

## Apply and Curate the Object-Process Methodology (OPM) and the Human-centered Design to Solve the Systemic Challenge – Use Campus Tour Experience Design as an Example

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*The purpose of the study is to solve the systemic challenge on campus—“How might we create an informative yet delightful campus tour experience for students, visitors and university in the lens of service design?” by applying Object-Process Methodology (OPM) in the field of the system engineering and human-centered design. This study contributes to design research through the seamless combination and comparison of select methodologies from the system engineering and design thinking fields to solving the challenges faced by university campuses. In particular, the study utilized OPM to decompose the whole campus tour system into four main components: object, process, link and status, which helps analyze the system in the lens of inside-out perspective. The results showed that using OPM inspired the individuals to revisit and to clarify the internal organization structure and its relationships in the context of the service provider – the university. Within the sub-systems, the study utilized a human-centered design: target group interviews, journey mapping, concept prototyping, scenario experiment and service design refinement to identify the core cause and recommend five key touchpoints and its design suggestions across the campus tour journey. In a way, applying a human-centered design is to view the challenge in the lens of the outside-in perspective, which underlines the user needs in the context of service receiver – visitors, students, and investors. The example not only successfully redesigns and improves the existing campus tour experience from both the service receiver and the service provider, but also perfectly curate OPM with the human-centered design to scale the impact of the project.*

**Keywords:** Object-Process Methodology; OPM; Human-centered Design; Design Thinking; System Engineering; System Thinking; Participatory Design; Campus Tour; Experience Design; Service Design

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# 1. Introduction

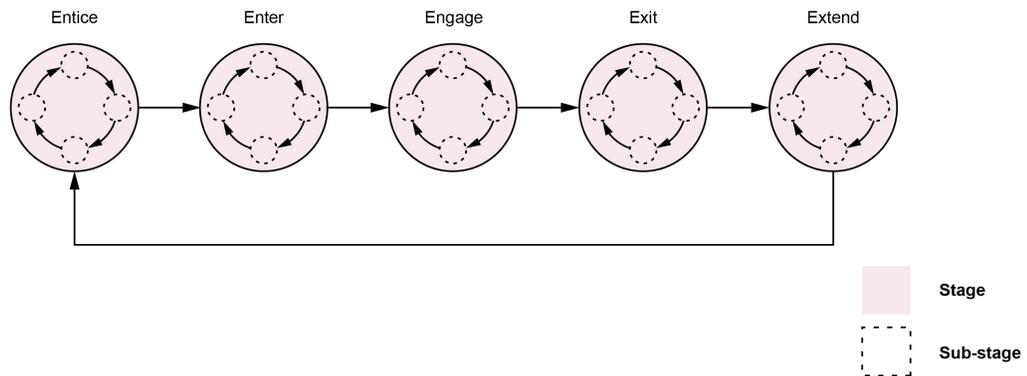
The study explored the possibility of comparing and merging the tools, the methodologies and framework from system engineering to the human-centered design. The definition of system and system engineering are varied (Dori & Sillitto, 2017). There are many different types of creative processes, tools and theories in the field of human-centered design, design thinking, and system engineering. However, in this study, the project team focused on the 5E experience design model and Object-Process Methodology (OPM) to conduct the preliminary research and experiment and applied them in the university campus tour experience design project. The study viewed the university campus tour experience project as a vehicle to unravel some of the potential connections and implications of the two methodologies. The study consisted of three sections: the first section discussed the background information, the keys steps and the history of the selected methodologies and tools; the second section presented the application and the values of the methodologies through the university campus tour experience project; and the last section not only demonstrated the outcome of the campus project but also provided a possible framework concept by merging the human-centered design with system engineering methodology (Figure 10).

# 2. Literature Review

Due to the scope of the study, we selectively reviewed the history, the introduction and the application of the following two methodologies: the 5E experience design model from the human-centered design and Object-Process Methodology (OPM) from the system engineering.

## 2.1 Human-centered Design – 5E Experience Design Model

In the study, the project team applied the 5E experience design model designed by Larry Keeley in 1994, which was one of the human-centered designs that the project put an emphasis on. The 5E experience design model is described as ‘an integrative model that can add coherence, elegance and excitement to your service or experience. It is simply a framework for building holistic and meaningful experiences’ (Sontag, 2018). The 5E experience design model is a useful tool to describe the service and experience of the user journey. It was repurposed by the project team by adding four analysis criteria—initial thoughts, key touchpoints, opportunity area, and relevant quote—during each stage to capture the overall user journey. The model in the study is unique in that within its each stage, there are three to five sub-stages. Therefore, it has more in-depth yet comprehensive capability to illustrate the existing user journey. The following table showed a brief definition of each stage and the analysis criteria designed for the study.



[ Figure 1 ] Modifying 5E Experience Design Model Structure (Simplified Version)

[ Table 1 ] A Brief Definition of Each Stage in the Study

Stage Sequence	1	2	3	4	5
Stage Name	ENTICE	ENTER	ENGAGE	EXIT	EXTEND
A Brief Definition	The stage refers to the period before the users enter the journey, which is the pre-starting point.	The stage refers to the period when the users just begin the journey, aka the starting point.	The stage refers to the period when the users are in the process of the journey, that is between the starting point and the ending point.	The stage refers to the period when the users are ready to leave the journey, aka the ending point.	The stage refers to the period after the users finish the journey, which can be viewed as extending of the exit stage.
Questions to consider	What triggers users' interest? Why do the users want to embark on the journey?	How to create a successful-yet-appealing first impression of the user journey?	How enjoyable is the user journey? How to measure the level of engagement?	What does the ending point look like and feel like that can satisfy the users' needs?	Why do users want to come back?

