Digital Transformation and Competence

Strengthening Digital Competencies in Thuringian State Administration

UNIVERSITÄT ERFURT
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Digital Transformation and Competence: Strengthening Digital Competencies in Thuringian State Administration

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Executive Summary

The successful digital transformation of Thuringia's public sector is critical to enhance trust in state and democracy, modernize service delivery, and address long-term workforce challenges. To achieve this, state employees must develop strong digital competencies—a blend of technological, cognitive, and social skills, knowledge, and attitudes necessary to effectively utilize Information and Communication Technologies (ICT) for problem-solving, productivity, and knowledge development (Hofmann & Ogonek, 2018). This policy recommendation paper provides suggestions for the implementation of a training concept for strengthening digital competencies within the Thuringian state administration. The paper employs a case study methodology, combining qualitative research, benchmarking of best practices, and competency mapping to create tailored recommendations. The research draws on academic literature, policy reports, and international digital competency frameworks, particularly the European Digital Competence Framework (DigComp 2.2). The benchmarking analysis examines successful digitalisation initiatives within Germany (in the states of Bavaria and North Rhine-Westphalia), Spain (Ikanos Initiative), Italy (Syllabus for Public Administration), and Denmark (Government Digital Academy). Lastly, a competency mapping exercise determines the specific digital skills required for administrative roles within Thuringia, in order to ensure that training programs align with job-specific responsibilities and future needs. Based on its findings, the paper proposes evidence-based, actionable recommendations across five key areas.

In the area of **Stakeholder and Planning**, it is suggested that the Thuringian state aligns its digital strategy with national and European frameworks. By doing so, the state can ensure consistency in training objectives, promote standardized skills development, and facilitate measurable progress in achieving digital transformation goals. It is also essential to engage diverse stakeholders—government agencies, universities, and private sector actors—to co-design training programs that are relevant, effective, and responsive to evolving public sector needs. Collaboration across sectors can enhance both the quality and accessibility of training initiatives. Equally important is to establish clear, measurable training objectives to track progress and ensure accountability. Structured learning goals should be set, such as requiring employees to complete a minimum number of courses per year or achieve specific competency levels within a defined timeframe. This approach will ensure that digital competency development is systematic, quantifiable, and aligned with long-term workforce planning.

To optimize **Learning and Skill Development**, the paper emphasizes the importance of integrating diagnostic tools that allow public servants to assess their current digital competencies. Personalized training pathways should be developed to meet the unique needs of each employee, ensuring that learning is directly linked to job-specific

responsibilities and career progression. In addition to technical skills, training programs should prioritize non-digital competencies such as communication, adaptability, and critical thinking, which are vital for supporting innovation, collaboration, and problem-solving in an increasingly digital work environment. The role of leadership in driving digital competency development is crucial; public sector leaders should actively participate in digital training initiatives, serving as role models who demonstrate the value of continuous learning and innovation. Institutionalized training programs should be established to equip leaders with the skills necessary to guide their teams through the digital transition, fostering a culture of adaptability and technological confidence.

To sustain effective training programs, **Evaluation and Monitoring** mechanisms need to be established. Clear metrics should be implemented to track the effectiveness of training, focusing on employee performance improvements, service delivery outcomes, and the adoption of digital tools. Periodic program updates are crucial to address the dynamic nature of digital transformation. As new technologies and administrative processes emerge, training content must be continually revised to maintain relevance and effectiveness.

For the development of robust **Training Infrastructure**, a unified digital training platform should be created to centralize all learning resources, simplify access to training, and provide employees with tools to monitor their progress. This platform can serve as a comprehensive system for managing both structured courses and informal learning opportunities. It should also be ensured that training initiatives are inclusive and accessible to all employees. Equity in access to training reduces digital divides and fosters a more capable and cohesive workforce.

Finally, the paper highlights the importance of strengthening specific **Digital Competencies** across all levels of administration. Implementing the suggested recommendations can allow Thuringia to embed digital skills development into the culture of the public sector and build a digitally competent workforce capable of supporting the state's long-term digital transformation objectives.

Table of Contents

Table of Figures

List of Tables

1

Introduction

In an era of rapid technological advancement and the transformative potential of data, the way people live, learn, work and interact has changed profoundly and the public sector is no exception to this shift. In Germany, the digitalization of the public sector has been recognised as an opportunity to enhance, streamline and optimize administrative processes and represents the largest modernization effort of the public administration since the founding of the Federal Republic of Germany (Federal Ministry of the Interior and Community, n.d).

The legal framework governing the transformation consists of a myriad of laws that have developed continually. The foundations were laid within Article 91c of the Basic Law (Grundgesetz), which sought to strengthen the cooperation between federal and state governments regarding the development of standards and security requirements for information systems. The introduction of the e-Government Act (EGovG) encouraged the federal, state and local governments to offer simpler, efficient and more user-friendly electronic administrative services. However, in 2017 the Online Access Act (Onlinezugangsgesetz (OZG)) specified that by 2022, the federal, state and local governments should be capable of offering all administrative services in digital form (Mergel, 2021).

However, to ensure the successful digitalization of the public sector, the state administration is reliant upon the support of state employees and government offices (Bundesdruckerei, 2024). The effectiveness of the digitalization effort is heavily dependent upon state employees being equipped not only with advanced technological tools, but with the right working environment, skills (OECD, 2021), and education surrounding the plethora of digital tools and their benefits (Bundesdruckerei, 2024). In Thuringia, the development of digital competencies amongst administrative staff is central to the digital transformation strategic framework (Sonsalla, 2024). It is anticipated that there will be a shortfall of approximately 30% Thuringian public sector positions—around 14,000 jobs—by 2035 due to retirement.

In response to this challenge, the state of Thuringia has acknowledged the importance of fully utilizing the opportunities presented by digitalization to enhance efficiency and meet future workload demands (Thüringer Finanzministerium, 2024). Therefore, Thuringia's strategic digital agency, Digitalagentur Thüringen GmbH (DAT), is committed to enhancing digital competencies among its workforce to support the transformation of public services. As part of this effort, DAT has commissioned the Willy Brandt School of Public Policy (University of Erfurt), as part of a capstone project, to develop recommendations for a training concept tailored to Thuringian state administrative employees. This initiative aims to equip public sector staff with the necessary competencies to navigate an increasingly digital work environment, ensuring they are prepared to drive and sustain the region's digital transformation.

As a result, this policy paper formulates recommendations which are to be

considered in the design of a comprehensive training concept to equip state government employees in Thuringia with the necessary digital skills. The paper examines the current state of research surrounding digital competency development, explores the impact of digitalization on public administrations, and which factors influence the effectiveness of skills development. International and national best-practice initiatives are analysed, their relevance and adaptability to the Thuringian context is assessed, and the digital competencies required by public administration employees in Thuringia are identified. By synthesizing these findings, the paper provides actionable and context-specific policy recommendations to support the digital transformation within the state of Thuringia.

Germany's Digitalization Opportunities & Challenges

The digital transformation of the German public sector presents significant opportunities for innovation and growth. According to the Digitalization Index 2023, Germany achieved a score of 108.6 points, reflecting a slight decrease from 110.5 points in 2022. This plateau offers a valuable moment to recalibrate efforts to sustain and accelerate digital growth (Bakalis, Büchel, & Scheufen, 2023). The Digitalization Index measures progress in digital transformation across dimensions such as internet infrastructure, adoption of digital technologies, digital skills, and innovation capacity. The decrease indicates slower progress in areas like expanding broadband access, digitalizing public services, and adopting digital tools in businesses and the public sector (Bakalis, Büchel, & Scheufen, 2023).

The pandemic demonstrated Germany's ability to adapt quickly and innovate in response to challenges, driving a significant increase in the Digitalization Index in 2021. This surge can be attributed to the rapid adoption of remote work, online interactions, and digital service delivery during the pandemic (Bakalis, Büchel, & Scheufen, 2023). However, the momentum has not been sustained, with the index stagnating in 2022 and 2023. Economic challenges, including the Ukraine war, inflation, and supply chain disruptions, have forced companies to delay or cancel digitalization projects. Additionally, the skills gap in digital jobs has widened again as economic recovery increased demand for qualified professionals (Bakalis, Büchel, & Scheufen, 2023).

A significant challenge in Germany's digital transformation lies in aligning administrative structures and culture with the demands of the digital age. While there is a broad political consensus on the need for digitization, translating this into tangible progress remains difficult. For instance, Eurostat data shows that the percentage of German citizens submitting administrative forms online has seen minimal improvement over the last decade, even decreasing between 2010 (23%) and 2019 (Funke, 2022). Germany's federal structure, characterized by decentralized and autonomous state-level administrations, complicates the coordination of nationwide efforts. Furthermore, the bureaucratic culture's emphasis on legalistic thinking and risk aversion often hinders swift adoption of new technologies (Funke, 2022). The

fragmented IT infrastructure, built on state-level portals instead of a unified national system, further complicates digitalization efforts (Funke, 2022). Addressing these structural and cultural barriers is essential for creating a more efficient, accessible, and citizen-centric public service landscape.

Regional Disparities in Digitalization: Thuringia's Position

Despite its strengths in technical infrastructure and innovation, Thuringia lags behind other German regions in overall digitalization. The Digitalization Index 2023 highlights that Eastern German states, including Thuringia, achieved only average to above-average scores in select areas, while falling behind in other aspects of digitalization (Foitzik, 2022). Eastern Germany's overall increase in the index was just 4.1 percentage points, compared to the 15–18 percentage point increases seen in other states (Foitzik, 2022). Overcoming these challenges will require targeted efforts to develop digital competencies among public servants and foster a mindset conducive to digital transformation.

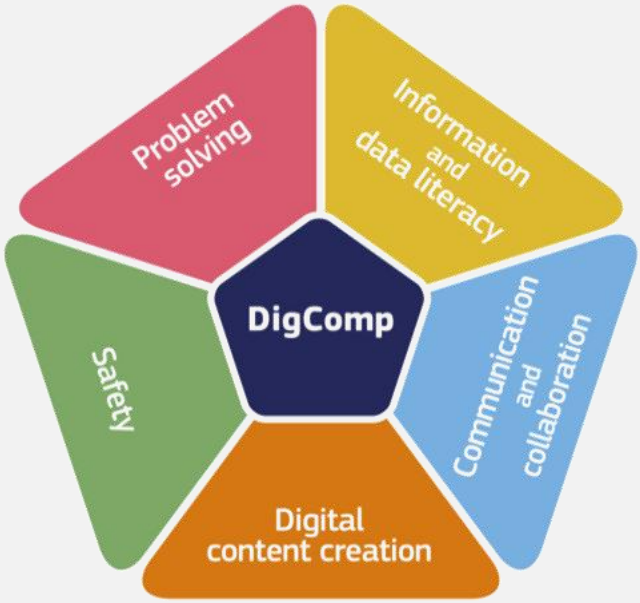
To this end, it is essential for the state's public servants to develop and master the **digital competencies** necessary to drive this progress.

What is understood by the term 'digital competency'?

Digital competencies can be defined as the combination of technological, cognitive, and social knowledge, skills, and attitudes required to apply Information and Communication Technologies (ICT) effectively for problem-solving, productivity, and knowledge development (Hofmann and Ogonek, 2018). Furthermore, the Council Recommendation on Key Competences for Lifelong Learning (European Commission, Directorate-General for Education, Youth, Sport and Culture, 2019) considers digital competences to include the confident, critical, and responsible use and engagement with digital technologies for learning, work and participation in society.

There are several digital competency frameworks across the globe that aim to identify and define key components of digital competencies. In 2010, the European Commission devised a European Digital Competence Framework (DigComp) which aimed to assist policy makers devise training initiatives to improve digital competencies for specific target groups (OECD, 2024). The DigComp framework identifies five key areas including information and literacy, communication and collaboration, digital content creation, safety and problem solving (see Figure 1). In total, 21 competencies are defined within the five areas (European Commission, 2022), with four identified proficiency levels (OECD, 2024).

Figure 1. DigComp framework



Source: European Commission, 2022

In 2020, the DigComp framework evolved to the DigComp 2.2, taking into account the evolving digital environment (Pérez-Escoda & González-Fernández-Villavicencio, 2016) and the emergence of Artificial Intelligence (AI), Internet of Things (IoT), datafication and teleworking (European Commission, 2022). Sustainability aspects of interacting with digital technologies is additionally reflected in DigComp 2.2.

1.1. Methodology

This policy recommendation paper employs a case study approach to explore the development of digital competencies within the public sector. The factors influencing the adoption of digital competencies in the public administration are investigated, with a particular focus on identifying national and international best practices that could be adapted to enhance digital skills among state employees in the Thuringian State Administration. The analysis primarily draws on qualitative data from secondary sources, including government documents, policy papers, research studies, and other relevant publications, though primary data is also considered. The selection of data

sources is based on their relevance, authority, and diversity of perspectives in order to ensure a comprehensive understanding of the issue. The data will be analysed through the identification of themes in the literature, and conducting cross-case comparisons to identify recurring patterns and insights. This approach will enable the identification of critical factors affecting the adoption of digital competencies, and which best practices may be transferable to the Thuringian State Administration.

Literature Review

The policy recommendation paper includes a comprehensive review of existing frameworks, reports, and studies on digital competencies, with a particular focus on the EU Digital Competence Framework. The literature review predominately consults secondary sources found in academic databases (JSTOR and Google Scholar). However, institutional reports from entities like the European Commission serve as primary data sources. The literature review identifies key trends, best practices, and gaps in digital competency development relevant to public administration. Findings are synthesized into thematic categories, including training needs, competency gaps, and integration challenges, providing a foundation for subsequent analysis.

