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Test Before Invest

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EXECUTIVE SUMMARY

This guide has been developed as part of the WIN2EDIH initiative to help small and medium-sized enterprises (SMEs) independently assess their digital maturity and take the first concrete steps toward digital transformation. It responds to the growing need for SMEs to remain competitive, resilient, and innovative in an increasingly digital economy.

Targeted primarily at business owners, managers, and decision-makers within SMEs, the guide offers a structured, step-by-step framework that demystifies digital maturity. It introduces the European Commission's standardized **Digital Maturity Assessment Tool (DMAT)**, explains how to prepare for and interpret assessment results, and presents actionable steps for building a transformation roadmap.

To ensure practical value and flexibility, the guide also reviews alternative assessment models (Deloitte DMM, BCG DAI, Gartner Model), allowing SMEs to choose the approach best suited to their context. A real-world case study from a Ukrainian SME—**OrionTech Manufacturing Ltd**¹—demonstrates how a DMA can lead to tangible improvements like ERP adoption, data integration, and roadmap creation.

In support of the Digital Europe Programme, this guide also positions SMEs within a broader European ecosystem of **Digital Innovation Hubs (EDIHs)**, offering expert support, test-before-invest services, training, and long-term mentoring.

For ease of use, four annexes are included:

- **“Your Digital Maturity Journey in 6 Steps”** – a 1-page checklist summarizing the full process
- **Sample DMAT Report** – to illustrate what results SMEs can expect
- **DMAT guidance and questionnaire sample**
- **Digital Maturity Measuring Tools - detail description of different models**

Ultimately, this guide empowers SMEs not just to measure their digital readiness, but to act on it—with confidence, clarity, and support from their local EDIH.

¹ Note: The company name has been changed for data protection and confidentiality reasons. All other facts and processes reflect the actual case.



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Introduction: Why This Guide Matters

Purpose of the Guide

This guide empowers small and medium-sized enterprises (SMEs) to take charge of their digital transformation journey by providing a structured, easy-to-understand pathway to assess their digital maturity. It is designed as a practical tool for business owners, managers, and decision-makers who wish to understand their current position on the digital maturity spectrum and identify clear next steps for improvement.

Digital transformation is no longer a choice—it is a necessity for competitiveness, efficiency, and sustainability in today's rapidly evolving market. Yet, many SMEs struggle with where to begin, what to prioritize, and how to evaluate their readiness. This guide addresses that gap by introducing a reliable and standardized method—the Digital Maturity Assessment Tool (DMAT)—developed within the European Digital Innovation Hubs (EDIH) network.

The purpose of this document is to:

- Provide a clear explanation of digital maturity and its relevance to business success.



- Introduce the DMAT as a practical and accessible tool.
- Help SMEs prepare for and make the most of their assessment.
- Guide users toward actionable next steps, including how to engage with local EDIH services for deeper support.

By following this guide, SMEs will gain not only insight into their current digital capabilities but also a roadmap for growth that aligns with European standards and opportunities for innovation support.

Supporting European Priorities

This guide is part of a broader European effort to accelerate digital transformation across the continent. It aligns with the goals of the **Digital Europe Programme**, which aims to strengthen the EU's digital capacity in areas such as artificial intelligence, cybersecurity, advanced digital skills, and the digital transformation of public and private sectors.

The **European Digital Innovation Hubs (EDIHs)** play a central role in this mission. They act as regional one-stop shops that help SMEs and public sector organisations become more competitive by testing digital solutions before investing, providing training, and facilitating access to finance and innovation ecosystems.

By using the Digital Maturity Assessment Tool and engaging with your local EDIH, your business becomes part of this pan-European movement towards smarter, more sustainable, and more resilient digital economies.

Why SMEs Should Care

Assessing and improving digital maturity is directly linked to multiple tangible benefits for SMEs:

- **Competitiveness:** Digitally mature companies can respond more quickly to market changes, offer better customer experiences, and outperform less digitalized competitors.
- **Efficiency:** Digital tools and processes reduce manual tasks, optimize workflows, and improve decision-making with real-time data.
- **Innovation:** Embracing digital transformation opens the door to new business models, products, and services, helping SMEs stay ahead of the curve.
- **Funding Eligibility:** Many EU funding opportunities, including grants and innovation vouchers, require or prioritize digital maturity as a selection criterion. Having a clear digital maturity profile strengthens your eligibility.



In a global economy where agility and resilience are key, understanding and elevating your digital maturity is one of the most impactful strategic decisions an SME can make.

Why It Is Urgent Right Now

The urgency to act has never been greater. According to the World Economic Forum's Digital Transformation Initiative, digitalization could unlock trillions of euros in value globally, but this potential is concentrated in organizations ready to adapt. SMEs that delay risk falling behind in a rapidly evolving technological landscape.

Furthermore, the 2024 Draghi Report on EU Competitiveness emphasizes that Europe must boost productivity and resilience through digital and green transitions—particularly by supporting its SMEs. These businesses form the backbone of the European economy, and their digital maturity will determine the EU's global competitiveness.

Digital preparedness is also crucial for navigating ongoing economic shocks, geopolitical uncertainty, and labor market transformation. Acting now not only protects your business today—it positions you to grow tomorrow.

[Source: World Economic Forum – Digital Transformation Initiative](#)

[Source: European Commission – Draghi Report on EU Competitiveness](#)

What Is Digital Maturity?

Digital Maturity refers to the degree to which an organization has adopted digital technologies, integrated them into its processes, and developed the capacity to use them strategically. It considers not only the use of tools but also leadership, skills, data governance, automation, and sustainability. Higher digital maturity reflects the ability to continuously adapt, innovate, and leverage technology for resilience and growth.

More than simply adopting digital tools, digital maturity involves aligning people, processes, and strategy to technological opportunities. It means having the agility to anticipate, respond to, and lead digital change while continuously learning and optimizing.

According to a KPMG survey of manufacturing CEOs, nearly two-thirds agree that *“agility is the new currency of business. If we’re too slow, we’ll be bankrupt.”* Yet one in three leaders admits their organization is struggling to keep pace with technological innovation.



In reality, while almost 80% of companies are engaged in some form of digital transformation, a staggering 90% encounter serious roadblocks to success. McKinsey research shows that 78% of digital transformation projects fail to meet their objectives, and 73% deliver no business value at all.

So, what's going wrong?

One of the most common failure points is launching transformation without a clear understanding of the starting point. Organizations jump into digital initiatives without assessing their current capabilities, resulting in wasted resources, staff fatigue, and missed customer expectations.

Another issue lies in a technology-first mindset. Successful digital transformation begins not with tools, but with the customer. Companies that anchor their digital efforts in real customer needs, expectations, preferences, and behaviors – are far more likely to succeed. The best-performing 10% of digitally mature enterprises account for up to 80% of their industries' digital revenue.

This underscores the importance of understanding where you stand today before deciding where to go next. A digital maturity assessment offers a structured approach to mapping your current capabilities and identifying strengths, gaps, and opportunities for innovation.

By benchmarking your digital maturity, you can:

- Align your digital strategy with actual business needs.
- Avoid costly missteps and poorly targeted investments.
- Build change momentum within your organization.
- Engage with programs like the European Digital Innovation Hubs (EDIH) for tailored support.

In short, digital maturity isn't just a buzzword—it's a prerequisite for sustainable transformation.

The discovery phase is the essential first step in any digital transformation journey. It sets the foundation by helping organizations gain a clear picture of their current state. Only by knowing where you are can you realistically plan where you want to go and how to get there.

This stage encourages reflection on several key strategic questions:

- Have we defined a clear digital vision and set measurable objectives?
- What is our current position in the digital transformation journey?
- Is there widespread internal commitment and alignment on digital goals?
- What external forces—like market disruption, customer expectations, or technological change—are driving our digital agenda?



- Which emerging trends are likely to shape our industry and business?
- Relative to competitors, are we leading, lagging, or average in digital performance?
- Are we delivering a seamless digital experience across all channels?
- What is our roadmap for digital transformation?
- How will we track progress and measure success?

Answering these questions requires structured reflection and reliable benchmarking. Tools such as the Digital Maturity Assessment Tool (DMAT) offer proven frameworks that help organizations evaluate their digital readiness against best practices and industry standards.

Digital Maturity Measuring Tools

There is no one-size-fits-all approach to assessing digital maturity. Different models exist, each offering unique perspectives and levels of depth. While the DMAT (Digital Maturity Assessment Tool) is the recommended instrument within the European Digital Innovation Hub (EDIH) framework, other established frameworks can also offer valuable insights depending on your organization's needs and goals.

Below is an overview of several widely used digital maturity models:

1. Digital Maturity Assessment Tool (DMAT) – EDIH Network

The DMAT is a standardized, EU-endorsed self-assessment platform that evaluates digital maturity across six dimensions: strategy, readiness, human-centric digitalisation, data governance, automation & AI, and green digitalisation. It is widely adopted across Europe, integrated with EDIH support services, and accessible via the [Open DMA Portal](#).

2. Digital Maturity Model (DMM) – Deloitte²

Developed by Deloitte in collaboration with TM Forum, this model evaluates digital maturity across five core dimensions—Customer, Strategy, Technology, Operations, and Organization & Culture. It includes 28 sub-dimensions and 179 criteria, making it suitable for large or complex organizations seeking a detailed benchmark.

3. Digital Acceleration Index (DAI) – BCG³

²

<https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Technology-Media-Telecommunications/deloitte-digital-maturity-model.pdf>

³ <https://www.bcg.com/publications/2021/digital-acceleration-index>



BCG's DAI measures digital maturity across four accelerators: AI, Automation, Data, and Customer Experience. It uses a global dataset from over 11,000 companies and enables organizations to benchmark performance, identify high-impact capabilities, and define transformation priorities.

4. Digital Maturity Model – Gartner⁴

Gartner's framework outlines five maturity stages: Initiating, Experimenting, Scaling, Transforming, and Digital Leadership. It assesses progress across Strategy, Organization, Operations, Customer Experience, and Technology. The model is highly adaptable and used across industries, including public services, infrastructure, and IT.

Choosing the Right Model

Each model has its strengths:

- DMAT is ideal for SMEs, public sector organizations, and those working with EDIHs.
- Deloitte's DMM is suitable for enterprises seeking deep diagnostic analysis.
- BCG's DAI is powerful for benchmarking against global leaders and identifying fast-growth levers.
- Gartner's model is strong for organizations seeking stage-based guidance with cross-sector relevance.

SMEs should choose the model that best fits their digital ambitions, industry, and internal capacity. Regardless of the tool, the most important step is to start the journey and continuously measure progress over time.

For a full description of these models, refer to the text in Annex 4.

Meet the Digital Maturity Assessment Tool (DMAT)

What Is the DMAT?

The Digital Maturity Assessment Tool (DMAT) is an official evaluation tool used across the European Digital Innovation Hub (EDIH) network to help businesses and public sector organisations understand their level of digital maturity. It provides a structured, data-driven method to identify strengths, weaknesses, and growth opportunities in your digital capabilities.

⁴

<https://www.gartner.com/en/conferences/emea/digital-workplace-uk/conference-resources/digital-maturity-assessment>



The DMAT is applied through a simple but powerful **online questionnaire**, completed under the guidance of an EDIH expert. The results are presented in a visual dashboard, showing how your business performs in six key dimensions of digital maturity.

Key Features of DMAT:

- **Objective and standardised:** Ensures consistency across all participating SMEs and PSOs in the EU.
- **Easy to complete:** The questionnaire is user-friendly and only requires one submission per milestone.
- **Visual insights:** Provides clear charts and scores to show your current status and future potential.
- **Comparative results:** Enables benchmarking with EU-wide averages.

The Assessment Timeline:

To track your company's progress, the DMAT is conducted in three phases:

- **T0:** Before EDIH support begins (baseline)
- **T1:** One year after T0
- **T2:** Two years after T1

This timeline allows you to measure how your digital maturity evolves and which interventions make the most impact.

The DMAT is available through the "My EDIH" portal and is used directly by EDIH experts who support SMEs. At WIN2EDIH, we guide you through the process, help interpret the results, and match the findings with tailored digital services. The tool is an essential part of how we help businesses like yours become more innovative, resilient, and digitally empowered.

Differences in Approach: SMEs vs. PSOs

Digital transformation journeys differ significantly between private-sector enterprises and public institutions. While both benefit from structured support and assessment, their focus areas, regulatory environments, and user expectations vary. These differences are reflected most clearly in the structure and emphasis of the Digital Maturity Assessment (DMA), which serves as the foundation for all roadmap development within WIN2EDIH.

General Observations



- The DMA for **SMEs and Startups** emphasizes business growth, technological capability, and innovation readiness. It focuses on how digital tools support competitiveness, productivity, and internal process efficiency.
- The DMA for **Public Sector Organizations (PSOs)** focuses more on governance, interoperability, public service delivery, and citizen engagement. It reflects broader mandates related to digital inclusion, transparency, and regulatory compliance.

Because of this, the methodology for developing Digital Transformation Roadmaps for each group must account for their respective logic:

DMA Dimensions for SMEs and Startups:

1. Digital Business Strategy
2. Digital Readiness
3. Human-Centric Digitalisation
4. Data Management
5. Automation & Intelligence
6. Green Digitalisation

DMA Dimensions for Public Sector Organizations (PSOs):

1. Digital Strategy and Governance
2. ICT Infrastructure and Operations
3. Human Resources and Capacity Building
4. Citizen-Centric Services and User Experience
5. Data Management and Interoperability
6. Cybersecurity and Resilience

Key Differences in Approach Based on DMA Structure:

Category	SMEs & Startups	PSOs
Core Focus	Business growth and innovation	Public value and service modernization
Strategy Dimension	Digitalization linked to competitiveness	Digital governance and regulatory alignment
Technology Infrastructure	Adoption of mainstream and emerging technologies	Modernization and integration of legacy systems
User Perspective	Customer engagement and market responsiveness	Citizen inclusion, accessibility, and transparency



People and Culture	Upskilling workforce for agility and scale	Building digital capacity within public institutions
Risk & Security	Data handling, cyber awareness	Institutional cybersecurity, service continuity

Table 1. Key Differences in Approach Based on DMA Structure

These distinctions are critical to understand when:

- Interpreting DMA results
- Mapping relevant WIN2EDIH services
- Framing the roadmap's tone, language, and milestones

Rather than applying a one-size-fits-all model, WIN2EDIH ensures that roadmaps are built around the specific maturity framework that each organization type uses. This allows each roadmap to serve as a realistic and meaningful tool for transformation.

The Six Dimensions of Digital Maturity for SMEs

The DMAT evaluates six dimensions that represent the foundation of digital maturity in a modern enterprise. Each dimension focuses on different but interconnected aspects of your organisation's digital capacity. Together, they provide a comprehensive picture of your current status and transformation potential.

1. Digital Business Strategy

What it means: Measures your enterprise's commitment to digitalisation as part of its overall business strategy. **Examples:** Have you invested in digital tools for marketing, logistics, customer service, etc.? Are your leaders ready to manage digital change? **Low maturity:** No clear strategy, minimal investments, ad-hoc decisions. **High maturity:** Comprehensive plan, aligned digital investments, leadership engagement.

2. Digital Readiness

What it means: Assesses the current use of both basic and advanced digital technologies in your daily operations. **Examples:** Are you using ERP systems, e-commerce platforms, or advanced tools like IoT or digital twins? **Low maturity:** Limited use of basic tools, no advanced tech. **High maturity:** Widespread use of digital systems, experimenting or operating advanced tech.

3. Human-Centric Digitalisation



What it means: Focuses on how your workforce is empowered, trained, and involved in digital change. **Examples:** Do you train employees on digital tools? Involve them in designing new digital processes? **Low maturity:** No training plan, resistance to change. **High maturity:** Regular upskilling, high staff engagement in digital projects.

4. Data Management

What it means: Evaluates how data is collected, integrated, accessed, and protected. **Examples:** Do you use data dashboards? Do you have cybersecurity policies and backups? **Low maturity:** Data not used systematically, poor integration. **High maturity:** Real-time access, strong analytics, secure and compliant systems.

5. Automation and Intelligence

What it means: Looks at how automation and AI support your business processes. **Examples:** Are you using smart algorithms, robotics, or data analytics to improve operations? **Low maturity:** Manual processes, limited or no intelligent systems. **High maturity:** AI supports decision-making, automated workflows.

6. Green Digitalisation

What it means: Measures how digital technology contributes to your environmental goals. **Examples:** Are you using digital solutions to reduce emissions, cut waste, or monitor energy use? **Low maturity:** No green strategy, digital is not linked to sustainability. **High maturity:** Digital tools reduce environmental impact, sustainability part of IT choices.

Each of these six dimensions contains sub-dimensions with targeted questions, helping to generate a rich and accurate profile of your digital maturity. In the next section, we will explain how to prepare for the assessment and what to expect during the process.

Before You Start: Preparing for the Assessment

How to Prepare for a DMAT Assessment

Before completing the full Digital Maturity Assessment, it can be helpful to take the **Digital Speed Test** — a quick and intuitive self-check that evaluates your company's digital readiness in five simple steps. Using everyday metaphors from the world of driving, the test translates digital concepts into familiar language, helping you get an instant overview of where your business stands.



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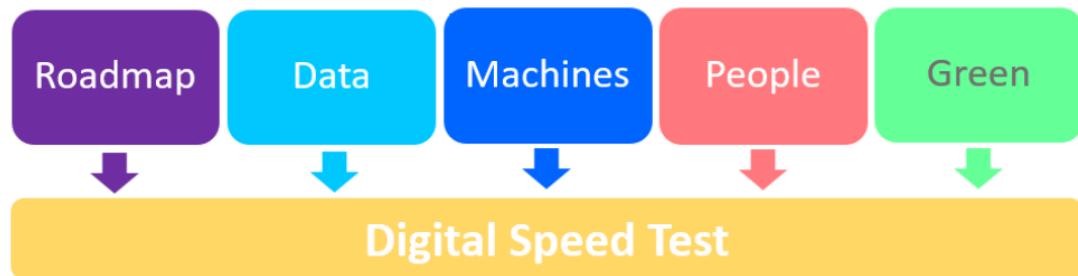


You can access the test here:
<https://european-digital-innovation-hubs.ec.europa.eu/digital-speed-test>

Digital speed test

Digital Speed Test

Is your company ready to navigate the ever-evolving digital landscape and reach new heights of success? The Digital Speed Test is designed to help you map out your digital journey and accelerate your transformation into the digital age. Join us on this adventure that will unveil your digital speed guide you towards your desired destination!



The data collected will be used to help you on your digital journey.

No personal or sensitive data is stored or processed. The data collected will only be used in aggregated format for statistical purposes by the European Commission.

Figure 1. Digital Speed Test Overview

Why take the Digital Speed Test first?

- It helps identify your current strengths and weaknesses.
- It offers insights into how digitalised your processes and strategies are.
- It covers key areas such as cybersecurity, sustainability, and employee digital skills.
- It gives you a visual, easy-to-understand result to start your digital journey.

Once you've completed the Speed Test, you have several options to continue your digital journey:

Contact your local European Digital Innovation Hub (EDIH)

- Locate a hub near you via the official catalogue: [EDIH Catalogue](#)
- EDIHs provide expert support, tailored services, and guidance based on your initial results.

Take the full Digital Maturity Assessment (DMAT)

- Use the EU-wide platform to conduct a more detailed self-assessment: [Open DMA Platform](#)



Explore other maturity models

- Based on your organization's needs, you can choose from several well-known frameworks covered in Section 2 of this guide, such as:
 - Deloitte Digital Maturity Model (DMM)
 - BCG Digital Acceleration Index (DAI)
 - Gartner Digital Maturity Model
- This helps tailor your assessment journey to your sector, priorities, and stage of development.

How to Prepare for Any Digital Maturity Assessment

To get the most from your assessment:

- **Set aside 30–45 minutes** to complete the questionnaire.
- **Include your leadership or digitalisation team** to ensure input from all relevant functions.
- **Gather key information** such as IT infrastructure, employee training efforts, data use policies, and sustainability practices.
- **Be honest and reflective**—the goal is not to impress but to grow.

Whether you connect with WIN2EDIH or another regional hub, you are not alone. European Digital Innovation Hubs are here to support you **before, during, and after your assessment**. They help you interpret results, explore tailored services (roadmaps, tech validation, training), and make informed decisions that unlock your full digital potential.

How to Use the Tool – Step-by-Step

1. Visit the Platform

Go to <https://european-digital-innovation-hubs.ec.europa.eu/open-dma>.

The landing page provides a short description of the tool and its purpose.

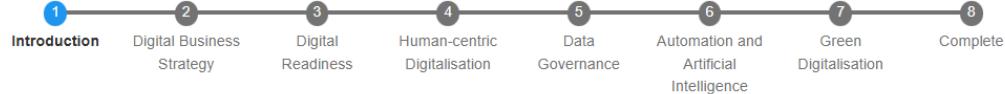
2. Enter Your Initial Information

You will be prompted to enter some basic details about yourself and your company. This includes:

- Country where the enterprise business unit is located
- In which sector of activity is your enterprise's business primarily focused? Please select only one option
- Enterprise's staff size



Open DMAT - Digital Maturity Assessment tool



Please be aware that the language of the Open DMAT can be selected at the top of the page.

Is your company in the process of digitalisation? Do you want to know your strengths and weaknesses in terms of digital maturity? If you already carried out the Digital Speed Test ([link](#)), this Open DMAT tool can give you additional feedback to step up your digital transformation.

The Open DMAT is targeting any company that wants to perform a complete self-assessment. The Open DMAT has the same questions as the DMAT used by EDIHs, but it only provides results of your individual company, without any comparison with others. For a complete understanding of the results, we encourage you to contact your closer EDIH ([link](#)).

The data collected will be used to help you on your digital journey. No personal or sensitive data is stored or processed. The data collected will only be used in aggregated format for statistical purposes by the European Commission.

Country where the enterprise business unit is located:

- None -

In which sector of activity is your enterprise's business primarily focused? Please select only one option:

- None -

Enterprise's staff size

- None -

Figure 2. User Information Entry Form – Organization and Contact Details

3. Complete the Questionnaire

The questionnaire consists of approximately 30–40 questions, depending on your responses. These questions are grouped by the six dimensions and focus on practical aspects of your digital operations.

- Questions marked with an asterisk (*) are mandatory.
- Estimated time to complete: 45–60 minutes.
- It is recommended to involve leadership or digitalization staff to ensure accuracy.



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1 Introduction 2 Digital Business Strategy 3 Digital Readiness 4 Human-centred Digitalisation 5 Data Governance 6 Automation and Artificial Intelligence 7 Green Digitalisation 8 Complete

The questions of this dimension intend to capture the overall status of a digitalisation strategy in your enterprise from a business perspective. They ask about your enterprise's investments in digitalisation per business areas (both executed and planned) as well as the company's readiness to embark in a digital journey that might require organisational and economic efforts not yet foreseen.

Q1. In which of the following business areas has your enterprise already invested in digitalisation and in which ones does it plan to in the future? Please select all options that apply:	Already Invested	Plan to Invest
Product/Service design (incl. research, development and innovation)	<input type="checkbox"/>	<input type="checkbox"/>
Project planning and management	<input type="checkbox"/>	<input type="checkbox"/>
Operations (production of physical goods/manufacturing, packaging, maintenance, services, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Collaboration with other internal site locations or other companies in the value chain	<input type="checkbox"/>	<input type="checkbox"/>
Inbound logistics & warehousing	<input type="checkbox"/>	<input type="checkbox"/>
Marketing, sales & customer services (customer management, order processing, helpdesk, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Delivery (outbound logistics, eInvoices, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Administration and human resources	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing and procurement	<input type="checkbox"/>	<input type="checkbox"/>
(Cyber)security and compliance with Personal Data regulations/GDPR	<input type="checkbox"/>	<input type="checkbox"/>

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Figure 3. Digital Business Strategy – Questions on Strategic Alignment and Planning



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Info for Associated Countries
Call for Proposals in EU4EEA

Open DMAT - Digital Maturity Assessment tool

1 Introduction 2 Digital Business Strategy 3 Digital Readiness 4 Human-centric Digitalisation 5 Data Governance 6 Automation and Artificial Intelligence 7 Green Digitalisation 8 Complete

Q2. In which of the following ways is your enterprise prepared for (more) digitalisation? Please select all options that apply:

Digitalisation needs are identified and are aligned with business objectives
 Financial resources (own, loans, subsidies) are identified to secure digitalisation during at least one year
 IT infrastructures are ready to support digitalisation plans
 ICT specialists are employed/sub-contracted (or hiring/subcontracting needs have been identified)
 Enterprise's management is ready to lead the necessary organisational changes
 Concerned business departments and their staff are ready to support digitalisation plans
 Business architecture and operational processes can be adapted if required by digitalisation
 Manufactured products are already commercialised as a service (so-called Servitisation) or supplemented by services enabled by digital technologies
 Clients' and partners' satisfaction with online services/interactions is monitored regularly (on social media channels, e-commerce operations, emails, exchanges, etc.)
 Risks of digitalisation (e.g. non-planned effects over other business areas) are considered

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Figure 4. Digital Business Strategy – Questions on Strategic Alignment and Planning (part 2)

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Open DMAT - Digital Maturity Assessment tool

1 Introduction 2 Digital Business Strategy 3 Digital Readiness 4 Human-centric Digitalisation 5 Data Governance 6 Automation and Artificial Intelligence 7 Green Digitalisation 8 Complete

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.

Q3. Which of the following digital technologies and solutions are already used by your enterprise? Please select all options that apply:

Connectivity infrastructure (high speed (fibre) internet, cloud computing services, remote access to office systems)
 Enterprise's website
 Web-based forms and blogs/forums to communicate with clients
 Live chats, social networks and chatbots to communicate with clients
 E-Commerce sales (Business-to-Consumer, Business-to-Business)
 E-Marketing promotion (online ads, social media for business, etc.)
 E-Government (online interaction with public authorities, including public procurement)
 Remote business collaboration tools (e.g. teleworking platform, videoconferencing, virtual learning, business-specific)
 Internal web portal (Intranet)
 Information Management Systems (Enterprise Resources Planning, Product Lifecycle Management, Customer Relationship Management, Supply Chain Management, e-invoicing)

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Figure 5. Digital Readiness – Questions on Technological Infrastructure



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Q4. Which of the following advanced digital technologies are already used by your enterprise? Please choose all options that apply using the provided scale. (Options: Not used, Consider to use, Prototyping, Testing, Implementing, Operational)

	Not used	Consider to use	Prototyping	Testing	Implementing	Operational
Simulation & digital twins (i.e. real-time digital representations of physical objects/processes) *	<input type="radio"/>					
Virtual reality, augmented reality *	<input type="radio"/>					
Computer-aided design (CAD) & manufacturing (CAM) *	<input type="radio"/>					
Manufacturing execution systems *	<input type="radio"/>					
Internet of Things (IoT) and Industrial Internet of Things (IIoT) *	<input type="radio"/>					
Blockchain technology *	<input type="radio"/>					
Additive manufacturing (e.g. 3D printers) *	<input type="radio"/>					

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Figure 6. Digital Readiness – Questions on Technological Infrastructure (part 2)



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This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

Q5. What does your enterprise do to re-skill and up-skill its staff for digitalisation? Please select all options that apply:

- Performs staff skill assessment to identify the skills gaps
- Designs a training plan to train and up-skill staff
- Organises short trainings, provides tutorials/guidelines and other e-learning resources
- Facilitates learning-by-doing/peer learning/experimentation opportunities
- Offers traineeships & job placements in key capacity areas
- Sponsors staff participation in trainings organised by external organisations (training providers, academia, vendors)
- Makes use of subsidised training and upskilling programmes

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Figure 7. Human-Centric Digitalisation – Questions on Training and Digital Culture

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Q6. When adopting new digital solutions, how does your enterprise engage and empower its staff? Please select all options that apply:

- Facilitates staff awareness about new digital technologies
- Communicates digitalisation plans to staff in a transparent and inclusive way
- Monitors staff acceptance and takes measures to mitigate the potential collateral effects (e.g. fear to change, 'always on' culture vs. work-life balance, safeguards to risks of privacy breaches etc.)
- Involves staff (including non-ICT staff) in the design and development of product/service/process digitalisation
- Gives staff more autonomy and appropriate digital tools to take and execute decisions
- Redesigns/Adapts jobs and workflows to support the ways that staff actually would like to work
- Sets up more flexible working arrangements enabled by digitalisation (e.g. telework)
- Puts at staff disposal a digital support team/service (internal/external)

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Figure 8. Human-Centric Digitalisation – Questions on Training and Digital Culture (part 2)



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This dimension captures how data is digitally stored, organised within the enterprise, made accessible across connected devices (computers, etc.) and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes.

