

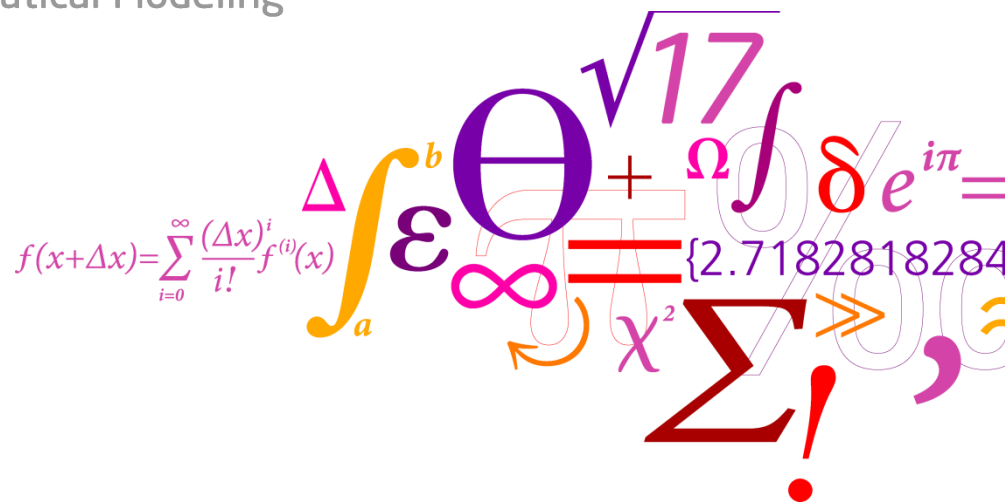
Software Engineering 2: Project

A Smart Home Security and Monitoring System

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- Smart phones all over the place
- Smart phones have all kinds of sensors and act(uat)ors:
 - Location
 - Acceleration (movement, shake)
 - Cameras / microphones
 - Temperature, humidity, ...
- Smart phones have quite some computation power
- Older ones can be obtained quite cheaply

