



# The AI Domain Expert

MAPIT: Mobilizing Advanced Partnerships for Digital Innovation and Transformation

## Project Information

<b>Project ID</b>	101158945
<b>Funding Programme</b>	Horizon Europe – WIDERA-2023-ACCESS-04
<b>Project Duration</b>	01-09-2024 to 31-08-2026 (24 months)
<b>Coordinator</b>	Izmir Institute of Technology (IZTECH)
<b>Consortium Members</b>	SHU, WEG, HÉTFA, KTO, METU, ATAP, TalTech, IFR
<b>CORDIS Project Website</b>	<a href="https://cordis.europa.eu/project/id/101158945">https://cordis.europa.eu/project/id/101158945</a>
<b>Project Official Website</b>	<a href="https://mapitproject.eu">https://mapitproject.eu</a>

Date: 28 February 2025

# Contents

<b>1</b>	<b>Question 1</b>	<b>4</b>
1.1	Question: . . . . .	4
1.2	Answer of MAP_IT: . . . . .	5
1.2.1	Programmes . . . . .	5
1.2.2	Destinations . . . . .	5
1.2.3	Thematic Priorities . . . . .	5
1.2.4	Call Topics . . . . .	6
1.2.5	Example of a Call Topic . . . . .	6
1.2.6	Technical, Human, and Productivity Capacities . . . . .	6
1.3	Conclusion . . . . .	7
1.4	Expected Answer: . . . . .	7
<b>2</b>	<b>Question 2</b>	<b>8</b>
2.1	Question: . . . . .	8
2.2	Answer of MAP_IT: . . . . .	8
2.3	Expected Answer: . . . . .	10
<b>3</b>	<b>Question 3</b>	<b>11</b>
3.1	Question: . . . . .	11
3.2	Answer of MAP_IT: . . . . .	11
3.3	Expected Answer: . . . . .	13
<b>4</b>	<b>Question 4</b>	<b>14</b>
4.1	Question: . . . . .	14
4.2	Answer of MAP_IT: . . . . .	14
4.2.1	Technical Capacities . . . . .	14
4.2.2	Human Capacities . . . . .	15
4.2.3	Productivity Capacities . . . . .	15
4.2.4	Desired Backgrounds for Researchers . . . . .	15
4.2.5	Desired Backgrounds for Research Project Managers . . . . .	16
4.3	Expected Answer: . . . . .	17
<b>5</b>	<b>Question 5</b>	<b>18</b>
5.1	Question: . . . . .	18
5.2	Answer of MAP_IT: . . . . .	18
5.3	Expected Answer: . . . . .	20
<b>6</b>	<b>Question 6</b>	<b>21</b>
6.1	Question: . . . . .	21
6.2	Answer of MAP_IT: . . . . .	21
6.2.1	Specialized Research Centers . . . . .	21

6.2.2	Universities . . . . .	22
6.2.3	Comparative Analysis . . . . .	22
6.2.4	Key Factors for Success . . . . .	23
6.3	Conclusion . . . . .	23
6.4	Expected Answer: . . . . .	23
<b>7</b>	<b>Question 7</b>	<b>24</b>
7.1	Question: . . . . .	24
7.2	Answer of MAP_IT: . . . . .	24
7.3	Expected Answer: . . . . .	26
<b>8</b>	<b>Question 8</b>	<b>27</b>
8.1	Question: . . . . .	27
8.2	Answer of MAP_IT: . . . . .	27
8.2.1	Methods and Tools of Productivity . . . . .	27
8.3	Expected Answer: . . . . .	29

### **Abstract**

This deliverable presents the outcomes of the MAPIT (Mobilizing Advanced Partnerships for Digital Innovation and Transformation) Horizon Europe project, aimed at enhancing research and innovation capacities in digital transformation. As part of this initiative, the AI Domain Expert tool has been developed to support research institutions, universities, and policymakers in navigating the European research and innovation funding landscape.

The AI Domain Expert facilitates knowledge management by providing insights into strategic funding opportunities, technical capacities, human resource requirements, and best practices for project execution. It enables research centers to align their efforts with Horizon Europe's key thematic priorities, ensuring impactful contributions to the digital transformation ecosystem. This document outlines the tool's functionalities, its integration with research infrastructures, and its role in fostering collaborative, data-driven decision-making.

By leveraging AI-driven analysis and decision-support mechanisms, the MAPIT project aims to strengthen digital innovation capabilities across Europe, fostering strategic partnerships and maximizing the impact of research and development initiatives. The deliverable provides key findings and recommendations to guide stakeholders in utilizing the AI Domain Expert for enhanced research management, ensuring alignment with European Commission priorities and promoting sustainable digital transformation.

# Introduction

This document serves as a deliverable for the MAPIT Horizon project, showcasing the AI tool developed as part of this initiative. The purpose of this deliverable is to provide a comprehensive overview of the AI tool's capabilities and its application within the context of the Horizon Europe research and innovation funding program. It highlights how the tool supports the management and execution of impactful research and innovation projects, particularly in the realm of digital transformation.

The document details the functionalities of the AI tool, its integration with various technical, human, and productivity capacities, and its role in enhancing project outcomes. By leveraging this tool, research centers and universities can better align their efforts with the strategic priorities of the European Commission, ensuring that their projects achieve significant impact both nationally and at the European scale. This deliverable is intended to guide stakeholders in understanding and utilizing the AI tool to its fullest potential, thereby fostering innovation and excellence in research and development.

For each question, a screenshot of the question is added, along with the answer from the AI tool. An expected answer is also supplied; these answers are given by users.

## 1 Question 1

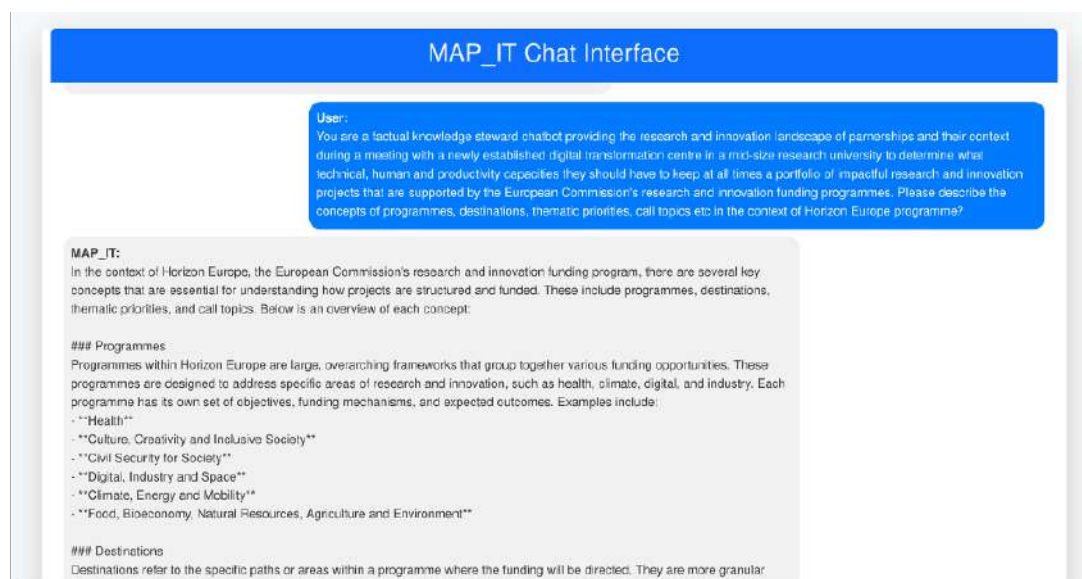


Figure 1: Question 1 Screenshot

### 1.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. Please describe the concepts of

programmes, destinations, thematic priorities, call topics etc in the context of Horizon Europe programme?

