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Monitoring Digital Inclusion in the Nordic and Baltic Region

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Table of Contents

Executive Summary

This discussion paper, which forms part of the "Digital Inclusion in Action" project, looks into the field of digital inclusion, focusing on how it is understood and monitored within the Nordic-Baltic region in light of the EU's Digital Economy and Society Index (DESI). Authored by the Digital Europe consortium, it aims to stimulate collaboration and knowledge sharing among practitioners and policymakers.

Understanding Digital Inclusion

The scope of digital inclusion in this discussion paper is defined by addressing key questions: its nature as a process or state, whether it is focused on services or users, the adoption of a group-centric or individual-centric approach, and the role of digital inclusion as a human right or service. The paper introduces a conceptual approach to digital inclusion, thereby analysing barriers to digital participation and the consequences of exclusion.

In this discussion paper, the overall obstacles to digital inclusion are identified: Access Barriers (internet connectivity, device availability, service complexity) and Capability Barriers (digital literacy, language difficulties, lack of domain-specific knowledge). These barriers significantly impact a range of demographic groups, including the elderly, people with disabilities, less educated people, rural residents and immigrants, necessitating targeted interventions and inclusive design.

Key Findings Related to Monitoring Digital Inclusion

- **Aligning European and Nordic-Baltic Perspectives on Digital Inclusion:** It is essential to recognise that, although there are variations among the Nordic and Baltic nations and the EU level when it comes to defining digital inclusion, these differences are not significant. In addition, the Nordic and Baltic countries have varied levels of strategic policy focusing on digital inclusion. Interestingly, countries with clear formulated objectives correlate with the most mature countries in terms of public sector digitalisation within each country. These differences do not pose major challenges to enhancing collaboration on the development of unified definitions and methodologies for measuring and monitoring digital inclusion. That suggests a solid foundation for closer cooperation across the region, facilitating a more harmonised approach to understanding, addressing and monitoring digital inclusion.

- **Partial Coverage by DESI in Assessing Digital Inclusion**: The analysis reveals that DESI primarily encompasses data on the digital access barrier, including connectivity and digital public services, and to a lesser extent on

digital capability. However, it does not include data on the digital consequences of exclusion. Consequently, while DESI offers valuable insights into certain aspects of digital inclusivity, it does not provide a full picture for understanding digital inclusion. It must be emphasised that holistic monitoring of digital inclusion has never been a primary aim of DESI.

- **Varied Monitoring of Digital Inclusion in the Nordic-Baltic Region:** Despite advanced digital infrastructure, the Nordic-Baltic region has a fragmented approach to monitoring of digital inclusion, focusing mostly on digital access. There is a need for more consistent and comprehensive monitoring across three elements of the conceptual approach to digital inclusion: digital access, digital capability and level of digital exclusion. The general lack of comprehensive monitoring practices across the region highlights the importance of adopting systematic monitoring and assessment to ensure that the benefits of digital transformation are shared equitably across all demographic sections of society.

- **Limited Learning from Digital Inclusion Policy Initiatives**: The Nordic-Baltic region's fragmented approach to the monitoring of digital inclusion significantly hinders the ability to learn from and improve policy initiatives aimed at ensuring that no one is marginalised in terms of participation in digital society. The lack of comprehensive monitoring of digital inclusion efforts results in missed opportunities to understand the effectiveness of policy initiatives and strategies. This gap underscores the need to establish robust mechanisms to evaluate/monitor the outcomes of digital inclusion policies, enabling informed decision-making and the development of more effective, inclusive digital transformation policies.

- **Policy Strategic Commitment vs Actual Monitoring in the Nordic-Baltic Region:** Although the Nordic-Baltic region demonstrates a strong strategic commitment to digital inclusion at a policy level, a noticeable gap exists between the countries' strategic objectives/initiatives and the implementation of actual monitoring practices. Establishing comprehensive and consistent monitoring methods is essential to bridge this gap, offering a more transparent and evidence-based understanding of the region's progress in the field of digital inclusion. Such in-depth data collection is crucial for evidence-based policymaking, empowering countries to identify specific barriers to digital inclusion and develop targeted, effective interventions. The alignment of strategy and monitoring will be key to ensuring that digital inclusion efforts are both efficient and impactful across the region.

Recommendations for the Future of Digital Inclusion Monitoring in the Nordic-Baltic Region

A. **Unified Definition and Consistent Monitoring:** It is imperative to establish a unified definition of digital inclusion, tailored to the Nordic-Baltic context. Regular, persistent and detailed monitoring that extends beyond mere digital access and skills is crucial to measure actual levels of digital inclusion and exclusion. That will facilitate a systematic, consistent and structured approach and foundation for monitoring in the Nordic-Baltic region, which could even provide pointers for the European model.

B. **Monitoring Effort and Impact:** To inform and prioritise political objectives effectively, there is a need to start monitoring both the efforts undertaken in various countries and their measured impacts. That will not only pave the way for political prioritisation but also ensure the allocation of necessary resources. Currently, such knowledge is not systematically available and would be beneficial for policymakers in both the European and Nordic-Baltic contexts.

C. **Collaboration and Learning:** Continuous collaboration at the level of the Nordic-Baltic region with academic institutions, think-tanks and experts is essential to enable integration of the latest research methodologies and advancements, thereby maintaining an environment for ongoing learning and conceptual development in the field of digital inclusion. Such cooperation could be facilitated at the level of the Nordic Council of Ministers and its related institutions.

This discussion paper recommends two main paths for advancing monitoring of digital inclusion. In the first instance, closer cooperation between the Nordic-Baltic countries and regions should be pursued, as it offers greater short-term benefits. That approach could involve creating/defining a dedicated Nordic-Baltic digital inclusion cooperation model to oversee consistent monitoring practices and promote knowledge exchange. In the long term, working towards closer collaboration with the EU system within the framework of DESI is advisable in order to incorporate digital inclusion monitoring practices and gain the advantages of a larger knowledge base for comparisons and learning.

1   Introduction

This discussion paper is a contribution to the debate on digital inclusion, how it is understood and how it is measured. Today, significant aspects of our lives have moved to digital channels, including our interactions with public authorities. However, not everyone is ready or able to participate in this shift towards increased digitalisation, resulting in a range of challenges. The political will to address the challenge of citizens who have trouble participating in digital society often depends on consensus as to the existence of a documented problem and the magnitude of that problem. Therefore, monitoring the issue of digital inclusion is of paramount importance to provide the attention necessary to pave the way for political prioritisation and, consequently, for policy objectives and actions that are followed up on.

