

# **[D8.1] Classification of SMEs based on European Interviews and Focus Groups**

**IDEALIST**

3 INDUSTRIAL ECOSYSTEMS TACKLING SUPPLY CHAINS DISRUPTIONS  
AND BOOSTING ADVANCED TECHNOLOGIES UPTAKE

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## Abbreviations and Acronyms

<i>Abbreviation / Acronym</i>	<i>Definition</i>
<b>A&amp;D</b>	Aerospace & Defence industrial ecosystem
<b>CSA</b>	Coordination and Support Action
<b>EII</b>	Energy Intensive Industries industrial ecosystem
<b>EU</b>	European Union
<b>MTA</b>	Mobility, Transport, Automotive industrial ecosystem
<b>SME(s)</b>	Small and Medium sized Enterprise(s)
<b>SPSS</b>	Statistical Package for the Social Sciences

## Background

The present document constitutes the Deliverable D8.1 “Classification of SMEs based on European Interviews and Focus Groups” in the framework of the “IDEALIST” CSA project funded by the Horizon Europe programme of the EU.

The project aims at bolstering the resilience and technological adaptability of SMEs within the European Union operating in the European industrial ecosystems Aerospace & Defence (A&D), Energy Intensive Industries (EII), and Mobility, Transport, Automotive (MTA).

The project is implemented by a European partnership composed by the following partners: CIMES (Coordinator-France), Albatros (France), APPAU (Ukraine), CAAR (Spain), CCB (Germany), COMET (Italy), DITECFER (Italy), EIT Manufacturing (France), GKZ (Germany), MLK (Czech Republic), Polymeris (France), SAC (Poland), 4CF (Poland), Eurecat (Spain).

## Objective

The Deliverable aims at evaluating the Twin (Digital and Green) transition maturity levels of European SMEs across the three target industrial ecosystems Aerospace and Defense (A&D), Energy-Intensive Industries (EII), Mobility, Transport, Automotive (MTA), and segment the results according to several parameters such as (i) industrial ecosystem (ii) company size (iii) manufacturing vs. service companies (iv) partner of membership (v) emerged needs.

## Executive Summary

This report evaluates the Twin transition maturity levels of European SMEs across the three target industrial ecosystems based on the results of a questionnaire submitted from June to September 2024 to 146 SMEs from 9 countries both within and outside EU (Ukraine, Türkiye). The analysis identifies digitalization and green transition practices, revealing strengths, challenges, and differences among ecosystems, company sizes, and clusters.

As the methodology, a robust quantitative analysis framework was used including statistical techniques such as dispersion and correlation analysis. SMEs were categorized by maturity levels—ranging from "Not Committed" to "Fully Committed"—in digital and sustainability domains. The results were further analyzed by company size, ecosystem, and company type (manufacturing vs. service providers).

Among the key findings, the survey states that:

- Most SMEs are at an intermediate maturity level, with notable disparities.
- Only 1% of SMEs achieved full commitment in both digital and green domains.
- Manufacturing SMEs excel in sustainability.
- Ecosystem analysis shows that A&D and MTA sectors are more advanced in digitalization, while EII lags behind.
- Cluster analysis shows that clusters like ALBATROS (A&D-France) and COMET (Multi-ecosystem-Italy) show strong performance both in digital and green initiatives.

The data analysis revealed and confirmed challenges in Twin transition of SMEs as follows:

- 'Digital factory' implementation is the weakest area for all manufacturing SMEs.
- Micro enterprises face significant challenges across most maturity indicators, except for human-centric digitalization.
- Key areas like digital strategy, data management, and human-centric digitalization show strong interdependencies, emphasizing their centrality to effective twin transitions.

The analysis focused on the future use of Advanced Technologies by SMEs highlights:

- the primary focus on *optimizing enterprise operations* (88%), followed by *developing innovative features in current products/services* (78%), and *creating brand-new products/services* (62%)
- on average SMEs consider 4-6 advanced technologies to work with in the future. Greater the SME maturity is more technologies are needed. The minimum number for Twin transition starts from 5
- AI, big data analytics, cloud computing, and IoT emerge as the most desired technologies for future adoption, with differences in priority by company size and ecosystem.

General conclusions and recommendations:

- Medium-sized companies and those in advanced ecosystems demonstrate higher maturity, but targeted support is needed for smaller enterprises.
- Clusters and ecosystems with integrated strategies perform better, suggesting the need for enhanced collaboration.
- Policymakers and stakeholders should address gaps in digital factory adoption and foster ecosystem-level initiatives to accelerate transitions.
- Policymakers and stakeholders should continue investing in tools (such as EDIHs, AI4Europe datasets, etc.) supporting SMEs in adopting Advanced Technologies, with special attention to AI, big data, as well as in strengthening European cloud computing potential.

Finally, this analysis provides actionable insights for advancing the Twin transition through targeted interventions and ecosystem-based strategies.

## 1. Methodology & data

### 1.1 Questionnaire design

In order to gather the necessary data about European SMEs' state of the art, readiness and planned investments towards the Twin Digital and Green Transition, a questionnaire was designed. The design phase was aimed at not creating a further new tool, than to capitalise on the existing good practices and on previous less successful experiences with similar surveys.

Therefore, the first step was to map all relevant European-level surveys from which to gather the questions considered the most appropriate to the scope of the project. A total 12 surveys were identified; per each of them it was: (i) clarified what IDEALIST goals could be achieved through it (ii) asked if any of the partners had had direct experience with, and asked to comment on that about the effectiveness of the tool, how easy it was to engage SMEs, etc..

Based on that, the most appropriate questions were chosen from the most relevant and effective survey in order to create a comprehensive IDEALIST questionnaire.

The third step was each partner-cluster to interview own SME members in 1-to-1 interviews, in order to reduce the risk of "self-assessment" by surveyed SMEs leading to disparate results, and therefore ensure the highest possible consistency in assessments.

The full text of the IDEALIST questionnaire is in the ANNEX. Here below are listed the previous survey models used to properly cover the different sections of the IDEALIST questionnaire:

Section	Source	Source web link
<b>3. Digitalisation – SME state of the art</b>		
3.1 Digital Business Strategy	EDIH DMA for companies	<a href="https://european-digital-innovation-hubs.ec.europa.eu/system/files/2023-11/DMA_Framework_Guidelines_for_EDIHs.pdf">https://european-digital-innovation-hubs.ec.europa.eu/system/files/2023-11/DMA_Framework_Guidelines_for_EDIHs.pdf</a>
	STARS project "SME Survey"	<a href="https://ec.europa.eu/eusurvey/runner/STARSPROJECTSURVEY">https://ec.europa.eu/eusurvey/runner/STARSPROJECTSURVEY</a>
3.2 Digital and Technological Readiness ( <i>current picture</i> )	EDIH DMA	See above
	STARS project "SME Survey"	See above
3.3 Digital Factory (whereas applicable)	ADMA Trans4mers	<a href="https://trans4mers.eu/blog/post/62/adma-trans4mers-scan">https://trans4mers.eu/blog/post/62/adma-trans4mers-scan</a>
3.4 Data Management	EDIH DMA	See above
3.5 Human Centric Digitalisation	EDIH DMA	See above
	EntreComp4Transition	<a href="https://www.camara.es/sites/default/files/Herramienta%20de%20autoevaluaci%C3%B3n%20para%20pymes.pdf">https://www.camara.es/sites/default/files/Herramienta%20de%20autoevaluaci%C3%B3n%20para%20pymes.pdf</a>
<b>4. Digitalisation – SME future</b>		
4.1 Strategy and Vision on ATs ( <i>the future</i> )	STARS project "SME Survey"	See above

<b>5. Environmental sustainability</b>		
5.1 Company policy and best practices	EntreComp4Transition	See above
	ADMA Trans4mers	See above
	EDIH DMA	See above
	SUSTAINability	<a href="https://esg.dintec.it/sustainability.aspx#questionario">https://esg.dintec.it/sustainability.aspx#questionario</a>

The resulting questionnaire was composed of questions to whom different ratings based on the different answers possible were assigned. This made it possible to proceed with the following quantitative analysis of results and the SMEs classification per Digital Maturity and Green Maturity.

## 1.2 Questionnaire submittance to SMEs

The IDEALIST partner-clusters interviewed their members in 1-to-1 sessions from June to September 2024. In total, 146 SMEs and 2 Large companies from 9 countries both within and outside EU (Ukraine, Türkiye) were interviewed.

The partners then gathered all detailed results in a shared document, which represented the basis for any following analysis.

## 1.3. Data analysis methodology

**The methodology of analysis reflecting the first objectives of the study** is based on **quantitative analysis** of data collected during interviews with SME. It entails following steps:

- Data cleaning and refining: at this stage large companies were dropped from the dataset, some values were clarified according to mark scheme;
- Transforming data and exporting them into SPSS format;
- Calculation subgroups values, assigning maturity categories (levels) according to the intervals provided below;
- Calculation of means (average scores) by categories: ecosystem, size, type of company, cluster, country etc.;
- Calculations of distance from lower bound in the maturity categories to reflect how far SMEs are from the upper category;
- Producing frequency table, cross tables and calculation of percentage of companies according to maturity levels;
- Testing the statistical significance of differences between categories;
- Pearson correlation were applied to explore relations between indicator and subgroups of indicators that drive twin transition.

To make the overall quantitative analysis possible as well as the overall classification of SMEs according to their Digital Transition Maturity and their Green Transition Maturity, 5 classes were created based on the total points obtainable asking the questionnaire (=100%) and classifying each SME according to their own total score achieved.

As service-providing SMEs had to skip the section 3.3 of the questionnaire, concerning “Digital Factories”, and therefore their total score was by design lower than the one achievable by a Manufacturing SMEs, two categories and classifications were created (see Tables 1 and 2).

Table 1 | Ranking classes for Manufacturing SMEs: classes of results in absolute numbers and corresponding % ranges and classes for Digitalisation Maturity and Green Maturity

Manufacturing SMEs	Not committed (0-19,9%)	Beginner (20-39,9%)	Intermediate (40-59,9%)	Good (60-79,9%)	Fully committed (80-100%)
Digitalisation	0-39,4	39,5-78,9	79-118,4	118,5-157,9	158-197,5
Green	0-7,9	8-15,4	15,5-23,4	23,5-30,9	31-39
Total	0-47,4	47,5-94,4	94,5-141,9	142-188,9	189-236,5

Table 2 | Ranking classes for Service-providing SMEs: classes of results in absolute numbers and corresponding % ranges and classes for Digitalisation Maturity and Green Maturity

Service-providing SMEs	Not committed (0-19,9%)	Beginner (20-39,9%)	Intermediate (40-59,9%)	Good (60-79,9%)	Fully committed (80-100%)
Digitalisation	0-37,9	38-75,4	75,5-112,9	113-150,9	151-188,5
Green	0-7,9	8-15,4	15,5-23,4	23,5-30,9	31-39
Total	0-45,9	46-90,9	91-136,4	136,5-181,9	182-227,5

## 1.4 Sample / Dataset description

After clearing dataset and excluding two companies that don't fit the methodology of the study (i.e. large companies), the final dataset includes data on **146 SMEs**, that operates in the targeted industrial ecosystems. The companies in dataset represented **9 countries**:

Czech Republic	11
France	38
Germany	14
Greece	2
Italy	35
Poland	15
Ukraine	15
Spain	15
Türkiye	1

Such a low number of respondents affected some results of average score calculations and should not be used for generalisation.

In terms of **company dimension**, the majority of responding companies are *small* ones (45,9%), followed by *micro* (27,4%) and *medium* (26,7%) (see Table 3).

Table 3 | Dimension of the surveyed SMEs

Size	N	% of Total N
Micro	40	27,4%
Small	67	45,9%

Medium	39	26,7%
Total	146	100%

The share of **Service providers** is 28%, while the rest of the companies in the dataset are treated as **Manufacturing**.

Table 4 | Typology of the surveyed SMEs

Type	N	% of Total N
Service provider	41	28,1%
Manufacturing	105	71,9%
Total	146	100%

In terms of **industrial ecosystem**, SMEs in dataset represent all the three targeted ecosystems rather equally. However, some SMEs operate in two or three ecosystems, thus the fourth category “multi-ecosystem” was introduced for those SMEs operating in all three ecosystems (A&D, EII, MTA).