Benchmarking Best Practices

Effective training and competency development programs from other German regions, EU countries, and international contexts are identified and analyzed. Case studies of successful digital training initiatives in public administration provide valuable insights. These programs are evaluated for methodologies, tools, and strategies, with common themes and unique approaches extracted. A comparative framework is developed to assess those practices, offering actionable lessons for Thuringia.

The cases selected for this policy report were chosen based on strategic and objective criteria to ensure relevance and applicability to Thuringia's public administration. Domestically, Bavaria and North Rhine-Westphalia (NRW) were included for their strong performance in the Bitkom Länderindex 2024 and their participation in European projects focused on developing public servants' digital competencies. Internationally, Italy, Spain (Basque Country), and Denmark were selected for their alignment with the European Digital Competence Framework (DigComp 2.2) or alternative frameworks, emphasizing public administration-specific competencies. These cases provide a comprehensive basis for benchmarking, offering valuable insights into framework design, program implementation, and policy evaluation. Details on the methodology for case selection are outlined in the corresponding section of this report.

Competency Mapping

To identify the digital competencies required for administrative employees in Thuringia, a comprehensive approach was employed, drawing from a variety of relevant sources. These included the DigComp 2.2 framework, insights provided by the client, and existing literature on digital skills. Additionally,

specific national frameworks from Spain and Italy were considered to offer a broader perspective. The analysis was further informed by a 2024 survey conducted by the Institut für den öffentlichen Sektor, which explored digital skill requirements for public sector employees in Germany.

Development of Recommendations

The concluding chapter of this policy recommendation paper synthesizes its findings into a series of actionable recommendations tailored to the specific context of Thuringia. These recommendations are intended to guide the development of a comprehensive and effective training program, ensuring that state government employees in Thuringia are equipped with the digital skills and competencies necessary for the successful digital transformation of the state administration.

2

Current Research on Digital Competencies

2.1. Impact of Digital Transformation on Public Administration

In the realm of public sector administration, digital transformation has represented a paradigm shift, fundamentally altering traditional administrative functions and workflows by improving operational efficiency, enhancing service delivery, and redefining workforce roles. Emerging technologies such as Artificial Intelligence (AI) additionally have a role to play in augmenting these advancements in the future, simultaneously presenting unique challenges for public administration.

A notable impact of digital transformation has been the enhancement of operational efficiency. The Thuringian Finance Ministry (*Thüringer Finanzministerium*) considers automation technologies to be an important aspect of streamline repetitive administrative tasks such as data entry, compliance tracking, and record management.

These advancements reduce errors, processing times and required resources, allowing employees to focus on higher-value responsibilities (Sonsalla, 2024). According to the OECD, government strategies that adopt a "digital by design" approach enable the rethinking and re-engineering of public processes, leading to simplified procedures and increased responsiveness (OECD, 2022). Countries with higher scores on the OECD Digital Government Index are more successful in leveraging digital tools to streamline administrative processes, eliminate redundancies, and enhance citizen engagement (OECD, 2022). The G7 Toolkit for AI in the public sector suggests that digital government strategies combined with AI can boost public sector productivity by automating routine tasks and providing data-driven insights for better decision-making (OECD/UNESCO, 2024). Italy's Three-Year Plan for the Digitalization of the Public Sector highlights the use of automation to reduce operational costs while reallocating savings toward personalized service delivery (OECD, 2024).

Digitalization enhances service delivery in the public sector by streamlining processes, increasing accessibility, and improving citizen satisfaction. Digital government strategies can improve service responsiveness and reliability, enabling public administrations to meet the evolving needs of citizens (World Bank, 2020). For example, during the COVID-19 pandemic, digital services ensured the continuity of public sector service delivery in many OECD countries, mitigating disruptions and enhancing accessibility (OECD, 2022). The integration of digital technologies allows public sector organizations to

tailor services to community needs while ensuring transparency and accountability (World Bank, 2021). E-government initiatives across Europe have successfully enhanced citizen engagement and trust in government operations (European Commission, 2018). However, the success of such initiatives depends on robust infrastructure, user-centric design, and addressing digital inequalities to ensure equitable access for all citizens (United Nations, 2020).

The need for integration of digital tools in public administration has altered workforce roles and competencies. Traditional skillsets are being required to be supplemented by hybrid work capabilities and virtual collaboration tools. Employees are increasingly required to possess digital skills, such as basic data analysis, cybersecurity, and a foundational understanding of AI applications. The World Bank (2021) highlights the importance of continuous learning and targeted training programs to ensure that public sector workers can meet these evolving demands. Furthermore, advancements in AI necessitate a solid understanding of AI principles and their implications for workflows (OECD, 2019). Building a resilient workforce capable of leveraging digital tools is essential for successful digital transformation in the public sector.

At the organizational level, digital transformation is meant to enhance collaboration and agility by breaking down departmental silos and promoting integrated workflows. However, the adoption of these technologies often encounters cultural and institutional barriers, including resistance rooted in fears of job displacement or a lack of understanding of the benefits of digital tools (OECD, 2020). Successful digital transformation requires effective change management strategies, leadership support, and comprehensive training to address these concerns (UNDP, 2021). Providing employees with the necessary skills and confidence is essential for fostering acceptance and ensuring the long-term success of digital initiatives.

2.2. Factors Influencing Digital Competency Development

In an organization, several key dimensions influence the success of digital transformation and the adoption of digital tools and competencies among employees. These factors include the organizational culture and climate, which shape attitudes towards change and technology, as well as human resource management and training, which ensures employees are equipped with the necessary skills and knowledge. Additionally, the structural and technological support provided to employees —such as robust IT infrastructure, tools, and resources—plays a

critical role in facilitating a smooth and sustainable digital transformation.

Culture and Climate

An organization that cultivates a culture of agility, creativity, and collaboration is better positioned to successfully navigate digital transformation. A work environment that encourages openness to change can significantly reduce employee resistance and foster a sense of ownership regarding digital initiatives (Distel, Ogonek, & Becker, 2019). Effective communication strategies are essential to ensure alignment between employees and organizational leadership. When digital transformation is primarily driven by management, employees may feel disconnected or resistant to adopting new technologies. To mitigate this, fostering open dialogue is crucial. Such dialogue should focus on clearly communicating the benefits of digitalization, addressing concerns, and illustrating how digital tools can enhance both individual roles and overall organizational efficiency (Hamburg, 2019).

Involving employees in decision-making processes further strengthens a sense of inclusion and empowerment, which in turn enhances their commitment to digital initiatives. Engaged employees are more likely to recognize the tangible benefits of digitalization, such as increased flexibility and efficiency, thus improving their work experience. This sense of ownership accelerates the integration of new technologies within the organization (Hamburg, 2019).

Additionally, fostering a culture that encourages experimentation and views mistakes as opportunities for growth—rather than failures—enables employees to explore more efficient ways of completing daily tasks. This approach leads to improved productivity at both the individual and organizational levels (Hamburg, 2019). In the German public sector, previous attempts at digitalization have often been hindered by a lack of "error culture," resulting in employee reluctance to embrace new digital tools due to the fear of making mistakes (Bundesdruckerei, 2024). In response, the state of Thuringia aims to create a culture of experimentation and learning, where digital applications can be tested in a controlled environment. This strategy encourages state employees to view errors not as failures but as opportunities for improvement and skill development (E-Government and IT Strategy, 2024). By adopting mistakes as learning opportunities, Thuringia seeks to foster a dynamic, adaptive administrative environment that enhances individual competencies while driving continuous improvement within the public sector.

Human Resources and Training

Human resource management and employee training are fundamental to building digital competencies within an organization. According to Distel, Ogonek, and Becker (2019), organizations must emphasize targeted training programs to prepare employees for the evolving digital landscape. This includes formal learning and informal learning opportunities. Training initiatives should address both technical and soft skills to ensure holistic competency development. Technical skills, such as data analytics, system management, and familiarity with digital tools, are critical for

functional adoption. Similarly, soft skills—such as adaptability, communication, and problem-solving—help employees navigate change effectively.

Formal and Informal Learning

When designing a training program for digital transformation, it is important to consider both formal and informal learning approaches. Formal learning is structured and typically takes place within formal educational settings. It plays a critical role in acquiring new digital skills and competencies (Mehner et al., 2024). This type of learning involves organized events such as lectures, workshops, and online courses, usually guided by a set curriculum and led by an instructor. In the public sector, formal training methods ensure that digital competencies for administrative employees are clearly defined in a standardized curriculum, ensuring consistency across the workforce (Manuti et al., 2015). Furthermore, it is essential that employees receive constructive feedback on their progress (OECD, 2021), and that external rewards such as certificates or credits are granted upon successful completion of digital skills training. These rewards can significantly boost intrinsic motivation, thereby increasing engagement with the training and enhancing its effectiveness (Johnson, 2022). Additionally, they offer a means for supervisors to assess and track the development of digital competencies within their teams (Johnson, 2022).

On the other hand, informal learning refers to the acquisition of skills and knowledge outside structured programs, often taking place organically within the workplace. It is typically less organized and unsystematic (Johnson, 2022), relying on intellectual curiosity, self-direction, and confidence. Informal learning is often seen as more effective than formal learning because it is driven by real-world experiences and immediate application (Manuti et al., 2015). It can be facilitated through mentoring, colleague collaboration, and on-the-job learning, providing significant opportunities to enhance digital skills through knowledge sharing and teamwork (Burtscher et al., 2024). Informal learning is estimated to account for 70–90 percent of all learning and is widely regarded as being engaging and motivating for learners (Johnson, 2022). However, it must be noted that digital skills gained through informal learning could be random and narrow (Johnson, 2022) as there is no curriculum, standard or learning outcomes defined. In research conducted by Colley et al. (2002), a balanced approach that combines formal and informal learning is highlighted as providing the most effective training solution. This combination allows for the achievement of formal curriculum objectives while also leveraging the benefits of informal learning, such as flexibility, real-world application, and enhanced employee engagement (Johnson, 2022).

Online Training Platforms

When designing a training concept for digital skills development, an e-learning platform offers a highly effective means of integrating interactive and audio-visual elements into the learning process. Audio-visual aids are particularly powerful for enhancing engagement, as research shows that 80 percent of individuals learn primarily through visual stimuli (Mohanty et al., 2019). The quality

of an e-learning system plays a critical role in determining user satisfaction, which directly affects whether administrative employees will return to the platform to further develop their digital competencies (Suryanto et al., 2023). A high-quality e-learning platform should be reliable, flexible, and functional, with an intuitive design that simplifies navigation and ensures ease of use. It is essential that the platform offers clear, targeted guidelines and content tailored to the specific digital skills needs of state administrative employees. Features should be user-friendly, and there should be tools for effective communication and interaction between trainers and learners (Suryanto et al., 2023).

The quality of the information provided through the platform is also crucial. Content must be accurate, current, and relevant to the specific digital challenges faced by administrative employees. To maximize the platform's effectiveness, it should incorporate a comprehensive feedback mechanism that helps learners track their progress and refine their digital skills. Feedback not only improves user satisfaction but also strengthens the learning experience by identifying areas for improvement and encouraging continuous development (Suryanto et al., 2023).

Individual Level

At the individual level, psychological factors such as technophobia and low motivation can significantly hinder the effectiveness of digital training programs. Research has identified six key factors that enhance the motivation of administrative staff to engage with training: the ability to choose the training program, the program's reputation, its design, the long-term benefits it offers, and the satisfaction derived from improved knowledge, skills, or income (Yaqoot et al., 2017). When designing training courses, it is crucial to address barriers that may affect the learning outcomes of digital training programs, such as overly short course durations, inflexible schedules, large class sizes, and mismatched participant profiles (Heena & Nidhi, 2022).

Furthermore, the educational background of administrative employees plays a significant role in the success of digital competency training programs. Employees with higher educational attainment often have stronger cognitive skills that enable them to absorb and apply new knowledge more effectively, contributing to the overall success of digital skills development programs (Lopes et al., 2023). Therefore, both training and recruitment strategies are essential for sustaining digital transformation. Organizations must attract talent with advanced technical competencies while also investing in the continuous development of their existing workforce. A balanced approach to external recruitment and internal upskilling ensures that employees remain equipped to meet the evolving demands of digitalization. HR practices that emphasize learning, growth, and continuous development create a workforce that is adaptable, resilient, and prepared for technological change, thereby supporting the long-term success of digital transformation initiatives.

Structural and Technological Support

The successful integration of digital tools requires adequate structural and technological support systems. Providing administrative personnel with access to appropriate technologies—such as project management platforms, video conferencing tools, and collaborative software—eases the transition into digital workflows. Regular support mechanisms, including clear guidelines, workflows, and troubleshooting resources, further facilitate adoption by reducing barriers to use.

Distel, Ogonek, and Becker (2019) emphasize that structural support should also encourage peer collaboration and collective learning. By fostering team-based approaches, organizations can leverage shared knowledge and skills to accelerate the adoption of digital competencies. Tools and structures that support collaboration help create a sense of shared responsibility, making digital initiatives more successful and sustainable.

The development of employees' digital competencies is a cornerstone of successful digital transformation in organizations. The critical link between training and effective e-governance in the context of technological advancements. A 2022 study by Kocot and Kwasek emphasizes that the efficient utilization of ICT tools hinges on the development of "agile attributes" in employees, including competence, creativity, and innovation (Kocot and Kwasek, 2022). This research suggests that training initiatives should extend beyond technical skills to cultivate these agile attributes for optimal use of ICT in areas such as sales, services, marketing, and finance.

Moreover, Kocot and Kwasek (2022) found that ICT tools are most commonly used in sales, services, marketing, finance, training, and logistics, demonstrating their pervasiveness in the modern workplace. This underscores the need for continuous development of digital competencies among public sector employees. Targeted workshops, training programs, and continuous learning opportunities, tailored to specific job roles and administrative levels, are crucial for equipping the public sector workforce to navigate the evolving landscape of e-governance effectively.

