

TUPDA - real-time and mobile data acquisition for local project management

Matthias Lange, Hellmuth Kubin, Klaus Kabitzsch

Limerick, June 26, 2006

Outline

- Introduction
- Preliminary considerations
 - Production process
 - Business components
 - Information processing components
- TUPDA - mobile ERP/ME component
 - Protection concepts
 - Main function
 - Additional functions
 - Synchronization and Administration
- Conclusion

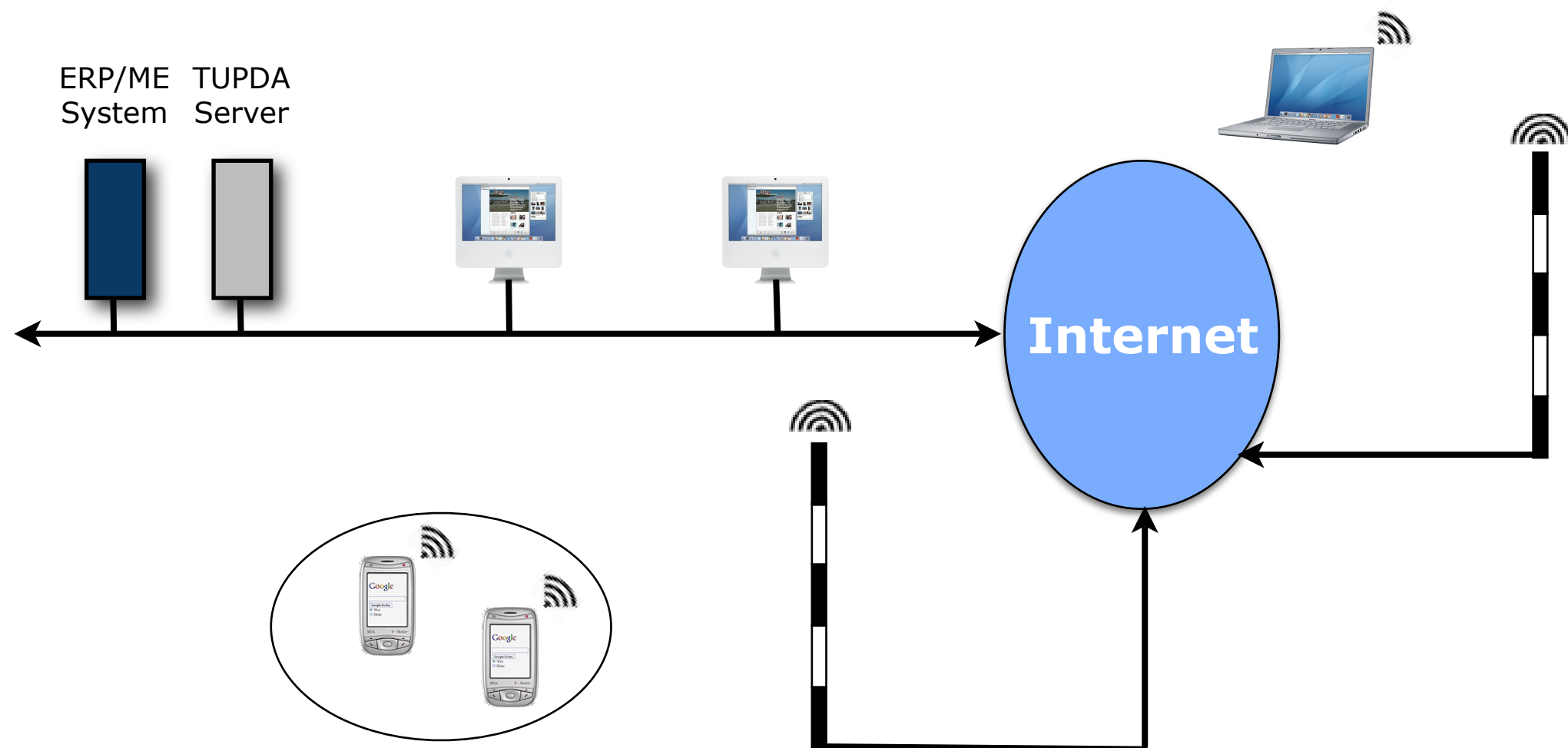
Introduction

- ERP/ME systems commonly used for project management
 - Tracking of project progress
 - Handle complexity of multiple related tasks
- Special problems on on-site work (e.g. final assembly)
 - No appropriate infrastructure to connect to ERP/ME system
 - Significant information delay or possibly loss

