Application Development for Mobile and Ubiquitous Computing

Whiteboard

Second Presentation

Group 14: Wolfgang Hönig, Frank Tetzel

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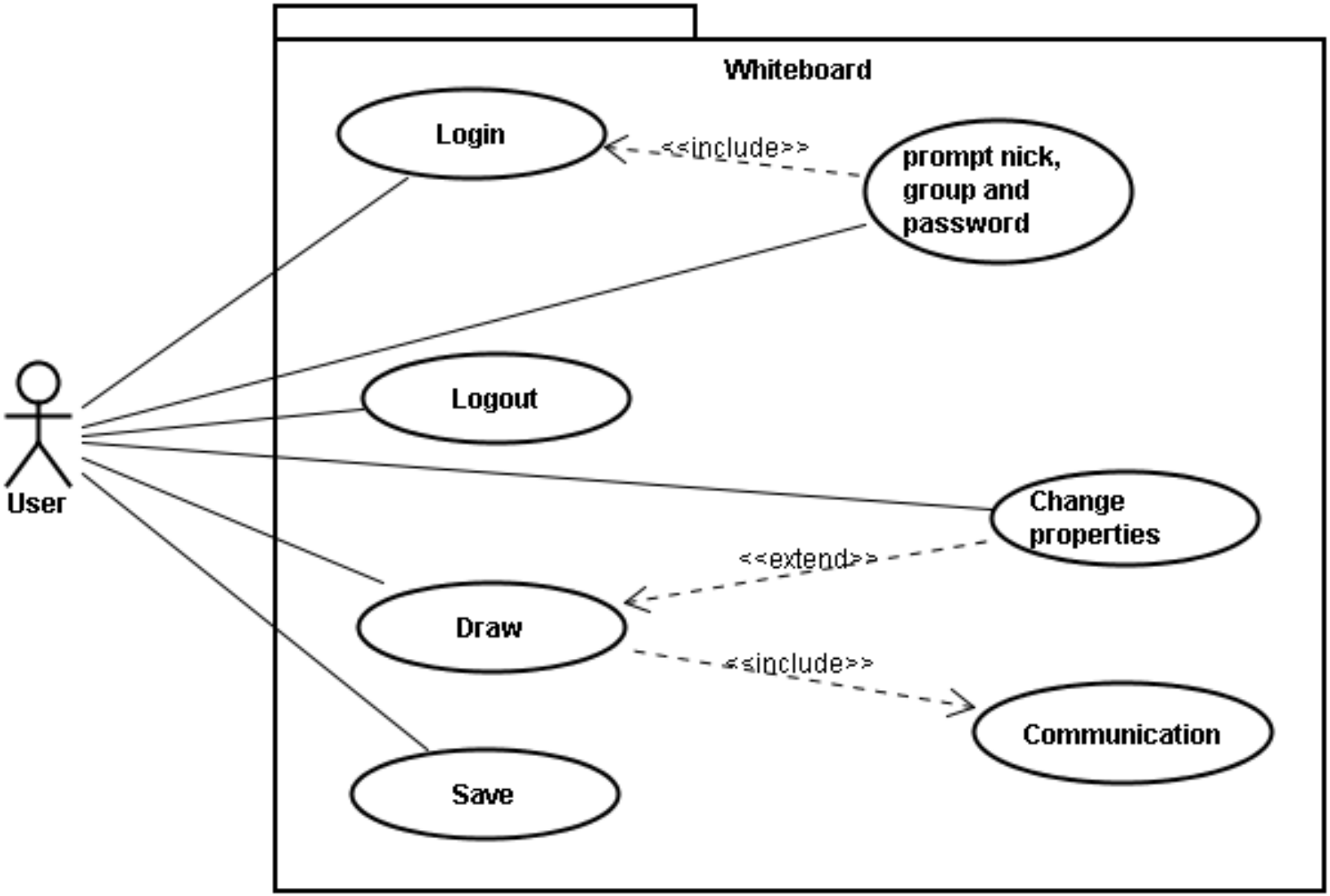
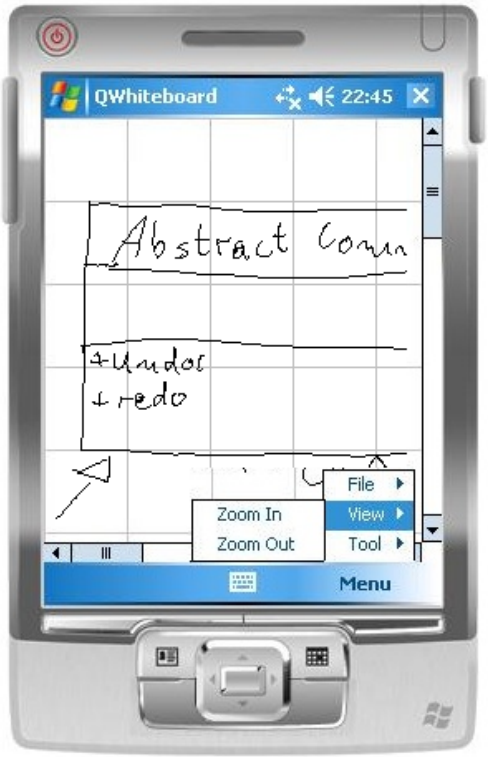
Application Scenario