[ Table 2 ] A Brief Definition of Each Analysis Criteria in the Study

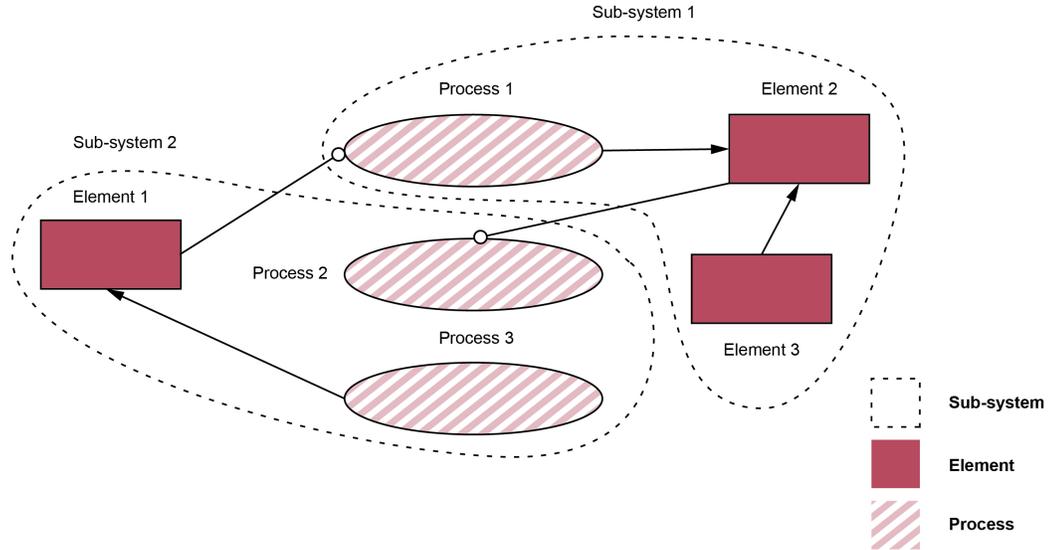
Criteria Name	Initial Thoughts	Key Touchpoint	Opportunity Area	Relevant Quote
A Brief Definition	The section was presented in the format of a series of key questions within the stage to help the project team clarify users' real pain points the team was going to solve.	The section was designed to break down the stage into three to five substages in sequence to describe the user journey step by step, for better illustration in detail.	The section was to capture several opportunity areas, some early concepts, and ideas addressing the initial thoughts and key touchpoints.	The section was to apply the interviewee's quotes from the research that were relevant to the content to support the ideas and concepts from the opportunity area.

## 2.2 Object-Process Methodology (OPM)

OPM is one type of model-based languages translating the complex system that consists of technology and humans through two fundamental elements: object and process into diagram in multiple layers by executing large-scale problems (Sharon & Dori, 2012). OPM can integrate the structure, the function, and the behavior of the system in one type of diagram (Lavi, Dori, Wengrowicz, & Dori Dov, 2020). It is an intuitive and domain-independent assisting tool, which helps the project team and system engineers express the concept, the element and the structure of the complex system in graphical and textual approach/natural language system (Soderborg & Crawley, 2003) for the purpose of effectively communicating the core ideas with system architecture, engineer, clients, investors, and potential stakeholders. *Although system meta-languages such as UML, SysML and OPM are still in their infancy, they show potential for describing systems in a generic yet powerful way that captures their exogenous influences, internal functions, functional attributes, subsystems, design variables, and the role of actors within the system (De Weck, Ross, & Magee, 2016).* Currently OPM has become a global standard language, ISO 19450, whose methodology can be applied to the field of system engineering and beyond. *OPM is the main tool used globally by Fortune top 500 enterprises and companies in various industries around the globe: Automotive industry, Aviation industry, White appliances industry, Energy companies, Space agencies, Insurance companies (Technion - Israel Institute of Technology Enterprise Systems Modeling Laboratory, 2018).*

Prof. Dov Dori, the founder of OPM, writes 'Object-Process Methodology (OPM) is a comprehensive novel approach to systems engineering' (Dori, 2002). OPM's another value lies in that the language can describe the system in different layers to clearly demonstrate the relationship between each sub-system, object and process, which minimize subjectivity and ambiguity in the process of composing and decomposing of the system modelling (Soderborg et al., 2003). There is a set of guiding principles for building the linkage of all components within the

system, which gives users e.g. the project team, system engineers a decent amount of flexibility to interpret the connection of the system and its sub-system. Currently, Technion - Israel Institute of Technology Enterprise Systems Modeling Laboratory has launched OPMCloud, an online collaborative model-based system engineering tool to help the users quickly and intuitively check, simulate, and verify the conceptual OPM model in the format of graphical and textural ways in real-time. Other research has shown OPM has a potential to be applied as the way of syntactic and semantic graphic recognition (Dori, 2000).



[ Figure 2 ] General OPM Structure (Simplified Version)

Figure 2 showed the general and simplified version of the OPM structure in a graphical way. In Figure 2, one can view the whole diagram as one big system, which includes two sub-systems, three processes, three objects, and five links. It didn't reveal the status of each object in Figure 2. There is no fixed starting point of the journey when people read the OPM. Different from the time-dependent feature of the 5E experience design model, it's more like an event-dependent structure based on which sub-system people want to start to analyze. Therefore, the arrow of all the links doesn't represent the flow of the journey, but indicates the relationship of the components in terms of their functional aspect such as Process 1 "requires" Object 1 to "generate" Object 2; Object 2 "requires" and "is produced" by Process 1. The following Table 3 provides a brief definition of each component mentioned above.

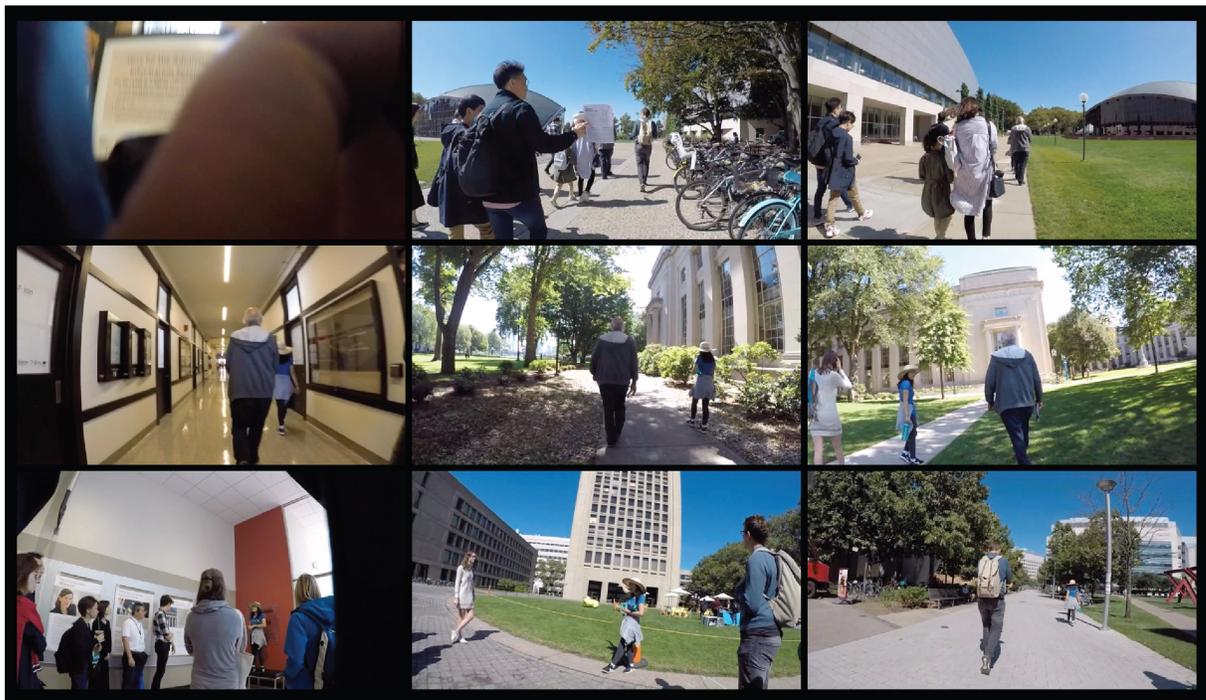
[ Table 3 ] A Brief Definition of OPM Key Component (Dori, 2002)

Component	Object	Process	Link	Status
Brief Definition	An object represents a thing, which can exist either physically or informatically in the system.	A process represents the transformation process of an object, which is normally connected with more than one object through production, consumption and status shifting. A process is an expression of the dynamic process in the system.	Broadly speaking, a link can be categorized into a structural link or a procedural link. A structural link represents structural relation e.g. A "consists of" B; A "exhibits" B, which clarifies the association between objects in the system. A procedural link represents procedural relation e.g. B "consumes" A; B "yields" A; B "affects" A, which shows the operational connections of objects and the process.	A status is one of the object features, which represents different stages according to its condition and situation. Normally, an object is in one status or in the transitional phase from the input status to the output status at any point-in-time in the system.

