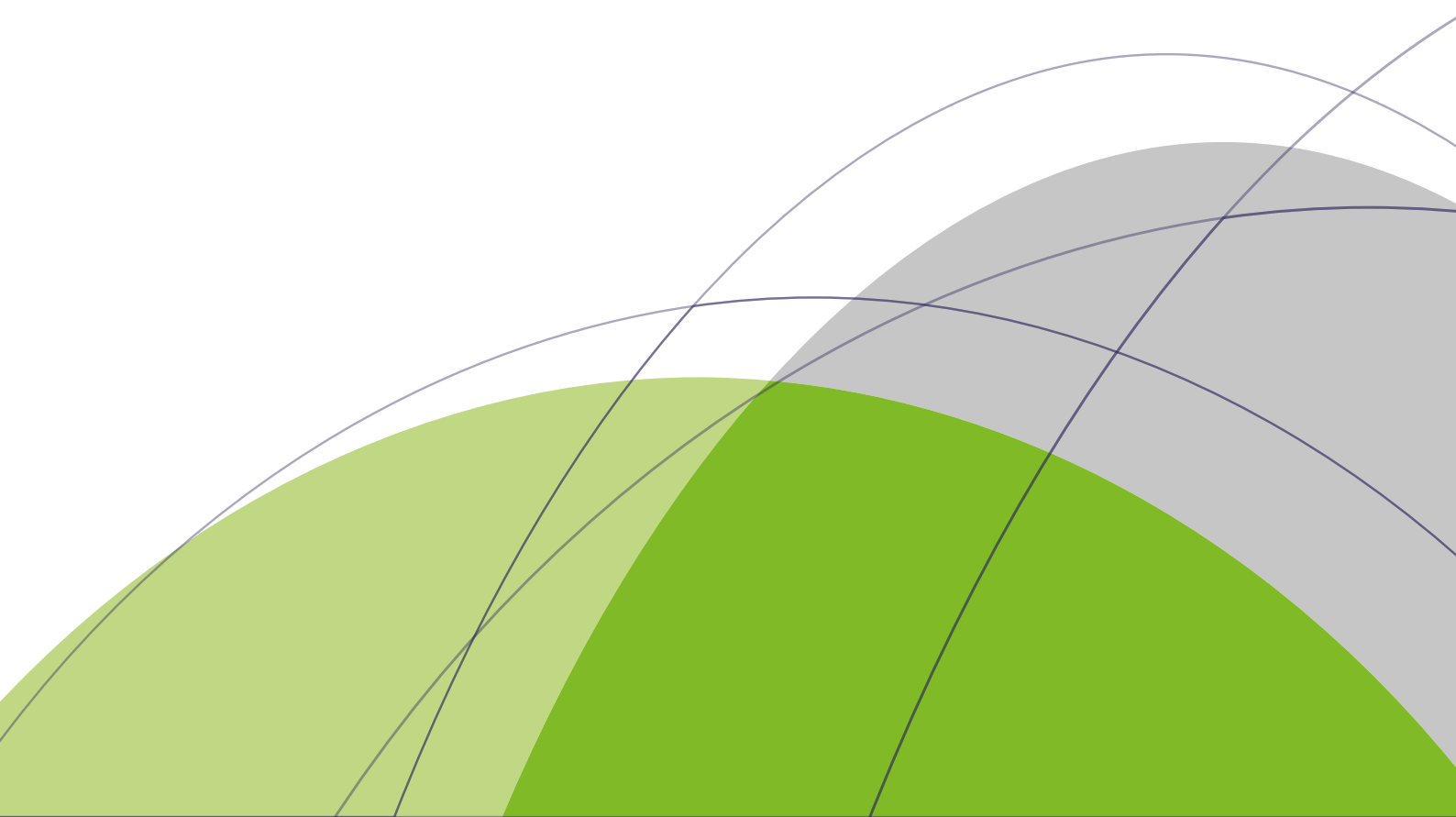


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Transnational Digital Collaboration in the Baltic Sea Region:

# National Profiles on Digital Policy for the PA Inno Strategy Guide

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Transnational Digital Collaboration in the Baltic Sea Region:  
**National Profiles on Digital Policy for the PA Inno Strategy Guide**

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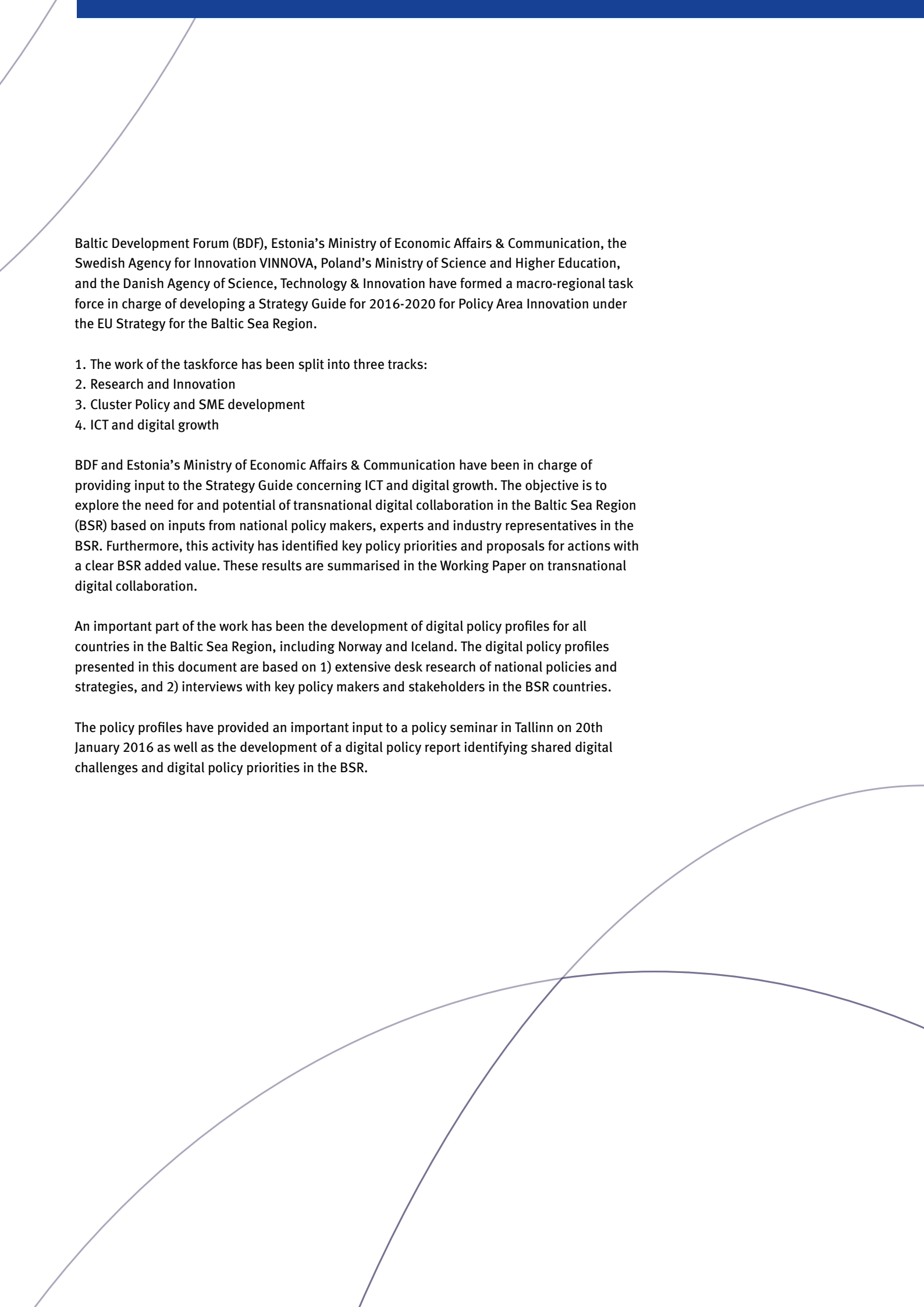


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Baltic Development Forum (BDF), Estonia's Ministry of Economic Affairs & Communication, the Swedish Agency for Innovation VINNOVA, Poland's Ministry of Science and Higher Education, and the Danish Agency of Science, Technology & Innovation have formed a macro-regional task force in charge of developing a Strategy Guide for 2016-2020 for Policy Area Innovation under the EU Strategy for the Baltic Sea Region.

