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Abstract: The digitalisation efforts towards an inclusive development are being mainly led by the governments. The government through appropriate public policies, strategies and initiatives are trying to play a key role in ensuring that the digital transformation does not lead to exclusions. During the COVID-19 pandemic, the digital 'exclusions' were quite evident across countries, bringing in the sharp focus on prevailing 'digital divides' across societies, regions and nations. Since early 2000s, both the regions are trying to use digital technologies for making their respective governments more efficient. Such efforts got intensified in India post the launch of Digital India flagship programme in 2015. The exemplary success in broadening the ambit of financial inclusion in India since 2015 is a testimony to the positive role of digitalisation in fostering inclusion. The major thrust towards digitalisation in the Europe has been observed mainly during the COVID-19 pandemic. With huge funding support, slew of initiatives have been launched to harness digital technologies. This paper intends to provide an overview of the inclusive digitalisation efforts through policy landscape in the Europe (at EU level and in Germany and Estonia) and in India and also discuss the key role of governments in leading the inclusive digitalisation process.

Keywords: Digitalisation, Inclusive Development, Digital Strategy, India, Europe

Introduction

The transformative power of digital technologies such as ICTs is often prescribed as a key enabler of sustainable development. Within the UN 2030 Agenda for Sustainable Development, ICTs are specifically

mentioned in SDGs 4, 5, 9, and 17. SDG 4 addresses quality education, which, according to Target 4b, includes training in the use of ICTs. SDG 5 is about gender equality and Target 5b mentions ICTs as an enabling technology for women's empowerment. SDG 9 is about industry, innovation, and infrastructure, and in target 9c, access to ICTs and affordable Internet access are seen as enabling this goal. SDG 17 is about global partnerships for the SDGs and target 17.8 is about enhancing the use of enabling technologies, in particular ICTs. However, the application of digital technologies can be seen or envisaged across many other key SDGs; be it in SDG 1 (No poverty), SDG 2 (Zero hunger), SDG 3 (Good health and well-being) and so on. During the COVID-19 pandemic, application of digital technologies witnessed a high thrust in many countries across the world, including in India and the Europe. At the same time, the lack of access to digital technologies led to rise in exclusionary trend among societies across regions, prompting the debate on how to ensure an inclusive sustainable digitalisation or digital transformation. Pandemic widened inequality and made abundantly clear that digital divides, if left unaddressed, can have a long-lasting impact on sustainable development. It is now not only more important than ever to systematically embed digital approaches into development but national digitalisation efforts need to be consciously inclusive and people-centred (OECD, 2021).

UNDP's Digital Strategy defines digital transformation as *"the integration of digital technologies into all areas of business, fundamentally changing how economic and social activities are enacted. It is also a social change process that is purposeful, rather than unregulated, and should be intentionally planned and executed."* (UNDP, 2022a). While digitalisation is an important force multiplier, it will not ensure attainment of sustainable development, unless it is inclusive in nature. According to UNDP (2022a), there are following five salient features of an inclusive digitalisation:

- It addresses the needs of the poorest as well as the most vulnerable and marginalised groups, including women and people with disabilities.

- It empowers underrepresented groups to take part in meaningful ways, and promotes gender equality.
- It ensures that digital transformation does not exacerbate existing inequalities, with a vision to leave no one behind.
- It protects from the adverse effects of digital technologies.
- It encourages the use and development of digital technology that is open, responsible and rights-based.

Analytical Framework and Methodology

There is multiple framework to assess digitalisation. For the purpose of this paper, digital transformation framework (Figure 1) being developed by the UNDP (2022b) has been used as analytical framework
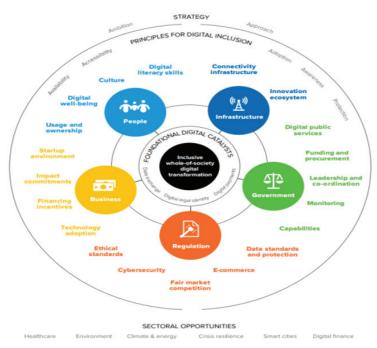
Figure 1: UNDP's Digital Transformation Framework

Source: UNDP (2022b)

especially with the focus on the role of government and public policies, as governments typically act as the stewards of digital transformation efforts at the national level by means of formulating policies, strategies, programmes and initiatives. According to the UNDP's framework, there are five principles for inclusive digitalisation viz. availability, accessibility, adoption, awareness, and protection.

The role of government extends beyond these five above-mentioned functions and includes creation of innovation ecosystem, building digital infrastructure, formulating regulatory architecture and fostering Start-up ecosystem. This paper intends to explore the role of governments in the Europe and in India to steer inclusive digitalisation through public policies, strategies and initiatives.

The methodology used is exploratory with data from secondary sources such as policies, strategies, reports and so on. The quantitative data has been drawn from the indices such as DESI and government reports.

Digitalisation Strategies, Declarations and Major Key Initiatives in the Europe with Special Reference to Estonia and Germany

The headway towards increasing the usage of digital technologies such as ICTs could be traced back to March 2005, when the 2000 Lisbon Strategy was re-launched. This re-launched Strategy stated that it was essential to build a fully inclusive information society, based on the widespread use of ICT in public services, SMEs and households. Following this re-launch, a new strategic framework "i2010-A European Information Society for growth and employment" was launched in June 2005 with the aim to promote an open and competitive digital economy and emphasised ICT as a driver of inclusion and quality of life. i2010 recognised that by making public services better, more cost effective and more accessible, ICT can help make public health and welfare systems more efficient and effective. It proposed adoption of 'Action Plan on eGovernment' and also proposed the launch of European Initiative on

e-Inclusion in 2008, addressing issues such as equal opportunities, ICT skills and regional divides.

i2010 EU eGovernment Action Plan 2006-2010 was adopted in April 2006, for accelerating eGovernment in Europe for the Benefit of All. It focused on following five major objectives:

- o No citizen left behind: advancing inclusion through eGovernment so that by 2010 all citizens benefit from trusted, innovative services and easy access for all;
- o Making efficiency and effectiveness a reality;
- o Implementing high-impact key services for citizens and businesses;
- o Putting key enablers in place - enabling citizens and businesses to benefit, by 2010, from convenient, secure and interoperable authenticated access across Europe to public services; and
- o Strengthening participation and democratic decision-making.

Subsequently, in November 2007, the European i2010 Initiative on e-Inclusion was luanched with the aim to enable every person who so wishes to fully participate in the information society, despite individual or social disadvantages. E-Inclusion was recognised necessary for social justice, ensuring equity in the knowledge society and also necessary on economic grounds, to fully realise the potential of the information society for productivity growth and reduce the cost of social and economic exclusion. It talked about digital literacy, internet coverage etc.

The thrust towards digitalisation in the EU got further fillip with the release of 2009 Malmo Declaration on eGovernment. In this Declaration, the joint vision was to aspire to a vision whereby European governments were recognised for being open, flexible and collaborative in their relations with citizens and businesses, wherein the governments use eGovernment to increase their efficiency and effectiveness and to constantly improve public services in a way that caters for users' different

needs and maximises public value, thus supporting the transition of Europe to a leading knowledge-based economy. It further stated that the public administrations of Member States should jointly strive for the following policy priorities, to be achieved by 2015.

o Citizens and businesses are empowered by eGovernment services designed around users' needs and developed in collaboration with third parties, as well as by increased access to public information, strengthened transparency and effective means for involvement of stakeholders in the policy process.

o Mobility in the Single Market is reinforced by seamless eGovernment services for the setting up and running of a business and for studying, working, residing and retiring anywhere in the European Union.

o Efficiency and effectiveness is enabled by a constant effort to use eGovernment to reduce the administrative burden, improve organisational processes and promote a sustainable low-carbon economy.

o The implementation of the policy priorities is made possible by appropriate key enablers and legal and technical preconditions.

The shared objectives to be achieved by 2015, as articulated in the Malmo Declaration, included the following:

o Citizens and businesses are empowered by eGovernment services designed around users needs and developed in collaboration with third parties, as well as by increased access to public information, strengthened transparency and effective means for involvement of stakeholders in the policy process.

o Mobility in the Single Market is reinforced by seamless eGovernment services for the setting up and running of a business and for studying, working, residing and retiring anywhere in the European Union.

- o   Efficiency and effectiveness is enabled by a constant effort to use eGovernment to reduce the administrative burden, improve organisational processes and promote a sustainable low-carbon economy.
- o   Development of e-government services.
- o   Promotion of Open-Source Models.
- o   Post-i2010 developments.

Following Malmo Declaration, a Digital Agenda for Europe, was released in May 2010. It was one of the seven flagship initiatives of the Europe 2020 Strategy, set out to define the key enabling role that the use of ICT would play if Europe wants to succeed in its ambitions for 2020. It mentioned creation of a vibrant digital single market; enhancing digital literacy, skills and inclusion. However, it also noted that the Europeans will not embrace technology they do not trust. In December 2010, the second EU eGovernment Action Plan 2011-2015 was adopted with the vision of harnessing ICT to promote smart, sustainable, and innovative government.