This paper forms part of the *Digital Inclusion in Action* research project,[1] whose purpose is to contribute to an inclusive digital transition in the Nordic-Baltic societies by promoting collaboration, dialogue and knowledge sharing between practitioners and policymakers in the region.

The objective of this paper is to discuss how monitoring is currently performed in the Nordic and Baltic countries as well as in the EU. The discussion will encompass observations regarding the advantages and disadvantages of enhancing collaboration between the examined countries and the EU in terms of measuring this policy field.

The author of this paper is the *Digital Europe* consortium, composed of the consulting companies Nextpuzzle and Cobrus Consulting, with extensive experience in the professional field of digital inclusion, monitoring, policy research and assessment. The views and recommendations presented in this paper solely reflect Digital Europe's perspectives based on our professional knowledge and experience regarding digital inclusion and related fields in the EU and globally and should be regarded as a contribution to the ongoing discussion, which can be further explored by relevant stakeholders wishing to advance it.

Additional knowledge has been gathered for this paper through desk research and a survey undertaken in summer 2023 involving experts from the Nordic and Baltic countries and regions (Norway, Sweden, Denmark, Finland, Iceland, Faroe Islands, Greenland, Åland, Estonia, Lithuania and Latvia). Furthermore, it is based on the information generated in a previous report by Digital Europe

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[1] https://nordregio.org/research/digital-inclusion-in-action/

for the Nordic Council of Ministers titled "Monitoring Digital Inclusion in the Nordic Baltic region" from December 2021.[2]

This discussion paper commences with this short introduction. Chapter 2 illuminates the fundamental concepts and definitions of digital inclusion, while chapter 3 provides an examination of its current monitoring mechanisms, including an analysis of the EU's Digital Economy and Society Index (DESI) and a comparison of monitoring practices within the Nordic-Baltic countries. Chapter 4 focuses on the need for a more comprehensive monitoring framework, and the paper concludes with chapter 5, offering discussions and suggestions for subsequent steps in the field of monitoring digital inclusion.

This paper should not be regarded as an exhaustive report or analysis encompassing all aspects of digital inclusion. Rather, its scope is deliberately narrow so as to concentrate on the monitoring of digital inclusion with the aim of examining and clarifying a way forward for monitoring digital inclusion in the Nordic-Baltic region.

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[2] https://www.norden.org/en/publication/monitoring-digital-inclusion-nordic-baltic-region

2 Understanding Digital Inclusion

In this chapter, we embark on a nuanced exploration of the concept of digital inclusion, a cornerstone of our journey towards an inclusive digital society. This chapter is essential in establishing a foundational understanding of the multi-faceted term digital inclusion, breaking it down into its many aspects and examining its various interpretations across different contexts.

Digital inclusion is a complex term that has gathered significant attention in the field of policymaking. Its complexity arises from the diverse perspectives and dimensions it encompasses, ranging from access and skills to participation and empowerment. This chapter seeks to unravel those layers, offering insights into the diverse ways that digital inclusion is understood and approached, particularly in the Nordic-Baltic context and within the broader European framework.

We examine the conceptual underpinnings of digital inclusion, probing into its interpretation as both a process and a state, its focus on service provision versus user empowerment, and its role as a tool for combating social inequality in the digital era. By addressing these fundamental questions, we lay the groundwork for a comprehensive understanding of digital inclusion, setting the stage for in-depth discussions in subsequent chapters.

2.1 Scoping Digital Inclusion

Defining and scoping the concept of digital inclusion is crucial to monitoring and continuous improvement of said monitoring.

The concept of digital inclusion can be approached from different perspectives and may encompass a variety of aspects. The scope of the concept becomes apparent when an attempt is made to address some of the fundamental questions such as:

- **Is digital inclusion understood as a process or as a state?** Does it refer to efforts undertaken to increase inclusion or is it the situation that prevails once that goal has been attained?
- **Is the focus on the service side or on the user?** Should we concentrate on improving digital solutions and making them accessible for more people? Or should we focus on improving the (potential) user´s skills and capacity?
- **Should we even focus on groups of people, or should we focus on user situations instead?** Is it more fruitful to analyse which situations/user cases are difficult than to expect all situations to be difficult for specific groups of people?

- **Do we see digital participation as a human right or as a service for those who can use it?**
- **Is it a cost-cutting exercise or a quality enhancement?** Is the goal to reduce costs and increase efficiency, or is it to ensure access to public services and democratic participation for all?
- **Is it a tool of social policy?** Is it a way to combat social inequality in a digital age?

In the scope of this paper, these meta-questions are raised not with the intention of providing definitive answers, but rather to frame the discussion, facilitating a deeper understanding of the concept of digital inclusion. This approach allows for exploration of the phenomenon from multiple perspectives, acknowledging the diverse interpretations that characterise the field of digital inclusion.

One understanding of the concept of digital inclusion is based on analysing barriers to digital participation and the consequences of exclusion. Figure 1 presents a conceptual illustration for grasping the multi-dimensional nature of digital inclusion. This illustration serves as a foundational tool, elucidating the relationship between barriers to digital participation and the consequent impacts of exclusion. It visually summarises a process-based approach, wherein digital inclusion is not merely a static state, but a dynamic continuum affected by various barriers and influencers. The illustration aids in breaking down the complex layers of digital inclusion, offering a structured lens through which the concept can be better understood and subsequently monitored. This conceptual approach was developed and included in the study carried out by Digital Europe for the Nordic Council of Ministers titled "Monitoring Digital Inclusion in the Nordic Baltic region" from December 2021.[3]

Figure 1: Conceptual Approach for Understanding Digital Inclusion

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[3] https://www.norden.org/en/publication/monitoring-digital-inclusion-nordic-baltic-region

Each component of this visualisation could be individually defined and measured. Figure 2 defines the fundamental obstacles that impede the attainment of digital inclusion, which are categorised into two distinct yet interconnected groups:

- **Access Barriers**: These are fundamental obstacles that prevent individuals from engaging with digital environments. They include lack of internet connectivity, which is often considered a primary barrier to entering the digital world. Additionally, not having a digital device restricts the opportunity to engage in digital activities. The complexity of digital services also constitutes a barrier, as it can prevent users from effectively utilising digital platforms and services that are crucial for full digital inclusion.

- **Capability Barriers**: Beyond physical access, capability barriers encompass the skills and competencies required to navigate digital spaces effectively. This category recognises digital literacy, including the ability to understand and utilise digital content and services. It also acknowledges the challenges faced by individuals with literacy difficulties, such as dyslexia, which can hinder their ability to engage with digital text and interfaces. Language difficulties are particularly marked among immigrants and ethnic minorities, who may not be proficient in the dominant language of digital content. Furthermore, the lack of domain-specific knowledge or familiarity with public sector language can alienate individuals from digital services designed for civic engagement. Lastly, personal attitudes such as unwillingness to engage with digital technologies – often stemming from mistrust or a sense of insecurity – further contribute to digital exclusion.

