

TRAMP: Traveling Repair and Maintenance Platform

TRAMP

Traveling Repair and Maintenance Platform

Project Kickoff Meeting

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Outline

- Introduction
 - TRAMP vs. other Praktika
 - Techniques used
 - Team-work
- Preliminary Problem Statement
- Technical issues
- Administrative issues

Why TRAMP is not an average Praktikum

- Real software engineering project:
 - Real customer
 - Rapidly changing requirements
 - Lots of work (6-20h)
- Your rewards:
 - Learn brand-new technologies
 - Gain experiences relevant for your professional career
 - Improve your soft skills
 - Two best students will present the system at Pittsburgh
 - A fun project!

Techniques used in the Praktikum

- Object Oriented Analysis and Design
- Issue-based modelling
- Component-based Software Engineering
- Ideas from Extreme Programming
- Buzzwords: XML, XSLT, Java, Servlets, Wearable Computing, JUnit, ANT, C++, Flash, Lotus Notes, OOAD, TeX, Case Tools, CVS ...
(more to come up soon :-)

Emphasis on Team-Work

- Participate in collaborative design
- Work as a member of a project team, assuming various roles
- Create and follow a project and test plan
- Create the full range of documents associated with a software product
- Complete a project on time

Outline

- Introduction
- Preliminary Problem Statement
 - Problem domain
 - Scenario
 - Milestones
 - Organization
- Technical issues
- Administrative issues

The Problem Domain - Mobile Maintenance of complex systems

- Products become more and more complex
- Mass customization
- “Hostile” environment: noise, dirt ...
- Wearable Computers assist front-line workers
- Multi-modal user interaction
- [F-18 maintenance](#)

Inmedius - The Customer

- 1995: Spin-off from CMU
- Company's focus: Maintenance of complex systems
- Delivers software products for “front-line” mobile workers
- German GmbH founded 2 weeks ago
- Thursday, 25.10: Inmedius presents Problem Statement at lecture

A Mobile Maintenance Scenario

- A customer's car breaks down on the road.
- He (or his car) calls for help with his UMTS mobile phone and describes the car and location.
- A mechanic in a nearby garage makes a remote diagnosis and takes along necessary spare parts.
- A wearable computer guides the mechanic to the broken-down car.
- The wearable assists the mechanic with repair documents it that it has retrieved wirelessly.
- The maintenance information is accessed using classical and new kinds of user interfaces such as speech and augmented reality.

Milestones

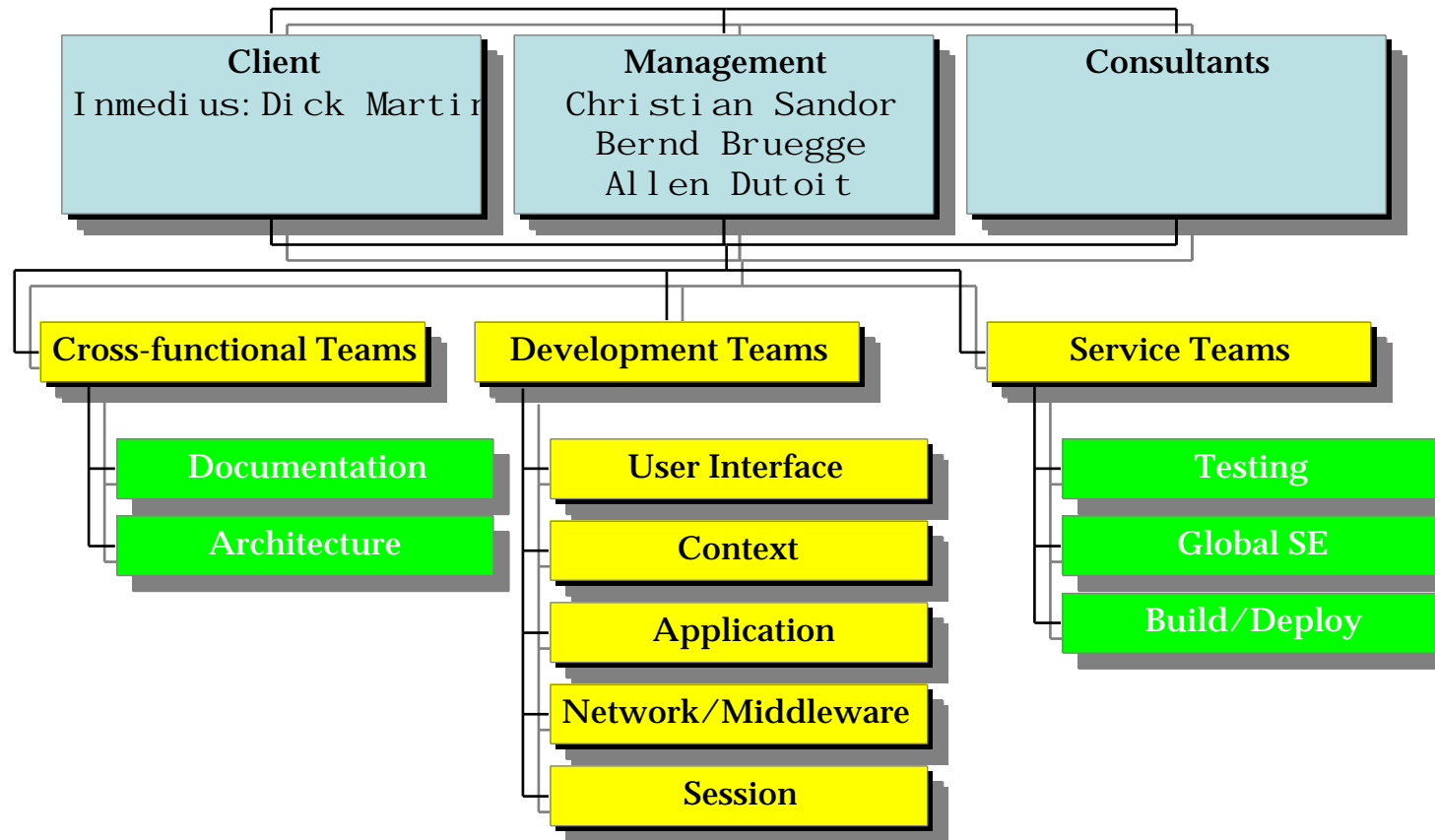
- Until end of Nov: Basic tutorials
- 23.11: Requirements Analysis
- 14.12: System Design
- 18.1: Object Design
- 7.12: Client Acceptance Test