### 3. Case Study – Campus Tour Experience Design

#### 3.1 Project Overview

It is a service innovation case study that the project team has been working with the university to solve the design challenge “How might we create an informative yet delightful campus tour experience for students, visitors and university in the lens of service design?” The project team applied a human-centered design including interview, journey map, brainstorming, prototyping, testing and refinement to identify and recommend five key touchpoints and its design suggestions. The experience design project is initiated by graduate students with the purpose of summarizing the key takeaways of the campus tour to improve the existing campus tour program on one hand; and to create the tailor-made tour services for prospective students, tourists, and university separately on the other. By using 5E experience design model and OPM in the case study, the project also wanted to describe the same user journey and compare and discuss the potential way to combine the two methodologies. Taking the university campus as an example, the project is intended to illustrate some of the design concepts, which do not represent those of the university officials.



[ Figure 3 ] The Photo of Interactive Interview—Shadowing

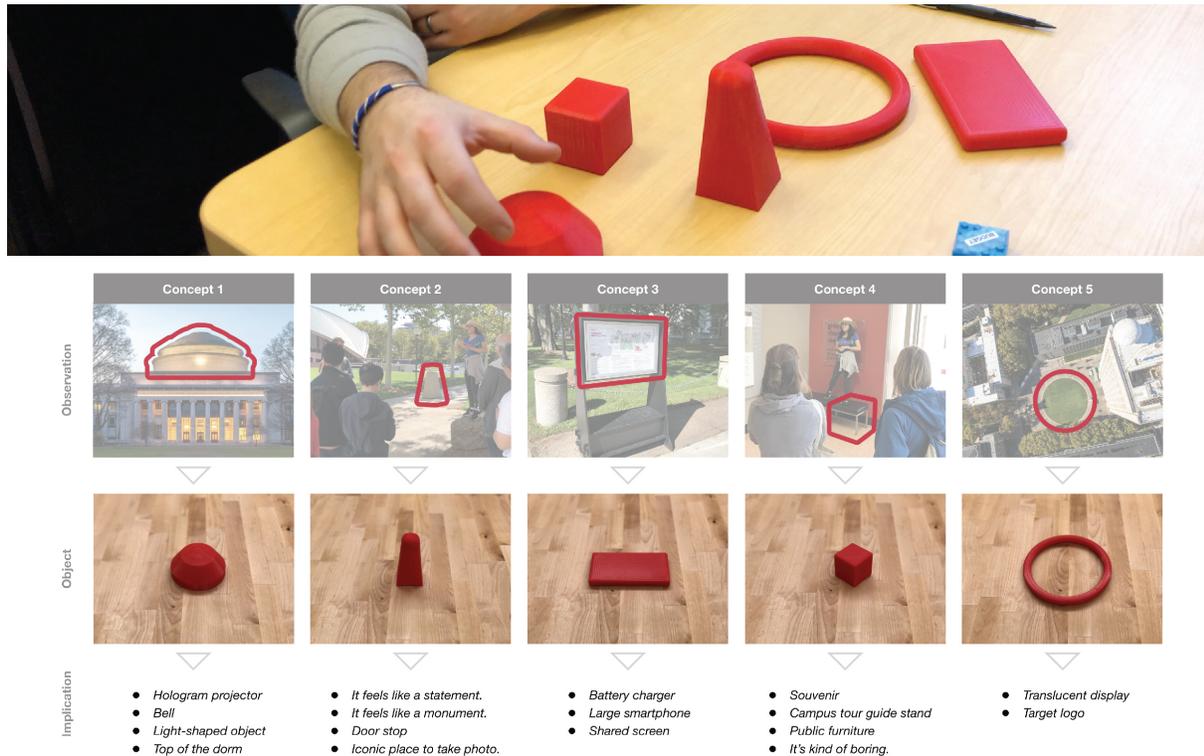
#### 3.2 Design Process

In the study, the section did not cover all the design process of the project in detail. It only highlighted the key stages that were relevant to both 5E experience design model and OPM, and discussed their implementation and future value.

##### Interactive Interview

The project conducted two rounds of interviews. The fourteen interviewees, varying from the university Admissions Office, the university bloggers, alumni, to visitors, prospective students and graduate students, were invited to participate in the first-round interview, covering four types of exercise: Interviews, Shadowing (Figure 3), Card, and Clock-in-a-day. Its intention is to capture varied points of view from multiple backgrounds through talks about their personal campus tour journeys. The second-round interview is to test the selected design prototypes with a more focused group of people. The team chose eight people, two of which were new interviewees, to bring about their fresh perspectives and give initial feedback on the concept. The second-round

interview was conducted in the form of Scenario Imagination, Digital Touchpoint, Human-Product Relationship, Campus Tour Toolkit, and Product Form Implication (Figure 4).



[ Figure 4 ] The Photo of Interactive Interview—Product Form Implication Prototype

### Existing Campus Tour Journey Snapshot

The following four main steps are the existing university campus tour routes from the perspective of visitors. Step 1 - Visitors will head to the Information Office and ask any questions about the university campus tour; Step 2 - There will be two free campus tours at 11am and 3pm per day. The tour starts from the university lobby 7; Step 3 - Visitors will follow a university campus tour guide who is also an undergraduate student; Step 4 - The university campus tour normally takes ninety mins. Visitors and the campus tour guide are walking most of the time.

### Observations and Key Learnings

- Inspire People and Empower Tools

For a campus tour guide, it's difficult to satisfy the needs of a mixed group of audience with multiple interests. Regarding the campus tour guide materials/tools, most of them like a map should be intuitive and easy to read for participants. For prospective students, authentic personal stories from the university students are much more useful than a sheet of the fact of buildings or history. Other than campus tours, the university blog is a great channel.

- Create a Human-centered Journey

For the tourist, the university campus tour experience is actually the last stop of the tourist experience. The journey already starts when people arrive in the USA. The project team also observed that in order to enable participates to be more engaged and enjoy themselves during the campus tour, the university needs to create comfortable and safe conditions. And at the same time, the university needs to clarify the difference and draw a boundary line between campus tour, orientation, and self-discovery.

