Interreg CENTRAL EUROPE

Co-funded by the European Union

SMERF

Report on SMERF Diagnosis Tool upgrade

Version 1

03 2026

Content

A. Introduction

The deliverable “Report on SMERF Diagnosis Tool upgrade” presents the results of the upgrade to the SMERF Diagnosis Tool (SDT), an online solution designed to support Central European SMEs, Higher Education Institutions (HEIs), and innovation intermediaries in assessing and enhancing their capabilities. Building on the preliminary version of the tool developed under previous activity, the upgraded version reflects a comprehensive validation, testing, and improvement process carried out through several pilot actions. The report consolidates inputs from Project Partners (PPs) across seven countries, ensuring that the upgraded solution responds to diverse user needs and regional contexts.

A detailed description of the results derived from the analysis of pilot testing activities—highlighting key findings, user feedback, and identified gaps—is provided in Deliverable “Report on SMERF DT Testing Pilot Action”. Based on these insights, a series of steps was undertaken to refine and enhance the tool, including adjustments to its functionalities and user interface elements to better align with user expectations and practical requirements. This deliverable focuses on the methodology, presenting how the process of upgrading the SDT was carried out and summarising the final stage of implementation.

The upgraded SDT represents the final, fully functional version of the solution. It incorporates improved features and layouts, as well as the integration of the Inspiration Knowledge Base, which provides essential information structured around the four key pillars of the SMERF framework. The tool will be made freely available online to all registered users, without restriction on organisation type, ensuring broad accessibility and supporting innovation capacity development across the Central European region.

B. Methodology of the SMERF Diagnosis Tool upgrade process

Figure 1 illustrates the structured methodology applied in the process of upgrading the SDT. The process was designed to ensure that the final set of improvements reflects both the needs identified during pilot actions and the collective expertise of PPs.

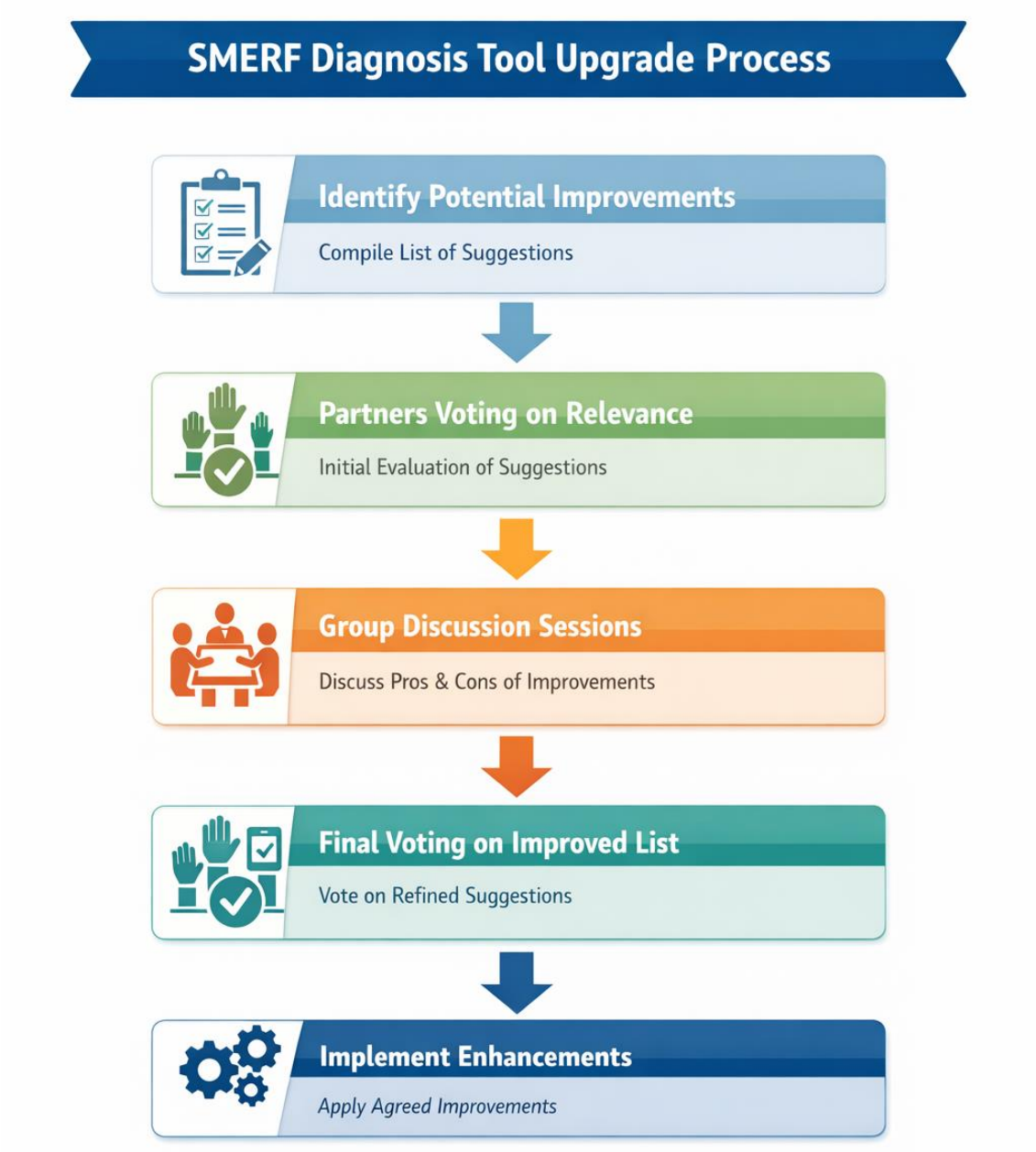


Figure 1 Methodology of the SDT upgrade process

The first step involved compiling a comprehensive list of potential improvements based on feedback collected during testing activities, in line with the continuous refinement approach of the tool. In the second

step, representatives of PPs evaluated and voted on the relevance and importance of each proposed improvement, enabling an initial prioritisation. Subsequently, partners were divided into smaller working groups to discuss the advantages and disadvantages of the selected improvements. This stage allowed for a more in-depth qualitative assessment and facilitated the exchange of perspectives across different organisational and regional contexts. In the fourth step, a second round of voting was conducted on the refined list of improvements, which had been updated based on the outcomes of the group discussions. This ensured consensus and validation of the final set of proposed changes. The final step consisted of implementing the agreed-upon improvements into the SDT. This iterative and collaborative process ensured that the upgraded version of the tool is aligned with user needs, enhances usability, and strengthens its effectiveness in supporting SMEs in their transformation journey.

