestones can be considered met at this point, since it is not clear at this point whether 80% of invoices in the Nordic region are eInvoices at this point. The roadmap milestone of the Nordic region being the most integrated in the world is beyond the scope for this report.

However, notably, the direction and trend of progress on these milestones are clear - all Nordic countries experience a high rise in the percentages of SMEs having a digital bookkeeping system and using eInvoices (roadmap milestones 2 and 6).

Moreover, it is concluded that the necessary technological possibilities are in place for SMEs to take into use, these being that there are possibilities available for sales and purchases to be handled digitally by default in compatible formats across the Nordic region; and that SMEs can freely choose to move their business data between business systems and are able to give access to their business data in ERP-systems to third parties using APIs or more simple user logins (roadmap milestone 3, 4, 5).

Regarding the broader milestones of saving SMEs EUR 500 million annually and the Nordic region being the most integrated in the world, we can point to estimations at this point. In Finland, the estimated benefits of a fully up and running real time economy ecosystem are approximately 6 billion euros annually (roughly 0.5% of the GDP). Estimation is based on external studies commissioned by the RTE program, interviews with public and private actors and experiments implemented in the RTE program. In Denmark, the cost-savings of digital bookkeeping and annual reporting is estimated to approximately 400 million euros annually. In 2026, there will be a more full picture of actual savings coming from the Danish Bookkeeping Act, that can be used to quantify this 2025 milestone. Moreover, it should be noted that, according to a study by the OECD ([Tax Administration 3.0](#)), decreasing administrative work in SMEs increases business activity by 4%.

On a broader note, the NSG&B programme has strengthened the long-standing trend of developing the national digital solutions and infrastructure in a way that is interoperable and makes sense in relation to existing and upcoming initiatives in the other Nordic countries, in the EU and globally.

# Perspectives for future work

## NSG&B and coordination of the work towards the European Union

One of the key goals of the NSG&B has been to develop an interoperable area of digital reporting between Nordic countries where the basic business data can be transmitted seamlessly across the borders between authorities and businesses. This is expected to increase the possibilities of Nordic businesses to trade and operate in the region. However, Nordic businesses operate throughout the Single Market of the EU.

Despite the existing and upcoming solutions for digitalisation and interoperability, the EU Commission is yet to come forward with legislation or other tools that would ensure the interoperability of digital reporting. For multinational companies, this results in the need to calibrate their financial administration software to comply with differing legal requirements of the Member States of the EU. This in turn, results in material ICT cost and unproductive administrative work for the businesses. The concern over this issue has been clearly highlighted by stakeholders, businesses, and service providers.

The EU has been active in introducing legislative and other solutions that support digital reporting, and there are elements that can support interoperability. Some of the main deliverables in this area include the Single Digital Gateway regulation, Interoperable Europe Act, eIDAS 2.0 regulation as well as the European Digital Identity Architecture and Reference Framework, for example. However, the EU has not sought a holistic attempt to ensure interoperability of digital business reporting in the EU. As the interoperability appears to be dependent on differing areas of legislation, there would be an intrinsic need for the relevant Directorate Generals of the Commission to work together to achieve true interoperability in the field of digital reporting requirements for businesses. To make this happen, it seems clear that the interoperability of digital business reporting would need to be explicitly noted in the programme (mission letters) of the next Commission college.

On the basis of the NSG&B work, there are identified areas where the European Commission could engage more: 1) identify the useful existing standards and practices and deciding on the obligation to apply these standards 2) create a common semantic data model, i.e. definitions of the exchangeable data required for seamless interoperability and 3) define a de minimis set of technical components for APIs/data transfer to allow seamless movement of the interoperable data. The experiences of the NSG&B could serve as a basis for the future work in this area.

For the Commission work programme there is a need to emphasize the importance of enhancing digitalisation, increasing the vitality of the Single Market and competitiveness and the need to cut down the administrative burden for businesses. In this vein, the demands for interoperability of digital reporting of business data within the EU would still be responding to many of the needs identified hereinabove. If the effort for interoperability will not be explicitly mentioned in the Commission work programme, the key players of the current NSG&B will need to continue their cooperation and coordination as long as it takes to find remedies to these existing obstacles for businesses to operate within the Single Market.

## Defined areas for continued cooperation

On the basis of the NSG&B work for the period 2021–2024, possibilities for future work can be highlighted. For each of the four working groups, there are outlined areas for future work as included in the solution area chapters in this report. The aim is to ensure that the deliverables from the NSG&B programme are maintained, partly to ensure that the knowledge and results from NSG&B can be used for further development in the field.

