

# Competencies necessary for eGovernment

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### 1. Introduction

In the current digital economy public administrations need to continuously develop and improve their communication channels, services and work processes using digital technology. This leads to the development of eGovernment infrastructure and services for citizens, businesses and public administrations, such as: electronic identification, digital signature, digital public services (e.g. online payments, “one-stop-shops”, public procurement, access to healthcare), interconnected databases, the implementation of “once-only” principle in data collection, shared services for public administration (for support functions: accounting, human resource management, procurement, etc.).

The very implementation of European Union (EU) policies regarding taxation and customs union, home affairs, the single market, transport, health and food safety, consumer protection, environment, etc. rely on cross-border information networks and services (European Commission 2018a). Certain eGovernment services are required by EU regulations<sup>1</sup>.

At the European level there are various strategies, declarations and initiatives regarding the promotion of eGovernment services and digital skills for European citizens such as *A Digital Single Market Strategy for Europe*, the *EU eGovernment Action Plan 2016-2020*, the *European Interoperability Framework*, *Tallinn Declaration on eGovernment*, the Communications from the European Commission on Artificial Intelligence<sup>2</sup> for Europe and *A New Skills Agenda for Europe*, as well as European Commission’s *Digital Skills Initiatives*.

In these strategic documents the emphasis is on streamlining the eGovernment transformations in Europe along agreed principles and towards common targets. The progress is monitored through annual *Digital Economy and Society Index (DESI) Reports* and *eGovernment Benchmark Reports*. Indicators focus primarily on connectivity, use of electronic services, user centricity, transparency, cross-border mobility, technical aspects of human capital, etc. However, the range and quality of digital public services varies greatly in Europe, as demonstrated by the *DESI Reports*. What explains the discrepancies?

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<sup>1</sup> e.g. The Directive 2006/123/EC on services on the internal market requires “points of single contact” in order to simplify administrative procedures, including digital access to such procedures.

<sup>2</sup> European Commission (2019a) According to the Communication from the European Commission on *Artificial Intelligence for Europe* (COM(2018) 237) “Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions - with some degree of autonomy - to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)” (European Commission 2018b: 1).

This report provides insights from a human resource management perspective regarding digital transformations in the public administrations, and argues for a change of focus in the understanding of the factors that influence the development of digital public services / eGovernment, from technology to the people employing the technology and their competencies<sup>3</sup> (skills, attitudes, knowledge) and vision of the future. The report addresses the following questions:

1. How do European governments approach the development of eGovernment services at strategic level?
2. What competencies are necessary at strategic and operational levels to develop and provide quality eGovernment services?
3. How do public administrations attract, develop and retain people with suitable competencies for eGovernment services?
4. What challenges are anticipated for eGovernment services from a human resource management perspective?

These issues are important for the public administrations and their clients (citizens and the business sector), from European countries and beyond, especially for planning and analysing workforce and workplace transformation in the context of digitalization, as well as for devising policies and practical measures to address the disparities regarding the quality of eGovernment services across European countries, at national and transnational levels.

**This report is relevant for:**

- government / public administration officials (policy-makers, promoters of eGovernment services);
- human resource management specialists from the public and private sectors;
- students, researchers and other citizens interested in the situation and challenges of eGovernment services in Europe.

### **Methodology:**

This report is elaborated for the European Public Administration Network (EUPAN) and is based on the survey on “Competencies necessary for e-government” carried out during the Romanian Presidency of the Council of the European Union, and online data provided by respondents (through links), as well as an exploration of recent studies regarding eGovernment and workforce transformation in the context of digitalization, in the public and private sectors. The preliminary results of the survey on “Competencies necessary for e-government” provided an input for the EUPAN Strategy Paper July 2019 - June 2022, which includes “Digitalization and innovation in European public administrations” as strategic domain<sup>4</sup>.

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<sup>3</sup> In this report competencies are defined as “the skills, knowledge and behaviours that lead to successful performance” (Civil Service Human Resources UK 2012: 1).

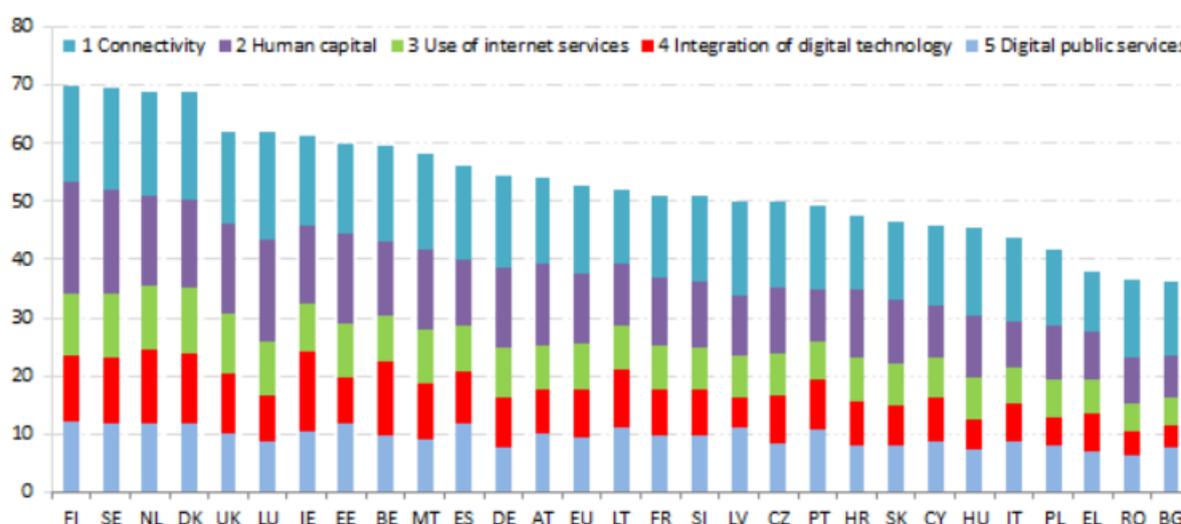
<sup>4</sup> EUPAN Strategy Paper July 2019 - June 2022 refers to the preliminary results of the survey presented at the the EUPAN Working Level meeting on 8-9 April 2019, Focsani, Romania.

According to the *Report regarding the EUPAN's main results in the period of the Strategy Paper July 2016 - June 2019*, the EUPAN network endorses experience exchange and research regarding eGovernment topics such as: “one-stop-shops” for public services, the “once-only” principle in data collection, shared services, innovation, competencies for public administration, process optimization, new ways of working, open government, training for managers / leaders.

The survey, based on the questionnaire included in the [Annex 1](#), was distributed in the EUPAN network and gathered responses, between February and May 2019, from 24 representatives in EUPAN, experts from eGovernment or human resource management departments of the central public administrations from: Belgium (BE), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Ireland (IE), Italy (IT), Latvia (LV), Malta (MT), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), and from the European Commission (EC).

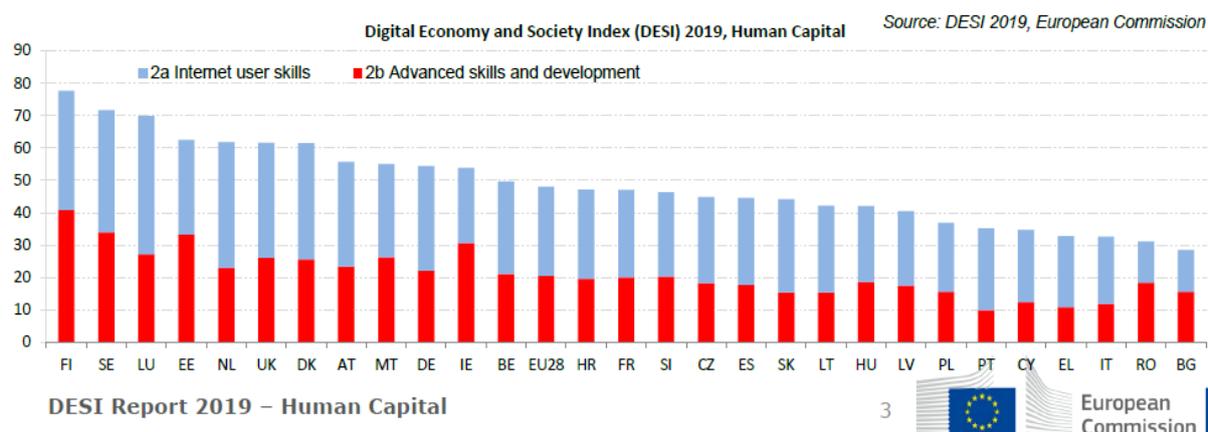
The questionnaire included multi-choice and open questions. The multi-choice questions provided insights regarding general trends and main approaches. The open questions gathered [digital resources regarding eGovernment institutions, strategies and competency models, included in Annex 2](#), and examples which were a source for the illustrations included in this report, mainly from the countries which are top performers regarding eGovernment services according to *DESI Report 2019*. The two figures below show the variation of eGovernment services and digital skills across the EU member states.

Figure 1 Digital Economy and Society Index (DESI) Report 2019 - overview



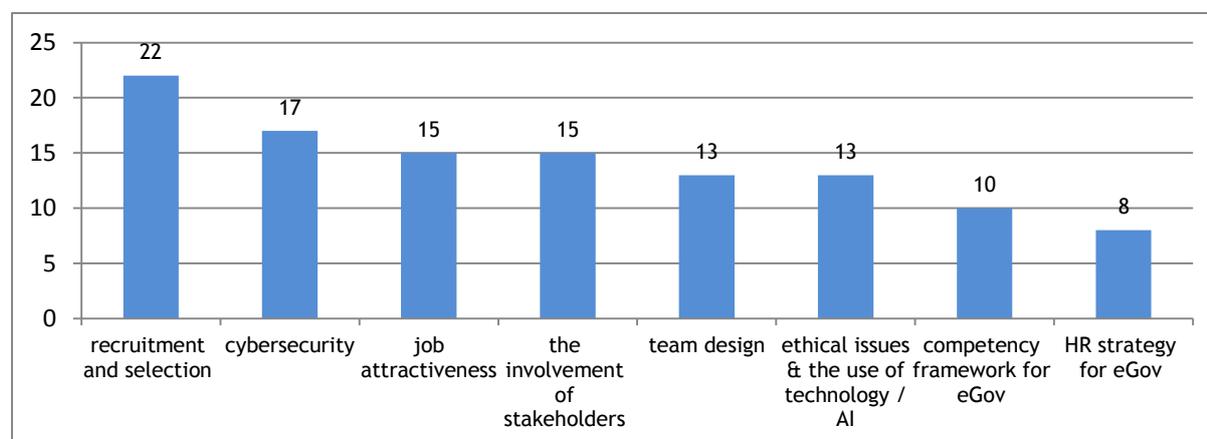
(source: DESI Report 2019)

Figure 2 DESI Report 2019 - Human Capital



The structure of the report is shaped by the research questions and also by the topics emphasized as challenges for eGovernment services in the survey (figure below), from a human resource management perspective: competency frameworks for the recruitment, selection and training of personnel for digital services, job attractiveness, team design, and related issues regarding the use of artificial intelligence (AI).

