ADMA TranS4MErs
Scan Results

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Completing the ADMA TranS4MErs Scan is the start of your advanced manufacturing transformation journey. In this short report you will find your scores in the 7 transformation areas alongside the benchmark Factory of the Future (FoF) scores and other SMEs.

ADMA TranS4MErs can help you start your digital transformation journey by working with our qualified advisors, our 'TranS4MErs', who will be your one-to-one support.   They can help you create your Transformation and Implementation Plan and guide you through all steps of your transformation journey. Continue your journey by connecting with your TranS4Mer to start your individualized Transformation Plan.
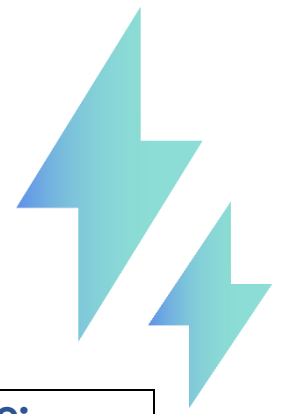

This report contains:
- Results summary
- Your answers and scores for each transformation area
- Next steps

You can view the scan results at any point by returning to the ADMA TranS4MErs xChange platform at www.trans4mersxchange.eu.

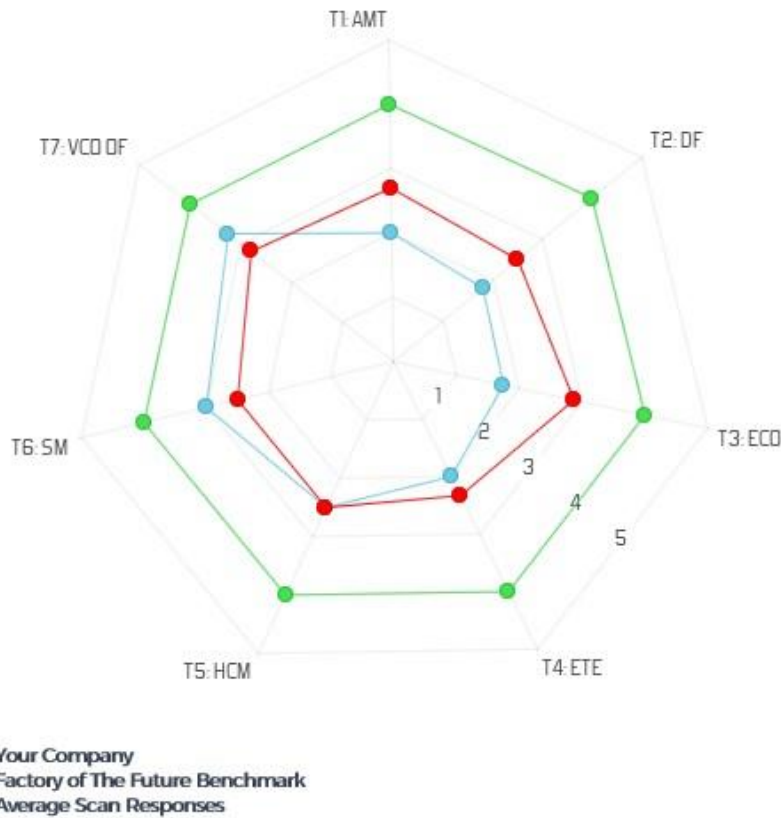# Results Summary

Your average maturity score:	Target Score:
2.54/5	4/5

Legend:
- Your Company
- Factory of The Future Benchmark
- Average Scan Responses

Axes: T1: AMT, T2: DF, T3: ECO, T4: ETE, T5: HCM, T6: SM, T7: VCO DF

# Highest and Lowest Scoring Transformation Areas at a Glance

The table below shows an overview of the scores for each Transformation Area based on the scan answers you have provided and how that relates to the Factory of the Future Benchmark.