An important milestone in this discourse was the launch of Digital Economy and Society Index (DESI) in 2014. The European Commission has been monitoring Member States' digital progress through the Digital Economy and Society Index (DESI) reports since 2014. The four key dimensions measured through DESI include human capital, connectivity, integration of digital technology and digital public services. At the dimension level, DESI addresses four principal policy areas of the 2030 Digital Compass (*discussed later in the text*). The Human capital dimension assesses both internet user skills of citizens and advanced skills of specialists. At least basic skills, ICT specialists and Female ICT specialists measure targets of the Digital Decade Compass. Under Connectivity, both fixed and mobile broadband are analysed with indicators measuring the supply and the demand side as wells as retail prices. Fixed VHCN and 5G coverage measure targets of the Digital Decade Compass. The Integration of digital technology dimension is made up of 3 sub-dimensions: digital intensity, take-up of selected

technologies by enterprises and e-commerce. SMEs with at least a basic level of digital intensity, take-up of Big data, Cloud and AI are targets of the Digital Decade Compass. The Digital public services dimension describes the demand and supply of e-government as well as open data policies. The Digital public services for citizens and businesses indicators assess targets of the Digital Decade Compass.

The third EU eGovernment Action Plan 2016-2020 was released in April 2016 with the aim of accelerating the digital transformation of government. The stated vision was that by 2020, public administrations and public institutions in the European Union should be open, efficient and inclusive, providing borderless, personalised, user-friendly, end-to-end digital public services to all citizens and businesses in the EU. Innovative approaches are used to design and deliver better services in line with the needs and demands of citizens and businesses. It brought in the issue of inclusiveness and accessibility clearly by mentioning that public administrations should design digital public services that are inclusive by default and cater for different needs such as those of the elderly and people with disabilities.

In October 2017, the Tallinn Declaration on eGovernment was released. The Declaration exhorted that eGovernment was significant for the development of the data economy and the Digital Single Market, especially for ensuring the secure and free movement of data as an enabler for digital innovation in Europe and for reducing the costs of and barriers to seamless functioning of the Single Market. It argued that development of eGovernment had a central role to play to meet the challenges and make use of the emerging digital opportunities. Amongst others, the digital transformation could strengthen the trust in governments that is necessary for policies to have effect: by increasing the transparency, responsiveness, reliability, and integrity of public governance. It realised that since the adoption of the 2009 Malmo Declaration, many steps had been taken towards modernising the delivery of public services nationally and across the borders within the EU with digital tools. However, the full potential of the digital transformation was yet to be attained in the

respective Member States administrations as well as at the EU level. The vision as articulated in this Declaration was to strive to be open, efficient, and inclusive, providing borderless, interoperable, personalised, user-friendly, end-to-end digital public services to all citizens and businesses – at all levels of public administration. It stressed on the following aspects of digitalisation process:

- Digital-by-default principle needs to be followed.
- More digital interaction needs to be promoted.
- User-centricity principle for design and delivery of digital public services should be practised.
- Principle of 'Once Only' should be adhered to.
- Increase the uptake of national eIDs.
- Interoperability frameworks to be in place; implementation of European Interoperability Framework and Interoperability Action Plan.
- Timely implementation of eIDAS (Regulation on Electronic Identification and Trust Services for Electronic Transactions).
- For ensuing cybersecurity, implementation of Network and Information Security (NIS) directive must be expedited.
- Increasing availability and quality of Open Government Data, by adopting 'Open-by-Default' approach should be followed.
- Making use of Open-Source solutions and/or Open Standards should be practised.

Following Tallinn Declaration, the Berlin Declaration on Digital Society and Value-based Digital Government was released in December 2020. It acknowledged that digital technologies offer new ways of solving societal issues and making governments and public institutions more efficient and effective, drawing from the role of digital technologies during the COVID-19 pandemic continues to have a profound impact on the societies from an educational, economic, leisure and it highlighted that digital technologies could enable the societies to effectively tackle sudden and extreme challenges and that innovative digital tools can be

developed incorporating the European Union's values and fundamental rights. It noted that this was only possible if people are adequately skilled and provided with easy access to the necessary technology and connectivity. It argued that the success of a modern and innovative Digital Government hinges on the involvement of as many members of our societies as possible, especially those who feel anxious about digitalisation, security and privacy, or find it difficult to keep pace with rapid technological development.

This declaration aimed to contribute to a value-based digital transformation by addressing and ultimately strengthening digital participation and digital inclusion in our societies. It stressed on the need for a compass to navigate the digital transition, aligned by the common European fundamental rights and values and shaped by participatory processes. It welcomed the ongoing efforts to improve digital cooperation on a global scale, in particular the UN Secretary General's Roadmap for Digital Cooperation, as well as ongoing initiatives like the Coalition of the Willing, that aims to combine strengths in digital government transformation at EU level. It further acknowledged that the public sector is an essential element for the European Single Market and a driving force for new and innovative technological solutions for public services and societal challenges. And for that public authorities at all levels must lead by example to strengthen the tenets of the European Union by adopting the following cornerstone seven principles in the digital sphere.

- *Validity and respect of fundamental rights and democratic values*: The existing rights, values and the corresponding legal framework of the European Union apply regardless of our means of communication and irrespective of the use of analog, digital, hybrid or integrated formats.

- *Social participation and digital inclusion to shape the digital world*: All people of Europe should be able to participate in and benefit fully from digital opportunities on an unconditional basis and without discrimination. We recognize the need for equal access

to an open Internet for all parts of society, including disadvantaged groups and citizens with disabilities, as a cornerstone of diversity of opinion, pluralism, innovation and progress. Governments and public authorities at all levels should lead by example and provide digital services, which respond to and evolve with citizens' digital preferences. Application of Web Accessibility Directive and the European Accessibility Act.

- *Empowerment and digital literacy*: Every citizen and business in Europe should be able to navigate the digital world with confidence and in a self-determined manner. Life-long learning and the development of digital skills should be promoted and include ethical, technical, legal, ecological and social aspects. Creation of Digital Skills Platform; Expansion of European Digital Education Hub.

- *Trust and security in digital government interactions*: Everyone should be able to navigate the digital world safely, authenticate and be digitally recognised within the EU conveniently. All people of Europe should avail of an easy to use, widely accepted and secure electronic identification conforming to European standards (e-ID), which allows them to securely access public, private and cross-border digital services.

- *Digital sovereignty and interoperability*: Digital sovereignty is key in ensuring the ability of citizens and public administrations to make decisions and act in a self-determined manner in the digital world. We must ensure that all underlying digital components of ICT solutions (hardware, software, and services) meet European requirements. We must create the right conditions for Europe to develop and deploy our own key digital capacities, including the deployment of secure cloud infrastructure and interoperable services that fully comply with European legal provisions and ethical values. Common standards, modular architectures and the use of Open-Source Software (OSS) in the public sector are facilitators for deploying and developing strategic digital tools and capacities. Creation of European Health Data Space and European Alliance on Industrial Data and Cloud.

- *Human-centred systems and innovative technologies in the public sector*: We need to ensure that the European Union further strengthens its pioneering role in the research on secure and trustworthy technology design and that the opportunities of Emerging Disruptive Technologies (EDT) including the Internet of Things (IoT), Artificial Intelligence (AI) systems, distributed ledger technologies, and quantum computing are put at the service of all European Member States' citizens, and businesses. Such technologies carry great potential for evidence-based policy-making and play a key role in providing user-centric public services. The human-centred approach aims to ensure that such applications are inclusive, help solve societal challenges and do not reproduce harmful social or economic biases. The public sector has a role-model function in ensuring that the development and application of these novel technologies is firmly rooted in our common fundamental rights and values and underpinned by a regulatory framework that is sufficiently flexible to mitigate the risks while accelerating innovation and competitiveness.

- *Towards a resilient and sustainable digital society*: One of the most pressing challenges and responsibilities for Europe is keeping our planet and people healthy and better preserving our natural foundations of life. The COVID-19 pandemic has provided a warning that new crises of unforeseen nature are likely to emerge in the future. In times where healthcare systems are under unprecedented pressure, digital solutions have proved essential in crisis management. We ought to explore and continuously follow up on the "lessons to be learned" from the COVID-19 pandemic and the boost it has given to digital transformation. We also need to make sure that the increasing use of digital technologies does not harm but rather contributes to people's physical and psychological well-being. In addition, the digital transformation in Europe needs to be closely aligned with the 2030 Agenda for Sustainable Development and the Paris Agreement as well as the goals of the European Green Deal.

Lisbon Declaration on Digital Democracy with a Purpose, released in June 2021 aimed to contribute to a model of digital transformation that

strengthens the human dimension of the digital ecosystem with the Digital Single Market as its core, by promoting human rights and fundamental freedoms, the rule of law and democratic principles in the digital world, digital literacy, cybersecurity, digital skills and competences, ethical development and use of digital technology, access to mobile government, international cooperation, as crucial conditions for a trustworthy, fair, transparent, sustainable, innovative, secure and competitive digital world. It observed that as labour markets, consumption, learning and teaching environments, and social interactions are undergoing a rapid change, there is a need to ensure that "no one is left behind" by promoting digital inclusion and literacy, reducing the digital divide between and within societies and eliminating all forms of discrimination. It also called for actively supporting the 2030 Agenda for Sustainable Development, the Green Deal and the European Pillar of Social Rights, which expresses principles and rights essential for fair and well-functioning labour markets and welfare systems in the 21st century and support the green growth, connectivity for all and technological competitiveness of companies (and especially start-ups and SME) in the internal market that are key factors for a fair, competitive and sustainable development. It reconfirmed the commitment of the Berlin Declaration that emerging and disruptive technologies, free and safe international data flows, digital infrastructures, digital products and services, networks, and the (re)use of personal and non-personal data must be in line with international law and ensure full respect for human rights and fundamental freedoms.

