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Design Solution in Circular Economy

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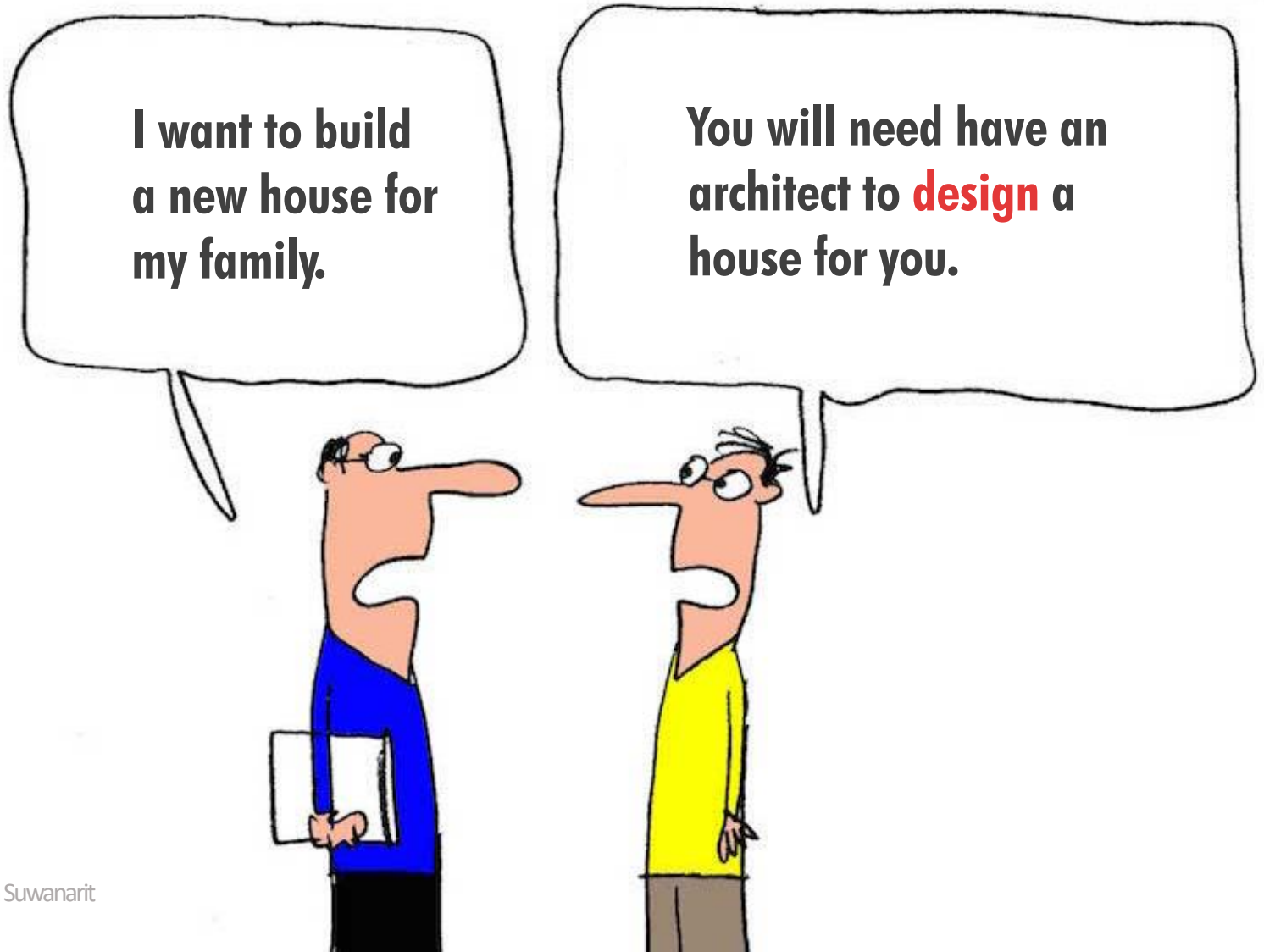
Assistant Professor Asan Suwanarit

DBTM

Founder of Asia's first integrated Bachelor's and Master's program in Design, Business & Technology Management

Dean of the Faculty of Architecture & Planning, Thammasat University


คณะสถาปัตยกรรมศาสตร์และการผังเมือง


I want to build a new house for my family.
You will need have an architect to design a house for you.

Points of Discussion

1. What is Design ?
2. The Concept of Design for Sustainability (DfS)
3. DfS Application in CE

What is Design ?

Perception of Design

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What most student thinks

What society thinks

What company may think

Design as Nouns

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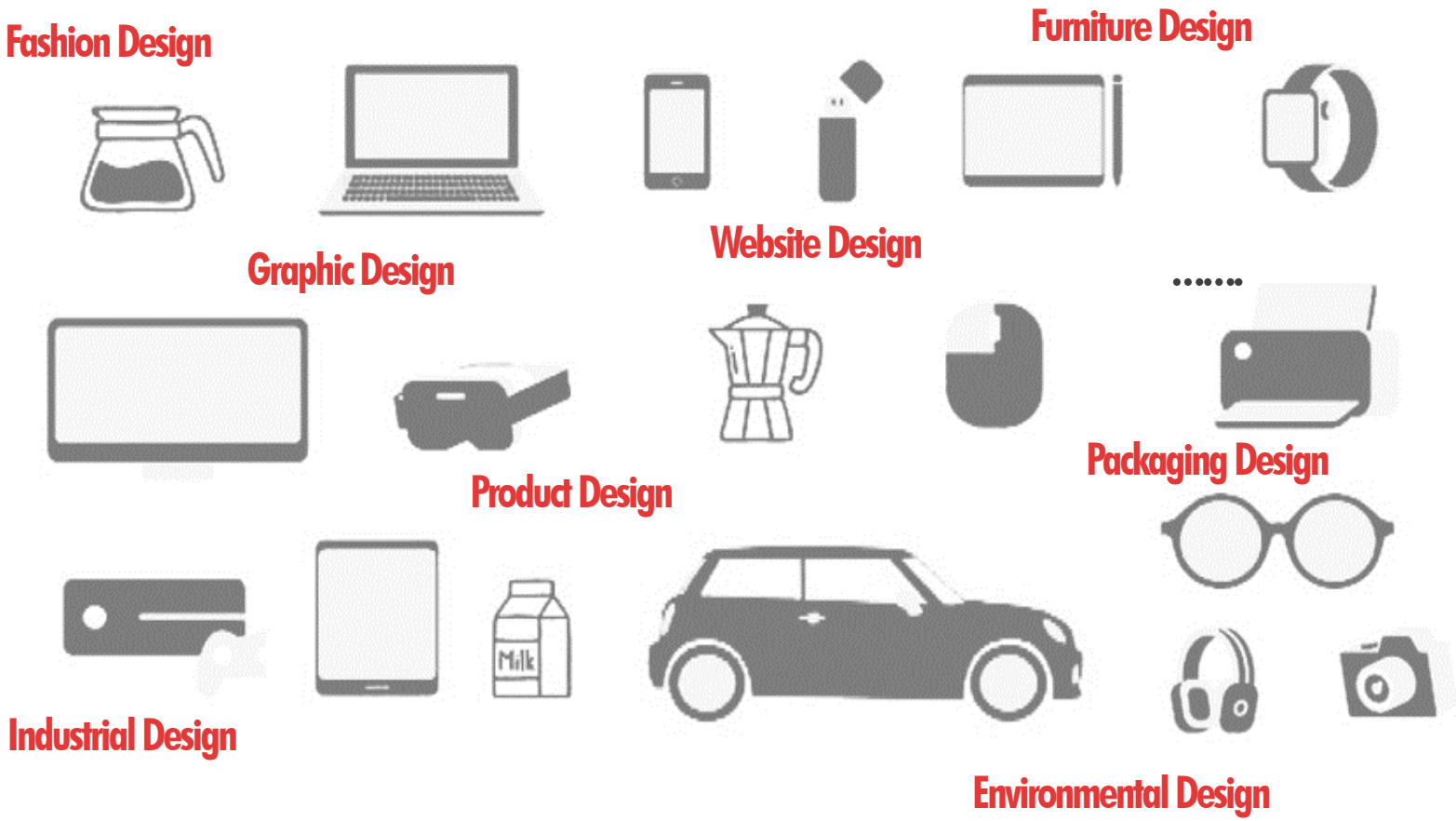