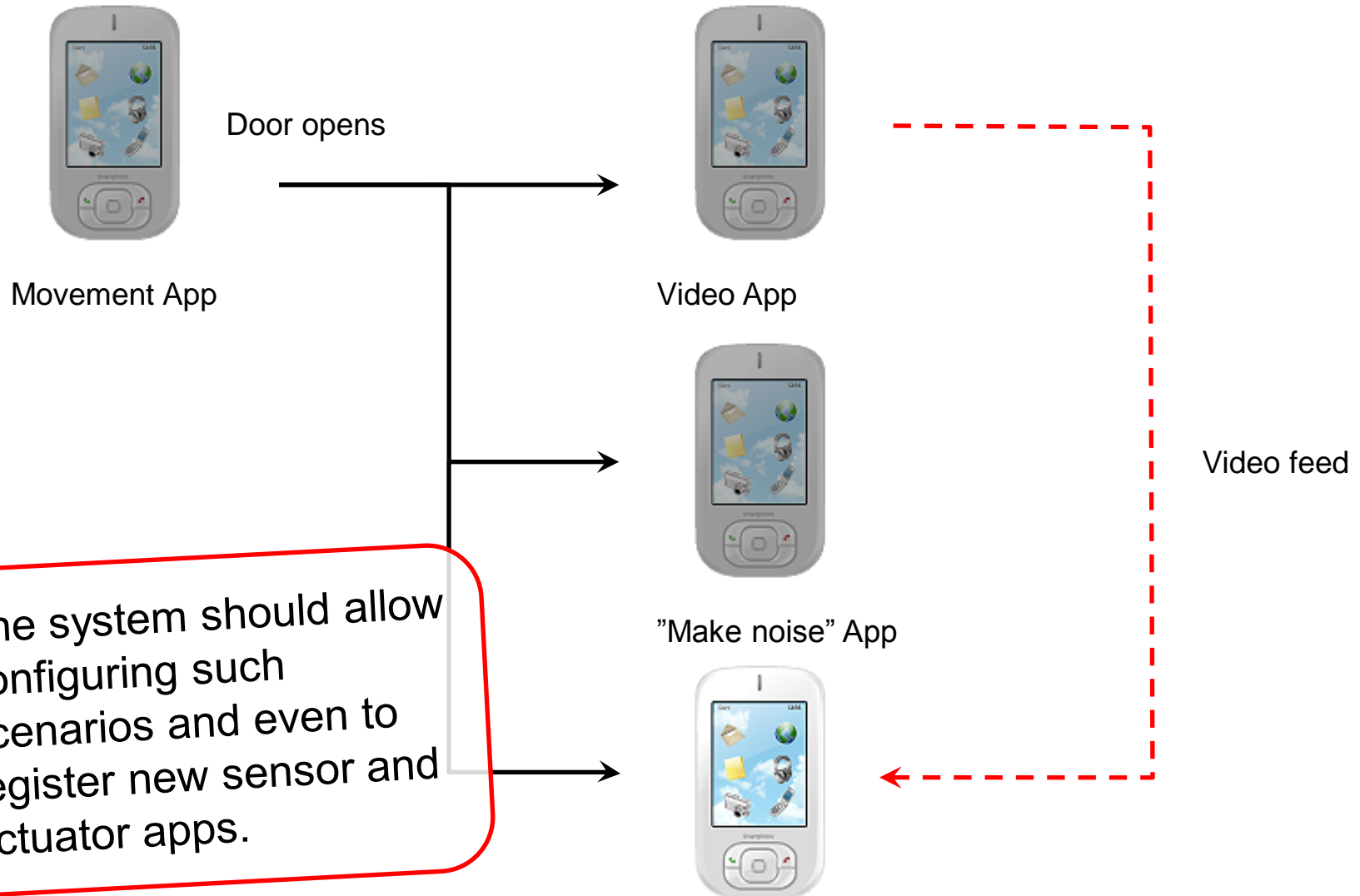


- Smart phones can provide lots of information
- Build a system that allows us to easily collect, combine, analyse and use this information for some good use in society?

NB: Collecting and storing information has also some downsides for society! Which are worth a project in their own right! Privacy is compromised in quite unexpected places – and the impact of this should be carefully studied! In this project, we focus on the technical potential, however.

A Smart Home Security and Monitoring System

- Use smart phones for motion detection, video surveillance, playing audios
- Defining rules for when to switch on and off sensor or actor apps
- Apps alerting home owner upon unexpected events
- Apps for online/offline video surveillance



The system needs a backend (server) for

- Registering apps
- Configuring the set up in a home
- Dealing with the incoming events and data
- Switching on and off other apps based on the configuration rules
- Permanently storing data from the apps (database and files)

The system needs Sensor and Actor Apps

- Flexibility to create new Apps without changing the backend
- Unique protocols for controlling these Apps and of how to connect to the backend

The system needs clients (Apps or Web)

- For visualizing and changing the configuration rules and the currently active apps
- For online surveillance
- For offline surveillance and viewing history of events
- For raising alerts to the home owner



This project is done in cooperation and the kind support of the CITIES project.

The CITIES project is mostly interested in smart use of energy. Our Smart Home Surveillance and Monitoring System, however, could be easily extended to record and monitor data relevant for reducing energy consumption by taking the weather, temperature and lighting situation and the current energy consumption into account.

CITIES provides us with some modern Android smart phones for experimentation. They will also provide some energy monitoring devices (optional extension).

- SE2 project page:
<http://www2.imm.dtu.dk/courses/02162/e14/project.shtml>
- More information will be provided in the next week(s); mostly driven by **YOUR** questions!
- Tutorials will give an introduction to and an overview of the basics of some needed underlying technologies

Weekly Schedule (roughly)

	Mon	Tue	Wed	Thu	Fri
8-10		lecture			
10-12		lecture	tutorial	project	
13-15					lecture
15-17					project

lecture

tutorial

project

The group meeting on Friday (15-17) is mandatory!

- Think of the task(s)
 - look at slides and project description
 - make an own example scenarios for the system
 - outline these scenarios
 - what kind of rules for configuring the system would make sense
 - what kind of smart phone sensors and actors would make sense in such a system

- what is unclear
- what is missing
- what are the use cases

- You should discuss that on Friday in the group meeting.
- Q&A-session next Tuesday.

- What could your role in the group be
 - Project leader
 - Responsibility for a deliverable
 - Quality manager
 - Tool / technology expert
 - Which part (see sub-tasks) of the project does interest you (from the WHAT or from that HOW point of view)

- Discuss the project
 - what are the important terms / concepts
 - identify problems
 - formulate the task in your own words
 - discuss cool features ideas
- Make an initial work plan
- Assign responsibilities

Always, have a look at the
"material and schedule" page!

See web page (material & schedule) for details
<http://www2.imm.dtu.dk/courses/02162/e14/material.shtml>

All deadlines refer to Thursday 24.00 that week (except explicitly stated otherwise).

- Project definition
- UML diagrams
- Technological experiment
- **System specification**

- 1st prototype
- Handbook
- **Feature complete prototype**
- **Final submission**
(a extended and revised version of the above, including tests, ...)

Note: In final submission,

- **everybody** must have written some part of the code (→ author tags, SVN checkins), and
- **everybody** must have written some part of the documentation (authorisation of chapters, sections or subsections of the documents).

- Early project presentation (mostly "WHAT")
- Tutorial presentations ("HOW")
- Final presentations ("WHAT" and "HOW")

Note: **Every** group member must be an active part (speaker) of at least one presentation!