

# IT Services Design as a Creative Process

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PA181 SERVICES - SYSTEMS, MODELLING AND EXECUTION

# Problems Faced when Designing IT Services/Solutions

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- Unstable requirements and challenges based upon often ill-defined contexts
- Complex interactions between Problem and Solution (value co-creation)
- Need for flexibility to change design processes and artifacts
- For effective solutions:
  - Critical dependence on human cognitive processes (e.g., intelligence, creativity...)
  - Critical dependence on human social abilities (e.g., teamwork, communication...)

# Three Stages of Designing a Solution

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1. Proof-of-Concept – Functional Feasibility
2. Proof-of-Value – Value Creation Potential
3. Proof-of-Use – Potential for Usability and Growth

# 1. Proof-of-Concept Stage Goals

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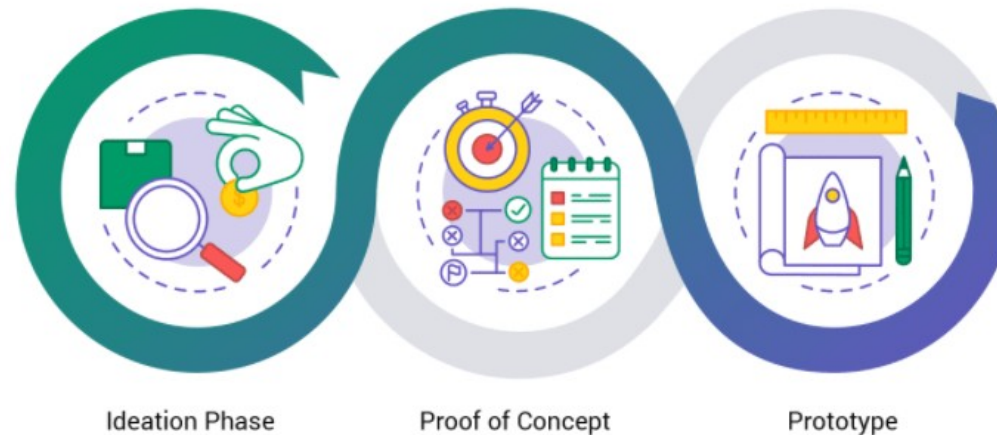
- To demonstrate potential solution for a set of unsolved problems
- To get better understanding of set of problems addressed by our solution
- To discover sources of domain-specific knowledge (insiders, potential end-users, case study...)
- To collect domain-specific knowledge which may impact specific design choices
- To foster creative potential of the team

# 1. Proof-of-Concept Stage Outcomes

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Typical outcomes of this phase:

- Prototypes (both high-level and low-level)
- Advanced knowledge (e.g., unacceptable solutions, technical constraints related to specific purposes...)



## 2. Proof-of-Value Stage Goals

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- To expand understanding of a domain-specific problem
- To measure the usability – improve intended KPI of the design
- To improve functional quality which increases usability
- To seek for unintended consequences of the design
- To document conditions under which the solution creates value
- To better understand technical, economic, and usability factors that will affect successful implementation

# 2. Proof-of-Value Stage Outcomes

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Typical outcomes of this phase:

- Configurable low-level prototype
- Field testing with end-users with different configurations which:
  - make use of random or unexpected (counterintuitive) value creation
  - minimize unintended or unforeseen effects (social, emotional, political...)
  - maximize value-creating design artifacts