1. The work of the taskforce has been split into three tracks:
2. Research and Innovation
3. Cluster Policy and SME development
4. ICT and digital growth

BDF and Estonia's Ministry of Economic Affairs & Communication have been in charge of providing input to the Strategy Guide concerning ICT and digital growth. The objective is to explore the need for and potential of transnational digital collaboration in the Baltic Sea Region (BSR) based on inputs from national policy makers, experts and industry representatives in the BSR. Furthermore, this activity has identified key policy priorities and proposals for actions with a clear BSR added value. These results are summarised in the Working Paper on transnational digital collaboration.

An important part of the work has been the development of digital policy profiles for all countries in the Baltic Sea Region, including Norway and Iceland. The digital policy profiles presented in this document are based on 1) extensive desk research of national policies and strategies, and 2) interviews with key policy makers and stakeholders in the BSR countries.

The policy profiles have provided an important input to a policy seminar in Tallinn on 20th January 2016 as well as the development of a digital policy report identifying shared digital challenges and digital policy priorities in the BSR.

# Denmark

## State of Affairs in Denmark

Denmark is ranked 1<sup>st</sup> in the Digital Economy and Society Index 2016 with relatively high scores in all dimensions, including Digital public services, Integration of digital technology and Use of internet.<sup>1</sup>

The Danish Government has launched several initiatives to support further digitisation of the economy and society. In February 2015, the Danish Government presented a new plan for the digitisation in Denmark with a focus on four areas: 1) Better mobile and broadband coverage in all parts of the country; 2) Strengthening the use of IT and data in the Danish business sector; 3) Better match between demand and supply of e-skills; and 4) Smart government to the benefit of businesses.<sup>2</sup>

The Danish eGovernment strategy, titled 'Joint Public Digital Strategy: The Digital Road to Future Prosperity 2011-2015' has been implemented, and a new strategy covering 2016-2020 has been published May 2016. The Digital strategy for 2016-2020<sup>3</sup> will focus on the following three key objectives: 1) Increasing efficiency and freeing up resources; 2) Creating value for citizens and businesses for instance through a focus on user experience and needs; and 3) Supporting innovation and growth.

Finally, the Danish government together with the national association of municipalities (KL) and the national association of Regions (Danske Regioner) have launched a joint public sector 'Strategy for Digital Welfare 2013-2020'. The aim of the strategy is to accelerate the use of ICT and welfare technology in frontline public service delivery, specifically within healthcare, care for the elderly, social services, and education.<sup>4</sup>

## Key National Challenges in the Digital Area

- *e-skills*: Denmark is performing well with regard to basic e-skills, but there is an increasing shortage of

ICT professionals. This is affecting businesses as well as the public sector in Denmark. There is a need to strengthen the capability of public sector organisations in managing large scale IT projects. For this purpose, a certification scheme for public IT projects has recently been launched to ensure a high level of quality and effectiveness in the procurement and implementation of IT solutions in the public sector.

- *Digital infrastructure*: There is a strong political focus on improving mobile and broadband coverage in all parts of the country, in particular in the rural areas. A government strategy from 2015 titled 'Growth and development in all of Denmark' proposes the establishment of a new fund to support better access to broadband in rural areas.<sup>5</sup>
- *Digital Single Market incl. eCommerce*: A key challenge is to increase the number of Danish businesses involved in cross-border eCommerce. A national partnership has been launched to support the digitisation of Danish businesses, including increasing their involvement in eCommerce.<sup>6</sup> Danish businesses can get information and advice free of charge on product and service specific rules and regulations concerning export to other EU member states.<sup>7</sup>
- *Business uptake of ICT*: Overall, the business sector in Denmark is performing well with regard to the uptake of digital solutions compared to other countries, but there is a need to support the further uptake of digital solutions, in particular among SMEs, as well as increase the innovative use of ICT and data, including Big Data. Various initiatives have been launched, including the Danish Innovation Centre for eBusiness.<sup>8</sup> A key policy issue is to ensure that personal data is collected and used by businesses in accordance with data protection regulation. An online tool, 'The Privacy Compass', has been developed to help businesses map their use of personal data and check if their data

<sup>1</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/denmark>

<sup>2</sup> <http://evm.dk/publikationer/2014/09-12-14-vaekstplan-digitalisering-af-dk>

<sup>3</sup> <http://www.digst.dk/ServiceMenu/English/Policy-and-Strategy/Digital-Strategy-2016to2020>

<sup>4</sup> [https://joinup.ec.europa.eu/sites/default/files/ckeditor\\_files/files/eGov%20in%20Denmark%20-%20January%202015%20-%20v\\_17\\_0\\_Final.pdf](https://joinup.ec.europa.eu/sites/default/files/ckeditor_files/files/eGov%20in%20Denmark%20-%20January%202015%20-%20v_17_0_Final.pdf)

<sup>5</sup> <http://evm.dk/arbejdsomraader/vaekst-og-konkurrenceevne/vaekst-i-hele-danmark/vaekstudspil-15-11-23>

<sup>6</sup> <https://startvaekst.virk.dk/gaa-digital/>

<sup>7</sup> <https://erhvervsstyrelsen.dk/indre-markeds-center>

<sup>8</sup> <https://www.ibiz-center.dk/in-english/>

practices comply with data protection regulation.<sup>9</sup> There is a strong political focus on the Industry 4.0 agenda. More specifically, the Danish government will form a partnership with national business and industry associations aiming at launching new initiatives to promote automation and uptake of new production technology in Danish SMEs.<sup>10</sup>

- *Innovative digital public services:* Key challenges include strengthening user involvement in the development of public services and increasing the level of back-office automation.
- *Cross-border digital solutions:* The development of cross-border solutions is often driven by EU legislation, resulting in area specific solutions. A key challenge is to ensure that existing and future cross-border solutions are more user friendly.
- *Open data:* Government data can provide the basis for new services and insights that are useful to citizens and businesses alike. However, there is currently a lack of uniform practice with regard to access to public data, which constitutes a barrier for the development of innovative solutions. As a result, businesses and entrepreneurs may not be aware of existing data, and there are considerable differences with regard to the availability of and access to the data of public authorities. In addition, legal and privacy challenges need to be tackled. Some authorities have income-generating sale of their data, and their business models need to be reconsidered and possibly adjusted.<sup>11</sup> A national 'Open Data Innovation Strategy' has been launched to create easier and more uniform access to public data.
- *Other key themes/challenges:* Rules concerning sharing economy business models, legacy systems as a barrier for digitisation, cyber security, and better conditions for digital entrepreneurs.

## Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area

Denmark is engaged in international collaboration on digital policy, including various UN, EU and OECD committees. Denmark is also involved in hands-on collaboration on the digital agenda. One example is a joint Nordic project on testing eID, and the project 'Innovative Nordic Digital Solutions', which aims at developing the Nordic regions into a pioneer region for new and innovative digital solutions.<sup>12</sup> Different factors are supporting Nordic collaboration in the digital area, in particular the similarities with regard to administrative structures, cultures, and levels of digital development in the Nordic countries.

Concerning Denmark's involvement in macro-regional collaboration in the digital area, the key areas of interest include:

- *Improving the knowledge base:* Studies or information on emerging issues and new policy initiatives in the BSR relating to the digital agenda.
- *Experience sharing:* Peer to peer collaboration, study visits.
- *Informal policy coordination:* Macro-regional collaboration can provide opportunities for informal policy coordination, e.g. developing common positions in relation to EU digital affairs.
- *Projects:* Promoting and developing specific cross-border digital solutions, interoperability and standards that support the implementation of the digital single market. Also relevant to consider projects supporting the development of strong entrepreneurship ecosystems for ICT in the BSR, and initiatives that may help address national e-skills shortages by matching supply and demand across borders.

<sup>9</sup> <https://privacykompasset.erhvervsstyrelsen.dk/>

<sup>10</sup> <https://www.evm.dk/publikationer/2015/15-11-23-vaekst-og-udvikling-i-hele-danmark>

<sup>11</sup> <http://www.digst.dk/ServiceMenu/English/Policy-and-Strategy/Open-Data-Innovation-Strategy-ODIS>

<sup>12</sup> <http://www.nordicinnovation.org/da/projekter/lighthouse-projects/innovative-nordic-digital-solutions/>

# Estonia

## State of Affairs in Estonia

Overall, Estonia is performing well compared to EU-28 and is ranked 7<sup>th</sup> in the Digital Economy and Society Index 2016.<sup>13</sup> Estonia is well known for being a digital frontrunner in a number of areas. Key initiatives include X-Roads (data exchange layer) and e-Residency (digital identity for non-residents that allows digital authentication and the digital signing of documents). The Estonian Government has launched a number of initiatives in the digital area, such as: A plan to increase basic computer literacy skills and fostering the development of ICT-skills for specialists and a Cyber Security Strategy for 2014–2017 with the objective of increasing the capacity of the state in the area of cyber security and raising the awareness among the common public of cyber risks.<sup>14</sup>

## Key National Challenges in the Digital Area

- *Digital infrastructure:* A key challenge is to avoid legacy issues through a modernisation of systems and infrastructure.
- *e-skills:* There is a need for improving the skills base of Estonian citizens. A number of national programmes for supporting the use of ICT by children and the elderly have been launched to address this challenge.
- *Innovation and competitiveness of the national ICT sector:* Estonia is a small country and access to ICT specialists is a challenge for the ICT industry. There is also a need for individuals with combined ICT and business skills. An additional challenge is internationalisation of the national ICT sector.

- *Business uptake of ICT:* The use of digital solutions within the business community should be increased. Key barriers include lack of access to ICT specialists, lack of skills and knowledge at company management level, and lack of financing for investments.
- *Innovative digital public services:* There is a need to increase the use of IT in the public sector. Another key challenge is the redesign of public services with a focus on user needs. Most digital services are currently national, and need to be made cross-border in order to better to support data flows.

## Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area

Estonia is engaged in international collaboration on digital policy, including various EU and OECD committees. Estonia is also a founding member of the D5 alliance of leading e-governance countries (Estonia, the United Kingdom, South Korea, Israel, and New Zealand). The purpose of the alliance is to exchange experiences on information society and the e-state. Estonia is also collaborating with other countries on a bilateral basis. In 2013, the governments of Estonia and Finland digitally signed a Memorandum of Understanding (MoU) on cooperation in the field of information and communication technologies, which includes joint use and development of the Estonian data exchange layer X-Road. Other recent cross-border digital projects involving partners from Estonia and Finland include a B2B real-time economy initiative and the establishment of a Smart City Twin Centre of Excellence.<sup>15</sup>

<sup>13</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/estonia>

<sup>14</sup> [https://joinup.ec.europa.eu/sites/default/files/ckeditor\\_files/files/eGov%20in%20Estonia%20-%20January%202015%20-%20v\\_17\\_Final.pdf](https://joinup.ec.europa.eu/sites/default/files/ckeditor_files/files/eGov%20in%20Estonia%20-%20January%202015%20-%20v_17_Final.pdf)

<sup>15</sup> <https://e-estonia.com/estonia-and-finland-to-plug-in-real-time-economy/> and <http://smarttwincity.eu/>



The BSR is considered to be of strategic interest for Estonia, not the least due to the relative high number of near market transactions, in particular with Finland and Sweden. Moreover, macro-regional projects are often more relevant and faster to implement than EU-wide projects, due to structural and cultural similarities between the countries in the region. EU and OECD are platforms for policy collaboration, while the BSR is well suited for hands-on collaboration.

Key areas of interest include:

- *Improving the knowledge base*: Benchmark and best practice studies, information on national developments and initiatives
- *Experience sharing*: Peer to peer collaboration, study visits with a focus on architecture, user-centered design, etc.
- *Projects*: Linking infrastructures and integration platforms in the BSR. Developing and disseminating cross-border digital solutions for instance eID and e-signatures, and supporting cross-border interoperability. Joint initiatives aiming at increasing the pool of ICT practitioners in Estonia and the BSR.

# Finland

## State of Affairs in Finland

Finland is ranked 4<sup>th</sup> in the Digital Economy and Society Index 2016.<sup>16</sup> Finland is among the EU leaders in Digital public services and Human capital, not least due to a high proportion of ICT specialists in the workforce compared to EU-28.

The Finnish Information Society Programme has constituted the strategic framework for the digital agenda in Finland in the period 2007-2015. The aim of the programme was to boost competitiveness and productivity, to promote social and regional equality and to improve citizens' well-being and quality of life through effective utilisation of information and communications technologies.<sup>17</sup>

Various government programmes supporting have been initiated in Finland in support of the digital agenda. In 2014, Finland launched an open data portal, [avoindata.fi](http://avoindata.fi), as a part of an open data programme managed by the Finnish Ministry of Finance. The portal provides one-stop access to Finland's open data, and promotes the interoperability of tools and guidelines, as well as public administration service information.<sup>18</sup> The Finnish Government also launched an Internet of Things programme in 2012-2015 with the aim of developing crucial building blocks, models, platforms and ecosystems for the next generation of Internet services.<sup>19</sup>

The Finnish Government has made "user-based, one stop shop digital public services" a key objective of

future public digitisation efforts in Finland.<sup>20</sup> This implies supporting further digitisation and improvement of public services, promoting an open data agenda, supporting R&I in the digital area, improving the legislative environment, introducing a culture of experimentation, and improving management and implementation of Government programmes.