The future work would aim to continue the development of the digital infrastructure for cross-border trade (eDocuments), cross-border interoperability for financial statements and the cross-border sharing of high quality structured data. The work should have the potential to be interoperable on an EU-level and not limited for Nordic or national purposes only.

In defining the scope of future work, it is emphasised that 1) the work is aligned with existing national priorities, and having the relevant government agencies to participate in the different work areas; 2) the work has an appropriate scope, so that it does not overlap with other initiatives in the area, and is coordinated with other initiatives in the area where its relevant e.g. EU-level initiatives; and 3) the work can be self-financed by participating organisations, and 4) relevant stakeholders such as system providers and SME end-users are involved.

The future work is outlined as follows:

### **1. Expand development and use of eDocuments for trade between Nordic companies**

Expand development and use of eDocuments for trade between Nordic companies.

Continue a technical working group on standardization and development of eDocuments. Explore how eDocuments can contribute to more automatic data sharing between businesses and authorities to ease the burden of existing and new regulations like CSRD and ViDA. A spin off of the NSG&B work has been to continue the work on including environmental product information into eDocuments to help automate CSRD reporting for companies. The pre-project is called Green eDocuments and is financed under Nordic Council of Ministers. A group of Nordic experts on eDocuments has been conducting workshops in Autumn 2024 to be concluded with a separate report of the findings in the beginning of 2025. The idea is to continue the cooperation in this field in 2025 and beyond.

### **2. Give access to high value datasets for Nordic companies**

Cooperation on maintenance and development of the common Nordic semantic data model for annual reports & ESG data. With the further goal to develop interoperability in the Nordic API solution or other relevant areas like the European Unified ID (EUID).

It should be noted that in particular regarding these two areas - eDocuments and Access to high value datasets – it is important to continue involvement of system providers and end-users to support the practical application of the results. This includes areas such as utilizing official registers through the common Nordic API and using Peppol eDocuments for transaction-based VAT reporting or ESG reporting. By engaging system providers, large companies and their SME clients can adopt these solutions, with the validated models then disseminated to other accounting firms and SMEs, promoting wider adoption and consistent implementation.

### **3. Coordination of EU-work**

Focus is on coordinating, sharing experiences, and collaborating on EU initiatives and legislation that impact the digitalisation and automation of key business data in cross border trading.

#### **Next step**

Participating organisations have decided to continue the cooperation in the areas mentioned above. The cooperation is manifested in a Memorandum of Understanding outlining the scope and responsibilities of the cooperation. It is planned that three working groups are formed in the above areas with national experts in the field, and that coordination and direction of the work is made by a steering group that has a mandate from participating organisations. The work in this format is to be started in Autumn 2024.

# List of participating Nordic authorities in NSG&B 2021-2024

## Participating Danish authorities

[The Danish Business Authority](#)

[The Danish Tax Authority](#)

[The Danish Statistical Agency](#)

## Participating Finnish authorities

[The Finnish Patent & Registration Office](#)

[The Finnish Tax Authority](#)

[The Finnish State Treasury](#)

[Statistics Finland](#)

## Participating Icelandic authorities

[Iceland Revenue and Customs](#)

[The Ministry of Finance and Economic Affairs](#)

[Ministry of Culture and Business Affairs](#)

[The Financial Management Authority](#)

## Participating Norwegian authorities

[The Brønnøysund Register Centre](#)

[The Norwegian Tax Authority](#)

[The Norwegian Statistical Agency](#)

[The Norwegian Agency for Public and Financial Management](#)

[The Norwegian Digitalisation Agency](#)

## **Participating Swedish authorities**

Swedish Companies Registration Office

Swedish Tax Agency

Statistics Sweden

DIGG (Agency for Digital Government)

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NSG&B Implementation Plan 2021-2024, 2021, [https://nordicsmartgovernment.org/sites/default/files/2023-02/NSG-Implementation-plan-2021-2024\\_WA.pdf](https://nordicsmartgovernment.org/sites/default/files/2023-02/NSG-Implementation-plan-2021-2024_WA.pdf)

Definition of eDocuments: "*any transactional document which is exchanged between trading partners in an electronic format and manner. Distinct from PDF or image files, e-documents are machine readable and typically exchanged via software or online platforms rather than email. E-document types include, but are not limited to: purchase orders, invoices of various types, credit/debit notes, correction invoices, dispatch advice, goods receipt notes, payment instructions.*" (Pagero, 2020, <https://www.pagero.com/blog/what-is-an-e-document>). See more in the abbreviation list.

