Reference Model

DT meets STEM

INTRODUCTION

This manual provides the complete reference model for the course *Organizational Change and Process Design in Engineering*, part of the Master's Degree in Management Engineering. The course has undergone a significant redesign through the application of the **Teach-Beast methodology**, specifically adopting the **Tech-Based** variant developed to foster active, project-driven learning.

The redesign responds to a growing need in management education: equipping future engineers not only with analytical frameworks, but also with the ability to think creatively, navigate uncertainty, and lead innovation-driven change initiatives. By integrating technology-enhanced tools and methodologies into the curriculum, the course bridges theoretical knowledge and real-world application, preparing students to become effective change agents in diverse organizational contexts.

In the adapted version of the course, students are placed at the center of the learning experience. Working in teams, they are tasked with selecting a real-world firm of their choice — from startups to multinational corporations — and identifying a current organizational or process challenge the firm is facing. They then tackle this challenge by applying the **design thinking process**, moving from problem identification to ideation, prototyping, and solution development.

This approach transforms students from passive recipients of knowledge into active problem solvers. They are encouraged to:

- Apply organizational theories to messy, real-world problems.
- Navigate the complexities of stakeholder engagement and resistance to change.
- Prototype and test process innovations in a simulated but realistic setting.
- Reflect critically on their role as designers of change.

The reference model is structured to support this transition by providing clear guidance, milestones, and resources. Specifically, it includes:

- **Step-by-step guide** on how to transform your syllabus to integrate DT meet STEM approach.
- **The Syllabus of the Course**: detailing the overall learning objectives, course contents, evaluation criteria, and expectations.
- **The Class-to-Class Organization**: offering a week-by-week breakdown of topics, activities, and deliverables, ensuring a coherent and manageable progression for students.
- **The Student Missions**: outlining the project students will undertake, the rules of engagement, and the success criteria for their proposed solutions.
- **The Miro Board**: serving as the shared digital workspace for ideation, collaboration, and project tracking, accessible throughout the course duration.

Summary

A Step-by-Step Guide for Updating Your Syllabus with PBL and Design Thinking

*In this section, we outline the complete process for redesigning a course based on a **project-based learning approach** integrated with the **Design Thinking (DT) methodology**. It serves as a step-by-step guide to transforming a traditional course into an interactive, skill-oriented, and challenge-driven learning experience. Specifically, this section includes:*

- **Phase 1: Analyzing the Current Syllabus and Setting Goals**
Guidance on reviewing the existing syllabus, identifying strengths and weaknesses, and defining SMART learning objectives that balance technical and soft skill development.

- **Phase 2: Introducing a Meaningful Challenge**
Instructions on how to design or select a real-world challenge that is human-centered, motivating for students, and relevant to the field of study, using different approaches (professor-driven, industry partnership, or student-driven).

- **Phase 3: Implementing the Design Thinking Process**
A detailed structure for integrating the core phases of Design Thinking — Empathize, Define, Ideate, Prototype, and Test — into the course, along with suggestions on how to adapt the process to students' needs and skill levels.

- **Phase 4: Using Support Tools**
An overview of key tools that can support the learning process, including presentation slides, project milestones, Miro boards, and a variety of Design Thinking templates such as actor maps, personas, STEEP analysis, and reflective diaries.

- **Phase 5: Managing Teams**
Best practices for forming and managing student teams, including setting up communication channels, defining roles and responsibilities, and organizing regular meetings to ensure continuous project progress.

- **Phase 6: Holistic Evaluation**
A guide to evaluating both the learning process and final project outcomes through a combination of project assessments, presentations, reflections, team evaluations, and the provision of constructive feedback.

- **Phase 7: Adaptability and Flexibility**
Recommendations for maintaining flexibility within the course structure, encouraging an experimental and iterative mindset among students, and adapting the program as needed to maximize learning outcomes.

Phase 1: Analyzing the Current Syllabus and Setting Goals

Review your existing syllabus:
- ✓ Carefully look at your current syllabus. What are its strengths and weaknesses in terms of interaction and practical application?
- ✓ How well does your course help students develop key skills like problem-solving, critical thinking, and collaboration?

Define learning objectives:
- ✓ Decide what specific skills (both technical and soft skills) students should gain by the end of the course.
- ✓ Make sure your objectives are SMART:
  - ▪ Specific (clear and well-defined)
  - ▪ Measurable (verifiable with concrete indicators)
  - ▪ Achievable (realistic and feasible)
  - ▪ Relevant (related to the course and career goals)
  - ▪ Time-bound (with set deadlines)

Phase 2: Introducing a Meaningful Challenge

Identify the challenge:
- ✓ Choose a real and meaningful challenge that is relevant to your course's field of study.
- ✓ The challenge should be human-centered, focusing on the needs of real people or organizations.
- ✓ The challenge can be:
  - ▪ Professor-driven: created by you, based on your experience.
  - ▪ Industry partnership: developed with companies or organizations to make it more relevant to the job market.
  - ▪ Student-driven: chosen by the students, to increase their interest and motivation.

Formulate the challenge:
- ✓ Phrase the challenge as a "How can we...?" question to encourage creative solutions and exploration.
- ✓ Make sure the challenge is possible for students within the given time and exciting enough to promote learning.

Phase 3: Implementing the Design Thinking Process

Integrate DT phases:
- ✓ Structure your course so that students go through these DT phases:
  - ▪ Empathize: Research to fully understand user needs (use interviews, observations, and personas).
  - ▪ Define: Summarize to clearly define the problem (use tools like actor maps and mind maps).
  - ▪ Ideate: Brainstorming to create a wide range of ideas (use brainstorming techniques).
  - ▪ Prototype: Create low-cost prototypes to test solutions.
  - ▪ Test: Gather feedback from users and improve the solutions (using prototyping and testing).

Adapt the process:
- ✓ Adjust the DT phases to fit your specific course and your students' skill level.
- ✓ Offer guidance and support throughout the process.

