AI Adoption Roadmap

Aerospace & Manufacturing
June 2025

West Midlands Combined Authority

AND

Table of Contents

AND

1. Introduction and context

The West Midlands is one of the United Kingdom's major clusters, including global players such as Rolls-Royce, Moog, Collins Aerospace and Parker-Meggitt, and a supply chain consisting of some 340 sites, directly employing over 14,000 people. The region's supply chain has specialist capabilities such as safety critical aerospace equipment systems, including flight control actuation, engine controls, thermal management and braking systems, as well as precision engineering, where many companies work in adjacent industrial sectors such as nuclear, motor sport, automotive etc. This advanced manufacturing network is dominated by SMEs that have significant potential to lead in industrial digitisation and applied AI innovation.

However, many companies are at early stages of digital maturity, with wide variation across the sector. Successful adoption of AI depends critically on strong foundations: data availability, cyber-secure infrastructure, workforce skills, and clarity of business needs. Without first strengthening these enablers, AI projects risk underperforming.

This roadmap sets out a practical, business-led journey that prioritises digitisation, addresses real business challenges, builds skills, and demystifies technology. AI is seen not as the goal in itself, but as a powerful enabler for solving meaningful operational and strategic problems.

Grounded in five phased stages, the roadmap is structured to help aerospace and manufacturing organisations move from understanding why digitisation matters, to implementing business-driven digital and AI solutions at an appropriate pace and scale.

2. How to use this roadmap

The aerospace supply chain organisations in the West Midlands are at very different stages in their digitisation and AI journeys. Some are just beginning to explore why digitisation is critical to their competitiveness and resilience. Others may already be piloting digital solutions or using data-driven techniques to improve production, maintenance, or supply chain management. This roadmap is designed to reflect that diversity: it is flexible and focused on meeting each organisation where they are.

The starting point is a **Digital Maturity Assessment**—a tool that helps companies understand their current level of digital capability, identify gaps (for example, in data capture, cyber security, or system integration), and clarify where digital technologies, including AI, could support their needs. This is not just about adopting technology for its own sake. It also brings to the surface operational challenges, infrastructure barriers, workforce skills needs, and broader business ambitions.

With these insights support can be tailored to the specific needs of each company. You do not have to follow the roadmap in strict order—each phase is designed to stand on its own and organisations can enter at the most appropriate stage for them.

The roadmap provides structured, practical support across five interconnected phases:

Phase	Focus	Who and when it's for
Phase 1	Why digitisation is essential for business continuity	For organisations of any size needing to understand the case for digital transformation, the meaning of key technologies, and how digitisation enables competitiveness and resilience.
Phase 2	Focus on business value	For organisations identifying operational challenges, inefficiencies, or strategic goals that digital and AI technologies could address.
Phase 3	Testing and validating digital solutions	For organisations ready to explore and validate digital and AI solutions through collaboration and small-scale pilots.
Phase 4	Delivering value and sustained improvement	For organisations scaling successful digital approaches, embedding new capabilities, and linking them to wider process improvements.
Phase 5	Strategic alignment and sector improvement	For organisations ready to connect into broader regional innovation efforts, supply chain collaboration, and sector-wide digital advancement.

Each phase is supported by toolkits, resources, and case studies that make the journey more accessible and actionable, whether you are starting from the fundamentals or looking to scale and sustain digital innovation.

3. AI adoption phases

3.1 Phase 1: Digital readiness and baseline mapping

Target audience: Organisations that are new to digitisation or require a clear, objective view of their current digital capabilities. Suitable for early engagement or for re-baselining before scaling up technology adoption.

Investment required: Low to moderate

Goal: To give every aerospace and manufacturing organisation in the West Midlands a clear starting point for responsible digitisation and future AI adoption—through self-assessment, peer learning, and practical, business-driven guidance.

What this phase delivers:

Completing this phase gives organisations a clear and practical understanding of their current digital maturity, data foundations, and infrastructure gaps. It helps establish a solid starting point and identify what support is needed to move forward. They will walk away with a baseline profile, peer connections, and tailored next-step recommendations.

Key activities:

- Launch a **Digital Maturity Assessment** to baseline current capabilities across data infrastructure, connectivity, cyber security, operational systems, and workforce skills.

- Deliver introductory workshops and demonstrations showcasing:

  - Why digitisation matters for business continuity and competitiveness.

  - Real-world case studies of digital manufacturing and aerospace transformation.

  - Clear, jargon-free explanations of key technologies (e.g. edge computing, big data, AI, cyber security).

