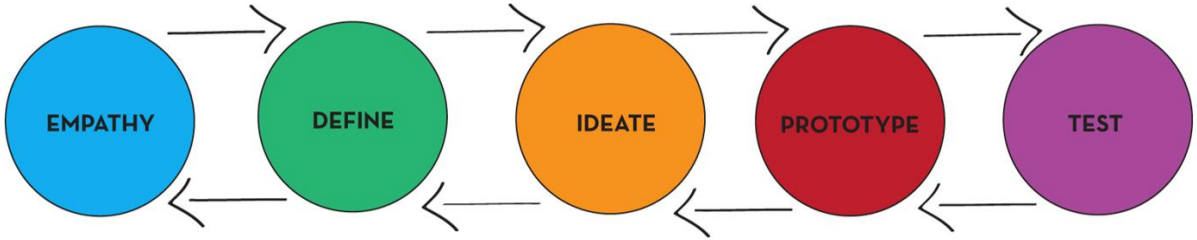
Intro to Design Thinking



CP1403

Design Thinking

Topics

- What is Design
- What is Design Thinking
- History of design thinking
- Design thinking processes
- Design thinker mindsets
- Design thinking & Software Development

Readings

- **Introduction to Design Thinking by Gerd Waloszek**

http://experience.sap.com/skillup/introduction-to-design-thinking/

- **SPRINT**
  - Introduction pages 7-17

Before Lecture

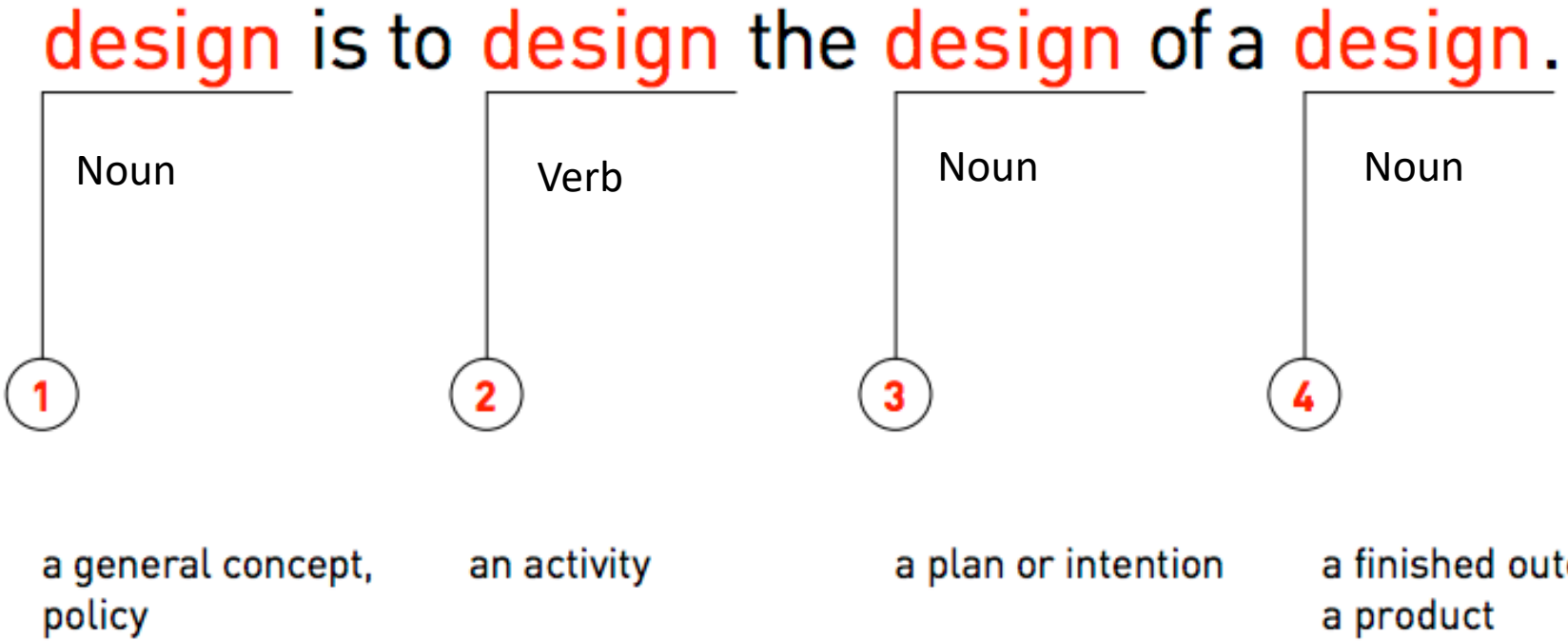
- Watch Ted Video: Designers – think big
  http://www.ted.com/talks/tim_brown_urges_designers_to_think_big

