

Project Presentation

Saarland University
Software Engineering Chair
October, 2015

1: Inventory management for Formula Student Team

Organization: Evolution Racing Team Saar

Contact: Eric Scheid



Evolution Racing Team Saar

- Formula Student Electric team at Saarland University
- We construct an electrical racing car like this



Build a software solution for inventory management

- overview of materials
- where are our things?
- what's the inventory's value?
- cheap solution!
- smartphone app
- multiple users (synchronized with our LDAP system)



The "*Evolution Racing Team Saar*" (evo-racing) is the *Formula Student Electric* team at Saarland University.

We are building an electric race car for the international competition "Formula Student".

To construct and build a racing car, a lot of material and inventory is needed to be managed.

What can you do for us?

We require a software solution which helps us to get and held an overview of our inventory. We want to know what we own, where these things are and which amortization value they have.

It should be a cheap solution (maybe with smartphones, QR codes and a database in the background). The solution should support multiple users (managed in our LDAP system).

All aboard! The race starts!

2: Seminar Management System

Organization: Saarland University

Contact: Matthias Hein/Tanja Breinig

Seminar Management System

Goal: central web-based system for seminar assignment overcoming current greedy solution

Customers: lecturers and students

- Lecturers: provide seminar description, minimal/maximal number of participants, requirements
- Students: provide preferences (format to be decided), number of (passed) seminars, field of study and provide for each seminar in their preference list a short message how and if they fulfill the requirements of the seminar
- Lecturers: get the list of students and enter their preferences (format to be decided)
- Algorithm: solve assignment problem (objective to be decided, Kurt Mehlhorn has offered assistance) – potentially several rounds
- Results are sent to students and lecturers via email
- Remaining open seminar places are provided on webpage (which can be changed by the lecturers)

3: Automated Core Course Scheduling

Organization: CS Department

Contact: Tanja Breinig, Erich Reindel

Automated Core Course Scheduling

Computer Science offers in total about 6 up to 12 core courses each semester. To schedule these courses a huge number of constraints have to be considered, e.g. availability of rooms, number of estimated participants, no overlap with other core courses or courses belonging to the same field of study and many more. Last but not least some time slots are favored (e.g. Tue, Thu 10-12), others are hated (Mo 8-10, Fr 4-6).

You are asked to **develop in your SE project a system that is web based, browser independent and using a GUI to help scheduling the courses**. The system should be the link between the lecturers and the study coordination. It should provide suggestions which fulfil as many requirements as possible but should also make sure that strong inconveniences are avoided.

In a first step all constraints have to be found out, then you have to develop algorithms how the system “talks” with the lecturers and the study coordination, an algorithm to optimize the scheduling and after this you have to set up the data base and to code the front ends.

The system you develop will be used by us.

4: Web-based annotation system for temporal structures (TempAnnot)

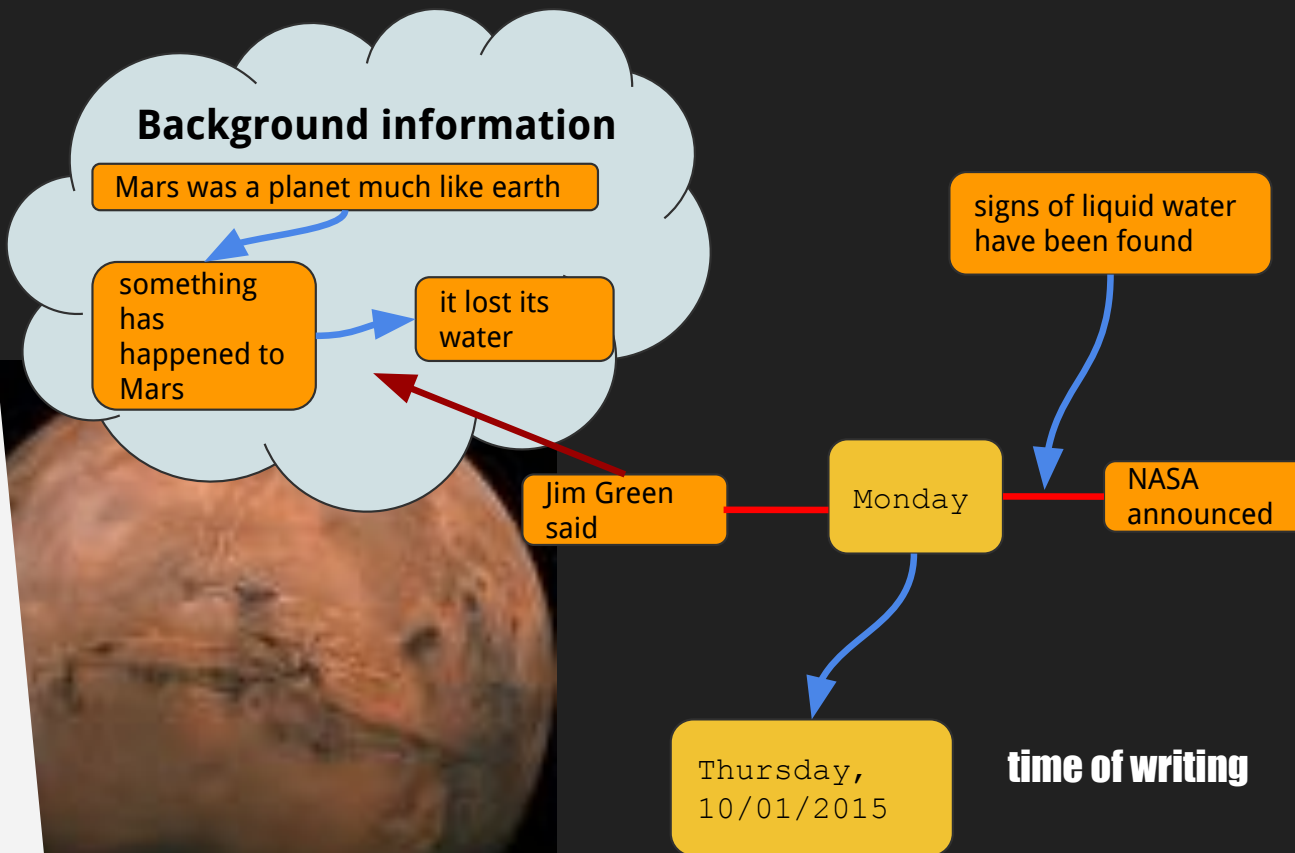
Organization: Computerlinguistik, UdS

Contact: Annemarie Friedrich

Web-based annotation system for temporal structures

NASA announces water on Mars Thursday, October 1, 2015

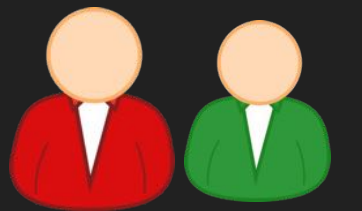
On Monday, NASA announced that signs of liquid water have been found on Mars. The Mars Reconnaissance Orbiter spacecraft found evidence of the liquid on the Martian surface, in long dark spots on the Red Planet thought to be formed because of water flow. In a news conference, NASA's planetary science director, Jim Green said, "We now know Mars was once a planet very much like Earth with warm salty seas and fresh water lakes [...] but something has happened to Mars, it lost its water."



Web-based annotation system for temporal structures



a **usable** and configurable web-based user interface, visualizing and linking graph structure and original text in a creative way

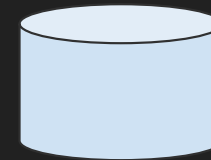


users with different roles, crowdsourcing

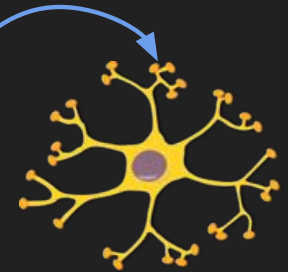


mobile app

representation of annotated data



web application / web server



we'll create models using machine learning from these data...

with the aim of creating temporal structures for new texts

5: Smart Factories Anomaly Detection

Organization: DFKI IUI

Contact: Dmitri Panfilenko

Industry 4.0 factories with its cyber-physical systems become more and more complex with increased maintenance costs. Reduced costs by cyber-physical (CP) controllers ensure the commercialisation of the results.

We implement multi-adaptive CP controllers in the steel industry domain. The main objective is to implement such controllers for the application domains and let the industry partners provide feedback about the cost reduction potential.

In our project CPS for Smart Factories in course of analysing the sensor network data flow through the implemented server architecture we need a software module providing the following functionalities:

- Modelling and detection of outliers ('anomalies')
- 2-stage sensor data flow analysis and classification
- Learning algorithms implementation
- User interface for sensor data monitoring



Digital

CPS4SF: Anomaly detection



There is a **flood of sensor data** coming in

- Application case in a steel hot rolling mill
- Some of the data point out the outliers (anomalies)

Your job in the project:

Ontology-based **anomaly detection**

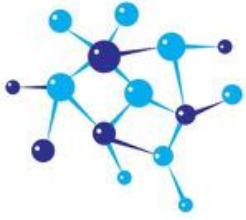
Provide a web-based user interface supplying a visualising the data flow and the “labelled” data

6: Clinical Data Intelligence

Recommending Treatment Steps

Organization: DFKI IUI

Contact: Dmitri Panfilenko



CDI: Description

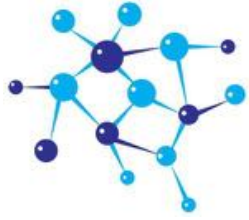


As a goal of the project the paradigm of “data intelligence” for clinical applications should be made available. Clinical processes across different clinics and comparative periods can be analysed, and that solutions can be developed and tested for decision support.

The comparative analysis makes it possible to develop clinical proposals for improving patient care. Those clinical paths can be modelled after intensive discussion with medical experts in order to detect deviations from the standard and to reason for the recognised trends early.

As a motion towards analysing patient data the clinical paths from the existing medical guidelines have to be extracted, processed and used for recommending the next steps of a treatment. A software module providing the following functionalities is needed for that:

- Clinical path process model extraction
- Patient positioning in the process depending on patient record entries
- Recommend the next step depending on the state
- Provide recovery forecast and further stats



CDI: Clinical Paths



There are **medical guidelines** in text form

- Application case in medical care
- Need for models of possible clinical paths

Your job in the project:

Model-based **clinical path recommendations**

Provide a web-based user interface supplying traceable process model extraction, patient assignment and next step treatments

7: Actors' Mailing Lists

Organization: Thunis acting group at Saarland University

Contact: Constantin Berhard



Thunis

Theatergruppe der Universität des Saarlandes

Rashomon

19.01., 26.01., 27.01.
Theatersaal in der
Königs-Str.

STONES

VON TOM LYCOS
UND STEFANO MARTSOU

PREMIERE
17.04.2015

WEITERE TERMINE:
18., 23., 24. & 25.04.2015
BEGINN: 19:30 Uhr
EINWITTE: 12,- / 7,-

Thunis - The
www.thunis.de
www.facebook

Komödie im D

20., 2

THUNIS
KOMÖDIE
KLARAS VERHÄLTNISSE
VON DEA LOYER

THEATERSAAL DER UNIVERSITÄT
1., 2. & 3. JULI 2015
EINLASS 19:00 UHR
BEGINN 19:30 UHR
VORVERKAUF IN DER AOKA

Thunis

Theatergruppe der Universität des Saarlandes

Spotify
Lade jetzt

theater
im Viertel
Königsplatz 1 66113 Saarbrücken www.theater.de
0361 3090000 info@theater.de

www.thunis-uni.de

Thunis
Theatergruppe der Universität des Saarlandes

Wir sind ThUniS, die deutschsprachige Theatergruppe der UniS. Bei uns beginnt jetzt eine neue Spielzeit. Dafür brauchen wir Leute, die Lust auf Schauspiel, Bühnenbildner:in, Maskenbildner:in, Regie, Musik etc. haben.

Lust auf Schauspiel?

Komm zum großen Theaterfest am 28. Oktober 2015 in der Theaterwerkstatt, in der gegenüber vom M...

Thu
www.thunis.de



owncloud

Seite [Diskussion](#) [Bearbeiten](#) [Suchen](#)

Hauptseite

Willkommen bei Thunis [Bearbeiten]

ThUniS ist die deutschsprachige Theatergruppe der Universität des Saarlandes. Dies ist unsere Website. Sieh dich doch bitte um!

- [Produktionen 2015](#)
- [Unsere Chronik](#)
- [Willst du Mitmachen?](#)
- [Grundwissen für Thunisianer](#)
- [komplettes Inhaltsverzeichnis](#)
- [Übungen](#)
- [Impressum](#)


MediaWiki

Permanenter Link
Seiten-Informationen

Diese Seite wurde zuletzt am 13. Juli 2015 um 12:10 Uhr geändert.

[Datenschutz](#) - [Über Thunis](#) - [Impressum](#)



8: Web-based semantic visualization tool

Organization: COLI/MMCI

Contact: Asad Sayeed

Web-based semantic visualization tool

- Can you cut a cake with a hammer?

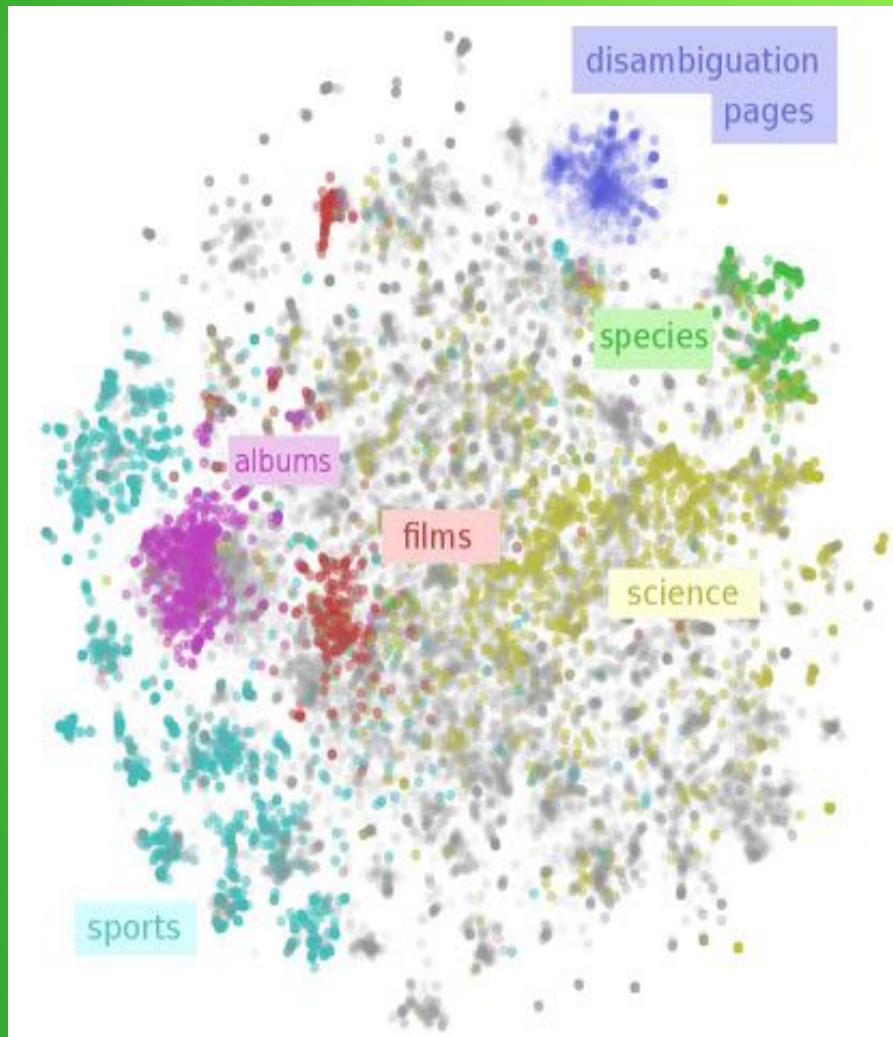


- Whatever YOUR answer is, we use BIG DATA from language to simulate it.

Web-based semantic visualization tool

- And we want YOU to help us query and visualize it on the web.
- Involves:
 - YOUR web skills.
 - YOUR user interface creativity.
 - OUR many large-scale semantic models for English.
 - DEEP LEARNING!
 - WORD EMBEDDINGS!

Web-based semantic visualization tool



=



9: MedicalExperimentDesigner

Organization: Clinical Bioinformatics, UdS, Medical Faculty &
Computer Science Department

Contact: Andreas Keller

MedicalExperimentDesigner

Prof. Eckart Meese,
Prof. Dominique Schröder,
Prof. Andreas Keller

In modern medicine, experiments are getting more and more complex. Understanding pathogenic mechanisms e.g. in cancer requires heterogeneous expertise. Starting from getting access to the right patient cohorts, molecular profiling approaches such as next-generation genome sequencing and ending in bioinformatics, statistics and computer sciences.

Many small laboratories have very sophisticated experience in single parts of the pipeline but can't cover the full spectrum. While such laboratories often don't have the possibility to contribute in larger studies their skills could support many research projects tremendously.

We want to implement a simple to use workflow system, similar to an interactive version of the computer game "the incredible machine". Researches should be able to set-up a complex experiment as a graph. Each node in the graph represents a step in the experimental workflow. Other researches can offer to handle the respective task – either for money, co-authorships or a combination of both. A respective program that should run on standard internet browsers may enable single researches to design and carry out interesting projects.

MedicalExperimentDesigner

Prof. Eckart Meese,
Prof. Dominique Schröder,
Prof. Andreas Keller

We want you to implement an interactive web-based software for defining workflows of highly complex medical experiments.

In difference to computer games the final workflow should however be implemented in reality.



This will support to utilize resources in different molecular medicine laboratories, hospitals and computer science / bioinformatics groups. Small laboratories with specialize expertise can then search for large projects where their skills may be urgently required.

A respective workflow design software can be much more than fun, you would have with a computer game. It may contribute to improve our healthcare.