- Activate a **mentorship and peer support network** connecting early-stage companies with more digitally mature businesses, universities, and technical experts.

- Launch a **Manufacturing and Aerospace Digitisation Knowledge Hub** as the central access point for toolkits, case studies, templates, and events.

- Use assessment data to segment the cluster and route organisations into appropriate next phases of support (e.g. targeted skills programmes, pilot projects, funding pathways).

Delivery tools and templates:

- Digital Maturity Assessment Toolkit (see appendices)

- Introductory workshop packs and facilitator guides

- Mentor directory and onboarding toolkit

- Manufacturing and Aerospace Digitisation Knowledge Hub

- Cyber security and data infrastructure starter templates

- Segmented support pathways linked to future roadmap phases

Delivery recommendations for the cluster & partners: To operationalise this phase, regional partners related to the sector (e.g. Midlands Aerospace Alliance, WMCA, Made Smarter West Midlands) should consider ways of resourcing and implementing the following:

1. **Commission the Digital Maturity Assessment:**
   Either yourselves or working with partners (e.g. design specialists or regional universities) create a tool or a survey that provides either automated feedback and tailored resource links or sets the CLuster to provide these based on the responses and scores. These should be practical, using business-focused language and providing relevant examples and case studies (see Appendix one for an outline)

2. **Design and deliver a regional introductory workshop programme:**
   Develop workshops in collaboration with early adopters (e.g. JLR, Collins Aerospace, SMEs from Made Smarter pilots). Focus on business needs, real-world success stories, and clear demystification of technologies. Offer multiple regional rounds to maximise access.

3. **Activate a mentorship network:**
   Recruit and brief mentors from digitally mature companies, technical providers, and academic partners. Use a simple application and onboarding process, and offer structured formats such as drop-in sessions and problem-solving clinics.

4. **Build and manage the Manufacturing and Aerospace Digitisation Knowledge Hub:**
   Create a user-friendly, continually updated hub hosting assessment tools, case studies, workshops, FAQs, and resource links. Assign a dedicated content lead to keep the hub relevant and current.

5. **Implement a segmented support model:**
   Use assessment results to categorise organisations by digital readiness and route them into targeted support offers—such as skills training (Phase 3), co-creation pilots (Phase 2), or strategic scaling programmes (Phase 4).

6. **Track engagement and gather feedback:**
   Monitor tool usage, workshop attendance, and mentorship participation. Use feedback loops to continuously improve support materials, training content, and regional delivery models.

Example use case:
A mid-sized aerospace supplier based in Wolverhampton completes the Digital Maturity Assessment and realises that while it has strong CNC machining capabilities, it has very limited data collection from the production line and no integrated maintenance scheduling. Through the Knowledge Hub, they access a workshop explaining practical steps to install basic sensors and begin capturing machine data securely. They are paired with a mentor from WMG, who advises them on low-cost, edge computing solutions to minimise cloud reliance. As a result, they prepare a focused pilot project to trial predictive maintenance across a key production cell—positioning themselves to move into Phase 2 with confidence.

3.2 Phase 2: Focus on business value

Target audience: Organisations that recognise the importance of digitisation and are ready to identify where it can deliver the greatest business impact. Suitable for those looking to move from awareness to action, based on specific operational priorities.

Investment required: Low to moderate

Goal: To help aerospace and manufacturing organisations link digital and AI opportunities directly to solving business challenges—focusing on value creation, operational improvements, and strategic competitiveness.

Key activities:

- Facilitate **business challenge workshops** that guide organisations through identifying their most pressing operational pain points (e.g. downtime, waste, quality issues, supply chain risks).

- Map challenges against digital solution areas—such as process automation, machine monitoring, predictive analytics, or supply chain visibility.

AND

- Carry out **data and infrastructure readiness assessments** to understand what is needed to enable chosen solutions (e.g. better data capture, secure connectivity, scalable storage - see appendix 2 for an outline).

- Prioritise challenges using simple ROI models and risk-benefit assessments.

- Develop **initial digital solution portfolios**—a manageable, prioritised list of areas where technology interventions could deliver measurable benefits.

Delivery tools and templates:

- Business Challenge Mapping Template

- Data and Infrastructure Readiness Checklist

- ROI and Business Case Development Toolkit

- Prioritisation Framework (value vs effort vs risk) - see appendix 3 for an outline

- Example Digital Solution Playbook (for common manufacturing and aerospace challenges)

Delivery recommendations for cluster partners: To operationalise this phase, sector bodies and delivery partners should:

1. **Design and deliver structured business challenge workshops:**
   Run facilitated sessions (in-person or virtual) where organisations are guided through diagnosing operational challenges, mapping them to potential digital enablers, and prioritising where to focus next.