Phase 4: Using Support Tools

Presentation slides:
- ✓ Create clear and engaging slides to introduce DT concepts and project phases.
- ✓ Use the slides to guide lessons and give detailed explanations.

Milestones:
- ✓ Set clear milestones and deadlines to guide students' projects.
- ✓ Milestones help break down the work into smaller, more manageable tasks.

Miro board:
- ✓ Use an online platform like Miro to support teamwork, idea sharing, and project management.
- ✓ Provide ready-made templates for different DT phases.

Other tools:
- ✓ Integrate other useful DT tools; you can leverage the tool description document:
  - *Design brief:* a document defining the challenge, goals, and project limits.
  - *Actor map:* to visualize the involved stakeholders.
  - *Benchmarking:* to analyze existing solutions.
  - *STEEP Analysis:* to analyze social, technological, economic, environmental, and legal trends.
  - *Personas:* to represent users.
  - *Design principles:* to guide the design.
  - *Pretotyping and Testing:* to test ideas and collect feedback.
  - *Technical data sheet and economic evaluation:* to finalize the project.
  - *Reflective Diary:* to guide student reflection on their learning experience.

Phase 5: Managing Teams

Form teams:
- ✓ Create balanced teams with students from different backgrounds and skills.
- ✓ Use a survey to gather information and assign students to teams.

Set up communication and collaboration:
- ✓ Set up clear communication channels for sharing information, questions, and feedback.
- ✓ Encourage open and clear communication.

Organize weekly meetings:
- ✓ Organize weekly meetings (online or offline) to monitor progress, give feedback, and solve any problems.

STEP 4. Define roles:
- ✓ Encourage teams to define roles and responsibilities for each member.

Phase 6: Holistic evaluation

Prepare evaluation methods:

- ✓ Use a mix of evaluation methods to assess both the learning process and the final results.
- ✓ Include:
  - ▪ *Project evaluation*: to assess the quality of teamwork and how well students applied the concepts.
  - ▪ *Presentations*: to assess the ability to communicate solutions effectively.
  - ▪ *Personal reflections*: to assess the capacity to reflect on the learning experience.
  - ▪ *Team evaluations:* to assess the ability to collaborate and contribute to team success.

Design evaluation criteria:
- ✓ Define clear and transparent evaluation criteria for each activity.

Give constructive feedback:
- ✓ Give constructive and timely feedback throughout the project.
- ✓ Encourage students to learn from their mistakes.

Phase 7: Ensure Adaptability and Flexibility

Ensure program flexibility:
- ✓ Be prepared to adjust the program based on student needs and project progress.
- ✓ DT is an iterative process that requires flexibility.

Promote experimental mindset:
- ✓ Encourage students to adopt an experimental mindset, where mistakes are seen as learning opportunities.
- ✓ Promote creativity, innovation, and curiosity.

Syllabus — Part 1: Introduction

This section contains the **syllabus** for the course Business Process Design and Organizational Change, redesigned to integrate **Design Thinking (DT)** and **Project-Based Learning (PBL)** into a unified, hands-on educational experience. Here, students and instructors can find all the key elements that define the structure, objectives, expectations, and ethical guidelines of the course. Specifically, this syllabus provides:

Revised Learning Objectives:
The course objectives have been updated to fully incorporate **Design Thinking** and **Project-Based Learning**. Students will develop both technical skills (organizational analysis, process modeling, simulation) and soft skills (problem-solving, critical thinking, collaboration, creativity), all essential for managing real-world business process design projects.

Readings and Books:
The syllabus lists a curated set of required and recommended materials, including scholarly articles and books directly related to **Design Thinking** and **PBL** approaches. Key references include Designing for Growth by Liedtka and Ogilvie, and seminal articles linking design thinking to innovation and organizational change.

Group Composition:
Students will be assigned to project groups of approximately five members. The composition of groups will be determined by the professor, based on each student's **Design Thinking mindset** (measured through a dedicated portal before team formation). Special attention is given to ensuring **diversity of mindsets** within each group to foster creativity, while also considering **logistical factors**:
- Working students will be grouped together to align schedules.
- Students living in the same city area will be grouped together to facilitate in-person meetings and strengthen group dynamics.

Challenge Definition:
In this course, students are required to **identify a real-world firm** and **define a design challenge together with the firm**. The challenge must fit the thematic scope of the course (organizational change and process design) and be **human-centered**. Furthermore, in order to **increase the likelihood of implementation** of student solutions, the chosen firm must be **eligible for a credit system** that allows it to access funding to realize the proposed solutions if deemed valuable.

Process Structure Based on Weekly Milestones:
The course follows a **weekly milestone structure**, guiding students progressively through the stages of the project. Students will also participate in **coaching activities** with mentors to receive feedback and support during their project development. Three **formal milestone presentations** will be organized, where each team presents its progress to the selected firm. These sessions help validate ideas, gather feedback, and refine the proposed solutions over time.

Individual Reflection Requirement:
Beyond team project work, students are required to produce an **individual reflection paper** at the end of the course. This reflection enables students to critically assess their learning journey, both in terms of theoretical knowledge and practical project experience.

LinkedIn Project Updates:

*As part of the course, each team must regularly **post updates on LinkedIn** about their project progress. This activity aims to build students' ability to communicate professionally, engage with the broader professional community, and showcase their work and learning journey through a widely used social platform.*

Time Allocation and Workload Management:
*Clear guidelines on **time allocation** are provided to avoid student overwork and to improve time management skills. Each course credit corresponds to a specific amount of class time and independent work (approximately 10 hours of class and 15 hours of self-directed work per credit). Students are required to **keep a log of time spent** on various activities (e.g., meetings, analysis, design), both individually and as a team, and to reflect on their time management strategies throughout the course.*

Ethics and Professional Conduct:
*The syllabus clearly outlines the **ethical standards** expected during the course. Students must ensure that all deliverables are the result of their own work or their team's collaboration, appropriately cite external sources, and maintain professional and respectful behavior in all interactions. Misconduct, including plagiarism, recycling of others' work, or inappropriate use of external or AI-generated material, will not be tolerated and will lead to serious academic consequences.*

COURSE DESCRIPTION

Business Process Design and Organizational Change concerns the application of the social sciences, Design and engineering to the study and implementation of new organizational projects. These include the design, modeling, development and implementation of technologies and operational processes within organizations. In organizational projects we pursue effectiveness through the design and implementation of organizational changes by specifying a project plan that incorporates processes, technologies, structures, incentives, and competencies into a coherent system that meets a need, is tangible for people, and has an impact for the organization. To enable these changes we intervene in organizational processes using a design thinking approach.