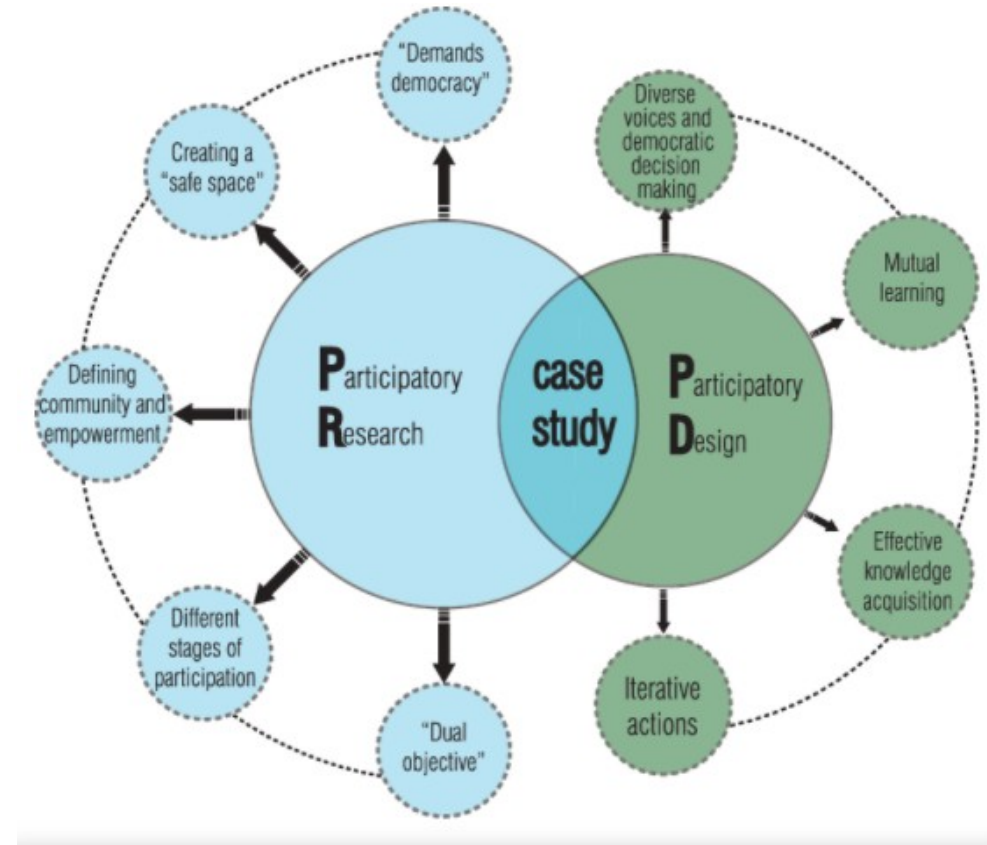
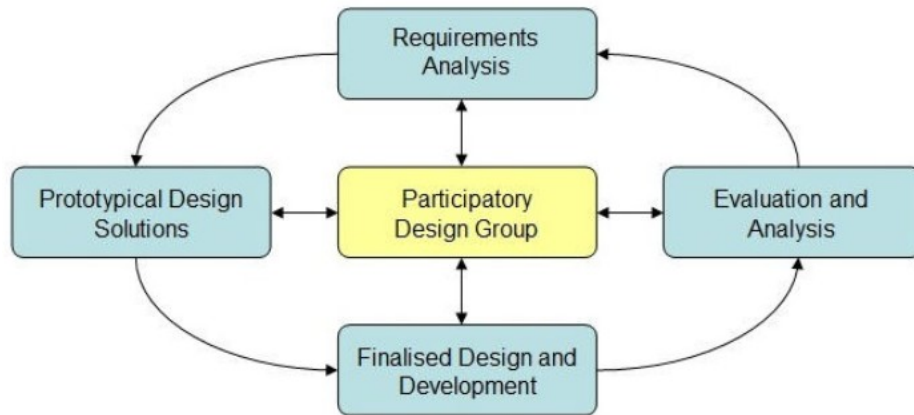
# 3. Proof-of-Use Stage Goals

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- To explore the potential to create self-sustaining communities
- To address marketing aspects
- To understand social, emotional, political (...) aspects that may impact value creation
- To make sure that all domain knowledge gained in Proof-of-Value Stage was implemented in the design
- To continue collecting domain knowledge as a part of continuous improvement