- **Write down 5 key points about design thinking you learnt from this video**

Activity (10 minutes)

- Group Discussion
- Discuss what are your views/definitions of “Design”?

What is Design?



Design as Art ?

form

shape
colour
texture
trends
meaning
...

tools

aesthetics
styling
decoration

Comprehensive view of Design(1)

form	function	production	application
shape	use	materials	price
colour	purpose	processes	usability
texture	ergonomics	technology	positioning
trends	environment	durability	distribution
meaning	life style	reliability	competition
...	...	...	...

tools

Comprehensive view of Design (2)

tools

aesthetics	interaction	engineering	strategic design
styling	ergonomics	economy	systems
decoration	semiotics	sustainability	cultural factors

What is it ?

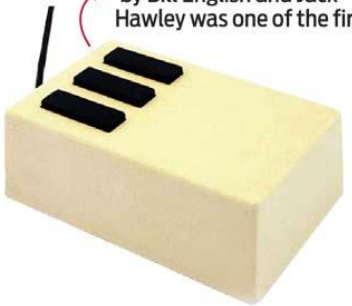
Reference:
http://web.stanford.edu/dept/SUL/library/extra4/sloan/MouseSite/Archive/patent/Mouse.html

The **history** of the computer mouse

Doug Engelbart, inventor of the computer mouse, has died at the age of 88. We take a look at his ace invention

Doug Engelbart publicly demonstrated his first mouse, consisting of two wheels in a wooden case, in 1968

A roller ball, like that used it most computer mice, was later created. This mouse developed for Xerox PARC by Bill English and Jack Hawley was one of the first



Apple's Lisa mouse was one of the first commercial mice sold. Lisa stood for Local Integrated Software Architecture but was also the name of Apple co-founder Steve Jobs's daughter

Gold ingot computer mice are a good gift for those who have everything

Microsoft launched its first PC-compatible mouse in 1982

Despite Apple's early success with mice, the "hockey puck" model released in 1998 was one of the few Steve Jobs inventions that didn't sell well

Source: Daily Telegraph

Reflecting the Definition of Design

Looking at the designs
of computer mouse


Why so many designs ?







The Evolution of the Apple Mouse

Reference: http://mashable.com/2010/09/26/evolution-apple-mouse/

The Evolution of the Apple Mouse

The Arc Mouse

Reference: http://www.yankodesign.com/2012/07/25/anywhere-mouse/

Belkin Gaming Mouse

Reference: http://www.belkin.com/IWCatProductPage.process?Product_Id=512006#

3DConnexion 3D Navigation Mouse

Reference: http://www.3dconnexion.eu/products/spacemouse/spacepilot-pro.html

Activity (10 minutes)

- Group Discussion
- Share 5 key points you have learnt from the Ted video: Designers – think big!

What is Design Thinking?