1. Step 1: Identify potential improvements

The first step of the SDT upgrade process focused on the identification and consolidation of potential improvements. This phase was based primarily on insights gathered during pilot testing activities, user feedback, and internal analyses conducted by PPs. A comprehensive list of proposed enhancements was compiled, covering both technical and functional aspects of the tool (Tab. 1). These included, among others, the development of new functionalities (such as the introduction of a questionnaire supervisor role), improvements related to system performance and security (e.g., security scans and server load testing), as well as user-oriented features such as data download options, benchmarking capabilities, and enhanced interaction with the Inspiration Knowledge Base (IKB).

Tab. 1 List of proposed enhancements of the SDT

id	Upgrade idea	Description/ comments/ open issues	To be ranked by Partners
1	Development of a new functionality related to the introduction of a survey/questionnaire supervisor	The questionnaire supervisor would have access to all analyses conducted by the companies they support. Typically, this would be someone from the business support organization. When starting a new analysis, the company should/can designate/select a supervisor. Any registered SDT user can be a questionnaire supervisor. The questionnaire supervisor should be able to see their own questionnaires in the system (full access) and those for which they are the supervisor (view only).	Yes
2	Conducting final technical testing to validate the tool's **security and stability** and performance before full release	Security scan - critical, high and medium level.	No (Obligatory modification)
		Server load test.	
3	The functionality for downloading data from the tool	Is it sufficient?	Yes
4	Integrating IKB	Obligatory – from the proposal. We should link results developed on IKB with the transformation scenario. The proposed idea will be shown on the following slide.	No (Obligatory modification
5	Benchmark for companies	For example, comparison with similar companies (by location or size) or with the general average (across all responses), to display as a background in a different color on the radar chart.	Yes

6	The option to delete chosen submitted questionnaires	By admin – deletion from the database (e.g., for auto-completion or tool testing by admins or project partners)	Yes
7	Link to services on IKB	Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general. https://readyforfuture.eu/innovative-services?	Yes
8	Link to folder with database backups	Development and implementation of backup strategy.	No (Obligatory modification
9	Adding pillars, features, new questions and answers	Adding new functionality to the tool that enables adding additional pillars, new features, more questions, and corresponding answers.	Yes
Focus of the login page – to be discussed			

In addition, proposals addressed system administration and maintenance needs, including database management functionalities (e.g., deletion of submitted questionnaires) and the implementation of a backup strategy. Suggestions for further development of the tool were also included, such as the possibility of expanding the system with additional pillars, features, questions, and answer sets.

Each identified improvement was documented along with its description and potential implementation considerations, and was marked to indicate whether it would be ranked by the PPs during voting or must be implemented due to proposal requirements. This structured approach ensured a clear overview of all proposed changes and created a solid foundation for subsequent evaluation and prioritisation steps in the upgrade process.

2. Step 2: Partners Voting on Relevance

The second step of the SDT upgrade process focused on the evaluation and prioritisation of the identified improvement proposals through a structured voting procedure involving all PPs. This stage aimed to ensure that the most relevant and impactful functionalities were selected for further development, reflecting the collective expertise and perspectives of the consortium. The activity was performed during the PP meeting held in Opatija (Croatia), 10-11.09.2025, where a dedicated workshop session was organised to assess and rank the proposed improvements.

To support this process, an internal survey was developed and distributed among PPs, following the principle of one response per partner. The survey enabled PPs to evaluate selected functionalities using a standardized scale ranging from least important to most important (1-5), allowing for a consistent and quantitative comparison of priorities.

The evaluated functionalities covered key areas of the tool's development, including system usability (e.g., login process and homepage improvements), data handling (e.g., data download functionality), system management (e.g., deletion of submitted questionnaires), and further development possibilities (e.g., adding new pillars, features, and questions). Particular attention was also given to integration with the IKB and improvements related to user roles and access management.

The screenshots (Fig. 2-4) illustrating the content of the survey are presented below (obligatory improvements from Tab. 1 – resulting from the proposal – were excluded from the voting):

