

SURE5.0

Grant Agreement Number: **101057369**

Project acronym: **SURE5.0**

Project full title: **Supporting the SME's Sustainability and Resilience transition towards Industry 5.0**

D.1.1

Self-Assessment Tool - Documentation

Due delivery date: 30.11.2022

Actual delivery date: 22.11.2022

Organization name of lead participant for this deliverable: **FRAUNHOFER IPT**

Project funded by the European Commission within Horizon Europe programme		
Dissemination level		
PU	Public	
PP	Restricted to other programme participants (including the GSA)	
RE	Restricted to a group specified by the consortium (including the GSA)	
CO	Confidential, only for members of the consortium (including the GSA)	x



Funded by the
European Union

Document Control Sheet

Deliverable number:	D1.1
Deliverable responsible:	FRAUNHOFER IPT
Work package:	WP 1
Editor:	Alexander Kreppein

Author(s) – in alphabetical order		
Name	Organisation	E-mail
Alexander Kreppein	FRAUNHOFER IPT	alexander.kreppein@ipt.fraunhofer.de

Document Revision History			
Version	Date	Modifications Introduced	
		Modification Reason	Modified by
V.1	21.11.2022		

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those for the European Union or HaDEA. Neither the European Union nor the granting authority can be held responsible for them.

Table of Contents

Executive Summary	4
1. Introduction	5
1.1 Purpose of the document	5
1.2 Intended audience.....	5
2. The SURE 5.0 Self-Assessment tool	6
2.1 Software used – Limesurvey	6
2.2 Functionalities of the tool.....	7
2.3 First Page of the Tool	9
2.4 Gathering participant data	10
2.5 Types of questions in the tool.....	12
2.6 Contents of the tool	15
2.6.1 Industry 4.0	15
2.6.2 Industry 5.0	15
2.6.3 Smart Factory	15
2.6.4 Strategy and Organization	15
2.6.5 Environmental Sustainability.....	15
2.6.6 Industrial resilience	15
2.6.7 Human-Centricity	15
2.7 Assessments	16
2.8 Last page	18
2.9 Analysis of assessment data.....	18
Annexes	20

SURE5.0

Executive Summary

This document serves as a documentation of the SURE 5.0 Self-Assessment tool that explains how the tool was developed and how the tool would function. This document also gives a brief overview about the literature and online materials used to decide upon the content of the tool and serves as a manual that describes how the assessment must be filled out and what needs to be done after completing the assessment.



1. Introduction

1.1 Purpose of the document

The aim of this document is to explain the working of the SURE 5.0 self-assessment tool and give an overview of the content and functionalities of the tool.

1.2 Intended audience

The main target of this deliverable are SMEs who will use the self-assessment tool, to receive an initial assessment of their Industry 5.0 readiness level. Also, the self-assessment serves as the start of SME for their journey in the SURE5.0 project.

SURE5.0

2. The SURE 5.0 Self-Assessment tool

2.1 Software used – Limesurvey

Limesurvey is a German-based survey software which has been used to develop the self-assessment tool. It offers great flexibility in building surveys for market research and is also easy to use. The results of the survey can be downloaded as a pdf and the general statistics for the survey can also be seen at the end of the assessment. The tool provides survey developers with customizable expression scripts which can be used to develop custom designs for the survey. Here, the expression scripts have been used to develop the self-assessment tool according to the design specifications of the SURE 5.0 project. It is also possible to develop one's own assessment logic for surveys and questionnaires.