	Your Scoring of the Company	FOF Benchmark	Gap to FoF Benchmark
T1: Advanced Manufacturing	2.33	4	1.67
T2: Digital Factory	1.75	4	2.25
T3: ECO Factory	2.5	4	1.50
T4: End-to-end Customer Focused Engineering	2.25	4	1.75
T5: Human Centred Organisation	3	4	1.00
T6: Smart Manufacturing	3.25	4	0.75
T7: Value Chain Oriented Open Factory	2.67	4	1.33

Transformation Area Scores
T1: Advanced Manufacturing Technologies
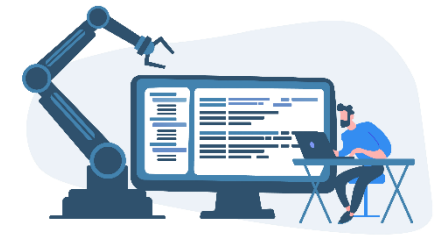## Score: 2.33
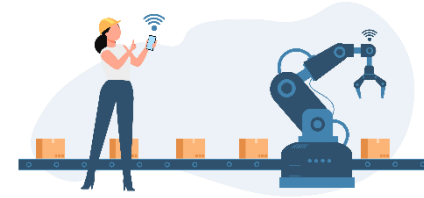
This transformation is based on deploying state-of-the-art manufacturing devices. Given the high wage level, European manufacturing SMEs cannot afford to manufacture using machinery that is outdated as compared to that of their non-European competitors. Factories of the Future develop their own devices for key components in production, and thus boast machinery that is globally unique.

Vision				
1.1 Strategy: A clear investment policy that matches the strategic vision is put into practice.				
Out-of-date machines are replaced ad hoc.	An investment plan for replacing out-of-date machines exists.	A detailed multiyear investment plan exists for the introduction of state-of-the-art technologies.	The company's technology roadmap includes multiyear investment plans as well as the evaluation of new technologies through feasibility studies.	The company's technology roadmap includes a research and development approach for advancement of relevant technologies to higher maturity levels.

Level of Capabilities				
1.2 Employees: How does your company ensure that its employees are qualified to handle advanced manufacturing technologies?				
Trainings are being organised by technology suppliers for new individual employees.	The company organises annually update trainings for machine operators.	In order to optimize technology usage, the company organises trainings for all individual employees at regular intervals.	The company supports individual employees in achieving expertise levels to enable them to implement process improvements themselves.	Individual employees achieve expertise levels enabling them to fully cope with new technologies.

Level of Implementation				
1.3 Maintenance: The maintenance strategy enables high levels of Overall Equipment Effectiveness (OEE).				

Reactive maintenance is being effectuated.	A preventive maintenance plan follows fixed time schedules.	Maintenance is managed based on current technology usage, e.g. interventions at pre-determined equipment usage levels.	Predictive maintenance is being executed through productivity measurement at pre-determined equipment usage levels making sure interventions are only done if needed.	An intelligent maintenance plan is based on real-time monitoring of critical components, enabling focused interventions at the moment of potential productivity loss.

T2: Digital Factory
Score: 1.75

Companies use digital technology to transform the development of products and/or processes into physical products, systems or services. All employees are supported by digital and integrated processes. Integral control of the digital information flow ensures the simulation of virtual scenarios before actually implementing the activities. The digital factory guarantees the accuracy of the data at any given moment in time. Each data item is only entered once into the system and all other systems retrieve the data item automatically to create new information, a so-called Single Source of Truth.

Enabling Infrastructure				
2.1 Connected shop floor: Are the equipment at shop floor connected to a network to enable data exchange?.				
Machines and other shop floor entities mainly act as stand-alone systems and are not connected to a network. Data (if any) is transferred using intermediate hardware, like a memory stick, flash card memory, etc..	Some equipment is connected to a company network. Data is transferred manually to or from the equipment (e.g. programs can be transferred to the machine over the network, but the transfer itself is most often initiated manually).	Equipment is connected to a company network providing access to the most important information and enabling the transfer of information to and from the machine. Important legacy equipment is digitally enabled through a connectivity module and/or digital identification tags.	All vital equipment is connected, and intelligence is added through the integration of sensors, gateways, etc. The exchange of data between machines and other shop floor entities is carried out via the network through middleware and/or MES systems.	All shop floor entities are smart and connected in an open way and autonomously share information. Data communication is carried out via standardised and open data structures. Any entity can connect to any other entity if desired or required.
2.2 Secure digital infrastructure: Security information and event management systems safeguard a continuous & smooth manufacturing operation.				
The organisation manages individual security updates of some devices, but is unaware of the overall (cyber) security status of	The organisation complies with existing industry and security standards Responsibility lies mainly within the ICT department	The organisation is aware that data are to be considered an important asset that has to be protected and for which	The organisation has put in place a comprehensive Security Information and Event Management system, seeking to avoid attacks.	The organisation has a system to detect anomalies and breaches, as well as a threat intelligence system, feeding back information to