By identifying such barriers, Figure 2 serves as a critical analytical tool for policymakers and stakeholders in the development of strategies and monitoring of frameworks aimed at fostering digital inclusion. Addressing and monitoring these barriers is paramount in the creation of an equitable digital society where every individual can participate fully and effectively.

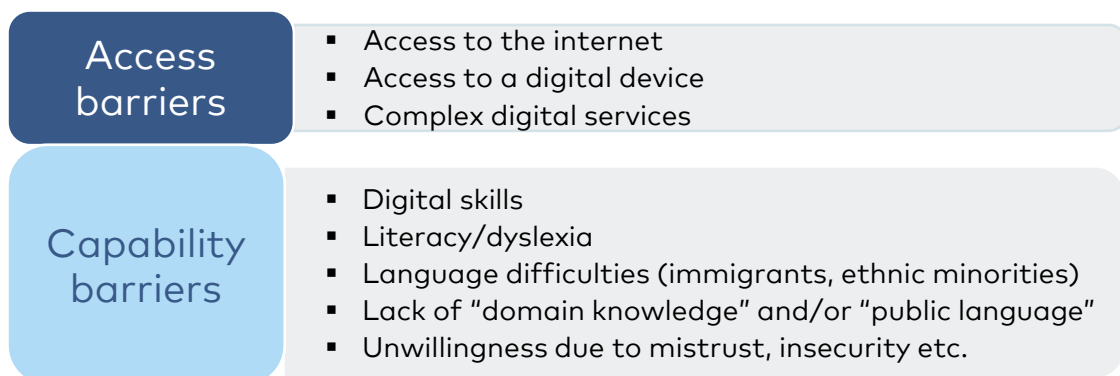| Access barriers	- Access to the internet - Access to a digital device - Complex digital services
Capability barriers	- Digital skills - Literacy/dyslexia - Language difficulties (immigrants, ethnic minorities) - Lack of "domain knowledge" and/or "public language" - Unwillingness due to mistrust, insecurity etc.

Figure 2: Typical Barriers to Digital Inclusion

From scrutinising the demographic groups most frequently confronted with obstacles in digital engagement, a common pattern transcending national borders emerges. Our research and experiences indicate that certain demographic groups are more vulnerable to digital exclusion. These groups face distinct challenges that heighten their risk of marginalisation in an increasingly digital society:

- **Older adults**: This group often faces multiple barriers, including limited exposure to technology throughout their life, uneasiness towards adopting new digital practices and age-related physical limitations that may hinder the use of digital devices.

- **People with disabilities**: Individuals with disabilities may encounter a lack of accessible digital services. The design of digital content and technology often overlooks the diverse needs of this group, resulting in a significant barrier to their full participation.

- **People with low/no education**: A lower level of education may correlate with reduced digital literacy, limiting an individual's ability to engage with and benefit from digital advancements. This educational divide can lead to a pronounced digital divide.

- **People in rural areas**: Those residing in rural localities often contend with infrastructural deficits, such as inadequate internet connectivity and limited access to digital learning opportunities, which may impede their digital inclusion.

- **Immigrants/ethnic minority groups**: Language barriers, cultural differences and a lack of representation in digital content creation can lead to the digital alienation of immigrants and ethnic minorities.

Additionally, a nuanced understanding of the digital inclusion of young people is required. While this demographic group is typically more adept at using technology, young people often encounter challenges when it comes to navigating and comprehending the complexities of the public sector. Their difficulties revolve less around the operational use of technology and more around engaging with bureaucratic structures and understanding public sector processes.

The challenges faced by these groups are not just barriers to personal advancement but are symptomatic of systemic issues that can spread inequality. Addressing such barriers through targeted interventions and inclusive design is essential to creating equitable digital ecosystems and/or societies.

The above is based on findings from our work and experiences in the field of digital inclusion, including the survey results of this paper, the study carried out by Digital Europe for the Nordic Council of Ministers titled "Monitoring Digital Inclusion in the Nordic Baltic region" from December 2021[4] and similar studies in the Nordic countries and for the World Bank outside the EU.

2.2   Definition of Digital Inclusion at the European Level

The European Commission has provided a definition that focuses on participation and public services, emphasising the requirements that digital service design should meet.

"Digital Inclusion relates to seamless, transparent, accessible, and user-friendly digital government services. Citizens must be able to use such digital services without having legal knowledge. The members of our societies should have the opportunity to help shape the digital transformation and share their ideas and content with others unimpeded, while respecting the rights of third parties. The public sector should encourage such wider participation in policy-making by involving society in the design of public services through co-creation, experimentation, and collaboration."[5]

Furthermore, a declaration on European digital rights and principles was signed by the Presidents of the European Parliament, Commission and Council in December 2022.[6] That declaration on digital rights and principles is intended to guide the digital transformation in the EU.

The term "digital inclusion" is not used in this declaration, but it is evident from the elaboration of the goals and content of such digital rights and principles that they encompass the phenomenon of digital inclusion. An example is the explanation of the rights and principles concerning *Solidarity and inclusion* and *Participation:*

> "Solidarity and inclusion: Technology should unite, not divide, people. Everyone should have access to the internet, to digital skills, to digital public services and to fair working conditions."

> "Participation: Citizens should be able to engage in the democratic process at all levels and have control over their own data."[7]

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[4] https://www.norden.org/en/publication/monitoring-digital-inclusion-nordic-baltic-region

[5] European Commission, 2022, https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/elap/digital-inclusion

[6] https://digital-strategy.ec.europa.eu/en/library/european-declaration-digital-rights-and-principles

[7] https://digital-strategy.ec.europa.eu/en/library/european-declaration-digital-rights-and-principles

New technologies and digital inequalities

As we stand at the peak of a new era marked by profound digital advancements such as AI and other advanced digital solutions, we must analyse the emergent forms of exclusion that accompany such progress.

Professor Massimo Ragnedda at Northumbria University brings to the forefront an emerging dimension of digital exclusion shaped by the spread of language models, artificial intelligence (AI), algorithms and other sophisticated digital technologies. Such technologies are on the cusp of revolutionising the workforce, potentially automating tasks previously performed by human beings across public and private sectors. An examination of these technological advancements reveals a multifaceted influence on societal structures, particularly in the context of digital equity.