2. **Offer lightweight data and infrastructure readiness assessments:**
   Provide simple audit templates or advisory clinics to help organisations assess whether their current systems, data quality, and cyber security are ready to support digital solutions.

3. **Provide simple ROI calculators and business case templates:**
   Support companies in building the business case for pilot projects or technology investments—not just in technical terms, but linked clearly to business outcomes (e.g. cost savings, quality improvements, risk mitigation).

4. **Create a "solution playbook" tailored to aerospace and manufacturing SMEs:**
   Curate a guide showcasing common, proven digital and AI solutions mapped to typical industry challenges (e.g. downtime reduction through predictive maintenance; scrap reduction via machine vision).

AND

Example use case:

An automotive parts manufacturer in Coventry participates in a business challenge workshop and identifies excessive unplanned downtime on a key assembly line as a major profitability risk. They work with advisors to map this problem to predictive maintenance solutions using basic IoT sensors and edge analytics. A simple ROI model shows that even a 10% reduction in downtime would pay for a pilot project within six months. They are then directed to Phase 3 to design and implement a small-scale co-creation pilot.

3.3 Phase 3: Testing and validating digital solutions

Target audience: Organisations that have identified key business challenges and are ready to explore, design, and test digital or AI solutions through practical, small-scale pilots. Suitable for teams aiming to build confidence and demonstrate early value.

Investment required: Moderate

Goal: To support aerospace and manufacturing organisations in moving from ideas to action—through collaborative design, delivery, and evaluation of practical pilots that address real business needs and demonstrate measurable improvements.

What this phase delivers: This phase helps organisations move from theory to action. By scoping and running small-scale, low-risk pilots, they can test solutions that address specific business challenges. They'll generate evidence, build internal confidence, and de-risk future investments—while learning what works and what doesn't in their environment.

Key activities:

- Facilitate **co-creation partnerships** between organisations, technology providers, universities, and innovation bodies to design solution pilots.

- Support the scoping of **small-scale, low-risk pilot projects** focused on solving a clear operational challenge or inefficiency.

- Ensure pilots are designed with **secure, scalable, and affordable digital architectures**—favouring open standards, edge computing, and minimal cloud dependence where appropriate.

- Embed early-stage **cyber security** considerations and good data management practices. Provide **mentoring and technical guidance** during pilot delivery.

- Capture outcomes through structured evaluation—focusing on both successes and lessons learned.

AND

Delivery tools and templates:

- Pilot Design Toolkit (defining goals, success measures, technical approach, data needs)

- Co-creation Partnership Agreements (outlining roles, IP considerations, confidentiality)

- Cyber Security and Data Protection Checklists

- Pilot Outcomes Evaluation Templates

- Case Study Capture Templates

Delivery recommendations for cluster partners: To operationalise this phase, sector bodies and innovation support organisations should:

1. **Broker and support co-creation partnerships:**
   Actively match organisations with suitable technology providers, research partners (e.g. WMG, MTC), or peer SMEs to design joint pilots around high-priority business challenges.

2. **Provide structured pilot design support:**
   Offer workshops or one-to-one guidance on scoping pilots that are realistic, low-cost, low-risk, and deliver clear business outcomes. Emphasise modular, scalable solutions over large, complex systems.

3. **Embed cyber security and data architecture best practices from the start:**
   Ensure every pilot includes a basic security and data management review to prevent costly issues later. Promote secure-by-design and privacy-by-design approaches.

4. **Offer technical mentorship during delivery:**
   Provide access to mentors or advisors who can troubleshoot, validate designs, and guide teams during pilot implementation.

5. **Capture and share case studies:**
   Use structured templates to document pilot journeys, highlighting what worked, what did not, and key learnings. Share successes and challenges openly to build sector-wide confidence and knowledge.

Example use case:
A precision engineering SME in Dudley partners with a local university innovation team to trial an edge-computing-based machine monitoring solution. They design a pilot using low-cost sensors to track spindle temperature and vibration on two CNC machines. During the three-month trial, early warning signs of tool wear are detected, preventing two potential unplanned stoppages. Using the pilot outcomes evaluation toolkit, they calculate that scaling this system across their shopfloor could reduce downtime by up to 12 percent. With a strong case study captured, they prepare to move into Phase 4 to sustain and expand the solution.