- **Cultivate Community Culture**  
The university campus tour services need to be designed in a way that is adaptable and flexible to cope with the potential changes. The university Admissions Office not only offers trained campus tour guides but also wants to cultivate a sharing-based, help-with-each-other community culture.
- **Understand the Limitation of the Environment**  
The university is huge, which will, therefore, take time for the visitors to walk on campus. Geographical distance decreases the excitement and engagement of the tour. Another side to see the limitation of the environment from the campus tour experience perspective is that for visitors and students, some unexpected surprising elements in the tour can create a surge of excitement.

### **Target Group Needs Statement**

- **Target Group 1 - Prospective Students**  
For prospective students, authentic personal stories from the university students, curriculum overview and professors, and lab intro are much more useful than a sheet of the fact of buildings. The hypothetical solution is that the university campus tour can be designed for a two-hour in-depth campus tour. The university info section discusses mainly the curriculum and provides in-person meetings with the university undergraduates and professors.
- **Target Group 2 - Tourist**  
For tourists, visiting the iconic buildings, walking on the campus, understanding the campus history briefly, taking photos and checking on social media websites are satisfying. The hypothetical solution is that the university campus tour can be designed for a ninety-min causal campus tour with flexible routes and content. The interaction with the campus tour guides will be more like a one-way, traditional introduction.
- **Target Group 3 - University/Admissions Office**  
For the university Admissions Office, a campus tour is one way to attract and recruit potential undergraduates that provide a platform to promote the university culture among the public. The hypothetical solution is that the university campus tour services need to be designed in a way that is adaptable and flexible to cope with the potential changes.

### **3.3 Design Highlight**

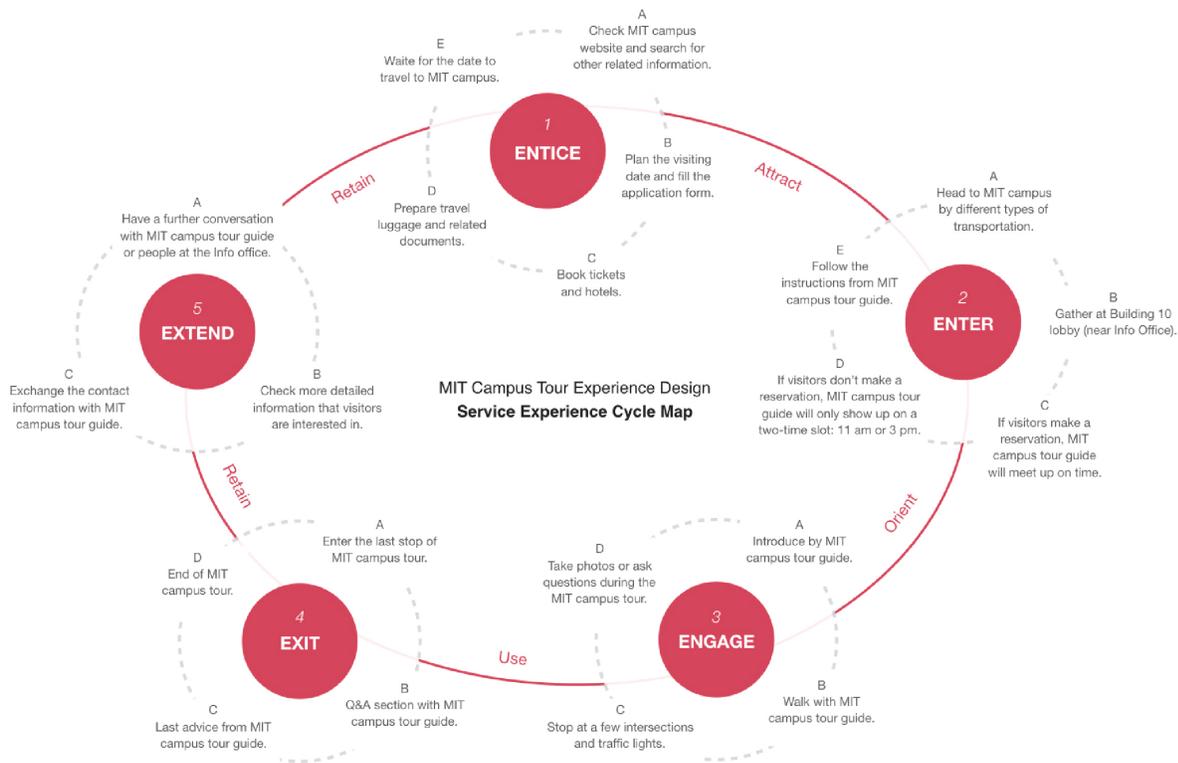
After the project team downloaded and synthesized the key learnings, and organized the target group needs statement abovementioned, it focused on the main pain point as a design challenge: “How to create and curate the tailor-made campus tour experience catering to different people’s needs?” which echoed what the university tour guide said “For a campus tour guide, it’s difficult to satisfy the needs of a mixed group of audience with multiple interests.” The following design highlight demonstrated and analyzed the existing the university campus tour journey through 5E experience design model and OPM to illustrate the overall picture before the project went into the prototyping section.

#### **5E Experience Design Model**

In the case study, the project team adopted and adapted the 5E experience design model created by Larry Keeley in 1994. In the lens of 5E experience design model, the project was decomposed into five stages: Entice, Enter, Engage, Exit and Extend based on the user journey (Figure 1). It was time-dependent and a liner way to study the existing the university campus tour experience. Within each stage, the project team added four analysis criteria: initial thoughts, key touchpoints, opportunity area, and relevant quote to capture the detail of the key moment. The intention is to put the project team in the shoes of the users in the scenario.

The 5E experience design model provided the project team with outside-in views to read the user journey, which means when the project team analysed the process, it could clearly control and understand it in a comprehensive way. Therefore, each 5E stage was not isolated. The project team considered the transition phase between each

stage by adding meaningful verbs such as attract, orient, use and retain to help paint the bigger picture of the user journey. When the project team zoomed in each 5E stage, there were three to five sub-stages to extend each stage in a detailed way, which intentionally decomposed a set of key touchpoints to create a "journey-within-journey" structure, so that the project team can resonate with the target users closely (Figure 5, Figure 6).



[ Figure 5 ] The 5E Experience Design Model Diagram of the Existing University Campus Tour Experience (Overview)

**Initial Thoughts**

- What does the first thing people want/need when they visit MIT campus?
- What is the first impression when people enter the MIT campus?
- How does MIT campus tour cultivate an immersive experience for the target groups?

**Key Touchpoint**

- Head to MIT campus by different types of transportation.
- Gather at Building 10 lobby (near Info Office).
- If visitors make a reservation, MIT campus tour guide will meet up on time.
- If visitors don't make a reservation, MIT campus tour guide will only show up on a two-time slot: 11 am or 3 pm.
- Follow the instructions from MIT campus tour guide.

