



31st Annual **INCOSE**
international symposium

virtual event

July 17 - 22, 2021

Idea Development Method, Applying Systems Design Thinking in a Very Small Entity

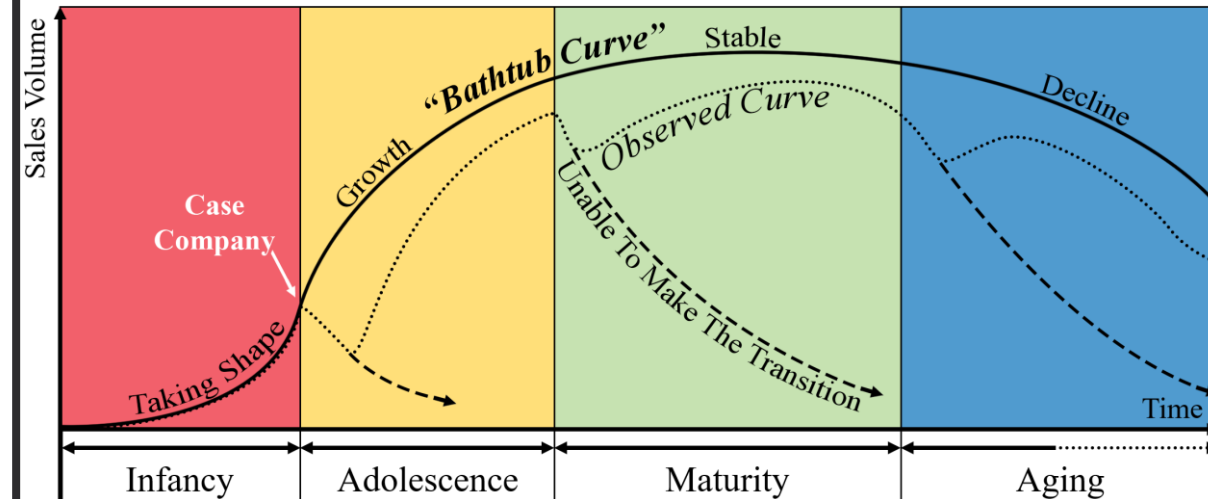
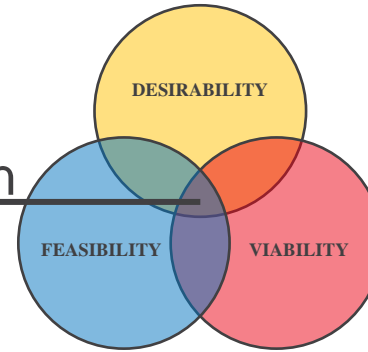
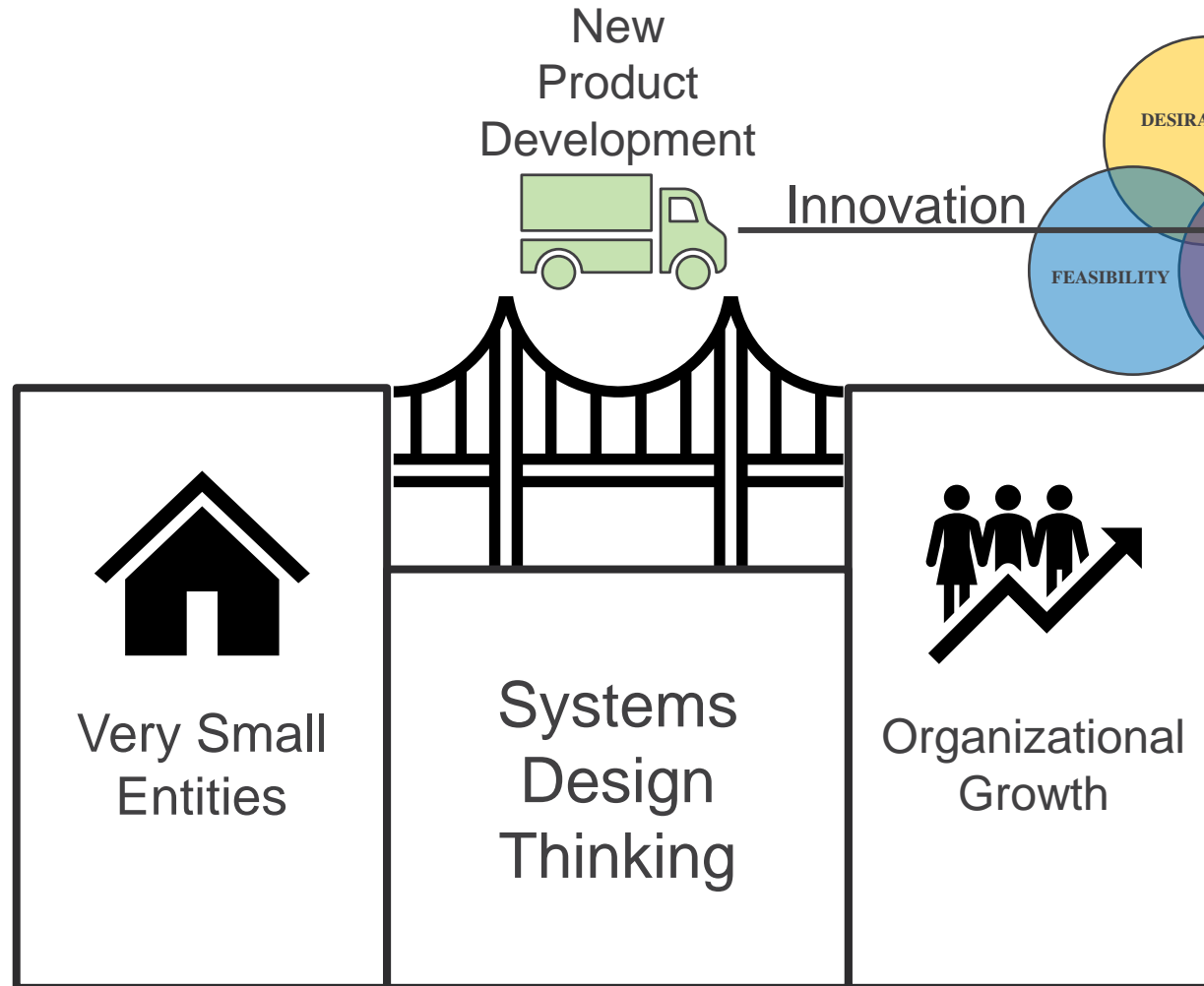