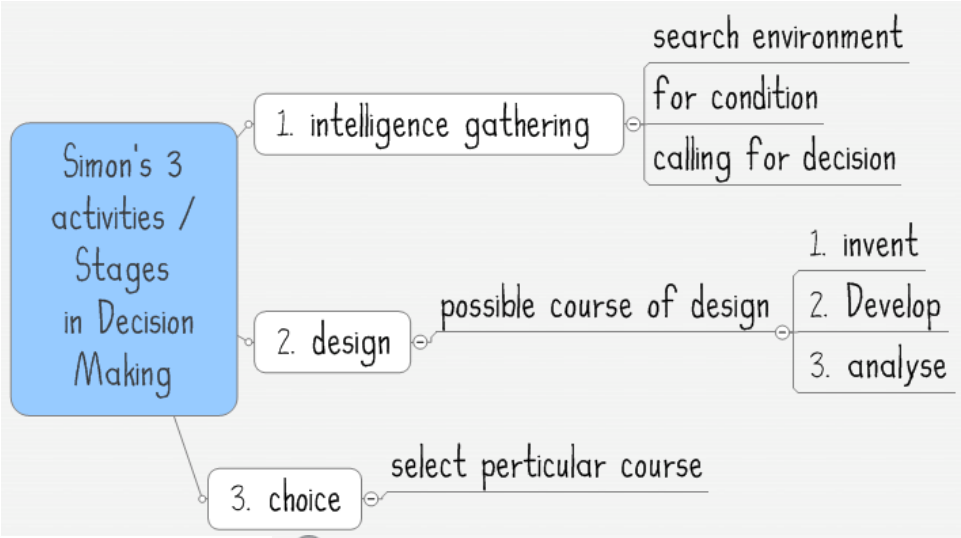
What is Design Thinking?

- It is a design methodology
  - Techniques, rules, or ways to design
- A problem-solving approach or process
  - A series of actions, events, or steps for design
- A creativity & analytical approach
  - Building up ideas and wild ideas
- A user-centered approach that brings design into the business world
  - Understanding the customers (users)

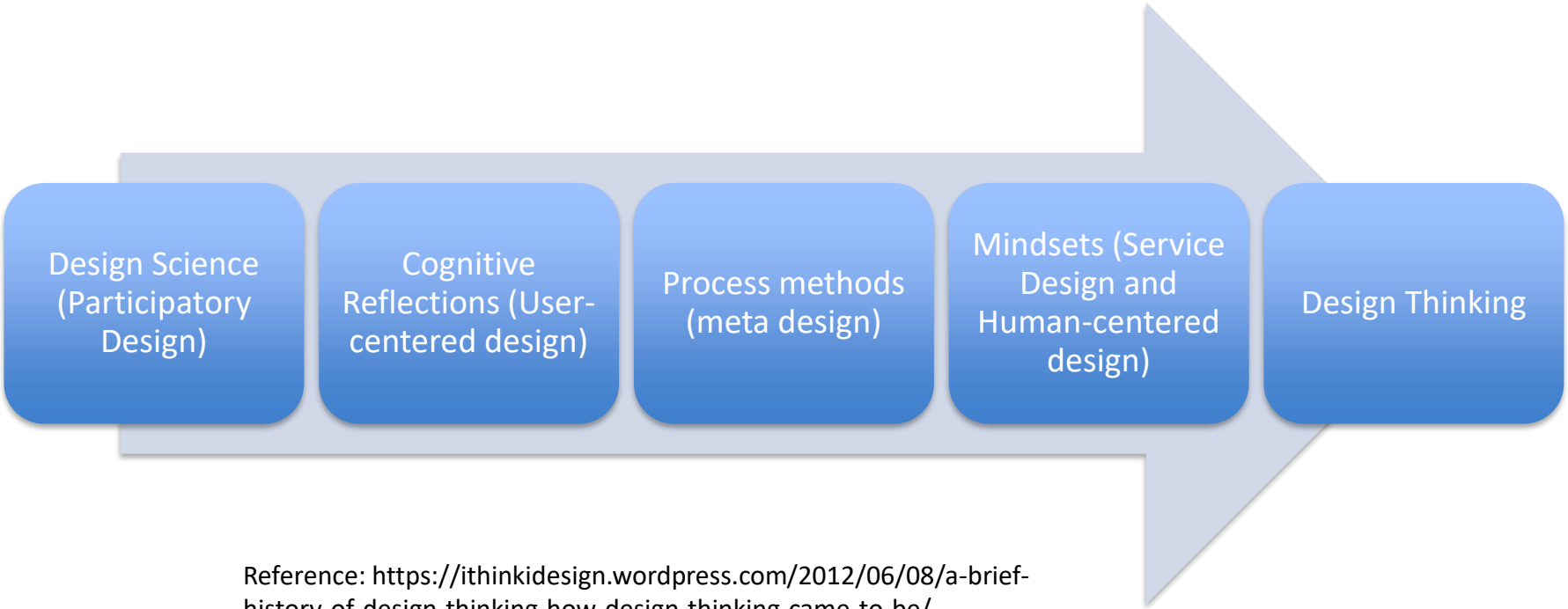
Details in: http://experience.sap.com/skillup/introduction-to-design-thinking/

