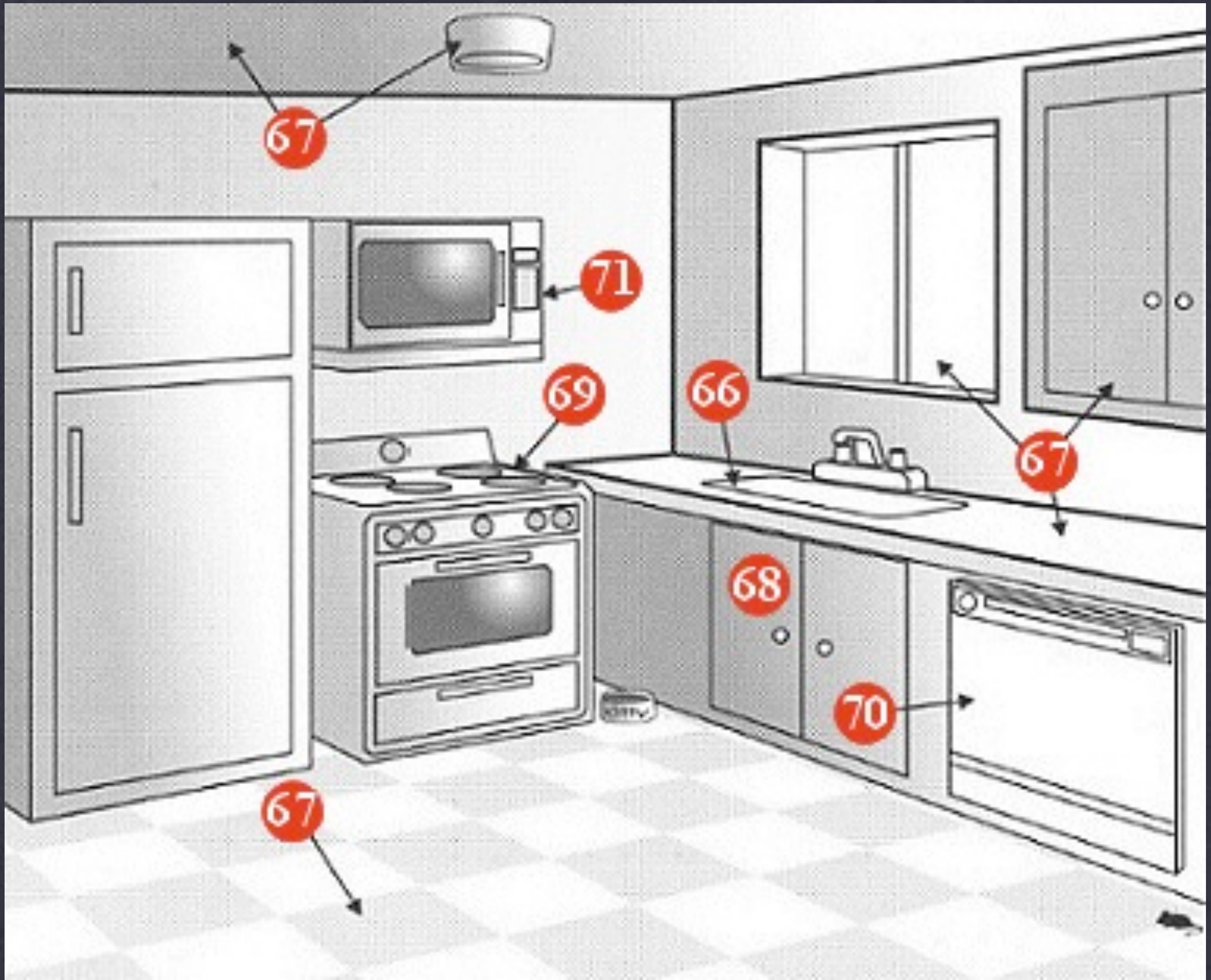


Material and some slide content from:
- Emerson Murphy-Hill
- Software Architecture: Foundations, Theory, and Practice
- Essential Software Architecture

# SE2: Introduction to Software Architecture

## Reid Holmes

Lecture 2 - Thursday, September 15 2011.

# Course Objectives

By the end of the course you will be able to:

- propose and analyze software architectures
- explain the strengths and weaknesses of various architectural styles and design techniques
- communicate and rationalize architectural and design decisions
- ideate, justify, and implement software designs
- evaluate different architectures and designs