Table 5 | Split of the surveyed SMEs by the three target industrial ecosystems

Industrial ecosystem	N	% of Total N
A&D	36	24,7%
EII	45	30,8%
MTA	44	30,1%
Multi-ecosystem	21	14,4%
Total	146	100%

The distribution of surveyed SMEs in dataset by the IDEALIST partner of membership is presented below. The EITM and GKZ cluster having provided a low number of answers, their respective data should be treated with more concerns on representativity at cluster / territorial ecosystem base.

Table 6 | Cluster/Platform of membership and country of surveyed SMEs

Cluster / Platform	N	% of Total N	Country of SMEs
ALBATROS	11	7,5%	France
APPAU	15	10,3%	Ukraine
CAAR	15	10,3%	Spain
CCB	11	7,5%	Germany
CIMES	12	8,2%	France
COMET	17	11,6%	Italy
DITECFER	17	11,6%	Italy
EITM	4	2,7%	France, Greece, Italy, Türkiye
GKZ	3	2,1%	Germany
MLK	11	7,5%	Czech Republic
POLYMERIS	15	10,3%	France
SAC	15	10,3%	Poland
Total	146	100%	

## 2. Results

### 2.1 Overview

In general SMEs demonstrated “intermediate” level of Twin transition maturity. Half of SMEs got into the “intermediate” category. Each fourth company showed good level, while only one out of 146 companies is “fully committed”. The maturity levels in green domain have greater variety: share of “not committed” is above 10,3%, while share of “fully committed” is about 10%. Both numbers outperform digital domain.

Figure 1 | Share of surveyed SMEs per overall (Digital + Green) maturity level

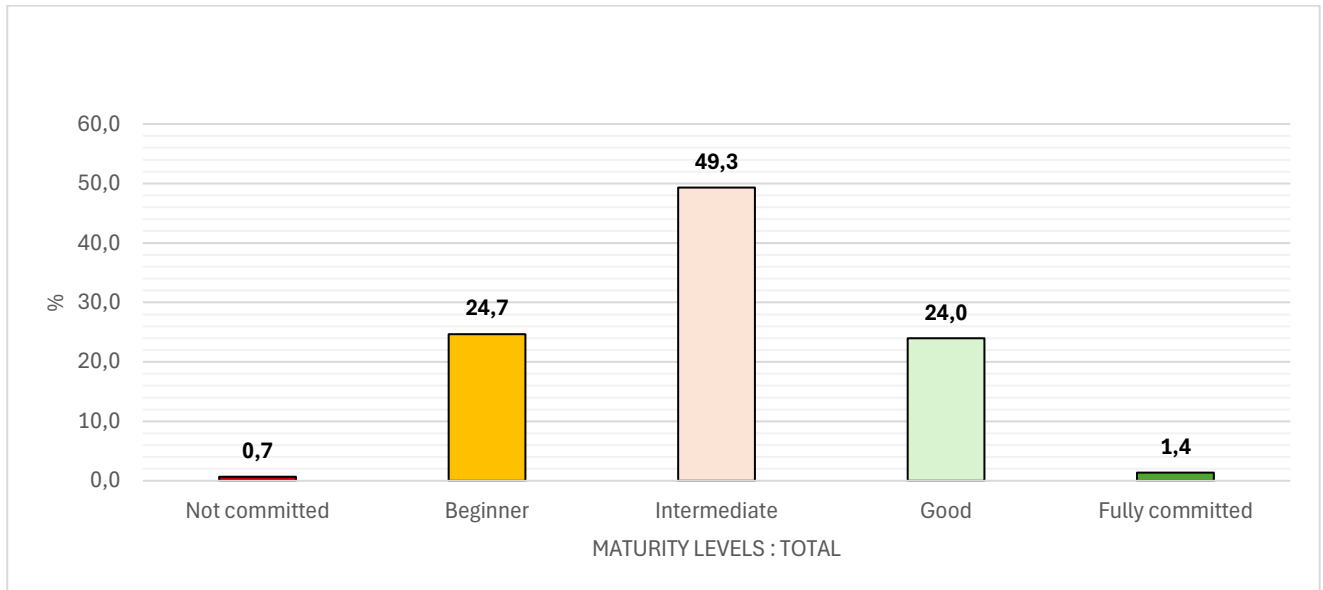


Figure 2 | Share of surveyed SMEs per Digitalisation maturity level

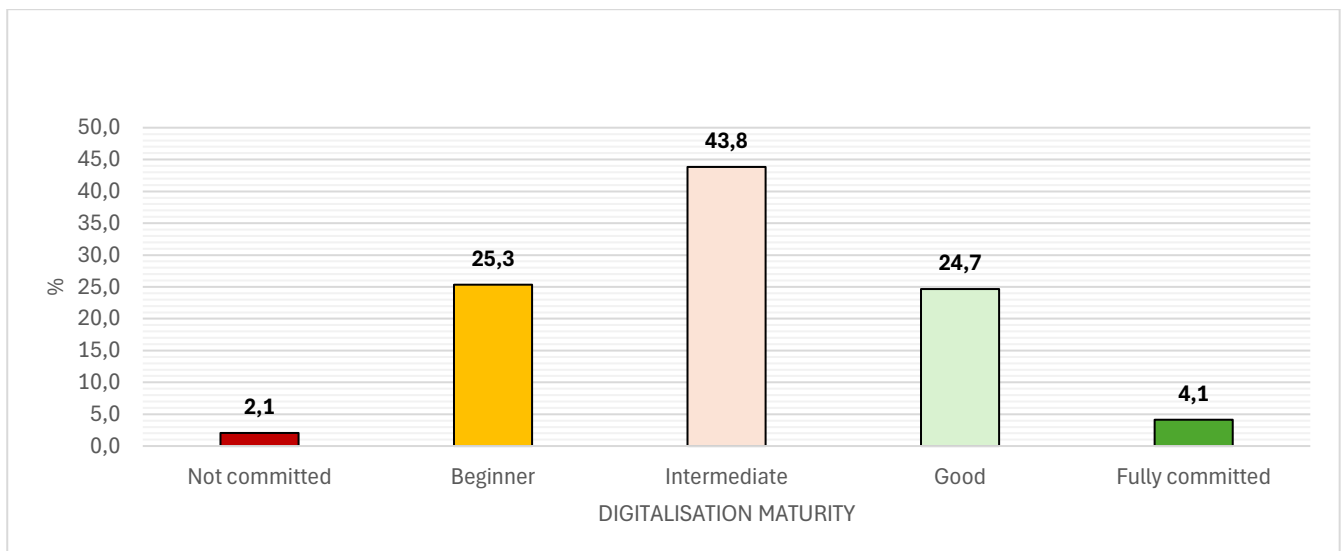
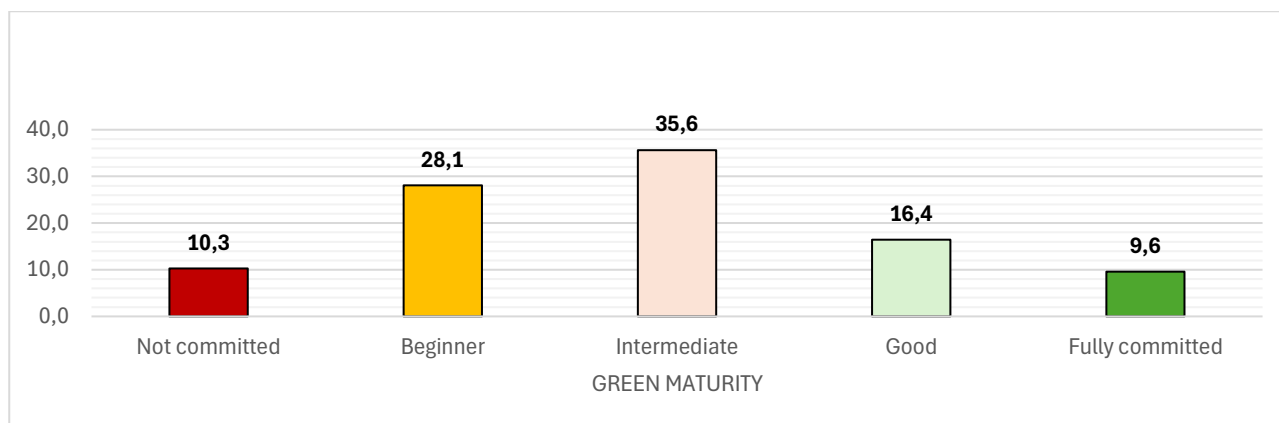


Figure 3 | Share of surveyed SMEs per Green maturity level



Cross table of Digital and Green domains showed that **digitalisation and greening are going rather hand in hand**. However, achieving of top level are challengeable. It should be mentioned that **only one company is fully committed in both domains**.

Table 7 | Cross table of Digital and Green maturity levels

% of Total		GREEN maturity levels					Total
		Not committed	Beginner	Intermediate	Good	Fully committed	
DIGITAL maturity levels	Not committed		2,1%				2,1%
	Beginner	3,4%	<b>10,3%</b>	8,9%	1,4%	1,4%	25,3%
	Intermediate	5,5%	11,6%	<b>17,1%</b>	5,5%	4,1%	43,8%
	Good	1,4%	2,7%	7,5%	<b>9,6%</b>	3,4%	24,7%
	Fully committed		1,4%	2,1%		0,7%	4,1%
Total		10,3%	28,1%	35,6%	16,4%	9,6%	100,0%

As for the clusters involved in the study, the average scores are presented in the following Table. In general ALBATROS (A&D) is the most developed in terms of digital transition, followed by CCB (EII), APPAU (Multi-ecosystem) and DITECFER (MTA). In green transition, the best results were achieved in GKZ (EII) and COMET (Multi-ecosystem), while MLK (A&D) and EITM (Multi-ecosystem) companies are lagging behind significantly. Notably, the differences between clusters are statistically significant at 1%.

Table 8 | Digital and Maturity readiness of all surveyed SMEs per Cluster

Cluster	TOTAL DIGITAL	TOTAL GREEN	TOTAL
ALBATROS	124.2	18.2	142.4
APPAU	110.2	18.2	128.4
CAAR	87.7	17.0	104.7
CCB	113.0	16.3	129.3
CIMES	98.9	17.6	116.5
COMET	99.5	25.9	125.3
DITECFER	110.3	17.4	127.6
EITM	68.4	11.3	79.7
GKZ	64.3	26.2	90.5
MLK	78.1	15.8	93.9

POLYMERIS	90.7	17.4	108.1
SAC	102.1	16.5	118.7

*\*Italic – low number of respondents*

The clusters and SMEs are affected not only by ecosystem specificities, but also country specific business ecosystem and economic conditions. We found that **country-related differences are statistically significant, in particular in the digital domain**. The most advanced countries are Italy, France, Germany and Poland. Also, Ukraine showed high average scores due to a few top performing companies.

Table 9 | Digital and Maturity readiness of all surveyed SMEs per country of provenance

Country	TOTAL DIGITAL	TOTAL GREEN	TOTAL
Czech Republic	78.1	15.8	93.9
France	103.0	17.7	120.7
Germany	102.6	18.4	121.0
Greece	39.3	7.4	46.6
Italy	105.1	21.6	126.7
Poland	102.1	16.5	118.7
Spain	87.7	17.0	104.7
Türkiye	80.8	9.3	90.0
Ukraine	110.2	18.2	128.4

*Italic – low number of respondents*

In general, SMEs in **most developed countries** performed better, probably due to better access to financing, skills and other supporting instruments and programmes. In addition, the **role of culture and social responsibilities** might impact Twin transition as well.

## 2.2 Results by type of company

There are some differences between SMEs providing services and manufacturing ones. On average, **service providers perform a little better in digitalization compared to manufacturing companies**, given that manufacturing companies got in average +3 points on digital factory. Meanwhile, the **difference in the green domain is statistically significant**, meaning that **manufacturing companies outperform service providers** by 4 points in average – which of course can depend on the variety and quantity of ‘hardware’ resources the former have to manage, while service providers can ‘just’ focus on energy consumption of computers and other kind of *individual* resource use, instead of *industrial* ones.