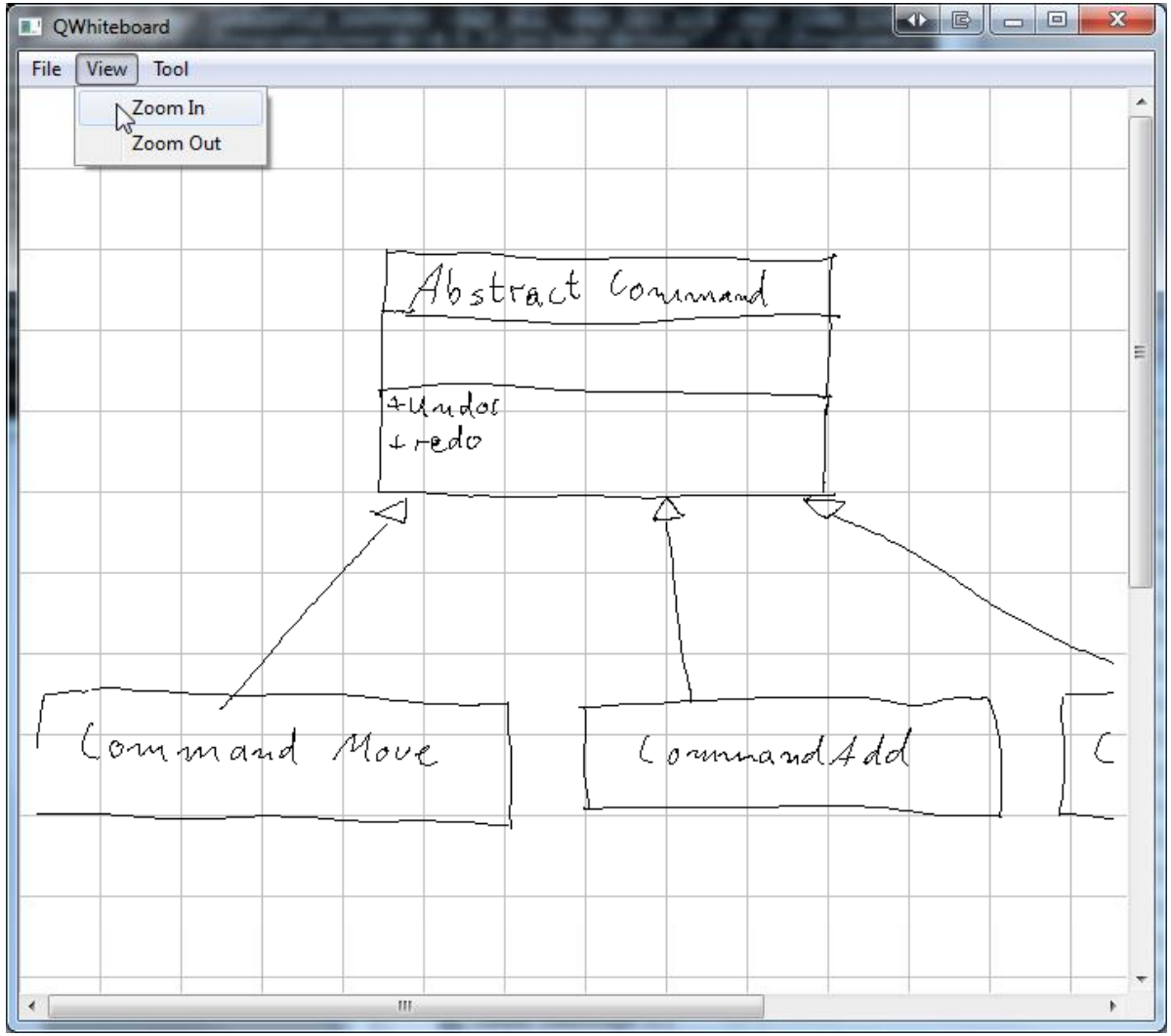
- Whiteboard with vector graphics support
  - share and/or save quick notes, sketches
  - distributed meetings
  - e-learning
- useable with wide range of devices
  - normal PC (Windows, Linux)
  - Tablet PC (Windows, Linux)
  - Laptop, Netbook
  - PDA (Windows Mobile)