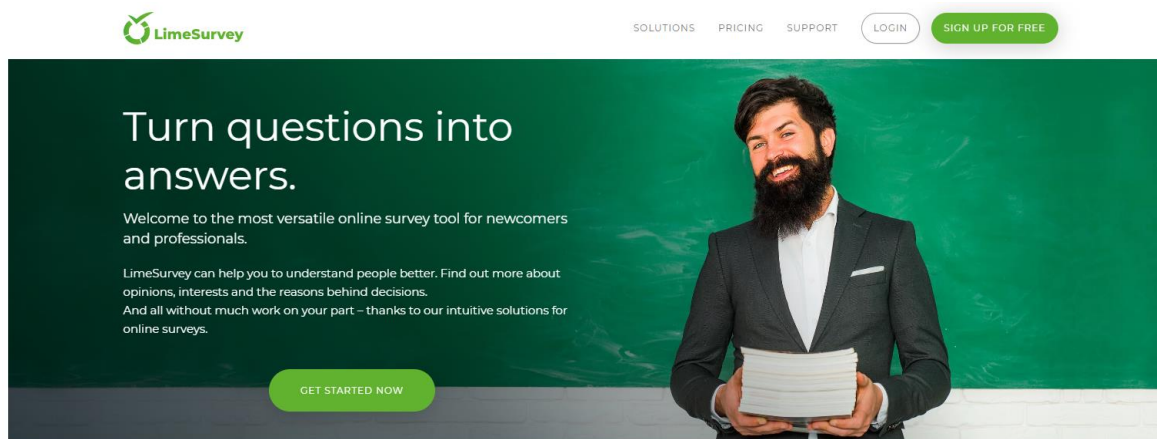


Figure 1 - Limesurvey's official website

2.2 Functionalities of the tool

The self-assessment tool offers the following functionalities:

- Every page of the tool has the 2 buttons – **Previous** and **Next** at the bottom, with which the participant can navigate through the survey. Already answered questions can still be edited by navigating backwards to the desired question using the Previous button.
- A participant may also decide to skip answering a question and navigating forward unless the question is a mandatory question. In this case the question must certainly be answered to continue the survey.
- The tool also has the option at the top to **save and resume the survey later**, in which case the participant will be prompted to enter his/her e-mail address to which the link to continue the saved survey will be sent.
- There is also the option to **clear the survey and exit the assessment**, in which case all entered data will be unsaved and automatically deleted.
- The survey also shows a **progress bar** at the top of every question to let the participant know how far he/she is in filling the tool.
- Almost all questions and answers that need additional explanation have been equipped with **Info-buttons** next to them, which upon hovering displays more information.
- Almost all questions also have the 2 options – **Question not relevant** and **Question unclear**. When selected the participant will be prompted to explain the reason for him/her to select one of these answer options. These additional questions aren't mandatory but have been incorporated into the tool for the purpose of developing the tool further and understanding the consumer base better.
- The participant can click **submit** after completing the survey and reading the assessment results, upon which he comes to the last page of the assessment.
- At the last page of the self-assessment tool, the participant can print his/her answers as a Pdf which would also have the assessments and scores. The participant can also see the public statistics of the survey which will automatically be generated by Limesurvey.

This survey is currently not active. You will not be able to save your responses.

Smart Factory - 1

***What is the scope of networking in your organization?** ⓘ
 Choose any one of the following answers or please explain the reason for your choice when you select either 'Not relevant' or 'Unclear'.

	Available in no machine ⓘ	Available in some machines ⓘ	Available in many machines ⓘ	Available in almost all machines ⓘ	Not relevant ⓘ	Unclear ⓘ
Machine-to-machine (m2m) communication ⓘ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remote Control and monitoring of machinery and devices in the plant through IT systems ⓘ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Previous Next

Figure 2 – Example of a **question page** from the SURE 5.0 self-assessment tool in Limesurvey

What is the extent of usage of visually interactive technologies in transferring knowledge and training employees? ⓘ
 Choose any one of the following answers and please explain the reason for your choice when you select either 'Question not relevant' or 'Question unclear'.

- Not used ⓘ
- Minimally used ⓘ
- Moderately used ⓘ
- Widely used ⓘ
- Question not relevant ⓘ
- Question unclear ⓘ

Figure 3 – Example of a question with **Info-buttons** from the SURE 5.0 self-assessment tool

- Question not relevant ⓘ
- Question unclear ⓘ

Why is this question not relevant to your organization?
 This is not a mandatory field but understanding your feedback would help us more in improving the tool.

Figure 4 – Example of a **pop-up question** from the SURE5.0 self-assessment tool which pops up when a participant selects **Question not relevant** for a question.

2.3 Start of the Self-Assessment

The first section of the first page of the self-assessment tool gives a brief overview of what the tool is, how it needs to be filled and what are its functionalities and explains the participant what he gets out of the assessment. The second section explains the aspects of the self-assessment and their importance in the industry 5.0-transformation of an organization. The third section explains the terms of usage and data protection. The participant may start the self-assessment upon clicking START.