Figure 3 Challenges regarding eGovernment services (survey)



The following sections focus on: strategic approaches for eGovernment, competencies required for effective eGovernment services, approaches to attract and retain personnel and the role of training for eGovernment services.

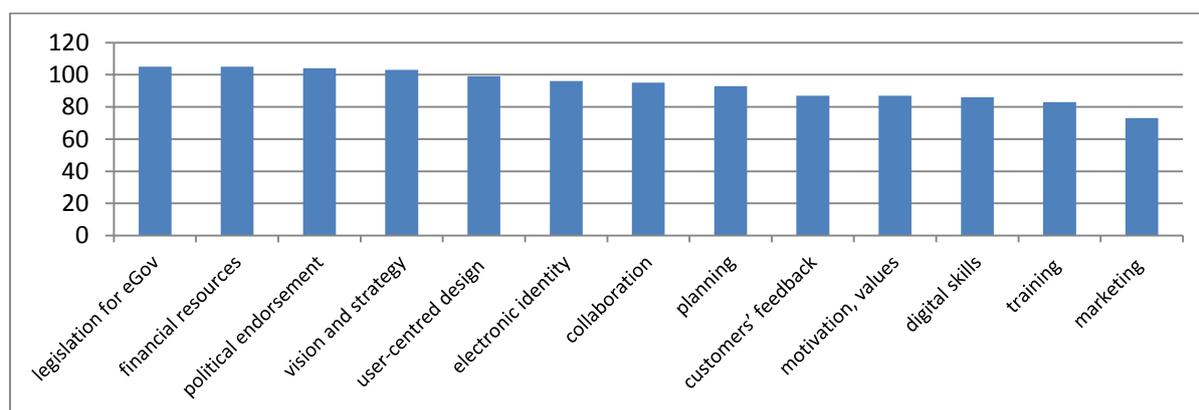
## 2. Strategic approaches for eGovernment

The survey shows a common strategic ground among European countries regarding the promotion of eGovernment services, facilitated by the European Union (EU) strategic documents: 23 respondent countries have digital / eGovernment strategies, 21 countries have institutions responsible for overseeing the

digitalization process in the public administration. Annex 2 provides an inventory of online resources regarding eGovernment institutions, strategies and competency models / frameworks (if available) in European countries, based on survey responses and additional online documentation, including references to *Digital Government Factsheets 2019* (NIFO 2019). These strategies include vision and goals for digital solutions in public administrations (regarding quality, security, trustworthiness, accessibility, contribution to productivity and growth), provisions regarding their adaptation and implementation, the development of digital skills for citizens and public administration employees, monitoring tools.

The survey highlights the following factors considered important for developing eGovernment services: legislation, financial resources, political endorsement, vision and strategy, followed by user-centred design, the implementation of electronic identity for citizens, collaboration between government agencies, planning, customers' feedback, digital skills, training and marketing.

Figure 4 Factors important for developing eGovernment services (survey)



(source: survey)

In the survey, legislation was indicated as highly important, on a par with financial resources, for enabling digital services. “Digital-ready legislation” refers to legislation that is drafted in a way that is easily understandable, manageable and enables digital administration (Agency for Digitisation Denmark 2019a). For example, in Denmark digital-ready legislation has to comply with the principles detailed in the figure below:

Figure 5 Principles of digital-ready legislation in Denmark

Principles of digital-ready legislation (Agency for Digitisation Denmark 2019b)	
Simple and clear rules	Legislation should be simple and clear so that it is easier to manage and contribute to a more uniform administration and digital support.
Digital communication	The legislation must support digital communication with citizens and businesses.
Enables automatic case processing	The legislation must support full or partial digital

## Competencies necessary for eGovernment

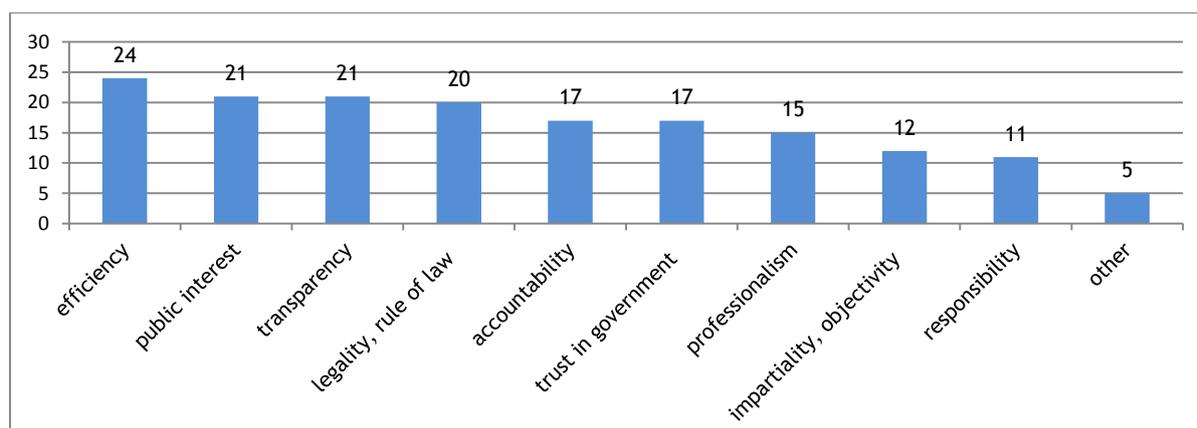
	administration, taking into account the legal security of citizens and businesses.
Uniform concepts and data reuse	Data and concepts need to be reused across authorities to create better coherence.
Safe and secure data processing	Priority should be given to data security and the focus should be on secure data management, including the protection of personal data.
Use of public infrastructure	Legislation must take into account the possibility of using existing public IT infrastructure.
Prevents cheating and mistakes	Legislation must be designed to allow efficient IT use for control purposes.

(source: <https://digst.dk/afbureaukratisering/digitaliseringsklar-lovgivning/veiledninger-og-vaerktoejer/> 25.10.2019)

The main challenge, from a human resource management perspective, is how to devise digital-ready legislation, how interdisciplinary teams are designed to bring together competencies regarding technical aspects and legal drafting. For example, the Digitization-Ready Legislation Secretariat in Denmark established a cross-ministerial professional group for legal drafting, in order to facilitate experience exchange between ministries' law offices, “with a particular focus on how the work on making the legislation ready for digitization” (Agency for Digitisation Denmark 2019c).

According to the survey, the implementation of eGovernment services is associated with the following values: efficiency, public interest, transparency, rule of law, accountability, trust in government / public administration, professionalism, objectivity, responsibility. Other values enlisted by the respondents are: productivity, public participation, co-creation, user-centricity, accessibility, simplicity.

Figure 6 eGovernment and public values (survey)



(source: survey)

These values are at the core of strategic documents regarding digitalization in the public administrations, as shown in the following examples<sup>5</sup>.

<sup>5</sup> With author's highlights in the quotations.

Finland's digitalization approach included in the *Strategic Programme of the Finnish Government (Finland, a land of solutions)*, endorses the following vision: "Public services will be digitalised with the help of new operating methods, will become **user-oriented and primarily digital to enable the leap in productivity** necessary for the general government finances. In the development process, priority will be given to services where productivity gains are highest. Digitalisation will be a cross-cutting theme in the government strategy. Principles for the digitalisation of all public services will be established. Internal administrative processes will be digitalised and old processes dismantled. (...) Help will be given to people who are not used to or are unable to use digital services. The organisation of digitalisation-related change management will be strengthened within the Government" (Finnish Government 2015: 25).

The Danish *Digital Strategy 2016-2020* (Agency for Digitisation Denmark 2016) stresses that "the public sector must offer high-quality digital services and digital welfare solutions. **Digitisation should make life easier, make it easier for people to help themselves, and improve the quality of public services.** (...) Digitisation will make it easier to run a business and will contribute to the Government's goal to reduce the administrative burden on the business community" (Agency for Digitisation Denmark 2016: 14).

In Estonia, the portal *e-estonia.com* conveys the values of eGovernment services such as efficiency and user-centricity: "eGovernance is a strategic choice for Estonia to **improve the competitiveness of the state and increase the well-being of its people, while implementing hassle free governance.** Citizens can select e-solutions from among a range of public services at a time and place convenient to them, as 99% of public services are now available to citizens as e-services. In most cases there is no need to physically attend the agency providing the service. The efficiency of eGovernment is most clearly expressed in terms of the working time ordinary people and officials save, which would otherwise be spent on bureaucracy and document handling".

Ireland's *Public Service ICT Strategy* states that "**adoption and facilitation of digital technologies will increase productivity, improve the relationship between citizens, businesses and government and will deliver social and economic benefits** for Ireland. Integrated services and increased data sharing will drive significant efficiencies; will facilitate insight driven decision making; will increase openness and transparency between Government and the public; and will provide a much higher user experience and quality of service for citizens, businesses and public servants" (Department of Public Expenditure and Reform Ireland 2015).

The document *European Commission Digital Strategy: A digitally transformed, user-focused and data-driven Commission* underlines the following vision: "By 2022, the Commission will be a **digitally transformed, user-focused and data-driven administration** – a truly digital Commission. It will be endowed with a new

generation of trusted and personalised digital solutions supporting its digitalised policies, activities and administrative processes. These solutions will increase the Commission’s **efficiency, effectiveness, transparency and security** and will deliver EU-wide, borderless, digital public services that are indispensable for the functioning of the European Union. (...) The successful implementation of this vision will deliver a set of digital solutions that: (i) support the Commission’s political priorities and activities in an ‘open, efficient and inclusive’ manner, and (ii) provide ‘borderless, interoperable, personalised, user-friendly, end-to-end digital public services’ (European Commission 2018a: 3-4).