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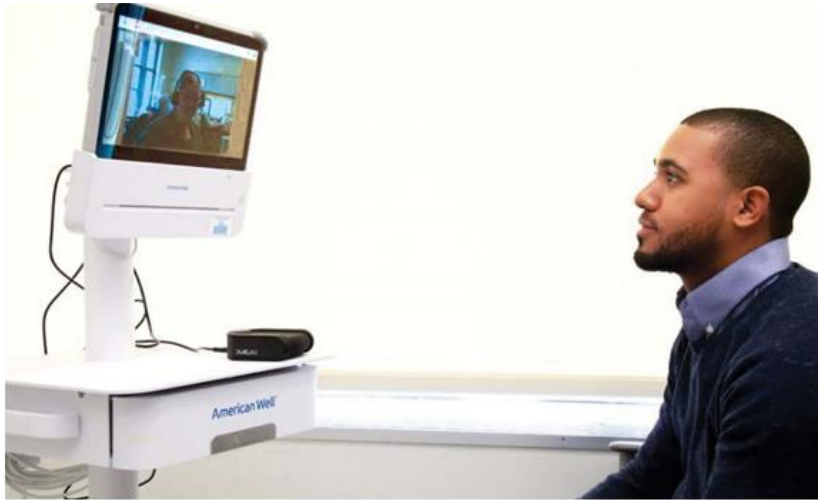
American Well


TESLA
TESLA


HANDLE WITH CARE
FRAGILE
FRAGILE
This Way Up
FRAGILE

Evolution of Design

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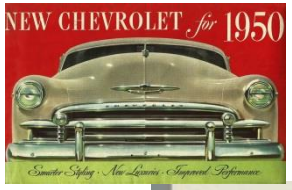
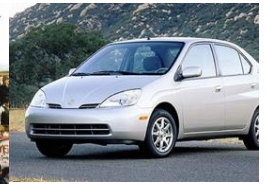
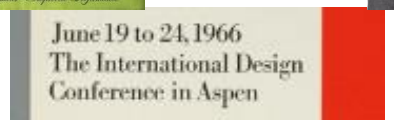






dmi: design management institute

iPhone

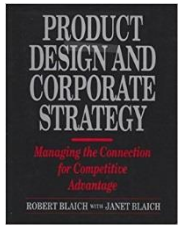
Circular Economy

Industrial Economy

Presidential Prize by the Royale Society of Arts

Designer as thinker, planner and coordinator (Pilditch 1965)

IBM



Design and Industries Association

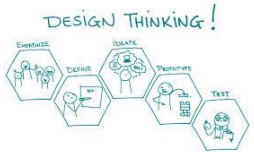
Product Design

Environmental Design

Information Design

Design within organization (Gorb 1978)

Creative Economy



"Design management as the function of defining a design problem, finding the most suitable designer, and making it possible for him to solve it on time and within a budget" (Farr 1965)

"Design management is the encompassing of on-going processes, business decisions, and strategies that enable innovation …that enhance our quality of life and provide organizational success" (DMI 2017)

"Design for Designers"

"Design for Managers"

"Design for Everyone"

1950 1960 1970 1980 1990 2000 2010 2020

Design as Process

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"Design is a process of decision-making that aims to create effective and attractive solutions to a problem"

Source: Boland and Collopy, 2004

Design as Creative Problem-solving Process

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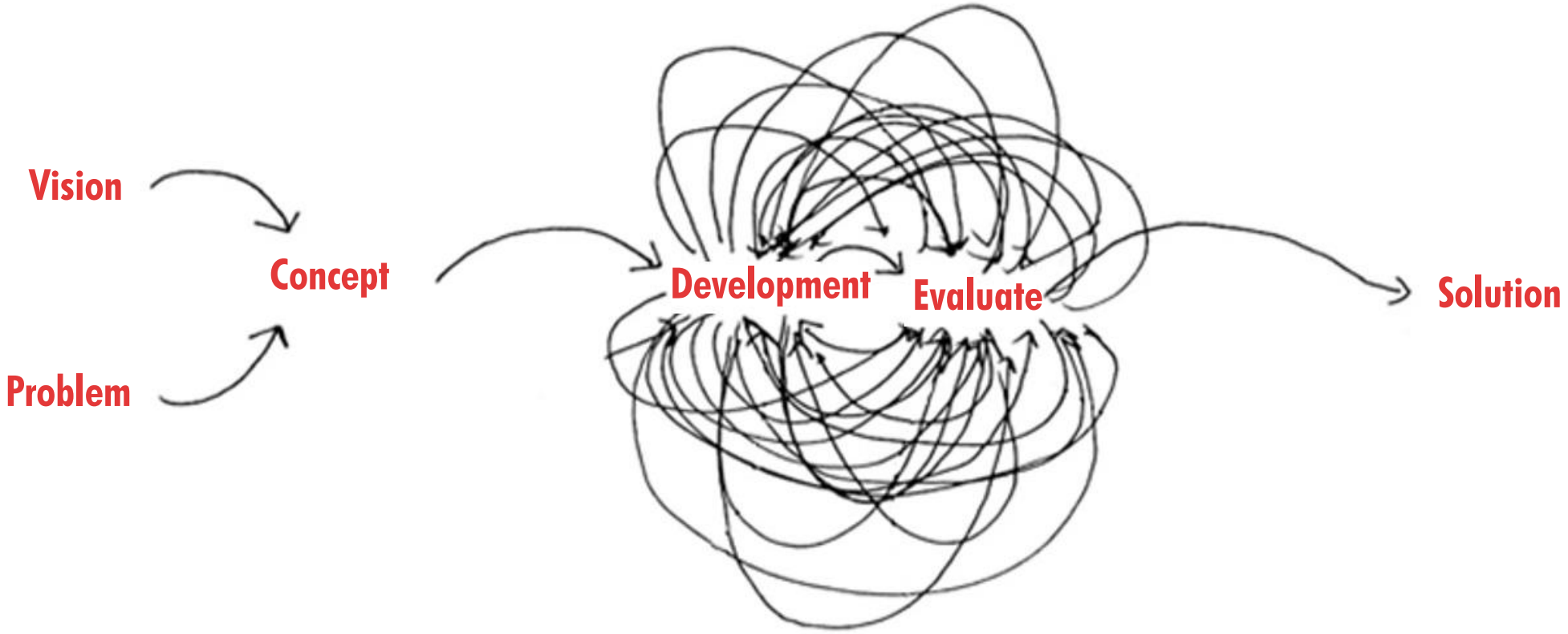
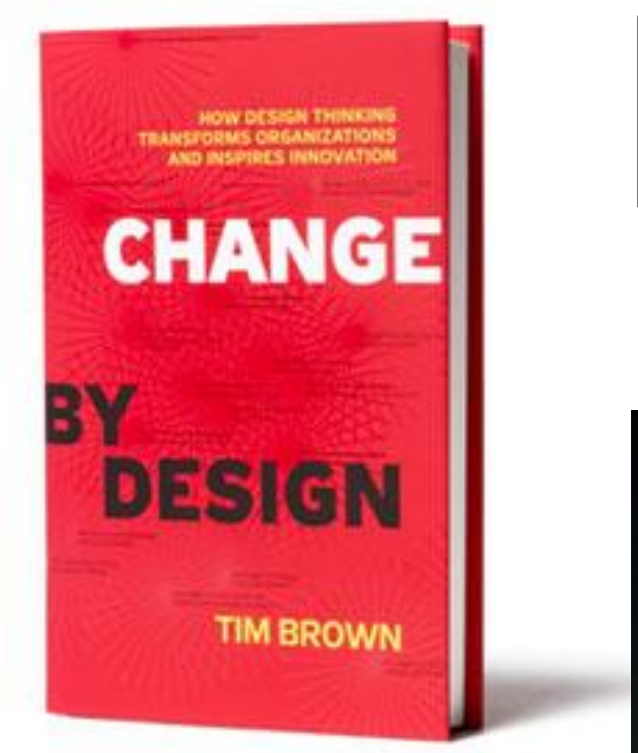