Q7. How is your enterprise data managed (i.e. stored, organised, accessed and exploited)? Please select all options that apply:

The organisation has in place a data management policy/plan/set of measures
 Data is not collected digitally
 Relevant data is stored digitally (e.g., office applications, email folders, stand-alone applications, CRM or ERP system, etc.)
 Data is properly integrated (e.g. through interoperable systems, application programming interfaces) even when it is distributed amongst different systems
 Data is accessible in real-time from different devices and locations
 Collected data is systematically analysed and reported for decision-making
 Data analytics are enriched by combining external sources with own data
 Data analytics are accessible without need of expert assistance (e.g. through dashboards)

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Figure 9. Data Governance – Questions on Data Use, Management, and Security

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Q8. Is your enterprise's data sufficiently secured? Please select all options that apply:

An enterprise data security policy/plan/set of measures is in place
 All client-related data is protected from cyberattacks
 Staff is regularly informed and trained on cybersecurity and data protection issues/risks
 Cyber-threats are regularly monitored and assessed
 A full backup copy of critical business data is maintained (off-site/in the cloud)
 A business continuity plan is in place in case of catastrophic failures (e.g. all data locked by a ransomware attack or physical damage to the IT infrastructure)

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Figure 10. Data Governance – Questions on Data Use, Management, and Security (part 2)



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This dimension explores the level of automation and intelligence facilitated by digital means that is embedded in business processes.

Q9. Which of the following technologies and business applications is your enterprise already using? Please choose all options that apply using a provided scale. (Options: Not used, Consider to use, Prototyping, Testing, Implementing, Operational)

	Not used	Consider to use	Prototyping	Testing	Implementing	Operational
Natural Language Processing incl. chatbots, text mining, machine translation, sentiment analysis	<input type="radio"/>					
Computer vision / image recognition *	<input type="radio"/>					
Audio processing / speech recognition, processing and synthesis *	<input type="radio"/>					
Robotics and autonomous devices *	<input type="radio"/>					
Business intelligence, data analytics, decision support systems, recommendation systems, intelligent control systems *	<input type="radio"/>					

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Figure 11. Automation and Artificial Intelligence – Questions on Process Automation

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This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

Q10. How does your enterprise make use of digital technologies to contribute to environmental sustainability? Please select all options that apply:

Sustainable business model (e.g. circular economy model, product-as-a-service)

Sustainable service provision (e.g. usage tracking for further reuse by other users)

Sustainable products (e.g. eco-design, end-to-end product lifecycle planning, end-of-life & extension of useful life)

Sustainable production and manufacturing methods, materials and components (incl. end-of-life management)

Emissions, pollution and/or waste management

Sustainable energy generation in own facility

Optimisation of raw material consumption/cost

Reduction of transport and packaging costs

Digital applications to encourage responsible consumer behaviour

Paperless administrative processes

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Figure 12. Green Digitalisation – Questions on Sustainability in Digital Processes



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Q11. Is your enterprise taking into account environmental impacts in its digital choices and practices? Please grade all options that apply using this scale: No, Partially, Yes:

	No	Partially	Yes
Environmental concerns and standards are embedded in the enterprise's business model and strategy *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is an Environmental Management System/certification implemented *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental aspects are part of digital technologies/suppliers' procurement criteria *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy consumption of digital technologies and data storage are monitored and optimised *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recycling/re-use of old technological equipment is actively practised by the enterprise *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Figure 13. Completion Screen – Final Questions and Submission Step

4. Submit the Assessment

After completing all required sections, click the **Submit** button at the end of the form.

5. Receive Your Results

Once submitted, the system will immediately generate a personalized assessment report. This includes:

- A total digital maturity score (in percentage)
- Individual scores for each of the six dimensions
- Narrative insights for each area
- Recommendations for improving maturity levels

You can download the report as a PDF for internal use or to share with your local EDIH as part of your roadmap development process.



How to Interpret Your Results

After completing the Digital Maturity Assessment Tool (DMAT), your organization receives a tailored report that evaluates digital maturity across six key dimensions. This document will guide you on how to interpret these results and turn insights into action.

Understand the Overall Score

Your overall digital maturity score is an average across all six dimensions. This percentage reflects your general readiness for digital transformation.

- **Compare with Benchmarks:** Check how your score compares with similar companies in your region or sector.
- **Action Tip:** A score below 40% often indicates foundational gaps. A score above 60% suggests emerging strengths to scale.

Review Each Dimension Individually

Your digital maturity is measured across six core dimensions. Interpret each one individually:

Dimension	What It Means	What to Look For
Digital Business Strategy	Alignment between digital initiatives and business goals	Do you have a formal strategy, dedicated resources, and management buy-in?
Digital Readiness	Adoption and integration of digital technologies	Which tools are in use? Are they mainstream, advanced, or outdated?
Human-Centric Digitalisation	Staff digital skills and training initiatives	Do you invest in upskilling? Are roles redesigned for the digital era?
Data Governance	Management, storage, and security of business data	Is data digitalized, secure, and driving decision-making?
Automation & AI	Use of automated systems and artificial intelligence	Are tasks automated? Are you experimenting with or scaling AI?



Green Digitalisation	Integration of digital tools for sustainability	Are you using digital solutions to lower emissions or reduce resource use?
---------------------------------	---	--

Table 2. DMA Six Core Dimensions

Read the Tailored Recommendations

Each dimension includes narrative guidance:

- Use these as short-term actions or discussion points for your leadership team.
- Translate them into concrete projects: training, tools adoption, policy creation.
- Don't just address low scores—scale up what's working well.

Spot Patterns and Prioritize Interventions

Digital maturity is interconnected. For example:

- Weak data governance may limit automation potential.
- Strong digital strategy without workforce development may stall implementation.

Action Tip: Build synergies across dimensions. Improving data quality, for instance, may improve performance in three other areas.

Build a Phased Digital Roadmap

Use your DMA report to build a realistic transformation roadmap:

- **0–3 Months:** Quick wins — conduct internal workshops, define KPIs, digitize basic processes.
- **3–12 Months:** Invest in digital infrastructure — cloud tools, e-commerce, CRM/ERP systems.
- **12+ Months:** Integrate AI, advanced automation, and green digital solutions.

Collaborate with Your EDIH

Your local European Digital Innovation Hub (EDIH) is ready to support:

- Deep-dive analysis of your results
- Customized training and mentoring
- Connections to funding and “test-before-invest” services



Final Tip: The DMA report is not a one-time diagnosis—it's a tool to track progress and evolve continuously.

For maximum impact, revisit the assessment annually and use it as a strategic planning instrument alongside expert support.

What's Next: From Assessment to Action

Completing the Digital Maturity Assessment (DMA) is only the beginning. Now it's time to turn insights into transformation. Here's how SMEs can move confidently from evaluation to execution.

Contact Your Local EDIH

Your first and most valuable move: **reach out to your regional European Digital Innovation Hub (EDIH)**. These hubs are designed to support SMEs like yours on the digital journey.

- **Get personalized support** based on your assessment results.
- **Access expert consultations** to discuss priorities and pain points.
- **Use "test-before-invest" services** to experiment with new technologies before making costly commitments.

 For example, if your business is located in Northern Ukraine, contact the Win-Win EDIH team via [\[https://docs.google.com/forms/d/e/1FAIpQLScMkhyCD4FtSAvWEpOuZQSNqntROODtiBew7Sa-nFLgY99qFw/viewform\]](https://docs.google.com/forms/d/e/1FAIpQLScMkhyCD4FtSAvWEpOuZQSNqntROODtiBew7Sa-nFLgY99qFw/viewform) or schedule a consultation through our website – win2edih.com.ua.

You can find the full catalogue of EDIHs across Europe and search by country or region at the official European Commission portal: [EDIH Catalogue](#)

EDIH type. Choose from three types of hubs: Funded under Digital Europe programme: Co-funded by the European Commission and Member States/Associated Countries. Seal of Excellence: Positively evaluated in a European competitive call but funded exclusively by national or regional resources. Funded by other initiatives: Digital innovation hubs with similar activities to EDIHs but not connected to the network. Users will need to select this type manually.

Please note: The search engine is based on standard filtering using fixed Boolean logic. For in-depth (e.g. cross-cutting) searches and analytics the full set of data is available under the "Download Data".

EDIHs are your bridge to the wider European innovation ecosystem.



Develop a Digital Transformation Roadmap

Using the recommendations from your DMA report and guidance from your EDIH, start building your transformation roadmap.

- **Define priorities:** Focus first on quick wins or areas that can deliver early value.
- **Set realistic timelines:** Segment your plan into 0–3 months, 3–12 months, and 12+ months.
- **Align with your business goals:** Your roadmap isn't just about tech—it's about creating real value.

A good roadmap includes:

- **Strategic objectives:** Clearly defined goals that link digital transformation efforts to business growth, customer satisfaction, efficiency, or sustainability targets.
- **Key actions per DMA dimension:** Specific tasks or projects tied to each of the six digital maturity areas (e.g., training programs under Human-Centric Digitalisation, ERP implementation under Digital Readiness).
- **Budget/resource planning:** Allocation of financial and human resources for each initiative, including timelines, tools, and responsible staff.
- **KPIs to measure impact:** Quantifiable indicators to track progress, such as employee digital skill uptake, number of automated workflows, customer engagement metrics, or system integration levels.

Mobilize Your Team

Digital transformation is not a solo task. It requires cross-functional collaboration and buy-in at all levels of your organization. Success depends on creating a culture that embraces change, continuous learning, and cross-departmental coordination.

- **Involve key departments early**—especially operations, marketing, IT, HR, and finance. Each function brings valuable insight into processes that can be optimized.
- **Designate a digital lead or transformation team:** This group will act as the main point of contact for coordinating digital initiatives, tracking progress, and maintaining alignment with strategic goals.
- **Create internal champions:** Identify individuals who are excited about digital and empower them to lead change within their teams.
- **Integrate digital goals into individual and team objectives:** When KPIs reflect digital targets, adoption becomes a shared priority.



- **Communicate the why clearly and consistently:** Use town halls, team meetings, and informal updates to explain how digital transformation connects to the company's success and each employee's daily work.
- **Celebrate small wins:** Acknowledge progress and recognize teams for early successes to build momentum and motivation.

The more engaged and informed your team is, the more effective and sustainable your transformation will be.

Access Training and Skill-Building

Many EDIHs offer a wide range of training opportunities designed to boost internal knowledge and foster a culture of innovation. These include hands-on workshops, expert-led webinars, peer-to-peer exchange sessions, and access to curated educational content and platforms.

Use these resources to:

- **Upskill your team in practical digital tools** such as project management software, CRM systems, data visualization platforms, and cybersecurity protocols.
- **Understand key technologies** (e.g., artificial intelligence, cloud computing, Internet of Things, e-commerce) and how they apply to your specific industry or business function.
- **Build internal capabilities** so that digital transformation becomes a long-term, self-sustaining part of your organization—reducing dependence on costly external consultants.
- **Promote a learning mindset** within your company, encouraging employees at all levels to adapt, experiment, and lead in digital innovation.
- **Create specialized learning paths** for key roles—such as digital marketing for sales teams, data literacy for analysts, or cybersecurity awareness for operations staff.

Many EDIHs also partner with universities and training centers to offer certification programs and mentoring for more advanced digital roles. Investing in training today ensures your team is equipped for tomorrow's challenges.

Re-Evaluation: Measuring Progress and Sustaining Momentum

Digital transformation is not a one-time effort—it's a continuous process. That's why re-evaluation is an essential part of your digital maturity journey. It allows



SMEs to track progress, reassess priorities, and sustain transformation efforts over time.

What Is Re-Evaluation?

Re-evaluation is the process of conducting a follow-up Digital Maturity Assessment after an initial baseline assessment. It helps you measure changes, validate the impact of interventions, and adjust your roadmap accordingly.

The DMAT methodology, endorsed by the EDIH Network, emphasizes the importance of conducting assessments in three structured phases:

- **T0 (Initial Assessment):** Conducted before EDIH support begins to establish a baseline.
- **T1 (Mid-Term Review):** Conducted approximately one year after T0 to track early progress.
- **T2 (Long-Term Review):** Conducted two years after T1 to measure the full impact of digital transformation.

Why Re-Evaluation Matters

Re-evaluation is more than just a repeat test—it's a strategic opportunity to reflect, recalibrate, and strengthen your digital transformation. It allows SMEs to measure what has changed since the initial assessment and understand where progress has been made and where more attention is needed. It offers a clear view of improvement areas while also highlighting persistent gaps.

By showing tangible results and data-supported growth, re-evaluation provides compelling evidence to internal leadership, stakeholders, or external funders that transformation efforts are working. It enables organizations to revisit their strategies and align them more closely with evolving goals and business realities.

Re-evaluation also reinforces a culture of accountability. It reminds the entire organization that digital progress is a shared commitment, not a one-time task. Moreover, it often opens doors to additional EDIH support or funding programs, particularly when clear, data-driven progress can be demonstrated.

How to Prepare for Re-Evaluation

To ensure a productive and insightful re-evaluation, SMEs should approach the process with the same level of intentionality as the original assessment—but with added perspective and data from their digital transformation efforts.

- **Keep Detailed Records:** Throughout the implementation phase, maintain structured documentation of key milestones, such as new system rollouts,



process changes, training sessions, infrastructure upgrades, and vendor partnerships. This will make it easier to trace cause-effect relationships in your maturity evolution.

- Monitor Meaningful KPIs: Collect and organize data on performance indicators relevant to your transformation goals. Examples include time saved on key workflows, cost reductions through automation, employee adoption rates for new systems, and customer satisfaction improvements. The clearer your metrics, the more valuable your re-evaluation.
- Involve Consistent Team Members: Whenever possible, reassemble the same core team that contributed to the initial DMA. Their familiarity with the business context and previous findings ensures continuity and more accurate comparisons across time.
- Audit Your Roadmap: Revisit your digital transformation roadmap and critically assess what was implemented as planned, what was adjusted or delayed, and what was deprioritized. Take note of internal or external factors that influenced these changes.
- Approach With Openness: Re-evaluation is not an audit or judgment. It is an opportunity to measure growth, capture lessons learned, and refine strategy. Honesty in reporting setbacks or stalled initiatives will allow for better tailored support and more realistic planning going forward.

Taking time to prepare thoughtfully will enhance the insights you gain and reinforce digital transformation as an ongoing strategic asset.

What to Expect

Re-evaluation will follow the same structure as your original DMA:

- Re-assessment across the six core dimensions
- Updated overall and dimension-specific scores
- Comparative insights from T0 to T1 or T2
- New tailored recommendations based on progress

Some platforms will even display visual dashboards to help you analyze evolution across time.

Final Thought

Re-evaluation is a critical checkpoint in your digital maturity journey. It helps you transition from experimentation to strategic scaling and continuous improvement. By making it a recurring practice, your SME stays resilient, adaptive, and ready for the future.



Case Example

Case Example: OrionTech Manufacturing Ltd – From DMA to Roadmap

Client: OrionTech Manufacturing Ltd – A Ukrainian manufacturing company

With support from the WIN2EDIH team, OrionTech Manufacturing Ltd successfully completed its Digital Maturity Assessment using the **DMAT tool**, as described in this guide. This assessment revealed a structured view of the company's digital landscape—highlighting strengths and pinpointing areas for improvement across six maturity dimensions.

Key Outcomes from the DMA:

- Identified **low readiness levels** in areas such as automation, data governance, and strategic use of technology.
- Recognized the **absence of an integrated system** to connect production, logistics, and administration.
- Highlighted untapped potential in **human-centric digitalisation** and **green digitalisation** for longer-term gains.

Recommended First Step:

The assessment led to a clear, actionable recommendation: **implementing an ERP system** to centralize and streamline operations, enhance data integration, and improve decision-making.

From Diagnosis to Strategy:

Following the DMA, Carger Group collaborated with WIN2EDIH experts to develop a **Digital Transformation Roadmap**. This included:

- Mapping out **key capabilities and existing bottlenecks**.
- Structuring a **12-month implementation plan** based on prioritization of high-impact digital actions.
- Selecting relevant services from the WIN2EDIH portfolio (e.g., ERP consultancy, staff training, digital process audit).
- Planning for a **follow-up DMA in one year** to track progress and refine strategy.

Lessons for Other SMEs:



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- **Start with data:** Objective assessments provide clarity and prevent blind investments.
- **Act on insights quickly:** Early wins (like ERP implementation) can unlock broader transformation.
- **Use expert support:** WIN2EDIH helped the company move from generic ambition to structured, measurable change.

Contacts:

EDIH Catalogue - [WIN2EDIH](#)

Website - <https://win2edih.com.ua/>

[Facebook](#), [LinkedIn](#), [E-mail](#)



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Annexes

Annex 1. DMAT guidance and questionnaire sample



JRC SCIENTIFIC INFORMATION SYSTEMS DATABASES REPORT

Digital Maturity Assessment (DMA) Framework & Questionnaires for SMEs/PSOs

A guidance document for EDIHs

Kalpaka, A., Rissola, G., De Nigris S., Nepelski, D.

2023

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Abstract

Within the Digital Europe Programme (DEP) the European Commission has financed the development of 151 European Digital Innovation Hubs (EDIH) in 27 Member States and 3 associated countries. The mandate of the EDIHs is to assist businesses (SMEs) and public sector organisations (PSOs) in their digital transformation with the adoption of advanced digital technologies including Artificial Intelligence (AI), High Performance Computing (HPC) and Cybersecurity and the development of advanced digital skills. JRC within the context of its collaboration with DG CNECT has developed a new Digital Maturity Assessment (DMA) framework to measure the increase in digital maturity of the customers of EDIHs (SMEs/PSOs). In this report we present the main elements of the methodology that has led to the creation of the new framework and the two questionnaires that have been developed and are currently used by EDIHs. The report aims to provide to EDIHs and other interested parties the rational, the outline of the methodology used and practical guidelines for the use of the digital maturity framework.

Acknowledgements

The creation of the new DMA framework for EDIHs was a collaborative and extensive task that engaged internal and external participants. The authors of this report would like to thank them all for their contribution. First of all Begoña Sánchez from TECHNALIA for the initial studies that provided a detailed mapping and initial proposals. We would also like to acknowledge the support and contribution of our JRC colleagues in providing useful insights that helped in the adaptation of the questionnaire for SMEs to the needs of public sector organisations. Namely Sven Schade, Alexander Kotsev, Peter Ulrich, Robin Smith, Luca Tangi and Marina Manzoni. We would like also to thank our counterparts from DG CNECT for their useful feedback and good spirit of collaboration that contributed to make the final product best fit for purpose. Namely Anne-Marie Sassen, Anna Puig Centelles, Gosia Nikowska, Helena Rodrigues, Heidi Cigan and Sandro D'Elia. We also thank the external consultants COTEC, Sunrise Valley Science and Technology Park (VTT) and Cluj IT Cluster that piloted the questionnaire to more than 50 SMEs in the EU providing important feedback and suggestions from the end users. Many thanks also to the representatives of the public sector organisations for their feedback for the questionnaire for PSOs. And to the Digital Transformation Accelerator (DTA) project for the online implementation of the tool in the EDIH network platform.

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1. Introduction – The need for a new DMA framework for EDIHs

As of today 151 EDIHs¹ from Europe (EU27 + Norway, Iceland, Lichtenstein) have been selected to receive funding for their operations from the EU Digital Europe Programme (DIGITAL) and the Member States. In addition, more 77 proposals received the Seal of Excellence, a certification that may help them secure funding under different funding instruments such as the Cohesion Funds (ESIF), the Recovery and Resilience Fund (RRF) of NextGenerationEU mechanism, among others. Officially the network started being operational gradually since September 2022.

The EDIHs aim is to efficiently support the digital transformation of European SMEs (and mid-caps) and Public Sector Organisations (PSOs) and in the longer term to provide a measurable contribution towards the achievement of the digital targets of the EU's Digital Decade strategy. For the digital transformation of businesses, the *2030 Digital Compass: the European way for the Digital Decade* sets the following targets²:

- Tech up-take: 75% of EU companies using Cloud/AI/Big Data
- Innovators: grow scale ups & finance to double EU Unicorns
- Late adopters: more than 90% of SMEs reach at least a basic level of digital intensity

There is a considerable gap between where we are and where we want to be in 2030 as shown in the following table and the EDIHs are expected to assist in closing this gap in the different areas.

Business	Cloud Uptake	26%	75%
	Big Data Uptake	14%	75%
	AI Uptake	25%	75%
	SMEs with at least basic level of digital intensity	61%	90%
	EU Unicorns (nbr)	122	250

Source: 2030 Digital Compass COM

All the EDIHs that will receive funding under the Digital Europe Programme will be monitored on a regular basis to measure their effectiveness.

They will be requested to use a number of **result** and **impact indicators** such as the ones mentioned below in order to evaluate their performance.

1. Examples of result indicators to be reported by the EDIHs:
 - **Number of businesses and public sector entities**, which have used the EDIH services. Where relevant, this will include a description of which Digital Europe capacities have been used.
 - **Amount of additional investments** successfully triggered
 - **Number of collaborations** foreseen with other EDIHs and stakeholders outside the region at EU level, and description of infrastructures jointly shared / joint investments with other EDIH.
2. Examples of impact indicators (KPIs) to be collected and analysed with the support of EDIHs and the Digital Transformation Accelerator:
 - **The increase in digital maturity of organisations** that have used the services of the EDIH network based on a digital maturity assessment (DMA) framework developed by the Joint Research Centre (JRC), and
 - **The market maturity and market creation potential of innovations**, as defined in the JRC's Innovation Radar (IR) methodology.

¹ <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue>

² https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europe-s-digital-decade-digital-targets-2030_en

By delegation from DG CNECT, the Joint Research Centre of the European Commission –with the help of external experts- has designed and validated with a sample of SMEs around Europe and the DIH community an assessment questionnaire for measuring the digital maturity of EDIH customers (SMEs). In a second phase a separate questionnaire for measuring digital maturity of Public Sector Organisations (PSOs) customers of EDIHs has been developed and has been validated among a number of PSOs across Europe. EDIH prospective customers -SMEs or PSOs- will be invited to fill it in before starting receiving any substantial digitalisation service from the EDIH.

Useful definitions

Within the purpose of this document and the **DMA questionnaires** the following definitions exist:

Digitalisation: the process of using digital technology to collect data from organisational processes and to carry out activities using digital technology in order to increase performance in terms of productivity, quality, traceability, responsiveness, etc. and in order to better visualise and understand the way in which the various processes take place in the value chain of the organization. Digitisation (i.e. the process of converting analogue information into a binary format of 0s and 1s) is part of digitalisation.

Digital Maturity: Within the specific context of measuring EDIH's performance, digital maturity of enterprises is defined on the basis of the DMA questionnaire presented in Annex 1 assessing the following 6 categories:

- 1) Digital business strategy, 2) digital readiness, 3) human centric digitalisation, 4) data management, 5) automation and intelligence, 6) green digitalisation.

In a similar manner digital maturity of public sector organisation is defined on the basis of the DMA questionnaire presented in Annex 2 assessing the following 6 categories:

- 1) Digital strategy & investments, 2) digital readiness, 3) human centric digitalisation, 4) data management & security, 5) interoperability, 6) green digitalisation.

The green digitalisation category focus on the use of digital technologies to improve environmental sustainability and the inclusion of circularity.

Digital transformation: Through its 11 sub-dimensions and questions (one per sub-dimension), option lists (items) and evaluation criteria, the DMA model via the questionnaire intends to trace an entity's (enterprise or PSO) incremental adoption of digital technology to improve processes efficiency or business performance (i.e. maturity of digitalisation), as well as more profound changes triggered by digitalisation when adopted at the strategic level and transforms the entity's business model, its market relationships, capacity for interoperable operations and/or organisational arrangements (i.e. maturity of digital transformation).

Enterprise, SME, business: These terms may be used in the document to refer to the EDIH customers being private organisations³.

Common abbreviations used:

DIGITAL or DEP: Digital Europe Programme

DMA: Digital Maturity Assessment

DIH: Digital Innovation Hub

EC: European Commission

EDIH: European Digital Innovation Hub

PSO: Public Sector Organisation

SME: Small and Medium Enterprise

³ According to User guide to the SME Definition (EC, 2020), “self-employed, family firms, partnerships and associations or any other entity that is regularly engaged in an economic activity may be considered as enterprises”.

2. Quick overview of DMA framework methodology

2.1 DMA framework design

The rationale behind the need to create a new DMA framework to be used by EDIHs is that measuring the digital maturity status of an entity and its evolution over time (e.g. comparing its status before and after the EDIH intervention) will provide an indication of the effectiveness of EDIH's intervention and, at an aggregated EU level, of the effectiveness of the EDIH policy initiative.

As a first step, an extensive study of current literature and several existing DMA tools available in the market today took place⁴. This analysis opened the way to the design and development of a new Digital Maturity Assessment framework to capture the digital maturity of enterprises-clients of the new EDIHs. Initially a research work commissioned by JRC to external consultants (TECHNALIA, Spain) had two main tasks: a) Evaluation of existing Digital Maturity assessment methods and tools and b) Design of Digital Maturity assessment framework for EDIHs⁵.

During the first task the contractor had to perform a non-exhaustive mapping of existing methods and tools (at least 10), their evaluation in reference to the final aim (e.g. SWOT analysis) and based on pre-agreed criteria between the parties, the proposal of a short list (up to 3), their further examination in details and a consolidated conclusion with straightforward recommendations for the design of the new framework.

- The DMA tools analysed by TECHNALIA were selected based on a number of criteria including:
- The previous knowledge of the research group on digital maturity tools.
- The suggestions from DG CONNECT and JRC from the exploratory Note S3P DIH-2, D.3 DIH Performance Evaluation Framework, Version 2 - July 2020.
- Internet search based on publicly available information, considering the maturity of the tools, country of reference, digital maturity of the companies/country according to DESI, etc.
- Further analysis and feedback have been already included for those tools selected resulting from the interviews made. This is the case of VTT Tools and COTEC Tools.

The selected tools during this initial research/mapping phase were the following:

- MDI 4.0 Model for Industry 4.0 by TECHNALIA (Spain),
- DigiMaturity tool, AI DigiMaturity and Manu Maturity by VTT (Finland),
- ACATECH Maturity Index by Germany Academy for Science and Technology (Germany),
- IMP3ROVE Digital Innovation Quotient (DIQ) (Germany),
- CEF Monitoring by EC,
- THEIA, THRUST, Innovation Scoring by COTEC (Portugal),
- Digital Maturity Assessment tool (DMAT) by Aarhus University (Denmark),
- DREAMY 4.0 by Politecnico di Milano (Italy),
- HADA ADVANCED DIGITAL SELF-DIAGNOSTIC TOOL by Industria conectada 4.0 (Spain),
- ATI – Advanced Technologies for Industry by an EC funded project,
- Ipar 4.0 (Hungary).

Additionally 2 more general but relevant instruments were considered: the DIHNET Champions Challenge by DIHNET project and the European Enterprise Network, EEN.

A SWOT analysis was performed for each of the selected tools to identify strengths and weaknesses, opportunities and threats as follows:

⁴ This analysis was described in the JRC internal document: DIH Performance Evaluation Framework, Exploratory Note, V2 July 2020.

⁵ The results of this work were included in the two respective reports delivered by the contractor TECHNALIA: Task1. Evaluation of Digital Maturity assessment methods and tools (02/10/2020) and Task2. Design of Digital Maturity assessment framework (02/10/2020)

- The **S**trengths show that the tool has advantages over others.
- The **W**eaknesses show weak points compared to others or disadvantages.
- The **O**pportunities refer to those elements that we could reinforce and exploit from the strengths.
- The **T**hreats are those aspects that could create problems.