**Opportunity Areas**

- Curate visitors' transfer experience between campus and transportation.
- Make full use of visitors' waiting time.
- MIT brand identity has a certain consistency with MIT campus tour guide personality and style.



“

*Sometimes the audience is a mixed group of parents, prospective students, investors, and visitors. I wish they could be separated when I give a campus tour.*

Kathleen N Esfahany

MIT Undergraduate Student, MIT Blogger and MIT Campus Tour Guide

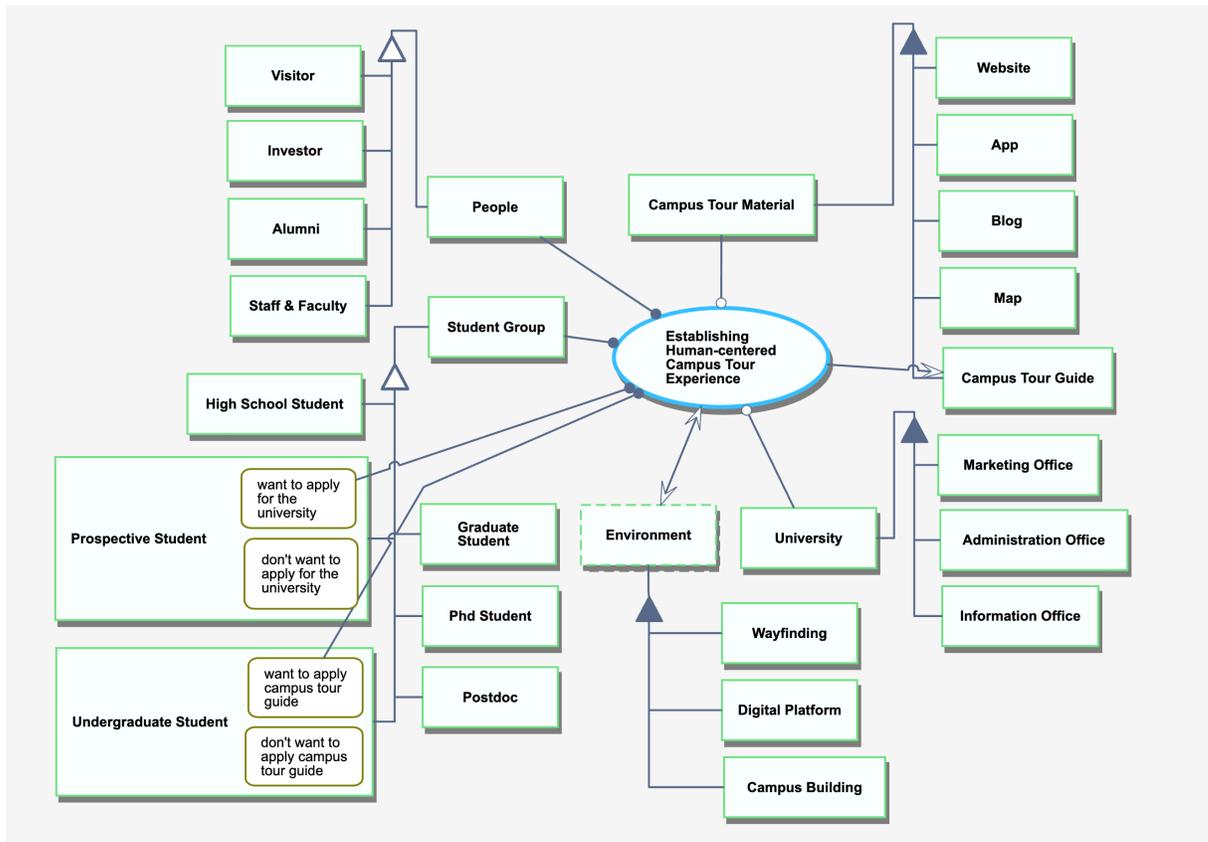


[ Figure 6 ] The 5E Experience Design Model Diagram of the Existing the University Campus Tour Experience (Entice Section)

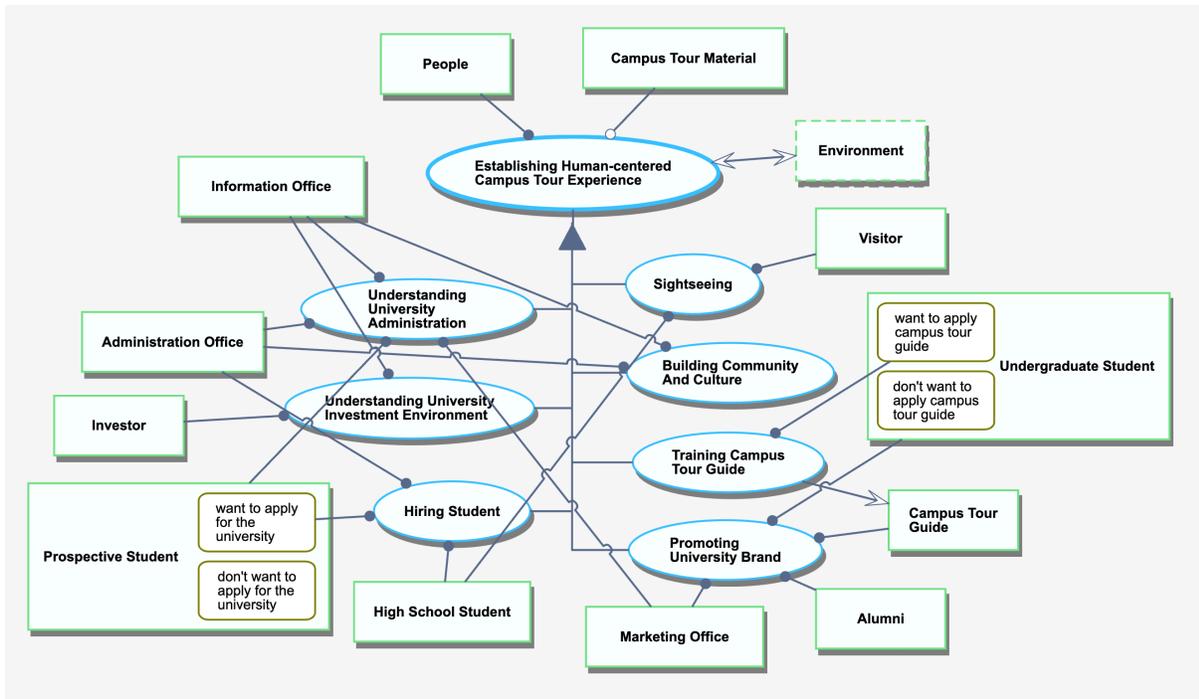
### Object-Process Methodology (OPM)

Figure 7, made by OPCloud, an online, real-time collaborative model-based system engineering tool by applying OPM ISO 19450, clearly shows the existing the university campus tour experience in the lens of OPM. The initial step was to decompose the campus tour by functions, processes, and objects. For example, the project team considered the reason why people want to take a campus tour was to meet their latent needs like sightseeing, experiencing life on campus or out of business considerations. The purpose could be viewed as part of the functions contained in the context of campus tour experience. In this case, the object represented the key stakeholders including prospective students, tourists, the university Admission Office staff, and potential investors linked to the campus tour experience. Objects could also mean relevant school departments, organizations, the government, and other tangible or intangible elements like campus tour services or its offering. The process acted as the connections between the functions and objects to form a meaningful relationship. One example interpreted in Figure 7 and Figure 8 was to cultivate the future campus tour guide (object 1), which required a university campus tour guide training program (process), the resource from both the university Admission Office (object 2) and the university undergraduate students (object 3) who were interested in.