Tim Brown's Design Thinking



IDEO

Source: Fortune.com

Extend beyond "design" into:

- Various industries such as finance, healthcare, and manufacturing
- Other verticals including workflows, processes, and operations

D. School's Design Thinking

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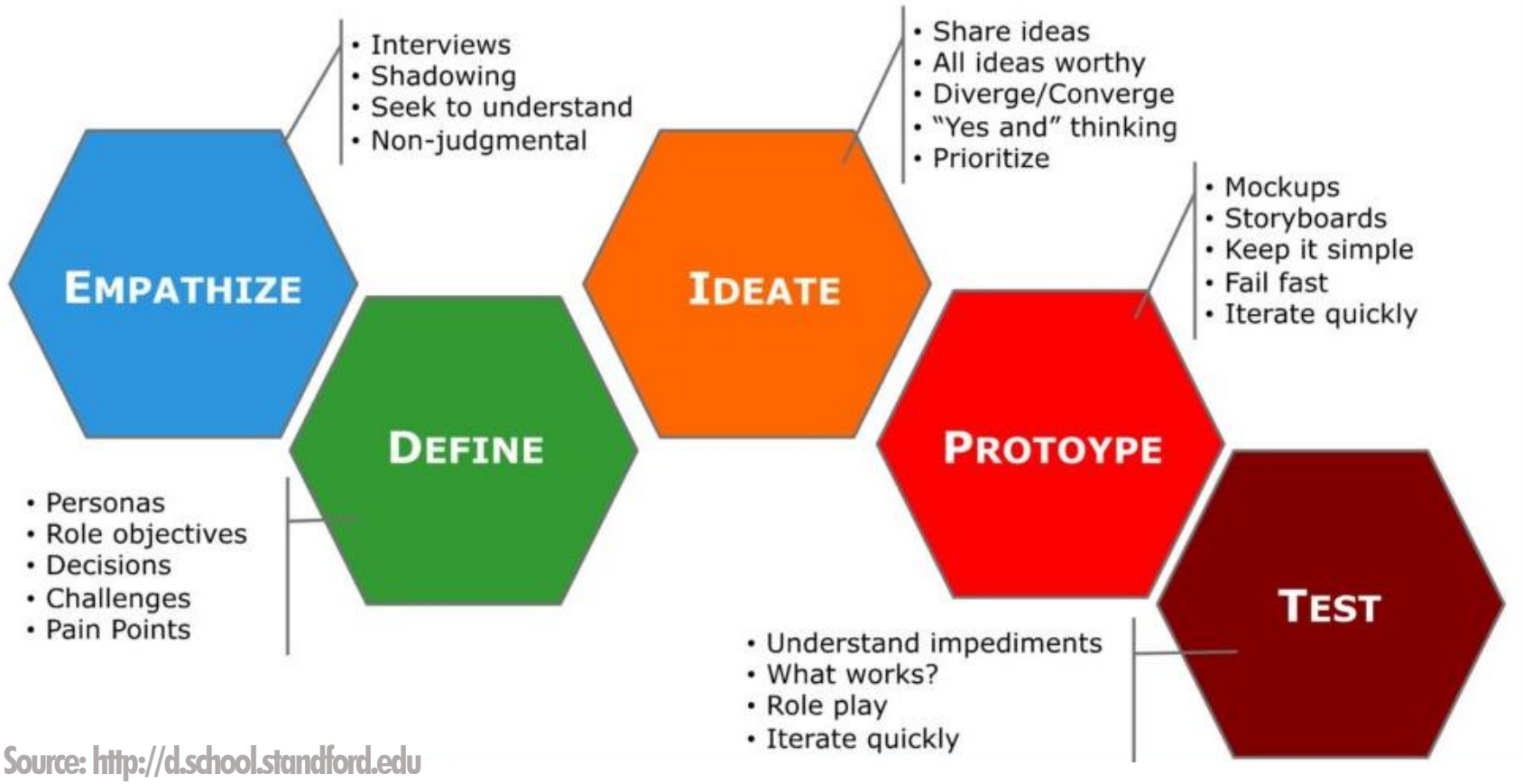

Source: http://d.school.standford.edu

UK Design Council's Double Diamonds

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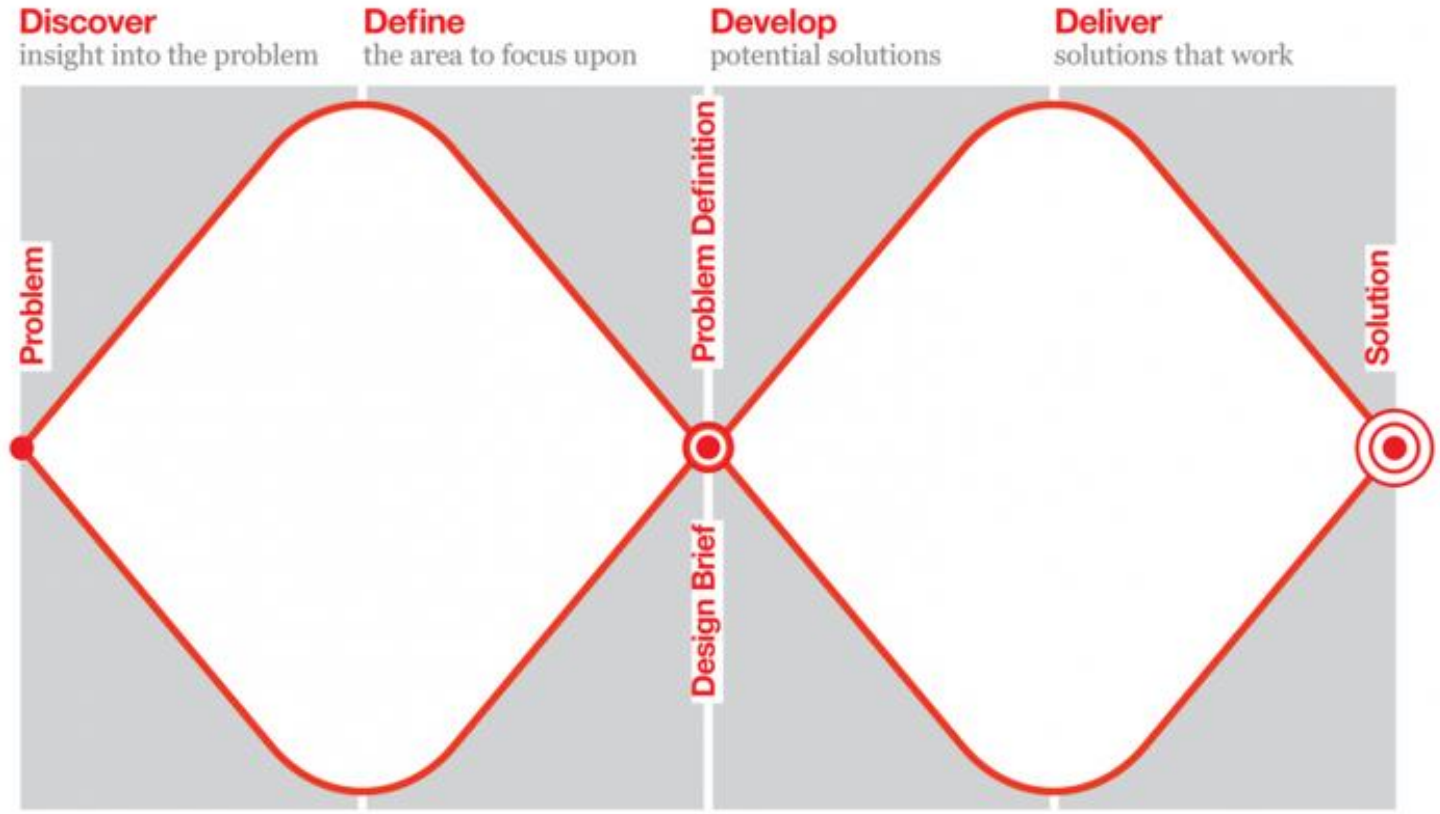