Use-Cases


Whiteboard
Login
<<include>>
prompt nick, group and password
Logout
User
Change properties
<<extend>>
Draw
<<include>>
Communication
Save

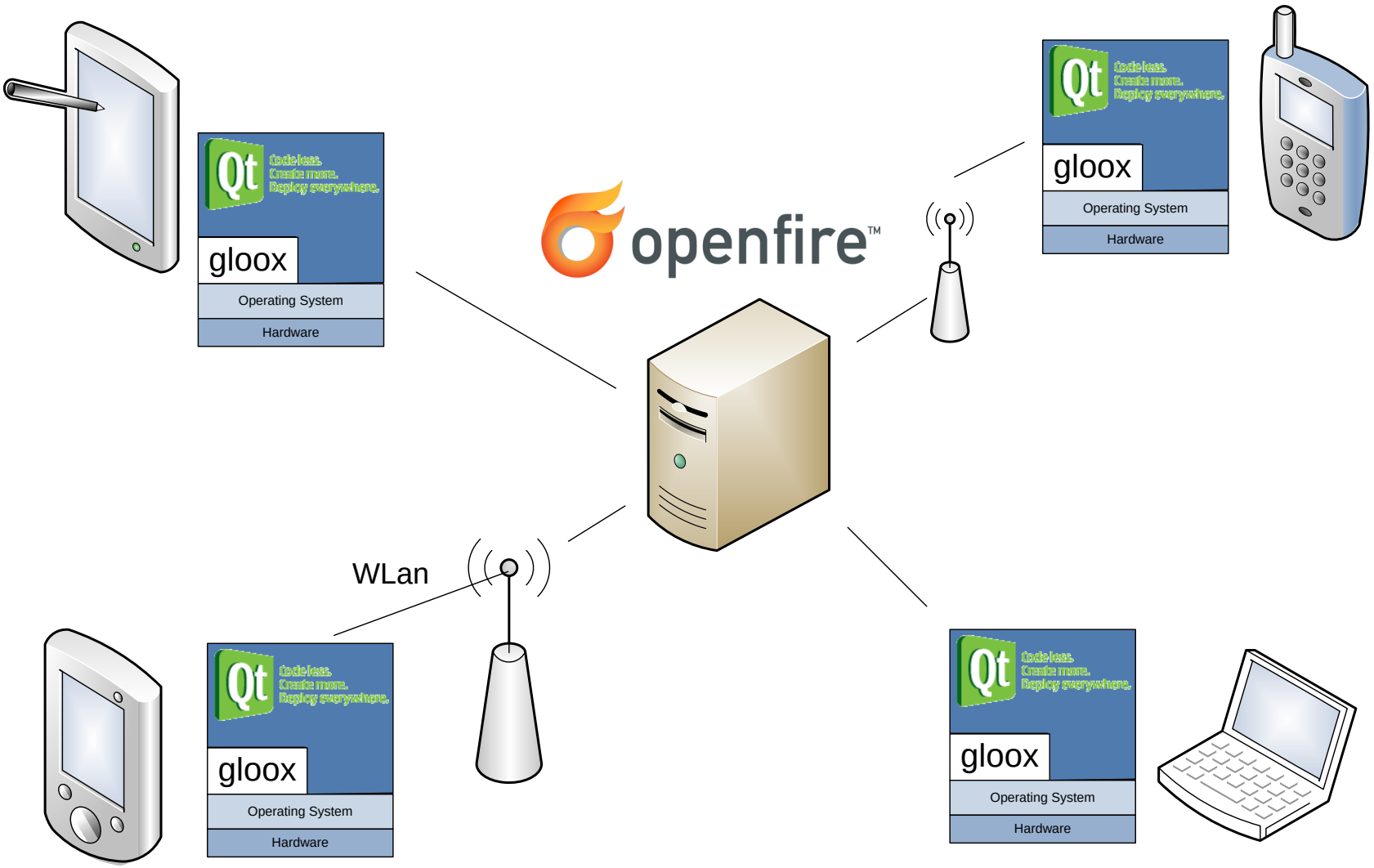
Mockup


QWhiteboard
22:45
Abstract Comm
+Undo
+redo
File
Zoom In
View
Zoom Out
Tool
Menu

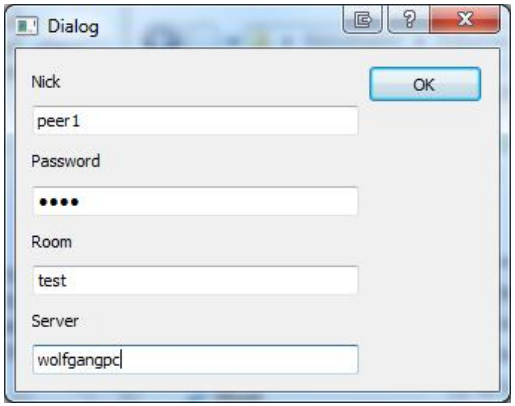

QWhiteboard
File
View
Tool
Zoom In
Zoom Out
Abstract Command
+Undo
+redo
Command Move
CommandAdd

Technologies

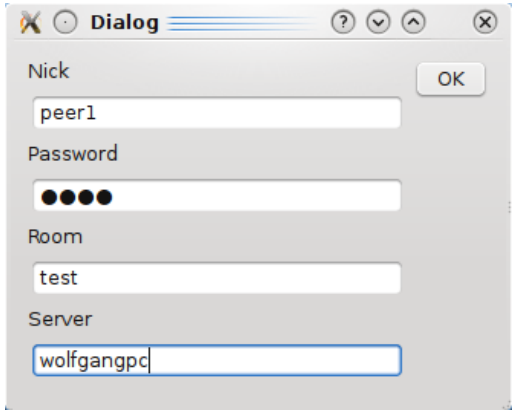
- Qt
  - cross platform C++ library
  - Used Frameworks: GraphicsView, Undo-Framework
- ~~JXTA-C~~
  - Problems connecting multiple peers with each other
  - small and mostly outdated documentation
  - currently not under active development
- XMPP/Jabber
  - Extensible Messaging and Presence Protocol
  - Client: gloox
    - ANSI C++
  - Server: OpenFire
    - real time collaboration (RTC) server
    - Java


Qt
Code less.
Create more.
Deploy everywhere.
gloox
Operating System
Hardware
openfire™
WLan