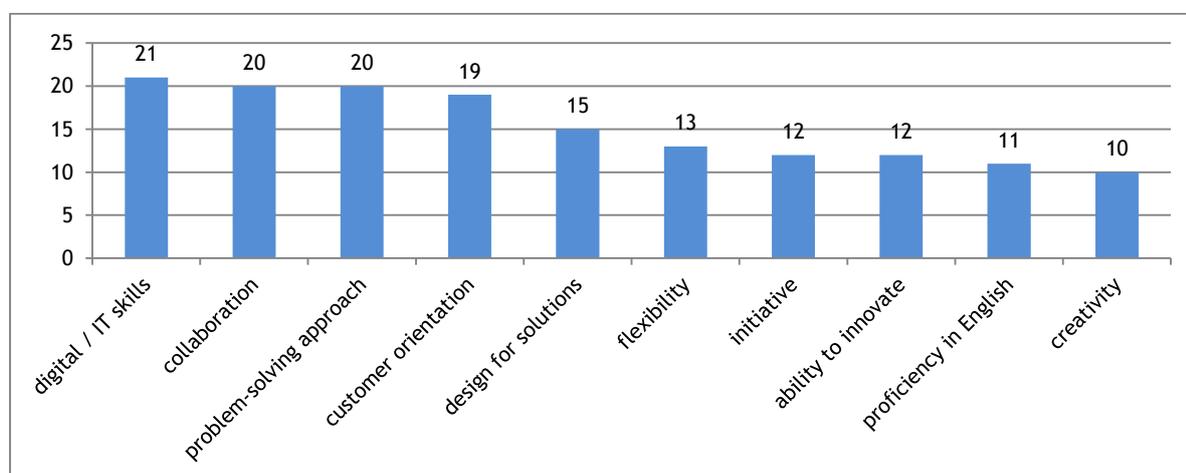
The survey shows that countries which score high in eGovernment statistics (e.g. DESI Report 2019) have “digital-ready” legislation, clear political vision and strategy regarding the role of public administration digitalization for citizens and the economy, and a focus on specific values: **productivity, user-centricity, efficiency, openness and transparency**. The other factors considered important for eGovernment in the survey, digital competencies and training, are tackled in the next sections.

### 3. Competencies required for eGovernment services

The main aim of the survey was to highlight the configurations of competencies necessary at strategic and operational levels for providing quality eGovernment services as well as frameworks / models of competencies employed for personnel recruitment, selection and training.

The survey shows that there are similar competencies required for employees working in eGovernment services: **digital/IT, collaboration, problem-solving approach, customer orientation, design for solutions, flexibility, initiative, ability to innovate**. The figure below illustrates the emphasis placed on each of these competencies among the respondents.

Figure 7 Competencies required for employees of eGovernment services (survey)



(source: survey)

The focus on skills development for citizens is a European-wide priority, reflected in *A New Skills Agenda for Europe* (COM(2016) 381), *European Commission Digital Strategy*, *the Digital Skills and Jobs Coalition*, *European Commission Digital Skills Initiatives*, *the European Digital Competence Framework for Citizens*, which includes 21 digital competencies. Some public administrations implement the European E-Competence Framework (e-CF) for information technology (IT) professionals (CEPIS 2019). However, eGovernment services require competencies additional to the E-Competence Framework.

### Competency models / frameworks for digital public services

The configurations of digital competencies required in the public administrations surveyed vary from one country to another. For example, in Portugal, the following competencies are required for employees of eGovernment services:

Figure 8 Competencies required for employees of eGovernment services in Portugal

Competency Category	Specific Competencies
Government Competencies	Administrative Law, Policy Process
Change Competencies	Strategy and Planning, Change Management, Project Management, Risk Management
Design Competencies	Organizational Design, Process Design, Information Systems (IS) Design
IT Competencies	IT Skills, User Service, ICT Vision Abilities, IS Privacy and Security
Social Competencies	Cooperation, Leadership, Communication and Coordination
Personal Competencies	Self-Management, Creativity

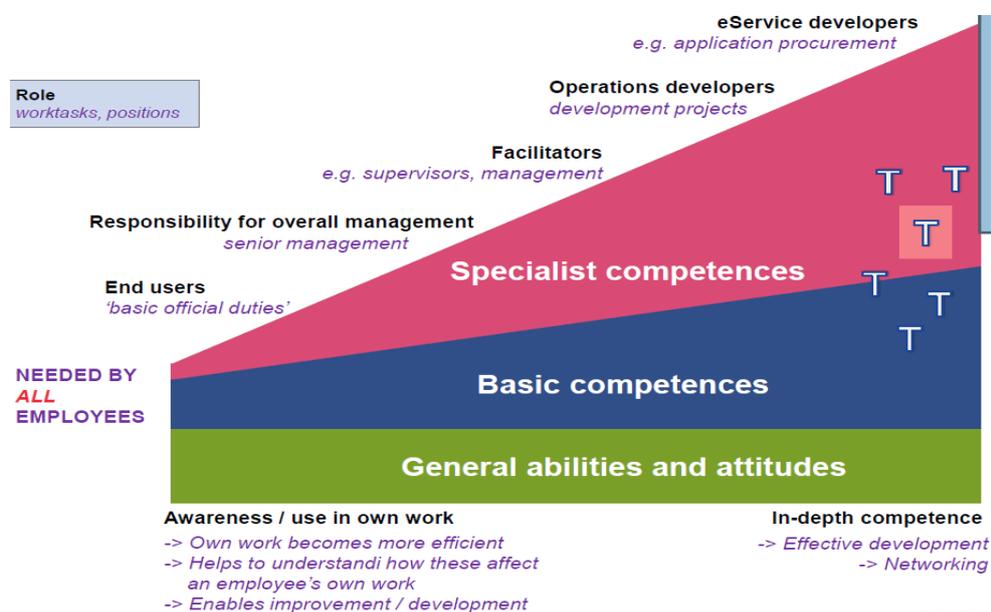
(source: questionnaire response, Portugal)

In France the *Répertoire Interministériel des Métiers de l'Etat*/ “Interministerial directory of state professions” (2017) identifies the jobs demanding digital, information and communication technology (ICT) competencies and the required knowledge, know-how and know-how-to-be competencies. The document *Référentiel des métiers et compétences des Systèmes d'information et de communication (2016)* / “Inventory of professions and competencies for the Information and communication systems” contains references to 44 professions in this domain and corresponding competencies (know-how and know-how-to-be competencies), with emphasis on technical skills.

In Finland, a survey on competencies required by digitalization in the Finnish government was conducted in 2016. On the basis of this survey a competence model was developed in the Ministry of Finance, entitled *Competence required by digitalization - The way the Finnish government looks at it* (Ministry of Finance

Finland 2016)<sup>6</sup>, to help government agencies and provide an overarching perspective regarding this issue.

Figure 9 Model of competence required by digitalization - Finland



(source: Presentation “Competence required by digitalization - The way the Finnish government looks at it”)

The model includes basic and specialist competencies described in the figure below. The range of basic digital skills required varies according to workplace digitalization in public administrations.

Figure 10 Basic and specialist competencies - Finnish digitalization competence model

### Basic competencies

- Use of digital services and tools in one’s work, such as the agency’s case processing system, personal email and smartphone, videoconferencing, Skype for Business, social media, online shop services (e.g. police permit services), Government publishing service, certain cloud services, survey applications, scheduling application, shared HR system, agency specific tools and services;
- Understanding of how digitalization affects customers, operations and own job duties: customers’ expectations and needs, legislation, basic knowledge of information security;
- Networking and promotion of collaboration.

### Specialist competencies

- Improving the customer experience;
- Data and analysis competence;
- Risk management;
- Digital-era procedures and operating logic;
- Process competence (e.g. Lean);
- Development methods;
- Digital communication competence;
- Partnership management;
- Overall management and change management.

(source: Presentation “Competence required by digitalization - The way the Finnish government looks at it”)

<sup>6</sup> Competence model available online at <https://www.innokyla.fi/documents/3575377/8c10fdf2-4be1-4c89-9dcd-5c18cb48e303> This competence model was presented by Marjaana Laine at the EUPAN Working Level meeting on 8-9 April 2019, Focsani, Romania.

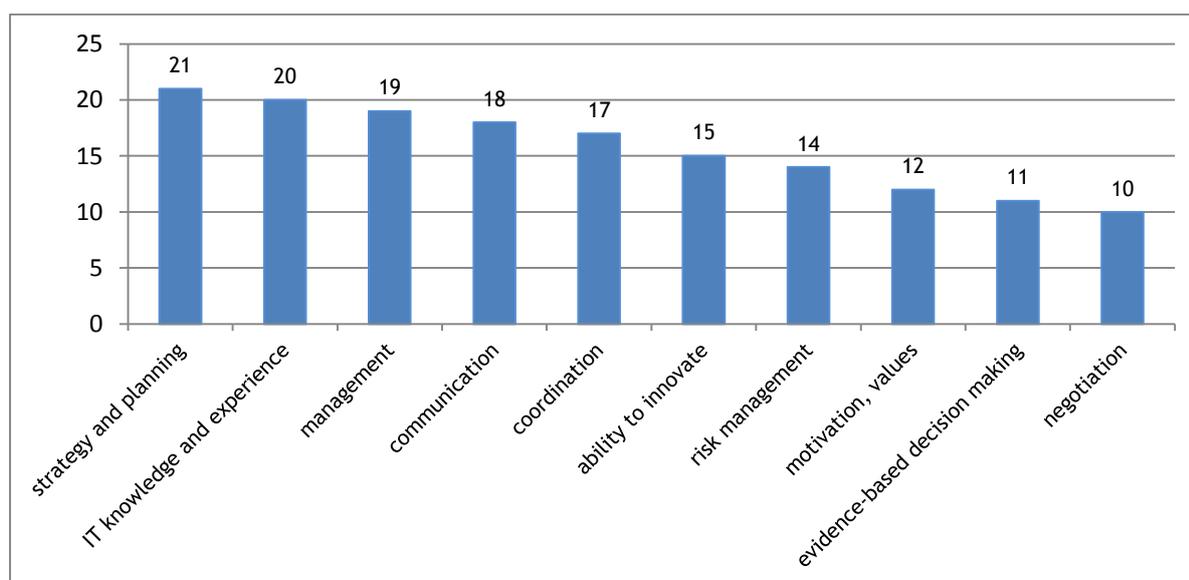
In Denmark the Digitization Board published in October 2019 the *Model for digital competencies in the state*, consisting of 4 areas of competence, 12 subcategories and 32 underlying competencies, based on a survey and consultation with more than 35 state authorities. The model provides an overview of the digital competencies necessary in state authorities in order to succeed in their core tasks (Agency for Digitisation Denmark 2019d). The four areas of competence are: *Strategy and business development, Projects and development, Governance and cooperation, Data and security*. For the latter, the main competencies are: *cybersecurity and information security, data usage, computer ethics and management* (Agency for Digitisation Denmark 2019e).