Source: UK Design Councils

NUS's Design Thinking

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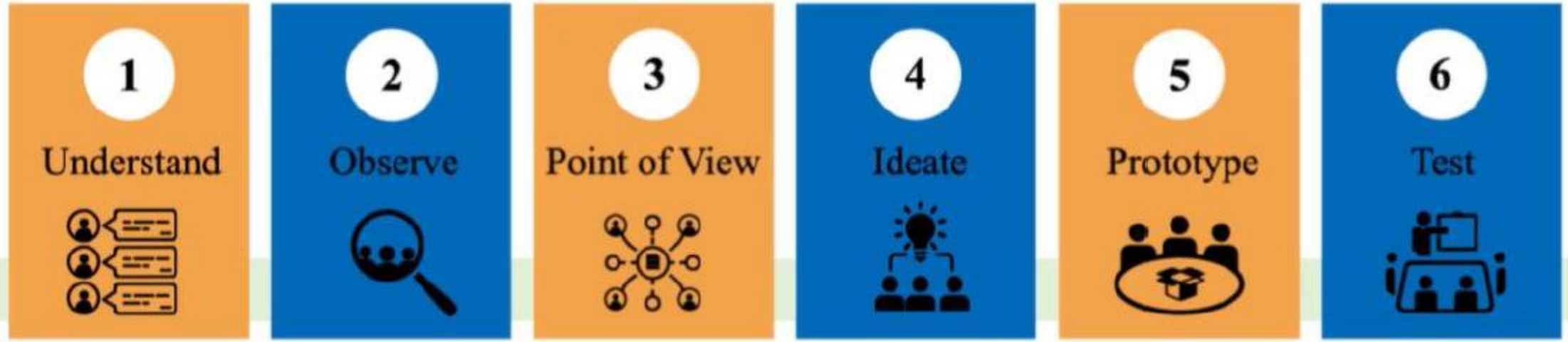

Source:: NUS Business School

Design Thinking at Philips

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"Combining conventional consulting approaches with a design thinking methodology brings care processes to life from an emotional point of view, while ensuring they are economically viable."

Source: www.philips.com.sg

Dr. Patrick Heiler
Principal Consultant, DACH region

Design Thinking at P&G

1. Clearly define problem to be solve with innovation
2. Understand and imagine the experience for the customer
3. Prototype and test (Minimum viable prototype)

Source: NUS Business School

TDS's Design Thinking

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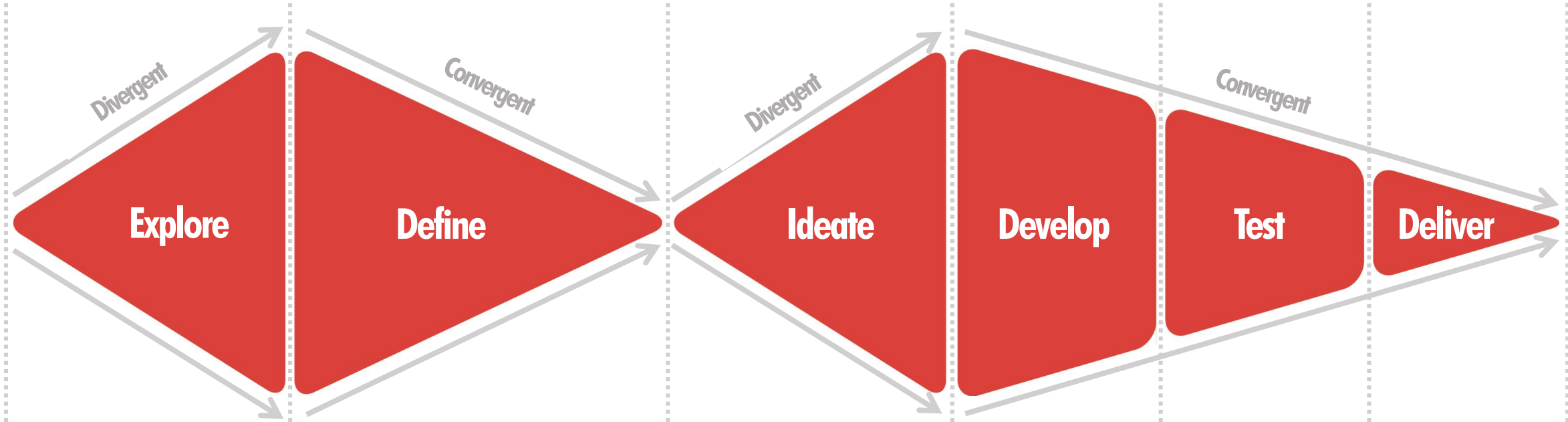