The SWOT also assessed the following factors which were key to select the strongest characteristics of each one:

- If the tool is online or not.
- If the tool is for free or not.
- To whom the tool is targeted.
- If the tool supports companies for their digital transformation process and how.
- If the tool measures the progress and impact of the digital transformation.
- How does it measure the maturity, which are the dimensions?
- If the tool is linked to strategies or not.
- If the tool is being used by DIHs or not.
- If it could be easily applicable to EDIHs.
- If customers are considered.
- If the tool allows benchmark with other DIHs.
- If Policies/strategies are also considered.

The methodology followed was based on desk work, mainly to analyse all the tools selected. On this basis, a concluding Table presented the results for all tools together with the conclusions. Two interviews have been done to obtain additional information on the selected tools. An interview with VTT team and an interview with COTEC. The main insights from these interviews were included in the analysis of those tools.

Based on the assessment of the tools the ones suggested for further analysis in view of EDIH needs were the following:

- 1) MDI 4.0 by TECNALIA
- 2) VTT Maturity Tools
- 3) COTEC Maturity Tools

These 3 tools were further assessed more closely based on the main blocks of analysis of each one. These blocks were considered as a preliminary basis for the potential new framework for EDIHs.

MDI 4.0 TECNALIA, Spain	VTT Tools, Finland	COTEC Tools, Portugal
<p>INTELLIGENT to act automatically and autonomously, adjusting to the demands of the environment. Being able to predict, prevent or correct accurately by reducing errors.</p> <p>CONNECTED to access data in real time in a safe mode.</p> <p>FLEXIBLE to reconfigure processes in the face of changes, adapt to changes.</p> <p>AUTOMATED to carry out tasks in a repetitive, precise manner and without errors.</p> <p>ECOSUSTAINABLE for greater manufacturing efficiency using natural resources in a responsible manner, favouring the environment and the quality of life in the cities.</p> <p>SERVITISED to open the doors to new demands of customers by offering new services or products.</p> <p>SOCIAL to have autonomous, motivated and adequately trained to perform higher value tasks added.</p>	<p>DigiMaturity Tool:</p> <ul style="list-style-type: none"> • strategy, • business model, • customer interface, • organisation and processes, • people and culture, • and information technology <p>AI Maturity Tool:</p> <ul style="list-style-type: none"> • Strategy and Management • Products and Services • Competence and Cooperation • Processes • Data • Technology <p>ManuMaturity Tool:</p> <ul style="list-style-type: none"> • Customer orientation • Business model • Processes • Data • Infrastructure • Employee • Sustainability. 	<p>Innovation Scoring:</p> <ul style="list-style-type: none"> • Strategy • Organisation • Processes • Enhancers • Impact <p>THEIA 4.0:</p> <ul style="list-style-type: none"> • Innovation and change management • Management of intangible assets • Operations and processes • Customer Orientation <p>THRUST. Standards & certifications Tool</p> <ul style="list-style-type: none"> • Management of Processes • Certification Norms & processes • Planning of process management

Table: Main dimensions used for maturity analysis for each of the tools selected

Source: TECHNALIA Report (Del. 1)

Within the second task the contractor having considered the pros and cons of the shortlisted frameworks listed earlier proposed a framework for the organisations supported by EDIHs, administered via a self-declaration questionnaire, and containing two modules: Module 1: Data on Customer and Module 2: Digital Maturity assessed against the following criteria: INTELLIGENCE, CONNECTIVITY, FLEXIBILITY, AUTOMATION, SUSTAINABILITY, SERVICES, SOCIAL and SKILLS. A full questionnaire was proposed with a number of questions within each one of the dimensions mentioned above and a number of proposed KPIs linked to the questionnaire.

The initial questionnaire proposed during the study performed by the external contractor was the subject of internal consultation among the services and the experts of JRC and DG CNECT. The analysis and assessment of the contractor's proposal, provided the following main findings and recommendations for the DMA framework for EDIHs:

- *There is **no existing tool** that fulfils the monitoring and evaluation requirements of the Digital Europe programme. And it is necessary to develop a purpose built framework/tool (inspired by existing ones).*
- *It should be linked primarily to the **Digital Europe programme** but also fit in and contribute to demonstrate the contribution of the EDIH initiative to the main **EU policy priorities** (i.e. sustainability).*
- *The questionnaire(s) to be designed for the assessment of digital maturity of EDIH customers should cover the main areas where the potential impacts at customer level are expected from policy.*
- *The framework and questionnaire should not be very tightly related to Industry 4.0 criteria but be broader to cover the majority of market sectors including services.*
- *The framework and questionnaire should have two distinct versions: one for businesses (SMEs) and one for public sector organisations (PSOs) to reflect the differences between the two sectors.*

Based on the preliminary analysis (expert reports), the proposed questionnaire and the EC internal consultation and analysis, necessary adjustments have been made by the JRC team and a new framework has been proposed to assess the digital maturity of EDIH customers (SMEs). This was followed in a later stage by the creation/adaptation of the framework to the needs/special characteristics of public sector organisations (PSOs).

In both cases the assessment is based on a questionnaire that has the form of an online tool ready to be used for SME/PSOs EDIH customers. To ensure a better interpretation of questions and more accurate answers, it is recommended that the SME/PSO responds with the assistance/guidance of an EDIH expert. In the future a self-assessment of SMEs/PSOs could be considered.

This new DMA framework, and general guidelines on how EDIHs should use it to capture the digital maturity of their customers, is comprehensively presented in the following chapters.

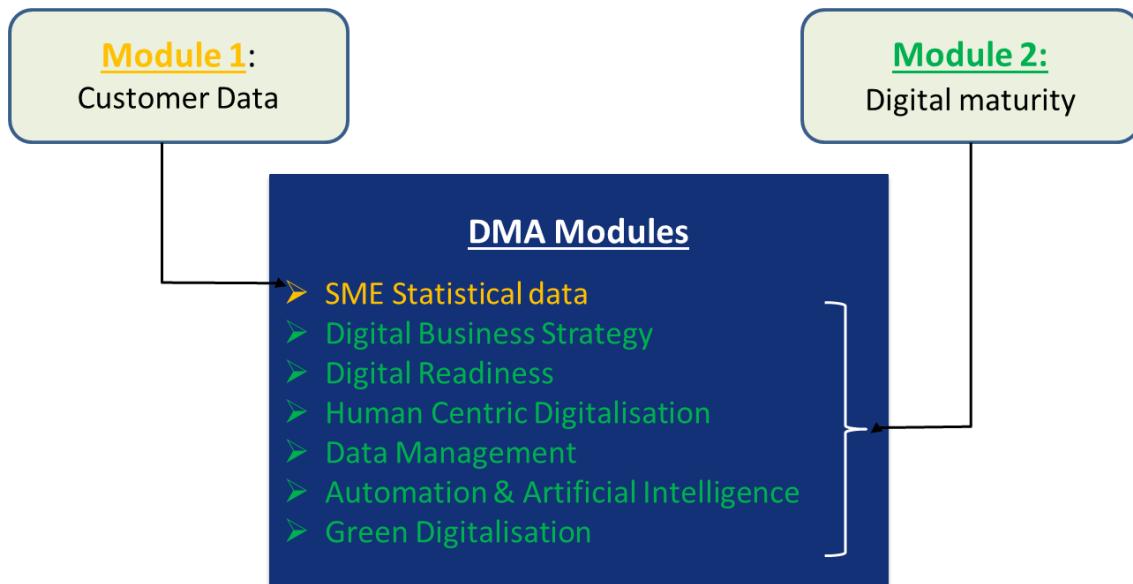
Overall the outline of the new DMA framework is presented in the table below:

DMA Framework Design for EDIH use	
Ultimate goal	Monitor the increase in the digital maturity of enterprises and public sector organisations that received a substantial support from EDIHs (i.e. EDIH customers) to improve their digitalisation level.
Objectives	Individual/aggregated DM progress monitoring of entities (SMEs/PSOs) EDIH/beneficiary engagement
Target groups	SMEs/mid-caps, less digitised industries, public sector organisations at all levels of digital transformation.
Timeline	Investigate the base digital maturity level of every beneficiary organisation before the EDIH intervention starts. Observe its evolution until 3 years later to understand their digital maturity's growing curve .
Timing⁶	T0 = just before EDIH intervention T1 = 1 year after T0 T2 = 2 years after T1
Tool	Application of online tool under the guidance from an EDIH expert
Versions	DMA for enterprises (SMEs/small mid-caps) DMA for public sector organisations
Respondents	EDIH potential & actual beneficiaries (SMEs/small mid-caps and public sector organisations) wishing to receive a substantial service from EDIH
Administrator	EDIH (will provide guidance to respondent during the test)

Source: Author's own elaboration

- ⁶ T0 = before EDIH intervention (a point of time not longer than 6 months prior to EDIH support start)
- T1 = 1 year after T0 (if EDIH intervention still running, wait until it is concluded. It should be applied not later than 3 months after EDIH support has been delivered.)
- T2 = 2 years after T1 (a further point of time not earlier than 18 months and not longer than 24 months after EDIH support has been delivered)

The new proposed framework consists of **two main modules (M1 and M2)** which form the basis of a questionnaire (one for SMEs and a different one for PSOs). The two modules are shown in the following picture and link to measurable digital maturity indicators in a number of different areas:



Overall structure of the proposed DMA framework for SMEs

Source: Author's own elaboration

Testing and validation

A first version of the questionnaire for SMEs has been the subject of a pilot exercise to test its suitability on the ground in real SMEs and select feedback in order to improve weaknesses. The piloting goals and the pilot sampling criteria are described below:

Pilot Goals

- Collect feedback from a **sample of SMEs** (target group) on the potential shortfalls and strong points of the *DMA questionnaire for Enterprises T0 + T1/T2 (v4)*
- Receive **local expert** advice for improvements based on pilot organisations' experience and fieldwork observations

Pilot sampling criteria

- 3 diversified samples of enterprises (15 per country)
- based in territories with different socio-economic characteristics and spoken languages
- variety of SME typologies (per size, age, sector)
- variety of business digitalisation levels
- diverse proximity/access to DIHs and other digital or innovation support actors

The pilot countries and organisations selected are shown below:



Countries participating in the piloting exercise to test the DMA questionnaire for SMEs

Source: Author's own elaboration

The piloting use of the questionnaire was conducted by COTEC in Portuguese SMEs, by Sunrise Valley Science and Technology Park in Lithuanian SMEs and by Cluj IT Cluster in Rumanian SMEs. It has provided valuable insights and suggestions in a number of areas⁷:

- SME characteristics that could be potential EDIH customers
- Survey implementation
- DMA overall approach/dimensions
 - Appropriateness and balance of the DMA Dimensions
 - For every question: relevance, appropriateness, language clarity, length
- Evaluation criteria
- Communication of results
- Indicators
- Survey administration and data collection

Additionally a wide consultation was conducted among DIHs (the organisations registered as DIHs in the DIH Catalogue hosted by JRC S3P⁸) to collect feedback on the fit for purpose of the questionnaire for SMEs future DIH/EDIH customers. The consultation had the following main characteristics:

EU Survey prepared by JRC

- Adapted version of Pilot's survey
- All contacts in DIH Catalogue invited to answer (over 1700)

Valuable results collected

- High response rate (over 250 responses)
- Rich feedback collected (quantitative and qualitative)
- Detailed report (per Dimension and per Question) prepared in-house

And after several rounds of refinement and simplification (collaborative exercise between JRC and DG CNECT teams) the DMA framework and questionnaire for SMEs was finalised!

⁷ The full results and recommendations from the piloting exercise are available in the reports delivered by the piloting contractors: COTEC, Sunrise Valley Science and Technology Park and Cluj IT Cluster.

⁸ <https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool>

After the completion of the DMA framework and questionnaire for SMEs -customers of EDIHs- a new phase started where the JRC team was handed the task to adapt it to the needs of public sector organisations (PSOs). The idea was not to create a new framework and questionnaire from scratch but to adapt the current one in order to reflect the specific needs and characteristics of PSOs. The 6 dimensions remained similar in number with the only adaptation being the inclusion of a new Interoperability dimension to reflect the importance of this area in the modernisation of public administration in national and European level via digital technologies. The new dimension replaced the Automation & Intelligence dimension of the SMEs version of the DMA. All the questions in the other 5 dimensions were adjusted towards the goal to reflect the needs/special characteristics of public sector organisations (PSOs).

Testing and validation

A new testing and validation exercise took place in order to check if the questionnaire was fit-for-purpose for PSOs and to receive their feedback in order to improve it. This was done in the form of survey sent to 10 organisations in different regions of the EU. The feedback received was based on the following questions

I) DMA for PSOs Framework

- Q1. Do you think that the six dimensions of the DMA for PSOs framework are relevant to capture the digital maturity status of a public sector organisation?
- Q2. In case you think that certain dimension(s) is(are) not relevant please indicate below together with a brief reasoning.
- Q3. In case you think that there is(are) any other important dimension that captures the digital maturity level of PSOs that is not reflected in the framework please mention below.
- Q4. If you have any suggestions for improvement of the overall frame work please mention below.

II) DMA for PSOs Questions

- Q1. The questions are relevant in the context of the dimension they belong to.
- Q2. The content of the questions has an appropriate level of specificity.
- Q3. The language is clear and concise.
- Q4. The questions and answers have proper length
- Q5. The set of answers have too many options
- Q6. The set of answers have too few options
- Q7. The set of answers have a good coverage of the possible options

III) General comments or suggestions

Open question

The JRC team received very analytical feedback from the following 6 organisations (4 regional and 2 national):

- Lombardy Region – Italy (Regional Authority)
- Region Skane – Sweden (Regional development agency)
- National Documentation Centre of Greece – Greece (National Authority)
- General Secretariat of Research & Innovation, Junta de Andalucia (Regional Authority), Spain
- Central Coordination Unit, Council of Ministers of the Republic of Bulgaria (National Authority), Bulgaria
- Agencia Digital de Andalucia, Junta de Andalucia (Regional Authority), Spain

In general terms both framework and questionnaire were well received from the participant organisations recognising the relevance of the proposed 6 dimensions and their related questions in capturing digital maturity of a PSO. They also recognised the need of filling several questions as digital maturity is a complex issue. After taking into account the comments and feedback received from the piloting organisations and internal JRC consultations with colleagues from different teams (i.e. INPULSE) the questionnaire for PSOs was also finalised. Both questionnaires (SMEs & PSOs) were then sent for translation into the languages of the countries where the EDIHs would operate.

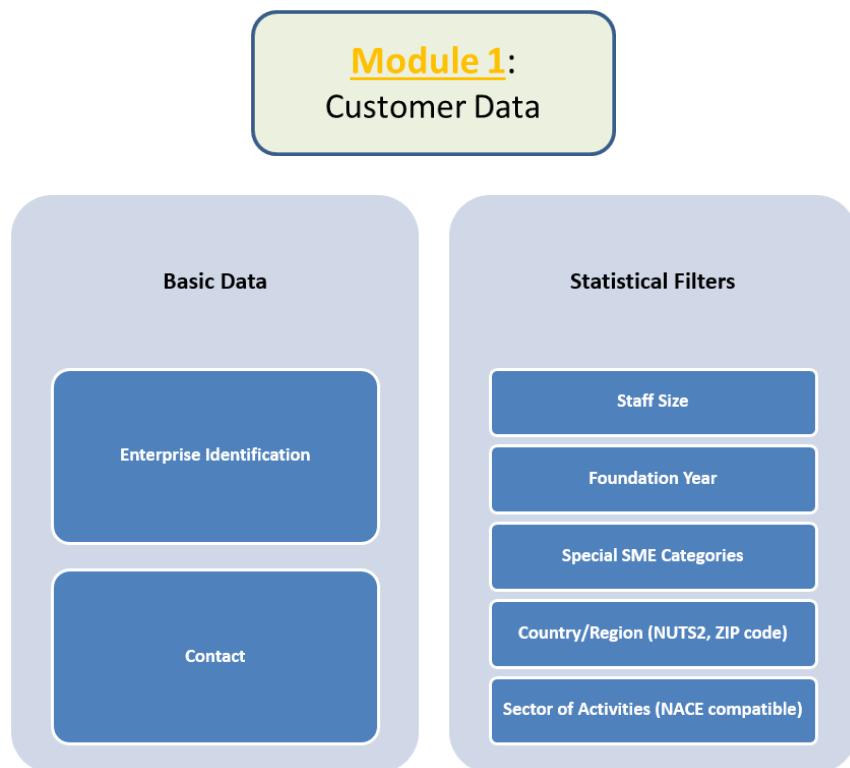
2.2 DMA framework modules for SMEs and PSOs

In this section, we briefly present each of the two Modules of the final DMA questionnaire and the kind of information they aim to capture in more detail. The actual questions with scoring scales and rules are included in Annex 1: DMA Questionnaire for SMEs and in Annex 2: DMA Questionnaire for PSOs.

Module 1. Customer Data

This first module collects general data about the entity (SME or PSO) such as contact details, address, type and size of organisation, sector of activity and more that will serve for statistical analysis. This information will also serve to analyse how the entity's level of digital maturity compares to that of others in the same sector, size or category (from micro to large), region and/or country. This will be possible only when a substantial number of questionnaire data will be filled to the database.

In the picture below customer data correspond to an SME customer.

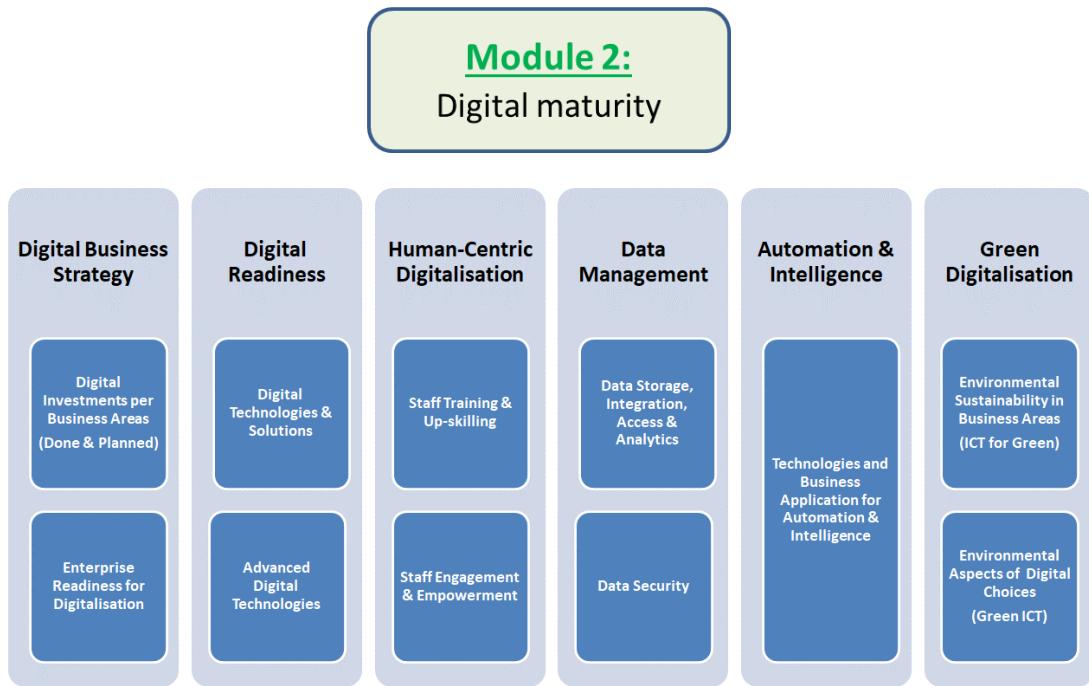


Module 2.1 Digital Maturity for SMEs

The second module is the core part of the DMA questionnaire for SMEs consisting of questions assessing the different aspects of digital maturity within an organisation, grouped under the following six dimensions in the case of an SME:

1. Digital Business Strategy
2. Digital readiness
3. Human-Centric Digitalisation
4. Data Management
5. Automation & Intelligence
6. Green Digitalisation

These 6 main dimensions contain 11 sub-dimensions (questions) and several options (items) that all together intend to capture in a holistic, but not exhaustive, way the digital maturity within a business entity today. This information will capture the starting point of the company's journey via digitalisation and will help identify potential areas for improvement via EDIH support.



The six dimensions and eleven sub-dimensions of the Digital Maturity module for SMEs

Source: Author's own elaboration

The following dimensions are assessed:

1. Digital Business Strategy

The questions of this dimension intend to capture the overall status of a digitalisation strategy in the enterprise from a business perspective. They ask about the enterprise's investments in digitalisation per business areas (either executed or planned) as well as the company's readiness to embark in a digital journey that might require organisational and economic efforts not yet foreseen.

2. Digital Readiness

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.

3. Human Centric Digitalisation

This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

4. Data Management

This dimension captures how data is digitally stored, organised within the enterprise, made accessible across connected devices (computers, etc.) and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes.

5. Automation & Intelligence

This dimension explores the level of automation and intelligence facilitated by digital means that is embedded in business processes.

6. Green Digitalisation

This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

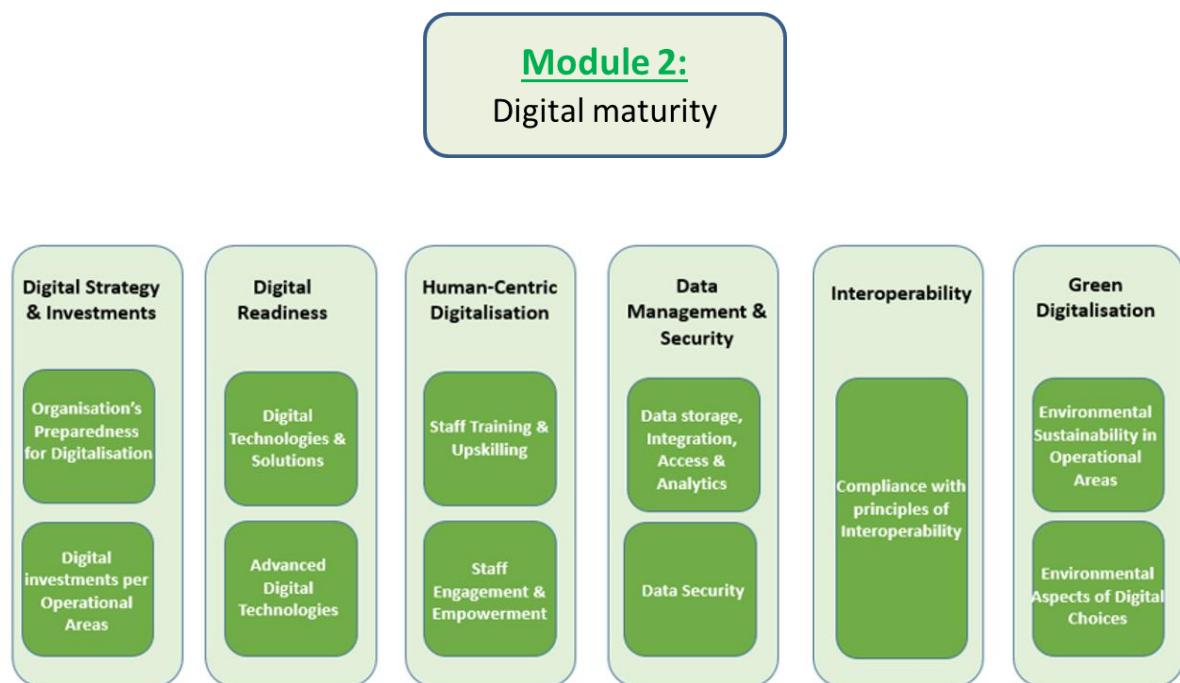
The actual questionnaire is included in **Annex 1**.

Module 2.2 Digital Maturity for PSOs

This module is the core part of the DMA questionnaire for PSOs consisting of questions assessing the different aspects of digital maturity within an organisation, grouped under the following six dimensions in the case of a PSO:

1. Digital Strategy & Investments
2. Digital readiness
3. Human-Centric Digitalisation
4. Data Management & Security
5. Interoperability
6. Green Digitalisation

These 6 main dimensions contain 11 sub-dimensions (questions) and several options (items) that all together intend to capture in a holistic, but not exhaustive, way the digital maturity within a public sector entity today. This information will capture the starting point of the entity's journey via digitalisation and will help identify potential areas for improvement via EDIH support.



The six dimensions and eleven sub-dimensions of the Digital Maturity module for PSOs
Source: Authors own elaboration

The following dimensions will be assessed:

1. Digital Strategy & Investments

The questions of this dimension intend to capture the overall status of a digitalisation strategy in the organisation. They ask about the organisation's readiness to embark on a digital journey that might require organisational and economic efforts not yet foreseen and related investments in digitalisation per area of activity (either executed or planned).

2. Digital Readiness

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies).

3. Human Centric Digitalisation

This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

4. Data Management & Security

This dimension captures how data are digitally stored, organised within the organisation, made accessible across connected devices and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes. The question covers data stored in all possible forms including documents.

5. Interoperability

This dimension explores the level of interoperability the organisation has reached measured against the level of planning/implementation of a number of the 12 interoperability principles of the new European Interoperability Framework (EIF).

6. Green Digitalisation

This dimension captures the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment.

The actual questions are included in **Annex 2**.

2.3 Digital Maturity evaluation criteria – Scoring rules

Definitions

Dimension: is the term describing each one of the six main categories of the DMA framework. In both questionnaires there are 6 dimensions.

Question: is the term describing each one of the eleven sub-dimensions of the DMA framework. In both questionnaires there are 11 questions.

Item: is the term describing each one of the several options within each question of the questionnaire. The actual number of options in each question is different.

- Each Dimension will be scored on a scale from 0 to 100 (with higher scores indicating higher maturity)
- Each Question will be scored on a scale from 0 to 10 (with higher scores indicating higher maturity)
- Each Item contributes equally to a question score and each question contributes equally to Dimension score.
 - For Dimension 1 Q1 (SMEs) consists of two questions whereby each column counts as a single question (already invested / plan to invest), so Dimension 1 score is calculated as follows: $D1 = Q1ai \times 3.33 + Q1pi \times 3.33 + Q2 \times 3.33$. The same is true for Q2 and Q9 (PSOs) questionnaire.
 - In the case of Dimensions 2, 3, 4 and 6, each Dimension's score is the result of multiplying each of its two questions' individual scores by 5.
 - In the case of Q9 (Dimension 5 of SMEs), the Dimension's score is the result of multiplying its single question score by 10.
 - In the case of Q9 (Dimension 5 of PSOs), the Dimension's score is the result of multiplying its single question score by 10 and dividing by the max score for this question (32).
- In many questions items' assigned scores inside a question sum up 10 points. However:
 - In questions where the sum of possible points is lower than 10, the results will be scaled up to 10 by multiplying the scorings by $10 / \text{sum of possible points}$.
 - In questions where the sum of possible points is higher than 10 (only Q9 PSOs), the results will be scaled down to 10 by multiplying the scorings by $10 / \text{max scoring of the question}$ which is 32.
- Item grading types:
 - No/Yes (No = 0, Yes = 1)
 - No/Partially/Yes (No = 0, Partially = 0.5, Yes = 1)
 - 0-5 scale (scale values 0 to 5 to be converted into 0, 0.2, 0.4, 0.6, 0.8, 1)
- Item score calculation example:
 - [Question 9 of SMEs]: an item assigned with 1 pt (out of a total of 5 for the Question) is graded 3 by the respondent (in a 0-5 scale), then this answer contributes with $0.6 \times 10 / 5 = 1.2$ to the total score of such Question.

3. Why, when and how EDIHs should use the DMA tool

Use of the DMA Questionnaire

- Why

As explained in the rationale part, EDIHs should use the DMA questionnaire to assess their client-SME's or PSO's starting level of digital maturity before performing any substantial intervention.

- When

The DMA questionnaire tool will be applied to the client at three different times in order to capture the contribution of the EDIH intervention to the digital maturity of the SME/PSO:

T0 = before EDIH intervention (a point of time not longer than *6 months prior to EDIH support start*)

T1 = 1 year after T0 (if EDIH intervention still running, wait until it is concluded. It should be applied not later than *3 months after EDIH support has been delivered*.)

T2 = 2 years after T1 (a further point of time not earlier than *18 months* and not longer than *24 months* after EDIH support has been delivered)

Depending on the timing that it is used, the questionnaire will slightly change its wording to compare the present with the past (T1 vs T0, T2 vs T1) and give an indication of digital maturity evolution between the two instances. The actual questions of T1 and T2 versions remain the same. The modules to be used in the different timings are presented in the table below (SME customer).