### Competencies for managers of eGovernment services

In the survey, the following competencies were considered important for managers of eGovernment services: strategy and planning, IT knowledge and experience, management, communication, coordination, ability to innovate, risk management, motivation, values, evidence-based decision making, negotiation (the figure below).

There is a shared perspective, in countries with different eGovernment performance (e.g. Finland, Norway, Netherlands, Italy) that leaders of digital public services need to have a “digital culture”, i.e. a broad knowledge of the possibilities of using information and communication technologies in the public administration, to inform their vision and strategy for digitalization.

Figure 11 Competencies considered important for managers of eGovernment services (survey)



(source: survey)

According to the Finnish competence model, the following aspects are detailed for “overall management and change management” for digitalization: “understanding

and taking into account the speed and importance of digitalization developments in overall management, ensuring the effectiveness of digitalization (project prioritization, resourcing, management, facilitating cooperation both within own organization and across organization boundaries, reward scheme for operations development” (Ministry of Finance Finland 2016).

In Italy there is a comprehensive model for “e-leadership” in public administration (Digital Transformation Team 2019), briefly summarised in the figure below.

Figure 12 Competency framework for e-leadership in Italy

“**Components of e-leadership** (not necessarily within a single individual but also distributed among a team) - 5 areas of competence:  
**Digital knowledge:** culture and knowledge of the digital world and ICT systems;  
**Soft skills:** skills (these are individual) of relationship and communication;  
**Organizational leadership:** organizational skills and change management;  
**Context PA:** management skills in the context of public administration (in particular the ability to identify trends and understand what the possible applications will be);  
**Digital PA:** knowledge of digital processes of public administration”.

Details regarding the area of competence **Digital knowledge:**  
**“Digital as an innovation factor:** the e-leader is aware of the potential of digital as a lever to innovate and optimize processes and services, but is not necessarily an IT specialist.  
**Digital innovation projects:** know the main processes, methodologies and tools that characterize the development and management of digital innovation projects and the possible sources of financing.  
**IT security:** is aware of the relevance of security in organizations and the associated risks. He knows which are the main organizational and technological tools for security management.  
**The world of applications:** it knows what are the types of applications and application services both traditional and based on the network and mobile devices, oriented to organizations and social networks.  
**The world of data:** it is aware of the value of data, information and knowledge in organizations and knows which are the main technologies for their management and sharing”.

(source: [https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze\\_e-leadership/mappatura-valorizzazione.html#descrizione-delle-cinque-aree-di-competenza](https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze_e-leadership/mappatura-valorizzazione.html#descrizione-delle-cinque-aree-di-competenza) )

The figure below shows the Italian competency model for leaders of digital services in the public administration (Digital Transformation Team 2019).

Figure 13 Italian competency model for leaders of digital processes in the public administration

Skills for e-leadership regarding digital processes in the public administration	Skills related to e-CF 3.0 <sup>7</sup>
<b>Protecting digital citizenship:</b> Ensure compliance with the principles of digital citizenship in an inclusive and widespread manner, activating all the initiatives useful for making digital citizenship rights actually practicable (digital identity, privacy and security, access to information).	A7. Monitoring of technological trends A9. Innovation D10. Information and Knowledge Management D11. Identification of Requirements E5. Process improvement
<b>Implement e-government projects:</b> Activate innovation projects (dematerialisation, interoperability, technological infrastructures) and reorganization (process re-engineering) within your	A.2. Service Level Management A.6. Application Design A.8. Sustainable Development A9. Innovation D.9. Staff Development D12. Digital Marketing E3. Risk

<sup>7</sup> European E-Competence Framework for IT professionals.

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Skills for e-leadership regarding digital processes in the public administration	Skills related to e-CF 3.0 <sup>7</sup>
organization, improving performance and efficiency with attention to the quality and usefulness of the results (definition and implementation of a regional Digital Agenda, design and development of a Smart City, etc.)	management E5. Process improvement E8. Information Security Management E9. Governance of Information Systems
<b>Activate OpenGovernment processes:</b> Practice transparency (access to information and open data), participation (listening and consultation), collaboration and accountability using technology as an enabling factor for the relationship with citizens and for the effectiveness of internal innovation processes.	A9. Innovation D12: Digital Marketing

(source: [https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze\\_e-leadership/mappatura-valorizzazione.html#descrizione-delle-cinque-aree-di-competenza](https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze_e-leadership/mappatura-valorizzazione.html#descrizione-delle-cinque-aree-di-competenza))

### Soft skills / emotional intelligence and ethics for digital public services

In parallel with the focus on technical and management skills, there is an interest in “soft skills” / “emotional intelligence”, defined as the capacity to perceive and understand one’s and others’ emotions, master one’s behaviour (regulate one’s emotions), handle relationships (Goleman 2012, Capgemini 2019). The survey shows that soft skills like communication, collaboration, coordination, self-management, flexibility / adaptability and leadership are highly valued for staff profiles in the eGovernment services, at both operational and management or leadership levels.

Scholars point out that emotional intelligence, rational decision-making and ethical conduct are interlinked, and that lack of emotional intelligence conducts to flawed decisions and lack of consideration for other people (or worst) (Goleman 2012).

The following examples from Sweden illustrate the importance of soft skills like adaptability, collaboration, involvement (taking responsibility for work) and leadership in the workplace. In the report of the Swedish Agency for Government Employers regarding digitalisation and employer policy (Vilhelmsson 2018) it is stated that “being adaptable and able to change are expected to become increasingly important characteristics of the employee. Employees are expected to be able to take greater responsibility not only for their own work but also the development of the operations overall” (Vilhelmsson 2018: 33). In addition, it is considered that “future leadership should also be more agile - that is, flexible in its approach and responsive to the situation at hand. How the employer handles resources and what degree of flexibility the organisation has in its structure and process become significant. Leaders should be able to more quickly identify

changes that are significant for their own operations and understand what will be needed in the future” (Vilhelmsson 2018: 33).

In Sweden leadership is interlinked with “co-workership” (Kilhammar 2019, Vilhelmsson 2018). According to Kilhammar (2019) the concept refers to the participation of workers and their responsibilities, involvement in one’s work, relations with colleagues, managers and clients, as well as one’s influence in organization. For ensuring “co-workership” the leadership is generous, delegatory, with emphasis on coaching” (Kilhammar 2019).

A Harvard Business Review article (Kavanaugh and Kumar 2019) presents results of a survey of 1000 business leaders (Infosys Knowledge Institute 2019) about staffing their digitalization projects, the skill gaps and what leading companies are doing to address it. Some of the findings refer to the skills in highest demand among survey respondents, which include: teamwork (74% of respondents), leadership (70%), and communication (67%), followed by user experience and analytics (Kavanaugh and Kumar 2019). One of the respondents, working in a global company, underlined that:

“How adaptable they [employees] are might be more important than how many coding languages they know. We need people who can collaborate, admit to mistakes, and rebound quickly. We used to look solely at a candidate’s programming skills and technical competency. Now we also measure a person’s motivation, and skills such as critical thinking, creativity, and collaboration. If they score poorly on these, we pass on them” (Kavanaugh and Kumar 2019).

A recent Capgemini report entitled “Emotional intelligence - the essential skillset for the age of AI” (Capgemini 2019) surveyed 750 executives and 1500 employees, and conducted in-depth interviews with over 15 industry experts, academics, and start-up executives (Capgemini 2019: 3). According to the report, 74% of executives and 58% of non-supervisory employees believe that emotional intelligence will become a “must-have” skill, due to evolving job roles and the inability to automate certain tasks. However, currently organizations focus more on building soft skills at senior levels. It is anticipated that top benefits from developing emotional intelligence / soft skills in organizations include enhanced productivity, employee wellbeing, reduced fear of job loss, more openness to change (Capgemini 2019: 2).

A recent report on *Ethics guidelines for trustworthy AI* elaborated by the High-Level Expert Group on Artificial Intelligence set up by the European Commission outlines three components of trustworthy artificial intelligence (AI):

1. “it should be **lawful**, complying with all applicable laws and regulations;
2. it should be **ethical**, ensuring adherence to ethical principles and values; and

3. it should be **robust**, both from a technical and social perspective, since, even with good intentions, AI systems can cause unintentional harm” (High-Level Expert Group on Artificial Intelligence 2019: 5)

On the basis of this report it can be argued that the following soft skills are important for responsible implementation of artificial intelligence (AI): communication, awareness of bias, openness to discussion, stakeholder participation and different perspectives regarding the ethical implications of AI, taking responsibility, accountability, etc. (High-Level Expert Group on Artificial Intelligence 2019: 24)

### New jobs and new team configurations for eGovernment and the use of AI

One implication of digitalization is the creation of new jobs, particularly for the implementation of artificial intelligence (AI) solutions. For example, according to Fountaine et al. (2019), a new class of experts, “analytics translators”, can “bridge the data engineers and scientists from the technical realm with the people from the business [organization] realm”.

Since the competencies required for digital public services are quite diverse, as this section illustrates, it is important to switch the focus from individual competencies to team competencies. Thus, new configurations of teams are needed for digitalization projects, such as the implementation of “robotic process automation (RPA)” and AI for certain processes in the public administration (e.g. to automate repetitive tasks). In the survey, team design was highlighted as an anticipated challenge for eGovernment services.

At the European level there is a growing interest in AI, particularly regarding the prerequisites for the adoption of AI across the economy. For example, the Communication from the European Commission on *Artificial Intelligence for Europe* points out the importance of a legal framework, ethics guidelines for the development and use of AI, data sharing, investment in AI research and development, (re-)training, modernization of the education system (with a focus on interdisciplinarity) (COM(2018) 237).