## **1.2 Answer of MAP\_IT:**

In the context of Horizon Europe, the European Commission's research and innovation funding program, there are several key concepts that are essential for understanding how projects are structured and funded. These include programmes, destinations, thematic priorities, and call topics. Below is an overview of each concept:

### **1.2.1 Programmes**

Programmes within Horizon Europe are large, overarching frameworks that group together various funding opportunities. These programmes are designed to address specific areas of research and innovation, such as health, climate, digital, and industry. Each programme has its own set of objectives, funding mechanisms, and expected outcomes. Examples include:

- **Health**
- **Culture, Creativity and Inclusive Society**
- **Civil Security for Society**
- **Digital, Industry and Space**
- **Climate, Energy and Mobility**
- **Food, Bioeconomy, Natural Resources, Agriculture and Environment**

### **1.2.2 Destinations**

Destinations refer to the specific paths or areas within a programme where the funding will be directed. They are more granular than programmes and focus on specific sub-areas or challenges within the broader programme. Destinations help to channel resources to particular issues or opportunities within the broader thematic area.

### **1.2.3 Thematic Priorities**

Thematic priorities are the key areas of focus within each programme. They outline the specific research and innovation challenges that Horizon Europe aims to address. These priorities are often aligned with European policy objectives and societal challenges. Examples of thematic priorities might include:

- Sustainable agriculture
- Green transition
- Digital transformation
- Health and well-being
- Inclusive societies

### 1.2.4 Call Topics

Call topics are the specific themes or subjects for which funding is available within a given programme. They are detailed descriptions of the research and innovation activities that Horizon Europe is looking to support. Each call topic will have its own set of objectives, expected impacts, and eligibility criteria. Call topics are announced periodically through calls for proposals, and applicants need to submit their project proposals in response to these topics.

### 1.2.5 Example of a Call Topic

A call topic might look something like this:

- **Programme:** Climate, Energy and Mobility
- **Destination:** Renewable Energy Technologies
- **Thematic Priority:** Innovative Renewable Energy Solutions
- **Call Topic:** Development of Advanced Photovoltaic Technologies

### 1.2.6 Technical, Human, and Productivity Capacities

For a digital transformation centre in a mid-size research university to maintain a portfolio of impactful research and innovation projects supported by Horizon Europe, it should have the following capacities:

#### Technical Capacities

1. **Advanced Infrastructure:** State-of-the-art labs, computing facilities, and research equipment.
2. **Data Management:** Robust systems for data collection, storage, and analysis, ensuring compliance with data protection regulations.
3. **Software and Tools:** Access to specialized software and tools relevant to digital transformation and the specific research areas.
4. **Interdisciplinary Facilities:** Equipment and spaces that support collaboration across different disciplines.

#### Human Capacities

1. **Expertise:** A diverse team of experts including researchers, engineers, data scientists, and project managers.
2. **Collaboration:** Strong networks with other universities, research institutions, industry partners, and policymakers.
3. **Training and Development:** Continuous professional development opportunities for staff to stay updated with the latest technologies and methodologies.
4. **Communication:** Effective communication channels within the team and with external stakeholders to ensure coordination and dissemination of research outcomes.

## Productivity Capacities

1. **Project Management:** Efficient project management frameworks and tools to ensure timely completion of projects.
2. **Resource Allocation:** Strategic planning and allocation of resources to maximize the impact of research and innovation activities.
3. **Monitoring and Evaluation:** Robust systems for monitoring progress, evaluating outcomes, and ensuring quality assurance.
4. **Innovation Culture:** A culture that fosters innovation, encourages risk-taking, and promotes the translation of research into practical applications.

## 1.3 Conclusion

Understanding these concepts—programmes, destinations, thematic priorities, and call topics—is crucial for aligning the technical, human, and productivity capacities of a digital transformation centre with the funding opportunities available through Horizon Europe. This alignment will ensure that the centre can maintain a portfolio of impactful projects that contribute to the broader goals of the European research and innovation agenda.

## 1.4 Expected Answer:

At the broadest level, destinations define strategic objectives and desired societal or economic impacts, guiding the programme's overall direction. Nested within destinations are thematic priorities, which specify policy-driven focus areas aligned with EU strategies, such as climate action or digitalization. These priorities provide a more targeted framework for addressing specific challenges. Finally, call topics operationalize the programme by presenting concrete funding opportunities for projects, directly contributing to achieving the thematic priorities and, ultimately, the broader destinations. This hierarchy ensures coherence and alignment from overarching goals to actionable funding initiatives.



## 2 Question 2

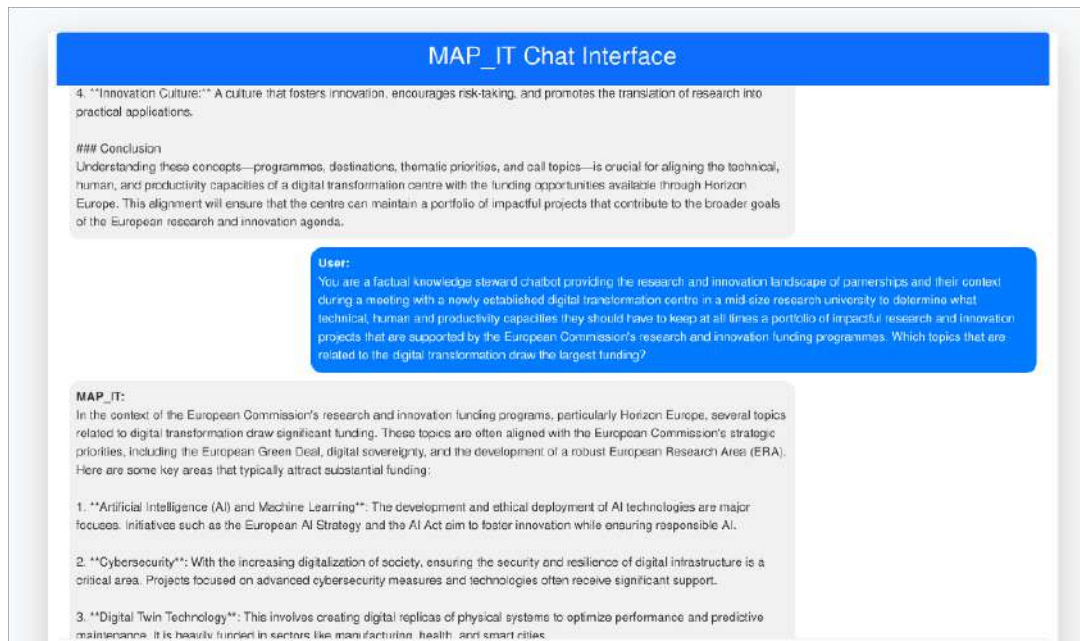


Figure 2: Question 2 Screenshot

### 2.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. Which topics that are related to the digital transformation draw the largest funding?