Introduction

- Mobile devices (mobile, PocketPC, Laptop) allow network connection from almost every place
- Java and XML technologies facilitate the design of powerful client-server solutions
- Extend the ERP/ME system with a mobile component:
 - Without altering the established ERP/ME system
 - Small mediator between both worlds needed

Network structure



Preliminary considerations

Production process

- Order to manufacture a product
 - Project with positions and sub-positions mapping to certain steps in the production process is launched (ordered by technologically required sequence)
- ERP/ME system is provided with project related data
 - Allows project manager to control the process as this data is updated during the production process
- Difficulties with local production steps (no connection to ERP/ME system)
 - Large time delays e.g. due to weekly provided reports
 - Unlimited increasing costs may result

Business components

- Manufacturing process structured into parts, divisions and groups
 - Directly mapped to production costs
- These units are assigned to cost-centres
 - Associate work done and costs individually to these units
- Keep track of planned costs and take measures if costs are diverging

Information processing components

- Usually no IT infrastructure at local construction place to access the company's ERP/ME system
- Bad conditions for PCs (dirt, heat)
- Size and weight of PCs are improper as mobile device
- Therefore we need a:
 - portable,
 - robust,
 - lightweight device with
 - mobile Internet access



TUPDA - mobile ERP/ME component

Protection concepts

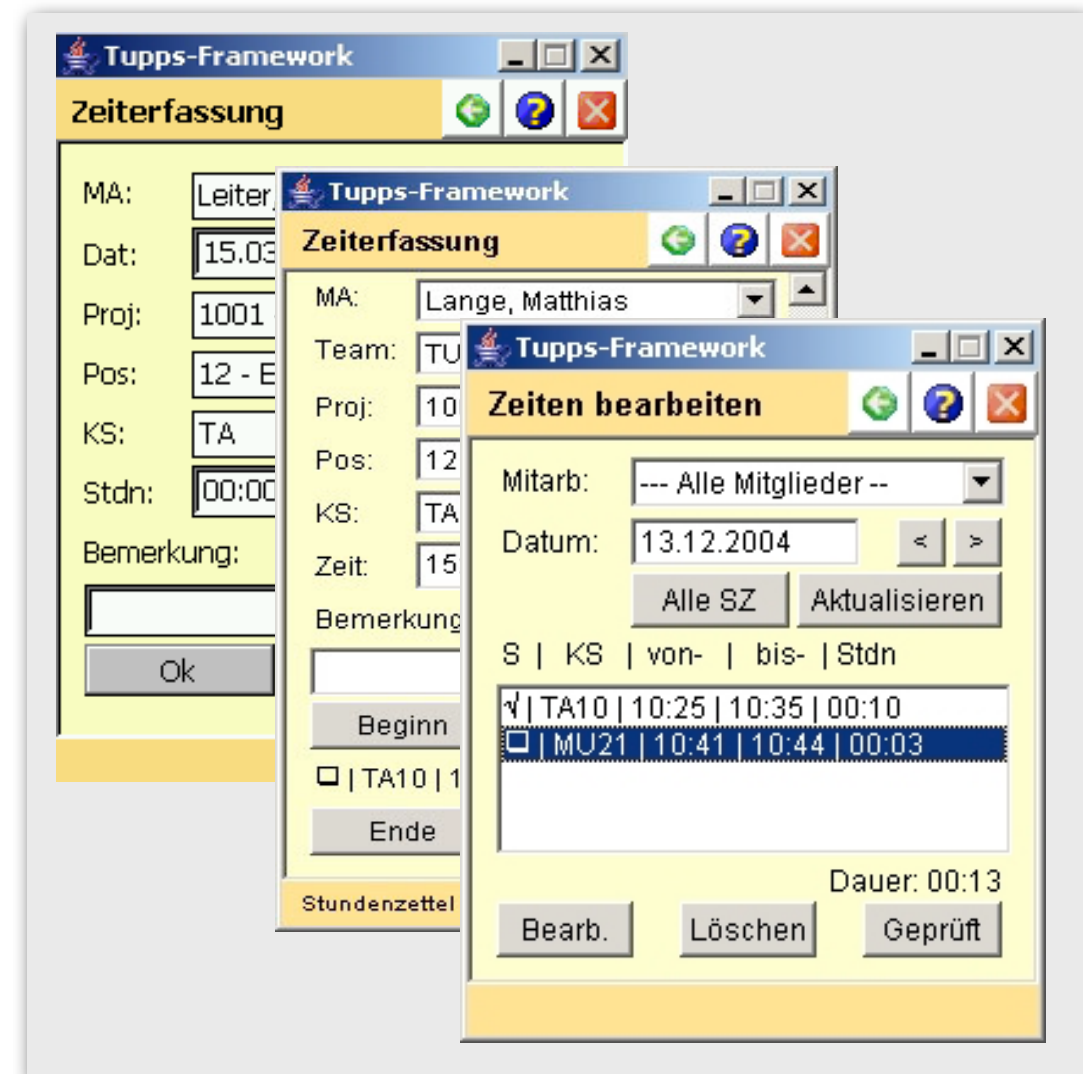
- Privacy is mandatory in cases where information is correlated with costs
- Licensing prevents unauthorized client-access to the server with a software key
- Managing is the assignment of clients to staff groups to control data distribution
- Each user has a login protected by password to secure individual data and is assigned to one of the following groups:
 - Worker: can display and edit only his/her data
 - Manager: can display and edit all users data
 - Boss: can display all but edit only his/her data