10: Fair ForEx

Organization: Saarland University

Contact: Dominique Schröder

FAIR FORFEX

Dominique Schröder
Saarland University

Jonathan Katz
University of Maryland, USA

PROBLEM



The United Nations counts over 206 states

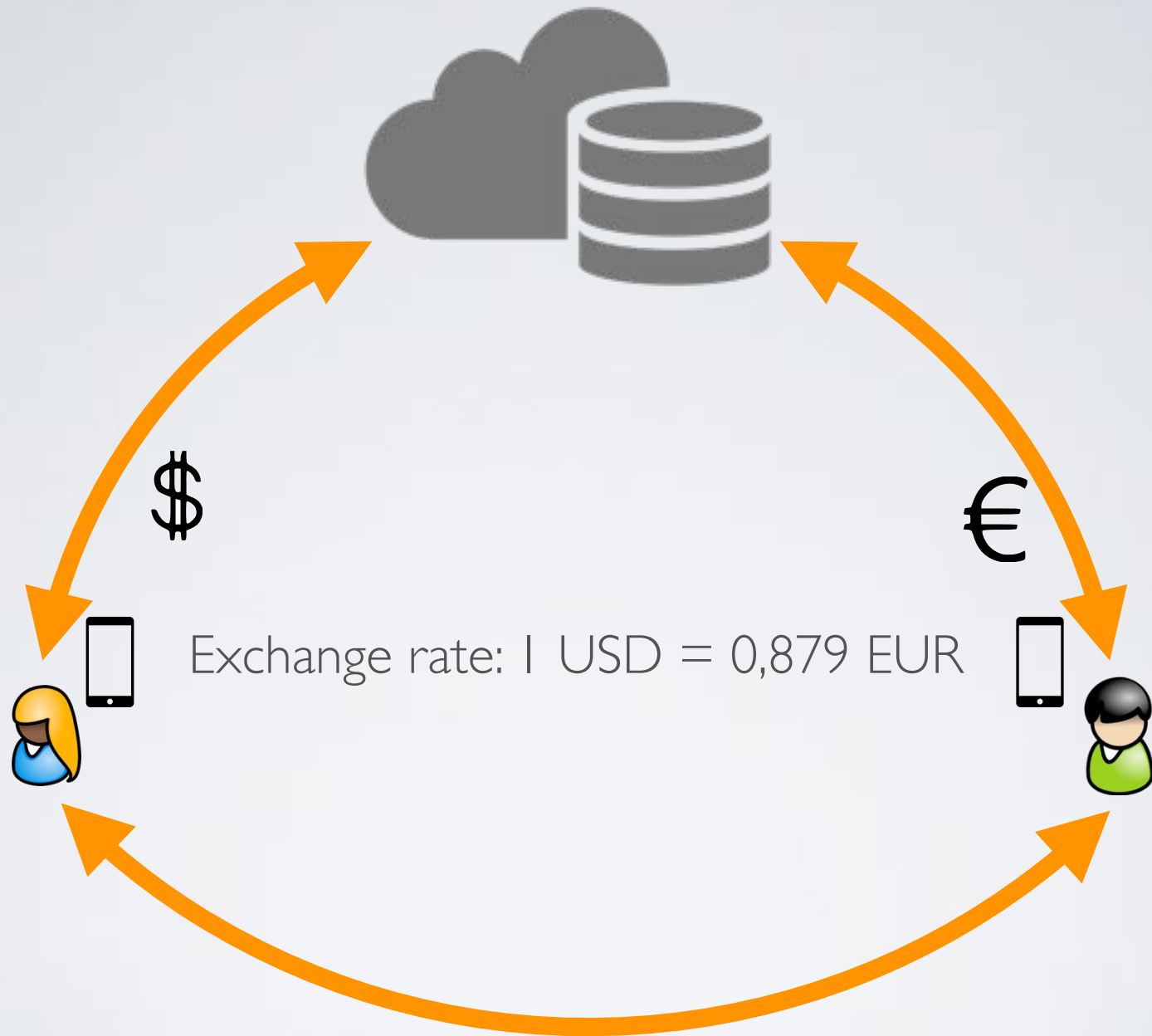
180 currencies recognized as legal tender in United Nations

PROBLEM



SOLUTION





Let's meet at Starbucks!

REQUIREMENTS

- Cloud Server
 - Managing users
 - Retreat current exchange rates
- Mobile app
 - Apple iPhone & Android

Basic knowledge in IT Security!



QUESTIONS?

FAIRFORFEX@CA.CS.UNI-SAARLAND.DE



11: RPGSoundMixer++

Organization: DFKI GmbH

Contact: Pascal Lessel

RPGSoundMixer++

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
People loving to
develop front- and backends



RPGSoundMixer++

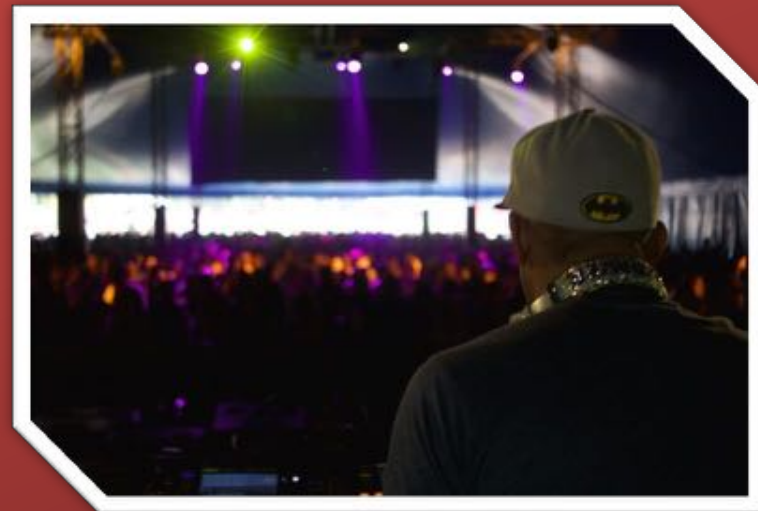
Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
People loving to
develop front- and backends

You create a software
that allows music and
sound effects to be
dynamically selected

...



RPGSoundMixer++

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
People loving to
develop front- and backends

... in a convenient way
suitable for a „Pen &
Paper RPG“ – Session
(you can also participate if you don't
have a clue what this means ;-))



RPGSoundMixer++

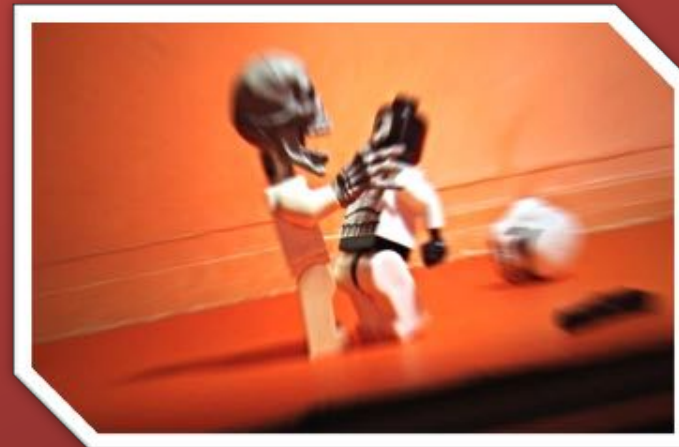
Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
People loving to
develop front- and backends

An example:

- The players suddenly get attacked
- The game master presses two keys on his laptop and a menacing music fades in and a heartbeat sound-effect plays every 5 seconds
- The required interaction was short and effortless



RPGSoundMixer++

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
People loving to
develop front- and backends

What we want to achieve (at least in the beginning ;-))

Usability?	We want a tool that is easy to use: Before a roleplaying session and during the session!
Related Systems?	Check for ARES RPG or RPG Soundmixer to get an impression what basic features seem reasonable
Technology?	Java/Python/HTML/JS/CSS should be used as you see fit for this project
Licensing?	We love open source , thus, we want all the geeks to work on this topic without restrictions after the course

12: DiceViewer

Organization: DFKI GmbH

Contact: Pascal Lessel

DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people



DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people

You throw a couple
of dice ...



Jan Kraus, <https://www.flickr.com/photos/johny/416479682/>, CC BY-NC-SA 2.0

DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people

... and your
software recognizes
the results ...

*11, 6, 5, 5, 80,
9, 6, 11, 3, 8*

DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people

e. g. visualizing it in other software

... and broadcasts
this information for
further use



11

DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people

What we want to achieve (at least in the beginning ;-))

Recognition?	Every object, independent of color, shape, and writing, should be recognized
Setup?	It is okay to have a setup phase, i.e., every dice that is used can be introduced to the system before use
Hardware?	We want to work with a single low-cost camera (e. g., Kinect or a webcam)
Performance?	Recognition should be possible within a few seconds (the faster, the better)
Licensing?	We love open source , thus, we want all the geeks to work on this topic without restrictions after the course

DiceViewer

Pascal Lessel, DFKI Saarbrücken
Michael Mauderer, University of St Andrews

A project for

Pen&Paper-roleplayers,
Boardgame-geeks,
Image-processing people

- Restrictions/Assumptions you want to make will be discussed during the requirements elicitation sessions
- You should have a good understanding of image processing tools

13: Voting plugin for Redmine

Organization: Software Engineering Chair, UoS

Contact: Vitalii Avdiienko

Voting plugin for Redmine

During each Software Engineering Course students are broken into groups and each group votes for projects they would like / would not like to have. Each team grades each proposed project with the mark from -2 to +2 and then Software Engineering Course Managers try to assign teams to their favourite project.

Problems:





REDMINE **PLUGIN**

Basic requirements:

- manage voting polls
- create student accounts
- create and join groups
- add projects
- vote for projects
- launch a solver from admin side
- resolve collisions
- show teams and assigned projects as well as statistical information about the results of voting (e.g. the most popular project, etc.)

14: Web front-end for Android GUI test generator

Organization: Software Engineering Chair, UoS

Contact: Konrad Jamrozik

Web front-end for Android GUI test generator

Konrad Jamrozik, UdS Soft. Eng. Chair

Implement a web front-end for an Android GUI test generator, “DroidMate”. The front-end will allow input app uploading and will have live display of statistics like GUI coverage, method coverage, etc. You can choose the front-end technology. DroidMate API will be provided as a jvm .jar. Very maintainable, well documented and well tested code **is a must** for this project. If you wish, your work can be open-sourced (nice for GitHub portfolio and CV).

Interested? Read full project description, read boxmate.org and don't hesitate to ask: jamrozik@st.cs.uni-saarland.de

15: Analysis Bots Platform for GitHub

Organization: University of British Columbia

Contact: Ivan Beschastnikh

Analysis Bots Platform for GitHub

Platforms like **GitHub** offer a suite of tools for developers around the world to collaborate on software projects. As they grow in popularity these platforms are also becoming increasingly programmable. Standard interfaces exist for retrieving the listing of project issues, commenting on commits, and other features of these platforms. It is therefore natural that this programmability can be used to develop useful automated agents, or bots, that operate on the software project artifacts.

Such "**analysis bots**" can automate many of today's manual software engineering processes and tasks. For example, a bot can check and alert project members about relevant new library versions, or perform spell-checking of code comments, recommend refactoring opportunities, etc. In this project you will **build a platform to support a variety of analysis bots** — automated software agents that execute with GitHub project information as input and **potentially alert the project of technical issues with the project.**

The platform will require:

- a careful balance of utility (want useful bots)
- intrusiveness (do not want to alert projects that do not care about these alerts)
- programmability (want to support a variety of bot types).

Some **key questions** to think through/answer as part of the project:

- How do GitHub projects sign up to have a bot operate on their project?
For example, a project could have a robots.txt file at top level of repository that the analysis bots platform finds/parses/interprets.
- What are the policies that the platform exposes to GitHub projects to control the execution of analysis bots over their project's content?
- What is the API/tool support for developing new analysis bot?
For example, there are multiple ways in which a bot can communicate with the project — create issues/comment on commits/issue pull requests, etc.
- Should the platform support both stateful and stateless bots?
How would information be stored and managed between multiple executions of the same bot, or between executions of different bots (e.g., the AST computation of one bot could be re-used by another bot)?

16: A Web-Editor for STORYWALKER

Organization: xm:lab @HBKsaar, Academy of Fine Arts Saar

Contact: Michael Schmitz

Scenario-Editor for **Storywalker**



Organization: Academy of Fine Arts Saar (HBKsaar)
Contact: Michael Schmitz (m.schmitz@xmlab.org)
Technologies: web-based(any framework)

Storywalker is a system to create and play location based, interactive audio-stories for smartphones. Players interact by their movements with the story and make decisions by choosing their walking directions. The story unfolds through voices, sounds and music, adapting to the players choice. The story is strongly interrelated to the actual location of the player, for an intensive, narrative experience.

Storywalker extends GPS-based audioguides with techniques of interactive fiction, such as branching stories and world state tracking.

Storywalker is an interactive fiction project:
A mix of GPS audio guides and
chose-your-own-adventure books.



We need a **web-/map-based scenario editor** allowing writers & game designers to create new stories.

Spot „Underground River“
GPS coord: 43.444 / 57.99

```
If (visited_church)
  sound x;
  a = true;
else
  sound y;
  a = false;
```

World state:

```
a (boolean)
visited_church (boolean)
passed_bridge (int)
...
```

- Attach story snippets / sounds to places
- Manage rules and states (if **a** then sound **x** else...)
- Export the game as XML + soundfiles for the App

17: MetaTrack: A database management system for documenting scientific datasets

Organization: Center for Bioinformatics Saar

Contact: Tim Kehl, Daniel Stöckel

MetaTrack: A database management system for documenting scientific datasets

A common task in bioinformatics is processing and analysing biological and medical datasets. As for a single dataset multiple analyses with a large amount of parameters are possible and, in fact, conducted, documentation is crucial for ensuring scientific integrity. A few structured approaches for solving this problem exist, however these tools often bind the user to specific platforms such as workflows systems. A generic approach, that allows to track arbitrary data flows and associated metadata would be highly desirable.

To this end we propose the **creation of a database system modelling datasets, their properties, as well as transformations**. Examples for transformations are analysis or processing steps such as normalisation or file type conversions. This database system should be **accessible via a RESTful API**.

Back-end:

- Language options: NodeJS, Rust, C++
- DBMS: PostgreSQL

Front-end:

- Web-App:
 - ✓ Single page app
 - ✓ Framework options: Ember, AngularJS, React, (Elm)
- Bindings:
 - ✓ Must-have: R
 - ✓ Nice-to-have: C++
 - ✓ Optional: Python (3), Julia

18: Usable and customizable LaTeX reference management for law and social sciences

Organization: Software Engineering Chair, UdS

Contact: Christoph Sorge

Usable and customizable LaTeX reference management for law and social sciences

Writing scientific texts with LaTeX has numerous advantages over common word processors: Using appropriate templates, a professional page layout is generated, while users can focus on the contents. Moreover, while there can be cryptic error messages, LaTeX usually behaves consistently, while some word processors are notorious for inexplicable changes to layout, numbering of references etc. shortly before the deadline for submission of the respective document. The main advantage of LaTeX, however, is the availability of BibTeX (and, alternatively, BibLaTeX) to manage literature references in a consistent manner, according to pre-defined styles.

Despite these advantages, lawyers, social scientists and humanists, at least in Germany, rarely use LaTeX. One reason is a prejudice is that **LaTeX and BibTeX are difficult to use**. Unfortunately, this prejudice is justified: The citation styles in these disciplines differ from the ones commonly used in computer science and natural sciences; to make matters worse, some details of the citation styles even differ between different journals within the same field. Existing solutions suffer from various problems, such as a lack of customization options. Your task will be to solve that problem, i.e. to **provide a solution for customizable reference management (for LaTeX)** suitable for literature in law and social sciences.

You will have to talk to actual lawyers to find out their requirements; at least **one person in the group should speak German**, as we only have German lawyers available for that purpose.

19: Interaction support for lectures

Organization: juris Professorship of Legal Informatics and
CISPA

Contact: Christoph Sorge

Interaction support for lectures

Lectures are supposed to be a challenge for the students, who are confronted with new ideas and concepts.

For the lecturers, the major challenge is to find out if they have challenged their students in the right way: Are they enjoying the lecture? Are they bored because of the slow pace? Are they bored because they do not understand anything the lecturer is saying? Interaction or simple looks in the students' faces may help, but this gets increasingly difficult the larger the lecture is.

The project shall help solve this problem by designing **a system that enables students to provide direct feedback through their smartphone or other mobile device.**

We anticipate at least two modules:

1. The first is to **provide simple requests** to increase or decrease the pace; this feedback shall be presented to the lecturer in an aggregated manner.
2. The other is **an iterative game**, in which the lecturer asks a series of questions. Any student who cannot answer a question drops out (of the game, not the lecture or the university). One or a few students remain, and it is the lecturer's task to think of an appropriate reward scheme for them.

We will evaluate the project result by using it in lectures at Saarland University.