PEPPOL (Pan-European Public Procurement Online) is a non-profit organisation based in Belgium with the purpose of establishing a common and standardised infrastructure for digital exchange of business documents. A PEPPOL Authority is a department within the public authorities of each PEPPOL country and, currently, there are 17 participating Peppol authorities, mainly in European countries, but in the past years, Japan, Singapore, New Zealand, Australia and Japan have joined. The primary purpose of the PEPPOL Authority is to approve new PEPPOL Access Points, which typically are ERP-system providers, that enable their customers - the companies - to send eInvoices and other eDocuments on the Peppol network (Peppol, 2024, <https://peppol.org/about/for-end-users/>). See more in the abbreviation list.

Definition of elnvoice: "*Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice (elnvoice) is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing, as defined in Directive 2014/55/EU.*" (European Commission, 2024, <https://ec.europa.eu/digital-building-blocks/sites/display/DIGITAL/What+is+eInvoicing>). See more about the different types of eDocuments in the abbreviation list.

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The xEBR core reference taxonomy is a standardized framework developed as part of the xEBR (European Business Register) initiative. It provides a common structure for defining and exchanging business and financial data across European business registers.

XBRL-JSON is a format for representing XBRL (eXtensible Business Reporting Language) data in JSON (JavaScript Object Notation), which is a lightweight data interchange format. XBRL is widely used for digital business reporting, such as financial statements, regulatory filings, and other structured business information, while JSON is a popular format for transmitting data between web servers and browsers. The XBRL-JSON format was developed to make XBRL data easier to work with in modern web technologies and applications.

*Case Nordic Smart Government & Business: enabling cross-border company data sharing in the Nordics using dataspaces*, Virtual Finland, 2023 – see appendix

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# List of abbreviations and definitions

Abbreviation or Concept	Definition
Accounting and Audit Vocabulary (AAV-model)	<p>The Accounting and Audit Vocabulary encompasses a wide range of terms and concepts used in financial accounting, auditing, and related fields.</p> <p>It includes terminology related to financial statements, transactions, reporting, and regulatory compliance.</p>
AI	<p>Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. The term can also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving. The core functions of AI include programming computers for certain traits such as:</p> <ul style="list-style-type: none"><li>• Knowledge: Ability to present and store information.</li><li>• Reasoning: Using rules to reach approximate or definite conclusions.</li><li>• Problem-solving: Overcoming obstacles by making judgements.</li><li>• Perception: Recognizing and interpreting sensory stimuli.</li><li>• Language understanding: Interpreting and speaking languages.</li></ul> <p>AI systems are used in various fields, from automated customer service to robot-assisted surgery, and they range from simple, single-task programs to complex, learning systems that can autonomously perform various tasks. AI can be categorised as either weak AI, which is designed and trained for a particular task (virtual personal assistants, such as Apple's Siri), or strong AI, which is an AI system with generalised human cognitive abilities so that when presented with an unfamiliar task, it has enough intelligence to find a solution. AI is a broad field of study that includes many theories, methods, and technologies, as well as the following major subfields:</p> <ul style="list-style-type: none"><li>• Machine learning: The science of getting a computer to act without programming.</li><li>• Deep learning: Uses huge neural networks with many layers of processing units, taking advantage of advances in computing power and improved training techniques to learn complex patterns in large amounts of data.</li><li>• Natural language processing (NLP): The processing of human (and not computer) language by a computer program. One of the older and best-known applications of NLP is spam detection.</li><li>• Robotics: The design and manufacturing of robots that are used to perform tasks done traditionally by human beings. This field overlaps with electronics, computer science, artificial intelligence, mechatronics, nanotechnology, and bioengineering.</li></ul> <p>The capabilities of AI are continuously expanding, impacting society in ways that require careful consideration to ensure its ethical use and integration into daily life.</p>

