TECHNISCHE UNIVERSITÄT DRESDEN

Department of Computer Science Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

Seminar Task
Second Presentation

GroupNo. 14
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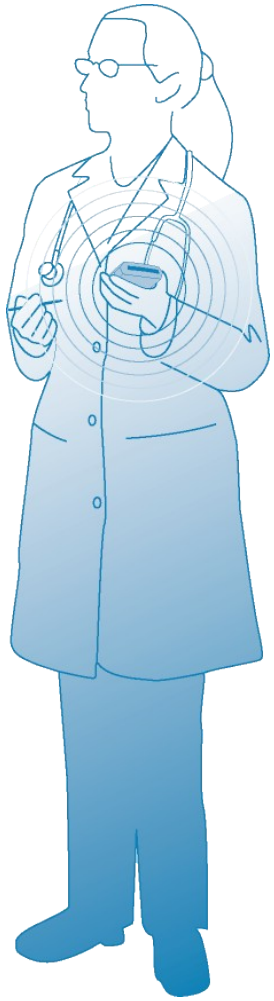
Medical Mobile Application

Our application will serve as a tool that will enable medical staff to effectively maintain patients' medical records without ambiguity.

The central focus of our system is clinical data management (collecting, storing, manipulating, and making available clinical information important to the delivery of patient care).



Medical Mobile Application: Scenario

- Doctor visits patients at their home and he needs to store information about his visit. He uses his smartphone to record patient information, create patient notes, track patients in home environment.

- Application records basic information such as:
  - Patient's ID, symptoms, disease
  - time, GPS coordinates

- Application retrieves settings for database configuration parameters from a remote server and synchronizes the locally stored information with the remote database.

- Application provides an intuitive and flexible user interface and universal functionality (exchangeable data entering module). We design the application to be useful for any medical practitioner anywhere in the world.

Medical Mobile Application: Benefits

- Reduced paperwork, automated record keeping
- Decrease in medication errors
  → Improved Quality of Care
- Time cost savings
- Integration of application with clinical intelligence services
- Clinician ease with timely access of resident records
  → Improved medical staff satisfaction

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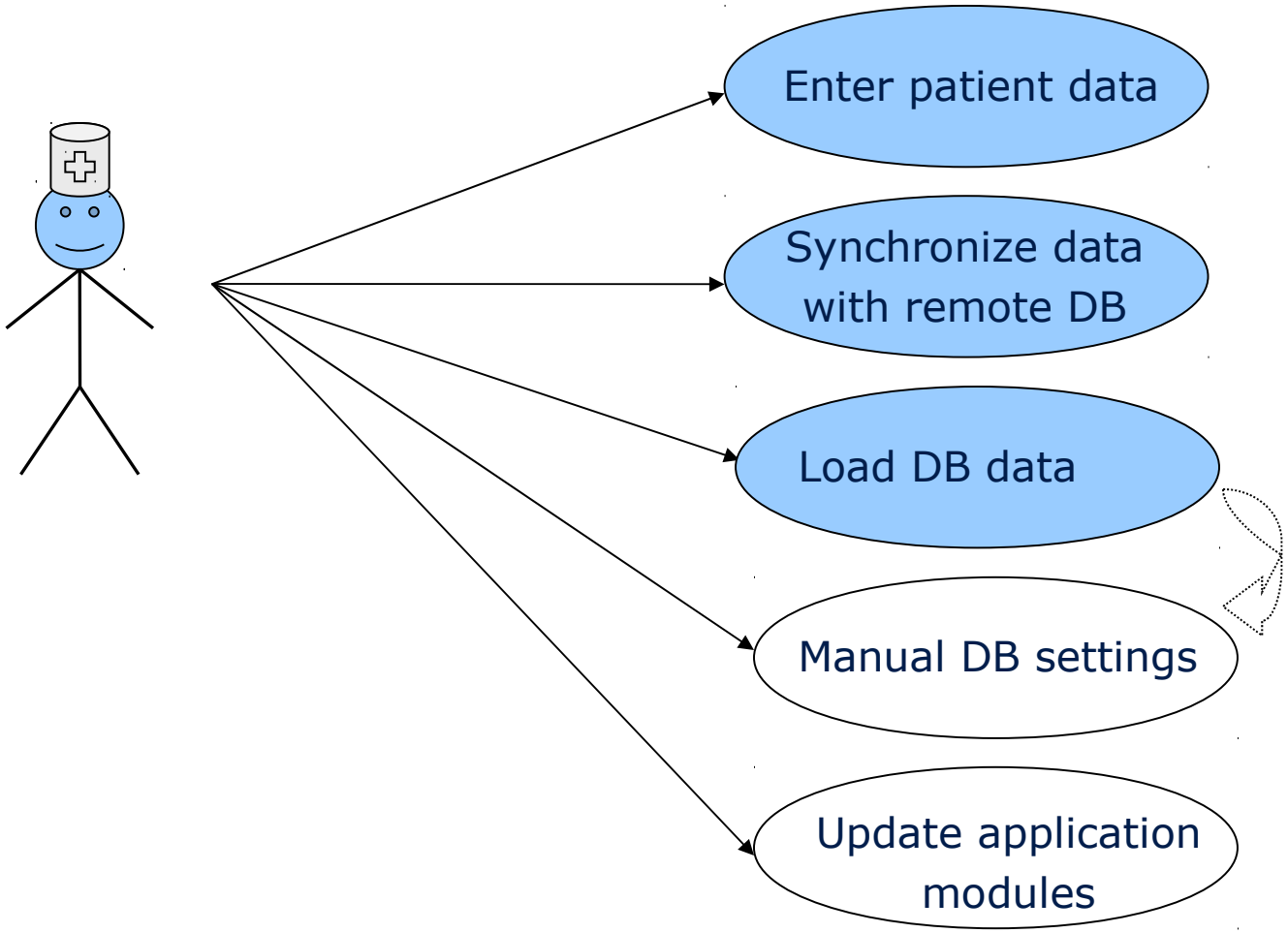
Medical Mobile Application: Use Cases