20: Extend "Uni Saar" app with recent iPhone features

Organization: Software Engineering Chair, UoS

Contact: Andreas Zeller

"Uni Saar" meets Apple



22: Bring "Uni Saar" to Apple TV

Organization: Software Engineering Chair, UoS

Contact: Andreas Zeller

"Uni Saar" meets Apple



22: Bring "Uni Saar" to Apple Watch

Organization: Software Engineering Chair, UdS

Contact: Andreas Zeller

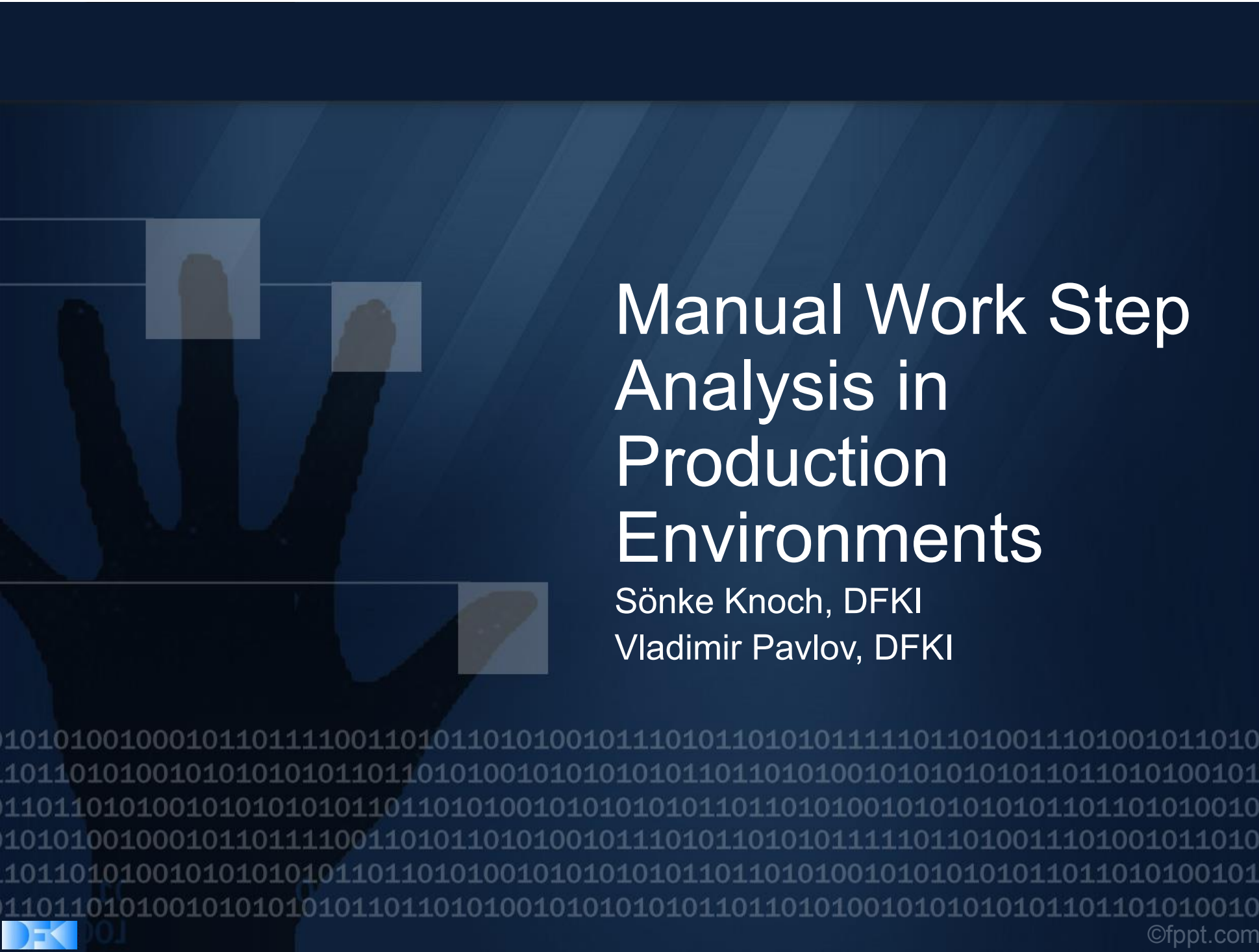
"Uni Saar" meets Apple



23: Manual Work Step Analysis in Production Environments

Organization: DFKI

Contact: Sönke Knoch



Manual Work Step Analysis in Production Environments

Sönke Knoch, DFKI

Vladimir Pavlov, DFKI

„The Manufacturing Black Box“

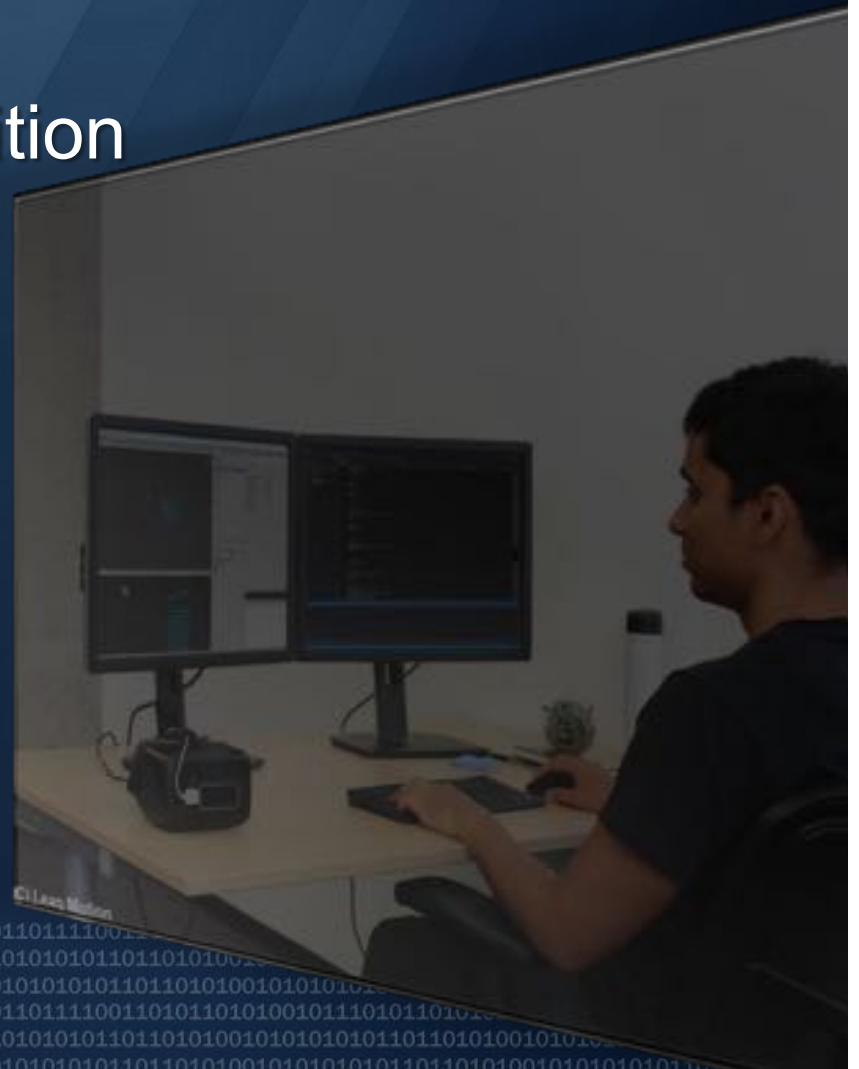


©Bosch Rexroth



Manual Work Step Analysis in Production Environments

- Core Features:
 - Hand movement recognition in defined zones
 - Differentiation between hand poses
 - Stable event generation
- Requirements:
 - C++
 - Interest in the topic



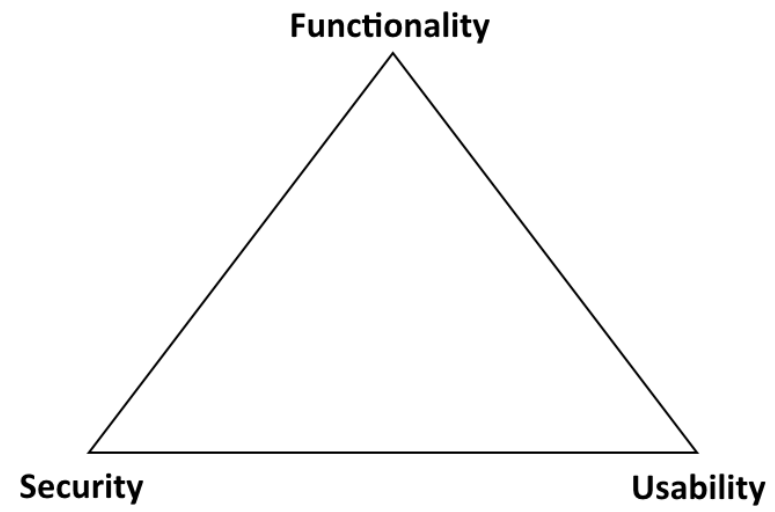
24: Usable Security

A Study Participant Management Tool

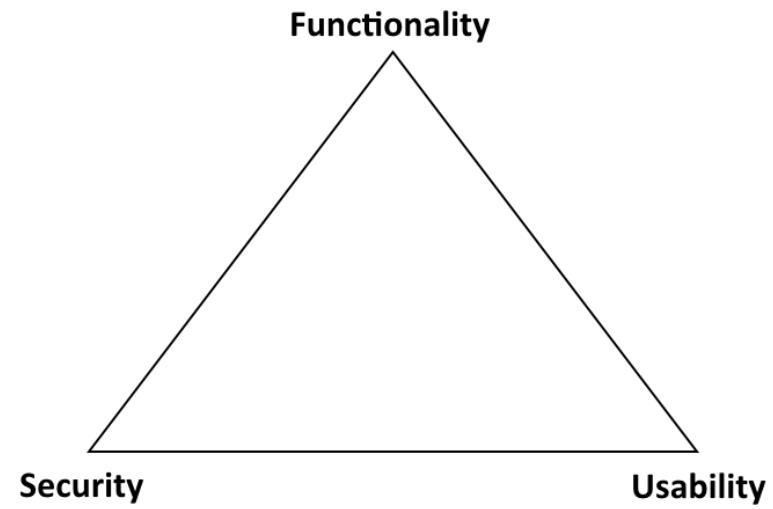
Organization: CISPA, Saarland University

Contact: Sascha Fahl

Our Work

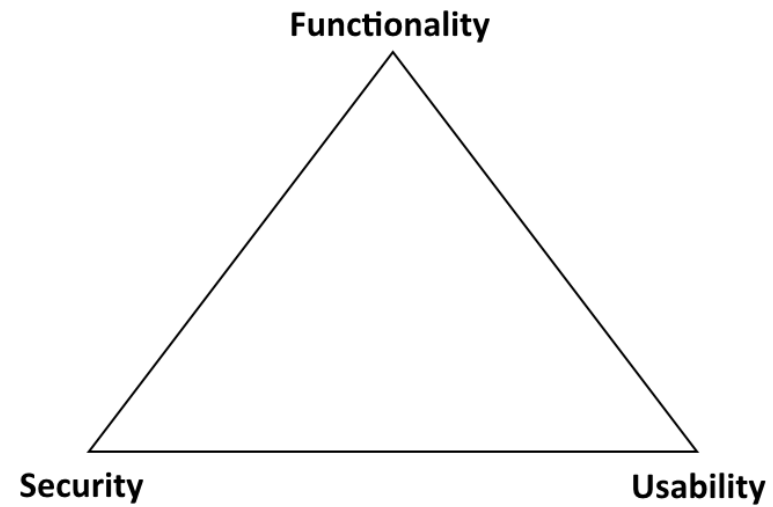


Our Work



- ▶ We work to make security more usable.

Our Work



- ▶ We work to make security more usable.
- ▶ We test improvements in studies.

Our Problem

- ▶ Managing/scheduling participants oftentimes is a pain

Our Problem

- ▶ Managing/scheduling participants oftentimes is a pain



The image shows a screenshot of a complex spreadsheet or scheduling software interface. The interface is filled with a grid of data, likely representing a schedule or participant management system. The grid has many columns and rows, with some cells containing text and others containing numbers or symbols. The overall appearance is that of a dense, multi-column table with a high degree of detail, illustrating the complexity of managing/scheduling participants.

Your task!



Your task!



Skills needed:

- ▶ Python/Django

Your task!



Skills needed:

- ▶ Python/Django
- ▶ HTML/CSS/JavaScript

Your task!



Skills needed:

- ▶ Python/Django
- ▶ HTML/CSS/JavaScript
- ▶ MySQL/postgres

And if you're good...

... come work with us!

25: Cross-Domain Issue Tracker

Organization: Testfabrik AG in the Starterzentrum

Contact: Elias Hartz

Does someone want to develop a

Cross-Domain Issue Tracker

for this guy who is just talking?

Elias Hartz
eliashartz@yahoo.de

Are you familiar with these?

Successful creation.

Issues

Filters

Status: open

#	Tracker	Status	Priority	Subject	Assigned to	Updated
368	Bug	New	Normal	Software test		2008-03-08 12:49
367	Bug	New	Normal	soff11	John Smith	2008-03-08 08:29
366	Bug	New	High	Fake Bug	John Smith	2008-03-07 22:50
365	Support	New	Normal	codebooktest	John Smith	2008-03-07 21:23
364	Bug	New	Normal	interna		2008-03-07 19:35
363	Bug	New	Normal	Provaasa	John Smith	2008-03-07 18:09
362	Feature	New	Normal	soff		2008-03-07 17:06
361	Feature	New	Normal	Sky	John Smith	2008-03-07 13:10
360	Bug	New	Normal	off		2008-03-06 20:42
359	Feature	New	Normal	moon on a stick	John Smith	2008-03-06 19:27
358	Feature	New	High	bella come il sole	John Smith	2008-03-06 17:18
357	Feature	New	High	bella come il sole	John Smith	2008-03-07 21:23
356	Feature	New	Urgent	soffare oeffra	John Smith	2008-03-06 16:27
355	Feature	New	Normal	How does this thing work?	John Smith	2008-03-06 15:44
354	Feature	New	Normal	generic features	John Smith	2008-03-06 15:39
353	Support	New	Normal	create new bug track	John Smith	2008-03-06 15:10
352	Support	New	Normal	create new bug track		2008-03-06 15:08
351	Feature	New	High	soff2	John Smith	2008-03-06 11:55
350	Feature	New	Normal	exportation/importation MSPProject		2008-03-07 16:01
349	Support	New	Normal	P 2 v 1-81788882		2008-03-06 04:49
348	Bug	New	High	ghoff	John Smith	2008-03-06 04:01
347	Feature	New	Normal	My silly feature		2008-03-06 03:22
346	Bug	New	Normal	test		2008-03-06 02:36
345	Feature	New	Normal	My silly feature		2008-03-05 23:24
344	Feature	New	Normal	W4322.122		2008-03-05 23:11

Redmine demo

Neues Projekt

Name *

Beschreibung

Kennung *

Projekt-Homepage

Öffentlich

Agile board - Agile board - Redmine Agile plugin demo - RedmineCEM demo

REDMINE AGILE PLUGIN DEMO

Agile board

New (5)	In Progress (4)	Closed (5)
User story #506 Cumulative flow chart	User story #508 Backlog and sprint	User story #501
User story #509 Velocity chart	Task #504 Setup CI server	User story #579 Assign Task to Area
User story #500 Add big avatars	User story #507 Sortable board cards	User story #505 Issues burndown chart
User story #563 Print Tasks	User story #507 Sortabe board cards	User story #502 Done/Undone Task
User story #579 Assign Task to Area		Task #501 PDF export

JIRA

Product Team Board

To Do (7 / 25)

In Progress (4 / 11)

Waiting (4 / 15)

WTF-0400
Enterprise 2.2 UX

WTF-0473
Remove exception catching

WTF-0402
Remove unhelpful status page

WTF-0406
Add AJS Cookie

WTF-0408
WTF-03 Roadmap

WTF-0421
Better to handle API

Are you familiar with these?

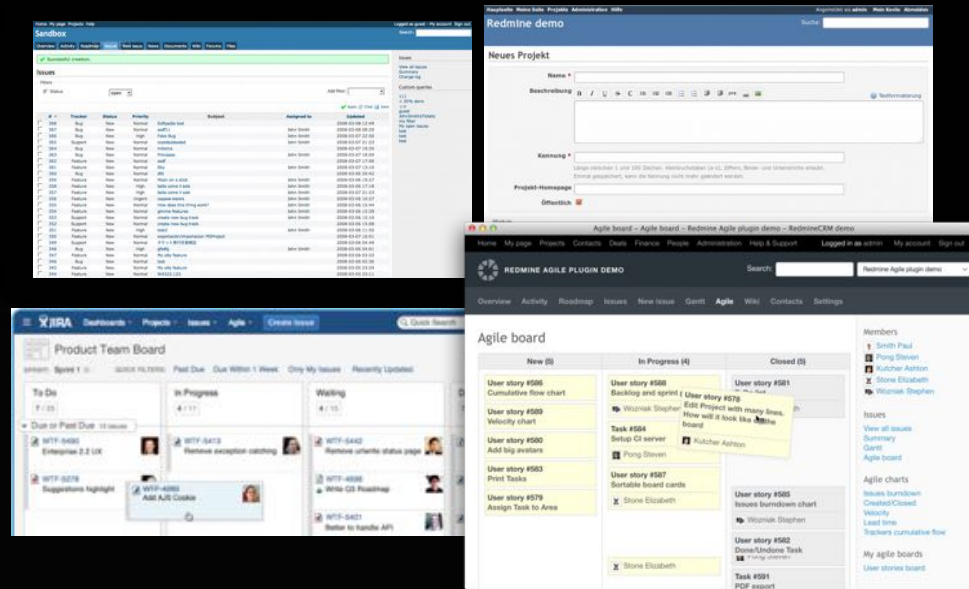
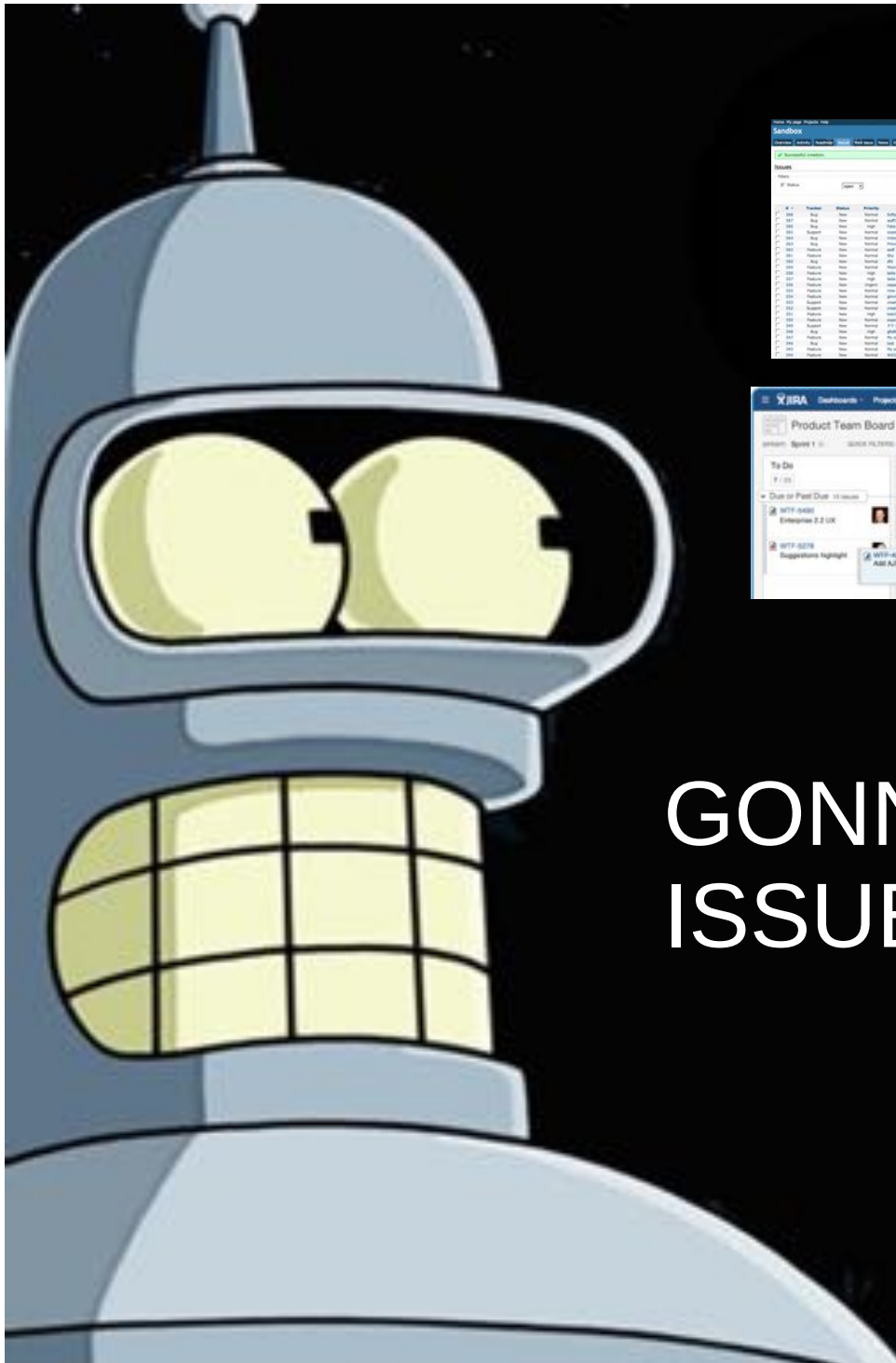
No matter which project you choose, you will be!