History of Design Thinking

- In the 1960s, some designers were looking for a design methodology
- Herbert A. Simon, an artificial intelligence and cognitive science researcher, established the discipline of Design Science



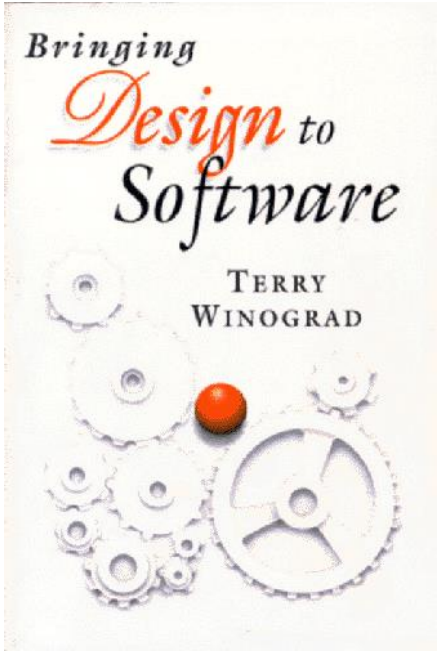
History of Design Thinking



Reference: https://ithinkidesign.wordpress.com/2012/06/08/a-brief-history-of-design-thinking-how-design-thinking-came-to-be/

History of Design Thinking

- In the early 1990s, Terry Winograd, who together with David Kelley of IDEO and Larry Leifer has been counted among the creators and proponents of Design Thinking, became widely known for his attempts at “bringing design to software”



Free to Read :http://hci.stanford.edu/publications/bds/

History of Design Thinking

- In 2005, IDEO and Stanford University founded the d.school (School of Design).

http://www.ideo.com/

- SAP co-founder Hasso Plattner made a personal donation of U.S. $35 million to fund the d.school, which is officially named "Hasso Plattner Institute of Design at Stanford."

