ICSY Retreat at Schloss Dagstuhl

The members of ICSY followed the new tradition that was initiated 2009, and met for the ICSY retreat at Leibniz-Zentrum für Informatik (LZI) at Schloss Dagstuhl near Wadern. The retreat was blessed with snow, fine winter weather, and a lot of excellent presentations from all members of ICSY. In several sessions, co-workers talked about the future of the workgroup.

In his talk Professor Müller inspired the members of ICSY by citing Einstein

“*We can't solve problems by using the same kind of thinking we used when we created them.*”

He reminded everybody to consider new ways of thinking and to keep an open mind for new solutions.

The retreat started with informative sessions that gave a flavor of what research is currently being undertaken at ICSY. At the first retreat ICSY members decided to split the group into two divisions “Future Networks” and “Service-oriented Architectures”. In addition to the traditional ICSY group meeting, both divisions meet on a weekly basis to discuss ongoing activities. The next ICSY retreat is scheduled for November 2011.

(Text: Tino Fleuren)
ICSY’s License4Grid Framework

Successful Completion of D-Grid phase 2 - FG 5

ICSY and partners (Regionales Rechenzentrum für Niedersachsen RRZN und das Albert Einstein Institut der Max Planck Gesellschaft) completed the D-Grid phase 2 projects in December 2010, which focused on accounting. Additionally, another goal was management of licensed data, because processing of licensed content in compliance with the terms of the license is currently not supported in Grid environments.

For example in the GDI-Grid project (cf. ICSY Report 2010-3), geospatial data had to be bought from an institution, like a land surveying office that provides certain area maps. These maps can be used under the restriction of a certain license. Many upcoming applications for Grid Computing require data provided under a specific license, also leading to license violations on a regular basis, because license compliance can currently not be validate; licensed content is often provided manually.

The D-Grid-Integrationsprojekt developed the core Grid infrastructure that users of the first community Grid projects use for their applications. This infrastructure is the basis for all Grid projects that are part of D-Grid. In the second phase of D-Grid additional features have been included into the infrastructure. ICSY participated in the development of an accounting frame-work that can be used in Grid environments.

ICSY also designed and implemented the License4Grid framework that enables users to maintain the association between the license information and the corresponding data. License4Grid has been developed for Globus Toolkit 4.0.8.

In December 2010 the results of the D-Grid phase 2 project have been presented on the European Conference on Web Services (ECOWS) in Cyprus.

(Text: Joachim Götze)

Congratulation Bernd Reuther, PhD

ICSY congratulates Bernd Reuther on receiving his doctoral degree in Computer Science. He celebrated the successful defense of his dissertation in the university’s INT CLUB in January.

In his thesis, entitled “Ein serviceorientierter Ansatz zur Abstraktion von Kommunikationsprotokollen im Internet”, he examines why current application interfaces hinder the exchange of protocol stacks, and what is needed so that applications can immediately make use of newly developed and only partial available new network mechanisms. He proposes an approach based on the service-oriented architecture paradigm, identifying applications as service consumers and protocol stacks as services. Applications specify just required services, while a broker determines and configures an appropriate protocol stack. Thus an application is decoupled from mechanisms of protocols stacks.

The main idea of his thesis builds the basis for the G-Lab projects (cf. ICSY Report 2009-02); its goal is to develop protocols, mechanisms, and technologies that could be used for future networks - especially, for constructing a Future Internet. While G-Lab phase 1 is nearing its ending, the second phase projects G-Lab-Deep and G-Lab-Ener-G are still in progress (cf. ICSY Report 2009-4).

Bernd was the very first research assistant of ICSY, more precisely: a co-founder of our beloved ICSY lab. Members of ICSY honored his work at the workgroup with handcrafting his doctoral hat and attaching items that symbolize important milestones of his scientific carrier.

(Text: Tino Fleuren)
ICSY co-chair for First DFG/NSF Workshop on “Future Network Architectures”

The first DFG/NSF doctoral consortium was held March 13-15, 2011, in conjunction with the 10th GENI Engineering Conference (GEC10) in San Juan, Puerto Rico. The consortium was jointly organized by the Deutsche Forschungsgemeinschaft (DFG) and the National Science Foundation (NSF). The co-chairs are Paul Müller of the University of Kaiserslautern and Mike Zink of the University of Massachusetts.

Members of ICSY attended the conference together with thirty-two graduate students from universities across the United States and Germany. In addition, a consortium “faculty” drawn from academia, industry, and government was on hand to assist the students in organizing and planning their ideas.

The faculty members served as shepherds for the students and were available to them during the whole conference.