Agenda

- Problem Statement
- Systems Design Thinking
- Research Overview
- Case Company
- Idea Development Method
- Findings
- Results
- Summary



Problem Statement



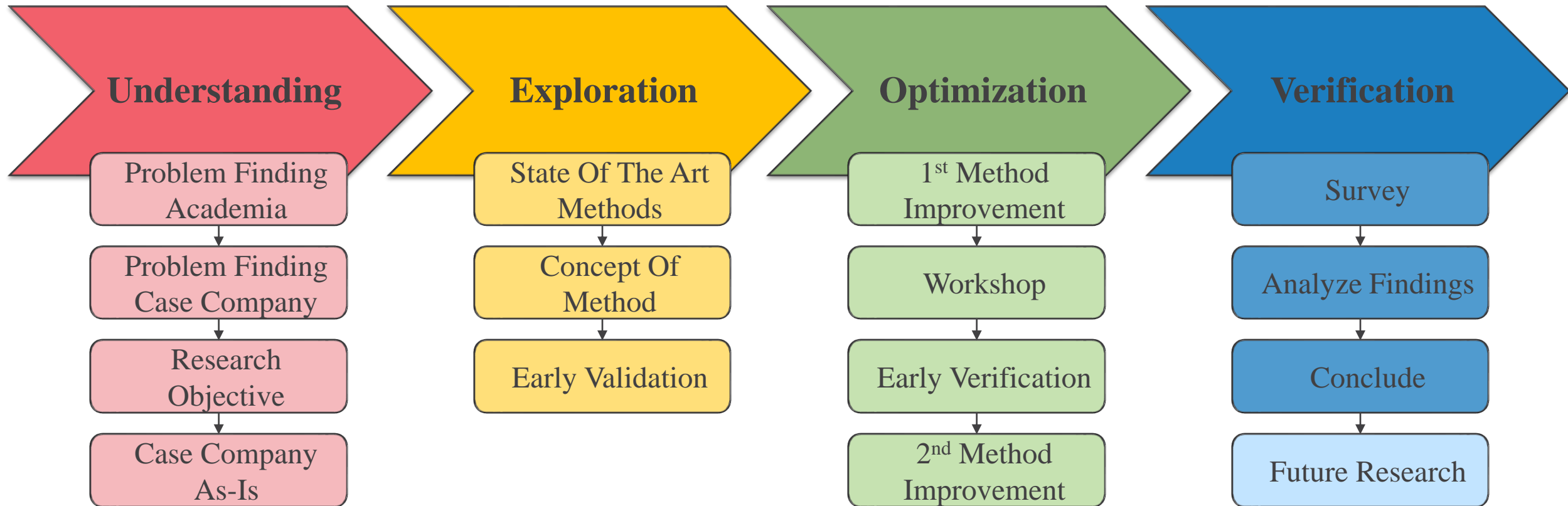


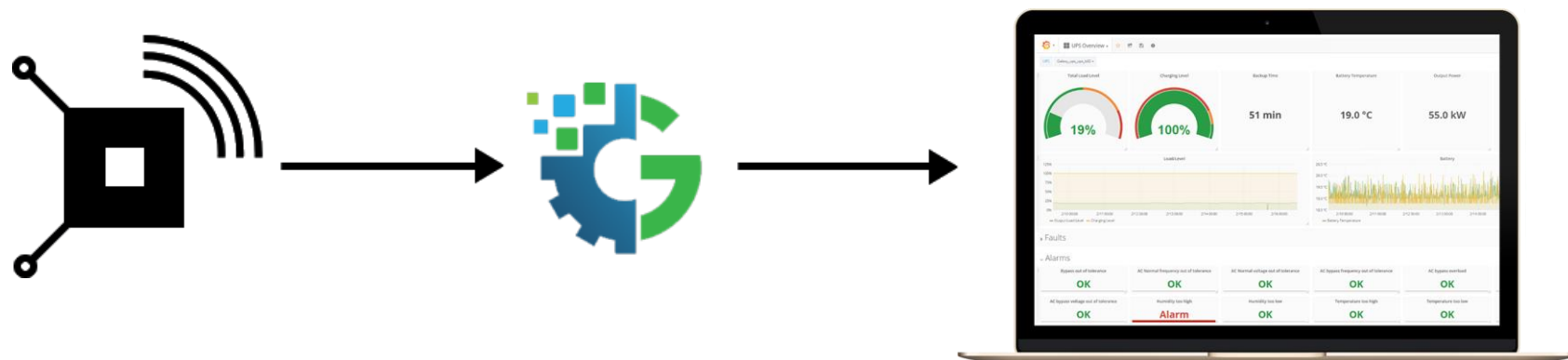
Systems Design Thinking

Systems Engineering	<ul style="list-style-type: none">• Analytical• Solution• Interacting of components• Requirement management• Verification & Validation	<ul style="list-style-type: none">• Big-picture View & Individual Systems• Technical & Social Interactions• Integration & Alignment• Tolerate Uncertainty & Flexibility	Systems Thinking
Similarities	<ul style="list-style-type: none">• Understanding of the problem• Knowledge of uncertainties• Visualizing methods• Interdisciplinary teams		
Design Thinking	<ul style="list-style-type: none">• Intuitive• Problem and empathy• User interaction and usability• Radical products, services, and business models		