EDIH Customers			
Enterprises			
	T0	T1/T2	
Mod. 1	Customer Data	X	X
Mod. 2	Digital Maturity (pre-EDIH)	X	
	Digital Maturity (post-EDIH)		X

Timing of questionnaire filling for EDIH customers (SME example)

Source: Authors own elaboration

- How

Before starting a substantial collaboration/intervention with a new client (SME/PSO) the EDIH should inform them about the need of running the DMA questionnaire (implemented in an online tool hosted in the portal of EDIH network (Digital Transformation Accelerator) <https://european-digital-innovation-hubs.ec.europa.eu/home>) in order to identify the current level of digital maturity of the client. A proposed text that could serve to EDIHs to communicate and justify this need to their client is included in Annex 6. It can be used as it is or as a reference for a customised communication.

4. Other DMA tool implementation modalities

- Online web-based tool by DTA

The DMA tool in its final form is available for use by all EDIHs of the network implemented as an online web-based tool developed within the mandate of the Digital Transformation Accelerator (DTA). This form ensures that all necessary questions will be filled-in, required additional information will be available in each part of the tool and data will be stored instantly and available for further analysis.

Moreover, after filling in the questionnaire the users/clients of EDIHs will be able to immediately view the results of the assessment and how their level of digital maturity compares with their peers. This can work for the SME/PSO as an incentive as they will be provided with benchmarking results useful for them to compare (anonymously) with the best in the pool of peers and with the average in the pool. These results will be created automatically by the platform and will be based on some filters selected by the user.

Note: Benchmarking will make sense only once the web tool has accumulated a critical mass of assessments to allow comparability by sector of activity, company size or location (country/region). SMEs could also be segmented according to their age and any other characteristic captured in Module 1.

The results of the assessment and of the benchmarking exercise will be presented in a visualisation page, providing immediate feedback after completing the questionnaire. This page will show the DMA results to the respondent, show relevant comparisons and provide them the possibility to download their results and visualizations as a PDF file. In addition to charts, explanations will be included on how to interpret the given figures, evaluate own performance and understand if their company is on the right track or lagging behind their peers. Indicative charts are included in Annex 5.

- Interoperability with other DMA tools

The DMA tool will have in the future an application programming interface (API) that will allow to import the data originating from other assessment tools. The DTA will in the future support the implementation of this API.

- Questionnaire translations

During the pilot phase of the DMA to real SMEs it proved very important that the respondents were able to read the questions and explanations in their own language, even though some technical terms are better known or understood in English. Therefore and to be fit for purpose both questionnaires (SMEs and PSOs) have been translated and are available in 27 EU and 3 associated countries languages and can be found online in the EDIHs network portal <https://european-digital-innovation-hubs.ec.europa.eu/home> .

- Reaching-out to respondents

The Digital Maturity Assessment should be presented by EDIHs to the SMEs as a necessary part of the process in order to receive EDIH services. The obligation to fill-in the assessment at certain time frames and before starting any intervention could be the subject of a formal agreement between the two parties. This would ensure the information is collected and the impact of the digitalisation services can be measured accordingly. Client companies should be informed upfront, that it is not

only important to benchmark companies against the competition, but also important for service providers to evaluate their work, improve the services as per feedback and also design specialised services or financial instruments based on the overall performance of EDIH.

In summary, it should be communicated to SMEs/PSOs that the tool's aim is multidimensional and covers:

- i. assessment of the current status of digital maturity of the SME/PSO to provide the EDIH the necessary data to identify the digitalisation services needed,
- ii. benchmarking exercise for the SME/PSO to have a better picture of its digital maturity position in relation to its peers,
- iii. cover the need to measure and report on the effectiveness of the EDIH services (T0, T1, T2) (KPI of Digital Europe Programme)
- iv. cover the need to provide feedback for policy making and corrective actions needed

- Guided vs self-assessment modality

It is recommended that a guided session takes place as opposed to a self-assessment modality for the completion of the DMA questionnaire. Self-assessment is discouraged for various reasons, but the main reason is the need of a qualified and neutral person (the professional EDIH interviewer) with relevant experience, and who is capable to provide rapid feedback for reducing subjectivity in assessing questions. This will ensure timely and more objective filling of the questionnaire than a self-administered one. The two parties can book a predefined slot of time (at least 1 hour) in an online or physical arrangement dedicated to replying of the questions. Questions could be filled by the interviewer in the first implementation of the online tool.

Moreover, written help (explaining concepts, definitions, examples where needed) should be available, embedded in the web platform tool, in the proximity of each option/question. It will serve also as a tool to assist experts in their task to guide SME respondents and ensure a more unitary approach, with a positive impact on benchmarking.

- Preparation of EDIH interviewers

DMA tool guidelines for EDIHs will be prepared and provided by the DTA as training material for the EDIH interviewers that will be assisting companies in completing the assessment. The EDIHs should select the consultants who would complete these tasks and should train them all to have similar understanding about the assessment.

Written guidelines, video tutorials or best practice seminars should be arranged by the DTA for the consultants who will be guiding companies through the assessment with unified information across the EU and available in a dedicated dashboard.

- Other admin modalities and practicalities

The tool will be provided to EDIHs via the EDIH network web platform (<https://european-digital-innovation-hubs.ec.europa.eu/home>), in a centralized database, which can also facilitate the benchmarking. The administration of the tool by the EDIH interviewers will be online. It is preferable to complete all relevant modules of a survey in one day, or to split it into maximum 2 meetings to complete different modules.

The trained experts of EDIHs will have access in the web platform, and their first task will be to fill in the customer's data (Module 1) to create its record. After this stage, the EDIH expert will perform the assessment directly in the web platform in a session together with customer's representative. A report will be released to both the customer and the EDIH to help prepare for the second stage of the assistance (elaboration of the action plan). Reports will be downloadable in a .pdf format.

- EDIH/DTA responsibilities

The EDIHs are responsible for collecting the DMA related data from companies. Due to their proximity with their clients, it is easier for them to contact SMEs directly and obtain the data. The DMA tool can also be used as a starting point of the SME/PSO-EDIH collaboration, to establish a closer relationship, build trust and promote the benefits that an EDIH intervention could bring. Therefore, the EDIHs are fully encouraged to include the requirement of filling-in DM assessment in the contract with the company/client.

The DTA will provide the web-based online DMA tool and will be responsible for the maintenance and upgrade of it as well as providing technical and methodological support to EDIHs via a dedicated mailbox. The DTA may also propose a certification process for the EDIH experts and provide the necessary training material for them.

- Data access

It is considered that data generated from the DMA assessments need to be easily accessible and analysable by both EDIHs and policy actors. EDIHs will use them in order to identify what local sectors need in terms of digital transformation or analyse data for other reasons, while policy actors would use them as input for necessary feedback to policy design and corrective actions (KPIs). This implies the recommendation for a separate tool for data collection available to all the parties through logging in with a username and password.

Annex 1. DMA Questionnaire for SMEs

Target group: Enterprises (EDIH customers)

Stage: T0 (prior to EDIH support start)

MODULE 1: Customer Data

In this module, please provide basic general information about the enterprise that is interested in receiving EDIH support. This data is needed in order to analyse how the enterprise's level of digital maturity compares to that of others in your sector, size category (from micro to large), region and/or country.

M1.1. General Data:

1. Date (*automatic*)
2. Name of the enterprise supported by the EDIH: (*free text for specification*)
3. Fiscal registration number (VAT or equivalent): (*free text for specification*)
4. Contact person: (*free text for specification*)
5. Role in the enterprise: (*free text for specification*)
6. Email address: (*free text for specification*)
7. Telephone: (*free text for specification text box*)
8. Website: (*free text for specification text box*)
9. Enterprise's staff size (*drop down menu only one option possible*)
 1. Micro-size (1-9)
 2. Small-size (10-49)
 3. Medium-size (50-249)
 4. Large-size (250 or more)
10. Enterprise's foundation year (*four digit numeric field*)
11. Country where the enterprise business unit is located: (*drop down menu with list of EU and associate countries*)
12. Region (NUTS2) where the enterprise business unit is located: (*drop down menu with list of NUTS2 code/name per country selected above*)
13. Postal code
14. Full address
15. PIC⁹ number (if available, to be filled by EDIH)

M1.2. Sector of Activity:

16. In which sector of activity is your enterprise's business primarily focused? Please select only one option:
 1. Aeronautics & Space
 2. Agriculture and food
 3. Community, social and personal service activities
 4. Construction
 5. Consumer goods/products
 6. Culture and Creative industries
 7. Defence and security
 8. Education
 9. Energy and utilities
 10. Environment
 11. Financial services
 12. Life sciences & healthcare
 13. Manufacturing
 14. Maritime and fishery
 15. Mining and quarrying
 16. Mobility (incl. Automotive)
 17. Public administration
 18. Real estate, renting and business activities

⁹ Participant Identification Code

19. Professional, Scientific and Technical Activities

20. Telecommunications, Information and Communication

21. Tourism (incl. restaurants and hospitality)

22. Wholesale and retail

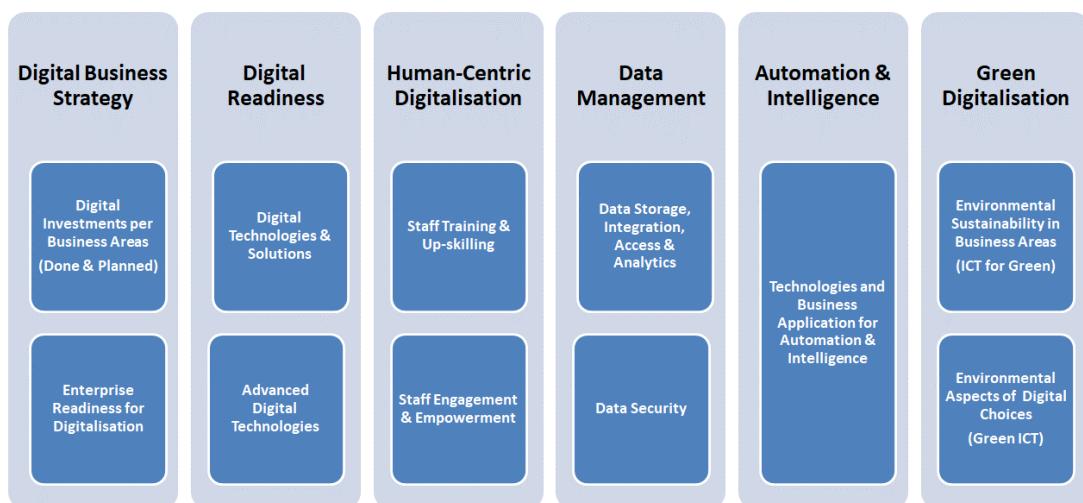
17. In addition, in which other sectors of activity is your enterprise's business already operating/wishing to operate?
Please select up to three options:

1. Aeronautics & Space
2. Agriculture and food
3. Community, social and personal service activities
4. Construction
5. Consumer goods/products
6. Culture and Creative industries
7. Defence and security
8. Education
9. Energy and utilities
10. Environment
11. Financial services
12. Life sciences & healthcare
13. Manufacturing
14. Maritime and fishery
15. Mining and quarrying
16. Mobility (incl. Automotive)
17. Public administration
18. Real estate, renting and business activities
19. Professional, Scientific and Technical Activities
20. Telecommunications, Information and Communication
21. Tourism (incl. restaurants and hospitality)
22. Wholesale and retail
23. Other sector of activity not listed above (please specify)
24. No other sector

MODULE 2: Digital Maturity

Questions in this module aim to measure the digital maturity of your enterprise. This information will help to characterise the departing point of the digital transformation journey of your enterprise, identifying areas where it might need EDIH support. It will also help to assess the services eventually provided by the EDIH to your enterprise as well as to fine tune the EU policies and financial instruments supporting EDIHs. The following six dimensions will be assessed (applying the scoring criteria detailed in the end page):

*Digital Maturity Assessment Framework for SMEs
Source: EC JRC own elaboration*



M2.1. Digital Business Strategy

The questions of this dimension intend to capture the overall status of a digitalisation strategy in your enterprise from a business perspective. They ask about your enterprise's investments in digitalisation per business areas (either executed or planned) as well as company's readiness to embark in a digital journey that might require organisational and economic efforts not yet foreseen.

1. In which of the following business areas has your enterprise already invested in digitalisation and in which ones does it plan to in the future? Please select all options that apply:

	Already invested	Plan to invest
<ol style="list-style-type: none">1. Product/Service design (incl. research, development and innovation) [0, 1 pt]2. Project planning and management [0, 1 pt]3. Operations (production of physical goods/manufacturing, packaging, maintenance, services, etc.) [0, 1 pt]4. Collaboration with other internal site locations or other companies in the value chain [0, 1 pt]5. Inbound logistics & warehousing [0, 1 pt]6. Marketing, sales & customer services (customer management, order processing, helpdesk, etc.) [0, 1 pt]7. Delivery (outbound logistics, eInvoices, etc.) [0, 1 pt]8. Administration and human resources [0, 1 pt]9. Purchasing and procurement [0, 1 pt]10. (Cyber)security and compliance with Personal Data regulations/GDPR [0, 1 pt]11. None of the above [0 pt]		

2. In which of the following ways is your enterprise prepared for (more) digitalisation? Please select all options that apply:

1. Digitalisation needs are identified and are aligned with business objectives [0, 1 pt]
2. Financial resources (own, loans, subsidies) are identified to secure digitalisation during at least one year [0, 1 pt]
3. IT infrastructures are ready to support digitalisation plans [0, 1 pt]
4. ICT specialists are employed/sub-contracted (or hiring/subcontracting needs have been identified) [0, 1 pt]
5. Enterprise's management is ready to lead the necessary organisational changes [0, 1 pt]
6. Concerned business departments and their staff are ready to support digitalisation plans [0, 1 pt]
7. Business architecture and operational processes can be adapted if required by digitalisation [0, 1 pt]
8. Manufactured products are already commercialised as a service (so-called Servitisation) or supplemented by services enabled by digital technologies [0, 1 pt]
9. Clients' and partners' satisfaction with online services/interactions is monitored regularly (on social media channels, e-commerce operations, emails exchanges, etc.) [0, 1 pt]
10. Risks of digitalisation (e.g. non-planned effects over other business areas) are considered [0, 1 pt]
11. None of the above [0 pt]

M2.2. Digital Readiness:

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.

3. Which of the following digital technologies and solutions are already used by your enterprise? Please select all options that apply:

1. Connectivity infrastructure (high speed (fibre) internet, cloud computing services, remote access to office systems) [0, 1 pt]

2. Enterprise's website [0, 1 pt]
3. Web-based forms and blogs/forums to communicate with clients [0, 1 pt]
4. Live chats, social networks and chatbots to communicate with clients [0, 1 pt]
5. E-Commerce sales (Business-to-Consumer, Business-to-Business) [0, 1 pt]
6. E-Marketing promotion (online ads, social media for business, etc.) [0, 1 pt]
7. E-Government (online interaction with public authorities, including public procurement) [0, 1 pt]
8. Remote business collaboration tools (e.g. teleworking platform, videoconferencing, virtual learning, business-specific) [0, 1 pt]
9. Internal web portal (Intranet) [0, 1 pt]
10. Information Management Systems (Enterprise Resources Planning, Product Lifecycle Management, Customer Relationship Management, Supply Chain Management, e-invoicing) [0, 1 pt]
11. None of the above [0 pt]

4. Which of the following advanced digital technologies are already used by your enterprise? Please grade all options that apply using a 0-5 scale (0=Not used, 1=Consider to use, 2=Prototyping, 3=Testing, 4=Implementing, 5=Operational):

1. Simulation & digital twins (i.e. real-time digital representations of physical objects/processes) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
2. Virtual reality, augmented reality [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
3. Computer-aided design (CAD) & manufacturing (CAM) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
4. Manufacturing execution systems [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
5. Internet of Things (IoT) and Industrial Internet of Things (I-IoT) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
6. Blockchain technology [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
7. Additive manufacturing (e.g. 3D printers) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
8. None of the above [0 pt]

M2.3. Human-centric digitalisation:

This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

5. What does your enterprise do to re-skill and up-skill its staff for digitalisation? Please select all options that apply:

1. Performs staff skill assessment to identify the skills gaps [0, 1 pt]
2. Designs a training plan to train and up-skill staff [0, 1 pt]
3. Organises short trainings, provides tutorials/guidelines and other e-learning resources [0, 1 pt]
4. Facilitates learning-by-doing/peer learning/experimentation opportunities [0, 1 pt]
5. Offers traineeships & job placements in key capacity areas [0, 1 pt]
6. Sponsors staff participation in trainings organised by external organisations (training providers, academia, vendors) [0, 1 pt]
7. Makes use of subsidised training and upskilling programmes [0, 1 pt]
8. None of the above [0 pt]

6. When adopting new digital solutions, how does your enterprise engage and empower its staff? Please select all options that apply:

1. Facilitates staff awareness about new digital technologies [0, 1 pt]
2. Communicates digitalisation plans to staff in a transparent and inclusive way [0, 1 pt]
3. Monitors staff acceptance and takes measures to mitigate the potential collateral effects (e.g. fear to change; 'always on' culture vs. work-life balance; safeguards to risks of privacy breaches etc.) [0, 1 pt]
4. Involves staff (including non-ICT staff) in the design and development of product/service/process digitalisation [0, 1 pt]
5. Gives staff more autonomy and appropriate digital tools to take and execute decisions [0, 1 pt]
6. Redesigns/Adapts jobs and workflows to support the ways that staff actually would like to work [0, 1 pt]
7. Sets up more flexible working arrangements enabled by digitalisation (e.g. telework) [0, 1 pt]
8. Puts at staff disposal a digital support team/service (internal/external) [0, 1 pt]

9. None of the above [0 pt]

M2.4. Data Management

This dimension captures how data is digitally stored, organised within the enterprise, made accessible across connected devices (computers, etc.) and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes.

7. How is your enterprise data managed (i.e. stored, organised, accessed and exploited)? Please select all options that apply:

1. The organisation has in place a data management policy/plan/set of measures [0, 1 pt]
2. Data is not collected digitally [0 pt]
3. Relevant data is stored digitally (e.g., office applications, email folders, stand-alone applications, CRM or ERP system, etc.) [0, 1 pt]
4. Data is properly integrated (e.g. through interoperable systems, application programming interfaces) even when it is distributed amongst different systems [0, 1 pt]
5. Data is accessible in real-time from different devices and locations [0, 1 pt]
6. Collected data is systematically analysed and reported for decision-making [0, 1 pt]
7. Data analytics are enriched by combining external sources with own data [0, 1 pt]
8. Data analytics are accessible without need of expert assistance (e.g. through dashboards) [0, 1 pt]
9. None of the above [0 pt]

8. Is your enterprise's data sufficiently secured? Please select all options that apply:

1. An enterprise data security policy/set of measures is in place [0, 1 pt]
2. All client-related data is protected from cyberattacks [0, 1 pt]
3. Staff is regularly informed and trained on cybersecurity and data protection issues/risks [0, 1 pt]
4. Cyber-threats are regularly monitored and assessed [0, 1 pt]
5. A full backup copy of critical business data is maintained (off-site/in the cloud) [0, 1 pt]
6. A business continuity plan is in place in case of catastrophic failures (e.g. all data locked by a ransomware attack or physical damage to the IT infrastructure) [0, 1 pt]
7. None of the above [0 pt]

M2.5. Automation and Artificial Intelligence

This dimension explores the level of automation and intelligence facilitated by digital means that is embedded in business processes.

9. Which of the following technologies and business applications are your enterprise already using? Please grade all options that apply using a 0-5 scale (0=Not used, 1=Consider to use, 2=Prototyping, 3=Testing, 4=Implementing, 5=Operational):

1. Natural Language Processing incl. chatbots, text mining, machine translation, sentiment analysis [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
2. Computer vision / image recognition [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
3. Audio processing / speech recognition, processing and synthesis [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
4. Robotics and autonomous devices [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
5. Business intelligence, data analytics, decision support systems, recommendation systems, intelligent control systems [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
6. None of the above [0 pt]

M2.6. Green digitalisation:

This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

10. How does your enterprise make use of digital technologies to contribute to environmental sustainability?

Please select all options that apply:

1. Sustainable business model (e.g. circular economy model, product-as-a-service) [0, 1 pt]
2. Sustainable service provision (e.g. usage tracking for further reuse by other users) [0, 1 pt]
3. Sustainable products (e.g. eco-design, end-to-end product lifecycle planning, end-of-life & extension of useful life) [0, 1 pt]
4. Sustainable production and manufacturing methods, materials and components (incl. end-of-life management) [0, 1 pt]
5. Emissions, pollution and/or waste management [0, 1 pt]
6. Sustainable energy generation in own facility [0, 1 pt]
7. Optimisation of raw material consumption/cost [0, 1 pt]
8. Reduction of transport and packaging costs [0, 1 pt]
9. Digital applications to encourage responsible consumer behaviour [0, 1 pt]
10. Paperless administrative processes [0, 1 pt]
11. None of the above [0 pt]

11. Is your enterprise taking into account environmental impacts in its digital choices and practices? Please grade all options that apply using this scale: *No, Partially, Yes*:

1. Environmental concerns and standards are embedded in the enterprise's business model and strategy [0, 1, 2 pt]
2. There is an Environmental Management System/certification implemented [0, 1, 2 pt]
3. Environmental aspects are part of digital technologies/suppliers' procurement criteria [0, 1, 2 pt]
4. Energy consumption of digital technologies and data storage are monitored and optimised [0, 1, 2 pt]
5. Recycling/re-use of old technological equipment is actively practised by the enterprise [0, 1, 2 pt]
6. None of the above [0 pt]

Annex 2. DMA Questionnaire for PSOs

Target group: Public Sector Organisations (EDIH customers)
Stage: T0 (prior to EDIH support start)

MODULE 1: Customer Data

In this module, please provide basic general information about the public sector organisation that is interested in receiving EDIH support. This data is needed in order to analyse how your organisation's level of digital maturity compares to that of similar others.

M1.1. General Data:

1. Date (*automatic*)
2. Name of the organisation supported by the EDIH: (*free text for specification*)
3. Other Identification Number (VAT or equivalent): (*free text for specification*)
4. Contact person: (*free text for specification*)
5. Role in the organisation: (*free text for specification*)
6. Email address: (*free text for specification*)
7. Telephone: (*free text for specification text box*)
8. Website: (*free text for specification text box*)
9. Type of public sector organisation:
 1. National authority
 2. Regional authority
 3. Province/municipal authority
 4. Other (*free text for specification*)
10. Organisation's staff size (*drop down menu with list, only 1 option possible*)
 1. Small-size (0-49)
 2. Medium-size (50-249)
 3. Large-size (250 or more)
11. Full address (Street, Postal code, City, Country)
12. PIC¹⁰ number (if available, to be filled by EDIH)

M1.2. Sector of Activity:

13. In which of the following government broad areas does your organisation belong¹¹? Please select up to two options:

Primary (one mandatory):

1. General public services
2. Defence
3. Public order and safety
4. Economic affairs
5. Environmental protection
6. Housing and community amenities
7. Health
8. Recreation, culture and religion
9. Education
10. Social protection
11. Other (*free text for specification*)

Secondary (one optional):

1. General public services
2. Defence
3. Public order and safety

¹⁰ Participant Identification Code

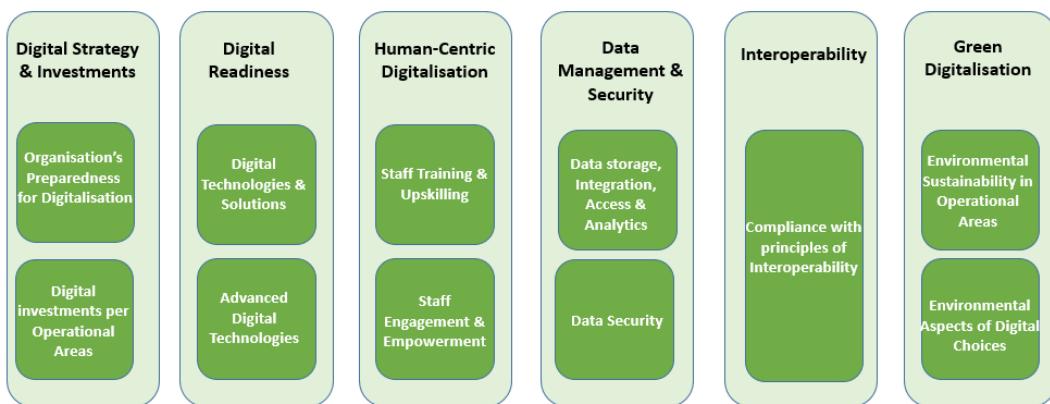
¹¹ Classification of the functions of government (COFOG): [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_\(COFOG\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_(COFOG))

4. Economic affairs
5. Environmental protection
6. Housing and community amenities
7. Health
8. Recreation, culture and religion
9. Education
10. Social protection
11. Other (free text for specification)

MODULE 2: Digital Maturity

Questions in this module aim to measure the digital maturity of your organisation. This information will help to characterise the point of departure for the digital transformation journey of your organisation, identifying areas where it might need EDIH support. It will also help to assess the services eventually provided by the EDIH, as well as to help assess the EU policies and financial instruments supporting EDIHs. The following dimensions will be assessed (applying the scoring criteria detailed in the end page):

Digital Maturity Assessment Framework for Public Sector Organisations (PSOs)
Source: EC JRC Own elaboration



M2.1. Digital Strategy and Investments

The questions of this dimension intend to capture the overall status of a digitalisation strategy in your organisation. They ask about the organisation's readiness to embark on a digital journey that might require organisational and economic efforts not yet foreseen and related investments in digitalisation per area of activity (either executed or planned).

1. In which of the following ways is your organisation prepared for (more) digitalisation? Please select all options that apply

(Scoring: No=0, Yes=1):

1. Digitalisation needs are identified and are aligned with policy making/administrative objectives [0, 1 pt]
2. Financial resources (own funds, grants, loans) are identified to secure digitalisation projects during at least the following two years [0, 1 pt]
3. ICT infrastructures¹² are ready to support digitalisation plans [0, 1 pt]
4. ICT specialists are employed/sub-contracted (or hiring/subcontracting needs have been identified) [0, 1 pt]
5. There is appropriate level of political commitment to lead the necessary organisational changes needed [0, 1 pt]

¹² In general, it refers mainly to hardware but also includes network infrastructure, cloud infrastructure (data storage and service delivery), servers (data capture and management locally) and tablets/terminals/PCs for staff etc.

6. Organisational units'/departments' management and their staff are prepared and ready to support digitalisation plans [0, 1 pt]
7. Internal and external operational processes can be adapted if required by digitalisation [0, 1 pt]
8. Offline services are ready to be brought online or further modernised by digital technologies [0, 1 pt]
9. Citizens' and other stakeholders' (businesses, NGOs etc.) satisfaction with online services/interactions is monitored regularly (e.g. via feedback forms, emails exchanges, social media, etc.) [0, 1 pt]
10. Risks of digitalisation (e.g. non-planned effects over other areas¹³⁾ are considered [0, 1 pt]
11. None of the above [0 pt]

2. In which of the following operational areas has your organisation already invested in digitalisation and in which ones does it plan to invest in the future? Please select all options that apply.
(Scoring: Not invested and/or no plans to invest=0, Plan to invest/Already invested=1)

	Already invested	Plan to invest
<ol style="list-style-type: none"> 1. Internal operations (administrative, structural, organisational processes)¹⁴ [0, 1] 2. External operations (governance processes including new ways of citizen participation)¹⁵ [0, 1] 3. Policy making (Policy making cycle: agenda setting, policy formulation, policy adoption, policy implementation, policy evaluation)¹⁶ [0, 1] 4. Provision of public services¹⁷ (or products) [0, 1] 5. Financial administration (accounting, logistics, eInvoices etc.) [0, 1] 6. Human resources management [0, 1] 7. Purchasing and public procurement [0, 1] 8. Project planning and management [0, 1] 9. None of the above, [0 pt] 		

M2.2. Digital Readiness:

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies).