## Key Digital Challenges and Priorities in Finland

- *e-skills*: Access to ICT professionals is not a problem in Finland, since there are currently many redundant ICT professionals in Finland following the decline of the national mobile industry. The main challenge is that many of the redundant ICT professionals are specialised in mobile technology, and they often need training to enter new industries. The Finnish Government can provide funding to non-digital companies if they decide to hire ICT professionals, but the incentives scheme has had limited impact to date.
- *Business uptake of ICT*: A digital transformation of the business sector in Finland is needed. A number of government initiatives have been launched to promote the digitisation of the business sector, but additional actions are required, in particular with regard to cloud computing, SaaS, and data security. Young companies are often born digital, so the Government's main focus is on helping established medium sized and large companies with their digital transformation as well as supporting digital start-ups.

<sup>16</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/finland>

<sup>17</sup> [http://www.tietoyhteiskuntaohjelma.fi/esittely/en\\_GB/introduction/index.html](http://www.tietoyhteiskuntaohjelma.fi/esittely/en_GB/introduction/index.html)

<sup>18</sup> <https://joinup.ec.europa.eu/elibrary/factsheet/egovernment-finland-january-2015-v170>

<sup>19</sup> <http://www.internetofthings.fi/about.html>

<sup>20</sup> [http://valtioneuvosto.fi/sipilan-hallitus/hallitusohjelma?p\\_p\\_id=56\\_INSTANCE\\_SSKDNE5ODInk&p\\_p\\_lifecycle=0&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-2&p\\_p\\_col\\_count=1&\\_56\\_INSTANCE\\_SSKDNE5ODInk\\_languageId=en\\_US](http://valtioneuvosto.fi/sipilan-hallitus/hallitusohjelma?p_p_id=56_INSTANCE_SSKDNE5ODInk&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_count=1&_56_INSTANCE_SSKDNE5ODInk_languageId=en_US)

- *Innovative digital public services:* There is still a need for further actions to support the digitisation of the public sector, including the development of one-stop-shops for specific public services. Silo thinking in the public sector is a challenge. In addition, future digitisation efforts need to promote a focus on customer perspective/needs. Regulation is barrier to developing innovative digital public services: Data collected for a specific purpose cannot be used for other purposes (not possible to reuse data).
- *Open data:* The Finnish Open Data programme has been quite successful, but lack of data standardisation is an issue.
- *Improving the knowledge base:* Benchmarking and best practice studies, macro-regional studies and recommendations concerning specific themes or issues relating to the digital single market or eGovernment.
- *Experience sharing:* Peer to peer collaboration, study visits.
- *Policy coordination:* Macro-regional collaboration can be an opportunity for developing common positions for instance in relation to EU digital affairs.
- *Joint projects:* Opportunity for developing specific cross-border digital solutions, interoperability and standards.

### **Assessment of the Relevance and Potential for Macro-Regional Actions**

Finland is engaged in international collaboration on digital policy, including various EU and OECD committees. Finland is also actively involved in cross-border digital projects on a bilateral basis (in particular with Estonia) as well as on Nordic, BSR and EU levels.

Macro-regional collaboration is considered to be able to provide added value to the national digital agenda, and joint projects in the BSR can also be a 'showcase' for the EU. Moreover, cross-border projects in the BSR can be used to set international standards (case: GSM standard) thus providing a global competitive edge to the macro-region. Concerning future macro-regional collaboration in the digital area, Finland's main areas of interest include:

# Germany

## State of Affairs in Germany

According to the Digital Economy and Society Index 2016, Germany ranks 9th out of the 28 EU Member States and has a score above the EU average. Germany is performing exceptionally well with regard to Integration of digital technology, but scores below EU average on Digital Public Services.<sup>21</sup>

The German federal government has defined its current digital policy priorities in the policy document Digital Agenda 2014-2017.<sup>22</sup> The policy document addresses a wide range of policy areas, including digital infrastructure, digitisation of industry, innovative public administration, digital participation, trust and cyber security.

A key digital policy issue in Germany is the digital transformation of industry. A national strategic initiative has been launched aiming at establishing Germany as a lead market and provider of advanced manufacturing solutions. This strategic initiative entitled 'Industry 4.0' is part of the German government's High-Tech Strategy 2020.<sup>23</sup>

## Key National Challenges in the Digital Area

- **Digital infrastructure:** Digital infrastructures are important building blocks for the digital economy and society, and the lack of access to broadband constitutes a challenge for digital business models and digital entrepreneurs. The uptake of fast broadband services

in Germany is below EU average, and the German government is planning to provide fast broadband internet (50 Megabits per second) to all rural and urban areas by 2018.<sup>24</sup>

- **Digital Single Market:** A key challenge for the further development of the digital economy is to avoid market fragmentation and national particularities. The EU Digital Single Market Strategy is an important driver for realising the potential of the Digital Single Market.
- **e-skills:** e-skills are important for the digital transformation of industry and the public sector. Access to ICT practitioners is a key issue.
- **Uptake of digital solutions by the business sector:** Industry 4.0 is a key priority, not only for big industry players, but also for start-ups and SMEs in Germany. Awareness raising is very important – many companies including SMEs are interested in the Industry 4.0 agenda, and there is a need to inform SMEs about challenges and opportunities. The digital transformation of industry offers huge opportunities. According to the German Federation of Industries (BDI), the digitalisation of European industry (EU-17) offers an annual value-added potential of roughly 1.25 trillion euros over the next ten years. However, failure to facilitate the digital transformation of industry can result in a potential loss of up to 605 billion euros by 2025.

<sup>21</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/germany>

<sup>22</sup> <http://www.bmwi.de/English/Redaktion/Pdf/digital-agenda-2014-2017,property=pdf,bereich=bmwi2012,sprache=en,rwb=true.pdf>

<sup>23</sup> <http://industrie4.0.gtai.de/INDUSTRIE40/Navigation/EN/industrie-4-0>

<sup>24</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/germany>

A key challenge concerning Industry 4.0 is to develop standards, not only at national level but also at European level. Industry 4.0 also involves skills issues, in particular with regard to new production methods and new professions. In addition, SMEs often have limited resources to develop Industry 4.0 solutions, and they need access to funding and to concrete examples of well-functioning business models. Legal uncertainties are also a barrier to exploiting the full potential of the Industry 4.0 agenda. Finally, the security of systems/network is important.

- *Digital global value chains:* Integration of SMEs in digital global value chains is a key challenge.
- *Privacy and cyber security:* Key issues for citizens and consumers, but also for industry. There are currently legal uncertainties concerning personal data that need to be addressed.
- *Other key issues:* Big data as a driver of innovation.

### **Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area**

Cross-border collaboration in the BSR can add value to the implementation of the Digital Agenda in Germany.

Key areas of interest include:

- Informal dialogue on digital policy developments, regulatory barriers to the digital transformation of the economy and society, and key themes such as the digital single market, smart cities, digital innovation, robotics, etc.
- Cross-border collaboration and exchange of best practice with regard to digital entrepreneurship, developing strong start-up ecosystems, including successful digital incubators/accelerator programmes.
- A closer and more frequent exchange between German and BSR industries with a focus on national best practices and creating a digital transnational ecosystem in Europe.
- Developing common solutions to the integrity and security of data transfer as well as to develop supportive, interoperable and market-relevant standards.

# Iceland

## State of Affairs in Iceland

According to the Digital Economy and Society Index 2015, Iceland is performing well compared to EU-28 on all dimensions of the scoreboard, in particular Connectivity and Use of Internet.<sup>25</sup>

Iceland currently has a new information society strategy under development. In 2015, the Ministry of the Interior released the Icelandic National Cyber Security Strategy for Iceland 2015–2026, including a three year Action Plan. The National Cyber Security Strategy addresses the need to protect critical infrastructure as well as the response to growing cyber security threats.