API	An API or application programming interface, from the English Application Programming Interface, is a specification of how different application programs can use and communicate with a specific software, which usually consists of a dynamically linked library and which thus becomes a software component in the application. The API is an interface between the application and the library.
BI	Business Intelligence (BI) refers to the technologies, processes, and tools used to analyse business data and provide actionable insights. It involves collecting, transforming, and visualising data to support decision-making within an organisation. BI systems help organisations understand their performance, identify trends, and make informed choices based on data-driven evidence.
Bookkeeping System	<p>A bookkeeping system is a structured process used by organisations to record and manage their financial transactions. This system encompasses all the practices, procedures, and resources employed to systematically track the incomes and expenditures, assets and liabilities, and other financial changes that occur within a business over time.</p> <p>The primary purpose of a bookkeeping system is to ensure accurate and up-to-date financial records are maintained, which are essential for preparing financial statements, managing cash flow, supporting audit processes, and complying with tax regulations. Modern bookkeeping systems often utilise software to automate many of these processes, enhancing accuracy and efficiency. This allows businesses to monitor their financial health continuously and make informed decisions based on precise financial data.</p>
Bookkeeping Law in Denmark	<p>The new bookkeeping law came into effect on 1st July 2022. The law includes a requirement for digital bookkeeping, which became mandatory for the first group of companies on 1st July 2024. The law can be seen here in English: Folketinget (Danish Parliament), 2022, <a href="https://danishbusinessauthority.dk/sites/default/files/2023-10/the-danish-bookkeeping-act-19052022_WA.pdf">https://danishbusinessauthority.dk/sites/default/files/2023-10/the-danish-bookkeeping-act-19052022_WA.pdf</a></p> <p>Danish Business Authority, 2024, <a href="https://danishbusinessauthority.dk/requirements-digital-standard-bookkeeping-systems">https://danishbusinessauthority.dk/requirements-digital-standard-bookkeeping-systems</a></p>
BRIS	Business registers interconnection system
Business event	A business event is something that happens, and when it happens it causes a pre-planned response by the business, or as we shall call it here, "the work". One category of business events are the things that happen inside an adjacent system. The work is made aware that the business event has happened because each happening produces a flow of data to the work. A business event is a significant happening – it is not just a mouse click. It is often a request for a service that your business provides, and the outcome is the provision of the service or product.
B2B	Business to Business
B2G	Business to Government
CEN	European Committee for Standardization
CRM	Customer Relationship Management

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**CSRD** The Corporate Sustainability Reporting Directive (CSRD) is a legislative framework implemented by the European Union to enhance and standardise the sustainability reporting requirements for companies. Coming into effect from January 2023, the CSRD expands on the previous Non-Financial Reporting Directive (NFRD) by increasing the number of companies required to report and broadening the scope of what they need to disclose (Finance) (IBM - United States) (Carbon Trust).

The CSRD aims to provide transparency in how companies impact social and environmental factors and is designed to help investors, consumers, and other stakeholders evaluate a company's sustainability practices more effectively. It introduces more detailed and stringent reporting requirements, including the novel concept of "double materiality," which requires companies to report not only how sustainability issues affect their business but also how their operations impact the environment and society at large.

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**CTC** Continuous Transaction Control (CTC) is a concept in database management and information systems that refers to mechanisms designed to ensure data integrity, accuracy, and consistency over the course of transactions that may occur continuously or in real-time. CTC is particularly important in environments where high volumes of transactions are processed, such as financial trading systems, real-time analytics platforms, and high-traffic e-commerce sites.

CTC systems are designed to monitor and validate transactions as they occur, ensuring each one adheres to predefined rules or parameters. This continuous checking helps prevent errors, fraud, and data loss, and can also aid in immediate error detection and correction. The goal of CTC is to maintain a consistent and correct state of the database or data store, even in the face of concurrent and possibly conflicting transaction requests.

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**DESI** Digital Economy and Society Index

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**Digital Business System** A digital business system refers to a collection of digital technologies and solutions that integrate data, processes, and people to enable and manage business activities online. These systems are designed to support companies in transforming and automating operations, engaging with customers through digital channels, and utilising data analytics for strategic decision-making. Essentially, a digital business system underpins a company's digital transformation strategy, allowing it to be more agile, efficient, and competitive in a digital-first world.

- **Finance:** A digital business system integrates various financial functions such as budgeting, financial reporting, and asset management. It enables real-time tracking of financial performance and enhances decision-making by providing comprehensive analytics and forecasting tools. This helps organisations to manage their finances more effectively and respond quickly to financial opportunities or risks.
- **Bookkeeping:** By automating the entry and management of financial transactions, digital business systems reduce the likelihood of human error and ensure that records are accurate and up-to-date. They facilitate seamless reconciliation of accounts and simplify the process of tracking income and expenditure, making it easier for businesses to maintain accurate financial records.
- **Invoices:** Digital business systems can automate the entire invoicing process, from creation to distribution, and tracking to payment. They help businesses manage cash flow more effectively by sending out invoices promptly, providing notifications for overdue payments, and offering detailed reports on receivables. This automation not only saves time but also improves the accuracy and efficiency of the invoicing process.

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## Digitalisation

Digitalisation, also spelled digitalization, refers to the use of digital technologies to change a business model and provide new revenue and value-producing opportunities. It is the process of moving to a digital business. Unlike digitalisation, which focuses on converting analog information into digital form, digitalisation involves leveraging digitised data and digital technologies to transform business operations, processes, and models.