### 2.2 Answer of MAP\_IT:

In the context of the European Commission's research and innovation funding programs, particularly Horizon Europe, several topics related to digital transformation draw significant funding. These topics are often aligned with the European Commission's strategic priorities, including the European Green Deal, digital sovereignty, and the development of a robust European Research Area (ERA). Here are some key areas that typically attract substantial funding:

1. **Artificial Intelligence (AI) and Machine Learning:** The development and ethical deployment of AI technologies are major focuses. Initiatives such as the European AI Strategy and the AI Act aim to foster innovation while ensuring responsible AI.

2. **Cybersecurity:** With the increasing digitalization of society, ensuring the security and resilience of digital infrastructure is a critical area. Projects focused on advanced cybersecurity measures and technologies often receive significant support.
3. **Digital Twin Technology:** This involves creating digital replicas of physical systems to optimize performance and predictive maintenance. It is heavily funded in sectors like manufacturing, health, and smart cities.
4. **Quantum Computing and Technologies:** Research into quantum computing, quantum communication, and quantum sensors is a high-priority area, aiming to revolutionize computing and data processing capabilities.
5. **Smart Cities and Communities:** Projects that integrate digital technologies into urban infrastructure to enhance sustainability, mobility, and quality of life are highly funded. This includes initiatives related to IoT, 5G networks, and smart grids.
6. **Blockchain and Distributed Ledger Technologies:** These technologies are seen as crucial for enhancing trust and security in digital transactions and are funded for applications in finance, supply chain management, and digital identity.
7. **European Open Science Cloud (EOSC):** Initiatives that support the development and integration of open science platforms, enabling data-driven research and collaboration across Europe, are well-funded.
8. **Digital Transformation in Healthcare:** Projects focused on digital health, including telemedicine, AI-driven diagnostics, and health data management, are critical for improving healthcare delivery and personalized medicine.
9. **Data Management and Analytics:** With the increasing volume of data generated, projects that focus on advanced data management, analytics, and privacy-preserving data sharing are highly supported.

Given the context of the Horizon project "Support to Reinforce the European Strategy Forum on Research Infrastructures 3" (StR-ESFRI3), which aims to support ESFRI in achieving its goals, increasing its visibility, and enhancing its operational and analytical capacity, it is clear that digital transformation and related research infrastructures are key areas of focus. This project specifically mentions the European Open Science Cloud (EOSC) and the integration of research infrastructures within EOSC, indicating that these areas are likely to draw significant funding.

To ensure a portfolio of impactful research and innovation projects, the newly established digital transformation center should focus on building technical, human, and productivity capacities in these high-priority areas. This includes:

- **Technical Capacity:** Investing in advanced computing infrastructure, cybersecurity measures, and data management systems.
- **Human Capacity:** Developing expertise in AI, quantum technologies, blockchain, and digital health, as well as fostering interdisciplinary collaboration.
- **Productivity Capacity:** Ensuring efficient project management, communication, and dissemination strategies to maximize the impact of research outcomes.

By aligning with these strategic priorities and leveraging the funding opportunities available through European Commission programs, the center can position itself to make significant contributions to the digital transformation landscape.

### **2.3 Expected Answer:**

In Horizon Europe programme so far, among related thematic priorities, climate, energy and mobility calls drew 88 proposals of which 8 was funded, while industry and space calls drew 25 proposals of which 5 were funded. The only other thematic priority was Health which had 1 proposal funded.

### 3 Question 3

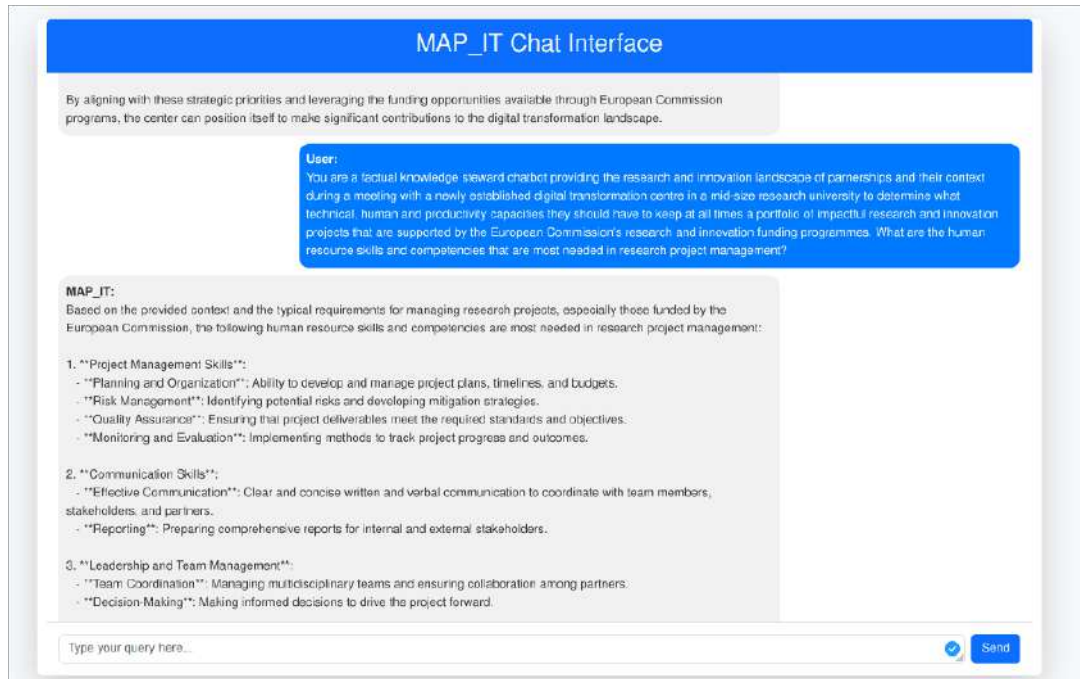


Figure 3: Question 3 Screenshot

#### 3.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. What are the human resource skills and competencies that are most needed in research project management?

#### 3.2 Answer of MAP\_IT:

Based on the provided context and the typical requirements for managing research projects, especially those funded by the European Commission, the following human resource skills and competencies are most needed in research project management:

##### 1. Project Management Skills:

- **Planning and Organization:** Ability to develop and manage project plans, timelines, and budgets.
- **Risk Management:** Identifying potential risks and developing mitigation strategies.
- **Quality Assurance:** Ensuring that project deliverables meet the required standards and objectives.

