

# IAB330 Mobile Application Development

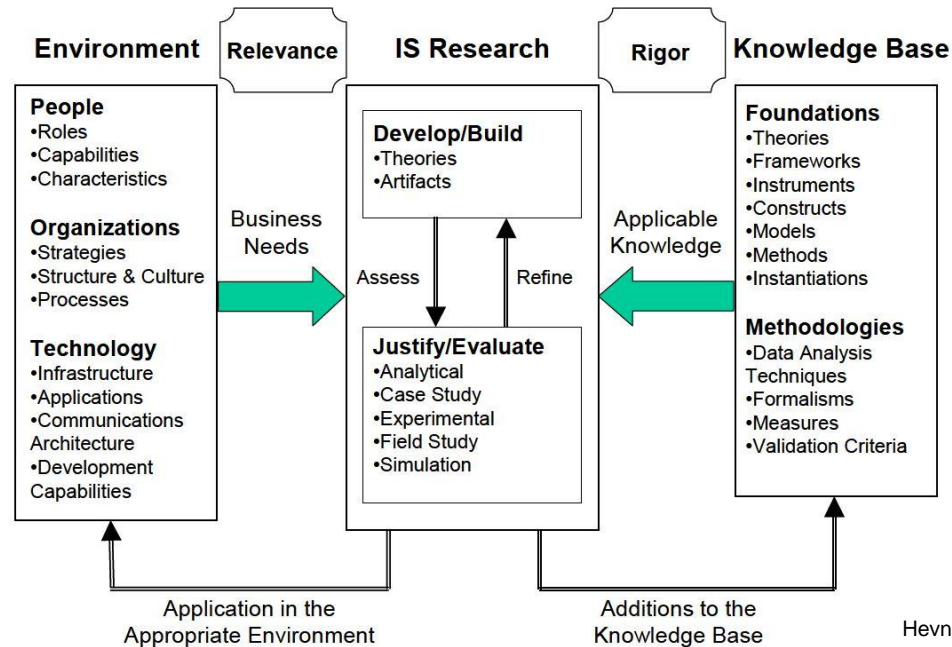
## Unit Introduction and Introduction to Design and Problem Identification