Main function

- Timekeeping
 - is cost relevant
 - carried out by
 - Worker: take care of his own working time
 - Manager: controls and manipulate records of staff members
- Execution state
 - important information for project management
 - keep track of percentual progress of the project and its positions
 - awareness of costs
 - opportunity to influence the projects course actively

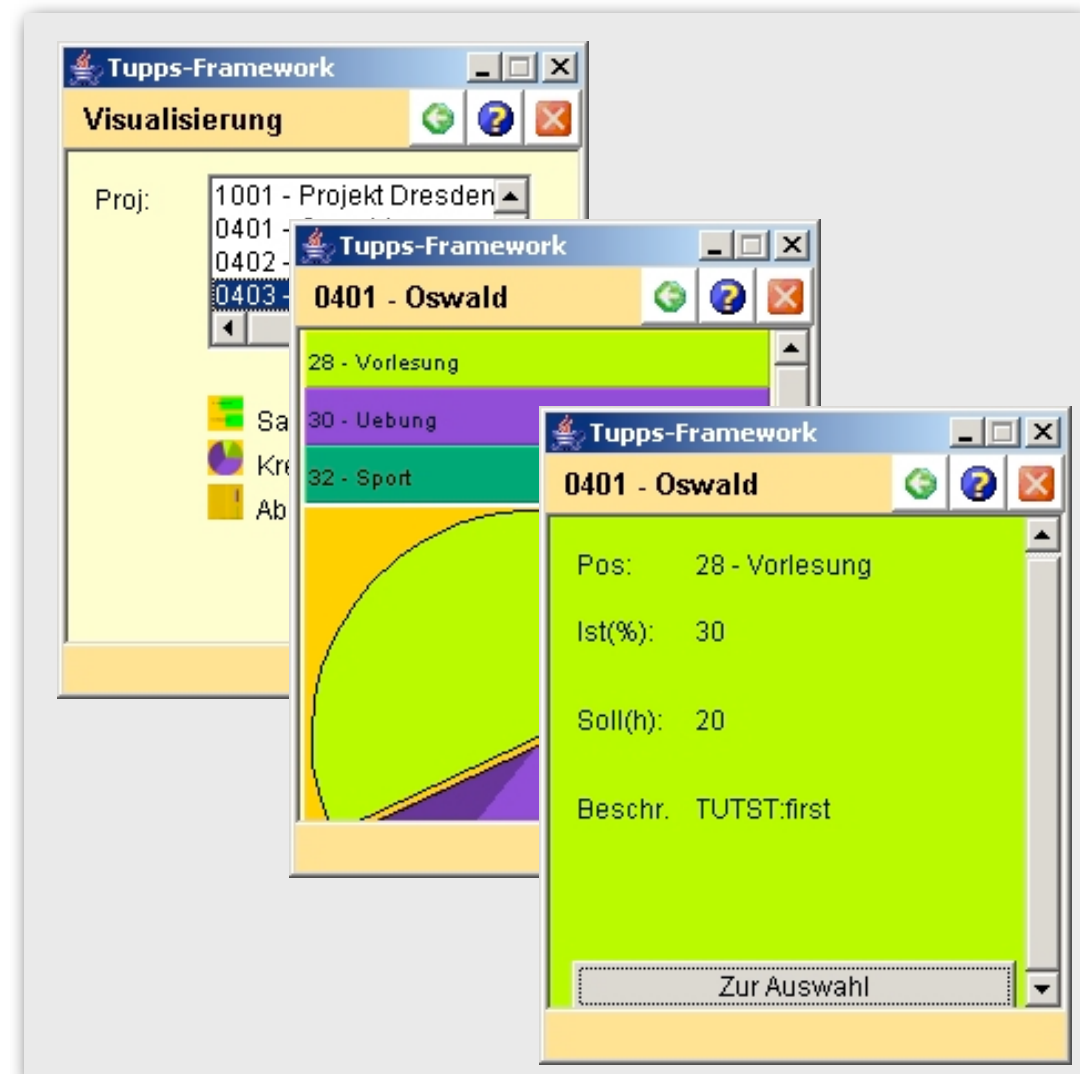
Timekeeping

- Two modes
 - absolut working time mode
 - start-start-...-end mode
- Popup menus allow selection of
 - project, project position,
 - cost centre and
 - additional cost centre
- Manipulation
 - manager can edit and verify all records



Execution state

- Manager evaluates project progress (in percent)
- Visualized with bar or pie charts
- Individual positions can be selected to display detailed information