The screenshot shows the JIRA 'Sandbox' page. At the top, there's a navigation bar with 'Overview', 'Activity', 'Roadmap', 'Issues', 'New Issue', 'Gantt', 'Agile', 'Wiki', 'Contacts', and 'Settings'. Below the navigation bar, there's a green success message: 'Successful creation.' The main content area is titled 'Issues' and contains a table of issues. The table has columns for '#', 'Tracker', 'Status', 'Priority', 'Subject', 'Assigned to', and 'Updated'. The issues listed include various bugs and features, such as 'Software test', 'Fake Bug', 'covid-related', 'mitema', 'Provaasa', 'and', 'Sky', 'dtd', 'Moon on a stick', 'bela come il sole', 'bela come il sole', 'cappae oemra', 'How does this thing work?', 'gimme features', 'create new bug track', 'create new bug track', 'importation/importation MSProject', 'P2 v1-BI75BMS2', 'ghdy', 'My silly feature', 'test', 'My silly feature', and 'WAK32.122'.

The screenshot shows the Redmine 'Neues Projekt' (New Project) form. The form has a title bar with 'Redmine demo' and a search bar. The main content area is titled 'Neues Projekt' and contains several input fields: 'Name', 'Beschreibung' (Description), 'Kennung' (Key), 'Projekt-Homepage', and 'Öffentlich' (Public). The 'Beschreibung' field is a rich text editor with various formatting options. The 'Kennung' field has a note: 'Länge zwischen 1 und 100 Zeichen. Kleinbuchstaben (a-z), Ziffern, Binde- und Unterstriche erlaubt. Einmal gespeichert, kann die Kennung nicht mehr geändert werden.' The 'Öffentlich' field is a checkbox that is currently checked.

The screenshot shows the Redmine Agile board. The board is titled 'Agile board' and has three columns: 'New (5)', 'In Progress (4)', and 'Closed (5)'. The 'New' column contains cards for 'User story #506 Cumulative flow chart', 'User story #509 Velocity chart', 'User story #500 Add big avatars', 'User story #563 Print Tasks', and 'User story #579 Assign Task to Area'. The 'In Progress' column contains cards for 'User story #508 Backlog and sprint', 'Task #504 Setup CI server', 'User story #507 Sortable board cards', and 'User story #505 Issues burndown chart'. The 'Closed' column contains cards for 'User story #501', 'User story #502 Done/Undone Task', and 'Task #501 PDF export'. The board also has a 'Members' list on the right side, including 'Smith Paul', 'Pong Steven', 'Kutcher Ashton', 'Stone Elizabeth', and 'Wozniak Stephen'. There are also 'Issues' and 'Agile charts' sections on the right side.

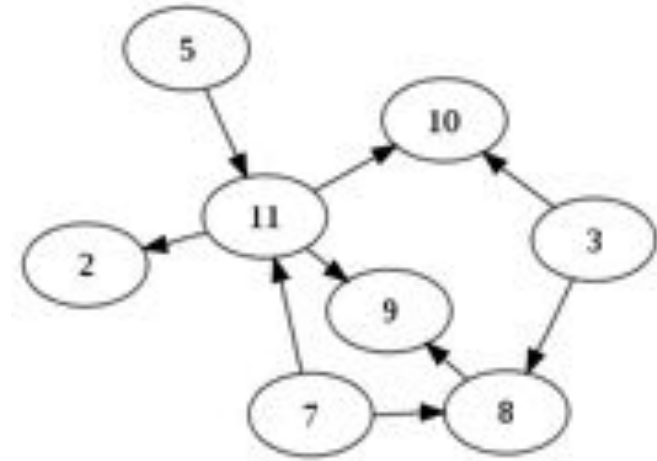
The screenshot shows the JIRA 'Product Team Board'. The board is titled 'Product Team Board' and has three columns: 'To Do', 'In Progress', and 'Waiting'. The 'To Do' column contains cards for 'WTF-0490 Enterprise 2.2 UX' and 'WTF-0276 Suggestions highlight'. The 'In Progress' column contains cards for 'WTF-0473 Remove exception catching' and 'WTF-0393 Add AJS Cookie'. The 'Waiting' column contains cards for 'WTF-0443 Remove unhelpful status page', 'WTF-0392', 'WTF-03 Roadmap', and 'WTF-0421 Better to handle API'. The board also has a 'Members' list on the right side, including 'Smith Paul', 'Pong Steven', 'Kutcher Ashton', 'Stone Elizabeth', and 'Wozniak Stephen'. There are also 'Issues' and 'Agile charts' sections on the right side.



GONNA BUILD MY OWN
ISSUE TRACKER WITH...

My own Issue Tracker with...

- custom-workflow graphs to support arbitrary domains?
(focus is on merging coding jobs with asset/resource-producing jobs)



- lots and lots of other features that can be discussed when negotiating the contract
- programming language, technology and architecture open to discussion as well



Elias places special emphasis on:

- quality of code and documentation
- usability and User Experience



Elias places special emphasis on:

- quality of code and documentation
- usability and User Experience

QUALITY > FEATURES

26: RefMod-Miner: Frontend Architecture

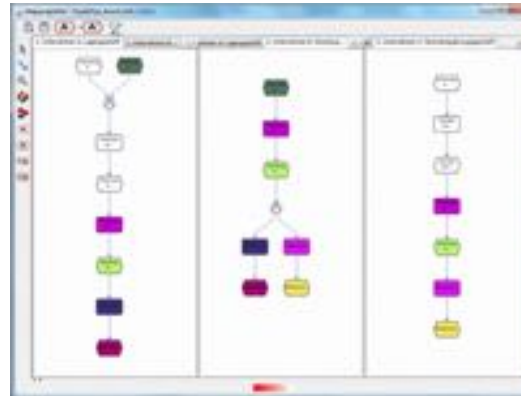
Organization: Institute of Information Systems at the DFKI

Contact: Jana Rehse, Philip Hake

A Tool for the Inductive Development of Reference Models

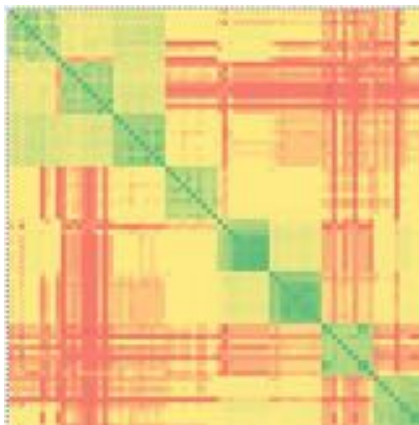
Model Analysis

- Clustering of Model Sets by Domain
- Computation of Model Similarities
- Identification of Corresponding Activities
- Determination of Model-based Metrics



Model Development

- Computation of Model Decompositions
- Clone Detection
- Generation of Process Variants
- Consolidation of Model Sets

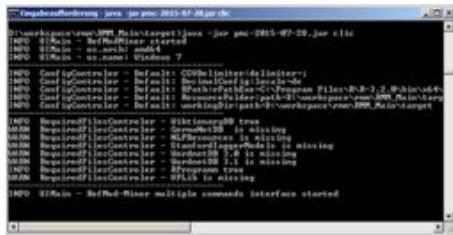


Model Manipulation

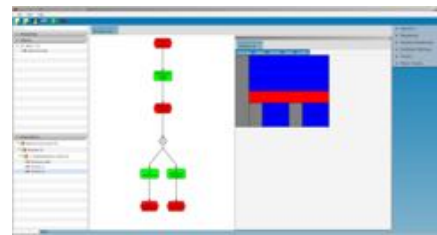
- Harmonization of Language
- Structuring
- Merging and Integration
- Visual Support of Analysis and Modification



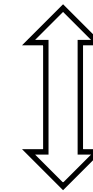
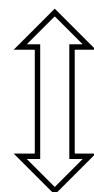
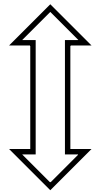
Command Line Interface



Graphical User Interface

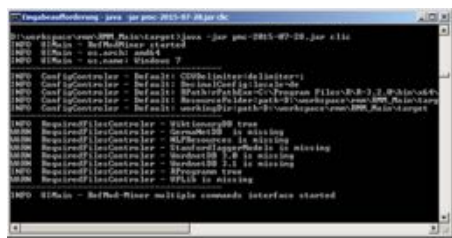


RMM as a Service (Web Frontend)

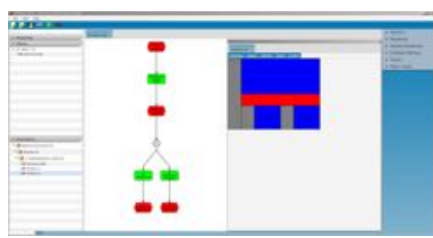


RefMod-Mining: Applications

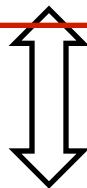
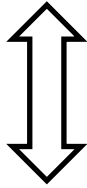
Command Line Interface



Graphical User Interface



RMM as a Service (Web Frontend)



RefMod-Mining: Applications

- **Goal: Develop and implement a concept for the RefMod-Miner frontend architecture**
- **Requirements**
 - Assess current functionalities and architecture of both frontends
 - Compile a list of must-have and nice-to-have functionalities
 - Develop and implement an integrated architecture concept
- **Material**
 - RefMod-Miner prototype (including GUI)
 - RefMod-Miner as a Service frontend (rmm.dfki.de)
 - RefMod-Miner user manual

27: RefMod-Miner: CLI Re-Design

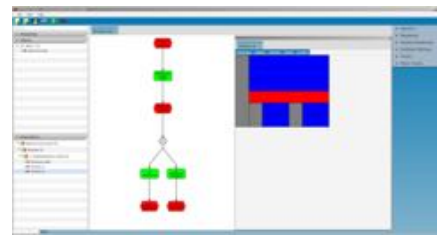
Organization: Institute of Information Systems at the DFKI

Contact: Jana Rehse, Philip Hake

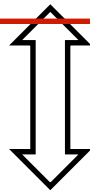
Command Line Interface



Graphical User Interface



RMM as a Service (Web Frontend)



RefMod-Mining: Applications

- **Goal: Design a new architecture for the RefMod-Miner Command Line Interface**
- **Requirements**
 - Assessment and Re-Design of our current CLI infrastructure
 - Compatibility to existing prototype
 - Compatibility to current and new frontends
 - Interface Design
- **Material**
 - Existing CLI architecture solution
 - Pre-defined CLI language
 - RefMod-Miner User Manual
 - RefMod-Miner prototype

28: Smart Service Platform

Organization: DFKI

Contact: Prof. Dr.-Ing. Wolfgang Maaß

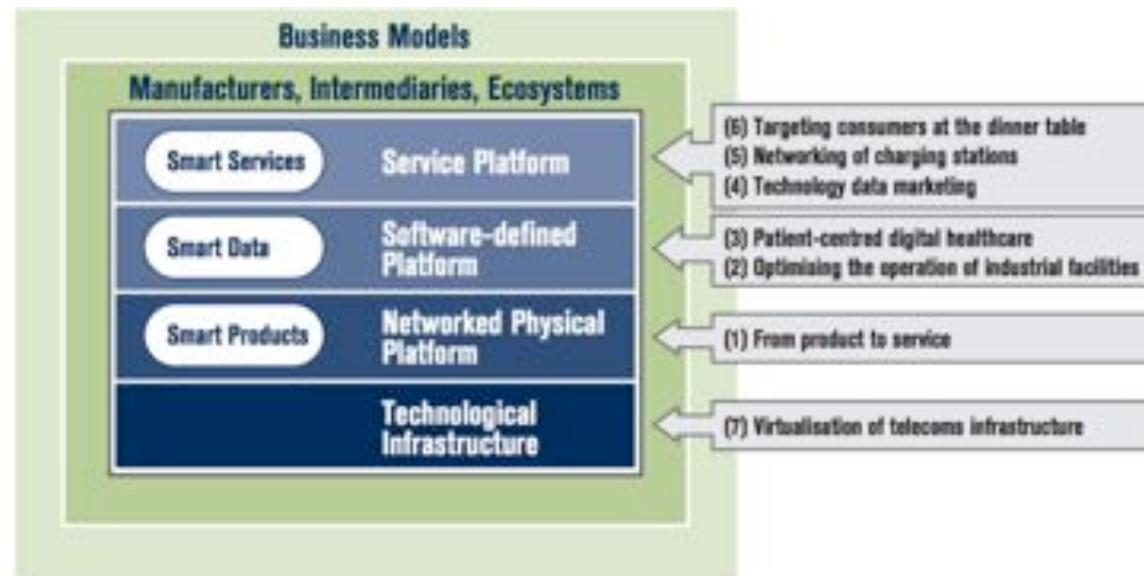
Smart Service Platform

The Smart Service Engineering group at DFKI, Saarbrücken, headed by Prof. Dr. – Ing. Wolfgang Maaß carries out research in the fields of intelligent information and service systems., ubiquitous information systems and data science. We cooperate with several industrial projects such as Deutsche Telekom AG, CosmosDirekt, CLAAS KGaA mbH, SAP, Bosch and many other IT and non IT companies.

Description:

The aim is to build a fully web-based platform that, based on the Smart Service Welt* recommendations, enables users (or businesses) to choose customized services (in the form of apps) as and when they need, manage these services and provide a dashboard to the user to do have an overview of the services under use and other suitable services that would be suitable to the user.

Here's is a general architecture of a Smart Service eco-system:



* <http://goo.gl/HPfIKQ>

Expectations:

This platform is to be deployed on **handheld devices** that use Android/iOS/Windows Mobile operating systems.

- Apache Cordova, Intel XDK, HTML, CSS and JavaScript can be used.

For data analytics:

- Apache Spark or Apache Flink

Everything must be well documented (with UML diagrams and other standard tools/methods). The software must also be accompanied with a test report.

Use cases and test services will be further discussed with the interested students.

29: Web-based visualization and corpus management for language modeling

Organization: Spoken Language Systems

Contact: Dietrich Klakow

49: Web-based visualization and corpus management for language modeling

Dietrich Klakow^{1,2} and Jon Dehdari^{1,3}

¹Saarland University

²Spoken Language Systems Group (LSV)

³German Research Centre for Artificial Intelligence (DFKI)

`dietrich.klakow@lsv.uni-saarland.de`

Technologies: javascript/web design. if possible: django, python



Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time
In a faraway

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time
In a faraway land

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time

In a faraway land

There was a search engine named

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time
In a faraway land
There was a search engine named
Google.

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time
In a faraway land
There was a search engine named
Google.

A language model predicts what you are going to **say** next based **on what you have** already

Web-based visualization and corpus management for language modeling

Fill in the blank:

Once upon a time
In a faraway land
There was a search engine named
Google.

A language model predicts what you are going to **say** next based **on what you have** already said.

Web-based visualization and corpus management for language modeling

Fill in the blank:

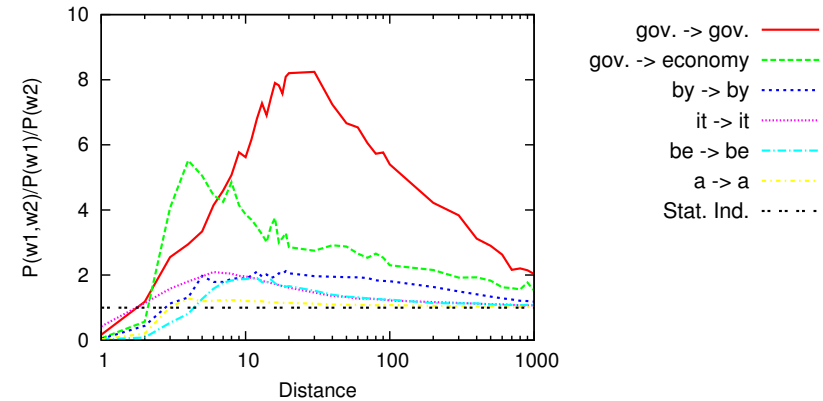
Once upon a time

In a faraway land

There was a search engine named

Google.

A language model predicts what you are going to say next based on what you have already said.



Full description

Once upon _____, in a faraway _____, there lived a Search Engine named _____. Google wanted to reduce the amount of _____ or energy it took for a user to retrieve relevant _____ given a specific _____. One way to do that was to predict the query before the user had finished _____. Prediction needs models. This kind of prediction needs LANGUAGE models.

A language model predicts what you are going to say next based on what you have already _____.

You may have learned about ngram language models in your studies. An ngram language model would likely have a hard time completing the last blank, even though you probably can easily, because the (arguably) most informative word is eight words away. Language data is too sparse for that. But is this an edge case? How much information can researchers hope to gain from these so-called long-range dependencies? What kind of information is it?

Your task is to develop an online system for visualizing how the current words influence the future words of a text. We imagine this is highly dependent on the kind of text (newspaper, transcript of telephone conversation, etc.), so we want the system to track or even detect features about the input. Many different language model implementations exist (including one designed for this task) for integration into your visualization system. Once these language models can be connected with the right visualizations they all will live _____.

30: Platform for conducting user studies in the field of HCI

Organization: DFKI, Grad School at Saarland University

Contact: Frederic Kerber

User studies in the field of Human-Computer-Interaction (HCI) often follow a similar approach:

After an initial questionnaire, experiments are conducted and sometimes video- and/or audio-recorded. At certain times (e.g. after an experiment block or after a single trial), additional questions are asked and finally, a post-session questionnaire is conducted.

Currently, we have **a lot of manual work** with this approach, e.g. when conducting the initial / post-session questionnaire with pen and paper or recording the complete session in one large file.

We therefore envision a platform that can help us when conducting such user studies.

