MASARYK
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FACULTY OF INFORMATICS

# Integration of AI tools in project management of a research laboratory

Master's Thesis

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Brno, Fall 2025

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Brno, Fall 2025

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# Declaration

Hereby I declare that this paper is my original authorial work, which I have worked out on my own. All sources, references, and literature used or excerpted during elaboration of this work are properly cited and listed in complete reference to the due source.

During the preparation of this thesis, I used artificial intelligence tools, specifically ChatGPT to improve language, stylistic adjustments and structural suggestions and Microsoft Copilot for generating and testing template prompts used in workflow design. All AI-generated outputs were reviewed, verified, and fully adapted by me. I declare that I used these tools in accordance with the principles of academic integrity and I take full responsibility for the correctness of the final text.

Miroslava Vanátová

**Advisor:** Ing. Leonard Walletzký, Ph.D.

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# Abstract

The thesis examines the application of Artificial Intelligence (AI) to project management processes within an academic research environment. With the Service Systems Laboratory (SeSLab) at the Faculty of Informatics, Masaryk University, the thesis analyzes the potential of AI to help coordinate, streamline administrative processes, and improve visibility of daily management activities.

The evaluation of existing workflows at SeSLab identified that it relied heavily on the manual collection of information, repetitive communication and informal semester routines. Based on evaluation and prioritization developed in collaboration with the laboratory leadership, several AI-driven improvements were developed and deployed within the Microsoft 365 ecosystem. These improvements strengthen consultation preparation, provide more accessible organizational knowledge to students, and introduce automation into routine semester activities.

The pilot testing shows that AI could help significantly decrease the administrative workload, decrease the time spent preparing meetings, and improve the consistency of coordination activities. Although the usefulness of these solutions is limited by the quality of the data, user behaviour, and licensing limits, the findings indicate that AI solutions can positively influence the quality of the project management practices within research groups and provide a usable model to other academic institutions.



# Keywords

project management, academic research teams, artificial intelligence, workflow automation, Microsoft 365 environment, process optimization, SeSLab …

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# Introduction

The expanding complexity of academic research presents increasing demand for effective organization, open communication and systematic knowledge management. Despite the availability of digital ecosystems to manage these activities, like Microsoft 365, academic workflows tend to be very manual and reliant on personal habits. These restrictions affect productivity, sustainability of management and quality of internal organization.

The concept of artificial intelligence (AI) has recently become a key support tool for organizational and research oriented work. Integrated into popular platforms, it allows automation of repetitive procedures, summarization of distributed data and improved decision support. Although these capabilities are currently being utilized in industry, their opportunities in academic research teams have not been fully explored. This raises the question of how AI solutions can be added into their workflows in a meaningful way without adding complexity that may weigh them down.

This thesis is focused on exploring the way AI-based technologies could optimize the project management in the context of a research laboratory, in this case, the Service Systems Laboratory (SeSLab) at the Faculty of Informatics of Masaryk University. The work maps existing processes of the laboratory, identifies shortcomings through analysis of problems and bottlenecks and examines coordination patterns, communication habits and tool usage. Following this evaluation and co-created prioritization with laboratory leadership, multiple AI-related improvements were designed, implemented and pilot tested in the Microsoft 365 environment.

The thesis initially presents the basic principles of project management, the characteristics of academic and research teams, and the new role of artificial intelligence in project management. Based on this base, it next analyzes the current situation of SeSLab, mapping its workflows, and identifying the biggest challenges. The following chapters introduce the design and implementation and conclude with a discussion of their effects and practical usefulness of AI improvements in the SeSLab environment.

# 1 Foundations of project and process management

## 1.1 Project management

**Project management** can be described as a well organized set of activities with the intent to complete specific project goals within set time, resources and quality. It includes planning, organizing, coordinating and controlling all activities needed to achieve a certain result. Simply, it is the integration of knowledge, skills, methods, tools and technologies into project work to ensure that the available resources can be utilized effectively in line with expectations of the stakeholders. [1]

The key features that define successful project management include the ability to lead a project to its goals within agreed time and cost, as well as to deliver the necessary technical standards and efficiently utilize the available resources. [2]

### 1.1.1 Project

The PMBOK ® Guide [3] defines **project** as a temporary activity that is undertaken in order to produce a unique item, service or outcome. Due to its temporal characteristic, each project has known start and finish point and can exist on its own or can be a part of a larger program or portfolio. [3]

A project may also be described as a planned collection of actions that are arranged to meet a specific goal. Unlike everyday work of operations, it requires a certain set of tasks, conditions and resources that are planned to be used in this situation. The projects involve coordinated effort across multiple activities and work within boundaries that define how the intended outcome is to be presented. [1]

### 1.1.2 Decision making and prioritization methods

Critical component of project management is decision making because organizations have to constantly decide what activities or what needs to be done at a given time when there are limited resources. This process is facilitated through structured prioritization techniques that

establish evaluation criteria and systematic steps in comparison such as multicriteria scoring, categorization or cost-benefit analysis to make comparison between alternatives in a transparent and repeatable manner. Such approaches contribute to making sure that the decisions of prioritization are based on the strategic purposes and consider both qualitative and quantitative criteria. [2, 3]

Selection and prioritization of projects is usually based on a blend of feasibility evaluations alongside benefit analysis and rating paradigms. Scaling models, checklist assessments or weighted scoring matrices enable the management to evaluate alternatives in terms of anticipated benefits, technical needs, risks, market potential or probability of success. These approaches allow more informed and consistent project management decisions to be made because they improve comparability between options and reduce subjectivity. [2, 3]

### Checklist rating system

**Checklist rating system** is a simple qualitative technique where project or alternative is rated in terms of a predetermined list of criteria. The criteria are listed one at a time and option considered is indicated with symbols or simple numerical designations showing whether or to what degree the criteria is met. The technique is not based on weighting, cumulative scoring, but rather it is a summary of strengths and gasp in the selected criteria. Due to its simplicity, the checklist is frequently used as initial screening tool to identify whether an option fulfills the key organizational requirements before proceeding to a deeper level of analysis. [2]

### MoSCoW method

The MoSCoW approach categorizes items into four levels of priority and is a simple prioritization schema of requirements, features or any other element of a project. All categories represent a different level of needs:

- **Must have** - necessities without which output cannot be considered viable,

- **Should have** - valuable items that bring a lot of value but are not strictly critical,
- **Could have** - more optional extra items that may be added when time and resources are available,
- **Won't have** - items intentionally excluded from current scope.

This kind of categorization allows teams to rapidly differentiate the essential, important, optional and out of scope items offering a clear framework on how to prioritize work. [3, 4]

### Weighted scoring analysis

Weighted scoring analysis is structured multicriteria technique to evaluate and rank alternatives according to a set of established criteria of evaluation. All criteria have defined weight which is used to indicate the relative importance of the criteria and every rated option has an allocated score in a set range. In the given scoring tables, the weights are in percentages, summing to 100 percent and the scale of scores begins with 1 (unacceptable) up to 10 (excellent).[2, 3]

Taking each criterion one after another, a weighted score is formulated:

$$Weighted\ Score_i = Score_i \times Weight_i$$

Overall evaluation of an choice is by derived by the summation of all weighted scores:

$$Total\ Weighted\ Score = \sum_{i=1}^{n} (Score_i \times Weight_i)$$

The end result is one prioritization value that allows direct comparison of alternatives. This approach enhances transparency and minimizes subjective decisions by making the input of every criterion visible. It is especially useful in situations where decisions need to compromise across several aspects like, feasibility, benefits, risks or technical constraints. [2]

Weighted scoring is popularly applied in a practical setting to facilitate prioritization among project proposals, backlog items or

feature sets, etc. Industry frameworks highlight that predetermined weights and collective scoring regulations assist groups to agree on priorities, to defend their judgments and frequently assess the same set of options consistently. [4]

## 1.2 Process management

Project management may be considered as a set of interacting processes under the influence of which project work is accomplished. Despite the uniqueness of every project, its activities are organized in established procedures, methods and rules that organize the way individual tasks are planned, coordinated and controlled. The process based perspective shows that the successful delivery of a project is determined by the uniform implementation of these management processes. [1]

**Process management** is the act of coordination and continuous improvement of organizational activity. In every organization work is executed by actions that follow each other to create process, each with certain inputs, outputs and resource needs. Since the processes are defining the direction of workflow between one individual and another and how value can be provided, there is a need to design, structure and proactively manage the processes to prevent the state of disorganization. Effective process management then involves the choice and arrangement of people and technologies, determination of how activities are to be organized within the organizational structure, coordination of daily activities and handling of unusual circumstances. The ongoing improvement of processes is also a key factor, which depends on the participation and experience of the individuals who execute it. [5]

### 1.2.1 Process

**A process** can be described as a systematic arrangement of work or sequence of activities that work together in producing a particular final product. The meaning of the term process can have different meanings when used by different individuals, whether it is limited procedural stages in order to complete a certain task or wide cate-

gories of similar processes covering an entire field of work. In contrast, general organizational processes are usually repeatable, continuous, and focused on the preservation or improvement of existing operations. These differences are essential to understand because project management is a combination of a number of process groups that are used to facilitate the start, planning, implementation, monitoring and project completion. [6]

### 1.2.2 Methods and principles of process management

Successful process based work is supposed to be well defined, organized and implemented. When work is not seen as independent functions but rather as essential processes that can be measured, assessed and redesigned throughout, then substantial positive changes in performance can be attained. A process based approach allows organizations to achieve greater levels of quality, flexibility and service by making sure the activities follow a sequence of determined actions in coordinated manner. Management of processes in this manner is meant to improve on the value being delivered to the customer, and make sure that the operational performance is stable and reliable. [7]

Different organizations have different levels of success in managing processes. The proper placement of technologies, human beings, and roles to ensure that work proceeds in a coherent, predictable way is a key to process management. It includes aligning lives on a day-by-day basis, maintaining the smoothness of the working process and constantly improving efficiency by the initiative and the experience of the individuals who undertake the working process. [5]

#### Capability Maturity Model

The level of maturity of process management can be described with the help of models like **Capability Maturity Model** (**CMM**) which identifies a variety of levels of process discipline:

- **Level 0 - non-existent:** processes are chaotic and uncontrolled.
- **Level 1 - initial:** processes are done on an ad hoc basis.
- **Level 2 - repeatable:** there are basic routines and som form of discipline.

- **Level 3 - defined:** processes have formal written documentation and standardization.
- **Level 4 - managed:** processes are managed and their performance is tracked using measures (e.g. KPIs).
- **Level 5 - optimized:** there is ongoing process improvement and systematic introduction of innovations. [5]

**Deming cycle**

One of the most popular approaches to continuous process improvement is the **PDCA** (Plan-Do-Check-Act) cycle, also called **Deming cycle**. It can be defined as cyclic process consisting of four steps or stages that will lead to the introduction, evaluation and implementation of process improvements within an organization. The cycle relies on the fact that the products of one activity become the inputs of the next activity, which establishes a continuous circle of refinement and learning. [1, 8]

The PDCA cycle consists of 4 stages:

- **Plan** - determine the goal of intended improvement an set the change plan.
- **Do** - apply the planned activities.
- **Check** - compare results to the initial plan
- **Act** - modify the plan or implementation according to findings and introduce improvements to the standard practice.

PDCA is one of the key principles of management that provides structured quality improvements and encourages continuous innovation in processes.[1, 8]

### 1.2.3 Process modeling

Process modeling is the image of business processes to have a knowledge of how activities, decisions, responsibilities as well as information flows are structured within working process. It gives an organization a common language to analyze and optimize their processes and

achieved overall end-to-end visibility on their current condition. Process models are used to create a fundamental foundation of process improvement and automation programs by recording process steps, identifying key metrics and exposing possible inefficiencies.[9]

### Business Process Model and Notation

Business Process Model and Notation (BPMN) is global standard of modeling business processes in a clear, consistent and universally understandable graphical representation. It offers a standardized notation that removes confusion in the description of processes and allows organizations to see the processes in a common language that can be read and understood both by technical and non-technical stakeholders. BPMN has been initially introduced by the Business Process Management Initiative and currently is maintained by the Object Management Group, which provides it with compability, extensibility and applicability to modern process-driven organizations. [10, 11]

BPMN relies on a library of graphical elements that are standardized and enables visualization of the processes in a clear and undisputed style. These components create a shared image language used to describe the way activities, decisions and information flows are structured in a workflow.

The main categories of BPMN diagram elements include:

1. **Events**
    - **Start** - the external or internal stimulus that triggers the process,
    - **Intermediate** - represent events which happen as the process is being executed,
    - **End** - denote the completion of the process or one of its branches.
2. **Activities**
    - **Tasks** - represents elementary, undividable units of work,
    - **Subprocesses** - complex tasks that may be broken down into a lower inner flow.

3. **Gateways**
   - **Exclusive (XOR)** - there is only one outgoing path considered,
   - **Parallel (AND)** - the outgoing paths are performed in parallel,
   - **Inclusive (OR)** - path can be followed in one or more ways depending on conditions.
4. **Flow elements**
   - **Sequence** - establishes the logical flow inside a process and indicates the sequence of actions,
   - **Message** - is communication or data flow between other parties (e.g. roles, departments, systems) or between separate pools.
5. **Pools and lanes**
   - **Pool** - represent independent player like an external party or organization,
   - **Lanes** - is divided into roles, departments or units.
6. **Data object and artifacts**
   - **Data objects** - inputs and outputs of material or information that are involved in activity,
   - **Annotations** - offer an explanation or clarification in the diagram,
   - **Groups** - visually group related activities and do not influence the logic in the process.[10, 11]

# 2 Project management in academic and research organizations

## 2.1 Characteristics of academic and research organizations

Academic and research organizations are typified by decentralized power and a high level of professional autonomy. Research and teaching are core activities and work of experts is hard to standardize, which restricts the applicability of the form of managerial control and coordinates more on professional standards and mutual adaptation than to strictly defined procedures.[12]

Research institutions have several goals at the same time and these are knowledge creation, education and contribution to society. These institutions tend to work within restrictive social responsibility and budget, which causes gradual transformation of organizational processes instead of organized restructuring of the organization or strict control systems.[13]

Universities are becoming more and more integrated into larger innovation systems that connect academia to industry and government. Such an extended role comes along with greater coordination demands, since there are external stakeholders, collaborative projects and funding mechanisms based on a project. [14]

The project oriented character of academic work is also reinforced by the relevance of entrepreneurial behaviour. Although research organizations are encouraged to compete on funding level and prove impact, their inner structure is still loosely tied, which gives research groups much space to organize and manage their works. [15]

## 2.2 Specifics of small, interdisciplinary and knowledge-intensive teams

Small research teams consist of highly specialized people with knowledge-intensive work that is not easy to formalize. The creation of value relies mostly on professional expertise, experience and ability to solve a problem, rather than on standardized process, which results in coordina-

tion through informal communication and mutual understanding.[16, 17]

Interdisciplinary collaboration also makes coordination more challenging, since disciplinary differences, terminology and techniques involve extra effort to synchronize objectives and achieve shared understanding. These differences increase the cost of coordination and expose research projects to misunderstandings and delays. [18]

Research teams typically work in a distributed or semi-distributed environment, where workers are physically separated, inhibiting casual communication and breaking down work flows. The absence of the common context complicates coordination and volume of explicit coordination practices. [17]

Management in small research teams is more likely to have lightweight and adaptive practices that still maintain professional autonomy but offer enough structure to allow interdisciplinary collaboration. [19]

## 2.3 Common organizational problems in research teams

The problem of coordination and communication in research teams is often caused by a fragmented work environment and lack of shared context. The lack of collocation among team members minimizes informal communication and makes the exchange of information less spontaneous leading to more possible misunderstandings, redundant work and delays. Lack of shared physical space restricts the possibility of ongoing clarification and synchronizing ongoing activities. [20]

The project based work environment tends to be influenced by issues about uneven planning, undefined roles and ineffective communication system. The presence of these problems is enhanced when project operations are dominated by individualism instead of standardized coordination system. This can lead to inefficiencies within teams, rework and problems associated with the ability to maintain a consistent view of project progress. [21]

According to traditional project management methodologies, communication breakdowns, lack of coordination and absence of standardized processes are common sources of project inefficiency. Once project information is distributed across several channels and there is

no clearly structured responsibility, the managerial oversight becomes hard and the decision making process becomes slow. Such issues are likely to be repeated in situations where project control measures are not implemented uniformly. [22]

# 3 Artificial intelligence in project management

## 3.1 Overview of AI capabilities in project management

Artificial intelligence in project management is a collection of computing methods to assist the activities of projects with data analysis, prediction and organized decision support. The positioning of AI is mainly to complement the current project management practices by improving analytical functions and not to substitute human decision making processes. [23, 24]

The fundamental AI functions that have been revealed in project management are cost estimation, schedule forecasting, risk assessment, and performance monitoring. Most often these capabilities are realized by machine learning, neural networks, fuzzy logic and hybrid models to enhance the accuracy of prediction with regard to historic and project data. [23, 25]

Besides predictive functions, AI also has the capability of pattern recognition and optimization methods to facilitate resource allocation, scheduling and identifying deviations or new risks during project execution. [25]

AI information processing capabilities are based on natural language processing methods to categorize, isolate and summarize project records, helping to enhance the accessibility and integration of project related information. [24]

In the literature, AI potential is considered in the context of human-AI cooperation model where AI assists with the analysis and data-driven tasks with human judgment and leadership remaining human. [23]

## 3.2 Expected benefits of AI tools

Use of AI tools helps in increasing efficiency in project management through performing repetitive and time consuming tasks like scheduling, reporting and tracking of progress. This saves time of manual

work and enables the project managers to concentrate on coordination and decision making instead of on operational management. [26]

AI enhances project control and planning by predicting using real-time and historical data. These functions facilitate more accurate estimation of the timelines, costs, and resources and allow discovering risks and deviations in advance. [26]

AI can help in improving communication and collaboration through information handling, summarization and updating information in real time. The effects of this include improved stakeholder information and standardized communication of the project. [26]

Generative AI adopts productivity as it is helpful in content generation, including reports, meeting summaries, project template and documentation. These tools speed up normal knowledge work but keep a human decision process. [27]

AI can support the decision making process and help to enhance human judgment by providing insights based on data. Instead of exchanging project managers, generative AI can be used as a supportive technology that enhances analytical skills and strategic thinking. [27]

## 3.3 Risks and limitations of AI

One of the most notable weaknesses of AI in project management is that it is not completely independent of the availability and quality of project information. AI-based tools need adequate historical and structured data to generate valid inputs, and their performance decreases in projects with highly fragmented, incomplete or inconsistent data. [23, 24]

Not all areas of project management have equal application of AI capability. They are primarily used in quantitative areas, including scheduling, estimation of costs and risk analysis, whereas areas that need contextual knowledge and human interactions are hard to justify with support of AI-based solutions. [23]