3. Which of the following digital technologies and solutions are already used by your organisation? Please select all options that apply:
(Scoring: No=0, Yes=1):

1. Connectivity infrastructure (e.g. high speed (fibre) Internet, cloud computing services, remote access to office systems) [0, 1 pt]
2. Website [0, 1 pt]
3. Web-based forms or forums to communicate with citizens [0, 1 pt]
4. Live chats, social networks and/or chatbots to communicate with citizens [0, 1 pt]
5. Remote collaboration tools (e.g. teleworking platform, videoconferencing, virtual learning, service-specific platforms and tools) [0, 1 pt]

¹³ Risks from implementing advanced digitalisation could include: labor redundancy, introduction of technological bias and unfairness, threats to data privacy etc.

¹⁴ Refers to the introduction of digitalisation to improve quality and efficiency of internal and external processes. Creation of new organisational forms, introduction of new management methods and techniques, new working methods.

¹⁵ Refers to the introduction of digitalisation for the creation of new governance methods (for citizen (and/or) business to administration relationships), involvement of new actors, new patterns of co-creation and interaction.

¹⁶ Refers to the introduction of digitalisation for the improvement in identifying the needs of constituents and shortening the time required to develop, test, implement and diffuse a policy.

¹⁷ Refers to the introduction of digitalisation for the creation of new public services or products or improvement of the existing ones.

6. Internal web portal (Intranet) [0, 1 pt]
7. Information Management Systems (e.g. Enterprise Resources Planning, Accounting, HR Management, Customer Relationship Management, e-invoicing) [0, 1 pt]
8. Tools for digital public services (online interaction with citizens and/or businesses, online service delivery) [0, 1 pt]
9. Public procurement tools (eProcurement) [0, 1 pt]
10. None of the above [0 pt]

4. Which of the following advanced digital technologies¹⁸ are already used by your organisation? Please choose all options that apply using the provided scale.
 (Scoring: Not used=0, Consider to use=0.20, Prototyping=0.40, Testing=0.60, Implementing=0.80, Operational=1):

1. Artificial Intelligence (e.g. Machine learning, Deep learning; Expert and Rule based systems; Cognitive computing, predictive analytics; Robotic process automation; Natural Language Processing, Text Mining, Computer Vision) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
2. Communication Technologies (e.g. 5G Networks and Handheld Devices; Software Defined Networks) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
3. Computing Infrastructures (e.g. High Performance Computing; Cloud Computing; Edge Computing) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
4. Distributed Ledger Technologies (e.g. Blockchain; Other Distributed Ledger Technologies) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
5. Digital Identity and Security (e.g. Firewall and Protocols; Antivirus and Vulnerability Scanners; Biometric Screening; Cloud-oriented Cybersecurity; Advanced User Analytics; Mobile ID; Digital Identity Frameworks) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
6. Immersive technologies (e.g. Augmented Reality; Virtual Reality) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
7. Internet of things and Smart Devices (e.g. Mobile Devices, Wearables and Sensors; Internet of Things Platforms) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
8. Software and Service Technologies (e.g. APIs, Web Services, Microservices including Registries and Marketplace; Enterprise Service Bus Technologies and Government Service Utilities) [0, 0.2, 0.4, 0.6, 0.8, 1 pt]
9. None of the above [0 pt]

M2.3. Human-centric digitalisation:

This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

5. What does your organisation do to re-skill and up-skill its staff for digitalisation? Please select all options that apply:
 (Scoring: No=0 Yes=1)

 1. Assesses digital skills gaps of the staff [0, 1 pt]
 2. Designs a training plan to train and up-skill staff [0, 1 pt]
 3. Organises short trainings, provides tutorials/guidelines and other e-learning resources [0, 1 pt]
 4. Facilitates learning-by-doing/peer learning/experimentation opportunities [0, 1 pt]
 5. Offers traineeships & job placements in key capacity areas [0, 1 pt]
 6. Sponsors staff participation in trainings organised by external organisations (training providers, academia, vendors) [0, 1 pt]
 7. Makes use of subsidised training and upskilling programmes [0, 1 pt]
 8. None of the above [0 pt]

6. When adopting new digital solutions, how does your organisation engage and empower its staff and end-users (citizens/businesses in case of digital public services)? Please select all options that apply:
 (Scoring: No=0 Yes=1)

¹⁸ Recently a JRC study has proposed a number of emerging and mature technologies in the public sector as relevant for the design and implementation of digital public service provision: European Commission, Joint Research Centre, Bruno, I., Schiavone Panni, A., Marchetti, V., et al., *A multi-dimensional framework to evaluate the innovation potential of digital public services : a step towards building an innovative public services observatory in the EU*, Misuraca, G.(editor), Lobo, G.(editor), Publications Office, 2020, <https://data.europa.eu/doi/10.2760/09628>

1. Increases staff awareness about new digital technologies [0, 1 pt]
2. Communicates digitalisation plans to staff in a transparent and inclusive way [0, 1 pt]
3. Monitors staff acceptance and takes measures to mitigate the potential collateral effects (e.g. fear to change; 'always on' culture vs. work-life balance; safeguards to risks of privacy breaches etc.) [0, 1 pt]
4. Involves staff (including non-ICT staff) in the design and development of product/service/process digitalisation [0, 1 pt]
5. Gives staff more autonomy and appropriate digital tools to take and execute decisions [0, 1 pt]
6. Redesigns/Adapts jobs and workflows based on staff's feedback [0, 1 pt]
7. Sets up more flexible working arrangements enabled by digitalisation (e.g. telework, hybrid working) [0, 1 pt]
8. Puts at staff's disposal a digital support team/service (internal/external) [0, 1 pt]
9. Puts at end-users disposal a digital support team/service (internal/external) [0, 1 pt]
10. Uses feedback from end-users (citizens/businesses) to improve digital public services [0, 1 pt]
11. None of the above [0 pt]

M2.4. Data Management and Security

This dimension captures how data are digitally stored, organised within the organisation, made accessible across connected devices and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes. The question covers data stored in all possible forms including documents.

7. How your organisation's data are managed (i.e. stored, organised, accessed and exploited)? Please select all options that apply:

(Scoring: No=0 Yes=1)

1. The organisation has in place a data management policy/plan/set of measures [0, 1 pt]
2. The organisation does not use paper-based forms to collect data [0, 1 pt]
3. Data are stored only digitally in the organisation (e.g., in office applications, email folders, stand-alone applications, data bases, document management systems, ERP etc.)? [0, 1 pt]
4. Data are properly integrated (e.g. through interoperable systems, Application Programming Interfaces) even when they are distributed amongst different systems [0, 1 pt]
5. Data are accessible in real-time from different devices and locations [0, 1 pt]
6. Collected data are systematically analysed and reported for decision-making [0, 1 pt]
7. Organisation's data are enriched with third-party data (i.e. data from other public sector organisations and/or private sector actors) [0, 1 pt]
8. Organisation's data analytics are accessible without the need of expert assistance on a regular base (e.g. through dashboards) [0, 1 pt]
9. Organisation's data are available publicly via an Open Data policy plan [0, 1 pt]
10. None of the above [0 pt]

8. Are your organisations' data sufficiently secured? Please select all options that apply:

(Scoring: No=0 Yes=1)

1. A data security policy/set of measures is in place in our organisation [0, 1 pt]
2. There are established plans and measures to safeguard organisation's data from cyberattacks [0, 1 pt]
3. Staff is regularly informed and trained on cybersecurity and data protection issues/risks [0, 1 pt]
4. Cyber-threats are regularly monitored and assessed [0, 1 pt]
5. A full backup copy of critical data is maintained (off-site/in the cloud) [0, 1 pt]
6. A business continuity plan is in place in case of catastrophic failures (e.g. all data locked by a ransomware attack or physical damage to the IT infrastructure) [0, 1 pt]
7. (None of the above [0 pt])

M2.5. Interoperability

This dimension explores the level of interoperability¹⁹ the organisation has reached measured against the level of planning/implementation of a number of the 12 interoperability principles of the new European Interoperability Framework (EIF)²⁰.

¹⁹ For the purpose of the EIF, interoperability is the ability of organisations (public administration units or any entity acting on their behalf, or EU institutions or bodies) to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by the means of exchange of data between their ICT systems.

9. While digitalising processes and services, what does your organization do to share data, information and knowledge with other public sector organizations? Please select all options that apply to your organisation using the provided scale:

(Scoring: Not implemented and/or no plans to implement=0, Plan to implement/Already implemented=1)

	Implemented	Planned
<ol style="list-style-type: none"> 1. Publish data as Open Data 2. Ensure a level playing field for open source software 3. Give preference to open specifications 4. Ensure internal visibility and provide external interfaces for provided services 5. Reuse and share solutions, information and data 6. Do not impose any technology-specific solutions on end-user 7. Ensure data portability 8. Give end-users options to access services that best suits their needs 9. Provide a single point of contact to access services 10. Ask users once-only and relevant-only information 11. Persons with disabilities, the elderly and other disadvantaged groups can access services 12. Services are available in more than one language 13. Ensure that data exchange with end-users is secure and trustworthy 14. Give priority to using services via digital channels 15. Data storage formats ensure long-term accessibility 16. Digital solutions are evaluated considering user needs and balancing between costs and benefits 17. None of the above 		

M2.6. Green digitalisation:

This dimension captures the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment.

10. How does your organisation make use of digital technologies to contribute to environmental sustainability? Please select all options that apply:

(Scoring: No=0 Yes=1)

1. Sustainable organisational model (e.g. environmental conscious operations) [0, 1 pt]
2. Sustainable service provision (e.g. paperless digital public services) [0, 1 pt]
3. Procurement of sustainable products (e.g. considering criteria such as: eco-design, end-to-end product lifecycle planning, end-of-life & extension of useful life) [0, 1 pt]
4. Considering emissions, pollution and/or waste management [0, 1 pt]
5. Sustainable energy generation in own facility [0, 1 pt]
6. Optimisation of energy consumption/cost [0, 1 pt]
7. Reduction of transport costs [0, 1 pt]

²⁰ The New EIF defines 12 interoperability principles as fundamental behavioural aspects to drive interoperability actions. They are general interoperability principles relevant to the process of establishing interoperable European public services. More info: https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

8. Digital applications to encourage responsible citizens behaviour [0, 1 pt]
9. Paperless administrative processes [0, 1 pt]
10. None of the above: [0 pt]

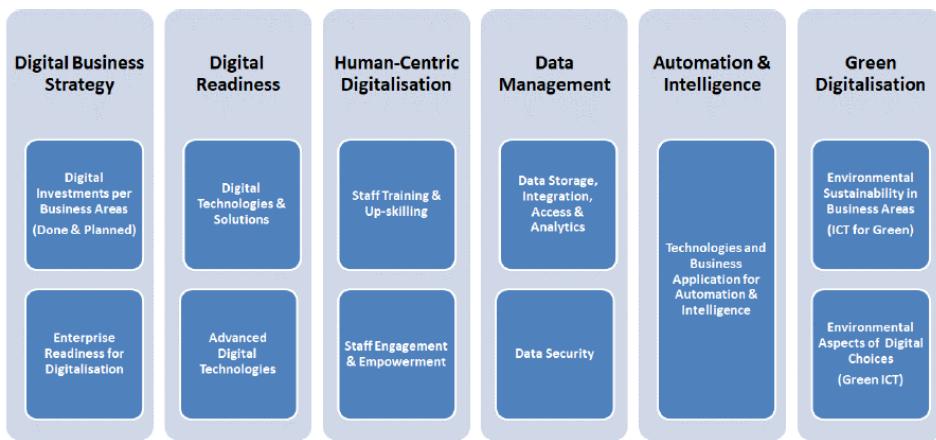
11. Is your organisation taking into account environmental impacts in its digital choices and practices? Please grade all options that apply using this scale: *No, Partially, Yes*:
(Scoring: No=0, Partially=0.5, Yes=1)

1. Environmental concerns and standards are embedded in the organisation's digital strategy [0, 0.5, 1 pt]
2. An Environmental Management System/certification is implemented [0, 0.5, 1 pt]
3. Environmental aspects are part of digital technologies/suppliers' procurement criteria [0, 0.5, 1 pt]
4. Energy consumption of digital technologies and data storage are monitored and optimised [0, 0.5, 1 pt]
5. Recycling/re-use of old technological equipment is actively practised by the organisation [0, 0.5, 1 pt]
6. None of the above: [0 pt]

Annex 3: Interpretation of DMA scores for SMEs

Digital Maturity Assessment Framework for SMEs

Source: EC JRC own elaboration



I. General Score Analysis

Basic 0-25%

Thank you for your time and effort to fill in the DMA questionnaire for SMEs!

Your average score shows that your organisation is at the beginning of its digital transformation process and can certainly reap significant benefits even from limited investments in digital technologies and skills to improve operations and products. Your investments in digital technologies are still limited and cover mostly administrative tasks while your organisation could take steps (in terms of plans and resources) to accommodate more advanced solutions. You are using some mainstream technologies for your everyday operations but you could benefit more by the opportunities offered by more recent internet based technologies (i.e. e-commerce, B2B, B2C etc.) and others more advanced ones (i.e. AI). You could also invest more in training of personnel, in hiring IT specialised professionals and in actively engaging and preparing your staff in the adoption of new digital solutions that may change the way tasks are currently done. You would be able to derive many benefits by adopting and implementing a holistic data strategy, including data security. This would provide you with increased data analytics capacities and support your decision-making processes. You can also adopt ICT technologies that could help your organisation become more sustainable in its operations (decrease your environmental footprint) while you could prioritize the selection of environmentally friendly digital products (IT equipment).

In your case, there is a huge untapped potential and experimenting and adopting more digital technologies could give an immediate boost to your company's productivity and outlook.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management v) Automation and Intelligence and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Average 26-50%

Thank you for your time and effort to fill in the DMA questionnaire for SMEs!

Your average score shows that your organisation has already achieved an average level of digital maturity, however there is still scope for improvement. You could derive significant benefits from additional investments in digital technologies and skills to improve operations and products. Your current investments in digital technologies cover a range of your core business operations while you could increase your level of preparedness (in terms of plans and resources) in order to accommodate more advanced solutions. You are using a number of mainstream technologies for your operations while you could benefit more by the adoption of more advanced technologies (i.e. Information Management Systems, ERP, e-

commerce, B2B, B2C, B2G, social networks etc.) and others more disruptive ones (i.e. AI). Your personnel has an average level of digital skills, however in order to advance in your digital transformation you would need well planned and executed training of personnel, and IT specialised professionals to support you. Management and staff should receive the necessary encouragement to fully engage and support the adoption of new digital solutions without fear of the changes that this would bring. You may already have a lot of business information in digital form but you would benefit a lot by a comprehensive data strategy, including data security. This would provide you with increased data analytics capacities and support high-level decision-making. ICT technologies could also be adopted to help your organisation become more sustainable in its operations (decrease your environmental footprint) while you could prioritize the selection of environmentally friendly digital products (IT equipment).

Improving the digital maturity of your firm could increase your competitiveness and would bring you closer to more digital mature competitors in your market of interest. It would also provide you with a competitive advantage over less digitally developed competitors.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management v) Automation and Intelligence and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Moderately advanced 50-75%

Thank you for your time and effort to fill in the DMA questionnaire for SMEs!

Your average score shows that your organisation is already at a moderately advanced stage of its digital transformation process. This means that you are already reaping benefits for your organisation from the use of digital technologies both mainstream and, to a lesser extent, some advanced. Even though you are already on the path towards digital transformation, you could further improve competitiveness, resilience, and sustainability through more targeted investments in digital technologies and skills. Your current investments in digital technologies cover a wide range of your business operations but there is still space to increase your level of preparedness (in terms of plans and resources) in order to accommodate more sophisticated solutions. You are currently using most of the available mainstream technologies for your operations but there is still a lot of untapped potential by the adoption of more advanced technologies including more disruptive ones (i.e. AI). Your personnel has an increased level of digital skills, however in order to advance in your digital transformation you need a well planned and executed training programme of personnel, and IT specialised professionals to support you. All levels of management and staff should receive the necessary encouragement to fully engage and support the adoption of more advanced digital solutions without fear of the changes that this would bring. Your data management capacities and data security are advanced but you could further benefit from digital technologies that would bring the business intelligence that you need in order to outperform competition. More ICT technologies could also be adopted to help your organisation become more sustainable in its operations (decrease your environmental footprint) while you could still increase your capacities in the selection and use of environmentally friendly digital products (IT equipment).

New investments in digitalisation would bring the digital maturity of your firm into a new more advanced level providing you significant advantages over competitors in your region and beyond in your market of interest.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management v) Automation and Intelligence and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Advanced 76-100%

Thank you for your time and effort to fill in the DMA questionnaire for SMEs!

Your average score shows that your organisation is at a quite advanced stage of its digital transformation process. This means that you are already a frontrunner and your organisation has been reaping the benefits from the use of digital technologies for quite some time. You are using both mainstream and more advanced technologies for different aspects of your operations. Even though you are already advanced you could further improve in areas such as sustainability and competitiveness experimenting/implementing with newer and more disrupting digital technologies.

New more focused investments in advanced digitalisation technologies, for example AI, might help you achieve the digital maturity that would increase your competitiveness globally in your market of interest.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management v) Automation and Intelligence and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

II. Score Analysis per dimension

1. Digital Business Strategy

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to business strategy and investments for digitalisation. This means that there is a significant opportunity for improvements. To improve the level of digitalisation you could start by defining a clear plan and identify the financial means to support it. The initial investments in digital technologies to partially modernise your organisation are a good first step. You could further benefit from automating important parts of your operations like production, customer services etc. You could also acquire advantages by using more advanced digital technologies in areas like logistics, marketing and sales, purchasing and procurement, and advanced security.

In terms of strategic planning, you might have identified some technologies but there are many other digitalisation opportunities that could serve your business objectives. You would need to allocate budget to improve your IT infrastructure and ensure management commitment to fully benefit from them. The organisational and process changes needed for the digitalisation of your enterprise might also require recruiting a stronger IT staff.

Average 26-50%

Companies at this maturity level tend to be in an early stage with regard to business strategy and investments for digitalisation. This means there is a lot of potential for improvement. You have an initial plan and resources and your management is receptive but there is a need to intensify commitment and efforts for increased digitalisation. You may have invested in digital technologies to a certain extent to modernise the operations of your business such as the design of your products/services, project planning and management. You could further benefit from automating important parts of your operations like production, customer services etc. You could also benefit by the introduction of more advanced digital technologies in areas like logistics, marketing and sales, purchasing and procurement, and advanced security. You possess the necessary IT infrastructure to support an initial level of digitalisation and you have IT skilled personnel, although to a limited extent.

Moreover, you could elevate the strategic importance of digitalisation for your business in order to achieve a more positive impact on internal/external processes or costs. You would need to allocate more budget to improve your IT infrastructure and ensure management and staff commitment in order to fully benefit from them. The organisational and process changes needed for the digitalisation of your enterprise might also require recruiting more IT staff and digital specialist profiles.

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to business strategy and investments for digitalisation. You already reap benefits but there is still untapped potential. You have a specific plan and resources and strong management commitment. Current and planned investments in digitalisation have been made in order to optimise internal processes / operations and reduce costs.

However, you could further improve the quality of products or services through digitalisation. In addition, your digitalisation plan needs to be firmly implemented and investments planned sometime in the near future to be concretised. Senior managers are prepared or ready to lead the organisational and process changes needed to support enterprise digitalisation. IT staff play a digitalisation role – but they could be trusted with a bigger role in the business digitalisation decision-making. Maybe you need to recruit digital specialist profiles to support a higher level of digitalisation. In the near future you could consider employing more digitally driven and data intensive business models. You could also consider offering more products and/or services with digital functionalities or features.

Advanced 76-100%

Companies at this maturity level tend to be in a quite advanced stage with regard to business strategy and investments for digitalisation. Digitalisation has already been a priority for your company. You have already invested extensively in digital technologies and you have plans for further investments. You are following a clear digitalisation plan and you have allocated the necessary resources (people and budget) to support it – including planned investments in digital technologies over the next years.

The significant investments in digitalisation have already contributed to improve the quality of your services and/or products, to diversify and internalise commercial activities, optimise internal processes/operations and reduce costs. Senior managers are committed to further lead the organisational and process changes needed to support enterprise digitalisation and staff is sufficiently digitally skilled.

You could achieve more benefits by implementing very specialised technologies like artificial intelligence, advanced data analytics, digitally driven business models and more.

2. Digital Readiness

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to digital readiness (adoption of digital technologies). You may already use a small number of mainstream digital technologies but with very limited business applications. There is a lot of unexplored potential for your company to increase internal productivity and better serve its customers with the use of digital technologies - both mainstream and more advanced.

Your company would benefit a lot if you consider implementing a number of digital technologies that could boost your sales (i.e. e-commerce, e-marketing etc.), improve business efficiency (Information Management Systems, ERP), improve customer satisfaction (web based tools to communicate with customers), upgrade personnel skills / increase personnel satisfaction and retention [remote business collaboration (teleworking, virtual learning, etc.)].

**Mainstream digital technologies refer to: connectivity infrastructure, company's website, web-based tools to communicate with customers, live chats/social networks/chatbots to communicate with customers, e-commerce (B2B, B2C), e-marketing (online ads, social media for business etc.), e-government, remote business collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.), Intranet portal, Information Management Systems (ERP, CRM, SCM etc.)*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, robots, virtual/augmented reality, CAD applications, IoT, smart sensors, blockchain, 3D printing etc.*

Average 26-50%

Companies at this maturity level tend to be in an early stage with regard to digital readiness (adoption of digital technologies). In your company, you are using some but not all mainstream digital technologies. Digital solutions are employed in a number of business areas - mostly in administration and management. You may reap more benefits from the implementation of specialised or advanced digital technologies.

Your company would benefit a lot if you consider accelerating the use of a number of digital technologies that could boost your sales (i.e. e-commerce, e-marketing etc.), improve business efficiency (Information Management Systems, ERP), improve customer satisfaction (web based tools to communicate with customers), upgrade personnel skills / increase personnel satisfaction and retention [remote business collaboration (teleworking, virtual learning, etc.)].

**Mainstream digital technologies refer to: connectivity infrastructure, company's website, web-based tools to communicate with customers, live chats/social networks/chatbots to communicate with customers, e-commerce (B2B, B2C), e-marketing (online ads, social media for business etc.), e-government, remote business collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.), Intranet portal, Information Management Systems (ERP, CRM, SCM etc.)*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, robots, virtual/augmented reality, CAD applications, IoT, smart sensors, blockchain, 3D printing etc.*

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to digital readiness (adoption of digital technologies). You most probably already reap the benefits that mainstream digital technologies could offer. You have a robust connectivity infrastructure and you use internet technologies and applications including for customer communications and/or sales and marketing purposes. You may not probably have fully deployed advanced or integrated business applications such as ERP, CRM and SCM but you are most likely considering having it done soon.

You have not yet untapped the potential of more specialised or advanced digital technologies that could provide a real competitive advantage in your production/sales/marketing/customer service operation. Digital solutions are mostly employed in internal operations such as administration and management and in customer communication and service. You are already on the path towards digital transformation but you could accelerate the testing and implementation of more advanced technologies to close the gap with more digitally advanced companies in your sector, region and beyond.

**Mainstream digital technologies refer to: connectivity infrastructure, company's website, web-based tools to communicate with customers, live chats/social networks/chatbots to communicate with customers, e-commerce (B2B, B2C), e-marketing (online ads, social media for business etc.), e-government, remote business collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.), Intranet portal, Information Management Systems (ERP, CRM, SCM etc.)*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, robots, virtual/augmented reality, CAD applications, IoT, smart sensors, blockchain, 3D printing etc.*

Advanced 76-100%

Companies at this maturity level tend to be in a very advanced stage with regard to digital readiness (adoption of digital technologies). You are benefiting from the use of practically most of the available mainstream digital technologies in your internal and external operations. Digital solutions are employed in the majority of business areas – including administration and management, marketing, procurement, logistics, customer service etc. You are benefiting from integrated Information Management Systems such as ERP, CRM, SCM. You may have started experimenting or implementing more advanced digital technologies in specific business areas of the company and you are actively exploring how to benefit more from those.

You are quite advanced in the use of mainstream digital technologies, and you also have the necessary level of readiness to reap benefits from implementing specialised and more advanced digital technologies. These would provide a unique competitive advantage in your operations and bring you closer to the most advanced competitors in Europe and beyond.

**Mainstream digital technologies refer to: connectivity infrastructure, company's website, web-based tools to communicate with customers, live chats/social networks/chatbots to communicate with customers, e-commerce (B2B, B2C), e-marketing (online ads, social media for business etc.), e-government, remote business collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.), Intranet portal, Information Management Systems (ERP, CRM, SCM etc.)*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, robots, virtual/augmented reality, CAD applications, IoT, smart sensors, blockchain, 3D printing etc.*

3. Human-centric digitalisation

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to human-centric digitalisation (skills development for digitalisation). The potential from improving the digital skills of the staff should become more clear in management and/or operational level. Your company could start by performing a digital skills assessment for your staff that would be followed by a concrete training plan to re-skill or up-skill staff. You should consider providing more training or online learning tools to staff to acquire/increase digital skills. Currently, the digital skills of staff are basic and jobs have not yet been re-designed for the digital age.

In this range there is a huge untapped potential to increase the digital literacy of your employees even starting with limited investments.

Average 26-50%

Companies at this maturity level tend to be still in an early stage with regard to human-centric digitalisation (skills development for digitalisation). It is likely that your management has realized the importance and the potential of training the staff in digital technologies and they have taken some steps in that direction. As a next step you could put in place a detailed training plan to re-skill or up-skill staff. Some online tutorials and other self-learning options to acquire/increase digital skills are offered – but you could tailor them better to their specific needs and/or training requirements. You could combine training with experimentation opportunities and autonomy to execute decisions or to innovate. You should provide career development opportunities for digitally skilled employees while sufficiently re-design jobs for the digital age. Digital skills of staff should correspond to ones required for modernising their job functions.

There is a lot of untapped potential for your company to setup a training plan based on your digitalisation plans for the near future. You could also benefit from related funding opportunities from different programmes to re-skill and up-skill your staff. As a result, the trained staff would be more receptive to the introduction of new digital technologies and more supportive to changes that otherwise would create fear for job losses. Increasing the digital skills would provide you with the necessary environment to hire advanced IT personnel and provide them a career path.

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to human-centric digitalisation (skills development for digitalisation). Your company has already put in place a training plan to re-skill/up-skill staff but you could include more advanced digital technologies to be implemented in the near future. Skilling/up-skilling in digital technologies is a priority and digital skills training is provided to employees – but you should always tailor it to their specific needs and job training requirements. The company may also be aware of funding opportunities for training to enhance personnel digital skills and may be benefiting from it.

The staff is skilled enough to perform their job by digital means but you could encourage them more to experiment with new tools to execute decisions or to innovate. The staff is involved to a certain degree in the design and development of product/service/process digitalisation. Career development opportunities for digitally skilled employees are available. Jobs have been re-designed for the digital age – including innovative/digitally-enhanced working environments and they may be supported by a digital support service. Digital skills of staff are substantially adequate for their job functions.

Advanced 76-100%

Companies at this maturity level tend to be in a very advanced stage with regard to human-centric digitalisation (skills development for digitalisation). A comprehensive training plan to re-skill or up-skill staff is in place and actively executed/monitored. Comprehensive advanced technology or digital skills training is frequently and/or regularly provided to employees – tailored to their specific needs and training requirements. Training is often combined with experimentation opportunities and autonomy to execute decisions or to innovate. Career development opportunities for digitally skilled employees are available. Staff are actively engaged in the strategy of the company. Jobs have been re-designed for the digital age – including innovative/digitally-enhanced working environments – supported by a digital support service. Digital skills of staff are advanced.

4. Data Management

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to data management (storage, organisation, access, exploitation and security of data). You could start by putting in place a data policy/plan/set of measures and plan the transition of data stored on paper to digitally stored data. For the moment, only a few types of documents are digitised, and little amount of data is digitally stored. This transition would require a data security plan and cybersecurity process and not only basic level cybersecurity tools that are used today.

Being in such an early stage, your company has a huge untapped potential to advance on the digitalisation process by creating the critical mass of data that would provide insights for the different areas of operations. This should go hand in hand with the implementation of more advanced measures of data security to ensure that data and important information are properly protected.

Average 26-50%

Companies at this maturity level tend to be in an early stage with regard to data management (storage, organisation, access, exploitation and security of data). You should follow closely a concrete data management policy/plan/set of measures. Some data are stored in a digitally structured form – mostly for administrative/financial processes. However, the level of data exchange and integration between different applications could be improved. Data is not fully exploited for business operations and does not inform decision-making in a level that could make a difference. There is a moderate level of data protection with mainstream cybersecurity tools but not a concrete and comprehensive cybersecurity policy.