Key aspects of digitalisation include:

- Integration of Digital Technologies: Implementing digital tools and platforms across various aspects of a business to streamline operations, improve efficiency, and enhance customer experiences.
- Transformation of Business Processes: Redesigning workflows and processes to take advantage of digital capabilities, such as automation, data analytics, and artificial intelligence, to improve decision-making and operational efficiency.
- Enhanced Customer Engagement: Utilising digital channels (e.g., social media, mobile apps, websites) to engage with customers more effectively and deliver personalised experiences.
- Innovation and New Business Models: Creating new products, services, or business models enabled by digital technologies, such as e-commerce platforms, subscription services, and digital marketplaces.

Digitalisation is a broader concept that encompasses the overall impact of digital technology on society, business, and the economy, leading to significant changes in how organisations operate and compete.

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## Digitisation

Digitisation, also spelled digitization, refers to the process of converting information into a digital format. In this format, information is organised into bits or binary data that computers and other digital devices can process. This process involves converting analog signals, such as sounds, images, or documents, into digital signals that can be stored, manipulated, and transmitted by electronic devices.

Key aspects of digitisation include:

- Conversion: This involves transforming physical or analog data (e.g., paper documents, photographs, sounds) into digital formats using scanners, digital cameras, or audio recorders.
- Storage: Digital data can be stored on various electronic media such as hard drives, CDs, DVDs, or cloud storage services.
- Processing: Once data is digitised, it can be processed and manipulated using software applications. This includes editing images, analysing data, or enhancing audio quality.
- Transmission: Digitised data can be easily transmitted over networks, including the internet, facilitating communication and information sharing across vast distances.

Digitisation is a crucial step towards digital transformation, enabling businesses and individuals to leverage digital technologies for enhanced efficiency, accessibility, and innovation.

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## DPP

The Digital Product Passport (DPP) is a concept developed under the European Union's framework for enhancing product sustainability and transparency across their lifecycle. The DPP serves as a digital twin of physical products, encapsulating detailed data about the product's manufacturing, usage, maintenance, and recycling processes. This digital record is linked to the physical product through identifiers like QR codes, allowing consumers and stakeholders to access a wide range of data including the product's origin, materials used, environmental impact, and instructions for repair and recycling.

EDIFACT	EDIFACT, which stands for Electronic Data Interchange for Administration, Commerce, and Transport, is an international standard for electronic data interchange (EDI). It was developed by the United Nations and approved and published by the UN Economic Commission for Europe (UNECE)
eIDAS2	<p>eIDAS 2, or eIDAS 2.0, is an update to the original eIDAS regulation, which stands for "electronic Identification, Authentication and Trust Services." This updated regulation aims to enhance the digital identity framework across the European Union, making it more accessible and functional for citizens and businesses.</p> <p>Introduced by the European Commission, eIDAS 2.0 focuses on expanding the use of digital identities across the EU. One of its key components is the introduction of a European Digital Identity Wallet, which allows EU citizens to store and manage their identity data securely. This wallet will enable individuals to access public and private services across the EU with greater ease.</p> <p>The update intends to provide a unified and secure identification service that introduces new authentication methods and improves interoperability across services. eIDAS 2.0 will cover not just public services but also extend to the private sector, aiming to significantly boost the digital economy by facilitating seamless and secure electronic transactions across member states.</p> <p>The regulation also aims to foster innovation and competition by allowing more flexibility in the services that digital identity providers can offer, thus enhancing the overall user experience and efficiency of digital services across the EU.</p>
ERP-system	An ERP (Enterprise Resource Planning) system is a type of software used by organisations to manage and integrate the essential parts of their businesses. An ERP software system can integrate planning, purchasing inventory, sales, marketing, finance, human resources, and more. The purpose of ERP is to facilitate the flow of information between all business functions inside the boundaries of the organisation and manage the connections to outside stakeholders. ERP systems automate processes by centralising data, which can help companies make informed decisions, decrease operational costs, and improve efficiency and productivity.
EU	European Union
EWC	The European Wallet Consortium
G2B	Government to Business
JSON	<p>JSON, which stands for JavaScript Object Notation, is a lightweight data-interchange format that is easy for humans to read and write and easy for machines to parse and generate. JSON is based on a subset of the JavaScript Programming Language, Standard ECMA-262 3rd Edition - December 1999. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others.</p> <p>This format is widely used to transmit data in web applications between clients and servers. One of its advantages is that it integrates seamlessly with JavaScript, which is commonly used in web development. JSON is also used for storing data and configuration settings across various software applications due to its ease of use and human-readable format.</p>