Ragnedda highlights the fallacy of technological neutrality, asserting that digital solutions are influenced by their creators, who encode their biases and worldviews into those technologies. Thus, the algorithms that are created to reshape many aspects of our lives carry the imprint of their designers, which may perpetuate existing societal biases. The reliance on pre-existing datasets for algorithmic decision-making may normalise social disparities. That is especially harmful when such datasets are reflective of historical inequalities, thereby entrenching the underrepresentation and misrepresentation of marginalised groups.

Ragnedda's analysis suggests that the proliferation of digital technologies could lead to what he terms "double exclusion" for the digitally challenged/excluded persons. Such exclusion is twofold: first, through the lack of access to digital resources and capabilities, and second, through being subjected to algorithmically driven processes that do not account for the nuances of unequal social experiences. A deliberate and concerted effort is needed to design digital solutions that are inclusive, equitable and representative of the diverse fabric of society. Only through such proactive measures can we envision a digital future that facilitates social mobility and equity, rather than entrenching the divisions of the past.[8]

Such aspects are new compared to the way in which most countries and international organisations currently define digital inclusion, but they are important considerations that look ahead to the various forms that digital inclusion may take in the future, thus allowing political entities to prepare themselves and address future inequalities in digital society.

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[8] Massimo Ragnedda: "Enhancing Digital Equity. Connecting the digital underclass", Palgrave, 2020

2.3   The Nordic-Baltic Definitions of Digital Inclusion

According to the survey related to this discussion paper conducted in summer 2023 and our previous Nordic-Baltic study on digital inclusion,[9] only very few of the Nordic and Baltic countries have a specific and official definition of digital inclusion and there is no common definition across the countries.

The Nordic and Baltic countries have a shared understanding of certain elements of digital inclusion, especially concerning various access and capability barriers (e.g. skills) and specific groups of people at risk of digital exclusion (such as the elderly and people with disabilities etc). Furthermore, there is a tendency among the countries to prioritise the social aspect of digital inclusion as well as citizens' rights in the context of digitalisation, including the right to receive services and the right to participate in society, often within an egalitarian framework.

At the same time, the countries prioritise individual components of digital inclusion differently. That may, to some extent, be due to the countries' varying levels of digitalisation and their specific challenges. The more digitally mature countries that are ranked high on the E-Government Development Index (EDGI)[10] and DESI rankings, such as Denmark, Finland, Estonia and Sweden, are also the countries with the most explicit approaches to digital inclusion; that may partly be because those countries are facing the challenges of digital inclusion to the greatest extent due to their high level of digitalisation.

A parameter that is not highly emphasised in the Nordic, Baltic or EU definitions of digital inclusion, but is a potential element of digital inclusion, is the ability for people to use the internet safely.[11]

Furthermore, new technologies, particularly AI, are not extensively addressed in the context of digital inclusion. We know that the use of technologies like AI is increasing, including in the scope of the public sector´s services to citizens in several countries. Research (including that of Ragnedda) indicates that AI may perpetuate and exacerbate inequalities by using datasets for algorithmic decision-making that tend to underrepresent or misrepresent marginalised groups. That aspect of AI is not included in the Nordic-Baltic definitions of digital inclusion.

> In conclusion, there is a shared Nordic-Baltic understanding of some aspects of digital inclusion related to access and capability barriers, with the focus being on specific groups of people at risk of digital exclusion. It should be noted that while there are variations between the European concept of digital inclusion and that of the Nordic and Baltic countries, such differences are not profound and do not pose a substantial obstacle to fostering closer collaboration on formulation of definitions and methodologies for measuring digital inclusion.

3   Current Monitoring of Digital Inclusion

Digital inclusion is one of the topics at the forefront of Europe's strategic vision for the upcoming decades, ensuring that citizens and businesses alike benefit from the digital era. The European Commission, through DESI, has been pivotal in assessing and comparing progress related to digitalisation and the digital competitiveness of EU Member States. This chapter investigates monitoring of digital inclusion at the EU level and the monitoring practices currently employed in the Nordic-Baltic region.

The chapter is structured into three main sections: i) an overview of DESI, ii) its alignment with the broader concept of digital inclusion, and iii) an overview of the Nordic-Baltic countries' approach to monitoring digital inclusion. Through this chapter, we aim to provide a holistic understanding of digital monitoring mechanisms in place and shed light on areas for further enhancement.

3.1   Monitoring at the EU level – DESI

The purpose of DESI is to assess and compare the digital competitiveness and digital performance of the EU Member States. DESI serves as a tool for the evaluation of EU countries' progress in the field of digitalisation, offering insights to support policymaking and initiatives aimed at enhancing digital development, growth and inclusivity. The European Commission has been monitoring EU Member States' digital progress through the DESI reports since 2014. As of 2023, DESI also serves as a tool for monitoring progress related to the Digital Decade Policy Programme.[12]

The EU has embarked on a strategic initiative termed "Europe's Digital Decade", setting digital targets to be achieved by 2030. The vision is also grounded in the principle of fostering a human-centric, sustainable and affluent digital future for both businesses and citizens.[13]

The DESI is a composite index that encompasses relevant indicators across four main dimensions: digital infrastructure, digital transformation of businesses, digitalisation of public services and digital skills. The dimensions include a set of sub-indicators and individual indicators. The table below contains the DESI dimensions and the DESI sub-indicators.

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[12] https://digital-strategy.ec.europa.eu/en/policies/desi
[13] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

DESI Dimensions	DESI Sub-indicators
Digital infrastructure	▪ At least 100 Mbps fixed broadband take-up ▪ At least 1 Gbps broadband take-up ▪ Fixed VHCN coverage ▪ FTTP coverage ▪ Mobile broadband take-up ▪ Overall G5 coverage ▪ G5 spectrum
Digital transformation of businesses	▪ SMEs with at least a basic level of digital intensity ▪ Electronic information sharing ▪ Social media ▪ Big data ▪ Cloud ▪ Artificial intelligence ▪ e-Invoice ▪ SMEs selling online ▪ e-Commerce turnover ▪ Selling online cross-border
Digitalisation of public services	▪ e-Government ▪ Digital services for citizens ▪ Digital services for businesses ▪ Pre-filled forms ▪ Transparency in service delivery, design and personal data ▪ Mobile friendliness ▪ Access to e-health records
Digital skills	▪ Internet use ▪ At least basic digital skills ▪ Above basic digital skills ▪ At least basic digital content creation skills ▪ Enterprises providing ICT training ▪ Females having at least basic digital skills ▪ ICT specialists ▪ ICT graduates ▪ Female ICT specialists

Figure 3: DESI Dimensions and DESI Sub-indicators

Source: https://digital-decade-desi.digital-strategy.ec.europa.eu/datasets/desi/indicators