Research Overview

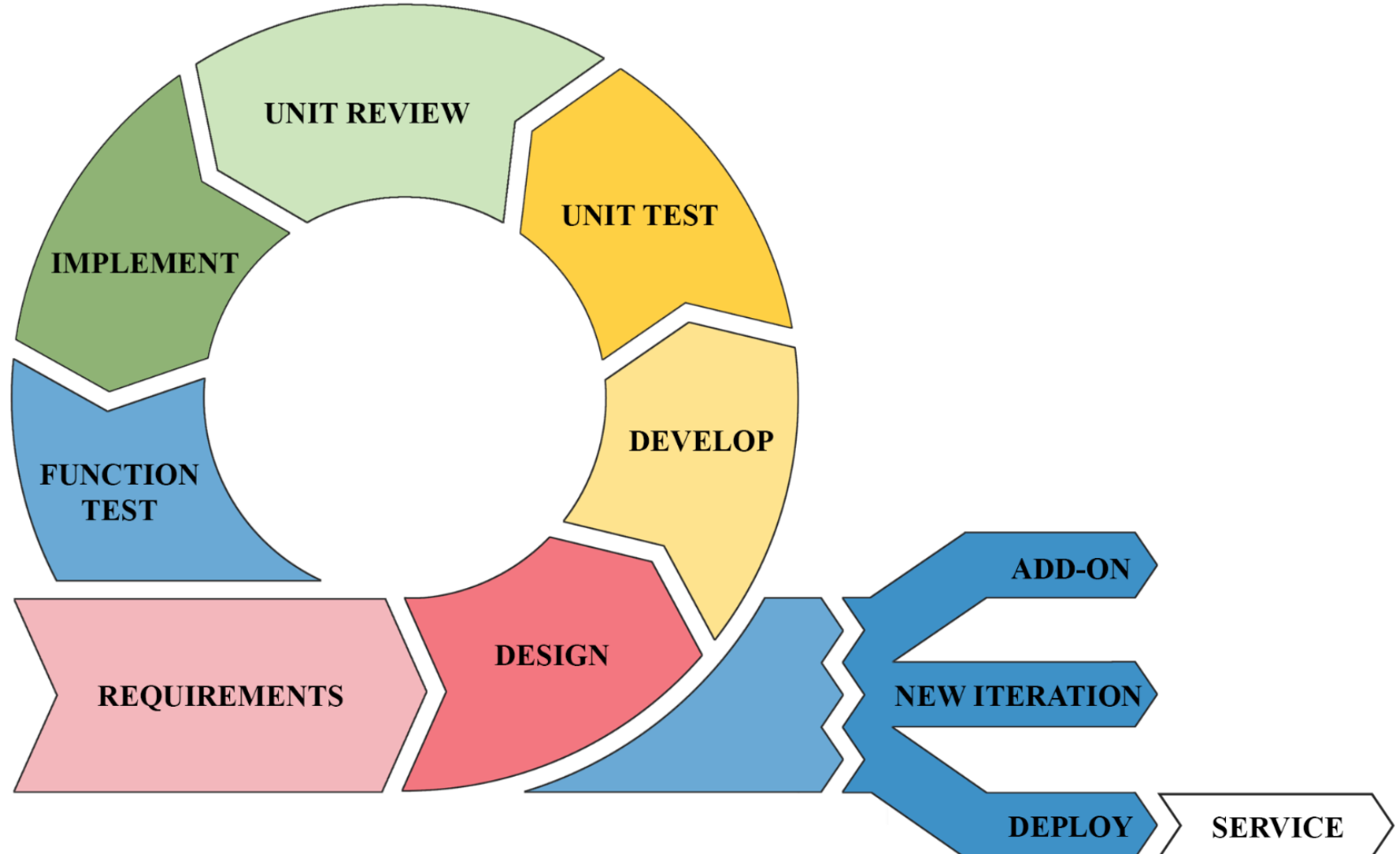






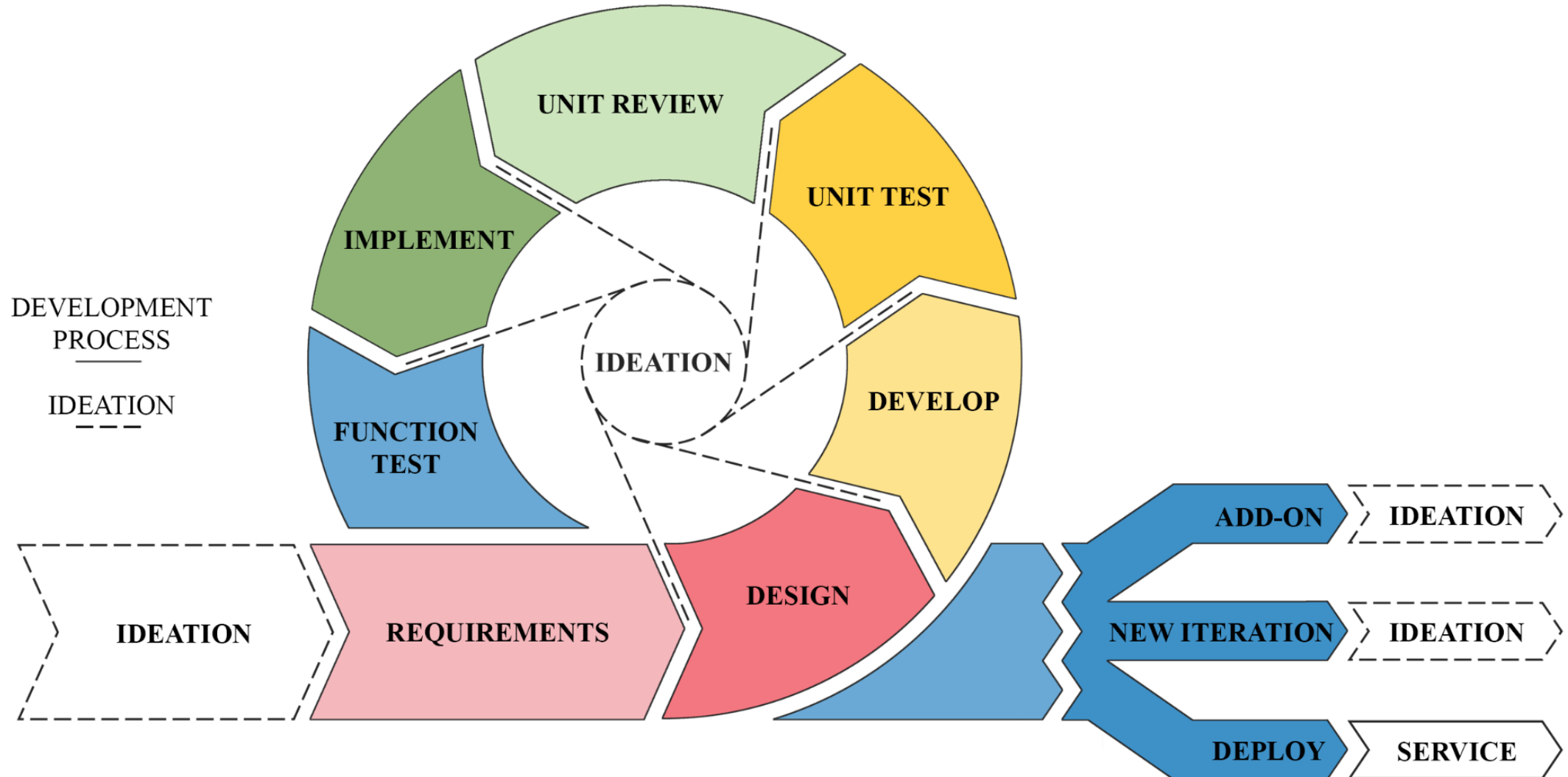
Company Development Process

DEVELOPMENT
PROCESS



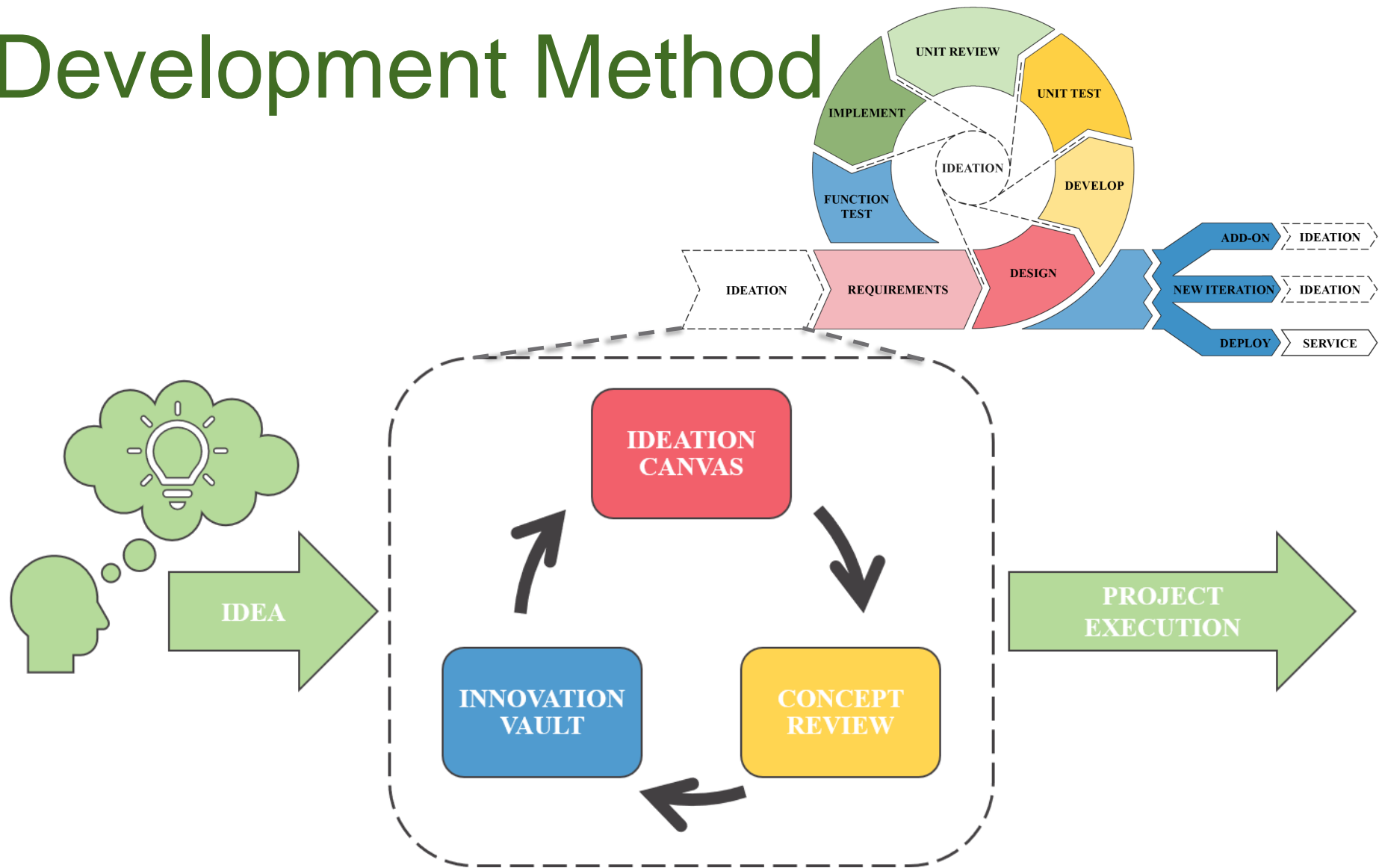


Idea Development Creation





Idea Development Method