every device, access point, etc. The organisation has not yet put in place measures to protect the digital and physical security of its infrastructure and production system and is therefore vulnerable to attacks.	and reviews of policies, procedures and third-party risk assessments happen occasionally. As the organisation is unprepared, breaches go largely unnoticed.	trusted data exchange systems need to be ensured. The organisation defends itself by deploying cybersecurity technology, such as gateways, firewalls, DMZ setups, ACM and/or anti-malware protection. The ICT department is still responsible, but periodically also third-party risk assessments are executed.	Management understands the importance of cybersecurity and the need for a dedicated policy with regular reviews. The ICT department focuses on the critical day-to-day operation of the network, and third parties are approached to take over some of the security responsibilities when appropriate.	other operative elements in place. Management is largely involved. Reviews and risk assessments are ongoing, with third-party expertise alleviating the security workload of the ICT team where needed.

Digital Capabilities

2.3 Transparent view on shop floor status: How is your company using real-time production data for optimisation and decision making?

There is no transparent view on the actual shop floor status. Specific (manual) effort must be taken to find out what is happening. Procedures and digital data are hardly in place to facilitate this process.	The most important processes are monitored on paper and/or digitally and the data is stored on a periodic basis. People are able to find out what is happening in production but accessing and assembling this information delay appropriate actions and countermeasures to a large extent. The company's ICT systems are not always coupled, requiring manual combination of data from different sources.	Up-to-date information is available and visualised through production dashboard. Employees are involved in a timely fashion if e.g. a machine breaks down in production.	Production data is used for ad-hoc analytics to support decisions. Some analytics might be integrated in decision support systems for e.g. predictive maintenance. Remote monitoring of equipment is implemented enabling machines to automatically notify personnel when there is an issue. The company has executed first experiments around data analytics and automated decision making through Machine Learning and Artificial Intelligence is being implemented.	Data analytics are integrated within decision support systems and automated decision making through Machine Learning and Artificial Intelligence is being implemented.

2.4 Mastering the digital transformation: The digital transformation is managed and forms a part of the company's DNA.				
The digital transition happens on an ad-hoc basis and is not managed. This typically causes loose ends or uncoordinated developments like data that might be available but is not used, operators that are not properly trained for the digital enabled equipment, etc.).	The organisation is convinced of the importance of a digital transformation. Some aspects of the digital transformation are managed. However, a digital roadmap linking all elements and guiding the transition is not yet available.	The organisation has defined a shared vision for digitisation and is convinced of the need for a well-managed transition. Information and knowledge are being gathered in order to define a roadmap for the digital transformation.	The organisation has a clear roadmap for the digitisation process and has defined the required expertise/capabilities, priorities, responsibilities, etc. Core teams are formed for the roll-out and progress is continuously monitored. External expertise is called upon when needed.	The organisation has a well-managed digital transformation in place. A large part has already been digitised and a system for continuous digital knowledge acquisition is in place. The digital transformation and all its aspects are part of the company's organisational and cultural DNA.

T3: ECO Factory
Score: 2.5

Being a front-runner in eco-production offers companies advantages such as cost reduction, risk reduction in raw material and energy supply, as well as in terms of a company's social responsibility image. Sustainable production includes a resilient production system based on the availability of raw materials and auxiliary materials. These systems are capable of closing the material cycle in order to optimize the efficiency of raw material usage.

The production system is aimed at a drastic reduction in energy consumption and the use of renewable energy sources. Companies are well attuned to the significance of the environmental impact of their activities and are constantly searching for ways to reduce the ecological footprint of their processes, products and services.

Project or deliverables already undertaken in this transformation area: [result from free text box "Did you already realize projects or deliverables in context of this transformation area?"]

Resource Management				
3.1 Materials usage: How is your company using product and manufacturing optimisation to reduce its raw material consumption?				
Several incremental material consumption improvement actions have been implemented.	Project-driven material usage improvements of the most relevant products and manufacturing processes have been implemented.	The company has set specific objectives and implements a methodological approach covering the transformation of materials consumption at machine, process and factory level.	The company draws upon the best available technologies to reduce the material usage of machines, processes, products, and methods.	Systems capable of closing the material cycle in order to optimize the efficiency of raw material usage (also called Circular Economy principles) have been implemented through strategic and stable partnerships with customers, suppliers and other key experts.
Compliance & Innovation				

3.2 Rules, regulation & standards: How actively does your company drive development of new rules, regulations and standards.				
Products and internal processes comply with existing rules and regulations.	The company as well as its supply chain is compliant with existing rules and regulations.	The company applies effective and timely methods for integrating new regulations into products, processes, and the supply chain.	The company applies a proactive approach towards the application of new as well as emerging rules, regulations and standards leading to a competitive advantage over its direct competitors.	Within its value chain, the company is considered a reference stakeholder in the process of shaping new rules, regulations, and standards.

