# Human-Centred IS Analysis and Design

FIT9138 IS Analysis, Design and Systems Thinking

# Learning Objectives

This week, you will:

- Reflect and discuss the importance of human-centred design in dealing with uncertain, messy and complex information ecosystems
- Reflect and discuss the importance of human-centred design in IS security design

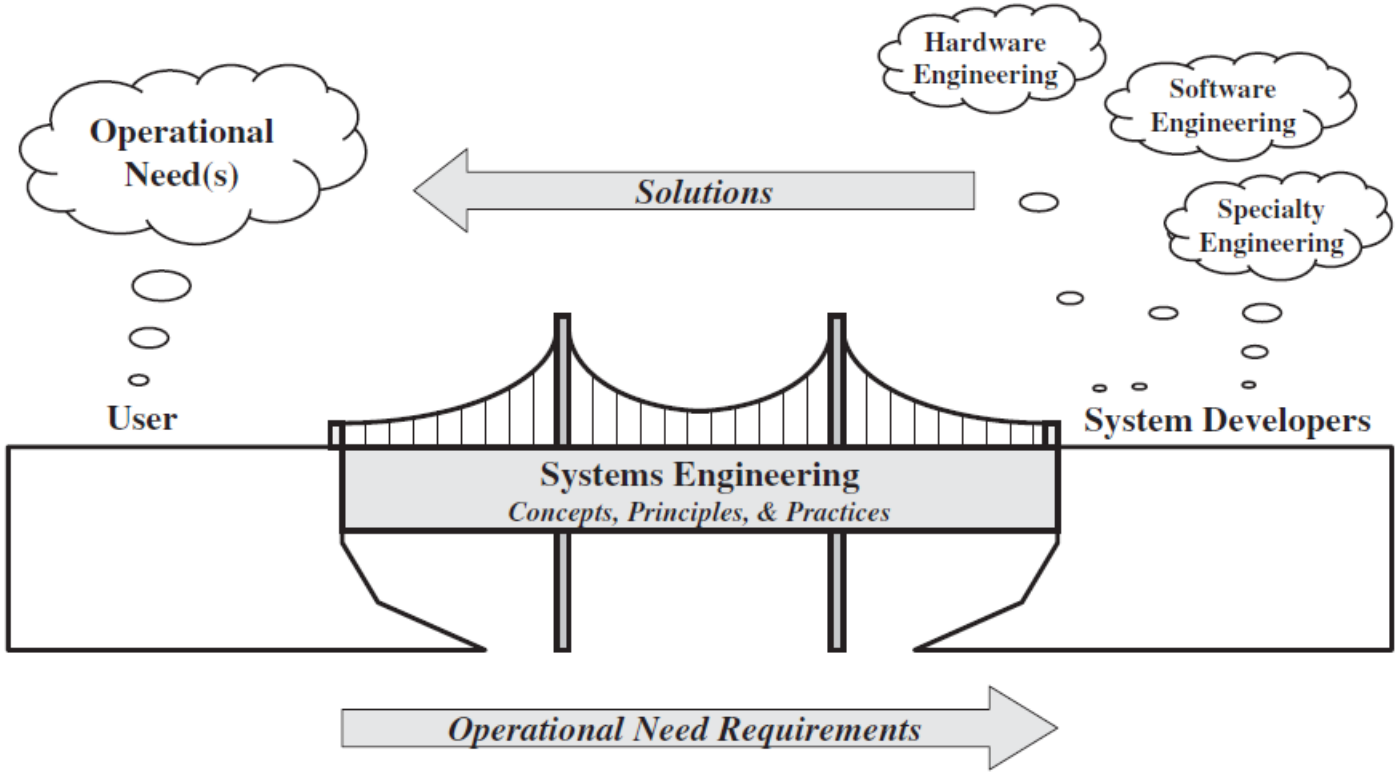
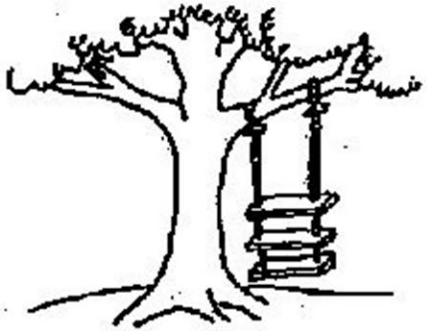



**Figure 1.1** Systems Engineering—Bridging the Gap from User Needs to System Developers

MONASH University

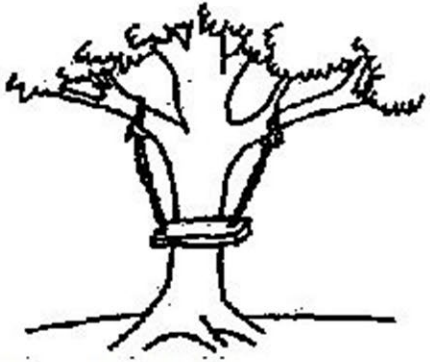
Wasson, C. S. System analysis, design, and development, Wiley, 2006



As proposed by the project sponsor.