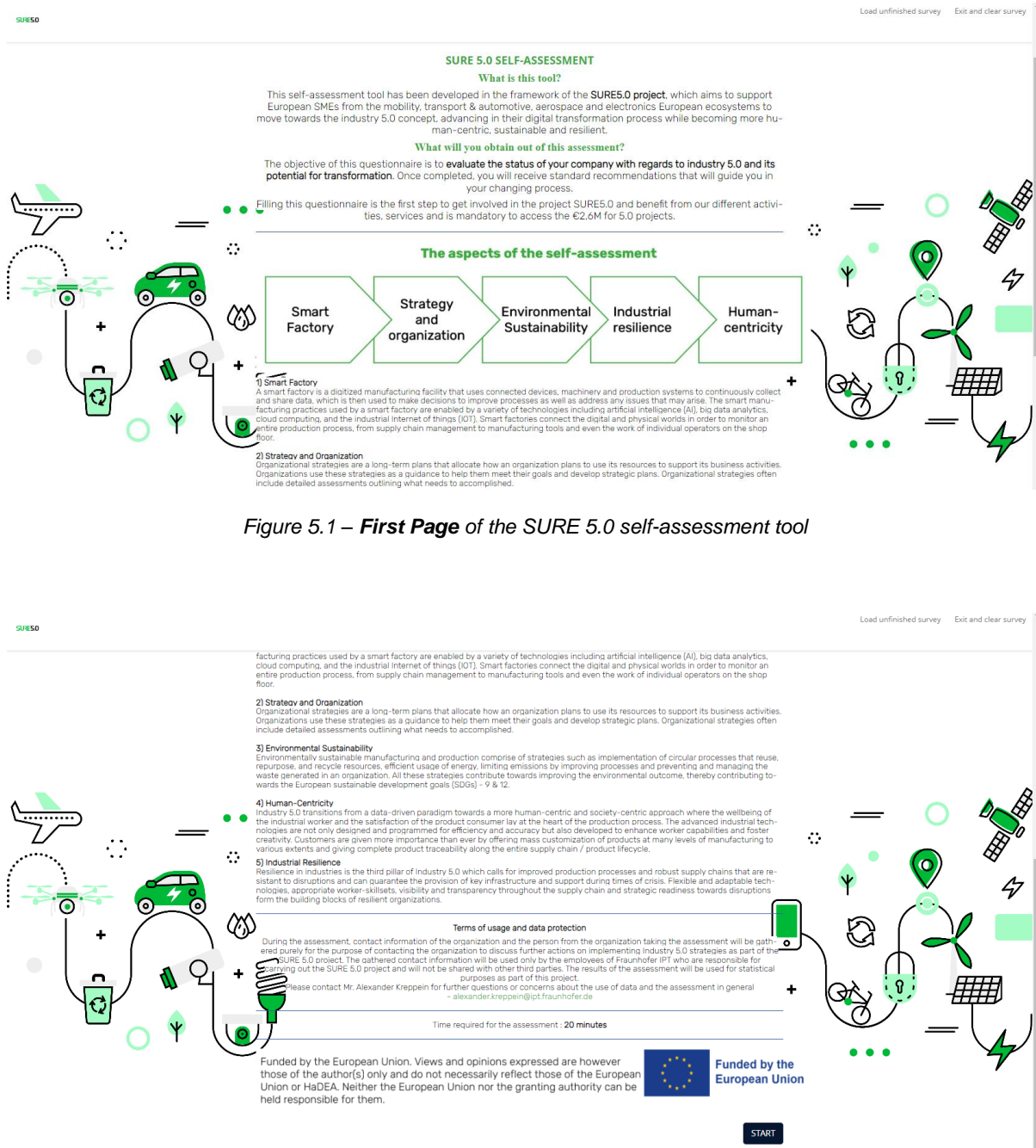


Figure 5.1 – First Page of the SURE 5.0 self-assessment tool

Figure 5.2 – First Page of the SURE 5.0 self-assessment tool

2.4 Gathering participant data

The **second page** of the self-assessment tool is intended to gather the participant data and general information about their organization such as the location, size, the type of organization, and their turnover in the last year.

General questions

*Name of Organization:

*Country

Please choose... ▾

*Your Surname:

Your Firstname:

*Your position in the organization:

Figure 6.1 – **The second page** of the SURE 5.0 self-assessment tool that gathers the participant's and organization's data

***Type of organization**

Please choose... ▾

How many employees does your organization have in your country? ⓘ
Please select any one of the following answer options.

- Less than 10 employees
- 10 - 49 employees
- 50 - 99 employees
- 100 - 199 employees
- 200 - 249 employees
- 250 - 999 employees
- 1000 - 4999 employees
- more than 5000 employees

What was the annual turnover of your organization last year? ⓘ
Please select any one of the following answer options.