Technologies

Client application

- Android Platform
- JDK 6 (Java Development Kit 6)
- OSGi Framework (synchronization and module updates)

Client – Server communication: WebServices (SOAP)

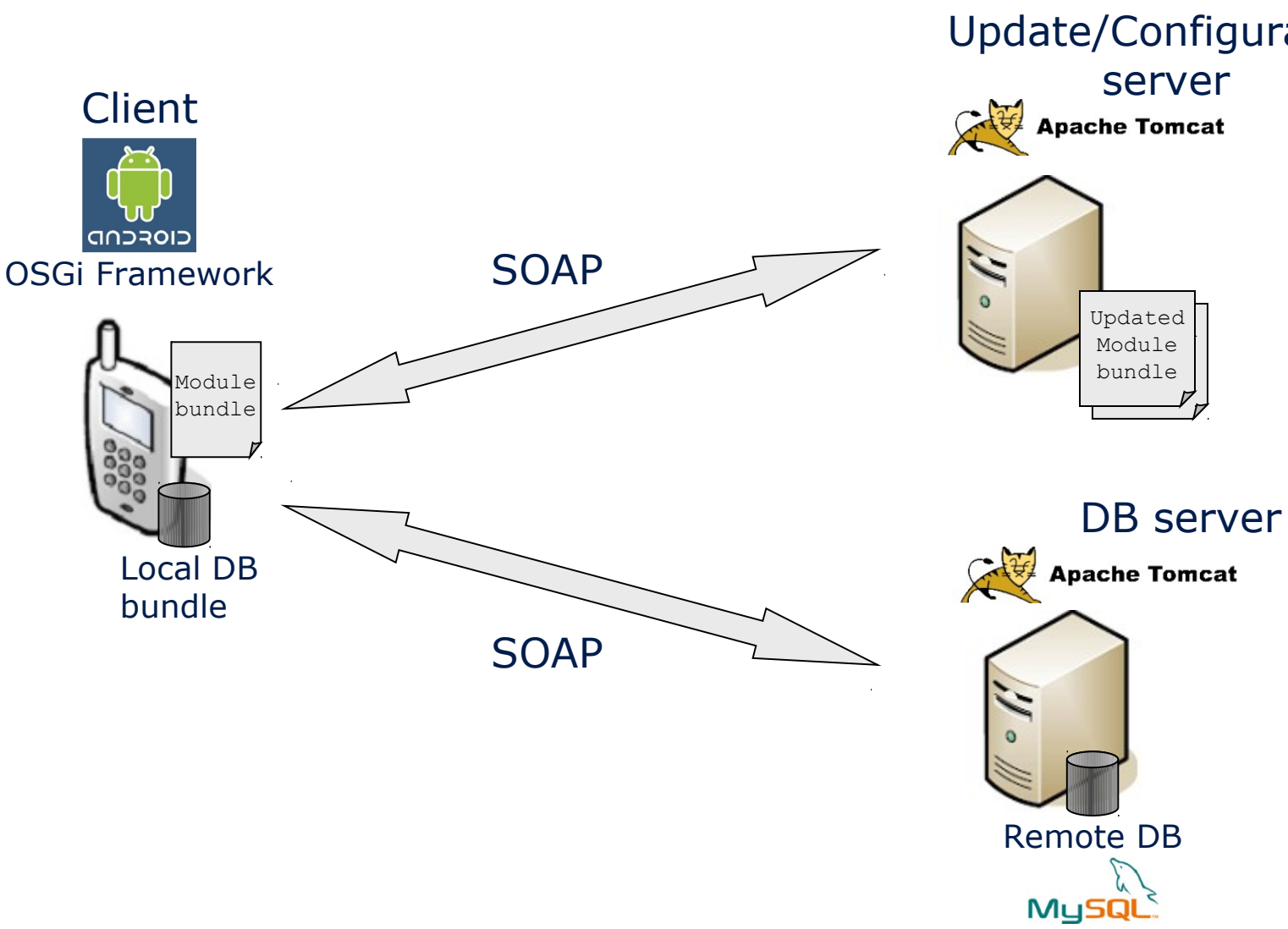
Configuration server (DB settings, module updates)