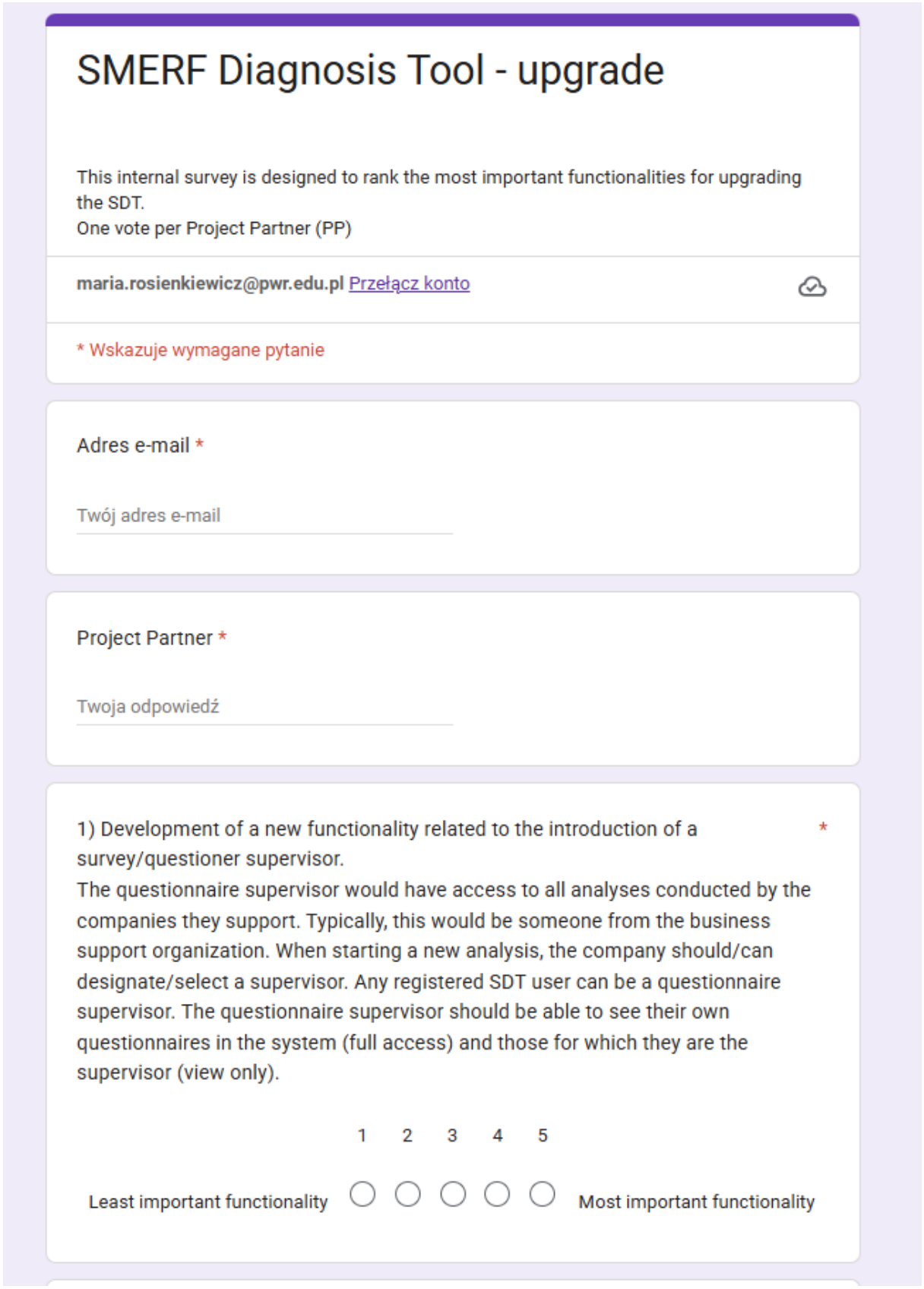


Figure 2 SDT upgrade - survey 1 screenshot 1

3) The functionality for downloading data from the tool *

Is it sufficient?

	1	2	3	4	5	
No	◯	◯	◯	◯	◯	Yes

5) Benchmark for companies *

For example, comparison with similar companies (by location or size) or with the general average (across all responses), to display as a background in a different color on the radar chart.

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

6) The option to delete chosen submitted questionnaires *

By admin – deletion from the database (e.g., for auto-completion or tool testing by admins or project partners)

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

7) Link to services on IKB *

Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general.

https://readyforfuture.eu/innovative-services?

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

Figure 3 SDT upgrade - survey 1 screenshot 2

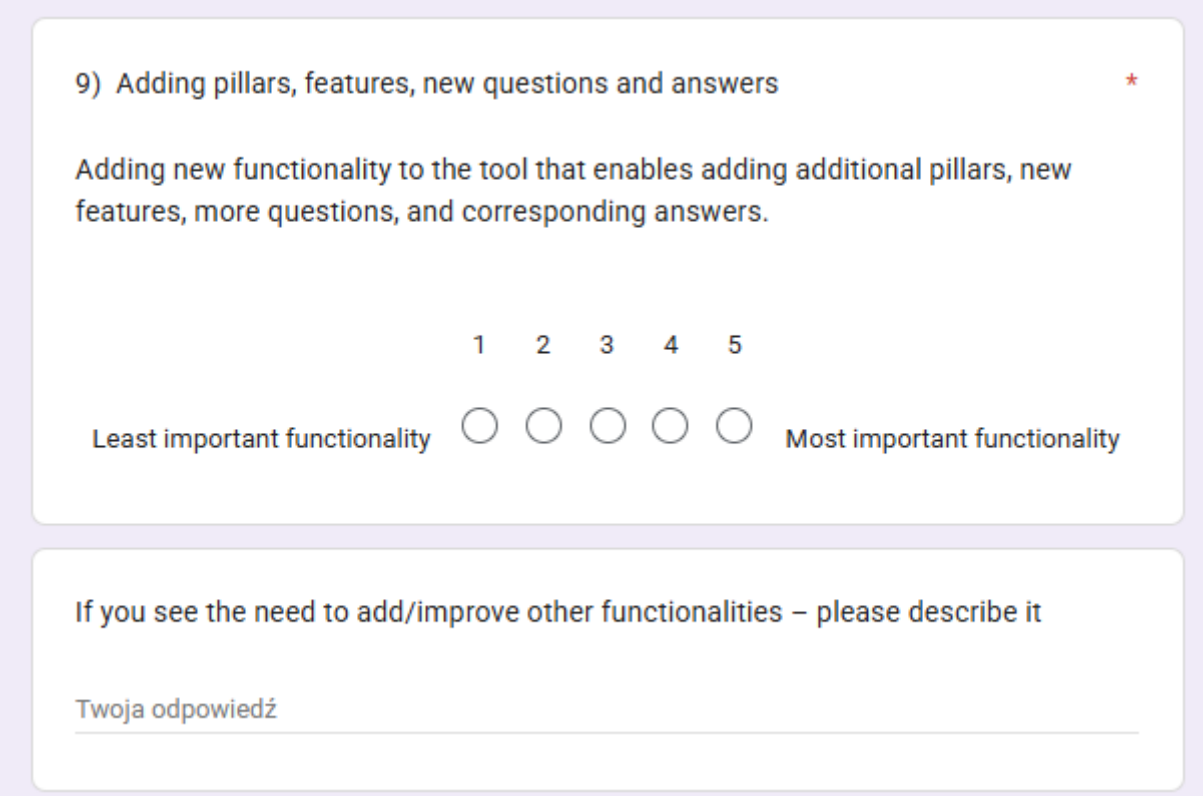


Figure 4 SDT upgrade - survey 1 screenshot 3

The results of the voting are presented in Tab. 2.

Tab. 2 Results of the voting

Time	E-mail	PP	1) Development of a new functionality related to the introduction of a survey/questioner supervisor	3) The functionality for downloading data from the tool	5) Benchmark for companies	6) The option to delete chosen submitted questionnaires	7) Link to services on IKB	9) Adding pillars, features, new questions and answers
9.11.2025 10:28:48	tobias.mueller2@kit.edu	KIT	4	2	3	4	2	4
9.11.2025 10:41:05	andrea.kurucz@pbn.hu	PBN	4	4	3	4	4	4
9.11.2025 10:41:55	bagnoli.a@crit-research.it	CRIT	5	2	2	5	3	2
9.11.2025 10:46:06	giovanni.berselli@unige.it	UNIGE	4	2	3	5	5	5
9.11.2025 10:47:11	jbmarcelja@uniri.hr	STEP RI	5	5	1	3	3	5

9.11.2025 10:47:22	laura.fotulova@tuke.sk	TUKE	4	2	5	2	2	3
9.11.2025 10:49:46	maria.rosienkiewicz@pwr.edu.pl	WUST	5	1	1	5	3	5
9.11.2025 10:51:00	jennifer.quoc@biz-up.at	Biz-Up	3	2	4	5	3	4
Average score:			**4,25**	**2,5**	**2,75**	**4,13**	**3,13**	**4**

The outcomes of this step served as a basis for subsequent group discussions (Step 3) and for refining the final list of improvements. Overall, this stage ensured a transparent, participatory, and data-driven approach to decision-making, strengthening the alignment of the upgraded SDT with user needs and project objectives.