These technologies should be human-centered, human-controlled, promote human well-being and human dignity. It reiterated that digitalization is a key factor for promoting competitiveness and sustainable development but also bears the risk of deepening existing inequalities or being misused to undermine democracies and social cohesion or violate human rights. Furthermore, it also noted that the lack of connectivity or inadequate digital skills can lead to the creation of a new divide between the connected and digitized people, business and regions and those who remain disconnected and not-digitized. In the light of these challenges, there is a need to ensure that the twinning of green digital transformation

is based on intentions and actions stemming from joint efforts of multiple stakeholders, not only individuals, governments and public authorities at all levels, but also international organizations, enterprises, businesses associations, social partners, civil society organizations and academia, both from EU and non-EU countries. It, therefore, invited the policy-makers and all relevant stakeholders to join this Declaration as a political statement. The Declaration aimed to contribute to the process stemming from the Commission's Communication "2030 Digital Compass: the European way for the Digital Decade". It clearly acknowledged that the digital transformation is a key element to achieving the United Nations Sustainable Development Goals for 2030 (SDGs), in line with the 2030 Agenda for Sustainable Development, which declared that the spread of information and communications technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies.

A major milestone in the digitalisation policy trajectory in the EU has been the release of European Union's Digital Strategy in February 2020. This strategy talked about three visions, key missions and three streams of action, in order to make a Europe fit for the digital age. Three visions as stated are as follows:

- Aiming to make the EU become a global role model for the digital economy;
- Support developing economies in going digital; and
- Developing digital standards and promote them internationally.

Three missions are as follows:

- Ensuring that the technology improves every citizen's daily life;
- Enabling businesses to start, grow, innovate and compete on fair terms; and
- Assuring that the digital technologies help the EU reach climate neutrality.

Three proposed streams of actions are as follows:

- Create and ensure that the technology works for the people
    - Invest in digital competences for all Europeans;
    - Protect people from cyber threats (hacking, ransomware, identity theft);
    - Ensure Artificial Intelligence is developed in ways that respect people's rights and earn their trust;
    - Accelerate the roll-out of ultra-fast broadband for homes, schools and hospitals throughout the EU; and
    - Expand Europe's super-computing capacity to develop innovative solutions for medicine, transport and the environment.

- Creation of a fair and competitive digital economy
    - Enable a vibrant community of innovative and fast-growing start-ups and SMEs to access finance and to expand;
    - Propose a Digital Services Act to strengthen the responsibility of online platforms and clarify rules for online services;
    - Make sure that EU rules are fit for purpose in the digital economy;
    - Ensure that all companies compete in Europe on fair terms; and
    - Increase access to high-quality data while ensuring that personal and sensitive data is safeguarded

- Creation of an open, democratic and sustainable society
    - Use technology to help Europe become climate-neutral by 2050;
    - Reduce the digital sector's carbon emissions;
    - Empower citizens with better control and protection of their data;

- o Create a European health data space to foster targeted research, diagnosis and treatment; and
- o Fight disinformation online and foster diverse and reliable media content.

Basically, the EU's Digital Strategy talks about strengthening/ building capacities and competencies of the people and businesses (including Start-ups), building infrastructures, promoting sectoral interventions (such as health, transport and environment), developing institutional architecture for governance to deal with the issues of fair practices, ethics, data privacy and data protection. The strategy has set out a programme of public policy reforms, which have started already with the Data Governance Act, the Digital Services Act, the Digital Markets Act and the Cybersecurity Strategy. A number of Union budget instruments are being planned to support the investments necessary for the digital transition, including the Cohesion programmes, the Technical Support Instrument, and the Digital Europe Programme. The agreement by the co-legislators that a minimum of 20 per cent of the Recovery and Resilience Facility should support the digital transition and will help underpin this reform agenda, with funding to build Europe's Digital Decade on solid foundations.

Following the release of the EU's Digital Strategy, the 2030 Digital Compass was released in March 2021, with the stated ambition of *pursuing digital policies that empower people and businesses to seize a human centred, sustainable and more prosperous digital future'*. It aspires to pave the way for Europe to be *'digitally sovereign in an interconnected world by building and deploying technological capabilities in a way that empowers people and businesses to seize the potential of the digital transformation, and helps build a healthier and greener society'*. The Vision for 2030 towards instilling the European way to a digitalised economy and society includes values such as solidarity, prosperity and sustainability, anchored in the empowerment of its citizens and businesses; while ensuring the security and resilience of its digital ecosystem and supply chains. The Digital Compass includes the

means to deliver the vision and set out key milestones along following four cardinal points. The first two are focused on digital capacities in infrastructures and education & skills, and the two others are focused on digital transformation of business and public services.

- Digitally skilled population and highly skilled digital professionals
- Secure and performant sustainable digital infrastructures
- Digital transformations of businesses
- Digitalization of public services

First Cardinal Point: It states that basic digital skills for all citizens and the opportunity to acquire new specialised digital skills for the workforce are a prerequisite to participate actively in the Digital Decade. The European Pillar of Social Rights Action Plan projects the target for adults with at least basic digital skills to 80 per cent in 2030. This is intended to allow all Europeans to fully benefit from the welfare brought by an inclusive digital society, and access to education allowing the acquisition of basic digital skills as a right for all EU citizens. Digital training and education are expected to support a workforce in which people can acquire specialised digital skills to get quality jobs and rewarding careers. As of 2019, there were 7.8 million ICT specialists with a prior annual growth rate of 4.2%. If this trend continues, the EU will be far below the projected need of 20 million experts e.g. for key areas, such as cybersecurity or data analysis. More than 70 per cent of businesses report a lack of staff with adequate digital skills as an obstacle to investment. There is also a severe gender imbalance with only one in six ICT specialists and one in three STEM graduates being women. This is compounded by a lack of capacity in terms of specialised education and training programs in areas such as Artificial Intelligence, quantum and cyber security and by a low integration of digital subjects and educational multimedia tools in other disciplines.

Addressing this challenge requires massive investment to train future generations of workers and to up-skill and re-skill the workforce. The compass proposed to the ambition that by 2030, in addition to the target on basic digital skills established in the European Pillar of Social

Rights Action Plan, there are 20 million employed ICT specialists in the EU, with convergence between women and men.

Second Cardinal Point: It aspires for an excellent and secure connectivity for everybody and everywhere in Europe, as it is a prerequisite for a society in which every business and citizen can fully participate. Achieving gigabit connectivity by 2030 is key. Although this ambition can be reached with any technology mix, the focus is on more sustainable next generation fixed, mobile and satellite connectivity, with Very High Capacity Networks including 5G. It argues that the Europe's digital leadership and global competitiveness depend on strong internal and external connectivity and should also inform its international engagement, in particular along the European time zones, and taking account the emergence of data gateways around EU periphery. The EU has a comprehensive programme of engagement including Broadband rollout with partners in the Western Balkans and Eastern Partnership. In addition, the EU is keen to step up implementation of the EU-Asia Connectivity Strategy via new Connectivity Partnerships with India and ASEAN.

It also noted that today, data produced in Europe is generally stored and processed outside Europe, and its value is also extracted outside Europe, while EU-based cloud providers have only a small share of the cloud market, which leaves the EU exposed to such risks and limits the investment potential for the European digital industry in the data processing market. Also, given the impact of data centers and cloud infrastructures on energy consumption, the EU should take the lead in making these infrastructures climate neutral and energy efficient by 2030, while using their excess energy to help heating our homes, businesses and common public spaces.

As part of the enhanced Digital Economy and Society Index (DESI), the Commission is planning to introduce mechanisms to measure the energy efficiency of data centers and electronic communications networks used by European companies. As highlighted in the European data strategy, the volume of data generated is great. It has been proposed

that all European households to be covered by a Gigabit network, with all populated areas covered by 5G. It is also proposed that the production of cutting-edge and sustainable semiconductors in Europe including processors is at least 20 per cent of the world production in value.

Third Cardinal Point: It states that by 2030, more than just enablers, digital technologies including 5G, the Internet of Things, edge computing, Artificial Intelligence, robotics and augmented reality will be at the core of new products, new manufacturing processes and new business models based on fair sharing of data in the data economy. In this context, the swift adoption and implementation of the Commission's proposals for the Digital Single Market and Shaping Europe's digital future strategies will enhance the digital transformation of businesses and ensure a fair and competitive digital economy. It will also need to be matched with a level playing field abroad. It highlighted that EU support, notably through the Single Market, Digital Europe and Cohesion programmes, will promote the deployment and use of digital capabilities including industrial data spaces, computing power, open standards, testing and experimentation facilities.

Fourth Cardinal Point: It argues that user-friendly services will allow citizens of all ages and businesses of all sizes to influence the direction and outcomes of government activities more efficiently and improve public services. Government as a Platform, as a new way of building digital public services, will provide a holistic and easy access to public services with a seamless interplay of advanced capabilities, such as data processing, AI and virtual reality. It exhorts that the Europe must harness digitalisation to drive a paradigm change in how citizens, public administrations and democratic institutions interact, ensuring interoperability across all levels of government and across public services. It is proposed that by 2030, 100 per cent online provision of key public services available for European citizens and businesses, 100 per cent of European citizens have access to medical records (e-records) and 80 per cent of citizens will use a digital ID solution.

Digital Compass is envisioned as a governance framework/structure, in the form of a digital policy programme, to ensure the delivery and implementation of the EU's ambition for digitalisation backed with annual reporting and follow-up. It has the following three key objectives:

- Achieving the concrete objectives under the four cardinal points;
- Shaping and launching multi-country projects; and
- Monitoring Digital Principles.