While training is crucial for equipping public servants with the necessary digital competencies, structural reform is equally vital for creating an environment conducive to successful eGovernment implementation. This includes streamlining administrative processes, establishing clear lines of responsibility, and fostering intergovernmental collaboration to ensure a unified and citizen-centric digital strategy. Addressing these structural factors alongside technology and training will pave the way for more effective and impactful e-governance systems.

2.3. Digitalization Goals and Strategies of Thuringia

The state has prioritized building digital capabilities among its workforce to support its comprehensive digitalization strategy. Wolfgang Tiefensee, former Minister for Economy, Science, and Digital Society, highlighted the progress in enhancing digital initiatives and emphasized the need for continuous development of digital competencies as a cornerstone of the state's strategy (Thüringer Strategie für die Digitale Gesellschaft, 2021). This emphasis reflects the recognition of digital skills as critical for achieving the state's broader digitalization objectives:

1. **Enhancing service delivery:**

- **Objective**: Improve the usability, efficiency, and accessibility of government services through digital transformation.
- **Implementation Strategies**:
  - Deploy digital tools and platforms to enable efficient service delivery and citizen engagement (Digitalagentur Thüringen GmbH, https://digitalagentur-thueringen.de/mission).
  - Utilize modern technologies to support lifelong learning and adapt to the changing needs of adult learners (Thüringer Strategie für die Digitale Gesellschaft, 2021).
- **Outcome**: Administrative staff equipped with digital skills can efficiently manage digital services, ensuring better public service delivery.

2. **Modernizing administrative procedures:**

- **Objective:** Streamline and automate administrative processes to enhance operational efficiency.
- **Implementation Strategies:**
  - Introduce process automation technologies (Qualifica Digitalis, 2020).
  - Encourage data analysis, digital correspondence, and practical applications of scientific knowledge (Thüringer Strategie für die Digitale Gesellschaft, 2019).
- **Outcome:** Administrative systems become more responsive and effective, supported by a digitally skilled workforce.

3. **Increasing productivity and efficiency:**

- **Objective:** Enable public sector organizations to operate more effectively through the integration of digital technologies.
- **Implementation Strategies:**

- Optimize workflows using digital tools (Qualifica Digitalis, 2020).
- Adopt advanced technologies to modernize research, education, and infrastructure through government and EU funding programs (Thüringer Strategie für die Digitale Gesellschaft, 2021).

- **Outcome:** Enhanced organizational competitiveness and productivity.

4. Building Digital Competencies

- **Objective:** Address the skills gap in digital competencies among administrative staff.
- **Implementation Strategies:**
  - Promote digital literacy and ensure secure operations within digital environments (Digitalagentur Thüringen GmbH, https://digitalagentur-thueringen.de/mission).
  - Implement training programs to enhance technical and digital skills (Qualifica Digitalis, 2020).
- **Outcome:** A workforce capable of adapting to, and leveraging, digital advancements.

5. Holistic and Inclusive Digital Transformation

- **Objective:** Ensure that digital transformation is accessible and beneficial for all demographics.
- **Implementation Strategies:**
  - Incorporate digital solutions in education, healthcare, and rural development (Thüringer Strategie für die Digitale Gesellschaft, 2021).
  - Focus on digital inclusion and accessibility initiatives (Thüringer Strategie für die Digitale Gesellschaft, 2019).

2.4. Key Trends and Gaps

The integration of AI into public administration is increasingly being emphasized for digital competency development. The European Commission (2021) underscores the importance of developing AI-related skills, alongside ethical considerations such as addressing algorithmic bias and ensuring data privacy. Training programs should prioritize not only core digital literacy but also competencies in regards to responsible interpretation, and application of, AI tools. Another trend is the adoption of collaborative learning platforms, which enable employees to continuously update their skills to keep pace with rapid technological evolution (World Economic Forum, 2020).

A key challenge that has emerged in public sector digitalization is the unequal access to digital technologies, especially in rural and underfunded regions, which often lack the infrastructure and resources necessary to implement advanced tools like AI.

This perpetuates disparities in service delivery and workforce readiness (World Bank, 2021). Frameworks such as the European DigComp Framework provide structured guidance for skills development, however, they can require further adaptation to address the diverse contexts and responsibilities of public sector roles.

A critical gap in available literature is the insufficient exploration of competencies required for emerging technologies in the public sector. While much of the existing literature focuses on basic digital literacy, there is a lack of emphasis on advanced competencies, such as data analysis, cybersecurity, and the integration of AI and predictive analytics into administrative workflows (OECD, 2019). Additionally, there is limited research on context-specific training approaches tailored to the unique operational needs of public sector employees in specific regions. Most studies provide general recommendations for digital competence development but fail to account for the specific administrative structures, workflows, and cultural factors that shape the adoption of new technologies (United Nations, 2020). Developing a more localized understanding of training needs and implementation strategies would better address regional requirements. Lastly, there is a lack of longitudinal studies assessing the long-term impact of digital competence initiatives. While many studies measure outcomes such as employee satisfaction and skill improvements, few evaluate how these initiatives affect organizational performance, service quality, or citizen satisfaction over a longer period of time (World Economic Forum, 2020).

Nevertheless, research shows that digital transformation is reshaping public administration by improving efficiency, enhancing service delivery, and redefining workforce roles. While AI is a critical enabler of these advancements, it is just one component of the broader digitalization process. By leveraging established frameworks and fostering a culture of ongoing skill development, public sector organizations can build a resilient and capable workforce prepared to navigate the complexities of digital governance.

3

Benchmarking Best Practices

The decision to use benchmarking as the method to develop the recommendations for this policy report stems from its ability to identify best practices implemented in other contexts that can be adapted to Thuringia's specific circumstances. Theoretically, benchmarking is a structured process used to compare practices, performance, or processes against established standards or leading examples to facilitate learning and improvement. Initially developed in the private sector as a tool for performance optimization, it has evolved into a valuable approach for public policy analysis and implementation (Papaioannou et al., 2006).

The selection of cases to be analyzed for insights into Thuringia's digital transformation was based on an objective criterion. According to the Bitkom Länderindex 2024, a digital ranking that assesses German states on their digital performance across the areas of economy, infrastructure, governance and administration, and society, Bavaria ranks third overall, following the city-states of Hamburg and Berlin (Bitkom Länderindex, 2024). Restricting the analysis to the Governance & Administration category, Bavaria climbs to second place. This strong performance validates its inclusion as one of the cases for benchmarking in this policy report.

While North Rhine-Westphalia (NRW) ranks sixth overall and ninth in the Governance & Administration category in the same ranking, it was chosen for different reasons. Between 2021 and 2023, NRW, alongside Bavaria, participated in a project with the European Commission's Agency for Economic Cooperation and Development, focusing on the development on public servants' digital competencies. As a recent initiative based on diverse digital competency frameworks, NRW presents an interesting case for benchmarking, offering valuable insights into the development of public sector digital skills.

Regarding the international cases, the selection was based on strategic criteria that ensure the relevance and applicability to the context of public administration in Thuringia. Firstly, cases based on the European Digital Competence Framework (DigComp 2.2) were prioritized, as this framework provides a standardized approach aligned with European policies for digital skills training and is widely adopted across Europe. Additionally, at least one case utilizing an alternative framework was included to provide a comparative perspective and enrich the competencies identified in DigComp 2.2.

Furthermore, emphasis was placed on cases that specifically address the digital competencies required in public administration to enhance efficiency and service quality. The combination of these factors ensures that insights gained from these cases can be directly applied to designing strategies for Thuringia, while also fostering alignment with international standards.

As a result, three international cases were selected: Italy - Syllabus, Spain - Ikanos, and Denmark - Government Digital Academy. The first two are based on DigComp 2.2, while the latter offers an alternative framework specifically tailored to public administration. All the selected cases are highly relevant to the public sector: Italy and Denmark

initiatives focus exclusively on public administration, while Spain, although aimed at a broader audience, includes a specific competence profile for public sector employees that was reviewed and considered in this study.

The integration of strategies and experiences from other regions is instrumental in shaping a comprehensive training concept tailored to enhance the digital competencies of Thuringian public servants. Bavaria and North Rhine-Westphalia emerge as prominent examples within Germany, offering distinct initiatives that reflect high performance in digital governance and innovative approaches to skill development.

On a European level, Italy, Denmark, and the Basque Country in Spain present complementary perspectives that enrich the discussion. These cases shed light on effective methods for framework design, program implementation, and policy evaluation. By drawing from their experiences, Thuringia can identify and integrate adaptable components to create a robust training concept, ensuring alignment with best practices and fostering continuous improvement in digital governance. This chapter delves into the defining characteristics of these cases, distilling actionable lessons and highlighting their relevance to the challenges faced by Thuringia.

3.1. Bavaria

In 2023, the state of Bavaria launched its Digitalplan (Bayrisches Staatsministerium für Digitales, 2023), a digital strategy for the region's future, which began development in 2021 through interviews, consultations, workshops, and online participation platforms. The plan encompasses three fundamental areas: guiding principles, data, and infrastructure, along with four fields of action: society, living spaces, value creation, and government. The latter is particularly relevant in the context of developing digital competencies among public servants.

The government section is further divided into seven subsections: future-proof structures (Zukunftsfähige Strukturen), digital administration (Digitale Verwaltung), digital justice (Digitale Justiz), legal framework conditions (Rechtliche Rahmenbedingungen), IT security (IT-Sicherheit), support for municipalities (Unterstützung der Kommunen), and digital competencies (Digitale Kompetenzen). The explicit goal of the digital competencies subsection, which is grounded in the state's Digital Act, is to “strengthen expertise in administration and promote the digital competence and enthusiasm of our employees.”

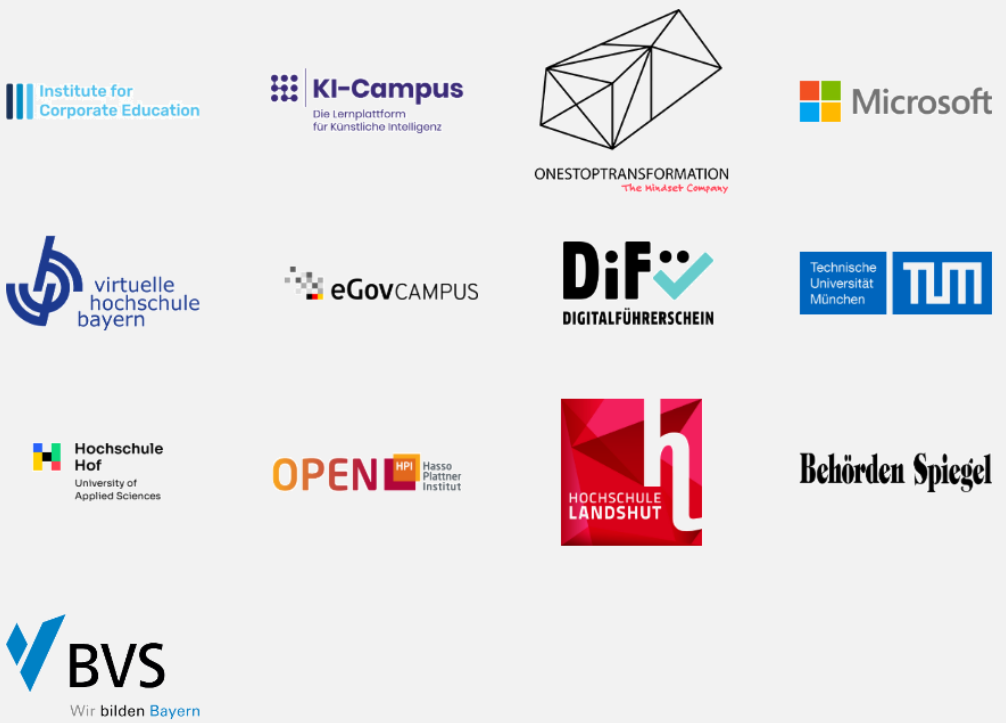
It is worth noting that the plan emphasizes that the development of digital competencies extends beyond merely adapting public servants to new technologies. It also involves enhancing communication skills, creativity,

openness to change, and enthusiasm for new possibilities in their professional roles. Based on these principles, the Digital.Campus Bayern stands out as a key initiative implemented by the Bavarian government to foster these competencies effectively.

Digital.Campus Bayern

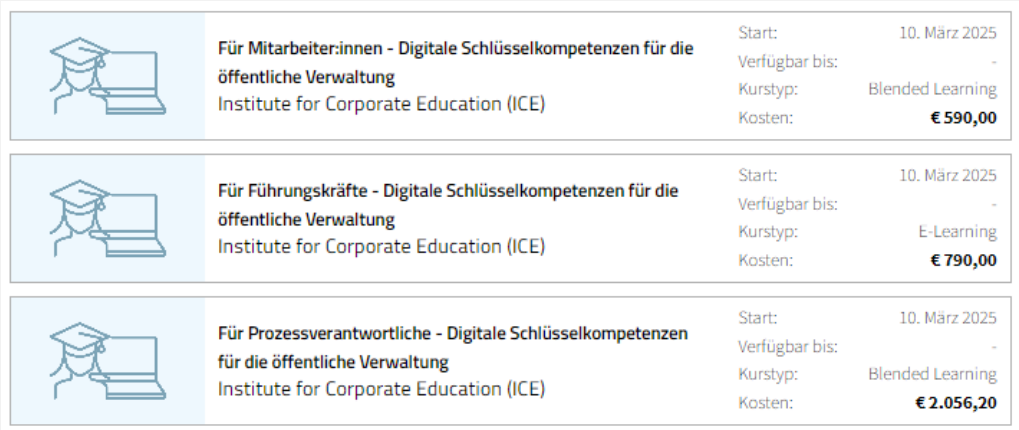
The Digital.Campus Bayern is an online platform that offers a wide range of professional and digital training courses for state public servants as well as local government employees in Bavaria (Startseite - Digital.Campus Bayern, 2024). Through this platform, employees can participate in flexible learning modules, ranging from foundational concepts such as data protection and information security to more advanced topics like agile work, change management, or remote leadership. Another noteworthy aspect is the network established with various actors for the development of course content, comprising universities, colleges, educational institutions, and companies. A key player in this model is the Bavarian Administration School (BVS), which promotes diverse teaching methods, such as e-learning, blended learning, and in-person events.