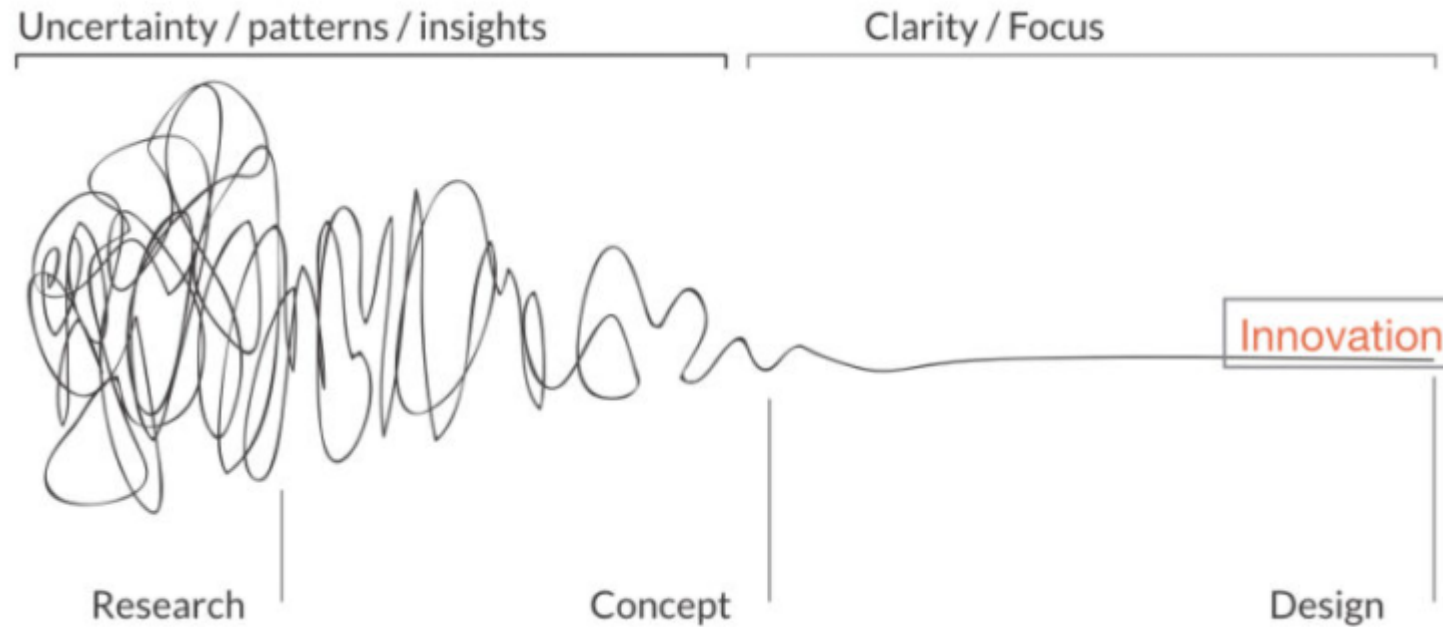


# Participatory Design Approach



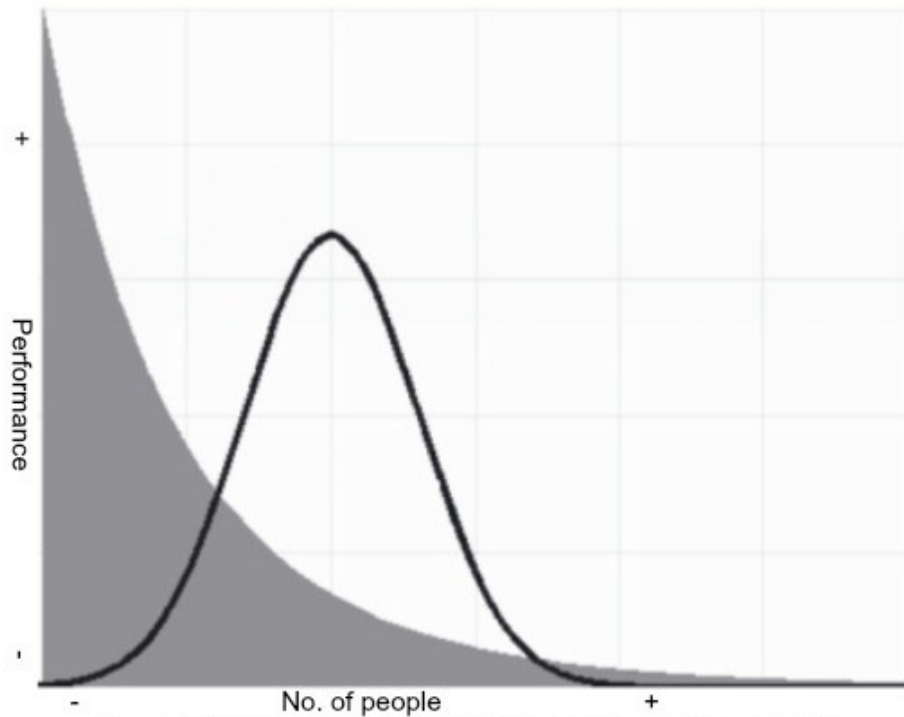
# Creativity, Brainstorming, Luck...?

