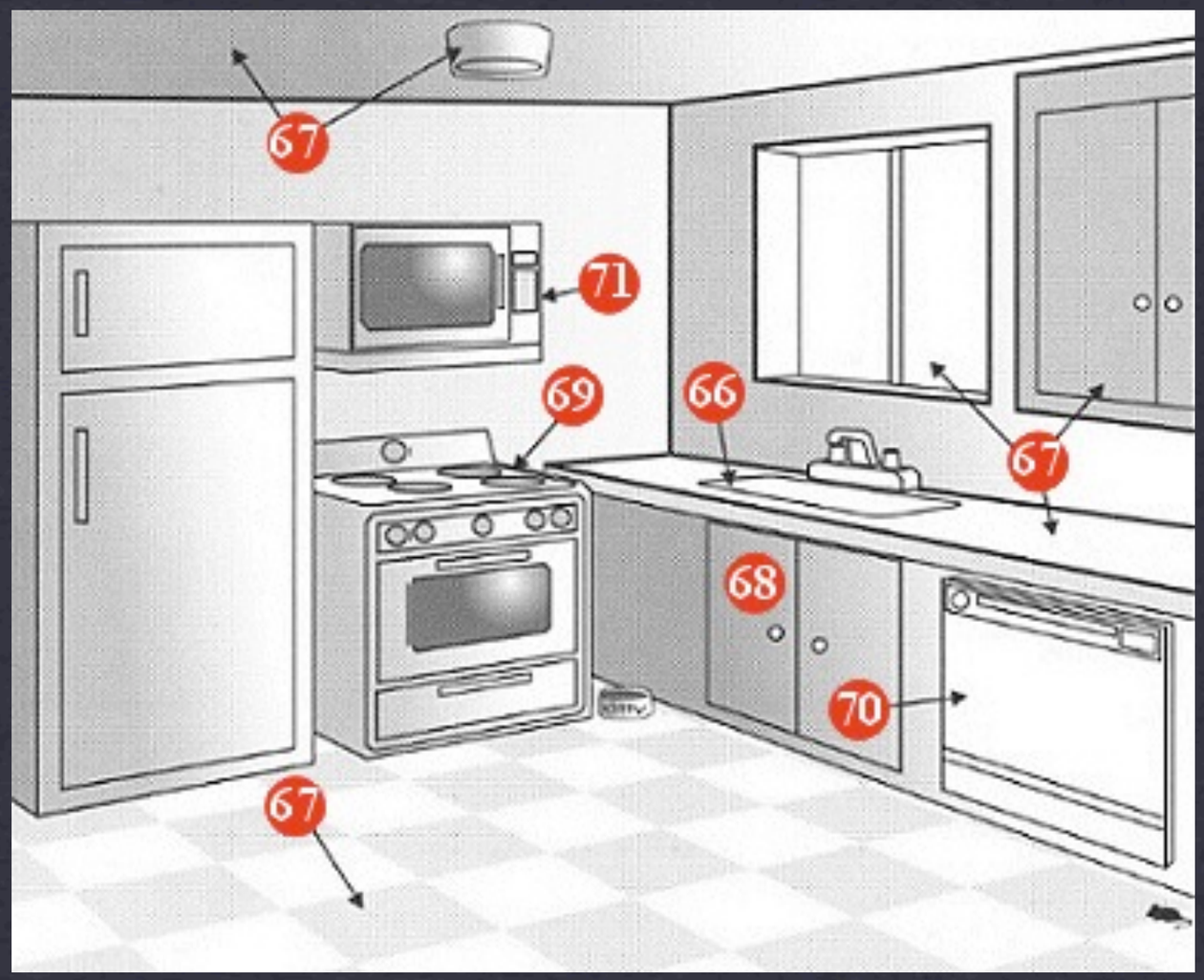


Material and some slide content from:
- Emerson Murphy-Hill
- Software Architecture: Foundations, Theory, and Practice
- Essential Software Architecture

SE2: Introduction to Software Architecture

Reid Holmes

Lecture 2 - Thursday, September 16 2010.

Outline

Course objectives

Software Carpentry

Project

Architecture introduction

Architecture activity

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

Software Carpentry

- Software Carpentry [software-carpentry.org].
  - Created by Greg Wilson (U of T).
  - Great resource on a variety of topics.
    - Video lectures, slides, notes.
  - Currently revamping curriculum.
  - e.g., Program design [link].