In order to facilitate information exchange, participants held a poster session on Sunday evening. During this session, they made a brief presentation of their research interests and had an opportunity to view other participants’ posters.

During the poster session, participants divided into clusters, based on shared research interests. Clusters had to be built under the following conditions:

a) students across the nations should build a cluster; it was not allowed to form a pure “German” or “US” cluster and
b) a minimum of 3 students were needed to build a cluster.

Over the following day and a half, cluster membership and names were refined. Each cluster proposed a research area, including potential experiments using GENI and/or G-Lab resources.

In one of the discussions, ICSY demonstrated the effectiveness and user-friendliness of ICSY’s tool ToMaTo, (TOpology MAnagement TOol), that enables easy setup and control of networking experiments (cf. ICSY Report 2010-03). ToMaTo’s graphical editor allows researchers to create network topologies in seconds, so that they can focus on the experiment and not on how to set it up.

In a plenary session Paul Mueller and Mike Zink gave an outbrief of the very successful first doctoral consortium which will be repeated.
Project for Students with Software AG

The student project Service-oriented Computing, offered yearly in summer term, is carried out in cooperation with Software AG. **Software AG** offers free licenses for their software to university labs for research and education purposes. This way, ICSY provides students the opportunity of gaining experience with leading-edge commercial software - **at no cost**.

**Scenario:**
Students participating in the Service-oriented Computing project play the role of employees of a virtual IT consulting company. The subject of Campus Connect is a virtual university that needs to become more flexible in order to better react to change. It wants to achieve this by optimizing its processes through an efficient, service-oriented IT infrastructure.

Thus, students use Software AG technologies to
- evaluate the existing heterogeneous applications
- integrate heterogeneous legacy applications into a new campus management system
- set up their service-oriented architecture
- design a browser-based user interface that allows access to all scenario participants

**easy to use:** Self-explanatory teaching materials, e-learning, documentation, assignment descriptions, sample solutions, and an intuitive getting started guide are all included,

**ready to use:** Students receive a pre-installed IT environment configured on virtual machines,

**supported:** Students and faculty staff can find answers to their questions in moderated communities,

**results-oriented:** After completing the project, participating students receive a Software AG certificate to enhance their job applications with Software AG or any of Software AG’s four thousand customers worldwide.

After project completion, students will be awarded with a certificate by Software AG which certifies the successful completion of a real-life project.

Interested team members can even become Software AG Certified Professionals for free.

**About Software AG:**
Software AG is the global leader in Business Process Excellence. Their 40 years of innovation include the invention of the first high-performance transactional database, Adabas; the first business process analysis platform, ARIS; and the first B2B server and SOA-based integration platform, webMethods.

*(Text: Tino Fleuren)*
Experiences visiting IIIT Allahabad, India

The two groups ICSY and the Software Engineering group of Prof. Dr. O. P. Vyas have started a cooperation with the focus on exchange of Master and PhD students (cf. ICSY Report 2010-2). So Bernd Reuther took the chance to visit the Indian Institutes of Information Technologies of Allahabad (IIITA).

Bernd Reuther: “The IIITA is one of only five similar institutes in India; it was founded 1999 and has now about 2000 students, whereby ~ 2/3 are undergraduate students. Every year more than one million students apply for a university place at one of the high ranked universities, which requires passing the All Indian Engineering Entrance Examination (AIEEE). Then the best ranked students with interest in informatics are selected by the IIITs.

The city of Allahabad is located in the south central of the state Uttar Pradesh where the rivers Ganges and Yamuna join together. This point is seen as a holy place and thus Allahabad is a religious center for Hindus - it is said that a third invisible river of wisdom also joins the Ganges here. Nevertheless, Allahabad belongs to one of the less developed parts in India, which was one reason to establish such a highly valued university in this place.

I was staying in a nice VIP-guest-house, which is on the campus like houses of professors or the girls’ hostels; the boys’ hostels are just outside the campus.

During my stay in Allahabad I gave several presentations, for students as well as for local staff, all related to Future Internet topics trying to motivate students for having a closer look on these topics. I spent my last day in the city Raipur where I was invited by Prof. Ranjana Vyas to give a talk during a workshop.

The Indian culture is of course very different than European culture, and it is hard to explain this in a few words. My first impressions in India were twofold, first of all the people are extremely friendly; sometimes a little bit over-the-top.

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Experiences visiting IIIT Allahabad, India
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The omnipresent “yes sir” can be confusing for western people. The second impression was the extreme poverty of many people, at least in this region of India. As I have seen later, other parts of the country are more developed. Also the traffic in the streets was very impressive, there were no traffic lights and very few signs in Allahabad, a city with 1.2 million inhabitants. Of course I enjoyed the spicy local food.