While DESI does not explicitly include the aim of measuring digital inclusion, it does contribute to the abovementioned strategic policy context and focus on human-centric participation and rights in the digital transformation. DESI does so by focusing on elements such as digital infrastructure (connectivity), digitalisation of public services and digital skills, which are all essential elements in terms of access barriers and capability barriers to digital inclusion; see figure 1 in the previous chapter.
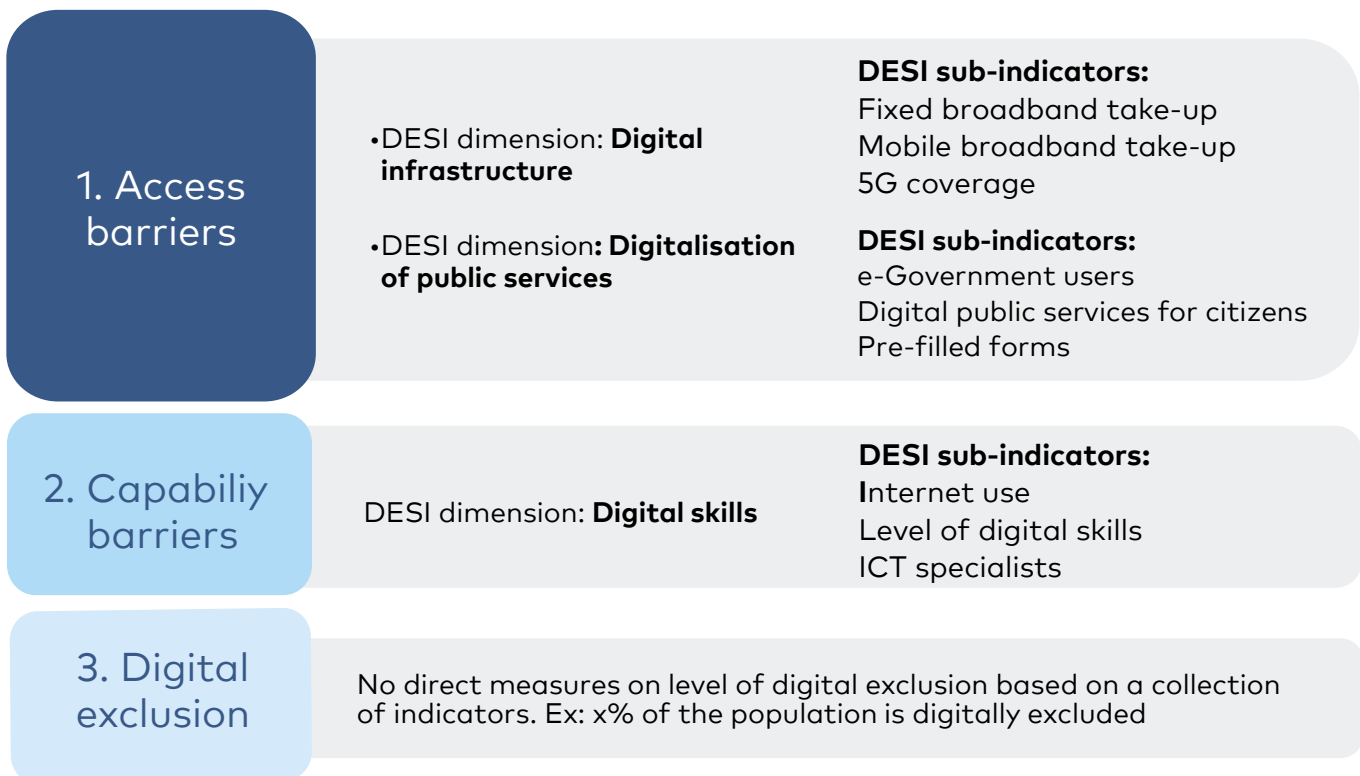
3.2   DESI Measuring Elements of Digital Inclusion

Understanding how DESI covers elements of digital inclusion is not just an academic exercise; it is fundamental to shaping policies that foster inclusivity. By assessing the alignment between the DESI metrics and the broader conceptual framework of digital inclusion, we can pinpoint both strengths in current monitoring in relation to digital inclusion and illuminate the need for additional measurements. It is essential to highlight that DESI is not and has never been intended to include explicit measures of digital inclusion.

This section seeks to evaluate DESI's coverage and its alignment with our concept of digital inclusion; see below. We aim to provide a comprehensive overview of how DESI covers the multifaceted dimensions of digital inclusion and where it could be improved. By drawing attention to these areas, we can better phrase policy and monitoring recommendations and provide a foundation for a more inclusive digital future for all.

Figure 4 shows an illustration of DESI's coverage in relation to the conceptual approach to digital inclusion, which we developed in a previous study related to monitoring digital inclusion,[14] including access barriers, capability barriers and level of digital exclusion.

Figure 4: DESI Coverage of Conceptual Approach to Digital Inclusion

1. Access barriers

• DESI dimension: **Digital infrastructure**

DESI sub-indicators:
Fixed broadband take-up
Mobile broadband take-up
5G coverage

• DESI dimension: **Digitalisation of public services**

DESI sub-indicators:
e-Government users
Digital public services for citizens
Pre-filled forms

2. Capabiliy barriers

DESI dimension: **Digital skills**

DESI sub-indicators:
Internet use
Level of digital skills
ICT specialists

3. Digital exclusion

No direct measures on level of digital exclusion based on a collection of indicators. Ex: x% of the population is digitally excluded

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[14] https://www.norden.org/en/publication/monitoring-digital-inclusion-nordic-baltic-region

As shown in Figure 4, DESI does provide a lens through which we can gather insights into the status of digital inclusion. It offers a valuable perspective by covering some essential components of the digital inclusion topic. Thus, DESI encompasses certain facets of digital inclusion, but it does not cover the full scope and depth of the topic. Each dimension of the conceptual approach to digital inclusion is studied below in order to understand what DESI covers:

1. **Digital access barriers**:

   - **Covered by DESI**: DESI encompasses elements related to connectivity, including metrics like fixed broadband take-up, coverage and mobile broadband. That directly aligns with the access barriers dimension, as having the necessary infrastructure is fundamental to digital participation in society. DESI also measures the level of digital public services. That is another indication that DESI includes measures related to access barriers; see the figure above and presentation of the conceptual approach in the previous chapter.

   - **Opportunities:** While DESI includes several metrics related to digital access, it may not capture the entire spectrum of access barriers, such as regional and local disparities in connectivity, access to devices required to access digital services, and complexity of public services.