Table 10 | Average performance of the two types of SMEs for Digital and Green readiness

Type	TOTAL DIGITAL	TOTAL GREEN	TOTAL
Service-providing SMEs	99.0	15.3	114.3
Manufacturing SMEs	99.9	19.4	119.3

## 2.3 Results by industrial ecosystem

Each industrial ecosystem performance is shown in the following Table. Based on the surveyed SMEs, we can assume that the Aerospace and Defense ecosystem, followed by Mobility-Transport-Automotive, performs better than others in digital domain.

Table 11 | The performances of the three target Industrial ecosystems in Digital and Green maturity

Industrial ecosystem	TOTAL DIGITAL	TOTAL GREEN	TOTAL
<b>A&amp;D</b>	103.4	18.6	122.0
<b>EII</b>	96.9	18.1	115.0
<b>MTA</b>	101.2	18.6	119.8
<b>Multi-ecosystem</b>	95.7	17.0	112.8

The A&D ecosystem was represented by 4 clusters. Among them COMET (Italy) and ALBATROS (France) are the leaders in digital domains, and COMET is leader in green domain as well.

EII has got 7 clusters. In digital domain there is only leader SAC (Poland), while in green domain we see GKZ (Germany) and COMET (Italy).

As for MTA there are 6 clusters. COMET and DITECFER (both Italy) are leaders in digitalization, while COMET (Italy) and CIMES (France) show better performance in green domain.

Multi-ecosystem companies come from 6 clusters. Here the leaders in digital domain are APPAU (Ukraine) and POLYMERIS (France). While in green domain there are COMET (Italy), APPAU (Ukraine) and MLK (Czech Republic).

Table 12 | Average performance of surveyed SMEs per industrial ecosystem and cluster of provenance

Industrial ecosystem / Cluster		TOTAL DIGITAL	TOTAL GREEN	TOTAL
A&D	ALBATROS	124.2	18.2	142.4
	COMET	126.9	34.7	161.6
	MLK	76.6	15.4	92.0
	SAC	99.0	17.4	116.4
	<b>Total</b>	<b>103.4</b>	<b>18.6</b>	<b>122.0</b>
EII	APPAU	103.5	17.1	120.6
	CCB	113.0	16.3	129.3
	CIMES	84.9	17.3	102.2
	COMET	91.5	24.8	116.2
	GKZ	64.3	26.2	90.5
	POLYMERIS	86.0	17.3	103.3
	SAC	139.5	19.0	158.5
	<b>Total</b>	<b>96.9</b>	<b>18.1</b>	<b>115.0</b>
MTA	CAAR	87.7	17.0	104.7
	CIMES	98.6	24.2	122.8
	COMET	112.4	25.6	138.0
	DITECFER	110.3	17.4	127.6
	MLK	89.3	15.6	104.9
	SAC	105.5	3.0	108.5
	<b>Total</b>	<b>101.2</b>	<b>18.6</b>	<b>119.8</b>

Multi-ecosystem	APPAU	128.8	21.3	150.1
	CIMES	107.6	12.5	120.0
	COMET	72.3	21.6	93.9
	EITM	68.4	11.3	79.7
	MLK	80.3	20.0	100.3
	POLYMERIS	121.3	18.3	139.5
	<b>Total</b>	<b>95.7</b>	<b>17.0</b>	<b>112.8</b>

The surveyed SMEs perform on average differently in the different sections of the questionnaire according to the industrial ecosystem where they operate. We can say that Aerospace and Defence ecosystem has better commitments in *digital business strategy*, *human-centric digitalization*. While MTA outperforms in *data management*. Multi-ecosystem companies are relatively advanced in *digital and technological readiness*

Table 13 | Average level ratio to maximum possible (%) per each section of the questionnaire

Sections of the questionnaire	A&D	EII	MTA	Multi-ecosystem	Total
3.1 Digital Business Strategy	65%	64%	62%	59%	63%
3.2 Digital and Technological Readiness	45%	47%	47%	51%	47%
3.3 Digital Factory (for Manufacturing SMEs only)	37%	26%	38%	32%	33%
3.4 Data Management	66%	64%	72%	59%	66%
3.5 Human-Centric Digitalisation	56%	48%	52%	47%	51%
4.1 Strategy and Vision on Advanced Technologies	50%	49%	45%	47%	48%
5.1 Company Policy e Practices	48%	46%	48%	44%	47%

In average, SMEs within maturity categories are in the middle. However, there are some differences between ecosystems (Annex B.1.). SMEs in EII ecosystem labeled as “not committed” in terms of digitalization are much closer to the next “beginner” stage compared multi-ecosystem SMEs. At the same time EII SMEs are struggling more in “beginner” stage yet. When SMEs move to “fully committed” stage they still have a lot of room for improvement as they are only 10% above the lower bound. It is worth mentioning that multi-ecosystem companies showed better progress in the highest maturity level.

The situation in green transition looks different. “Not committed” SMEs in EII ecosystem are only halfway to the next stage, while multi-ecosystem ones are at the very early path; actually, they are lagging behind SMEs in other ecosystems on every level but are “fully committed”. On that level in average, companies are halfway to maximum possible score in respective interval.

## 2.4 Results by SME size

One of the factors **influencing Twin transition** (digital and green transformation) is **company size**. Here we just confirmed this fact with empirical data. They showed **gradually increasing the value of indicators from micro to medium size**. Also, dispersion (ANOVA) analysis indicated that there is a **statistically significant difference in the means between different company sizes in the green domain**.

Table 14 | Average performance of surveyed SMEs by size

Size	TOTAL DIGITAL	TOTAL GREEN	TOTAL
Micro	94.0	15.3	109.3
Small	100.6	18.7	119.3
Medium	103.9	20.3	124.2

The next figures present the distribution of maturity categories (levels) by size of companies.

Figure 4 | Distribution of both Digital and Green maturity levels by surveyed SMEs' size

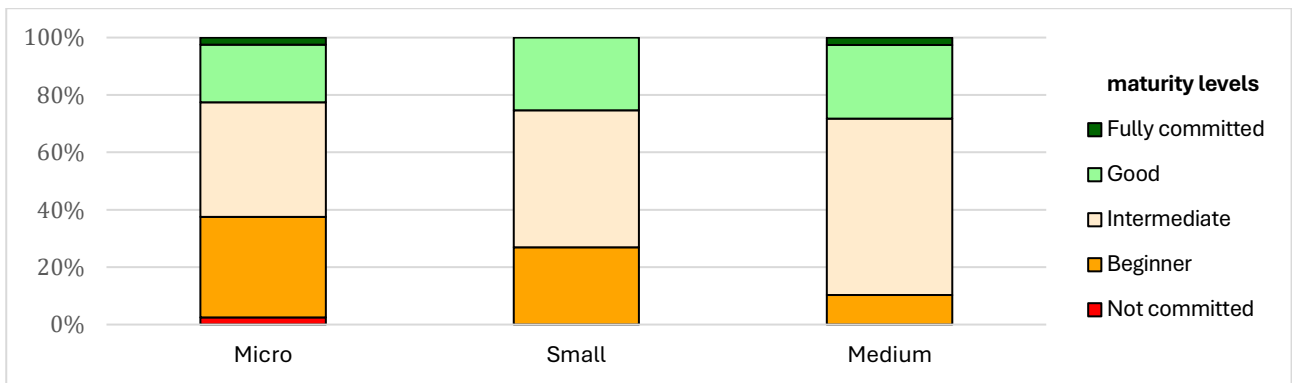


Figure 5 | Distribution of Digital maturity levels by surveyed SMEs' size

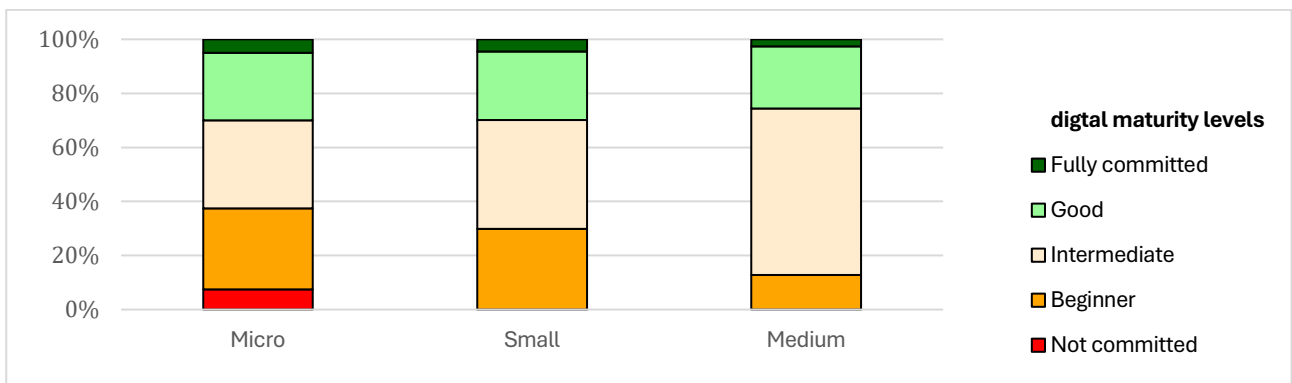
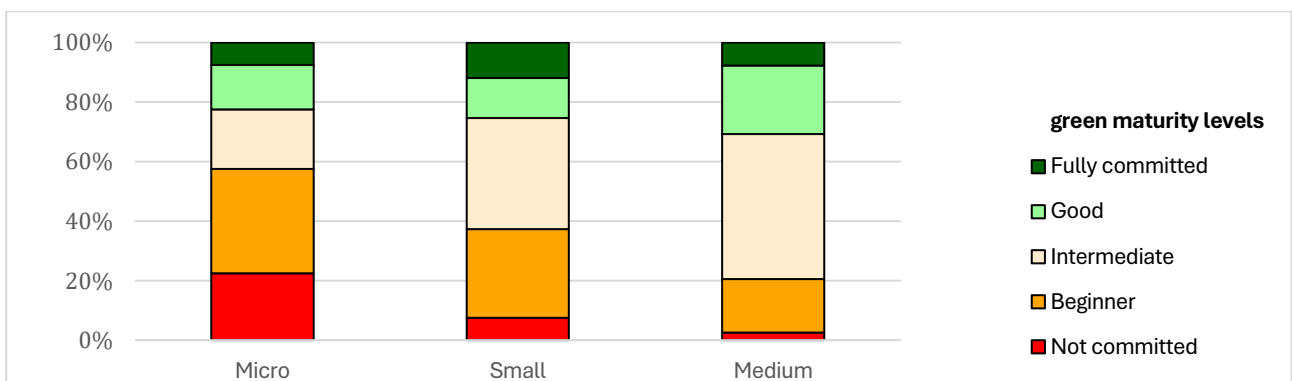


Figure 6 | Distribution of Green maturity levels by surveyed SMEs' size



Micro enterprises demonstrated different patterns: they are present both in the “not committed” and in “fully committed” categories. However, the most challenging for them is Green transition as well as for small ones.

The analysis of SMEs' positions within the maturity level interval in relation to company size uncovers more information on the Twin transition process (Annex B.2). First of all, micro enterprises, which are “not committed”, are quite close to the next maturity level in digital domain, while more progress and efforts are needed for the “not committed” SMEs in green domain. By fact, in the green domain the completion rate of each maturity level is less than 50%, except for “fully committed”, where SMEs showed slightly better progress to achieve the maximum possible score.

As for the digital domain, the more mature level is, the lower the completion ratio is. Starting from the beginner level, where respective completion rates are 60% for micro, 64 for small and 70% for medium ones, they decreased to about 10% for micro and small and 37% for medium in “fully committed” level. The medium companies performed better compared to micro and small ones as they are closer to the next maturity level.

Once we identified that size matters, especially in a green domain, we tried to look deeper to find the most challenging areas for each category. The table shows that **micro enterprises are lagging behind in most areas, but human-centric digitalisation**. It is the only area where size doesn't matter. **Digital factory level is better for medium companies**, while micro and small are on the same level. However, **digital factory is the most underdeveloped area for all companies**.