3. Step 3: Group Discussion Sessions

The third step of the SDT upgrade process focused on qualitative assessment of the previously identified and prioritised improvement proposals through structured group discussions. This stage aimed to complement the quantitative results obtained in Step 2 with more in-depth analysis, enabling partners to explore the practical implications, advantages, and potential limitations of each proposed functionality.

During the workshop session, PPs were divided into smaller working groups to facilitate interactive discussions and encourage the exchange of perspectives across different organisational and regional contexts. Each group analysed improvement proposals, focusing on their feasibility, expected impact on users, and alignment with the overall objectives of the SDT.

An important outcome of this step was the identification of additional suggestions and refinements, which were not initially included or fully developed in the earlier stages. These inputs are summarised in Tab. 3 and consequently in the survey no. 2.

Tab. 3 Additional improvement ideas resulting from the working groups

Additional improvement ideas
Automatic translation of webpage; addition to point 5: Add a short comment on the number of datasets the output is generated.
We would suggest to add the possibility of all the PPs languages
Mentor should have access to data of companies, but only those that he/she is working with, not to data of all companies (for example 2, 3… companies). Administrator should have possibility to grant access to certain data to mentors (alternatively: company contacts mentor on their own and send results of assessment, the mentors do not have access to the tool).
If the company indicates in questionnaire country of origin that is the same as a PP country, the contact person from PP organization should appear as a „get in touch" contact.

Roles need clear identification, explanations and new assignments. PPs need to be managers with full functionalities (including adding and deleting pillars).
The user should be able to prioritise which pillars are the most important to him/her. Based on the relevance the recommendations for improvement should be mentioned first.
Log-In page & Mail confirmation. Increase the size of the SMERF-Logo.

The contributions included, among others, proposals related to multilingual accessibility (e.g., automatic translation of the interface and inclusion of all partner languages), improvements in user roles and access management (e.g., clearer role definitions and differentiated access for mentors), and enhancements of user interaction (e.g., prioritisation of pillars based on user preferences or improved contact functionalities).

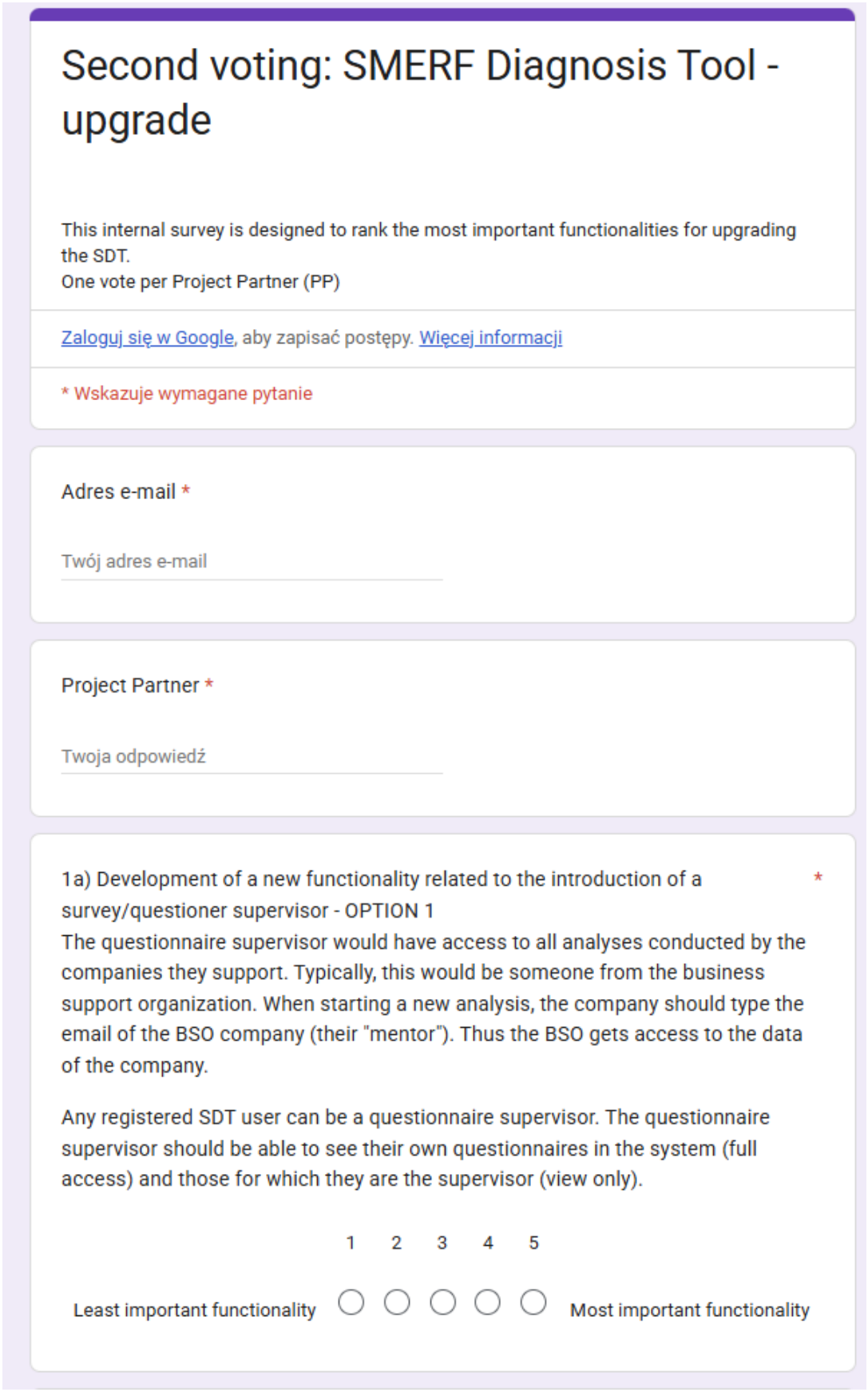
Furthermore, technical and usability-related improvements were highlighted, such as refinements of the login page, email confirmation processes, and the visual presentation of the tool (e.g., homepage adjustments and logo visibility). Suggestions also addressed the need to provide additional contextual information in outputs, such as indicating the number of datasets used for benchmarking results.

Overall, this step enabled a deeper understanding of the proposed improvements and enriched the initial list with additional, practice-oriented insights. The results of the group discussions formed a refined and more comprehensive basis for the subsequent validation and final voting stage (Step 4), ensuring that the final set of enhancements reflects both quantitative prioritisation and qualitative expert input.