There are three main questions we need to ask ourselves when dealing with business process design projects. First, who are the designers and how should they work productively together? Second, how do they gain an understanding of an organization when they are asked to redesign its processes? Third, what tools can they use for organizational design?
This course aims to address these issues and build the skills needed to design and manage business process design projects in complex contexts (e.g., characterized by geographic distribution, cultural differences, and job ambiguity). The course will therefore focus on two key issues:
1. Data collection and analysis methods for deep understanding of organizations;
2. Tools for organizational design.

OBJECTIVES

The course aims to develop students' knowledge of:
- ✓ the theoretical background and applied tools of process-oriented organizational analysis and design;
- ✓ the main tools and techniques for process modeling and simulation.

CONTENTS

1. **Data collection and analysis methods for deep understanding of organizations**
   - Remark
   - Interviews
   - Qualitative data analysis techniques
   - Questionnaires
   - Experiments
2. **Tools for organizational design**
   - Business Process Design
     - ○ Search
     - ○ Analysis
     - ○ Summary
     - ○ Solution
   - Meaning and nature of business processes
     - ○ functional structure and integration processes
     - ○ process structure and business analysis

        ○ understanding, management and design of Performance
- Business process modeling, simulation and design
  - Three perspectives on business processes (operational, strategic, change)
  - Business process modeling (BPMN, SD, Agent)
  - Business process simulation (DES, SD, ABS)
- Business Process Design (Business Design Thinking)
- Design and Management of Change

MATERIALS AND READINGS

On the web page dedicated to the course, students will find:
- A collection of required articles and book chapters. The articles are scholarly papers published in top organizational and engineering journals. Reading scientific research from the original sources (as opposed to finding a summary in a textbook or slide) is a challenge, but it is an important learning experience. NB: There is no one-to-one relationship between required readings and face-to-face lectures. This discrepancy is intentionally designed!
- Recommended readings. Additional readings are provided for those who wish to understand more about specific topics. Recommended topics will not be included in the final assessment.
- Lecture slides;
- Cases and exercises for class discussion;
- Software for process mapping and simulation.

List of mandatory articles available on IOL

- Madsbjerg, C., Rasmussen, M. B. (2014) An Anthropologist Walks into a Bar, Harvard Business Review
- Dorst, K., (2011) The Core of Design Thinking and its application, Design Studies 32, 521-532
- Liedtka, Jeanne. "Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction." Journal of Product Innovation Management 32.6 (2015): 925-938.
- Bertolotti, F., Macrì, D. and Vignoli, M. (2019), "Strategic alignment matrix: Supporting management coordination in complex organizations", Journal of Accounting & Organizational Change, Vol. 15 No. 4, pp. 557-579
- Marshak, R. J. (1993). Managing the metaphors of change. Organizational dynamics, 22(1), 44-56.
- Appelbaum, S. H., Habashy, S., Malo, J. L., & Shafiq, H. (2012). Back to the future: revisiting Kotter's 1996 change model. Journal of Management Development.
- Anylogic in Three Days

Required books

- Jeanne Liedtka and Tim Ogilvie (2011) "Designing for GROWTH: a design thinking tool kit for managers" Columbia Business School

Books and in-depth articles

- Jeanne Lieddtka, Tim Ogilvie and Rachel Brozenske (2019) "The Designing for Growth Field Book: A step-by-step project" Columbia Business School
- Elsbach, K. D., and Stigliani, I. "Design thinking and organizational culture: A review and framework for future research." Journal of Management 44.6 (2018): 2274-2306.
- Flower F. J. (2009) Designing Questions to be good measures. In F. J. Flower Survey Research Design, Thousand Oakes (CA): Sage Publications, pp. 87-113.
- Dong, A. Lovallo, D. and Mounarath, R. "The effect of abductive reasoning on concept selection decisions." Design studies 37 (2015): 37-58.
- Brown T. (2009) Change by Design: How Design Thinking Can Transform Organizations and Inspire Innovation, Harperbusiness.
- Martin, R. (2009) "The Design of Business: Why Design Thinking is the Next Competitive Advantage" Harvard Business Press
- Laloux, F. (2014) "Reinventing Organizations" Nelson Parker.
- Tabrizi, B. (2007) "Rapid Transformation," Harvard Business School Press.
- Gassmann, O. Frnkenberger, K. and Csik, M. (2014) "The Business Model Navigator" FT Publishing
- Kumar, V. (2012) "101 Design Methods: A Structured Approach for Driving Innovation in Your Organization," John Wiley & Sons Inc.

LESSON PLAN

Class hours will include theoretical lectures, project coaching sessions, case discussions, simulations and laboratory sessions. Students are strongly encouraged to participate in all class sessions and activities.

Class attendance is mandatory and can be verified at each class. It is also important to arrive on time, ready to learn and participate. There are two main activities that students will be expected to do during the course: a group project and individual reflection to do at home.

a. Group project

Participants will be divided into teams to conduct project work. Working on a project is the best way to learn how to conduct, in practice, an organizational change and business process design project. Former students report that working with their team in this course taught them a lot about themselves and others. However, some teams are more challenging than others. While this is good because you will learn more, it can also create frustration.

Project teams will be formed by the professor. Students are asked to fill out the form in order to provide the necessary information to form the teams - Groups will be announced during class. Details on group activities follow.