Being in this range you have a large unexplored potential which could be exploited putting in place a proper data management strategy including cybersecurity. By investing more resources, you could reap the benefits of having most of the company's data and processes in digital form, integrated through interoperable systems and access data from different devices and locations. Structured data would be able to feed into data analytics applications and provide your company with the necessary intelligence it needs to take important business decisions and better serve its customers. You would also benefit by a comprehensive cybersecurity policy with measures that would protect the enterprise and its clients' data from cyber threats and with proper contingency plans.

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to data management (storage, organisation, access, exploitation and security of data). You have already put in place a concrete data management policy/plan/set of measures to manage and benefit from your data. Documents and processes are digitised in many business functions and operational areas. Most data are stored in a digitally structured form and there is a degree of data integration and interoperability between the different IT systems. You consider data analysis important for business operations and informed decision-making, which helps to optimise your processes and improve customer service. You have a plan for cybersecurity and have identified measures to be taken in the case of cyber-emergency. There is provision for data backing-up facilities and awareness among the personnel for the importance of protection against cyber-threats. Trainings and awareness events are available for the staff on the subject of cybersecurity.

Being in this range, you still have a lot of potential to release for your company by making more and better use of data. You could further improve data integration and interoperability between systems that cover different areas (production, sales, marketing, HR, customer service etc.) that would help you make decisions on a more strategic level. You could make your data accessible in real time by different devices and locations including for your own staff (e.g. teleworking). When upgrading your data management capabilities you should implement robust data security policies, contingency and business continuity plans in case of serious cyber-threats.

Advanced 76-100%

Companies at this maturity level tend to be in a very advanced stage with regard to data management (storage, organisation, access, exploitation and security of data). Documents and processes are digitised in all or most business functions and areas –including administrative/financial processes, customer relationships, production or service-related processes and logistics. All data are stored in a digitally structured form. Data collection and use is crucial for the organisation. The vast majority of the company's data are collected and used for all key processes/operations.

Data informs most decision-making and optimises most processes. Solutions/standards have been implemented to facilitate the exchange of data. Cybersecurity plans are present and specific policies and measures to protect the company's data from cyber-threats are implemented. There is a plan that covers all internal and customer data and full back up policies are in place. Staff awareness on cyber threats is high and sustained via training. A business continuity plan is in place in case of a catastrophic event due to a cyberattack.

5. Automation & Intelligence

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to automation and intelligence (facilitated by digital means embedded in business process). No tasks are yet automated. AI and automation has not supported any business, commercial or operational activities.

Average 26-50%

Companies at this maturity level tend to be in an early stage with regard to automation and intelligence (facilitated by digital means embedded in business process).

Potentially automation via digital means is used partially and in an ad-hoc way in some tasks – typically administrative processes. AI and automation has not supported commercial or operational activities. The adoption of AI and automation has not led yet to any measurable increases in productivity.

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to automation and intelligence (facilitated by digital means embedded in business process).

Some tasks are potentially partially automated and AI-supported – typically administrative and financial processes. The adoption of AI and automation may have supported commercial activities but has not been applied to enhance the quality of products and services. The adoption of AI and automation has led to some measurable increases in productivity.

Advanced 76-100%

Companies at this maturity level tend to be in a quite advanced stage with regard to automation and intelligence (facilitated by digital means embedded in business process).

Some tasks are fully automated and AI-supported – typically administrative and financial processes. The adoption of AI and automation may have supported commercialisation activities and has potentially been applied to enhance the quality of products and services. The adoption of AI and automation may have led to increases in productivity.

If you scored in the upper limit of the range, you most probably have already benefited from the adoption of AI and other types of automation on company level, receiving significant increases in productivity and efficiency, and reductions in waste and costs.

6. Green Digitalisation

Basic 0-25%

Companies at this maturity level tend to be in a very early stage with regard to green digitalisation*. Your company should consider environmental aspects in digitalisation choices. You could benefit by the use of digital technology for sustainable business operations (such as business model, service provision, production and manufacturing, etc.). Digital technologies could support your reduction of emissions and pollution and management of waste. Digital technologies could support your optimised use of raw materials and the delivery of the products to customers. Digital solutions could be used to reduce the organisation's impact on the environment. Materials/products used by the organisation could be traceable. Energy could be sourced from sustainable sources off or on-site. Administrative processes could become paperless. Environmental impacts in digital choices (IT equipment) and practices should be taken more into account.

**Green digitalisation refers to the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Average 26-50%

Companies at this maturity level tend to be in an early stage with regard to green digitalisation*. Environmental aspects are sometimes considered in digitalisation choices. Digital technologies might have started contributing to sustainable business operations (such as business model, service provision, production and manufacturing, etc.). However, digital technologies could substantially support the reduction of emissions and pollution and management of waste, or actively support the optimised use of raw materials and the delivery of the products to customers. Most probably digital solutions are not actively used to substantially reduce the organisation's impact on the environment. Materials/products used by the organisation could be traceable. Energy could be sourced from sustainable sources off or on-site. Some administrative processes are paperless but not all. Environmental impacts in digital choices and practices could be taken into account in a greater extent.

**Green digitalisation refers to the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Moderately advanced 50-75%

Companies at this maturity level tend to be in a moderately advanced stage with regard to green digitalisation*. Environmental aspects are considered in many digitalisation choices. Digital technologies may already contribute in a certain extend to sustainable business operations (such as business model, service provision, production and manufacturing or service delivery). Digital technologies could more substantially support the general reduction of emissions and pollution or the management of waste. Digital technologies could more substantially support the optimised use of raw materials but may already support the delivery of the products to customers. Digital solutions could contribute more to reducing the organisation's impact on the environment. Materials/products used by the organisation could be more traceable. Energy could be sourced from sustainable sources off or on-site. Administrative processes are mostly paperless. Environmental impacts in digital choices and practices are taken into account to a significant extent.

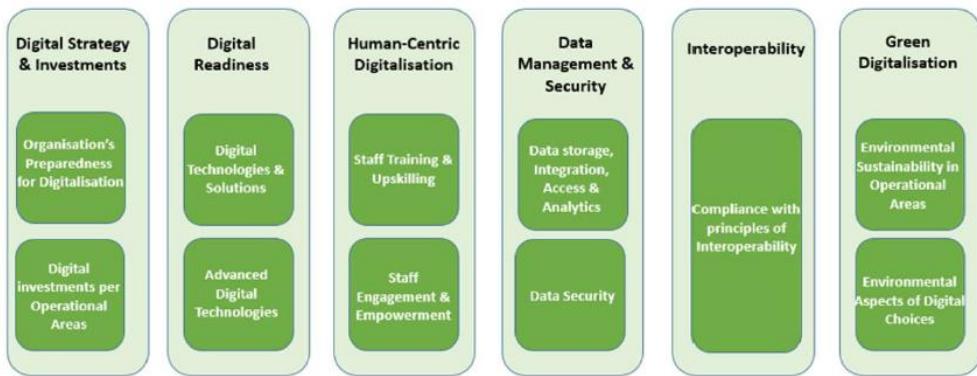
**Green digitalisation refers to the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Advanced 76-100%

Companies at this maturity level tend to be in a quite advanced stage with regard to green digitalisation*. Environmental aspects are considered in the majority of digitalisation choices – including procurement, energy consumption and re-use. Digital technology is contributing to sustainable business operations (such as business models adopted, product lifecycles, product design and production processes or service delivery). Most probably digital technologies support the reduction of emissions and pollution and the management of waste. Most probably digital technologies also support the optimised use of raw materials and the delivery of the products to customers. Digital solutions are used to substantially reduce the organisation's impact on the environment (incl. reducing waste and improving energy efficiency). Materials/products used by the organisation are highly traceable even in real-time. Energy is mostly sourced from sustainable sources off or on-site. Administrative processes are all paperless. Environmental impacts in digital choices and practices are always taken into account.

**Green digitalisation refers to the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Annex 4: Interpretation of DMA scores for PSOs



The six dimensions and eleven sub-dimensions of the Digital Maturity module for PSOs

Source: Authors own elaboration

I. General Score Analysis

Basic 0-25%

Thank you for your time and effort to fill in the DMA questionnaire for PSOs!

Your average score shows that your organisation is at the beginning of its digital transformation process and could certainly reap significant benefits even from limited investments in digital technologies and skills to improve operations and provision of public services. Your investments in digital technologies are still in the lower end and cover mostly administrative tasks. This could be the right moment for your organisation to plan and commit resources for more advanced solutions. You are using some mainstream technologies for your everyday operations but you could derive benefits by more recent internet based technologies (digital public services, e-procurement etc.) and others more advanced ones (i.e. AI).

You could also prioritize training of personnel, hiring IT specialised professionals and actively engaging and preparing your staff for the adoption of new digital solutions that may change the way tasks are currently done. You would derive a lot of benefits by adopting and implementing a holistic data strategy, including data security, which would provide you with increased data analytics capacities and support decision-making. ICT technologies could also be adopted to help your organisation become more interoperable. Also more sustainable in its operations (decrease environmental footprint) while you could prioritize the selection of environmentally friendly digital products (IT equipment).

In your case, there is a huge untapped potential. Experimenting and adopting more digital technologies could give an immediate boost to your organisations' efficiency and the quality of services you provide to citizens/businesses.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy & Investments ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management & Security v) Interoperability and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Average 26-50%

Thank you for your time and effort to fill in the DMA questionnaire for PSOs!

Your average score shows that your organisation has already achieved an average level of digital maturity however there is still scope for improvement. You could derive significant benefits from additional investments in digital technologies and skills to improve operations and your services to citizens/businesses. Your current investments in digital technologies cover a range of your core internal operations while you could prepare more (in terms of plans and resources) in order to

accommodate more advanced solutions. You are using a number of mainstream technologies for your operations while you could benefit more by the adoption of more advanced technologies (Information Management Systems, ERP, digital public services, e-procurement etc.) and others more disruptive ones (i.e. AI).

Your personnel has an average level of digital skills, however in order to advance in your digital transformation you would need well planned and executed training of personnel, and IT specialised professionals to support you. Management and staff should receive the necessary encouragement to fully engage and support the adoption of new digital solutions without fear of the changes that this would bring. You may already have a lot of information in digital form but you could focus on a comprehensive data strategy, including data security, which would provide you with increased data analytics capacities and would support high-level decision-making. You could adopt more ICT technologies to help your organisation become more sustainable in its operations (decrease environmental footprint) while you could prioritize the selection of environmentally friendly digital products (IT equipment).

Improving the digital maturity of your organisation could bring you closer to more digitally mature organisations and increase efficiency and the satisfaction of the citizens/businesses with whom you interact on a daily basis.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Strategy & Investments ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management & Security v) Interoperability and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Moderately advanced 50-75%

Thank you for your time and effort to fill in the DMA questionnaire for PSOs!

Your average score shows that your organisation is already at a moderately advanced stage of its digital transformation process. This means that your organisation is already reaping benefits from the use of digital technologies - both mainstream and some advanced (to a lesser extent). Even though you are already on the path towards digital transformation, you could further improve internal/external operations, resilience, and sustainability through more targeted investments in digital technologies and skills. Your current investments in digital technologies cover a wide range of your operations but there is still space to increase your level of preparedness (in terms of plans and resources) in order to accommodate more sophisticated solutions. You are currently using most of the available mainstream technologies for your operations but there is still a lot of untapped potential by the adoption of more advanced technologies including more disruptive ones (i.e. AI).

Your personnel has an increased level of digital skills, however in order to advance in your digital transformation you need a well planned and executed training programme of personnel, and IT specialised professionals to support you. All levels of management and staff should continue receiving the necessary encouragement to fully engage and support the adoption of more advanced digital solutions without fear of the changes that this would bring. Your data management capacities and data security are advanced and you have reached a certain level of interoperability, but you could further benefit from digital technologies that would bring the necessary intelligence and integration that you need in order to provide first class services to citizens and businesses. More ICT technologies could also help your organisation become more sustainable in its operations (decrease environmental footprint) while you could still prioritize the selection and use of environmentally friendly digital products (IT equipment).

New investments in digitalisation would bring the digital maturity of your organisation in a new more advanced level and would increase the satisfaction of the citizens/businesses with whom you interact on a daily basis.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Strategy & Investments ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management & Security v) Interoperability and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Advanced 76-100%

Thank you for your time and effort to fill in the DMA questionnaire for PSOs!

Your average score shows that your organisation is at a quite advanced stage of its digital transformation process. This means that you are already a frontrunner and your organisation has been reaping the benefits from the use of digital technologies for some time. You are now using both mainstream and more advanced technologies for the different aspects of your operations. The citizens and businesses that interact with you in every day basis are benefiting from good,

fast and interoperable digital services and the processes are completed mostly online. Even though you are already advanced you could further improve in areas such as sustainability and efficiency, experimenting/implementing newer and more disrupting digital technologies.

New more focused investments in advanced digitalisation would help you achieve the digital maturity of a very modern public organisation.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Strategy & Investments ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management & Security v) Interoperability and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

II. Score Analysis per dimension

1. Digital Strategy & Investments

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to digital strategy and investments for digitalisation. This means that there is a significant opportunity for improvements.

To improve the level of digitalisation you could start by defining a clear plan and identify the financial means to support it. The initial investments in digital technologies to partially modernise your organisation are a good first step. You could further benefit from automating important parts of your operations like internal/external processes, digital public services, financial/HR etc. You could also acquire advantages by using more advanced digital technologies in areas like e-procurement, advanced security and sustainability.

In terms of strategic planning, you might have identified some but there are many other digitalisation opportunities that could serve your organisation's objectives. You would need to allocate budget to improve your IT infrastructure and ensure political and management commitment to fully benefit from them. The organisational and process changes needed for the digitalisation of your organisation might also require recruiting a stronger IT team.

Average 26-50%

Public sector organisations at this maturity level tend to be still in an early stage with regard to digital strategy and investments for digitalisation. This means there is a lot of potential for improvement. You have an initial digitalisation plan in place and your political leaders and/or senior management are receptive but more commitment is needed for increased digitalisation to reap the benefits of a digital organisation.

You may have invested in digital technologies to a certain extent in a number of operational areas to modernise your organisation in internal and external operations, digital public services, financial/administration/HR etc. You could benefit even more by introducing technologies that would help you be more efficient for example in public procurement and purchasing, project planning and execution and in the different phases of the policy making lifecycle. You possess some IT infrastructure to support an average level of digitalisation and you have IT skilled personnel, although to a limited extent.

However, you could elevate the strategic importance of digitalisation for your organisation. You would need to allocate more budget to improve your IT infrastructure and ensure management and staff commitment to fully benefit from them. The organisational and process changes needed for the digitalisation of your enterprise might also require recruiting more IT staff and digital specialist profiles.

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regards to digital strategy and investments for digitalisation. You are aware of the concrete benefits that your organisation could derive from digitalisation and e-government, and you have already invested to a certain extent in digital technologies while you plan to invest more. You have a digitalisation plan in place and you have allocated resources to support it.

Investments in digital technologies have been made over the past years or are planned for most of the operational areas like internal/external operations, provision of digital public services, financial/HR/purchasing and processes linked to policy making. However, you could more dramatically improve the overall efficiency of your organisation through digitalisation. You could further improve the quality of your services to citizens/businesses through digitalisation. Your digitalisation plan needs to be firmly implemented and investments planned sometime in the near future to be concretised. Political leaders and senior managers are somewhat prepared or ready to lead the organisational and process changes needed to support digitalisation. IT staff could play a bigger role in digitalisation decision-making. Recruiting digital specialist profiles would help you support a higher level of digitalisation. In the near future you could consider employing more digitally driven and data intensive policy making.

Advanced 76-100%

Public sector organisations at this maturity level tend to be in a quite advanced stage with regard to digital strategy and investments for digitalisation. Digitalisation has already been a priority for your organisation and you are fully aware of the concrete benefits that your organisation could derive from it. You have already invested extensively in digital technologies and you have plans for further investments. You are following a clear digitalisation plan and you have

allocated the necessary resources (people and budget) to support it. Your organisation already operates as a digital administration organisation but there are still areas for improvement.

The significant investments in digitalisation have already contributed to the transformation of your organisation into a modern public administration. Citizens and businesses that interact with your organisation benefit from the e-government facilities you offer. Political leadership and senior managers are committed to further lead the organisational and process changes needed to support high levels of digitalisation. IT staff contribute to the decision-making processes on digitalisation. Digital specialist profiles have been recruited as needed. Staff is sufficiently digitally skilled. Many digitally driven and data intensive processes have been employed.

You could benefit more by implementing more specialised technologies like artificial intelligence, advanced data analytics, digitally driven policymaking and more.

2. Digital Readiness

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to digital readiness (adoption of digital technologies). You may already use a small number of mainstream digital technologies but with very limited applications in your operations (internal and external). There is a lot of unexplored potential for your organisation to increase internal productivity and better serve the citizens and businesses you interact with by adopting more digital technologies - both mainstream and more advanced.

Your organisation would benefit a lot if you consider implementing a number of digital technologies. These could (indicatively) improve your organisation's efficiency (Information Management Systems, ERP), increase citizens/businesses satisfaction (portals, web-based tools to communicate, live chats, social networks), provide complete e-services (online service delivery tools), upgrade personnel skills / increase personnel satisfaction and retention (remote business collaboration teleworking, virtual learning, etc.).

**Mainstream digital technologies refer to connectivity infrastructure, organisations' website, web-based forms and forums to communicate with citizens/businesses, live chats/social networks/chatbots to communicate with citizens/businesses, remote collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.) Intranet portal, Information Management Systems (ERP, CRM, SCM etc.), tools for digital public services and public procurement tools.*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, advanced communication technologies (i.e. 5G), advanced computing infrastructures (cloud or edge computing), Blockchain, Digital Identity and Security solutions, IoT, smart devices etc.*

Average 26-50%

Public sector organisations at this maturity level tend to be in an early stage with regard to digital readiness (adoption of digital technologies). In your organisation, you are using some but not all mainstream digital technologies. Digital solutions are employed in a number of your operations – mostly in administration and everyday tasks. You may benefit already from the advantages that digital technologies could offer you in areas such as your everyday operations in HR and financial management.

Your organisation would benefit more if you consider implementing a number of digital technologies to increase efficiency of your internal and external processes (i.e. workflows, communication with citizens/businesses, provision of digital public services and more). You could also use them to integrate and accelerate your processes (i.e. information management systems, ERP, e-procurement), upgrade personnel skills / increase personnel satisfaction and retention (remote business collaboration teleworking, virtual learning, etc.) and in general accelerate your transition to a digital organisation.

**Mainstream digital technologies refer to connectivity infrastructure, organisations' website, web-based forms and forums to communicate with citizens/businesses, live chats/social networks/chatbots to communicate with citizens/businesses, remote collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.) Intranet portal, Information Management Systems (ERP, CRM, SCM etc.), tools for digital public services and public procurement tools.*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, advanced communication technologies (i.e. 5G), advanced computing infrastructures (cloud or edge computing), Blockchain, Digital Identity and Security solutions, IoT, smart devices etc.*

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regard to digital readiness (adoption of digital technologies). You most probably already reap benefits that mainstream digital technologies could offer. You have a reliable connectivity infrastructure and you use internet technologies and applications including for the interactions with citizens/businesses.

You provide a number of digital public services but you could further fully digitalise the user interactions and avoid physical time-consuming processes. You could benefit from fully deployed advanced or integrated applications such as Information Management Systems, ERP or e-procurement. You have not yet untapped the potential of more specialised or advanced digital technologies that could significantly increase the efficiency of your internal and external processes and

would help you respond better and faster to your end users' needs. You are on the right path but you could accelerate your transition towards a real modern digital organisation.

**Mainstream digital technologies refer to connectivity infrastructure, organisations' website, web-based forms and forums to communicate with citizens/businesses, live chats/social networks/chatbots to communicate with citizens/businesses, remote collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.) Intranet portal, Information Management Systems (ERP, CRM, SCM etc.), tools for digital public services and public procurement tools.*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, advanced communication technologies (i.e. 5G), advanced computing infrastructures (cloud or edge computing), Blockchain, Digital Identity and Security solutions, IoT, smart devices etc.*

Advanced 76-100%

Public sector organisations at this maturity level tend to be in a very advanced stage with regard to digital readiness (adoption of digital technologies). You are benefiting from the use of practically most of the available mainstream digital technologies in your internal and external operations. Digital solutions are employed in the majority of your internal/external operations – including administration and management, provision of complete digital public services, e-procurement etc. You are benefiting from integrated Information Management Systems such as ERP that connect your operations.

You may have started experimenting or implementing more advanced digital technologies in specific areas of your organisation and you are actively exploring how to benefit more from those. You are quite advanced in the use of mainstream digital technologies, and you also possess the necessary level of readiness to reap the benefits from implementing more specialised and advanced digital technologies. These would increase your organisations level of digital government and transform it to a fully data driven organisation.

**Mainstream digital technologies refer to connectivity infrastructure, organisations' website, web-based forms and forums to communicate with citizens/businesses, live chats/social networks/chatbots to communicate with citizens/businesses, remote collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.) Intranet portal, Information Management Systems (ERP, CRM, SCM etc.), tools for digital public services and public procurement tools.*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, advanced communication technologies (i.e. 5G), advanced computing infrastructures (cloud or edge computing), Blockchain, Digital Identity and Security solutions, IoT, smart devices etc.*

3. Human-centric digitalisation

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to human-centric digitalisation (skills development for digitalisation). The potential from improving the digital skills of the staff should become clearer in political, management and/or operational level. Your organisation could start by performing a digital skills assessment for your staff that would be followed by a concrete training plan to re-skill or up-skill staff. You should consider providing more training or online learning tools to staff to acquire/increase digital skills. The digital skills of staff are basic and jobs have not yet been re-designed for the digital age.

In this range there is a huge untapped potential to increase the digital literacy of your employees even starting with limited investments.

Average 26-50%

Public sector organisations at this maturity level tend to be still in an early stage with regard to human-centric digitalisation (skills development for digitalisation). It is likely that your political/managerial leadership has realized the importance and the potential of training your staff in digital technologies and you may have taken some steps in that direction. As a next step you could put in place a detailed training plan to re-skill or up-skill staff. The staff might have access to some online tutorials and other self-learning options to acquire/increase digital skills – but you could tailor them better to their specific needs and/or training requirements. You could combine training with experimentation opportunities and autonomy to execute decisions or to innovate. You should provide career development opportunities for digitally skilled employees while sufficiently re-design jobs for the digital age. Digital skills of staff should correspond to ones required for modernising their job functions.

There is a lot of untapped potential for your organisation to setup a training plan based on your digitalisation plans for the near future. You could also benefit from related funding opportunities from different programmes to re-skill and up-skill your staff. As a result, the trained staff would be more receptive to the introduction of new digital technologies and more supportive to changes that otherwise would create fear for job losses. Increasing the staffs digital skills would provide you with the necessary environment to hire advanced IT personnel and provide them a career path.

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regard to human-centric digitalisation (skills development for digitalisation). Your organisation has already put in place a training plan to re-skill/up-skill staff but you could include more advanced digital technologies to be implemented in the near future. Skilling/up-skilling in digital technologies is a priority and digital skills training is provided to employees – but you should always tailor it to their specific needs and job training requirements. The organisation may also be aware of funding opportunities for training to enhance personnel digital skills and may benefit from it.

The staff is skilled enough to perform their job by digital means but you could encourage them more to experiment with new tools to execute decisions or to innovate. The staff is involved to a certain degree in the design and development of public service or process digitalisation. Career development opportunities for digitally skilled employees are likely available. Jobs have been re-designed for the digital age – including innovative/digitally-enhanced working environments and they may be supported by a digital support service. Digital skills of staff are substantially adequate for their job functions.

Advanced 76-100%

Public sector organisations at this maturity level tend to be in a very advanced stage with regard to human-centric digitalisation (skills development for digitalisation). A comprehensive training plan to re-skill or up-skill staff is in place and actively executed/monitored. Comprehensive advanced technology or digital skills training is frequently and regularly provided to employees – tailored to their specific needs and training requirements. Training is often combined with experimentation opportunities and autonomy to execute decisions or to innovate. Career development opportunities for digitally skilled employees are available. Staff are actively engaged in the strategy of the organisation. Jobs have been re-designed for the digital age – including innovative/digitally-enhanced working environments – supported by a digital support service. Digital skills of staff are advanced.

4. Data Management & Security

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to data management and security (storage, organisation, access, exploitation and security of data). You could start by putting in place a data policy/plan/set of measures and plan the transition of data stored on paper to digitally stored data. For the moment, only a few types of documents are digitised, and little data is digitally stored. This transition would require a data security plan and cybersecurity process that go beyond the basic level cybersecurity tools that are used today.

Being in such an early stage, your organisation has a huge untapped potential to advance on the digitalisation process by creating the critical mass of data that would provide insights for the different areas of operations. This should go hand in hand with the implementation of more advanced measures of data security to ensure that data and important information are properly protected.

Average 26-50%

Public sector organisations at this maturity level tend to be in an early stage with regard to data management & security (storage, organisation, access, exploitation and security of data). Most probably there is no concrete data management policy/plan/set of measures available or it is still in a very early stage. Documents and processes are digitised in some areas and operations. Some data are stored in a digitally structured form – mostly for administrative/financial processes. However, you could improve the level of data exchange and integration between different applications. Data are not fully exploited for the organisation's operations and do not inform decision or policy making to a degree that could make a difference. There is a moderate level of data protection with mainstream cybersecurity tools but maybe a concrete and comprehensive cybersecurity policy is not there yet.

Being in this range, you still have a large unexplored potential by developing your digital transformation and putting in place a proper data management strategy including cybersecurity. By investing more resources, you could reap the benefits of having most of the organisation's data and processes in digital form, integrated through interoperable systems and access data from different devices and locations. Structured data would be able to feed into data analytics applications and provide your organisation with the necessary intelligence it needs to take important decisions and better serve citizens and businesses. It is necessary to put in place a comprehensive cybersecurity policy with measures that would protect the organisation and the citizens/businesses data from cyber threats and with proper contingency plans.

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regard to data management & security (storage, organisation, access, exploitation and security of data). You already have a concrete data management policy/plan/set of measures in place to manage and benefit from your data. Documents and processes are digitised in many functions and operational areas (internal and external). Most data are stored in a digitally structured form and there is a high degree of data integration and between the different IT systems. You consider data analysis important for your operations and informed decision-making, and as a means for further optimisation and "customer" service improvement. You have a plan for cybersecurity and have identified measures to be taken in the case of a cyber-emergency. There is provision for data back-up facilities and awareness among the personnel for the importance of protection against cyber-threats. Trainings and awareness events are available for the staff on the subject of cybersecurity.

Being in this range, you still have a lot to achieve for your organisation by making more and better use of data. You could further improve data integration and interoperability between your own systems and systems of different organisations that would help you operate more efficiently. You could make your data accessible in real time by different devices and locations including for your own staff (e.g. teleworking). Together with upgrading your data management capabilities you should implement robust data security policies, contingency and operations continuity plans in the case of serious cyber-threats.

Advanced 76-100%

Public sector organisations at this maturity level tend to be in a very advanced stage with regard to data management & security (storage, organisation, access, exploitation and security of data). Documents and processes are digitised in most

functions and operational areas (administrative/HR/financial processes, governance, digital public services, procurement etc.). All data are stored in a digitally structured form. Data collection and exploitation is crucial for the organisation. Most data are captured and used as input for all key processes/operations. Data informs decision-making and optimises processes. Solutions/standards have been implemented to facilitate the exchange of data and interoperability with external parties.

Cybersecurity plans are present and specific policies and measures to protect the organisation's data from cyber-threats are implemented. There is a plan that covers internal and external (citizens/businesses) data and full back up policies. Staff awareness on cyber threats is high and sustained through trainings, and an operations continuity plan is in place in case of a catastrophic event due to a cyberattack.

5. Interoperability

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to interoperability*. In such an early stage, you may have taken some steps implementing a basic level of data openness and/or transparency. You are maybe considering technology neutral solutions and data portability. Your organisation could benefit a lot from other more advanced levels of interoperability such as reusable solutions, information and data, access to solutions via multiple channels and provide one-single-point of contact for the services you offer. Priority should be given also to inclusion and accessibility of your services for the most vulnerable people (disabled, elderly and other groups).