Week 1

# What's design?

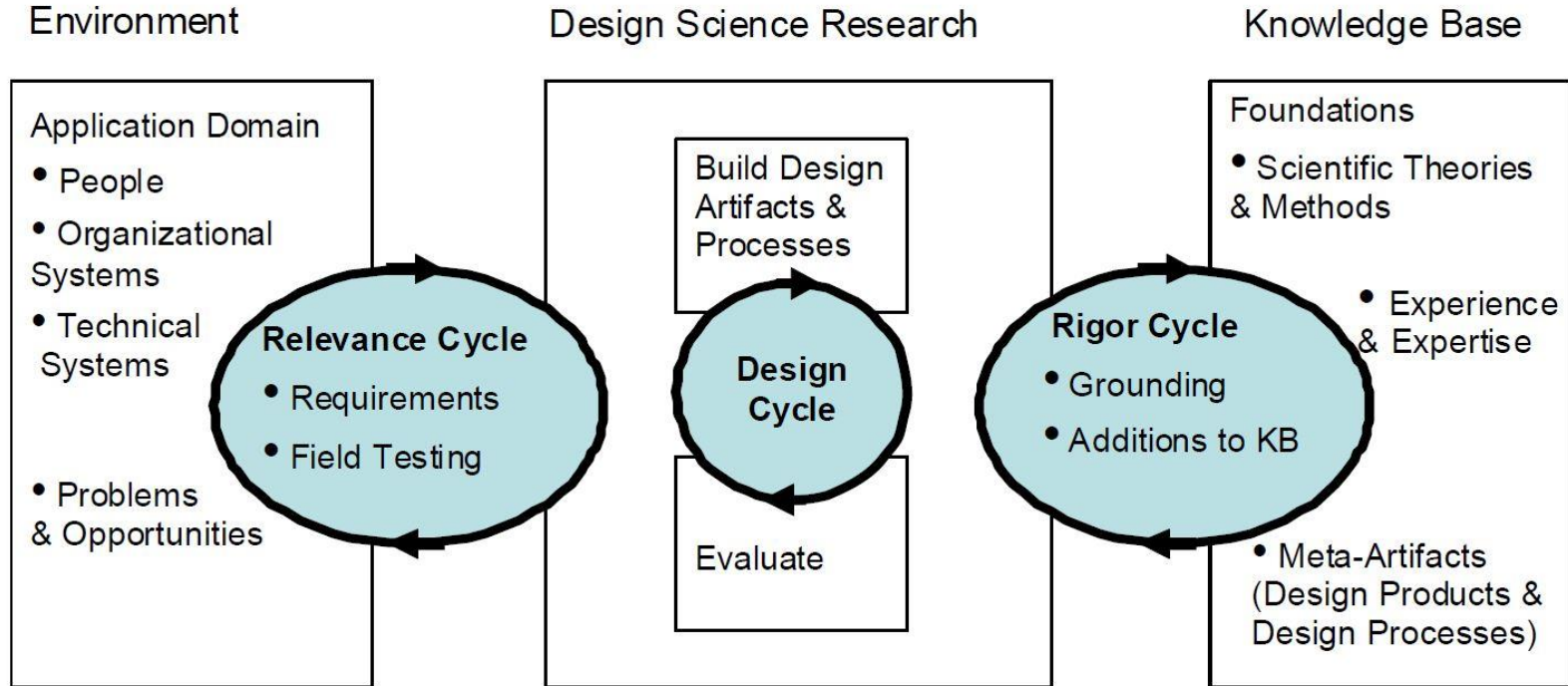
# Design Science

- Design science is fundamentally a problem-solving paradigm
- It seeks to create and evaluate IT artefacts intended to solve identified problems