AND

3.4 Phase 4: Delivering value and sustaining improvement

Target audience: Organisations that have completed successful pilots and are ready to scale solutions, embed digital capabilities, and secure long-term value. Suitable for teams focused on strengthening operational performance and developing workforce skills.

Investment required: Moderate to high

Goal: To help aerospace and manufacturing organisations transition from small-scale pilots to sustainable, value-creating digital practices—embedding new technologies, upskilling the workforce, strengthening cyber security, and building continuous improvement cultures.

Key activities:

- Support the **scaling up** of successful pilots into operational production environments or broader business functions.

- Facilitate the development of **workforce digital skills plans**—targeting operators, engineers, managers, and leadership teams.

- Strengthen **cyber security governance** and operational resilience as systems and data flows increase.

- Embed **continuous improvement cycles** around digital solutions, using lean principles adapted for digital environments.

- Encourage the integration of **AI literacy** programmes—not just technical skills, but also understanding of data use, algorithmic limitations, ethical considerations, and business impacts.

- Provide guidance for **sustained investment planning** in digital infrastructure, open architectures, and adaptable systems.

Delivery tools and templates:

- Workforce Skills and Training Needs Assessment Toolkit

- Digital Solution Scale-up Planning Templates

- Cyber Security Governance Starter Pack

- AI Literacy for Business Leaders and Operators Guides

- Continuous Improvement for Digital Operations Handbook

AND

Delivery recommendations for cluster partners: To operationalise this phase, sector bodies and innovation support organisations should:

1. **Support scaling through targeted workshops and clinics:**
   Offer support for organisations ready to expand pilots into full operational use, covering topics such as solution refinement, change management, and investment appraisal.

2. **Deliver digital skills development programmes:**
   Partner with training providers and universities to offer flexible courses for technical staff, operators, managers, and senior leaders. Focus on real-world, applied skills in digital operations, data-driven decision-making, and AI-enabled workflows.

3. **Promote robust cyber security practices:**
   Provide templates, workshops, and mentoring on strengthening cyber resilience—addressing access controls, data protection, incident response planning, and supply chain security.

4. **Embed continuous improvement cultures:**
   Encourage organisations to adapt lean principles to digital transformation—building capabilities for regular review, iteration, and optimisation of digital processes and AI systems.

5. **Strengthen AI and digital literacy across the business:**
   Run tailored training sessions to help all employees understand the basics of digital systems, AI capabilities and limits, ethical considerations, and how these technologies impact business models.

Example use case:
A medium-sized aerospace maintenance firm in Solihull successfully pilots an AI-driven quality inspection system on two production lines. Following the pilot, they work with training partners to upskill their quality control team and maintenance engineers in using and interpreting AI outputs. They expand the system across their main facility and invest in upgrading their data storage and cyber security protocols. As a result, inspection time per unit drops by 18 percent, scrap rates fall, and customer defect returns decrease. Their continuous improvement team is now tasked with identifying further digital enhancement opportunities based on this success.

3.5 Phase 5: Strategic alignment and sector integration

Target audience: Organisations that have embedded digital or AI solutions and are looking to engage with regional innovation initiatives, influence sector-wide transformation, and contribute to shared infrastructure and capability development.

Investment required: Moderate to high

AND

Goal: To embed aerospace and manufacturing organisations into the West Midlands' broader digital and AI innovation ecosystem—helping them access shared opportunities, shape regional strategies, and build resilience and competitiveness at scale.

Key activities:

- Facilitate **engagement with regional innovation programmes** such as Made Smarter West Midlands, the WMCA AI Growth plan, and Midlands Aerospace Alliance initiatives.

- Support organisations to contribute to and benefit from **regional and national infrastructure investments** (e.g. testbeds, manufacturing innovation hubs, cyber security centres).

- Help businesses align with **regional policy developments** on AI, digital manufacturing, and cyber security, ensuring their needs and voices are represented.

- Promote the development and sharing of **sector-wide standards and best practices**—particularly in areas like secure data sharing, interoperable systems, and responsible AI use.

- Capture and report on **impact metrics**—such as productivity gains, carbon reductions, workforce skills growth, and innovation outputs—to demonstrate collective sector progress.

- Support **collaborative innovation and supply chain initiatives** that use shared digital platforms, AI tools, or data resources to drive cross-business value.

Delivery tools and templates:

- Regional Innovation Participation Guide

- Policy Engagement Templates (briefings, consultation responses)

- Sector Impact Reporting Framework (covering jobs, investment, productivity)

- Best Practice and Standards Sharing Playbooks

- Regional Collaboration Toolkit for Digital Supply Chains

Delivery recommendations for cluster partners: To operationalise this phase, sector leaders, innovation bodies, and regional agencies should:

1. **Actively broker connections into regional and national initiatives:**
   Create pathways for aerospace and manufacturing organisations to engage with innovation accelerators, AI growth programmes, and funding calls aligned to digital manufacturing.