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# What defines success? Skills or luck?

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*Figure 1: A Normal Distribution (Black) Overlaying a Pareian Distribution (Grey).*

# What defines success? Skills or luck?

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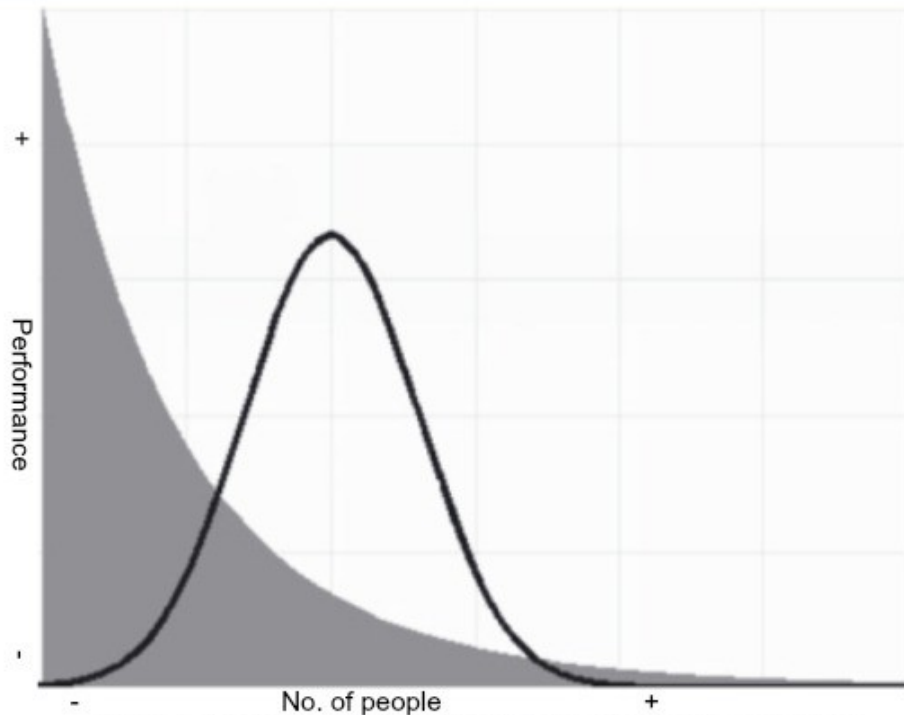


Figure 1: A Normal Distribution (Black) Overlaying a Pareian Distribution (Grey).

While abilities/intelligences are normally distributed in the population, the distribution of wealth follows a power law

[An Italian Study](#) based on computer simulation revealed that the **richest individuals are not the most talented**, but those who have managed to **repeatedly capitalize on random opportunities** throughout their lives.

# Lucky Achievements

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# Lucky Achievements

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Microwave oven

Viagra

Safety Glass

X-ray

Safety Matches

Insulin



# Creativity and Luck?

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# Creativity I

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- A set of skills allowing for artistic, scientific or other creative activities. It manifests as an ability to create new and original work or idea.
- Two basic aspects:
  - originality
  - usefulness



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# Creativity II

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- Theory of 3 dimensions:
  - Fluency (number of produced ideas)
  - Flexibility (ability to change inefficient approach)
  - Originality (statistically unusual ideas)



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# Psychology of Creativity

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- Two historic approaches:
  - Creativity as the intellectual capacity to form associations, divergent thinking, rich imagination and primary processes (**creativity as a personal trait**)
  - Creativity as a straightforward ability to solve problems, i.e. a cognitive ability based on logic (**creativity as a process**)