Figure 2. Map of the partners of Digital.Campus Bayern



Source: www.digitalcampus.bayern

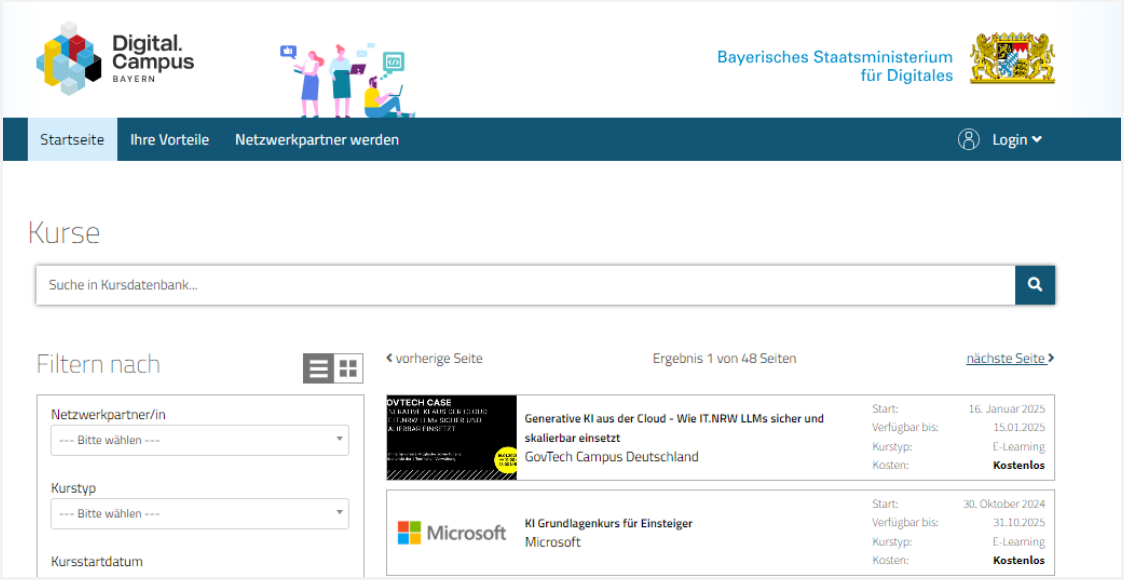
Figure 3. Examples of courses offered on the Digital.Campus Bayern platform



Source: www.digitalcampus.bayern

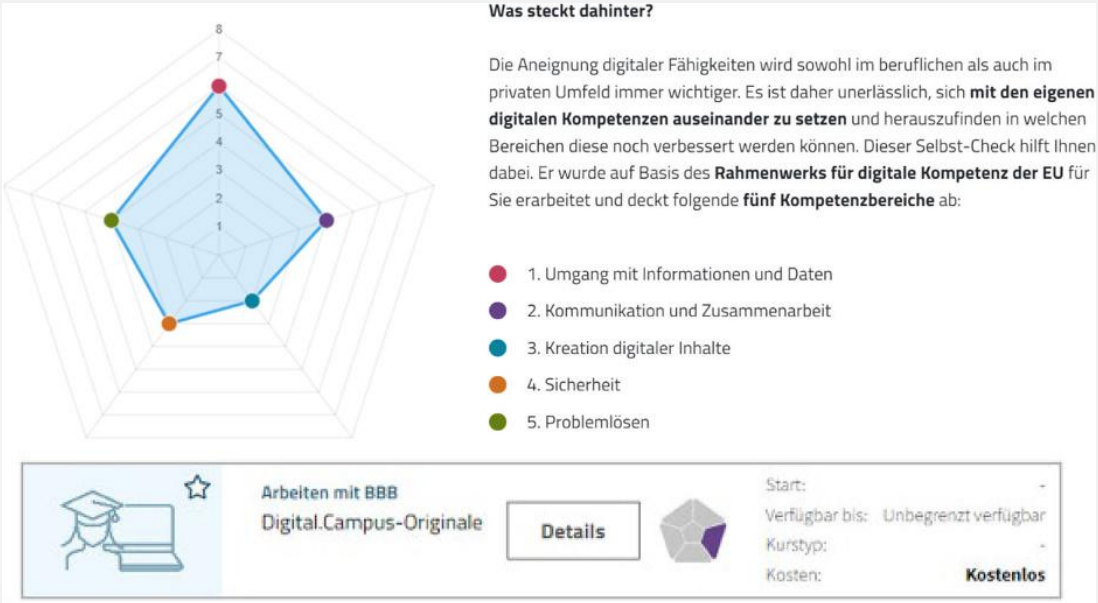
The implementation of this platform provides valuable insights for the development of a training concept for the state of Thuringia. In Bavaria, the Digital.Campus was implemented in three distinct phases. The first phase involved the creation of a search platform that aggregated courses developed by the previously mentioned partners and validated by the Bayrische Staatsministerium für Digitales (StMD). The second phase focused on the development of an effective, personalized learning platform, which allows each public employee to log in individually. Through this platform, public servants can not only search for courses but also track their own learning progress via personal dashboards that indicate their pedagogical advancement, as well as issue certificates for completed courses. Finally, and no less importantly, the third phase included the implementation of a Diagnostic-Tool, enabling public employees to assess their current level of digital competencies. Based on this self-assessment, employees receive course and module recommendations tailored to their results. Both the self-evaluation and the course recommendations are based on the Digital Competence Framework for Citizens (DigComp 2.2) (Knifka et al., 2023).

Figure 4. Search on Digital.Campus Bayern platform



Source: www.digitalcampus.bayern

Figure 5. Diagnostic-tool on Digital.Campus Bayern platform



Source (Knifka et al., 2023, p. 243)

The implementation of such a platform is not without its challenges. Knifka et al. (2023) emphasize the critical role of effective change management by public sector leaders in ensuring the successful adoption of the learning platform by civil servants. Since any organizational change often brings discomfort and resistance among those affected, it is essential for public sector leaders to actively communicate their vision of the importance of developing digital competencies. They must promote awareness campaigns and lead by example by utilizing the platform themselves, thereby setting a standard for others to follow.

KI Roadshow: A Collaborative Approach to AI Training in Public Administration

In addition to Digital.Campus Bayern, another initiative by the Bavarian government could be highly valuable for shaping a training concept for Thuringia's public servants. During a visit to the Bayerische Agentur für Digitales (Byte) in January 2025, project members explored several of the agency's key initiatives, including *Digitalschmiede* and *Open Data Bayern*. Among these, the **KI Roadshow** stood out as a model of collaborative learning, engaging Byte, government agencies, and public servants in the exploration and application of artificial intelligence.

The KI Roadshow aligns with Bavaria's broader digital strategy by integrating AI as a core competency within public administration. Like other initiatives, it emphasizes interactive, hands-on learning to equip public servants with practical digital skills. The program unfolds in three phases: **KI erfahren (Experience AI)** introduces foundational AI concepts through expert presentations; **KI erleben (Live AI)** allows participants to engage with real AI applications relevant to their work; and **KI erarbeiten (Develop AI)** fosters collaboration, enabling public servants to explore AI use cases and design practical solutions for their administrative tasks.

By combining theoretical knowledge, hands-on experimentation, and problem-solving, the KI Roadshow exemplifies an approach that goes beyond passive learning. AI adoption in the public sector remains limited, yet it is an unavoidable reality that must be proactively addressed. Bavaria's model, which actively involves public servants in the learning and development process, provides a compelling alternative to top-down training strategies that may overlook practical needs. Rather than imposing predefined solutions, this participatory approach ensures that AI training is directly relevant to employees' tasks and challenges. For Thuringia, adopting a similar strategy could foster greater engagement, enhance trust in AI-driven processes, and ensure that digital competencies are developed in a way that is both practical and sustainable in the long term.

Key Takeaways - Bavaria

1. The integration of public servants' digital competency development with the broader digital strategy of the state fosters interdepartmental connections and supports the creation of mutual support networks.
2. The development of courses for the *digital.campus bayern* platform, undertaken by a diverse network of partners, enriches content variety and eases the workload of the ministry.
3. The Competence Tool, based on DigComp 2.2, evaluates employees' digital skills, recommends courses, and personalizes the learning process through tailored learning paths.
4. Leadership engagement in promoting the platform is crucial to encouraging its adoption by other state employees.
5. A collaborative and hands-on approach to AI training enhances public servants' engagement and practical understanding of emerging technologies. The KI Roadshow demonstrates how involving employees in the learning, testing, and development of AI tools fosters greater confidence and ensures that training is directly relevant to their tasks. This bottom-up approach helps bridge the gap between theoretical AI knowledge and real-world application in public administration.

3.2. North Rhine-Westphalia

The state of North Rhine-Westphalia (NRW) introduced a comprehensive digital strategy in late 2021. In the strategy's concluding section, which outlines the next steps for addressing the identified themes, it is stated: "*The state of North Rhine-Westphalia will adapt the training and continuing education of public service employees to meet the demands of digitized processes. Personnel development measures and the retention of qualified specialists will ensure the effectiveness of the digital state administration and support employees in enhancing their digital skills.*" Additionally, the strategy set a goal for 2022 to "*implement a continuing education program to further develop the digital competencies of state administration*

employees, based on the DigitalCheck-NRW tool." (Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie des Landes Nordrhein-Westfalen, 2021)

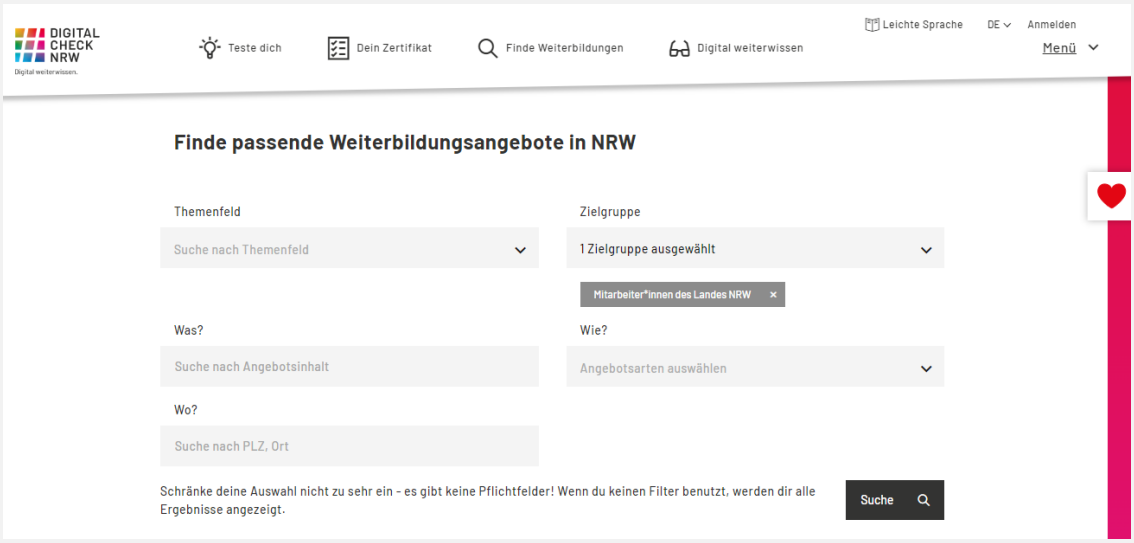
The Digital Check NRW is a platform that allows any citizen, including public servants, to test their digital competencies and determine their proficiency level in various domains. Its methodology is rooted in the Medienkompetenzrahmen NRW (Media Competence Framework NRW), which defines six distinct areas of digital competence. This framework also serves as the foundation for other public policies in the state, such as initiatives for digital literacy among students.

In addition to the self-assessment of competencies, the portal includes a course search tool that helps users find training programs to enhance their skills. This feature is equipped with filters for courses specifically designed for NRW public servants, similar to the approach used by the digital.campus bayern platform. This dual focus on assessment and targeted training resources ensures a comprehensive approach to digital skill development.

Figure 6. Six dimensions of the Medienkompetenzrahmen NRW (MeKo)

Source: medienkompetenzrahmen.nrw

Figure 7. Search platform on Digital Check NRW



Source: www.digitalcheck.nrw/checkup/

Between 2021 and 2023, NRW collaborated with the Agency for Economic Cooperation and Development of the European Commission on a project aimed at developing a new conceptual approach to digital transformation. This initiative focused on equipping the state's public servants with digital skills to support the implementation of digitalization strategies in the public sector. One key recommendation from the European Commission regarding NRW's framework, particularly in connection with the Digital Check platform, was to integrate the categories of *Qualifica Digitalis* into the Medienkompetenzrahmen NRW (MeKo). This recommendation aimed to create a more comprehensive and cohesive structure for evaluating and enhancing digital competencies, ensuring alignment with broader European standards while addressing NRW's specific administrative needs.