The other weakness is that AI models are not easily transferable to new project scenarios. AI solutions can be trained or configured to a particular type and data that limit scalability and necessitate reconfiguration to new contexts. [24]

Complex AI models also imply lower levels of transparency and interpretability of the results. This may reduce confidence in AI-assisted advice and decrease its usefulness in project decision making. [23, 10]

## 3.4 Conditions for successful implementation of AI

Effective AI use in project management needs to have access to formal, dependable project data throughout project phases. AI analyses and predictions cannot deliver any meaningful support without adequate and regular data inputs. [25, 24]

The use of AI can work in areas of quantitative project management, including scheduling, cost estimation, and risk analysis. Application of AI in fields where measurement is low or human judgment is intense diminishes the usefulness in practice. [25]

The adaptation of AI models to particular project is another requirement. To prevent the generation of incorrect output, AI tools frequently need to be calibrated or retrained to resemble the characteristics of the project and the organizations where they are used. [24]

The use of AI also requires human control, and integration into underlying decision making processes, with AI outputs reinforced. but not eliminated by managerial judgment. [25, 24]

# 4 Analysis of the current state of SeSLab

## 4.1 Characteristic of the SeSLab

Masaryk University was founded in 1919 and is one of the leading universities in the Czech Republic. It currently consists of ten faculties including the Faculties of Informatics, Science, or Law, and operates several research and service facilities. Over the years, the university has maintained a strong academic reputation and has consistently been ranked among the top universities worldwide. [28]

The Faculty of Informatics, founded in 1994, is one of the ten faculties that form the Masaryk University. It offers various interesting study programs in computer science and related fields, welcoming over 2 000 students from both the Czech Republic and abroad. The faculty employs around 300 staff members, including 16 professors and 31 associate professors. Its success is reflected by around 7 500 alumni, 30 industrial partners, and numerous organized IT colloquia, events, or conferences.The faculty runs over twenty laboratories where researchers often work together with companies from the Science and Technology Park. Research groups are mainly interested in visual computing, formal methods and theory, artificial intelligence, data management, security and embedded systems, large scale distributed systems and network or enterprise systems and services. [29, 30, 31]

Within the research area Enterprise Systems and Services, the Laboratory of Service Systems (SeSLab) focuses on exploring innovative approaches to service design and delivery. The primary goal of SeSLab is to explore ways of delivering services and their IT support - often provided in the form of "service as a service" - in order to maximize the value for users. The laboratory is led by Ing. Leonard Walletzký, Ph.D. and supported by a team of four doctoral students, while the laboratory currently involves 30 students in total at the bachelor's and master's level, which increases the demands on coordination and supervision.[32]

SeSLab's activities are divided into four laboratory teams, as illustrated in Figure 4.1:

- Service Design, supervised by doctoral student Zuzana Hruška and Ing. Leonard Walletzký, Ph.D. focusing on service analysis

and design, Smart City solutions, open data, and the application of AI in service design.

- T-shape, supervised by doctoral students Klára Kubíčková and Janka Marschalková focusing on research of T-shaped competencies, recommendation systems, and AI skills integration.
- Multiagent Systems and Knowledge Graphs, supervised by doctoral student Patrik Procházka (formerly Living Lab) focusing on multiagent systems, knowledge graphs, and their technical implementation in applied research projects.
- Implementation, led by doctoral student Patrik Procházka, provides technical and implementation support across the laboratory rather than operating as a standalone research team.

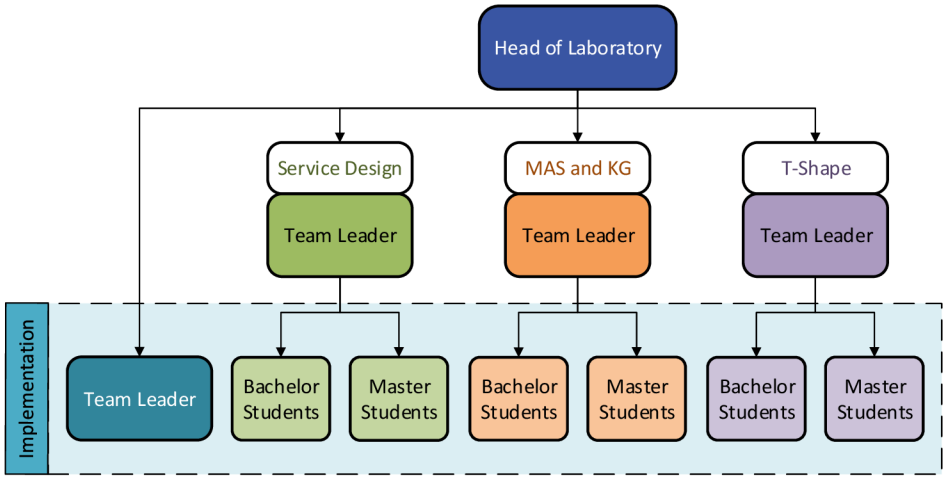


**Figure 4.1:** Organizational structure of SeSLab [33]

Meetings are frequent in all laboratory teams, but cooperation goes much further than coordination within the laboratory. Members are additionally engaged in collaborative projects with municipalities and organizations throughout the Czech Republic, including Žďár nad Sázavou, Dačice or Lelekovice. A lot of these projects are associated with implementing the Smart City concept with the Ministry

of Regional Development and many other smart companies (JINAG, NSZM...). SeSLab's activities are not limited to the home market, but it also has numerous foreign partnerships with universities of Salerno, Naples, Bucharest or Paris. These collaborations and projects tend to take place at the same time which demands an organized coordination, monitoring and clear reporting. In an attempt to coordinate everything, the laboratory uses the functions of Microsoft 365, e.g., MS Planner, MS Teams, SharePoint. Despite the use of these technologies, there are still plenty of manual processes including tracking of tasks, documentation of meetings and reporting. This is an area of possible improvement through AI support, automation or integration. [32]

A previous diploma thesis conducted in SeSLab was dedicated to adapting agile methodologies to support the laboratory's growth and its collaboration model. Although this work offered a useful managerial and methodological background for understanding the organizational development of the laboratory. However, the present thesis focuses on concrete laboratory workflows and their potential improvements with the help of AI and automation. [33]

## 4.2 Roles and responsibilities of the core members

The daily activities of any organization depend on the coordinated work of its key members. This is also the case at SeSLab, where core members collaborate on both research and administrative activities. Unlike the previous section 4.1, which provided an overview of the laboratory's structure, this part describes the specific roles, responsibilities, and interactions of members. This analysis is based on interviews with key laboratory members, internal documentation and direct observation of daily processes.

Every member plays a role in ensuring the smooth running of the laboratory by completing their individual duties. The following overview describes activities, typical tasks, and the tools that key members of the SeSLab use in their daily work. Understanding these processes and tools will help identify areas that could benefit from AI-supported optimization.

### 4.2.1 Ing. Leonard Walletzký, Ph.D.

The head of the Laboratory of Service Systems is Ing. Leonard Walletzký, Ph.D. He plays a crucial role in the strategic and operational management of SeSLab. His primary responsibility is to coordinate the laboratory's overall direction, research agenda, collaboration both with external organizations and among internal teams and members. In general, he provides supervision to doctoral students, monitors development of the research projects, oversees thesis for students, and ensures that all laboratory activities align with the long-term goals and strategies of the Laboratory of Service Systems, the Faculty of Informatics and Masaryk university.

In practice, the work of Ing. Leonard Walletzký, Ph.D. goes much further than high-level supervision. He is actively engaged with coordination of project teams, project progress review, and administrative monitoring of several research activities. Being the primary channel of communication between teams, he makes sure all that flows effectively inside the team and with external partners. Because each team and research project handles its tasks and reporting independently, it is very difficult to keep a complete picture of all active projects going on.

As a work management tool, Ing. Leonard Walletzký, Ph.D. mostly uses the **Microsoft 365 tools**, including **MS Planner, Outlook or MS Teams**. These tools enable him to monitor the progress of different projects, assign or check tasks and manage meetings.Nevertheless, there are still some shortcomings - for example: to obtain a complete overview of project status, it is often necessary to open several separate plans, the synchronization of work between Planner and Outlook is not always reliable, attachments or email messages are not necessarily all supported. Therefore, administrative and coordination activities are taking up most of his time leaving less time to focus on strategic management of the laboratory or research.

It turned out that routine activities, such as reviewing accomplished works, tracking deadlines or email correspondence, are mostly handled manually. These processes are a chance to automate and manage tasks with more help from AI. The use of smart tools that can help combine project data, summarize communications or create performance reports could significantly ease the administrative load of the

head of the laboratory and enhance the overall efficiency and visibility of project management at SeSLab.

### 4.2.2 Zuzana Hruška

Zuzana Hruška is a doctoral student who coordinates the **Service Design team** under the supervision of Ing. Leonard Walletzký, Ph.D. Her duties are a combination of administrative, organizational, and research-oriented work. She leads the routine activities of the team and also supervises the current projects and supports other members of the team, especially in areas related to service design, open data and smart city concepts. In addition, her other responsibilities include preparation of materials during consultations and meetings, as well as communication with students.

Much of her agenda involves administrative and coordination tasks. She updates task progress in MS Planner, tracks deadlines, and makes sure that the progress is being documented properly. Within the laboratory, she is considered as one of the main contact points for scheduling and organizing the activities, frequently making sure that the meetings, reminders, and deadlines are communicated well to the other members.

Like Ing. Leonard Walletzký, Ph.D., Zuzana uses **Microsoft 365 environment** in her daily work to organize and coordinate the ongoing activities, especially MS Planner, Outlook or MS Teams. However, most of her work is still done manually, such as sending reminders, monitoring the completion of tasks or creating progress reports. These repetitive activities are time consuming and are most likely to be affected by human error.

From an analytical point of view, Zuzana's role represents a critical connection between administrative support and project management. Due to the quantity of operational tasks and communication responsibilities that she handles, automating routine tasks such as report generation, progress monitoring or AI-based information bot could significantly increase her efficiency and allow her to reduce administrative workload.

### 4.2.3 Klára Kubíčková

Klára Kubíčková is a doctoral student and coordinator of the **T-Shape team** at SeSLab. As of Autumn 2025 semester, she and Janka Marschalková are leading the team together. The T-Shape team deals with the creation of interdisciplinary competencies and the implementation of the T-Shape concept by assessing employees' T-Shaped skill profiles. Her position connects research, coordination, and communication processes in the T-Shape team. She supervises the development of the T-Shape research agenda, reviews student work, and makes sure that the goals of the team are consistent with overall research interests of the laboratory team.

A large part of her responsibilities is to handle the project documentation and the coordination of project activities with SeSLab members and external partners. She organizes external collaborations with the universities and organizations involved in international education and research programs, such as negotiating teaching schedules, arranging transportation and assistance for visiting academics, updating course information for students or sending reminders about international classes.

Like other members of the SeSLab, Klára uses Microsoft 365 to organize materials, track progress of tasks, and facilitate collaborative work, especially through SharePoint, MS Planner and Outlook. However, most of these activities are still done manually. Sending reminders, updating documents, or tracking activities are usually tasks which need repetitive input into several systems. Such manual work raises the chances of inconsistency and complicates the process of project coordination.

Analytically speaking, Klára's position represents a link between research and operational coordination of the T-Shape team. Since she has several administrative and communication-related tasks, and also contributes to research outcomes, the implementation of automation tools, e.g. AI-based notifications, dashboards to keep track of progress, could simplify her work. The implementation of these solutions would help improve the efficiency of internal communication and enable her to spend more time on research and strategic development within the T-Shape team.

### 4.2.4 Patrik Procházka

Patrik Procházka is a doctoral student who is responsible for the Implementation and Multiagent Systems team at SeSLab. His role is a combination of technical, organizational, and research work that connects the laboratory's development and applied research efforts. Patrik manages the introduction of digital tools and platforms used by the laboratory, participates in the creation of teaching materials and syllabi, and makes sure the results of implementation projects are relevant to the research interest of SeSLab and its strategic goals.

In his daily work, Patrik focuses on technical coordination and system maintenance. He leads and continuously develops the Living Lab platform, maintains documentation and teaching materials, and takes part in developing smart service applications. Moreover, he also helps in task management, meeting notes, and responds to ad hoc requests within the management laboratory meetings. His technical expertise and project coordination skills ensure that he plays a critical role between the research objectives and practical implementation of SeSLab.

Similar to other SeSLab members, Patrik works with the Microsoft 365 environment, specifically using MS Planner, Teams or Outlook. Even with the assistance these tools offer, there are still a considerable number of activities that must be handled manually. This routine work is time consuming and risks the possibility of data inconsistency of different projects.

From an analytical perspective, the work of Patrik is essential in relating research findings of the laboratory to technical implementation. With such a variety of tasks, the automation of routine operations, e.g. meeting transcription, synchronization with other Microsoft applications, or automated reporting, could significantly enhance his efficiency.

### 4.2.5 Janka Marschalková

Janka Marschalková is a doctoral student who recently has become a part of the core team of SeSLab and joined T-Shape team, taking part in academic and organizational work with Klára Kubíčková. As a new member, she is progressively being engaged in the organization of

T-shape related research and teaching activities, helping to prepare materials and support the continuity of projects of the team.

Besides these duties, Janka also supports the laboratory's communication and visibility through social media. She intends to help SeSLab to become stronger online and promote its research findings, current projects and activity to the rest of the academic and professional community. With the assistance of the organization and external communication, she assists bridge the gap between the laboratory's internal activities and its public image.

Like other SeSLab members, Janka works with MS Planner, Sharepoint, or Teams to plan and coordinate teamwork. Nonetheless, a lot of her work, particularly, the work associated with the creation of the posts, gathering updates, or monitoring the engagement, could be even better optimized with the help of the AI-powered content tools and automatization of the communication processes.

## 4.3 Project Management tools and processes

After identifying the core organizational roles in SeSLab, it is important to focus on the project management tools to facilitate the internal processes. The laboratory is mainly dependent on the Microsoft 365 ecosystem, especially the Planner, SharePoint, Outlook and Teams to plan, communicate and administrative work. This chapter analyzes the current use of these tools in relation to the most important processes in the laboratory and how they assist in project management, collaboration and reporting.

### 4.3.1 Microsoft Planner

MS Planner is mostly used to organize activities and manage tasks within SeSLab. It provides a visual and interactive way that enables users to organize tasks into boards, buckets and checklists, allowing members to monitor project progress and ongoing work.

In SeSLab, Planner is primarily used for assigning tasks related to ongoing research projects, teaching, and administrative tasks. Every laboratory team, T-Shape, Service Design, Multiagent Systems and Knowledge Graphs, Implementation, has its own plan, where core

members create new tasks, assign them to students, and update their status when necessary. Tasks are usually organized according to the specific project or type of activity like research, course preparation, communication with external partners, or administration.

The tool allows users to set deadlines, assign responsibilities, and track progress of each activity. These features are necessary for maintaining coordination of the laboratory as SeSLab runs multiple overlapping projects and collaborations at once. The integration of Planner with Outlook and Teams allows notifications to effectively communicate deadlines and changes.

However, despite its advantages, a number of challenges have been identified in the present application of Planner. Tasks can be created inconsistently or duplicated in different boards, which makes it difficult to have a complete picture of the laboratory's overall progress. There are still team members who prefer to use email communication or track their personal tasks outside of Planner rather than always updating Planner, making the team less transparent. The preparation of project summaries are also difficult because of the absence of synchronization between individual plans.

To improve task management efficiency, it would be a good idea to standardize task structures, and automate regular updates using Power Automate or other AI-based tools. These improvements would minimize the administrative workload and increase the level of coordination in all teams of the laboratory.

SeSlab relies on Microsoft Planner paid versions. The common paid license is used by doctoral students, and the head of laboratory is on a higher-level license with more management and overview features, for example reporting features.

### 4.3.2 Microsoft Teams

MS Teams is the primary communication platform in SeSLab. It is a digital workspace used by the members of the laboratory to coordinate research, meetings and other activities associated with the projects. The tool combines different communication channels such as chat or video meetings into one environment, where doctoral students, researchers, and external collaborators can easily collaborate.

Teams play a key role in SeSLab, as it is used to structure laboratory meetings, as well as facilitate communication and to exchange important updates. Each team, such as T-Shape, Service Design, Multiagent Systems and Knowledge Graphs, has its own channel dedicated to discussions and the exchange of important announcements or supporting materials. The platform allows team members to arrange meetings, screen-share and work on documents in real time.

The main benefit of Teams is that it centralizes communication that was spread over emails or meetings in the past. Users can directly link meeting discussions to task creation and follow up actions because of integration of Planner and Outlook, which helps in overall project management. Additionally, Teams is used as a reporting tool for meeting recordings and to share briefs or findings, which enhance synchronous collaboration.

The present use of Microsoft Teams has however been identified to have several limitations. Some members of the laboratory still use personal channels of communication, or fail to respond to communication regularly in common channels. Although these habits may seem convenient, they may result in information being distributed across multiple channels and make the overall communication less clear. Delayed responses or lack of involvement by the students could make the coordination process difficult and the decision making process slowed down. The other problem is the minimal automation of meeting outputs, the preparation of notes and summaries are still done manually and this adds to the administrative workload and wastes precious time, which could be spent on research activities.

Meanwhile, SeSLab mainly uses Teams for basic communication (chat, meetings, and announcements), while many of the features available are not exploited. The platform provides a variety of integrated tools that may greatly enhance the efficiency of the workflow. To illustrate, shared task boards and project tabs might be attached directly to Planner, and internal reporting and feedback might be simplified with the help of built-in approvals and forms or Power BI dashboards. Even the introduction of AI-supported features, like Microsoft Copilot, would help automatically summarize discussions, extract primary points, and provide a follow-up action. These features would help to improve collaboration, minimize repetitive tasks, and allow the laboratory to maximize the use of Microsoft 365 ecosystem.

### 4.3.3 Microsoft SharePoint

Microsoft SharePoint is a central knowledge sharing and document management platform at SeSLab. It is the primary store of any research, teaching and administrative materials. SharePoint binds the research section together under a single structure, each team has its own subsite in the primary SeSLab SharePoint. This setup enables each group to operate more or less independently, while keeping their results available within a unified laboratory environment.

Meeting presentations, project documentation, final thesis materials, research and teaching materials are stored on the platform. Besides shared folders, the laboratory actively uses the Wiki page, where students leave their progress notes to research works, thesis or on-going projects. This tool has become an important resource that helps the supervisors monitor student progress and also students use it to record their progress as time goes by. Another helpful option that has been newly implemented in SeSLab's SharePoint is Microsoft Bookings that substituted the previous method of using email or MS Teams to schedule consultation with Ing. Leonard Walletzký, Ph.D. or PhD students. This implementation has simplified the organization of meetings and made consultation planning more transparent and efficient.