T4: End-to-End Customer Focused Engineering
Score: 2.5

Manufacturing SME's use customer expectations as the key driver and starting point for all new developments and processes.

Robust, high-quality product, manufacturing and service creation processes are the result of a cross-functional and cross-departmental design approach.

Supported by the use of virtual models and simulation tools where possible, this transformation optimizes processes to create maximum value throughout the design, manufacturing, usage, servicing and disposal part of the company's value chain.

Project or deliverables already undertaken in this transformation area: [result from free text box "Did you already realize projects or deliverables in context of this transformation area?"]

Customer focus & value proposition				
4.1 Customer Integration: How does your company collect, process and document market and customer information?				
1. Input from sales is being used by engineering.	2. Key account requirements are actively incorporated in the engineering of the products.	3. Requirements of as many customers as possible are actively incorporated into the engineering and manufacturing of the products.	4. Customer requirements are systematically documented and integrated throughout the engineering, manufacturing and servicing steps of the products.	5. All customer requirements are continuously kept up-to-date to be used throughout all engineering, manufacturing and servicing processes in order to obtain the highest possible value solution for each individual customer.
Robust Engineering Processes				

4.2 Interdepartmental co-creation & stakeholder involvement: How does your company initiate and form development teams?				
A selection of the individual engineering employees master project-focused work methods. Improvements in processes are initiated by managers or specialists The organisation works ad hoc on process improvement.	Internal stakeholders from different departments work together when moving from the development to the production phase of a product. Departments work together easily to work on improvements and redesign processes.	New product, process and/or service developments incorporate actual production capabilities/restrictions. Individuals and managers active in operations are involved in cocreation. Individuals can work-out and participate in initiatives on new products and production processes.	Cross departmental project teams actively work together using digital tools that can manage multiple workflows and different data sets. Individuals can easily reach out to others within the company. It is obvious for all employees to involve others to think and/or work out of the box.	Centralized, cloud-based CAD, CAE and PLM capabilities enable the integration of multiple internal competence teams as well as external stakeholder collaboration. New and temporary project teams develop quickly to implement innovations. Individuals can easily link to other partners in the supply chain.
4.3 Managing quality & robustness: How is your company collecting and leveraging product-related data (product and service changes, preventative and corrective actions, transfer process, manufacturing feasibility tests, etc.?				
Engineering projects are documented mainly to cover scope and manufacturing feasibility.	Engineering projects are regularly being followed up and design, production & service specifications are documented.	The reliability and predictability of both the development of new basic technology as well as incremental product & process development is continuously maximised.	Specific KPIs for new products, processes and services are defined, actively used, and documented.	Both internal and external feedback is converted to KPI's covering all products and processes, both new and existing.

T5: End-to-End Customer Focused Engineering
Score: 3

Employee involvement in the future development of the company is crucial.

Individual factory workers need to be transformed to a group of employees with the autonomy and space to channel their talent, creativity, and initiatives within the context of an innovative organisation.

Sustainable employability is about motivating and supporting individual employees to continue to contribute to a(ny) labour process, through continuous/repetitive evaluation of their skills and update of their competencies through training, coaching, etc.

The resulting climate is such that people feel the relevance of continuous learning and remain motivated to provide a top performance.

Project or deliverables already undertaken in this transformation area: [result from free text box "Did you already realize projects or deliverables in context of this transformation area?"]

Individual Employee				
5.1 Experience and knowledge accumulation: How is tacit knowledge (lessons learned, operative knowledge etc.) managed and shared in your company?				
The knowledge gained about best practices, operational problems or lessons learned is not documented, but is kept in the minds of individual employees. The management of experience (operations knowledge that has been accumulated) is seen as a managerial responsibility.	Operational problems and solution experiences are discussed by supervisors and management. The re-use of existing experience (operations knowledge that has been accumulated) is the responsibility of those involved.	The supervisor ensures the storage and monitoring of solution experiences. In case of operational problems, the manager reacts and provides advice. Active learning is being done.	Although the team takes the lead in solving operational problems, each individual has the necessary knowledge and skills or knows who they can turn to for additional input. Systems for tracking lessons learned are actively used. Newly gained experience (operations knowledge that has been accumulated) is	The team autonomously manages the processes and resolves operational problems with ease, without the intervention of a supervisor or manager. They have the skills and framework to develop and improve processes, to innovate and to maintain the sustainability of all of their responsibilities. The