The *Qualifica Digitalis* is a research and implementation initiative developed to address the challenges posed by digital transformation in the public sector. It provides a comprehensive framework to enhance the skills of public employees, ensuring they are equipped to navigate digitalized work environments effectively. The initiative identifies and systematizes key digital competencies, including personal adaptability, creativity, and the ability to manage processes and organizations using IT. It also emphasizes skills in searching, processing, and storing digital information, effective digital communication and collaboration, the creation and presentation of content, and ensuring security in online environments. Additionally, it highlights problem-solving abilities, critical reflection on digital media, and data literacy as essential for public administration professionals. Through structured training programs, *Qualifica*

Digitalis aims to empower employees to meet the demands of a rapidly evolving digital landscape, aligning their capabilities with the broader goals of modern governance.

In summary, based on North Rhine-Westphalia's (NRW) current approach to developing digital competencies among its public servants, which is grounded in the Digital Check NRW platform and the Medienkompetenzrahmen NRW framework, there are valuable lessons for Thuringia. Additionally, the recommendations from the Agency for Economic Cooperation and Development of the European Commission, particularly advocating for integrating the Medienkompetenzrahmen (MeKo) into the categories of Qualifica Digitalis, offer strategic insights. This integration could enhance digital skill development and provide a comprehensive, structured approach to advancing Thuringia's digital transformation efforts, ensuring alignment with successful practices and frameworks from NRW.

Key Takeaways - North Rhine-Westphalia

1. The Digital Check NRW platform effectively combines self-assessment tools with curated course recommendations, enabling public servants to evaluate their digital competencies and engage in tailored learning paths.
2. The use of the Medienkompetenzrahmen NRW (MeKo) framework provides a structured and comprehensive approach to categorizing and enhancing digital skills, while the integration of Qualifica Digitalis categories could further align competencies with European standards.
3. NRW's collaboration with the European Commission emphasizes the value of partnerships in developing innovative solutions for public sector digital transformation and leveraging expertise beyond local boundaries.
4. The dual focus on assessment and skill development highlights the importance of continuous education and regular evaluation to adapt to evolving digital demands, ensuring an agile and capable public workforce.

3.3. País Vasco, Spain - Ikanos Initiative

In 2012, the Basque Government in Spain launched the Ikanos initiative, a program aimed at strengthening digital skills across all sectors of society, including public administration. This initiative is based on the European Digital Competence Framework (DigComp), its conceptual foundation. The main goal of Ikanos is to develop personalized roadmaps to enhance digital skills, aligned with real challenges and supported by practical tools (Basque Government, 2023).

The Ikanos model was designed to help organizations and citizens successfully navigate the digital transformation. It was developed initially in Euskadi, but it could be applicable worldwide. This model consists of 6 steps:

Figure 8. Ikanos scheme

Source: Ikanos - https://ikanos.eus/ (accessed December 2024)

1. **Discover:** Understanding the competencies of the European methodological framework DigComp.
2. **Audit:** Assessing the levels of competence achieved in DigComp skills.
3. **Analyze:** Evaluating audit results and setting objectives for skill development.
4. **Guide:** Improving skills and appropriate training.
5. **Learn:** Strategies for lifelong learning with digital technology.
6. **Demonstrate:** Show acquired capabilities and visibility of digital talent.

For each of these steps, Ikanos provides a set of tools guiding citizens and organizations through the process. This study will emphasize those tools useful for public employees, which could also be valuable for the public administration in Thuringia.

1. **Discover:** In this stage, Ikanos provides a self-assessment test for digital skills, through specific questionnaires for different professional profiles. Interested organizations can contact Ikanos to apply the questionnaire that is best suited to the functions and goals of that entity. Via the Ikanos test platform, participants log in and complete the self-assessment questionnaire which takes about 25 minutes. The platform assesses skills across the 5 areas of DigComp (Information and data literacy, Communication and collaboration, Digital content creation, Safety, and Problem-solving) and classifies them into 3 levels: basic, intermediate, and advanced. Based on the results, the platform provides a personalized PDF report, and the organization receives the results for all participants.

2. **Audit:** In this step, the public entity uses the platform to create both the Organizational Digital Profile and the Professional Digital Profile. The audit in organizations ends with the drafting of a qualitative report, analyzing the results of areas and departments concerning professional digital profiles and identifying improvement areas.

- The Professional Digital Profile defines the knowledge, skills, and attitudes needed for tasks involving ICT use in a specific occupation, highlighting relevant digital competencies and adding specific descriptors for skills according to each occupation's needs. It introduces the concept of "subcompetence" to detail particular digital tasks within a DigComp competence, improving the precision of the profile for personnel selection, and human resources management, and ensuring interoperability between evaluation systems.
- The Organizational Digital Profile gathers individual digital profiles of employees to offer a global view, which helps the organization to design training or structure teams for digital transformation.

3. **Analyze:** At this stage, the Ikanos test allows users to set objectives for a professional digital profile and compare them with personal results, highlighting differences between the current level and the required one for a particular occupation. This feature helps users identify areas of improvement in their digital competence. Additionally, organizations have access to a Digital Competence Management Tool to interpret large volumes of data, segmenting and comparing data by organizations, locations, areas, departments, profiles, and ages. The tool can also respond to specific requirements made by companies, such as editing questions to suit specific processes and operations, creating annual and level versions of tests, and carrying out an annual review of profiles. The supervisor can assess the competence level of each worker and enter the data into the tool, as well as having their own scales for assessing tasks that affect digital competency levels (European Commission, 2018).

Group profiles show the average results of users across the 21

competencies of the DigComp model, comparing them with the goals of the Professional Digital Profile set, and include a table with individual user results. Through data analysis, training plans can be developed to meet the required profiles.

Figure 9. Example of digital competency level visualization of professionals and comparison with the digital profile goal.

Source: Ikanos webpage - https://ikanos.eus/

4. **Guide:** In this stage, there are tools available that help verify and contrast the personal digital profile for customized career guidance, defining objectives and designing training paths tailored to the user's level and expectations. Additionally, there is a catalog of ICT training resources that facilitates the design of efficient training plans, leveraging available materials and reducing development costs.

5. **Learn:** Ikanos uses the methodology of Personal Learning Environments (PLE) and Organizational Learning Environments (OLE) to acquire digital competencies. PLEs are a set of personal sources of information and contacts to organize, curate, and update information, promoting continuous and collaborative learning. In the context of the project, Ikanos designed a mentoring system for building a personal learning environment, iPLE. On the other hand, OLEs expand PLE usage at an institutional level to integrate informal learning processes and organizational knowledge management. With this approach, organizations continuously design technological solutions to facilitate learning through Web 2.0 tools, helping learners build and develop their PLEs, creating social platforms for formal activities, and developing institutional plans focused on organizational needs.

6. **Demonstrate:** In this stage, strategies include recognition for companies or organizations that

have obtained the "*ikanos enpresa*" seal by completing the Professional Digital Competence Diagnostic Program 2023, and the BAIT Digital Competence Certification System, accrediting a person's skills in using computer tools and the Internet.

Figure 10. «ikanos enpresa» seal

Source: Ikanos.eus

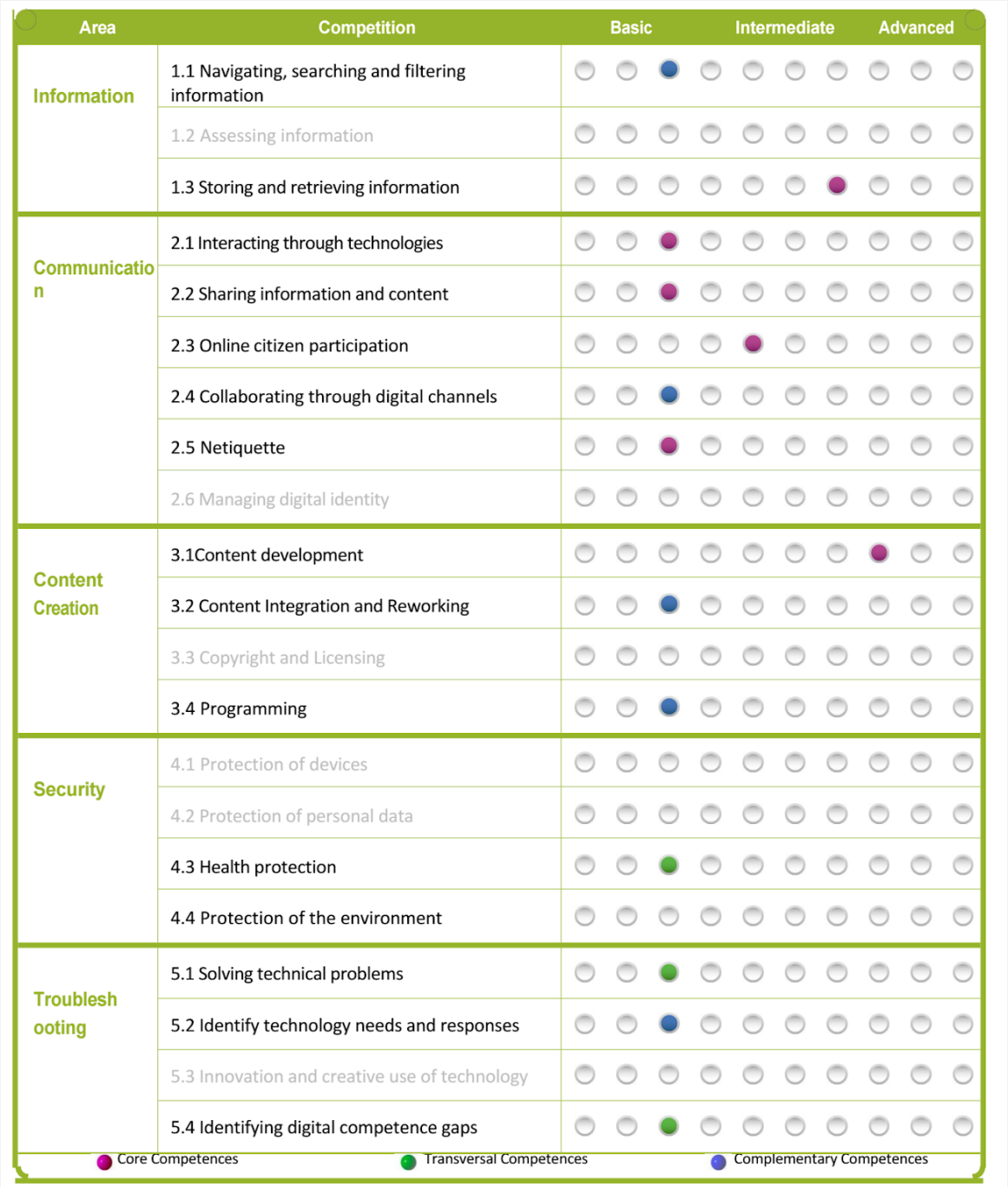
Professional Digital Profile for Public Administration

With the tool Professional Digital Profiles (PDP), Ikanos has already predefined PDP for different jobs, among them the administrative staff in public organizations. The description of the Public Administration "Administrative Staff" Role is:

- Management of accounting (budgets, financial closings, invoicing and purchases).
- Management of personnel and human resources administration (payroll and social security).
- Administrative support for other departments.
- Administrative processing related to projects (applications, scholarships, grants and subsidies).
- Authorizations and sanctions (fines and unpaid debts).
- Administrative support in relation with other public administrations.
- Management of administrative information and related data (filing, updating and facilitation).

Ikanos has defined aspects of the digital competencies from DigComp specific to the occupation of Public Administration Staff that can be consulted in Public Administration Profile Ikanos, 2017. Figure 11 summarizes the level required for each of the 21 competencies for this profile.

Figure 11. Professional digital profile for public administrative staff



Source: Perfil Profesional de competencias digitales Administrativo de la Administración Pública, 2017

Key Takeaways - Ikanos Initiative

1. **Mapping digital competencies:** Ikanos has successfully mapped the necessary digital competencies for various professional profiles. These mappings have been used to systematically assess and address skill gaps.
2. **Analysis tool:** The initiative developed an analysis tool that allows comparing competencies with other organizations, departments, and employee groups, and helps establish segmented action plans based on the different digital skills required.
3. **Personalized and collective focus:** This initiative's individualized approach ensures program relevance according to participants' specific needs, whether they are public or private sector employees, while a collective focus ensures that the objectives of implementation and digital transformation management set by organizations are met.
4. **Collaborative network:** Ikanos works in collaboration with a wide network of stakeholders, including local governments, educational institutions, and private sector partners. This networked approach enriches the initiative by incorporating diverse perspectives and knowledge.
5. **Professional Digital Profile for public administration:** The Ikanos initiative has developed a Professional Digital Profile specifically tailored for public administration roles, including the Administrative Profile for Public Administration. This profile outlines the "target level" for the 21 digital competencies defined by the European DigComp framework. This structured and detailed approach is a reference for the State of Thuringia.

3.4. Italy - Digital Competences for PA' Syllabus

In Italy, the Syllabus for Public Administration (Syllabus per la PA) is an initiative developed as part of the Repubblica Digitale program. Its goal is "to ensure that all civil servants are able to actively operate in a safe, aware, collaborative and result-oriented manner within an increasingly digital public administration" (Presidency of the Council of Ministers - Department for Digital Transformation, 2022, p. 14). This initiative was adopted in July 2020 and is part of the Digital Competences for PA project promoted by the Department of Civil Service of the Presidency of the Council of Ministers, aligning with Italy's National Digital Skills Strategy.

The Syllabus framework outlines the knowledge and digital competencies that any civil servant (excluding IT staff) should possess to contribute to the digital transformation of public administration. However, it excludes basic skills that all individuals are expected to have, such as the ability to use a computer or tablet, which are considered prerequisites for operating within a digital public administration.

Digital Competence Framework

The Syllabus is based on the European DigComp framework, adapted to the specific needs of the Italian public administration. It encompasses 5 areas of competence and 11 skills, as shown in the following table. Each skill is described across three proficiency levels: basic, intermediate, and advanced.