The *EUPAN Strategy Paper July 2019 - June 2022* and the Finnish Presidency of the Council of the European Union (July - December 2019) endorsed initiatives regarding the use of new technologies to support innovation and improve digital services in the public administrations.

The use of “software robots” and AI in the public administration is in a pilot phase. For example, according to an article published in the *New Statesman* (Ferreira 2019), in 2017 the Department for Work and Pensions (DWP) from the United Kingdom completed a robotic process automation (RPA) project to “automate repetitive, rules-driven tasks” such as processing pension claims. The manual processing of the claims produced a backlog of 30000 claims, which would have

entailed new hires and work of many thousands hours. However, using RPA the backlog was cleared in two weeks (Ferreira 2019).

Given the experimentation phase with robotisation and AI, public administrations could learn from experiences with AI in the business sector. The following example illustrates the interdisciplinarity / complexity of skills and teams for developing AI. In the article “Building the AI-Powered Organization” Fountaine et al. 2019 argue that “AI has the biggest impact when it’s developed by **cross-functional teams with a mix of skills and perspectives**. Having business and operational people work side by side with analytics experts will ensure that initiatives address broad organizational priorities, not just isolated business issues (...). Each generally includes the manager in charge of the new AI tool’s success (the “product owner”), translators, data architects, engineers and scientists, designers, visualization specialists, and business analysts. These teams address implementation issues early and extract value faster” (Fountaine et al. 2019).

In its 2019 report on *Ethics guidelines for trustworthy AI*, the High-Level Expert Group on Artificial Intelligence set up by the European Commission emphasizes the following recommendations for human resource management in the process of AI implementation:

- to have diverse teams (in terms of professional background, skill sets, gender, culture, age) for the development of AI, with “the right mix of competences and diversity of profiles”;
- to raise awareness and provide corresponding training on the requirements of trustworthy AI (outlined in the report) to developers and others responsible for the implementation of AI solutions (High-Level Expert Group on Artificial Intelligence 2019: 25). These are general provisions and are applicable to the use of AI for eGovernment services.

This section illustrates the complexity of competencies that interdisciplinary teams for eGovernment services need to have. Although there is no general recipe for devising such teams, it is important to have diverse teams (in terms of professional background, skill sets, gender, culture, age) and to acknowledge that all configurations of competencies share several characteristics, such as emphasis on a set of basic IT skills, specialist IT skills, and soft skills (communication, self-management, collaboration, coordination, flexibility, openness to different perspectives and stakeholder participation, taking responsibility, accountability, leadership).

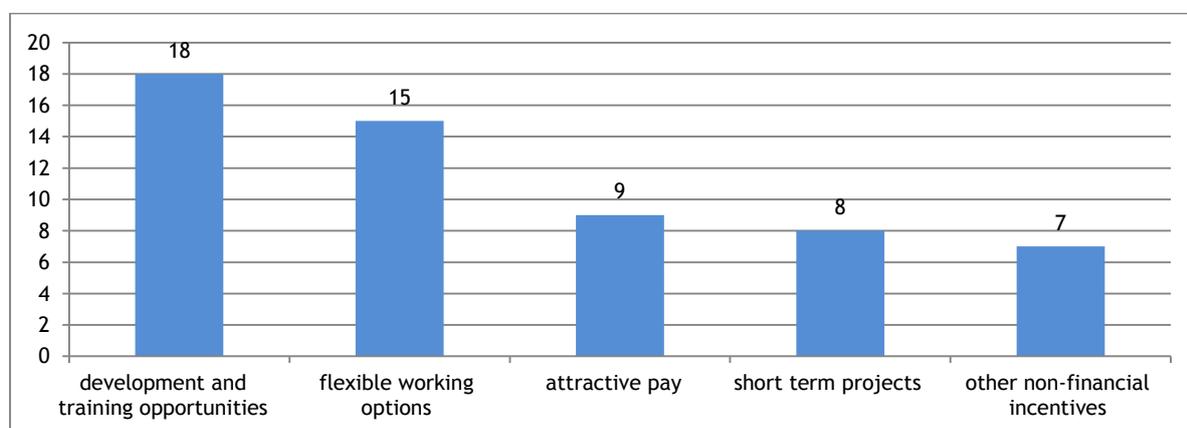
The competencies discussed in this section can constitute a blueprint for further elaboration of competency frameworks for eGovernment services, which could be a solution for the challenges anticipated by the survey respondents regarding

the recruitment, selection and training of the personnel for digital public services.

#### 4.How to attract and retain personnel for eGovernment services

According to the survey, the main measures to attract and retain people with key competencies for eGovernment services include development and training opportunities, flexible working options, attractive pay, short term project-focused contracts, other non-financial incentives. The examples provided below focus on the non-financial incentives for attracting skilled personnel. “Development and training opportunities” are tackled in the next section.

Figure 14 Measures to attract and retain people with key competencies for eGovernment (survey)



(source: survey)

Approaches to attract and retain personnel for eGovernment services include “employer branding” through job fairs, information campaigns in schools and universities using job profiles, ICT competitions / hackathons focused on solutions for social challenges, career paths, apprenticeships, internships, good working conditions (examples from Finland, France, Romania, Netherlands)<sup>8</sup>.

For example, the French Civil Service has a human resource strategy plan for key competencies of digital, Information and communication systems, with 32 actions for 2019-2022, which include the following: “develop the Employer Branding, “sourcing” of the best profiles; expand recruitment pools (apprenticeships, partnerships with engineering schools, etc.); set up specific training courses for the digital professions (master plan); support the “career paths” via specialized career mobility advisers and develop “trainees” as digital experts; speed up the mobility process; encourage the hiring of high-level digital expert contract workers

<sup>8</sup> 8 survey examples and issues discussed at the Workshop on “Competencies necessary for e-government” at the EUPAN Working Level meeting on 8-9 April 2019, Focsani, Romania.

(comparable remuneration to the private sector, career support, recruitment on permanent contracts, etc.)” (source: survey response, France).

In Finland the approach to attract and retain skilled employees in this sector include “good working conditions (e.g. professional management, telework, flexitime, high-quality software and ICT equipment, attention to work - private life balance and well-being” (source: survey response, Finland). In Ireland, Malta and at the European Commission career progression on a dedicated career path is devised to attract personnel in this domain (source: survey responses). At the European Commission the *Digital Workplace Strategy* (2017) is focused to engage employees, increase motivation and productivity through a digital workplace that improves collaboration, knowledge sharing, speed of communication, teleworking.

### Anticipated workplace and workforce changes

Attracting suitable personnel for digital public services may require comprehensive changes, including new staff profiles / job descriptions, new training packages / learning options, adjusted recruitment, specific human resource strategies for public administrations, awareness campaigns in order to facilitate changes in organizational culture, as suggested by the following examples.

The *European Commission Digital Strategy* underlines that “creating a digitally transformed and data-driven Commission requires, inter-alia, changing the mindsets of staff and their working methods (...) through training, coaching, knowledge sharing” (European Commission 2018a: 29). The following actions are planned:

- “establish new targeted training programmes for staff, IT staff and management;
- identify new staff profiles;
- adapt the Commission’s recruitment policies and the framework contracts to recruit IT specialists in new emerging technologies;
- establish a community of practice to enable personalised learning experiences;
- internal awareness-raising campaign” (European Commission 2018a: 29).

A Harvard Business Review article on “*How to Develop a Talent Pipeline for Your Digital Transformation*”, based on a survey of 1000 business leaders by Infosys Knowledge Institute, argues that companies with a robust approach for attracting personnel for digital transformation focus on: (1) potential not credentials (diplomas), (2) value soft skills as much as technical ones, (3) think about teams, not individuals, (4) incentivize employees to grow (i.e. to upgrade their skills continuously).

The next section tackles training and other learning opportunities, which are very important for attracting and retaining personnel.

## 5. The role of training for eGovernment services

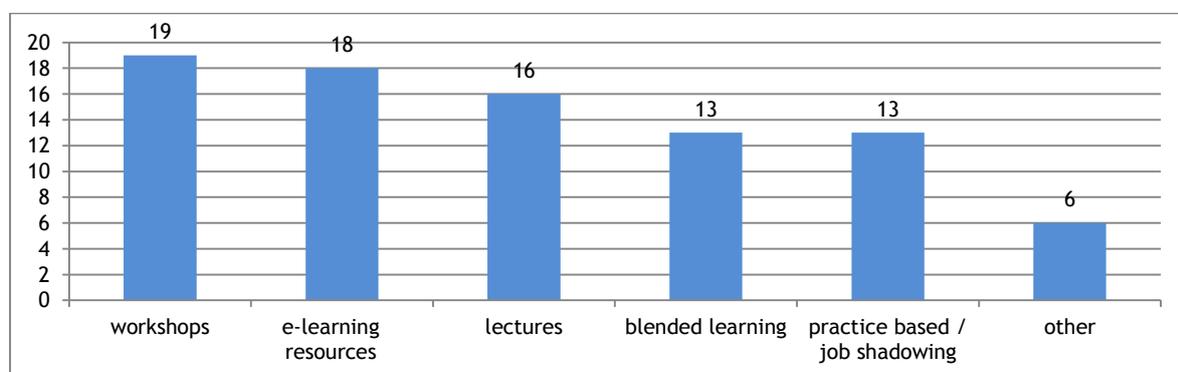
According to the EUPAN survey, training and development opportunities are the main attraction for digital professions in the public administration. The survey shows that the training for the personnel in eGovernment services is delivered mainly through workshops, e-learning, lectures, blended learning, practice based / job shadowing, and other formats, detailed in the figures below.

Figure 15 Diverse forms of training for digital competencies (survey)



(source: survey responses from Estonia, Italy, Finland, France, Netherlands, Romania, European Commission)

Figure 16 Most frequent forms of training (survey)



(source: survey)

### Learning and leadership

In some countries (e.g. Netherlands, Norway, Sweden) managers and public institutions leaders are provided special information sessions / training for general awareness regarding eGovernment services, digital technologies, trends, challenges, etc. The following examples from Norway and Sweden illustrate the role of training for awareness and leadership in eGovernment:

“Leaders are trained to be able to understand how ICT can change the way the services are provided, and to lead and manage the development and implementation of new ICT systems and ICT-related processes. Increasing the leaders’ general awareness about digitization, it will hopefully become a topic on the leaders’ strategic agenda. The initiative aims to make the leaders understand that digitization cannot be left to the ICT department, but is part of every leader’s field of responsibility.

