

## **SICSA Distinguished Visiting Fellow: Dr Claus-Peter Wirth**

### **Final report**

#### **Background**

Dr Claus-Peter Wirth has been a member of the Association for Automated Reasoning since 1994 and has worked in automated and human-oriented inductive theorem proving since 1990. He holds a Dr. rer. nat. from the University of Kaiserslautern in informatics, and was a member of the Collaborative Research Center SFB 378 "Resource-Adaptive Cognitive Processes" at the Saarland University for many years. After working at the Max Planck Institute for Informatics his current affiliation is the German Research Center for Artificial Intelligence.

Claus-Peter visited Scotland between April and June 2010 and provides the following report on his activities.

#### **Research**

Besides the usual exchange of new scientific results and ideas with Roy Dyckhoff, Ekaterina Komendantskaya, Vladimir Komendantsky, and Robert Rothenberg (University of St. Andrews); Simon Gay (University of Glasgow); Kees van Deemter and Roman Kutlak (University of Aberdeen); and Alex Simpson and Lucas Dixon (University of Edinburgh); there was an especially useful exchange between the translation project of Frege's "Grundgesetze" (University of St. Andrews and Northern Institute of Philosophy) and the visitor's Hilbert Bernays Project (<http://www.dfki.de/hb>) on the translation of Hilbert and Bernays' "Grundlagen der Mathematik" in a meeting with Philip Ebert and Roy Dyckhoff, which resulted in an ongoing collaboration and exchange of knowledge, data, and computer programs.

The deeper motivation for the stay, however, were two projects of joint work.

The first of these projects is with Alan Bundy and Alan Smaill (University of Edinburgh) on descente infinie and rippling, aiming at a major breakthrough in automated inductive theorem proving. The planned resubmission of an EPSRC proposal failed due to new resubmission regulations which are most inappropriate to research in general.

The second of these projects is with Murdoch J. Gabbay (Heriot-Watt University, Edinburgh) on a combination of the techniques of Gabbay's nominal terms and Wirth's free variable-frameworks for descente infinie and Hilbert's epsilon. The very high number of meetings of Gabbay and Wirth triggered a bunch of great new ideas, which will be published soon.

The work on both projects is ongoing and the possibility to meet in person over a longer period of time was an invaluable help for the development of the participant's research.

## Talks/Seminars

During his visit Dr Wirth gave the following talks/seminars:

**TITLE:**

Hilbert's epsilon as an operator of indefinite committed choice! --- And as a paradigm for the design of similar operators for the analysis of reference in natural language semantics?

**TYPE:** Seminar

**PLACE:** CS Dept, University of Aberdeen, Scotland

**TIME:** May 19, 2010

**TITLE:**

Hilbert's epsilon in the semantics of programming languages

**TYPE:** FATA Seminar

**PLACE:** CS Dept, University of Glasgow, Scotland}

**TIME:** May 18, 2010

**TITLE:**

Open Discussion on Descente Infinie in the Automation of Inductive Theorem Proving and Synthesis of Recursive Functions

**TYPE:** DReaM talk

**PLACE:** CS Dept, University of Edinburgh, Scotland

**TIME:** May 11, 2010

**TITLE:**

Hilbert's epsilon --- History and Future

**TYPE:** CISA Seminar

**PLACE:** CS Dept, University of Edinburgh, Scotland

**TIME:** May 10, 2010

**TITLE:**

On the Relevance of Confluence of Conditional Term Rewriting Systems for Symbolic Computation

**TYPE:** Seminar

**PLACE:** CS Dept, University of St. Andrews, Scotland

**TIME:** May 06, 2010