KPI	Key Performance Indicator
MVP	Minimum Viable Product
NACE codes	NACE stands for the Nomenclature statistique des activités économiques dans la Communauté européenne, which translates to the Statistical Classification of Economic Activities in the European Community. It's a classification system used to categorise economic activities within the European Union (EU)
NSG&B	Nordic Smart Government and Business
Peppol	<p>Peppol (Pan-European Public Procurement Online) is a set of standards and specifications designed to facilitate cross-border electronic procurement and document exchange among businesses and government entities within Europe and beyond. It enables the standardised communication for procurement processes such as electronic invoicing, purchase orders, and other business documents.</p> <p>The aim of Peppol is to increase efficiency and reduce the barriers in the public procurement process, allowing for easier interaction between organisations regardless of their location or the systems they use. It operates through a secure network known as the Peppol network, which connects various participants such as suppliers, buyers, and government agencies, ensuring that all can exchange documents in a common format. This system promotes transparency, accessibility, and interoperability in public procurement, thereby enhancing economic activity and streamlining administrative processes.</p>
Peppol BIS	<p>Peppol BIS (Business Interoperability Specifications) are a set of standards developed to facilitate the electronic exchange of business documents within the Peppol network. These specifications standardise the formats and protocols for exchanging documents such as invoices and purchase orders, ensuring seamless and interoperable communication between different systems across borders.</p> <p>The Peppol BIS utilises the Universal Business Language (UBL) ISO/IEC 19845 standards, which provide a universally accepted method of communicating business data electronically. This allows for the efficient and accurate transmission of data in e-procurement processes, both pre-award and post-award, across various industries and countries participating in the Peppol network.</p> <p>The four-corner model of Peppol encapsulates this interoperability by allowing entities (buyers and suppliers) to connect via Peppol-certified service providers, known as Access Points. These Access Points handle the secure transmission of documents to and from other Access Points within the network, ensuring that all data meets the required specifications and security standards.</p>

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## Peppol Network

The Peppol Network is an international framework designed to simplify the electronic exchange of standardised business documents such as invoices, purchase orders, and shipping notices between companies. It allows for secure and uniform communication across different e-procurement systems and business sectors globally. Here's how it works:

- **Interoperability:** The network uses a standard called Peppol BIS (Business Interoperability Specifications) to ensure that all documents are consistent and compatible, regardless of the systems the trading partners are using.
- **Four-Corner Model:** This model is a distinctive feature of the Peppol network. It involves four key players: the sender, the recipient, and their respective Peppol Access Points. The Access Points act as intermediaries that facilitate the secure transmission of documents across the network.
- **Global Reach:** Initially developed by the European Union, Peppol is now used in over 70 countries worldwide, facilitating transactions across continents and helping businesses comply with local and international regulations more efficiently.
- **Peppol Authorities:** These are designated bodies that govern the use and implementation of the Peppol standards within specific regions, ensuring compliance and facilitating the network's operation.

The Peppol Network's structure and specifications make it a robust tool for businesses looking to streamline their procurement processes and improve efficiency across borders.

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## PDF

PDF stands for Portable Document Format. It is a file format developed by Adobe in the 1990s to present documents, including text formatting and images, in a manner independent of application software, hardware, and operating systems. Each PDF file encapsulates a complete description of a fixed-layout flat document, including the text, fonts, vector graphics, raster images, and other information needed to display it.

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## POS

POS stands for "Point of Sale." It refers to the system used in retail and hospitality environments where transactions occur when customers make a purchase. This can include the hardware and software used for checkouts—the physical and digital environments where sales are finalised. A POS system typically includes capabilities such as scanning items, processing payments, and generating receipts. It can also integrate inventory management, customer management, and sales reporting tools to help businesses operate more efficiently and effectively. This system is crucial for managing sales data, tracking customer orders, and handling financial transactions, making it an essential component of modern business operations.

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## PSD2

PSD2 stands for the Payment Services Directive 2. It's an EU directive that aims to increase transparency and innovation within the financial industry. One of its key provisions is enabling other banks and third-party providers to offer payment and account information services. In essence, PSD2 facilitates cross-border payments and promotes new, innovative payment methods.