2. **Digital capability barriers**:

   - **Covered by DESI**: DESI measures human capital, looking at internet user skills and advanced skills and development. That offers insight into the population's ability to use digital technologies effectively, capturing elements of digital capability.

   - **Opportunities**: While DESI does touch upon digital capabilities, it may not encompass the full scope of barriers some individuals face, such as language barriers, level of digital literacy, lack of public sector domain knowledge, knowledge of public sector language and unwillingness to use public sector services.

3. **Level of digital exclusion**:

   - Arguably, this is the area where DESI's coverage seems to be the least comprehensive in terms of monitoring digital inclusion. While metrics related to digitalisation of the public sector and businesses may indirectly touch upon the level of consequences of digital exclusion (e.g. citizens not being able to use digital services), it does not directly measure the societal and individual consequences. Digital exclusion may lead to a range of adverse outcomes, from reduced employment opportunities and threats to democratic rights/participation through

to lack of equal opportunities to receive and use public services and social isolation. DESI does not include comprehensive measurement of digital inclusion capturing those potential embedded consequences.

In summary, when comparing the current DESI metrics with the conceptual approach to digital inclusion and its three dimensions, it is clear that DESI mostly includes data on the digital access barrier (connectivity and digital public services), and to a lesser degree on the digital capability barrier. DESI does not include data on the digital consequences of digital exclusion. That is further supported by our previous study "Monitoring Digital Inclusion in the Nordic-Baltic region" from 2022 for the Nordic Council of Ministers and the dialogues with the relevant European Commission services related to digital inclusion and DESI. That partial coverage suggests that while DESI is a valuable tool for assessing certain dimensions of digital inclusion, relying solely on it could cause critical aspects of the broader inclusion landscape to be overlooked.

3.3   Monitoring in the Nordic-Baltic Countries

The Nordic-Baltic region has predominantly embraced the digital age, as is reflected in its countries` strong ICT infrastructure, near-universal internet access and comprehensive mobile-cellular network. Several of the countries in the region have a "digital-first" approach to public services, whereby public services are delivered digitally.

The Nordic and Baltic countries have varied levels of strategic policy focus on digital inclusion. Some countries have clearly formulated objectives, while others emphasise specific elements or give it less priority. Interestingly, the degree of focus might correlate with the maturity of public sector digitalisation within each country.

The Nordic-Baltic region displays varying maturity levels with regard to general digitalisation and levels of digital inclusion monitoring. When considering digital inclusion monitoring practices based on the survey related to this discussion paper as monitoring one or more aspect of the three dimensions of digital inclusion, i.e. digital access, digital capabilities and digital exclusion (see the conceptual approach to digital inclusion used in the previous chapters), it may be concluded that ten of the Nordic and Baltic countries (no survey reply for one country) track digital inclusion in some capacity. That is mainly due to the fact that the entire region monitors connectivity related to access barriers to digital inclusion; see above. However, the capability barriers

and consequences of digital exclusion are not necessarily monitored comprehensively.

In the academic pursuit of understanding digital differences within the Nordic-Baltic region, it becomes evident that explicit monitoring reflecting the degree to which various demographic groups face digital exclusion is an essential measure. Despite the critical nature of this data, only three countries in the region have instituted some measures to monitor the degree to which demographic groups face digital exclusion. Such quantitative assessment is essential for revealing the granularity of digital marginalisation, thereby allowing policymakers and practitioners to tailor interventions that address the digital divide with greater precision and cultural sensitivity.

Based on the information gathered for this discussion paper and our previous study on digital inclusion for the Nordic Council of Ministers, the most commonly used indicator groups for regular monitoring of digital inclusion in the Nordic-Baltic region are:

- Access to the internet (connectivity)

- Number of internet users

- Accessibility of ICT equipment and digital services

- Use of digital services

In addition, some countries perform research and assessments on an ad hoc basis. Such studies examine digital barriers in terms of citizens' capabilities and the actual level of digitally excluded citizens, broken down by citizen groups (e.g. older adults, persons with disabilities).

To better comprehend the scope of the current monitoring of digital inclusion in the Nordic-Baltic region, we draw on our concept of digital inclusion, including the following three barriers to digital inclusion:

1. **Digital access barriers:** Refers to the challenges faced by individuals in accessing digital platforms, primarily due to a lack of infrastructure or affordability.

2. **Digital capability barriers:** Relates to the lack of necessary skills or understanding to use digital tools and services effectively.

3. **Digital exclusion:** Represents a section of society that is left out of the digital transformation, either due to lack of resources, skills or both.

The Nordic-Baltic region has adopted diverse approaches to monitoring of digital inclusion. Despite the region's advanced ICT infrastructure, ubiquitous internet access and comprehensive mobile-cellular network reflecting a

digital-forward stance, there is an apparent difference in how digital inclusion is monitored. While most countries in the region monitor some aspects of digital inclusion (most often digital access), their monitoring remains largely fragmented, incomplete or performed in isolated increments rather than being comprehensive or systematic. Using data collected for this discussion paper and our concept of digital inclusion, the following becomes apparent:

1. **Digital access barriers:** The region has robust knowledge about ICT infrastructure, universal internet access, expansive mobile-cellular network etc. so monitoring of connectivity and digital infrastructure is used to indicate the status of digital inclusion in the Nordic-Baltic region and progress in that regard.

2. **Digital capability barriers:** The assessment of digital capabilities – which are crucial for effective and empowering use of digital tools – is an area where monitoring activities in the region vary. Some countries have initiated periodic research to explore such barriers, focusing on specific demographic groups such as the elderly or individuals with disabilities. However, such efforts are not uniform across the region, nor do they comprehensively cover all groups at risk of digital exclusion. Consequently, there remains a need for more detailed and consistent evaluations of digital literacy, skills and usability barriers within the population across the region.

3. **Digital exclusion:** Overall measurement of the degree of digital exclusion is not extensively conducted in the region. Only a few countries have embarked on a more detailed, albeit ad hoc assessment of the degree of digital exclusion, which would illuminate the levels of digital exclusion among various demographic groups. A thorough and systematic approach is required to understand the full scope of digital exclusion, encompassing not only access to technology but also the ability to use it effectively and the degree to which it integrates inclusively into the lives of all citizens.

In conclusion, the Nordic-Baltic region displays a spectrum of digital inclusion monitoring practices. While some countries lead with structured approaches, others are in the emerging stages of understanding and institutionalising digital inclusion. It is crucial for these countries to learn from each other's best practices and challenges in order to ensure that the benefits of digital transformation are equitably distributed among their populations.