One of the unique salient features of the 2030 Digital Compass is the notion of Digital Citizenship. It was argued that in the digital space, there is a need to make sure that the same rights that apply offline can be fully exercised online. To be fully empowered, people should first have access to affordable, secure and high quality connectivity, be able to learn basic digital skills – which should become a right for all- and be equipped with other means which together allow them to fully participate in economic and societal activities of today and the future. They also need to have easy access to digital public services, on the basis of a universal digital identity, as well as access to digital health services. People should benefit from non-discriminatory access to online services and as well from the realisation of principles, such as secure and trusted digital spaces, work-life balance in a remote working environment, protection of minors, and ethical algorithmic decision-making. In addition, the digital technologies and services people use must be compliant with the applicable legal framework and respect the rights and values intrinsic to the "European way".

Furthermore, the human-centred, secure and open digital environment should comply with the law, but also further enable people to enforce their rights, such as the rights to privacy and data protection, freedom of expression, the rights of the child and consumer rights. The digital principles are rooted in primary EU law, notably the Treaty on European Union (TEU), the Treaty on the Functioning of the European Union (TFEU), the Charter of Fundamental Rights and the case-law of the Court of Justice of the European Union, as well as in secondary legislation.

This European way for the digital society should also underpin and support open democracy initiatives by contributing to inclusive policy-making, enabling wide-ranging engagement with people and stimulating grass-roots action for developing local initiatives as enabler factors to improve social acceptability and public support for democratic decisions.

This European way for the digital society is also based on ensuring full respect of EU fundamental rights:

• Freedom of expression, including access to diverse, trustworthy and transparent   information;

• Freedom to set up and conduct a business online;

• Protection of personal data and privacy, and right to be forgotten; and

• Protection of the intellectual creation of individuals in the online space.

It is equally important to set up a comprehensive set of digital principles that will allow to inform users and guide policy makers and digital operators such as:

• Universal Access to internet services;

• A secure and trusted online environment;

• Universal digital education and skills for people to take an active part in society and   in democratic processes;

• Access to digital systems and devices that respect the environment;

• Accessible and human-centric digital public services and administration;

• Ethical principles for human centric algorithms;

• Protecting and empowering children in the online space; and

• Access to digital health services.

The Commission also proposed to include such a set of digital principles and rights in an inter institutional solemn declaration between the European Commission, the European Parliament and the Council, based on a proposal from the European Commission and building on

and complementing the experience of the European Pillar of Social Rights. The Commission intends to carry out an annual Eurobarometer exercise specifically dedicated to monitoring the perception of Europeans regarding the respect of their rights and values, and to what extent they feel that the digitisation of our society is serving them.

The latest key development has been the release of the European Declaration on Digital Rights and Principles for the Digital Decade in January 2022. This Declaration's Preamble has included the following assertions:

- The digital transformation affects every aspect of people's lives. It offers significant opportunities for a better quality of life, innovation, economic growth and sustainability, but it also presents new challenges for the fabric, security and stability of our societies and economies. With the acceleration of the digital transformation, the time has come for the European Union (EU) to spell out how its values and fundamental rights should be applied in the online world.

- Parliament has made several calls for ensuring the full compliance of the Union's approach to the digital transformation with fundamental rights such as data protection or non-discrimination, and with principles such as technological and net neutrality, and inclusiveness. It has also called for a strengthened protection of users' rights in the digital environment.

- Building on previous initiatives such as the "Tallinn Declaration on eGovernment" and the "Berlin Declaration on Digital Society and Value-based Digital Government", the Council has called, through the "Lisbon Declaration – Digital Democracy with a Purpose" for a model of digital transformation that strengthens the human dimension of the digital ecosystem with the Digital Single Market as its core.

- The Council also called for a model of digital transition that ensures that technology assists in the need to take climate action and protect the environment. The EU vision for digital transformation puts people at the centre, empowers individuals and fosters innovative

businesses. The Commission has recently presented a Proposal for a Decision on a "Path to the Digital Decade", which sets out the concrete digital targets based on four cardinal points (digital skills, digital infrastructures, digitalisation of businesses and of public services) that will help us achieve this vision.

- The Union way for the digital transformation of our societies and economy should encompass digital sovereignty, inclusion, equality, sustainability, resilience, security, trust, improving quality of life, respect of people' rights and aspirations and should contribute to a dynamic, resource-efficient and fair economy and society in the Union.

- The Declaration aims to explain shared political intentions. Not only does it recall the most relevant rights in the context of the digital transformation, it should also serve as a reference point for businesses and other relevant actors when developing and deploying new technologies.

- The Declaration should also guide policy makers when reflecting on their vision of the digital transformation: putting people at the centre of the digital transformation; underlying solidarity and inclusion; restating the importance of freedom of choice; participation in the digital public space; safety, security and empowerment; and sustainability.

- The democratic oversight of the digital society and economy should be further strengthened, in full respect of the rule of law principles, effective justice and law enforcement. This Declaration does not affect lawful limits on the exercise of legal rights, in order to reconcile them with the exercise of other rights, or necessary and proportionate restrictions in the public interest.

- The Union should promote the Declaration in its relations with other international organisations and third countries with the ambition that the principles serve as an inspiration for international partners to guide a digital transformation which puts people and their human rights at the centre throughout the world.

- This Declaration notably builds on primary EU law, in particular in the Treaty on European Union, the Treaty on the Functioning of the European Union, the EU Charter of Fundamental Rights and the case-law of the Court of Justice of the EU, as well as in secondary law. It also builds on and complements the European Pillar of Social Rights. It has a declaratory nature and does not as such affect the content of legal rules or their application.

- The promotion and implementation of the digital principles is a shared political commitment and responsibility of the Union and its Member States within their respective competences and in full compliance with Union law. The Commission has proposed that the annual report on the "State of the Digital Decade", to be submitted to the Parliament and Council, would cover the monitoring of the digital principles.

The Declaration on Digital Rights and Digital Principles comprises of following six chapters:

- *Chapter 1: Putting people at the centre of the digital transformation*
    - o People are at the centre of the digital transformation in the European Union. Technology should serve and benefit all Europeans and empower them to pursue their aspirations, in full security and respect of their fundamental rights.
    - o It was committed to strengthen the democratic framework for a digital transformation that benefits everyone and improves the lives of all Europeans; – taking necessary measures to ensure that the values of the Union and the rights of individuals as recognised by Union law are respected online as well as offline; – fostering responsible and diligent action by all digital actors, public and private, for a safe and secure digital environment; – actively promoting this vision of the digital transformation, also in our international relations.

- *Chapter 2: Solidarity and inclusion*
    - o Everyone should have access to technology that aims at uniting, and not dividing, people. The digital transformation should contribute to a fair society and economy in the Union.
    - o It was committed to make sure that technological solutions respect people's rights, enable their exercise and promote inclusion. – a digital transformation that leaves nobody behind. It should notably include elderly people, persons with disabilities, or marginalised, vulnerable or disenfranchised people and those who act on their behalf.
    - o Developing adequate frameworks so that all market actors benefiting from the digital transformation assume their social responsibilities and make a fair and proportionate contribution to the costs of public goods, services and infrastructures, for the benefit of all Europeans.
    - o It covers Connectivity (3 As); Digital Education and Skills (Current and Future of Education and Work); Working conditions (Work-Life Balance); Online Digital Public Services (Digital Identity; Digital Health).
- *Chapter 3: Freedom of choice*
    - o Interactions with algorithms and artificial intelligence systems (address challenges such as biasness in AI algorithms)
    - o Everyone should be empowered to benefit from the advantages of artificial intelligence by making their own, informed choices in the digital environment, while being protected against risks and harm to one's health, safety and fundamental rights.
    - o It was committed to ensure transparency about the use of algorithms and artificial intelligence, and that people are empowered and informed when interacting with them.

- o Ensuring that algorithmic systems are based on suitable datasets to avoid unlawful discrimination and enable human supervision of outcomes affecting people.
- o Ensuring that technologies, such as algorithms and artificial intelligence are not used to pre-determine people's choices, for example regarding health, education, employment, and their private life. – providing for safeguards to ensure that artificial intelligence and digital systems are safe and used in full respect of people's fundamental rights.
- o Everyone should be able to effectively choose which online services to use, based on objective, transparent and reliable information. Everyone should have the possibility to compete fairly and innovate in the digital environment. We commit to ensure a safe, secure and fair online environment where fundamental rights are protected, and responsibilities of platforms, especially large players and gatekeepers, are well defined.

- *Chapter 4: Participation in the digital public space*
  - o Everyone should have access to a trustworthy, diverse and multilingual online environment. Access to diverse content contributes to a pluralistic public debate and should allow everyone to participate in democracy.
  - o Everyone has the right to freedom of expression in the online environment, without fear of being censored or intimidated. Everyone should have the means to know who owns or controls the media services they are using. Very large online platforms should support free democratic debate online, given the role of their services in shaping public opinion and discourse. They should mitigate the risks stemming from the functioning and use of their services, including for disinformation campaigns and protect freedom of expression.

- o It was committed to support the development and best use of digital technologies to stimulate citizen engagement and democratic participation.
- o Continuing safeguarding fundamental rights online, notably the freedom of expression and information.
- o Taking measures to tackle all forms of illegal content in proportion to the harm they can cause, and in full respect of the right to freedom of expression and information, and without establishing any general monitoring obligations.
- o Creating an online environment where people are protected against disinformation and other forms of harmful content.

