

Assignments 4 – System Architecture

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Days and Topics

March 11	Intro
March 16	Designing Interactive Systems – Assignment 1 Published in Detail
March 23 (10-13)	Prototyping + Evaluating Interactive Systems - Paper Presentation and Discussion (Assignment 1) - Assignments 2-4 Published in Detail - Android Sensing Tutorial Day will be Announced!
April 20	Presentation Assignment 2/3
April 27	Presentation Assignment 2/3 - Submission Assignment 4
May 4	User Interfaces for Ubiquitous Computing - Assignment 5 Published in Detail
May 11	Context-Aware Computing - Details on Final Paper
May 18	Presentation Assignment 5
June 1	Presentation Assignment 5
June 8	Submission Final Paper

General Idea

Describe System Architecture of Complete System

- Use UML diagrams to illustrate the system architecture
- Make notes about what kind of capabilities you need in which pieces of your system
- This assignment should help you to prepare for assignment 5 (implementation of one sensor-based feature of your system)

Learning Goals

- **Plan Implementation:** You should practice thinking about implementing a complete ubicomp system.
 - Are components physically separated?
 - Are multiple devices necessary?
 - Which sensors do you need to gather which sensory data?
 - What kind of data postprocessing do you need? Do you think this will be carried out on the mobile device or do you need a more powerful computer for this?
 - Communication between components?

Learning Goal

- **Practice UML:** Select meaningful diagrams and representations.
 - The goal is not to have a very detailed system architecture, but a meaningful one. Remember that in the next assignment you will implement only a relevant part of the complete system, so this architecture will be your last “implementation” towards the “complete” system (which is an approximation of the system in the original paper)

Grading

- Are components, classes, actions (whatever you describe in the architecture meaningfully labelled?
- Is the system completely described?
- Notation – does the notation roughly conform to a UML standard (if I understand it, it is fine – if in doubt, it counts if it is UML)

Example Architecture

Memento – a system for keeping a physical diary and an online diary (a website) synchronised.

Storyboard (vision):

- User looks at real diary page through camera
- If the page already exists, user is informed about comments made online to this page
- If not, the user can take a photo and upload it to website with a single touch

Components: A client for smartphones, and a server that stores and publishes the websites.