Overview Window - Safe Swim Sys.

STATUS: PRELIMINARY

DECISION: INITIATE PROTOTYPING

VERSION: 0.4

TRACEABILITY CODE: 10.170.15.004

AUTHOR: John Johnson

DATE CREATED: 23.04.2020

REVIEWER:

DATE REVIEWED:

APPROVER:

DATE APPROVED:

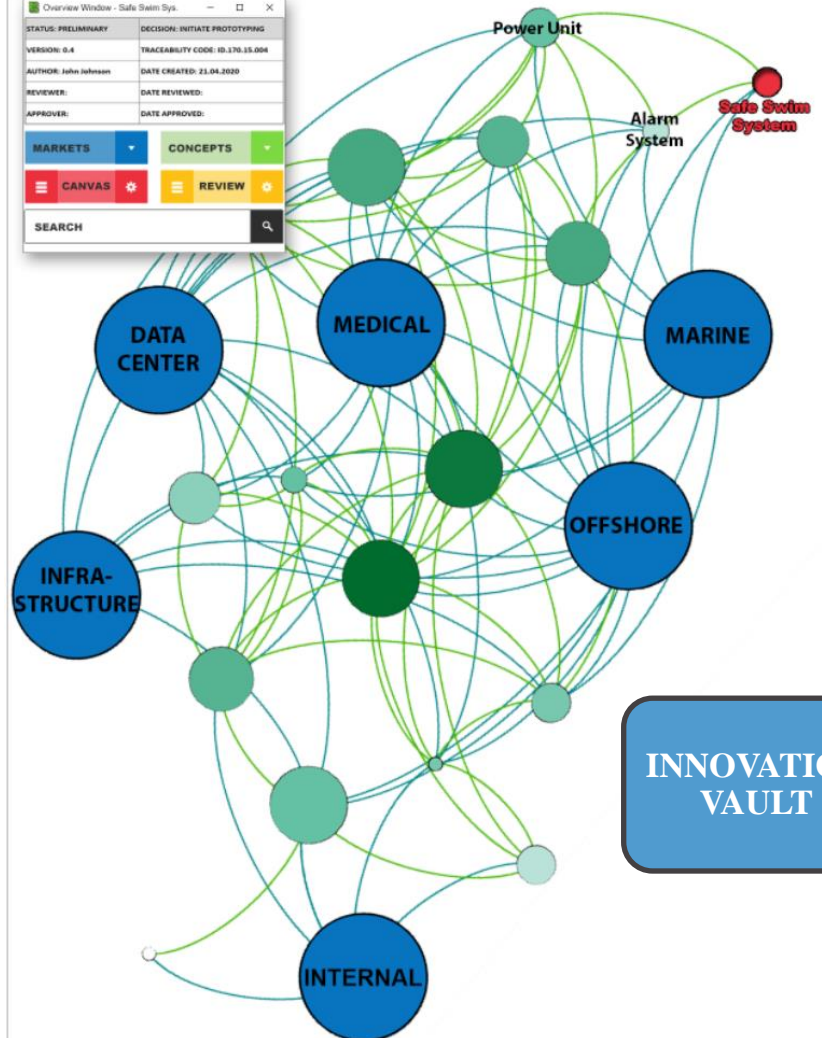
MARKETS

CONCEPTS

CANVAS

REVIEW

SEARCH



- CONNECTIONS FOR PRODUCTS, SERVICES AND CONCEPTS
- PRODUCT, SERVICE OR CONCEPT
- CONNECTIONS TO MARKETS
- MARKET SECTOR

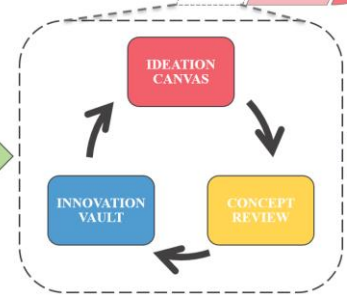
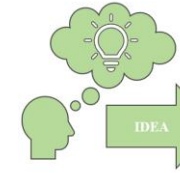
INNOVATION VAULT