Table 15| Average level ratio to maximum possible (%) per each section of the questionnaire

Size	Micro	Small	Medium	Total
3.1 Digital Business Strategy	58%	64%	68%	63%
3.2 Digital and Technological Readiness	41%	48%	50%	47%
3.3 Digital Factory (for Manufacturing SMEs only)	30%	32%	36%	33%
3.4 Data Management	61%	67%	70%	66%
3.5 Human-Centric Digitalisation	51%	51%	52%	51%
4.1 Strategy and Vision on Advanced Technologies	46%	49%	48%	48%
5.1 Company Policy e Practices	39%	48%	52%	47%

## 2.5 Deeper look: Interlinks between indicators

In addition, we applied correlation analysis to test the strength of the relation between subgroups of indicators (see Annex). We run analysis separately for manufacturing and service providers as they might explore different paths in twin transition. The results showed that **for both manufacturing companies and service providers there is a rather strong connection between digital business strategy and human-centric digitalisation and data management**. So, those three parts are linked to each other. **For service providers there is a quite strong link between Strategy and Vision on Advanced Technologies and Digital and Technological Readiness**, while **for manufacturing companies Digital and technological readiness positively correlated with digital factory**, also some rather strong links are between **Digital business strategy and Digital and technological readiness**.

Analysis of the correlation between individual indicators revealed **interesting strong positive links** between the following items:

- Employees' usage of digital devices, and employees' data management, and employees' communication and collaboration;
- Data security and data management.

Also, **quite a strong correlation** was observed between:

- Employees' involvement and empowerment, and data management;
- Enabling infrastructure – supply chain digitally connected and enabling infrastructure – connected shop floor;
- Sustainable decision-making and sustainability innovation;
- Sustainable decision-making and climate action and your business;
- Digitalization for green and resource management – details (more types of resources).

### 3. SMEs classification

The results of each questionnaire answered by the 146 SMEs were also used to classify each SME based on own Digital maturity and Green maturity.

For Digital maturity, as Manufacturing SMEs had to answer the section 3.3 *Digital Factory*, therefore may have a higher score than Service-providing SMEs, two classifications are provided.

For Green maturity, all SMEs had to answer the same questions, but the level of commitment into this may depend on being manufacturer of hardware products or software ones; therefore two classifications are provided as well.

For privacy reasons, as this Deliverable is public, the names of the companies are not provided. The partners have of course all the details, and **on this they will refine the following project support activities both at European level and at cluster level.**

#### 3.1 SMEs Digital maturity

The following Tables show the positioning of each surveyed SME, indicating own country, industrial ecosystem, the total points achieved and the respective % positioning towards the maximum score possible each respondent could achieve. The percentage helps visualize the **'distance' to the optimum** per each SME.

Table 16 | Classification for Digital maturity of Manufacturing SMEs (100% = 197,5 points)

Country	Industrial ecosystem	Total points	Performance vs. max possible	Rating
France	A&D	164,25	83,16%	Fully committed
France	MTA	163,25	82,66%	
Italy	MTA	161,30	81,67%	Good
Czech Republic	A&D	159,50	80,76%	
Germany	EII	157,55	79,77%	Good
Germany	EII	155,55	78,76%	
Germany	EII	153,25	77,59%	
France	A&D, MTA	152,75	77,34%	
Italy	MTA, A&D	152,55	77,24%	
France	A&D	148,00	74,94%	
Italy	MTA, EII	147,00	74,43%	
Ukraine	EII	146,55	74,20%	
Italy	Mutli-ecosystem	145,50	73,67%	
France	A&D	142,25	72,03%	
Italy	A&D	138,75	70,25%	
France	A&D	135,25	68,48%	
Czech Republic	A&D	132,80	67,24%	
Italy	MTA	132,00	66,84%	
Italy	MTA	130,25	65,95%	
Ukraine	EII	129,75	65,70%	
France	EII	129,25	65,44%	

## D8.1 Classification of SMEs based on European Interviews and Focus Groups

Italy	EII	128,25	64,94%	
France	EII	127,50	64,56%	
Germany	EII	124,75	63,16%	
Germany	EII	122,30	61,92%	
France	EII	121,50	61,52%	
Italy	MTA	121,25	61,39%	
France	A&D	120,00	60,76%	
France	A&D	119,05	60,28%	
France	A&D	118,00	59,75%	Intermediate
France	EII	118,00	59,75%	
Ukraine	Multi-ecosystem	116,90	59,19%	
Italy	MTA	114,80	58,13%	
France	A&D	114,80	58,13%	
Czech Republic	A&D	114,50	57,97%	
Italy	MTA	114,25	57,85%	
Spain	MTA	113,00	57,22%	
France	EII	111,10	56,25%	
Spain	MTA	111,00	56,20%	
France	EII	108,25	54,81%	
Spain	MTA	107,50	54,43%	
Italy	MTA, A&D	107,35	54,35%	
France	EII	104,30	52,81%	
Czech Republic	A&D	103,75	52,53%	
Spain	MTA	103,55	52,43%	
Germany	EII	103,30	52,30%	
Germany	EII	103,00	52,15%	
Spain	MTA	101,30	51,29%	
France	EII	100,55	50,91%	
Germany	EII	100,35	50,81%	
Italy	Mutli-ecosystem	99,75	50,51%	
Germany	EII	99,75	50,51%	
Ukraine	Multi-ecosystem	99,30	50,28%	
Italy	Multi-ecosystem	99,25	50,25%	
Spain	MTA	97,05	49,14%	
Italy	MTA	96,85	49,04%	
Italy	A&D	96,50	48,86%	
Spain	MTA	94,60	47,90%	
Ukraine	Multi-ecosystem	92,35	46,76%	
France	MTA	91,80	46,48%	
France	A&D	91,25	46,20%	
Italy	EII	90,25	45,70%	
France	EII	90,05	45,59%	
Czech Republic	MTA	89,30	45,22%	
Italy	MTA	89,00	45,06%	



D8.1 Classification of SMEs based on European Interviews and Focus Groups

Ukraine	EII	88,80	44,96%	
Italy	MTA	87,70	44,41%	
Germany	EII	87,70	44,41%	
Ukraine	EII	87,35	44,23%	
Italy	MTA	84,60	42,84%	
Czech Republic	A&D	82,75	41,90%	
Czech Republic	A&D	82,75	41,90%	
Poland	A&D, MTA	80,30	40,66%	
Poland	A&D	80,15	40,58%	
France	EII	80,05	40,53%	
Spain	MTA	78,85	39,92%	Beginner
France	A&D, EII	78,00	39,49%	
France	A&D, MTA	77,80	39,39%	
Italy	Multi-ecosystem	75,85	38,41%	
France	EII	74,75	37,85%	
Poland	A&D	73,80	37,37%	
Germany	EII	72,35	36,63%	
Italy	MTA	71,35	36,13%	
Italy	MTA	70,95	35,92%	
Poland	A&D	70,85	35,87%	
Poland	A&D	70,80	35,85%	
Czech Republic	A&D	70,50	35,70%	
France	EII	70,30	35,59%	
Poland	A&D	69,00	34,94%	
Poland	A&D	67,85	34,35%	
France	MTA	65,50	33,16%	
Spain	MTA	65,50	33,16%	
Spain	MTA	65,05	32,94%	
France	EII	58,85	29,80%	
Germany	EII	58,00	29,37%	
Spain	MTA	56,05	28,38%	
Spain	MTA	56,05	28,38%	
Italy	MTA	56,00	28,35%	
Italy	EII	55,90	28,30%	
Germany	EII	54,50	27,59%	
France	EII	44,80	22,68%	
Ukraine	Multi-ecosystem	44,35	22,46%	
Italy	Mutli-ecosystem	42,80	21,67%	
Italy	Mutli-ecosystem	41,05	20,78%	
France	EII, A&D	38,50	19,49%	Not committed

Table 17 | Classification for Digital maturity of Service-providing SMEs (100% = 188,5 points)

Country	Industrial ecosystem	Total points	Performance vs. max possible	Rating
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D8.1 Classification of SMEs based on European Interviews and Focus Groups

Ukraine	Multi-ecosystem	165,00	87,53%	Fully committed
Italy	MTA	155,75	82,63%	
Poland	A&D	144,50	76,66%	Good
France	EII	142,00	75,33%	
Ukraine	Multi-ecosystem	141,50	75,07%	
Italy	MTA	141,25	74,93%	
Poland	EII	139,50	74,01%	
Ukraine	Multi-ecosystem	129,75	68,83%	
Italy	MTA, A&D	123,75	65,65%	
France	A&D	122,75	65,12%	
Poland	A&D	119,50	63,40%	
France	Multi-ecosystems	117,00	62,07%	
Italy	Multi-ecosystem	114,20	60,58%	
France	A&D, MTA	112,20	59,52%	Intermediate
Ukraine	Multi-ecosystem	111,50	59,15%	
Italy	MTA	110,50	58,62%	
Spain	MTA	109,00	57,82%	
Ukraine	Multi-ecosystem	108,75	57,69%	
Italy	MTA	105,50	55,97%	
Poland	MTA	105,50	55,97%	
Ukraine	Multi-ecosystem	100,75	53,45%	
Poland	A&D	99,50	52,79%	
Italy	MTA	93,75	49,73%	
Ukraine	EII	93,00	49,34%	
Poland	A&D	92,50	49,07%	
Poland	A&D	90,25	47,88%	
Spain	MTA	89,45	47,45%	
Italy	MTA	81,25	43,10%	
The Netherlands	Multi-ecosystem	80,75	42,84%	
Spain	MTA	78,50	41,64%	
France	A&D	78,00	41,38%	
Czech Republic	A&D	75,45	40,03%	Beginner
France	MTA	73,75	39,12%	
Czech Republic	A&D	67,25	35,68%	
Italy	Multi-ecosystem	65,75	34,88%	
Germany	EII	62,50	33,16%	
France	EII	62,00	32,89%	
Poland	A&D	56,50	29,97%	
Poland	A&D	55,75	29,58%	
France	EII	33,20	17,61%	Not committed
France	Multi-ecosystem	12,75	6,76%	

### 3.2 SMEs Green maturity

The following Tables show the positioning of each surveyed SME, indicating own country, industrial ecosystem, the total points achieved and the respective % positioning towards the maximum score possible each respondent could achieve. The percentage helps visualize the **'distance' to the optimum** per each SME.

Table 18 | Classification for Green maturity of Manufacturing SMEs (100% = 39 points)

Country	Industrial ecosystem	Total points	Performance vs. max possible	Rating
Italy	EII	38,00	97,44%	<b>Fully committed</b>
Italy	Mutli-ecosystem	36,00	92,31%	
Italy	A&D	36,00	92,31%	
France	MTA	33,30	85,38%	
France	A&D	33,00	84,62%	
Germany	EII	33,00	84,62%	
Italy	MTA	32,00	82,05%	
Italy	Mutli-ecosystem	32,00	82,05%	
Italy	Multi-ecosystem	32,00	82,05%	
Italy	A&D	32,00	82,05%	
France	EII	31,25	80,13%	
Italy	MTA	31,00	79,49%	
Italy	MTA	30,00	76,92%	<b>Good</b>
France	A&D	30,00	76,92%	
France	EII	30,00	76,92%	
Spain	MTA	28,00	71,79%	
Germany	EII	28,00	71,79%	
Italy	MTA, A&D	27,25	69,87%	
France	A&D	27,25	69,87%	
Germany	EII	27,25	69,87%	
Italy	MTA	27,00	69,23%	
Italy	MTA	26,00	66,67%	
Italy	MTA, A&D	26,00	66,67%	
France	A&D	26,00	66,67%	
Ukraine	EII	25,00	64,10%	
Germany	EII	24,30	62,31%	
Ukraine	EII	24,25	62,18%	
Spain	MTA	24,25	62,18%	
Italy	Multi-ecosystem	24,00	61,54%	
France	EII	24,00	61,54%	
Italy	MTA	23,00	58,97%	<b>Intermediate</b>
France	EII	22,30	57,18%	
Czech Republic	A&D	22,25	57,05%	
Spain	MTA	22,00	56,41%	
Czech Republic	A&D	22,00	56,41%	
Czech Republic	A&D	22,00	56,41%	