The main benefit of SharePoint is its logical structure divided by teams and projects, so that all materials are systematically organized and stored. The Teams and Planner integration can enable files and tasks to be easily synchronized throughout the Microsoft 365 ecosystem. The members are able to collaborate in real time by co-editing the documents, by viewing the version history, and accessing the latest materials, which makes collaboration easier and avoids information loss.

However, the present-day application of SharePoint has received a number of challenges. According to the informal talks with students, supported by the data from lab retrospective questionnaires, a lot of students continue to have difficulties with orientation on the platform. They also tend to be confused as to where to get the latest meeting presentations, how to reach certain planners or which subpage has the required materials. Although the structure is administratively well-organized, new members may find it too complicated. This leads to

certain information being ignored and the communication still needs to be supplemented through Teams or personal messages.

In order to overcome these issues it would help to simplify the SharePoint homepage structure and develop a clear guide that lists the main points of interest, i.e. meeting notes, planners or presentations archives. User orientation could also be highly enhanced by introducing short training sessions or video tutorials to new members. Also, it would be beneficial to standardize the names of folders and create direct links between SharePoint folders and Teams channels to make the tools more connected in a better way. Such improvements would make the system more user-friendly, motivate students to use it on a regular basis, and improve the coordination and knowledge management in SeSLab.

### 4.3.4 Microsoft Outlook

Microsoft Outlook is the main use of formal communication and scheduling in SeSLab. It can be used to send official emails, coordinate activities with supervisors and doctoral students, and to accept invitations to meetings thanks to its integration with Microsoft Teams. Outlook keeps all the communication in order and traceable, which is important for ensuring clarity in various research and administrative projects.

The laboratory promotes the use of Outlook as the common form of communication both internally and externally. Invitations to meetings, updates on progress, and project announcements are regularly distributed using Outlook, and the calendar of Teams can automatically synchronize scheduled consultations and laboratory meetings. This integrated calendar keeps the members aware of the next events and deadlines.

Although the current usage of Outlook is advantageous, some shortcomings have been found in the existing version of the application, particularly in its integration with other Microsoft 365 applications. The head of the laboratory, Ing. Leonard Walletzký, Ph.D., has observed that the connection of an email discussion to a single task in Planner is not quite operable. Whereas one can export an email and add it to a task, this linkage is not two-way and any subsequent reply in the original Outlook thread is not automatically updated in Planner.

This forces the email to be re-exported again and manually revised in the task, adding administrative burden to work and decreasing the effectiveness of communication.

This integration could be greatly improved, which would boost workflow coordination. Outlook has a high potential of automation, especially with Power Automate or Microsoft Copilot, which could be used to summarize emails daily, create summaries and previews before meetings, or automatically identifying actionable items in mail. These AI-supported implementations might help to simplify the communication of the project, reduce manual work, as well as establish a more connected online workplace in SeSLab.

### 4.3.5 Microsoft Copilot

Microsoft Copilot is slowly becoming another support tool in the SeSLab workflow. It is mostly applied to find quick information, write texts or summarize information. Even though its present use is primarily ad hoc, Copilot adds to existing tools by saving the time spent on performing routine tasks and makes access to information faster and more structured.

Since Copilot is built into the Microsoft 365 ecosystem, it can potentially assist in the preparation of meetings, summarize documents, extract action items in emails or shared content. These opportunities are not yet fully exploited, Copilot is applied to simple daily tasks, but not in complex automated processes.

At SeSLab, the full paid Copilot license is used only by the head of the laboratory, and gives access to more advanced summarizing features or cross application retrieval, for example in the form of AI-agent assisting in MS Planner. Today, doctoral students don't use any paid Copilot license. These differences in licensing determine how much individual members can trust Copilot in their daily activities.

## 4.4 Process mapping and workflow analysis

To better understand the daily operations of SeSLab and the areas where processes have been inefficient, a process mapping was done. The following analysis complements the section above dedicated to

project management tools by showing how these tools are used in practice in workflows. The point was to visualize the real action flows, to notice unnecessary or manual processes, and to see possible areas where automation or AI support may be applied.

Five important processes were modeled on the basis of direct observation, interviews with core members, and internal documentation. Each process was mapped in its current state, representing the existing workflow. The result processes give a graphical view of how information, documents, and tasks flow in SeSLab routines.

Each of these processes is further detailed in subchapters below, with their purpose, key activities, and current bottlenecks. The associated visual process models are provided in Appendix A.

### 4.4.1 Task lifecycle process

Task lifecycle process is one of the most essential workflows in SeSLab since it describes the way tasks are generated, allocated, tracked and fulfilled throughout the laboratory teams. Tasks are the core of the coordination of research, teaching, and administrative activities, and hence have a direct impact on the transparency and efficiency of the internal management of the laboratory.

In the present form, tasks are entered manually in Microsoft Planner based on information from meetings, emails, or the needs of the project. The design and revision of tasks are both more or less a matter of individual effort. Because of this, task progress and workload visibility relies on frequent manual updates that are not always coordinated between teams.

The process model can be found in Appendix A.1.

### 4.4.2 Creation of action items process

Creation of action items process involves the conversion of discussion results of meetings, consultations or project reviews into specific tasks and actions of follow-up. The process is important in ensuring continuity between communication and task execution, so that decisions made in meetings are systematically documented, assigned, and monitored within the project environment of SeSLab.

In the present workflow, action items are typically written in Microsoft Teams or on the Wiki page during or after any meeting. The task is then supposed to be generated by the responsible person in MS Planner, which is commonly postponed or avoided. Consequently, the most important action points can be left in meeting notes or emails, and not be captured in any formal task management system. This fragmentation minimizes transparency and raises the risk of overlooking assigned duties.

The process model can be found in Appendix A.2.

### 4.4.3 Preparation process for consultation

The preparation process for consultation explains how doctoral students and the head of the laboratory prepare in advance to meet with students or project teams in the future. Consultations are the essential aspect in the academic and research work of SeSLab, and the success of the consultation process largely relies on the capacity of the supervising members to collect and analyze the information beforehand. This is a significant process of continuity between student work, project progress and supervision.

In the present situation, consultation preparation is more of a manual process. Doctoral students look at the progress of the students using multiple sources, such as MS Planner boards, Wiki pages, emails, SharePoint's folder or Teams conversations. All these platforms hold incomplete information and since the data are not synchronized, the members usually have to manually assemble the information to have a complete picture. This not only takes a lot of time, but also makes it easy to miss crucial information. Follow-up actions or reminders are usually delivered as ad hoc messages, which can create gaps or delays in updating MS Planner.

The process model can be found in Appendix A.3.

### 4.4.4 Repetitive administrative process

The Repetitive administrative communication process is used to capture the repetitive communication activities that the core members of SeSLab are required to perform on a regular basis and especially when it comes to coordination of the students, reminders and regular

updates. These activities keep the students updated on the deadlines, consultations, changes in meetings, formatting of assignments, and other procedural needs. This process represents a significant part of the laboratory's administrative workload, since they are repeated and frequently involve answering the same questions by the new students.

Repetitive communication in the present workflow is handled manually. Doctoral students are responsible to answer individual questions related to recurring topics, and create reminders in Teams or Outlook. Even though technically, information exists on Microsoft Teams channel or SharePoint folder, not all students look at these resources regularly, which leads to them asking the same questions and putting extra efforts on the side of the coordinators. This process is not only consuming as it is manual but also risks inconsistency or messages lost especially since it takes a lot of time.

The process model can be found in Appendix A.4.

### 4.4.5 Semester reporting process

The semester reporting process reflects the way SeSLab prepares reports on the progress of the projects, the tasks that were done, the current activities, and the general performance of the teams. The presence of an effective reporting workflow would be instrumental in keeping track of various teams, informed decision making, and long-term management of the laboratory.

In the existing workflow, reporting is highly dependent on manual gathering of information through various sources. To find the information about tasks done, the work in progress, and the general performance, members must visit multiple Planner boards, Teams channels, email threads or SharePoint documents. As every team has its own Planner plan and task activities are not always the same across all members, the data gathered is rather fragmented and may usually need to be verified manually. A full report can take several hours to prepare and can be easily affected by inconsistencies, omission, or repeated information.

The process model can be found in Appendix A.5.

## 4.5 Overview of key challenges and opportunities

The recognition of the main challenges is an important part of the project management processes analysis of the current state in SeSLab. Even though the laboratory already uses the Microsoft 365 ecosystem and various structured workflows, the interviews with the core members of the laboratory management, internal documentation the observations of the everyday practice, and the analysis of the mapped current process models showed that there was a set of repetitive problem areas that prevent efficiency and result in unnecessary administrative work, or lack of coordination between laboratory teams.

The identified challenges reveal various aspects of the work of SeSLab, including manual workflow and documentation processes, discontinuous flows of information, inconsistent use of digital tools, barriers to knowledge transfer, onboarding issues, and repetitive communication activities. The combination of these factors allows to create a complete picture of areas in which the implementation of AI-based solutions or automation can potentially make a significant positive value.

These findings have been summarized in the Table 4.1 as twelve challenges. Each challenge is presented with its present-day form and the form of AI-based or automated improvements that might possibly solve it. This overview provides the basis for the prioritization that occurs in the following chapter.

**Table 4.1:** Overview of key challenges and potential improvement directions at SeSLab.

| ID | Challenge | Current situation | Potential improvement direction |
|---|---|---|---|
| CH1 | Manual task management | Tasks in MS Planner are created manually based on meetings, emails or project needs. The responsibility to update task progress is usually handled on an individual basis, which results in delays and unstable reporting. | Automation of task creation, assignment and progress tracking in order to minimize manual updates. |
| CH2 | Manual meeting documentation and preparation | Meeting notes are written manually in Wiki or Teams; tasks are often not created immediately or not created at all. Consultation preparation is also based on manually collected data from students' open tasks. | Automated capture and structuring of meeting results and consultation inputs to ensure consistent follow-up on tasks. |
| CH3 | Information duplication and weak data integration | Email messages containing data and attachments are not synchronized with Planner and Teams, while project-related information is distributed across multiple plans and tools. | Better integration and consolidation of project-related information across tools to minimize duplication and fragmentation. |
| CH4 | Repetitive administrative communication with students | Coordinators repeatedly answer the same questions related to consultations, deadlines and task formats each semester. | Automated processing of frequent student requests and recurring announcements. |
| CH5 | Manual semester reporting | Semester reports are assembled manually from multiple Planner boards and email conversations. | Automated collection and summarization of task and project data to support routine reporting. |

Continued on next page

**Table 4.1 – continued**

| ID | Challenge | Current situation | Potential improvement direction |
|---|---|---|---|
| CH6 | Irregular social media updates | Posts and updates are dependent on the manual work of a single individual, which often leads to delays and irregular communication. | Assistance in the creation and planning of communication outputs based on existing laboratory materials. |
| CH7 | Complex SharePoint navigation for new members | New members find it difficult to locate relevant materials, as the structure is logical but not intuitive for newcomers. | Streamlining and regulating access to information to support onboarding and orientation of new members. |
| CH8 | Inconsistent use of Microsoft 365 tools across members | Some members rely on email or external tools, while Planner updates and tool usage are not consistent across the laboratory. | Improved consistency in tool usage through monitoring, guidance and lightweight support mechanisms. |
| CH9 | Weak knowledge capture | Research outputs, project information and meeting notes are distributed across Wiki pages, emails and documents. | Structured collection and organization of research results and project knowledge to improve reuse and continuity. |
| CH10 | Lack of data-driven decision support | There is no shared overview of progress, workload and deadlines across projects. | Improved visibility of workload, progress and deadlines to facilitate informed coordination and decision-making. |
| CH11 | High administrative workload due to manual summarization | Summaries of emails, tasks and meeting preparations are created manually by coordinators. | Reduction of manual information-gathering effort through automated preparation of overviews and briefings. |
| CH12 | Manual semester reminders | Start-, mid- and end-semester reminders and deadline notifications are repeatedly sent manually by coordinators. | Automated distribution of recurring reminders and deadline messages on a regular basis. |

The challenges have been identified based on common patterns of problems that were observed in the mapped current processes in chapter 4.4. Although

certain challenges are more related to the specific workflow (e.g. task lifecycle or reporting), most of them are present in several processes, indicating that they affect the laboratory as a whole.

## 4.6 Future process models and improved scenarios

In this section, the future process models are described, demonstrating potential areas for improvement based on the challenges identified in the previous chapter 4.7. They represent theoretical situations rather than complete solutions and serve as a basis of the prioritization.

### 4.6.1 Task lifecycle process

The optimized version of the task lifecycle process is imagined to be more integrated and automated in the Microsoft 365 ecosystem. Meeting outputs or items listed as required actions might not need to be created manually, and once reviewed and approved by the task owner they might be treated as tasks to be assigned with automated systems providing help in task assignment, deadline and notification.

The scenario shows how the manual work could be minimized and how conclusions, which were made at meetings, could be better translated into the workable tasks that enhance transparency and coordination of research and administrative work in SeSLab.

The main focus of this future scenario is on issues of manual task management and irregular tracking of tasks (CH1, CH8). The process model can be found in Appendix A.6.

### 4.6.2 Creation of action items process

The creation of action items scenario in future describes a semi-automated workflow that involves the use of AI support and human verification. Action items could be proposed during a discussion in a meeting and any propositions were reviewed with the host of the meeting afterwards and approved or modified.

After being confirmed, they can be converted to tasks with automated support, which involves the assignment and deadline setting. This situation shows the possibilities of more regularly capturing follow-up actions without sacrificing human control and manual effort.

The challenges covered by this future scenario are mainly connected with manual meeting documentation and creation of follow-up tasks (CH2, CH1). The process model can be found in Appendix A.7.

### 4.6.3 Preparation process for consultation

The future case of consultation preparation is used to provide a workflow whereby relevant information is centralized prior to the actual meeting. After arranging a consultation, student materials and recent developments could be summarized with

the use of AI-based assistance to present a brief overview of the current student progress.

The supervisor would review this summary before the consultation and base the discussion on it in a structured form. The situation shows that preparation time might be shortened and continuity between work of students and supervision may be improved.

In this vision of the future, the main topic is to focus on the issues of manual consultation preparation, information fragmentation and heavy administrative load (CH2, CH3, CH11). The process model can be found in Appendix A.8.

### 4.6.4 Repetitive administrative process

The future scenario of the repetitive administrative communication shows how centralized, automated support to process frequently requested questions by students can be used. The same shared knowledge base could be applied to handle repetitive questions related to meetings, deadlines or procedural details and less manual addressing would be required.

The questions not to be answered automatically would be forwarded to a doctoral student who could offer an answer and update the knowledge base. This situation shows how redundant communication may be minimized and consistency in information delivery and reduction in workload of administrators enhanced.

The main challenges that are targeted in this future scenario are administrative work and repetitive administrative communication (CH4, CH11). The process model can be found in Appendix A.9.

### 4.6.5 Semester reporting process

The future reporting situation outlines the integration of the project and task information across digital tools to enhance more efficient reporting. Current immediate activities might be combined and represented in a single overview to give visibility about progress, work volume and pending assignments.

This kind of overview would help in timely coordination and decision making by providing compressed descriptions as well as brief explanations of the present position of the project.

The main challenges faced in this future scenario are those linked to manual reporting and restricted data-based decision support (CH5, CH10). The process model can be found in Appendix A.10.

## 4.7 Weighted scoring analysis of implementation priorities

The weighted scoring analysis was used to rank the challenges discovered in the previous chapter in order to determine which improvement opportunities should be considered with the highest priority.

The author created the scoring model on the basis of the workflow analysis and later revised it together with SeSLab management in order to reflect analytical results and also the strategic priorities of the laboratory.

The scoring evaluates every challenge on the basis of these four criteria:

- **Workload impact (weight 0,3):** he degree to which the challenge leads to avoidable administrative burden or inefficiencies in the day-to-day operations.

- **Frequency (weight 0,25):** the frequency of the challenge in practice and how frequent it impacts on the workflows of the laboratory.

- **Feasibility (weight 0,2):** the practicality of an implementation of an AI-based or automated solution.

- **AI benefit (weight 0,25):** the amount of value added to the challenge that AI or automation is expected to deliver.

All four criteria were rated on a five point scale with all four criteria having a lowest value of 1 and a highest value of 5. The final weighted score was calculated by use of the following formula:

$$WeightedScore = (Workload * 0.30) + (Frequency * 0.25) + (Feasibility * 0.20) + (AIBenefit * 0.25)$$

This approach makes the prioritization more systematic and interpretable. It reflects the operational reality of SeSLab, includes the strategic priorities of the management, and offers a balanced perspective on where AI-assisted enhancements can bring the highest value. The results of the prioritization are shown in the following table 4.2.

**Table 4.2:** Weighted scoring analysis of challenges at SeSLab.

| ID | Challenge | Work. | Freq. | Feas. | AI ben. | Score |
|---|---|---|---|---|---|---|
| CH1 | Manual task management | 5 | 3 | 2 | 4 | 3.65 |
| CH2 | Manual meeting documentation and preparation | 5 | 4 | 4 | 5 | **4.55** |
| CH3 | Information duplication and weak data integration | 4 | 3 | 3 | 4 | 3.55 |
| CH4 | Repetitive administrative communication with students | 5 | 5 | 4 | 4 | **4.55** |
| CH5 | Manual semester reporting | 4 | 3 | 3 | 4 | 3.55 |
| CH6 | Irregular social media updates | 3 | 4 | 5 | 5 | 4.15 |
| CH7 | Complex SharePoint navigation and onboarding improvement | 4 | 3 | 3 | 4 | 3.55 |
| CH8 | Inconsistent use of Microsoft 365 tools across members | 3 | 3 | 3 | 3 | 3.00 |
| CH9 | Weak knowledge capture | 4 | 3 | 3 | 4 | 3.55 |
| CH10 | Lack of data-driven decision support | 5 | 5 | 4 | 5 | **4.80** |
| CH11 | High administrative workload due to manual summarization | 4 | 3 | 4 | 4 | 3.75 |
| CH12 | Manual semester reminders | 5 | 4 | 5 | 4 | **4.50** |

The final outcomes of the weighted scoring analysis demonstrate clear variation in the strategic significance and expected impact of individual challenges. The challenges with the highest scores are those that either have a broad influence on other problem areas or repeatedly consume a substantial amount of effort in the day-to-day operation of the laboratory.

Although CH10, lack of data-driven decision support, achieved the highest weighted score, it is not addressed as an isolated problem. Instead, this challenge is closely interconnected with several other high-priority areas. Improvements in consultation preparation, meeting documentation, task visibility or information consolidation directly contribute to better availability, structure and reliability of data. As a result, addressing selected operational challenges also gradually mitigates the lack of data-driven decision support.