4. Step 4: Voting on the Improved List

Based on the outcomes of the group discussions (as summarised in Tab. 3), and the additional inputs collected during the meeting, a revised set of improvement proposals was developed. The insights gathered during this stage allowed for refining, clarifying, and expanding the initially identified functionalities, ensuring that they better reflect user needs and practical implementation considerations.

On this basis, a second version of the internal survey was prepared, incorporating the updated and extended list of proposed improvements. The revised questionnaire aimed to validate the refined set of functionalities and support the final prioritisation process. The structure and content of the updated survey are presented in Figures 5-10.



Second voting: SMERF Diagnosis Tool - upgrade

This internal survey is designed to rank the most important functionalities for upgrading the SDT.
One vote per Project Partner (PP)

Zaloguj się w Google, aby zapisać postępy. Więcej informacji

* Wskazuje wymagane pytanie

Adres e-mail *

Twój adres e-mail

Project Partner *

Twoja odpowiedź

1a) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 1 *
The questionnaire supervisor would have access to all analyses conducted by the companies they support. Typically, this would be someone from the business support organization. When starting a new analysis, the company should type the email of the BSO company (their "mentor"). Thus the BSO gets access to the data of the company.

Any registered SDT user can be a questionnaire supervisor. The questionnaire supervisor should be able to see their own questionnaires in the system (full access) and those for which they are the supervisor (view only).

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Figure 5 SDT upgrade - survey 2 screenshot 1

1b) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 2 *
Mentor should have access to data of companies, but only those that he/she is working with, not to data of all companies (for example 2, 3… companies).
Administrator should have possibility to grant access to certain data to mentors. This requires extra effort from the admin team of the tool.

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

1c) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 3 *
No new functionality - just company contacts mentor on their own and send results of assessment, then mentors do not have an access to the tool).

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

3) The functionality for downloading data from the tool *

Allow the company to download the data in a structure similar do ""dataset_features_v5.xlsx"" and ""dataset_questions_v5.xlsx"", without LT and MT classification + switching from ""% of not applicable to ""% of relevance = 100 - % of not applicable""

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Least important functionality

Figure 6 SDT upgrade - survey 2 screenshot 2

5) Benchmark for companies *

For example, comparison with similar companies (by location or size) or with the general average (across all responses), to display as a background in a different color on the radar chart.

Add a short comment on the number of datasets the output is generated

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

6) The option to delete chosen submitted questionnaires *

By admin – deletion from the database (e.g., for auto-completion or tool testing by admins or project partners) .

***It is available by "manager" role.

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

7) Link to services on IKB *

Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general.

https://readyforfuture.eu/innovative-services?

	1	2	3	4	5	
Least important functionality	◯	◯	◯	◯	◯	Most important functionality

Figure 7 SDT upgrade - survey 2 screenshot 3

9) Adding pillars, features, new questions and answers *

Adding new functionality to the tool that enables adding additional pillars, new features, more questions, and corresponding answers.
***It is available by "manager" role.

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Option of switching ON/OFF the Pillars - functinality that activates or deactivates existing pillars *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Possibility to modify the choice/adding new choice of Pillars for STEP-2 *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Change the score per Pillar from arithmetic average to a weighted average with the % of ""not applicable"" answers as weight *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Figure 8 SDT upgrade - survey 2 screenshot 4

Fixing registration process & email confirmation *
Log-In page & Mail confirmation

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Modification of the homepage. Focus of the description of the tool and not just "log-in" process. Increase the size of the SMERF-Logo. *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

If the company indicates in questionnarie country of origin that is the same as a PP country, the contact person from PP organization should appear as a „get in touch" contact *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

The user should be able to prioritise which pillars is the most important to him/her. Based on the relevance the recommendations for improvement should be mentioned first *