## D8.1 Classification of SMEs based on European Interviews and Focus Groups

<b>Czech Republic</b>	A&D	22,00	<b>56,41%</b>	
<b>Italy</b>	MTA	21,00	<b>53,85%</b>	
<b>Italy</b>	MTA	21,00	<b>53,85%</b>	
<b>France</b>	EII	21,00	<b>53,85%</b>	
<b>Ukraine</b>	Multi-ecosystem	20,25	<b>51,92%</b>	
<b>France</b>	EII	20,00	<b>51,28%</b>	
<b>Spain</b>	MTA	20,00	<b>51,28%</b>	
<b>Poland</b>	A&D, MTA	20,00	<b>51,28%</b>	
<b>Czech Republic</b>	A&D	20,00	<b>51,28%</b>	
<b>France</b>	EII	19,30	<b>49,49%</b>	
<b>Ukraine</b>	EII	19,25	<b>49,36%</b>	
<b>Poland</b>	A&D	19,25	<b>49,36%</b>	
<b>France</b>	MTA	19,00	<b>48,72%</b>	
<b>Italy</b>	EII	19,00	<b>48,72%</b>	
<b>France</b>	A&D	19,00	<b>48,72%</b>	
<b>Germany</b>	EII	19,00	<b>48,72%</b>	
<b>Germany</b>	EII	19,00	<b>48,72%</b>	
<b>France</b>	MTA	18,30	<b>46,92%</b>	
<b>Italy</b>	MTA, EII	18,30	<b>46,92%</b>	
<b>Germany</b>	EII	18,25	<b>46,79%</b>	
<b>France</b>	A&D, EII	17,55	<b>45,00%</b>	
<b>Italy</b>	EII	17,30	<b>44,36%</b>	
<b>Italy</b>	MTA	17,30	<b>44,36%</b>	
<b>Poland</b>	A&D	17,25	<b>44,23%</b>	
<b>Italy</b>	MTA	17,00	<b>43,59%</b>	
<b>France</b>	EII	17,00	<b>43,59%</b>	
<b>France</b>	EII	16,50	<b>42,31%</b>	
<b>Italy</b>	MTA	16,30	<b>41,79%</b>	
<b>Poland</b>	A&D	16,30	<b>41,79%</b>	
<b>Ukraine</b>	Multi-ecosystem	16,25	<b>41,67%</b>	
<b>Spain</b>	MTA	16,05	<b>41,15%</b>	
<b>Spain</b>	MTA	16,05	<b>41,15%</b>	
<b>Spain</b>	MTA	16,05	<b>41,15%</b>	
<b>France</b>	EII	16,00	<b>41,03%</b>	
<b>Poland</b>	A&D	16,00	<b>41,03%</b>	
<b>Czech Republic</b>	MTA	15,55	<b>39,87%</b>	
<b>Spain</b>	MTA	15,25	<b>39,10%</b>	<b>Beginner</b>
<b>Spain</b>	MTA	15,00	<b>38,46%</b>	
<b>Germany</b>	EII	15,00	<b>38,46%</b>	
<b>Ukraine</b>	EII	14,60	<b>37,44%</b>	
<b>Italy</b>	MTA	14,55	<b>37,31%</b>	
<b>Germany</b>	EII	14,50	<b>37,18%</b>	
<b>Poland</b>	A&D	14,30	<b>36,67%</b>	
<b>France</b>	EII	14,25	<b>36,54%</b>	



D8.1 Classification of SMEs based on European Interviews and Focus Groups

Poland	A&D	14,25	<b>36,54%</b>	
Spain	MTA	13,80	<b>35,38%</b>	
France	A&D	13,55	<b>34,74%</b>	
France	EII	13,00	<b>33,33%</b>	
Spain	MTA	13,00	<b>33,33%</b>	
Germany	EII	12,00	<b>30,77%</b>	
France	A&D	11,75	<b>30,13%</b>	
France	EII	11,50	<b>29,49%</b>	
Czech Republic	A&D	11,50	<b>29,49%</b>	
Ukraine	Multi-ecosystem	11,00	<b>28,21%</b>	
France	A&D, MTA	10,75	<b>27,56%</b>	
Ukraine	Multi-ecosystem	10,75	<b>27,56%</b>	
France	A&D, MTA	10,50	<b>26,92%</b>	
Italy	Mutli-ecosystem	10,00	<b>25,64%</b>	
Italy	Mutli-ecosystem	10,00	<b>25,64%</b>	
Italy	MTA	9,50	<b>24,36%</b>	
France	EII, A&D	9,00	<b>23,08%</b>	
Spain	MTA	8,00	<b>20,51%</b>	
Czech Republic	A&D	7,50	<b>19,23%</b>	<b>Not committed</b>
France	A&D	7,25	<b>18,59%</b>	
Germany	EII	7,00	<b>17,95%</b>	
Germany	EII	6,30	<b>16,15%</b>	
France	EII	5,75	<b>14,74%</b>	
France	A&D	3,00	<b>7,69%</b>	
Germany	EII	3,00	<b>7,69%</b>	

Table 19 | Classification for Green maturity of Service-providing SMEs (100% = 39 points)

Country	Industrial ecosystem	Total points	Performance vs. max possible	Rating
Italy	MTA	33,30	<b>85,38%</b>	<b>Fully committed</b>
Germany	EII	31,00	<b>79,49%</b>	
Poland	A&D	29,30	<b>75,13%</b>	<b>Good</b>
France	MTA	26,30	<b>67,44%</b>	
France	A&D	26,30	<b>67,44%</b>	
Ukraine	Multi-ecosystem	25,00	<b>64,10%</b>	
France	EII	25,00	<b>64,10%</b>	
Ukraine	Multi-ecosystem	24,00	<b>61,54%</b>	
Spain	MTA	22,50	<b>57,69%</b>	<b>Intermediate</b>
Italy	Multi-ecosystem	21,30	<b>54,62%</b>	
Ukraine	Multi-ecosystem	20,25	<b>51,92%</b>	
Ukraine	Multi-ecosystem	20,25	<b>51,92%</b>	
Poland	A&D	19,50	<b>50,00%</b>	
Poland	EII	19,00	<b>48,72%</b>	

## D8.1 Classification of SMEs based on European Interviews and Focus Groups

<b>Italy</b>	MTA, A&D	18,30	<b>46,92%</b>	
<b>France</b>	Multi-ecosystems	18,00	<b>46,15%</b>	
<b>Poland</b>	A&D	17,25	<b>44,23%</b>	
<b>Ukraine</b>	Multi-ecosystem	16,00	<b>41,03%</b>	
<b>Italy</b>	MTA	15,00	<b>38,46%</b>	<b>Beginner</b>
<b>Ukraine</b>	Multi-ecosystem	14,50	<b>37,18%</b>	
<b>France</b>	EII	14,50	<b>37,18%</b>	
<b>Poland</b>	A&D	14,00	<b>35,90%</b>	
<b>Poland</b>	A&D	13,25	<b>33,97%</b>	
<b>Poland</b>	A&D	13,25	<b>33,97%</b>	
<b>Poland</b>	A&D	12,25	<b>31,41%</b>	
<b>Spain</b>	MTA	12,00	<b>30,77%</b>	
<b>Italy</b>	MTA	11,75	<b>30,13%</b>	
<b>Czech Republic</b>	A&D	11,55	<b>29,62%</b>	
<b>Spain</b>	MTA	11,25	<b>28,85%</b>	
<b>Ukraine</b>	EII	10,75	<b>27,56%</b>	
<b>Czech Republic</b>	A&D	9,25	<b>23,72%</b>	
<b>The Netherlands</b>	Multi-ecosystem	9,25	<b>23,72%</b>	
<b>France</b>	Multi-ecosystem	8,50	<b>21,79%</b>	
<b>Italy</b>	MTA	7,25	<b>18,59%</b>	<b>Not committed</b>
<b>Italy</b>	Multi-ecosystem	6,25	<b>16,03%</b>	
<b>France</b>	A&D, MTA	5,50	<b>14,10%</b>	
<b>Italy</b>	MTA	3,00	<b>7,69%</b>	
<b>Italy</b>	MTA	3,00	<b>7,69%</b>	
<b>France</b>	A&D	3,00	<b>7,69%</b>	
<b>Poland</b>	MTA	3,00	<b>7,69%</b>	
<b>France</b>	EII	2,80	<b>7,18%</b>	

## 4. SMEs future

The in-depth analysis of the section 4.1 “SME Future”, composed of:

- For what priorities the SME wants to use Advanced Technologies in the future
- What Advanced Technologies the SME wants to work on in the future

provides us indications about what priorities in the following IDEALIST activities at (i) industrial ecosystem / pan-European level (ii) cluster / territorial level.

### 4.1 What are SMEs’ priorities for using Advanced Technologies

*“When coming to making the most from Advanced Technologies, what is your enterprise’s priority of application?”*

When SMEs think about areas of application for Advanced Technologies, the huge majority tends to use it for **optimization of company’s operations** (88% of answered positively). Almost 80% are also willing to **develop innovative features in their current products/services**. The least popular area is developing **brand new products/services**: only 62% of SMEs chose this answer. However, answers depend on type of companies’ activity: service providers see more opportunities to use Advanced Technologies in developing brand-new services (78% vs 55% of manufacturing SMEs).

Table 20 | Share of priority application of advanced technologies by SME type (Manufacturing vs. Service-providing)

	1. To optimise my enterprise’s operations (e.g. manufacturing process, supply chain management, relationships with customers, staff management, etc.)	2. To develop innovative features in my current products/services	3. To develop brand-new products/services
Service-providing SMEs	78%	86%	78%
Manufacturing SMEs	93%	75%	55%

Also, some differences were revealed with regard to the industrial ecosystems: **MTA** is more oriented toward **enterprise’s optimization** and less to develop brand new products/services. While **other ecosystems** showed **less variations** in Advanced Technology application areas.

Table 21 | Share of priority application of advanced technologies by industrial ecosystem

	1. To optimise my enterprise's operations (e.g. manufacturing process, supply chain management, relationships with customers, staff management, etc.)	2. To develop innovative features in my current products/services	3. To develop brand-new products/services
A&D	84%	80%	68%
EII	83%	80%	70%
MTA	95%	70%	48%
Multi-ecosystem	86%	90%	71%

When it comes to size of company, more differences are revealed. Answers of **Micro enterprises** are **equally distributed**: about 70-75% of micro companies are going to use Advanced Technologies in each area. Meanwhile, **small and medium companies** see more opportunities in **optimization of enterprise operations** (both 94%). And only 55-59% of small and medium companies want to use Advanced Technologies for developing brand-new products/services. The share of those who want to use them to develop innovative features in current products/services is 77% for small and 79% for medium companies.

Table 22 | Share of priority application of Advanced Technologies by SME size

	1. To optimise my enterprise's operations (e.g. manufacturing process, supply chain management, relationships with customers, staff management, etc.)	2. To develop innovative features in my current products/services	3. To develop brand-new products/services
Micro	71%	75%	74%
Small	94%	77%	59%
Medium	94%	79%	55%

SMEs at different digital maturity levels have different visions on using of Advanced Technologies: **Not-committed** companies definitely don't consider using Advanced Technologies in any proposed areas. **Beginners** prefer to use them to optimise enterprise's operations (85%), almost two third to develop innovative features in current products/services, and 55% to develop brand-new products/services. For **intermediate** developing innovative features in current products/services and brand-new products/services gain more importance (+19 and +12 percentage points respectively). SMEs which considered as **good** in digital transition mostly chose optimization of enterprises' operation and developing innovative features in current products/services (100% and 96% respectively), while developing brand-new products/services were chosen by 63%. All 4 (100%) of **fully committed** companies consider all areas of application for Advanced Technologies.

Table 23 | Share of priority application of advanced technologies by SME Digital maturity level

Digital maturity	1. To optimise my enterprise's operations (e.g. manufacturing process, supply chain management, relationships with customers, staff management, etc.)	2. To develop innovative features in my current products/services	3. To develop brand-new products/services
Not committed	0%	0%	0%
Beginner	85%	64%	55%
Intermediate	88%	83%	67%
Good	100%	96%	63%
Fully committed	100%	100%	100%

#### 4.2 What are the Advanced Technologies SMEs want to work on in the future

In average, **50% of SMEs expect to deal with 4-6 Advanced Technologies in the future**. However, both their current Digital and Green maturity level and size matter.

In the field of Digital maturity, on average, **not committed** SME expect to use less Advanced Technologies in the future. **Beginners** and **intermediates** are close to each other with 5 technologies. SMEs ranked as **good** and **fully committed** want to deal with 7+ technologies in the future. The difference between different categories is statistically significant at 99% level.