2. **Encourage participation in shared infrastructure projects:**
   Promote opportunities to access testbeds, demonstrators, skills hubs, and cyber security centres. Where possible, advocate for manufacturing and aerospace needs in the design and governance of these assets.

3. **Support businesses to shape and respond to policy developments:**
   Provide briefings, templates, and advisory support to help companies input into regional AI and digital strategies, ensuring industry perspectives influence future priorities and regulation.

4. **Coordinate sector-wide standards and good practice sharing:**
   Work with trade bodies, universities, and cluster organisations to publish practical guides and shared models for secure, scalable, responsible digital adoption across the aerospace and manufacturing supply chain.

5. **Capture and publicise collective impact:**
   Develop regular sector impact reports, showcasing real-world results of digitisation and AI adoption—highlighting how the West Midlands is becoming a leader in responsible industrial transformation.

Example use case:

Following the successful scaling of their edge computing predictive maintenance system, a Tier 2 aerospace supplier in Telford is invited to participate in the West Midlands Innovation Accelerator. They contribute to a regional demonstrator project on secure digital supply chains, sharing their experience in open architecture design and cyber security best practices. They also join a sector-wide impact reporting initiative, showcasing how their improvements reduced machine downtime by 15 percent and carbon emissions by 7 percent. Through these connections, they access further R&D collaboration opportunities and strengthen their position within aerospace supply networks.

AND

4. Toolkit ecosystem and roadmap deliverables

This roadmap is underpinned by a set of practical, reusable toolkits and frameworks designed to reduce friction, align support across partners, and guide organisations from initial readiness through to full integration and strategic impact. While each roadmap phase contains specific delivery tools tailored to that stage, several cross-cutting themes, enablers, and approaches recur throughout. These shared elements are central to the cluster's ability to deliver a coordinated, scalable, and value-led transformation across aerospace and manufacturing.

4.1 Cross-cutting themes

Business challenges first
At every stage, the roadmap prioritises business needs over technology solutions. Whether through readiness assessments, pilots, or skills development, the starting point is always a clearly defined operational or strategic challenge.

Modular, reusable toolkits
Each phase includes toolkits and templates that are easy to use, flexible, and designed to be revisited over time. This makes the roadmap adaptable to changing business needs and technology contexts.

Skills and capability building
From Phase 1 through to Phase 5, there is a strong emphasis on upskilling the workforce, promoting AI literacy, and embedding a culture of continuous improvement. These activities support both technical and leadership capability.

Cyber-secure, scalable infrastructure
Digital architecture is approached with long-term viability in mind—favouring open-source tools, secure-by-design principles, edge computing where appropriate, and cost-effective scaling.

Collaboration and shared progress
The roadmap encourages organisations to work with universities, technology providers, innovation programmes, and each other. It supports regional collaboration that drives learning, reduces risk, and increases impact.

4.2 Summary of deliverables and tools

The following table summarises the toolkits and frameworks used across the roadmap. These should be hosted on a shared digital platform (such as the proposed *Manufacturing and Aerospace Digitisation Knowledge Hub*) and maintained collaboratively by regional partners.

Category	Deliverable	Purpose
Readiness and baselining	Digital Maturity Assessment Toolkit	Helps organisations understand current digital capabilities and gaps
	Workshop Packs & Facilitator Guides	Used in Phase 1 and 2 to introduce core concepts and case studies
Business planning	Business Challenge Mapping Toolkit	Structures how organisations define and prioritise operational needs
	ROI & Business Case Templates	Supports decision-making and investment planning
	Data & Infrastructure Readiness Checklist	Ensures technical and cyber readiness before scaling solutions
Pilot and solution design	Pilot Design Toolkit	Guides the design of small-scale, low-risk solution pilots
	Co-creation Partnership Templates	Clarifies roles, responsibilities, IP, and data handling in joint projects
	Cyber Security & Data Protection Checklists	Ensures pilots follow good practice from the outset
Knowledge sharing	Case Study Templates	Helps capture and communicate learnings across the cluster
	Digitisation Knowledge Hub	Central online platform for accessing all toolkits and resources
Scaling and sustainability	Scale-up Planning Templates	Supports the transition from pilot to full operational rollout
	Continuous Improvement Handbook	Encourages lean, iterative development of digital capabilities
	AI Literacy Guides for Business Leaders and Staff	Promotes understanding of AI use, risks, and value across the organisation
Collaboration and alignment	Regional Innovation Participation Guide	Connects organisations to regional initiatives and funding pathways
	Policy Engagement Templates	Enables businesses to shape local and national digital policy
	Sector Impact Reporting Framework	Standardises the way outcomes and economic impact are captured
	Best Practice & Standards Playbooks	Promotes consistent and responsible digital adoption across the sector