The platform should provide:

- Session management for different participants
- Questionnaires with basic question types such as multiple choice (single/multi select), Likert scales, free text answers, etc.
- Support for single trials / experiment blocks (either randomised or counter-balanced order)
- Video and audio recordings based on trials / experiment blocks
- Intermediate questions
- Separate views for experimenter and participants (two screens, automatically adopting to different resolutions)
- Simple analysis (min, max, mean, etc.) for appropriate questions
- System should work independently from internet access, (e.g. no Google Forms for questionnaires)

A very basic prototype that covers a small subset of the above mentioned points has recently been created in Java, but the programming language can be changed.

31: Recording Teleprompter Webapp

Organization: MMCI

Contact: Arif Khan

Recording Teleprompter Webapp

Organization: MMCI, Multimodal Speech Processing

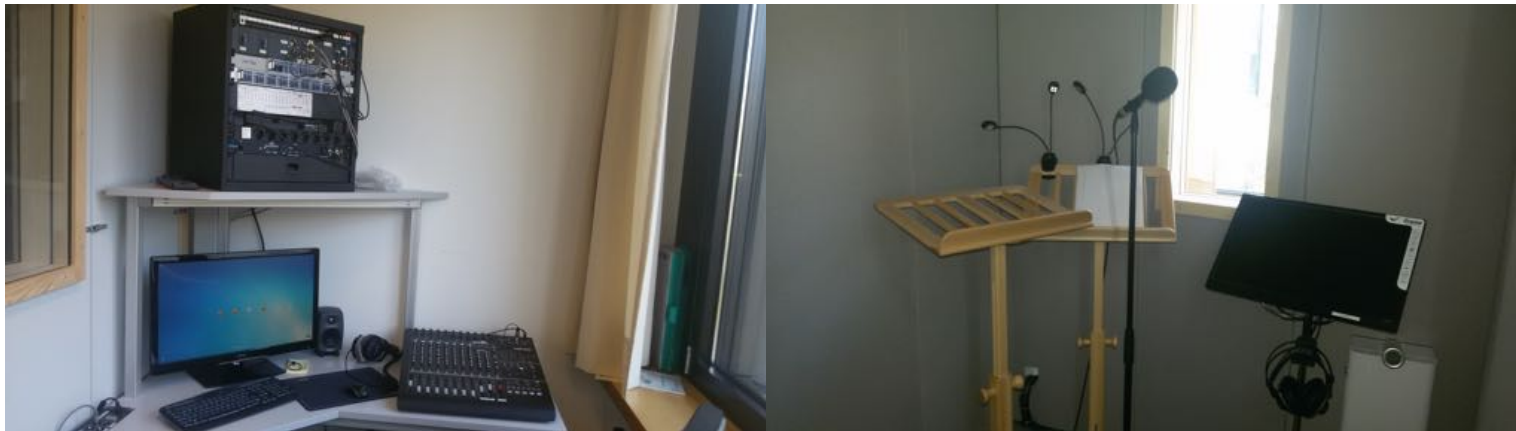
Contact: Arif Khan, Ingmar Steiner

The Problem

- ▶ A wide variety of applications require a user to be recorded while reading aloud a given text. These scenarios range from creating an audiobook, to preparing media assets for games or HCI components such as speech synthesis and recognition.
- ▶ Recording studio exists but are difficult to manage (scheduling and finding participants).
- ▶ The existing web applications (webapps) are difficult to use, expensive, technically limited, buggy, or all of the above, and do not satisfy all requirements.

Recording Teleprompter Webapp

The Problem



Recording Teleprompter Webapp

Solution

- ▶ Implement a simple but powerful webapp that runs in a modern browser (without relying on plugins).
- ▶ The webapp should be as "hands-free" as possible.
- ▶ The app should automatically recognize which part of the text the user is reading and scroll the display accordingly.
- ▶ The audio is post-processed and indexed automatically to create time-aligned subtitles.
- ▶ The resulting media file is saved locally or in the cloud.
- ▶ Audio quality should be preserved.

Recording Teleprompter Webapp

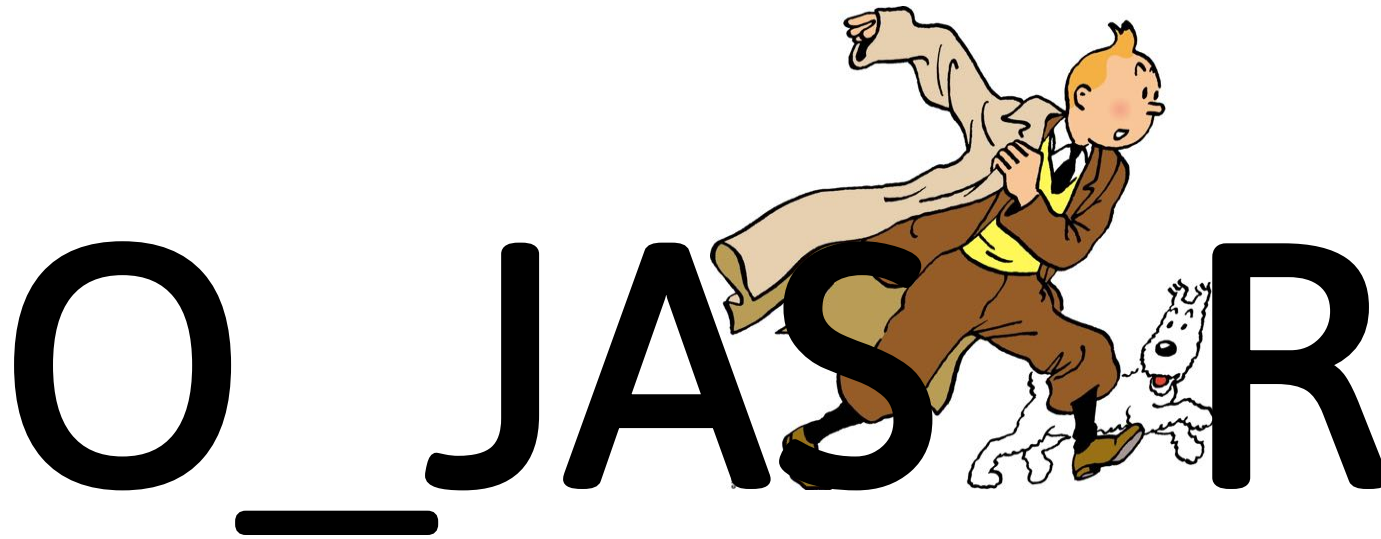
Technical Requirements

- ▶ Software should be free and open-source, developed on GitHub if possible.
- ▶ Knowledge about audio formats and conversion software.
- ▶ Web programming/JavaScript,
- ▶ Other languages as required (Java preferred).

32: Journalists Award System & Review (JAS.R)

Organization: MMCI/CISPA/Kompetenzzentrum

Contact: Gordon Bolduan



Online Journalist Award System &
Review



Journalists **1.** hand in articles, radio features, TV programs



Jurors **2.** review

Output **3.** Ranking based on evaluation algorithm

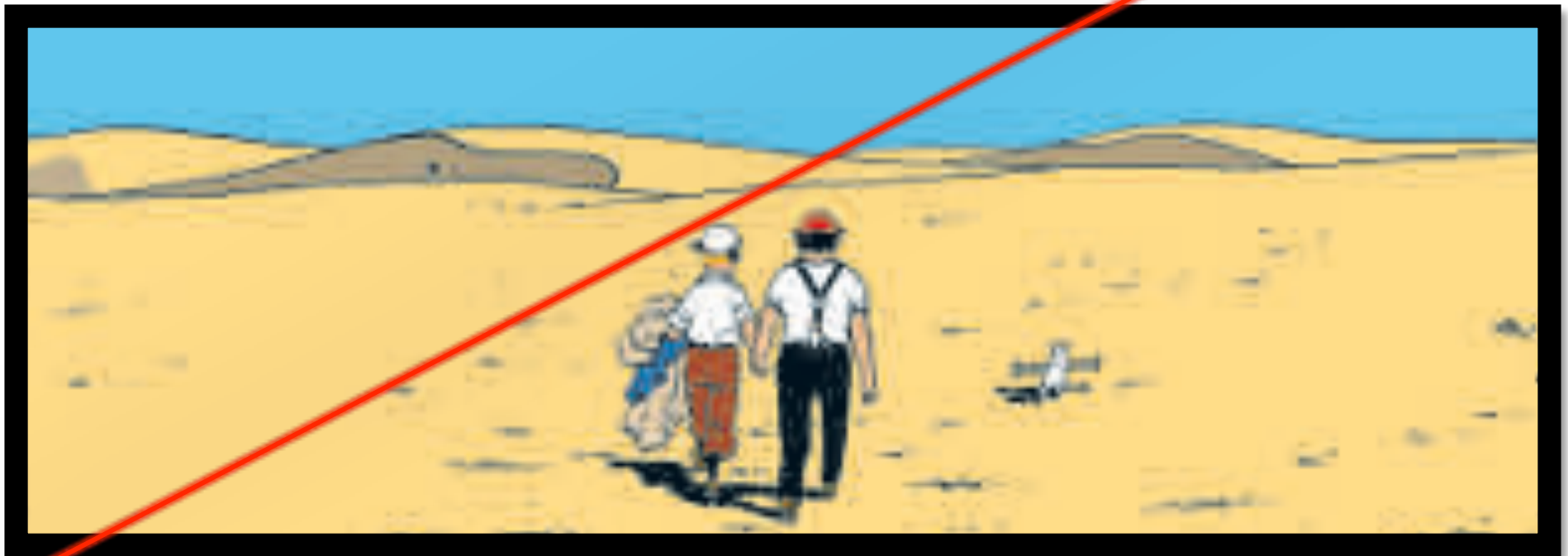
Technology?

HTML, CSS, PHP, MySQL, JQuery



The project is **no** death march!

Gordon Bolduan
Science Communication MMCI, CISPA
bolduan@mmci.uni-saarland



33: PowerPoint Streaming

Organization: Sebastian Wendland

Contact: Sebastian Wendland

PowerPoint Streaming



Agents and Simulated Reality



With **Display-as-a-Service (DaaS)** we have a very flexible video streaming system that can distribute any number of streams to any number of displays.

Problem:

- PowerPoint does not stream

Your Task:

- Create a PowerPoint Streaming app
 - The PowerPoint presentation is uploaded to the server
 - It is then converted into an image sequence (one image per slide)
 - The image sequence encoded in H264 and streamed onto the network
 - The transition times for the slides are taken from the presentation

Contact: Sebastian Wendland
sebastian.wendland@dfki.de

PowerPoint Streaming



Agents and Simulated Reality



- **Intended environment**

- Web interface in HTML5
- Video encoding in H264/MP4
- RTSP streaming
- Preferably written in C++ using the Intel Media SDK
- Should run on Windows and Linux
- Streaming server is available



Contact: Sebastian Wendland
sebastian.wendland@dfki.de

34: Agenda System

Organization: Sebastian Wendland

Contact: Sebastian Wendland

Agenda System



Agents and Simulated Reality



The Viscenter at the DFKI regularly hosts all-day events for which agendas are circulated on paper. **We would like to switch this to an electronic form.**

- **Task:**

- Develop a agenda handling systems for public information displays (PIDs)
 - The agenda for an event is configured on a web interface
 - Agendas can be viewed in a browser in styles
 - '**Current**' that only shows the current and the next agenda point
 - '**Full day**' that shows the agenda for the day
 - The displayed information must change dynamically based on time
 - Different display sizes, aspect ratios and DPI values must be supported

Contact: Sebastian Wendland
sebastian.wendland@dfki.de

Agenda System

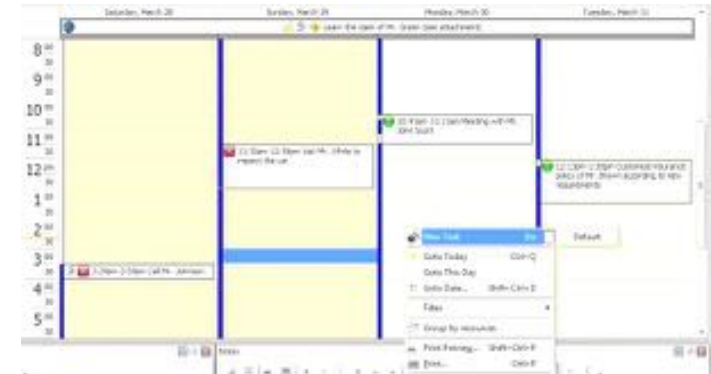


- **Some advanced ideas:**

- **PIDs can be 'registered' with the system**
 - To assign an agenda and style via the UI
- **Webservice backend**
 - The backend only speaks JSON
 - All formatting happens via HTML5, CSS and JS

- **Intended environment and software**

- **Each PID has a small computer with a browser in full-screen mode**
 - OS could be one of Windows, Linux, Android, ChromeOS, OS X
- **HTML5 and CSS**
 - Layout needs to work with all modern browsers
- **Backend written PHP/Python/NodeJS**
- **MySQL/Mongo**
- **Backend needs to run on Linux (CentOS 7)**



Contact: Sebastian Wendland
sebastian.wendland@dfki.de

35: Purchase System

Organization: Sebastian Wendland

Contact: Sebastian Wendland

Purchase System



UNIVERSITÄT
DES
SAARLANDES



UNIVERSITÄT
SAARBRÜCKEN

The Computer graphics chair uses an electronic purchase system for drinks and snacks.

- **Problem:**

- Software is almost 20 years old
- Originally written for PHP 3, QT 1.4 and MySQL 3.1, all of which are End-of-Life

- **Your Task:**

- Create a new purchase system based on current technologies:
 - Windows 10 Touch UI
 - Image recognition for barcodes
 - HTML 5 backend

Contact: Sebastian Wendland
wendland@cg.uni-saarland.de

Purchase System



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DES
SAARLANDES



UNIVERSITÄT
SAARBRÜCKEN

- **Details:**

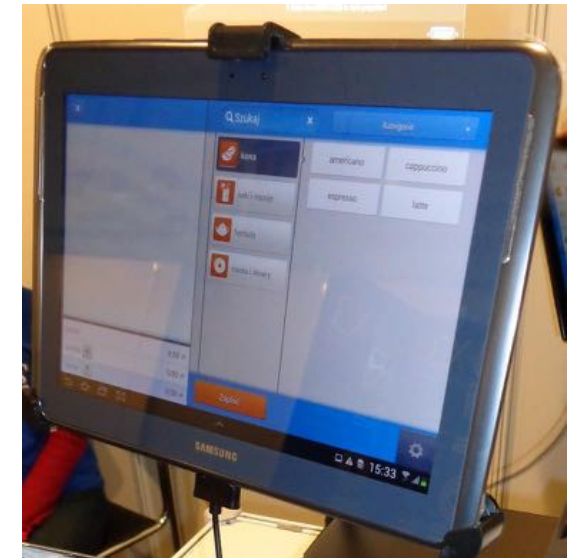
- **Windows 10 touch App for purchases**
 - Image recognition for barcodes instead of hand scanner
- **Web interface for Super User**
 - For managing prices and user credit

- **Hardware requirements**

- **Windows tablet (provided by CG)**

- **Software requirements**

- **Windows Universal APP**
- **HTML5**
- **MySQL**



Contact: Sebastian Wendland
wendland@cg.uni-saarland.de

36: Software for warehouse logistics

Organization: Ministry of Social Affairs/ German Red Cross

Contact: Katja Biesel



Software for warehouse logistics



37: Exercise Sheet Generator

Organization: Cryptographic Algorithms Group, UoS

Contact: Nils Fleischhacker, Mark Simkin

Exercise Sheet Generator

Software that allows to handle larger databases of exercises that have been collected over the years.

Main features:

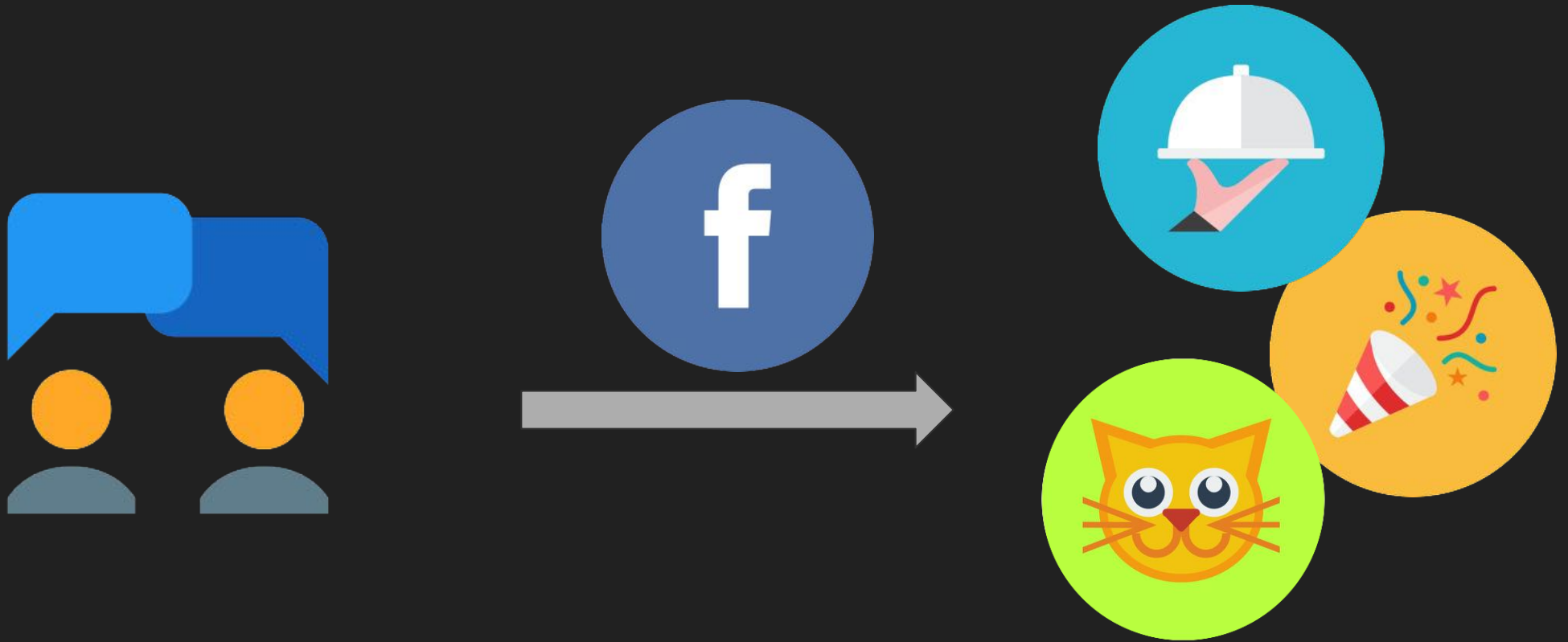
- A nice looking UI for inserting new, updating and changing old, and searching exercises.
- The software should allow the user to generate exercise sheets from selected exercises via a semi-automated process and export them as PDF and Tex files.
- The software should facilitate lecture management by allowing users to store and manage whole exercise sheet sets.
- The UI should also include live-previews of exercises and exercise sheets.
- The resulting software should be platform-independent. Preferably it should be written in Python.