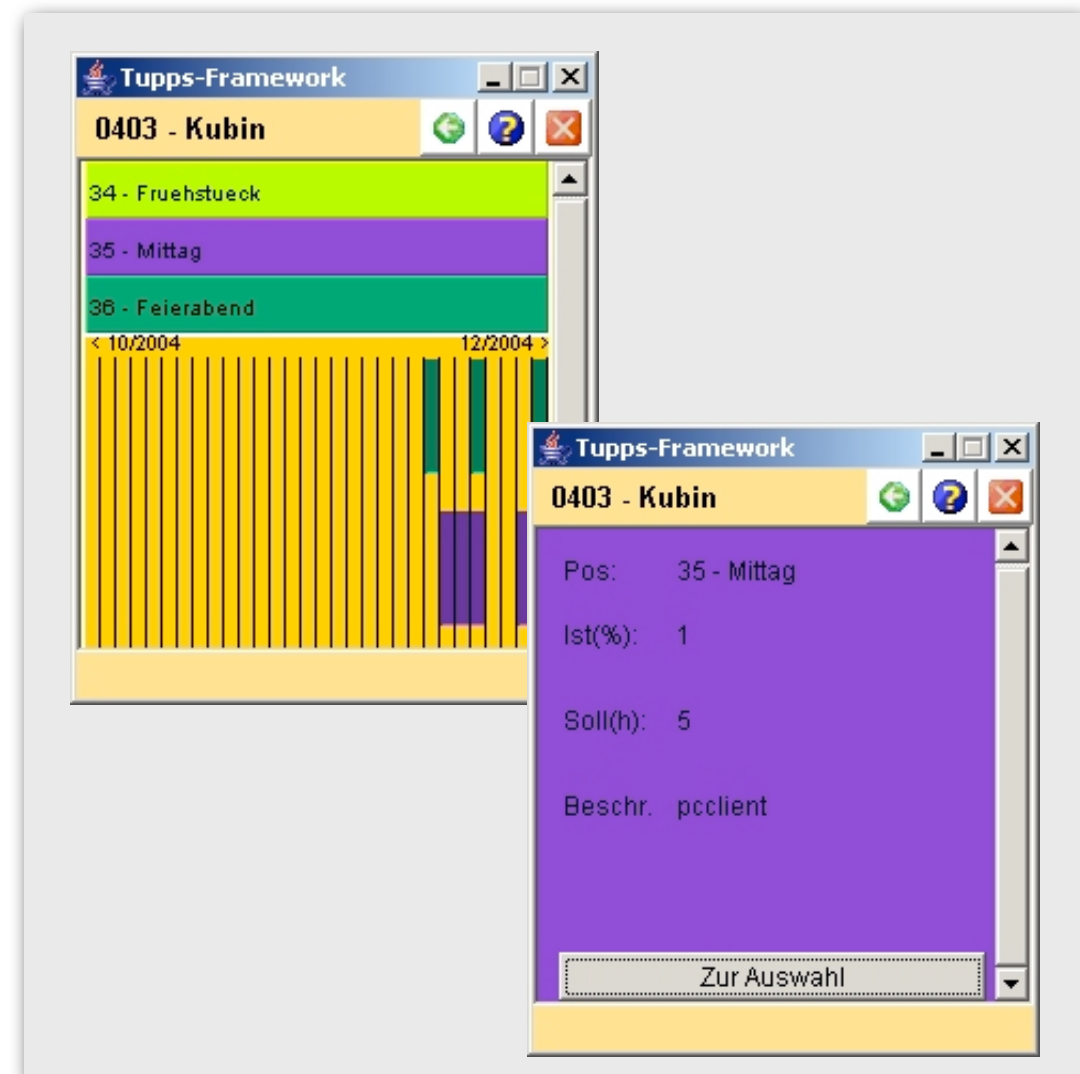


Additional functions

- Working time
 - displays time spent on different project positions
 - important managers control tool
- Communication
 - contact project manager or staff members
 - documentation of action
 - internal communication by using existing master data
 - easier to use than existing solutions