AND

4.3 Implementation recommendations

Many of the activities described in this roadmap—such as workshops, mentoring, assessments, and pilot co-design—can be supported by delivery partners across the region. Rather than repeating delivery guidance within each phase, this section outlines core resources and good practice to support implementation.

Common delivery methods:

- **Facilitated workshops** (in-person or online) to run readiness assessments, challenge-mapping, or pilot design.

- **Mentorship or peer clinics** connecting early-stage adopters with experienced businesses, tech partners, or universities.

- **One-to-one advisory sessions** for business case development, infrastructure audits, or funding guidance.

- **Open-access templates** hosted in the Knowledge Hub, with guidance notes and case study examples.

Delivery partners:

If resources are identified and relevant, demand-led programmes are developed and the following partners are likely to be important to engage with in terms of delivery support:

- Midlands Aerospace Alliance

- WMCA Innovation and Digital Economy teams

- Made Smarter West Midlands

- WMG, MTC, and other university centres

- Local Growth Hubs and business networks

Refer to the toolkit table in Section 4.2 for a complete list of templates.

4.4 What this delivers for the cluster

By embedding this toolkit ecosystem at the heart of roadmap delivery, the aerospace and manufacturing cluster in the West Midlands will:

- Create a shared foundation for responsible, secure, and value-led digitisation

- Accelerate learning and reduce duplication through practical resources and case studies

AND

- Support scalable delivery of support across hundreds of diverse organisations

- Strengthen collaboration, skills, and strategic alignment across the region

- Build visibility and impact, supporting the West Midlands' leadership in industrial transformation

5. Moving forward

This roadmap is not just a strategy document—it is a practical tool to help organisations in the West Midlands aerospace and manufacturing cluster build capability, solve problems, and grow responsibly through digital innovation.

Whether they are just beginning or already scaling successful pilots, support is available. They can access:

- Expert guidance through **Made Smarter West Midlands**, **WMG**, and **MAA** where funding resource and availability allows.

- A full set of toolkits and templates via the upcoming **Digitisation Knowledge Hub**

- Regional collaboration and funding opportunities through **WMCA's AI Growth plan**, **Innovation Accelerators**, and other initiatives

We encourage the cluster and its member organisations to:

- Start with the **Digital Maturity Assessment**

- Use the toolkits to focus on the right business challenges

- Connect with partners and peers to accelerate your progress

This is a shared journey. By working together, businesses, researchers, and regional leaders can position the West Midlands as a national leader in responsible, value-driven industrial innovation.

AND

6. Appendices

APPENDIX 1: Digital Maturity Assessment (DMA) – Outline

Purpose
To help aerospace and manufacturing organisations establish a clear and objective baseline of their digital capabilities, infrastructure, data practices, and workforce readiness—so they can prioritise actions and access the right support at the right time.

Structure
The assessment can be delivered as:

- An **online self-assessment tool** with automated feedback and tailored resource links.

- A **facilitated workshop** (in-person or virtual) for deeper diagnostic conversations.

- A **light-touch diagnostic** conducted during business engagement visits (e.g. as part of funded business support delivery / sector body interactions).

Assessment domains and indicative questions

Domain	Focus	Sample Indicators / Questions
1. Business strategy and leadership	Alignment of digital with business priorities	- Does your leadership team have a shared understanding of the role of digital in your business strategy? - Have you defined measurable goals linked to digital investment (e.g. cost reduction, growth, quality)?
2. Data infrastructure and systems	Systems integration, data quality, accessibility	- Do you collect and store production or operational data systematically? - Are your systems (ERP, MES, finance, etc.) integrated and interoperable? - Is data accessible and usable across functions?
3. Operations and automation	Use of digital tools in production, maintenance, quality	- Are any processes currently automated or digitally monitored? - Do you use sensors, IoT, or machine data to inform decisions? - Do you track downtime or equipment performance digitally?
4. Workforce skills and culture	Digital skills, confidence, learning culture	- Have staff been trained in digital tools or systems recently? - Do people feel confident in using new technologies? - Is there openness to change and experimentation?
5. Cyber security and risk management	Security, compliance, and resilience	- Do you have basic cyber security practices in place (e.g. access control, regular backups, awareness training)? - Have you ever experienced a digital or cyber-related disruption? - Are suppliers assessed for cyber risk?
6. Innovation and experimentation	Pilots, proof of concepts, external collaboration	- Have you trialled new digital technologies in the past 12–24 months? - Do you collaborate with universities, tech providers, or other businesses on innovation? - Is there a process for capturing lessons from pilots?