Component Diagram

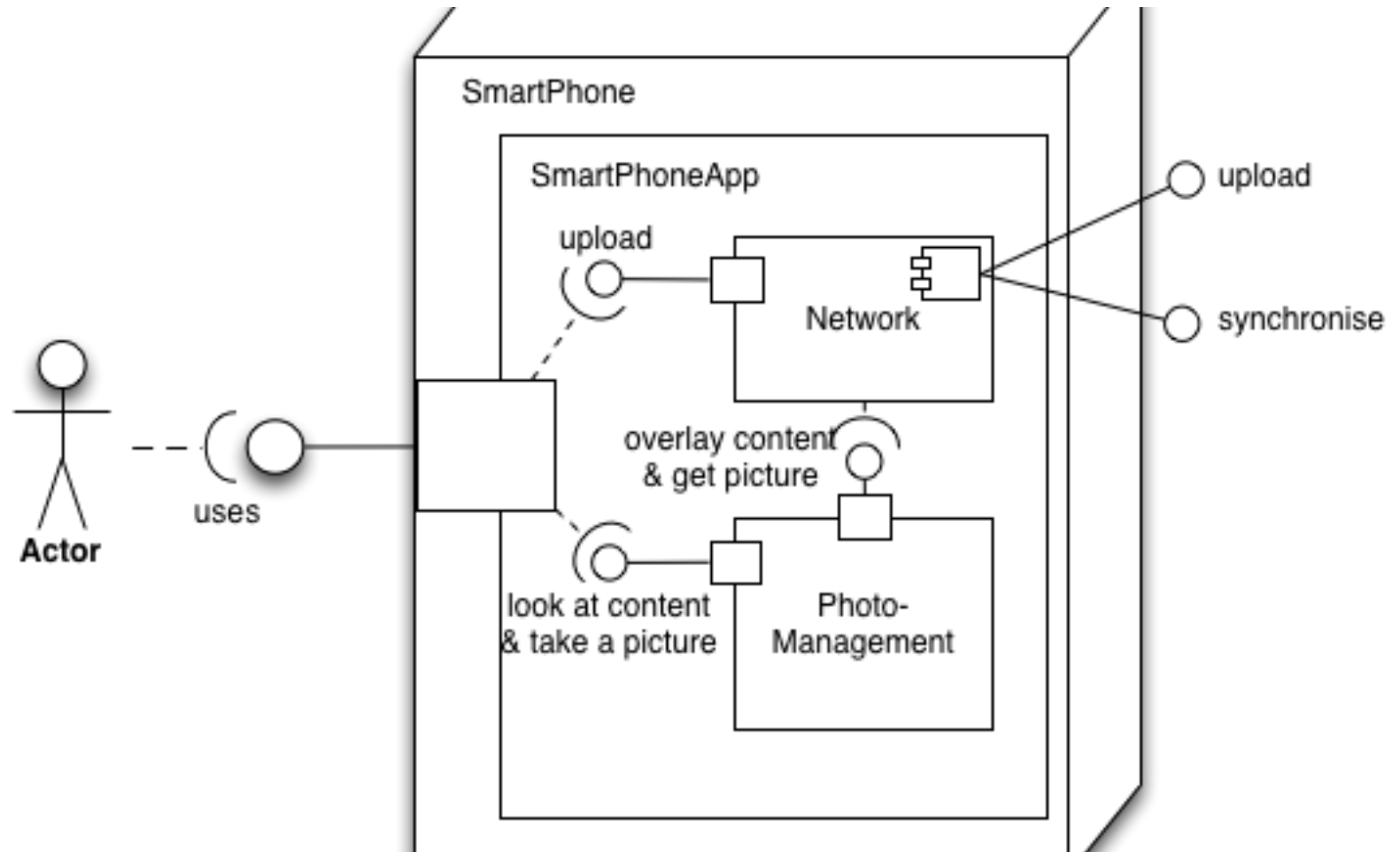
Client

PhotoManagement

- LookAtContentThroughCamera (for starting the camera)
- TakeAPhoto (for taking a photo)
- Display digital content (for overlaying camera image with digital content, or the message “Please upload page, it does not exist yet online”)

Network

- Upload (for uploading photos – also needed to verify if photo exists online already; image analysis is carried out at server)
- Synchronise (for informing the user about comments made online, *and for notifications*)



Component Diagram

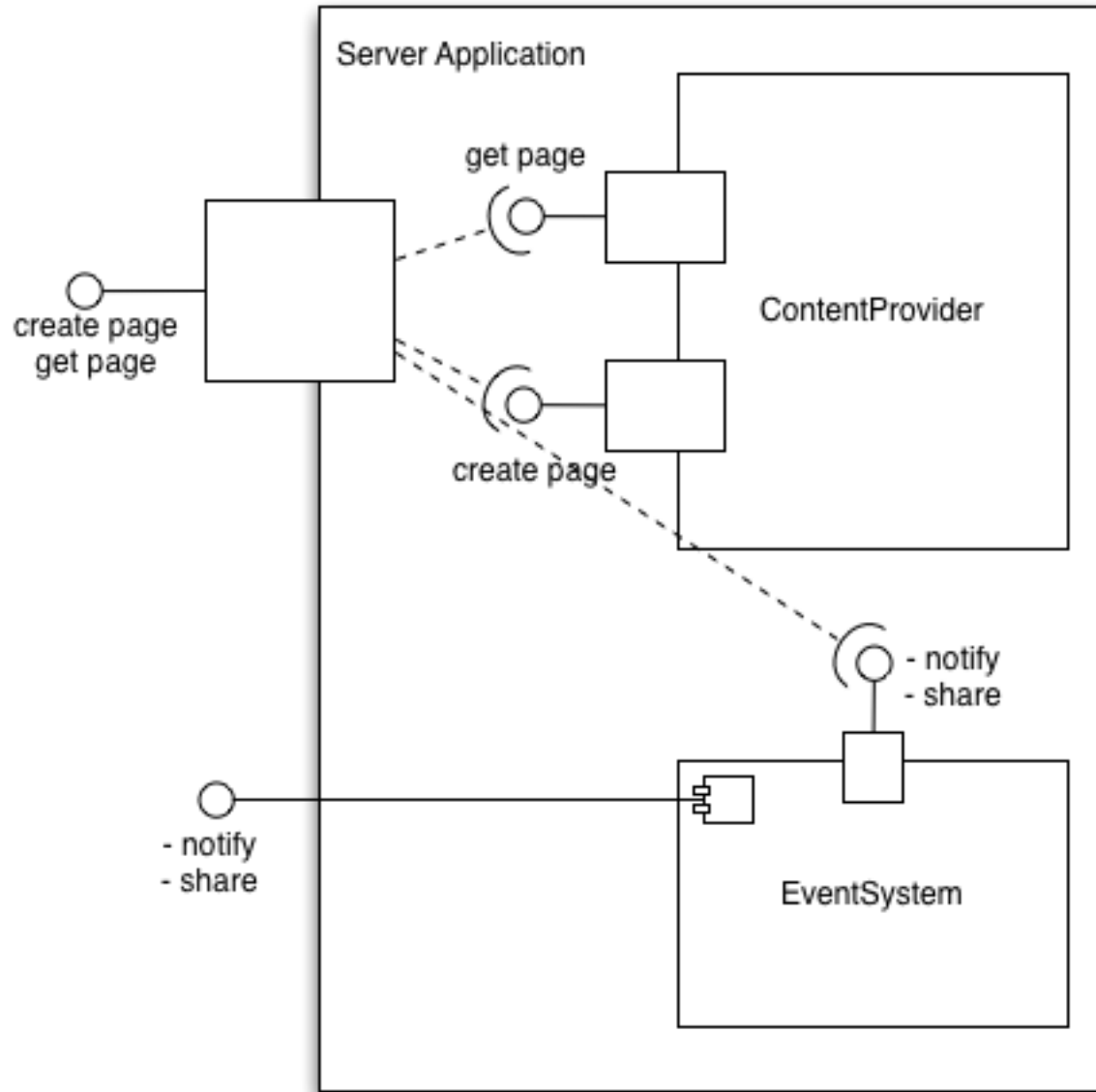
Server

ContentManager

- createDiaryPage (for creating a new diaryPage)
- getDigitalContentforPage (for checking whether a particular image represents content that already exists on the server, and answering with digital content if yes – here, image analysis needs to take place at the server)

EventSystem

- *Notify (notify user about online activity)*
- *Share (for giving or taking away access rights to a particular diary – server needs to manage users and their rights)*



Submission

Until April 27, exactly midnight, via email to
viktorija.pammer@tugraz.at

Send one file in attachment (PDF)

Contains system architecture (approx. 2 pages)