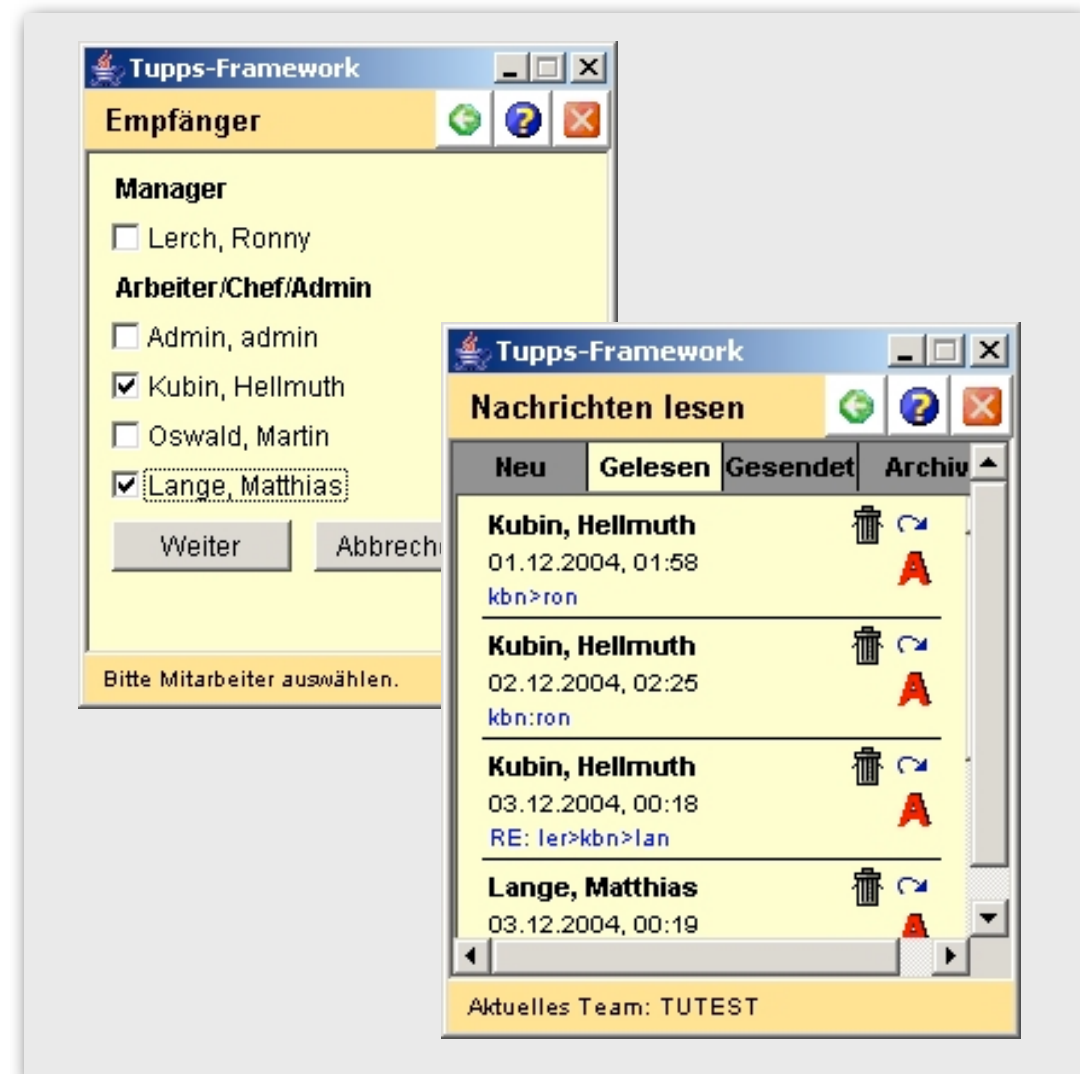
Working time

- Displays project activities as GANT chart
- Shifting of time period



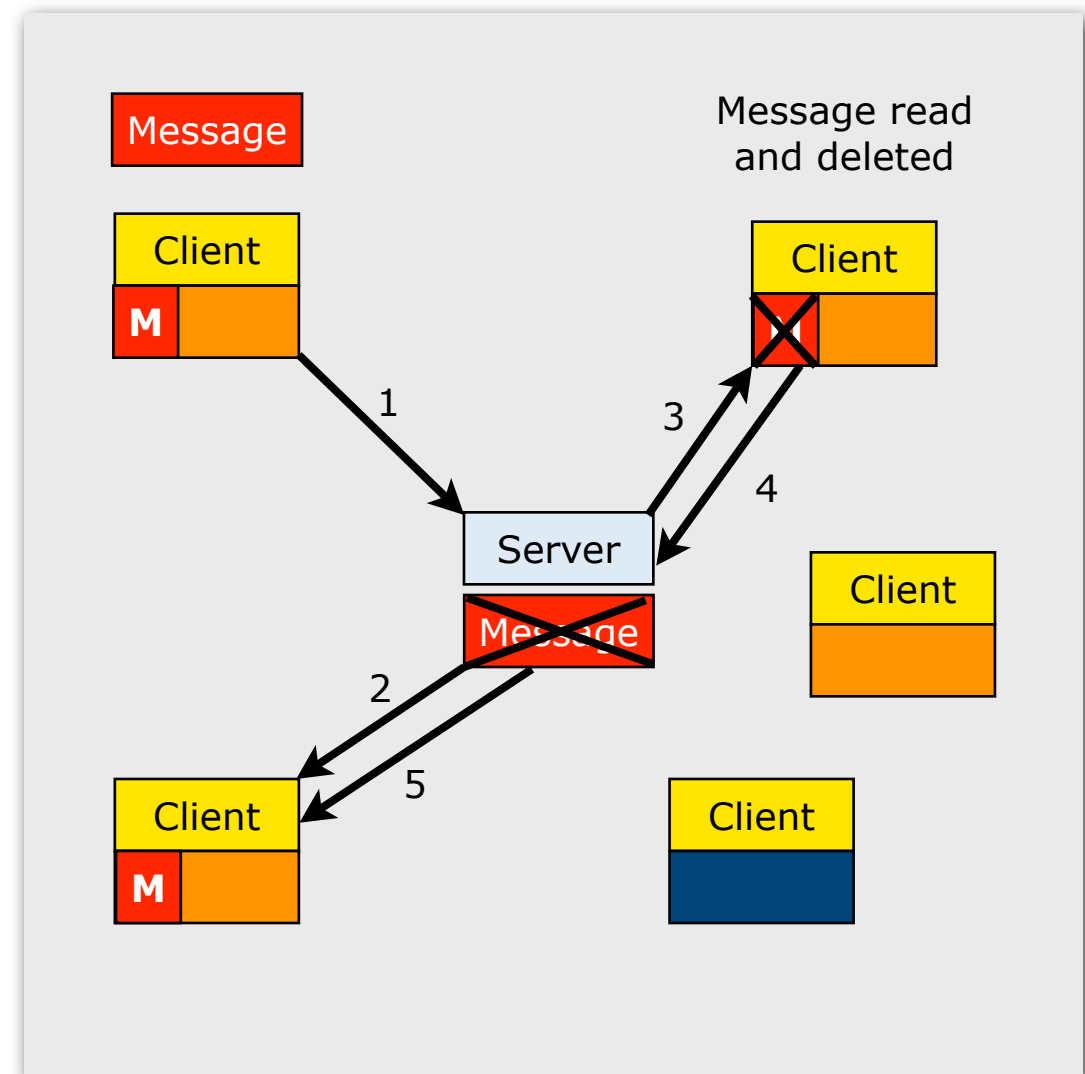
Communication

- Standard mode where you can send one message to one person
- Extended mode with possibilities to:
 - send one message to multiple persons at once
 - require read confirmation message
 - require answer
- Archive messages