# Project

Group organization

Project proposal

Next Friday's tutorial

# Group Organization

# Project Proposal

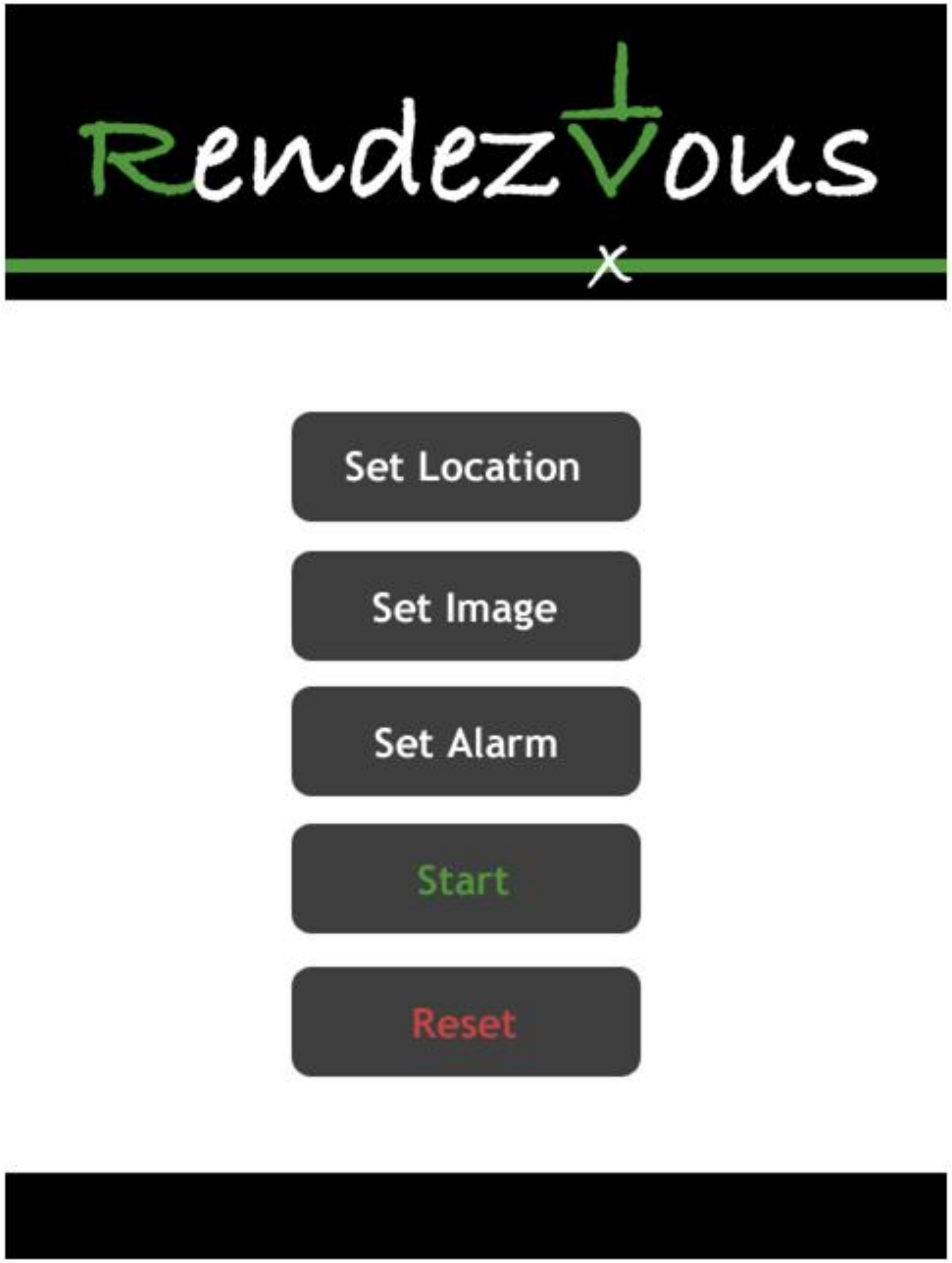
- Due September 20 @ 0800
- See course web page for complete requirements.

