

Connected System Design Project (EGE205)

Idea Generation and Evaluation

Idea Generation



- Idea generation is the process of **creating**, **developing** and **communicating** of **new thoughts and concepts**.
- It focuses on coming up with **possible solutions** to perceived or actual problems and opportunities.



Idea Generation



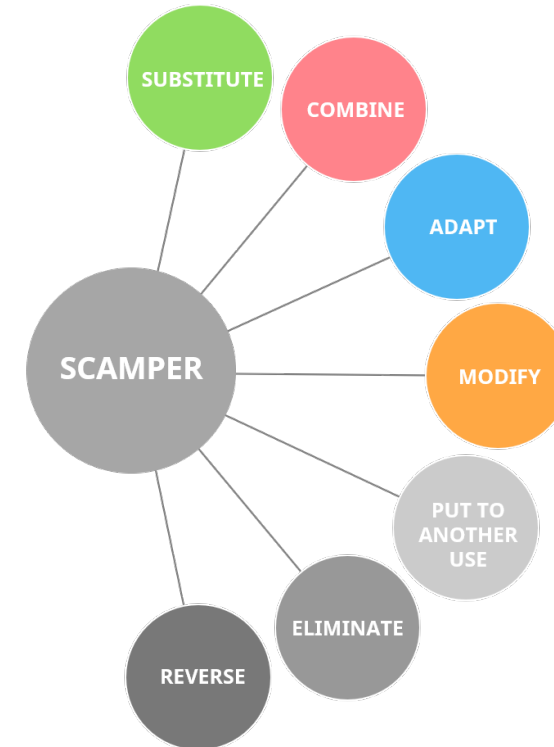
- There are **tools and techniques** that can be used to generate new ideas such as:
 - The 5W+H Method
 - Social Listening
 - Brainstorming
 - Role Playing
 - Mind Mapping
 - Think In Reverse
 - **SCAMPER Technique**

Idea Generation



SCAMPER Technique

- The SCAMPER technique is created by **Bob Eberle**, and is a **method** used for **problem-solving and creative thinking**. It's a holistic way of applying critical thinking to **modify ideas, concepts** or **processes** that already exist.
- SCAMPER is an acronym for **Substitute, Combine, Adapt, Modify, Put to another use, Eliminate** and **Reverse**.



Idea Generation



SCAMPER Technique

- **Substitute**

- It refers to replacing a part of the product, concept or process with another to achieve even better outcome.
- Question asked such as ""What can be replaced?" (Example: components, materials, people)
- Example: If you were making windows for a children's playhouse, you might substitute glass with plastic for safety.

- **Combine**

- It explores the possibility to combine two ideas into a single, more effective solution.
- Question asked such as "What can be combined?" (Example: other features, devices)
- Example: Smart phones combined phone features with cameras.

Idea Generation



SCAMPER Technique

- **Adapt**
 - It explores the possibility to make the process more flexible and focuses on other similar incremental improvements to the idea, process, or concept.
 - Question asked such as “What can be added?” (Example: new elements, functions)
 - Example: Cars now have built-in Wi-Fi.
- **Modify**
 - It looks at the problem or opportunity from a bigger perspective and aims for improving the overall results.
 - Question asked such as “What can be modified?” (Example: change the size, shape, color, or other attribute)
 - Example: Sunglasses reduced in size for babies or small children.

Idea Generation



SCAMPER Technique

- **Put to another use**

- It focuses on finding ways to use the idea or existing solution for another purpose and analyses the possible benefits if applied to other parts of the business.
- Question asked such as "Could you put the product to a different use, or use it in another industry?"
- Example: During COVID-19 pandemic, coffee filters being used as filters in masks for faces.

- **Eliminate**

- It examines the possible outcomes if one or more parts of the concept were eliminated.
- Question asked such as "What can be removed or simplified?"
- Example: Removing cigarette lighters from cars so that the space for charging devices.

Idea Generation



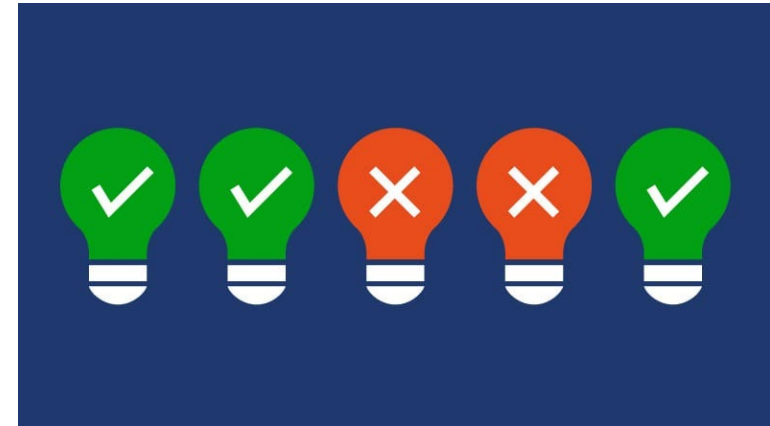
SCAMPER Technique

- **Reverse**
 - It focuses on reversing the order of interchangeable elements of an idea.
 - Question asked such as "What would happen if you reversed the product's production process?"
 - Example: Fast food restaurants rearranged the typical eat then pay model to pay then eat.

Idea Evaluation



- Idea evaluation is a **ideas screening process** to **prioritizing ideas** and **making decisions** on which ones to implement right away.



Idea Evaluation



- There are **tools and techniques** that can be used to evaluate ideas such as:
 - Consensus mapping
 - Cost-benefit analysis
 - Decision trees
 - Delphi technique
 - SWOT analysis
 - **Evaluation matrix**

Idea Evaluation



Evaluation Matrix

- It is simply a **table** with **one row for each evaluation idea** and **columns that address evaluation criteria for comparisons**. The design matrix links each evaluation idea to the criteria for selecting the idea.
- To **effectively build and use** the evaluation matrix for evaluate ideas, a **series of sequential steps** are to be followed strictly.

	CONCEPT 1	CONCEPT 2	CONCEPT 3
CRITERION 1	+	+	=
CRITERION 2	-	+	+
CRITERION 3	-	-	+
CRITERION 4	+	=	-

STRONG WEAK NEUTRAL BODY OF MATRIX

Idea Evaluation



Evaluation Matrix

- **Step 1:**
 - Select The Ideas To Put Through Your Matrix.
- **Step 2:**
 - Define idea screening criteria.
- **Step 3:**
 - Rate the criteria.

Idea Evaluation



Evaluation Matrix

- **Step 4:**
 - Score each idea based on the criteria.
- **Step 5:**
 - Calculate each idea's weighted score.
- **Step 6:**
 - Sum the weighted scores for each idea and selected the idea with highest weighted score.

Project Report (Part 3)

To be completed by week 7's first zoom / pyshical lesson

Project Report (Part 3)



Task 1 – Idea Generation

1. **Work** as a team to **apply at least 1** idea generation tools and techniques to generate ideas.
2. Each team member to **contribute at least 1** idea to the pool of ideas.

Task 2 – Idea Evaluation

1. **Work** as a team to **use** a decision matrix table (refer to the template given) to identify an idea to work on for your team project. Use the created user persona to form the criteria in the decision matrix table.

Task 3 – System Block Diagram Design

1. **Work** as a team to **design** the system block diagram of the selected idea and **indicate clearly** the team member responsible for each block.

Project Report (Part 3)



Reading References:

- <https://magazine.startus.cc/7-creative-idea-generation-methods>
- <https://www.designorate.com/a-guide-to-the-scamper-technique-for-creative-thinking>

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End of Idea Generation and Evaluation