- *Chapter 5: Safety, security and empowerment*
  - o A protected, safe and secure online environment
  - o Everyone should have access to digital technologies, products and services that are safe, secure, and privacy-protective by design.
  - o It was committed to protect the interests of people, businesses and public institutions against cybercrime, including data breaches and cyber attacks. This includes protecting digital identity from identity theft or manipulation.
  - o Countering and holding accountable those that seek to undermine security online and the integrity of the Europeans' online environment or that promote violence and hatred through digital means.
  - o Privacy and individual control over data: Everyone has the right to the protection of their personal data online. That right includes the control on how the data are used and with whom they are shared. Everyone has the right to the confidentiality of their communications and the information on their electronic devices, and no one shall be subjected to unlawful online surveillance or interception measures.

- o Everyone should be able to determine their digital legacy, and decide what happens with the publicly available information that concerns them, after their death.
- o It was committed to ensure the possibility to easily move personal data between different digital services.
- o Children and young people should be protected and empowered online Children and young people should be empowered to make safe and informed choices and express their creativity in the online environment. Age-appropriate materials should improve children's experiences, well-being and participation in the digital environment.
- o Children have the right to be protected from all crimes, committed via or facilitated through digital technologies.
- o It was committed to promote a positive, age-appropriate and safe digital environment for children and young people. – providing opportunities to all children to acquire the necessary skills and competences to navigate the online environment actively, safely and make informed choices when online. – protecting all children against harmful and illegal content, exploitation, manipulation and abuse online, and preventing the digital space from being used to commit or facilitate crimes.

- *Chapter 6: Sustainability*
  - o To avoid significant harm to the environment, and to promote a circular economy, digital products and services should be designed, produced, used, disposed of and recycled in a way that minimises their negative environmental and social impact.
  - o Everyone should have access to accurate, easy-to-understand information on the environmental impact and energy consumption of digital products and services, allowing them to make responsible choices.

- o It was committed to support the development and use of sustainable digital technologies that have minimal environmental and social impact.
- o Developing and deploying digital solutions with positive impact on the environment and climate.

The above-mentioned Declarations, strategies and initiatives provided an overview of the policy landscape related to digitalisation at the level of EU. The following paragraphs will now provide the digitalisation policy landscape of two selected European countries i.e., Germany and Estonia.

Country Focus: Germany

In the latest DESI 2022, Germany ranks 13th. According to the latest UN E-Government Survey 2022, Germany ranks 22nd in the world. The "Digital Strategy 2025" was adopted in 2016. It describes the priorities of the German Government, namely the development of digital capabilities and the promotion of the use of new tools with the aim of enhancing Germany's digitalisation processes.

The strategy is based on 10 pillars important for digitalisation, including a pillar that focuses on introducing digital education and throughout the stages of one's life. In 2021, projects worth over EUR 2 billion were approved under the Digital Pact for Schools (DigitalPakt Schule) for building digital infrastructure and supporting the digital transformation of schools. The federal government and the federal states agreed to allocate EUR 5 billion in federal funding to the pact between 2019 and 2024.

Digitalisation is a key priority for the new government, building on the digital dimension of the Recovery and Resilience Plan (RRP) adopted by the previous government. From a total budget of EUR 26.5 billion , more than 50 per cent is allocated to digitalisation. The plan features two major multi-country 'important project of common European interest' (IPCEI) on digitalisation: Microelectronics and Communication

Technologies, and Next Generation Cloud Infrastructure and Services (IPCEI-CIS).The implementation strategy 'Shaping Digitalization', adopted on 15 November 2018, is a strategic umbrella covering more than 140 central digital policy projects in five fields of action: digital competence, infrastructure and equipment, innovation and digital transformation, society in the digital transformation and the modern state. By October 2021, over 90 per cent of the implementation steps had been started, of which 44 per cent have been completed. The interactive digital policy dashboard 'digital made in de', tracks progress on each measure covered by the strategy and other German digital strategies (artificial intelligence (AI), blockchain and data strategies), as well as impact indicators for digital policies. The dashboard helps to ensure transparent, verifiable and evidence-based digital policy in Germany.

The Federal Government initiated the innovation competition INVITE. INVITE aims at innovative solutions that – with the help of AI – enable all people to find the right continuing professional training on demand. The Federal Government has launched the 'hubs for tomorrow' to support companies, esp. SMEs, and employees with custom-fit counseling and innovative learning approaches. Furthermore, SMEs are supported in introducing human-centred AI-based systems together with their employees. The Federal Ministry of the Interior and Community supports the 'Germany secure in the network' initiative (Deutschland sicher im Netz e.V.), which launched a programme in March 2022, called DsiNDigitalführerschein, to raise the level of digital skills and competencies among the general public to help them become more involved in the digitalised society. The programme provides free, interactive online courses to develop digital skills for use in professional and private contexts. Certificates are issued so that participants have evidence of their digital skills to show employers.

Although rural coverage has significantly improved since 2019, from 75 per cent to 85 per cent, well above the EU average of 67.5 per cent, Germany still has a clear digital divide between urban and rural areas. Compared to other EU Member States, Germany performs

particularly well on overall fixed broadband take-up and broadband prices. In the broadband pricing index (based on representative baskets of fixed, mobile and converged packages, adjusted for national household income levels), Germany ranks 8th in the EU. As to preparedness for the Gigabit society, Germany has significantly improved very high-capacity network (VHCN) coverage over the last year from 55.9 per cent in 2020 to 74.9 per cent in 2021 and is currently above the EU average of 70.2 per cent. However, the country is still lagging in deploying VHCN in rural areas (with a coverage of 22.5 per cent versus 37.1 per cent EU average) and only 15.4 per cent of households have access to a Fibre to the Premises (FTTP) connection (compared to an EU average of 50 per cent), which places Germany among the Member States with the second lowest fibre coverage, while the top five EU performers have a fibre coverage of 85 per cent or more.

In total, the Federal Government provided EUR 12 billion to subsidise fibre connections. With the start of the Gigabit programme in April 2021, funding was expanded to cover also the grey NGA areas. Apart from fibre connections for households, the programme aims at the expansion of gigabit connections for socio-economic drivers such as businesses, hospitals, administrative services, transport hubs and fibre connections to schools. A separate programme, the 'Digital Classroom' initiative focusses on connecting schools to broadband networks. Altogether, around 11 700 schools receive funding. In addition to the general national broadband funding schemes, many German regions have separate funding schemes. A gigabit strategy to implement the objectives of the coalition agreement with regard to digital infrastructure was adopted on 13 July 2022. It includes promising goals on the availability of Fibre to the Premises (FTTP) for all German households by 2030, and of 15 million new FTTP connections by the end 2025.

Germany has introduced a number of strategies, initiatives and activities to support the digital transformation of companies and the deployment and uptake of advanced technologies. Several measures are specifically tailored to SMEs. The current focus is largely on the

continuation or further development of existing measures. In the coalition agreement, the newly-elected government made a pledge to create a friendlier environment for (digital) start-ups. With the 'SME digital' initiative (Mittelstand-Digital) Germany is continuing its activities to support businesses and especially SMEs in their digital transformation. The digital now programme (Digital Jetzt) has provided 2 800 SMEs with financial support for digital skills and technologies projects. From September 2020 to the end of 2021, it invested around EUR 280 million in total. Financial support was increased in 2021, bringing the total support available up to 2024 to about EUR 460 million.

Germany's Online Access Act (Onlinezugangsgesetz), adopted in August 2017, requires all German federal and state governments to provide their services for individuals and for companies online, through public-administration websites. Implementation has two main strands, both covered by the German RRP: one for the digitalisation of federal services (Digitalisierungsprogramm Bund) and another for the digitalisation of services provided by federal states and municipalities (Digitalisierungsprogramm Föderal). In May 2022, 79 of the 575 public services were available online and another 200 were in the process of being put online. Based on the law all public services should be available online by the end of 2022. This is in line with the Digital Decade target of 100 per cent of public services available online by 2030.

Country-Focus: Estonia

In the latest DESI 2022, Estonia ranks 9th. It performs well and scores above the EU average in all indicators except connectivity where is ranks 26th. According to the latest UN E-Government Survey 2022, Estonia ranks 8th in the world, with highest ranking in Online Services Index (OSI) (UN, 2022). When it comes to digitalisation and e-governance, Estonia has emerged as a remarkable example. Today, 99 per cent of the country's public services are available online 24/7, 30 per cent of the population votes electronically and according to country's estimates, digitalisation reduced bureaucracy accounts for about 844 years of

working time. Estonia embarked on its journey to digitalisation in the late 1990s itself. The earliest initiatives focused on government efficiency. In 2000, the Estonian government committed to transform society digitally and started rolling out internet connections across the country. Moreover, the country declared internet as human right in 2001. It introduced E-Residency programme in 2014, which gives anyone living anywhere in the world the ability to receive a government-issued digital ID and full access to Estonia's public e-services. Since 2014, more than 40,000 people from 150 different countries have been granted Estonian e-residency. They have established over 6,000 companies in Estonia.

There were following three key foundational projects led by the government which led the pathways for the digitalisation in Estonia:

- Digitizing registers held by public bodies to provide the necessary information to support e-services;
- building the X-Road platform that connects the wealth of different systems used in the public and private sector and allows them to share information; and
- giving citizens the means to securely access online services by providing digital ID cards and making digital signatures equivalent to handwritten signatures. Since the concept was introduced in 2002, 98 percent of Estonians own an ID card, which is the key to using all the digital services and getting the most out of them. In Estonia, when a person is born, they're assigned a personal ID code; it's compulsory to have one.