Scoring approach

Each domain is scored on a 0–5 scale, reflecting increasing levels of maturity:

Score	Description
0	Not started – No activity or awareness in this area
1	Initial – Some awareness, few ad hoc actions
2	Basic – Limited implementation or experimentation
3	Developing – Formalised activities underway in parts of the business
4	Established – Integrated, managed practices across functions

A short explanation should accompany each score with prompts or examples, so users can self-score consistently.

Outputs and recommendations

After completing the assessment, organisations receive:

- A **digital maturity profile** across the six domains

- A **visual dashboard** showing strengths and gaps

- Suggested **next steps**, such as:

   - "You may benefit from joining a digital skills programme" (linked to Phase 4)

   - "You are ready to explore a pilot project" (linked to Phase 3)

   - "Data quality and system integration may be a barrier to AI readiness" (linked to Phase 2)

Optionally, organisations can be segmented into broad categories (e.g. Foundational, Developing, Advanced) to guide tailored support offers from delivery partners.

Delivery and management considerations

- **Customise for different sub-sectors** (e.g. precision machining, aerospace systems, composites) by adapting examples and terminology.

AND

- Ensure **plain language** and business-friendly framing—avoiding excessive jargon.

- Allow both **self-assessment and guided delivery** (e.g. through mentors or business advisors).

- Integrate results into the **central Knowledge Hub** so organisations can access toolkits aligned with their scores (see Section 4 of the roadmap).

- Gather anonymised results at the cluster level to track regional progress and target support.

APPENDIX 2: Data & Infrastructure Readiness Checklist – Outline

Purpose

To help organisations identify gaps, risks, and opportunities in their data and IT infrastructure that may impact the success of digital or AI initiatives. It ensures that technology adoption is built on secure, scalable, and fit-for-purpose foundations.

Structure

The checklist is divided into six key domains. Each domain includes yes/no questions, graded prompts, or maturity ratings (e.g. basic / developing / advanced), and space for comments and follow-up actions.

1. Data availability and collection

Purpose: Understand what data is already being collected, how, and where.

Checklist Items	Example Prompts
Do you currently collect data from production, equipment, or business systems?	E.g. machine utilisation, defect rates, energy use
What formats is the data in (digital, paper, spreadsheets)?	How consistent is the format across teams?
Is the data time-stamped or structured for analysis?	Can you see trends over time or in real-time?
Are sensors or IoT devices installed?	If yes, on which equipment or lines?

2. Data quality and consistency

Purpose: Assess the reliability and usability of existing data.

Checklist Items	Example Prompts
Is the data accurate and regularly validated?	Are checks in place to detect anomalies or errors?
Is the data complete and consistently recorded?	Are there known gaps or frequent omissions?
Are naming conventions, codes, and formats standardised?	E.g. part numbers, machine IDs, timestamps

AND

3. System integration and interoperability

Purpose: Understand how systems connect and whether data can flow across functions.

Checklist Items	Example Prompts
Do your core systems (e.g. ERP, MES, CRM) integrate with each other?	Or are they siloed?
Can data be easily shared across teams or departments?	Do staff have access to the data they need?
Are APIs or connectors in place to link to new tools?	Or are there barriers to integration?

4. Data storage, access and security

Purpose: Check if data is stored securely, accessibly, and in a scalable way.

Checklist Items	Example Prompts
Where is your operational and historical data stored?	On-site servers, cloud platforms, mixed?
Is your storage scalable to support future growth?	Can you store high-frequency or image data if needed?
Who has access to which data?	Are permissions clearly managed?
Is your data backed up regularly and securely?	Are there recovery plans in place?

5. Connectivity and infrastructure performance

Purpose: Assess whether the physical and digital infrastructure can support reliable data exchange and automation.

Checklist Items	Example Prompts
Is your site infrastructure (network, Wi-Fi, cabling) reliable across key areas?	Are there dead zones or weak links?
Are machines or devices connected to the network or cloud?	If not, is retrofitting possible?
Are latency and data transmission speeds acceptable for real-time applications?	Especially for process control or monitoring?
Are systems protected by firewalls and secure protocols?	Especially for remote access or cloud systems?