38: Facebook Post Analyzer

Organization: DFKI

Contact: Frederic Raber

Facebook Post Analyzer



Contact: frederic.raber@dfki.de | felix.kosmalla@dfki.de

Facebook Post Analyzer



Contact: frederic.raber@dfki.de | felix.kosmalla@dfki.de

Facebook Post Analyzer



design & implement a Facebook app that..

- Analyzes the user's posts
- Recognizes the topics
- Provides a graphical representation
- Suggests friends/posts, based on topics
-

requirements

- Implemented in Python (e.g. Django)
- Some experience in the Facebook Graph API
- Some experience in ML is beneficial

Contact: frederic.raber@dfki.de | felix.kosmalla@dfki.de

39: Visualization of the Interwebz

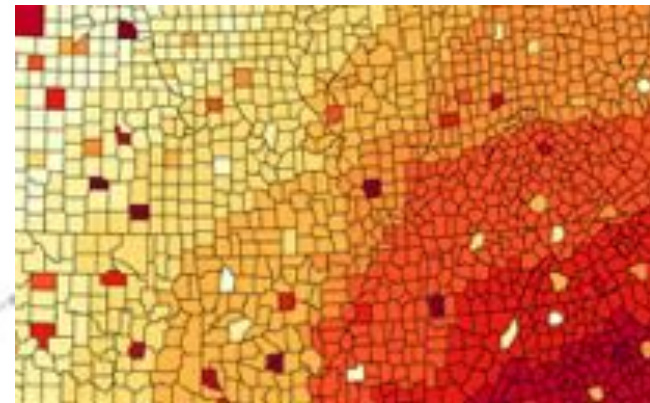
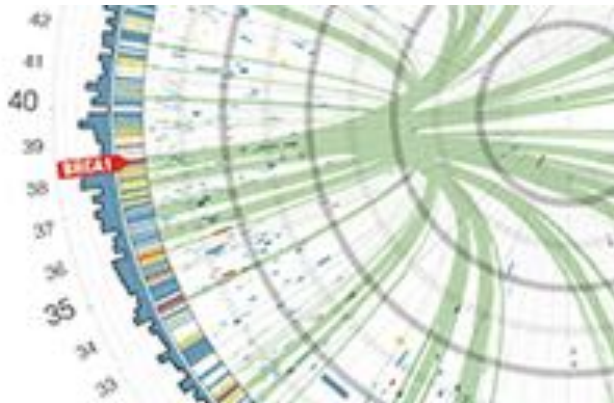
Organization: CISPA

Contact: Giancarlo Pellegrino

Visualization of the Interwebz

The Interwebz is built on top of a number of core network services, e.g., IP routing, DNS, email exchange, and web services which are offered by private and governmental organizations. Recent events showed these organization may, intentionally or unintentionally, be part of large-scale malicious activities including state-sponsored cyber espionage. **We are investigating on the intricate inter-connections between Interwebz actors to shed some light on the security properties.** We are running large-scale experiments to explore this network and we plan to make accessible our datasets to the public in both aggregated and raw form.

The goal of this project is to **develop a pretty cool, well-designed web application which allows users to visit, explore, and interact with our datasets by using animated infographic, interactive large graphs, and big data visualization.** We expect the web application client side to be developed in HTML5, CSS3, and JavaScript using the latest, cutting-edge JS frameworks. For the server side, we would prefer python or PHP, however, if needed, we are open to other languages. Also, we expect the students to be familiar with both relational and non relational databases.



40: Software-Based Network Flow Aggregation

Organization: CISPA

Contact: Christian Rossow

- Capture network traffic in a flow format
 - Aggregate statistical information about network traffic
 - Number of packet, inter-arrival times, packet sizes, etc.

src	sport	dst	dport	proto	time	TTLs (last 6)	# packets	hist(packet_size)	pay-loads
1.2.3.4	50712	8.8.8.8	53	17	11:13:23 - 11:15:18	48 48 48 47 48 48	2857	0;0;0;2850;7;0;0;0	82af1 ed128
2.72.1.3	23718	8.8.8.8	53	17	11:13:23 - 11:15:18	51 51 51 51 51 51	13	0;0;1;8;4;0;0;0;0	ab2a9 f9172

- Aggregation functions: median, average, histogram, first-N, last-N, bloom filters, ...
- Requirements: scale to tens of Mbps network traffic, live record

41: NodeBuzz 2.0

Organization: Dependable Systems & Software Group, UdS

Contact: Felix Freiberger

NodeBuzz 2.0

Develop a system that helps running a game-show like quiz with multiple teams.

A central, locally-running web server provides multiple web applications for different types of devices that participate in the event, e.g. the game host's laptop, global status monitors and the participants' smartphones.



The core feature of the system is **simulating a buzzer**.

Once enabled by the host, teams can signal that they want to answer a question using their smartphone, by tapping a button or by hitting their table (which is registered by the accelerometer). The first team doing this is selected; their devices play a sound and all devices (e.g. the global status monitors) show which team may answer and a countdown, as configured by the game host.

The system should also provide some **secondary features**: like score tables that can be viewed on each device, polls that require input from each team, and support for multiple devices per team and multiple games per server.

A minimal prototype demonstrating the fundamental principle is already available, but has poor quality and cannot realistically be extended to meet the requirements.

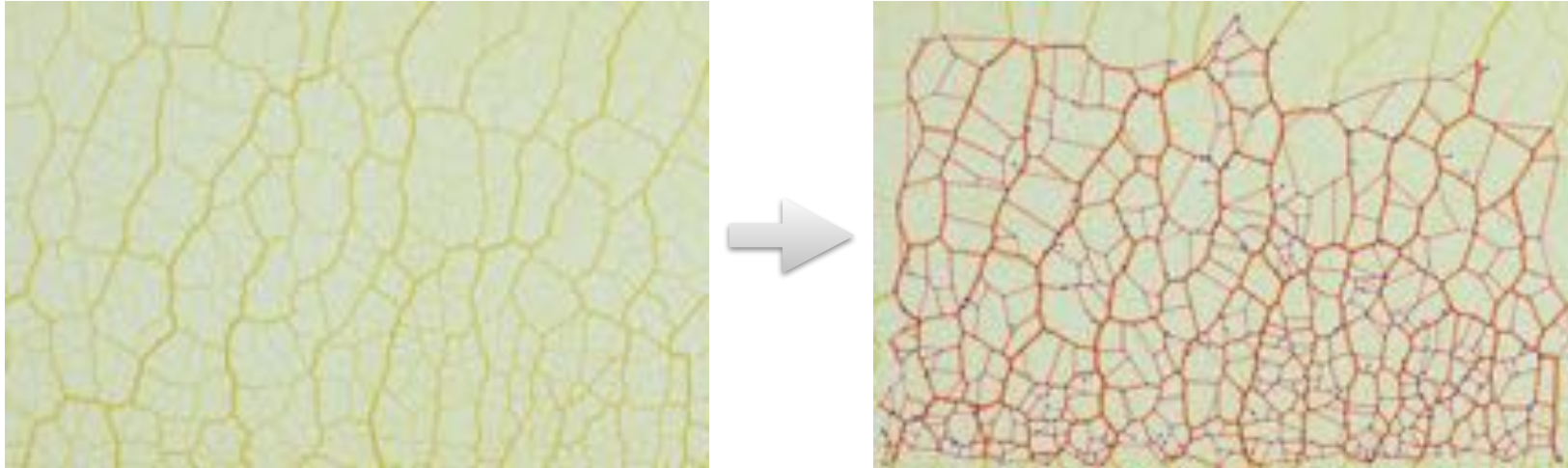
Being a web app, this project is restricted to JavaScript for client-side code. Server-side code is technology-agnostic in principle, but using JavaScript on both sides has some advantages.

42: Towards NEFI 2.0

Organization: MPI - Inf AG1

Contact: Michael Dirnberger

Towards NEFI 2.0



NEFI, short for **Network Extraction From Images**, lies at the center of our research into the structure and function of networks. It is a handy piece of software which, **given a high quality digital image of a network, returns a graph representation of the depicted structures**. Once a graph is obtained, powerful analysis techniques from graph theory and network science can be applied to great effect. We, that is Prof. Kurt Mehlhorn and his humble minions, are especially interested in studying structures formed by the slime mold *Physarum polycephalum*. Feel free to check out NEFI's homepage and its example galleries at <http://nefi.mpi-inf.mpg.de/> to get an impression of what the software is all about!

NEFI has had a short yet eventful past. It all started as a project named "PHAT" in the Software Engineering lecture of 2013, where a brave group of students faced our first bare-bones prototype and worked it into something usable. After the lecture finished, we took over development with some of the students staying with the project. During 2014 the project improved dramatically featuring more sophisticated algorithms and the results quickly reached the level of quality we were aiming for. In 2015 we renamed the project "NEFI" and went public. Since then NEFI has been peer reviewed, accepted for journal publication and is starting to attract the interest of other research groups.

Today we have used NEFI to process close to 1 TB of images from the wet-lab in various projects. We do know the software inside out, both from a developers as well as from a users perspective. As a result we know NEFI's strengths but are painfully aware of its shortcomings at the same time. **We would like to work together with a team of motivated students to revisit and improve NEFI.** In this project the students will need to familiarize themselves with NEFI's design goals, its intended workflow as well as its existing architecture and code base. Students will have to discuss possible improvements and figure out a way to implement them economically without breaking existing code. **The goal is NEFI 2.0.**

43: Crowd-based online assessment of 3D animations

Organization: DFKI, MMCI

Contact: Fabrizio Nunnari

CROWD-BASED ONLINE ASSESSMENT OF 3D ANIMATIONS

Organization:

[Sign Language Synthesis and Interaction](#) group
[DFKI](#) / [MMCI](#)

Contact:

Fabrizio Nunnari <fabrizio.nunnari@dfki.de>

Technologies:

[Blender](#) (Python addons), [XML3D](#),
[Django](#) (mySQL+Python), web frontend (HTML+CSS)

CONTEXT + MOTIVATION

- Virtual 3D Interpreters for Sign Language



- Leverage the implicit expertise of the Deaf community in assessing the quality of signs
- A data analysis on users annotations → brings better understanding of Sign Language

GOALS + FEATURES

- Web repository of signs
- Collect users corrections

Configurable Questions

Text as well as Video Comments



Multilanguage

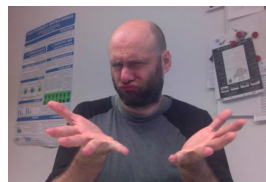
User Management

3D Window

Video Scrub on the Timeline

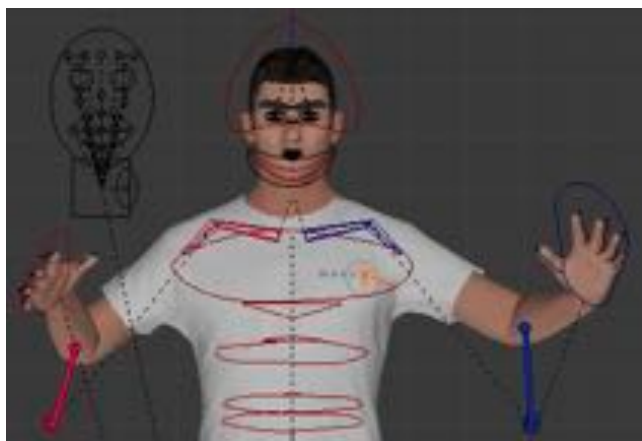
Timestamped Annotations

Fabrizio said: I really do not like this version



CHALLENGES

- Extend the Current Blender → XML3D
- Multilanguage
- User Management
 - With E-mail authentication
- Editable Questionnaires
- 3D Assets Repository
 - Asynchronous big data upload, to avoid connection timeouts
 - Timeline scrub



BLENDER



WEB BROWSER + XML3D

44: Clinical Diagnosis iPhone App - The Phenomizer

Organization: MMCI Excellence Cluster & MPI for Informatics

Contact: Marcel Schulz



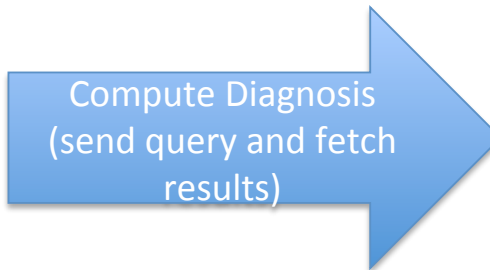
Clinical Diagnostics App – The Phenomizer

Design and implement an iOS mobile device app for computational clinical diagnostics similar to our previously developed webserver

The Phenomizer (<http://compbio.charite.de/phenomizer/>)

Overview:

Input Observed Phenotypes into mobile App



-Visualize List of Ranked Diseases
-Link to databases

Webserver¹ Example:

HPG.	Feature	Modifier
category: Abnormality of the genitourinary system (2 Items)		
HP-000144	Decreased fertility	observed
HP-0100589	Urogenital fistula	observed
category: Abnormality of the nervous system (1 Item)		
HP-0001249	Intellectual disability	observed
category: Abnormality of the skeletal system (1 Item)		
HP-0001169	Broad palm	observed
category: Growth abnormality (1 Item)		
HP-0004302	Short stature	observed



	p-value	Disease id.	Disease name	Genes
<input type="checkbox"/>	1.0000	OMM-19...	DOWN SYNDROMETRISOMY 21, INCLUDED	GATA1
<input type="checkbox"/>	1.0000	OMM-60...	#601803 PALLISTER-KILLIAN SYNDROME; P...	
<input type="checkbox"/>	1.0000	OMM-26...	RETINITIS PIGMENTOSA, DEAFNESS, MENT...	
<input type="checkbox"/>	1.0000	OMM-10...	#101800 ACRODYSOSTOSIS 1, WITH CR WL...	PRKAR1A
<input type="checkbox"/>	1.0000	OMM-23...	#234050 TRICHOTHICHDYSTROPHY, NONPH...	MPLKIP
<input type="checkbox"/>	1.0000	OMM-30...	#306000 LOWE OCULOCEREBRORENAL SY...	OCRL

¹ Köhler et al. American Journal of Human Genetics 2010

45: 2D Browser Teaching RPG

Organization: CISPA, Saarland University

Contact: Sven Bugiel

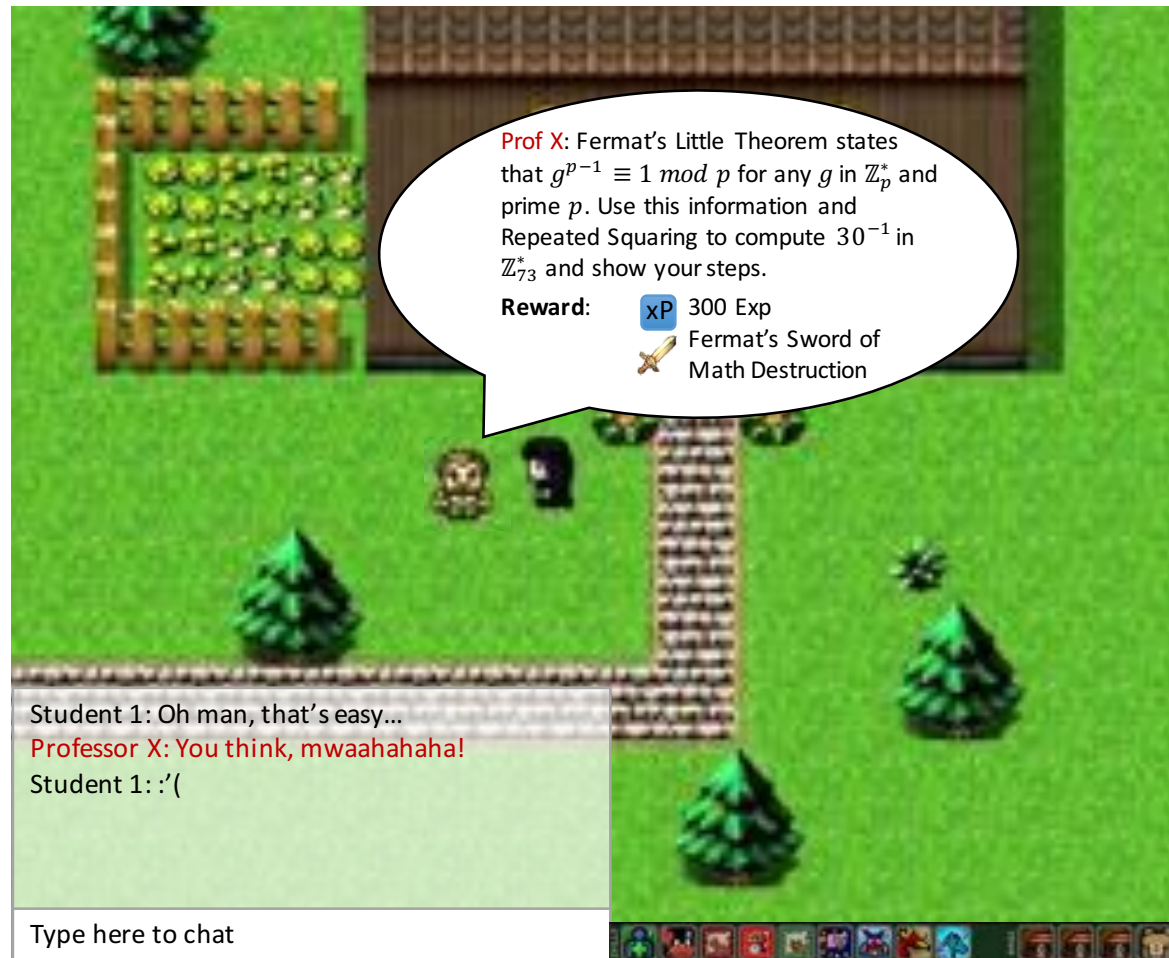
2D Browser RPG for Teaching

Requirements:

- Optically appealing
- Magic items and character sheet supported
- Extensible and customizable back-end (Map editor, custom characters, quest editor, levels,...)
- Group quests
- *Security of the client and back-end to prevent cheating*

Technically requirements:

- Front-end: JavaScript
- Back-end: Any non-exotic technology that can be actually deployed



46: The smart phone project

Organization: Uni-Saarland, CISPA, MPI-INF

Contact: Milivoj Simeonovski

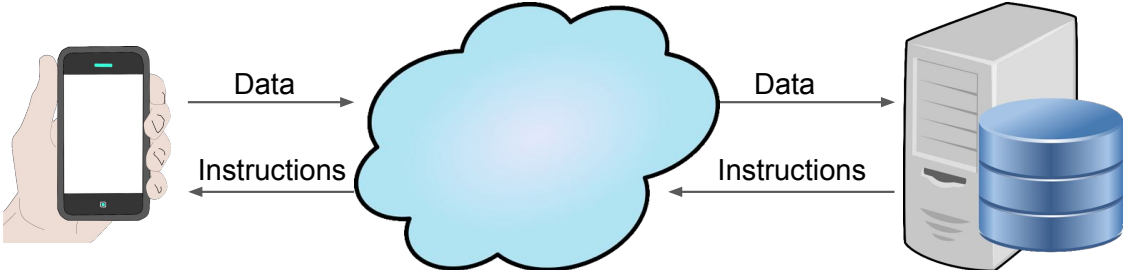
The **SMART PHONE** project

My smart phone **understands** how I behave and how I feel!