Table 1. Description of the Syllabus framework

Area	Description	Competence
1. Data, information, and digital documents	Ability to manage, organize, and critically evaluate digital data and information. Understanding differences between data and information and the ability to handle digital documents effectively, including creating, editing, and storing them securely.	1.1 Manage data, information, and digital content. 1.2 Produce, evaluate, and manage computerized documents 1.3 Learn about Open Data

Area	Description	Competence
2. Communication and sharing	Skills related to using digital tools to communicate effectively and share information securely. This includes knowledge of digital communication protocols, social media etiquette, and collaborative tools to ensure professional and efficient exchanges.	2.1 Communicate and share within the administration 2.2 Communicate and share with citizens, businesses, and other public administrations
3. Safety	Awareness and application of cybersecurity practices to protect systems, data, and users from threats. This includes understanding data privacy regulations, secure online behavior, and managing risks associated with digital tools and platforms.	3.1 Protect devices 3.2 Protect personal data and privacy
4. Online services	Accessing, using, and delivering digital services effectively. Ability to interact with e-government platforms, use online forms and applications, and provide or access digital services securely and efficiently.	4.1 Know the concept digital identity and its use to access digital public services. 4.2 Deliver online services
5. Digital transformation	Explore the role of emerging technologies in public administration, including how to foster innovation and adapt to changes driven by digital advancements. This area includes understanding concepts such as artificial intelligence, blockchain, and how they can enhance public service delivery.	5.1 Know the goals of digital transformation. 5.2 Know the emerging technologies for digital transformation

Source: Il Syllabus "Competenze digitali per la PA, 2018

Implementation of the Syllabus for Public Entities

The Syllabus program operates through its own web portal, which is accessible to public administrations and their registered employees for training in digital competencies and other relevant areas for public administration. The training process can be summarized in the following steps:

1. **Registration of Administration and Employees:** Administrations and their employees must register on the Syllabus platform. During this step, an administrator is assigned to oversee the allocation of available training courses, manage employee profiles, and monitor training progress. Employees cannot individually access training unless their administration is registered on the platform.
2. **Self-Assessment Test:** For some assigned competencies, public employees can evaluate their proficiency using an online self-assessment tool. Based on their results, they receive personalized training pathways. If an employee achieves an advanced level in 8 of the 11 competencies outlined in the "Digital Competencies for Public Administration" program during the self-assessment, they are considered to have met their individual training goal. This outcome also contributes to the administration's collective training objectives.
3. **Training Modules:** The platform offers courses across four major categories: Digital Transition, Ecological Transition, Administrative Transition, and Principles and Values of Public Administration. Each category includes a variety of learning modules. The training is self-paced and does not include synchronous activities like virtual classrooms or webinars. The following table outlines courses specifically related to the digitalization of public administration.

Table 2. Syllabus' modules and courses related to the digitalization of public administration

Category	Module	Courses	Duration
Digital Transition	Digital Competencies for Public Administration	1 course for each of the competencies in the Syllabus framework. A total of 11 courses divided into basic, intermediate, and advanced levels.	90 minutes + test time per course (from basic to advanced). Approximately 5.5 hours in total.

Category	Module	Courses	Duration
	Cybersecurity: Raising Awareness in Public Administration	1 basic-level course: Cybersecurity Awareness	1 hour 25 minutes + test time
	Quality of Digital Services for Open Government	1 course from basic to intermediate: Understanding the essentials for designing, implementing, and evaluating digital services	5 hours + exam time
	Introduction to Artificial Intelligence	1 basic-level course: Introduction to Artificial Intelligence	1 hour 45 minutes
Administrative Transition	Digital Participatory Practices for Open Government	1 course from basic to intermediate: Understanding the essentials for designing and promoting public participation initiatives	4 hours 30 minutes + exam time

Source: Dipartimento per la Trasformazione Digitale. (n.d.)

The training is structured across different skill levels, aiming to prepare public servants for the challenges of a digitalized public sector. The skills acquired are tested through an exam at the end of each course. If a participant fails the exam, they can retake it up to a maximum of three times. The questions in subsequent attempts are usually different, allowing for verification of the knowledge acquired. If all three attempts are used up, the participant can retake the course to strengthen their competencies, thereby unlocking new attempts for the corresponding course exam.

4. **Continuous Monitoring and Updates:** The course catalog is regularly updated to include new content that addresses the emerging needs of public administration, such as soft skills, topics on transparency and anti-corruption or emerging technologies. The program undergoes a biannual review

using a dashboard with over 60 key performance indicators.

5. **Certificates and Badges:** After passing an exam, the Syllabus issues a badge certifying the level of knowledge attained in a specific training course. Currently, it is up to each administration to decide whether to recognize these badges or certificates for internal promotions or other evaluations.

Figure 12. Open and digital badge for the Syllabus program

Source: Dipartimento per la Trasformazione Digitale. Syllabus - Competenze digitali per la PA. https://www.syllabus.gov.it/portale/web/syllabus/direttiva (accessed December 2024)

6. **Tracking and Progress:** The Syllabus platform includes a Training Dossier, accessible from the homepage or the user's profile menu. This section allows participants to monitor their progress, compare knowledge levels, review earned badges, check completed training hours, and calculate the time spent on courses. Additionally, administrators can monitor employee training progress using tracking tools on the platform. These tools provide detailed and aggregated data, showing which courses have been completed, who participated, and whether individual training objectives have been achieved.

7. **Mandatory Participation and Goals:** Regarding the digital transition, it was required that by June 30, 2023, all administrations register for the Syllabus platform and ensure that digital training activities are provided to at least 30% of their workforce within six months of registration. This target increases to 55% in 2024 and at least 75% in 2025. Furthermore, public administrations must guarantee a minimum of 24 hours of training per employee, per year—approximately three workdays annually dedicated to improving competencies. All public employees, including those on temporary contracts, are required to complete these training sessions.

Key Takeaways - Digital Competences for PA' Syllabus

1. **Taylored to public administration:** The syllabus program is based on the European DigComp framework but tailored to Italy's public administration needs. It covers five key areas of competence and 11 skills, each assessed at three proficiency levels: basic, intermediate, and advanced. The competencies address critical areas such as data management, digital communication, cybersecurity, online services, and digital transformation, focusing on how emerging technologies like AI and blockchain can enhance public service delivery.

2. **Mandatory training goals:** Public administrations must ensure that at least 30% of employees complete digital training by June 2023, with the target increasing to 55% in 2024 and 75% by 2025. Additionally, each employee is required to complete at least 24 hours of training annually. This training is aimed at enhancing the digital competencies of all public servants, regardless of their role or contract type, ensuring that the public sector is well-equipped for the challenges of a digitalized environment.

3. **Centralized training platform:** Under the program, a platform called Syllabus was created to centralize all training courses for public administration employees. This platform serves as a one-stop resource where employees can access various digital skills courses and track their individual progress. Syllabus also offers tools for administrators to monitor the overall training progress within their organization, ensuring that the digital competency goals are being met at both the individual and organizational levels.

4. **Focus on Accessibility:** During the development of the platform, special attention was given to ensuring its accessibility. Multiple usability and accessibility tests were conducted, which helped optimize various aspects of the platform. Additionally, the platform is continuously updated, incorporating suggestions and feedback provided by users to improve its overall functionality and user experience, ensuring it remains inclusive and accessible for all.

5. **Continuous updates:** The program is continuously updated to stay relevant to the evolving needs of the public administration. The course catalogue is refreshed every six months to include new topics, including emerging digital technologies, soft skills, and public sector priorities like transparency and anti-corruption.

3.5. Denmark - Government Digital Academy

With a score of 0.9847 on the E-Government Development Index (EGDI), Denmark ranks first globally in e-government development. This index measures three key dimensions: the provision of online services, telecommunications connectivity, and human capacity. Denmark's digital leadership makes its case a key reference for analyzing how it has achieved such high levels of performance. In this context, the *Statens Digitaliseringsakademi* (Government Digital Academy) stands out. Established in 2018, it was conceived as a strategy to strengthen digital competencies in the public sector, promoting administrative efficiency and the use of digital tools. The Government Digital Academy operates within the Agency for Digital Government (*Digitaliseringssyrelsen*) at the Ministry of Digital Government and Gender Equality in Denmark.

The Digital Skills Model

The Academy's team developed a digital competencies model that offers a unique perspective on the development of digital skills in public administration. Unlike the initiatives in Italy and Spain, which are based on the European Digital Competence Framework (DigComp 2.2), this Danish framework was developed specifically tailored to the needs of public sector employees through a broad consultation process involving various governmental entities to identify the competencies needed to fulfill core government functions in a digital environment. Instead of detailing specific advanced digital competencies, it outlines the general competencies that should be represented within digital government organizations.

As shown in the following figure, the Danish central government's digital skills model is represented as a "competency wheel" and focuses on the practical skills needed to work in an environment marked by digital transformation. Its development involved extensive consultation with over 35 government authorities and expert interviews. During this process, key technological trends were identified, and prototypes were created for eight generalist roles within central administration. In collaborative workshops, employees defined the essential skills for their roles, which helped refine and define a representative set of competencies (OECD, 2024).

The competencies needed by a public servant may differ based on their specific role, tasks, and responsibilities, with each employee requiring only a portion of the competencies outlined in the model. Consequently, the model provides an overall framework of competencies that should be

represented at the organizational level within each digital government agency (OECD, 2024).

Figure 13. Danish model of digital skills

Source: Danish Agency for Digital Government, Government Digital Academy, 2022, translation taken from OECD, 2024

The competencies are organized into four main areas:

1. **Strategy and Business Development:** Government agencies must align their business strategies with IT and digitalization goals, leverage new technologies to enhance core tasks, and understand the interaction between legislation and technology to ensure effective digitalization.
2. **Projects and Development:** Efficient project execution is key to public sector development, requiring clear needs definition, effective tendering, knowledge of relevant tools and methods, and the ability to implement solutions and manage resulting changes effectively.
3. **Data and Security:** Data is essential for government functions and will continue to grow in importance. However, the rise in cyberattacks

and increased data security regulations, like the GDPR, heighten the need for competencies in secure data handling, ethical considerations, and legal awareness in data usage.

4. **Governance and Collaboration:** Governance and collaboration are essential for successful IT implementation and digitalization in government. Agencies rely on external suppliers, making effective collaboration and management crucial. Additionally, they must manage an expanding IT portfolio and maintain financial oversight.

Each area includes 12 subcategories that, together, define 32 unique competencies, which are not limited solely to technological skills but also encompass a broad range of skills relevant to public administration, such as socio-emotional competencies crucial for managing and implementing digital technologies in the public sector. The detailed categories, subcategories, and competencies can be consulted in Model for Digitale Kompetencer.

Table 3. Digital competencies of the Government Digital Academy model

Main skills categories	Skills subcategories	Unique skills
Strategy and business development	Strategy formulation	1 Formulate strategies and action plans. 2 Determine financial implications and potentials.
	Legislation and technology	3 Ensure the link between legislation and digitalization. 4 Know the potential of new and existing technologies. 5 Know the common public IT solutions and digital public architecture.
	Identification of potential and need	6 Involve users and stakeholders by continuously identifying and testing needs. 7 Determine the digital potential of the core public functions. 8 Map and model business processes. 9 Integrate business and IT.
	Specification of requirements	10 Formulate user stories, acceptance criteria and requirements specification. 11 Use, evaluate and implement different forms of tenders and contracts. 12 Assess implications for administrative law.

Main skills categories	Skills subcategories	Unique skills
Projects and further development	Development and optimization	13 Be able to implement government IT projects. 14 Ensure the quality of digital solutions. 15 Apply relevant development and operational methods. 16 Be able to further develop and optimize operations.
	Organizational implementation	17 Practice change management. 18 Ensure continuous operation.
Data and security	Cyber and information security	19 Act cyber safely. 20 Act in accordance with the GDPR. 21 Acting in accordance with ISO 27001.
	Use of data	22 Use data to develop core public functions. 23 Create an overview of data and data flows.
	Data ethics and administration	24 Know ethical issues and assess legal issues when working with data.
Governance and co-operation	Supplier co-operation and management	25 Be able to manage and collaborate with suppliers. 26 Know the IT market and be able to assess its offerings.
	Financial management	27 Manage IT costs. 28 Manage project finances. 29 Ensure the attainment of returns.
	Governance and portfolio management	30 Map and analyze the systems landscape. 31 Manage the IT portfolio through its life cycle. 32 Ensure adequate governance, IT organization and skills.

Source: Danish Agency for Digital Government, Government Digital Academy, 2022, translation taken from OECD, 2024

Course Offerings and Structure

The State Digitalization Academy designed its courses to address the specific challenges and competence needs of the Danish public sector. A key feature of the training approach was its strong connection to real-world government practices. The courses were practical, incorporating government cases and examples to ensure relevance to the daily tasks of public employees. Moreover, they were aligned with the strategic goals, requirements, and policies shaping the digital transformation of the public sector and the competencies presented previously.

The academy's courses primarily targeted government employees without formal IT or digitalization education, but for whom digital competencies were essential to fulfilling their roles effectively. This focus aimed to bridge the knowledge gap and ensure that employees across various departments could confidently engage with digital tools and processes.

The Danish Digital Agency played a central role in the academy's administration. A Secretariat for Digital Competencies was established to manage and coordinate courses and related initiatives, ensuring that training programs remained closely aligned with the evolving needs of government authorities. The academy's placement within the Danish Digital Agency also allowed for continuous updates to course offerings in response to new legal requirements, policy reforms, and emerging digitalization needs (Danish Agency for Digital Government, n.d.).

Closure of the Academy

Despite its structured approach and alignment with government strategies, the State Digitalization Academy ceased operations at the end of 2024. No official explanation for the closure was provided. In an effort to gather further details, we contacted the Danish Digital Agency via email; however, their response indicated that they were unable to share additional information regarding the reasons behind the academy's discontinuation.