	1	2	3	4	5	
Least important functionality	○	○	○	○	○	Most important functionality

Figure 9 SDT upgrade – survey 2 screenshot 5

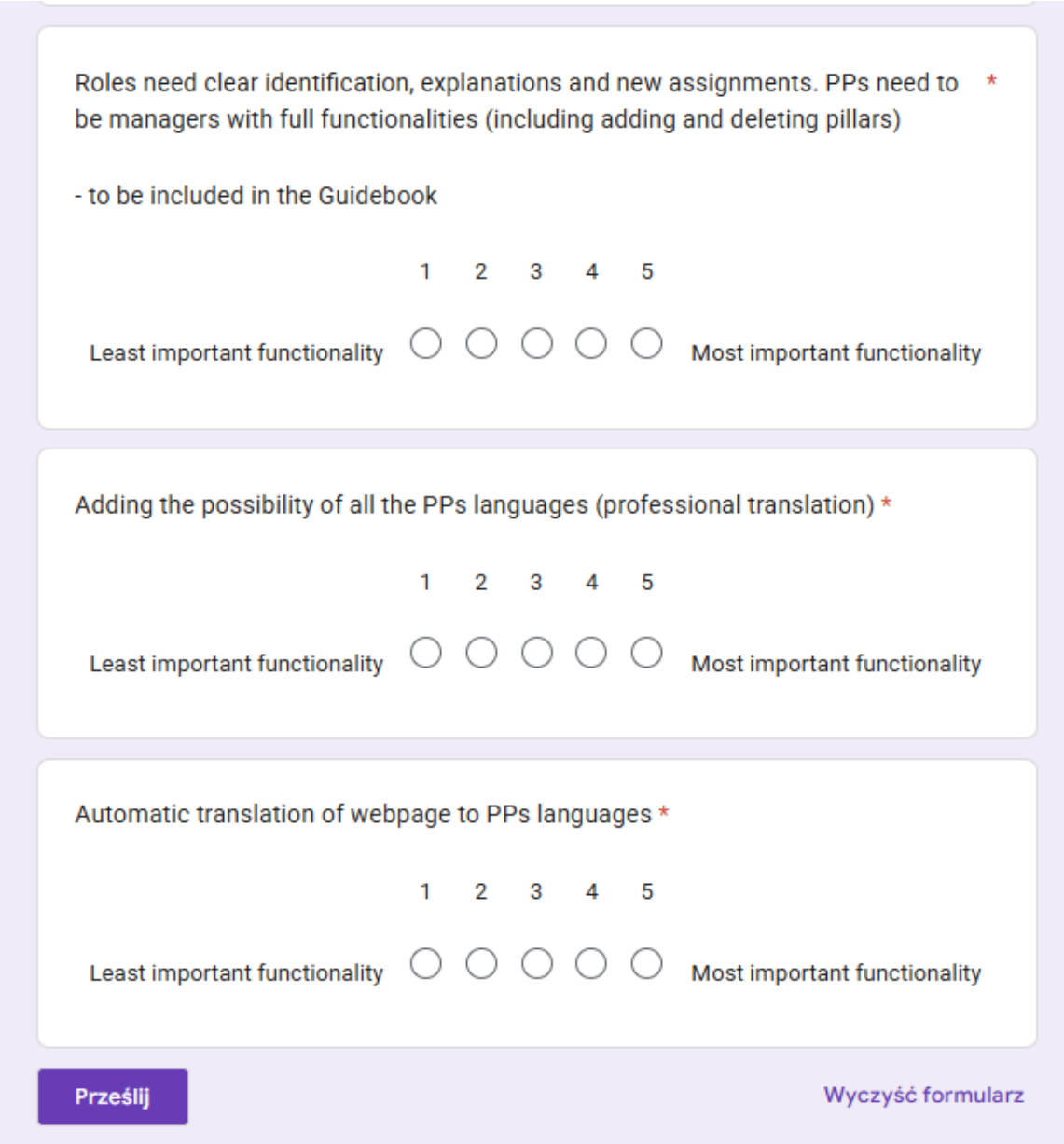


Figure 10 SDT upgrade - survey 2 screenshot 6

The results of the voting are presented in Tab 4.

Tab. 4 Results of the voting on the ranking of upgrading functionalities of the SDT

Project Partner	average	CRIT	KIT	TUKE	UNIGE	STEP RI	Biz-Up	WUST	Pannon Business Network
Fixing registration process & email confirmation Log-In page & Mail confirmation	**5,00**	5	5	5	5	5	5	5	5

Roles need clear identification, explanations and new assignments. PPs need to be managers with full functionalities (including adding and deleting pillars) - to be included in the Guidebook	**4,75**	5	5	5	4	5	4	5	5
Modification of the homepage. Focus of the description of the tool and not just "log-in" process. Increase the size of the SMERF-Logo.	**4,63**	5	5	5	4	3	5	5	5
3) The functionality for downloading data from the tool Allow the company to download the data in a structure similar do "dataset_features_v5.xlsx" and "dataset_questions_v5.xlsx", without LT and MT classification + switching from " % of not applicable to " % of relevance = 100 - % of not applicable"	**4,50**	5	4	5	5	5	3	5	4
9) Adding pillars, features, new questions and answers Adding new functionality to the tool that enables adding additional pillars, new features, more questions, and corresponding answers. ***It is available by "manager" role.	**4,50**	2	4	5	5	5	5	5	5
Possibility to modify the choice/adding new choice of Pillars for STEP-2	**4,25**	2	5	5	5	4	4	5	4
6) The option to delete chosen submitted questionnaires By admin – deletion from the database (e.g., for auto-completion or tool testing by admins or project partners) . ***It is available by "manager" role.	**4,13**	3	4	4	5	2	5	5	5
Option of switching ON/OFF the Pillars - functinality that activates or deactivates existing pillars	**4,13**	2	4	5	5	4	4	4	5
Change the score per Pillar from arithmetic average to a weighted average with the % of ""not applicable"" answers as weight	**3,88**	4	4	5	4	4	3	3	4

1a) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 1 The questionnaire supervisor would have access to all analyses conducted by the companies they support. Typically, this would be someone from the business support organization. When starting a new analysis, the company should type the email of the BSO company (their "mentor"). Thus the BSO gets access to the data of the company. Any registered SDT user can be a questionnaire supervisor. The questionnaire supervisor should be able to see their own questionnaires in the system (full access) and those for which they are the supervisor (view only).	**3,75**	1	3	5	2	5	4	5	5
Automatic translation of webpage to PPs languages	**3,75**	3	4	4	4	2	3	5	5
1c) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 3 No new functionality - just company contacts mentor on their own and send results of assessment, then mentors do not have an access to the tool).	**3,25**	5	4	1	4	4	3	4	1
The user should be able to prioritise which pillars is the most important to him/her. Based on the relevance the recommendations for improvement should be mentioned first	**3,25**	2	2	5	4	1	5	2	5
If the company indicates in questionnarie country of origin that is the same as a PP country, the contact person from PP organization should appear as a „get in touch" contact	**3,13**	2	3	5	5	1	3	1	5
Adding the possibility of all the PPs languages (professional translation)	**3,13**	2	4	5	3	2	3	1	5
1b) Development of a new functionality related to the introduction of a survey/questioner supervisor - OPTION 2 Mentor should have access to data of companies, but only those that he/she is working with, not to data of all companies (for example 2, 3… companies). Administrator should have possibility to grant access to certain data to mentors. This requires extra effort from the admin team of the tool.	**2,88**	1	2	5	5	2	4	1	3

7) Link to services on IKB Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general. https://readyforfuture.eu/innovative-services?	**2,88**	2	2	2	5	2	4	2	4
5) Benchmark for companies For example, comparison with similar companies (by location or size) or with the general average (across all responses), to display as a background in a different color on the radar chart. Add a short comment on the number of datasets the output is generated	**2,75**	1	3	5	3	1	4	1	4

Tab. 4 presents the results of the second round of voting on the refined list of proposed improvements to the SDT. The table reflects the ranking of upgrading functionalities based on the evaluations provided by PPs, expressed as average scores. The results highlight the relative importance assigned to individual functionalities, indicating clear priorities for further development. In particular, the highest-ranked improvements relate to system usability and stability, including fixing the registration process and email confirmation, as well as clarifying user roles and permissions. High scores were also attributed to enhancements in data handling and the possibility of further expanding the tool's structure. Overall, the outcomes of this voting stage provided a validated and prioritised basis for the implementation phase, ensuring that the selected improvements align with both user needs and technical feasibility.

5. Step 5: Implement enhancements

The final step of the SDT upgrade process focused on the implementation of the agreed-upon improvements into the system. This phase translated the outcomes of the previous steps - particularly the prioritised list of functionalities and the validated proposals - into concrete technical and functional modifications of the tool.

The implementation process was carried out in close cooperation with the technical provider, ensuring that the selected improvements were feasible within the available time and budget constraints. Each proposed enhancement was analysed in terms of implementation effort, expected impact, and technical dependencies. As presented in Tab. 4, the improvements varied significantly in complexity - from adjustments requiring no additional development effort (e.g. clarification of user roles or minor interface changes) to more advanced functionalities requiring dedicated development time (e.g. introduction of new roles).

A key aspect of this step was the clarification and structuring of user roles and permissions within the system. A clear distinction was established between different types of users, including administrator, manager, pillar leader, and partner.