Several challenges scored above the specified prioritization line and have high potential for efficiency improvement.In particular, challenges with a weighted score

exceeding 4 were chosen to be considered during the implementation stage. These include manual meeting documentation and preparation (CH2), repetitive administration communications (CH4), irregular updates on social media and websites (CH6), and manual semester reminders (CH12). A common aspect of these areas is their high administrative burden and they happen to be frequent in their everyday activities and represent areas where AI-based or automated solutions are technically feasible. For these reasons, they form the primary focus of the proposed solutions described in the following chapters.

On the other hand, challenges with lower weighted scores, like manual task management (CH1), irregular use of tools (CH8), mastery of knowledge (CH9) or semester reporting (CH5), are still relevant but at the present not the most effective areas of immediate intervention. They might need organizational change, long-term behavioural changes or they might need enabling solutions to be put in place first. For these reasons, they are not analyzed in detail in the following implementation chapters.

Overall, the prioritization outcomes offer a clear map of areas for the proposed pilot implementation. By focusing on the highest scoring challenges, SeSLab can reach noticeable improvements within a relatively short time and at the same time create a groundwork to longer-term, more complex improvements in project management and knowledge coordination.

# 5 AI-driven improvements

This chapter introduces three AI-based improvements that have been suggested to SeSLab, which are specifically designed to solve particular challenges identified in the analysis in the previous chapter 4.7. These improvements have been chosen based on the weighted scoring analysis, which prioritized the most effective and achievable areas of optimization. The prioritization was made in consultation with SeSLab leadership to make sure that the suggested solutions are a reflection of the analytical results and strategic needs of the laboratory.

All the solutions were designed, implemented and tested by the author. The workflow structure, prompt template, knowledge-base design and Power Automate logic were based on the real laboratory practice and refined in consultation with the laboratory management. These implemented solutions show that proposed improvements can be successfully integrated into already existing processes and can be used in the future as the foundation of more advanced automation.

## 5.1 AI-assisted consultation preparation

Consistent and effective planning for consultations is the key to quality of supervision in SeSLab. Nonetheless, as revealed in CH2 - manual meeting documentation and preparation, supervisors are now required to manually gather information using a number of isolated sources like Planner, Wiki pages, email messages or SharePoint folders before each consultation. It is time-consuming, creates a risk of missing crucial updates, and limits the quality of preparation across members. These limitations indicate that a simplified workflow is necessary to decrease manual effort and facilitate more systematic academic oversight.

### 5.1.1 Concept of the proposed solution

The proposed solution provides a prompt template used by the supervisors in Microsoft Copilot to prepare for the consultation. The supervisor does not need to browse through multiple platforms manually, but instead activates a predefined prompt that directs Copilot to find various Wiki notes, thesis files, email communication and Planner tasks, and summarize them into a briefing.

This solution is a low-cost and instant deployment improvement to the current workflow. It does not involve setting up changes in the technical infrastructure or automation pipelines and as a result, it can be immediately adopted by supervisors. At the same time, it provides a single and consistent preparation process, so that every consultation is presented in the same information structure and minimizes the risk of missing crucial updates.

### 5.1.2 Implementation

#### Consultation briefing prompt template

The consultation briefing template specifies the way Copilot retrieves information about student and the structure of the final briefing. The prompt runs the AI model over a pre-defined path of data sources to make sure that every available update is included in the preparation. The input section defines what Copilot searches and the output part defines how the briefing is displayed to the supervisor.

**Input**

Copilot uses a systematic search logic to create a full overview of what student has been doing recently:

- Wiki notes with the student's name, which lists the most recent updates on supervision.
- Documents written or edited by the student and related to the thesis and were found with the help of the keywords such as thesis, diploma, bachelor, DP, BP.
- Recent email messages between the supervisor and the student to record agreements, questions and coordination points.
- Planner activities to be completed with the focus on the completed, ongoing or delayed work.

This retrieval logic makes sure that all the information relevant to supervision is captured, despite the habits of individual supervisors or data fragmentation.

**Output**

The final briefing should include the identification details of the student and five structured parts:

1. a brief summary of the thesis topic,
2. a list of progress updates,
3. documents that have been recently updated,
4. a summary of the recent email communication,
5. open or delayed Planner tasks.

All sections are brief with bullet points and have links wherever possible. In case there is no information on a specific section, Copilot is asked to clearly indicate that it is not found, which will provide transparency and prevent creation of false or unprovable information.

**Appendix B** shows the complete template prompt used to create consultation briefings.

### Practical use within SeSLab

In practice, very little modification to the current practice of preparing supervisors is necessary in the workflow. Prior to a planned meeting, the supervisor opens Microsoft Copilot, enters the name and UČO (Masaryk university student identification number) of the student in the prompt template and asks to generate the briefing. The specified logic then instructs Copilot to find the information needed in the Microsoft 365 environment and summarize it in a clear and readable summary.

The result enables supervisors to gain in a short period of time what the student has been doing lately, what updates have been lost, and what to ask at the meeting. It also can be used to make sure that the decisions taken in the consultation are formed on a full picture of information available instead of on scattered notes stored in different platforms.

Since the workflow is based only on existing data in SharePoint, Planner, Outlook and Wiki notes, it does not need any adjustments in the existing systems. This causes instant application of the solution to all supervisors, whether they are technically skilled or not. The quality and detail of the generated briefing is determined by the level of license permitted to the user. The paid version of Microsoft Copilot offers more reliable and detailed cross-application search, whereas the free version can offer less detailed summaries and sometimes lack information. Nevertheless, despite this restriction, the solution can still be applicable in practice, but it works significantly more effectively in the licensed Copilot environment.

### 5.1.3 Expected effects and benefits

This proposed workflow is likely to help facilitate the process of consultation by giving the supervisors clear and well-organized review of the recent work by the student. This saves time spent on searching through various different systems and enables the supervisor to concentrate more on academic discussion than administrative work. Part of the consultation is spent on refreshing context and requesting simple updates, reducing the time available for providing useful advice.The AI-generated briefing is ready in advance, so supervisors enter the meeting already oriented on the progress of the student, which means that a few minutes of meaningful conversation are returned to the student and overall quality of the consultation is improved.

The use of unified format helps to strengthen consistency and continuity of supervision. The supervisors can monitor progress more easily and track missing updates and follow up on the outstanding tasks, which helps to monitor the progress of every student better in the long term.

The solution also helps resolve a number of related challenges that were identified in the analysis. It directly decreases the CH11 - high administrative workload, as supervisors and doctoral students no longer need to manually compile consultation summaries when preparing for meetings. It also leads to CH1 - manual task management and CH4 - repetitive administrative communication, since inconsistent Planner updates and missing notifications are often revealed during consultation preparation and need to be verified or notified manually. There is also a slight

positive impact on CH3 - information duplication and weak data integration by gathering information from multiple sources into one briefing. Lastly, the organized summaries help CH10 - lack of data-driven decision support, allowing supervisors to make better decisions during consultations.

In general, the workflow improves efficiency, quality of documentation, and helps in several interconnected areas of the project management environment in SeSLab.

### 5.1.4 Potential risks and limitations

The quality and consistency of data stored in Wiki notes, SharePoint documents, email communication and the Planner tasks determine the effectiveness of the consultation briefing. Unless these sources are updated frequently or the documents are stored with varied names or at different locations, the briefing might be incomplete or miss some important background information.

Another weakness is based on the differences in Copilot license levels. The paid version provides more stable and descriptive search across applications, but the standard one might generate a less extensive summary, leading to different outcomes in the quality of briefs of supervisors.

Supervisors may also be over-dependent on automatically generated summaries. The lack of unclear information still has to be checked manually. Moreover, the workflow relies on the existing structure and consistency of the Microsoft 365 environment, changes in data organization, permissions or application functionality might also influence the ability of the Copilot to generate valid outputs.

### 5.1.5 Future upgrade possibilities

The consultation briefing workflow may be further enhanced by several extensions. One of them is to increase the access to paid versions of Microsoft Copilot. Because the paid license has more advanced cross-application summarization, its availability not only to the head of the laboratory but also to some doctoral students, particularly, Zuzana Hruška, who participates in most consultations due to the Service Design team being the largest, and does a lot of administrative work, would further improve efficiency and reduce the time on coordination.

The automation of the presently manual process is a long-term upgrade. When internal data structure and naming conventions are more standardized, the briefing can be created automatically prior every consultation with the assistance of Power Automate. The outputs could also be automatically recorded in meeting notes and generate a record of continuous supervision without further administrative effort.

These improvements would minimize the number of manual steps further as SeSLab processes get mature and allow a more integrated and data-driven supervision process.

## 5.2 AI-powered student information bot

The analysis of SeSLab has shown that a significant part of the administrative burden is introduced by repetitive questions of students about meetings, deadlines and where they could find the necessary materials. This problem is visible mostly in CH4 - repetitive administrative communication, where core management often repeats the same information multiple times. The implementation of an AI-based information bot can relieve this burden by providing timely and consistent feedback and responding based on a systematized knowledge base, thereby simplifying the overall communication process and making information more accessible to students.

### 5.2.1 Concept of the proposed solution

The solution proposed is an information bot created in the Microsoft Copilot Studio and allows students to use one conversational interface to access the key information about SeSLab. Rather than have core management repeat explanations on meetings, processes or where to find documents, students can simply ask the questions information bot directly and receive brief and appropriate answers.

The solution is designed to avoid modifying existing systems and is based on lightweight implementation. Working as an extra service over the existing Microsoft 365 setting, the bot enhances accessibility of information without changing work processes in Planner, SharePoint or Teams. This allows the solution to be simple to implement, easy to maintain and applicable to a gradual growth as the processes of SeSLab change.

It does not intend to substitute the current system or automate operational processes, but it should be an addition to them that facilitates access to the already existing information on the laboratory environment. In this way, the bot could help to minimize the amount of general administrative messages, assist new members with the process of onboarding and facilitate the consistency of knowledge about laboratory processes.

### 5.2.2 Implementation

The implementation of an AI-driven information bot consists of developing an organized knowledge base and integrating it into the chat interface within Microsoft Copilot Studio. It is not meant to automate the operations but rather create a dependable and available source of information to students and limit repetitive communication pressure among the SeSLab management.

#### Knowledge base structure

The functionality of the bot relies on a structured knowledge base that summarizes the important information SeSLab members need to know. To achieve clarity, consistency and reliability, the knowledge base is written in four documents and each document represents one aspect of the organizational landscape.

The knowledge base is structured into two levels:

- **General laboratory information -** general information about SeSLab such as area of interest, its organizational structure, meetings, communication channels, access to shared resources, etc.
- **Team specific information -** three documents summarizing the activities, leadership, meetings, research focus or student involvement in the Service design team, T-Shape team, and the Multiagent systems and knowledge graphs team.

Each document uses short sections, clear headings and a minor FAQ section to ensure that the bot gives correct and predictable answers.

These documents are attached in the appendix C and are the entire content basis that the bot uses.

### Practical use within SeSLab

In the present form, the information bot exists in the form of a test version in Microsoft Copilot Studio. It is already operational and is able to respond to a broad range of procedural and organizational questions based on the knowledge base. In case further testing proves the bot is reliable and accurate in the long term, it can be implemented into Microsoft Teams. This will involve buying Copilot Studio credits which is the main cost of operation when fully deployed.

Practically, the bot can be used as a first contact point for students to quickly access information without having to browse through SharePoint or reach out to SeSLab management directly. The number of repeated questions is greatest at the beginning of each semester, there are also peaks in the number of repeated questions when significant checkpoints are near, such as the time before semester meetings, before handing in assignments or thesis related materials to the Information System (IS), or whenever students are not sure about what is expected of them. The bot also helps absorb this variability by providing immediate responses and reducing the number of regular messages sent to management.

In the case of SeSLab management in charge of administration, the infobot minimizes the repetitive communication, enables a more seamless onboarding process and provides students with increased freedom to navigate the laboratory space. Maintenance needs are also low, as knowledge base can be updated easily by changing the support materials that the bot works with.

### 5.2.3 Expected effects and benefits

The AI-driven information bot will help decrease a high volume of repetitive administrative communication in SeSLab. The questions that management is answering now manually can be automated and the management can dedicate more time to supervision, research and project work. The solution also improves the onboarding process of new members. Students can easily find documents or information they need and information bot will offer clear and consistent information back without requiring them to wait for a manual response.

In addition to the assistance in the daily coordination, the bot also helps in some of the challenges observed during the analysis. It also helps to overcome CH7 - complex SharePoint navigation, as students do not have to search through several places to locate important materials. The solution also partially serves CH9 - weak knowledge capture since it introduces an access point to information that would otherwise be spread over SharePoint, Teams and internal documentation. Lastly, it indirectly supports CH12 - manual semester reminder because students can get procedural and semester specific information detail without depending on personal communication with core members of laboratory management.

### 5.2.4 Potential risks and limitations

The performance of the bot depends on the fact that there is a regularly updated knowledge base. If documents are not updated after organizational or process changes it is possible that students will be provided with old or incorrect information. A current technical limitation is that Copilot Studio is not able to reliably access dynamic SharePoint content, which increases the need for manual maintenance of source files.

Another risk is that users may have expectations about what the bot can do, for instance, operational actions or access to internal systems, which may lead to confusion. The bot may also have difficulties answering ambiguous or very specific questions, which may require the follow-up support by doctoral students. Moreover, full functionality in Microsoft Teams requires the purchase of Copilot Studio credits, which means its future is linked to licensing terms.

Regardless of these drawbacks, the solution is still a lightweight and useful tool that can be gradually enhanced as the documentation and technical environment of SeSLab develops.

### 5.2.5 Future upgrade possibilities

The further development of the information bot can be its implementation into Microsoft Team, as soon as its reliability is tested sufficiently, and the necessary Copilot Studio credits are purchased. This would provide access to the bot within the environment that most students use.

The bot may also be extended to search SharePoint and update itself automatically. During a consultation with M365 team at the Institute of Computer Science at Masaryk university (ÚVT), it was suggested to build the knowledge base by using PDF or Markdown files because Copilot Studio does not always read the data reliably when it is stored in SharePoint. In later versions, once this limitation is resolved, the bot may directly interact with current materials held in SharePoint without necessarily keeping separate knowledge base files.

In general these improvements would increase the capability of the bot and simplify the communication pressure on the SeSLab management even more.

## 5.3 Automated reminder workflow

The necessity of a more systematic reminder system in SeSLab is directly connected to CH12 - manual semester reminders, not because doctoral students had been sending semester reminders previously, but because there was no structured reminder system at all. Key semester milestones were usually remembered in an informal manner, communicated ad-hoc or forgotten between semesters. This led to uneven practice and unnecessary pressure of administration on the management of the laboratory. An automated reminder workflow is proposed to make sure that important academic and organizational procedures are performed consistently and within deadline.

### 5.3.1 Concept of the proposed solution

The proposed solution presents an automated reminder system based on Microsoft Power Automate and a central list in SharePoint. Every row within the list reflect a particular academic or organizational milestone such as beginning of the semester, mid point meetings, end of semester check or social media updates and how and when the reminder is to be triggered.These entries are automatically checked by Power Automate that sends the notification to the correct receiver every time in an email.

This design was selected because of its flexibility and minimal implementation effort. SeSLab management can easily update the SharePoint list without requiring any technical knowledge which enables adding new reminders or modifying the current ones as practices change. The workflow also makes sure that all reminders are scheduled in a similar format, which minimizes the likelihood of not remembering a task and eliminates the reliance on informal communication or personal memory.

The solution offers the laboratory a consistent base in the management of repetitive duties during semesters by providing a centralized and repeatable reminder process and frees up the administrative burden of running a laboratory.

### 5.3.2 Implementation

The reminder workflow is implemented with the help of a core SharePoint list that contains all the necessary semester and operational reminders, and a Power Automate flow that examines the list on a daily basis. All these combined create a low-weight and flexible system that can be maintained by SeSLab management even without any technical knowledge.

#### Reminder trigger logic and data structure

Each reminder in the SharePoint list has four key attributes:

1. reminder type - beginning, middle or end of the semester or social media
2. date - the exact date that reminder needs to be sent
3. message - content of the reminder, it may contain like, checklist or Copilot prompt

4. recipient - doctoral student that reminder needs to be sent to

Power Automate compares the trigger date with the current date in runtime. If the values are the same, the reminder is performed.

The social media reminder type is just different in terms of message template, which includes the AI prompt template to assist in content creation.

The structure of the implemented SharePoint list used by the reminder workflow is illustrated in Figure 5.1.

| ReminderType | Date | Message | Recipients |
|---|---|---|---|
| StartOfSemester | 02.02.2026 | Hello everyone,<br><br>the new semester is approaching — yes, already. 😊<br>We still have about two weeks before everything starts running at full speed, which makes this the perfect moment to prepare the essentials and ensure a smooth beginning.<br><br>As every semester, there are a few organizational tasks that will help us start in a more structured (and hopefully less chaotic) way. Below is a short overview of what should be completed before the | Zuzana Hruška<br>Patrik Procházka<br>Janka Marschalková<br>Klára Kubíčková<br>Leonard Walletzký |

**Figure 5.1:** Structure of the SharePoint list

## Workflow implementation in Power Automate

The Power Automate workflow is created as a scheduled cloud flow. Every morning, the Recurrence trigger initiates the process and Get items gets all the reminders stored in SharePoint list. Because there might be more than one reminder in the list, the flow uses Apply to each to process the list one by one. For every reminder, Condition is used to see if the trigger date of the reminder is today.

If true, the flow continues with For each loop to go through recipients list and send the corresponding notification using Send an email (V2).

If false, the item is skipped and flow goes to the next reminder.

The flow overview is illustrated in the following figure 5.2.

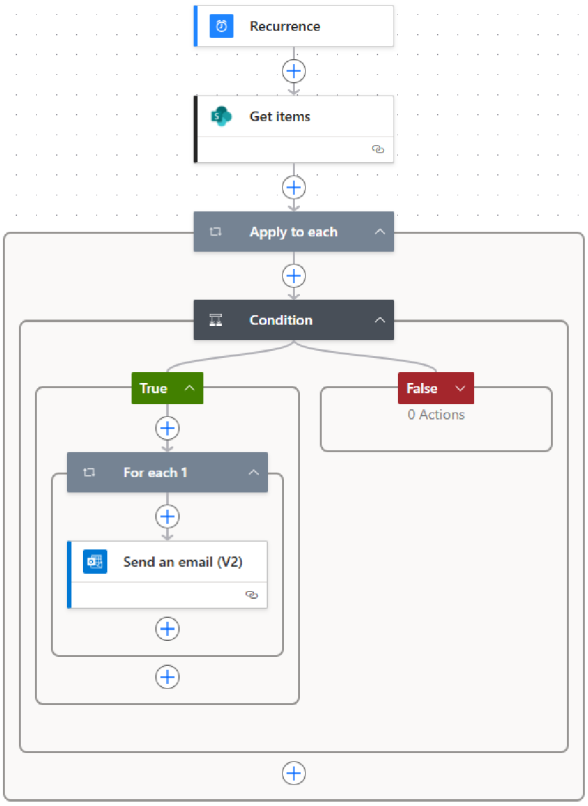


**Figure 5.2:** Power Automate flow for automated semester reminder workflow

### Practical use within SeSLab

In practice, the workflow of reminders provides doctoral students with a clear structure for the semester and eliminates the need to remember tasks that are repeated. Because all reminders are based on one checklist that is shared, all doctoral students are given the same guidance at the same time, which can better ensure continuity and minimize variation in coordination styles.