One of the principles in enabling this is the "once-only principle" i.e. any time one submit any type of data to the government, they shouldn't ask for this data again. Another key principle is called "digital by default", which means the introduction of any new service is to be done digitally. Another element which has been aiding the success of the concept of a digital government is "truth by design" i.e. individuals own their own data, companies own their own data, and the choice is left to them to determine who else gets their hands on it.

In the Estonian RRP, adopted in October 2021, an estimated EUR 208 million is devoted to digital objectives – this represents 21.5 per cent of the plan's total budget. target groups and setting objectives to be reached by 2035 for young people and the general population. OSKuste Arendamise koordinatsioonisüsteem (OSKA), the Estonian skills forecasting body, plays a key role in skills foresight and policy planning. It analyses the labour and skills needs for the country's economic development for the next 10 years. Schools in Estonia are generally well-equipped with digital devices. According to the 2020 Education & Training Monitor, 99 per cent of students in upper secondary education and around 90 per cent in primary and lower secondary education go to digitally equipped and connected schools. Digital skills are part of the compulsory curricula for students and implementation is regulated by each school.

To tackle the shortage of ICT specialists in the coming years, a legislative proposal to facilitate the immigration of skilled workers is being prepared. It will include a 'growth visa,' that complements the existing Digital Nomad Visa. The new visa will make it easier for IT companies with global growth potential to hire third-country nationals. Estonia is also supporting the creation of specialised new master's programmes.

On the down side, businesses are not yet reaping the full benefits of the digital economy. Despite some innovative companies driving the Estonian business ecosystem, more traditional businesses and Small and Medium-sized Enterprises (SMEs) are lagging behind. Overall, Estonia continues to perform strongly in the uptake of digital technologies. The country is a global leader in the digitalisation of public services. However, to ensure no one is left behind, measures promoting connectivity and further digitalisation of businesses would be essential.

To further advance Estonia's digitalisation agenda, a "Digital Agenda 2030" was released in 2021 with three priorities: (i) developing further digital public services; (ii) focusing on cybersecurity and (iii) improving connectivity across the country.

Digitalisation Strategies and Major Key Initiatives in India

E-governance initiatives in India took a broader dimension in the mid 1990s for wider sectoral applications with emphasis on citizen-centric services. The major ICT initiatives of the Government included, inter alia, some major projects, such as railway computerization, land record computerisation etc., which focused mainly on the development of information systems. Later on, many states started ambitious individual e-governance projects aimed at providing electronic services to citizens. The national level e-governance programme called National e-Governance Plan (NeGP) was initiaited in 2006. There were 31 Mission Mode Projects under National e-Governance Plan covering a wide range of domains, viz. agriculture, land records, health, education, passports, police, courts, municipalities, commercial taxes and treasuries etc. Considering the shortcomings in National e-Governance Plan that included lack of integration amongst Government applications and databases, low degree of government process re-engineering, scope for leveraging emerging technologies like mobile and cloud etc., the Government of India approved e-Kranti programme with the vision of "Transforming e-Governance for Transforming Governance". "NeGP 2.0".

In July 2015, "Digital India" was launched. It is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. Digital India programme is centred on three key vision areas[1]:

- Digital Infrastructure as a Core Utility to Every Citizen;
- Governance & Services on Demand; and
- Digital Empowerment of Citizens.

Digital Infrastructure as a Core Utility to Every Citizen: It includes availability of high speed internet as a core utility for delivery of services to citizens; provision of cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen; provision of mobile

phone and bank account enabling citizen participation in digital & financial space; easy access to a Common Service Centre; shareable private space on a public cloud and safe and secure cyber-space.

Governance & Services on Demand: It includes seamlessly integrated services across departments or jurisdictions; availability of services in real time from online & mobile platforms; citizen entitlements to be portable and available on the cloud; digitally transformed services for improving ease of doing business; making financial transactions electronic & cashless and leveraging Geospatial Information Systems (GIS) for decision support systems & development.

Digital Empowerment of Citizens: It includes universal digital literacy; universally accessible digital resources; availability of digital resources/services in Indian languages; collaborative digital platforms for participative governance and citizens not required to physically submit Govt. documents/certificates.

Approach undertaken in the Digital India to realise the vision and objectives is as follows:

- e-Governance would be promoted through a centralised initiative to the extent necessary, to ensure citizen-centric service orientation, interoperability of various e-Governance applications and optimal utilisation of ICT infrastructure/ resources, while adopting a decentralised implementation model.

- Successes would be identified and their replication promoted proactively with the required productisation and customisation wherever needed.

- Public Private Partnerships would be preferred wherever feasible to implement e-governance projects with adequate management and strategic control.

- Adoption of Unique ID would be promoted to facilitate identification, authentication and delivery of benefits.

- For effective management of Digital India programme, the Programme Management Structure consists of a Monitoring Committee on Digital India headed by the Prime Minister, a Digital India Advisory Group chaired by Minister of Communications and IT and an Apex Committee chaired by Cabinet Secretary

Digital India aims to provide the much needed thrust to the nine pillars of growth areas, namely Broadband Highways (BharatNet, Optical Fibre, Rural India), Universal Access to Mobile Connectivity, Public Internet Access Programme, e-Governance: Reforming Government through Technology, e-Kranti - Electronic Delivery of Services, Information for All (Open Data), Electronics Manufacturing, IT for Jobs and Early Harvest Programmes.

Key Foundational Pillars in India's Digitalisation Endeavours include the following:

- **AADHAR:** Aadhaar identity platform is one of the key pillars of 'Digital India', wherein every resident of the country is provided with a 12-digit unique identity or Aadhaar number. The largest biometrics based identification system in the world, Aadhaar is a strategic policy tool for social and financial inclusion, public sector delivery reforms, managing fiscal budgets, increase convenience and promote hassle-free people-centric governance. It is unique and robust enough to eliminate duplicate or fake identities and used as a basis/ primary identifier to roll out several Government welfare schemes and programmes for effective service delivery thereby promoting transparency and good governance. The Unique Identification Authority of India (UIDAI), a statutory authority established in January 2009 by the Government of India, under the jurisdiction of the Ministry of Electronics and Information Technology, is the nodal agency for Aadhar.

- **PRADHAN MANTRI JAN-DHAN YOJANA (PMJDY):** It is a National Mission on Financial Inclusion encompassing an integrated approach to bring about comprehensive financial inclusion of all the households in the country. The plan envisages universal access to banking facilities at least one basic banking account in every household, financial literacy, access to credit, insurance and pension facility. The initiative envisages channeling all Government benefits (from Centre / State / Local Body) to the beneficiaries' accounts and pushing the Direct Benefits Transfer (DBT) scheme of the Union Government.

- **JAM Trinity:** Jan Dhan-Aadhar-Mobile (JAM) Trinity has propelled India's financial inclusion success to a great extent.

- **Digital Saksharta Abhiyan or National Digital Literacy Mission (NDLM) Scheme:** It has been formulated to impart IT training to more than 5 million persons, including Anganwadi, social workers and authorised ration dealers in all the States/UTs across the country. The initiative aims at training non-IT literate citizens to become IT literate to enable their active and effective participation in the democratic, developmental process, and enhance their livelihood too.

- **BHARAT BROADBAND NETWORK (BBNL):** Bharat Broadband Network Limited is a special purpose vehicle set-up under Companies Act by the Government of India with an huge authorized capital. It has been mandated to create the National Optical Fiber Network (NOFN) in India.

- **Direct Benefit Transfer:** DBT was initiated with the aim to reform government delivery system by re-engineering the existing process in welfare schemes for simpler and faster flow of information/funds and to ensure accurate targeting of the beneficiaries, de-duplication and reduction of fraud. DBT will bring efficiency, effectiveness, transparency and accountability in the Government system and infuse confidence of citizen in the governance. Use of modern technology and IT tools will realize the dream of MAXIMUM GOVERNANCE MINIMUM GOVERNMENT.

- **Integrated Health Information Platform (IHIP):** It is being set up by the Ministry of Health and Family Welfare (MoHFW). The primary objective of IHIP is to enable the creation of standards compliant Electronic Health Records (EHRs) of the citizens on a pan-India basis along with the integration and interoperability of the EHRs through a comprehensive Health Information Exchange (HIE) as part of this centralized accessible platform.

- **OPEN DATA:** Open Government Data (OGD) Platform India - data.gov.in is a platform for supporting Open Data initiative of Government of India. The portal is intended to be used by Government of India Ministries/ Departments their organizations to publish datasets, documents, services, tools and applications collected by them for public use. It intends to increase transparency in the functioning of Government and also open avenues for many more innovative uses of Government Data to give different perspective.

- **Unified Payments Interface (UPI):** It is an instant real-time payment system developed by National Payments Corporation of India (NPCI). The interface facilitates inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions. UPI is an open-source application programming interface (API) that runs on top of Immediate Payment Service (IMPS). It is regulated by the Reserve Bank of India (RBI) and works by instantly transferring funds between two bank accounts on a mobile platform. BHIM. Paytm, Google Pay etc.

- **BHIM (BHARAT INTERFACE FOR MONEY):** It is an app that makes payment transactions simple, easy and quick using UPI. It enables direct bank to bank payments instantly and collect money using a Mobile number or Payment address.