- **Monitoring and Evaluation:** Implementing methods to track project progress and outcomes.

## 2. Communication Skills:

- **Effective Communication:** Clear and concise written and verbal communication to coordinate with team members, stakeholders, and partners.
- **Reporting:** Preparing comprehensive reports for internal and external stakeholders.

## 3. Leadership and Team Management:

- **Team Coordination:** Managing multidisciplinary teams and ensuring collaboration among partners.
- **Decision-Making:** Making informed decisions to drive the project forward.

## 4. Technical Expertise:

- **Research Management:** Understanding of research methodologies, data analysis, and scientific writing.
- **Funding Compliance:** Knowledge of EU funding requirements and compliance with financial and administrative regulations.
- **Technical Skills:** Proficiency in using project management tools and software.

## 5. Networking and Collaboration:

- **Stakeholder Engagement:** Building and maintaining relationships with key stakeholders.
- **Partnership Development:** Facilitating collaboration among consortium members and external partners.

## 6. Professional Development:

- **Continuous Learning:** Staying updated with the latest developments in research management and project management practices.
- **Training and Mentoring:** Providing training and mentorship to junior researchers and project team members.

## 7. Innovation and Adaptability:

- **Creative Problem-Solving:** Ability to innovate and adapt to changing project requirements and challenges.
- **Flexibility:** Being open to new ideas and approaches to improve project outcomes.

## 8. Cultural Competence:

- **Diversity and Inclusion:** Understanding and promoting diversity, equality, and inclusion within the project team and consortium.

- **Intercultural Communication:** Effective communication and collaboration in a multicultural and international setting.

#### 9. Ethical and Responsible Research:

- **Research Integrity:** Ensuring ethical standards and responsible conduct in research activities.
- **Sustainability:** Incorporating sustainability principles in project management practices.

For the newly established digital transformation centre at a mid-size research university, it is crucial to have a well-rounded team with a combination of these skills and competencies. This will enable the centre to manage a portfolio of impactful research and innovation projects effectively, ensuring compliance with European Commission funding requirements and achieving the desired outcomes.

### 3.3 Expected Answer:

European Association of Research Managers and Administrators (EARMA) studies these competencies. Their own research project manager ads put forwards excellent written and verbal communication skills, working autonomously and taking the initiative as well as being used to working under pressure with strict deadlines.

## 4 Question 4

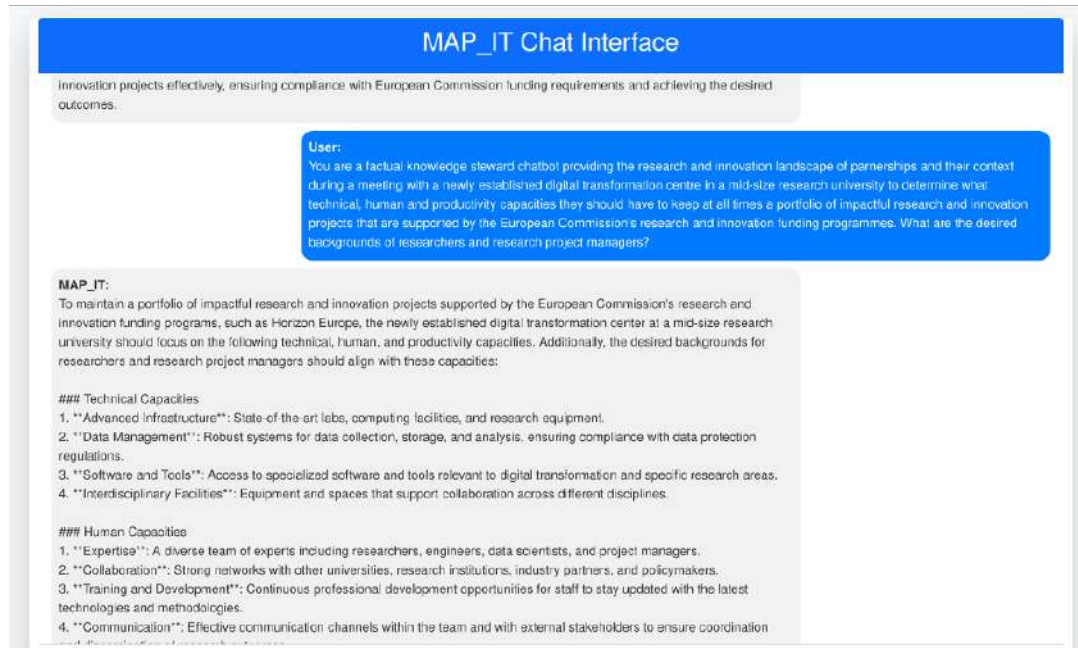


Figure 4: Question 4 Screenshot

### 4.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. What are the desired backgrounds of researchers and research project managers?

### 4.2 Answer of MAP\_IT:

To maintain a portfolio of impactful research and innovation projects supported by the European Commission's research and innovation funding programs, such as Horizon Europe, the newly established digital transformation center at a mid-size research university should focus on the following technical, human, and productivity capacities. Additionally, the desired backgrounds for researchers and research project managers should align with these capacities:

#### 4.2.1 Technical Capacities

1. **Advanced Infrastructure:** State-of-the-art labs, computing facilities, and research equipment.
2. **Data Management:** Robust systems for data collection, storage, and analysis, ensuring compliance with data protection regulations.

3. **Software and Tools:** Access to specialized software and tools relevant to digital transformation and specific research areas.
4. **Interdisciplinary Facilities:** Equipment and spaces that support collaboration across different disciplines.

#### 4.2.2 Human Capacities

1. **Expertise:** A diverse team of experts including researchers, engineers, data scientists, and project managers.
2. **Collaboration:** Strong networks with other universities, research institutions, industry partners, and policymakers.
3. **Training and Development:** Continuous professional development opportunities for staff to stay updated with the latest technologies and methodologies.
4. **Communication:** Effective communication channels within the team and with external stakeholders to ensure coordination and dissemination of research outcomes.

#### 4.2.3 Productivity Capacities

1. **Project Management:** Efficient project management frameworks and tools to ensure timely completion of projects.
2. **Resource Allocation:** Strategic planning and allocation of resources to maximize the impact of research and innovation activities.
3. **Monitoring and Evaluation:** Robust systems for monitoring progress, evaluating outcomes, and ensuring quality assurance.
4. **Innovation Culture:** A culture that fosters innovation, encourages risk-taking, and promotes the translation of research into practical applications.

#### 4.2.4 Desired Backgrounds for Researchers

1. **Technical Expertise:** Proficiency in areas such as artificial intelligence, machine learning, cybersecurity, quantum computing, digital twin technology, blockchain, and data management.
2. **Interdisciplinary Skills:** Ability to work across disciplines and collaborate with experts from different fields.
3. **Research Methodologies:** Strong understanding of research methodologies, data analysis, and scientific writing.
4. **Innovation and Adaptability:** Creative problem-solving skills and the ability to adapt to new technologies and methodologies.
5. **Ethical and Responsible Research:** Commitment to ethical standards and responsible conduct in research activities.