Key Takeaways - Government Digital Academy

1. **A Public Sector-Specific Framework Developed Through Participation:** Denmark developed its own digital competencies framework tailored specifically for public sector employees, unlike other countries that follow DigComp 2.2. The framework was built through extensive consultations with over 35 government authorities and expert interviews, ensuring it accurately reflected the real needs of public servants.
2. **A Comprehensive Digital Competencies Model:** The Danish framework categorized 32 key competencies into four main areas: Strategy & Business Development, Projects & Development, Data & Security, and Governance & Collaboration. These competencies encompassed not only technical skills but also strategic, managerial, and collaborative abilities, ensuring public employees could navigate the complexities of digital transformation effectively.
3. **Practical Training Aligned with Daily Tasks:** The Government Digital Academy focused on hands-on, practical training designed to help employees apply digital tools and strategies in their daily work. The courses incorporated real government cases and examples, making the learning process more relevant and directly applicable to public administration challenges.

3.6. Cases Summary

Table 4. Comparative analysis matrix

Criteria	Bayern	Nordrhein-Westfalen	País Vasco (Ikanos)	Italy (Syllabus)	Denmark (Digital Academy)
Framework used	Digcomp	MeKo Qualifica Digitalis	DigComp	DigComp	Danish Model of Digital Skills
Identification of skills required / differentiation among different roles and profiles	Yes	Yes	Yes / Definition of Organizational Digital Profile and Professional Digital Profile	Yes / Set by the administrator of each organization	Yes
Assessment of skills possessed / test type (self-assessment, knowledge questions, performance based)	Yes / Self-assessment test	Yes / Self-assessment test	Yes / Self-assessment test for different professional profiles	Yes / Self-assessment test	Yes / Self-assessment test

Criteria	Bayern	Nordrhein-Westfalen	País Vasco (Ikanos)	Italy (Syllabus)	Denmark (Digital Academy)
Digital skills levels classification	0 to 8 points in each category of DigComp	0 to 20 points in each category of MeKo	Basic, intermediate, and advanced	Basic, intermediate, and advanced	No classification
Training methodologies	E-learning, Blended learning, and In-person events	E-learning, and In-person events	Personal Learning Environments (PLE) and Organizational Learning Environments (OLE)	Self-paced learning - no synchronous activities (such as virtual classrooms or webinars).	-
Certification of competences	Yes DigitalCheck-NRW	Yes Diagnostic Tool (digital.campus)	Yes "ikanos enpresa" seal for completing the Professional Digital Competence Diagnostic Program 2023, and the BAIT Digital Competence Certification System for a person's skills	Yes at the end of each course, a certificate is issued.	-

Criteria	Bayern	Nordrhein-Westfalen	País Vasco (Ikanos)	Italy (Syllabus)	Denmark (Digital Academy)
Stakeholders involved	Regional Government Public administrations / University / Educational experts / Companies / Public and private	Public administrations / Educational experts / Companies / Public and private	Regional Government Public administrations / University / Educational experts / Companies / Public and private employment agencies	Government Institutions (Department for Digital Transformation (DTD) – Agency for Digital Italy (AgID) / Educational Institutions and Training Providers	Government Institutions / Public administrations / Educational experts
AI integration	No	No	No	Yes Included in one of the competencies areas	Not specified
Cost	Free for public employees	Free for public employees	-	Free for institutions and employees	-

Source: Own elaboration, 2025

4

Competency Mapping for Thuringian State Administration

The methodology for mapping competencies combines insights from the DigComp 2.2 framework, responses from the client, and relevant literature on digital skills critical for functioning effectively in a digital society. This approach was tailored to the specific needs of the Thuringian State Administration through an analysis of workflows and daily operational tasks performed by its employees.

To ensure a comprehensive perspective, national frameworks from Spain and Italy were incorporated, broadening the applicability of the identified competencies. Additionally, findings from the survey conducted by the Institut für den öffentlichen Sektor (2024) on relevant digital skills for public sector employees in Germany informed the process.

This structured approach involved the following steps:

1. **Task Identification**: Core administrative tasks and workflows within the Thuringian State Administration were examined, with an emphasis on processes where digital tools and technologies are central.
2. **Competency Categorization**: These tasks were analyzed to identify the digital skills essential for their execution, forming the basis for competency mapping.
3. **Framework Mapping**: The identified skills were systematically aligned with competencies outlined in the DigComp 2.2 framework, ensuring alignment with established digital standards.
4. **Gap Analysis**: Existing employee skill sets were compared against the mapped competencies to highlight gaps and opportunities for development.
5. **Contextual Adaptation**: The competencies were refined to address the unique operational and strategic needs of the Thuringian State Administration, ensuring their relevance to ongoing digital transformation initiatives.

By integrating established frameworks, sector-specific recommendations, and a detailed analysis of workflows, this methodology provides a structured and practical approach to identifying and addressing the digital competency needs of the Thuringian State Administration.

4.1. Roles and Responsibilities of Civil Servants

Civil servants in the Thuringian State Administration fulfill diverse roles, primarily centered on administrative responsibilities. They facilitate the processing of benefit applications, oversee the disbursement of funds, and ensure

compliance with regulations. A significant aspect of their work includes overseeing the legal utilization of designated funds, promulgating administrative directives, and addressing grievances. Furthermore, civil servants act as liaisons, providing counsel to individuals and organizations, thus fostering effective communication between the government and public.

Personnel administration is another critical area, involving the maintenance of employee records and payroll calculations. Civil servants also participate in budgetary planning, contributing to the formulation and implementation of economic strategies. These responsibilities highlight the multifaceted nature of their work, which extends beyond routine tasks to strategic planning and policy implementation (BERUFENET: Bundesagentur für Arbeit, 2020).

Impact of Digital Tools and Technologies on Administrative Processes

Digital tools are profoundly transforming administrative processes in both back-office operations and citizen-facing services. The integration of technology necessitates administrative personnel to acquire proficiency in new digital protocols and software applications. For instance, the adoption of electronic identification systems, such as SPID in Italy, illustrates how digital technology is revolutionizing public administration by streamlining procedures like accessing social security services (European Commission, 2020).

In Germany, legislations such as the Online Access Act (OZG), emphasize creating electronic administrative processes, such as electronic file management and processing. This approach ensures accessibility and usability for individuals with impairments, underscoring the importance of inclusivity in the digital transformation journey (Ehlers, U.-D., Lindner, M., & Rauch, E., 2024)

The growing reliance on digital tools introduces challenges, including the need for robust data protection measures and cybersecurity protocols. The COVID-19 pandemic accelerated the adoption of telecommuting, compelling employees to adapt to less structured work environments. Proficiency in digital technologies for task management and communication has become essential, highlighting the increasing demand for self-management and adaptability in contemporary administrative settings (European Commission, 2020).

Critical Workflows and Tasks in Daily Operations in the Thuringia state Administration

The following tasks were identified as essential to the Thuringia State administration's daily operations and service delivery:

1. Citizen Communication: Addressing inquiries through email or phone calls and managing service requests.
2. Virtual Coordination: Organizing and overseeing virtual meetings using platforms like OpenTalk and Microsoft Outlook.
3. Document Management: Preparing, evaluating, and disseminating

formal communications, maintaining digital e-files, and converting physical documents into digital formats.

4. ERP Systems Usage: Managing data in enterprise resource planning (ERP) systems for case management, financial tracking, and resource distribution
5. Collaboration: Utilizing cloud platforms such as Nextcloud for document sharing and teamwork.
6. Reporting and Analysis: Producing reports and deriving insights from data using Excel and ERP systems.
7. IT Troubleshooting: Addressing fundamental IT challenges, especially in remote work setups

These tasks illustrate the administration's reliance on a mix of traditional and digital tools to ensure efficient service delivery.

4.2. Mapping Thuringian State Administration Competencies

The competencies necessary for effective functioning within the Thuringian State Administration closely align with the EU's DigComp 2.2 framework, providing a comprehensive structure for digital skills development. The following sections map these competencies to specific areas within the framework, highlighting their relevance for employees.

Competence Area 1: Information and Data Literacy

Electronic File Management (Competency 1.3: Managing Data, Information, and Digital Content):

Employees are required to organize, store, and retrieve digital content effectively. Tools like electronic document management systems (EDMS) and cloud storage services support structured workflows and ensure compliance with archival policies.

Competence Area 2: Communication and Collaboration

Digital Communication (Competency 2.1: Interacting Through Digital Technologies):

Making phone calls, sending emails, and hosting virtual meetings: These activities are examples of Competency 2.1, Interacting through Digital Technologies. Competence 2.1 focuses on recognising the proper digital communication methods for a specific environment, such as phone calls, emails, or video conferencing, as well as choosing the right tools and services for synchronous or asynchronous communication.

Content Collaboration (Competency 2.2: Sharing through Digital Technologies):

Cloud storage services (Nextcloud/Thuringian exchange platform) can enhance collaboration by allowing file sharing. As a result, this skill can be related to competency 2.2, Sharing via Digital Technologies.

Remote Work (Competency 2.4: Collaborating with Digital Technologies):

The hybrid work model demands proficiency in digital tools such as video conferencing platforms (e.g., OpenTalk, Microsoft Teams) and collaborative environments like Nextcloud. These technologies enable seamless communication and task coordination.

Competence Area 3: Digital Content Creation

Office Software (Competency 3.1: Developing Digital Content):

Word, Spreadsheet, and Presentation software. These skills are strongly related to competence 3.1, Developing Digital Content, because these tools are widely used to create and edit digital content in a variety of formats. This competency focuses on using digital tools to express oneself and create material, which includes text documents, spreadsheets, and presentations.

Competence Area 4: Safety

Cybersecurity (Competency 4.1: Protecting Devices):

Understanding Windows security settings and recommended practices leads to proficiency. 4.1 Protecting Devices. This competency requires knowledge of safety and security procedures, as well as the ability to secure devices and digital assets.

Data Protection (Competency 4.2: Protecting Personal Data and Privacy):

Some parts of this ability, such as user access controls and data encryption, refer to competence. 4.2 Protecting Personal Data and Privacy. This competency focuses on understanding and executing ways to protect personal information in digital contexts.

Protecting the Environment (Competency 4.4):

Inspired by practices in Spain, employees should adopt environmentally sustainable digital practices. This includes energy-efficient device use, minimizing e-waste, and integrating sustainability principles into procurement and daily operations. These actions align with long-term environmental and digital strategies.

Competence Area 5: Problem Solving

Technical Troubleshooting (Competency 5.1: Solving Technical Problems):

Solving Technical Problems, is critical for dealing with technical challenges in remote work settings, including network issues, software malfunctions, and remote access to files and systems.

Identifying Needs and Technological Responses (Competency 5.2)

This involves identifying and implementing digital tools for remote work, including communication, task management, and time tracking applications.

Creative Use of Digital Technologies (Competency 5.3):

Drawing lessons from Spain, employees should be trained in the use of emerging technologies like IoT and blockchain. These technologies offer

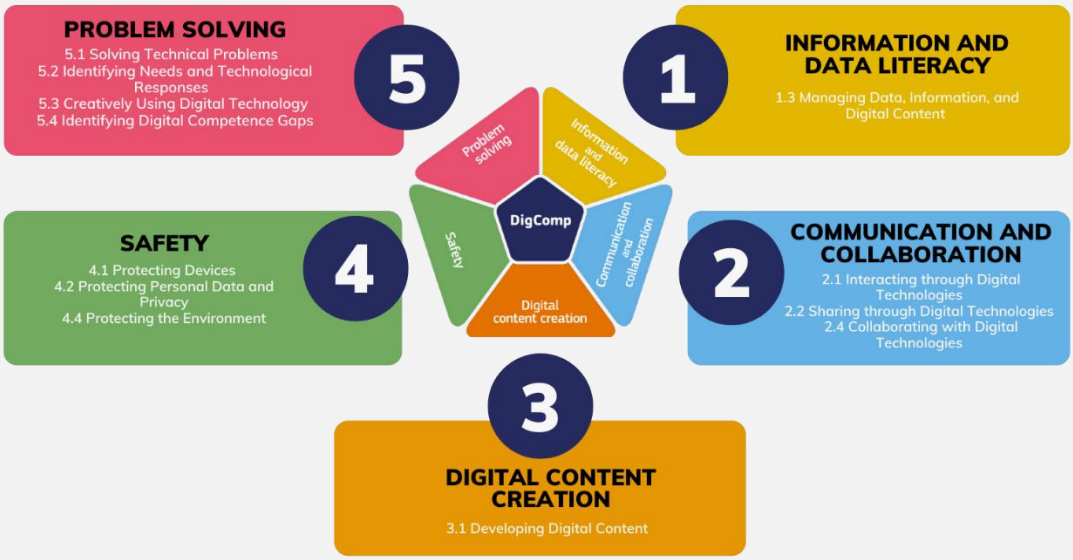
innovative solutions for optimizing administrative workflows, such as using OpenProject for advanced project management or ERP systems for resource distribution.

Skill Development (Competency 5.4: Identifying Digital Competence Gaps):

Regular assessments should identify skill gaps in digital literacy. Tailored training programs can address these gaps, fostering a future-ready workforce capable of adapting to emerging digital demands.

Figure 14 gives a clearer view of the aforementioned competences.

Figure 14. Competencies identified for the digital transformation of the Thuringian administration



Source: Own elaboration, 2025

The numbers represent digital competence framework areas and specific competencies according to DigComp 2.2 Framework (e.g., 1.1 = Area 1: Information and Data Literacy, Competence 1: Browsing, Searching, and Filtering Data etc)

5

Recommendations

This section presents a series of 10 recommendations aimed at strengthening digital competency development and training for public sector employees in the State of Thuringia. These recommendations have been classified into five key categories: Stakeholder & Planning, Learning & Skill Development, Evaluation & Monitoring, Training Infrastructure, and Digital Competencies.