- Under 2 million €
- more than 2 million € - 10 million €
- more than 10 million € - 25 million €
- more than 25 million € - 50 million €
- more than 50 million € - 100 million €
- more than 100 million € - 250 million €
- more than 250 million € - 500 million €
- more than 500 million €

Figure 6.2 – **The second page** of the SURE 5.0 self-assessment tool that gathers the participant's and organization's data

2.5 Types of questions in the tool

The Tool consists of multiple types of questions such as **single choice, multiple choice, drop-down, array, text input as well as pop-up upon selection** questions. Examples of each type of question haven been attached below.

Single choice question:

What was the annual turnover of your organization last year? ⓘ
Please select any one of the following answer options.

- Under 2 million €
- more than 2 million € - 10 million €
- more than 10 million € - 25 million €
- more than 25 million € - 50 million €
- more than 50 million € - 100 million €
- more than 100 million € - 250 million €
- more than 250 million € - 500 million €
- more than 500 million €

Figure 7 – Example of a **single-choice question** from the SURE 5.0 self-assessment tool

Multiple choice question:

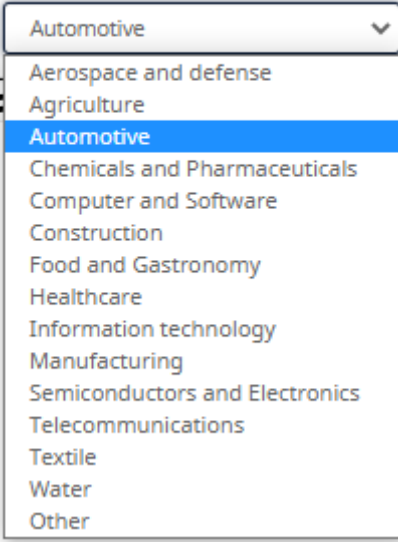
What are in your opinion the biggest challenges in the implementation of an Industry 5.0 related project in your organization? ⓘ
Please select all options that you find relevant.

- Lack of knowledge, expertise, and skills
- Lack of financial incentives and support
- Lack of operational resources
- Lack of communication between organizational departments
- Strategy formulation and implementation
- Limited engagement of stakeholders
- Other projects hold more priority
- Other challenges

Figure 8 – Example of a **multiple-choice question** from the SURE 5.0 self-assessment tool

Drop-down question:

*Type of organization

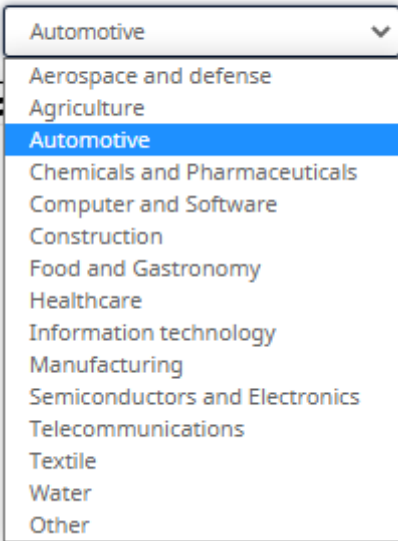


A screenshot of a web form titled '*Type of organization'. It features a drop-down menu with a white background and a grey border. The menu is currently open, showing a list of industry categories. The top of the menu shows 'Automotive' with a downward arrow. Below this, the following categories are listed: 'Aerospace and defense', 'Agriculture', 'Automotive' (highlighted in blue), 'Chemicals and Pharmaceuticals', 'Computer and Software', 'Construction', 'Food and Gastronomy', 'Healthcare', 'Information technology', 'Manufacturing', 'Semiconductors and Electronics', 'Telecommunications', 'Textile', 'Water', and 'Other'.

Figure 8 – Example of a **drop-down question** from the SURE 5.0 self-assessment tool

Array question:

*Type of organization



A screenshot of a web form titled '*Type of organization'. It features an array question interface. The top of the form shows 'Automotive' with a downward arrow. Below this, the following categories are listed: 'Aerospace and defense', 'Agriculture', 'Automotive' (highlighted in blue), 'Chemicals and Pharmaceuticals', 'Computer and Software', 'Construction', 'Food and Gastronomy', 'Healthcare', 'Information technology', 'Manufacturing', 'Semiconductors and Electronics', 'Telecommunications', 'Textile', 'Water', and 'Other'.