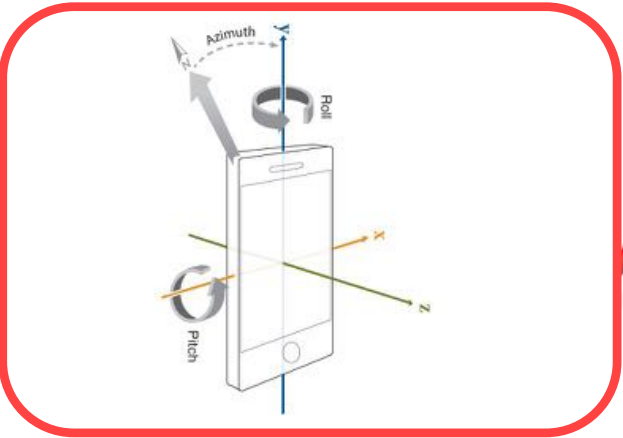
Actually, that is why is called **SMART**.



Data acquisition



- **Sensory data**



- **Semantic data**



47: Live-Tracking Frequentierung Uni-Fit Fitnesszentrum und bildliche Darstellung erhobener Log-In Daten im Tagesverlauf

Organization: Uni-Fit Fitnesszentrum / Hochschulsportzentrum

Contact: Adrian Kalb

Live-Tracking Frequentierung Uni-Fit Fitnesszentrum und bildliche Darstellung erhobener Log-In Daten im Tagesverlauf

Das Uni-Fit Fitnesszentrum als Ort des Sporttreibens für Studierende und Bedienstet auf dem Campus unterliegt Schwankungen in der Frequentierung sowohl im Hinblick auf den Wochentag, als auch auf die Tageszeit.

Dieser Umstand ermöglicht die Bearbeitung folgender *Problemfelder*:

1) Unmittelbare Verbesserung des Angebots durch ein "Live-Tracking" der Nutzung/Auslastung:

Um Mitgliedern die Möglichkeit zu unterbreiten ihr Training an die aktuelle Frequentierung anzupassen, sollte es eine, für jede Person zugängliche Möglichkeit geben die gegenwärtige Auslastung in Echtzeit einsehen zu können.

✓ Lösungsansatz: Als Plug-in auf der Hochschulsportzentrum-Uni-Fit Homepage

✓ Erhebung der Daten über den Durchgang durch eine Zugangsschranke (Drehkreuz) mit der personalisierten Zugangskarte (UdS-Card), die an eine Verwaltungssoftware gekoppelt ist

Am Training interessierte Personen können ihren Besuch im Uni-Fit im Tagesverlauf in die Zeiten geringerer Auslastung legen.

2) Langfristige Veränderung/Steuerung der Frequentierung auf Grundlage der erhobenen Daten:

Aus den erhobenen Daten soll eine überschauliche und veröffentlichbare Grafik/Darstellung für die Bereitstellung auf der homepage entsehen, die zu Wochenbeginn auf der Grundlage der Daten der Vorwoche die Frequentierung (=eingeloggte Nutzer) über den Tagesverlauf (stundenweise Abfrage) ausweist.

Die Kombination dieser beiden Schritte trägt dazu bei sowohl kurz- als auch langfristig das "Sporttreiben im Uni-Fit" für die Mitglieder planbarer zu machen und somit das Nutzererlebnis in Folge der Vermeidung von Wartezeiten/Überbelegung zu verbessern. So soll die knappe Ressource "Raum"/"Geräteverfügbarkeit" effizient genutzt werden.

48: Visual feedback in language learning

Organization: Saarland University

Contact: Frank Zimmerer, Jeanin Jügler

Visual feedback in language learning

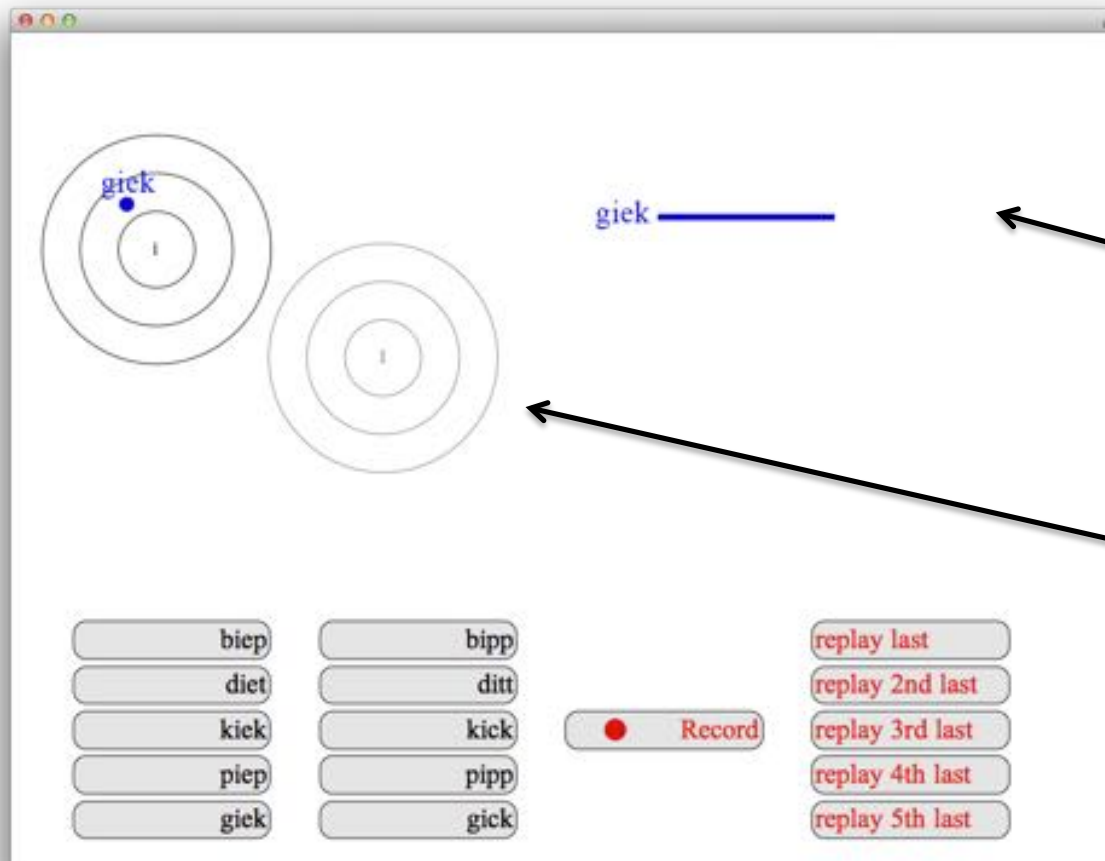
Goal: Visualization of the analysis of an utterance by non-native speakers to train a better pronunciation

- Example I: A speaker intends to produce a German word like "Kahn", however, her/his pronunciation is actually "kann", the visualization should tell the speaker that the vowel was too short
- Example II: A speaker intends to produce a German word like "Meter", however, her/his pronunciation is actually "Mieter", the visualization should tell the speaker that the vowel was wrong

Idea: a frog is standing at the shore of a river, there are stones (or sea roses) in the river. The goal is that the frog lands on the sea rose (or there are more than one rose, and the frog has to land on the correct one). That only happens if:

- The length of the vowel that should have been uttered is correct (In case of Example 1, the frog would jump too short)
- The vowel is correct (In case of Example II, the frog would jump to wrong sea rose (maybe these two visualizations could be combined))

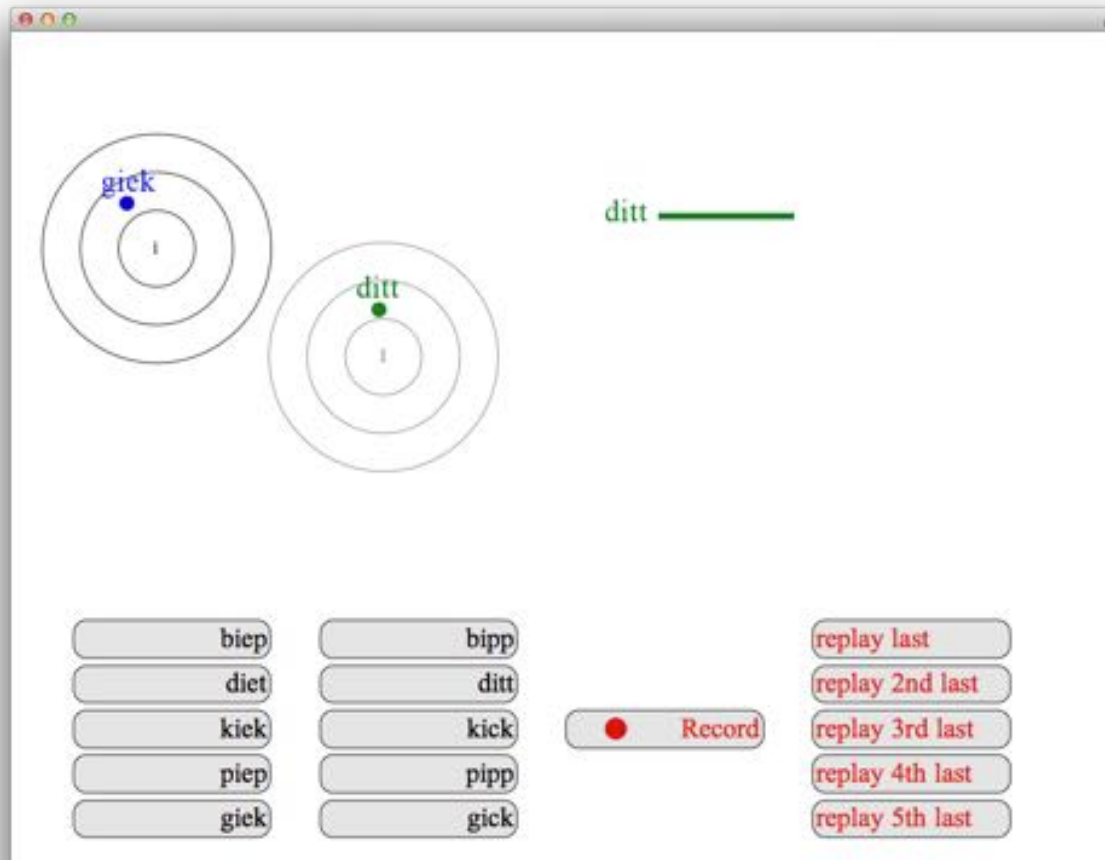
System Layout and Functionality



Duration Feedback Space representing absolute duration of vowel.

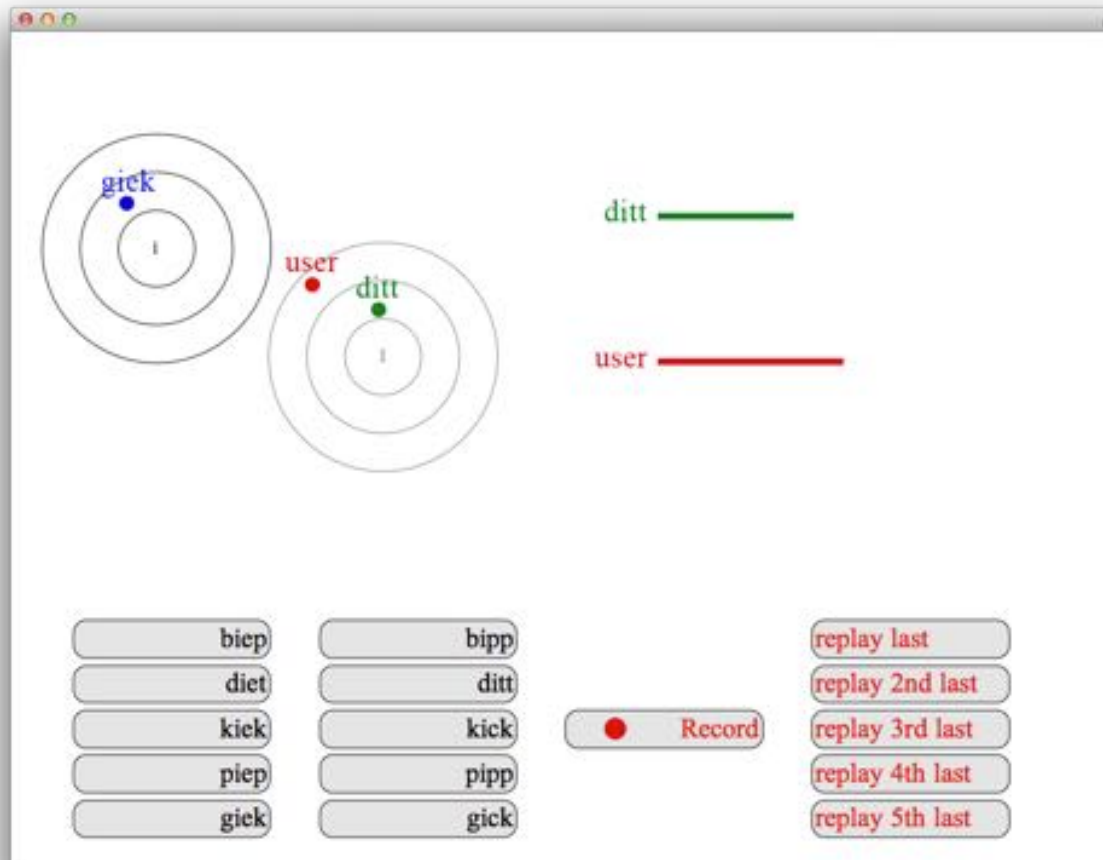
Acoustic Feedback Space representing the first and second formants.

System Layout and Functionality



Each target vowel from the native speaker is labeled with text identifying the nonsense word, and color coded based on the vowel category.

System Layout and Functionality



After the user records his or her voice, he or she can see a point representing the acoustic quality, and a bar representing the duration.

Requirements for the software: Acoustic analysis of speech, speech recognition (forced alignment), visualization of analysis in game-like form

- Platform independent
- If possible, easy to change visualization (e.g. instead of the frog jumping on sea roses, an arrow that shoots at balloons)

49: WG management script/app "Kaffeekasse"

Organization: 3S

Contact: Jens Peter

WG management script/app "Kaffeekasse"

We have a small script to **keep track of shared expenses and the like.**

Whether you buy a weeks worth of food for everyone or just a pack of toilet paper, you simply enter the purchase into the script and **it calculates what your mates owe you.** It also keeps balances so in most cases you rarely have to exchange actual money. The balances just go back and forth between the mates. Obviously the whole system is based on trust between all involved. You wouldn't want a stranger to write up a bill for you.

Current implementation:

The screenshot shows a web browser window titled "WG-Verwaltung - Mozilla Firefox". The page content includes a sidebar with navigation buttons: "Neuen Einkauf", "Neue Bezahlung", "Neuer Kommentar", "Daten anzeigen", "Einstellungen", and "Logout". The main content area is titled "Übersicht über Einkäufe, Bezahlungen, Putzplan und Kommentare" and includes a date selector for "2015" and "9".

Overlaid labels on the right side of the screenshot identify the following features:

- Expenses**: Points to the table of purchases with columns: Datum eingekauft, Beschreibung, jens, Thorsten, Gesamtpreis.
- Payments**: Points to the table of payments with columns: Datum, gezahlt, erhalten, Betrag.
- Balances**: Points to the list of items to be paid, such as "Michi muss Beck 6,64 zahlen".
- Cleaning duty**: Points to the weekly cleaning schedule section, which lists tasks like "Bad putzen" and "Möbelwaxen".

Unfortunately the old implementation is kind of crude and in PHP4 or so.

A rework of this concept could make a really useful tool for shared flats, groups of friends, clubs, wherever there are small expenses between a group of people.

We envision a small, easy to deploy server application that serves a web front end.

Optional add-ons could be a smartphone app, cleaning plan, or a (limited) trust system.

50: Database frontend for medical gate analysis data

Organization: DFKI GmbH in cooperation with UdS

Contact: Tim Dahmen

Database front-end for medical gate analysis data

Good research starts with good data. In the field of trauma surgery, a long running research question is how to predict fracture union or non-union (i.e. does the broken leg heal or not) from diagnostic data. However, most data available today is either highly unreliable (ask the question: in a scale of 1-10, how much pain do you feel?) or available at very low frequency (X-Ray images for example can only be taken every couple of months).

A novel idea in the field is the construction of **electronic shoe bottoms**. Those devices are worn for several weeks inside the shoe and allow to gather pressure data on several dozens points under the patient's foot at a frequency of up to 50hz. The data obtained is very promising from a clinical point of views but **infrastructure to handle the data is completely missing as of today**.

In the proposed project a **database front-end will be constructed to manage the gate analysis data**. This includes management of doctor and patient metadata, image information and most importantly the sensory data gathered by the electronic shoe bottoms. **The system will provide a web-based front-end upload, store, view and analysis of the data**. Analysis functions will include several simple statistical analysis functions and some more advanced predictive algorithms, for which Matlab prototypes are already available. The output of several of those analysis functions (called figures of merit) are most easily interpreted in a graphical way. **So depending on scope and the progression of the project, the system can be extended for some graphical representations of certain figures of merit**.

The developer group has complete freedom concerning the used technology. However, if the project is executed well, the system will potentially be used for life research in the future. We therefore favor more widespread web development tools such as J2EE, ASP.NET or comparable in order to more easily find developers that can maintain the system after the project ends.