http://dschool.stanford.edu/

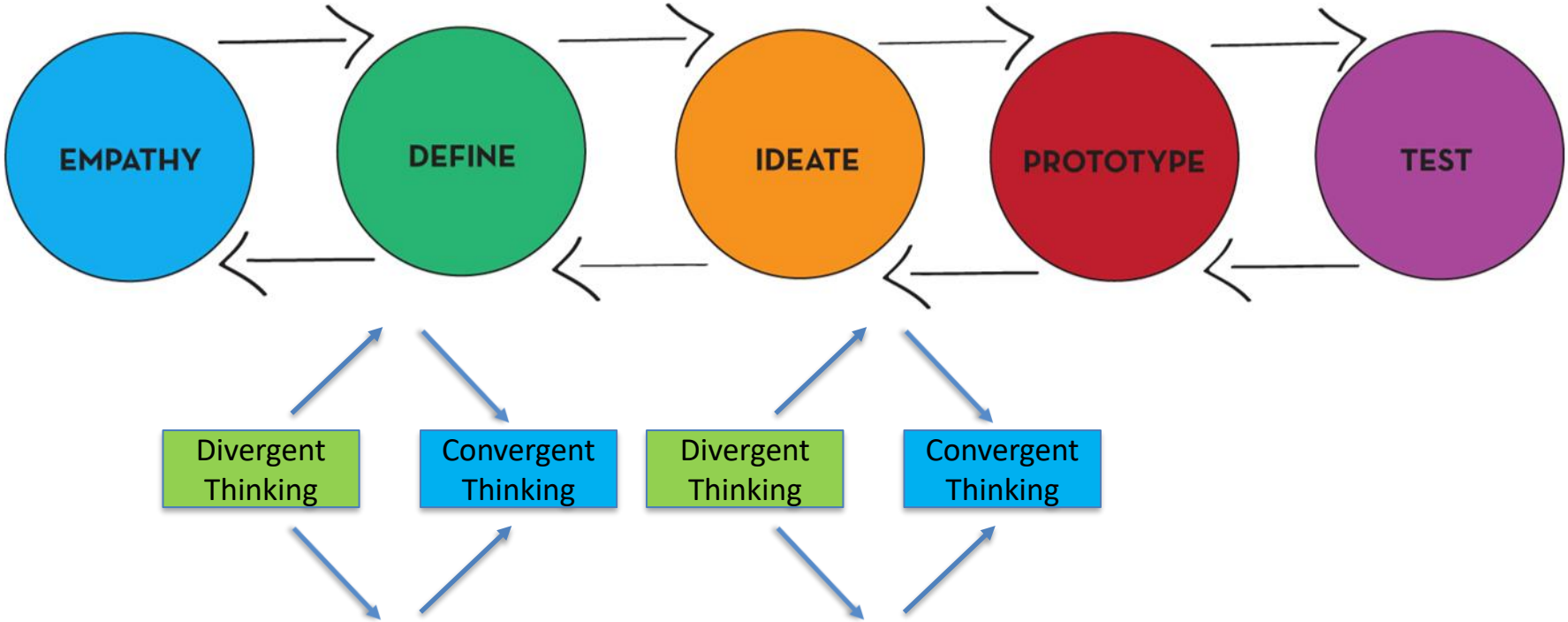
Design Thinking Processes

There are different processes in design thinking, and different groups have some slightly different processes

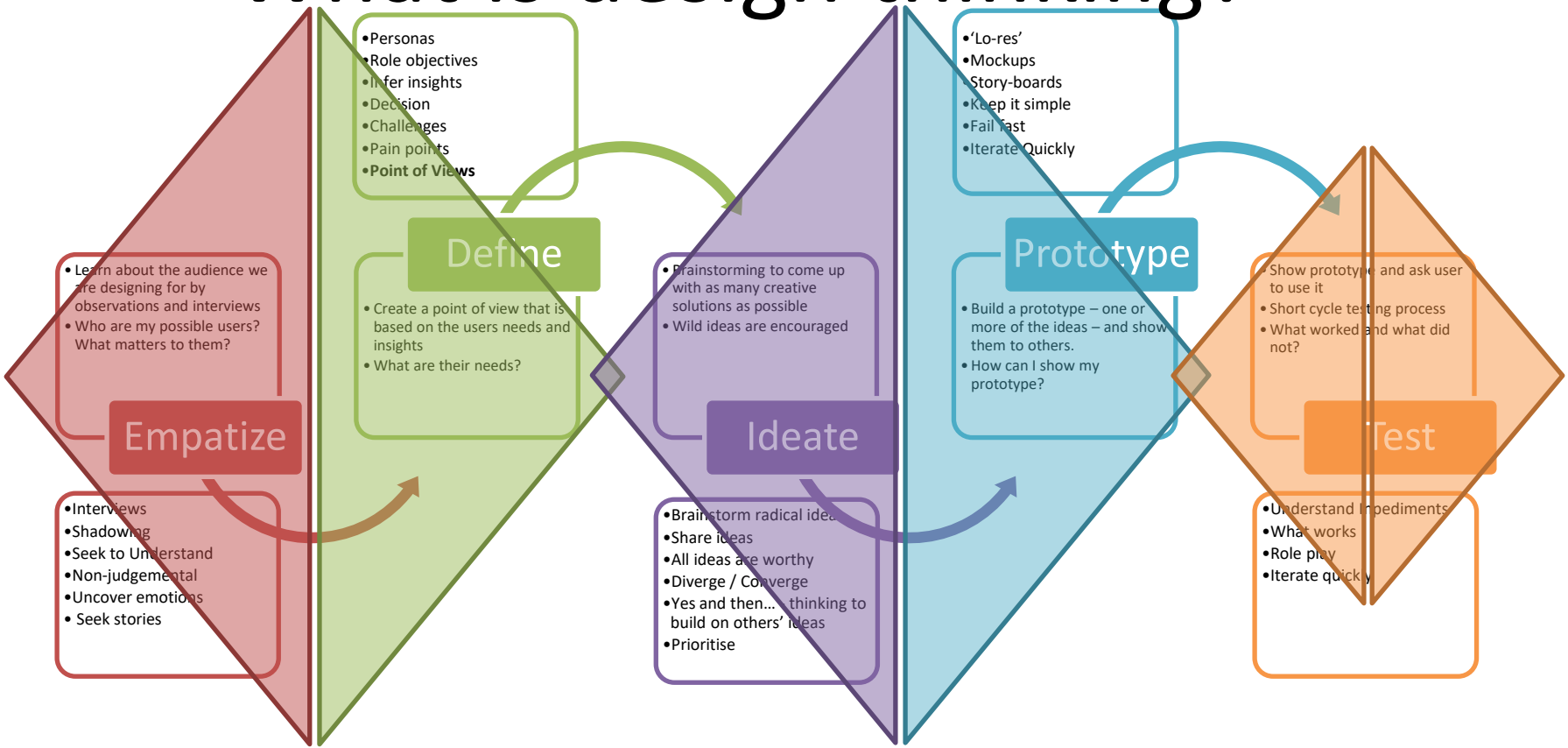
Design Thinking Processes for CP1403/CP1803