## Key National Challenges in the Digital Area

- *Digital infrastructure:* Coverage is high: 98 percent of Iceland is covered by high-speed broadband. However, there is a risk with regard to the vulnerability of connections to mainland Europe and North America.
- *Funding for public sector digitisation projects:* Development and implementation of innovative solutions is costly.
- *e-skills:* Access to ICT practitioners is a key challenge for the business sector.
- *Business uptake of ICT:* The uptake of digital solutions is considered too low. Industry 4.0 agenda can promote innovation and growth.

## Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area

Iceland is engaged in numerous activities relating to the digital agenda, including EU, OECD, Nordic and bilateral activities. Activities in the BSR can complement these activities, in particular by focusing on the development of innovative digital public services and the uptake of digital solutions by the business sector. Specific actions could also include strengthening the informal dialogue between relevant policy makers in the BSR and supporting peer-learning activities and exchange of experience between countries in the BSR.

<sup>25</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/iceland>



# Latvia

## State of Affairs in Latvia

According to the Digital Economy and Society Index 2016, Latvia is performing above EU average on a number of indicators, but Latvia also faces substantial challenges, in particular with regard to integration of digital technology by Latvian businesses.<sup>26</sup>

The digital policy priorities of the Latvian Government are defined in the *Information Society Development Guidelines 2014 – 2020*.<sup>27</sup> The stated goal of the guidelines is “to provide an opportunity for everyone to use the possibilities offered by ICT, to develop a knowledge-based economy and to improve the overall quality of life by contributing to the national competitiveness, and increasing economic growth and job creation”.

Seven specific focus areas have been defined for 2014-2020: ICT education and skills; Widely available access to the Internet; Modern and efficient public administration; E-services and digital content for society; Cross-border cooperation for the digital single market; ICT research and innovation; and Trust and safety.

The strategic coordination of public ICT development and maintenance in Latvia is based on the Organisational Model for the Management of Public Information and Communications Technologies formally approved in 2013.<sup>28</sup> This ICT management model identifies the main parties involved: the public ICT organisation, sector ICT organisations, hybrid ICT organisations, public ICT manager forums, and sector ICT management councils.

## Key National Challenges in the Digital Area

*Digital Single Market incl. eCommerce:* Access to markets – online and offline – is a key challenge for Latvia, and currently only 7 percent of Latvian SMEs are doing business across borders.

- *e-skills:* There is a shortage of ICT professionals in Latvia. This constitutes a barrier to innovation and growth for the Latvian economy. Shortages are evident both in the ICT sector (programmers, ICT and application developers, ICT architects, data analysts etc.) and among ICT skilled specialists in other sectors, especially manufacturing, medicine, banking, accounting, and public sector. The demand for ICT practitioners in Latvia is expected to exceed supply by 21% in 2020.
- *Business uptake of ICT:* The uptake of digital solutions by Latvian businesses is relatively low. Main barriers include a lack of understanding of the strategic and economic importance of digital solutions, limited financial capabilities, focus on day-to-day routine operations, and lack of access to ICT-practitioners/know how.
- *Innovative digital public services:* Latvia has a strong focus on the integration of different information systems and registers, in order to support the “once only” principle – the government only asks for data once. One example is the online tax refund declaration, which features pre-filled data from relevant registers, including privately owned. Four principles make up the basis of current eGovernment policy in Latvia: digitisation of business processes alongside with re-design to enhance their efficiency; 2) development of public services for citizens and businesses; 3) re-use of public sector information; 4) increased quality of eGovernment in Latvia including ensuring interoperability and security.
- *Other key themes:* e-signatures and Smart Cities

<sup>26</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/latvia>

<sup>27</sup> [http://www.varam.gov.lv/eng/darbibas\\_veidi/e\\_gov/?doc=13317](http://www.varam.gov.lv/eng/darbibas_veidi/e_gov/?doc=13317)

<sup>28</sup> [http://www.varam.gov.lv/eng/darbibas\\_veidi/e\\_gov/?doc=13317](http://www.varam.gov.lv/eng/darbibas_veidi/e_gov/?doc=13317)



### Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area

Latvia is engaged in international collaboration on digital policy, including various EU and OECD committees. In addition, Latvia is engaged in macro-regional collaboration, including a number of cross-border projects with the participation of Latvian public authorities, knowledge institutions and organisations. Examples of relevant projects in the digital area include:

- Central Baltic Startup Springboard (business acceleration programs and coaching of business startup teams) under the Central Baltic Programme 2014-2020.
- BELT - Baltic Entrepreneurship Laboratories (creating new joint Central Baltic companies and cooperation between start-ups in the Central Baltic region with a focus on “Smart City”) under the Central Baltic Programme 2014-2020.
- Central Baltic ICT - Export Meta Cluster
- SMART E67 - Advanced traffic management on E67 transport corridor
- SmartPorts - Modern and attractive small ports network through cross-border interactive information system, joint marketing and improved port services
- DeDiWe - The Developer of Digital Health and Welfare Services

Concerning Latvia’s involvement in macro-regional collaboration in the digital area, the key areas of interest include:

- *Improving the knowledge base*: Benchmark and best practice studies concerning specific themes or issues relating to the digital single market or eGovernment.
- *Experience sharing*: Peer to peer collaboration, study visits with a focus on ICT policy development and specific themes such as access to markets, e-skills, business uptake of ICT, innovative digital public services, and smart cities.
- *Projects*: Promoting and developing specific cross-border digital solutions with a focus on e-signatures.

# Lithuania

## State of Affairs in Lithuania

According to the Digital Economy and Society Index 2016, Lithuania ranks 13th out of the 28 EU Member States.

Overall, Lithuania is performing well with scores above EU average on all DESI dimensions, except with regard to Human resources. More specifically, Lithuania is one of the leaders in NGA rollout<sup>29</sup>, while progress is still needed in the specific area of Open Data.<sup>30</sup>

The national digital policy priorities are defined in the Lithuanian Information Society Development Programme 2014–2020 “Digital Agenda of Lithuania”:

- increased percent of population in digital literacy;
- development of advanced electronic services;
- digitalization of cultural heritage;
- development of Lithuanian language technology solutions;
- further development of broadband;
- safe, reliable, interoperable ICT Infrastructure.

The strategic objective of the Programme is to improve the quality of life for the Lithuanian residents as well as to strengthen the business productivity through the use of the opportunities created by the ICTs and to, by the year 2020, increase the internet users in Lithuania to at least 85 percent and the companies using high-speed internet to at least 95 percent.

## Key National Challenges in the Digital Area

*e-skills:* e-skills and e-literacy are important issues in Lithuania. Key priorities include reducing the digital divide of citizens, increasing the use of personal identification in the digital environment, and encouraging Lithuanian residents in gaining knowledge and skills for using ICT in areas such as e-commerce as well as for managing personal data and using e-identification tools and e-banking services securely. The Lithuanian Government is also working on enabling flexible learning conditions to ensure lifelong learning opportunities in the digital environment.

*Uptake of digital solutions by the business sector:* A key issue is to increase the operational efficiency and competitiveness of small and medium-sized enterprises in Lithuania and to encourage them to adopt and use ICT. In addition, there is a need for improving the legal framework for information society services to exploit new digital business opportunities and to better protect the rights of citizens and businesses in the digital environment.