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RTE	<p>The Real-Time Economy (RTE) refers to an economic environment where transactions and business processes are conducted digitally and executed instantly, without any delay. This concept means that all activities from the initiation of a business transaction, like placing orders or sending invoices, to completing financial obligations, are handled electronically and in real time. The key attributes of the RTE include automated data exchanges, immediate transaction processing, and the use of digital formats for all business communications and records.</p> <p>One of the primary advantages of the RTE is the increase in efficiency and the reduction of the time lag in business processes and decision-making. This can lead to cost savings, improved competitiveness, and enhanced transparency for businesses and governments alike. For governments, RTE can streamline processes such as tax collection and regulatory compliance by using real-time data, which also allows for more dynamic economic forecasting and planning.</p> <p>The transition to a real-time economy is supported by various technologies, including cloud computing, the Internet of Things (IoT), and blockchain, which facilitate the instant exchange and reliable processing of vast amounts of data across different platforms and stakeholders.</p> <p>As the RTE evolves, it presents challenges such as the need for standardisation across different systems, ensuring data security and privacy, and managing the technological and organisational changes required to implement real-time systems.</p>
RTE project in Finland	<p>The <b>Finnish RTE (Real-Time Economy) Project started in 2020 and</b> is a national initiative aimed at promoting real-time digital transactions and the automated exchange of financial data between businesses, public authorities, and other stakeholders. The goal of the programme is to enable a "<b>real-time economy</b>" where financial and administrative processes, such as invoicing, payments, reporting, and compliance, happen instantly and automatically, reducing the need for manual intervention.</p>
SA	Solution Area
SAF-T	<p>SAF-T (Standard Audit File for Tax) is an international standard for the electronic exchange of reliable accounting data from organisations to a national tax authority or external auditors. This standard is defined by the Organisation for Economic Co-operation and Development (OECD). It allows businesses to provide accurate financial and accounting information in an electronic format, facilitating efficient communication with tax authorities. VAT taxpayers use SAF-T to document their transactions related to the trade of goods and services.</p>
SBR project in Sweden	<p>Standard Business Reporting (SBR) is a joint government project which focuses on efficiently and securely exchanging structured data between companies and authorities to simplify the process. In early 2024, two preliminary studies were conducted: one on digital advisory tools for automating reporting and reducing errors, and the other on legal issues to harmonize the submission of annual reports, tax returns, and statistics.</p>

SDGR	<p>The Single Digital Gateway Regulation (SDGR), established by Regulation (EU) 2018/17242, aims to simplify online access to a wide range of information, administrative procedures, and assistance and problem-solving services for EU citizens and businesses engaging in cross-border activities within the EU. This regulation supports the EU's efforts to create a Digital Single Market by improving the interaction between public administrations and users and ensuring that important administrative procedures are available online, both domestically and across borders.</p>
	<p>Key features of the SDGR include:</p> <ul style="list-style-type: none"> <li>● Providing a centralised digital access point to comprehensive and integrated information about EU and national rules, rights, and procedures.</li> <li>● Ensuring that essential administrative procedures can be completed online, facilitating smoother interactions within the internal market.</li> <li>● Implementing the "once-only" principle, meaning that citizens and businesses need to supply the same information only once to public administrations.</li> <li>● Enhancing the availability and quality of online procedures and support services, making them accessible to all users across the EU, thus helping reduce administrative burdens and increasing the transparency of regulatory environments.</li> </ul>
	<p>The regulation mandates that by December 2023, a set of 21 key administrative procedures must be digitised and made available online to facilitate business, work, and residency activities within the EU.</p>
SME	Small and Medium Enterprise
UNSPSC	<p>The UNSPSC, or United Nations Standard Products and Services Code, is a hierarchical classification system for products and services. This coding system is used globally to facilitate the efficient, accurate, and transparent procurement and supply chain management across different industries and countries. The UNSPSC system is organised into a five-level hierarchy with a logical structure that categorises goods and services from the broadest description to more detailed classifications. Each product or service is assigned a unique eight-digit code, which helps in standardising the description of products and services across various platforms and databases, improving data management and analysis.</p>
	<p>This coding system is developed and managed by GS1 US for the UN Development Programme (UNDP). It is widely used in e-commerce, procurement, and supply chain management systems to help organisations manage their spending and inventory more efficiently by standardising terminology and providing detailed product classifications.</p>
VAT	<p>VAT, or Value Added Tax, is a consumption tax levied on the value added to goods and services at each stage of production or distribution. It is typically imposed on the sale of goods or services within many countries and is included in the price paid by the final consumer. The tax is charged as a percentage of price, which means that the actual tax burden is visible at each step in the production and distribution chain.</p>
	<p>Businesses collect and account for the tax on behalf of the government and can reclaim VAT they have paid on goods and services. This mechanism ensures that the tax is neutral regardless of how many transactions are involved. VAT is used in over 160 countries around the world as a major source of government revenue.</p>

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## ViDA

The ViDA (VAT in the Digital Age) initiative proposed by the European Commission is a comprehensive reform aimed at modernising and streamlining VAT processes across the European Union to address the challenges posed by digitalization and the platform economy. The main objectives of ViDA include:

**Introduction of Digital Reporting Requirements (DRR):** This will standardise the information that must be submitted electronically by businesses on each transaction to the tax authorities. It includes mandatory e-invoicing for cross-border transactions to improve transparency and reduce fraud.