Understanding

- Context
- Problem Statement
- Trends
- Target User Groups

Programing

- Empathy Mapping/ Persona
- User Journey
- Jobs-to-be Done
- Point of View

Potential Ideas

- DT Canvas
- Brainstorming
- Cluster of Ideas
- Selection Criteria

Refined Ideas

- Design Brief
- Technology
- Business
- Conceptual

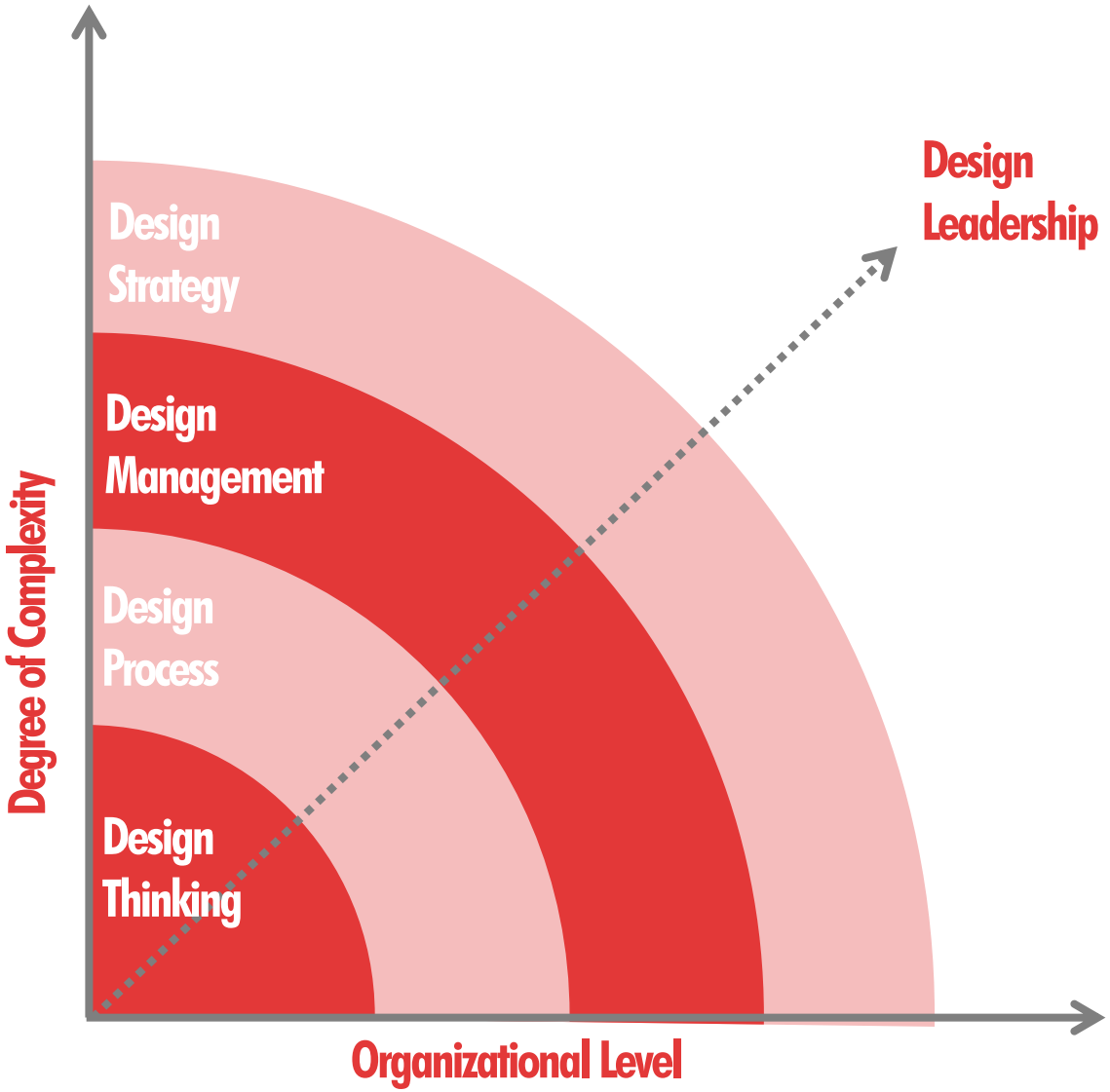
Prototype

- Testing
- User Feedback
- Validation
- Refined Prototype

Implement

- Feedback
- Value Proposition
- Action for Next
- Resource Plan

Design in a Nutshell



Use of Design in Organization

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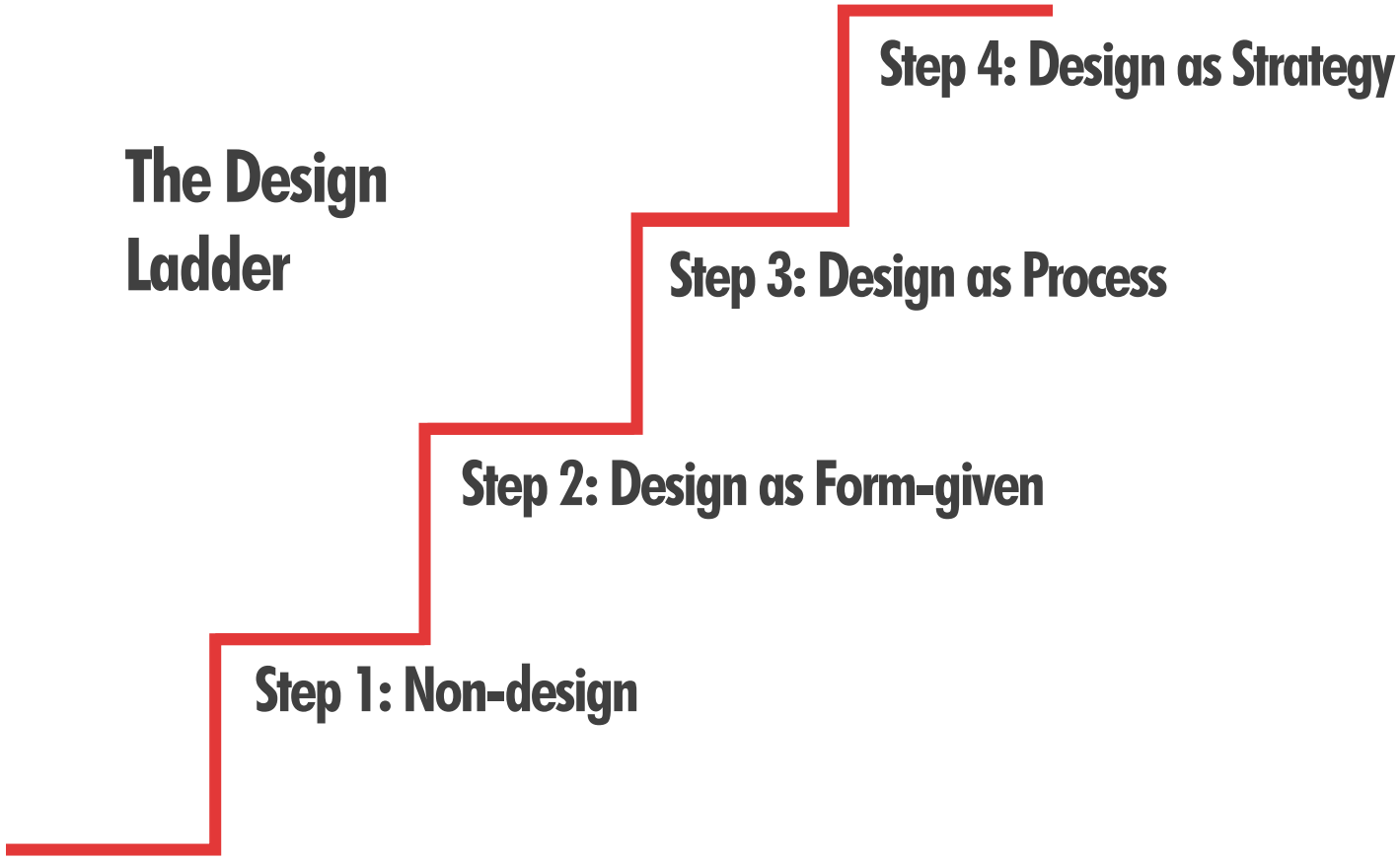

Source: Danish Design Center

The Concept of Design for Sustainability

UN's Sustainable Development Goal (SDGs)

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V - Volatility
U - Uncertainty
C - Complexity
A – Ambiguity