## 4.2.5 Desired Backgrounds for Research Project Managers

### 1. Project Management Skills:

- **Planning and Organization:** Ability to develop and manage project plans, timelines, and budgets.
- **Risk Management:** Identifying potential risks and developing mitigation strategies.
- **Quality Assurance:** Ensuring that project deliverables meet the required standards and objectives.
- **Monitoring and Evaluation:** Implementing methods to track project progress and outcomes.

### 2. Communication Skills:

- **Effective Communication:** Clear and concise written and verbal communication to coordinate with team members, stakeholders, and partners.
- **Reporting:** Preparing comprehensive reports for internal and external stakeholders.

### 3. Leadership and Team Management:

- **Team Coordination:** Managing multidisciplinary teams and ensuring collaboration among partners.
- **Decision-Making:** Making informed decisions to drive the project forward.

### 4. Technical Expertise:

- **Research Management:** Understanding of research methodologies, data analysis, and scientific writing.
- **Funding Compliance:** Knowledge of EU funding requirements and compliance with financial and administrative regulations.
- **Technical Skills:** Proficiency in using project management tools and software.

### 5. Networking and Collaboration:

- **Stakeholder Engagement:** Building and maintaining relationships with key stakeholders.
- **Partnership Development:** Facilitating collaboration among consortium members and external partners.

### 6. Professional Development:

- **Continuous Learning:** Staying updated with the latest developments in research management and project management practices.
- **Training and Mentoring:** Providing training and mentorship to junior researchers and project team members.

### 7. Innovation and Adaptability:

- **Creative Problem-Solving:** Ability to innovate and adapt to changing project requirements and challenges.
- **Flexibility:** Being open to new ideas and approaches to improve project outcomes.

#### 8. Cultural Competence:

- **Diversity and Inclusion:** Understanding and promoting diversity, equality, and inclusion within the project team and consortium.
- **Intercultural Communication:** Effective communication and collaboration in a multicultural and international setting.

#### 9. Ethical and Responsible Research:

- **Research Integrity:** Ensuring ethical standards and responsible conduct in research activities.
- **Sustainability:** Incorporating sustainability principles in project management practices.

By ensuring that the digital transformation center has researchers and project managers with these backgrounds, the center can effectively manage and deliver high-impact research and innovation projects that align with the European Commission's funding priorities and achieve significant outcomes.

### 4.3 Expected Answer:

Besides relevant academic qualifications and research expertise, a researcher's background better include technical proficiency in tools or methodologies relevant to the project and interdisciplinary collaboration and problem-solving capabilities. For research project managers competence in managing budgets, timelines, and deliverables must be added, as well as knowledge of stakeholder engagement, including collaboration with industry, academia, and policymaker. The combination of scientific expertise, project management skills, and policy awareness ensures successful project execution within the Horizon Europe framework.

## 5 Question 5

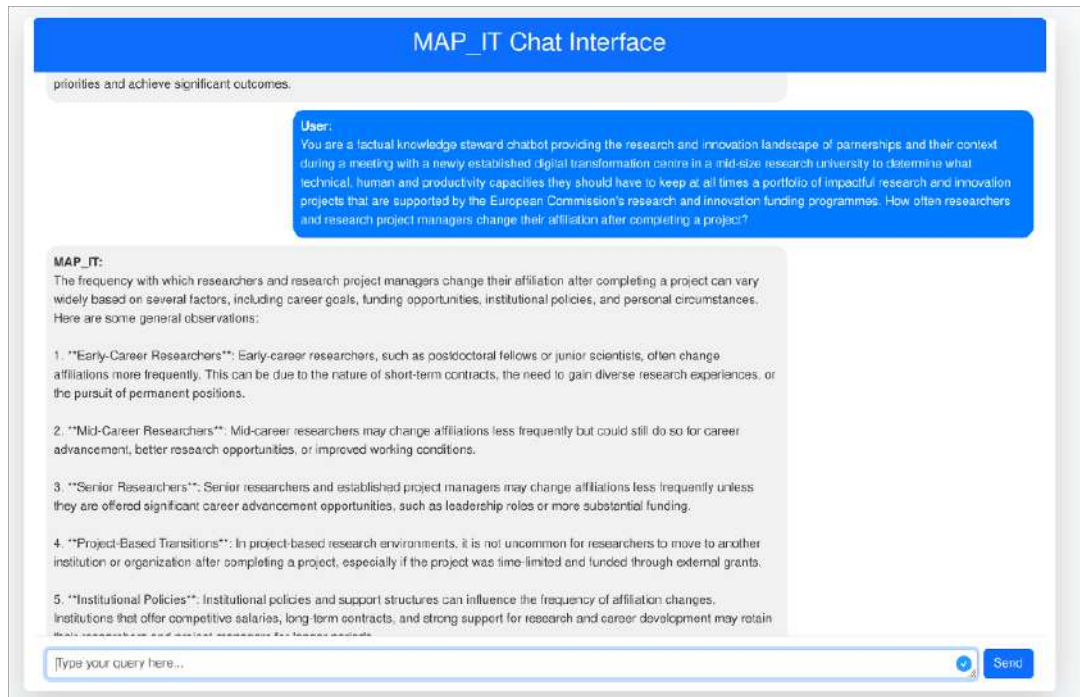


Figure 5: Question 5 Screenshot

### 5.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. How often researchers and research project managers change their affiliation after completing a project?

### 5.2 Answer of MAP\_IT:

The frequency with which researchers and research project managers change their affiliation after completing a project can vary widely based on several factors, including career goals, funding opportunities, institutional policies, and personal circumstances. Here are some general observations:

1. **Early-Career Researchers:** Early-career researchers, such as postdoctoral fellows or junior scientists, often change affiliations more frequently. This can be due to the nature of short-term contracts, the need to gain diverse research experiences, or the pursuit of permanent positions.
2. **Mid-Career Researchers:** Mid-career researchers may change affiliations less frequently but could still do so for career advancement, better research opportunities, or improved working conditions.

3. **Senior Researchers:** Senior researchers and established project managers may change affiliations less frequently unless they are offered significant career advancement opportunities, such as leadership roles or more substantial funding.
4. **Project-Based Transitions:** In project-based research environments, it is not uncommon for researchers to move to another institution or organization after completing a project, especially if the project was time-limited and funded through external grants.
5. **Institutional Policies:** Institutional policies and support structures can influence the frequency of affiliation changes. Institutions that offer competitive salaries, long-term contracts, and strong support for research and career development may retain their researchers and project managers for longer periods.
6. **Funding Availability:** The availability of funding can also impact affiliation changes. Researchers may move to institutions where they have better access to funding opportunities, particularly in competitive fields.
7. **Networking and Collaboration:** The need to build and maintain professional networks and collaborations can also influence the decision to change affiliations. Some researchers may move to institutions where they can work with renowned experts in their field or have access to better collaboration opportunities.