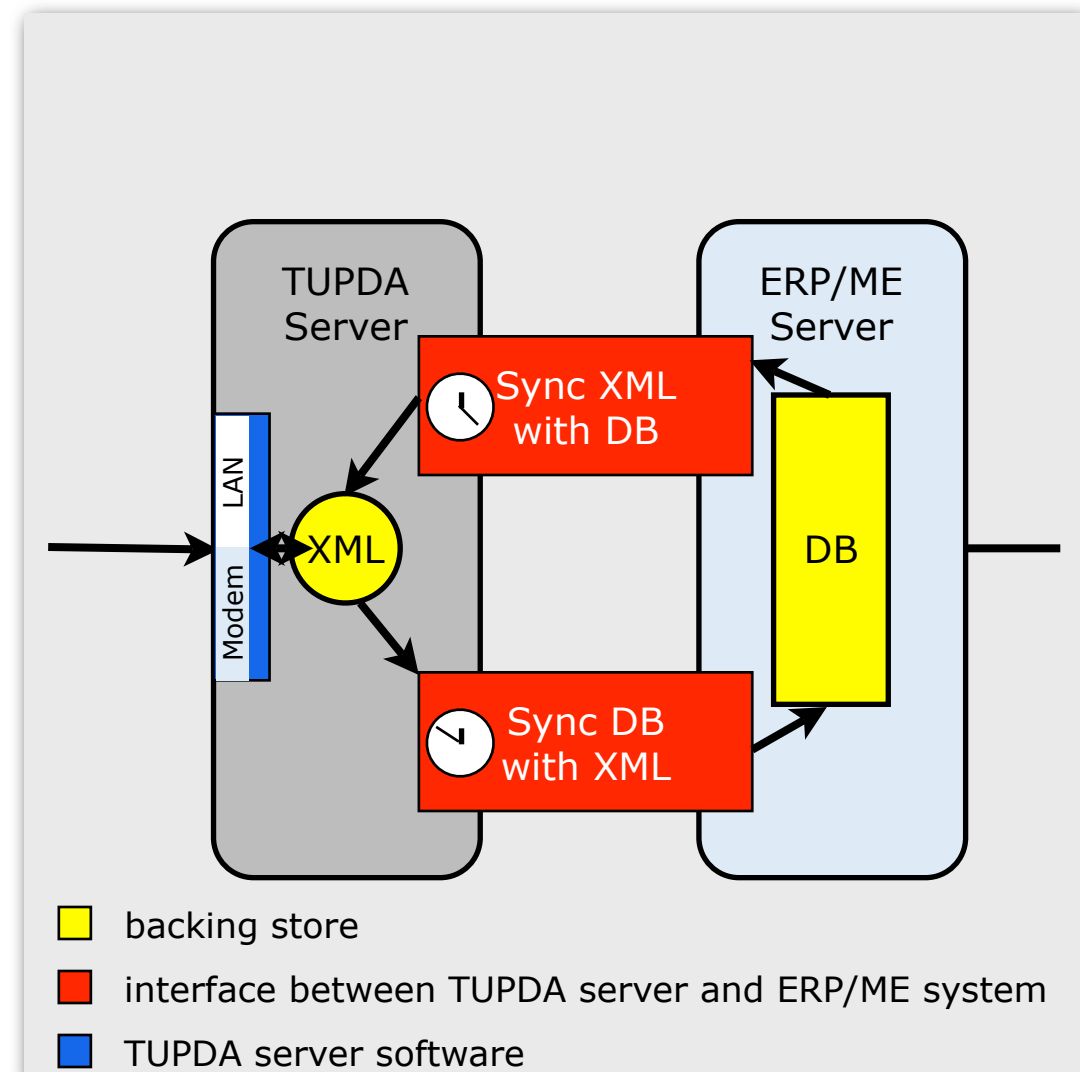
Com. problems

- Clients only temporally connected
- Clients are grouped and staff members can read their messages on every client of the group
 - State of message must be kept consistant on all clients holding that message