Each team will be tasked with conducting a business process design project aimed at developing a micro-enterprise with the goal of financing the project through a call for proposals sponsored by an institution or foundation, in collaboration with the Grameen Italy Foundation. Specifically, the first activity will be to identify an organization interested in addressing a specific challenge, where to apply the concepts and techniques learned during the course in order to design a change process. Each team will be assigned a mentor, with whom team members can interact for up to 6 hours, for the duration of the project. The mentor will have access to the documents produced, and does not provide any formal evaluation of the team.

Each week a mission will be launched by posting the related document on Virtual. Students will have a workspace on MIRO and TEAMS, details will be provided by the lecturer in the classroom.

Each team will produce 4 deliverables according to the following schedule. on [date], their design challenge will be formalized, which must be delivered to the organization and will serve as an agreement between the parties with respect to the project. Between [date], and [date], deliveries must be uploaded to a specially created folder by 9 a.m. on the day indicated in the diagram. Deliveries will be presented to the organizations on [date], [date], and [date]. It is essential to agree on these dates with the organization from the first meetings and send an invitation to put the appointments on the calendar. It is possible to agree with the organization on different times if necessary. Details on each delivery will be provided in class and posted on Virtual. Teams will be responsible for arranging with the organizations' contact persons for planned meetings and additional meetings deemed necessary for the project to proceed. The location of the meetings may be at the organization's premises, if available and suitable, or online. A summary outline follows.

Important: Only 2 deliverables will be formally evaluated: Challenge Analysis [date] and Final Solution [date]. N.B. All deliveries must be uploaded to the indicated folder by [date].

The design process will be documented through **one post per week per team,** to be posted on **Tuesdays by 7 p.m.** on the class Linkedin group [link]. Each group should use a hashtag in the posts that corresponds to the project organization. NB: **Apply for membership**

b. Individual reflection

In addition to group work, individual participants will be asked to hand in a paper to be done individually as a reflection on the experience of working as a team on the project. Each student will prepare a reflection, based on both practical and theoretical knowledge gained during the course. The individual reflection will be written in a Word file and uploaded to the scheduled folder by [date]. Detailed instructions are available [where].

The two activities just described (group project and individual reflection) are carried out mainly outside of class hours. Since each course credit involves 10 hours of class activities and 15 hours of independent work, we have designed the course workload so that the independent activities cover a total of 90 hours. We encourage students to keep track of their time in a journal and review the log both individually and within their teams and discuss it with professors in order to allocate the correct effort to different activities.

CLASSROOM BEHAVIOR

Each of us comes to this course with different backgrounds and expectations, but the common goals of the course are best achieved when we work together as a group and each of us makes the best efforts both inside and outside the classroom.

It is everyone's responsibility that this is a safe place for different ideas, beliefs and values. Everyone should feel free to express their opinions. We may experiment and take risks in our discussions and written communications. Students are expected to show respect for the opinions and ideas of others at all times.

SCIENTIFIC AND PROFESSIONAL ETHICS

Individual contributions to the work in this course must be your own. In addition, project team outcomes must be performed by ALL team members and ONLY by the actual members of that team. Individual reflection, on the other hand, is a personal outcome. In both activities feel free

to build on, react to, critique, and analyze the ideas of others but, when you do, make it explicit by referring to sources. You need to explicitly acknowledge when your work is based on someone else's ideas, especially authors you read (e.g., from articles, Web sites). If you have questions about how to draw the line between others' work and your own, ask the professor for assistance and guidance.

While we encourage students to interact strongly and share ideas, any individual or group work must be completed independently. Recycling deliverables submitted by students or teams in your class, students or teams from other classes or students or teams who have previously taken part in this course, or copying material you find on outside sources such as the Internet or generated by AI, will not be tolerated and will automatically receive a null grade. In this case, you will be reported to the [name of the body] with appropriate consequences, which may go as far as expulsion in the most serious cases.

Syllabus — Part II: Class-to-Class Organization

*The following section presents the **class-to-class organization of the course** Business Process Design and Organizational Change in Engineering.*

*Here, students and instructors will find a **detailed schedule** that outlines:*
- *The **dates** and **times** of each class session.*
- *The **hours** allocated to each activity (lectures, workshops, coaching sessions, presentations).*
- *The **topic** covered in each class, aligned with the progression of the course content and the phases of the **Design Thinking** process.*
- *The **related mission** assigned to students after each session, guiding their project work and linking theoretical content to practical application.*
- *Information about whether a **deliverable** is expected for that specific session, with corresponding deadlines when applicable.*

This structured overview is designed to help students manage their workload, plan their project activities effectively, and maintain a steady, organized pace throughout the course.

Class-to-class organization of the course

The table below contains a tentative course schedule for the semester. For each day of class you can see the topic covered, the materials and readings to support your understanding of the topics covered (see the Materials and Readings section for details on where to find them), and the expected deliverables.

NB: Simulation classes will require the use of a laptop.

#	Date	Hours	Topic	Missions	Deliveries
		3	PAUSE		
1		3	Introduction to the course		
2		3	The Design Process	1.0 - Design Brief	Paper drop Challenge
3		3	Sense Intent and Team Design		
		3	PAUSE		
		3	PAUSE		
4		3	Needfinding: The Search for Needs	2.1 Benchmarking	Delivery 1 - Design Brief
5		3	Elements of Qualitative Research: Observations and Interviews		
6		3	Business Process Modeling	2.2 Needfinding	
7		3	Business Process Modeling		
		3	PAUSE		
8		3	Understanding Process Performance		
9		3	Project Coaching	2.3 Challenge Reframe (EPO)	
		3	PAUSE		
10		3	Framing Knowledge and Storytelling	2.4 Milestone Presentation	
		3	Challenge Analysis Presentation		
11		3	Design Principles and Ideation	3.1 - Design Principles and Ideation (Business Hypothesis)	Delivery 2 - Challenge Analysis
12		3	Prototyping and (re)designing business process		
13		3	Evaluating alternatives: Testing and user feedback	3.2 - Prototyping and testing	
14		3	Simulation		
15		3	Simulation	3.3 - Business Opportunities and Value Prop.	
		3	Project Coaching		
16		3	Simulation		