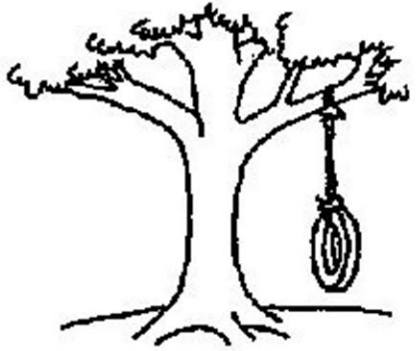
As specified in the project request.

As designed by the senior analyst.



As produced by the programmers.

As installed at the user's site.



What the user wanted.

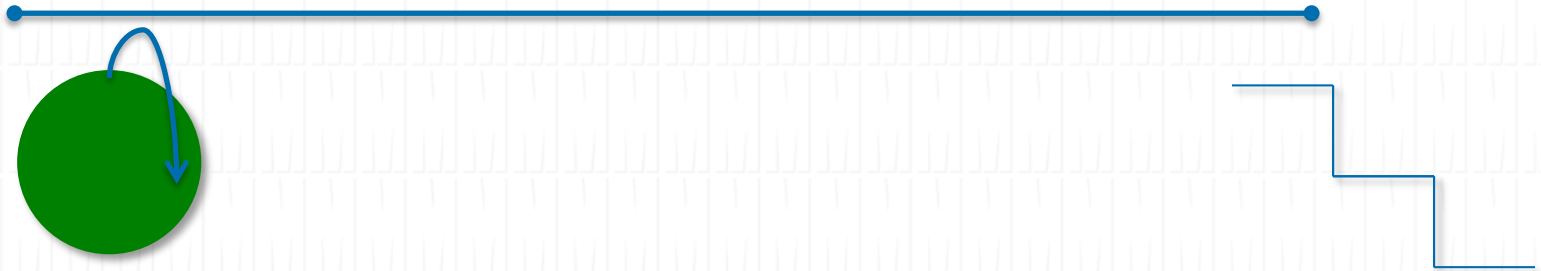
MONASH University

TODAY:

YESTERDAY:

Flexible, improvised

Routine, planned



MONASH University

# Choosing between Waterfall and Agile

| Factor | Waterfall | Agile |
|---|---|---|
| Requirements | • Known upfront & do not change<br>• Customers can articulate the requirements very clearly | • Requirements change over the duration of product/software development<br>• Customers find it difficult to articulate the requirements; hence requirements become clearer as different features get developed |
| Business environments | • Customers look for incremental changes<br>• Products are commoditized<br>• Business environment changes are slow and cause little impact on demand for product features | • Product innovations are valued by customers<br>• Product differentiation drives market share<br>• Business environment is constantly changing & demands changes to product features |
| Development & Product teams | • Very large<br>• Geographically dispersed<br>• Product components are tightly coupled | • Relatively small<br>• Co-located<br>• Product components are loosely coupled |
| Team culture | • Large number of inexperienced developers<br>• Centralized task allocation & hierarchy<br>• Specialized skills with little cross-train | • Experienced<br>• Collaborative with self-organizing capabilities<br>• Cross-trained with skills in different aspects of the development environment |

# DESIGN THINKING

RIVERDALE NY

- SPEED INNOVATING - SESSION #2

DESIGN THINKING FOR TEACHERS

help them be more innovative
↳ how to problem solve

learn about students' needs for personal space

2nd time

how to promote discovery?

storytelling

IDEO

"?"

How do you reduce waste?

storytelling

wild ideas encouraged

hold off on critiquing ideas

3rd time

how to create culture of collaboration?