- Apache Tomcat Application Server 5.5

Database server

- Apache Tomcat Application Server 5.5
- MySQL database server

Architecture



Why OSGi?

Reduce complexity: Bundles are modules. They hide their internals from other bundles and communicate through well defined services.

Reuse: The OSGi component model makes it very easy to use many third party components in an application.

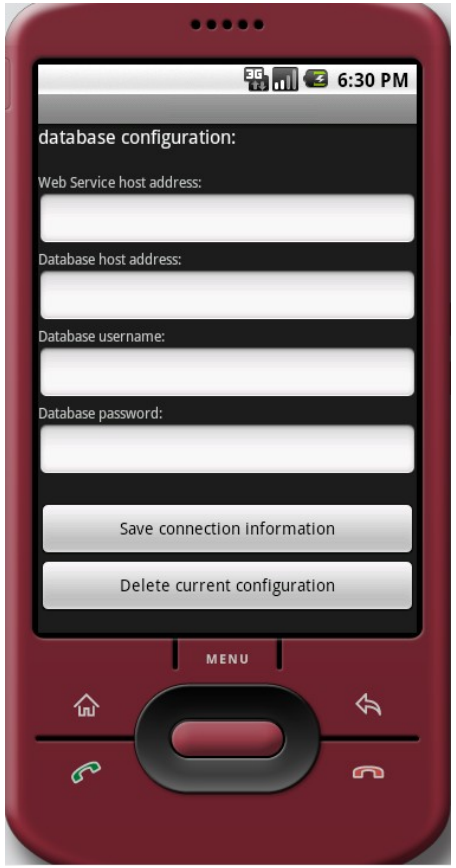
Dynamics updates: The OSGi component model is a dynamic model. Bundles can be installed, started, stopped, updated, and uninstalled without bringing down the whole system.

Fast: OSGi pre-wires bundles and knows for each bundle exactly which bundle provides the class. This lack of searching is a significant speed up factor at startup.

Prototype Application Screenshots

Main screen

Manual Database Settings Configuration



Data entering module

Challenges

- Integrate OSGi Framework in Android platform 
- Improve user interface (add new screens)
- Create a centralized center for settings and module updates
- Implement adaptative application structure for different scenarios (create a module update for entering data with constrains checking)

Work plan

- 10-11-2010: Literature research
- 12-11-2010: Design a database
- 14-12-2010: First Prototype (client+server)
- → 07-01-2011: Second Presentation
- 10-01-2011: First Application Version
- 22-01-2011: Application Testing
- 28-01-2011: Final Presentation
- 04-02-2010: Submit the results