- **Empathy**
  - **Understand the problem (Scope)**
  - **Observe users (Research)**
- **Define**
  - **Interpret the results(Synthesis)**
- **Ideate**
  - **Generate ideas**
- **Prototype**
- **Test & Improve (Validation)**

Details in: http://experience.sap.com/skillup/introduction-to-design-thinking/


EMPATHY
DEFINE
IDEATE
PROTOTYPE
TEST
Divergent Thinking
Convergent Thinking
Divergent Thinking
Convergent Thinking

What is design thinking?



Short activity

- You will see a picture on the next slide
- Take 20 seconds to observe it

What does she need?

What does she need?

42-17318054 [RF] © www.visualphotos.com

JAMES COOK UNIVERSITY AUSTRALIA

What is a need?

User + Need + Insight

>>>

X needs Y because of Z

Activity (10 minutes)

- Group Discussion
- “Are you creative ? Why or why not ?”
  - Give 3 reasons

Design Thinker Mindset and Attributes

Show Don't Tell

Communicate your vision in an impactful and meaningful way by creating experiences, using illustrative visuals, and telling good stories.

Focus on Human Values

Empathy for the people you are designing for and feedback from these users is fundamental to good design.

Craft Clarity

Produce a coherent vision out of messy problems. Frame it in a way to inspire others and to fuel ideation.

Design Thinker Mindset and Attributes

Embrace Experimentation

Prototyping is not simply a way to validate your idea; it is an integral part of your innovation process. We build to think and learn.

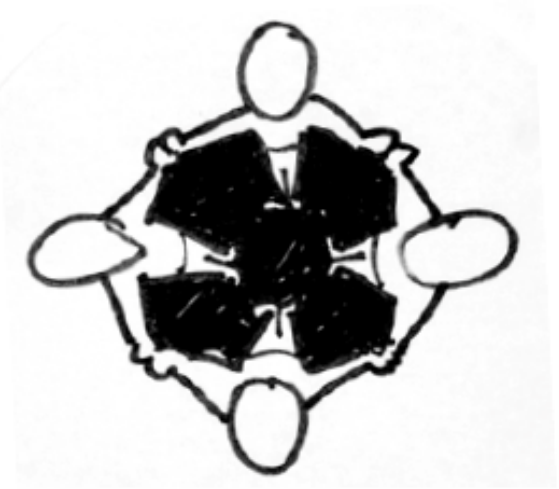
Be Mindful Of Process

Know where you are in the design process, what methods to use in that stage, and what your goals are.