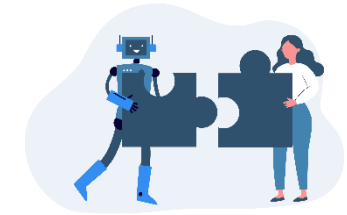|			automatically distributed among all team members.	company culture stimulates and heavily invests in learning based on acquired experience (operations knowledge that has been accumulated) and the continuous operational consultation between team members.
Team				
5.2 Autonomy: How much authority and responsibility do the teams have to ensure team development, learning and continuous improvement?				
The operational manager assigns tasks to individual employees and supervises their execution.	Individual employees receive work instructions without a kind of group or team being involved. As a consequence, employees work alongside each other, not together.	Groups of individual employees structurally monitor the activities and take appropriate actions if adjustments are needed. People work closely together, and the interdependence and connections are strong. The manager actively participates and acts as a group coach rather than a hierarchical superior. The groups of individual employees have autonomy to determine the work approach, the division and organisation of tasks.	The team organises itself, both in terms of internal operations and goals and in terms of external contacts, outside of the own team. Depending on the aspirations and needs of individual employees, a team can easily switch between competencies and tasks in which the burden and capacity of each individual are respected. Teams manage themselves autonomously and have acquired the necessary skills to translate this into their work organisation.	Teams are assembled in a very agile fashion. When the composition of teams changes, the team members can easily arrange the work through mutual consultation. Even if there are potential conflicts of interest between the collective and the individual, people on the shop floor succeed in resolving and managing these conflicts. The teams systematically work closely together at the shop floor, and a lot of knowledge and information is exchanged across the teams.
Leadership				
5.3 Vision and Strategy: How actively and openly do your company's leaders promote development and communicate about future opportunities?				

Management informs all individual employees on the results and long-term vision on an annual basis. No relation is made to the daily job context of individual employees. Company information is provided in a one directional way, with little room for discussion.	Management regularly provides updates on company results and vision. Strategy and projects are reported as well. Initiatives are set up to keep individual employees informed.	Management engages in explaining the vision and strategy and in finding the links between individual employees and the company's vision and strategy.	Management and teams discuss the vision and strategy as well as the way individual employees can contribute to the realisation of these goals, but also on the impact these goals have on them and how that might create opportunities. Management succeeds in stimulating and motivating everyone through the links with the company vision.	In collaborative team discussions all teams define the way they contribute to the realisation of the future vision and strategy set out by top management. Individual employees understand the interaction between different projects, departments, teams, etc. and how they can collaborate.

Organisation

5.6 Open dialogue: How open is communication between hierarchical levels on diverse topics, including company results?

The information sharing between management and the employee (representatives) is carried out according to formal principles. There is hardly any cooperation, and the interaction is mainly limited to mandatory consultation moments.	Individual employee representatives have a direct line with management. There is a willingness and openness to address urgent questions or specific projects on an ad-hoc basis outside of the scheduled consultation moments.	Not only individual employee representatives, but also individual employees themselves, have an open communication line with management and managers. Both ad-hoc issues and project specific issues can be discussed.	All individual employees can consult with supervisors and management about the vision, strategy & projects. There are open discussions about changes, in which all individual employees are involved at the appropriate moments.	The boundaries between hierarchical layers have disappeared in all communication and consultation moments. Everyone collaborates as partners of the company. There is a joint effort to outline the future strategy and all interested parties can commit themselves to take on an additional role in innovative initiatives or projects.