According to Figure 7 and Figure 8, OPM was obviously a suitable methodology to construct and analyze the complicated system. In this case, the project team had already filtered out lots of factors and simplified the real situations. Once we reconsider the real conditions in terms of the structure of the university and its department, the university’s regulations and policy, the project budget and human resources, OPM can greatly help to map out the blueprint of the system and its connection between sub-systems, objects, and process. The project team could easily track the sequence of each event, activity, the process in layers of sub-systems and identify the key touchpoints from inside-out view accordingly.



[ Figure 7 ] The OPM System Diagram (SD) of the Existing University Campus Tour Experience



[ Figure 8 ] The OPM System Diagram 1 (SD1) of the Existing University Campus Tour Experience (SD1 is a descendant of SD)

### Concept Co-creating and Prototyping

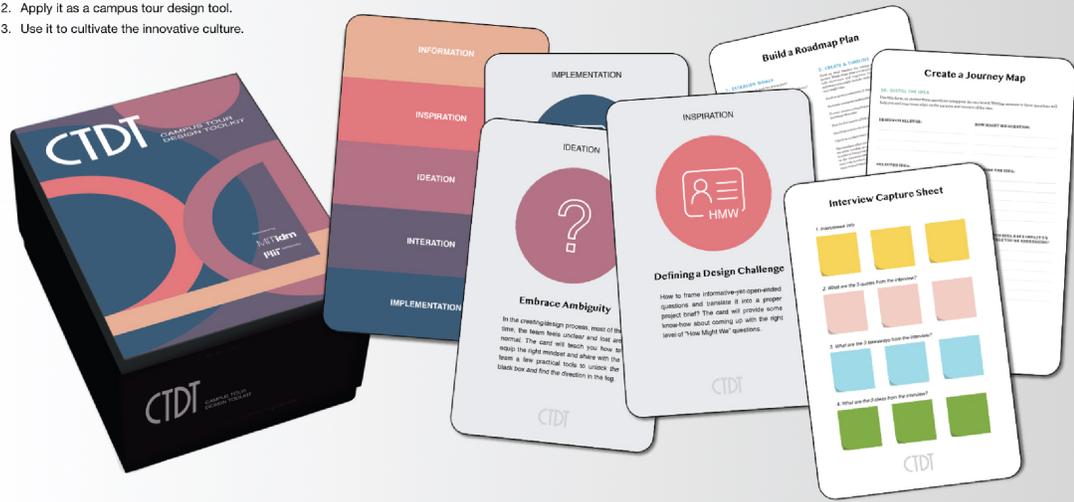
During the project, the team considered “What is the root cause of the user’s burning needs?” One theory was that the university Admissions Office lacked well-thought-through pre-planning and design toolkit. Therefore, the project team provided a solution: Campus Tour Design Toolkit (CTDT) which could help pre-plan and design campus tour experience (Figure 9). The CTDT is a set of physical cards with QR code linked to its digital platform. The project team defined CTDT as an educational and inspirational tool to facilitate the design process related to campus tours. It was like a catalyst to trigger, to unlock the creative potentials. The CTDT aimed to help the university leadership team build a creative campus tour community, including campus tour training program, cultivate creative culture and carry out team building to create a sustainable-yet-innovative system.

The purpose of creating CTDT concept was to 1. bring together people including visitors, prospective students, tour guides, the university Admissions Office staff and other relevant key stakeholders to gain more exposure and create more opportunities to discuss, to share, to co-create and to improve the user experience; 2. apply the CTDT concept as a useful and meaningful campus tour design toolkit to envision the future campus scenarios; 3. adopt the CTDT concept as an approach to cultivate the innovative culture within the campus tour team and its training program. The CTDT was not the final solution, but a prototyping concept.

### CTDT - Campus Tour Design Toolkit

Purpose of the toolkit

1. Bring the team/people (visitors, prospective students, tour guides, MIT) together.
2. Apply it as a campus tour design tool.
3. Use it to cultivate the innovative culture.



[ Figure 9 ] The Prototyped Photos of Campus Tour Design Toolkit (CTDT) Concept

## 4. Summary and Suggestion

The study categorized the summary and suggestion into two sections: research approach and case study, which provided the key takeaways and learnings in the lens of the methodology innovation and the project deliverable.

### 4.1 Research Approach

The study focused on the comparison and the discussion about the possibility of combining the human-centered design (5E experience design model) with OPM by applying the university campus tour experience design project. The project team used a simple metaphor such as the dot to represent the unit of the methodology; the line to indicate the process of the methodology; and the surface as a way to express the feature of the methodology. The ultimate goal is to connect the different dots, lines, and surfaces to construct a solid body of new tools to solve future systemic challenges. There are four key learnings in terms of the research approach as summarized in Table 4.

#### DOT - The Controllable Unit Represents the Methodology Building Block.

It was interesting to note that the controllable unit of both methodologies was very different. The controllable unit was intended to serve as a building block that could be more easily controlled by the project team in the context of the study. In the 5E experience design model, the controllable units are moment and scenario. The

project team can describe the user journey by compiling key moments and scenarios. Regarding OPM, the controllable units are elements (object) and functions (process), which help describe the characteristic of the system in a bird's-eye view.

**LINE - The Methodology Process is Driven by Either Timeline or Event.**

The controllable units in the context of the 5E experience design model are placed in the sequence of the journey, which means the moments and the scenarios are time-dependent factors. It shows the overall journey in a linear way. From the project team’s perspective, it is more like outside-in views to oversee the user journey comprehensively. In addition, the controllable units of OPM are arranged based upon the intention and the purpose of the systems and its sub-systems, which indicate the objects and the processes are event-dependent building blocks. One event can represent one system, which consists of varied objects and processes. It is less like a linear-and-time-dependent process. From the project team’s perspective, it is more like inside-out views to analyze and observe the user journey internally.