NAME OF IDEA: Safe Swim System					// CONCEPT REVIEW //
NAME OF IDEA: Safe Swim System					// CONCEPT REVIEW //
TRACEABILITY CODE: 10.170.15.004					
List of attributes	Description	Assumption (Drop down list)	Score, 0-7	Normalized Weight	SUM
Problem	Small or large problem.	Nice to have	3	0.1	0.3
Customer	Few or many markets.	Some high paying customers	5	0.22	1.1
Value Proposition	Is it valuable to the customer?	Brings some value to the customer	3	0.21	0.69
Novelty	Level of newness.	New to the world, never seen before	7	0.05	0.35
Customer Scalability	Amount of rework for next customer.	Barely any rework needed for next customer	5	0.1	0.5
Development	Degree of investment in development	Complex Software Development and Complex Hardware Development	0	0.05	0
Technical Scalability	Additional product and service directions.	Easy to add on new functionalities	4	0.1	0.4
Scoping of concept	How defined the concept is.	The concept need more work on the definition of scope	3	0.1	0.3
Time	Long or short development time.	Two years	1	0.05	0.05
SUM			31	1	3.69

This innovation is: **Very High Risk , High Reward**

higher is better

CONCEPT REVIEW



IDEATION CANVAS

NAME OF IDEA: Safe Swim System

// IDEATION CANVAS //

NAME OF IDEA: Safe Swim System

// IDEATION CANVAS //

NAME OF IDEA: Safe Swim System

// IDEATION CANVAS //

1 PROBLEM

2 SOLUTION

3 CUSTOMERS

4 STAKEHOLDERS

5 VALUE PROPOSITION

6 SPECIFICATIONS

7 MISC. NOTES

8 NEXT STEP

Difficult to spot someone who is drowning. Challenging to locate exact position. Not all that can help receive a fast notification of an ongoing incident. Can take time to swim to drowning person. Amount of lifeguard spotters can be expensive.

Max 5 m dia.

Alert!

Emergency Service

Alert!

Service Dock

Alert!

Drowning? YES / NO

Responsibles for Public beaches, Shipyards, Oilplatforms, Cruiseships, Swimming competitions. Firedepartments, Search & Rescue organizations.

External: People who swim, Lifeguards, SAR-teams, Emergency services, Swimming instructors

Internal: Project team, Project director, Sales & Marketing, Manufacturing Engineer, Test Engineer.

Safely, precise and effectively locate and aid someone who is fighting for their life in the water, with instant alert to surrounding helpers.

Those with responsibility for people in the water can ease their stress by implementing this risk reducing device.

People around feel safer.

Communicate to the Emergency Service the location of the drowning swimmer, with an accuracy of maximum 5 meter in diameter.

Alert the lifeguard of drowning swimmer, within 10 seconds.

Continuously operative minimum of 700 minutes every day.

Able to carry and deploy a lifebuoy ring.

Able to operate in strong breeze and heavy rain.

The system might be useful in other applications as well, with little rework. Such as survey of hard to reach places. Use for locating missing people.

Technology might not be ready yet.

Establish initial project team. Market research. Create a plan and a budget. Buy a drone and other prototype items.

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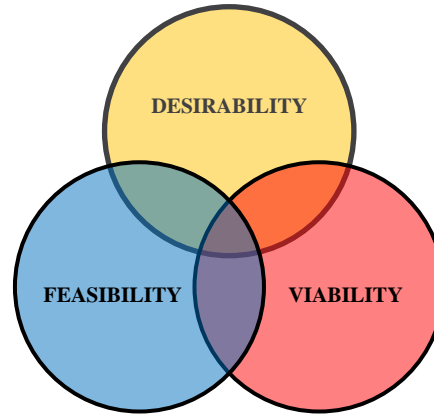
10



Need finding in case company

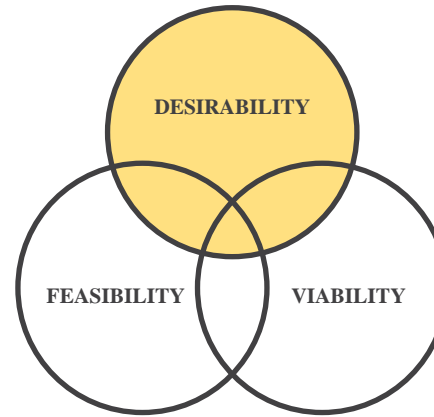
- Systems overview
- Resource- and user-friendly
- Formalization
- Communication

Survey



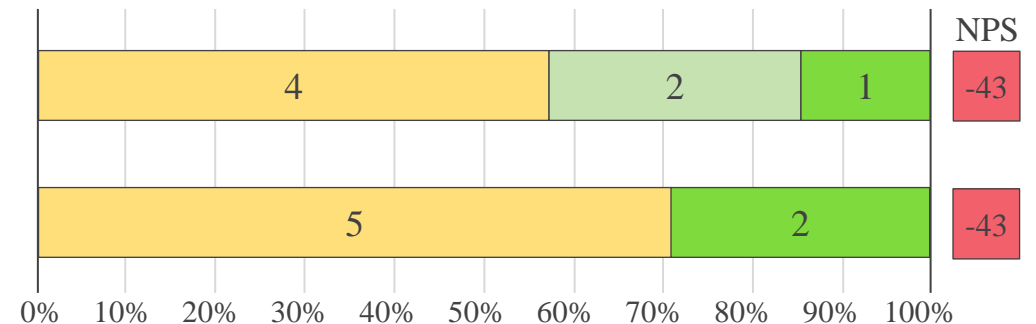
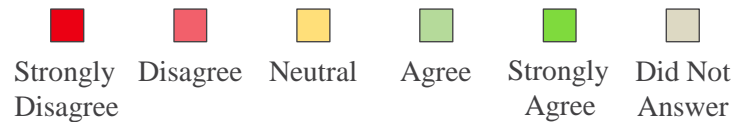
- 10-question survey
- 60 % of employees