Future Challenge

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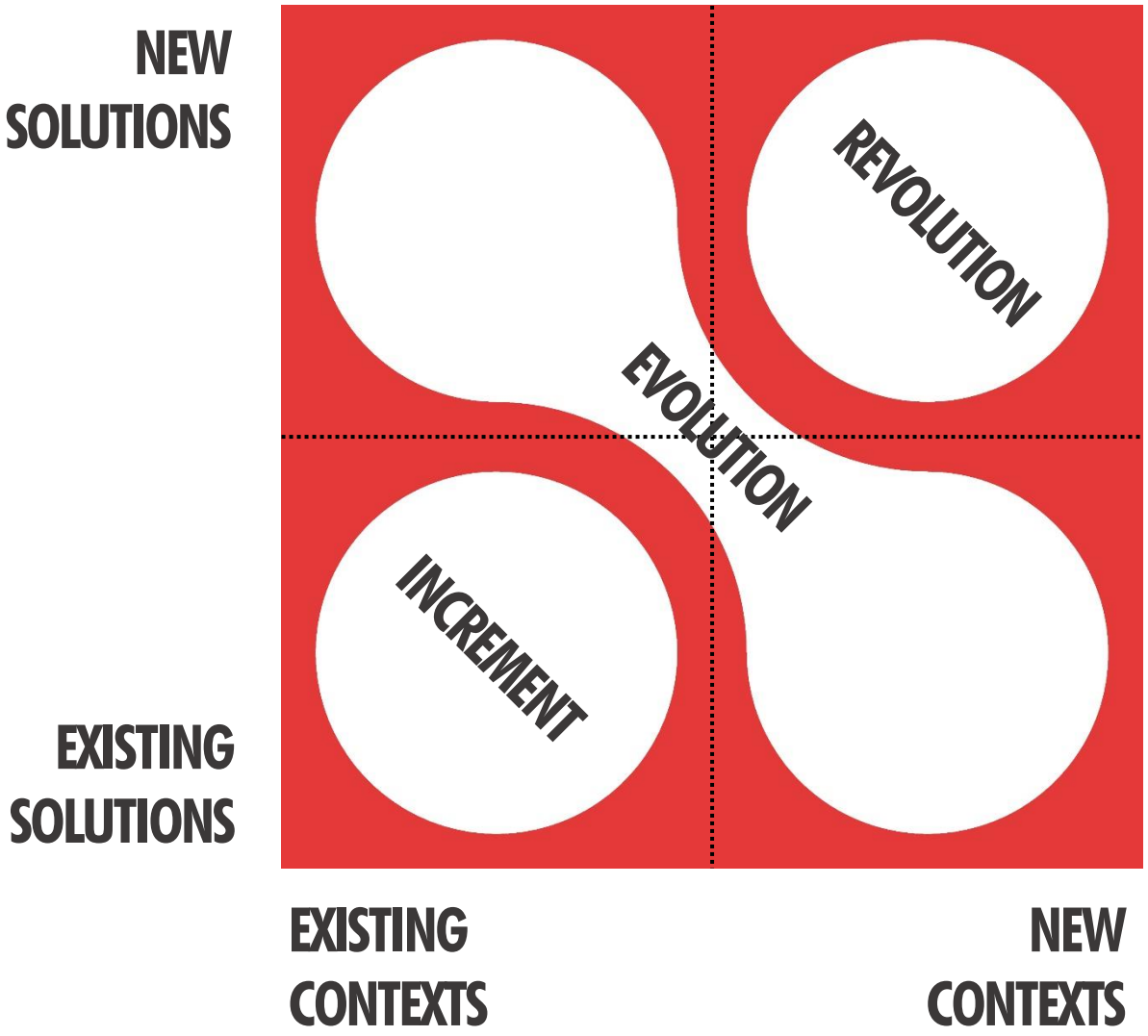
Source: Banny Banerjee



Ideo's Innovation Framework

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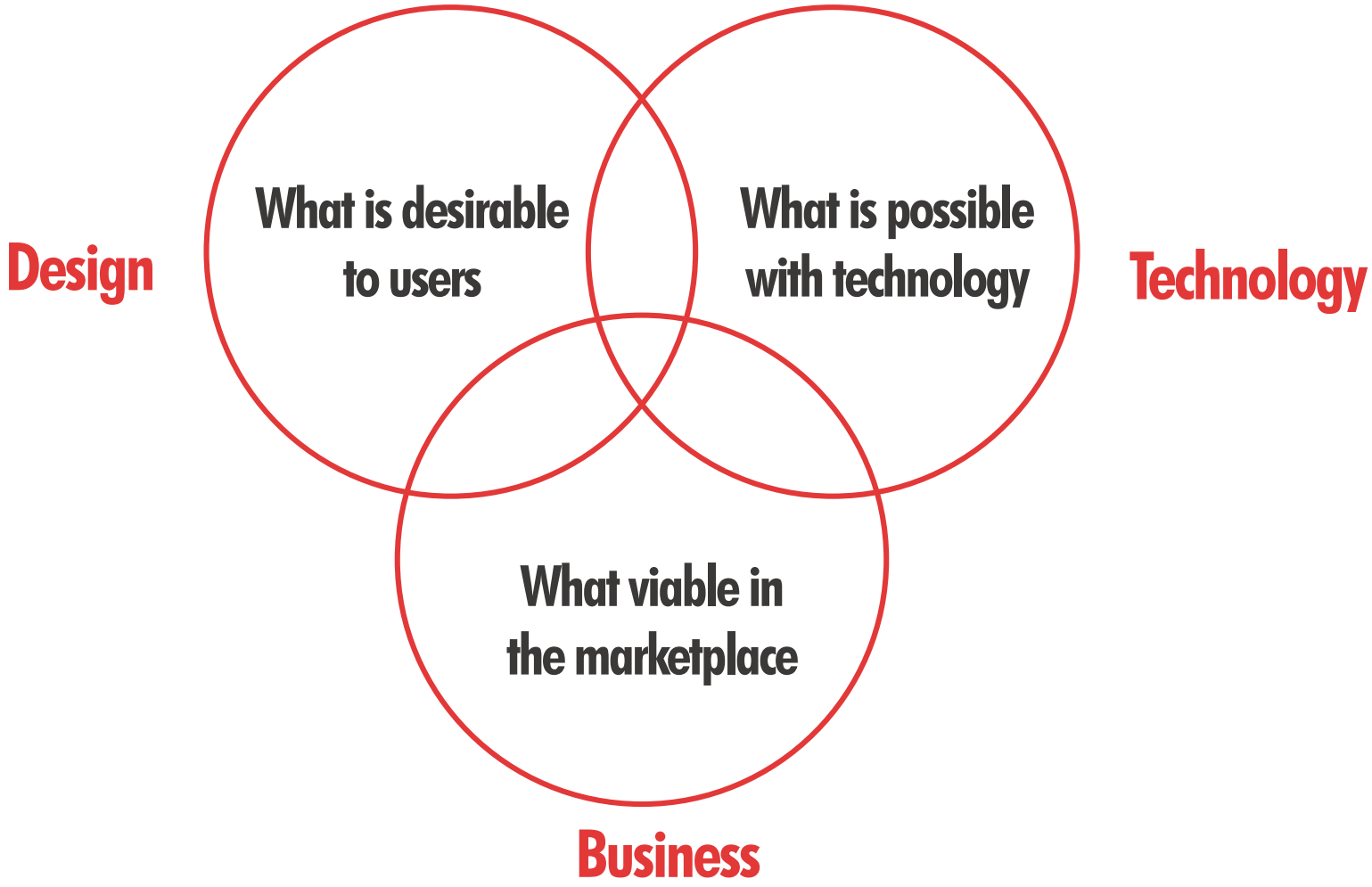
Source: Ideo



Design for Sustainability

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- Design for sustainability (DfS) is a holistic design approach to the activities that emphasize the well-being of people and the environment as the outcome.
- It focuses on resource efficiency and the use of environmentally friendly materials to develop products and processes.
- The DfS approach is also considered as a lifecycle design approach, whereby the approach incorporates information about the total lifecycle phases of products and their effect both on the environment and living things.

(Shaharuzaman, 2021)