Each role was assigned a specific scope of access and responsibilities, covering both frontend functionalities (e.g., viewing and exporting data) and backend capabilities (e.g. managing questionnaires, pillars, and system content). This contributed to improved system governance, usability, and security. The details are presented below:

admin

- Has full access, but is used only by developers

manager

- Frontend views:
    - Can see all submitted questionaries for each User and can delete or redo submitted questionaries for each User
    - Can see Users view and export the list in csv format
    - Can see export menu and export both tables in csv format ("users anwser points" and "users pillars charts values")

- Backend views (Admin)
    - Can create new Users
    - Can create or edit Questionnaires
    - Can create or edit Pillars
    - Can create or edit Features
    - Can create or edit Questions
    - Can create or edit Answers
    - Can create or edit Activities
    - Can create, edit, or delete Submissions
    - Can see Jobs view (To see the progress of exports)

pillar-leader

- Frontend views:
    - Can see all submitted questionnaire of each User
    - Can see Users view and export the list in csv format
    - Can see export menu and export both tables in csv format ("users anwser points" and "users pillars charts values")

- Backend views (Admin)
    - Can see Users
    - Can see Questionnaires
    - Can edit Pillars
    - Can edit Features
    - Can edit Questions
    - Can edit Answers

- Can edit Activities
- Can see Submissions
- Can see Jobs view (To see the progress of exports)

partner

- Frontend views:
  - Can see all submitted questionnaires of each User
  - Can see Users view and export the list in csv format
  - Can see export menu and export both tables in csv format ("users anwser points" and "users pillars charts values")
- Cannot access the admin views

test

- The role exists but is no longer used; it was used to test some functionalities during the development period

The implementation phase also included several usability and performance improvements. These involved enhancements to the login process and email confirmation mechanisms, modifications to the homepage and overall interface, and improvements in data handling functionalities, such as exporting user data in structured formats. In addition, new or extended features were introduced, including options for expanding the tool structure (e.g., adding new pillars, features, and questions), introducing mentor-related functionalities, and enabling better interaction with external resources such as the Inspiration Knowledge Base (IKB).

Furthermore, selected improvements addressed user experience and accessibility, including multilingual support and the possibility to adapt the tool to different user needs (e.g., prioritisation of pillars or tailored recommendations). Technical improvements such as changes in calculation methods (e.g., weighted scoring) and the implementation of backup and data management functionalities were also considered.

To efficiently implement the requested changes in the tool, Tab. 5 was developed as a communication mechanism with the technical provider.

Tab. 5 List of requested modifications addressed by the technical provider

MOD	average	effort/ h
Fixing registration process & email confirmation Log-In page & Mail confirmation	5	0

Roles need clear identification, explanations and new assignments. PPs need to be managers with full functionalities (including adding and deleting pillars) - to be included in the Guidebook	4,75	0
Modification of the homepage. Focus of the description of the tool and not just "log-in" process. Increase the size of the SMERF-Logo.	4,63	0
3) The functionality for downloading data from the tool allows the company to download the data in a structure similar to ""dataset_features_v5.xlsx"" and ""dataset_questions_v5.xlsx"", without LT and MT classification + switching from ""% of not applicable to ""% of relevance = 100 - % of not applicable""	4,5	8
9) Adding pillars, features, new questions and answers. Adding new functionality to the tool that enables. Adding additional pillars, new features, more questions, and corresponding answers *** It is available by "manager" role.	4,5	4-48
Possibility to modify the choice/adding new choice of Pillars for STEP-2	4,25	0
6) The option to delete chosen submitted questionnaires by admin - deletion from the database (e.g., for auto-completion or tool testing by admins or project partners) . *** It is available by "manager" role.	4,13	0
Option of switching ON/OFF the Pillars - functionality that activates or deactivates existing pillars	4,13	0
Change the score per Pillar from arithmetic average to a weighted average with the % of ""not applicable"" answers as weight	3,88	8
1a) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 1 The questionnaire supervisor would have access to all analyses conducted by the companies they support. Typically, this would be someone from the business support organization. When starting a new analysis, the company should type the email of the BSO company (their "mentor"). Thus, the BSO gets access to the data of the company. Any registered SDT user can be a questionnaire supervisor. The questionnaire supervisor should be able to see their own questionnaires in the system (full access) and those for which they are the supervisor (view only).	3,75	32
~~Automatic~~ Translation of webpage to PPs languages	3,75	8

Adding the possibility of all the PPs languages (professional translation)	3,13	24
1c) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 3 No new functionality - just company contacts mentor on their own and send results of assessment, then mentors do not have access to the tool).	3,25	
The user should be able to prioritise which pillars are the most important to him/her. Based on the relevance the recommendations for improvement should be mentioned first.	3,25	16
If the company indicates in the questionnaire its country of origin and it matches with a PP‘s country, the contact person from PP organization should appear as a „get in touch” contact.	3,13	4
1b) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 2 Mentor should have access to data of companies, but only those that he/she is working with, not to data of all companies (for example 2, 3… companies). Administrator should have possibility to grant access to certain data to mentors. This requires extra effort from the admin team of the tool.	2,88	
7) Link to services on IKB Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general. https://readyforfuture.eu/innovative-services?	2,88	2
5) Benchmark for companies For example, comparison with similar companies (by location or size) or with the general average (across all responses), to display as a background in a different color on the radar chart. Add a short comment on the number of datasets the output is generated.	2,75	32
user's data removal request		24

Tab. 5 presents the list of requested modifications addressed by the technical provider, including their estimated implementation effort. The table serves as a key communication and planning tool between PPs and the technical provider, translating the outcomes of the voting process into concrete development tasks. It illustrates the diversity of proposed improvements, ranging from minor adjustments requiring no additional effort to more complex functionalities involving significant development time. The inclusion of effort estimates (in hours) and implementation remarks allowed for a realistic assessment of feasibility within the available project timeframe and resources. Overall, this table supported and informed decision-making and facilitated the efficient planning and execution of the SDT upgrade process.

Next table, tab. 6, presents the final list of improvements selected for implementation in the SDT, agreed upon in close consultation with the technical provider. The table reflects the outcome of the entire upgrade process, translating the prioritised and validated functionalities into concrete technical solutions delivered within the system.