*Open data:* Lithuania is performing below EU average with regard to open data, and the Government is focusing efforts on encouraging businesses to use public data commercially and to increase the availability of data. Key actors in Lithuania are also arranging ‘hackatons’ to promote the development of innovative solutions based on public data. Currently, the vast majority of open data initiatives in Lithuania are at the first level of maturity,

<sup>29</sup> Rollout of Next Generation Access network

<sup>30</sup> <https://ec.europa.eu/digital-single-market/scoreboard/lithuania>

i.e. open data are published in different formats. In addition, authorities are developing and using individual technological solutions that may not be compatible. Finally, the authorities do not share all data, and in some cases the data which could be used by businesses on a commercial basis, are subject to a payment. In order to improve the situation, the legal framework is now under review and new initiatives are launched to improve access to data and ensure interoperability between different systems.

*Public sector modernisation:* Key objectives include providing more administrative services on-line, to provide these services via one gateway, to develop trans-European electronic services and to introduce people to use administrative e-services. In addition, the Government intends to develop ICT solutions aimed at increasing the openness of public governance processes and to encourage active participation of the public in these processes. Some of the key challenges in the development of innovative digital public services is the lack of cross-department interoperability, improving IT governance as well as retaining skilled IT professionals in the public sector.

*Other key issues:* Digitisation of the cultural heritage and development of Lithuanian language technology solutions.

### **Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area**

Lithuania is actively involved in various BSR political fora and cross-border projects. In the digital area, the specific proposals for future actions include:

- Promoting digital policy dialogue between BSR countries and support the exchange of knowledge and best practice with regard to key digital issues, including the development of innovative digital public services, regulation, e-skills, trust and open data.
- Promoting cross-border exchange of data and documents by promoting the cross-border connectivity of national interoperability platforms and developing unified e-signature solutions.
- Development and analysis of business cases for cross-border exchange of data and documents. The assessment of business cases can help identify key areas to be further developed in cross-border pilot projects in the BSR.

# Norway

## State of Affairs in Norway

According to the Digital Economy and Society Index 2016, Norway is performing well compared to EU-28 on all dimensions of the scoreboard, in particular Human Resources and Use of Internet.<sup>31</sup> A key policy document is the Government's strategy for a digital economy and society, Digital Agenda Norway.<sup>32</sup>

Norway is involved in a number of digitisation projects, including a Nordic project on eID with a focus on public sector services. The solution may also be used in the private sector, for instance in the financial sector.

## Key National Challenges in the Digital Area

*Innovative digital public services:* There is a strong focus on developing digital public services that are easy to use for citizens and businesses. In addition, information needs to be easier to find, in particular tax and health information. The digitisation of public services is increasingly focusing on potentials for reducing public administration expenditure, for instance by implementing digital mailboxes for public sector information.

*Access to public sector information:* There is currently a number of national initiatives concerning open data, and all open data sources are listed on the website Data.norge.no. A key challenge is to establish a national structure for public sector information.

*Uptake of digital solutions by the business sector:* Overall, business uptake of digital solutions in Norway is relatively high. However, Norway's score with regard to online cross-border sales and electronic information is below EU average.<sup>33</sup>

## Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area

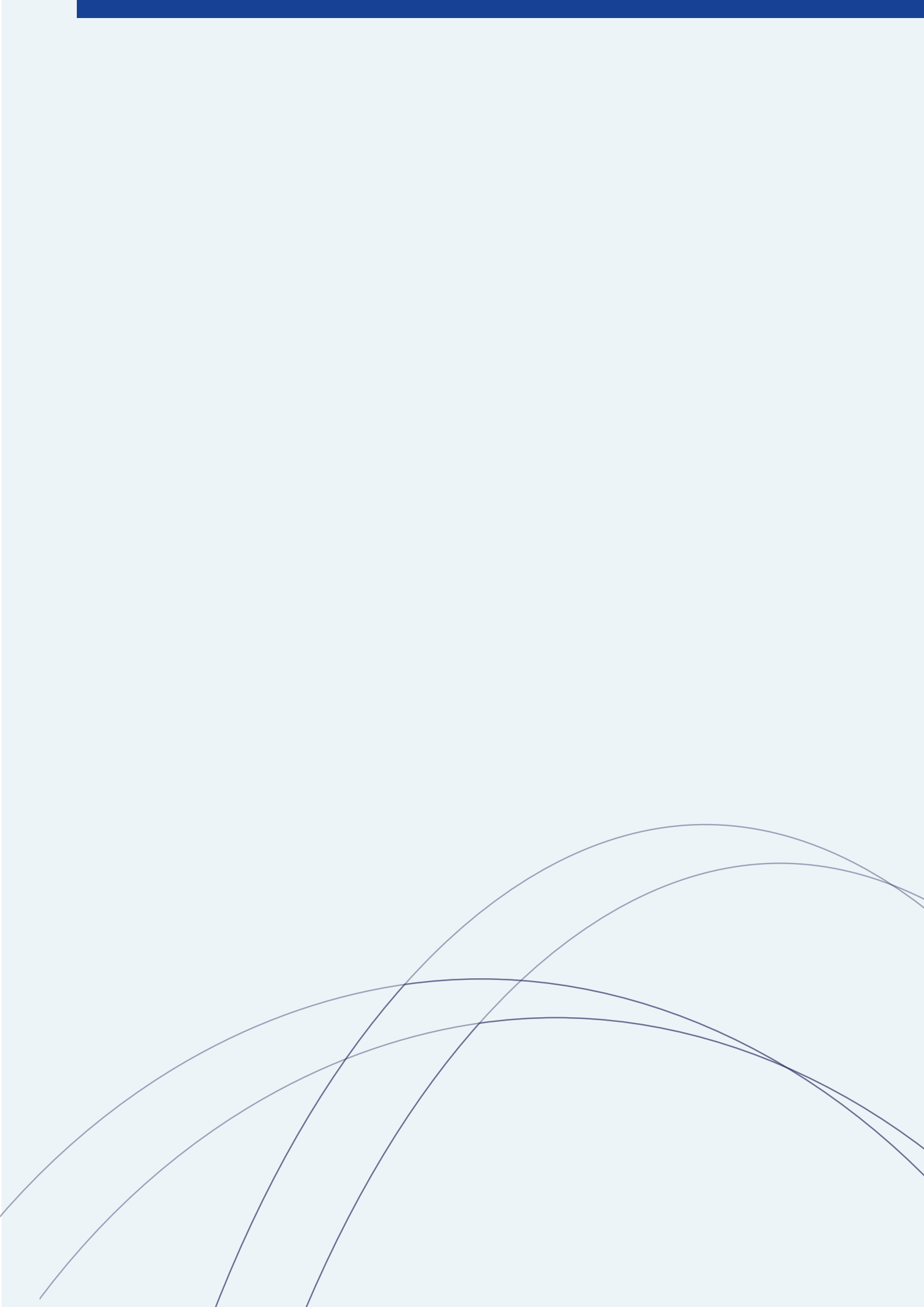
Cross-border transactions of documents and data is a relevant focus area for collaboration in the BSR. A tentative approach could be to analyse first the business case of cross-border transactions in various areas and on this basis select the most promising areas for pilot projects. There is also a need for more information on developments in the BSR countries and new initiatives, for instance the different projects between Estonia and Finland.