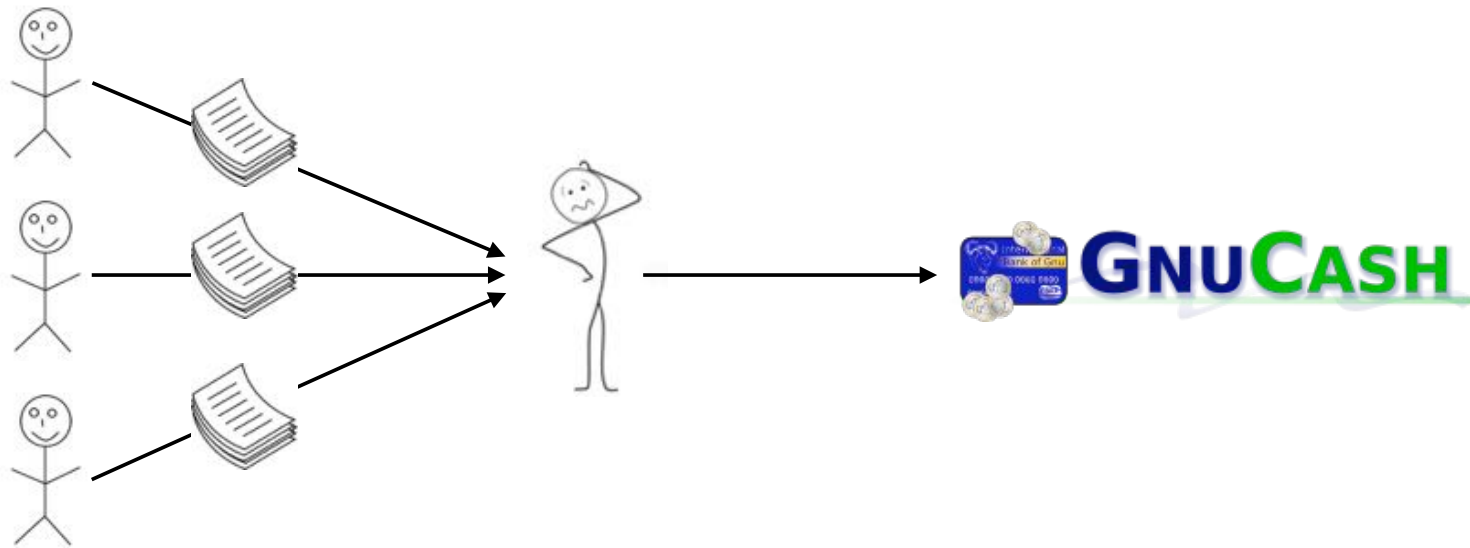
51: ThUnis Accounting Helper

Organization: ThUniS, SE chair

Contact: Alexander Kampmann

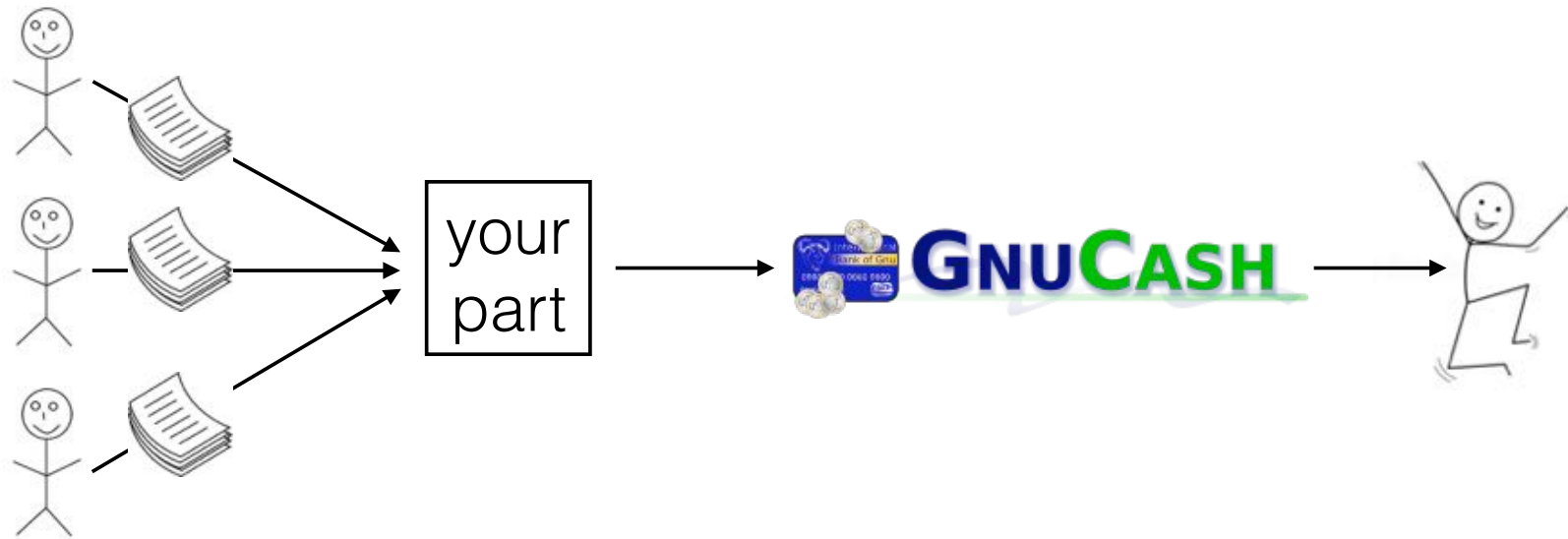
ThUniS: Accounting software

What we have:



ThUniS: Accounting software

What we want:

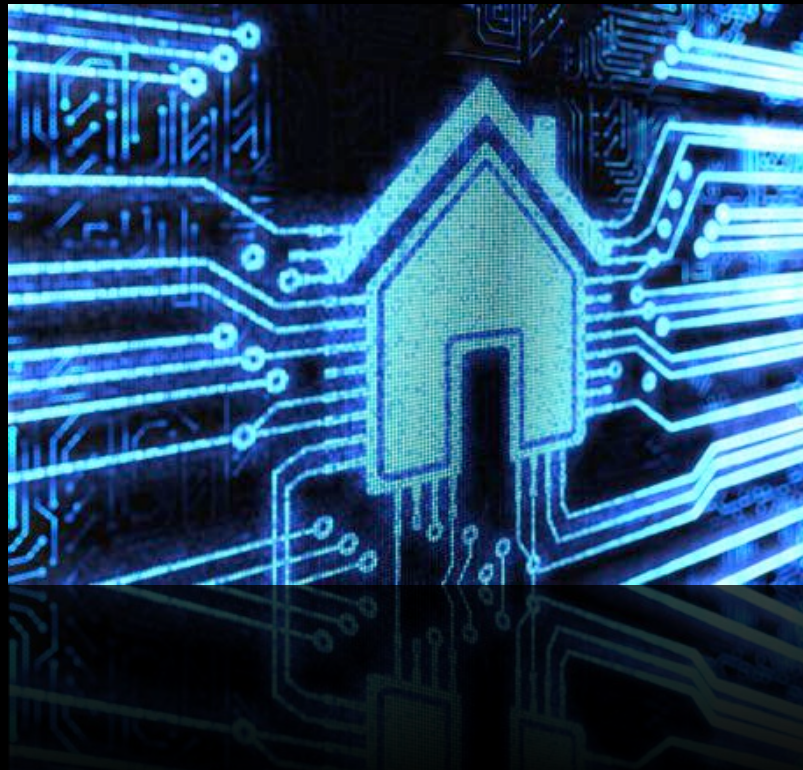


52: COLEMASS - COmmon Living rules Enforcement through home autoMAtion of Shared Spaces

Organization: SE Chair - Saarland University

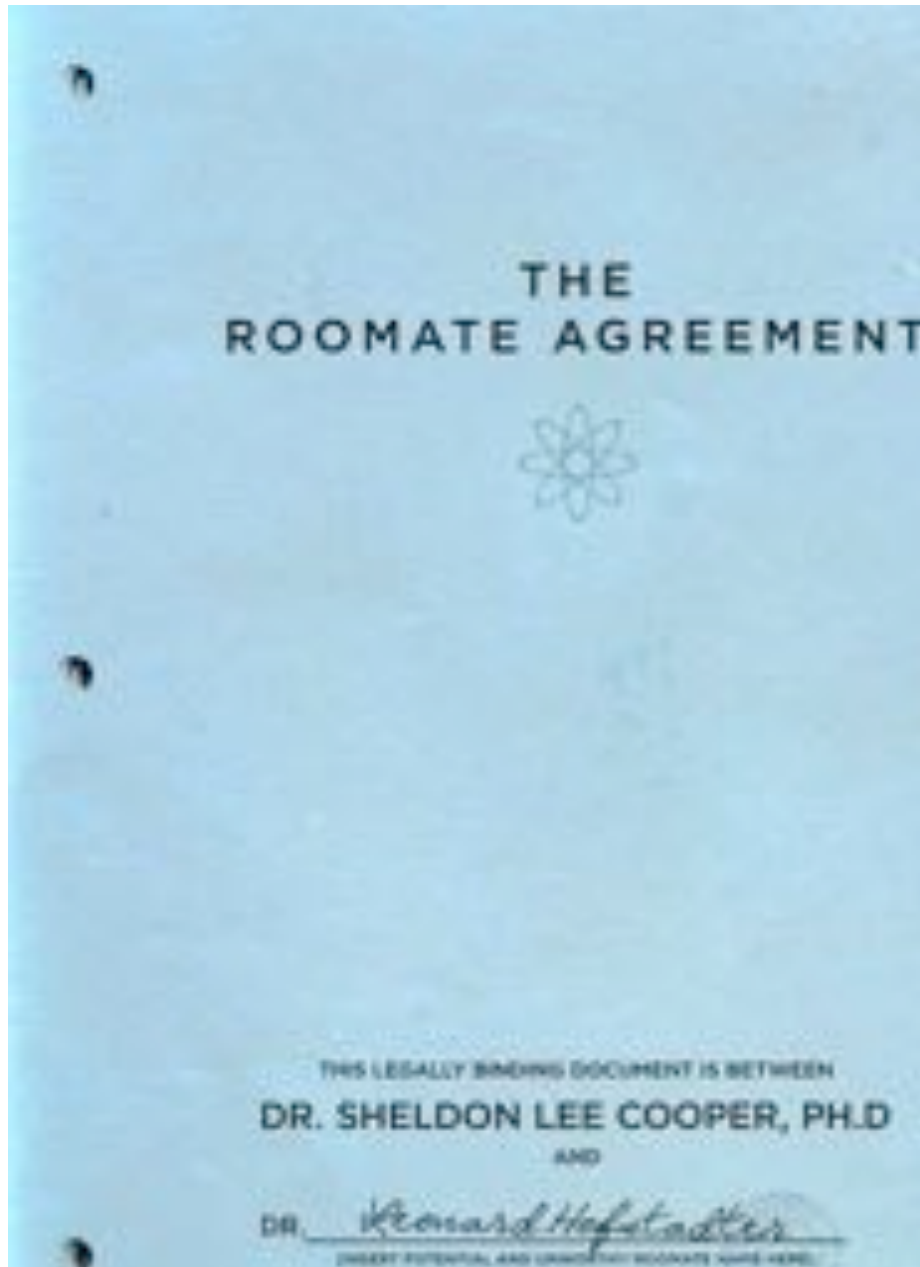
Contact: Alessio Gambi

COLEMASS



*COmmon Living rules Enforcement through home
autoMAtion of Shared Spaces*





Kitchen Rules

- If you empty it - *Fill it*
- If you dirty it - *Clean it*
- If you spill it - *Wipe it up*
- If you open it - *Close it*
- If you cook it - *Share it*



London Underground Service Update 22:11 05 Jun 2008

Bakerloo	Good Service	Jubilee	Good Service
Central	Good Service	Metropolitan	Good Service
Circle	Minor Delays	Northern	Good Service
District	Part Suspended	Piccadilly	Good Service
East London	Bus Service	Victoria	Planned Closure
H'smith & City	Part Suspended	Waterloo & City	Planned Closure
Hammersmith and City - Part Suspended			
No service between Whitechapel and Plaistow due to a request of the police whilst investigating an unexploded WW2 bomb at Bromley by Bow.			



53: Elastic and transparent test execution in the Cloud

Organization: SE Chair - Saarland University

Contact: Alessio Gambi



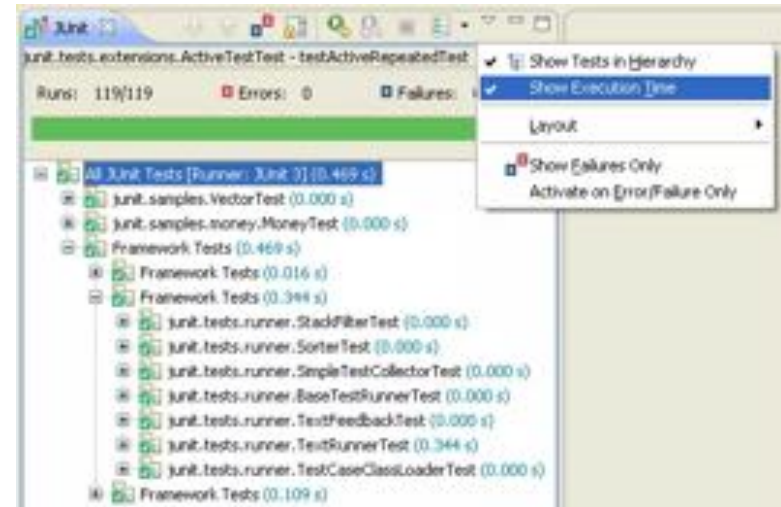
Application Server

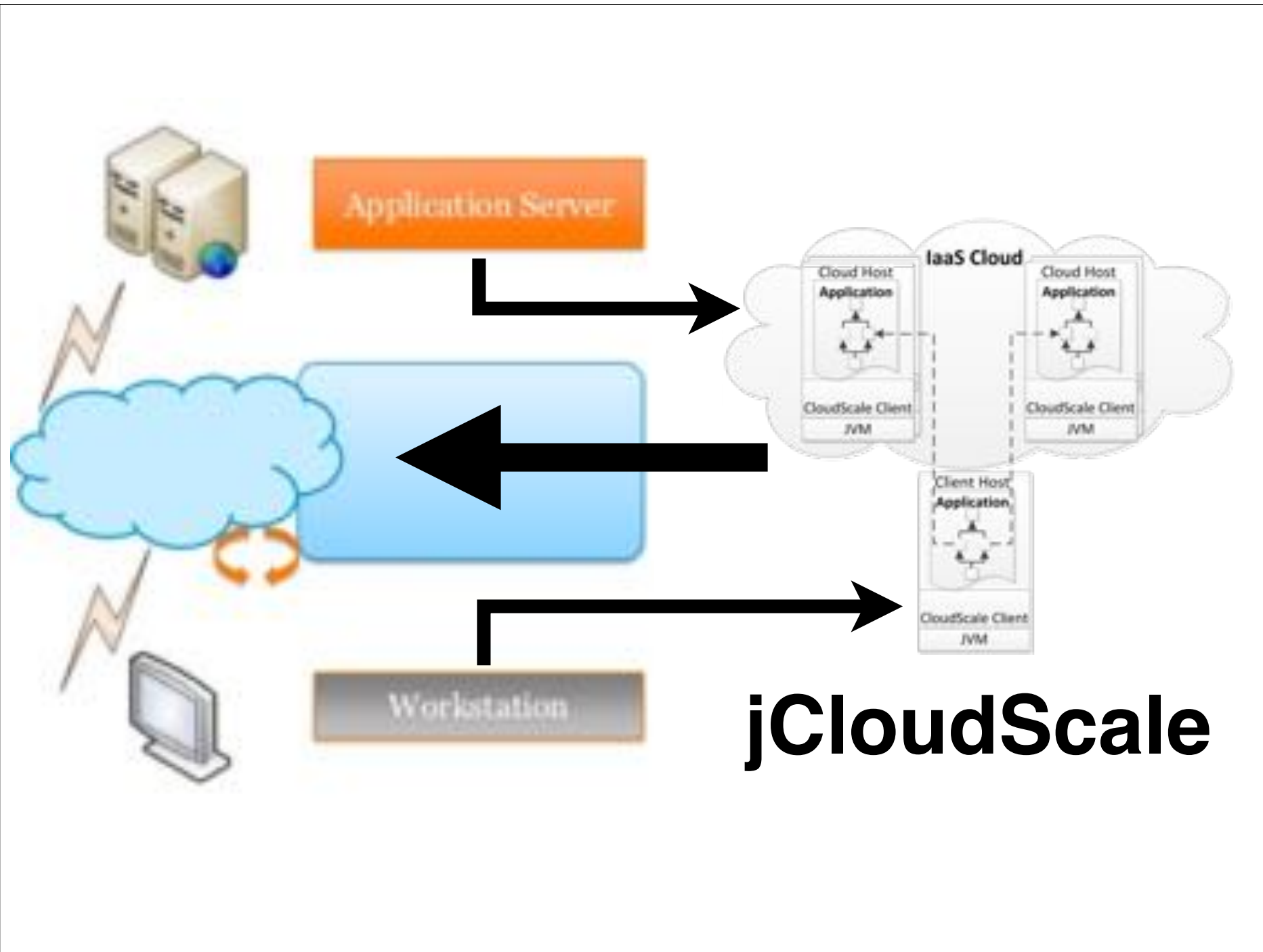


Workstation



JUnit





jCloudScale

54: A virtualization based platform for autotesting Debian packages

Organization: SE Chair - Saarland University

Contact: Alessio Gambi



debci

Source: puppet

Build-Depends:

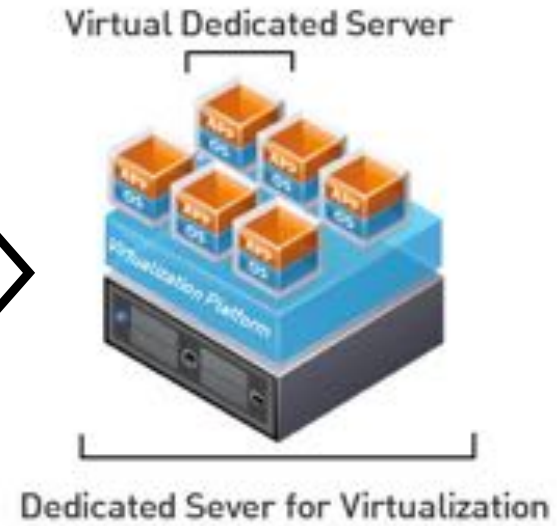
```
debhelper (>= 9~),  
dh-systemd,  
factor,  
rake,  
ruby-hiera
```

Testsuite: autopkgtest

Tests: run-tests

Depends:

```
puppetmaster-passenger,  
perl
```



Distributed Queues



Virtualization



Kameleon
appliance builder