		3	Presentation of Business Opportunities		Delivery 3 - Business Opportunities
17		3	PAUSE	3.4 - Implementation Plan and Change actions	16
18		3	Designing Change		
		3	Managing Change	3.5 - Final delivery and roadmap	
		3	Project Coaching		
			Presentation of the final solution		
					Delivery 4 - final solution
					Individual Reflection Delivery
			Written Examination		

Syllabus — Part III: Procedure to assess student performance

*The following section of the syllabus presents the **evaluation system** for the course Business Process Design and Organizational Change. It describes how both **group** and **individual** performance will be assessed, following the integration of **Design Thinking (DT)** and **Project-Based Learning (PBL)** principles into the course structure.*

Students' work will be evaluated through several components:

1. DELIVERABLES

First, **group deliverables** will be assessed at two key deadlines (Challenge Analysis and Final Solution). For each deadline, teams are required to produce three outputs:
- a **written report** detailing their project activities and findings,
- a **presentation** delivered to the selected firm,
- and a **promotional video** to creatively and effectively communicate their solution

These deliverables aim to enhance students' professional communication skills, their ability to synthesize and present ideas clearly, and their creativity in promoting innovative solutions.

Each set of deliverables will be evaluated across five main dimensions:
- **Content Quality**: evaluating the depth, relevance, and impact of the proposed solution, reflecting the group's ability to address a real-world challenge.
- **Methodological Rigor**: assessing whether students correctly applied the design thinking tools and techniques introduced during the course.
- **Creativity**: encouraging students to propose original solutions and to communicate them effectively through innovative formats.
- **Organization of Work**: measuring the team's capacity to plan, distribute tasks, manage deadlines, and collaborate effectively.
- **Presentation Quality**: evaluating the clarity, professionalism, and care in the design of reports, slides, and videos.

2. INDIVIDUAL REFLECTION

In addition to team outputs, students must also submit an **individual reflection**. This paper is intended to assess their personal learning journey, with particular attention to how students connect their project experience to the **academic literature** studied during the course, encouraging critical thinking and theoretical integration.

3. WRITTEN EXAM

To ensure a comprehensive evaluation of learning, the course also includes a **written exam** covering theoretical aspects, and **in-class participation** will contribute to the final grade, promoting active engagement throughout the course. In addition to the results of the team project and work on Individual Reflection, students will take a written exam at the end of the course. The written exam is intended to assess the skills acquired and will consist of a series of multiple-choice questions (select one or more answers from a given list). Both theoretical and practical skills (solving short exercises with the simulation software used during classroom lectures) will be assessed with these questions. The written test will be scored from 0 to 31 (a

score higher than 30 will result in honors). To sit for the exam, students must score above 18/30 on the two assessed project deliverables and the Individual Reflection.

The final individual assessment will be based on:
- Group project 50% (team evaluation)
- Individual Reflection 20% (individual assessment)
- Written examination 30% (individual assessment)
- Class participation 5% (individual bonus)

Specific evaluation criteria are given in the following table.

Team Evaluation
Project deliverables
Content: is the context correctly represented? Does it cover all relevant needs? Are organizational processes clearly analyzed and mapped? Are stakeholders correctly presented and have all their needs been identified? Is performance designed correctly? Is the solution presented complete and implementable? Does it use simulation elements to support the design? **Methodological rigor**: are relevant tools used correctly? Is relevant literature cited and used? **Creativity and independent contribution**: was the team able to go beyond what was asked? Is what was presented surprising or remarkable in any aspect? **Organization of work**: is it clear who did what and how the project was organized? Was the time the team and people spent on the project reported? **Presentation**: is the presentation clear and well crafted? Are all materials curated? Does the presentation present a plausible story for the evolution of the organization?

Individual Assessment		
Individual Reflection	**Written Examination**	**Classroom participation**
Content: is the argumentation sound? Does it reflect on group experience based on literature? **Application of theory to personal experience**: are the theories adequately stated? Are they clearly applied to the specific case? **Presentation**: are the topics presented clearly, concisely, and convincingly?	**Content**: are theories and approaches related to business process modeling and simulation acquired? **Application of business process modeling and simulation techniques**. Are the techniques applied in a relevant way? **Knowledge of theory**: does the candidate know the course topics in detail?	**Classroom participation**: did the student intervene constructively? Did he/she ask interesting or thought-provoking questions? Did he/she provide helpful suggestions and comments? **Interaction with organizational liaisons**: was the student present during appointments? Did he/she ask relevant and respectful questions? Did he/she interface in a professional manner?

EVALUATION OF THE EXAMINATION FOR NON-ATTENDERS

For non-attendees, materials and textbooks remain the same with the addition of recommended texts 2,3,4

Students who do not attend classes or participate in project activities will undergo a different examination process, consisting of:
- an individual paper with discussion of a specific topic. Students should agree with professor on a topic after reading the recommended texts and details on how to prepare the paper;
- a written test
- an oral test

Student missions for the course

This chapter presents the missions that guide students throughout the course project, offering a structured pathway from the initial stages of organizational analysis to the final stages of solution development.

The missions are organized as weekly tasks, each building upon the previous one to create a coherent and cumulative learning experience. Through this progression, student teams are gradually introduced to key practices in organizational analysis, design thinking, and creative problem-solving, allowing them to apply theoretical concepts to real-world scenarios.

Each mission has been thoughtfully designed and carefully aligned with the course's learning objectives. This ensures that students not only gain knowledge but also develop practical skills that are essential for navigating complex organizational challenges. By blending academic theory with hands-on activities, the missions foster a dynamic learning environment where students actively construct knowledge through experience and collaboration.