6. Governance and compliance

Purpose: Ensure the organisation is managing data responsibly and legally.

Checklist Items	Example Prompts
Do you have a designated data owner or governance process?	Who is responsible for data quality and access?
Are you compliant with relevant regulations (e.g. GDPR)?	Particularly in employee or customer data use
Is there a process for granting/revoking access to systems and data?	How often is this reviewed?
Are third-party systems (e.g. cloud providers) regularly assessed for security?	Is supplier risk managed?

Scoring and outcomes

Each domain can be scored using a simple traffic light or maturity scale:

- **Red** – Significant gaps; priority attention needed

- **Amber** – Some foundation in place; action required before scaling

- **Green** – Strong baseline; ready to proceed

The checklist results inform:

- Whether a digital or AI pilot is technically feasible now

- What prerequisites need to be addressed

- Where to focus investment or advisory support (e.g. infrastructure upgrades, integration, cyber readiness)

Formats and use

Available as:

- A self-assessment form (fillable PDF or spreadsheet)

- A guided version used during support visits (e.g. by business support advisors / sector body interactions))

- An embedded step within the Digital Maturity Assessment platform

AND

Outputs

- A clear picture of digital infrastructure readiness

- A prioritised list of actions or investment needs

- Evidence for grant or programme applications

- Input into pilot scoping and partner discussions (Phase 3)

AND

APPENDIX 3: Prioritisation Framework – Outline

Purpose

To help organisations assess and compare potential digital or AI initiatives using a structured, business-friendly approach based on:

- **Value** (expected business impact)

- **Effort** (resources, time, complexity)

- **Risk** (likelihood and severity of failure or disruption)

Use cases

This framework is best applied:

- After a list of potential solutions or challenge areas has been identified (via Phase 2 workshops or diagnostics)

- When preparing to select ideas for pilots (Phase 3)

- As part of investment decision-making or internal business case preparation

Core assessment dimensions

Each initiative or use case is assessed across three dimensions:

1. Value

What is the potential benefit to the business?

Sub-criteria	Considerations
Cost savings	Reduced downtime, waste, or labour costs
Revenue impact	New capacity, improved customer experience
Strategic alignment	Supports long-term goals, customer expectations
Workforce benefit	Improves decision-making or reduces manual burden
Sustainability gains	Energy efficiency, waste reduction, compliance

2. Effort

What resources and time are required to implement?

Sub-criteria	Considerations
Technical complexity	Degree of integration, system requirements
Data readiness	Quality, availability, and access to required data
Internal capacity	Skills, staff availability, leadership bandwidth
Implementation time	How long will it take to see results?
Cost to implement	Estimated upfront and recurring costs

Scoring: e.g. Low (1) = easy / High (3) = complex or resource-heavy

3. Risk

What could go wrong? How likely and severe are those risks?

Sub-criteria	Considerations
Technical uncertainty	Technology unproven, integration challenges
Operational disruption	Downtime, change management risks
Security or data concerns	Compliance, IP, cyber vulnerabilities
Partner dependency	Reliance on external vendors or support
Reputational risk	Risk of failure or negative stakeholder perception

Scoring: e.g. Low (1) = little risk / High (3) = major risk or uncertainty

Framework tool formats

Initiative	Value (1–3)	Effort (1–3)	Risk (1–3)	Priority (auto-calc)	Notes
Pilot A	3	1	1	**High (QW)**	Strong ROI, ready to go
Pilot B	2	2	2	Medium	Need to refine scope
Pilot C	1	3	3	Low	Too complex, defer

AND

Use formulas to:

- Highlight high-value, low-effort, low-risk as **Quick Wins**

- Flag high-value, high-effort as **Strategic Bets**

- Identify low-value, high-risk as **Deprioritise or Reassess**

How to use this toolkit

1. **Facilitate a prioritisation session**
   Use with cross-functional teams to rate 3–5 ideas or pilot candidates. Encourage discussion to reach consensus.

2. **Apply consistent scoring criteria**
   Use definitions and examples to help teams score accurately and comparably.

3. **Use outputs to inform next steps**
   Prioritised list feeds directly into:

   - Pilot planning (Phase 3)

   - Business case development (with ROI template)

   - Skills or infrastructure planning (Phases 3–4)

Outputs

- A ranked list of digital initiatives, with clear rationale

- A shortlist of pilots or focus areas for immediate action

- A visual heatmap or matrix to support internal communication and decision-making