4   Advocating for Comprehensive Monitoring

In this chapter, we explore the complexities of monitoring digital inclusion, contrasting the practices of the Nordic-Baltic region with those of the EU's DESI. Observations highlight both convergences and divergences in the two approaches. While there is some symmetry in areas like measurement of digital access, public services and human capital, some nuanced aspects of the Nordic-Baltic approach to digital inclusion, such as digital exclusion and demographic-specific assessments, are not as prevalent in DESI's framework.

Moreover, the region's vision and approach to digital inclusion shows focused and motivated policy objectives and initiatives. However, differences in the level of implemented and comprehensive monitoring of digital inclusion can be observed. This analysis underscores the need for a more comprehensive and harmonised monitoring system, taking pointers from DESI but enriching it with the region's unique needs and insights.

This chapter aims to pave the way for more robust and comprehensive monitoring of digital inclusion with the aim of fostering proposals for evidence-driven policy interventions that ensure no one is left behind in the digital era.

When viewed in light of the DESI, the monitoring practices of the Nordic-Baltic region display a combination of similarities and aspects which may not be captured comprehensively within the standard framework of DESI. Analysing the monitoring framework of the region against the DESI framework yields the following insights:

1. **Alignment between DESI and the Nordic-Baltic region:**

   - **Digital infrastructure**: Both the Nordic-Baltic region's tracking and DESI focus on connectivity indicators. Metrics such as internet access, number of internet users and accessibility of ICT equipment correlate with DESI's "Connectivity" dimension, particularly its sub-indicators like fixed broadband take-up, coverage and mobile broadband.

   - **Digitalisation of public services**: The general "digital-first" approach to public services and measurement of the use of public sector services in the Nordic-Baltic region, emphasising online delivery of public services, is paralleled in DESI's "Digital Public Services" dimension and the Nordic-Baltic monitoring. That includes aspects such as e-Government users, digital public services for citizens and digital public services for businesses.

   - **Skills**: The DESI's "Human Capital" dimension, which encompasses indicators like internet user skills and advanced skills and development,

aligns with the Nordic-Baltic region's assessment of citizens' digital skills and capabilities, even though such data is not collected systematically in relation to digital inclusion in the region.

The preceding analysis highlights the correlation between DESI and the monitoring of digital inclusion within the Nordic-Baltic region. Next, we attempt to define the variances between DESI and the specific circumstances of the Nordic-Baltic region. Nonetheless, the fundamental diversity of the Nordic-Baltic region, particularly in terms of the degree of digitalisation and emphasis on digital inclusion, presents a complex challenge.

2. **Beyond DESI and the Nordic-Baltic region:**

- **Digital exclusion**: While the Nordic-Baltic region provides insights into the level of digital exclusion among its citizens, this aspect is not comprehensively covered by DESI. DESI and the Nordic-Baltic monitoring do not have direct/explicit measures that capture the extent or implications of digital exclusion.

- **Specific demographic assessments**: The ad hoc research conducted by some countries in the Nordic-Baltic region to understand digital barriers specific to groups like the elderly or those with disabilities is a specialised approach that might not be possible to fully mirror within the broader DESI framework.

- **Holistic view of digital inclusion**: DESI offers a structured system of metrics for understanding digital progress in general and is aligned with the EU digital policies and objectives. However, that approach does not include direct/explicit measures that capture the extent of digital exclusion. The general policy approach of the Nordic and Baltic countries to digital inclusion includes a broader and more direct perspective (than the EU's approach), covering the entire digital inclusion spectrum. However, monitoring in each country across the region does not reach the same comprehensive level as the countries' strategic policy approach.

The following are the arguments for establishing more comprehensive monitoring:

Need for enhanced monitoring
The Nordic and Baltic countries have shown a strategic commitment to digital inclusion. Yet there is an apparent disparity in the alignment of strategic objectives and actual monitoring practices. Comprehensive monitoring can bridge this gap, providing a clearer understanding of regional progress on digital inclusion. Such detailed data can facilitate evidence-based

policymaking, enabling countries to pinpoint barriers and design effective, targeted measures.

Given the limited impact assessments of political initiatives related to digital inclusion across the Nordic-Baltic region, the need for comprehensive monitoring of digital inclusion becomes paramount. Such continuous monitoring oversight not only paves the way for future, in-depth evaluations of the effects of policy initiatives but also ensures that progress aligns with intended policy directions.

Addressing digital exclusion

When addressing digital exclusion, monitoring of digital inclusion must extend beyond focusing on access and capability indicators. It is essential to adopt a comprehensive perspective that considers the societal, economic and individual consequences of digital exclusion. That requires in-depth monitoring of the diverse impacts on groups marginalised in digital society, with a specific focus on the varying degrees of exclusion experienced by various citizen groups, such as people with disabilities, the elderly and those with limited or no education. Such an approach – including a profound understanding of the needs of and consequences for the various groups of excluded people – is essential in order to develop policies that are genuinely effective.

Lessons from DESI

DESI offers an established, structured framework enabling evaluation of digital progress and identification of some digital inclusion trends. However, it mainly involves the "easy-to-measure" element of digital inclusion monitoring, such as the level of connectivity and public services. For the Nordic-Baltic region, DESI serves as a key reference. Nevertheless, it is crucial to acknowledge the limitations of DESI in terms of capturing the comprehensive nuances of digital inclusion. Adapting and expanding upon the DESI framework to suit the unique challenges and priorities of the region in the field of digital inclusion will enable a more relevant monitoring tool to be established.

Importance of cross-country collaboration and learning

The shared culture, goals and challenges of the Nordic and Baltic countries and regions present a unique advantage. Promoting active collaboration between these countries and regions can supercharge digital inclusion efforts. Shared repositories of best practices, collaborative research and synchronised monitoring frameworks can streamline efforts and enable a unified front when it comes to addressing digital inequalities.

Enhancing DESI for broader European learning

The Nordic-Baltic region, with its nuanced approach to digital inclusion, can offer valuable insights to enrich the DESI framework. By building on learnings from practices and findings from this region, DESI could offer a more comprehensive and holistic approach to monitoring of digital inclusion. An enhanced framework will benefit not only the Nordic and Baltic countries but also the broader European community, fostering a collaborative learning environment.

Algorithmic inequities and the digital underclass

The rise of advanced digital technologies like AI and algorithms in both the public and private sectors necessitates consideration of the potential risks of new forms of digital exclusion. There is a risk that biased datasets used for decision-making may result in increased inequalities. As we envision the future of digital inclusion, it is imperative for the political sphere and authorities to recognise and address the potential risk that technology will widen divides, thereby ensuring that digital progression does not unintentionally translate to societal regression.

The next and final chapter of the discussion paper focus on the potential way forward in establishing such comprehensive monitoring of digital inclusion.