The monthly social media reminder with integrated Copilot template prompt ensures that the updates get created on a regular basis even during busy times.

Since the workflow relies on familiar tools (SharePoint, Outlook and Power Automate), it can be used immediately without training and new reminders can be added as SeSLab's processes develop.

### 5.3.3 Expected effects and benefits

The reminder workflow makes semester routines more reliable by ensuring that important steps are not something that is forgotten and rely on individual memory. It provides a centralized structure to assist doctoral students organize their work more consistently from semester to semester. This strengthens internal organization and helps maintain stable operational standards in SeSLab.

Some of the challenges faced during the analysis are also addressed in the workflow. It is associated with CH11 - high administrative workload because doctoral students are not expected to recreate or rediscover the semester routine anymore. There is a secondary connection to CH6 - irregular social media updates, since one type of the reminders directly act as a monthly content trigger with the Copilot prompt template, which helps maintain more frequent external communication. Lastly, it indirectly leads to CH8 - inconsistent use of Microsoft 365 tools, since it makes the semester checkpoints predictable, aligned with the internal processes of the laboratory.

In general, the workflow enhances reliability, minimizes administrative loads and improves process consistency throughout SeSLab.

### 5.3.4 Potential risks and limitations

The workflow for the reminder is dependent on being able to have correct and regularly updated data in the SharePoint list, especially trigger dates. If these dates are not refreshed by doctoral students once per year before the start of the semester, the workflow will fail to trigger the relevant reminders.

It also depends on a stable configuration of Power Automate and SharePoint. Changes in permissions, licensing or list structure may prevent the flow and there is limited error handling, so failures may not be noticed immediately.

Finally, the social media reminder still requires manual use of the Copilot prompt. If this step is not taken, then the intended regularity of posts may not be achieved.

### 5.3.5 Future upgrade possibilities

Several extensions could make the reminder workflow more intelligent and less dependent on manual steps. One way is to progress from fixed dates to more dynamic, data-driven triggers by integrating the workflow with Planner or Outlook.

Another opportunity for upgrade is automatic annual regeneration of trigger dates, to reduce the need for manual updates at the beginning of each academic year and to avoid reminders that are no longer active.

Finally, the social media reminder could also be extended by allowing the workflow to automatically generate drafts posts using Copilot or Microsoft Graph API, instead of just using a prompt template.

# 6 Evaluation

This chapter reviews the practical impact of implemented improvements and reflects on how well the improvements are relevant to the challenges identified in the analysis. It analyzes how individual workflows are affected, the responses given by the SeSLab management and what kind of risks and limitations can affect the sustainability in the long term. The aim of this chapter is to evaluate how the proposed solutions achieved the purpose and suggest the opportunities of their further development.

## 6.1 Impact on identified challenges

The analysis in Chapter 2 revealed twelve challenges that influence the project management workflows at SeSLab. The challenges that were selected in the implementation phase were done with cooperation from SeSLab leadership to make sure that created solutions concentrate on the areas of the highest priority in the laboratory and where AI-based solutions could possibly have the most immediate practical impact.

The three applied improvements therefore address a small part of the identified challenges, while many others are also indirectly impacted.

Table 6.1 provides an overview of all challenges (CH1-CH12) and shows which of the implemented improvements affect them, whether more or less directly.

**Table 6.1:** Impact of implemented improvements on identified challenges at SeSLab.

| ID | Challenge | Relevant improvements | Description of impact |
|---|---|---|---|
| CH1 | Manual task management | AI-Assisted Consultation Preparation | Task follow-up is indirectly improved, when consultation briefings expose missing or outdated Planner tasks. |
| CH2 | Manual meeting documentation and preparation | AI-Assisted Consultation Preparation | Removes manual information collection and standardizes preparation before consultations. |
| CH3 | Information duplication and weak data integration | AI-Assisted Consultation Preparation | Briefing summarizes information from several sources, eliminating the duplication. |

Continued on next page

**Table 6.1 – continued**

| ID | Challenge | Relevant improvements | Description of impact |
|---|---|---|---|
| CH4 | Repetitive administrative communication | AI-Powered Student Information Bot, AI-Assisted Consultation Preparation | The bot minimizes repetitive questions. Consultation preparation minimizes the use of emails requesting clarification. |
| CH5 | Manual semester reporting | — | No impact. Semester reporting is not automated in the implemented solutions. |
| CH6 | Irregular social media updates | Automated Reminder Workflow | Prompt template and monthly reminder helps to post more regularly. |
| CH7 | Complex SharePoint navigation | AI-Powered Student Information Bot | Information bot gives a chat access to structured information, which does not require a manual search. |
| CH8 | Inconsistent use of Microsoft 365 tools | Automated Reminder Workflow | Common reminder structure promotes more consistent use of Outlook, SharePoint, and Planner. |
| CH9 | Weak knowledge capture | AI-Powered Student Information Bot | Knowledge base summarizes the basic information and simplifies access to it. |
| CH10 | Lack of data-driven decision support | AI-Assisted Consultation Preparation | An AI briefing is structured, summarized information about progress that helps management make more data-driven decisions. |
| CH11 | High administrative workload | AI-Assisted Consultation Preparation, Automated Reminder Workflow | The AI-assisted consultation preparation reduces manual summarisation, and the automated reminder workflow eliminates the need to recreate semester routines, which indirectly reduces workload. |
| CH12 | Manual semester reminders | Automated Reminder Workflow | Ad-hoc reminders are completely replaced by an automated and unified system. |

The evaluation reveals that every improvement provided has an additional impact than its intention. The AI-assisted consultation preparation can make the most contribution, which improves task clarity, supporting decision making and making communication more effective. The AI-based information bot decreases

repetitive administrative communication and improves the access to structured organizational knowledge. The automated semester reminder improves routine activities during the semester and decreases manual coordination burden.

There is one challenge that has not been influenced and that is CH5 - manual semester reporting. This exclusion was made intentionally and in cooperation with SeSLab leadership. Currently, the head of the laboratory has access to advanced level Microsoft 365 license that can create on-demand reports using the Planner AI features. Because it is already possible to create semester reports, there was no need to prioritize the implementation of solutions to this area at this time.

In general, the proposed improvements fulfill the most pressing operational opportunities raised in the analysis and show that the most effective and easy-to-implement AI improvements could significantly improve coordination and decrease administrative burdens in a research laboratory environment.

## 6.2 Pilot testing and observations

With the close collaboration with SeSLab leadership, the improvements introduced in the previous chapter 5 were created, implemented and pilot tested. All solutions were checked by pilot testing on a small scale to examine their technical functionality, practical boundaries to the solutions and estimate likely efficiency improvements. This preliminary assessment aims to explain how implemented workflows will perform under real laboratory conditions as well as the level of how deeper they address the identified project management challenges.

### 6.2.1 AI-assisted consultation preparation

The consultation briefing workflow was tested with several real student cases to evaluate its effectiveness in facilitating the preparation for consultation. Prior to the implementation of this workflow, supervisors usually spent 10-15 minutes gathering information manually. In cases when preparation was not possible, the initial stage of the consultation was wasted on the reconstruction of the recent history of the student's progress. This led to the fact that about 10 minutes of the meeting were spent on clarifying the context rather than delivering feedback, essentially cutting time the student could use.

The preparation process was much faster with the introduction of the prompt template in this thesis. It took about 2-3 minutes to open the template, change the name and UČO of the student and create the briefing. The summary generated was a direct overview of the progress updates and the recent files, email messages, which minimized the need to review or explain simple information during the meeting.

Pilot testing also showed some limitations that could be expected:

- the briefing can exclude the documents stored in non-standard folder structures,
- the search quality is based on the Copilot license level.

In general, the pilot reveals that the workflow is operational and much faster than manual preparation. It can improve the efficiency and structure of meetings and still relies on the consistency of information.

### 6.2.2 AI-powered student information bot

Information bot was tested on their unpublished Copilot Studio platform to confirm whether it can reliably answer standard organizational and procedural questions with the use of the pre-existing knowledge base. Each knowledge base document was reviewed by team leaders and they provided feedback on terminology, structure and accuracy of described processes. All documents have been updated according to this feedback to make sure that the bot represents the actual practice and organizational expectations of all SeSLab teams. Figure 6.1 illustrates an example of a response that the SeSLab information bot produced during pilot testing.

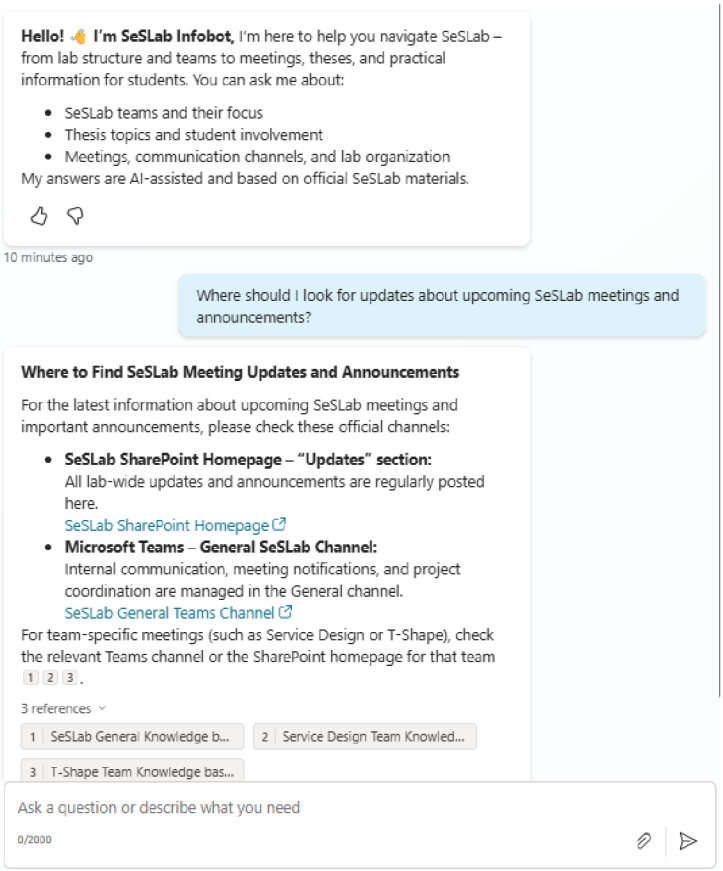


**Figure 6.1:** Example of a response generated by the SeSLab information bot during pilot testing

According to the pilot, the bot actively reads the whole spectrum of natural language questions and generates concise answers using a structured knowledge base. It was useful to separate the general laboratory information and team specific documents as they became easier to understand and navigate.

The testing also showed a number of limitations:

- the bot is not reliable to get dynamic SharePoint content,
- the reliability of the response is wholly reliant on keeping documents updated,
- unspecified queries may require human verification, which a bot cannot perform.

Students have not utilized the bot in real life onboarding situations or throughout the semester since it is not currently implemented in Microsoft Teams. Its wider influence on coordination and information access will be measurable once it is made available to members of SeSLab. When Copilot Studio credits will be accessible, the bot can be released and used systematically.

Overall, according to the pilot, the information bot is technically working, gives adequate results within the current scope and has the possibility to enable more consistent access to organizational information once fully implemented into the laboratory setting.

### 6.2.3 Automated reminder workflow

Automated reminder workflow was tested via trial runs multiple times using sample dates, recipients and message template to verify its technical functionality. The tests proved that the Power Automate properly analyses trigger dates, access relevant records in the SharePoint list and sends out messages to target recipients. These tests revealed that the workflow is functional in the current Microsoft 365 setup and does not need further infrastructure modifications.

During testing it was noted that Power Automate fails to consistently retain formatting that was created on SharePoint text field. It led to irregularities in how reminder messages are displayed and had to make minor changes to the template to ensure that the notifications are readable when sent in plain text. The flow itself interpreted the SharePoint list structure correctly and did not find any problems with date recognition and processing of the recipients. The last look of the social media reminder email is shown in figure 6.2 once the problematic formatting has been corrected during pilot testing.

Instagram and Linked In Copilot template prompt is shown in Appendix D.

Hi Janka,
a quick friendly reminder that it's time to prepare the next SeSLab social media post 😊
You can use the Copilot prompt below to generate an easy first draft.

*Instagram template prompt:*

You are the social media marketer for SeSLab (FI MUNI).
Adopt our brand voice: friendly, concise, community-oriented; highlight student support, collaboration, and practical impact.

**Goal:** Prepare 3 Instagram post suggestions based on SeSLab activities in the last 30 days.

**Search priorities (last 30 days):**

- SeSLab calendar: events, team meetings, milestones.
- Public-safe references (SeSLab website, photo galleries). Avoid internal/private URLs.

**Audience:** students & broader community.
**Platform conventions:** hook in the first line, strong visual, scannable caption, accessible alt text.

**Figure 6.2:** Example of the final social media reminder email after resolving formatting issues identified during pilot testing

The structure of the reminders was optimized based on the feedback provided by SeSLab management. Laboratory leadership also determined what semester-related activities needed automated notifications, proposed the appropriate time when a particular reminder should be sent and gave suggestions about the content that was expected to be included in the specific messages. Their remarks were included in the final version of the SharePoint list so that the workflow captures the real coordination requirements.

Because most milestones only happen once per semester, a detailed analysis of how the workflow has affected coordination and routine management processes can be made once it will be applied during the following semester. The pilot testing, however, confirmed the technical consistency, maintainability, and alignment of the workflow with the SeSLab operational structure.

## 6.3 Feedback from SeSLab management

Structured feedback was collected from Ing. Leonard Walletzký, Ph.D. and Zuzana Hruška in order to evaluate the level of practical relevance of the implemented solutions. The feedback was focused on perceived value, practical application and possible risks. The full responses are provided in Appendix E.

In general, the responses indicate that all three suggested improvements are applicable and could be used in present practices of SeSLab. Among the solutions, the automated reminder workflow was viewed as the most immediate practical benefit, especially in helping coordinate overloads during semester and support leadership overview. The AI-aided consultation preparation was useful, and valuable both in

meeting preparation and rapid review of progress, although its long-term effects definitely need more time to watch. The student information bot was identified as an AI-powered promising solution that could decrease repetitive administrative communication, while its efficiency was found to be closely reliant on student adoption.

## 6.4 Summary of risks and limitations

The evaluation indicates that the effectiveness of the implemented improvements in the long term depends on several common risks, based on human behaviour, data practices, platform limitations or technical limitations of the existing ecosystem.

### Organizational and behavioral dependence

The three suggested improvements depend on the fact that users should constantly update notes, properly manage Planner tasks or update reminder dates. Unless management of SeSLab do not fully adopt the workflows or gradually stop using the prepared templates, the solutions will lose their reliability or cease to function altogether. The most important limitation is this behavioural dependency since no technical mechanism can replace lack or outdated human input.

### Quality and consistency of data

The AI components can process only what is stored within the Microsoft 365 environment. Split files, odd naming, unfinished Wiki notes or no keeping knowledge base documents updated, decrease the accuracy of generated briefings and limit the usefulness of the information bot or reminder workflow. The success of the solutions therefore depends on constant attention to data maintenance.

### Limitations in platforms and license

The inconsistencies in summarization of free and paid Copilot licenses are caused by differences and the complete implementation of the information bot cannot be achieved without Copilot Studio credits. Power Automate flows can also fail because of change in permissions or list structure. These external factors create some form of dependency that SeSLab can not entirely control.

### Limitations of existing tools due to technical constraints

Actually, Copilot Studio does not have a reliable view of the dynamic SharePoint content and the search logic may miss necessary files that are stored outside the expected format. These limitations mean that the solutions adopted facilitate coordination but cannot exist as completely autonomous systems and therefore need to be regularly checked by human intervention.

## 6.5 Recommendations for future development

A number of opportunities in the further development have been identified based on the analysis. These recommendations are based on practical steps that can improve long-term stability, reliability and utility of the proposed workflows.

### Increase usage of more advanced Copilot licence

Since the difference in quality of summarization between licence levels is higher, SeSLab might think about granting at least one or two doctoral students access to paid Copilot licence, especially, who participates in supervision process mostly and Janka Marschalková, who would appreciate AI help with social-media tasks.

### Regular data and workspace routines

The regular light-weight review at the beginning and end of each semester to refresh reminder dates, review the Planner boards, update SharePoint folders and Wiki notes would help minimize data fragmentation and improve the precision of any AI-driven processes.

### Integrate the information bot within Microsoft Teams

Once the bot proves to be stable during testing, it should be integrated into Teams so that it becomes more usable by students and minimize repetitive questions at the beginning of the semester and during semester checkpoints. It will need Copilot Studio credits.

### Help in creating tasks more organized in Planner

More clear task descriptions, including realistic deadlines, estimated durations or closing finished tasks in a regular manner, would allow more detailed data reporting and enable SeSLab management to track progress more efficiently. This can be adopted without any technical adjustments.

### Set up feedback sessions

A series of short feedback sessions at least once per semester can assist with refining templates, updating the knowledge base and keeping the workflows relevant to the changing practices in SeSLab.

# Conclusion

This thesis examined the opportunities of artificial intelligence to assist project management processes in an academic research laboratory, specifically Service Systems Laboratory (SeSLab) of Faculty of Informatics, Masaryk University. The main goal was to locate coordination and administrative bottlenecks in the current workflows and to assess whether the chosen AI-based tools can make a significant positive impact.

The thesis revealed common challenges in the process of manual information collection, fragmented data, repetitive communication and irregular semester routines through process mapping and analysis of the current state. Three AI-based enhancements were planned, developed and pilot tested on a prioritization structure created collaboratively with SeSLab management, including AI-assisted consultation preparation, AI-based student information bot, and automated semester reminder workflow.

The analysis and pilot testing revealed that relatively lightweight AI interventions could have real advantages in terms of the coordination of research activities. Specifically, the automated reminder workflow proved to be an immediately useful solution, while the AI-assisted consultation preparation presented a high potential in minimizing the time used to prepare and enhance the format of the supervisory meetings. It was found that the student information bot was technically feasible and conceptually promising, but the long term effects largely depend on user adoption and regular maintenance of knowledge base.

The results of this thesis demonstrate that AI tools can be useful in assisting project management in a research laboratory if they are introduced as progressive improvements integrated with current workflows, in line with organizational operations, and in combination with disciplined human interaction. Instead of replacing managerial or academic judgment, AI in this sense is an enabling technology that increases visibility, consistency and decision support. The discussed methodology and findings can also serve as a useful source of information to other academic teams who want to implement AI into their project management routines in presented and realistic manners.