A challenge for the BSR in the digital policy area is the lack of an organisation to help drive transnational collaboration. Nordic Council of Ministers has facilitated transnational collaboration between the Nordic countries in the digital policy area, but there is currently no facilitator for transnational collaboration in the BSR in this area.

<sup>31</sup> <https://ec.europa.eu/digital-single-market/scoreboard/norway>

<sup>32</sup> [https://www.regjeringen.no/no/dokumenter/meld-st-23-20122013/id718084/?q=digital%20agenda&ch=1#match\\_0](https://www.regjeringen.no/no/dokumenter/meld-st-23-20122013/id718084/?q=digital%20agenda&ch=1#match_0)

<sup>33</sup> <https://ec.europa.eu/digital-single-market/scoreboard/norway>



# Poland

## State of Affairs in Poland

According to the Digital Economy and Society Index 2016, Poland is facing a number of challenges in the digital arena, in particular with regard to Integration of Digital Technology (business digitisation and eCommerce), while the score for Digital public services is above EU average.<sup>34</sup>

The Polish Government has launched several initiatives addressing the digital challenges with a focus on broadband infrastructure development, electronic services (cloud) development, e-skills and demand development, and cybersecurity. Key initiatives include the National Integrated Informatization Programme (2014), the National Broadband Plan, and the Operational Programme Digital Poland 2014 -2020 with a total budget of 2.17 bln euro, including approx. 950 mln EUR for e-administration. These three documents define the activities and available funding for the development of digitisation in Poland up until 2020.<sup>35</sup>

In addition, the Polish Government has created the Polish Academy of Accessibility, a web portal, to help public administrations and developers increase the accessibility of their websites and online services.<sup>36</sup>

## Key Digital Challenges and Priorities in Poland

*Infrastructure:* Broadband infrastructure is a key issue and Poland is investing heavily in this area.

*Digital Single Market incl. eCommerce:* Close to 5 percent of Polish SMEs are involved in cross-border eCommerce, which is below EU average. Main barriers to cross-border eCommerce are cross-border payments and delivery costs along with language issues.

*e-skills:* There is a shortage of ICT professionals, which is a barrier to growth for the Polish economy. In addition, the digital literacy and usage of ICT in society needs to be increased.

*Business uptake of ICT:* The uptake of digital solutions is considered too low, in particular with regard to SMEs.

*Innovation and competitiveness of national ICT sector:* There is a need to focus on internationalization of the national ICT sector (global outlook), to increase R&D investments, and facilitate collaboration between the business sector and the research community.

*Cross-border interoperability:* Key factors limiting the cross-border exchange of data include a lack of interoperability related to electronic identification, electronic documents (eDocuments), and base registers (authentic sources).

<sup>34</sup> <https://ec.europa.eu/digital-single-market/en/scoreboard/poland>

<sup>35</sup> <https://joinup.ec.europa.eu/node/124151>

<sup>36</sup> <https://joinup.ec.europa.eu/community/opengov/news/poland-academy-help-administrations-fight-digital-exclusion>

*Innovative digital public services:* Innovation is hampered by a lack of skills in public administration. There is a need for a single cross-government vision for national information infrastructure and for a government enterprise architecture approach. Finally, the use of digital public services by citizens or businesses is facing a number of barriers, including lack of awareness among potential users, digital illiteracy or unwillingness to use digital public services due to lack of trust, or lack of perceived need.

*Other key themes:* Focus on Internet of Things, transition to Internet Protocol Version 6 (IPv6), and cybersecurity.

### **Assessment of the Relevance and Potential for Macro-Regional Actions**

Poland is engaged in international collaboration on digital policy, including various EU and OECD committees. Poland has entered a number of bilateral agreements, including agreements with Denmark, Portugal, and Republic of Korea.

Key areas of interest include:

- *Improving the knowledge base:* Benchmarking and best practice studies, macro-regional studies and recommendations concerning specific themes or issues relating to the digital single market or eGovernment, including prices comparison for small parcel delivery, and economic analysis of accessibility to electronic services.
- *Experience sharing:* Peer to peer collaboration, study visits with a focus on ICT policy development and specific themes such as cyber security, enterprise architecture, and user-centered design.
- *Policy coordination:* Developing common positions, for instance in relation to EU digital affairs.
- *Projects:* Promoting and developing specific cross-border digital solutions, interoperability and standards with a focus on eID recognition, electronic payments, electronic invoices, and e-signatures.

# Sweden

## State of affairs in Sweden

Sweden is among the digital leaders in the Baltic Sea Region, with high scores on all dimensions of the Digital Economy and Society Index 2016.<sup>37</sup> In 2011, the Swedish Government presented a national strategy 'ICT for Everyone - A Digital Agenda for Sweden' with a stated goal of becoming the best in world at exploiting the opportunities of digitalisation.<sup>38</sup> As part of the strategy, the Swedish Government set up a Digital Commission in 2012 to analyse and monitor progress in terms of meeting the ICT-policy goal, present proposals for new policy actions, highlight benefits associated with the digital transformation and sharing best practices.<sup>39</sup> In 2012, the Swedish Government also launched a strategy for collaborative digital services in government administration, 'Putting the citizen at the centre'.<sup>40</sup>

More recently, the Digital Commission in December 2015 identified six strategic areas that should be prioritised in Sweden's future digitalisation policy:<sup>41</sup>

1. Continuous central government engagement in promoting the digitalisation of society
2. Regulations that function in and for the digital transformation
3. Skills for the digital society
4. Infrastructure that promotes digitalisation
5. Data-driven innovation for growth
6. Security and integrity in a digital age

A new digitisation strategy for Sweden will be published in 2016.

The Swedish Agency for Innovation (Vinnova) has identified Services and ICT as one of the agency's strategic areas. This strategic area deals with meeting the changes and opportunities in society resulting from new information technology.<sup>42</sup> In addition, Vinnova has identified four societal challenges in which Sweden's prospects for internationally leading innovativeness are considered good, including Information society 3.0 and Competitive Production.<sup>43</sup>

## Key national challenges in the digital area

- *Infrastructure:* Strong focus on developing 5th generation of telecom.
- *Business uptake of ICT:* Large companies such as ABB and Volvo are very advanced in their use of ICT. The key challenge is to promote the digitisation of small companies, in particular to ensure that they can remain or become part of value chains of large companies.
- *Support for digital start-ups:* Supporting innovative digital start-ups is a key challenge. In particular, digital start-ups need to collaborate closer with industry, and efforts are needed to keep digital talents in Sweden.
- *e-skills:* Sweden has a relatively high share of ICT specialists in the workforce, but still faces a shortage. Use of ICT in the education system and getting more young people into ICT educations are key issues.

37 <https://ec.europa.eu/digital-single-market/en/scoreboard/sweden>

38 <http://www.government.se/contentassets/8512aaa8012941deae5cf9594e50ef4/ict-for-everyone---a-digital-agenda-for-sweden>

39 <https://digitaliseringskommissionen.se/in-english/>

40 [https://joinup.ec.europa.eu/sites/default/files/egov\\_in\\_sweden\\_-\\_january\\_2015\\_-\\_v\\_17\\_0\\_final.pdf](https://joinup.ec.europa.eu/sites/default/files/egov_in_sweden_-_january_2015_-_v_17_0_final.pdf)

41 <https://digitaliseringskommissionen.se/wp-content/uploads/2014/06/Summary-strategic-areas-and-proposed-actions.pdf>

42 <http://www.vinnova.se/en/Our-activities/Strategically-important-knowledge-areas/Information-Technology/>

43 <http://www.vinnova.se/en/Our-activities/Cross-border-co-operation/Challenge-driven-Innovation/Challenge-driven-Innovation/>



- *Innovative digital public services:* Strong focus on digitisation of the public sector, in particular at municipality level. Municipalities often do not have the capability to engage in the development of digital services.
- *Other key issues:* Data driven innovation, trust and cyber security.