Since each of these approaches prefers a different methodology that produces conclusions supporting the initial idea, there is not yet significant consensus in this area

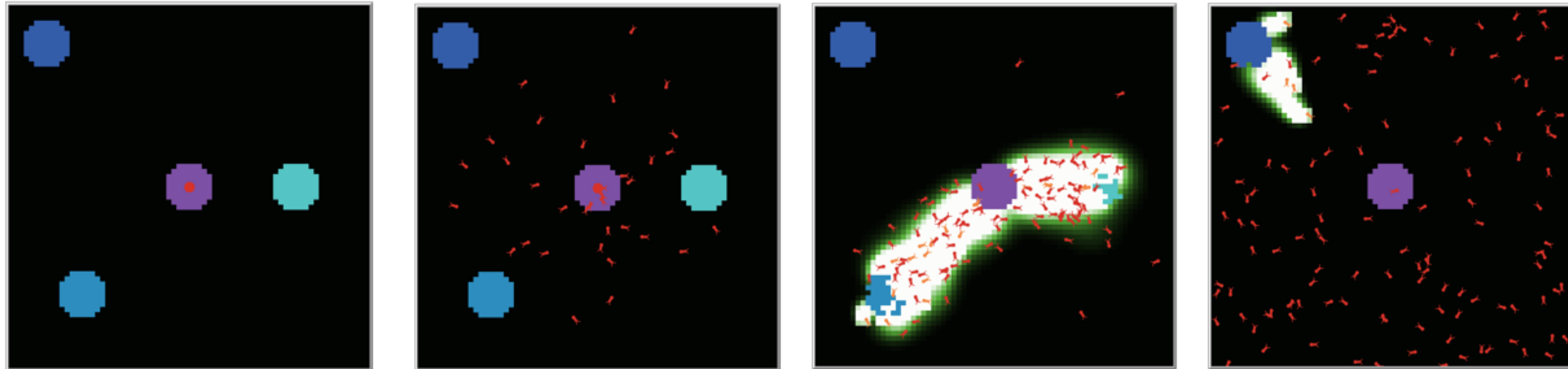
# Third Approach: Creativity as Stochastic Process

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- By [studying creative behavior of scientists](#), it appears that **creativity includes aspects of chance, luck and randomness**
- The number of new combinations grows approximately exponentially with the number of new concepts, ideas, facts, procedures, heuristics and techniques one knows
- The ability to combine different ideas increases the likelihood that these combinations will be interesting
- High productivity increases the chance that new ideas will be successful
- **The more combinations you create, the higher probability that they will (randomly) succeed**

# Random Walk & Distributed Intelligence

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Simulation of Ant Colony Searching for Food (NetLogo)

# How to Support own Creativity?

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- Seek inspiration in other fields (look for similar "patterns")
- Try enrolling in a course completely outside your field
- Do some physical activity, play sports or at least walk
- Play a musical instrument
- Play chess
- Know how to relax (in a way that you enjoy)
- The "Six Thinking Hats" technique

# Six Thinking Hats Model

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White Hat - facts, just the facts

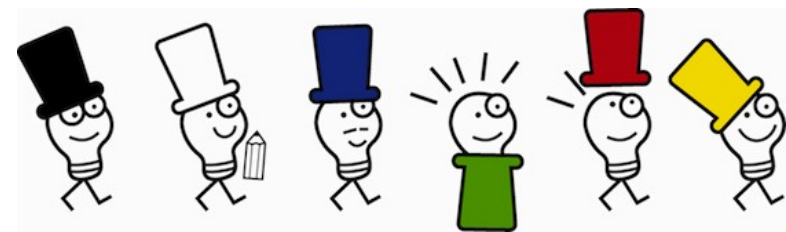
Yellow hat - optimism, exploring possibilities and opportunities

Black hat - pessimism, what can go wrong, looking for risks

Red hat - intuition, emotion, subjective perception, fear

Green hat - creativity, brainstorming, "anything goes"

Blue hat - managing the creative process, reflection on knowledge, objective evaluation