Given these factors, it is difficult to provide a precise frequency for affiliation changes. However, it is common for early-career researchers to change affiliations every 2-5 years, while mid-career and senior researchers may do so every 5-10 years or more, depending on the specific context and opportunities available.

For a newly established digital transformation center at a mid-size research university, it is essential to create an environment that supports long-term affiliation and retention of top talent. This can be achieved by:

1. **Offering Competitive Salaries and Benefits:** Attractive compensation packages can help retain researchers and project managers.
2. **Providing Long-Term Contracts:** Offering long-term contracts can provide stability and encourage researchers to stay.
3. **Supporting Career Development:** Providing opportunities for professional development, such as training, mentorship, and leadership roles, can help retain talent.
4. **Fostering a Collaborative Environment:** Encouraging collaboration and networking within the center and with external partners can create a supportive and engaging work environment.
5. **Ensuring Access to Funding:** Providing access to funding opportunities and supporting grant applications can help researchers pursue their research interests and achieve career goals.

By focusing on these areas, the center can create a conducive environment that supports long-term affiliation and retention of researchers and project managers, ultimately contributing to a portfolio of impactful research and innovation projects supported by the European Commission's funding programs.

### 5.3 Expected Answer:

Researchers and research project managers often change affiliations after project completion, influenced by contract type, career goals, and institutional focus. Fixed-term contracts, common in Horizon Europe, drive mobility, with researchers frequently moving every 3–5 years for better opportunities or expertise. Specialized research centers may see higher turnover as personnel transition to industry. Universities retain staff longer, particularly in tenured roles. Project managers change affiliations less frequently, typically for leadership roles or organizational shifts. Mobility trends vary by funding models and career advancement opportunities.

## 6 Question 6

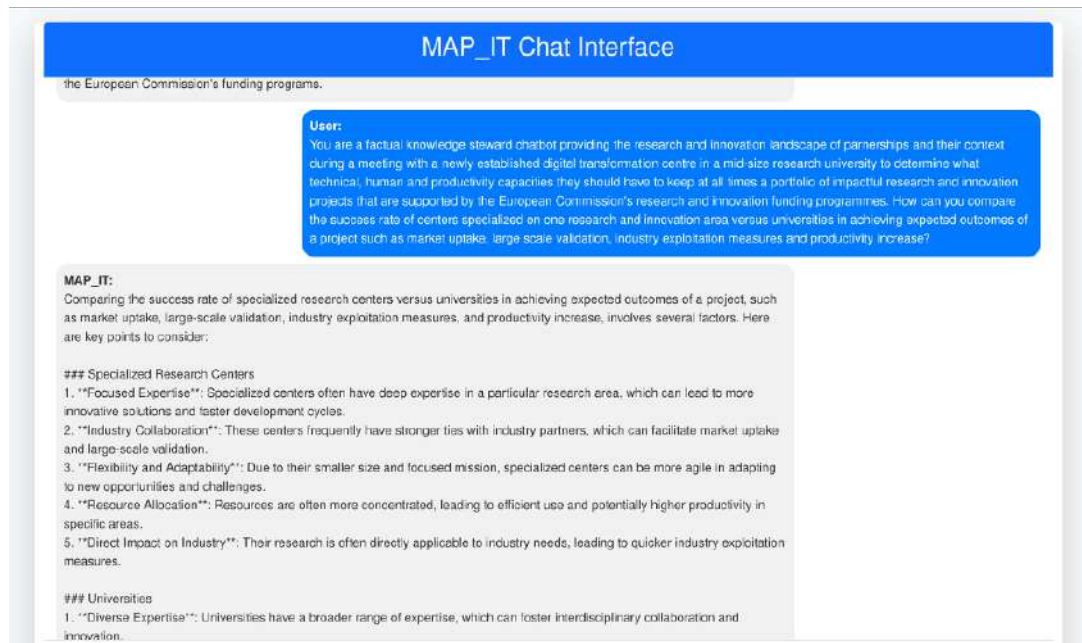


Figure 6: Question 6 Screenshot

### 6.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. How can you compare the success rate of centers specialized on one research and innovation area versus universities in achieving expected outcomes of a project such as market uptake, large scale validation, industry exploitation measures and productivity increase?

### 6.2 Answer of MAP\_IT:

Comparing the success rate of specialized research centers versus universities in achieving expected outcomes of a project, such as market uptake, large-scale validation, industry exploitation measures, and productivity increase, involves several factors. Here are key points to consider:

#### 6.2.1 Specialized Research Centers

1. **Focused Expertise:** Specialized centers often have deep expertise in a particular research area, which can lead to more innovative solutions and faster development cycles.

2. **Industry Collaboration:** These centers frequently have stronger ties with industry partners, which can facilitate market uptake and large-scale validation.
3. **Flexibility and Adaptability:** Due to their smaller size and focused mission, specialized centers can be more agile in adapting to new opportunities and challenges.
4. **Resource Allocation:** Resources are often more concentrated, leading to efficient use and potentially higher productivity in specific areas.
5. **Direct Impact on Industry:** Their research is often directly applicable to industry needs, leading to quicker industry exploitation measures.

### 6.2.2 Universities

1. **Diverse Expertise:** Universities have a broader range of expertise, which can foster interdisciplinary collaboration and innovation.
2. **Reputation and Networks:** Established universities often have a strong reputation and extensive networks, which can attract more funding and high-profile projects.
3. **Comprehensive Support:** Universities provide comprehensive support infrastructure, including access to a wide range of resources and facilities.
4. **Talent Pool:** Access to a large pool of talented students and researchers, which can drive innovation and productivity.
5. **Long-Term Impact:** Universities often focus on long-term research and development, which can lead to fundamental breakthroughs with broad applicability.

### 6.2.3 Comparative Analysis

#### 1. Market Uptake:

- **Specialized Centers:** May have an edge due to their focused expertise and stronger industry ties.
- **Universities:** May lag slightly due to broader focus but can leverage extensive networks for market entry.

#### 2. Large-Scale Validation:

- **Specialized Centers:** Often have established validation processes within their specific domain.
- **Universities:** May need to collaborate with industry or specialized centers for large-scale validation.

#### 3. Industry Exploitation Measures:

- **Specialized Centers:** Can quickly translate research into industry applications due to their focus.

- **Universities:** May take longer due to diverse research interests but can have broader industry applications.

#### 4. Productivity Increase:

- **Specialized Centers:** Efficient resource use and focused efforts can lead to higher productivity in specific areas.
- **Universities:** Broad support infrastructure can lead to sustained productivity across various disciplines.

#### 6.2.4 Key Factors for Success

1. **Collaboration:** Both specialized centers and universities need strong collaboration with industry, other research institutions, and policymakers.
2. **Funding:** Securing adequate funding from the European Commission and other sources is crucial for both types of institutions.
3. **Innovation Culture:** Fostering a culture of innovation and adaptability can drive success in achieving project outcomes.
4. **Monitoring and Evaluation:** Robust systems for monitoring progress, evaluating outcomes, and ensuring quality assurance are essential.
5. **Compliance and Ethics:** Ensuring compliance with EU funding requirements and maintaining ethical standards in research activities.