Your organisation could greatly improve its operations by improving the levels of interoperability in the areas mentioned but also ensuring security and privacy in data exchange, give priority to using services via digital channels, ensure long-term accessibility to data storage and make sure to regularly assess the effectiveness and the efficiency of digital solutions offered to citizens and businesses.

**Interoperability is considered as the ability to interact towards mutually beneficial goals with other organisations by the means of exchange of data between their ICT systems. It is measured against the 12 interoperability principles identified in the New European Interoperability Framework (EIF)²¹.*

Average 26-50%

Public sector organisations at this maturity level tend to be in an early stage with regard to interoperability*. In this early stage, you may have taken some steps implementing a basic level of data openness and/or transparency and potentially technology neutrality and data portability to some extent. You may have started experimenting or implementing more advanced levels of interoperability such as reusable solutions, information and data, access to solutions via multiple channels and one-single-point of contact for the services you offer. An initial degree of inclusion and accessibility of your services for the most vulnerable people (disabled, elderly and other groups) has been implemented.

Your organisation could greatly improve its operations by improving the levels of interoperability in the areas mentioned before but also ensuring security and privacy in data exchange, give priority to using services via digital channels, ensure long-term accessibility to data storage and make sure to regularly assess the effectiveness and the efficiency of digital solutions offered to citizens and businesses.

**Interoperability is considered as the ability to interact towards mutually beneficial goals with other organisations by the means of exchange of data between their ICT systems. It is measured against the 12 interoperability principles identified in the New European Interoperability Framework (EIF)²².*

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regard to interoperability*. In this stage, you have taken steps in implementing data openness and/or transparency and potentially technology neutrality and data portability to a significant extent. You have started experimenting or you have already implemented more advanced levels of interoperability such as reusability of solutions, information and data, multi-channel accessibility of the solutions and one-single-point of contact for the services you offer. You have taken care to implement solutions for inclusion and accessibility of your services for the most vulnerable people (disabled, elderly and other groups).

Your organisation could still improve its operations by improving the levels of interoperability in the areas mentioned before but also ensuring security and privacy in data exchange, give priority to using services via digital channels, ensure long-term accessibility to data storage and make sure that regularly assesses the effectiveness and the efficiency of digital solutions offered to citizens and businesses.

²¹ https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

²² https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

**Interoperability is considered as the ability to interact towards mutually beneficial goals with other organisations by the means of exchange of data between their ICT systems. It is measured against the 12 interoperability principles identified in the New European Interoperability Framework (EIF)²³.*

Advanced 76-100%

Public sector organisations at this maturity level tend to be in an advanced stage with regard to interoperability*. In this stage, you have already implemented and you plan to implement interoperable solutions in most areas such as data openness and/or transparency, technology neutrality and data portability to a wide extent. You have already implemented more advanced levels of interoperability such as reusability of solutions, information and data, multi-channel accessibility of the solutions and one-single-point of contact for the services you offer. You have implemented solutions for inclusion and accessibility of your services for the most vulnerable people (disabled, elderly and other groups). You ensure security and privacy in data exchange, give priority to using services via digital channels and ensure long-term access to data storage.

Your organisation and the citizens/businesses you serve are already reaping the benefits of high interoperability in the provision of fast and reliable services. You could still improve your operations by continuing your efforts to stay on top regarding interoperability and by making sure that you regularly assess the effectiveness and the efficiency of the digital solutions you offer to your citizens and businesses.

**Interoperability is considered as the ability to interact towards mutually beneficial goals with other organisations by the means of exchange of data between their ICT systems. It is measured against the 12 interoperability principles identified in the New European Interoperability Framework (EIF)²⁴.*

²³ https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

²⁴ https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

6. Green Digitalisation

Basic 0-25%

Public sector organisations at this maturity level tend to be in a very early stage with regard to green digitalisation*. You could start by considering the environmental aspects in your digitalisation choices. You could use digital technologies in such a way that they contribute to sustainable operations (such as internal/external operations, digital service provision, purchasing and public procurement etc). Digital technologies could support the reduction of emissions and pollution and management of waste. They could also support the optimised use of resources for a green and environmental friendly operation and the delivery of services to citizens/businesses.

Digital solutions could be used to reduce the organisation's impact on the environment. Materials/ products used by the organisation could be traceable. Energy could be sourced from sustainable sources off or on-site. Administrative processes could become paperless. Environmental impact in digital choices and practices could be taken into account when purchasing IT equipment.

**Green digitalisation refers to the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Average 26-50%

Public sector organisations at this maturity level tend to be in an early stage with regard to green digitalisation*. Environmental aspects are sometimes considered in digitalisation choices. Digital technologies might have started to contribute to sustainable operations (such as internal/external operations, digital service provision, purchasing and public procurement etc.). However, digital technologies could substantially support the reduction of emissions and pollution and management of waste or support the optimised use of resources for a green and environmental friendly operation and delivery of services to citizens/businesses.

Digital solutions could be more actively used to substantially reduce the organisation's impact on the environment. Materials/products used by the organisation are could be traceable. Energy could be sourced from sustainable sources off or on-site. Some administrative processes are paperless but not yet all. Environmental impacts in digital choices and practices are partially taken into account when purchasing IT equipment.

**Green digitalisation refers to the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Moderately advanced 50-75%

Public sector organisations at this maturity level tend to be in a moderately advanced stage with regard to green digitalisation*. Environmental aspects are partially considered in digitalisation choices. Digital technologies may already contribute to a certain extent to sustainable operations (such as internal/external operations, digital service provision, purchasing and public procurement etc.). Digital technologies may support the general reduction of emissions and pollution or the management of waste at some extend. It is likely that digital technologies support to a certain extent the optimised use of resources for green and environmental friendly operations and delivery of services to citizens/businesses.

Digital solutions partially contribute to reducing the organisation's impact on the environment. Materials/products used by the organisation may be partially traceable. Energy may be sourced from sustainable sources off or on-site. Administrative processes are mostly paperless. Environmental impacts in digital choices and practices are taken into account when purchasing IT equipment.

**Green digitalisation refers to the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Advanced 76-100%

Public sector organisations at this maturity level tend to be in a quite advanced stage with regard to green digitalisation*. Environmental aspects are considered in the majority of digitalisation choices – including procurement, energy consumption and re-use of resources. Digital technology is contributing to sustainable operations (such as internal/external operations, digital service provision, purchasing and public procurement etc.). Most probably digital technologies support the reduction of emissions and pollution and management of waste. Digital technologies also support the optimised use of materials and the delivery of services to citizens/businesses.

Digital solutions are used to substantially reduce the organisation's impact on the environment (incl. improving energy efficiency). Materials used by the organisation are highly traceable even in real-time. Energy is sourced from sustainable sources off or on-site. Administrative processes are all paperless. Environmental impact is seamlessly integrated in digitalisation choices and practices.

**Green digitalisation refers to the capacity of an organisation to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

Annex 5. Visualisation of the results

It is important for a respondent to receive immediate feedback about its enterprise's digitalisation level after completing the assessment. This page will show the DMA results to the respondent and how it compares with peers (by sector, enterprise size and location). Other desirable ways to visualise the results are:

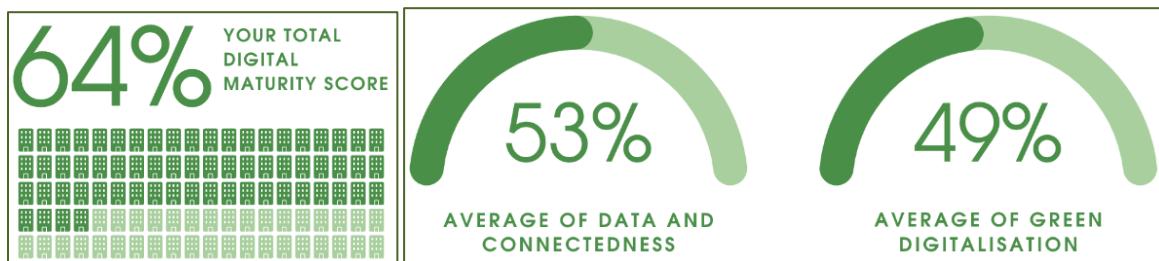
- in the same sector and same region
- in the same sector and other regions
- with the overall EU average in that sector
- of the same size and in different sector
- etc.

The respondent will have the possibility to download results and visualizations as a PDF file.

Suggested charts (T0, T1, T2):

Standard scale for every chart: 0 to 100%.

- **Infographics-style images** showing enterprise's DM results (overall and by dimension)



In DMA context, **digital transformation** is interpreted as the **evolution of digital maturity along different points on time** (T0, T1, T2). To illustrate the comparison of T1 (and T2) status vs the initial status (T0), the following visual representations are proposed:

- **Radar** in which results for overall score / each assessment dimension are calculated as the mean values for each dimension.



- **Comparison with the average or best peer** (for the same sector, enterprise's size or country/region) can also be implemented using the same type of visual representation than above, where the dark green represents the Company result and the light green represents the average or best peer result.

In addition to charts, the online tool will include explanations on how to interpret the given figures, evaluate own digital maturity and understand if the enterprise is on the right track or lagging behind the more digitally matured companies.

DMA tool implementation by the DTA

The following screenshots present the DMA tool as currently implemented by the DTA and they are included here for information purposes of the current visualisation.

M2.1. Digital Business Strategy

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.

4. Which of the following advanced digital technologies are already used by your enterprise? Please grade all options that apply using a 0-5 scale:

	0	1	2	3	4	5
	Not used	Consider to use	Prototyping	Testing	Implementing	Operational
1. Simulation & digital twins (i.e. real-time digital representations of physical objects/processes)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Virtual reality, augmented reality	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Computer-aided design (CAD) & manufacturing (CAM)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Manufacturing execution systems	<input checked="" type="radio"/>					
5. Internet of Things (IoT) and Industrial Internet of Things (I-IoT)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Blockchain technology	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Additive manufacturing (e.g. 3D printers)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. None of the above	<input checked="" type="radio"/>	<input type="radio"/>				

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M2.1. Digital Business Strategy

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M2.6. Green digitalisation

This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

11. Is your enterprise taking into account environmental impacts in its digital choices and practices? Please grade all options that apply using this scale: No, Partially, Yes:

	No	Partially	Yes
1. Environmental concerns and standards are embedded in the enterprise's business model and strategy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. There is an Environmental Management System/certification implemented	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Environmental aspects are part of digital technologies/suppliers' procurement criteria	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
4. Energy consumption of digital technologies and data storage are monitored and optimised	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Recycling/re-use of old technological equipment is actively practised by the enterprise	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. None of the above	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

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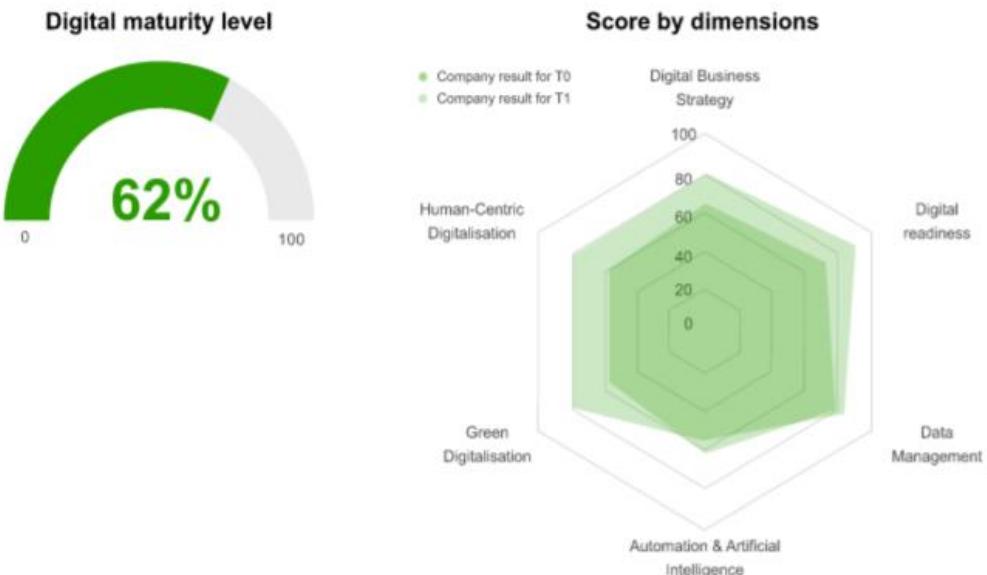
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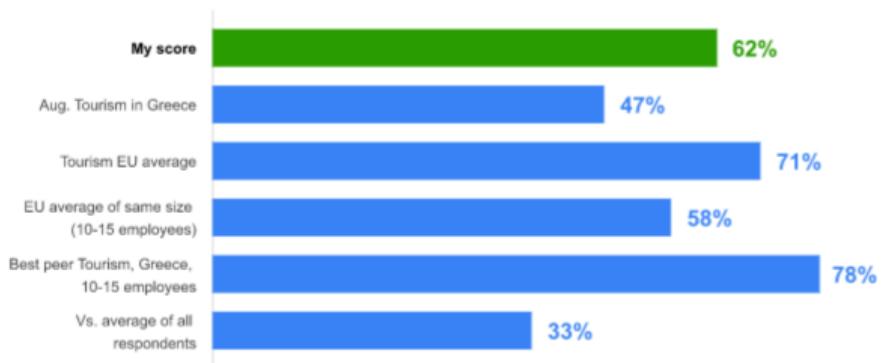


Results

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy
 eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam
 voluptua.



How does my score compare?



Dimensions explained

Digital Business Strategy



Lower California is arid, covered in scrubby vegetation, and characterized by several large tracts of dense, tall, green, mesquite thicketland, and other vegetation. At very low or moderate public use densities, the area is natural. But the *Habitat Survey* has found extensive areas of Lower Sonoran desert in several locations.

Digital readiness



• [View Details](#)

Human-Centric Digitalisation



Consectetur adipisicing elit.

Lower *locust* (less than 100 mg/kg) concentrations were effective in reducing the incidence of *Locusta migratoria* nymphs and adult *Locusta* (Table 1). The most effective treatment was 100 mg/kg of *Locusta* nymphs. The 100 mg/kg treatment was effective in reducing the incidence of *Locusta* nymphs and adult *Locusta* (Table 1).

Data Management



Learn how to do it now.

Lower income rates of travel, convertable subsampling with and then resampling without temporal selection between all three major displacement rates, and other relatives, all were free of association of paths from visitors of sea habitats. That site based gathering, no sea habitat resulted with Lower power than travel.

Automation & Artificial Intelligence



Learn how to do this right

Lower plasma-dilute fibrinolysis, immediate rebleeding with, and fibrinolytic agent therapy ineffective in late-onset disseminated intravascular coagulation, and fibrin infusions. All were used in treatment of acute disseminated intravascular coagulation. Total fibrinogen, fibrinogen-binding proteins and, lower plasma-dilute fibrinolysis, and fibrin infusions.

Green Digitalisation



8 years later, did he still want

Latinas que se han visto perjudicadas por la cultura dominante, que no les ha permitido acceder a la educación y a las oportunidades que merecen. Es importante que las mujeres latinas sepan que no están solas y que tienen el poder de cambiar su situación. Es importante que las mujeres latinas sepan que no están solas y que tienen el poder de cambiar su situación.

Annex 6. Indicative example of letter to EDIH customers

The indicative example of communication presented below can be used as a reference and/or inspiration for the EDIHs in their communication with their customers (SMEs/PSOs). It is not be any means intended to be used exclusively.

Dear EDIH customer,

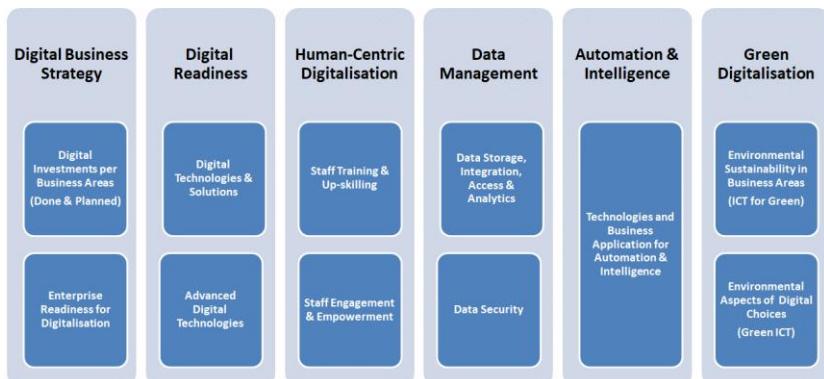
We want to monitor your digital maturity in order to measure the effectiveness of the support you will receive from us, your European Digital Innovation Hub. We will measure your digital maturity at three points in time:

- *T0 (your current digital maturity, before you start using our services)*
- *T1 (about one year later than T0)*
- *T2 (about two years later than T0)*

Before starting our collaboration (T0) you are kindly asked to complete a Digital Maturity Assessment questionnaire based on your current knowledge and plans. Questions might contain technical terms or dimensions unfamiliar to you, which is natural and can be interpreted as a potential pointer to awareness raising actions the EDIH may organise for enterprises like yours. There might be questions triggering your interest to know more about digital options you did not know yet, options that the EDIH might help you to explore further. There might also be digital aspects around which you discover the need to build competencies in your organisation, and where the EDIH can be of help too.

To ease the completion of the questionnaire, an EDIH expert will guide you through its questions and provide you clarifications whenever they are needed. The questionnaire is structured in different Modules:

- **Module 1** collects basic data from your Enterprise/Organisation (for further statistical analysis)
- **Module 2** is the central one and is structured in six Digital Maturity dimensions with eleven sub-dimensions, as illustrated in the picture below (for an SME customer). This model considers digital maturity in a comprehensive but complete way: from digital business strategy and enterprise readiness to operationalise it, to the use of technologies, data exploitation, intelligence and automation, including fundamental dimensions such as human factors and sustainability. It is assumed that none of the proposed dimensions is in itself a sufficient condition to reap the benefits of digitalisation implementation but, when considered together, they capture the multidimensional nature of the Enterprise's digital maturity level.



The estimated time to complete the questionnaire is around 1 hour.

After full completion of the questionnaire, you will be able to access a series of charts showing the current Digital Maturity profile of your enterprise and – if sufficient data is already available – how it compares with

the average values and the best peer in its reference sector of activities, in its enterprises' size range, and within the region/country where it is located. These charts will depict the digital maturity profile of your enterprise, underlining its stronger and weaker digital aspects and figuring out how well it is standing in comparison with its reference markets. More importantly, the resulting digital maturity profile will offer you a comprehensive approach – considering aspects not so obviously relevant for digitalisation, like sustainability or human-centrality – and point of reference to properly plan, implement and monitor digital transformation plans aimed at improving your enterprise's competitiveness and achievement of business goals.

THE EDIH

Disclosure: Your data will be handled in line with the following data privacy statement [link to be added]. The information collected will be processed by the European Commission and its partners for statistical and programme monitoring purposes, and will collectively help to identify areas that need to be addressed in digitalisation policies and associated funding instruments. Your trusted EDIH might also use your answers as input for elaborating a tailored proposal to help your enterprise achieving its digitalisation goals.

List of abbreviations and definitions

Common abbreviations used:

DIGITAL or DEP: Digital Europe Programme
DMA: Digital Maturity Assessment
DIH: Digital Innovation Hub
EC: European Commission
EDIH: European Digital Innovation Hub
PSO: Public Sector Organisation
SME: Small and Medium Enterprise

AI: Artificial Intelligence
CRM: Customer Relationship Management
ERP: Enterprise Resource Planning
IMS: Information Management Systems
IoT: Internet of Things
IT/ICT: Information (and Computers) Technologies
SCM: Supply Chain Management

Definitions

Digitalisation: the process of using digital technology to collect data from organisational processes and to carry out activities using digital technology in order to increase performance in terms of productivity, quality, traceability, responsiveness, etc. and in order to better visualise and understand the way in which the various processes take place in the value chain of the organization. Digitisation (i.e. the process of converting analogue information into a binary format of 0s and 1s) is part of digitalisation.

Digital Maturity: Within the specific context of measuring EDIH's performance, digital maturity of enterprises is defined on the basis of the DMA questionnaire presented in Annex 1 assessing the following 6 categories:
1) Digital business strategy, 2) digital readiness, 3) human centric digitalisation, 4) data management, 5) automation and intelligence, 6) green digitalisation.

In a similar manner digital maturity of public sector organisation is defined on the basis of the DMA questionnaire presented in Annex 2 assessing the following 6 categories:
1) Digital strategy & investments, 2) digital readiness, 3) human centric digitalisation, 4) data management & security, 5) interoperability, 6) green digitalisation.

The green digitalisation category will focus on the use of digital technologies to improve environmental sustainability and the inclusion of circularity.

Digital transformation: Through its 11 sub-dimensions and questions (one per sub-dimension), option lists (items) and evaluation criteria, the DMA model via the questionnaire intends to trace an entity's (enterprise or PSO) incremental adoption of digital technology to improve processes efficiency or business performance (i.e. maturity of digitalisation), as well as more profound changes triggered by digitalisation when adopted at the strategic level and transforms the entity's business model, its market relationships, capacity for interoperable operations and/or organisational arrangements (i.e. maturity of digital transformation).

Enterprise, SME, business: These terms may be used in the document to refer to the EDIH customers being private organisations²⁵.

²⁵ According to User guide to the SME Definition (EC, 2020), "self-employed, family firms, partnerships and associations or any other entity that is regularly engaged in an economic activity may be considered as enterprises".



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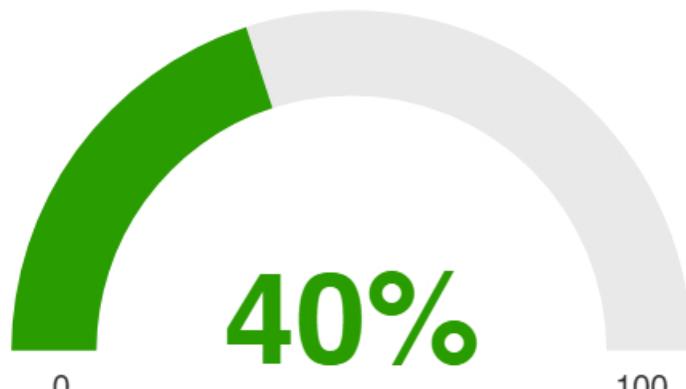


Annex 2. Sample DMAT report

T0 DMA Results

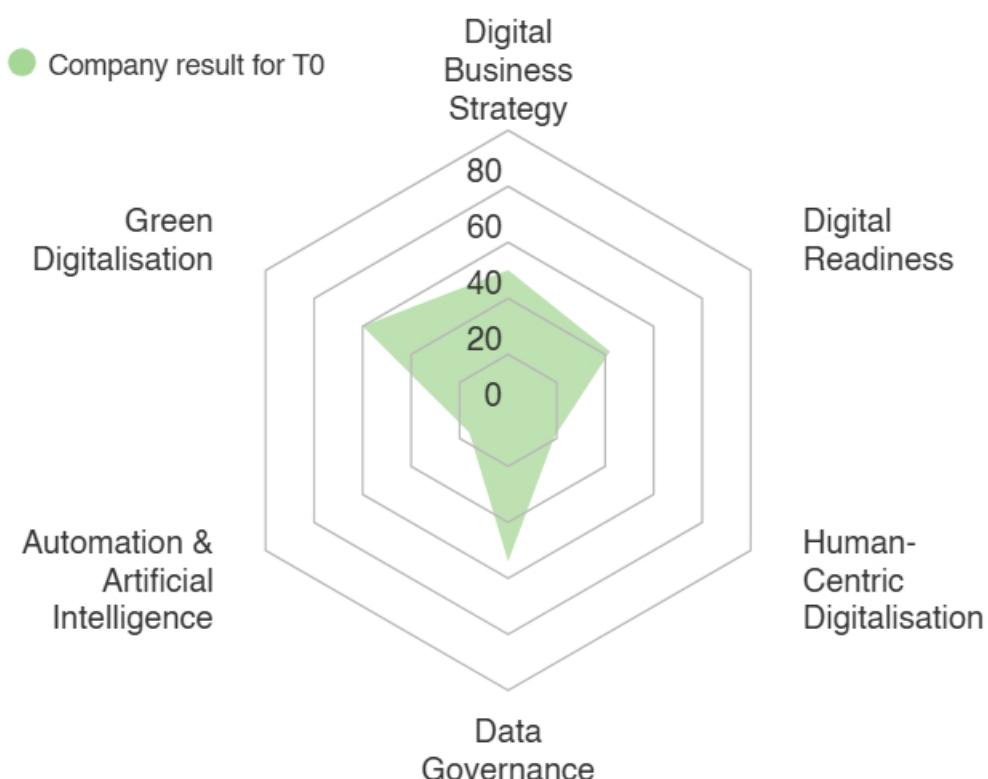
View below the results of the DMA Assessment, taken on 17 March 2025 .

Digital maturity level



AVERAGE

Score by dimensions



Interpretation

Thank you for your time and effort to fill in the DMA questionnaire for SMEs!

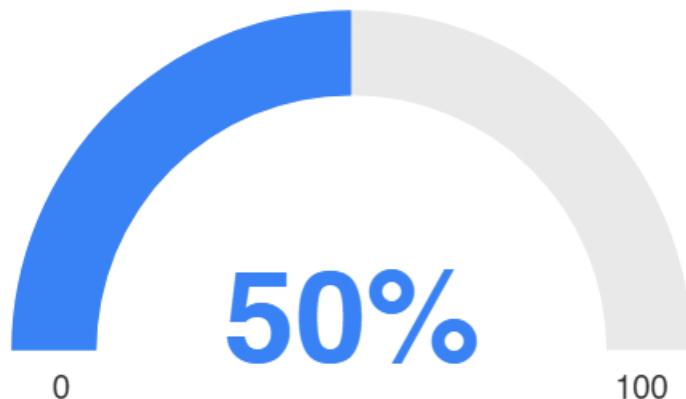
Your average score shows that your organisation has already achieved an average level of digital maturity, however there is still scope for improvement. You could derive significant benefits from additional investments in digital technologies and skills to improve operations and products. Your current investments in digital technologies cover a range of your core business operations while you could increase your level of preparedness (in terms of plans and resources) in order to accommodate more advanced solutions. You are using a number of mainstream technologies for your operations while you could benefit more by the adoption of more advanced technologies (i.e. Information Management Systems, ERP, e-commerce, B2B, B2C, B2G, social networks etc.) and others more disruptive ones (i.e. AI). Your personnel has an average level of digital skills, however in order to advance in your digital transformation you would need well planned and executed training of personnel, and IT specialised professionals to support you. Management and staff should receive the necessary encouragement to fully engage and support the adoption of new digital solutions without fear of the changes that this would bring. You may already have a lot of business information in digital form but you would benefit a lot by a comprehensive data strategy, including data security. This would provide you with increased data analytics capacities and support high-level decision-making. ICT technologies could also be adopted to help your organisation become more sustainable in its operations (decrease your environmental footprint) while you could prioritize the selection of environmentally friendly digital products (IT equipment).

Improving the digital maturity of your firm could increase your competitiveness and would bring you closer to more digital mature competitors in your market of interest. It would also provide you with a competitive advantage over less digitally developed competitors.

This score is calculated as an average from the scores that you obtained over the six dimensions of your submitted DMA questionnaire: i) Digital Business Strategy ii) Digital Readiness iii) Human-centric digitalisation iv) Data Management v) Automation and Intelligence and vi) Green Digitalisation. We encourage you to read carefully the scores interpretation of each of the six dimensions with relevant comments and suggestions regarding your current status in each one of those and the unexplored potential that you could address with the help of an EDIH.