**SURFACE - The Key Feature of the Methodology**

In terms of the feature of both methodologies, the 5E experience design model does well in expressing the experience of the users, because the controllable units, moments and scenarios can strongly give the user journey a vivid narrative including the locations (where), people (who) and their behaviour (what and why), and the conditions of each moment and scenario that align with the timeline and the sequence of the events. Whereas OPM does well in illustrating the structure of the complicated system by breaking down the journey in the lens of functions (process) for the project team to look into the system structurally and flexibly through multiple layers instead of a linear timeline.

[ Table 4 ] The Comparison of 5E experience design model and OPM

Methodology Name	5E Experience Design Model	OPM
OVERVIEW - Brief Definition	The model created by Larry Keeley in 1994 is a service design tool to plan out the key touchpoints by applying 5E stages to map out the user journey experience blueprint.	Object-Process Methodology (OPM), a comprehensive model-based language created by Dov Dori in 1995, is an approach to describe complex systems in the format of objects and processes.
DOT - Controllable Unit	<ul style="list-style-type: none"> <li>• Moment</li> <li>• Scenario</li> </ul>	<ul style="list-style-type: none"> <li>• Object</li> <li>• Process</li> </ul>
LINE - Process Type	<ul style="list-style-type: none"> <li>• Time-dependent</li> <li>• Liner process</li> <li>• Outside-in view</li> </ul>	<ul style="list-style-type: none"> <li>• Event-dependent</li> <li>• Layered sub-system</li> <li>• Inside-out view</li> </ul>
SURFACE - Key Feature	<ul style="list-style-type: none"> <li>• Suitable to describe the experience of the user/people in sequence</li> <li>• Express the user journey based on the occurrence of the events and time, which helps people understand the in-context scenario efficiently.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable to describe the structure and the function of the system through multiple layers</li> <li>• Illustrate the system in a bird's-eye view with flexibility to allow people to dive into different layers of the sub-systems for further information.</li> </ul>

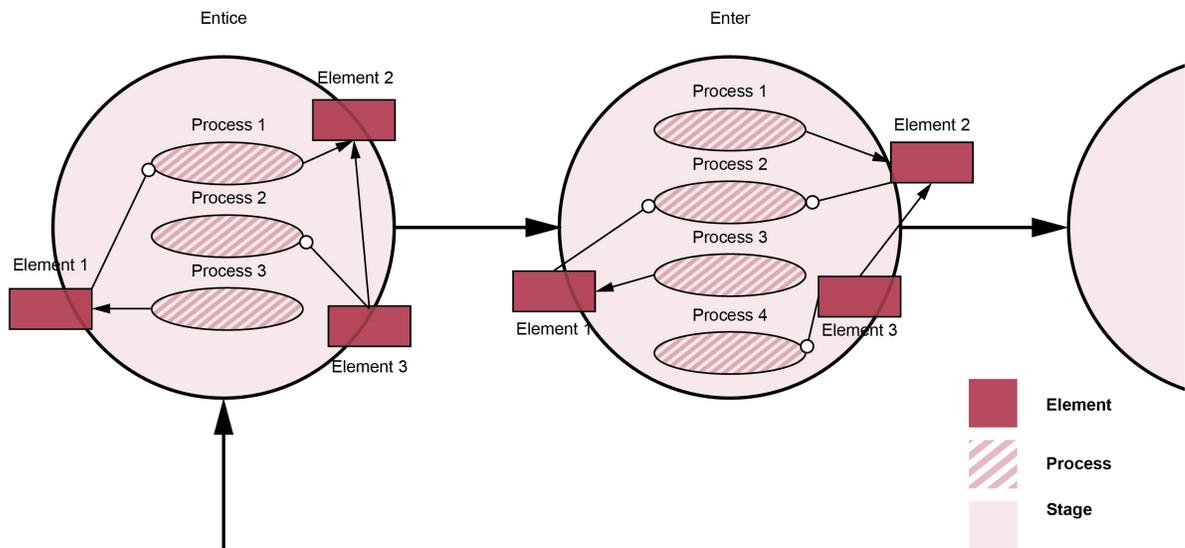
**Curate and Create the Suitable Innovative Methodology for the Future**

The purpose of comparing the two methodologies from the field of design and system engineering is not to try to create the perfect methodology that can solve every problem in the world, but to provide another fresh perspective for designers to view a service and experience design project in a systemic approach and to leverage the essence of the tools from multiple disciplines. In the study, the project team had not been in the research stage of experimenting by combining the two approaches, but Instead, invested more time and resources in understanding and comparing both methodologies in a principle level (Table 4).

Figure 1 and Figure 2 showed the simplified version of the typology, the structure and the main process from both methodologies. Under the assumption that the majority of organizations will face systemic service innovative challenges in most future projects, curating and creating a new type of tools, frameworks, and methodologies with the capability to solve complicated problems has become critical and inevitable. For the next step of the research, the experimental approach should include the positive features of a human-centered design and system engineering tools, capable of solving systemic challenges in a human-centered way.

In this case, assuming the 5E experience design model and OPM represent the field of design and system engineering respectively, the Figure 10 diagram can be one possible way to curate and to merge them. When zooming out the diagram, we can have an outside-in and comprehensive view and time-dependent process of 5E experience design model, which keeps the controllable unit/building block such as moment and scenario to maintain its human-centered spirit along the linear process. When zooming in each stage/controllable unit/building block, we can apply OPM to establish the platform in the format of object (element) and process (function) to analyze the systemic part of the challenge, which assists the user including the project team, system engineers to understand the relationship between each sub-system, object, process, status in multiple layers with inside-out views and event-dependent feature. In conclusion, the diagram is a potential concept of combining the human-centered design (5E experience design model) with system engineering methodology (OPM). It is not the final solution or answer.

For the further research, the benefit of merging two methodologies for the user/project team is capturing the user journey comprehensively from emotional angle (scenario, moment, user’s behaviour) and from the functional aspect (object, system, sub-system) in order to build the well-rounded capability to solve the systemic service design challenge in the era of change. In the long run, the research area should consider how to build a new system, framework, and tool with manageable as well as predictable behaviours and to suppress the unpredictable ones (Crawley, De Weck, Eppinger, Magee, Moses, Seering, Schindall, Wallace & Whitney, 2004).



[ Figure 10 ] One of the possible methodology structures of combining 5E experience design model and OPM (Note: The diagram was modified from ‘A Brief Discussion on Object-Process Methodology (OPM) and Design Thinking Approach’ (Lee, 2019).)

## 4.2 Case Study

Based on the previous fieldwork research, user interview, relevant studies, synthesizing and design process, the project team provided five selected high-level concepts to the university campus experience design project. The experience design needs to take into considerations desirability, feasibility, and viability of user journey, organization structure, culture, business model, service strategy and so forth in order to help realize the concepts in the project.

**Experience Design Concept 1 - The Platform Identifies Visitors’ Needs**

Before arriving at the campus, the visitors need to login to the campus online system to choose their needs and roles including prospective students or visitors, which greatly assists the platform to choose the suitable campus tour program.