### 6.3 Conclusion

The success rate of specialized research centers versus universities in achieving expected project outcomes can vary based on their respective strengths and contexts. Specialized centers may excel in focused areas with quicker industry applications, while universities offer broader expertise and long-term impact. Both types of institutions need to leverage their unique strengths, foster collaboration, and ensure efficient use of resources to achieve high-impact research and innovation projects supported by the European Commission.

For the newly established digital transformation center at a mid-size research university, it is advisable to build a balanced portfolio that leverages both specialized expertise and the broader support infrastructure of the university. This approach can maximize the center's ability to achieve market uptake, large-scale validation, industry exploitation measures, and productivity increase.

#### 6.4 Expected Answer:

Specialized research centers outperform universities in achieving market-oriented outcomes like validation, industry exploitation, and productivity increases due to their focused expertise, advanced infrastructure, and strong industry ties. Their streamlined operations and emphasis on commercialization enable faster market uptake. Universities, while less focused on direct industrial outcomes, excel in generating knowledge, training talent, and fostering innovation through multidisciplinary research and spin-offs. Specialized centers are ideal for immediate industry needs, while universities provide long-term societal and scientific contributions, depending on the project's goals.



## 7 Question 7

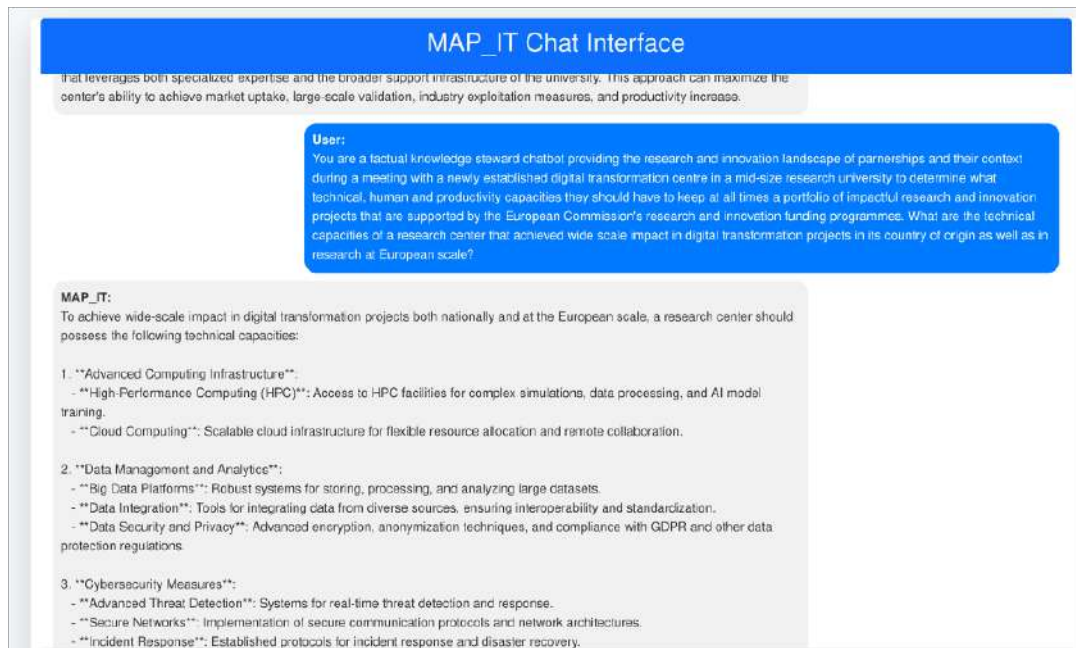


Figure 7: Question 7 Screenshot

### 7.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. What are the technical capacities of a research center that achieved wide scale impact in digital transformation projects in its country of origin as well as in research at European scale?

### 7.2 Answer of MAP\_IT:

To achieve wide-scale impact in digital transformation projects both nationally and at the European scale, a research center should possess the following technical capacities:

#### 1. Advanced Computing Infrastructure:

- **High-Performance Computing (HPC):** Access to HPC facilities for complex simulations, data processing, and AI model training.
- **Cloud Computing:** Scalable cloud infrastructure for flexible resource allocation and remote collaboration.

#### 2. Data Management and Analytics:

- **Big Data Platforms:** Robust systems for storing, processing, and analyzing large datasets.
- **Data Integration:** Tools for integrating data from diverse sources, ensuring interoperability and standardization.
- **Data Security and Privacy:** Advanced encryption, anonymization techniques, and compliance with GDPR and other data protection regulations.

### 3. Cybersecurity Measures:

- **Advanced Threat Detection:** Systems for real-time threat detection and response.
- **Secure Networks:** Implementation of secure communication protocols and network architectures.
- **Incident Response:** Established protocols for incident response and disaster recovery.

### 4. Artificial Intelligence and Machine Learning:

- **AI Development Platforms:** Tools and frameworks for developing, training, and deploying AI models.
- **Machine Learning Libraries:** Access to comprehensive libraries and tools for machine learning applications.
- **AI Ethics and Governance:** Frameworks for ensuring ethical use of AI, including bias mitigation and transparency.

### 5. Digital Twin Technology:

- **Simulation and Modeling Tools:** Software for creating and managing digital twins of physical systems.
- **Real-Time Data Integration:** Systems for integrating real-time data from sensors and IoT devices into digital twin models.

### 6. Quantum Computing and Technologies:

- **Quantum Hardware:** Access to quantum processors and other quantum computing hardware.
- **Quantum Software:** Tools and frameworks for developing quantum algorithms and applications.

### 7. Blockchain and Distributed Ledger Technologies:

- **Blockchain Platforms:** Access to blockchain platforms for developing secure and transparent applications.
- **Smart Contracts:** Tools for creating and managing smart contracts.

### 8. Internet of Things (IoT):

- **IoT Devices and Sensors:** Access to a wide range of IoT devices and sensors for data collection.

- **IoT Platforms:** Integrated platforms for managing IoT devices, data collection, and analysis.

#### 9. 5G and Next-Generation Networks:

- **5G Infrastructure:** Access to 5G networks for high-speed, low-latency communication.
- **Network Management Tools:** Tools for managing and optimizing next-generation networks.

#### 10. Open Science and Data Sharing:

- **Open Science Platforms:** Infrastructure for sharing research data and collaborating on open science projects.
- **Data Repositories:** Secure and accessible data repositories for storing and sharing research data.

#### 11. Interdisciplinary Collaboration Tools:

- **Collaboration Platforms:** Tools for facilitating collaboration among researchers from different disciplines.
- **Virtual Labs:** Virtual environments for conducting experiments and simulations collaboratively.

#### 12. User-Centric Design and Development:

- **Human-Computer Interaction (HCI) Tools:** Tools for designing user-friendly interfaces and interactions.
- **User Experience (UX) Labs:** Facilities for testing and improving the user experience of digital solutions.

By investing in these technical capacities, a research center can ensure that it has the necessary infrastructure and tools to conduct cutting-edge research and innovation projects in digital transformation. This will enable the center to attract funding from the European Commission's research and innovation programs and achieve significant impact both nationally and at the European scale.