Figure 9 – Example of an **array question** from the SURE 5.0 self-assessment tool

Text question:

Are there other technologies of high relevance to your organization?

Other technologies:

Figure 10 – Example of a **text question** from the SURE 5.0 self-assessment tool

Pop-upon selection question:

***How would you describe the relevance of the following technologies to your organization?** ⓘ
 Choose any one of the following answers and please explain the reason for your choice when you select 'Unclear'.

	Low	Medium	High	Unclear ⓘ
Robotics and Automation ⓘ	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wireless identification systems ⓘ	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate the extent of planned investments in these technologies in the next 3 years? ⓘ
 Please choose any one of the following options.

	None ⓘ	Low ⓘ	Moderate ⓘ	High ⓘ
Robotics and Automation ⓘ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wireless identification systems ⓘ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 11 – Example of a **pop-upon selection question** from the SURE 5.0 self-assessment tool

2.6 Contents of the tool

2.6.1 Industry 4.0

Since industry 4.0 forms the technological basis for the industry 5.0 transformation of an organization, relevant questions have been framed based on the concepts of smart factories and organizational strategies related to implementation and usage of modern technologies.

2.6.2 Industry 5.0

The 3 central aspects of Industry 5.0 are Environmental Sustainability, Industrial resilience, and Human-centricity. Questions have been framed with respect to all these aspects based on interactive discussions, brainstorming, market studies and literature reviews.

2.6.3 Smart Factory

Smart Factory has questions related to machine and production data storage, processing, and usage. They have been framed keeping the idea in mind that machines and devices in plants need to be capable of communicating over a network and transferring data that can be stored and used for purposes like problem-solving, process automation, and predictive machine maintenance.

2.6.4 Strategy and Organization

Strategy and Organization has questions related to the implementation and usage of new and modern technologies that make factories smart, sharing data along the supply chain as well as the biggest challenges an organization would face while planning and implementing a new project related to industry 5.0

2.6.5 Environmental Sustainability

Environmental sustainability has questions related to the implementation of strategies that drive environmentally sustainable manufacturing and production in industries.

2.6.6 Industrial resilience

Same as the previous section, industrial resilience has question(s) related to the implementation of strategies that make the supply chain and processes of an organization more resilient and robust against the various types of operational disruptions that happen.

2.6.7 Human-Centricity

Industry 5.0 puts humans at the center of industrial operations. Human-Centricity has questions relating to the importance given to the shop floor workers, other employees as well as the consumers in an organization.

2.7 Assessments

The tool has been developed to provide 2 kinds of assessments.

One page gives the **overall Industry 5.0 assessment score and the scores in each category of the self-assessment.**