Design Thinker Mindset and Attributes

Bias Toward Action

Design thinking is a misnomer; it is more about doing than thinking. Bias toward doing and making over thinking and meeting.



Radical Collaboration

Bring together innovators with varied backgrounds and viewpoints. Enable breakthrough insights and solutions to emerge from the diversity.

Design Thinking & Software Development

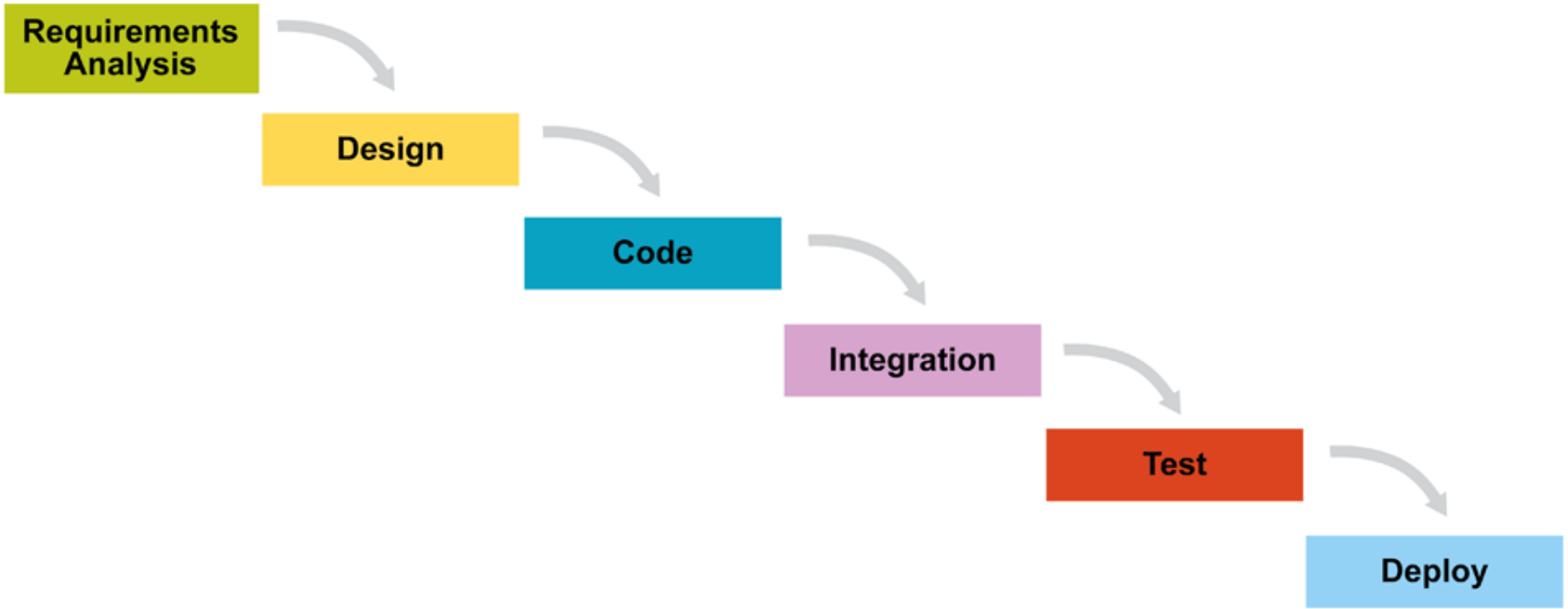
History of Design Thinking with SAP

Watch Video:
https://youtu.be/vvu5mgocfjg

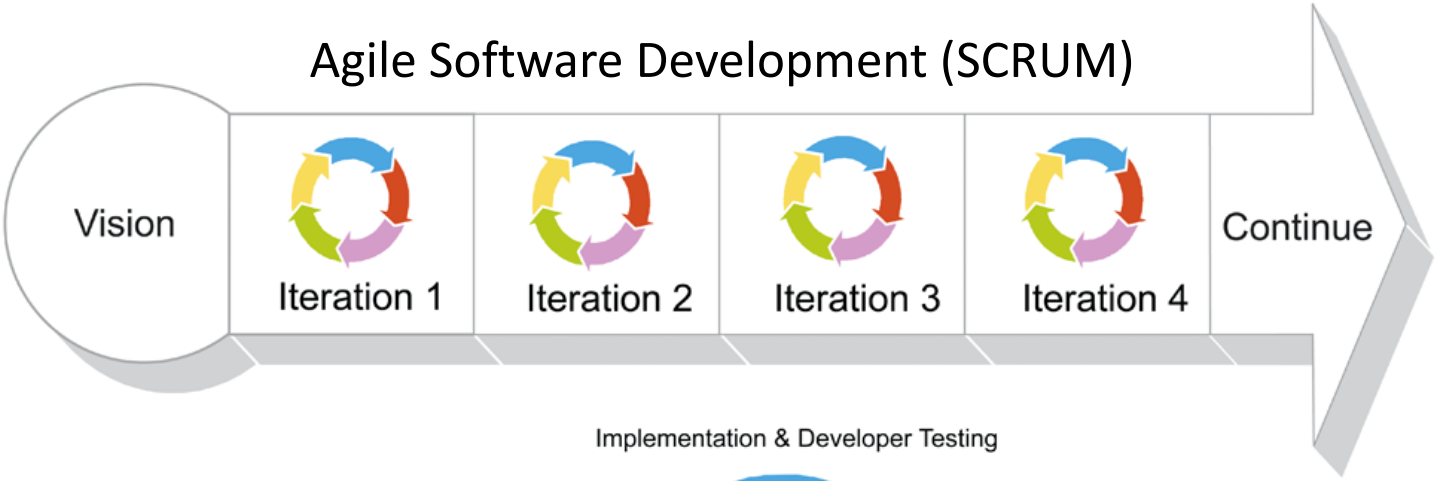
Five Traditional Criteria for Software Design

- Requirements—Does it have a clear purpose?
- Correctness—Does it work properly?
- Fault tolerance—Does it keep working?
- Timeliness—Does it complete its work in time to be useful?
- Fitness—Does it align well with the user environment?

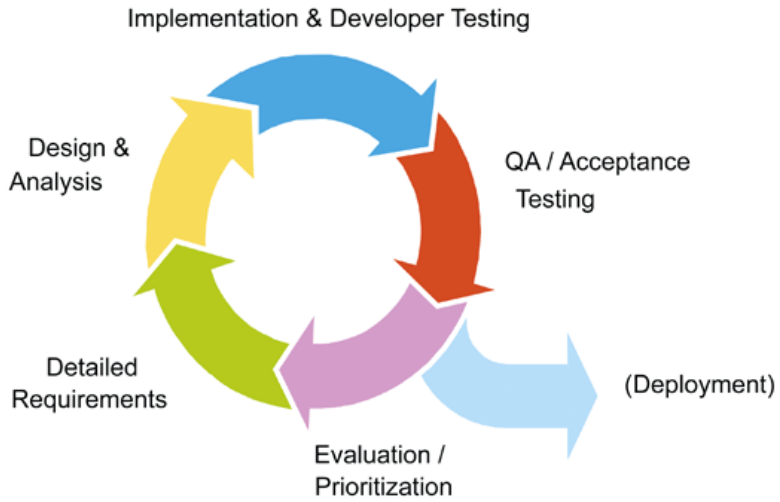
Traditional Software Development (Waterfall Model)



Agile Software Development (SCRUM)



Iteration Detail



Reference:
http://scrumreferencecard.com/scrum-reference-card/

Next Practical

In next weeks practical you are forming groups for your assignment

YOU MUST BE THERE!!!

Before Next Lecture

1. Observe the functions and controls of 5 appliances and devices at home
   - Observe how people using the appliances and devices at home
   - Make notes, take photos, draw sketches about the observations
2. https://sdgs.un.org/goals 
   - Browse the goals and pick one that interests you
   - Check out the *targets* defined for that topic
   - Find one additional article / resource that relates and gives more details of the target you have selected
3. Read article:
   - HBR: ”Why Design Thinking Works”: https://hbr.org/2018/09/why-design-thinking-works