But when we come to Green transition maturity, the situation changes. **Not committed** select 4 technologies in average, **beginners** with 4,8, **good** and **intermediate** about 5,4 and **fully committed** 7,8.

All this leads us to **suggestion that Advanced Technologies might foster Twin transition starting from 5 technologies adopted by SMEs**.

When it comes to SMEs size and type, it matters to certain extent when we look at the difference between **micro and medium enterprises** (4,7 vs 5,7 Advanced Technologies used by company). Also, there is difference between **service-providing and manufacturing SMEs**: the latter expect 5,6 technologies to be dealt compared to 4,6 of service providers. The difference is significant at 90%.

Currently, among Advanced Technologies SMEs consider the:

- **most feasible AI, big data analytics, cloud computing and IoT/I-IoT**
- the next group by popularity includes **robotics, advanced materials and additive manufacturing**
- **VR and digital twins** got attention only about 30% of SMEs.

Here we also see some size related differences. **Medium and small companies need more IoT, AI and robotics**, while **micro companies** expect more from **cloud computing, big data analytics and AI**.

#### Table

Table 24 | The expected future degree of use for the advanced technologies in SMEs, by size

	Micro	Small	Medium	average
<b>1. Additive manufacturing</b>	48%	46%	52%	48%
<b>2. Robotics</b>	32%	67%	68%	58%
<b>3. Internet of Things (IoT) and Industrial Internet of Things (I-IoT)</b>	35%	69%	77%	62%
<b>4. Big Data Analytics</b>	68%	59%	65%	63%
<b>5. Artificial Intelligence (AI)</b>	65%	85%	74%	77%
<b>6. Digital Twins</b>	32%	30%	35%	32%
<b>7. Virtual Reality (VR), Augmented Reality (AR)</b>	26%	19%	45%	28%
<b>8. Blockchain</b>	19%	17%	16%	17%
<b>9. Cloud Computing</b>	74%	70%	55%	67%
<b>10. Photonics</b>	3%	7%	16%	9%
<b>11. Micro- and Nanoelectronics</b>	19%	7%	13%	12%
<b>12. Advanced Materials</b>	42%	52%	48%	48%
<b>13. Nanotechnology</b>	13%	11%	6%	10%

Considering **industrial ecosystems** related differences, the data showed that **A&D**, in addition to cloud computing, needs AI, advanced material, additive manufacturing, robotics etc. **EII** relies mostly on AI, big data analytics and cloud computing, while **MTA** needs AI, IoT, also cloud computing and robotics.

In terms of **technology intensity** in most of the industrial ecosystems average number of technologies was about 5,6; only MTA suggested a lower intensity, with only 4,7 Advanced Technologies.

Table 25 | The expected future degree of use for the advanced technologies in SMEs, by industrial ecosystem

	A&D	EII	MTA	Multi-ecosystem
<b>1. Additive manufacturing</b>	60%	57%	40%	38%
<b>2. Robotics</b>	68%	53%	58%	52%
<b>3. Internet of Things (IoT) and Industrial Internet of Things (I-IoT)</b>	52%	53%	68%	76%

<b>4. Big Data Analytics</b>	56%	<b>77%</b>	48%	<b>81%</b>
<b>5. Artificial Intelligence (AI)</b>	<b>76%</b>	<b>73%</b>	<b>75%</b>	<b>86%</b>
<b>6. Digital Twins</b>	24%	37%	23%	52%
<b>7. Virtual Reality (VR), Augmented Reality (AR)</b>	24%	43%	18%	29%
<b>8. Blockchain</b>	12%	23%	13%	24%
<b>9. Cloud Computing</b>	<b>80%</b>	60%	63%	<b>71%</b>
<b>10. Photonics</b>	16%	13%	3%	5%
<b>11. Micro- and Nanoelectronics</b>	12%	7%	18%	10%
<b>12. Advanced Materials</b>	<b>72%</b>	50%	35%	43%
<b>13. Nanotechnology</b>	12%	10%	13%	5%

## 5. Conclusions

### Regarding of maturity level by industrial ecosystems and countries:

1. The more developed countries have better results in Twin transition.
2. Size is an important factor for twin transition, especially in green domain: the larger company, the more mature it is. Meanwhile, Human-Centric Digitalisation and Strategy and Vision on Advanced Technologies subgroups did not show size-related difference.
3. More support is needed for micro companies in EII to start Twin transition, especially in green/sustainability domain, focusing on strategy development and vision on Advanced Technologies with further facilitation and additional support in expanding the transition and making it comprehensive and inclusive.
4. A&D and MTA are the most advanced sectors, while Multi-ecosystem (of which 2/3 are in EII) and EII are lagging behind.
5. Manufacturing companies are more advanced in green/sustainability, while service providers do quite better in digitalization.
6. The most advanced areas of Twin transition are 3.4 *Data Management* and 3.1 *Digital Business Strategy*.
7. The most challenging area for manufacturing SMEs is 3.3 *Digital Factory*, while in other areas they are at the intermediate level.

### Regarding clusters positions:

1. The most mature clusters for Digital Transition are ALBATROS (Aerospace) followed by DITECFER (Railway), CCB (Chemical), APPAU (Industrial Automation) and COMET (Mechanical engineering sector, focuses on metal processing and mechanics).
2. GKZ (Raw materials from exploration to extraction, processing and recycling), COMET (Mechanical engineering sector, focuses on metal processing and mechanics) are leaders in Green Transition, getting 65% of the maximum score, compared to an average only 47% of the other clusters.

*However, the survey does not show the links between level of maturity and other factors that can influence maturity level (internal, as cluster management or external, as ecosystem and regulation environment). This data is missing in the survey.*

### General conclusions on SMEs path to Twin Transition:

All paths of Green and Digital Transitions require more attention. On the one hand, green indicators and digitalization areas (subgroups) are rather showing both weak and positive correlations. On the other hand, many companies go step by step in Twin transition, trying to move along digital and green domains together towards good maturity levels. However, full commitment remains hardly an affordable goal.

### Regarding the use of Advanced Technologies for the future:

The study highlights the future priorities and preferences of SMEs regarding the use of Advanced Technologies. Key findings include:

#### 1. Areas of application:

- The primary focus for SMEs is optimizing enterprise operations (88%), followed by developing innovative features in current products/services (78%), and creating brand-new products/services (62%).
- Service-providing SMEs exhibit greater interest in developing new services compared to manufacturers, while manufacturing SMEs prioritize operational optimization.
- Differences are evident based on company size and digital maturity levels. For instance, micro enterprises show balanced interest across all application areas, whereas small and medium enterprises lean heavily toward optimization.
- Companies at advanced digital maturity levels show a comprehensive commitment to leveraging technologies across all areas.

#### 2. Advanced Technologies:

- In average SMEs consider 4-6 advanced technologies to work with in the future. Greater the SME maturity is more technologies are needed. The minimum number for Twin transition starts from 5.
- AI, big data analytics, cloud computing, and IoT emerge as the most desired technologies for future adoption, with differences in priority by company size and ecosystem.
- Medium and small companies favour IoT, AI, and robotics, while micro enterprises focus on cloud computing and big data analytics.
- Ecosystems like A&D prioritize AI and advanced manufacturing, while EII emphasizes big data analytics and MTA prefers IoT and robotics.

#### 3. Industrial Ecosystem Variations:

- Industrial ecosystem-specific requirements underline the diverse needs for Advanced Technologies. For example, A&D ecosystem require additive manufacturing and robotics, whereas Multi-ecosystem organizations leverage a mix of IoT, big data analytics, and cloud computing.

## Annexes

### Annex A.1 Pearson Correlation matrices for manufacturing SMEs (a) and service-providing SMEs (b)

a)

<b>Manufacturing SMEs</b>	3.1 Digital Business Strategy	3.2 Digital and Technological Readiness	3.3 Digital Factory	3.4 Data Management	3.5 Human-Centric Digitalisation	4.1 Strategy and Vision on Advanced Technologies
3.2 Digital and Technological Readiness	.525**	--				
3.3 Digital Factory (for Manufacturing SMEs only)	.389**	.606**	--			
3.4 Data Management	.553**	.333**	.299**	--		
3.5 Human-Centric Digitalisation	.655**	.601**	.490**	.609**	--	
4.1 Strategy and Vision on Advanced Technologies	.334**	.522**	.388**	0.126	.401**	--
5.1 Company Policy and Practices	.332**	.383**	.415**	.218*	.279**	.259**

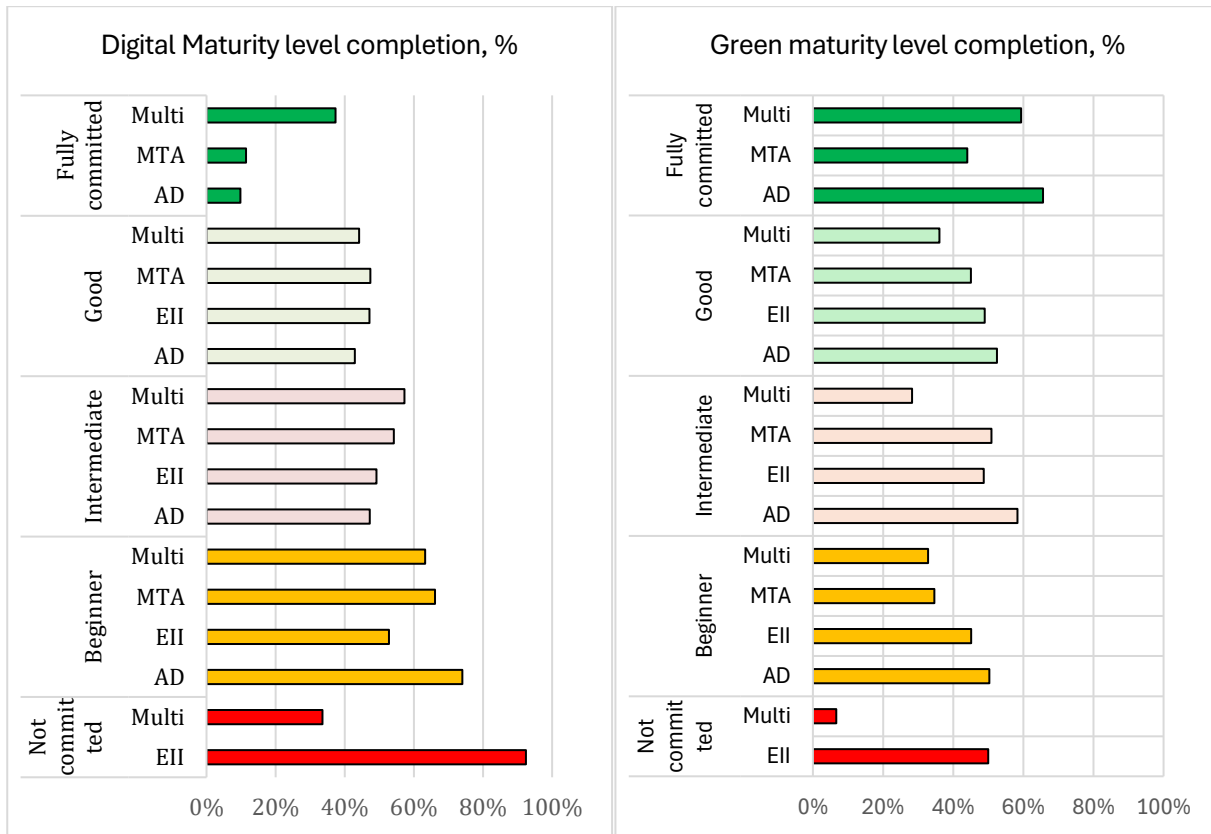
b)

<b>Service-providing SMEs</b>	3.1 Digital Business Strategy	3.2 Digital and Technological Readiness	3.4 Data Management	3.5 Human-Centric Digitalisation	4.1 Strategy and Vision on Advanced Technologies
3.2 Digital and Technological Readiness	.320*	--			
3.4 Data Management	.540**	.334*	--		
3.5 Human-Centric Digitalisation	.616**	.414**	.659**	--	
4.1 Strategy and Vision on Advanced Technologies	0.281	.587**	.309*	0.196	--
5.1 Company Policy and Practices	0.292	.376*	0.263	0.129	.445**