**Addressing the Platform Economy:** ViDA aims to update VAT rules for platform economies like short-term accommodation and passenger transport services. It clarifies rules and enhances the role of platforms in collecting VAT, ensuring fair competition and simplified compliance for businesses operating in these sectors.

**Simplification of VAT Registration:** By expanding the scope of systems like the One-Stop Shop (OSS) and the Import One-Stop Shop (IOSS), ViDA seeks to reduce the need for businesses to have multiple VAT registrations across the EU. This will be achieved by allowing businesses to manage their VAT obligations through a single registration and reporting mechanism.

The ViDA proposals are designed to reduce VAT fraud, lower compliance costs for businesses, and ensure a more consistent application of VAT across member states. These changes are scheduled to be implemented in stages, with some measures set to begin as early as 2024 and others by 2028

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## XBRL

XBRL, or eXtensible Business Reporting Language, is an open international standard for digital business reporting. It is used to communicate information between businesses and on the internet in a language that can be processed automatically by software, ensuring that the data is accessible and usable.

The key features of XBRL include:

- **Data tagging:** Each element of information in a report is assigned a unique tag that defines it in terms of established accounting and business concepts. This tagging allows the data to be machine-readable and enables automatic checking of information consistency and accuracy.
- **Flexibility:** Because XBRL is extensible, it allows the creation of custom tags to meet specific reporting needs of different companies, industries, or regulatory requirements.
- **Enhanced analysis:** By standardising the data presentation across diverse systems, XBRL facilitates more efficient data analysis and comparison. Financial analysts, regulators, and other stakeholders can easily extract and analyse relevant data without dealing with cumbersome and error-prone manual re-entry of data.
- **Improved transparency and comparability:** As a standardised language, XBRL ensures that financial information is not only transparent but also comparable across different organisations and jurisdictions. This standardisation is particularly beneficial for investors, regulatory authorities, and other users who rely on accurate and comparable financial data to make informed decisions.

XBRL is widely used for financial reporting by public companies and regulators in many countries around the world, including the U.S. Securities and Exchange Commission (SEC) and the HM Revenue and Customs in the UK. The adoption of XBRL has been driven by its potential to improve the speed, accuracy, and usability of financial reporting, which benefits all parties involved in financial information consumption and analysis.

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XBRL-JSON

XBRL-JSON is a format for representing XBRL (eXtensible Business Reporting Language) data in JSON (JavaScript Object Notation), which is a lightweight data interchange format. XBRL is widely used for digital business reporting, such as financial statements, regulatory filings, and other structured business information, while JSON is a popular format for transmitting data between web servers and browsers. The XBRL-JSON format was developed to make XBRL data easier to work with in modern web technologies and applications.

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xEBR

The xEBR core reference taxonomy is a standardized framework developed as part of the xEBR (European Business Register) initiative. It provides a common structure for defining and exchanging business and financial data across European business registers.

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XML

XML, or Extensible Markup Language, is a flexible text format derived from SGML (Standard Generalised Markup Language) widely used to store and transport data. XML provides a framework for tagging structured data that allows both humans and machines to read and understand the information. The design goals of XML emphasise simplicity, generality, and usability across the Internet.

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# Appendix

NSG&B webinar – [Conclusions from piloting VAT in a Digital Age ViDA](#) – October 11 2024 (pdf)

NSG&B webinar – [Digital business documents – a smoother, safer and a more effective cross border trade](#) – October 10 2024 (pdf)

NSG&B webinar – [VAT-guidelines and VAT-refund – prepare for the future and get it right direct from the start](#) – October 22 2024 (pdf)

NSG&B webinar – [Building trust in the Nordic Business region](#) (pdf)

NSG&B webinar – [Born Digital – Making life easier for Nordic SMEs – Norway as a test bed for the Nordic Business Region](#) – October 8 2024 (pdf)

Report – [Born Digital – Rapport fra eksperimentering med nye digitale samhandlingsmønstre – in Norwegian](#) – Nov 7 2024 (pdf)

Report – [Born Digital – Virtual Finland IOXIO NSG dataspace White Paper](#) – June 13 2023 (pdf)

Report – [Open Accounting & Simplified Reporting](#) (powerpoint)

[NSG&B roadmap milestones](#) (powerpoint)

[NSG&B scenarios 2021–2024](#) (powerpoint)

# About this publication

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