→ asynchronous sharing

storytelling

using Moodle

# What is Innovation?

"a **thoughtful** and **insightful** application, delivery, extension, or recombination of existing technologies… the key is that an innovation is a **valued leap from the viewpoint of consumers** whether or not it is incremental from the producer's standpoint" --- (Vogel, Cagen & Boatwright 2005)

The point is: innovation is new and successful in the marketplace

MONASH University

# What is Innovation?

Standard view of three steps to innovation:

1. Invention
2. Adoption
3. Implementation

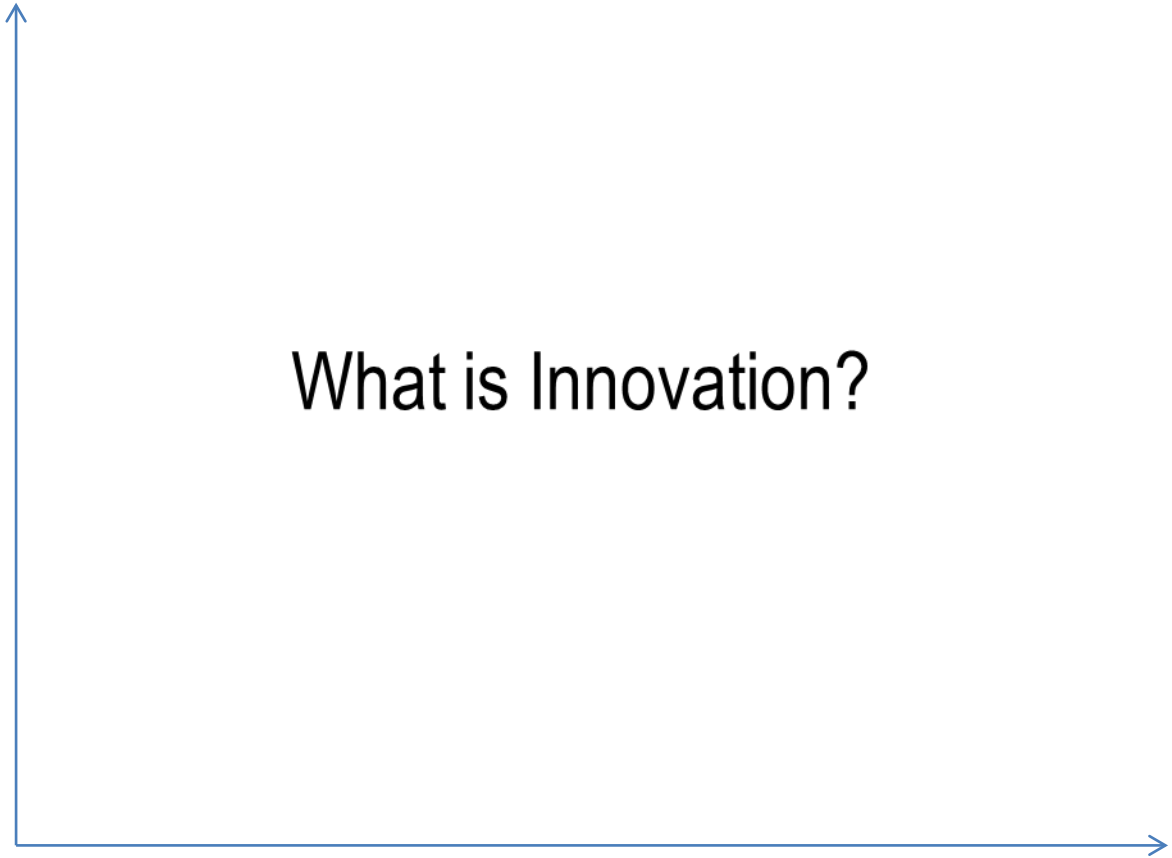
Real innovation is about more than the simple launching creation and launching of new products. It is also about... (S. J. Palmisano 2006)

- How services are delivered
- How business processes are integrated
- How organizations and institutions are managed
- How knowledge is transferred, etc.

MONASH University

*Doing new things*
(exploration, invention, vertical or intensive technological progress)

# What is Innovation?



*Copy things that work*
(exploitation, globalization, scaling, horizontal or extensive progress)

# What is Design and Designing?

"initiating change in man-made things" – *John Chris Jones, Welsh designer*

"to solve problems or meet needs while satisfying the constraints imposed by the design context" – Bob Glushko, UC Berkeley

"making things better for people" – *Richard Seymour, designer*

"translates an idea into a blueprint for something useful"… "A design doesn't have to be new, different or impressive to be successful in the marketplace, as long as it's fulfilling a need, but design methods do lead to innovative products and services" – *Design Council*

MONASH University

# What is Design Thinking?

A human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.” — Tim Brown, president and CEO of IDEO