Evolution of Design for Sustainability

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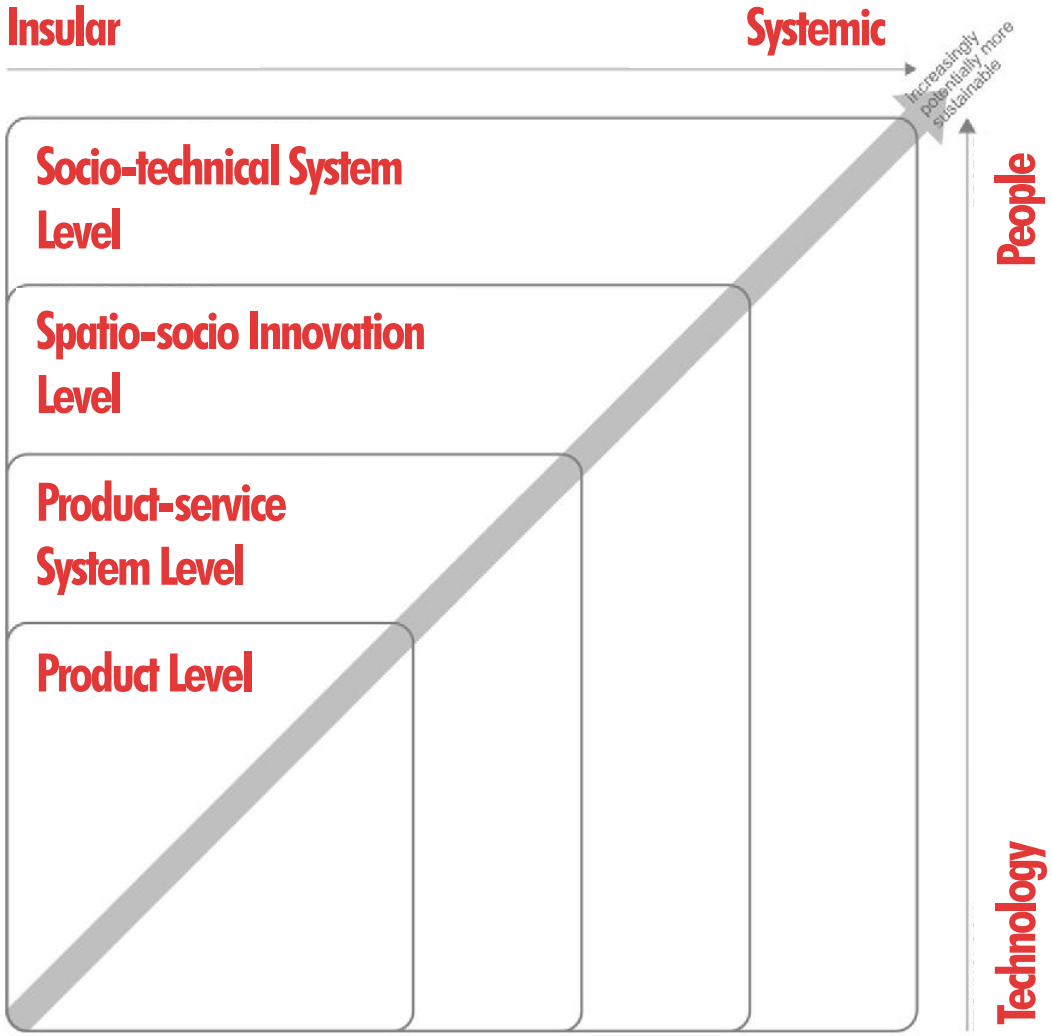
Ceschin and Gaziulusoy highlighted the evolution of DfS from product design to design for system innovations and transitions level

(Ceschin, E and Gaziulusoy, I., 2016)



DfS Application in CE

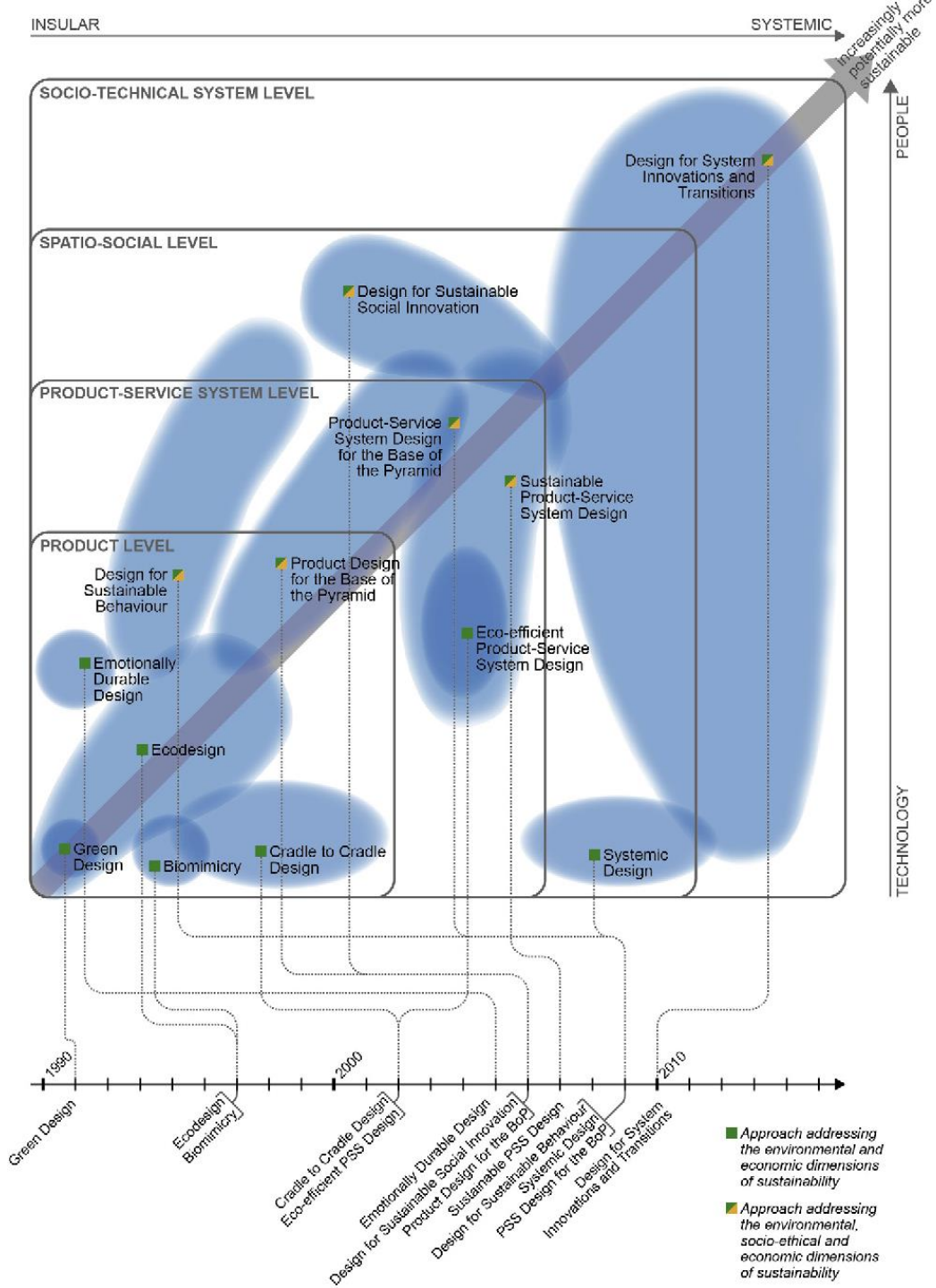
Example of Application of DfS in CE

1. Product Level

- Green Design
- Biomimicry
- Ecodesign
- Design for Sustainable Behavior

2. Product-service System Level

- System Design
- Product-service System Design
- Eco-efficient Product-Service System Design



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3. Spatio-social Innovation Level

- Design for Sustainable Social Innovation
- Systemic Design

4. Socio-technical System Level

- Design for System Innovation and Transition

(Ceschin, F and Gaziulusoy, I., 2016)

Product Level – Green Design

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- Focus on Reduce-Reuse-Recycle
- Minimizes the harmful effects on human health and the environment.
- Choosing eco-friendly materials and construction practices.
- The use of renewable energy .