Success Story: Financial Inclusion

Financial Inclusion (FI) is an important priority of the Indian government. The objective of Financial Inclusion is to extend financial services to the large hitherto un-served population of the country to unlock its growth potential. The Government initiated the National Mission for Financial

Inclusion (NMFI), namely, Pradhan Mantri Jan Dhan Yojana (PMJDY) in August, 2014 to provide universal banking services for every unbanked household, based on the guiding principles of banking the unbanked, securing the unsecured, funding the unfunded and serving un-served and under-served areas.

Launched in 2014, the PMJDY is one of the flagship schemes of the government with an objective to ensure financial inclusion of those individuals who do not have a bank account. The scheme offers various financial services, including basic savings & deposit accounts, insurance, pension, remittance and credit, in an affordable manner. Through this scheme, an individual can open a basic savings bank deposit (BSBD) account in any bank branch or a business correspondent (Bank Mitra) outlet. Following that, the account holder is offered a 'RuPay' debit card and has no prerequisites to maintain any minimum balance in his/ her account. The account holder is eligible for other benefits including accidental insurance cover of Rs. 1 lakh (~US$ 1370), which was increased to Rs. 2 lakh (~US$ 2740) for new accounts that were opened after 28 August 2018; and overdraft facility (OD) up to Rs. 10000 (~US$ 137). In addition, the account holder can avail other schemes such as Atal Pension Yojana (APY), Direct Benefit Transfer (DBT), Micro Units Development & Refinance Agency Bank (MUDRA) and others. As of August 2022, under the scheme, the government opened accounts for over 46 crore beneficiaries, with deposits amounting to INR 174870.1 crore (~US$ 20.5 billion). Of this, 55.59 per cent account holders were women and 66.79 per cent accounts were in rural or semi-urban areas. Following are the digital instruments that the government launched to enable financial inclusion:

***Under Jan Dhan-Aadhaar-Mobile* (JAM) initiative**, by linking Jan Dhan bank accounts with *Aadhaar* and mobile numbers, the government aimed to create a digital infrastructure that can be leveraged for various purposes including transferring direct benefits, adopting pension schemes, supporting credit flows and promoting digital payments through 'RuPay' cards. This initiative has enabled DBT from the government under various schemes to ~80 million accounts.

Aadhaar-based Biometric Authentication and Digital Payments Solutions: As more and more bank accounts are linked with *Aadhaar* numbers, executing online financial transactions becomes easy at various banking touchpoints. More than 1.25 billion digital identities have been generated under *Aadhaar*, enabling them to authenticate and carry out transactions. Using biometric ID, cost-effective payment solutions have been implemented including Immediate Payment Service (IMPS), RuPay Debit card, Unified Payments Interface (UPI), etc. ***Jan Dhan Darshak:*** Through this '*Jan Dhan Darshak*' mobile application, the government aims to help citizens locate and view banking touchpoints such as ATMs, bank branches, bank *mitras*, post offices and common services centres (CSCs). The service is also being used by authorities to identify unbanked locations/villages that do not have any banking touchpoints. The app will act as a guide for citizens to locate financial service touchpoints at a given location in the country. According to the government, the app has mapped >8 lakh financial service touchpoints.

Financial inclusion is a major step towards inclusive growth which ensures the overall economic development of the marginalised sections of the society. The advantage of the digital architecture created under FI ecosystem came handy during the COVID-19 pandemic when it facilitated direct income support to farmers under PM-KISAN and transfer of ex-gratia payment to PMJDY account holders under PM Garib Kalyan Package in a seamless and time-bound manner.

Discussion and Conclusion

Both in the Europe and in India, the effort towards inclusive digitalisation is being led by the governments through various policies, strategies and initiatives. Whether it is EU's Digital Strategy or digital strategies of Germany, Estonia and India, one of the common threads is the focus on fostering inclusive digitalisation. The tenets of inclusivity across these regions are more or less same, but the approach and drivers might differ owing to the different socio-economical and cultural contexts.

Digitalisation in the Europe entails three fundamental elements, which are as follows:

- Technology that works for people;
- A fair and competitive economy; and
- An open, democratic and sustainable society.

In India, its flagship programme titled "Digital India" has following three vision areas:

- Digital Infrastructure as a Core Utility to Every Citizen;
- Governance and Services on Demand; and
- Digital Empowerment of Citizens.

The driving factors for digitalisation in the Europe (and its countries like Germany and Estonia) and India as explicitly mentioned in the policy documents or strategies are enlisted in the Table 1.

Table 1: Driving Factors for Digitalisation in the Europe and India

Key Driving Factor	Europe	India
Need to build inclusive information/knowledge society	✔	✔
Promoting Digital Economy	✔	✔
Increasing efficiency	✔	✔
Strengthening Democratic Decision-Making/ Participative Governance	✔	✔
Ensuring Equity and Decreasing Exclusion	✔	✔
Improving Public Services	✔	✔
Enhancing Digital Literacy, Skills and Competence	✔	✔
Providing Safe and Secure Cyber Space	✔	✔
Promoting Open Source, Open Standards	✔	✔

Ensuring Digital Sovereignty	✓	✓
Becoming Global Role Model	✓	✓
Developing Digital Standards	✓	✓
Achieving Climate Neutrality	✓	X
Promoting SMEs and Start-Ups	✓	✓
Strengthening Digital Infrastructure	✓	✓
Fighting disinformation and fake news	✓	X
Promoting Sectoral Interventions (Health, Education, Transport, Environment, Agriculture)	✓	✓
Developing institutional architecture for governance to deal with the issues of fair practices, ethics, data privacy and data protection	✓	✓
Curbing Corruption	X	✓
Enabling Financial Inclusion	X	✓
Enabling infrastructure for digital identity	✓	✓
Provisioning Direct Benefit Transfers	X	✓

Source: Author's own analysis

It can be clearly observed that the driving factors or salient features of the digitalisation endeavours in both the Europe and India are almost similar. Both have placed inclusion as a key priority in their digitalisation policy landscape. For the Europe, inclusion is mostly in terms of

capacity building of individuals and businesses to harness the benefits of digitalisation for their growth and development; whereas for India, inclusion would also mean the use of digital technologies in bringing the vast majority of people into the ambit of banking and financial services so that they get the social security entitlements directly in their bank accounts, thus curbing the corruption and leakages to a great extent. In India, digital identification has plugged over INR 2 lakh crore (~ USD 30 billion) leakage in the government's welfare schemes by eliminating fake and duplicate identities.[2]

Following observations (Table 2) can be made while mapping the role of governments in the digitalisation process across the Europe and India against the UNDP's Inclusive Digital Transformation analytical framework.

Dimension: Government

a. Sub-Dimension: Digital Public Services

Europe: The online availability of public services has been growing steadily over the last decade, accelerated by the COVID-19 pandemic, however the progress is uneven across and within Member States.

India: Sustained efforts have been made at multiple levels to improve the delivery of public services and simplify the process of accessing them. E-governance in India has steadily evolved from computerization of government departments to initiatives that encapsulate the finer points of governance, such as citizen centricity, service orientation and transparency. However, the progress is uneven across Indian States.

b. Sub-Dimension: Funding and Procurement

Europe: Recovery and Resilience Facility (RRF), entered into force in February 2021, with total Available RRF funds of EUR 723.8 Bn (in loans and grants) has twin key transitions: "green transition (climate neutrality)" and "digital transition". Within digital transformation, RRF supports reforms and investments aiming to promote the roll-out of

very high capacity networks, the digitalisation of public services and government processes, the digitalisation of businesses, in particular SMEs, the development of basic and advanced digital skills as well as measures supporting digital-related R&D and the deployment of advanced technologies.

India: The Ministry of Electronics and Information Technology (MeitY), Government of India's outlay for Digital India programme in the Budget for 2022-23 jumped 67.13 per cent. Around INR 10,676.18 crores has been allocated this year for the programme, up from INR 6,388 crores last year. It is interesting to note that an initial sum of INR 2510 crore was allocated to the Digital India Programme and allied efforts as part of the 2015-16 budget, when this Programme was launched in 2015.

c. Sub-Dimension: Leadership and Coordination

Europe: At the pan-Europe level, EU play a key role by formulating Declarations and Strategies and providing major share of Funding; while respective Member States develop their own Digital Strategies. The national governments provide the leadership and coordination in the individual Member countries.

India: The Central government provide the leadership and coordination at the Federal level, while the State government leads, implement and supplement the efforts of the Central governments with their respective policy thrusts and incentives within the State.

d. Sub-Dimension: Monitoring

Europe: Europe has a well established annual monitoring framework in the form of DESI (Digital Economy and Society Index), which summarises indicators on Europe's digital performance and tracks the progress of EU countries.

India: India does not a specific digitalisation monitoring system, though the India Innovation Index (released every year by NITI Aayog) measures Indian States against some of the digitalisation indictors such as digital infrastructure and human resource. Similarly, Reserve Bank

of India (RBI) comes out with Digital Payments Index every year to capture the extent of digitalisation of payments across the country.

e. **Sub-Dimension:** Capabilities

Europe: Capabilities to lead digitalisation in the Europe rest mainly with the national governments and its level of preparedness.

India: The Central government along with various State governments are constantly striving to increase its capabilities to promote digitalisation across the sectors.