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# A Process diagrams

## A.1 Current workflow

### A.1.1 Task lifecycle

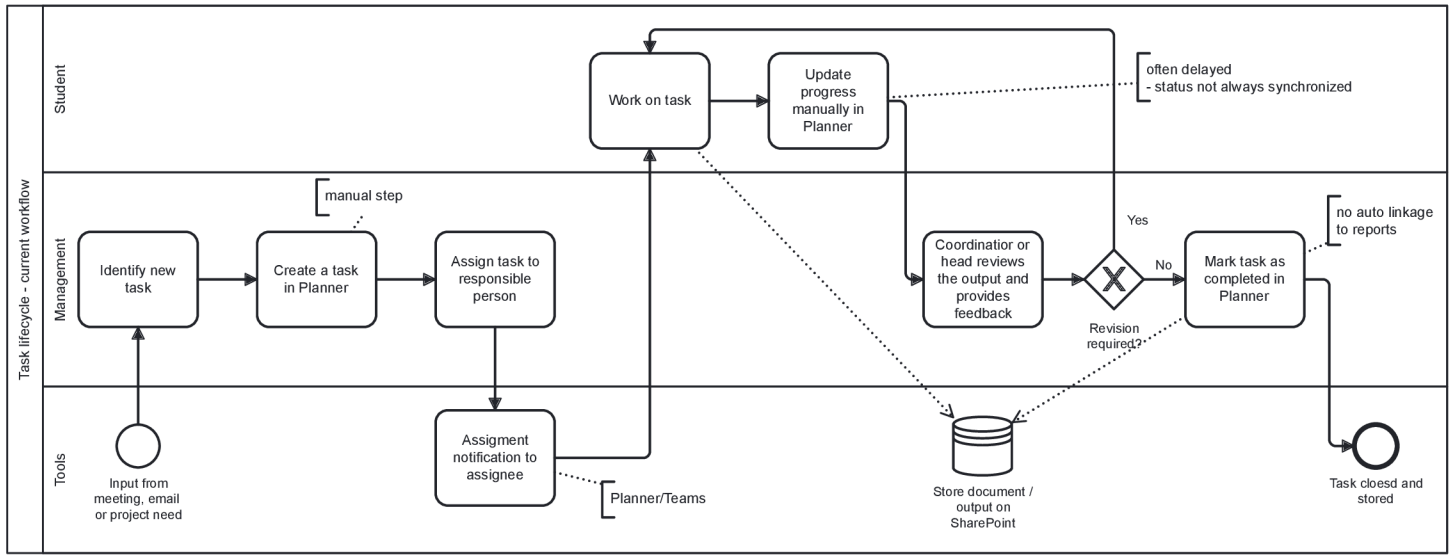


**Figure A.1:** Task lifecycle - current workflow

### A.1.2 Creation of action items

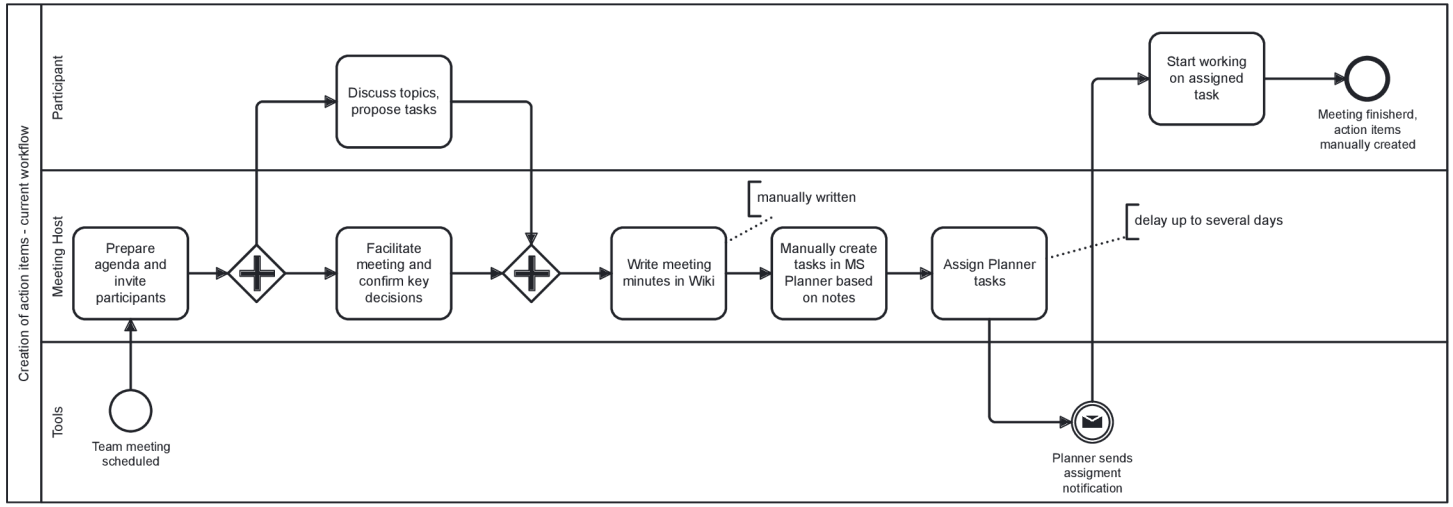


**Figure A.2:** Creation of action items - current workflow

### A.1.3 Preparation process for consultation

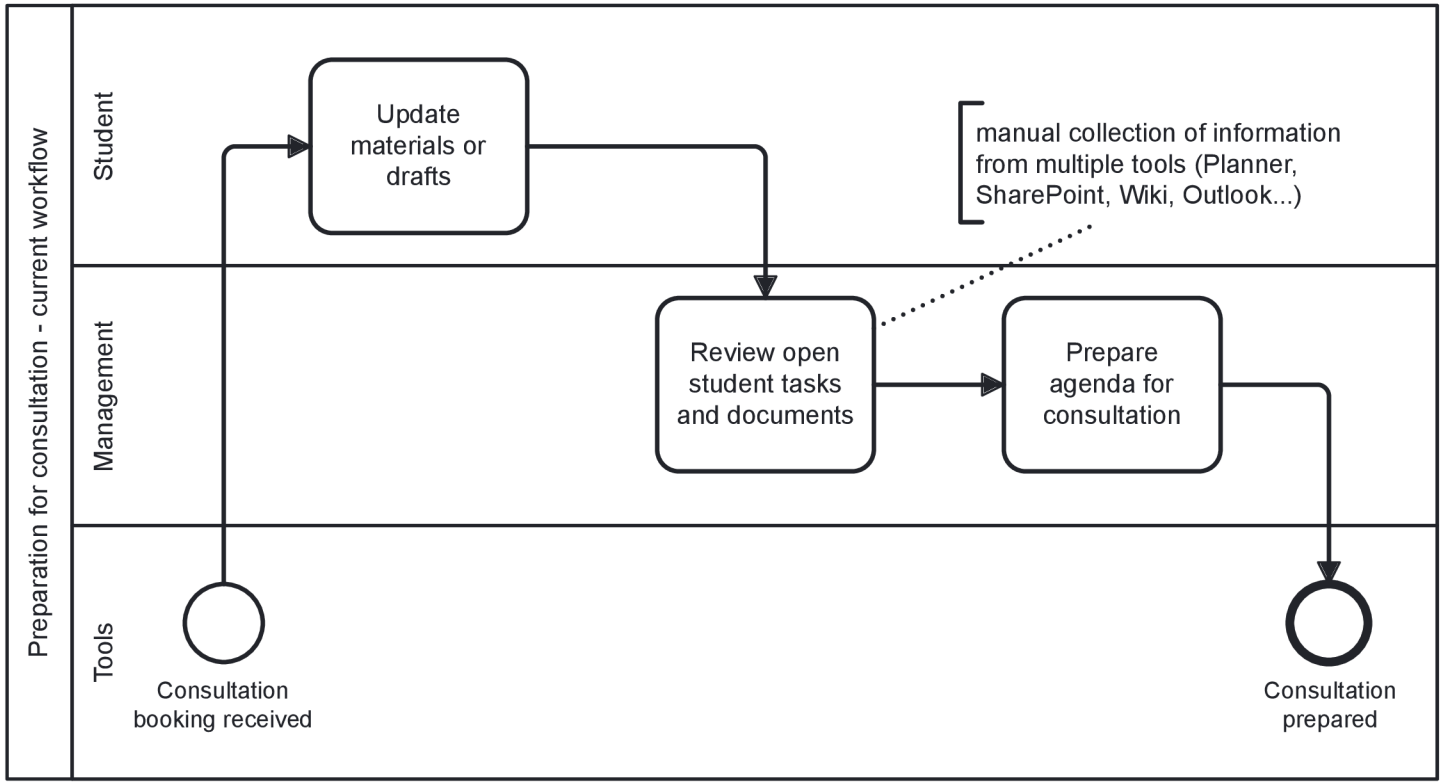


**Figure A.3:** Preparation for consultation - current workflow

### A.1.4 Repetitive administrative

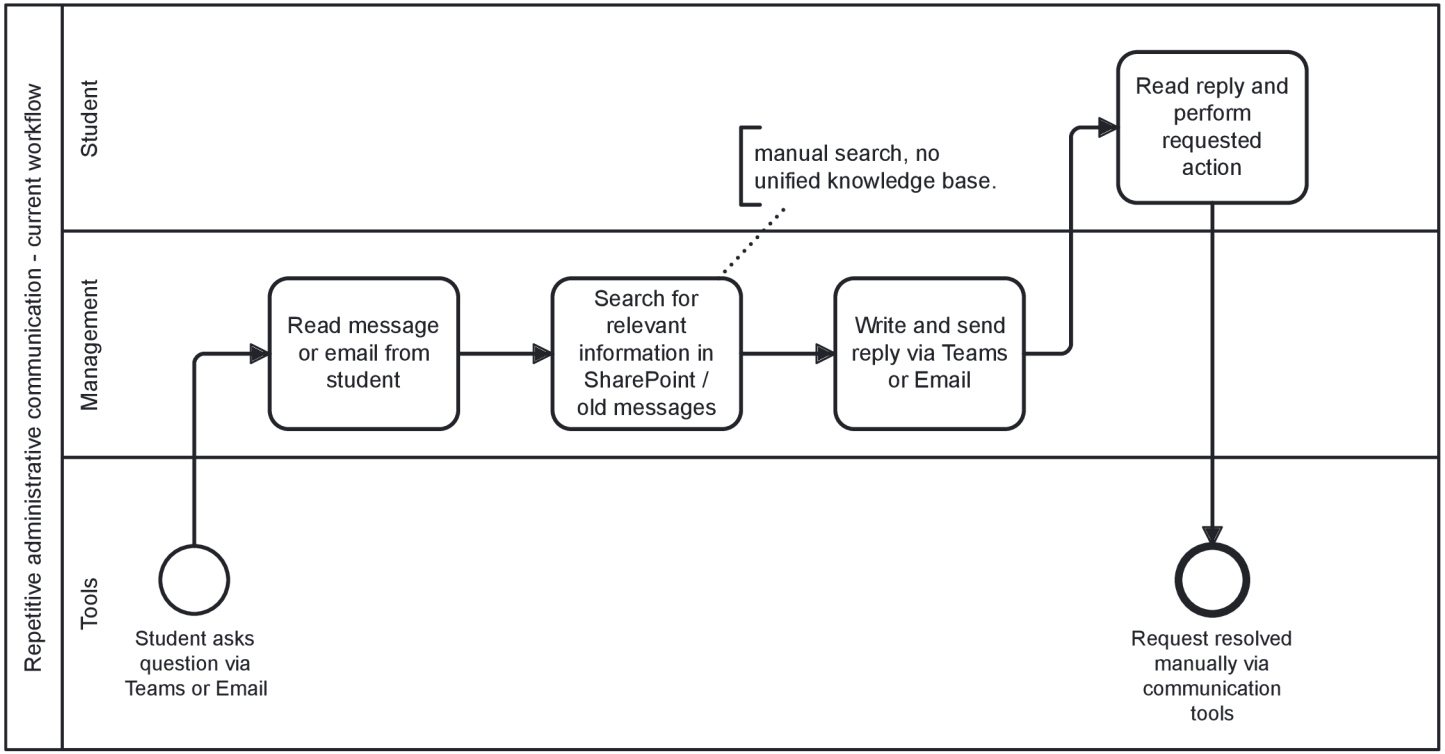


**Figure A.4:** Repetitive administrative communication - current workflow

### A.1.5 Semester reporting process

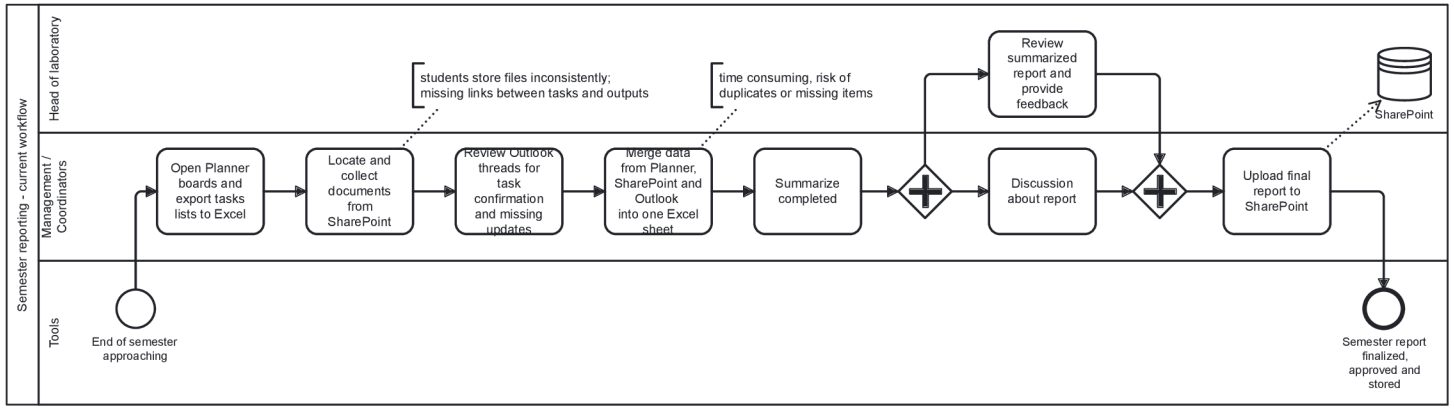


**Figure A.5:** Semester reporting - current workflow

## A.2 Optimized workflow

### A.2.1 Task lifecycle

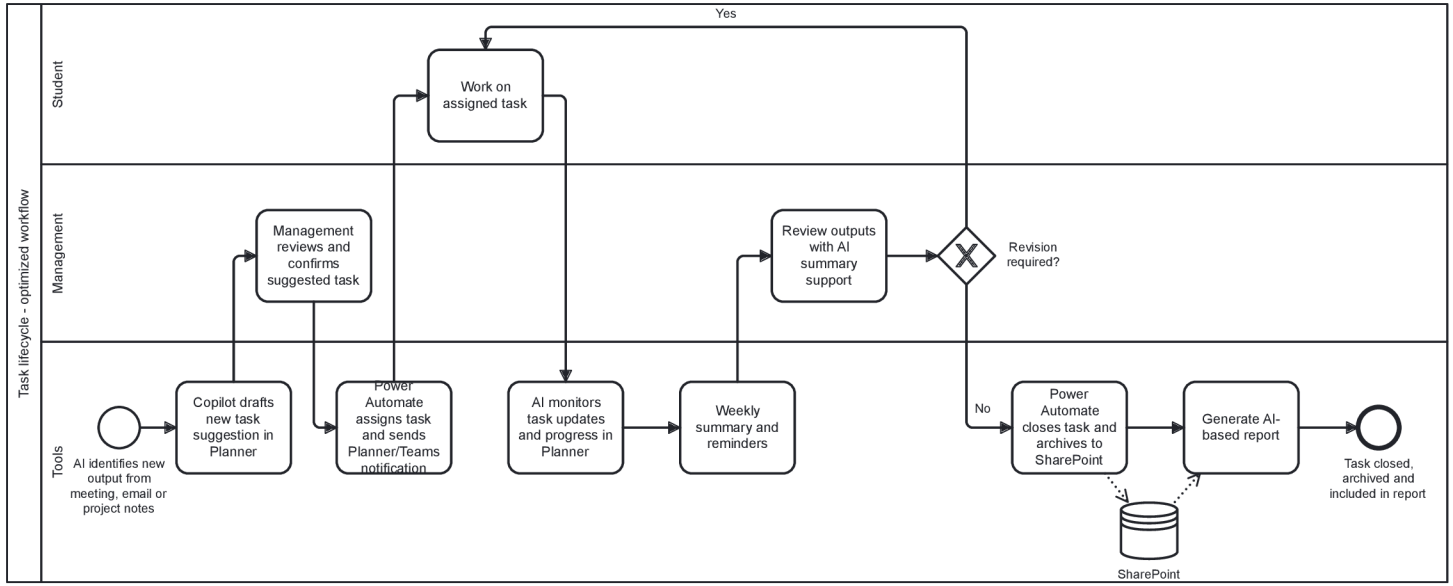


**Figure A.6:** Task lifecycle - optimized workflow

### A.2.2 Creation of action items

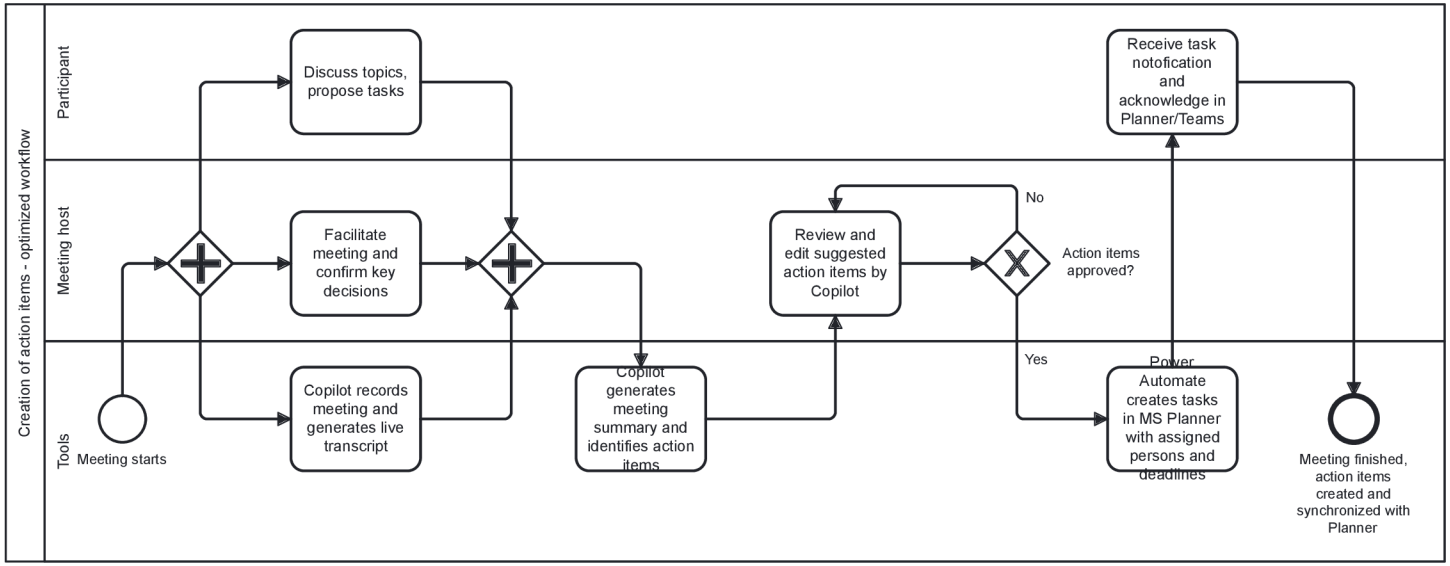


**Figure A.7:** Creation of action items - optimized workflow

### A.2.3 Preparation process for consultation

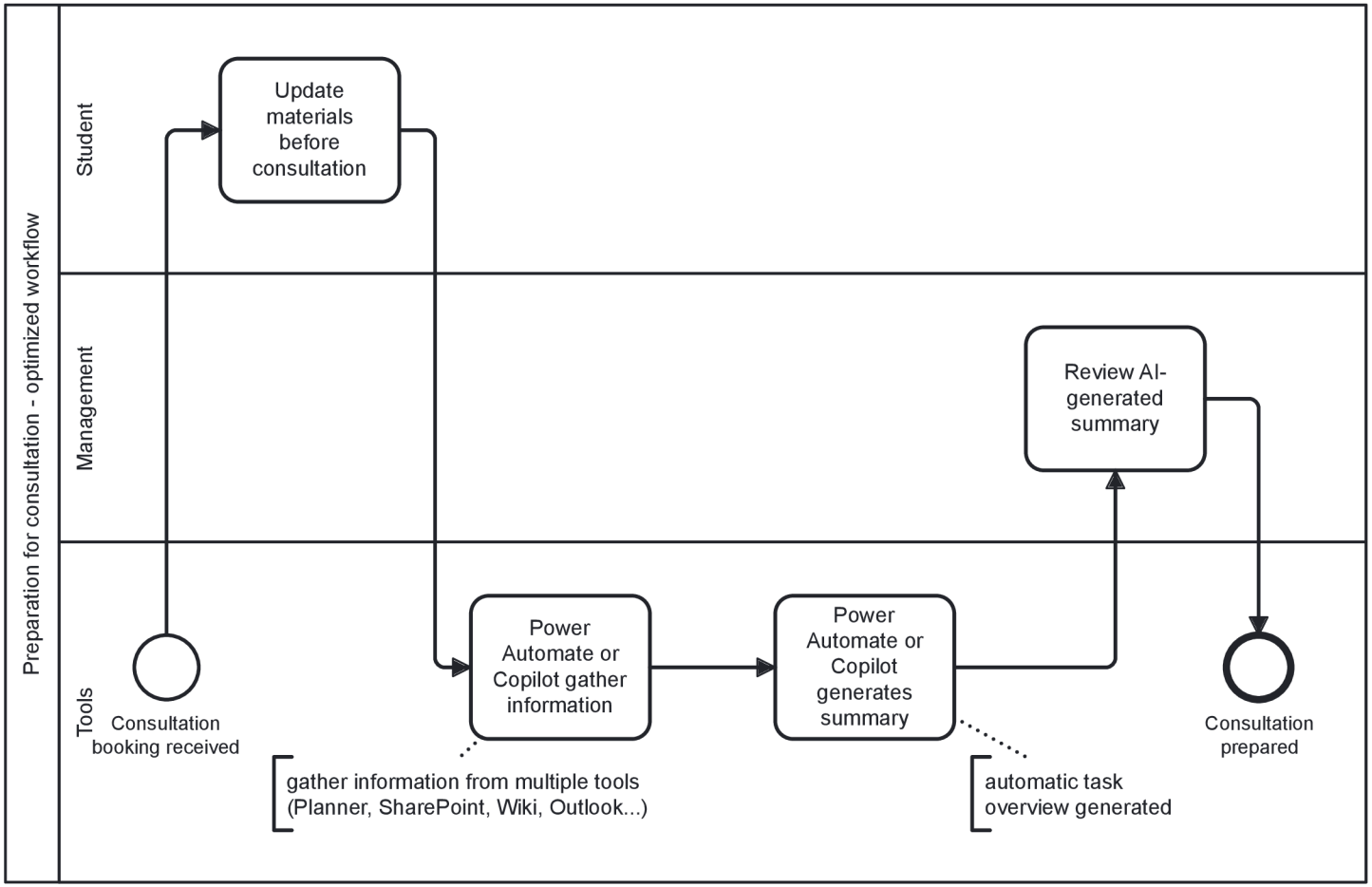


**Figure A.8:** Preparation for consultation - optimized workflow

### A.2.4 Repetitive administrative

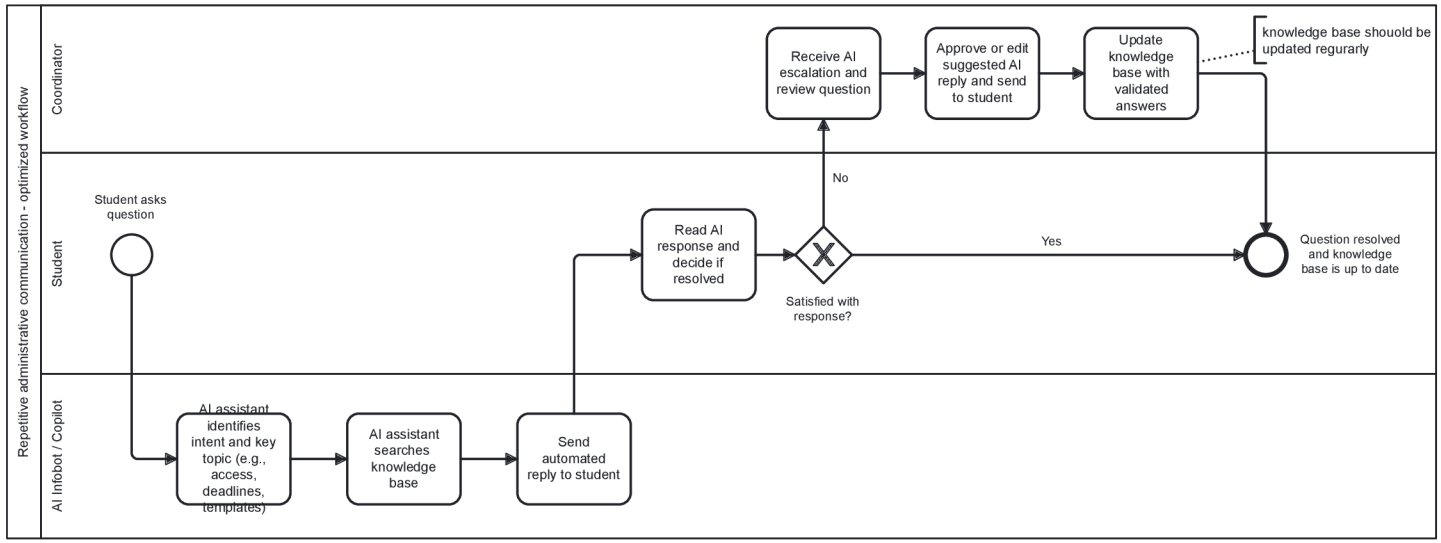


**Figure A.9:** Repetitive administrative communication - optimized workflow

### A.2.5 Semester reporting process

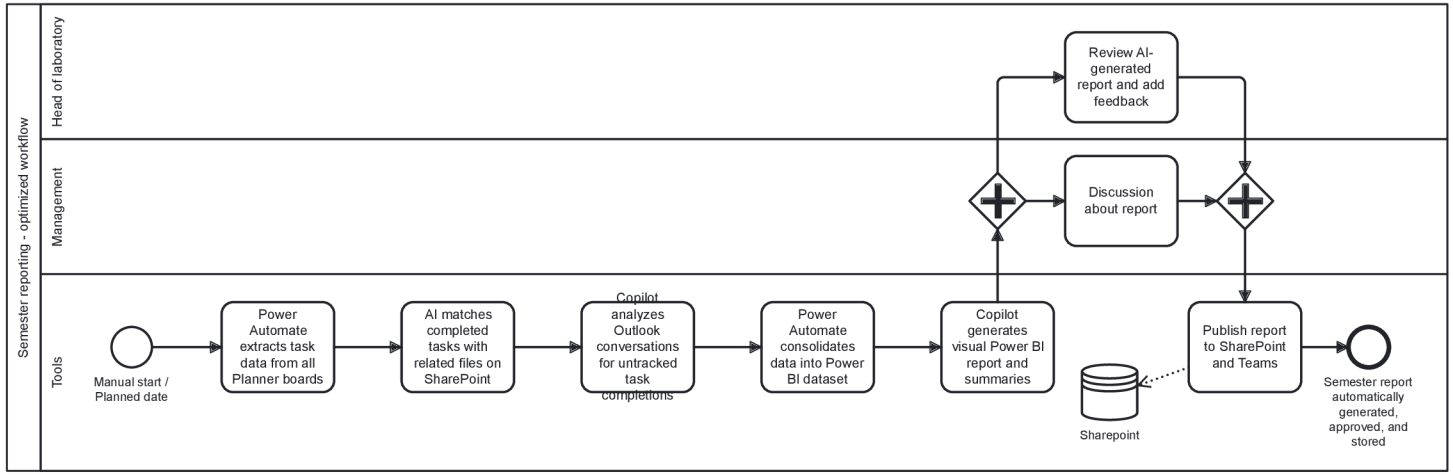


**Figure A.10:** Semester reporting - optimized workflow

# B AI-assisted consultation preparation

```
Prepare a detailed briefing for a consultation with a
   student in SeSLab (FI MUNI):

Student: {STUDENT_NAME} | UCO: {UCO} | emails:
   {UCO}@mail.muni.cz, {UCO}@muni.cz

Search priorities:
- First, check SharePoint Wiki notes named after the
   student (SeSLab Wiki).
- Then, check files related to thesis/diploma work
   (keywords: thesis, diploma, bachelor, DP, BP)
   authored or edited by the student.
- Then, check recent emails involving the student.
- Finally, check Planner tasks assigned to the student.

Include:
1) Thesis title and focus - from Wiki notes or
   thesis-related files; summarize in 2-3 sentences.
2) Recent progress (last 30 days) - from Wiki notes or
   thesis files; list 3-5 bullet points with date and
   short description.
3) Recently edited documents - up to 5 items: name,
   type, last modified date, link.
4) Recent emails - up to 3 threads: summarize key points
   in 1-2 sentences + link to the latest email.
5) Planner tasks (open or overdue) - task name, due
   date, status, link.

Output format:
- Start with student info (name, UCO, emails).
- Use clear section headers (1-5) and bullet points for
   each item.
- Keep text concise but informative (avoid long
   paragraphs).
- If no data is found for any section, write "NOT FOUND".
- Language: English.
- Do NOT fabricate information; only use available data.
```

# C AI-powered student information bot

## C.1 General SeSLab knowledge base

### SeSLab Focus

The Service Systems Laboratory (SeSLab) at the Faculty of Informatics, Masaryk University, focuses on research, development, and evaluation of complex service systems. The lab integrates principles from information technology, human-centered design, artificial intelligence, organizational studies, and data-driven innovation. Its mission is to improve how services—digital, social, urban, educational, or organizational—are designed, delivered, and governed, with a strong emphasis on societal impact, smart cities, and interdisciplinary collaboration. SeSLab brings together students, researchers, and external partners to explore technologies and methods that support sustainable, resilient, user-centered, and data-informed service ecosystems.

### Research Topics and Key Terms

- Service Systems & Service Design – holistic design and analysis of services in public and private sectors.
- Smart Cities & Urban Innovation – digital technologies for sustainable mobility, citizen participation, environmental monitoring, and municipal services.
- Artificial Intelligence & Knowledge Technologies – multiagent systems, knowledge graphs, decision support, semantic data integration.
- Interdisciplinary Education & Skills Development – T-shaped competencies, teamwork, soft skills, experiential learning.
- Data-Driven Service Improvement – analytics, automation, dashboards, and process optimization.

Key terms: service systems, smart services, interdisciplinary collaboration, stakeholder-centered innovation, multiagent coordination, knowledge graphs, T-Shaped skills, service lifecycle, semantic data integration.

### Student Involvement

- Writing bachelor's and master's theses on current SeSLab topics
  - open topics: `https://seslab.fi.muni.cz/en/for-students/open-final-thesis-topics`
- Participation in research projects and grants → more detailed information will be provided by team leaders
- Attending lab meetings

## External Collaboration

- Collaboration with the City of Brno, Living Lab Brno, public institutions, and IT companies
- Participation in European and international research projects
- Partnerships with other universities and research groups

More information:

- Local collaboration: `https://seslab.fi.muni.cz/en/about/local-collaboration`
- International collaboration: `https://seslab.fi.muni.cz/en/about/foreign-collaboration`

## Organizational Structure and Teams

SeSLab consists of three specialized teams. Each team has its own focus, meetings, planner, and research areas. Detailed information is found in their dedicated documents.

- **Service Design Team:** focuses on design, delivery, and evaluation of smart city services, human-centered service development, and stakeholder-centered innovation.