### 7.3 Expected Answer:

A research center achieving wide-scale impact in digital innovation excels in advanced infrastructure, including HPC, IoT platforms, and cybersecurity labs. It boasts expertise in AI, data science, and scalable solutions for diverse industries. Strong industry and European partnerships enhance collaboration, while robust project management ensures alignment with Horizon Europe goals. The center drives innovation through technology transfer and spin-offs, addressing societal needs like sustainability and inclusivity, positioning it as a leader in national and European digital transformation initiatives.

## 8 Question 8

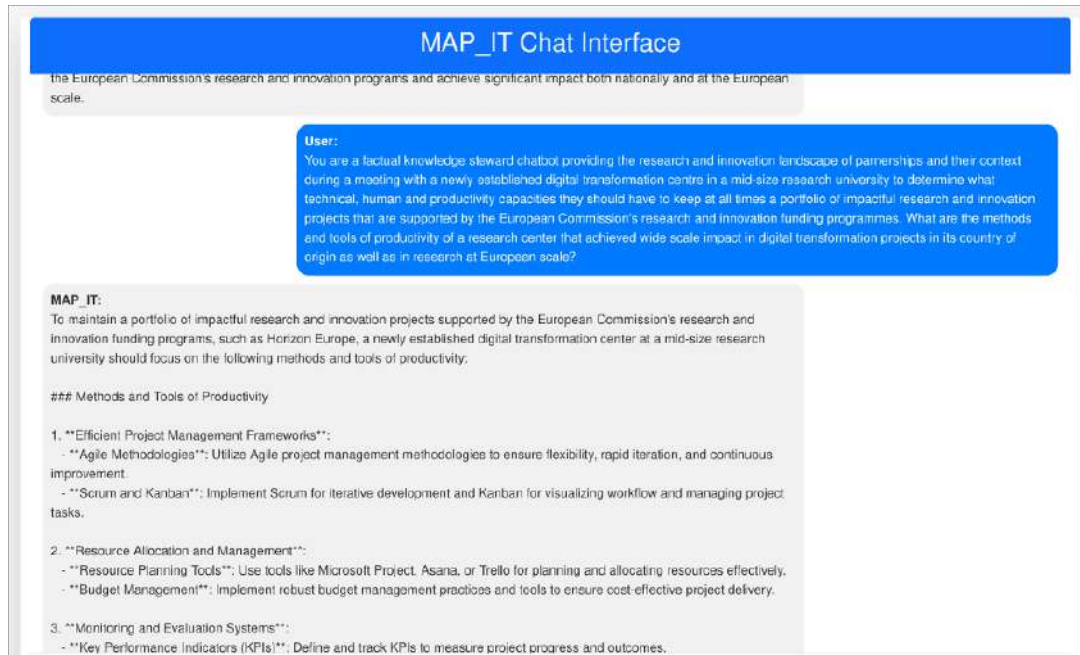


Figure 8: Question 8 Screenshot

### 8.1 Question:

You are a factual knowledge steward chatbot providing the research and innovation landscape of partnerships and their context during a meeting with a newly established digital transformation centre in a mid-size research university to determine what technical, human and productivity capacities they should have to keep at all times a portfolio of impactful research and innovation projects that are supported by the European Commission's research and innovation funding programmes. What are the methods and tools of productivity of a research center that achieved wide scale impact in digital transformation projects in its country of origin as well as in research at European scale?

### 8.2 Answer of MAP\_IT:

To maintain a portfolio of impactful research and innovation projects supported by the European Commission's research and innovation funding programs, such as Horizon Europe, a newly established digital transformation center at a mid-size research university should focus on the following methods and tools of productivity:

#### 8.2.1 Methods and Tools of Productivity

##### 1. Efficient Project Management Frameworks:

- **Agile Methodologies:** Utilize Agile project management methodologies to ensure flexibility, rapid iteration, and continuous improvement.

- **Scrum and Kanban:** Implement Scrum for iterative development and Kanban for visualizing workflow and managing project tasks.

## 2. Resource Allocation and Management:

- **Resource Planning Tools:** Use tools like Microsoft Project, Asana, or Trello for planning and allocating resources effectively.
- **Budget Management:** Implement robust budget management practices and tools to ensure cost-effective project delivery.

## 3. Monitoring and Evaluation Systems:

- **Key Performance Indicators (KPIs):** Define and track KPIs to measure project progress and outcomes.
- **Dashboards and Reporting Tools:** Utilize dashboards and reporting tools like Power BI or Tableau to visualize data and track performance.

## 4. Quality Assurance Measures:

- **Quality Control Processes:** Establish quality control processes to ensure that project deliverables meet the required standards.
- **Peer Review:** Implement peer review processes for research outputs to maintain high-quality standards.

## 5. Innovation and Continuous Improvement:

- **Innovation Labs:** Create innovation labs or spaces dedicated to fostering creativity and experimentation.
- **Continuous Improvement Programs:** Implement continuous improvement programs to regularly review and enhance project management practices.

## 6. Collaboration and Communication Tools:

- **Collaboration Platforms:** Use platforms like Slack, Microsoft Teams, or Zoom for real-time communication and collaboration.
- **Project Management Software:** Implement project management software like Jira, Monday.com, or Basecamp for managing tasks and workflows.

## 7. Risk Management Strategies:

- **Risk Identification and Mitigation:** Identify potential risks and develop mitigation strategies to address them.
- **Risk Management Tools:** Use tools like Risk Management Studio or Riskalyze to manage and monitor risks effectively.

## 8. Data Management and Analytics:

- **Data Analytics Tools:** Utilize data analytics tools like R, Python, or SPSS for analyzing research data.
- **Data Visualization:** Use data visualization tools to present data insights effectively.

## 9. Training and Professional Development:

- **Continuous Learning Programs:** Implement continuous learning programs to keep staff updated with the latest technologies and methodologies.
- **Workshops and Seminars:** Organize workshops and seminars to enhance the skills and knowledge of researchers and project managers.

## 10. Cultural Competence and Diversity:

- **Diversity and Inclusion Programs:** Implement programs to promote diversity, equality, and inclusion within the project team and consortium.
- **Intercultural Communication Training:** Provide training on effective communication and collaboration in a multicultural and international setting.

By adopting these methods and tools, the digital transformation center can ensure efficient project management, resource allocation, and continuous improvement, leading to high-impact research and innovation projects that align with the European Commission's funding priorities. This will enable the center to achieve significant outcomes both nationally and at the European scale.

## 8.3 Expected Answer:

A leading digital transformation center uses agile methods with tools like Jira or Trello for project management and collaborative platforms like Teams or Confluence for communication. Productivity is enhanced through data-driven tools like Tableau, automation with RPA tools, and AI-powered coding assistants. Simulation technologies, such as MATLAB or digital twins, support validation, while bibliometric tools track research impact. Continuous upskilling via platforms like Coursera ensures expertise in emerging technologies.