Simple Multiuser Chat



Windows



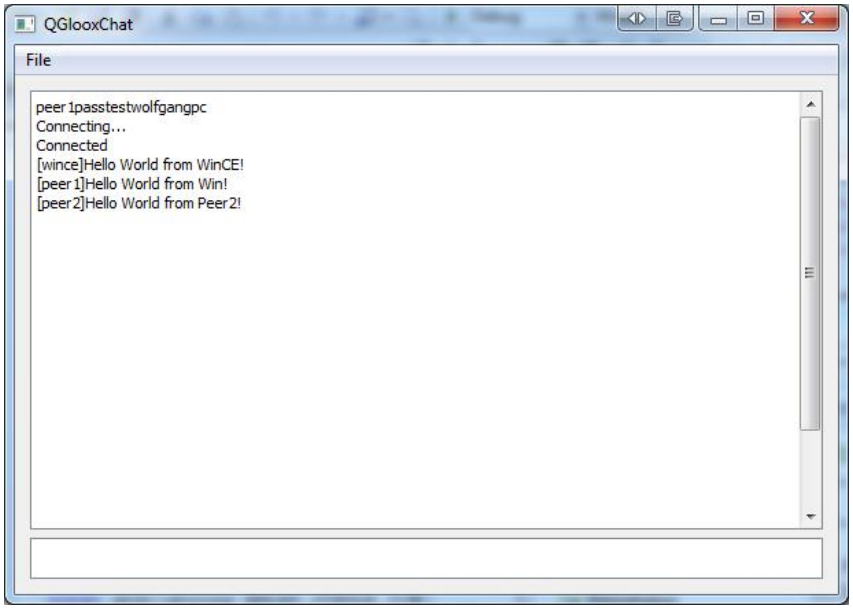
Linux

Windows Mobile

Due to Qt. . .

. . . all sharing the same source code!

Simple Multiuser Chat



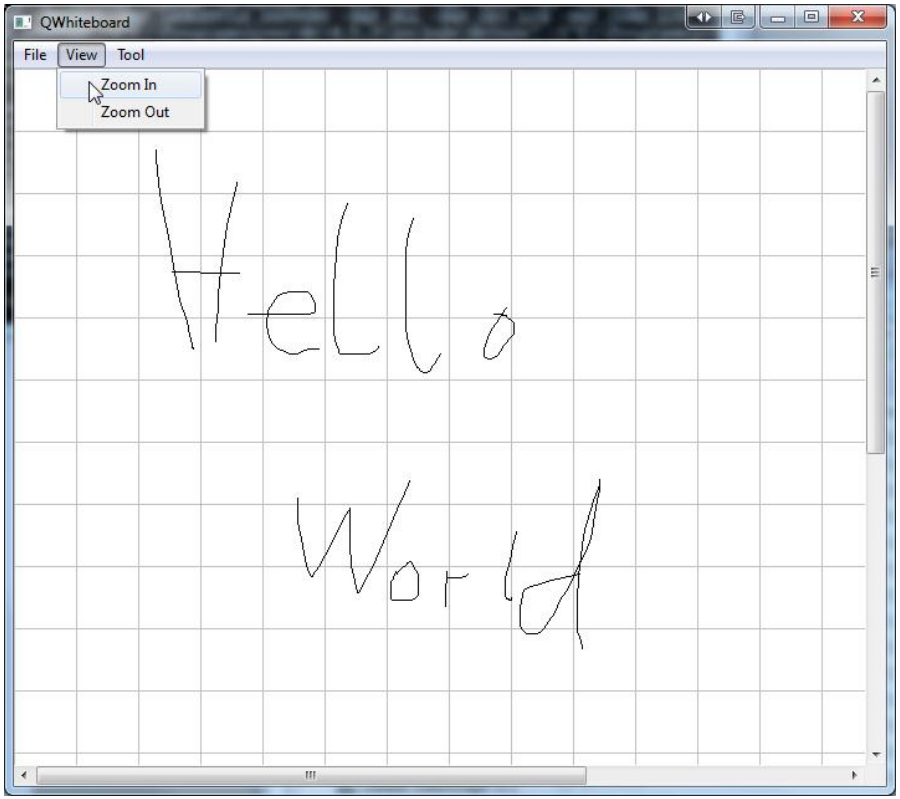
Windows

Windows Mobile

Due to Qt...

...all sharing the same source code!

Singleuser Whiteboard



Windows

Windows Mobile

Due to Qt. . .

. . . all sharing the same source code!

Challenges

- different screen sizes
  $\Rightarrow$ vector graphics in QGraphicsView
- Heterogeneity
  $\Rightarrow$ only crossplatform libraries, e.g. gloox, Qt
- Bandwidth, Latency
  $\Rightarrow$ compress messages with zlib or similar
- Disconnections, Consistency
  $\Rightarrow$ OpenFire saves history, reconnect gets current state

Work plan

Done

1. ~~port jxta-c to Windows Mobile~~
2. built a simple chat prototyp (multiuser chat application with gloox and Qt)
3. built a single-user whiteboard with Qt

To Do

extend whiteboard with collaboration capabilities