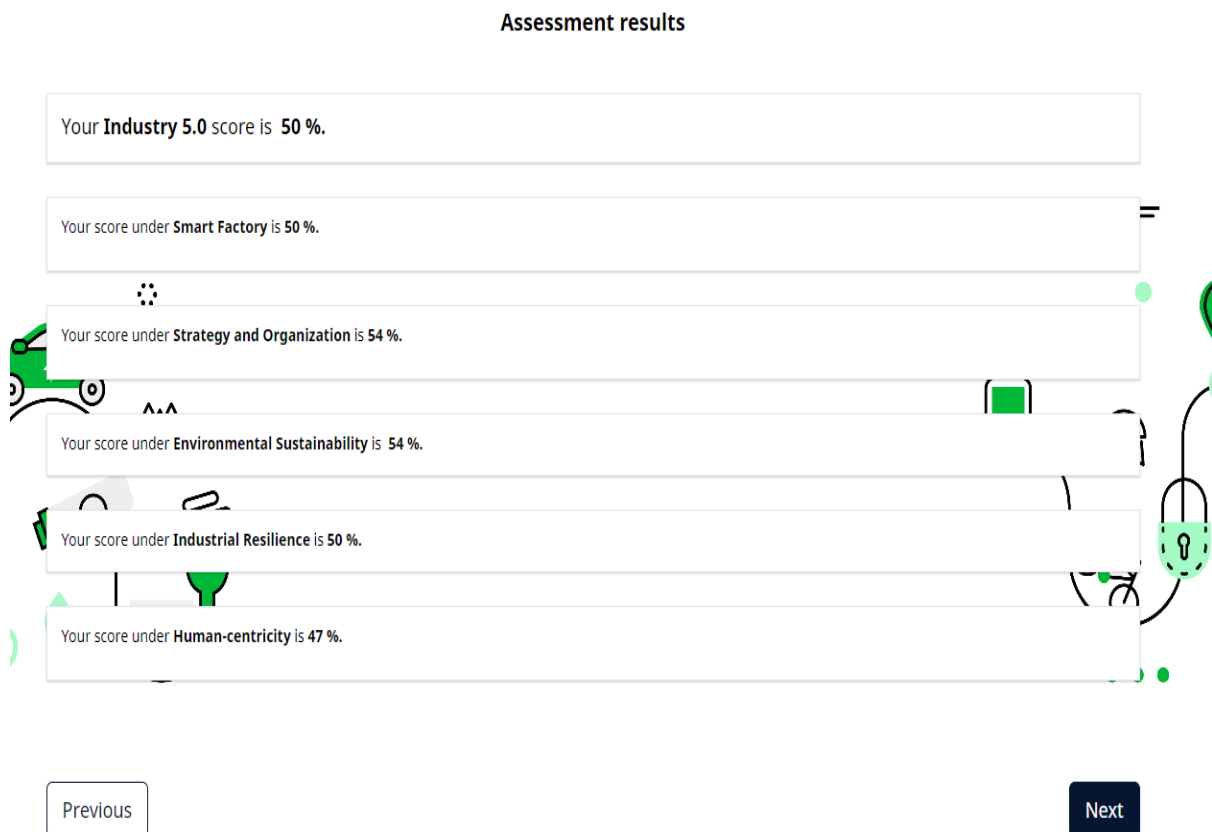


Figure 12 – Example of the **assessment page with overall scores** from the SURE 5.0 self-assessment tool

The other pages are **detailed assessments** where the importance and advantages of every aspect / question will be explained, and operational adjustments and recommendations will be given based on the answer selected by the participant to the respective question.

Every aspect / question in the assessment has been evaluated to a scale of 4 where **1** is the **Beginner** level, **2** is the **Intermediate** level, **3** is the **Advanced** level and **4** is the **Expert** level.

Detailed Assessment - Strategy and Organization

Extent of product customization offered: Level 2 - Intermediate

Mass customization utilizes a flexible manufacturing process that integrates information technology for developing items with personalized features compared to generic ones. It gives businesses a **competitive advantage and increases their economic value**. It is also a strategy used to **attract more customers, improve the brand image, maintain long-term customer relationships, and retain potential consumers**. By choosing the correct customization model, or combination of models, and making continuous improvements, an SME can set itself apart from its competitors and benefit from all the advantages that product customization offers.

Your organization is still at the **intermediate level**. We would recommend **identifying the right customization model and brainstorming more creative customization options for products produced in the organization**.

Data sharing along the supply chain: Level 2 - Intermediate

Data sharing along the supply chain enables **better planning of supply orders and supply chain processes, reduces the time taken to diagnose problems between various organizational processes and improves the overall customer experience** that drives the business forward.

Your organization is still at the **intermediate level**. We would recommend **considering sharing important process and product data in real-time with suppliers and customers**.

Previous Next

Figure 13 – Example of the **detailed assessments page** from the SURE 5.0 self-assessment tool

The participant may click **Submit** to submit his assessment and land at the last page of the tool.

2.8 Last page

The last page of the tool explains the next steps in the SURE 5.0 project and has been designed to include hyperlinks to the following sites related to the SURE 5.0 project:

- LinkedIn-Page
- Twitter-Handle
- YouTube-Page
- SURE 5.0-Website
- Link to sign up to the newsletter as well as the
- Website that talks about the funding of the project through the European union.



Figure 14 – The **Last Page** of the SURE 5.0 self-assessment tool

The last page also has the options to **print the survey as a Pdf** as well as view the **public statistics of the survey**.

2.9 Analysis of assessment data

It has been planned to create a dashboard in PowerBI that analyzes and presents the assessment data of individual assessments as well as a dashboard that presents relevant overall statistics.

SURE5.0

The results must be sent to every participant manually upon completion of the survey.

The overall statistics will be manually updated into the Assessment-Pages of Limesurvey for the participants to view.

SURE5.0

Annexes

List of annexes in order of mention.

- Annex 1: Limesurvey – SURE 5.0 SELF-ASSESSMENT TOOL
- Annex 2: Limesurvey – Official website