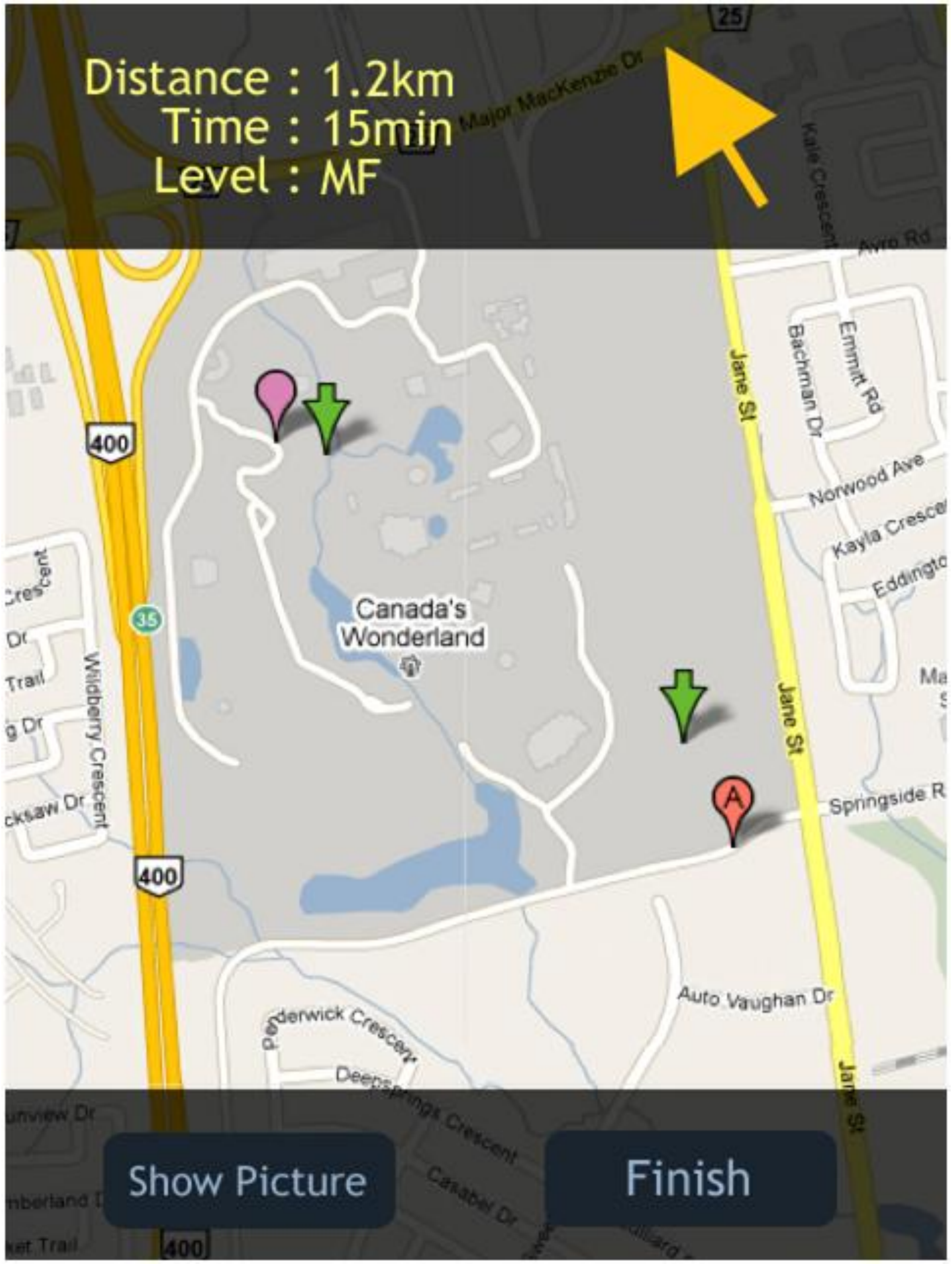
...And as you can see, our proposal is also fully buzzword-compliant.
Y2K
OK
EIEIO

# Project Proposals

## All SE2 Teams

# RendezVous




Distance : 1.2km
Time : 15min
Level : MF

# Project Title: To develop a Waterloo guide mobile application (multiple platforms) using GWT (K-W maps).

## Group Name: LTZ

# CS Advisor Appointment System

Team Legendary Apps

Always Fresh
TimHortons.com

# Event Chimp for Facebook

+

# Road Trip

# Friday Sept 23 Tutorial

- By the end of Friday Sept 23 these should work:
  - Basic GWT project: [instructions]
  - Interesting GWT project: [instructions]
- GWT Overview Video [link]
- GWT v2 Overview [link]
- Great starting tutorial [link]
- Good overview slides [link]
- Some Resources:
  - GWT Widgets [link]
  - GWT Panels [link]
  - GWT Examples [link]

# Architecture

- Architecture is:
  - All about communication.
  - What ‘parts’ are there?
  - How do the ‘parts’ fit together?
- Architecture is not:
  - About development.
  - About algorithms.
  - About data structures.

# What is Software Architecture?

- The conceptual fabric that defines a system
  - All architecture is design but not all design is architecture.
- Architecture focuses on those aspects of a system that would be difficult to change once the system is built.
- Architectures capture three primary dimensions:
  - Structure
  - Communication
  - Nonfunctional requirements

# Structural example

# Non-functional requirements

- Technical constraints: restrictions made for technical reasons
- Business constraints: restrictions made for business reasons
- Quality attributes: e.g., the *'ilities'*
  - Scalability
  - Security
  - Performance
  - Maintainability
  - Evolvability
  - Reliability/Dependability
  - Deployability

# SEI

“The software architecture of a program or computing system is the structure or structures of the system, which comprise software elements, the externally visible properties of those elements, and the relationships among them.

# ANSI/IEEE 1471-200

"Architecture is the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution"

# Eoin Woods

“Software architecture is the set of design decisions which, if made incorrectly, may cause you project to be cancelled.”

# Philippe Krutchen

“The life of a software architect is long (and sometimes painful) succession of sub-optimal decisions made partly in the dark.

# WWW Example

Image from [Software Architecture: Foundations, Theory, and Practice] companion materials.

# WWW Example

Image from [Software Architecture: Foundations, Theory, and Practice] companion materials.

# WWW Example

Image from [Software Architecture: Foundations, Theory, and Practice] companion materials.

# Activity

- Architect a kitchen
  - What are the high-level requirements?
  - What systems are involved?
    - What properties do the systems have?
    - How do they interact?
  - How is the kitchen used?

# Kitchen Architecture Discussion

- What are the components?
- What are their properties?
- What are their relationships?
- Present and critique design alternatives.

# Upcoming Deadlines

Project proposal.

- Pass/fail.
- 0800 Tuesday Sept 20.
- Email rth.se2@gmail
- Full description on course web page.