T6: Smart Manufacturing
Score: 3.25

Smart Manufacturing can be defined as the combination of the smart use of people's capabilities, the smart use of technology and the deployment of a (self-) learning production system. Smart manufacturing entities focus on customer-oriented product quality, services, delivery times and reliability through a shop floor organisation which is flexible, digitised, automated and fully connected with the organisation and the value chain. The purpose is to create maximum efficiency, flexibility and value creation of machine operators and employees on the shop floor.
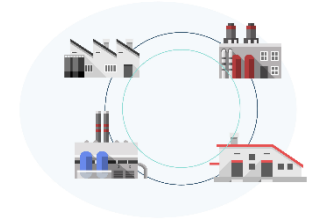
Human-machine interaction				
6.1 From rigid automation to flexible manufacturing: How integrated and automated are your company's production processes?				
Manufacturing equipment works on a stand-alone basis without any automation solutions.	Key manufacturing equipment and automation solutions are combined into Manufacturing Cells connected to a digital platform.	Machines can launch and perform simple and/or repetitive tasks in a digital and automated way.	Intelligent use of real-time information enables efficient and flexible automation, communication, and production planning.	Advanced and automated planning and operation of digitally connected manufacturing equipment guarantees maximum efficiency and flexibility levels.
6.2 Shop floor tasks: How integrated and automated are your company's production processed?				
No automations or robotic systems are present at the shop floor.	Specific repetitive and tedious manufacturing tasks are performed by industrial automations and/or robotic systems.	Intelligent automated machines, cobots and/or robots are present. They enable individual employees to spend less time on tedious jobs enabling them to take on more complex tasks.	Intelligent automated machines, cobots and/or robots perform simple and/or repetitive tasks while also supporting parts of the complex tasks of the individual employee.	Intelligent automated machines, cobots and/or robots work alongside individual employees for maximum employee and customer value creation.
Manufacturing Planning & Control Processes				

6.3 First time right: What is your company's approach to Quality Assurance?				
Quality assurance is achieved by inspecting every single product.	Quality inspection techniques and statistical models are used to improve quality.	Key manufacturing processes are monitored in order to control and predict product quality.	Widespread, real-time monitoring of manufacturing processes along with automated feedback-based actions guarantee First Time Right production.	Knowledge on the relationship between manufacturing parameters and final product quality enables First Time Right in 'lot size 1' environments or in manufacturing environments needing quick changeovers.

T7: Value Chain Oriented Open Factory
Score: 2.67

Innovations of the highest quality and using the most complex technologies are increasingly being carried out by self-organising networks. Networks are interlinked organisations that generate, acquire and integrate specific knowledge and skills to co-create new solutions, products and/or technologies. Self-organisation refers to the ability of these networks to combine and recombine the learned skills based on a flexible and de-centralised management.

In a world of exponentially increasing technology developments and fast changing customer demands, companies can no longer depend exclusively on proprietary research and resources. They develop their products, manufacturing processes and services with the complete value chain in mind. Individual producers increasingly need to enable co-creation thereby expanding innovative capabilities. Factories are evolving from solo-players to networked organisations that share both risk and capital.

Projects or deliverables in the context of this transformation area:
[Text answer from the free text box: "Did you already realize projects or deliverables in context of this transformation area?"]

Cooperation and Partnerships				
7.1 Internal Innovation Network: Does your company have a strategic innovation plan?				
No innovation plan or structure is present, innovations happen coincidentally.	Innovations are realized by a small number of people. They only happen when specific challenges need to be addressed.	An innovation plan is defined, and new ideas are welcomed through open communication structures.	A management system supports and visualises the idea generation and execution process included in the innovation plan.	A multi-dimensional innovation plan targeting both short to long term impacts is both supported and executed by teams throughout the whole of the organisation.
7.2 Partnership-driven innovation: Networks of innovation are actively used by the factory as a way to combine and recombine internal as well as external knowledge to reach the position of an innovation leader.				

The supply chain is not designed to allow change.	Changes to the supply chain can be made on the long term.	Some parts of the supply chain can be changed on a project-by-project basis.	A small, fixed supply chain is supplemented by new partners within a project-based approach.	The supply chain is a flexible network to be adapted as services require.

External Expertise and Knowledge Management

7.3 External knowledge management: Companies screen, capture and integrate external knowledge on new technologies, ICT- tools, finances, markets, etc. to be able to adapt to changes in its environment.

External knowledge is only available at the level of individual employees and is not stored centrally.	There are sporadic impulses for collecting and storing external knowledge.	First elements of an external knowledge management system have been introduced.	A formal external knowledge management system is implemented and actively used.	Every individual employee works intrinsically and in a self-controlled manner, contributing in a role as a kind of trend watcher and transfers acquired knowledge to colleagues in a formal and informal way.

Next Steps

Thank you for filling out the ADMA TranS4MErs scan. The report shows how your company may be described in each of the 7 transformation areas and which areas are to be improved, with the goal of becoming a Factory of the Future.

The next step is for you to discuss and evaluate the results in this document with your TranS4MEr and start developing your Transformation and Implementation Plan with their support. The Transformation and Implementation Plan will guide you through your transformation journey and enable you to get the most out of your transformation.

To continue your journey, visit www.trans4mersxchange.eu.

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The ADMA TranS4MErs Team