Desirability

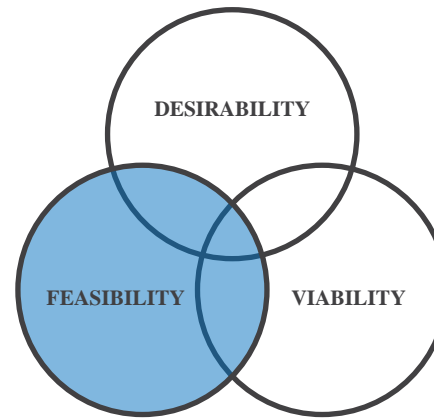


1. The process and its tools are user-friendly.

2. This process does not require much resources/time to complete.



Feasibility

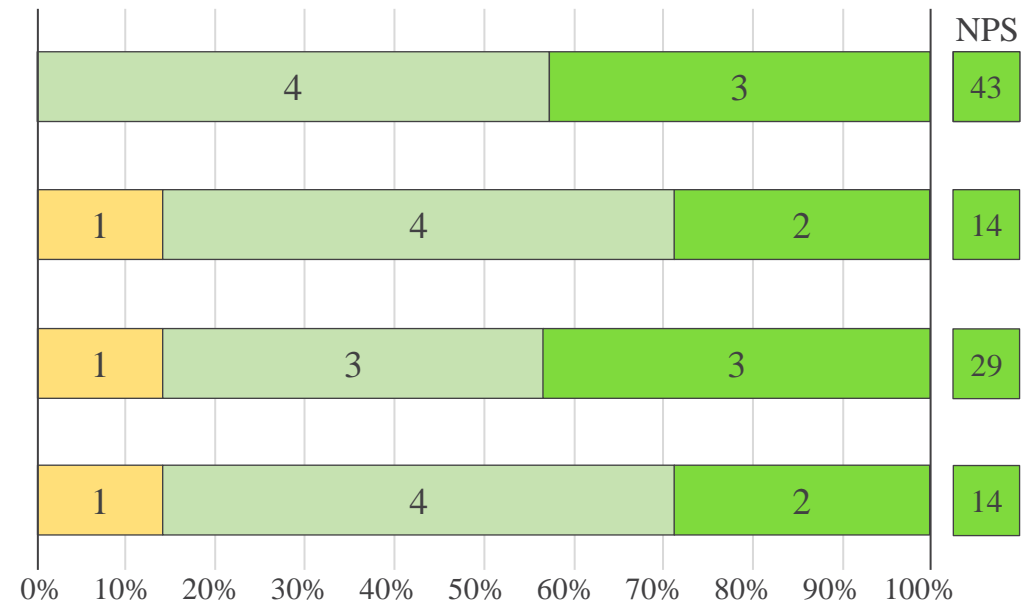
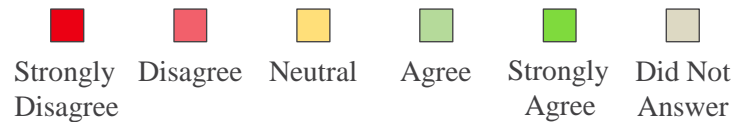


3. Presentation and communication of ideas will improve with this method.

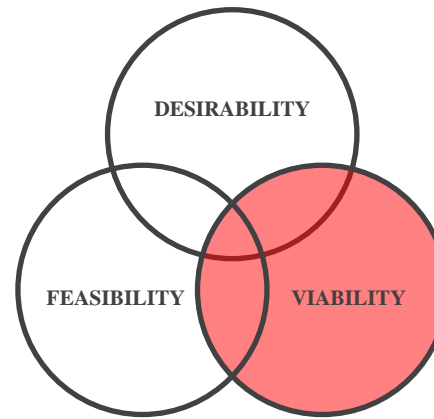
4. This method can be used before, during and/or after a project to improve new and existing ideas.