Dimension: Infrastructure

a. Sub-Dimension: Connectivity Infrastructure

Europe: Despite progress over the last years, broadband coverage remains uneven between rural and urban areas across many European countries. The Digital Decade defines two targets in the area of broadband connectivity for 2030 viz. gigabit coverage for all households and 5G in all populated areas. Around EUR 16 billion RRF reforms and investments have already been approved to roll out digital connectivity networks in the next four years, especially in rural regions. Moreover, the EU is also planning to leverage connectivity investments through the new Cohesion Funds, the EAFRD, InvestEU and EIB loans, and, through CEF Digital. CEF Digital, a programme directly managed by the Commission through its HADEA Agency, will grant EUR 2 billion over 7 years for high-performance connectivity infrastructures, with the aim of leveraging between EUR 3 and 6 billion targeted investments in line with the 2030 digital connectivity targets.

India: One of the key areas on which the vision of Digital India is centred is "digital infrastructure as a utility to every citizen". A key component under this vision is high speed internet as a core utility to facilitate online delivery of various services. It is planned to set up enabling infrastructure for digital identity, financial inclusion and ensure easy availability of common services centres. The emphasis is on providing high speed internet connectivity across the length and

breadth of the country by deploying ICT infrastructure, optical fibre, and last-mile connectivity options offered by wireless technologies in a manner that is affordable, reliable and competitive.

b. Sub-Dimension: Innovation Ecosystem

Europe: The Digital Europe Programme, launched in 2021, is strategic in supporting the digital transformation of the EU industrial and innovation ecosystems. It is intended to reinforce EU critical digital capacities by focusing on the key areas of artificial intelligence (AI), cyber security, advanced computing, data infrastructures, data governance and processing, the deployment of these technologies and their best use for critical sectors like energy climate change and environment, manufacturing, agriculture and health. As part of this, European Digital Innovation Hubs (EDIHs) are being established as one-stop shops supporting companies to respond to digital challenges and become more competitive.

India: The Digital India programme of the government has emerged as a very good platform for people to display their talent and share ideas on spectrum of topics. Rise of digital tech-based Start-ups is a great testimony. The digital revolution is kicking in innovations for the bottom of pyramid segment for effective and sustainable growth. More and more innovations are expected in the sectors like education, agriculture, healthcare and environment in the coming years to solve the challenges faced by the rural masses.

Dimension: Regulation

a. Sub-Dimension: Data Standards and Protection

Europe: The General Data Protection Regulation (GDPR), the Data Protection Law Enforcement Directive and other rules concerning the protection of personal data are prevalent in the Europe. EU's Digital Strategy 2020 states the aim of making Europe a global leader by developing digital standards.

India: The government is soon going to come out with a comprehensive data protection framework. The Digital Personal Data Protection Bill is expected to be passed between July and September this year. In addition, the draft Digital India Bill, which will replace the Information Technology Act, 2000, is also likely to be ready by July. The proposed Digital India Act envisages to act as catalysts for Indian economy by enabling more innovation, more start-ups, and at the same time protecting the citizens of India in terms of safety, trust, and accountability. The Meta Data and Data Standards (MDDS) are developed following the guidelines set by the Ministry of Electronics and Information Technology.

b. Sub-Dimension: E-Commerce

Europe: The European Commission has adopted a proposal for a Digital Services Act (DSA). Together with a Digital Markets Act, this proposal will create a safer and more open digital space for all users and ensure a level playing field for businesses. The EU has made it easier and safer for European consumers to shop online no matter where they are in the EU. To reach the full potential of e-Commerce, the EU has worked on the revised Payment Services Directive and new rules on cross-border parcel delivery services that are already in force. eIDAS (Regulation on Electronic Identification and Trust Services for Electronic Transactions) has been launched.

India: The FDI Policy on e-commerce, first pronounced through Press Note 2 of 2000, permitted 100 per cent FDI in B2B e-commerce activities. B2C e-commerce, that is multi-brand retail through inventory based model, has all along remained prohibited for FDI. A draft e-Commerce Policy was prepared in 2019, but could not see the day of light due to prolonged consultations. The government is going to propose a revised E-commerce policy soon after it stabilise its recently launched e-commerce initiative ONDC (Open Network for Digital Commerce) and address the data privacy concerns. In the meantime, government has released the Consumer Protection (E-Commerce) Rules 2020.

c. Sub-Dimension: Fair Market Competition

Europe: The Digital Single Market constitutes one of the key priorities of the European Commission (EC) through which it seeks to improve access to cross-border e-commerce for consumers and businesses throughout the European Union. To achieve its ambitions, the EC has intensified the enforcement of competition law with regard to restrictive practices related to online sales. The EU Digital Markets Act (DMA) came into force in October 2022. The new Regulation is expected to put an end to unfair practices by companies that act as gatekeepers in the online platform economy.

India: The proposed amendments to the Consumer Protection (E-Commerce) Rules 2020 also include provisions to promote free and fair competition, by placing prohibitions on abuse of dominance, unfair. These issues fall squarely within the mandate of the Competition Commission of India (CCI) established under the Competition Act, 2002.

d. Sub-Dimension: Cybersecurity

Europe: Regulation (EC) No 460/2004 of the European Parliament and of the Council (6) established ENISA (European Union Agency for Cybersecurity) with the purposes of contributing to the goals of ensuring a high and effective level of network and information security within the Union, and developing a culture of network and information security for the benefit of citizens, consumers, enterprises and public administrations. In 2013, the Cybersecurity Strategy of the European Union was adopted to guide the Union's policy response to cyber threats and risks.

India: The Information Technology Act (2000) contains provisions for the protection of electronic data. The IT Act penalises 'cyber contraventions' (Section 43(a)–(h)), which attract civil prosecution, and 'cyber offences' (Sections 63–74), which attract criminal action.

e. Sub-Dimension: Ethical Standards

Europe: In 2019, a High Level Expert Group on Artificial Intelligence submitted a report on Ethical Guidelines for Trustworthy AI.

India: In 2021, NITI Aayog came out with an Approach Document titled 'Responsible AI: #AIFORALL", which explored ethical considerations related to AI.

Dimension: Business

a. Sub-Dimension: Start-Up Environment

Europe: Digital start-ups in the central, eastern and south-eastern Europe (CESEE) region face an investment gap compared to innovators in other European regions. To address this gap in a geographically targeted way the digital innovation and scale-up initiative (DISC) was launched in 2019 by the European Commission in cooperation with several other international institutions.

India: The Indian start-up ecosystem is booming owing to monetary and non-monetary support from the Government's Start-up India and Digital India Initiatives and the availability of skilled Information Technology (IT) personnel.

b. Sub-Dimension: Impact Commitments

Europe: The Digital Decade has listed target goals for measuring the impact of digitalisation in terms of increased uptake across businesses.

India: There are no such committed goals to measure impact but the endeavour is to promote greater digitalisation across firms.

c. Sub-Dimension: Financing Incentive

Europe: The Digital Europe Programme (DIGITAL), a new EU funding programme focused on bringing digital technology to businesses, citizens and public administrations. Various funding schemes have been launched to promote SMEs digitalisation.

India: Within the ambit of Digital India, various schemes have been

launched to digitally transform services for improving ease of doing business with Start-Up funds and Funds-of-Funds.

d. Sub-Dimension: Technology Adoption

Europe: EU and Member States are encouraging the adoption of digital technologies by the firms. Currently SMEs are lagging behind in digital technology adoption.

India: Government of India is encouraging the adoption of digital technologies by the firms. Currently MSMEs are lagging behind in digital technology adoption.

Dimension: People

a. Sub-Dimension: Digital Literacy Skills

Europe: EU and Member States are giving priority to the enhancement of digital literacy skills to the citizens by launching various teaching and training initiatives at the levels of schools, colleges and firms.

India: Central and State governments are giving priority to the enhancement of digital literacy skills to the citizens by launching various teaching and training initiatives at the levels of schools, colleges and firms.

b. Sub-Dimension: Culture

Europe: The uptake of digital way of living varies across sections and countries. Some countries are quite forthcoming and comfortable while some are still having hesitations.

India: The uptake of digital way of living is progressing but given the population, it will take some time to be widely integrated.

c. Sub-Dimension: Digital Well-being

Europe: EU has recently come out with the European Declaration on Digital Rights and Principles for the Digital Decade. The Digital Compass has introduced the noble idea of Digital Citizenship to promote digital well-being.

India: Not much discussion is currently happening on this aspect at the policy level.

d. Sub-Dimension: Usage and Ownership

Europe: There are trust issues regarding digital technologies in some Member States.

India: The rising adoption of digital technologies by various sections of society reflects growing trust on digital technologies.

Based on the analysis, it can be observed that there are efforts by the governments both in the Europe and India to promote digitalisation across sectors and sections of societies by means of providing policy directions and funding support to build human capital, digital infrastructure, enabling ecosystem, regulatory architecture as well as by ensuring fair competitive environment, public trust with strong data protection regimes and ethical standards. These all means and ways would go a long way in fostering inclusive digitalisation in both these regions. There is also much scope for cooperation between the Europe and India in sharing and learning from each other on various aspects of digitalisation. The EU-India Connectivity Partnership Agreement signed in 2021 aims to promote jointly a transparent, viable, inclusive, sustainable, comprehensive, and rules-based approach to connectivity; with digital connectivity as one of the core connectivity pillars.

Endnotes

[1]   Digital India: vision and areas. https://www.digitalindia.gov.in/content/vision-and-vision-areas

[2]   Economic Times. 2022. Aadhaar driving Digital India programme. https://government.economictimes.indiatimes.com/news/digital-india/aadhaar-driving-digital-india-programme-has-plugged-over-rs-2l-cr-subsidy-leakage-amitabh-kant/91960809

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