An approach (process) to solve design problems by…

- Understanding users’ needs and
- Developing insights to solve those needs

Essential mindset

- Only through contact, observe, empathy with users can you design solutions that fit into their environment and lives

MONASH University

# Why Design Thinking?

To match **human needs** with available **technical resources** within the practical constraints of **business**

Be open-minded, open-ended, and iterative

Ability to be intuitive, to recognize patterns of behaviors, to construct ideas of both emotional meanings and functionalities

Tim Brown, Change by design, Harper business, 2009

MONASH University

# Context of Design

The design of any service/information product – whether it be performed by human and/or systems – takes place in a context of:

1. Current and potential customers/users
2. Current and potential technologies/systems
3. Current and potential competitors (direct/indirect)
4. Existing services, systems, or application interfaces (integration)
5. Existing user or organization
6. Legal, regulatory, cultural systems and constraints

Factors/constraints may not be equally important

- How they are weighted determines the appropriate design methodology and the key characteristics of the design

The cost of a design goal or choice depends on the context

# Design vs Art

Art – no external constraints

- Artist selects the constraints, ignoring those that he/she feels are inappropriate and embracing those that help tell a story, make meaning or create a particular aesthetic

Design – can’t ignore constraints

# Constraints

"[constraint] is one of the few effective keys to the design problem – the ability of designer to recognize as many of the constraints as possible – his willingness and enthusiasm for working within these constraints – the constraints of price, of size, of strength, balance, of surface, of time, etc.; each problem has its own peculiar list" – (Neuhart & Neuhart 1989)

MONASH University

# Constraints

"In reality, however, not all constraints originate strictly in the requirement specification… designers frequently impose constraints that are neither necessary nor objectively valid" – (Gedenryd 1998)

MONASH University

# Challenges (Constraints) of Design

Space of knowledge & current state of art

Problem difficulty

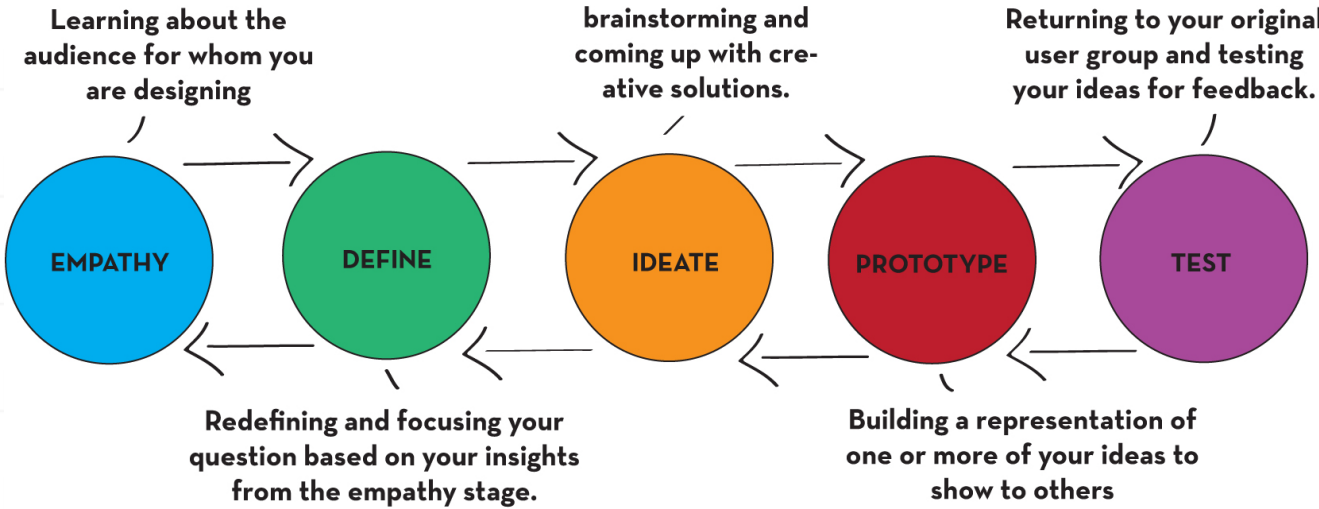

Design progress & environmental shocks

Team composition & dynamics

MONASH University

# Design Thinking – How?

Design thinking process is best thought of as a system of overlapping spaces rather than a sequence of orderly steps




MONASH University

http://www.mountvernonschool.org/upperschool/2012/03/design-thinking-summit-today/

# Next Week

## Design Thinking Process: Empathy and Define

FIT9138 IS Analysis, Design and Systems Thinking

MONASH University