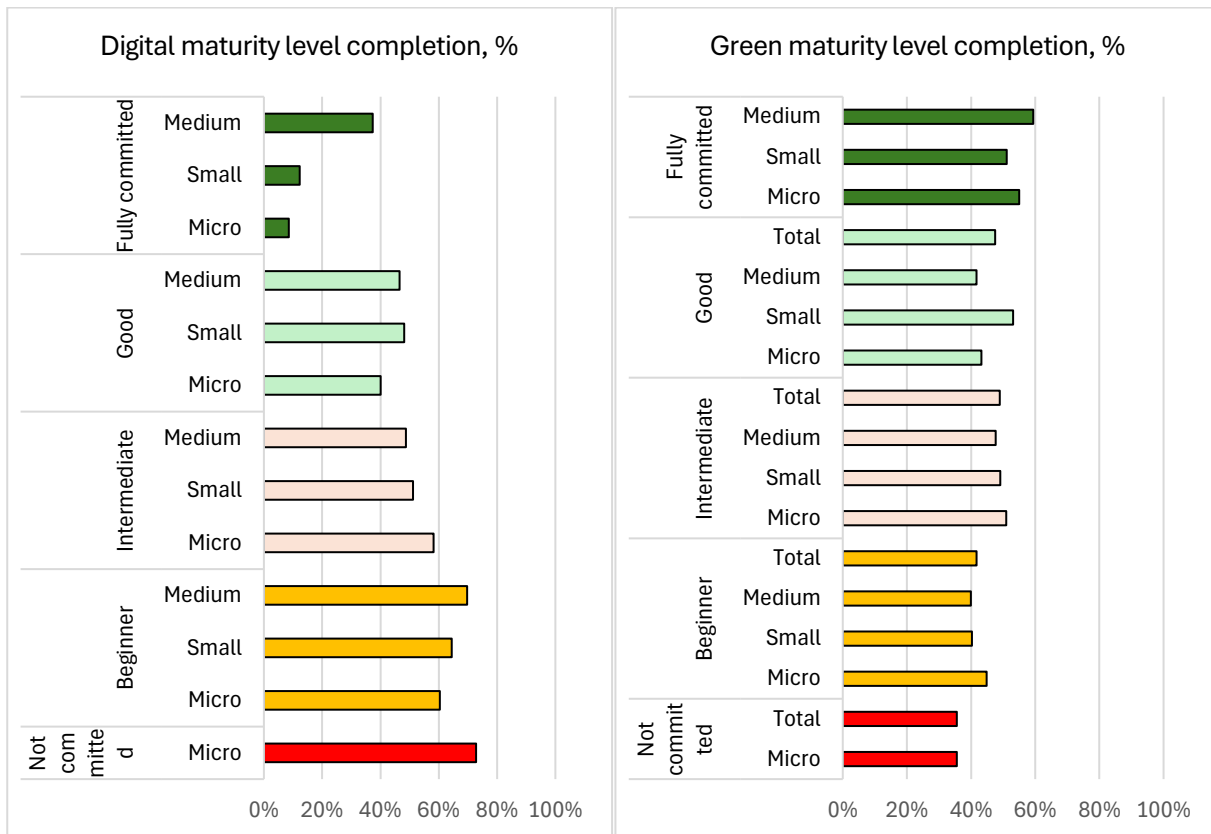
\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Annex B.1 Maturity level completion, by industrial ecosystem**



**Annex B.2 Maturity level completion, by size**



## Annex C.1 The IDEALIST Questionnaire

## INTERVIEW TO SMEs (vs. 1.0)

SECTION 1 – AGREEMENT TO DATA COLLECTION, PROCESSING, TREATMENT, STORAGE .....	1
SECTION 2 – SME BIO DATA .....	2
SECTION 3 – DIGITALISATION – SME STATE OF THE ART .....	2
3.1 Digital Business Strategy.....	2
3.2 Digital and Technological Readiness .....	3
3.3 Digital Factory (for Manufacturing SMEs only) .....	5
3.4 Data Management.....	7
3.5 Human-Centric Digitalisation.....	8
SECTION 4 – DIGITALISATION – SME FUTURE .....	10
4.1 Strategy and Vision on Advanced Technologies.....	10
SECTION 5 – ENVIRONMENTAL SUSTAINABILITY .....	11
5.1 Company Policy e Practices .....	11

### **SECTION 1 – AGREEMENT TO DATA COLLECTION, PROCESSING, TREATMENT, STORAGE**

***Please, explain to the SME the following:***

All data requested is necessary to gather information and draw conclusions about your company and your sector.

Confidentiality in data analysis will be ensured in three main ways:

- A team from IDEALIST partners will have access to the data in order to carry out the analysis necessary for the purposes of the project, which are (i) to gather knowledge about SMEs' resilience potential, readiness and needs towards the Twin Digital and Green Transition (ii) to use such knowledge to better support your company and your sector alike.
- The outputs of all the interviews made, whereas made public (project Deliverables), will be entirely anonymous and will consist of aggregated data only.
- The outputs of your interview will be used to define a dedicated support to your company throughout the following project activities.

The company accepts these rules       Yes     No

## SECTION 2 – SME BIO DATA

Name of the company	
Size (Micro-Small-Medium)	
# Employees	
Annual Turnover	
Industrial Ecosystem	
Business Segment	
ISO etc. certifications owned	
Foundation Year	
Country	
Website	
Email contact	

## SECTION 3 – DIGITALISATION – SME STATE OF THE ART

### 3.1 Digital Business Strategy

*Please, explain to the SME the purpose of this section:*

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.

<b>DIGITAL INVESTMENTS PER BUSINESS AREAS (DONE &amp; PLANNED)</b> 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:	<b>ALREADY INVESTED</b>	<b>PLAN TO INVEST</b>
	<b>1pt</b>	<b>0pt</b>
1. Product/Service design (incl. research, development and innovation)		
2. Project planning and management		
3. Operations (production of physical goods/manufacturing, packaging, maintenance, services, etc.)		
4. Collaboration with other internal site locations or other companies in the value chain		
5. Inbound logistics & warehousing		
6. Marketing, sales & customer services (customer management, order processing, helpdesk, etc.)		
7. Delivery (outbound logistics, eInvoices, etc.)		
8. Administration and human resources		
9. Purchasing and procurement		
10. (Cyber)security and compliance with Personal Data regulations/GDPR		
11. None of the above [0 pt]		
<b>TOTAL</b>		

<u>TIME HORIZON FOR YOUR DIGITAL BUSINESS STRATEGY</u> What is your time horizon in having the Strategy delivered?	1 YEAR 1pt	2 YEARS 0,5pt	3 YEARS 0,2pt	3+ YEARS 0pt
<b>TOTAL</b>				

<u>OBSTACLES IN DELIVERING THE STRATEGY</u> Are you encountering obstacles in delivering the Strategy?	YES 0pt	NO 3pt
<b>If so, please select all options that apply:</b>	YES 0pt	NO 0,25pt
Internal resistance to change		
Lack of skills, including managerial skills		
Lack of information technology infrastructure, such as high-speed internet connection		
Lack of financial resources		
IT security issues		
Regulatory obstacles		
Uncertainty about future digital standards		
None of these - Please specify:		
<b>TOTAL</b>		

### 3.2 Digital and Technological Readiness

*Please, explain to the SME the purpose of this section:*

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**.

<u>(TOOLS)</u> Which of the following digital technologies and solutions are already used by your enterprise? Please select all that apply:	ALREADY USED 1pt	NOT USED YET 0pt
1. Connectivity infrastructure (high speed (fibre) internet, cloud computing services, remote access to office systems)		
2. Enterprise's website		
3. Web-based forms and blogs/forums to communicate with clients		
4. Live chats, social networks and chatbots to communicate with clients		
5. E-Commerce sales (Business-to-Consumer, Business-to-Business)		
6. E-Marketing promotion (online ads, social media for business, etc.)		
7. E-Government (online interaction with public authorities, including public procurement)		
8. Remote business collaboration tools (e.g. teleworking platform, videoconferencing, virtual learning, businessspecific)		
9. Internal web portal (Intranet)		

10. Information Management Systems (Enterprise Resources Planning, Product Lifecycle Management, Customer Relationship Management, Supply Chain Management, e-invoicing)		
11. None of the above [0 pt]		
<b>TOTAL</b>		

<b>(ADVANCED TECHNOLOGIES)</b> Which of the following advanced digital technologies are already used by your enterprise? Please select all that apply using a 0-4 scale	<b>Not used</b>  0pt	<b>Consider to use</b>  0,75pt	<b>Prototyping</b>  2pt	<b>Testing</b>  3pt	<b>Implementing</b>  4pt
1. Computer-aided design (CAD) & manufacturing (CAM)					
2. Manufacturing execution systems / Robotics					
3. Additive manufacturing (e.g. 3D printers)					
4. Internet of Things (IoT) and Industrial Internet of Things (IIoT)					
5. Simulation & Digital Twins (i.e. real-time digital representations of physical objects/processes)					
6. Virtual Reality (VR), Augmented Reality (AR)					
7. Blockchain technology					
8. Artificial Intelligence (AI)					
9. None of the above [0 pt]					
<b>TOTAL</b>					

<b>AREAS OF APPLICATION</b> Areas in which your enterprise is being implementing technologies. Please select all that apply:	<b>YES</b>  1pt	<b>NO</b>  0pt
1. Support service innovation		
2. Support product innovation		
3. Support manufacturing		
4. Support operations and maintenance		
5. Analysis of operations related data (e.g., manufacturing operations: quality, maintenance, fast Manufacturing Resource Planning — MRP)		
6. Analysis of machine or device data (e.g., equipment, products, RFID, buildings, other sensors)		
7. Analysis of online customer behaviour related data (e.g., clickstream analysis, web logs, social networking data)		
8. Warranty management and service execution		
9. Factory data analysis for continuous improvement initiatives		
10. Concurrent engineering and product life-cycle management		
11. Analysis of supply chain data		

12. Optimise human resources' work		
13. Other – Please specify:		
14. None of the above [0 pt]		
<b>TOTAL</b>		

### **3.3 Digital Factory (for Manufacturing SMEs only)**

*Please, explain to the SME the purpose of this section:*

Digital Factory is meant as (i) using digital technology to transform the development of products and/or processes into physical products, systems, or services, and (ii) all employees being supported by digital and integrated processes.

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.

<b><u>ENABLING INFRASTRUCTURE – CONNECTED SHOP FLOOR</u></b> <b>Has the company a connected and flexible infrastructure to enable data exchange?</b> <b>Please select the option that applies:</b>	<b>Weigh of each answer</b>	<b>SME point</b>
1. 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..	0pt	
2. 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).	0,3pt	
3. 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.	1pt	
4. 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.	2pt	
5. 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.	3pt	
<b>TOTAL</b>		

<b>ENABLING INFRASTRUCTURE – SUPPLY CHAIN DIGITALLY CONNECTED</b> <b>Is the supply chain digitally connected?</b> <b>Please select the option that applies:</b>	<b>Weigh of each answer</b>	<b>SME point</b>
1. The supply chain is not digitally connected. If information like customer specifications for quotes, production status, delivery information, etc. is transferred between parties, manual or paper-based interventions are needed to obtain the required information.	0pt	
2. Parts of the supply chain are digitally connected. A product service system is in place. Upon request, digital information is or can be provided. This information comes from a central system (information is stored), but extracting the information still requires manual interventions.	0,3pt	
3. Most parts of the supply chain are digitally connected. Third parties are automatically informed about basic relevant events, like delivery dates, delays, etc.	1pt	
4. A predominant portion of supply chain interactions are digitally supported and automated. Most supplier and customer information is received digitally and automatically processed with limited human intervention. A digital product configurator is available and human interventions are only needed for e.g. fixing delivery times.	2pt	
5. The supply chain is fully digitally supported and dynamic interaction from order to delivery is in place. Online product configurators, calculation & simulation models, real time info sharing platforms and/or online auctions support the customer in a fully digital and automated way. User interaction and feedback are integrated automatically. Customers can obtain real-time information on the status of their orders.	3pt	
<b>TOTAL</b>		

<b>ENABLING INFRASTRUCTURE – SECURE DIGITAL INFRASTRUCTURE</b> <b>Do security information and event management systems safeguard a continuous &amp; smooth manufacturing operation?</b> <b>Please select the option that applies:</b>	<b>Weigh of each answer</b>	<b>SME point</b>
1. The organisation manages individual security updates of some devices, but is unaware of the overall (cyber) security status of 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.	0pt	
2. The organisation complies with existing industry and security standards Responsibility lies mainly within the ICT department and reviews of policies, procedures and third-party risk assessments happen occasionally. As the organisation is unprepared, breaches go largely unnoticed.	0,3pt	

3. The organisation is aware that data are to be considered an important asset that has to be protected and for which 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.	1pt	
4. The organisation has put in place a comprehensive Security Information and Event Management system, seeking to avoid attacks. 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.	2pt	
5. The organisation has a system to detect anomalies and breaches, as well as a threat intelligence system, feeding back information to 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.	3pt	
<b>TOTAL</b>		

### 3.4 Data Management

*Please, explain to the SME the purpose of this section:*

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.