Important topics in the training: Why collaboration across hierarchies is so important in a digital perspective; How they can collaborate in order to reach common goals through digitization; The links between general strategies on sector or enterprise level and digitization.” (source: survey response, Norway)

“It is important to train and develop IT skills among existing non-IT experts and staff. The whole organisation needs to recognize the value of more digitizing” (source: survey response, Sweden).

### Workforce transformation: work with AI, upskilling, digital academies

Training is crucial for workforce transformation in the context of digitalization. The Communication of the European Commission regarding *Artificial intelligence for Europe* COM(2018) 237 identifies “three main challenges for the EU” and stresses the importance of re-training / upskilling programs, interdisciplinarity in education (joint degrees), diversity in the workforce as well as targeted training in AI:

**“Overall there are three main challenges for the EU - highlighting the fundamental role of education and training, including of teachers and trainers themselves, for which responsibility lies with Member States. The first challenge is to prepare the society as a whole. This means helping all Europeans to develop basic digital skills, as well as skills which are complementary to and cannot be replaced by any machine such as critical thinking, creativity or management. Secondly, the EU needs to focus efforts to help workers in jobs which are likely to be the most transformed or to disappear due to automation, robotics and AI. This is also about ensuring access for all citizens, including workers and the self-employed, to social protection, in line with the European Pillar of Social Rights. Finally, the EU needs to train more specialists in AI, building on its long tradition of academic excellence, create the right environment for them to work in the EU and attract more talent from abroad”** (European Commission 2018b: 12).

The public sector needs to face the implications of digitalization for workforce transformation, the adoption of artificial intelligence (AI) and the need to “upskill” workers in the public sector, including job conversion programs.

The study *Improving work-life balance: opportunities and risks coming from digitalization*<sup>9</sup> points out that “retraining and reskilling (both staff and managers) is required to minimise the negative impact of digitalization on employees’ work-life balance. But the responsibility for acquiring new skills and updating old ones have to be shared by everyone, management and employees alike. Employers are responsible to finance and provide access to training during working hours, with the employees responsible to understand their training needs and attend the training” (TUNED/EUPAE 2019: 24).

According to the report *Upskilling your people for the age of the machine* by Capgemini Research Institute (2018), upskilling programs are designed “to train and develop a workforce to deal with automation-driven change”. These programs prepare the workforce by helping them to: “learn new skills or technologies within a similar job, including: skills necessary to leverage automation effectively to complement the non-automated part of a job, to perform higher value tasks in the time freed-up by automation; redefine or complement skills to shift to new types of jobs (side-skilling / job migration); complement existing skills with new ones to be able to perform several jobs (multi-skilling).” Upskilling can be focused not only on technical skills, but also on harnessing soft skills such as collaboration, and it is advisable to be “as close as possible to the new role that needs to be performed” (Capgemini 2018: 20).

For the responsible use of AI in eGovernment services it is important to train the personnel for the development and deployment of AI, taking into consideration the principles and recommendations from the report on *Ethics guidelines for trustworthy AI* (High-Level Expert Group on Artificial Intelligence 2019). The training could make clear what it means in the practice of digital public services to meet the “seven key requirements for Trustworthy AI: (1) human agency and oversight, (2) technical robustness and safety, (3) privacy and data governance, (4) transparency, (5) diversity, non-discrimination and fairness, (6) environmental and societal well-being and (7) accountability” (High-Level Expert Group on Artificial Intelligence 2019: 24).

In the countries that are the best performers regarding eGovernment services, such as Denmark and Netherlands, there are digital academies for the public administration, which provide trainings and information for digital awareness and specialist knowledge. In the Netherlands the National Academy for Digitalization

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<sup>9</sup> The study was elaborated by Zoltan Vadkerti for EU Social Dialogue Committee for Central Government Administrations (SDC CGA), Trade Unions National and European Delegation (TUNED) and European Public Administration Employers (EUPAE).

and Computerization Government (RADIO) was established in 2017 (Department for Digital Government Policy Netherlands 2019). In Denmark the State Digital Academy was established to advance the digital skills of government employees, in collaboration with educational institutions and other private sector actors (Agency for Digitisation Denmark 2019d).

Digital academies in the public sector are inspired by models from the business sector. According to Fountaine et al. (2019) “to ensure the adoption of AI, companies need to educate everyone, from the top leaders down. To this end some are launching internal AI academies, which typically incorporate classroom work (online or in person), workshops, on-the-job training, and even site visits to experienced industry peers. Most academies initially hire external faculty to write the curricula and deliver training, but they also usually put in place processes to build in-house capabilities”. The topics of instruction cover issues like leadership, analytics, issues related to end users (their habits, workflow), the role of “translators” (who translate / connect the activity of the organization with terms of IT, analytics, etc.) (Fountaine et al. 2019).

This section shows that training is crucial for the development of eGovernment services, from informing the leadership to the professionalization of the personnel, workforce transformation (upskilling) and the implementation of critical changes in the structure of digital public services through the implementation of AI.

## 6. Conclusions and recommendations

This report aims to stimulate discussions, experience exchange and policy initiatives regarding the competencies necessary for eGovernment services, for effective human resource management and quality digital public services.

The main conclusions of the report are summarized in the caption below:

- Countries with effective eGovernment services have clear legal and institutional frameworks as well as clear vision and strategies for such services. In the survey, legislation was indicated as highly important for enabling eGovernment services.
- Countries which are top performers regarding eGovernment have strategic approaches regarding the development of human resources in the digital public services, which include digital competency models / frameworks for recruitment, selection and training of the personnel, and training programs

adapted to the needs of digitalization. Some countries (like Denmark, Finland, Italy and Portugal) recently developed digital competency frameworks for public administration. This report provides an overview of these competencies, which can be a blueprint for further elaboration, for a competency framework for eGovernment services.

- Beside technical IT skills, soft skills (including competencies like communication, self-management, collaboration, coordination, flexibility, openness to different perspectives and stakeholder participation, taking responsibility, accountability, leadership) are very important for work in digital public services.
- The eGovernment services require multidisciplinary competencies, and the focus is to cover necessary competencies with well-designed teams. Moreover, new job descriptions need to be created in response to changing work processes, the introduction of “robotic process automation” and artificial intelligence (AI) (which are currently tested).
- Given the European Commission’s commitment to promote artificial intelligence in order to increase productivity and improve services, it is anticipated that jobs in public administrations will be further transformed by technology. In this context it is useful to learn from public administrations with advanced eGovernment services as well as from the business sector regarding workplace and workforce transformation triggered by robotisation and AI, which include management and leadership transformation, training for leaders regarding the importance of digitalization as well as upskilling / job conversion programs.

The issues tackled in this report, with reference to survey responses and examples from the European public administrations and the business sector, support the following recommendations for policy, research and actions:

1. Institutions for human resource management coordination in public administrations can develop institutional surveys for creating inventories of required digital competencies in the public administrations and possibly digital competency models / frameworks, to support the recruitment, selection and training of personnel for digital public services. Human resource policies at the national level may include measures to develop specific competencies (technical skills as well as soft skills) for effective eGovernment services.

2. Institutional leaders at national level may encourage experience exchange regarding workforce transformation between public administrations and the private sector.
3. Training institutions for public administration may create and promote ethics courses for trustworthy AI and leadership programs regarding the use of ICT and management transformations in the process of public administration digitalization.
4. Policy makers at the national level and at the European Commission may endorse experience exchange and collaboration programs on the topics mentioned above, between public administrations, in order to support robust and efficient eGovernment services that will promote the development of the single market.
5. In addition, the following issues could be relevant for EUPAN, for experience exchange, workshops and further research:
  - competency frameworks and team-design for eGovernment services;
  - leadership and change management programs for digitalization in public administrations;
  - upskilling / job conversion programs in the context of digitalization;
  - the role of soft skills for trustworthy eGovernment;
  - challenges of AI in public administration; trainings for trustworthy AI;
  - effective approaches for job attractiveness, for eGovernment services.

These issues are relevant for the strategic domain of the EUPAN Strategy Paper July 2019 - June 2022 regarding digitalization and innovation in public administrations.

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## 8. Annex 1 Questionnaire for EUPAN on “Competencies necessary for e-government”

Please provide your contact details:

Name:

Institution:

Country:

Email:

Tel:

1. Your public administration has:

a strategy for digital / e-government services?

a governmental institution for digitalization or e-government services?

Please provide details (a brief description or a link, if available):

2. In your public administration the implementation of e-government services is associated with the promotion of specific values, such as:

legality, rule of law

impartiality, objectivity

efficiency

transparency

responsibility

public interest

professionalism

accountability

trust in government / public administration

other .....

3. In your public administration digital solutions for governmental services are developed:

- with external contractors
- in-house
- using open source solutions
- buying ready-made digital solutions
- with open competitions for digital solutions
- other .....

4. Which competencies are required for employees working in e-government services, in your public administration?

- digital / IT skills
- creativity
- customer orientation
- proficiency in English
- presentation skills
- marketing
- problem-solving approach
- work with big data
- design (for solutions)
- leadership
- collaboration
- initiative
- flexibility
- ability to innovate
- other .....

5. Please provide a brief description and / or links to webpages (if available) regarding competencies required for employees working in e-government services in your public administration, in the box below or by email to [ro.eupan@anfp.gov.ro](mailto:ro.eupan@anfp.gov.ro) .

6. In your public administration, what competencies are considered important for managers of e-government services?

- IT knowledge and experience
- strategy and planning
- motivation, values
- management
- evidence-based decision making
- communication
- risk management
- coordination
- negotiation
- ability to innovate
- other .....

7. Your administration has programs or specific measures to attract and retain people with key competencies for e-government services, such as:

- attractive pay
- short term project-focused contracts
- development and training opportunities
- flexible working options
- specific terms of employment
- other non-financial incentives .....

8. How is the training for digital / e-government services delivered:

- e-learning resources
- lectures
- workshops
- blended learning
- practice based / job shadowing
- other .....