Finally having such an insight in another culture is very helpful to improve intercontinental communication. I’m looking forward to cooperate with IIIT Allahabad and especially to work together with highly motivated Indian students.”

(Text: Bernd Reuther)

TransCloud: International Cooperation between G-Lab and GENI

The 10th GENI Engineering Conference (GEC10), hosted by the University of Puerto Rico and the Polytechnic University of Puerto Rico (PUPR), took place March 15-17, 2011 at the Sheraton Puerto Rico Convention Center Hotel in San Juan, Puerto Rico. ICSY participated in the TransCloud demonstration at the GEC10 plenary session.

At the plenary session, an intercontinental MapReduce application on distributed Internet repository data was shown. This was one idea that came out of the Brussels Workshop on EU/US collaboration in Internet research. The participating clouds will be on sites at

- HP Labs, Palo Alto
- UC San Diego
- Northwestern
- Amsterdam
- and Kaiserslautern.

The international connectivity was provided by iGENI (http://groups.geni.net/geni/wiki/IGENI) a distributed network research infrastructure integrating the GENI resources via StarLight, NetherLight, Geant2 and DFN.

(Text: Paul Müller)
ICSY in Brief

Changes in Staff
Eric Veith joins ICSY to fill the vacancy in the G-Lab project; he will support the team in challenges of Future Network research.

Christine Roth is the interim secretary until Ulrike Hahn will return from parental leave.

ICSY’s After Lecture Tea Party
The After Lecture Tea Party has become a recurring event after each term; it received great reception amongst the students, who get the opportunity to inform themselves about ICSY and possible topics for their theses, while drinking coffee and eating cake. ICSY is getting feedback, which allows for improving the quality of their courses.

ALUMNI Reunion and Works Outing
Last summer, alumni, students and current members of ICSY enjoyed works outing in Kaiserslautern city center.

After visiting the Casimirsaal, and participating in a guided tour including the antique escape ways and the historic city center of Kaiserslautern, all members were having dinner together.

(Text: Tino Fleuren)

iGreen Project will continue

The first iGreen project review was successfully done in Spelle near Osnabrück in May.

As announced in our previous ICSY Reports, the iGreen project intends to develop and realize a knowledge management system and network of location-based services in the agriculture, which integrates various public and private information sources. This network allows for implementing of mobile decision assistant systems, which facilitate the decentralized support and optimization of cooperative production processes of the farming sector, reaching improved energy efficiency, economic advantages, and environmental benefits. ICSY provides the iGreen infrastructure with its service platform Venice, which enables a secure communication between iGreen nodes.

In the mid-term review, all work packages presented their work, and an example scenario demonstrated the practical use that the iGreen platform offers for processes in agriculture. The reviewers got on-board of the agricultural machine in order to get a hands-on experience with the iGreen-powered processes. In the corresponding scenario, the driver of the agricultural machine receives work instructions of the contractors on the machine terminal via the iGreen communication infrastructure. Then he performs those instructions while the iGreen technology delivers information about the condition and quality of the field. Afterward the agricultural contractor is notified about the results.

(Text: Senol Arikan)
Cloudy CeBIT

About the latest IT trend and ICSY’s Venice Service Cloud

Every article about CeBIT in March contained the word “Cloud Computing”. Cloud is the most important IT trend at the moment. ICSY discusses the concepts needed for Cloud Computing in detail in the lecture “Grid & Cloud Computing”.

What is Cloud Computing? There are a lot of definitions; however, basically it is all about storing programs and data somewhere in the world in computer centers. PCs only provide a keyboard and display, and connect to a remote system doing all the work. Because of the uncertainty of how many systems are involved the term “Cloud” has been propagated.

Cloud computing offers great opportunities to the business worlds - software and compute power need not be bought but can be temporarily rented. ICSY developed its own Cloud framework; the flier about ICSY’s “Venice Service Cloud” informed the visitors of the CeBIT. Venice is a service platform, providing Cloud structures and tools based on the principles of service orientation.

The end user benefits from this, too. Mobile devices for example need not be stuffed with software and data.

Disadvantages are obvious: users always need to have an Internet connection in order to get access to their data and programs. In addition, the provider can close the door to the users’ data at any moment.

ICSY is especially concerned with questions about Cloud security: Is my data protected from unauthorized access? How can I force any copies of my data to be deleted - including backups? Are new security concepts needed for protecting data in the Cloud?

(Text: Tino Fleuren)