- **Multiagent Systems and Knowledge Graphs Team:** specializes in autonomous agents, semantic data integration, knowledge graph construction, and intelligent automation.
- **T-Shape Team:** supports development of T-shaped skills, soft skills, interdisciplinary collaboration, and coordination of the T-Shape course at FI MUNI.

SeSLab consists of three specialized teams. For more details about each team, see the Service Design Team Knowledge base, Multiagent Systems and Knowledge Graphs Team Knowledge base, and T-Shape Team Knowledge base documents.

## SeSLab Leadership

- Head of the laboratory: Ing. Leonard Walletzký, Ph.D.
  - email: qwalletz@fi.muni.cz
- Contacts for lab leadership and individual teams: `https://seslab.fi.muni.cz/en/contact`

## Connection to Teaching

SeSLab is closely linked to teaching activities at FI MUNI:

- Coordination of the T-Shape course.
- Supervision of bachelor's and master's theses.
- Guest lectures and invited workshops.
- Collaboration on project-based and experiential learning methods.
- Participation in interdisciplinary educational projects.
- Courses overview: `https://seslab.fi.muni.cz/en/for-students/courses-of-the-lab`

## SeSLab Meetings

- 3 meetings per semester, which are mandatory for all lab members of all teams
- You can find dates of all meetings on the SharePoint HomePage or Microsoft Team General SeSLab Channel:
  - SharePoint HomePage: `https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx`
  - General SeSLab Channel: `https://teams.microsoft.com/l/channel/19%3A2039066b3d234a469e87b04ea23b2258%40thread.skype/General`

## SeSLab News & Updates

- SharePoint SeSLab Homepage – "Updates" section: `https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx`
- Microsoft Teams – General SeSLab channel used for internal communication, project coordination, and resource sharing: `https://teams.microsoft.com/l/channel/19%3A2039066b3d234a469e87b04ea23b2258%40thread.skype/General`

## SeSLab Members

- You can find the list of lab members here: `https://ucnmuni.sharepoint.com/teams/SesLab/Lists/SeSLab%20members/AllItems.aspx`
- For team-specific member lists, see the respective team Q&A documents.

## Publications and Materials

- Public research outputs:
  - Publications: `https://seslab.fi.muni.cz/en/research/publications`
- Internal documents, drafts, and working materials are stored on:
  - SharePoint: `https://ucnmuni.sharepoint.com/teams/SesLab/Sdilene%20dokumenty/Forms/General.aspx`
  - Wiki: `https://ucnmuni.sharepoint.com/teams/SesLab/_layouts/15/Doc.aspx?sourcedoc={0066a47f-365e-4c00-b3af-9317f3aef0cd}`

## Frequently Asked Questions (FAQ)

- **Q: What is SeSLab?**

  *A:* A research laboratory at FI MUNI focused on service systems, smart cities, artificial intelligence, and interdisciplinary education.

- **Q: How can I get involved with SeSLab?**

  *A:* Students can get involved by choosing an open thesis topic, contacting a team leader, or attending a laboratory meeting.

- **Q: Who is the head of the lab?**

  *A:* The head of the laboratory is Ing. Leonard Walletzký, Ph.D.

- **Q: Where can I find information about the teams?**

  *A:*Information about individual teams is available in the team-specific Q&A documents or on the SeSLab website: `https://seslab.fi.muni.cz/en/about/teams`

- **Q: How do I know which team is right for me?**

  *A:* The choice depends mainly on the student's area of interest, such as service design, AI and knowledge technologies, or soft-skills and interdisciplinary development.

- **Q: Can I participate even without writing a thesis?**

  *A:* Yes, students may participate in research projects or educational activities depending on the current capacity of the laboratory.

- **Q: Where do I find updates and announcements?**

  *A:* Updates and announcements are shared via the SeSLab SharePoint (Updates section) and relevant Microsoft Teams channels.

## C.2 Service Design team knowledge base

### Team Focus

Service Design is a subarea of the Service Systems Laboratory focused on the design, delivery, and evaluation of IT services in complex societal environments, especially in cities and municipalities. One of our key research areas is smart city services and how IT can contribute to the value these services provide to citizens. A particular emphasis is put on services supporting carbon neutrality, resilience, and green cities. Our work is grounded in a holistic approach to service systems that takes into account technical as well as human and social dimensions. In our research and teaching, we use the 4-diamond model of service design.

### Research Topics and Key Terms

- Service Design: user- and stakeholder-centered service development methodology.
- Smart Services / Smart City: intelligent digital services improving city functionality.
- 4-diamond model: combines IT systems, human-centered design, and systemic thinking.
- T-shaped skills: deep IT knowledge + interdisciplinary awareness.
- Stakeholder-centered innovation: all parties involved in service creation.

### Completed and Open Theses

- Topics include Smart City services, stakeholder analysis, co-design implementation, and T-shaped skills development.
- Completed theses: `https://seslab.fi.muni.cz/en/research/final-theses`
- Open thesis topics: `https://seslab.fi.muni.cz/en/for-students/open-final-thesis-topics`

### Team Leadership

- Team Leader: Mgr. Zuzana Hruška
- Contact: hruska@fi.muni.cz or Microsoft Teams
- SeSLab Leadership contacts: `https://seslab.fi.muni.cz/en/contact`
- Responsible for coordination of the Service Design team, supervision of student theses, and collaboration on Service Design–related projects.