<u>DATA MANAGEMENT</u> <b>How is your enterprise data managed (i.e. stored, organised, accessed and exploited)?</b> <b>Please select all that apply:</b>	<b>YES</b>	<b>NO</b>
	<b>1pt</b>	<b>0pt</b>
1. The organisation has in place a data management policy/plan/set of measures		
2. Data is collected digitally		
3. Relevant data is stored digitally (e.g., office applications, email folders, stand-alone applications, CRM or ERP system, etc.)		
4. Data is properly integrated (e.g. through interoperable systems, application programming interfaces) even when it is distributed amongst different systems		
5. Data is accessible in real-time from different devices and locations		
6. Collected data is systematically analysed and reported for decision-making		
7. Data analytics are enriched by combining external sources with own data		
8. Data analytics are accessible without need of expert assistance (e.g. through dashboards)		

9. None of the above [0 pt]	
<b>TOTAL</b>	

<u>DATA SECURITY</u> Is your enterprise's data sufficiently secured? Please select all that apply:	YES 1pt	NO 0pt
1. An enterprise data security policy/set of measures is in place		
2. All client-related data is protected from cyberattacks		
3. Staff is regularly informed and trained on cybersecurity and data protection issues/risks		
4. Cyber-threats are regularly monitored and assessed		
5. A full backup copy of critical business data is maintained (off-site/in the cloud)		
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)		
7. None of the above [0 pt]		
<b>TOTAL</b>		

### **3.5 Human-Centric Digitalisation**

*Please, explain to the SME the purpose of this section:*

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.

<u>EMPLOYEES USAGE OF DIGITAL DEVICES</u> How competent are your employees in using digital devices for work purposes and adapting to new digital tools and technologies? Please select the option that applies per each category:	Not at all / or not applicable 0pt	Beginner 0,25pt	Intermediate 1pt	Proficient 2pt	Expert 3pt
1. Administration					
2. Product Manufacturing					
3. Service Development					
4. Customers Management					
5. Marketing					
6. Sales					
7. Operations and Maintenance					
8. Human Resources Management					
<b>TOTAL</b>					

<u>EMPLOYEES DATA MANAGEMENT</u> How competent are your employees in using digital tools to analyse and interpret data relevant to your business? Please select the option that applies per each category:	Not at all / or not applicable 0pt	Beginner 0,25pt	Intermediate 1pt	Proficient 2pt	Expert 3pt
1. Administration					
2. Product Manufacturing					
3. Service Development					
4. Customers Management					
5. Marketing					
6. Sales					
7. Operations and Maintenance					
8. Human Resources Management					
<b>TOTAL</b>					

<u>EMPLOYEES COMMUNICATION AND COLLABORATION</u> How competent are your employees in collaborating and communicating with others using digital tools (e.g., shared documents, project management) Please select the option that applies per each category:	Not at all / or not applicable 0pt	Beginner 0,25pt	Intermediate 1pt	Proficient 2pt	Expert 3pt
1. Administration					
2. Product Manufacturing					
3. Service Development					
4. Customers Management					
5. Marketing					
6. Sales					
7. Operations and Maintenance					
8. Human Resources Management					
<b>TOTAL</b>					

<u>EMPLOYEES TRAINING</u> How is training provided in your enterprise? Please select all options that apply:	Weight of each answer	SME point
1. Training courses are organised by technology suppliers for new individual employees.	0,5pt	
2. The enterprise organises annual update training courses only for machine operators.	1pt	
3. The enterprise organises training courses for all individual employees at regular intervals to optimise technology usage	2pt	

4. The enterprise performs staff skill assessment to identify the skills gaps at individual level and train accordingly	3pt	
5. The enterprise supports all individual employees on a continuous basis in achieving expertise levels to enable them to implement process improvements by themselves	4pt	
6. None of the above	0pt	
	<b>TOTAL</b>	

<b>EMPLOYEES INVOLVEMENT AND EMPOWERMENT</b> <b>When adopting new digital solutions, how does your enterprise engage and empower its staff?</b> <b>Please select all options that apply:</b>	<b>YES</b>	<b>NO</b>
	<b>1pt</b>	<b>0pt</b>
1. Facilitates staff awareness about new digital technologies		
2. Communicates digitalisation plans to staff in a transparent and inclusive way		
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.)		
4. Involves staff (including non-ICT staff) in the design and development of product/service/process digitalization		
5. Gives staff more autonomy and appropriate digital tools to take and execute decisions		
6. Redesigns/Adapts jobs and workflows to support the ways that staff actually would like to work		
7. Sets up more flexible working arrangements enabled by digitalisation (e.g. telework)		
8. Puts at staff disposal a digital support team/service (internal/external)		
9. None of the above [0 pt]		
	<b>TOTAL</b>	

#### **SECTION 4 – DIGITALISATION – SME FUTURE**

##### **4.1 Strategy and Vision on Advanced Technologies**

*Please, explain to the SME the purpose of this section:*

This section aims to understand how you see your enterprise in five/ten years, and how Advanced Technologies can help the realization of this Vision.

<b>ENTERPRISE'S PRIORITIES FOR USAGE</b> <b>When coming to making the most from Advanced Technologies, what is your enterprise's priority of application?</b> <b>Please select all options that apply:</b>	<b>YES</b>	<b>NO</b>
	<b>1pt</b>	<b>0pt</b>
1. To optimise my enterprise's operations (e.g. manufacturing process, supply chain management, relationships with customers, staff management, etc.)		
2. To develop innovative features in my current products/services		

3. To develop brand-new products/services		
4. None of the above [0 pt]		
<b>TOTAL</b>		

<u>TARGET ADVANCED TECHNOLOGIES</u> What is the expected future degree of use for the advanced technologies in your enterprise? Please select all that apply:	YES 1pt	NO PLAN TO IMPLEMENT 0pt
1. Additive manufacturing		
2. Robotics		
3. Internet of Things (IoT) and Industrial Internet of Things (IIoT)		
4. Big Data Analytics		
5. Artificial Intelligence (AI)		
6. Digital Twins		
7. Virtual Reality (VR), Augmented Reality (AR)		
8. Blockchain		
9. Cloud Computing		
10. Photonics		
11. Micro- and Nanoelectronics		
12. Advanced Materials		
13. Nanotechnology		
14. None of the above [0 pt]		
<b>TOTAL</b>		

## SECTION 5 – ENVIRONMENTAL SUSTAINABILITY

### 5.1 Company Policy e Practices

*Please, explain to the SME the purpose of this section:*

This section aims to understand your approach and practices towards sustainability aspects in your business and the Green Transition.

<u>IMPORTANCE OF BEING GREEN</u> How would you rate the importance of sustainability (green) transformation for your company? Please select the option that applies:	Not at all important 0pt	Slightly important 0,25pt	Important 1pt	Fairly important 2pt	Extremely important 3pt
<b>TOTAL</b>					
<u>KNOWLEDGE OF SUSTAINABILITY</u> What is the level of understanding of your company about sustainability challenges and opportunities facing your sector? Please select the option that applies:	Not considered 0pt	Limited 0,25pt	Some 1pt	Good 2pt	Comprehensive 3pt
<b>TOTAL</b>					

<b><u>SUSTAINABLE DECISION-MAKING</u></b> Have you developed a decision-making framework that incorporates sustainability considerations? Please select the option that applies:	Not considered  0pt	Informal decision-making process  0,25pt	In progress  1pt	Formal decision-making framework  2pt	Well-structured formal process  3pt
<b>TOTAL</b>					

<b><u>SUSTAINABILITY INNOVATION</u></b> Have you implemented any innovative solutions or practices to improve sustainability performance of your enterprise? Please select the option that applies:	Not considered  0pt	Not yet  0,25pt	A few  1pt	Some  2pt	Yes, a lot  3pt
<b>TOTAL</b>					

<b><u>RESOURCE MANAGEMENT</u></b> What is the level of your enterprise's strategy in place for managing your resource consumption, including energy, water, and materials? Please select the option that applies:	Not considered  0pt	To begin now  0,25pt	Limited  1pt	Good  2pt	Comprehensive  3pt
<b>TOTAL</b>					

<b><u>RESOURCE MANAGEMENT - DETAILS</u></b> What resources is your enterprise managing to increase sustainability? Please select all that apply:	YES  1pt	NO  0pt
1. Emissions		
2. Waste		
3. Energy		
4. Water		
5. Materials / Packaging (in-bound)		
6. Materials / Packaging (out-bound)		
7. Employees' Mobility		
8. Suppliers' Sustainability		
9. None of the above [0 pt]		
<b>TOTAL</b>		

<b>CLIMATE ACTION AND YOUR BUSINESS</b> How do you scale your company about identifying the risks and opportunities associated with climate change for your business? Please select the option that applies:	<b>Not considered</b>	<b>To begin now</b>	<b>Basic</b>	<b>Partially</b>	<b>Comprehensive</b>
	<b>0pt</b>	<b>0,25pt</b>	<b>1pt</b>	<b>2pt</b>	<b>3pt</b>
<b>TOTAL</b>					

<b>GREEN KPIS &amp; TARGETS</b> Does the company structurally address environmental impact measurements? Please select the option that applies:	<b>Weigh of each answer</b>	<b>SME point</b>
1. Aside from obligatory targets related to compliance with rules and regulations, no other KPIs are set to address the environmental impact of the company.	0pt	
2. Basic measurement, benchmarking and communication around environmental impact improvements over the product's entire life cycle exists.	0,3pt	
3. The company implements a structural control, benchmark and management system with indicators that go beyond existing rules and regulations.	1pt	
4. An integrated approach is defined and implemented in order to achieve continuous improvement of internationally benchmarked customer and society targets related to environmental impact.	2pt	
5. The actual measurement of the ecological footprint aims at a reduction of the environmental impact over the entire value chain, explicitly taking customer and societal expectations into account. KPIs and targets adopted by the company are considered to serve as a reference for international industry standards within the value chain.	3pt	
<b>TOTAL</b>		

<b>DIGITALISATION FOR GREEN</b> How does your enterprise make use of digital technologies to contribute to environmental sustainability? Please select all options that apply:	<b>YES</b>	<b>NO</b>
	<b>1pt</b>	<b>0pt</b>
1. Sustainable business model (e.g. circular economy model, product-as-a-service)		
2. Sustainable service provision (e.g. usage tracking for further reuse by other users)		
3. Sustainable products (e.g. eco-design, end-to-end product lifecycle planning, end-of-life & extension of useful life)		
4. Sustainable production and manufacturing methods, materials and components (incl. end-of-life management)		
5. Emissions, pollution and/or waste management		
6. Sustainable energy generation in own facility		

7. Optimisation of raw material consumption/cost		
8. Reduction of transport and packaging costs		
9. Digital applications to encourage responsible consumer behaviour		
10. Paperless administrative processes		
11. None of the above [0 pt]		
<b>TOTAL</b>		

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Table 1 | Final ranking table: how to classify the SMEs based on their answers

The maximum points obtainable are **218** (100%), of which **179** (82%) for Digitalisation and **39** (18%) for Sustainability.

5 groups have been created to classify the SMEs according to their results, to ease readiness analysis and future clusterisations for specific IDEALIST activities.

	Not committed	Beginner	Intermediate	Good	Fully committed
<b>Digitalisation</b>	0-39	40-90	91-120	121-148	149-179
<b>Sustainability</b>	0-9	10-15	16-20	21-30	31-39
<b>Total</b>	0-49	50-105	106-140	141-178	179-218