A brief **overview of each mission is provided in this chapter**, offering essential guidance to support students' day-to-day project work. For those seeking more in-depth support, the **full version of the missions is available in the annex** document attached to the syllabus. Moreover, to offer students and instructors a concrete example of how the missions can be operationalized in a collaborative setting, **an example of a Miro board completed** by a previous student team **is also included in the annex**. This visual guide illustrates how project components can be mapped, discussed, and refined over time, serving as both inspiration and a practical reference point for new teams embarking on the course project.
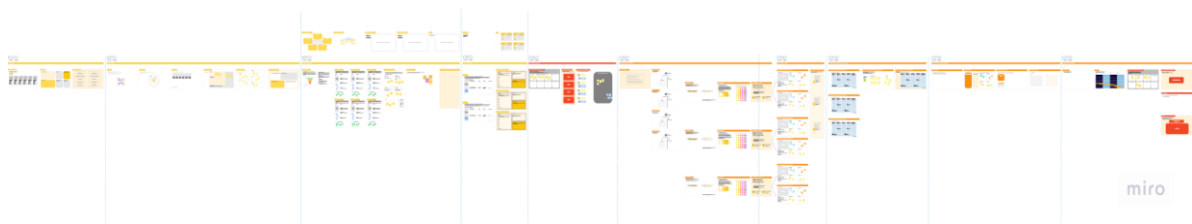
Mission 1 – Design Brief

This marks the beginning of the project. Take the time to get to know each other and deepen your understanding of the project you will tackle together.

The deadline for submitting the first deliverable is **[date]**.
I expect you to upload a **PDF file of maximum 2 pages**. After submitting, also upload it as an image in the designated space on Miro.

MIRO SPACE FOR MISSION 1

Mission 2.1 — Benchmarking

This is the first activity of the second phase of the project: **challenge analysis**. In this activity, broaden the scope of your research to include the competitive context. You have **one week** to conduct a documentary and literature review and gather all available information related to your challenge.

The goal is to become **experts on the context as a group**.
Tip: split into subgroups by type of research and, when you meet, share discoveries and proceed to synthesize the information.
The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 2.1
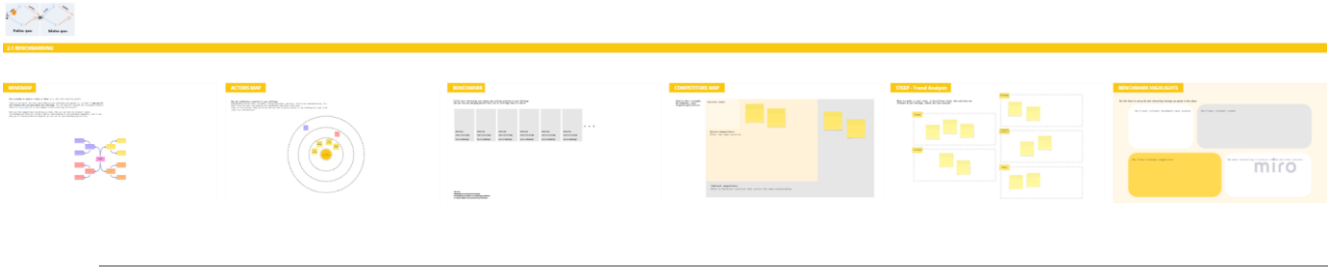
Mission 2.2 — Needfinding

This is the second activity of the second project phase: **challenge analysis**. It is essential to get in contact with the project stakeholders you mapped last week, starting with the users of your organization.

You have **one week** to start the needfinding activity and process mapping.

This activity may continue in the following weeks if necessary.

The objective is to **build empathy** with users and stakeholders.

Tip: split into subgroups based on stakeholders and, when you meet, share identified needs and mapped processes to synthesize findings.

The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 2.2
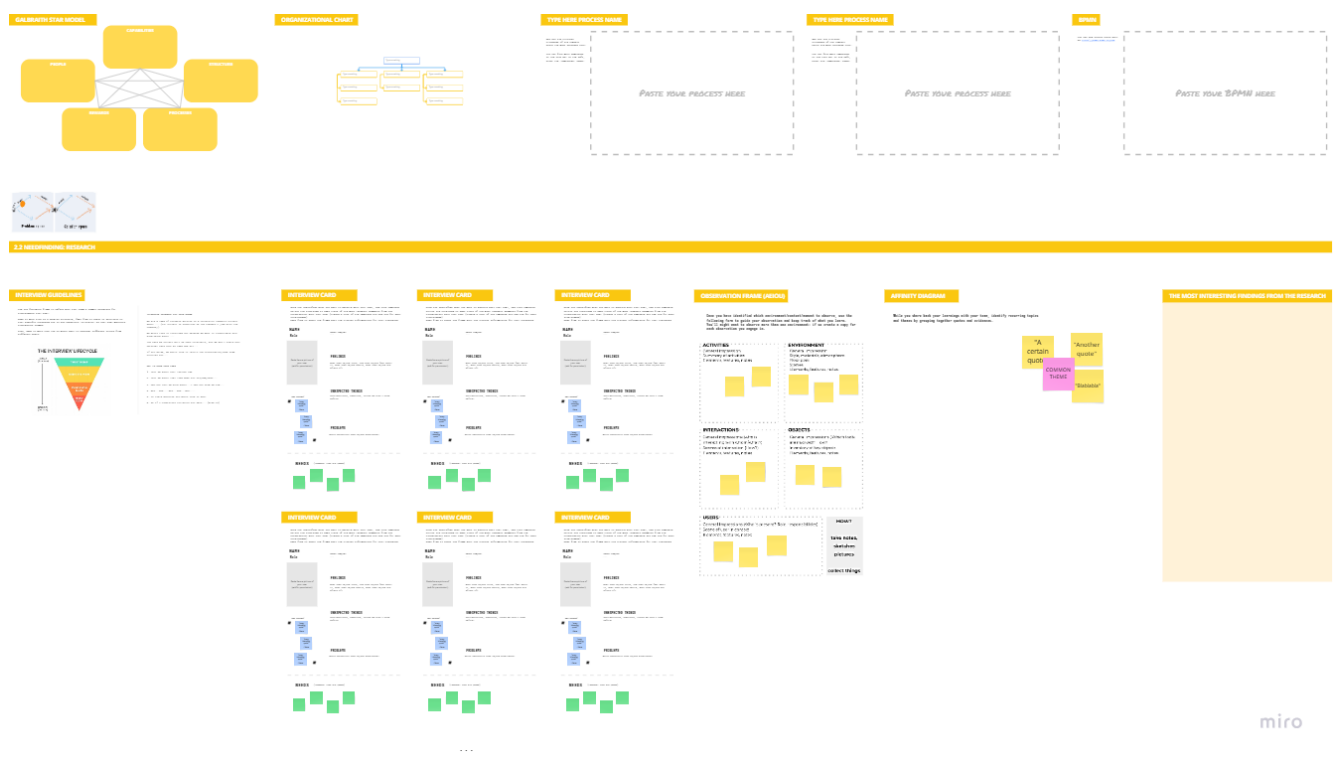
Mission 2.3 — Challenge Reframe