9. Which of the following factors are important for developing e-government services, in your public administration? Please mark their importance, from 1 to 5, considering the following scale: 1 - not relevant, 2 - occasionally relevant, 3 - frequently relevant, 4 - quite important, 5 - very important, a must.

Factors	1	2	3	4	5
political endorsement / commitment	<input type="checkbox"/>				
motivation, values	<input type="checkbox"/>				
vision and strategy	<input type="checkbox"/>				
planning	<input type="checkbox"/>				
financial resources	<input type="checkbox"/>				
user-centred design of digital services	<input type="checkbox"/>				
digital skills	<input type="checkbox"/>				
marketing for e-government services	<input type="checkbox"/>				
customer / citizens' feedback	<input type="checkbox"/>				
collaboration between governmental agencies	<input type="checkbox"/>				
training for the personnel working in e-government services	<input type="checkbox"/>				
electronic identity for citizens	<input type="checkbox"/>				
legislation for e-government services	<input type="checkbox"/>				

10. What challenges do you anticipate, from a human resources management perspective, regarding e-government services in your public administration, in the next decade?

- recruitment and selection of candidates with the required competencies
- a HR strategy for e-government services
- job attractiveness / pay and contract conditions for specialists
- team design, to have people with a suitable mix of competencies
- a competency framework for e-government services
- cybersecurity
- the involvement of stakeholders in the design of e-government services
- ethical issues regarding the use of technology / artificial intelligence for e-government services
- other.....

(source: author's elaboration)

## 9. Annex 2 Inventory of online resources regarding eGovernment institutions, strategies and digital competency models

	Links to eGovernment institutions, strategies and digital competency models (if available)
<b>NIFO - National Interoperability Framework Observatory</b>	Digital Government Factsheets - 2019 <a href="https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-government-factsheets-2019">https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-government-factsheets-2019</a>
<b>Competency frameworks at the European level</b>	European E-Competence Framework (e-CF) for ICT professionals - <a href="http://www.ecompetences.eu/e-cf-overview/">http://www.ecompetences.eu/e-cf-overview/</a>  European Digital Competence for citizens (DigComp) <a href="https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework">https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework</a>
<b>European Commission</b>	<a href="https://ec.europa.eu/info/sites/info/files/digitalworkplacestrategy2017.pdf">C(2018)7118 European Commission Digital Strategy: A digitally transformed, user-focused and data-driven Commission</a>  <a href="https://ec.europa.eu/info/sites/info/files/digitalworkplacestrategy2017.pdf">https://ec.europa.eu/info/sites/info/files/digitalworkplacestrategy2017.pdf</a>
<b>Austria</b>	Digitales Österreich <a href="https://www.digitales.oesterreich.gv.at/amtshelfer-help-gv-at">https://www.digitales.oesterreich.gv.at/amtshelfer-help-gv-at</a>  E-Government Vision 2020 <a href="https://www.digitales.oesterreich.gv.at/e-government-vision-2020">https://www.digitales.oesterreich.gv.at/e-government-vision-2020</a>  Digital office / Digitales Amt / google play <a href="https://play.google.com/store/apps/details?id=at.gv.oe.app">https://play.google.com/store/apps/details?id=at.gv.oe.app</a>  Digital Government Factsheet 2019 Austria <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Austria_2019_3.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Austria_2019_3.pdf</a>
<b>Belgium</b>	“Digital Belgium” <a href="http://digitalbelgium.be/en/">http://digitalbelgium.be/en/</a>  Digital Transformation is part of the new public service BOSA. <a href="https://dt.bosa.be/en">https://dt.bosa.be/en</a>  Le bureau de recrutement des collaborateurs IT pour les administrations publiques fédérales <a href="https://egovselect.be/fr">https://egovselect.be/fr</a>  Regarding competencies:

	Links to eGovernment institutions, strategies and digital competency models (if available)
	<p><a href="https://dt.bosa.be/en/over_fedict/jobs">https://dt.bosa.be/en/over_fedict/jobs</a> - All must have at least “PRINCE2” certification.</p> <p><a href="https://egovselect.be/fr">https://egovselect.be/fr</a></p> <p><a href="https://www.linkedin.com/company/digitaltransformation/jobs/">https://www.linkedin.com/company/digitaltransformation/jobs/</a></p> <p><a href="http://digitalbelgium.be/en/">http://digitalbelgium.be/en/</a></p> <p>Digital Government Factsheet 2019 Belgium  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Belgium_2019_1.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Belgium_2019_1.pdf</a></p>
<b>Bulgaria</b>	<p>Digital Government Factsheet 2019 Bulgaria  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Bulgaria_2019_1.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Bulgaria_2019_1.pdf</a></p>
<b>Croatia</b>	<p>Digital Government Factsheet 2019 Croatia  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Croatia_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Croatia_2019.pdf</a></p>
<b>Cyprus</b>	<p>Digital Government Factsheet 2019 Cyprus  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Cyprus_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Cyprus_2019_0.pdf</a></p>
<b>Czech Republic</b>	<p><a href="https://portal.gov.cz/obcan/">https://portal.gov.cz/obcan/</a></p> <p>Mobile application “<a href="#">what to do, when...</a>” / Co dělat když (Google Play)</p> <p>gGovernment project  <a href="https://www.mvcz.cz/clanek/vzdelavani-zamestnancu-verejne-spravy-a-propagace-aktivit-v-oblasti-egovernmentu.aspx">https://www.mvcz.cz/clanek/vzdelavani-zamestnancu-verejne-spravy-a-propagace-aktivit-v-oblasti-egovernmentu.aspx</a></p> <p>Digital Government Factsheet 2019 Czech Republic  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Czech%20Republic_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Czech%20Republic_2019.pdf</a></p>
<b>Denemark</b>	<p>Digitization Agency  <a href="https://digst.dk/">https://digst.dk/</a></p> <p>Danish Digital Strategy (Agency for Digitisation 2016)  <a href="https://en.digst.dk/policy-and-strategy/digital-strategy/">https://en.digst.dk/policy-and-strategy/digital-strategy/</a></p> <p><a href="https://en.digst.dk/news/news-archive/2019/january/world-class-digital-services/">https://en.digst.dk/news/news-archive/2019/january/world-class-digital-services/</a></p>

	<b>Links to eGovernment institutions, strategies and digital competency models (if available)</b>
	<a href="https://en.digst.dk/media/15367/a-solid-ict-foundation-strategy-for-ict-management-in-central-government.pdf">https://en.digst.dk/media/15367/a-solid-ict-foundation-strategy-for-ict-management-in-central-government.pdf</a>
<b>Estonia</b>	<p>Digital Agenda 2020 for Estonia  <a href="https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf">https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf</a></p> <p>Digital Government Factsheet 2019 Estonia  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Estonia_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Estonia_2019.pdf</a></p>
<b>Finland</b>	<p>Finland, a land of solutions: Strategic Programme of the Finnish Government  <a href="http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/160985/29_18_Finland_a_land_of_Solutions_2018-2019_EN.pdf?sequence=1&amp;isAllowed=y">http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/160985/29_18_Finland_a_land_of_Solutions_2018-2019_EN.pdf?sequence=1&amp;isAllowed=y</a></p> <p>Government ICT Centre  <a href="https://valtori.fi/en/frontpage">https://valtori.fi/en/frontpage</a></p> <p><a href="https://www.suomi.fi/welcome-to-the-renewed-suomifi">https://www.suomi.fi/welcome-to-the-renewed-suomifi</a></p> <p>Digital Government Factsheet 2019 Finland  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Finland_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Finland_2019.pdf</a></p>
<b>France</b>	<p>Répertoire interministériel des métiers de l'Etat), chapitre Numérique et systèmes d'information et de communication (pages 585 - 625) : <a href="https://www.fonction-publique.gouv.fr/files/files/biep/Rime/RIME_edition_web_2017.pdf">https://www.fonction-publique.gouv.fr/files/files/biep/Rime/RIME_edition_web_2017.pdf</a></p> <p>Référentiel des métiers et compétences des Systèmes d'information et de communication (2019)  <a href="https://www.data.gouv.fr/fr/datasets/referentiel-des-metiers-et-competences-des-systemes-dinformation-et-de-communication-sic/#_">https://www.data.gouv.fr/fr/datasets/referentiel-des-metiers-et-competences-des-systemes-dinformation-et-de-communication-sic/#_</a></p> <p>France's International Digital Strategy  <a href="https://www.diplomatie.gouv.fr/IMG/pdf/strategie_numerique_a4_02_interactif_cle445a6a.pdf">https://www.diplomatie.gouv.fr/IMG/pdf/strategie_numerique_a4_02_interactif_cle445a6a.pdf</a></p> <p>Digital Government Factsheet 2019 France  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_France_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_France_2019.pdf</a></p>
<b>Germany</b>	Digital Government Factsheet 2019 Germany

	<p><b>Links to eGovernment institutions, strategies and digital competency models (if available)</b></p>
	<p><a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Germany_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Germany_2019.pdf</a></p>
Greece	<p>The Greek Digital Strategy  <a href="https://ec.europa.eu/digital-single-market/en/country-information-greece">https://ec.europa.eu/digital-single-market/en/country-information-greece</a></p> <p>Digital Government Factsheet 2019</p>
Hungary	<p>National Infocommunication Strategy 2014-2020:  <a href="https://www.kormany.hu/download/5/ff/70000/NIS_EN_clear.pdf">https://www.kormany.hu/download/5/ff/70000/NIS_EN_clear.pdf</a></p> <p>Digital Government Factsheet 2019 Hungary  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Hungary_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Hungary_2019.pdf</a></p>
Ireland	<p>Public Service ICT Strategy  <a href="https://ictstrategy.per.gov.ie/index.html">https://ictstrategy.per.gov.ie/index.html</a></p> <p>eGovernment Strategy 2017 - 2020:  <a href="https://egovstrategy.gov.ie/">https://egovstrategy.gov.ie/</a></p> <p>Our Public Service 2020: <a href="https://ops2020.gov.ie/">https://ops2020.gov.ie/</a></p> <p>Digital Government Factsheet 2019 Ireland  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Ireland_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Ireland_2019.pdf</a></p>
Italy	<p>Agenzia per l'Italia Digitale - Agency for Digital Italy (AgID)          Digital Growth Strategy 2014-2020</p> <p>E-leadership skills <a href="https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze-e-leadership/index.html">https://lg-competenzedigitali.readthedocs.io/it/latest/doc/competenze-e-leadership/index.html</a></p> <p>Guidelines for the <a href="#">harmonization of professional qualifications, professions and ICT profiles</a>          Guidelines for the quality of <a href="#">digital skills in professionalism</a> ICT          Guidelines for <a href="#">e-leadership skills</a>          at <a href="https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/notizie/2018/10/15/online-linee-guida-competenze-digitali-professionali-leadership">https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/notizie/2018/10/15/online-linee-guida-competenze-digitali-professionali-leadership</a></p> <p>Other links  <a href="http://www.funzionepubblica.gov.it/digitalizzazione/agenda-digitale">http://www.funzionepubblica.gov.it/digitalizzazione/agenda-digitale</a>  <a href="https://www.agid.gov.it/it/agenzia/strategia-quadro-">https://www.agid.gov.it/it/agenzia/strategia-quadro-</a></p>