5. It is possible to incorporate this method into this company.

6. I believe this method has scalability opportunities.



Viability

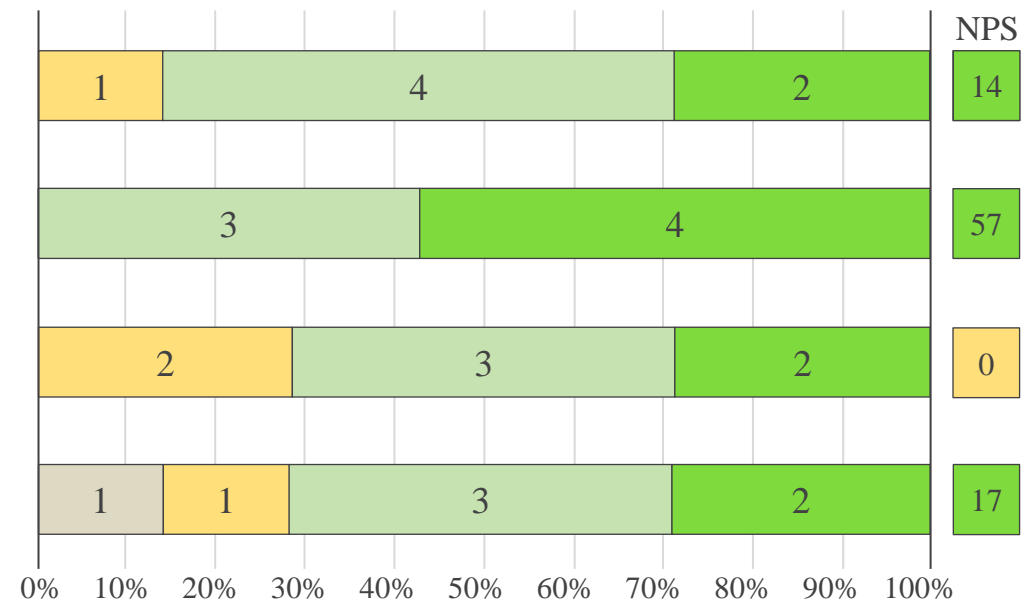


7. This method will help develop ideas.

8. This method makes it easier to prioritize which ideas to develop further.

9. This method improves the understanding of mutual benefits between different products, services, and ideas in the company.

10. These tools will help to understand both the technical and market related aspects of ideas.



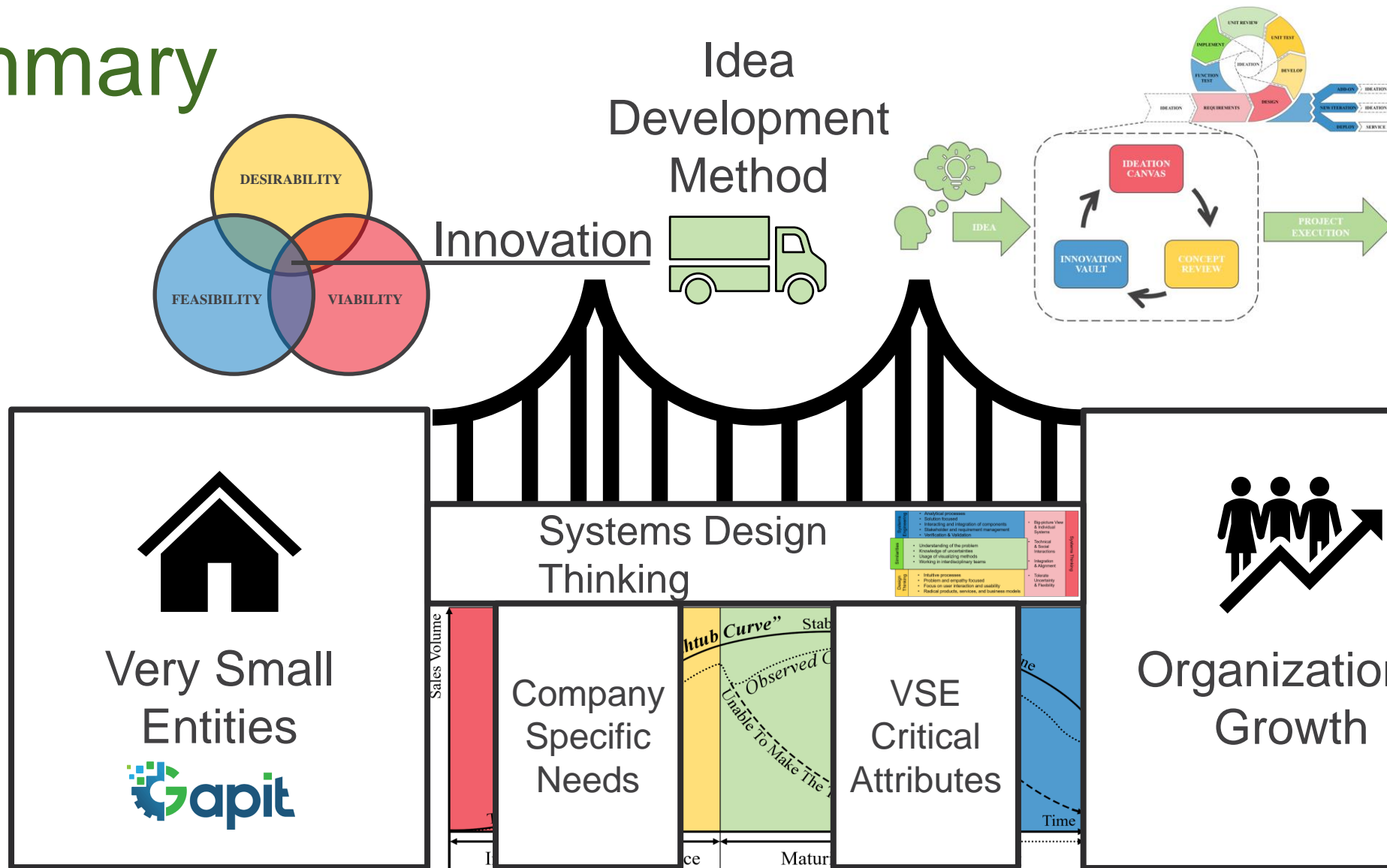


Takeaway

- **Systems Design Thinking in the Ideation Phase**
 - Strengthening communication
 - Easier prioritizing of ideas
 - Enhanced systems overview
 - Improves the ideas
 - Formalization improved the ideation process
- **Systems Design Thinking in a Very Small Entity**
 - Feasible and Viable in VSE when align with the critical process attributes of the specific entity
 - Desirability could be improved



Summary





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Thank you

- Questions
- Contact Information



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