Project

Group organization

Project proposal

Team assessment

Friday's tutorial

Group Organization

Project Proposal

- Due September 21 @ 0800
- See course web page for complete requirements.

Team Assessment

[Overall project percentage] x [# team members] = [points].

Groups allocate their points as they see fit. This can be done as a group or individually. The number of points given to each member is their final project percentage (cannot exceed 100).

e.g. Team Foo (4 members) gets 85% on their project.

- 85 * 4 = 340 points
- If they worked evenly, each gets 85.
- Or 83, 83, 83, 91 (worked the hardest)

Team Assessment

- Project grade can be scaled both up and down.
- Point assignment must be justified by brief statement.
- I reserve the right to interview team members in the case of disagreements about the final assessments.

Friday's Tutorial

- By the end of Friday 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]

Lecture Objectives

After lecture you will be able to:

- explain what software architecture is and isn't
- catalog the main aspects of an architecture
- succinctly describe the architecture of a system

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.
- Non-functional requirements feature highly here:
  - 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"

WWW Example

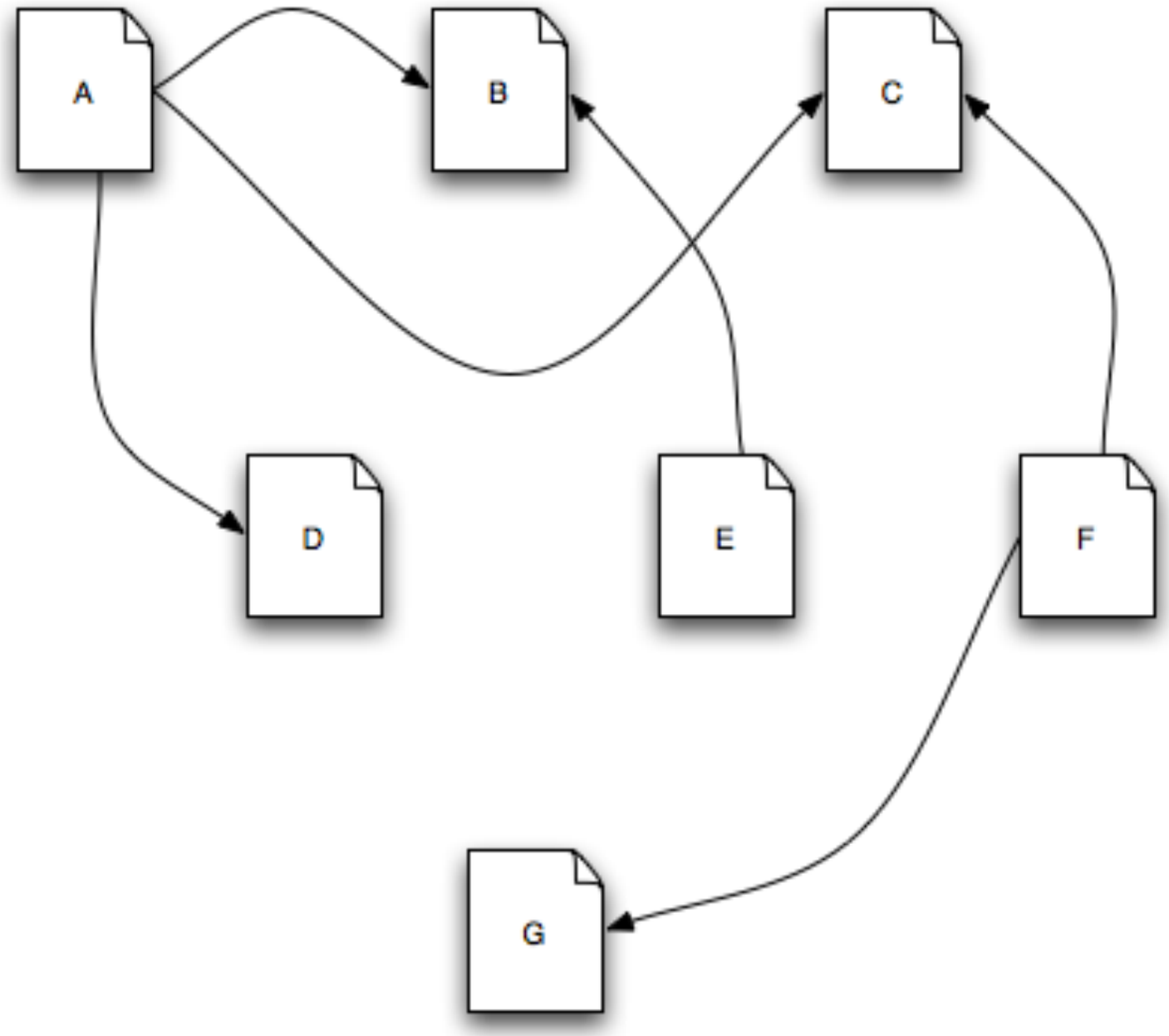
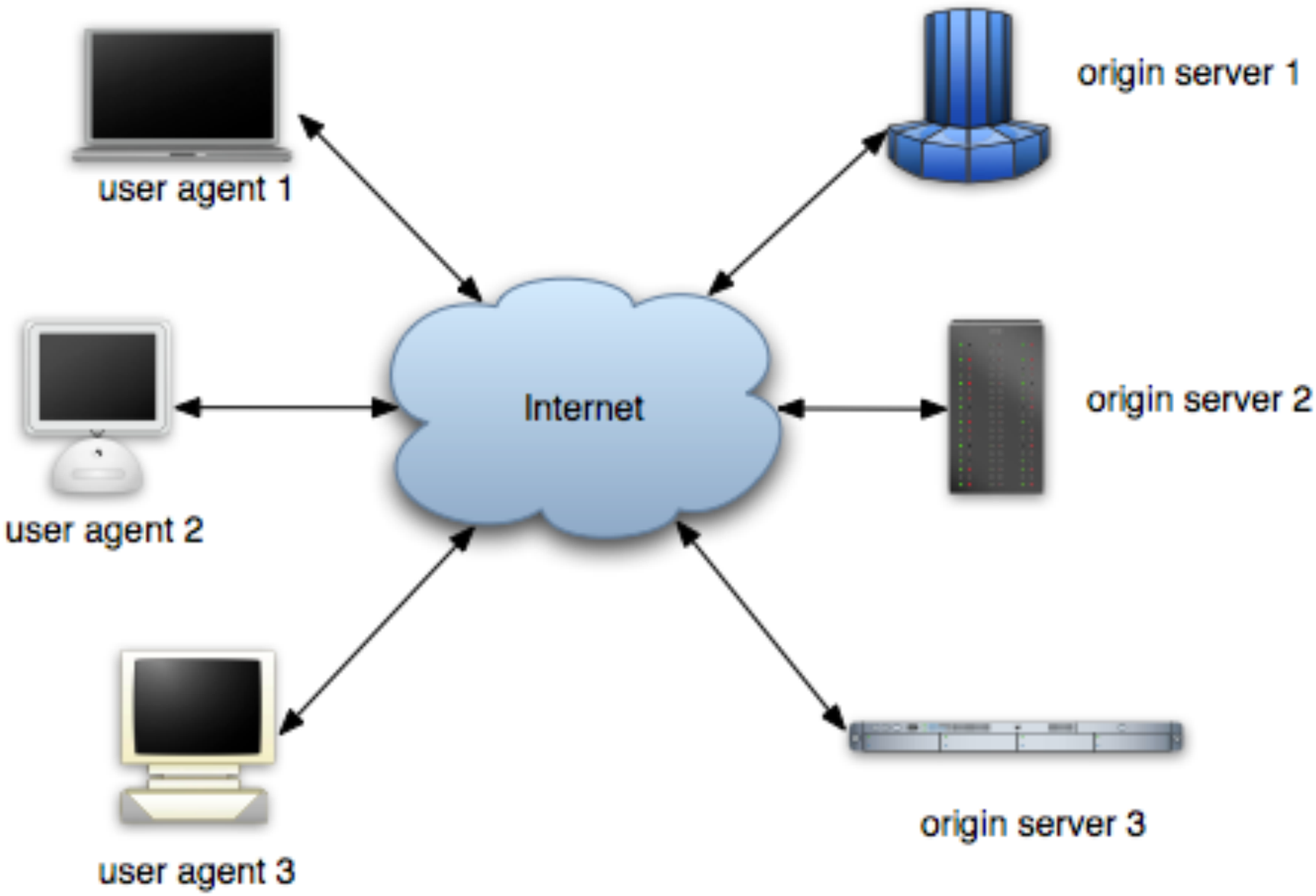


Image from [Software Architecture: Foundations, Theory, and Practice] companion materials.