Tab. 6 Final list of implemented changes

id	Description	Internal notes	Partner Extra Requests added
2	Integrating IKB We should link results developed on IKB with the transformation scenario	Added a custom field on the Pillar object where it is possible to insert custom text and links to the IKB resources. This data is displayed next to the charts on the results pages.	
7	The functionality for a 'base' user to download his/her data from the tool.	Added the ability for a 'base' user to export his/her data from the two currently developed exports: - User's answer points - User's pillar chart values	
8	Adding new functionality to the tool that enables: adding additional pillars, new features, more questions, and corresponding answers Possibility to modify the choice/adding new choice of Pillars for STEP-2	Extended capabilities for users with the 'pillar-leader' role. Also added the ability for 'pillar-leader' users to import a new questionnaire (and all its data) via .csv.	Added functionality to enable (or disable) a different questionnaire
10	The option to delete chosen submitted questionnaires by admin - deletion from the database	Extended capabilities for users with the 'pillar-leader' role to delete submissions for all users. Also, users are able to delete their own questionnaire(s). If all submissions of a user are deleted, a new open questionnaire is automatically created for the 'base' user.	

11	Option of switching ON/OFF the Pillars - functinality that activates or deactivates existing pillars	Added a 'required' option on the Pillar object and activated the pillar selection form before starting Step 1. If the 'required' option is selected, that Pillar is mandatory and cannot be deselected in any form (including Step 2). In Step 2, the pillars selectable on the form before starting the questions are filtered based on the pillars selected in Step 1	Changed logic The 'required' option only affects the first form, before starting the questions in Step 1
12	Change the score per Pillar from arithmetic average to a weighted average with the % of "not applicable" answers as weight	All scores calculated before the deployment of this change remain in the database using the old formula. Only new submissions after the deployment of this change are calculated using the new formula	
13	1a) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 1 The questionnaire supervisor would have access to all analyses conducted by the companies they support. Typically, this would be someone from the business support organization. When starting a new analysis, the company should type the email of the BSO company (their "mentor"). Thus the BSO gets access to the data of the company. Any registered SDT user can be a questionnaire supervisor. The questionnaire supervisor should be able to see their own questionnaires in the system (full access) and those for which they are the supervisor (view only). 1b) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 2 Mentor should have access to data of companies, but only those that he/she is working with, not to data of all companies (for example 2, 3… companies). Administrator should have possibility to grant access to certain data to mentors. This requires extra effort from the admin team of	Combined the three options. Added a new 'mentor' user role and two new fields on the registration form ('Related Mentor' and 'Request to be a Mentor'). Admin: - Can activate the 'mentor' role for a user by checking the dedicated checkbox. - Can assign a mentor to a 'base' user by selecting them in the 'Related Mentor' field. - Can view the users related to a mentor in the dedicated 'Mentees' field. User: - During registration, can select their supervisor by choosing them in the 'Related Mentor' field. - During registration, can request to become a mentor. After a user requests to become a mentor, they continue as a 'base' user, and in the meantime, an email is sent to a list of 'emails for mentor requests' (editable in the questionnaire). An Admin (or 'pillar-leader') must then check the 'mentor' checkbox for that user. Once the checkbox is flagged, the user is automatically added to the 'Related Mentor' selection list on the registration form. Mentors can view and filter the submissions of their mentees on the 'Submissions' page and can export their data	Changed logic The email to the 'emails for mentor requests' list remains active as a notification for these addresses. However, after the checkbox is flagged on the registration form, the user is now automatically granted the 'mentor' role

	the tool." 1c) Development of a new functionality related to the introduction of a survey/questionnaire supervisor - OPTION 3 No new functionality - just company contacts mentor on their own and send results of assessment, then mentors do not have access to the tool).		
18	If the company indicates in questionnarie its country of origin and it matches with the PP country, the contact person from PP organization should appear as a "get in touch" contact.	A custom button has been added at the end of the results, below the list of contact emails	Added an extra 'or copy this email' option near the button, always showing a custom email based on the country
20	Link to services on IKB Optional: Link to services on IKB – provides direct redirection to IKB, but not to a specific pillar; instead, it shows all services in general. https://readyforfuture.eu/innovative-services?	Added an IKB link at the end of the results, just above the 'Email addresses' section. The text and link are editable in a dedicated field in the Questionnaire	
22	user's data removal request	When you click on 'destroy,' an alert/popup will ask you to confirm your choice. Upon confirming 'destroy': - The system checks whether the user has any active or completed quizzes/submissions; if so, all of them are deleted. - It checks whether the user has filled out the company form; if so, that data is deleted. - Finally, after removing all of the user's associations from the database, the user account itself is also deleted.	Customized the 'destroy' button by renaming it to 'remove'

The above table summarises the improvements that were successfully developed and deployed following the validation and prioritisation process and agreed upon in consultation with the technical provider. It includes detailed descriptions of each implemented functionality, along with internal notes on their technical realisation and any additional partner requests incorporated during the testing phase. The table reflects the final outcome of the upgrade process, demonstrating how the identified needs and agreed enhancements were translated into concrete system features. The implementation results were verified through final technical checks and validation activities, ensuring that the upgraded tool operates reliably and meets user expectations. Overall, this step ensured the successful transformation of the SDT into its final, fully operational version. The implemented enhancements significantly improved the functionality, usability, and flexibility of the tool, strengthening its capacity to support SMEs, HEIs, and innovation intermediaries in their transformation processes.

The details presenting the final functionality of the SDT will be presented in “Guidebook on how to use SDT”.

C. Summary and conclusions

The SDT upgrade process resulted in the development of a fully functional and user-oriented solution that effectively supports Central European SMEs, HEIs, and innovation intermediaries in assessing and enhancing their transformation capabilities. The process followed a structured, iterative, and participatory methodology, ensuring that the final version of the tool reflects both the needs identified during pilot actions and the collective expertise of PPs.

The upgrade process combined both quantitative and qualitative approaches. Initial identification of potential improvements, followed by partner voting and prioritisation, enabled a data-driven selection of the most relevant functionalities. This was complemented by in-depth group discussions, which provided additional insights and led to further refinement and expansion of the proposed improvements. The final implementation phase ensured that the validated enhancements were effectively integrated into the system, considering technical feasibility and resource constraints.

As a result, the upgraded SDT incorporates a range of improved and newly developed functionalities. These include enhanced user role management, improved system usability and interface design, expanded data handling capabilities, and strengthened integration with the IKB. Additional features, such as improved data export and extended system flexibility, further contribute to the usability and scalability of the tool.

Importantly, the upgrade process also ensured that the tool meets key requirements related to performance, security, and reliability. Final technical testing and validation confirmed that the system is ready for full-scale deployment and use by a wide range of stakeholders.

The SDT is made available online, free of charge, to all registered users, without restriction on organisation type. This open-access approach enhances its potential impact and supports the broader objective of fostering innovation capacity and sustainable transformation among SMEs in the Central European region.

In conclusion, the upgraded tool represents a significant advancement compared to its preliminary version. It provides a robust, flexible, and user-driven solution that can effectively support organisations in their transition towards more innovative, sustainable, and future-ready business models.