**Experience Design Concept 2 - Provide Campus ID Card and Tailor-made Map**

Based on visitors’ needs, the platform will provide accordingly designed campus ID cards and tailor-made maps. Visitors can follow the recommended routes to explore the campus. The campus ID card not only serves as a souvenir, but also can be used for accessing certain labs, libraries, and other special spaces and resources to enhance the campus tour experience.

**Experience Design Concept 3 - Create People’s Story Handbook**

The campus tour not only provides visitors with accurate information but also tells the story of people on campus. Creating a people’s story handbook is one of the approachable ways to reflect the culture of the university and the communities.

**Experience Design Concept 4 - Choose the Suitable Campus Tour Guide for Visitors**

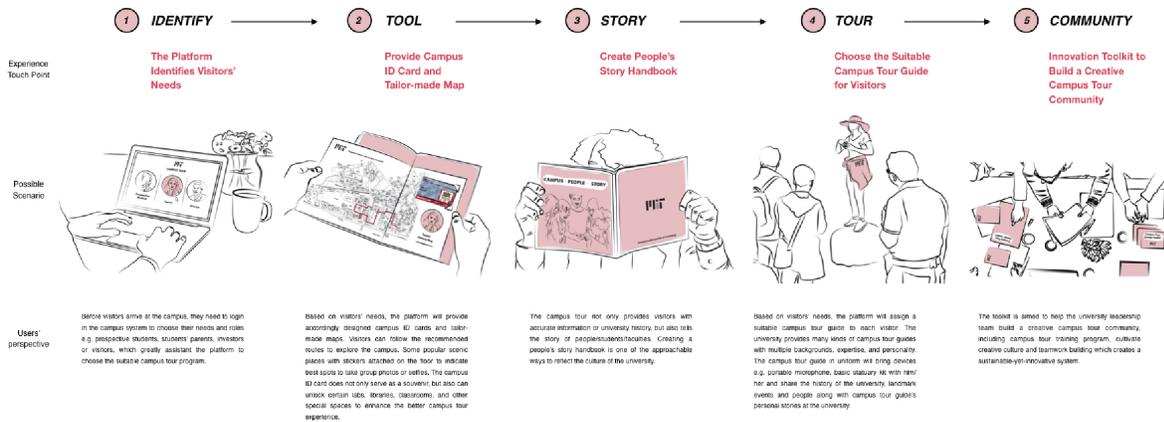
Based on visitors’ needs, the platform will assign a suitable campus tour guide in terms of nationality, expertise and personality. The campus tour guide in uniform will bring assisting tools such as portable microphones and share the history of the university, landmark events and people along with campus tour guide’s personal stories at the university.

**Experience Design Concept 5 - Innovation Toolkit to Build a Creative Campus Tour Community**

The toolkit aimed to help the university leadership team build a creative campus tour community, including campus tour training programs, talent recruitment, creative culture cultivating and teamwork building which creates a sustainable-yet-innovative system.

**EXPERIENCE DESIGN BLUEPRINT**

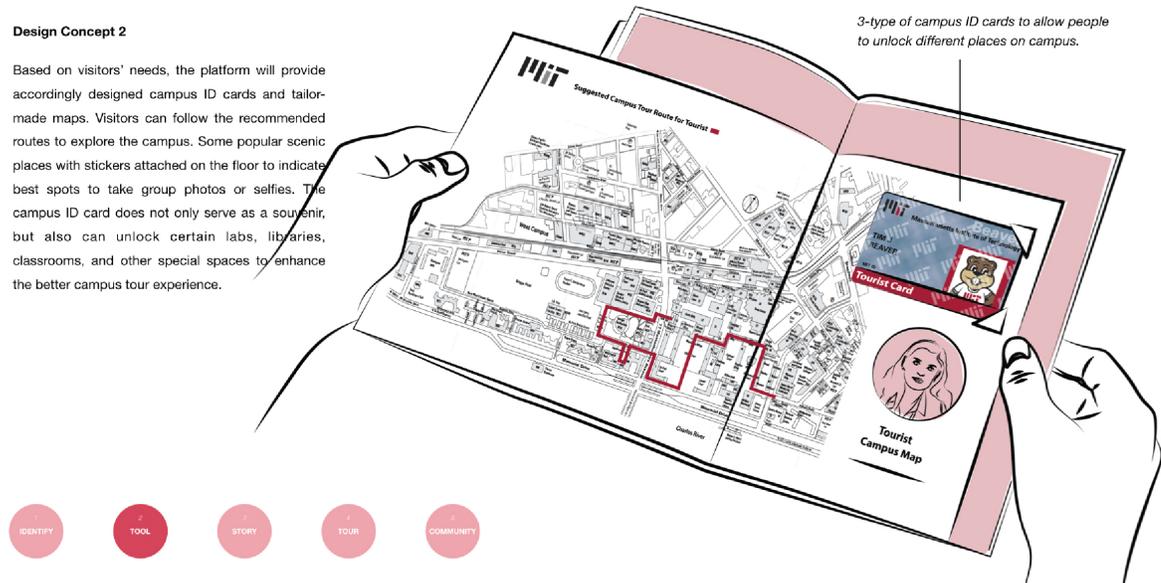
Visualize and contextualize key touch points in the scenarios to help us think through the whole journey that participants have taken. The structure includes Touch points, Scenarios, Analogous examples and Ideas.



[ Figure 11 ] The Experience Design Concept Overview

### Design Concept 2

Based on visitors' needs, the platform will provide accordingly designed campus ID cards and tailor-made maps. Visitors can follow the recommended routes to explore the campus. Some popular scenic places with stickers attached on the floor to indicate best spots to take group photos or selfies. The campus ID card does not only serve as a souvenir, but also can unlock certain labs, libraries, classrooms, and other special spaces to enhance the better campus tour experience.



[ Figure 12 ] The Experience Design Concept 2

There is still a long way to go in translating the five high-level experience concepts into actionable and feasible ideas. Next step of the case study is to prepare the material both hardware (devices, infrastructure) and software (campus tour guide training program), nurture the culture and create the suitable conditions including university policy, organization structure for conducting the campus tour experience prototype and its service.

The highlight of the university campus tour experience design project was to view experience design through two different methodologies. The 5E experience design model contributed to the user journey, which covered most user pain points and assisted the project team to curate a better human-centered campus tour experience by compiling the suitable-yet-designed key moments and user scenarios. In the project, the OPM had greatly underlined the needs to build a typical user journey map or its service and experience model on the scale of the system level. The nature of the OPM structure greatly assisted the project team to track the user pain points, the key stakeholders needs, the system structure, the correspondent sub-systems, and the relationship of objects and process within the system easily. When the project grows bigger and its system becomes complicated in the near future, the requirement for system thinking is increasing (Crawley, Cameron, & Selva, 2016). Therefore, the value of OPM will be revealed and positioned in a more critical role.

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