This is the third activity of the **Needfinding phase**, where convergence begins. It is crucial to wrap up the research phase and **identify concrete opportunities** to focus the project. Tip: schedule specific time blocks for each activity, identify key themes and opportunities, then split into subgroups to reorganize the research material.
The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 2.3

Mission 2.4 — Milestone Presentation

This is the final activity of the **Needfinding phase**, the peak moment of convergence and decision-making. You must decide what to present from your research and achieve full clarity on the project opportunities. Tip: start from what you want to tell and work backwards to define which pieces of research are necessary to support the story. Once the presentation outline is clear, split into subgroups to work on the slides, the video, the infographic, and the report.

Coordinate with your contacts at the organization to schedule at least **60 minutes** of their time.

The deadline for this activity is **[date]**.

Upload four deliverables:

- **Video** – Empathy Phase (Observations, Interviews, Context…) – max 3 minutes [Note: upload a PDF or DOC with the link]
- **Infographic Poster** – Secondary research, data, trends... [PDF or JPG]
- **Milestone Presentation** – Analysis [PPT or PDF]
- **Report** – maximum 10 pages + appendices (e.g., interview cards, BPMN diagrams) [PDF or DOC]

MIRO SPACE FOR MISSION 2.4
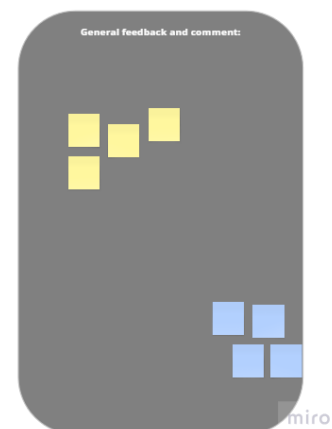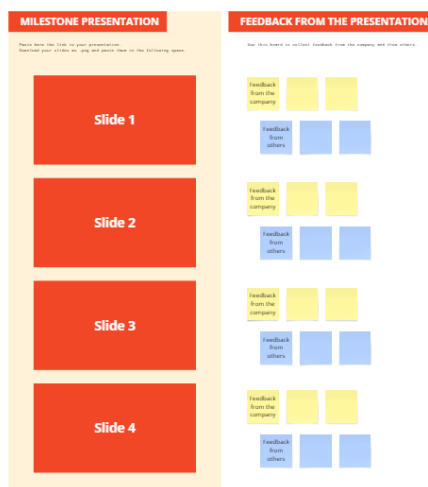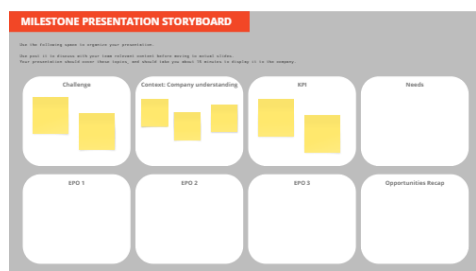
Mission 3.1 — Design Principles and Ideation

This is the first activity of the **Design phase**, the moment of synthesis and creative divergence.
The team works internally, without external input.
Now is the time to **unleash your ideas**!
Tip: organize a session to define your **Design Principles (DPs)** and **How Might We (HMW)** questions, followed by three short brainstorming sessions to maintain high energy.
The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 3.1
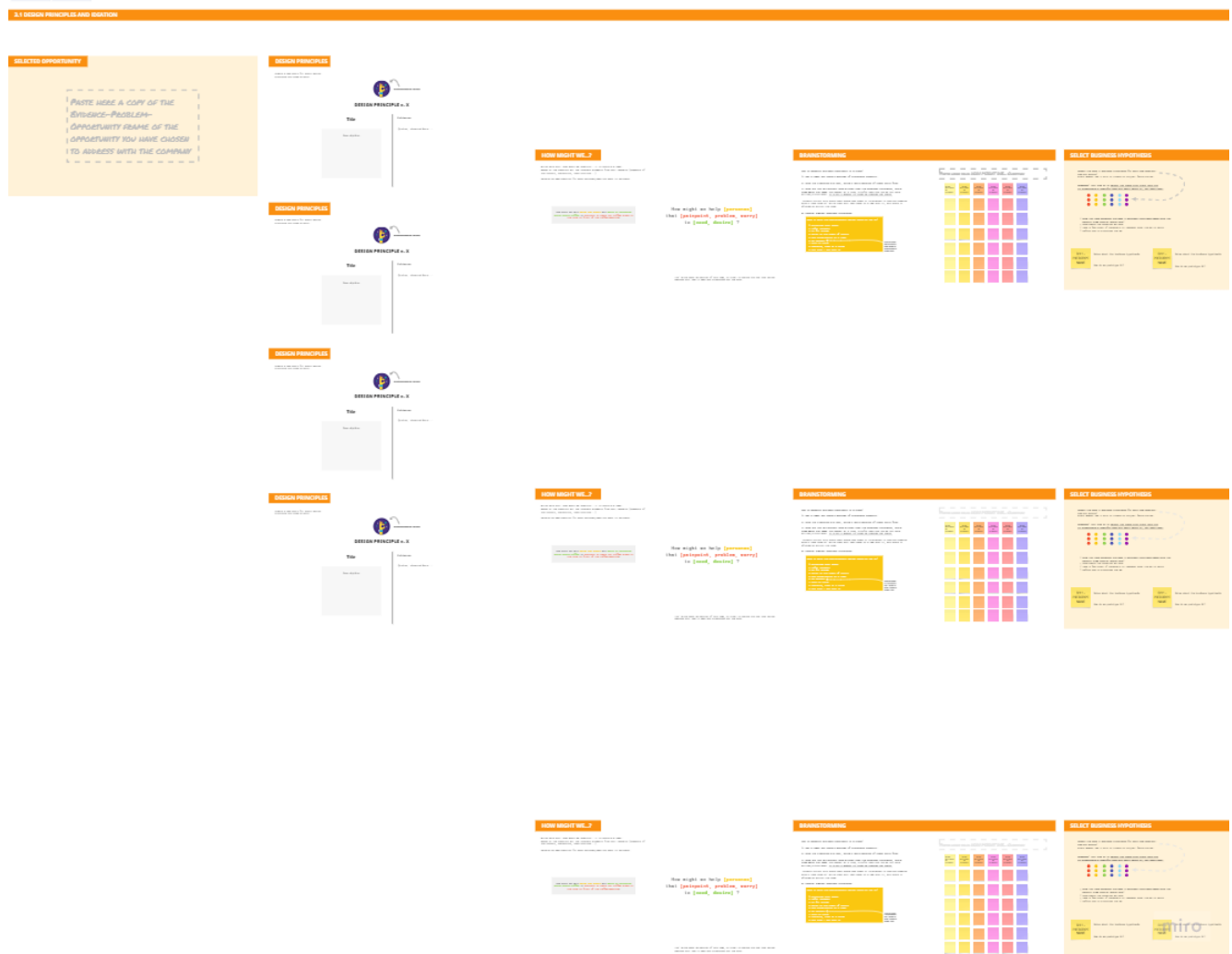
Mission 3.2 – Pretotyping and Testing