Each recommendation follows a structured approach, beginning with a proposal outlining the suggested action, followed by a rationale that explains the reasoning behind the recommendation, often supported by relevant case studies or best practices from other regions. Finally, implementation steps are provided, offering specific guidance on how to effectively apply the recommendation within the context of Thuringia's public sector training and digital transformation efforts.

The following table presents the set of recommendations.

Stakeholder & Planning
1. Align the digital strategy for the public sector with state, national, and European frameworks and set measurable goal.
2. Engage diverse stakeholders to ensure comprehensive and effective digital competency programs, incorporating collaborative AI integration where relevant.
Learning & Skill Development
3. Integrate self-assessment tools to personalize digital training for public servants.
4. Develop personalized learning pathways based on individual competencies and role-specific needs.
5. Encourage incorporation of non-digital skills to support comprehensive digital transformation in the public sector.
Evaluation & Monitoring
6. Establish metrics to evaluate training effectiveness.
7. Regularly update training programs to address the dynamic demands of digital transformation in the public sector.
Training Infrastructure
8. Develop a unified digital training platform to centralize and streamline learning resources.
9. Ensure equitable and inclusive access to digital skill development for all public sector employees.
Digital Competencies
10. Strengthening digital competencies for the Thuringia State Administration.

1

Align the digital strategy for the public sector with state, national, and European frameworks and set measurable goal

Proposal

The digital strategy for Thuringia's public sector should be fully aligned with state, national, and European digital strategies, ensuring coherence across various levels of government and sectors. This alignment should include the integration of digital competencies development, course design, and specific public administration goals, reflecting the priorities and objectives set at the aforementioned levels. Thuringia should adopt European standards, such as the European Digital Competence Framework (DigComp 2.2), to ensure interoperability, sharing of best practices, and integration with broader European digital initiatives.

Rationale

Aligning the digital strategy at multiple levels—state, national, and European—will ensure consistency and coherence of the digital transformation. This approach facilitates a unified strategy, helping Thuringia's public sector adapt to evolving technological standards and collaborate more effectively with other governmental entities. By adhering to European frameworks like DigComp 2.2, Thuringia can strengthen its competitiveness within the global digital landscape.

Implementation in Thuringia

- Ensure digital competencies for public employees align with the European Digital Competence Framework (DigComp 2.2).
- Encourage partnerships with other regions, national entities, and European organizations to share best practices and enhance knowledge exchange.

2

Engage diverse stakeholders to ensure comprehensive and effective digital competency programs, incorporating collaborative AI integration where relevant.

Proposal

Digital transformation in public administration demands input from a wide range of stakeholders, including local governments, educational institutions, private sector organizations, and civil society. A collaborative approach ensures that digital competency programs are comprehensive, current, and aligned with diverse needs. In particular, the integration of AI tools and methodologies should be developed in close cooperation with government departments and public servants to ensure relevance and applicability in daily administrative tasks.

Rationale

Engaging diverse stakeholders promotes innovation, knowledge-sharing, and mutual support networks. Insights from Bavaria's collaborative model for Digital.Campus and NRW's partnerships with the European Commission demonstrate the benefits of incorporating varied expertise and perspectives. Additionally, Italy's Syllabus platform shows how collaboration across national levels can centralize efforts, while Denmark's decentralized approach emphasizes the importance of local government engagement in achieving widespread training outcomes. The KI Roadshow in Bavaria highlights how AI integration can be approached bottom-up, by actively involving public servants in the learning, testing, and co-development of AI applications. This model ensures that digital training directly addresses the needs of employees, rather than relying solely on top-down policy implementation.

Implementation in Thuringia

- Establish partnerships with universities, vocational schools, and private sector entities to co-develop training materials and monitor progress.
- Organize regular stakeholder workshops to align digital training objectives with local and national digital strategies.
- Create a dedicated coordination team within DAT to manage partnerships and integrate stakeholder feedback into the training programs.
- Develop AI-focused pilot programs where government agencies and public servants can collaboratively test and refine AI applications before broader implementation.

3 Integrate self-assessment tools to personalize digital training for public servants

Proposal

Self-assessment tools enable public servants to identify their digital competency levels and receive tailored recommendations for training. These tools create personalized learning pathways, increasing engagement and efficiency in skill development.

Rationale:

The Competence Tool in Bavaria and the Digital Check NRW demonstrate how self-assessment enhances the relevance of training programs by targeting specific skill gaps. Aligning these tools with frameworks like DigComp 2.2 ensures consistency with European standards. Further, Italy's Syllabus platform and the Basque Country's continuous learning systems highlight how integrating real-time feedback with individualized training recommendations promotes a dynamic and adaptive learning experience.

Implementation in Thuringia

- Develop a self-assessment platform integrated into the state's digital training portal, leveraging DigComp 2.2 to standardize competency evaluation.
- Incorporate real-time feedback mechanisms, inspired by the Basque Country, to adjust training recommendations dynamically based on employee progress.
- Ensure the platform is accessible and includes personalized dashboards for tracking progress, issuing certificates, and guiding employees through targeted learning pathways.

4

Develop personalized learning pathways based on individual competencies and role-specific needs.

Proposal

Create a personalized learning framework that begins with an initial self-assessment of digital competencies for each administrative employee, identifying their skills gaps and aligning these with their role-specific requirements. Leveraging tools like the diagnostic platforms used in Digital.Campus Bayern and Ikanos, Thuringia could implement a tailored approach, offering individual learning paths through e-learning modules, workshops, and mentoring programs.

Rationale

Benchmarking evidence highlights the effectiveness of tailored training in addressing diverse needs within public administration. The Ikanos initiative in Spain provides self-assessment tools and personalized recommendations based on DigComp competencies, leading to targeted skill development. Similarly, Digital.Campus Bayern's diagnostic tool allows employees to evaluate their skill levels and receive course recommendations that align with their professional responsibilities. Varying digital skill levels among employees necessitate customized interventions to bridge skill gaps.

Implementation in Thuringia

- The Thuringian State Administration can adopt a self-assessment platform modelled on Ikanos and Digital.Campus Bayern to evaluate employees' digital competencies.
- The results can inform the creation of individual learning plans, which would include modular e-learning content, blended learning opportunities, and practical workshops.

5 Encourage incorporation of non-digital skills to support comprehensive digital transformation in the public sector.

Proposal

Incorporate non-digital skills training into public sector capacity-building initiatives to enhance and support ongoing digital transformation endeavors. Competencies including project management, leadership, and adaptability to change are essential for promoting innovation, overseeing complex projects, and mitigating resistance to the cultural transformations necessary for effective digital implementation.

Rationale:

Effective digital transformation necessitates a combination of technical expertise and the capacity to address organizational challenges while fostering cultural change. Instances from various regions underscore the significance of well-rounded skill sets: leadership programs in Nordic countries and change management initiatives in the Netherlands have enhanced the capacity of their public sectors to implement digital strategies with efficacy. The integration of digital and non-digital competencies cultivates a comprehensive workforce that is prepared to respond to evolving challenges and capitalize on opportunities for innovation.

Implementation in Thuringia:

- Enhance the current training programs by incorporating modules that focus on project management, leadership, and adaptability to change.
- Collaborate with specialists to develop a curriculum specifically designed to address the requirements of public servants, while ensuring it is aligned with the unique organisational challenges faced in Thuringia.
- Implement peer learning and mentorship opportunities to strengthen these skills via practical application.
- Establish tracking mechanisms to assess advancements in both digital and non-digital competencies, thereby facilitating a holistic evaluation of capacity building.

6

Establish metrics to evaluate training effectiveness

Proposal

Develop a comprehensive evaluation framework to assess the effectiveness of training programs, incorporating both quantitative and qualitative metrics. Metrics should include pre- and post-training assessments, employee satisfaction surveys (feedback on training relevance and usability), and performance indicators tied to organizational objectives (increase in workflow efficiency, citizen satisfaction, etc.).

Rationale

The success of training initiatives relies on robust evaluation mechanisms that measure their impact on workforce competencies and organizational outcomes. Italy's Syllabus framework incorporates performance tracking and biannual reviews, ensuring that training remains aligned with evolving needs. Similarly, Denmark's Government Digital Academy emphasizes the use of key performance indicators to assess learning progress and inform continuous improvement. By implementing a metrics-driven approach, Thuringia can ensure the continuous refinement of its training programs and the alignment of learning outcomes with broader digital transformation goals.

Implementation in Thuringia

- Tools like feedback mechanisms and digital dashboards used in Italy's Syllabus for Public Administration could serve as models for monitoring progress.
- A reporting system should be developed within DAT to monitor training outcomes and periodic reviews should identify areas for improvement.

7

Regularly update training programs to address the dynamic demands of digital transformation in the public sector

Proposal

Regularly update training programs to incorporate emerging digital trends, such as artificial intelligence, blockchain, and cybersecurity, ensuring public servants remain equipped to meet the evolving demands of digital transformation.

Rationale

The rapidly changing landscape of digital technology requires public sector employees to stay informed and skilled in cutting-edge tools and methodologies. Italy's Syllabus initiative serves as a compelling example of how integrating emerging trends into training programs can enhance workforce adaptability and innovation. By proactively addressing future technological advancements, Thuringia can ensure its public servants are well-prepared to tackle current and forthcoming challenges, fostering a culture of continuous improvement and innovation in public administration.

Implementation in Thuringia

- Partner with leading tech experts, universities, and private sector organizations to identify and prioritize emerging digital trends for integration into training content.
- Establish a review cycle (e.g., annually or biannually) to evaluate and update training programs, ensuring alignment with advancements in technology and public sector needs.
- Develop a centralized digital competency framework that includes specialized modules for emerging technologies, allowing public servants to choose relevant courses based on their roles and responsibilities.
- Utilize feedback from trainees and stakeholders to refine and enhance course offerings continuously.

8

Develop a unified digital training platform to centralize and streamline learning resources

Proposal

Establish a unified digital training platform that consolidates all digital training resources into one centralized, accessible location. This platform should allow both employees and administrators to effectively track progress, evaluate learning outcomes, and identify areas for improvement. Additionally, it should include tools to ensure alignment with broader organizational strategies and objectives, enabling a more cohesive and efficient approach to digital training.

Rationale

Cases from Germany, Spain, and Italy have implemented centralized platforms in for their training programs. For instance, Italy's Syllabus platform consolidates various training resources, ensuring that employees have easy access to relevant courses while allowing administrators to track progress effectively. In Germany and Spain, similar initiatives have proven valuable in aligning training with organizational goals. By centralizing training resources and tracking mechanisms, public sector employees can have a clearer understanding of their learning path, while administrators can ensure that training is consistent with strategic goals and is continuously updated.

Implementation in Thuringia

- Develop a digital platform that integrates all digital training resources, ensuring it is user-friendly and accessible to all public sector employees.
- Include features for both employees and administrators to monitor individual progress, assess learning outcomes, and pinpoint areas for improvement.
- Ensure that the platform's training modules are directly linked to the overarching goals and strategies of the Thuringian public sector, promoting a unified approach to digital transformation.

9

Ensure equitable and inclusive access to digital skill development for all public sector employees

Proposal

The development of training programs and the digital training platform should prioritize equitable and inclusive access for all public sector employees, taking into account the particular needs of individuals, including those with disabilities and employees residing in rural areas. The platform should be designed to remove participation barriers and provide tailored learning opportunities, ensuring all employees have the chance to enhance their digital competencies, regardless of their background or challenges.

Rationale

Equitable access to training is crucial for fostering an inclusive public sector workforce and ensuring that every employee has the opportunity to thrive in a digital environment. The case of Italy's Syllabus platform highlights the importance of focusing on accessibility during platform development. Italy made substantial efforts to ensure that its platform was accessible to all employees, conducting multiple usability and accessibility tests to address any challenges users might face. This approach led to a continuously updated platform, incorporating feedback to further optimize usability and functionality.

Implementation in Thuringia.

- Evaluate and address potential barriers to accessing the platform, such as physical disabilities, digital literacy challenges, or limited internet access in rural areas, ensuring these employees can participate fully in training.
- Develop a platform that is compatible with accessibility standards, including WCAG (Web Content Accessibility Guidelines), to ensure it is usable for employees with visual, auditory, and/or cognitive impairments.
- Implement a system for collecting ongoing feedback from users to identify areas for improvement and ensure that the platform evolves in line with the needs of all employees.
- Ensure that employees from rural or underserved regions have equal access to training materials and can participate effectively.
- Design the platform's content to be culturally sensitive and inclusive, ensuring it meets the diverse needs of Thuringia's public sector employees.

10

Strengthening digital competencies for the Thuringia State Administration

Proposal

Focus should be placed on the following competencies when developing a training manual to enhance the digital skills and efficiency of employees within the Thuringia State Administration. These competencies are selected based upon the current workflows within the Thuringia state administration, national frameworks from Spain and Italy, and insights from the Institut für den öffentlichen Sektor (2024) survey on digital skills in the public sector in Germany:

- Competence 1.3: Managing Data, Information, and Digital Content
- Competence 2.1: Interacting through Digital Technologies
- Competence 2.2: Sharing through Digital Technologies
- Competence 2.4: Collaborating with Digital Technologies
- Competence 3.1: Developing Digital Content
- Competence 4.1: Protecting Devices
- Competence 4.2: Protecting Personal Data and Privacy
- Competence 5.1: Solving Technical Problems
- Competence 5.2: Identifying Needs and Technological Responses
- Competence 5.3: Creatively Using Digital Technology
- Competence 5.4: Identifying Digital Competence Gaps

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