(Ceschin, E and Gaziulusoy, I., 2016)

Berol's Karisma coloured pencil series

Product Level – Biomimicry

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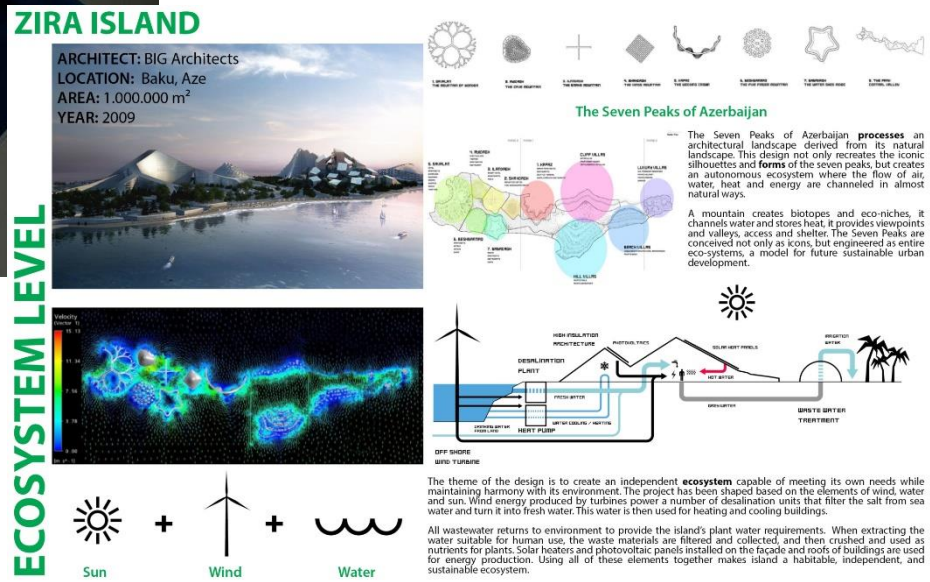
- Applying nature-inspired designs in human engineering and invention to solve human problems. Using nature as model, measure and mentor.

- 3 levels of BM: first is mimicking forms of nature, second is mimicking processes of nature and third is mimicking ecosystems.

(Ceschin, F. and Gaziulusoy, I., 2016)



Product Level – Ecodesign

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- Focus on the whole life-cycle of products from extraction of raw materials to final disposal
- Quantification of environmental impacts
- Minimize the consumption of natural resources

(Ceschin, F. and Gaziulusoy, I., 2016)

Product Level – Design for Sustainable Behavior

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- Built upon various behavior change theories and there are many different design approaches

- Aims to influence user behaviors
  - making it easier for people to adopt a desired behavior;
  - making it harder for people to perform an undesired behavior;
  - making people want a desired behavior;
  - making people not want an undesired behavior.

(Ceschin, F. and Gaziulusoy, I., 2016)

Product-service System Level

- A mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs

- A shift from a consumption based on ownership to a consumption based on access and sharing

- Composed of products, services, and a network of actors

(Ceschin, E and Gaziulusoy, I., 2016)

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บัญชีผู้ใช้
รายละเอียดแบตเตอรี่
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กระบบนำทาง
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บริการจาก Swap & Go

แบตเตอรี่
แบตเตอรี่จำนวน 2 ก้อน
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น้ำหนัก 5.3 กิโลกรัม/ก้อน
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สถานีสวอพแบตเตอรี่
ทำงานอัตโนมัติ 24 ชั่วโมง
ยืนยันตัวตนแบบไร้การสัมผัส
มีระบบการควบคุมแบบคลาวด์

4 ขั้นตอนง่าย ๆ กับ Swap & Go

01

เดินทางไปยังสถานีเปลี่ยนแบตเตอรี่
โดยคุณสามารถจองแบตเตอรี่รวมถึง
หาสถานีใกล้เคียงผ่านแอปพลิเคชันได้

02

สแกน QR Code เพื่อปลดล็อคตู้

03

เปลี่ยนแบตเตอรี่ที่ใช้แล้วด้วย
แบตเตอรี่ใหม่

04

พร้อมออกเดินทางอีกครั้ง

Source: www.swapandgo.co/

Spatio-social Innovation Level – Social Innovation

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- To improve human settlements and secure better spatio-social conditions of their communities
- Consider both technological innovation and social innovation for well-being, aiming to solve social problems
- Co-creation approach

(Ceschin, F. and Gaziulusoy, I., 2016)

Socio-technical System Level – Design for System Innovation and Transition

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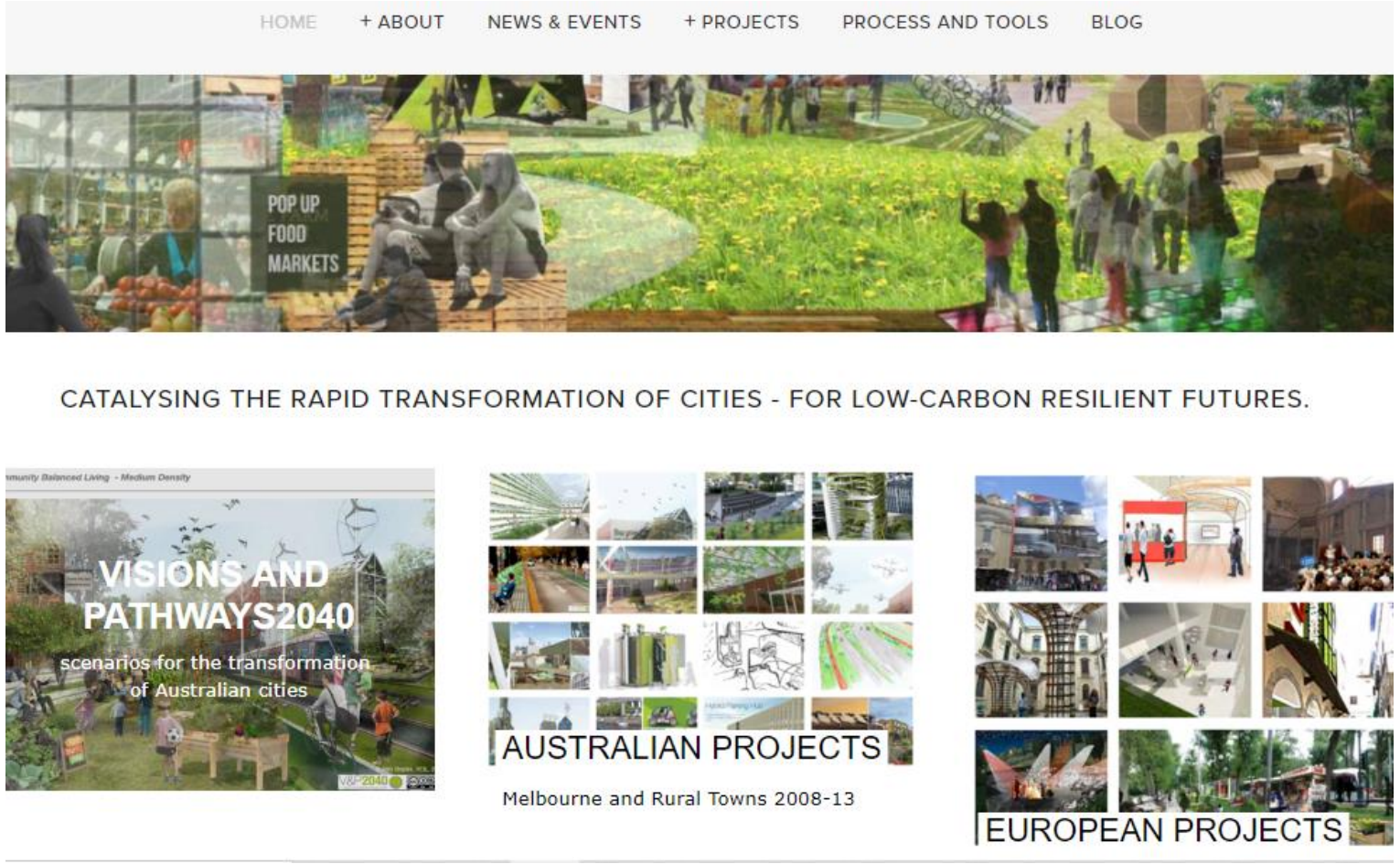
- An emerging focus in the science and technology studies area on transformation of socio-technical systems for sustainability

- Developing design-orienting scenarios to influence sustainable technological and social innovations

(Ceschin, F. and Gaziulusoy, I., 2016)



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THANK YOU FOR YOUR ATTENTION

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