Team Organization

- Every participant will be in at least one team
- Most teams have six members
- Each team will be advised by a coach
- Every team has its individual mission

TRAMP: Traveling Repair and Maintenance Platform

TRAMP Organization Chart



Outline

- Introduction
- Preliminary Problem Statement
- Technical issues
 - Hardware
 - Techniques used
 - Tasks for teams
- Administrative issues

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TRAMP Platforms

- Development platform:
 - Apple PowerMac G3s running Mac OS X
- Demonstration platform:
 - Linux-based Wearable with StrongARM CPU



Compaq's iPAQ



Inmedius' SPOT

Three Types of Teams

- Development teams (5)
 - Develop the core components that form the system
- Service teams (3)
 - Provide crucial services to other teams
- Cross-functional teams (2)
 - Members are liasons from development and service teams

Development Team (1): Application

- Coach: Joerg Traub
- Tasks:
 - Authoring of UIs for mobile maintenance applications
 - Screenplay for final demonstration scenario
 - Configuration with XML documents of all system components
- Skills:
 - Creativity
 - User Interface Design
 - XML

Development Team (2): User Interface

- Coach: Christian Sandor
- Tasks:
 - Develop new metaphors for multi-modal Human-Computer Interaction
 - Use Flash to develop GUIs
 - Use speech recognition and synthesis
 - Explore usability of head-mounted displays
- Skills:
 - Flash
 - XML

Development Team (3): Context

- Coach: Martin Wagner
- Tasks:
 - Determine the user's position using various methods
 - Integrate measurements from different sensors
 - Video tracking with optical markers
- Skills:
 - Linear Algebra
 - Filter Theory
 - C++
 - Computer Vision

Development Team (4): Session Management

- Coach: Vinko Novak
- Tasks:
 - Distribute application on mobile and stationary computers
 - Develop a session concept for wearable applications
 - Model applications containing several interacting users
- Skills:
 - XML
 - Distributed applications
 - Client/Server computing

Development Team (5): Network

- Coach: Asa MacWilliams
- Tasks:
 - Select middleware to connect all the other modules
 - Roaming between different mobile or stationary networks
 - Investigate service location mechanisms
- Skills:
 - CORBA
 - C++
 - Network Protocols (e.g. TCP/IP)

Service Team (1): Global Software Engineering

- Coach: Oliver Creighton
- Tasks:
 - Analyze, formalize and improve the development process
 - Develop a web-based infrastructure for distributed development
- Skills:
 - Lotus Notes
 - XML
 - OOAD

Service Team (2): Testing

- Coach: Joerg Dolak
- Tasks:
 - Build a testing framework useable by other teams
 - Help the other teams to develop their unit tests
 - Develop tools for integration testing
- Skills:
 - ANT
 - Servlets
 - JUnit

Service Team (3): Build/Deploy

- Coach: Bernhard Zaun
- Tasks:
 - Develop/configure build environment for multiple platforms
 - Consult other teams on software available for Linux on StrongARM
 - Deploy final system on demonstration hardware
- Skills:
 - Linux
 - Palmtop computers
 - ANT

Cross-Functional Team (1): Architecture

- Coach: Christian Sandor
- Tasks:
 - API Engineering
 - System Design
 - Promote information flow between teams
- Skills:
 - UML
 - OOAD
 - negotiating

Cross-Functional Team (2): Documentation

- Coach: Martin Wagner
- Tasks:
 - Define standards for documentation
 - Integrate the documents written by other teams
- Skills:
 - Good English
 - TeX
 - HTML

Outline

- Introduction
- Preliminary Problem Statement
- Technical issues
- Administrative issues
 - Weekly schedule
 - How to get a Schein
 - Timeline for the next two weeks
 - What to do next?

Weekly Schedule

- Project meeting (mandatory)
 - Mondays 14:00-16:00, 3175
- Team meetings (mandatory)
 - First Action Item for next week: find date
- Exercises and work for your team (mandatory)
- Tutorials (recommended)
 - Fridays 11:00-12:00 S1128
- Lecture (recommended)
 - Thursdays 14:00-16:30 S1128

How to Get a Schein

- Attend the project meetings (miss at most 2)
- Attend the team meetings (miss at most 2)
- Do the exercises (skip at most 1)
- Work for your team (checked by a final interview)

Schedule for the next two weeks

- 16.10-17.10 12am: Answer the questionnaire
- 16.10-18.10: Question and answer with coaches
- 19.10 11am: Lotus Notes tutorial
- 22.10 2pm: teams are announced and should meet for the first time during that week
- 22.10-26.10: meet Helma Schneider
 - Magnetic cards (20 DM deposit)
 - Photo for Lotus Notes Address book
 - Sign some administrative documents

What's next?

- Answer the online questionnaire here in the lab (<http://tramp.globalse.org/>)
- Make appointments to talk to coaches
- Check that your Lotus Notes accounts work
- Ask us any questions!