At this point, it's time to **bring ideas back to users**.

To interact effectively, it's crucial to **make ideas tangible** by creating **pretotypes**.
After building pretotypes in small groups, map all the possible ways to test them.

Use friends, family, acquaintances — involve them in testing through the **snowball method** (each test should lead to at least two more testers).

Also use your classmates through the Teams platform to request and offer help identifying potential testers.
The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 3.2

Mission 3.3 – Business Opportunities and Value Proposition
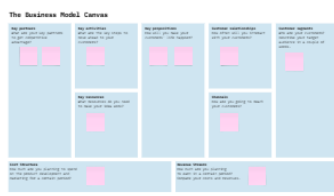
This is the moment of **choice**. Write the business opportunities using a business-oriented language (using tools like the Business Model Canvas) and discuss with the organization which opportunity is best to pursue. Prepare a **direct, decision-oriented presentation** and use the meeting as a test to understand the decision-making process.
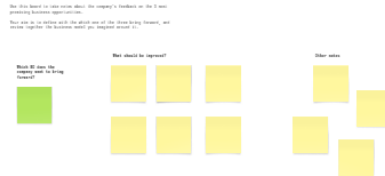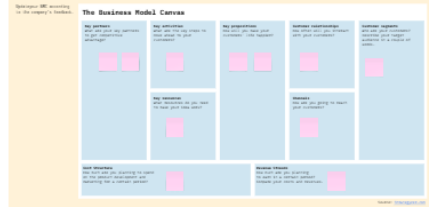
Tip: rehearse with your mentor, who will be assigned to you soon, to validate the clarity and relevance of your business models.

Schedule the meeting with the organization starting from **[date]** and upload the file on the morning of the meeting by **[date]**.

The final deadline for submission is **[date]**.

MIRO SPACE FOR MISSION 3.3
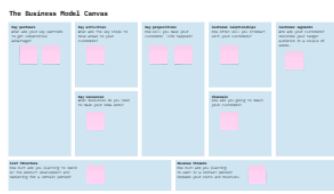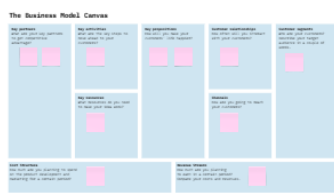
Mission 3.4 – Implementation Plan and Change Action

In this mission, you **dive into business planning**: define a clear vision of what needs to be done, test the critical function, and confront KPIs and the economic plan.
You must **speak the language of business**.
Start involving all key stakeholders (suppliers, customers, employees) and share the story of your project to help them **visualize the change**.
Remember: **the protagonists are the change and the organization, not you**. Your goal is to "pave the road," not to walk it yourselves.
The deadline for this activity is **[date]**.

MIRO SPACE FOR MISSION 3.4

Mission 3.5 – Final Delivery and Roadmap

This is the **final mission**, where the maximum synthesis is reached by designing the **first actionable step** the organization should take to implement the solution.

Aim to **minimize the effort required** for the organization to start the change, making it easier to trigger implementation.

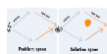Tip: validate your final presentation with your mentor.

Plan the final presentation to the organization starting from **[date]**, ideally in the afternoon to allow final preparations.

The project concludes with the final submission of the **Project Report**, which must be uploaded by **[date]**.

Upload four deliverables:

- **Final Report** (executive summary max 2 pages + full report max 15 pages + appendices with Miro boards) [PDF or DOC]
- **Full Sale Presentation** – a persuasive 20-minute presentation to convince the organization to invest in your project [PPT or PDF]
- **Video** – max 3 minutes – a trailer of the project to be shared within the organization [PDF or DOC with link to Panopto]
- **Final Infographic** – the final solution summarized in one impactful page with its KPI impact [PDF or JPG]

MIRO SPACE FOR MISSION 3.5

"TEACH to BE Aware Students" Project (2022-1-PL01-KA220-HED-000089791) implemented by University of Information Technology and Management in Rzeszow (Poland), Alma Mater Studiorum – Università di Bologna (Italy), ESADE Ramon Llull University (Spain) and Instituto Politecnico de Portalegre (Portugal)