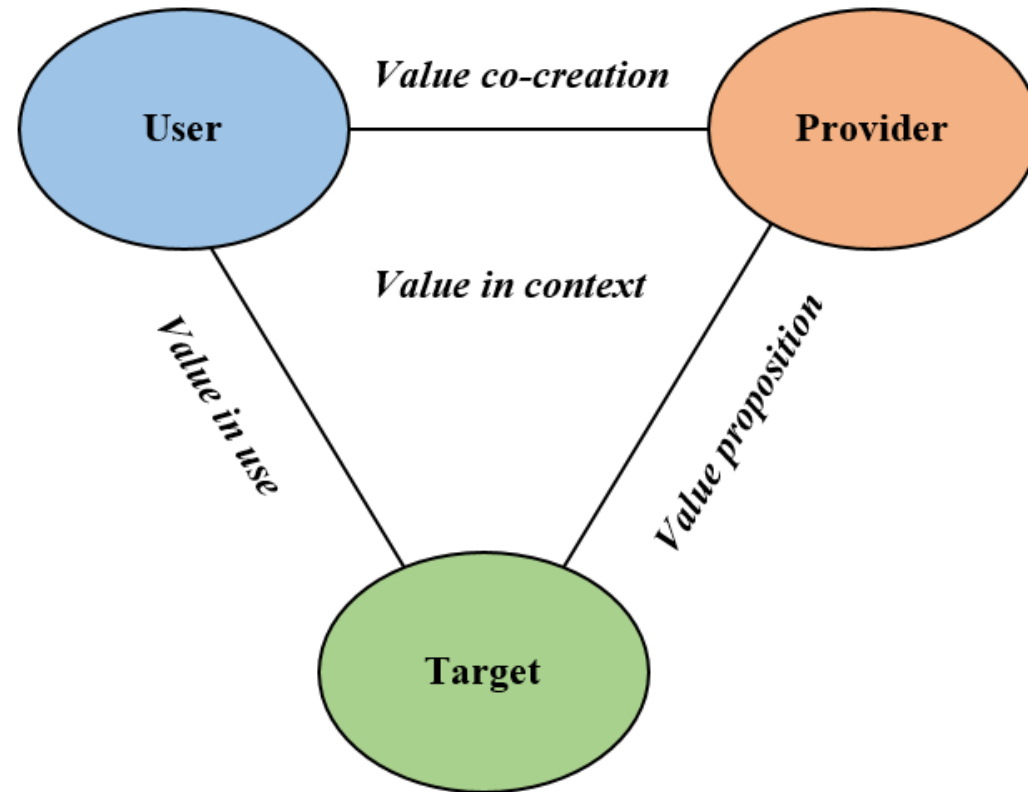
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# Service Value Model

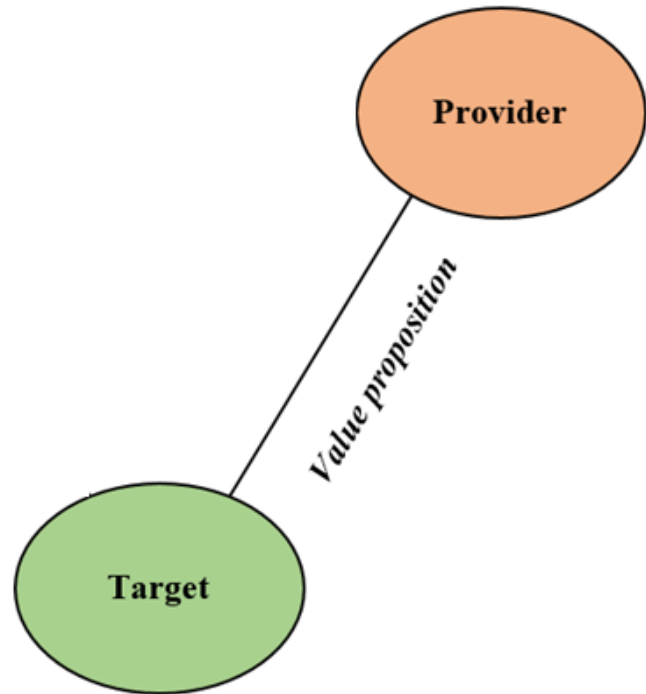
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# Provider's perspective