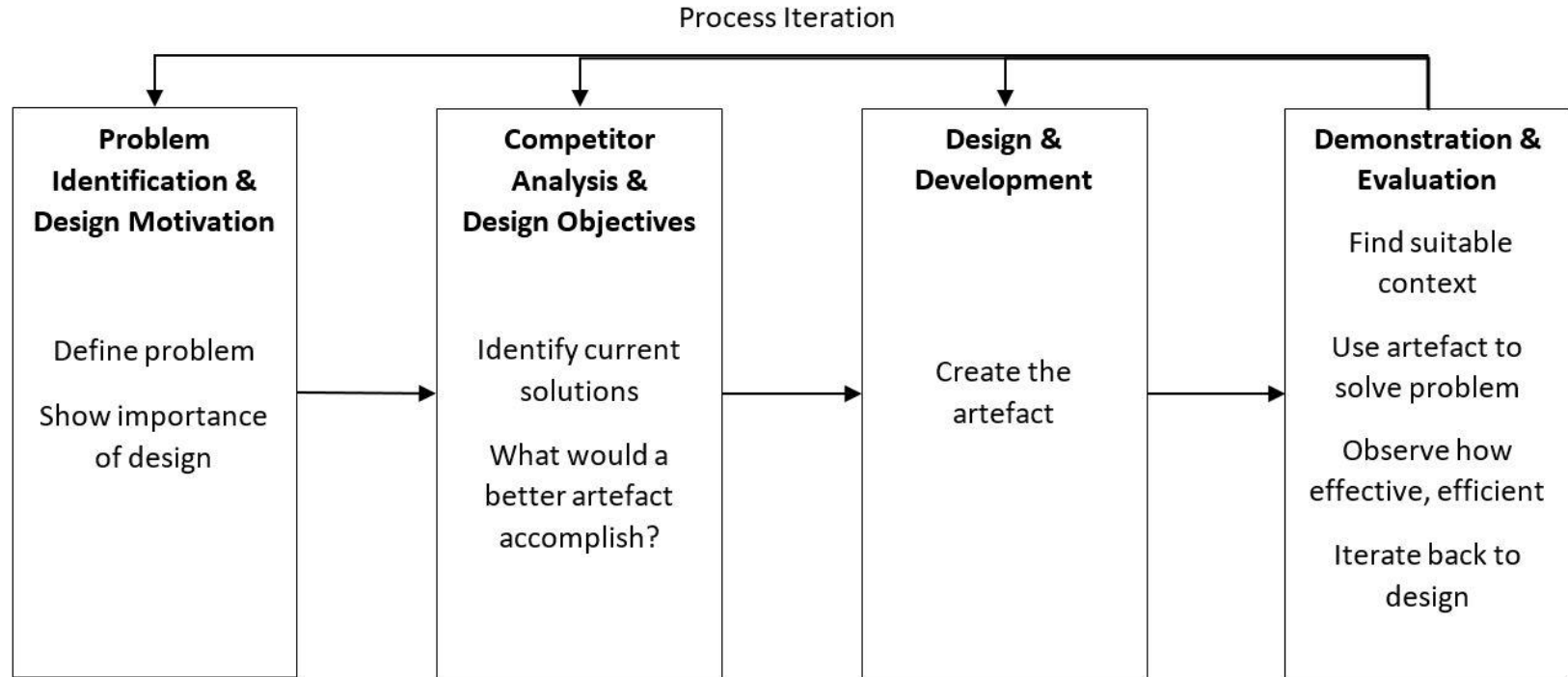
Hevner et al. 2004

# Design Cycle



Hevner 2007

# Design Science Process Model



Based on Peffers et al. 2007

# Design Science Process Model

## Activity 1: Problem Identification and Design Motivation

- Define problem: knowledge of the state of the problem
- Show importance of design: justify the value of a solution
- Problem definition will be used to develop an artefact that can effectively provide a solution
- What motivates you to pursue the design and development of a mobile app?
- First: understand the problem

# Design Science Process Model

## Activity 2: Competitor Analysis and Design Objectives

- Translate the problem definition to design objectives
- You don't need to reinvent the wheel! What's already out there?
- Identify current solutions: competitor analysis provides a useful approach to develop a better understanding of user needs and improved or new design features
- What would a better artefact accomplish? You can learn from the strengths and weaknesses of current solutions and define objectives for your design solution!

# Design Science Process Model

## Activity 3: Design and Development

- Create the artefact: can be any designed object (constructs, models, methods, or instantiations)
- In this unit, we focus on instantiations, more specifically, mobile applications
- Determine the app's desired functionality based on problem definition, design motivation, competitor analysis, and design objectives
- Then, create the actual artefact
- Moving from objectives to design and development requires knowledge of theory and application, which will be covered in the lectures and workshops



# Design Science Process Model

## Activity 4: Demonstration and Evaluation

- Find suitable context for the demonstration of your artefact: who should be your test users?
- Use artefact to solve problem: demonstrate the use of the artefact to prove that the idea works
- Observe how effective and efficient: Is the artefact doing what it is supposed to do (is it useful)? Does it require minimal effort to use the artefact (is it easy to use)?
- Compare the objectives of a solution to actual observed results from use of the artefact in the demonstration and evaluation
- Different forms of evaluation are possible: surveys, experiments, interviews
- In this unit, we will focus on interviews
- Empirical evidence is required to evaluate your artefact
- At the end of this activity, you can decide whether to iterate back to activity 1-3 to try to improve the effectiveness and efficiency of the artefact

Can you think of an example of a good mobile app design?

# IAB330 Mobile Application Development

## Introduction to Problem Identification

Week 1

24 July 2019

QUT

# How to Identify Problems that Matter? Avoid Asking the Wrong Questions!

**Scenario:** You live in a village and commonly there is no wolf, so your null hypothesis is: “There is no wolf.”

**Type I error** (false positive): you see a wolf when there is none, and therefore you raise a false alarm (rejecting the null hypothesis when it is true)

**Type II error** (false negative): you fail to see the wolf when in fact a wolf is present, and therefore you fail to raise an alarm (accepting the null hypothesis when it is false)

**Type III error** (wrong reason): assume that wolves are no serious threat to humans but to livestock, however, your village does not have any livestock, and therefore you raise an alarm when there is actually a wolf, but it does not matter whether there is any wolf (correctly rejecting the null hypothesis for the wrong reason)



What would be a wrong reason to build a mobile app? Think of any design features that might be interesting but not important to solve a real world problem!

# Be Problem-Minded Rather than Solution-Driven!

- Avoid to formulate unclear or pseudo problems
- Don't overlook or underestimate problem identification
- Solution-driven mindset makes it more likely to solve the wrong problem



Based on Rai 2017

# Gap-Spotting for Design Motivation

- Avoid to motivate your app design with the rationale that there is no app without addressing why the gap is important
- Gaps may not be important to address but spotting them does not make the case for the value that the artefact will generate
- A gap may merely exist because it is not worth pursuing



Based on Rai 2017

# Design Science Process Model

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Which mobile app comes to your mind that addresses a meaningful problem space and provides an important value of a solution?

# Questions?

## Next Week

### **Lecture 2**

Competitor Analysis and Design Objectives

### **Workshop**

Group Formation, Problem Space and Ideation