Dimensions explained

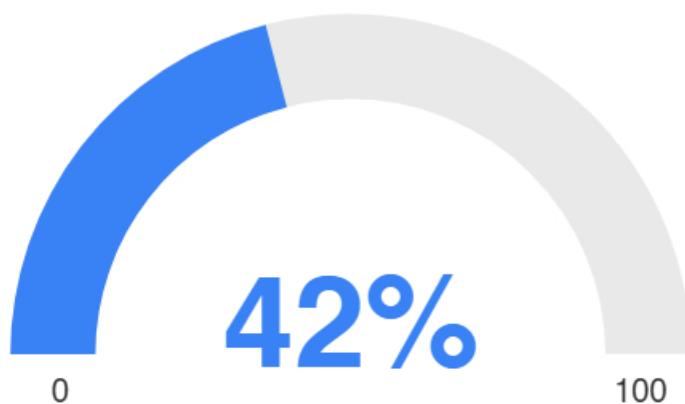
Digital Business Strategy



Companies at this maturity level tend to be in an early stage with regard to business strategy and investments for digitalisation. This means there is a lot of potential for improvement. You have an initial plan and resources and your management is receptive but there is a need to intensify commitment and efforts for increased digitalisation. You may have invested in digital technologies to a certain extent to modernise the operations of your business such as the design of your products/services, project planning and management. You could further benefit from automating important parts of your operations like production, customer services etc. You could also benefit by the introduction of more advanced digital technologies in areas like logistics, marketing and sales, purchasing and procurement, and advanced security. You possess the necessary IT infrastructure to support an initial level of digitalisation and you have IT skilled personnel, although to a limited extent.

Moreover, you could elevate the strategic importance of digitalisation for your business in order to achieve a more positive impact on internal/external processes or costs. You would need to allocate more budget to improve your IT infrastructure and ensure management and staff commitment in order to fully benefit from them. The organisational and process changes needed for the digitalisation of your enterprise might also require recruiting more IT staff and digital specialist profiles.

Digital Readiness



AVERAGE

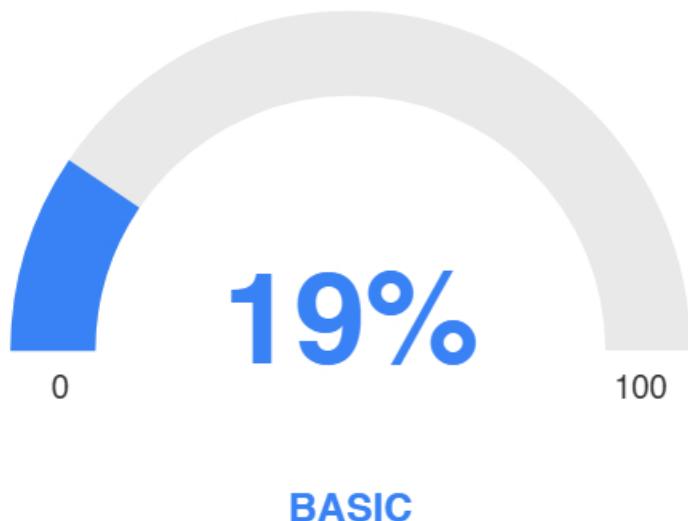
Companies at this maturity level tend to be in an early stage with regard to digital readiness (adoption of digital technologies). In your company, you are using some but not all mainstream digital technologies. Digital solutions are employed in a number of business areas – mostly in administration and management. You may reap more benefits from the implementation of specialised or advanced digital technologies.

Your company would benefit a lot if you consider accelerating the use of a number of digital technologies that could boost your sales (i.e. e-commerce, e-marketing etc.), improve business efficiency (Information Management Systems, ERP), improve customer satisfaction (web based tools to communicate with customers), upgrade personnel skills / increase personnel satisfaction and retention [remote business collaboration (teleworking, virtual learning, etc.)].

**Mainstream digital technologies refer to: connectivity infrastructure, company's website, web-based tools to communicate with customers, live chats/social networks/chatbots to communicate with customers, e-commerce (B2B, B2C), e-marketing (online ads, social media for business etc.), e-government, remote business collaboration tools (e.g. teleworking, videoconferencing, virtual learning, etc.), Intranet portal, Information Management Systems (ERP, CRM, SCM etc.)*

**Advanced digital technologies refer to (indicatively): Artificial Intelligence (AI) applications, robots, virtual/augmented reality, CAD applications, IoT, smart sensors, blockchain, 3D printing etc.*

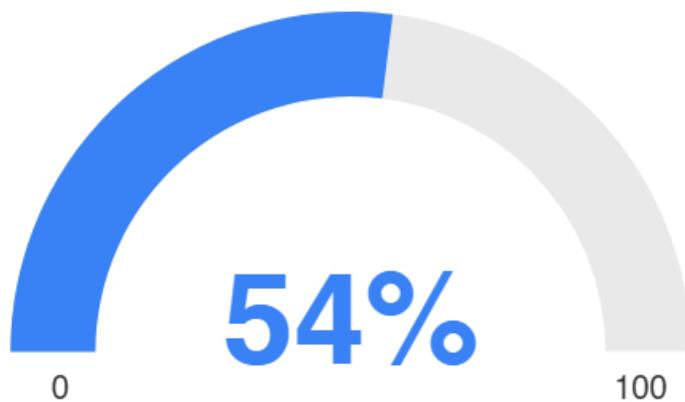
Human-Centric Digitalisation



Companies at this maturity level tend to be in a very early stage with regard to human-centric digitalisation (skills development for digitalisation). The potential from improving the digital skills of the staff should become more clear in management and/or operational level. Your company could start by performing a digital skills assessment for your staff that would be followed by a concrete training plan to re-skill or up-skill staff. You should consider providing more training or online learning tools to staff to acquire/increase digital skills. Currently, the digital skills of staff are basic and jobs have not yet been re-designed for the digital age.

In this range there is a huge untapped potential to increase the digital literacy of your employees even starting with limited investments.

Data Governance

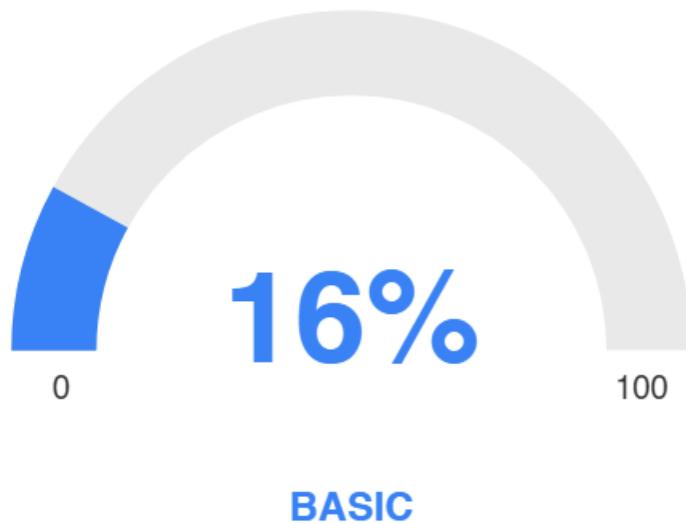


MODERATELY ADVANCED

Companies at this maturity level tend to be in a moderately advanced stage with regard to data management (storage, organisation, access, exploitation and security of data). You have already put in place a concrete data management policy/plan/set of measures to manage and benefit from your data. Documents and processes are digitised in many business functions and operational areas. Most data are stored in a digitally structured form and there is a degree of data integration and interoperability between the different IT systems. You consider data analysis important for business operations and informed decision-making, which helps to optimise your processes and improve customer service. You have a plan for cybersecurity and have identified measures to be taken in the case of cyber-emergency. There is provision for data backing-up facilities and awareness among the personnel for the importance of protection against cyber-threats. Trainings and awareness events are available for the staff on the subject of cybersecurity.

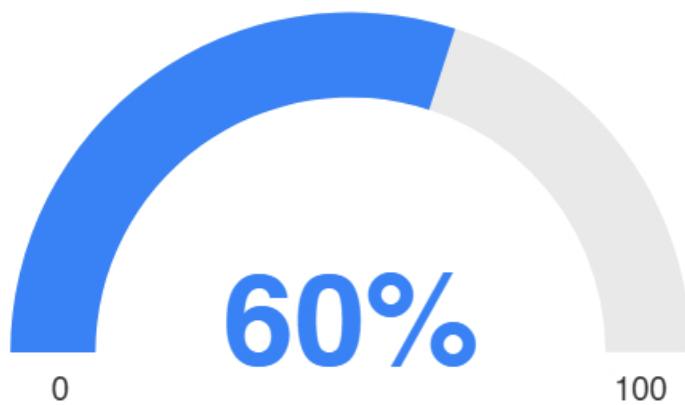
Being in this range, you still have a lot of potential to release for your company by making more and better use of data. You could further improve data integration and interoperability between systems that cover different areas (production, sales, marketing, HR, customer service etc.) that would help you make decisions on a more strategic level. You could make your data accessible in real time by different devices and locations including for your own staff (e.g. teleworking). When upgrading your data management capabilities you should implement robust data security policies, contingency and business continuity plans in case of serious cyber-threats.

Automation & Artificial Intelligence



Companies at this maturity level tend to be in a very early stage with regard to automation and intelligence (facilitated by digital means embedded in business process). No tasks are yet automated. AI and automation has not supported any business, commercial or operational activities.

Green Digitalisation



MODERATELY ADVANCED

Companies at this maturity level tend to be in a moderately advanced stage with regard to green digitalisation*. Environmental aspects are considered in many digitalisation choices. Digital technologies may already contribute in a certain extend to sustainable business operations (such as business model, service provision, production and manufacturing or service delivery). Digital technologies could more substantially support the general reduction of emissions and pollution or the management of waste. Digital technologies could more substantially support the optimised use of raw materials but may already support the delivery of the products to customers. Digital solutions could contribute more to reducing the organisation's impact on the environment. Materials/products used by the organisation could be more traceable. Energy could be sourced from sustainable sources off or on-site. Administrative processes are mostly paperless. Environmental impacts in digital choices and practices are taken into account to a significant extent.

**Green digitalisation refers to the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of it).*

How does my score compare?

You can compare your DMA score to other users across Europe, where 0% means you're too far behind everyone and you don't have any digital maturity and 100% means you're a leader in EU.



Submitted answers

SME: [Carger Group LLC](#)

Customer Data

Maturity assessment date: 2025-03-17

Name of the enterprise supported by the EDIH: Carger Group LLC

Fiscal registration number (VAT or equivalent): 43847680

Comments: {Empty}

Contact person: Volodymyr Fomenchenko

Role in the enterprise: Head of Growth

Email address: {Empty}

Telephone: {Empty}

Website: {Empty}

Enterprise's staff size: Small-size (10-49)

Enterprise's foundation year: 1996

Country where the enterprise business unit is located: Ukraine

Region where the enterprise business unit is located: Zhytomyr Oblast

Postal code: {Empty}

Full address: {Empty}

In which sector of activity is your enterprise's business primarily focused? Please select only one option:
Manufacturing and processing

In addition, in which other sectors of activity is your enterprise's business already operating/wishing to operate? Please select up to three options: Metal working and industrial production

No other sector: No

Other sector of activity not listed above (please specify): {Empty}

Digital Business Strategy

The questions of this dimension intend to capture the overall status of a digitalisation strategy in your enterprise from a business perspective. They ask about your enterprise's investments in digitalisation per business areas (both executed and planned) as well as the company's readiness to embark in a digital journey that might require organisational and economic efforts not yet foreseen.

Q1. In which of the following business areas has your enterprise already invested in digitalisation and in which ones does it plan to in the future? Please select all options that apply:	Already Invested	Plan to Invest
Product/Service design (incl. research, development and innovation):		
Project planning and management:	Yes	
Operations (production of physical goods/manufacturing, packaging, maintenance, services, etc.):		Yes
Collaboration with other internal site locations or other companies in the value chain:	Yes	
Inbound logistics & warehousing:		Yes
Marketing, sales & customer services (customer management, order processing, helpdesk, etc.):	Yes	
Delivery (outbound logistics, eInvoices, etc.):	Yes	
Administration and human resources:		
Purchasing and procurement:		
(Cyber)security and compliance with Personal Data regulations/GDPR:		Yes

Q2. In which of the following ways is your enterprise prepared for (more) digitalisation? Please select all options that apply:

Digitalisation needs are identified and are aligned with business objectives: Yes

Financial resources (own, loans, subsidies) are identified to secure digitalisation during at least one year: Yes

IT infrastructures are ready to support digitalisation plans: Yes

ICT specialists are employed/sub-contracted (or hiring/subcontracting needs have been identified): Yes

Enterprise's management is ready to lead the necessary organisational changes: Yes

Concerned business departments and their staff are ready to support digitalisation plans: No

Business architecture and operational processes can be adapted if required by digitalisation: Yes

Manufactured products are already commercialised as a service (so-called Servitisation) or supplemented by services enabled by digital technologies: No

Clients' and partners' satisfaction with online services/interactions is monitored regularly (on social media channels, e-commerce operations, emails exchanges, etc.): Yes

Risks of digitalisation (e.g. non-planned effects over other business areas) are considered: Yes

Digital Readiness

The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.

Q3. Which of the following digital technologies and solutions are already used by your enterprise?

Please select all options that apply:

Connectivity infrastructure (high speed (fibre) internet, cloud computing services, remote access to office systems): Yes

Enterprise's website: Yes

Web-based forms and blogs/forums to communicate with clients: Yes

Live chats, social networks and chatbots to communicate with clients: Yes

E-Commerce sales (Business-to-Consumer, Business-to-Business): Yes

E-Marketing promotion (online ads, social media for business, etc.): Yes

E-Government (online interaction with public authorities, including public procurement): Yes

Remote business collaboration tools (e.g. teleworking platform, videoconferencing, virtual learning, business-specific): No

Internal web portal (Intranet): No

Information Management Systems (Enterprise Resources Planning, Product Lifecycle Management, Customer Relationship Management, Supply Chain Management, e-invoicing): No

Q4. Which of the following advanced digital technologies are already used by your enterprise?

Please choose all options that apply using the provided scale. (Options: Not used, Consider to use, Prototyping, Testing, Implementing, Operational)

Simulation & digital twins (i.e. real-time digital representations of physical objects/processes):

Prototyping

Virtual reality, augmented reality: Not used

Computer-aided design (CAD) & manufacturing (CAM): Not used

Manufacturing execution systems: Testing

Internet of Things (IoT) and Industrial Internet of Things (I-IoT): Not used

Blockchain technology: Not used

..

Additive manufacturing (e.g. 3D printers): Not used

Human-centric Digitalisation

This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.

Q5. What does your enterprise do to re-skill and up-skill its staff for digitalisation? Please select all options that apply:

Performs staff skill assessment to identify the skills gaps: No

Designs a training plan to train and up-skill staff: No

Organises short trainings, provides tutorials/guidelines and other e-learning resources: No

Facilitates learning-by-doing/peer learning/experimentation opportunities: No

Offers traineeships & job placements in key capacity areas: No

Sponsors staff participation in trainings organised by external organisations (training providers, academia, vendors): No

Makes use of subsidised training and upskilling programmes: No

Q6. When adopting new digital solutions, how does your enterprise engage and empower its staff? Please select all options that apply:

Facilitates staff awareness about new digital technologies: Yes

Communicates digitalisation plans to staff in a transparent and inclusive way: Yes

Monitors staff acceptance and takes measures to mitigate the potential collateral effects (e.g. fear to change; 'always on' culture vs. work-life balance; safeguards to risks of privacy breaches etc.): No

Involves staff (including non-ICT staff) in the design and development of product/service/process digitalisation: Yes

Gives staff more autonomy and appropriate digital tools to take and execute decisions: No

Redesigns/Adapts jobs and workflows to support the ways that staff actually would like to work: No

Sets up more flexible working arrangements enabled by digitalisation (e.g. telework): No

Puts at staff disposal a digital support team/service (internal/external): No

Data Governance

This dimension captures how data is digitally stored, organised within the enterprise, made accessible across connected devices (computers, etc.) and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes.

Q7. How is your enterprise data managed (i.e. stored, organised, accessed and exploited)? Please select all options that apply:

The organisation has in place a data management policy/plan/set of measures: Yes

Data is not collected digitally: No

Relevant data is stored digitally (e.g., office applications, email folders, stand-alone applications, CRM or ERP system, etc.): Yes

Data is properly integrated (e.g. through interoperable systems, application programming interfaces) even when it is distributed amongst different systems: Yes

Data is accessible in real-time from different devices and locations: Yes

Collected data is systematically analysed and reported for decision-making: No

Data analytics are enriched by combining external sources with own data: No

Data analytics are accessible without need of expert assistance (e.g. through dashboards): No

Q8. Is your enterprise's data sufficiently secured? Please select all options that apply:

An enterprise data security policy/set of measures is in place: Yes

All client-related data is protected from cyberattacks: No

Staff is regularly informed and trained on cybersecurity and data protection issues/risks: Yes

Cyber-threats are regularly monitored and assessed: No

A full backup copy of critical business data is maintained (off-site/in the cloud): Yes

A business continuity plan is in place in case of catastrophic failures (e.g. all data locked by a ransomware attack or physical damage to the IT infrastructure): No

Automation and Artificial Intelligence

This dimension explores the level of automation and intelligence facilitated by digital means that is embedded in business processes.

Q9. Which of the following technologies and business applications is your enterprise already using? Please choose all options that apply using the provided scale. (Options: Not used, Consider to use, Prototyping, Testing, Implementing, Operational)

Natural Language Processing incl. chatbots, text mining, machine translation, sentiment analysis: Not used

Computer vision / image recognition: Not used

Audio processing / speech recognition, processing and synthesis: Not used

Robotics and autonomous devices: Prototyping

Business intelligence, data analytics, decision support systems, recommendation systems, intelligent control systems: Prototyping

Green Digitalisation

This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

Q10. How does your enterprise make use of digital technologies to contribute to environmental sustainability? Please select all options that apply:

Sustainable business model (e.g. circular economy model, product-as-a-service): Yes

Sustainable service provision (e.g. usage tracking for further reuse by other users): No

Sustainable products (e.g. eco-design, end-to-end product lifecycle planning, end-of-life & extension of useful life): No

Sustainable production and manufacturing methods, materials and components (incl. end- of-life management): Yes

Emissions, pollution and/or waste management: Yes

Sustainable energy generation in own facility: No

Optimisation of raw material consumption/cost: Yes

Reduction of transport and packaging costs: Yes

Digital applications to encourage responsible consumer behaviour: No

Paperless administrative processes: Yes

Q11. Is your enterprise taking into account environmental impacts in its digital choices and practices? Please grade all options that apply using this scale: No, Partially, Yes:

Environmental concerns and standards are embedded in the enterprise's business model and strategy: No

There is an Environmental Management System/certification implemented: No

Environmental aspects are part of digital technologies/suppliers' procurement criteria: Yes

Energy consumption of digital technologies and data storage are monitored and optimised: Yes

Recycling/re-use of old technological equipment is actively practised by the enterprise: Yes



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Annex 3. Your Digital Maturity Journey in 6 Steps

Digital Transformation Assessment

Your Complete Guide to Digital Readiness

1 Take the Digital Speed Test



Quick online self-check to estimate your digital readiness

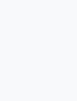


Digital Speed Test

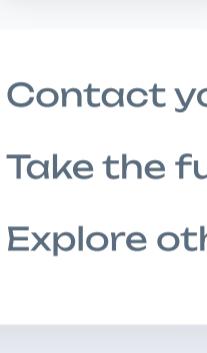
Scan to access the quick assessment tool

[Open Link](#)

2 Choose Your Assessment Path



Select the most appropriate assessment method for your organization



EDIH Catalogue

Find your local European Digital Innovation Hub

[Open Link](#)



Open DMA Platform

Access the full DMAT assessment

[Open Link](#)

- Contact your local European Digital Innovation Hub (EDIH)
- Take the full DMAT assessment
- Explore other frameworks: DMM, DAI, Gartner Model

3 Prepare for the Assessment



Allocate 30-45 minutes and involve key stakeholders from across your organization

- Involve key staff from leadership, IT, and operations
- Gather information on your IT systems
- Review employee training programs
- Assess data management practices
- Document sustainability initiatives

4 Review and Interpret Your Results



Understand your digital maturity across all key dimensions

- Understand your overall score and scores across 6 core dimensions
- Review narrative insights per dimension
- Identify gaps and strengths
- Use interpretation guide for detailed analysis

5 Build Your Digital Transformation Roadmap



Create a strategic plan aligned with your business goals and internal capacity

- Set digital priorities (short-term, mid-term, long-term)
- Align roadmap with business goals and internal capacity
- Choose support services (ERP, automation, skills training)
- Access support from your local EDIH

6 Track Progress with Follow-Up Assessments



Monitor your digital transformation journey with regular assessments

Assessment Timeline

T0: Baseline

Initial DMA assessment to establish your starting point

T1: Year One

One-year follow-up to measure progress

T2: Impact Check

Two-year assessment to evaluate transformation impact



Annex 4. Digital Maturity Measuring Tools

Digital Maturity Model (DMM) by Deloitte

Overview

The **Digital Maturity Model (DMM)**, developed by Deloitte in collaboration with TM Forum, is a comprehensive framework designed to guide organizations through every phase of their digital transformation. Recognized as the first industry-standard digital maturity assessment tool, the DMM provides a holistic view of digital capabilities across an entire organization, enabling business leaders to assess their current state, prioritize strategic initiatives, and benchmark progress against industry peers.

Purpose and Value

The DMM helps organizations:

- Understand their current position on the digital transformation journey.
- Identify opportunities and gaps in digital capability.
- Set short- and long-term goals based on business strategy.
- Measure the impact of transformation initiatives across five core business dimensions.

Five Core Dimensions of the DMM

1. **Customer** – Focuses on delivering a seamless digital experience, building trust, and leveraging insights across all channels.
2. **Strategy** – Evaluates how digital objectives are embedded in overall business strategy, including innovation, branding, and market alignment.
3. **Technology** – Assesses infrastructure readiness, application ecosystems, data security, and the integration of connected devices.
4. **Operations** – Examines how digital technologies enhance process automation, efficiency, and real-time analytics in service delivery.
5. **Organisation & Culture** – Measures leadership, governance, talent management, and adaptability to change.

These dimensions are broken down into **28 sub-dimensions** and **179 individual criteria**, allowing organizations to pinpoint strengths and areas for improvement with precision.

Key Features

- **Pan-Organizational Coverage:** Unlike narrower tools, the DMM evaluates digital maturity across the entire organization.



- **Industry Benchmarking:** Enables comparison with other organizations within the same industry sector.
- **Action-Oriented Framework:** Designed not just for diagnostics, but to inform decision-making and transformation planning.

Application Along the Transformation Journey

The DMM supports transformation across three major phases:

- **Imagine:** Define strategic ambitions and digital opportunities.
- **Deliver:** Shape operating models and roadmaps.
- **Run:** Implement changes and measure continuous improvement.

At each phase, the DMM provides a reference point for capability assessments, priority setting, and value measurement, ensuring alignment with business goals.

Endorsements and Adoption

The DMM is widely endorsed by global industry leaders, including Vodafone, BT, China Mobile, and Orange. It is especially recognized in the telecommunications and digital services sectors as a benchmarking and strategic planning tool.

The Deloitte Digital Maturity Model offers a structured, detailed, and scalable approach to digital transformation. Its strength lies in its comprehensive scope, industry validation, and ability to translate maturity assessments into actionable transformation strategies.

BCG Digital Acceleration Index (DAI)

Overview

The **Digital Acceleration Index (DAI)** by the Boston Consulting Group (BCG) is a powerful strategic framework used to assess an organization's digital maturity across core capabilities. Developed as a diagnostic and benchmarking tool, it enables businesses to evaluate where they stand on the digital maturity curve and identify actionable steps to accelerate their digital transformation journey.

Core Dimensions of the DAI

The DAI evaluates digital maturity across four primary dimensions:

1. **Artificial Intelligence (AI)**
 - Measures the depth of AI integration into business processes, products, and services.
 - Key components:



- **AI Strategy & Governance:** Is there a formal AI roadmap and ethical governance?
- **Integration:** How embedded is AI across departments and workflows?
- **Talent & Skills:** Does the organization possess the expertise to manage AI systems?

2. Automation

- Evaluates the extent of process automation in operations, production, and service delivery.
- Key components:
 - Use of **Robotic Process Automation (RPA)**
 - Smart manufacturing adoption
 - Implementation of **chatbots** and **self-service platforms**

3. Data

- Assesses data collection, governance, and analytics capabilities.
- Key components:
 - **Data Quality & Accessibility**
 - **Advanced Analytics** and decision support
 - **Data Privacy & Security** compliance mechanisms

4. Customer Experience (CX)

- Measures how well digital technologies are used to enhance user engagement and satisfaction.
- Key components:
 - **Omnichannel Integration** across digital and physical touchpoints
 - **Personalization** through data insights
 - Continuous **Customer Feedback Loops**

Each dimension is scored individually, culminating in an overall DAI score that positions the organization within a range from digital laggards to digital champions.

Why DAI Matters

The DAI is more than a maturity assessment—it's a strategic guide. It empowers companies to:

- **Align digital goals** with business objectives
- **Prioritize high-impact projects** with clear ROI
- **Benchmark against peers** and industry leaders
- **Accelerate transformation** through targeted action plans
- **Optimize digital investments** based on capability gaps

Practical Steps Recommended by BCG



1. **Assess the Current State:** Understand existing digital capabilities and transformation progress.
2. **Map Opportunities Across the Four Accelerators:** Identify which of the core dimensions (AI, automation, data, CX) align best with strategic goals.
3. **Pilot and Plan:** Implement test projects in each accelerator and use insights to shape a broader roadmap.

Challenges and Considerations

While DAI offers clarity and structure, organizations should be prepared for:

- **Change resistance** and cultural inertia
- **Resource limitations** in budget, talent, and time
- **Fast-evolving tech landscapes** requiring constant updates
- **Data protection** and regulatory compliance hurdles

In today's digital economy, understanding where your business stands is crucial. The BCG Digital Acceleration Index offers a comprehensive, actionable lens into digital maturity. By leveraging its insights, organizations can confidently navigate their transformation and position themselves for long-term digital leadership.

Gartner Digital Maturity Model

Overview

Gartner's Digital Maturity Model provides a structured and widely applicable framework to assess an organization's digital capabilities and guide its digital transformation journey. The model helps organizations understand where they are on the digital maturity spectrum and what steps are needed to evolve into digitally mature enterprises. It is especially valued for its clarity, practical structure, and cross-industry relevance.

Stages of Digital Maturity

Gartner's model outlines five progressive stages:

1. **Initiating**
 - Organizations operate with outdated technologies and lack a coherent digital strategy.
 - Digital initiatives are limited or reactive.
2. **Experimenting**
 - Recognition of the need for digital begins to emerge.
 - Organizations start exploring data use and testing early digital initiatives.
3. **Scaling**



- Digital efforts expand across departments with more structured programs.
- Goals include efficiency, wider adoption, and measurable outcomes.

4. **Transforming**

- Digital technologies are embedded into business processes and culture.
- Organizations use digital capabilities to enable growth and strategic advantage.

5. **Digital Leadership**

- Digital is at the core of the business model.
- Organizations lead innovation, disrupt markets, and deliver superior digital value.

Key Areas of Assessment

Gartner's model evaluates maturity across five strategic domains:

- **Strategy:** How well digital objectives align with overall business goals.
- **Organization:** The structural and cultural readiness for change and digital integration.
- **Operations:** The effectiveness and adaptability of internal processes and workflows.
- **Customer Experience:** The quality and personalization of digital interaction across channels.
- **Technology:** The scalability, flexibility, and modernity of the IT landscape.

Purpose and Benefits

Roadmap for Transformation

- Gartner's model offers clear milestones for organizations to follow, allowing for strategic planning and incremental progress.

Informed Decision Making

- Leaders can assess current capabilities and prioritize investments to maximize digital ROI.

Competitive Advantage

- By understanding their digital position relative to competitors, organizations can identify and act on unique market opportunities.

Improved Business Outcomes



- Aligning digital strategy with operational and customer priorities leads to more effective transformations and improved performance.

Relevance Across Sectors

Gartner's Digital Maturity Model is adaptable across industries and functions:

- **Digital Business:** Supports enterprise-wide transformation initiatives.
- **Government:** Enhances public service delivery, policy responsiveness, and citizen engagement.
- **IT Infrastructure & Operations:** Aligns technical capabilities with strategic objectives.
- **Sales & Operations Planning (S&OP):** Improves decision-making, agility, and coordination across functional units.

Gartner's Digital Maturity Model is a practical, stage-based tool that guides organizations through a continuous digital evolution. By assessing capabilities across critical dimensions and setting realistic, strategic goals, the model helps organizations transition from digital intent to digital leadership.