### **Assessment of the Relevance and Potential for Macro-Regional Actions in the Digital Area**

Macro-regional collaboration in the Baltic Sea Region is a political priority for Sweden, complementing collaboration at bilateral, Nordic and EU levels.

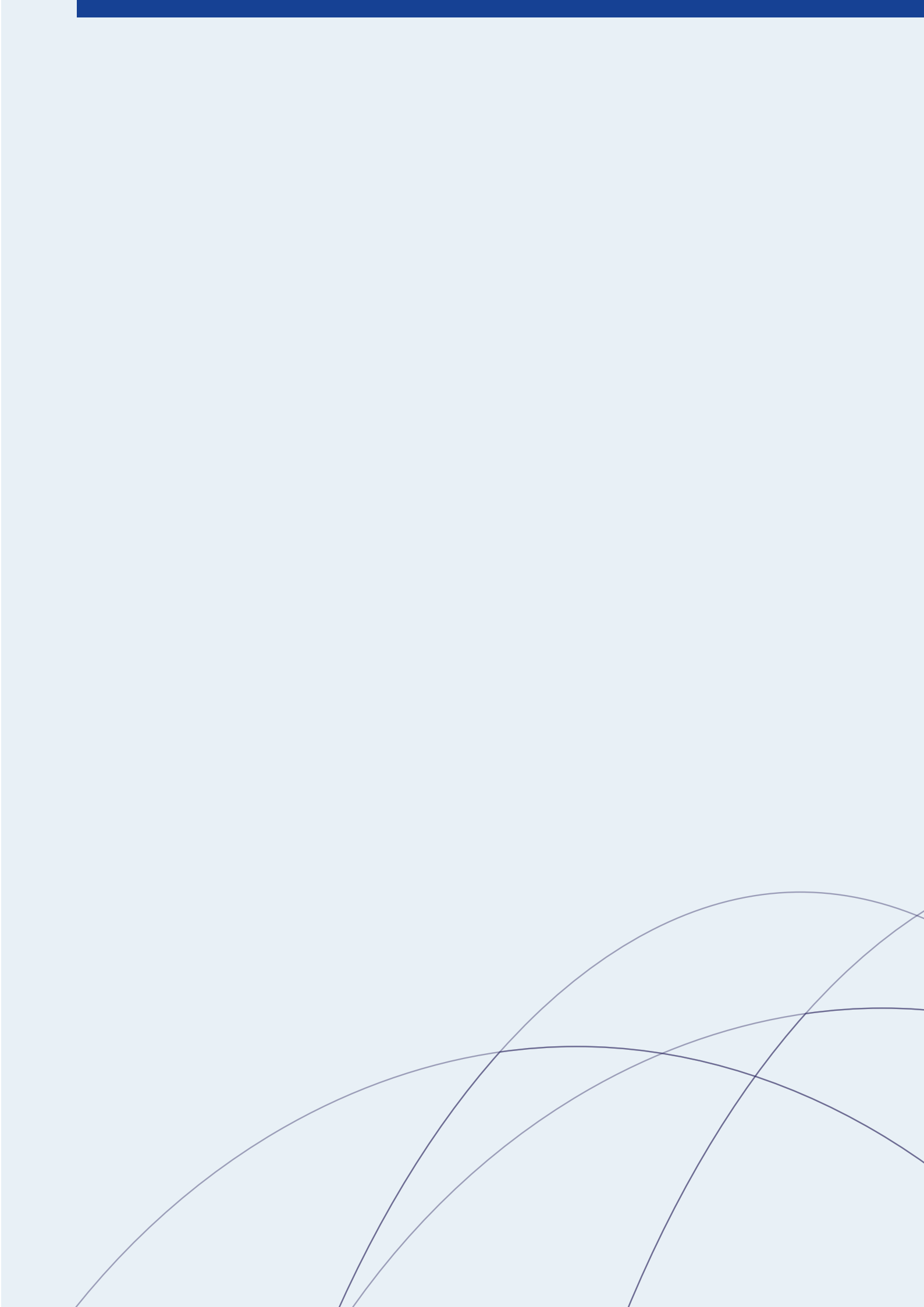
Key areas of interest in the digital area include:

- Improving the knowledge base and promoting exchange of experiences through peer to peer collaboration, study visits, etc.
- The informal policy dialogue between BSR countries can be strengthened, focusing on key digital policy issues and regulatory issues, in particular digital business models, access to e-skills, data-driven innovation, innovative digital public services and digital start-ups.
- Promoting and developing specific cross-border digital solutions, facilitating cross-border access to living labs, test and demonstration facilities in the BSR, R&I matchmaking events.

## Annex 1: Respondents

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<b>Poland</b>	<i>Sebastian Christow</i> , Director, Ministry of Digital Affairs, Department of Informatization. <i>Michal Bukowski</i> , Minister's Counsellor, IT Strategy and Enterprise Architecture Division, Department of Informatization, Ministry of Digital Affairs
<b>Germany</b>	<i>Dr. Frank Goebbels</i> , Director, European Digital Policy, Federal Ministry of Industry and Energy <i>Quirin Blendl</i> , Senior Manager, Digitalisation and Industrial Value Chains, Federation of German Industries
<b>Estonia</b>	<i>Taavi Kotka</i> , Deputy Secretary General, ICT, Ministry of Economic Affairs & Communications <i>Siim Sikkut</i> , Digital Policy Adviser, Government Office
<b>Latvia</b>	<i>Elita Zvaigzne</i> , Senior Consultant, INFSO and eGovernment, Ministry of Environmental Protection and Regional Development
<b>Lithuania</b>	<i>Aiste Paradnikaite</i> , Ministry of Economics <i>Daiva Kirkilaite-Chetcuti</i> , Head of Information Society Unit, Office of the Government of the Republic of Lithuania
<b>Finland</b>	<i>Tapio Virkkunen</i> , Ministry of Employment and Economy <i>Antti Eskola</i> , Ministry of Employment and Economy <i>Olli-Pekka Rissanen</i> , Senior Adviser, Ministry of Finance
<b>Norway</b>	<i>Tor Alvik</i> , Agency for Public Management and e-government
<b>Sweden</b>	<i>Cecilia Sjöberg</i> , Head of Division, Vinnova <i>Lena Carlsson</i> , Kanslichef, Digitaliseringskommissionen
<b>Denmark</b>	<i>Torsten Andersen</i> , Head of Department, EU & International Affairs, Danish Business Authority <i>Mikael Bomholt Nielsen</i> , Head of Section, EU & International Affairs, Danish Business Authority <i>Yih-Jeou Wang</i> , International coordinator, Danish Agency for Digitisation
<b>Iceland</b>	<i>Elvar Knútur Valsson</i> , Senior economic advisor, Ministry of industries and innovation





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**POLICY AREA 'INNOVATION'**



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