## Team Meetings

- **Schedule:** Set by the team leader or by collective agreement.
- **Attendance:** All team members + students who are not assigned to any team yet.
- **Agenda:**
  - **Team News:** The Team Leader will present team-wide news.
  - **Scrum:** All team members briefly answer:
    - "What have you been doing since the last team meeting?"
    - "What do you plan to do until the next team meeting?"
    - "Are you facing any blockers?"
  - **Topics to Discuss:** Open points for discussion.

You can find dates of team meetings here:

- SharePoint: `https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx`
- Microsoft Teams – Service Design channel: `https://teams.microsoft.com/l/channel/19%3A54a5ab7f07974ede8192fab097a9ae62%40thread.skype/Service%20Design`

## Meeting Notes

The notebook with meeting notes has two sections:

**Team Meetings Notes – include:**

- Attendance sheet
- Team Updates
- Topics to discuss
- Reminder to update individual notes
- The agenda structure described in the previous section

**Individual Progress Notes – regularly updated before meetings/consultations:**

- Thesis progress
- Link to Overleaf document
- Short description of the topic
- Tasks you're working on
- Notes from consultations

Meeting notes notebook: `https://ucnmuni.sharepoint.com/teams/SesLab/ServiceDesign/_layouts/15/Doc.aspx?sourcedoc={a9c311a1-399f-4ef2-92a0-c16c9a2789ac}`

## Team News & Updates

Latest updates can be found here:

- SharePoint "Updates" section: https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx
- Microsoft Teams – Service Design channel: https://teams.microsoft.com/l/channel/19%3A54a5ab7f07974ede8192fab097a9ae62

## Team Members

List of members: https://ucnmuni.sharepoint.com/teams/SesLab/ServiceDesign/SitePages/Service-Design-Members.aspx

## Publications and Materials

- Research papers related to the Service Design team topic are available in the team's SharePoint research folder: https://ucnmuni.sharepoint.com/:f:/r/teams/SesLab/ServiceDesign/Sdilene%20dokumenty/Service%20Design%20papers%20and%20resources?csf=1&web=1&e=BjqdCQ
- Public research outputs: https://seslab.fi.muni.cz/en/research/publications
- Internal materials on SharePoint: https://ucnmuni.sharepoint.com/teams/SesLab/ServiceDesign/

## Frequently Asked Questions (FAQ)

- **Q: What does the Service Design team do?**

  *A:* The team focuses on designing, delivering, and evaluating IT services for cities and municipalities, with emphasis on smart city solutions and sustainability.

- **Q: Who is the team leader?**

  *A:* Mgr. Zuzana Hruška.

- **Q: Where can I find meeting notes?**

  *A:* Meeting notes are available in the team's OneNote notebook (link above).

- **Q: How do meetings work?**

  *A:* Meetings include team news, scrum updates, and discussion topics. The schedule is set by the team leader or collectively.

- **Q: How can I join or get more information?**

  *A:* Contact the team leader or check the SeSLab SharePoint.

## C.3 T-Shape team knowledge base

### Team Focus

The T-Shape Team is a research-oriented subarea of the Service Systems Laboratory focused on research into approaches that support the development of T-shaped skills among students of the Faculty of Informatics. The research focus lies in exploring how deep expertise in a selected IT domain can be combined with a broad interdisciplinary understanding of related fields, enabling effective collaboration, cross-disciplinary communication, and functioning in modern team-based environments. The team also focuses on the research and development of tool-based and AI-supported solutions, including recommendation systems, that influence and support T-shaped skill development.

The team supports community building, soft-skill development, and the coordination of the T-Shape course at FI MUNI. Its mission is to contribute research-based insights and frameworks that inform how interdisciplinary and T-shaped skill development can be supported in academic and educational environments.

### Research Topics and Key Terms

- T-shaped skills: a combination of deep knowledge in one area and broad awareness across others.
- Interdisciplinary collaboration: cooperation across different fields of expertise.
- Soft Skills for IT: communication, teamwork, presentation skills, and facilitation.
- Learning pathways: educational activities supporting student growth.
- Experiential learning: learning through projects, reflection, and hands-on practice.
- Community building: supporting student engagement and teamwork culture.
- AI skills literacy and tool-supported development: the role of digital tools and AI in supporting T-shaped skill development.

### Completed and Open Theses

- Topics include T-shaped skills development, interdisciplinary projects, team collaboration assessment, and case studies from practice.
- Completed theses: `https://seslab.fi.muni.cz/en/research/final-theses`
- Open thesis topics: `https://seslab.fi.muni.cz/en/for-students/open-final-thesis-topics`

## Team Leadership

- Team Leaders:
  - Mgr. Bc. Klára Kubíčková
  - Mgr. Janka Marschalková
- Klára: kkubickova@mail.muni.cz
- Janka: 493097@mail.muni.cz
- SeSLab Leadership contacts: `https://seslab.fi.muni.cz/en/contact`

## Team Meetings

- **Schedule:** Meetings are scheduled biweekly on Thursday at 14:00.
- **Attendance:** All team members + students who are not assigned to any team yet.
- **Agenda:**
  - **Team News**
  - **Scrum:** Each member answers:
    - "What have you been doing since the last team meeting?"
    - "What do you plan to do until the next team meeting?"
    - "Are you facing any blockers?"
  - **Topics to Discuss**

You can find dates of team meetings here:

- SharePoint HomePage: `https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx`
- T-Shape Teams Channel: `https://teams.microsoft.com/l/channel/19%3Add9fb3a6c61442768c2ef50b927ce138%40thread.skype/T-Shape`

## Meeting Notes

Notebook sections:

**Team Meetings Notes** include:

- Attendance sheet
- Team updates
- Topics to discuss
- Reminder to update individual notes

**Individual Progress Notes** include:

- Thesis progress
- Link to Overleaf document
- Short topic description
- Tasks you're working on
- Notes from consultations

Notebook link: https://ucnmuni.sharepoint.com/teams/SesLab/TShape/_layouts/15/Doc.aspx?sourcedoc={d56fe715-0bb1-4c18-afce-123ae47766d7}

## Team News & Updates

- SharePoint Updates: https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx
- Microsoft Teams – T-Shape channel: https://teams.microsoft.com/l/channel/19%3Add9fb3a6c61442768c2ef50b927ce138%40thread.skype/T-Shape

## Team Members

Team member list: https://ucnmuni.sharepoint.com/teams/SesLab/TShape/SitePages/T-shape-members.aspx

## Publications and Materials

- Research papers related to the T-Shape team topic are available in the team's SharePoint research folder: https://ucnmuni.sharepoint.com/:f:/r/teams/SesLab/TShape/Sdilene%20dokumenty/T-shape%20papers%20and%20resources?csf=1&web=1&e=XlJsOP
- Publications: https://seslab.fi.muni.cz/en/research/publications
- Internal documents: https://ucnmuni.sharepoint.com/teams/SesLab/TShape/

## Frequently Asked Questions (FAQ)

- **Q: What does the T-Shape team do?**

  *A:*The team focuses on interdisciplinary and soft-skill development and coordinates the T-Shape course.
- **Q: Who is the team leader?**

  *A:* Klára Kubíčková and Janka Marschalková.
- **Q: Where can I find meeting notes?**

  *A:* In the team's OneNote notebook (link above).

- **Q: How do meetings work?**
  *A:* News, scrum updates, discussion topics.
- **Q: How can I join the team or get more information?**
  *A:* Contact the team leader or check SharePoint.

## C.4 Multiagent Systems and Knowledge Graphs team knowledge base

### Team Focus

The Multiagent Systems and Knowledge Graphs Team at SeSLab focuses on the development, integration, and application of multiagent systems and knowledge graphs in artificial intelligence, data science, and complex information environments. The team explores how autonomous agents can collaborate, reason, and interact with structured knowledge representations to solve real-world problems, including semantic data integration, intelligent decision-making, and context-aware automation. Research activities span from theoretical foundations to practical implementations in domains such as smart cities, scientific knowledge management, and enterprise data interoperability.

### Research Topics and Key Terms

- Multiagent Systems (MAS): collections of autonomous agents that collaborate to solve complex tasks, leveraging distributed intelligence and specialized roles.
- Knowledge Graphs (KG): structured representations of entities and their relationships, enabling advanced reasoning, semantic search, and data integration.
- Semantic Mapping: automated integration of heterogeneous data sources using agents and knowledge graphs.
- Collaborative AI: multiagent architectures for knowledge graph construction, enrichment, and query answering.
- Applications: smart cities, scientific research, Industry 4.0, healthcare, finance, cybersecurity, and more.

### Completed and Open Theses

- Topics include multiagent coordination, semantic mapping of relational data, knowledge graph construction, and AI-powered data integration.
- Completed theses: `https://seslab.fi.muni.cz/en/research/final-theses`

- Open thesis topics: `https://seslab.fi.muni.cz/en/for-students/open-final-thesis-topics`

## Team Leadership

- Team Leader: Ing. Patrik Procházka
- Contact: 418277@mail.muni.cz or Microsoft Teams
- SeSLab Leadership contacts: `https://seslab.fi.muni.cz/en/contact`
- Responsible for coordination of the Multiagent Systems and Knowledge Graphs team, supervision of student theses, and collaboration on team-related projects.

## Team Meetings

- **Schedule:** Set by the team leader or by collective agreement.
- **Attendance:** All team members + students who are not assigned to any team yet.
- **Agenda:**
  - **Team News**
  - **Scrum:** Each member briefly answers:
    - "What have you been doing since the last team meeting?"
    - "What do you plan to do until the next team meeting?"
    - "Are you facing any blockers?"
  - **Topics to Discuss**

You can find dates of team meetings here:

- SharePoint HomePage: `https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx`
- Teams Channel – Multiagent Systems and Knowledge Graphs: `https://teams.microsoft.com/l/channel/19%3A75f0dd97497c4f0595664e996568db2f%40thread.skype/Multi-agent%20and%20knowledge%20graph%20team`

## Meeting Notes

Notebook sections:

**Team Meetings Notes** include:

- Attendance sheet
- Team Updates

- Topics to discuss
- Reminder to update individual notes

**Individual Progress Notes** include:

- Thesis progress
- Link to Overleaf thesis document
- Short description of topic
- Tasks you're working on
- Notes from consultations

Notebook link: https://ucnmuni.sharepoint.com/teams/SesLab/MASandKG/_layouts/15/Doc.aspx?sourcedoc={175063fc-505a-4472-9b6a-82b0ab29a135}

## Team News & Updates

- SharePoint Updates: https://ucnmuni.sharepoint.com/teams/SesLab/SitePages/en/Home.aspx
- Microsoft Teams – Multiagent Systems and Knowledge Graphs channel: https://teams.microsoft.com/l/channel/19%3A75f0dd97497c4f0595664e996568db2f%40thread.skype/Multi-agent%20and%20knowledge%20graph%20team

## Team Members

Team member list: https://ucnmuni.sharepoint.com/teams/SesLab/MASandKG/SitePages/MAS-and-KG-Members.aspx

## Publications and Materials

- Research papers related to the MAS and KG team topic are available in the team's SharePoint research folder: https://ucnmuni.sharepoint.com/:f:/r/teams/SesLab/MASandKG/Shared%20Documents/MAS%20papers?csf=1&web=1&e=Vx32Lf
- Publications: https://seslab.fi.muni.cz/en/research/publications
- Internal documents: https://ucnmuni.sharepoint.com/teams/SesLab/ServiceDesign/

## Frequently Asked Questions (FAQ)

- **Q: What does the Multiagent Systems and Knowledge Graphs team do?**
  *A:* The team focuses on developing, integrating, and applying multiagent systems and knowledge graphs for intelligent automation, semantic data integration, and advanced reasoning in AI.
- **Q: Who is the team leader?**
  *A:* Ing. Patrik Procházka.
- **Q: Where can I find meeting notes?**
  *A:* In the team's OneNote notebook (link above).
- **Q: How do meetings work?**
  *A:* Team news, scrum updates, and discussion topics.
- **Q: How can I join the team or get more information?**
  *A:* Contact the team leader or check the SeSLab SharePoint.
- **Q: What research topics is the team currently working on?**
  *A:* Current research focuses on applying knowledge graphs and multiagent systems in the context of smart cities, particularly on semantic integration of heterogeneous urban data, intelligent coordination of agents, and decision support for complex urban systems. The team also collaborates with the T-Shape team on interdisciplinary aspects, such as combining technical AI solutions with organizational, societal, and human-centered perspectives.

# D Automated reminder workflow

## D.1 Instagram template prompt

```
You are the social media marketer for SeSLab (FI MUNI).
Adopt our brand voice: friendly, concise,
   community-oriented; highlight student
support, collaboration, and practical impact.

Goal:
Prepare 3 Instagram post suggestions based on SeSLab
   activities in the last 30 days.

Search priorities (last 30 days):
- SeSLab calendar: events, team meetings, milestones.
- Public-safe references (SeSLab website, photo
   galleries).
  Avoid internal/private URLs.

Audience:
Students and broader community.

Platform conventions:
- Hook in the first line.
- Strong visual.
- Scannable caption.
- Accessible alt text.

Constraints:
- Use only public, verifiable data; if nothing relevant
   is found, write "NOT FOUND".
- No sensitive details; prefer http://seslab.fi.muni.cz.
- Avoid unexplained acronyms.

For each of the 3 posts include:
- Title (max. 6 words) + one emoji aligned with the
   theme.
- Caption (max. 120 words) with one clear takeaway;
   plain language.
- Visual suggestion (photo / carousel / reel; what to
   show).
- Hashtags (8-12; mix of branded, topic, and
   location-based).
- Alt text (max. 20 words).
```

```
Self-check before output:
- Is the post public-safe and on-brand?
- Is the caption concise and engaging?
- Would this work as a carousel or reel?

Output format:

Post {1..3}
- Title:
- Caption:
- Visual:
- Hashtags:
- Alt text:

Language:
English.

Do NOT fabricate information; only use available data.
```

## D.2 Linked In template prompt

```
You are the social media marketer for SeSLab (FI MUNI).
Adopt our brand voice: professional, insight-driven,
   partner-friendly; emphasize
outcomes, collaboration, and research quality.

Goal:
Prepare 3 LinkedIn post suggestions based on SeSLab
   activities in the last 30 days.

Search priorities (last 30 days):
- SeSLab calendar: project meetings, consultations,
   collaborations, milestones.
- Notes or transcripts referencing automation, workflow
   improvements,
  and student support.
- Public-safe references (SeSLab website, articles,
   slide decks).
  Avoid internal or private URLs.

Audience:
Academics, practitioners, and partners.
```

```
Platform conventions:
- Value-focused headline.
- Concise lead.
- Bullet-point key takeaways.
- Clear call to action (CTA).

Constraints:
- Use only public, verifiable data; if nothing relevant
   is found, write "NOT FOUND".
- No sensitive details; prefer http://seslab.fi.muni.cz.
- Quantify outcomes if available; otherwise keep
   benefits specific
  and avoid vague claims.

For each of the 3 posts include:
- Headline (max. 12 words) with a clear value focus.
- Lead (2--3 sentences): context and outcome or benefit
  (include one data point if available).
- Key bullet(s) (1--2): what was learned or what comes
   next.
- CTA with a public link (e.g.,
   http://seslab.fi.muni.cz).
- Hashtags (3--6; targeted and relevant).

Self-check before output:
- Is the headline value-oriented?
- Does the lead clearly state an outcome or benefit?
- Is the CTA actionable and public-safe?

Output format:

Post {1..3}
- Headline:
- Lead:
- Key bullet(s):
- CTA:
- Hashtags:

Language:
English.

Do NOT fabricate information; only use available data.
```

# E Feedback from SeSLab management

This appendix presents structured qualitative feedback collected during the evaluation phase of the diploma thesis. The feedback was obtained from two key representatives of SeSLab management who were closely involved in consultations throughout the development of this work.

- **Answer 1** – Ing. Leonard Walletzký, Ph.D., Head of the Service Systems Laboratory
- **Answer 2** – Zuzana Hruška, doctoral student and coordinator of the Service Design team

The following questions and responses reflect their perspectives on the practical relevance, applicability, and risks of the proposed AI-driven improvements.

1. **How do you perceive the overall contribution of the three proposed solutions to the functioning of SeSLab?**

   *Answer 1:* All three proposed solutions have significant potential to enhance the efficiency of lab members. While thesis supervision may not be directly related to the lab's research, the content of most theses will generally align with the lab's topics. I appreciate the idea of an information bot; however, I am somewhat skeptical about whether students who struggle to navigate the lab's web pages will be willing to communicate with the bot. In the short term, I anticipate the greatest impact from the automated reminder workflow.

   *Answer 2:* The proposed solutions are easy enough to incorporate in the current functioning of SeSLab, and if we adopt them successfully, it is a good first step in the direction of more automatization for our processes.

2. **Is this type of help for consultation preparation useful for you, and do you see room for regular use?**

   *Answer 1:* It is definitely helpful, and I see its clear value. To confirm this, we need to evaluate it for at least one semester.

   *Answer 2:* It could be useful not only for consultation preparation, but also as a quick way to check what is the current status of the student's research or thesis, which I appreciate.

3. **Do you think an infobot would actually reduce the number of repeated questions from students?**

   *Answer 1:* It has definitely the potential to do it. There are questions about the motivation of the students to use it instead of asking the same questions during their consultations. Also, we need to evaluate the process of the information upgrade, as some information is valid only for a short period.

   *Answer 2:* As students nowadays often use tools like ChatGPT to gain information instead of actively searching for the information themselves, it

might be a welcomed change for them. I believe that when the infobot has up-to-date information and the lab leaders encourage students to use it, it could become a frequently used tool in our laboratory.

4. **Do you consider a uniform semester reminder workflow useful and applicable in everyday practice?**

   *Answer 1:* This is a clear value. A reminder system can be very helpful, especially when everyone is overwhelmed by numerous responsibilities in research, projects, and teaching.

   *Answer 2:* It is a recurring problem that we tend to focus on overall lab operations and research while forgetting the semester flow. The reminder would therefore be useful and could also serve as a prepared agenda for regular meetings of lab leaders.

5. **Which of the solutions do you consider most beneficial in practice and why?**

   *Answer 1:* At this moment, I see the reminder workflow as the most beneficial solution, while allowing the other two to demonstrate their full value over time.

   *Answer 2:* It is difficult to determine at this stage, as each solution provides a different type of value. I look forward to testing them fully during the next semester.

6. **Do you see any risks or obstacles in the normal use of these solutions?**

   *Answer 1:* The main risk is the willingness of students to use the information bot. Additionally, the system requires very disciplined users, especially among lab leaders, which could also represent a potential source of risk.

   *Answer 2:* All solutions rely on having up-to-date information. For the infobot, this includes laboratory and team descriptions; for reminders, correct semester dates; and for consultation preparation, regularly updated student progress notes. If this information is not maintained, the tools will gradually lose their value.