	<p><b>Links to eGovernment institutions, strategies and digital competency models (if available)</b></p> <p><a href="#">normativo</a></p> <p>Digital Government Factsheet 2019 Italy  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Italy_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Italy_2019_0.pdf</a></p>
<b>Latvia</b>	<p>"Information Society Development Guidelines 2014-2020"  <a href="http://www.varam.gov.lv/eng/darbibas_veidi/e_gov/?doc=13317">http://www.varam.gov.lv/eng/darbibas_veidi/e_gov/?doc=13317</a></p> <p>competencies required for employees working in e-government services:  <a href="https://nevis.mk.gov.lv/Uploads/CompetenceDictionary.6310fce38bd842a3b5a769030b30042a.pdf">https://nevis.mk.gov.lv/Uploads/CompetenceDictionary.6310fce38bd842a3b5a769030b30042a.pdf</a>  <a href="https://likumi.lv/doc.php?id=250211#piel4">https://likumi.lv/doc.php?id=250211#piel4</a></p> <p>Digital Government Factsheet 2019 Latvia  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Latvia_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Latvia_2019.pdf</a></p>
<b>Lithuania</b>	<p>Digital Government Factsheet 2019 Lithuania  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Lithuania_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Lithuania_2019_0.pdf</a></p>
<b>Luxembourg</b>	<p>Digital Government Factsheet 2019 Luxembourg  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Luxembourg_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Luxembourg_2019_0.pdf</a></p>
<b>Malta</b>	<p>A Parliamentary Secretary responsible for the Digital Economy and Innovation <a href="http://www.opm.gov.mt">www.opm.gov.mt</a></p> <p>Malta Information Technology Agency (MITA)  <a href="http://www.mita.gov.mt">www.mita.gov.mt</a></p> <p>MITA has adopted a competence framework that is based on Skills Framework for the Information Age V6.</p> <p>Digital Government Factsheet 2019 Malta  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Malta_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Malta_2019.pdf</a></p>
<b>Netherlands</b>	<p>NL DIGIbeter - Digital Government Agenda  <a href="http://www.nldigitalgovernment.nl">www.nldigitalgovernment.nl</a>  <a href="http://www.nldigitalgovernment.nl/digital-government-agenda">www.nldigitalgovernment.nl/digital-government-agenda</a></p> <p><a href="http://www.nldigitalgovernment.nl/wp-content/uploads/sites/11/2019/02/digital-government-agenda.pdf">www.nldigitalgovernment.nl/wp-content/uploads/sites/11/2019/02/digital-government-agenda.pdf</a></p>

	Links to eGovernment institutions, strategies and digital competency models (if available)
	<p>Governmental institution: LOGIUS  <a href="http://www.logius.nl/english">www.logius.nl/english</a>                      The European e-Competence Framework  <a href="http://www.ecompetences.eu/">http://www.ecompetences.eu/</a> has been adopted by the Dutch Government.                      Digital Government Factsheet 2019 Netherlands  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Netherlands_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Netherlands_2019_0.pdf</a></p>
Poland	<p>“Strategic Action Priorities of the Minister of Digital Affairs in Computerization of Public Services”  <a href="http://archiwum.mc.gov.pl/files/directions_of_strategic_actions_of_the_minister_of_digital_affairs_in_the_field_of_computerization_of_public_services.pdf">http://archiwum.mc.gov.pl/files/directions_of_strategic_actions_of_the_minister_of_digital_affairs_in_the_field_of_computerization_of_public_services.pdf</a></p> <p>Digital Government Factsheet 2019 Poland  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Poland_2019_4.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Poland_2019_4.pdf</a></p>
Portugal	<p><a href="#">ICT2020 Strategy</a>, approved by the Resolution of the Council of Ministers n° 108/2017 of March 2                      Governmental institution for Digital Government - The <a href="#">Administrative Modernization Agency (AMA)</a>  <a href="https://www.ama.gov.pt/web/english">https://www.ama.gov.pt/web/english</a></p> <p>Digital Government Factsheet 2019 Portugal  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Portugal_2019_vFINAL.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Portugal_2019_vFINAL.pdf</a></p>
Romania	<p><a href="http://www.e-guvernare.ro/">http://www.e-guvernare.ro/</a></p> <p>The National Strategy for Digital Agenda for Romania / Strategia Nationala Agenda Digitala pentru Romania (HG nr. 432/2015) <a href="https://www.comunicatii.gov.ro/legislatie/">https://www.comunicatii.gov.ro/legislatie/</a>                      The Agency for Digital Agenda for Romania / Agentia pentru Agenda Digitala a Romaniei <a href="http://www.aadr.ro/">http://www.aadr.ro/</a></p> <p>Digital Government Factsheet 2019 Romania  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Romania_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Romania_2019.pdf</a></p>
Slovakia	<p>Office of the Deputy Prime Minister of the Slovak Republic for Investments and Informatization  <a href="https://www.vicpremier.gov.sk/en/index.html">https://www.vicpremier.gov.sk/en/index.html</a></p>

	<b>Links to eGovernment institutions, strategies and digital competency models (if available)</b>
	<p>National Agency for Network and Electronic Services  <a href="https://www.nases.gov.sk/en/national-agency-for-network-and-electronic-services/index.html">https://www.nases.gov.sk/en/national-agency-for-network-and-electronic-services/index.html</a>                      Document - The National Concept of eGovernment</p> <p>Digital Government Factsheet 2019 Slovakia  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Slovakia_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Slovakia_2019.pdf</a></p>
<b>Slovenia</b>	<p>Public Administration Development Strategy 2015 - 2020                      The Development Strategy for the Information Society until 2020</p> <p>Currently in the process of establishing Competency model for the Slovenian public administration</p> <p>Digital Government Factsheet 2019 Slovenia  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Slovenia_2019_0.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Slovenia_2019_0.pdf</a></p>
<b>Spain</b>	<p>The General Secretariat of Digital Administration  <a href="https://administracionelectronica.gob.es/">https://administracionelectronica.gob.es/</a></p> <p>The Digital Transformation Plan for the General Administration and Public Agencies.  <a href="https://administracionelectronica.gob.es/pae_Home/dam/jcr:0d4cfaad-3df4-46a1-8b87-aa3dc602e90b/Plan_de_trans_Estrategia-TIC_ingles.pdf">https://administracionelectronica.gob.es/pae_Home/dam/jcr:0d4cfaad-3df4-46a1-8b87-aa3dc602e90b/Plan_de_trans_Estrategia-TIC_ingles.pdf</a></p> <p>Sectorial Commission Electronic Administration (CSAE)</p> <p>Digital Government Factsheet 2019 Spain  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Spain_2019_1.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Spain_2019_1.pdf</a></p>
<b>Sweden</b>	<p>Agency for Digital Government  <a href="https://www.digg.se/about-us">https://www.digg.se/about-us</a></p> <p>The Agency for Government Employers (SAGE) manage a website Jobba statligt (“Work for the State”)  <a href="https://www.arbetsgivarverket.se/jobba-statligt/in-english/">https://www.arbetsgivarverket.se/jobba-statligt/in-english/</a></p> <p>Digital Government Factsheet 2019 Sweden  <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Sweden_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Sweden_2019.pdf</a></p>
<b>United Kingdom</b>	Digital Government Factsheet 2019 United Kingdom

	Links to eGovernment institutions, strategies and digital competency models (if available)
	<a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_UK_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_UK_2019.pdf</a>
<b>Switzerland</b>	<p><a href="https://www.egovernment.ch/en/">https://www.egovernment.ch/en/</a> Digital Switzerland Strategy 2018-2020</p> <p><a href="https://www.bakom.admin.ch/bakom/en/homepage/digital-switzerland-and-internet/strategie-digitale-schweiz.html">https://www.bakom.admin.ch/bakom/en/homepage/digital-switzerland-and-internet/strategie-digitale-schweiz.html</a> National eGovernment Study 2019 - E-government in Switzerland from the perspectives of the general public, businesses, and public administration.</p> <p><a href="https://www.egovernment.ch/en/dokumentation/nationale-e-government-studie-2019/">https://www.egovernment.ch/en/dokumentation/nationale-e-government-studie-2019/</a></p> <p>Leadership - The Value of Swiss eGovernment Cooperation <a href="https://www.egovernment.ch/en/organisation/e-government-schweiz-kurz-erklart/the-utility-of-egovernment-switzerland/">https://www.egovernment.ch/en/organisation/e-government-schweiz-kurz-erklart/the-utility-of-egovernment-switzerland/</a></p> <p>Conférence nationale Suisse numérique 2019: Façonner ensemble notre avenir numérique <a href="https://strategy.digitaldialog.swiss/fr/conference/">https://strategy.digitaldialog.swiss/fr/conference/</a></p> <p>Digital Government Factsheet 2019 Switzerland <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Switzerland_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Switzerland_2019.pdf</a></p>
<b>Norway</b>	<p>Digital agenda for Norway in brief: <a href="https://www.regjeringen.no/contentassets/07b212c03fee4d0a94234b101c5b8ef0/en-gb/pdfs/digital_agenda_for_norway_in_brief.pdf">https://www.regjeringen.no/contentassets/07b212c03fee4d0a94234b101c5b8ef0/en-gb/pdfs/digital_agenda_for_norway_in_brief.pdf</a></p> <p>Digital Government Factsheet 2019 Norway <a href="https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Norway_2019.pdf">https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Norway_2019.pdf</a></p>

(source: author's elaboration on the basis of survey data and additional documentation; links valid as of November 2019)