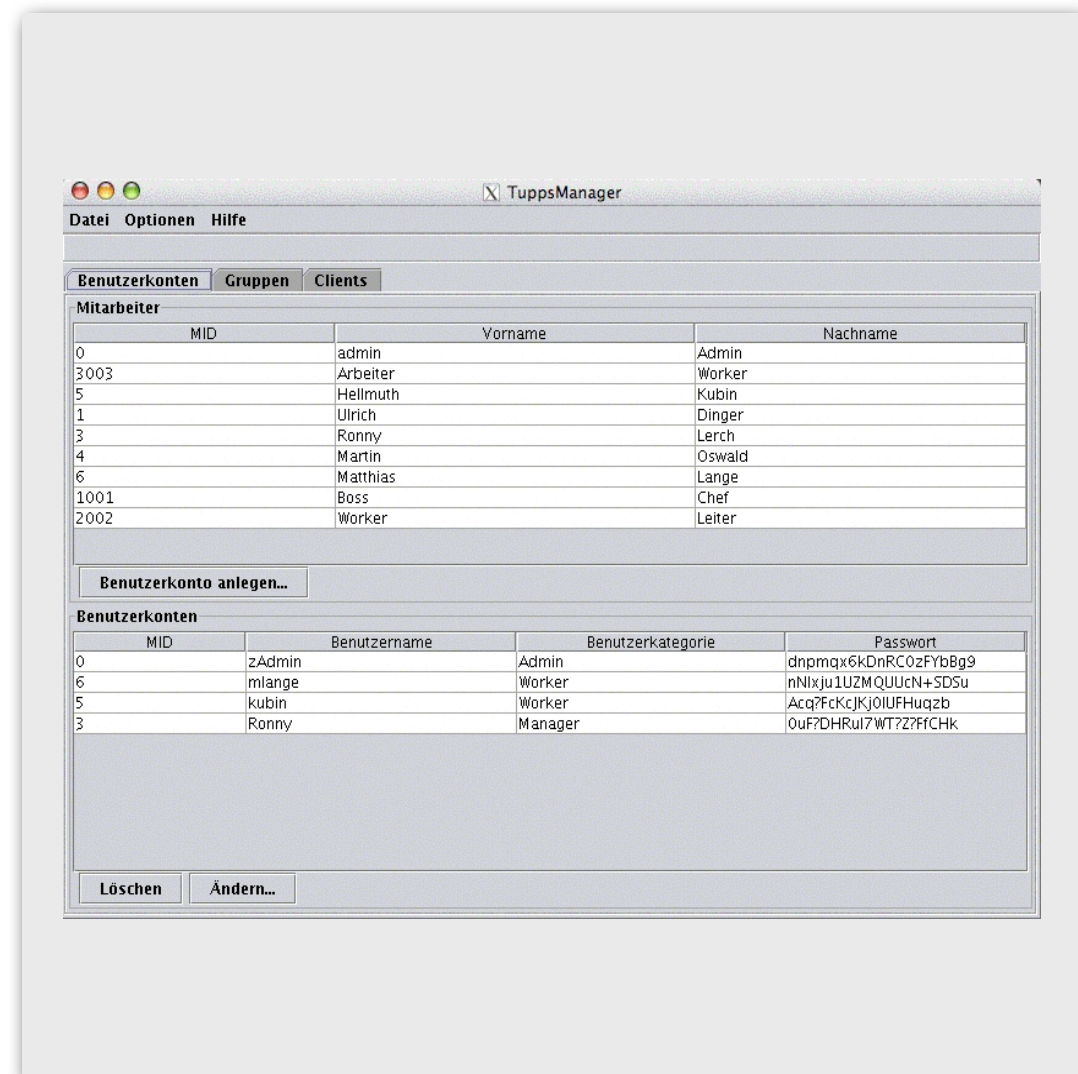
Synchronization

- Clients work offline most of the time with local data of the ERP/ME system
 - Minimize costs of mobile network access
- Synchronization is essential to the whole solution
 - Client data with TUPDA server data (on demand)
 - TUPDA server data with ERP/ME system data (periodically)



Administration

- Register clients at server at first startup
- Use separate management tool (TuppsManager) to
 - setup user accounts
 - assign clients to groups
 - assign members and projects to groups
- This information is deployed to the client at synchronization



Conclusion

- TUPDA is
 - the mobile extension and
 - compatible with any ERP/ME system
- Simple and easy to use user interface
 - Hides internal complexity
- Software is written in Java and uses the HTTP-protocol for communication
 - Runs on every computer with a JVM (Windows, Linux, Mac, ...)
 - TUPDA-Server runs on every LINUX/UNIX or Windows computer
- Designed for extensibility

The TUPDA system is the solution for better process management for on-site production stages.

Thank you!

Matthias Lange, Hellmuth Kubin, Klaus Kabitzsch
kubin@mail.inf.tu-dresden.de

Q&A