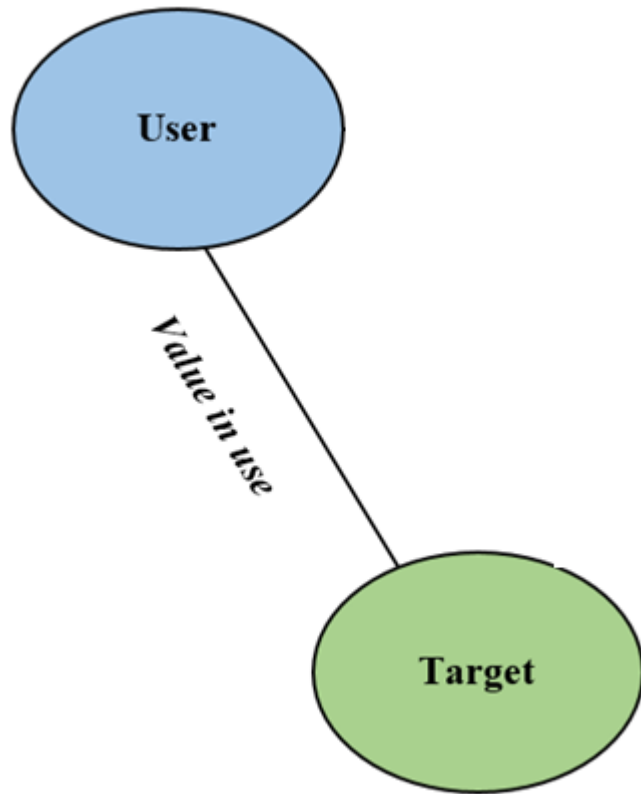
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- ❑ The provider offers the solution to the users' needs by combining its knowledge, resources, competences, and capabilities.
- ❑ The concept of 'value proposition' in terms of provider's proposals to market based on their knowledge, competences, and capabilities.

# User's perspective

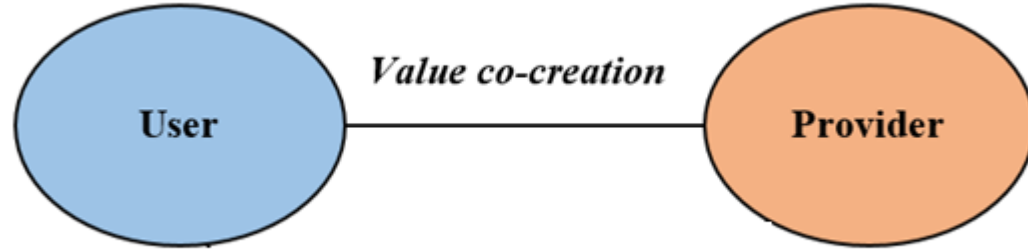
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- ❑ From user's perspective, users evaluate the solutions to their requirements based on their perceived utility, emotional state, past experience, and memories.
- ❑ This perspective analyses the ways in which users define their needs.

# Provider-user relational perspective

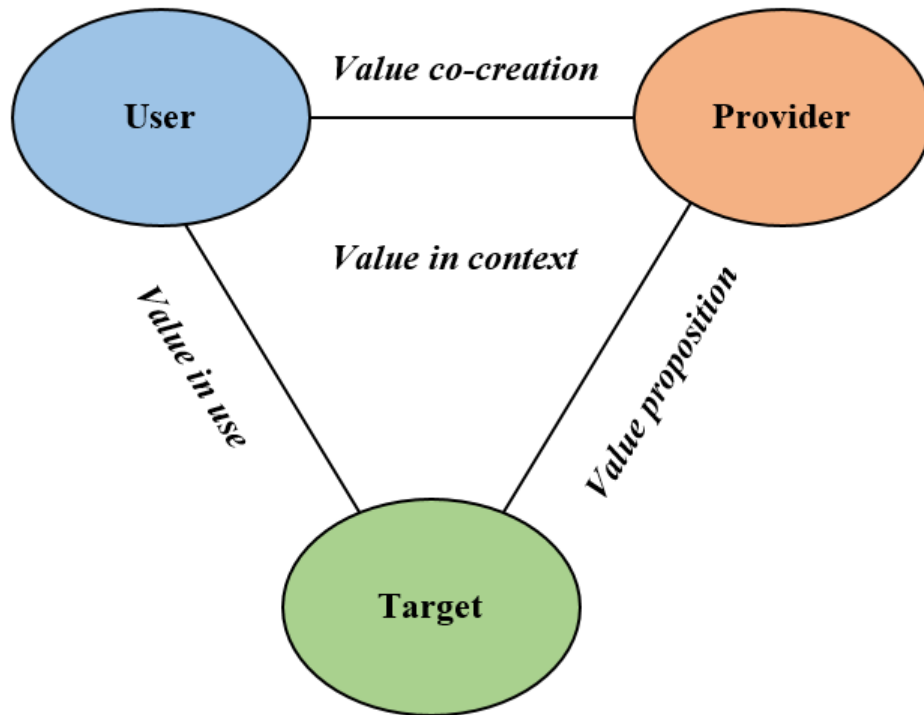
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- ❑ The relationship between service providers and users
- ❑ The concept of 'value co-creation' underling that "value is ultimately derived with the participation of, and determined by, the beneficiary (often, the customer) through use (often called 'consumption') in the process of acquisition, usage, and disposal"