5   Considerations for Next Steps

The path to genuine digital inclusivity in the Nordic and Baltic countries is built upon the unique policy focus on digital inclusion in the region and lies in robust, comprehensive and persistent monitoring. By addressing the current monitoring gaps, leveraging existing tools like DESI and fostering regional collaboration, the region can champion a digital future where benefits are accessible to all.

Monitoring the steps taken and the effect of policy initiatives related to digital inclusion is essential in order to gain the attention necessary to pave the way for political prioritisation and, consequently, for political objectives that are followed up on, as well as to allocate the necessary financial resources. Some of the countries in the Nordic-Baltic region have made progress with monitoring, but there are still significant potential benefits to be gained from advancing monitoring in the countries of the region according to a more systematic and structured approach.

To ensure effective evaluation, it is recommended that data collection and variables are kept consistent over time. That approach, known as persistence, is crucial for monitoring and evaluating impacts accurately. Regularly changing variables over time may hinder the ability to track and assess progress effectively. Therefore, a commitment to persistent data and variable usage is essential for reliable long-term analysis and evaluation.

In the Nordic-Baltic region, there are or could be several approaches to allow for improved monitoring. One approach focuses on greater cooperation with the European level, while another approach emphasises deepened collaboration among the Nordic and Baltic countries. Both approaches have advantages and disadvantages, which we will explore below.

However, some general considerations that are relevant regardless of the chosen path should be noted first:

A. It is essential to **establish a unified definition** of digital inclusion tailored to the specifics of the Nordic-Baltic context. Whether the focus is on European or Nordic-Baltic cooperation, a common and accepted understanding of digital inclusion is crucial.

B. The emphasis should be on regular, persistent and detailed monitoring that goes beyond mere digital access and skills in order to measure **actual levels of digital inclusion** and exclusion. A systematic and structured monitoring framework is important, whether at the European or Nordic-Baltic level.

C. It is necessary to begin **monitoring the steps taken and their effect** so that knowledge can be collected about the political efforts initiated in various countries and their measured impact. Such knowledge is not currently available in a systematic form and would be valuable for the policymakers of all countries and regions, both at the European level and in the Nordic-Baltic context.

D. It is important to continue **collaboration with experts** at academic institutions, tech think-tanks and other experts to integrate the latest research, methodologies and technological advancements. Such cooperation could be facilitated at the level of the Nordic Council of Ministers and its related institutions. This recommendation is relevant regardless of the chosen path, as it is beneficial to maintain an environment for ongoing learning and conceptual development in this field.

E. Whatever monitoring model is chosen, it is essential to consider on an ongoing basis how to **future-proof the monitoring system**. As previously outlined, we must anticipate that the use of artificial intelligence may become a key factor in terms of aggravating inequalities. Therefore, that parameter should be analysed with a view to assessing whether it entails new risks of exclusion, and if so, should be integrated into the monitoring framework of the future.

Two overarching paths to take monitoring of digital inclusion to the next level:

1: Closer cooperation with the European Commission

This approach involves aligning the way we monitor digital inclusion in the Nordic-Baltic region with DESI monitoring at the EU level.

An evident advantage of closer monitoring collaboration with DESI is the opportunity to **compare our region with more countries**, thereby enhancing the basis for learning. However, a potential downside that may limit the learning potential is that there are many countries with varying levels of digital maturity and different types of challenges, all to be assessed using the same measurement. Nevertheless, there are significant advantages to be gained from having a better foundation for comparing countries.

Another benefit of this approach is its **alignment with an existing, structured measurement system** like DESI. Since this system is already established and recognised by participating countries, including most Nordic and Baltic countries, adherence would likely be easier and expanding DESI would be a less overwhelming task. Furthermore, **governance is already established** within the existing DESI setup, making it easier to gain support from participating countries.

However, a drawback to consider is that integrating a Nordic-Baltic element on digital inclusion into DESI would likely entail gathering more extensive data in each country and region, which could pose **a workload challenge**, especially for smaller countries.

Another challenge is the need to modify the existing DESI framework to accommodate digital inclusion elements, requiring collaboration and the **openness of other countries** to change. Even if support is secured, defining new indicators and their content for all EU countries would be a lengthy process. Regarding funding, it may be assumed that if the European Commission agrees to expand DESI to include digital inclusion aspects, it will likely provide the relevant financing. However, individual countries and regions would still need to allocate additional resources for increased monitoring.

2: Closer cooperation within the Nordic-Baltic region

This approach involves focusing more on existing collaboration in the Nordic-Baltic region and developing a monitoring framework independently.

As part of this approach, it is proposed that a **dedicated Nordic-Baltic digital inclusion body or consortium** be established. That entity can oversee consistent and regional Nordic-Baltic monitoring practices, promote knowledge exchange across the Nordic and Baltic countries, and represent the region in broader European digital inclusion dialogues. That will be the response to questions concerning governance in this model.

One of the central tasks in this model will be **selecting and agreeing on indicators**. Compared to European-level cooperation, this task is more manageable because there are fewer countries involved and there is a degree of similarity among them. Moreover, since Nordic and Baltic countries and areas **share an understanding of digital inclusion and face similar challenges**, most are at roughly the same level of digital maturity. Hence, the choice of what to measure is likely to be more straightforward.

Consequently, a significant advantage of this model is the potential for **greater learning outcomes** from comparing ourselves to one another. The level of digital maturity influences what we consider relevant to measure.

However, a drawback is the need to develop an entirely **new regime for developing a common monitoring model** in the scope of closer Nordic-Baltic cooperation. That requires resources and gaining the support of the countries involved, which might be equally or more challenging than expanding an existing system like DESI.

The development of closer cooperation on monitoring in the Nordic-Baltic countries will **require independent financing to be secured**, with a need for both funds and manpower.

For individual countries, such closer cooperation means **submitting data to both the EU's DESI and the new Nordic-Baltic measurement system** on some parameters. However, that does not necessitate double data collection as long as the indicators and methods are aligned.

Even if this path is chosen, we recommend continuing dialogues with the European Commission regarding **DESI's more explicit measurement of digital inclusion** and learning activities across countries, as this could be a natural next step for close Nordic-Baltic collaboration in this field.

In conclusion, we recommend initiating work in two stages. We recommend adopting the model of closer cooperation between the Nordic and Baltic countries as the first step given that, for the reasons mentioned above, there are greater short-term benefits to be gained. At the same time, it is advisable to work towards closer collaboration with other European countries in the long term to incorporate digital inclusion monitoring practices into DESI and thereby gain the advantages of having a larger knowledge base with data from a higher number of countries for comparisons and learning, for the benefit of all EU Member States and their citizens.