WWW Example



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www Example

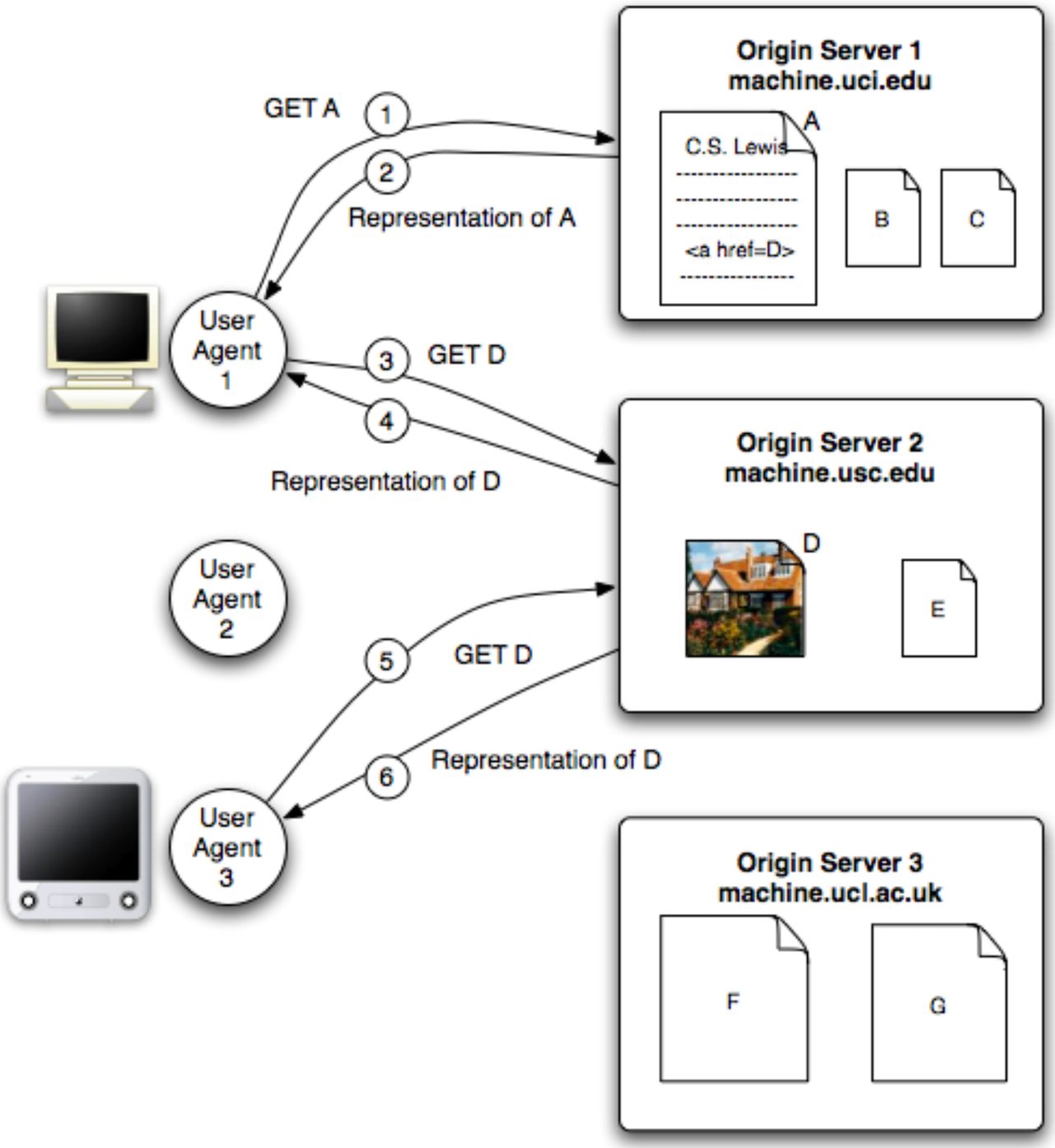

Image from [Software Architecture: Foundations, Theory, and Practice] companion materials.

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 21.

Email rth.se2@gmail

Full description on course web page.