# Contextual perspective

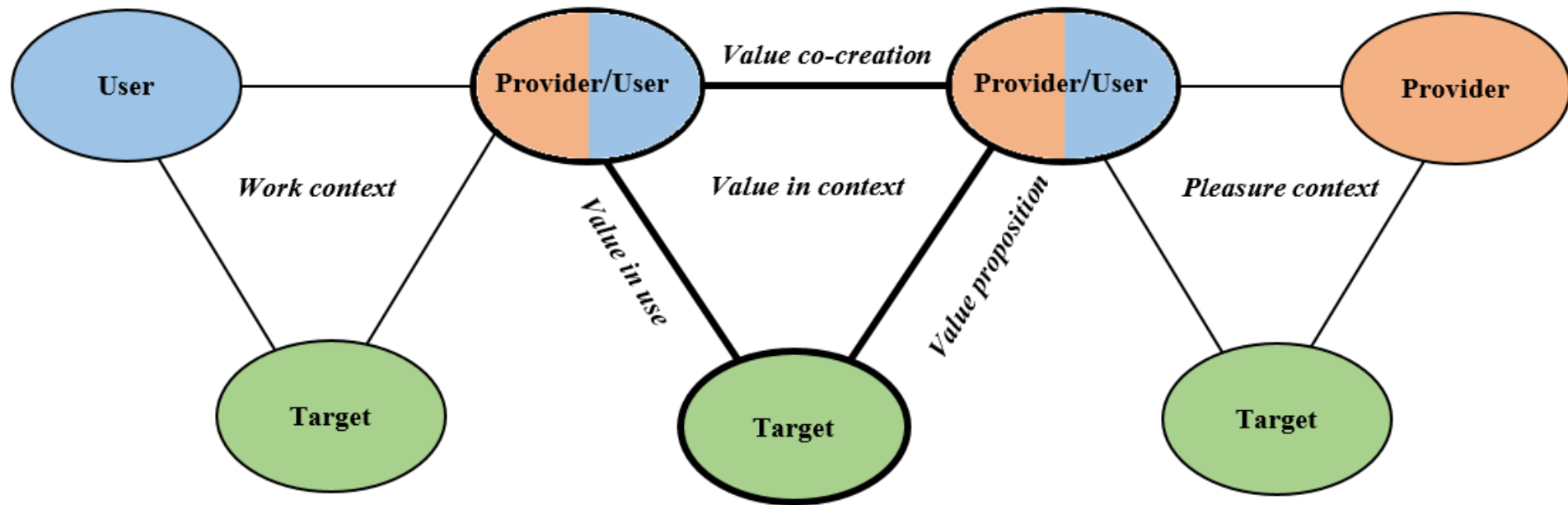
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- ❑ Value is influenced by contextual and social dynamics.
- ❑ The concept of 'value in context' stated that the "value creation being understood in the context of a larger value-configuration space" (Vargo 2008).

# Value Process Model

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# Service Value Chain - Example

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