



FIDIS

Future of Identity in the Information Society

Title: "D15.3/D13.10: FIDIS International Summer School"
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Identifier: D15.3/D13.10
Type: [Other]
Version: 1.0
Date: Monday, 20 October 2008
Status: [Final]
Class: [Confidential]
File: FIDIS_D13.10_D15.3_v1.0.doc

Summary

Training for PhD students within FIDIS is conducted through structured and timely events held at or in association with an academic institution from within the FIDIS network. To this end, the aim of this deliverable was to organise and execute the second FIDIS International Summer School, an event akin to a formal academic conference with a mixture of keynote lectures by senior researchers and workshop presentations by PhD students. These are designed to tie-in with other closely related events to expand the knowledge base and as a by-product to further publicise the work of FIDIS. This means that, whilst assuring the interests of FIDIS, the event also targeted participants from outside the FIDIS network. In this case it was jointly organised with IFIP (International Federation of Information Processing) Working Groups 9.2 (Computers and Social Accountability), 9.6/11.7 (IT Misuse and the Law) and 11.6 (Identity Management). To further the value, scope and appeal, it was also combined with WP13's Privacy Summer School (D13.10) to form an extended, enhanced and enriched event.

The combined event was successfully held on the 1st – 7th September in Brno, Czech Republic. The proceedings will subsequently be published by the official IFIP publisher Springer Science and Business Media.



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<i>3. Vrije Universiteit Brussel</i>	Belgium
<i>4. Unabhängiges Landeszentrum für Datenschutz</i>	Germany
<i>5. Institut Europeen D'Administration Des Affaires (INSEAD)</i>	France
<i>6. University of Reading</i>	United Kingdom
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<i>18. Institut de recherche criminelle de la Gendarmerie Nationale</i>	France
<i>19. Netherlands Forensic Institute</i>	Netherlands
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Versions

<i>Version</i>	<i>Date</i>	<i>Description (Editor)</i>
0.1	15.09.2008	<ul style="list-style-type: none">• Initial release
0.2	02.10.2008	<ul style="list-style-type: none">• Internal review release
1.0	20.10.2008	<ul style="list-style-type: none">• Final release

Foreword

FIDIS partners from various disciplines have contributed as authors to this document. The following list names the main contributors for the chapters of this document:

<i>Chapter</i>	<i>Contributor(s)</i>
All Chapters	Deliverable Editors

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1 Executive Summary

Establishing long-term links, i.e. beyond the life-time of the FIDIS NoE, between partners is key to ameliorating the research fragmentation issues both at a fundamental level across disciplines and at the broader level across Europe.

The aim of this deliverable was to organise and execute the second FIDIS Summer School, an event akin to a formal academic conference. These events are designed to tie-in with other closely related events to expand the knowledge base and as a by-product to further publicise the work of FIDIS. This means that, whilst assuring the interests of FIDIS, the event specifically also targeted participation from outside the FIDIS network. In this case it was jointly organised with IFIP (International Federation of Information Processing) Working Groups 9.2 (Computers and Social Accountability), 9.6/11.7 (IT Misuse and the Law) and 11.6 (Identity Management). To further the value, scope and appeal, it was combined with WP13's Privacy Summer School (D13.10) to form an extended, enhanced and enriched event.

The focus of this Summer School, held on the 1st – 7th September in Masaryk University, Brno, Czech Republic, was on aspects of Identity Management in relation to current and future technologies in a variety of contexts, especially security and privacy issues related to the internet. Based on the premise that the increasing diversity of Information & Communication Technologies and their equally diverse range of uses in personal, professional and official capacities raise challenging questions of identity in a variety of contexts, the event aimed to address questions such as: What constitutes an identity, how do new technologies affect identity, how do we manage identities in a globally networked information society?

FIDIS supports interdisciplinary exchange and IFIP takes a holistic approach to technology and so participants' contributions combining technical, socio- economic, ethical, philosophical, psychological and legal perspectives on challenges for privacy and security in relation to identity were solicited. Indeed being a heterogeneous environment, the event was an excellent opportunity to exchange ideas and build a truly interdisciplinary research network.

This event proved to be notably successful, with more than 52 delegates from 14 countries actively participating. The proceedings of the event will subsequently be published by the official IFIP publisher Springer Science and Business Media.

2 Introduction

A Network of Excellence (NoE) is an instrument for strengthening excellence by tackling the fragmentation of research across Europe, where the main deliverable is a durable integration of the research capacities of the participants. The exchange of knowledge is essential in this context, and considered one of the *desiderata* within FIDIS. Equally, establishing long-term links, i.e. beyond the life-time of the NoE, between partners is key to ameliorating the fragmentation issues both at a fundamental level across disciplines and at the broader level across Europe. One core method by which both can be attained is through the cross discipline training of PhD students within the FIDIS network. The importance of this aspect is echoed by the elaboration of this specific area into its own focussed Work Package (WP15) within FIDIS.

The FIDIS Summer School markedly differs from the smaller PhD training events which occur as part of WP15 throughout the year. While the drive is still to encourage a stimulating discourse between all participants, these longer events aim to provide a setting more akin to a formal academic conference, with participation widely drawn from reputed sources beyond the FIDIS network. With a formal program committee, extensive review process for participants' submissions, and subsequent publication of proceedings, these events have the potential to offer a high degree of academic value. Equally, connecting students and researchers from disparate domains together helps foster interdisciplinary collaboration and is an important platform for networking.

2.1 Aims of the FIDIS International Summer School

The focus of this Summer School was on aspects of Identity Management in relation to current and future technologies in a variety of contexts, especially security and privacy issues related to the internet. Following the holistic approach advocated by the IFIP working groups involved, a diverse group of participants ranging from young doctoral students to leading researchers in the field were encouraged to engage in discussion, dialogue and debate in an informal and supportive setting. The interdisciplinary and international emphasis of the Summer School allowed for a broader understanding of the issues in the technical and social spheres.

The FIDIS Summer School event is detailed in the following sections. Note that material including abstracts, papers, presentations and tutorials is available on the official site¹, and is linked from the internal FIDIS portal².

¹ <http://www.buslab.org/SummerSchool2008/>

² <http://internal.fidis.net/community-main/phd/>

3 2nd FIDIS International Summer School

From the 1st to the 7th September 2008 at Masaryk University, the 2nd FIDIS international Summer School was held in co-operation with the IFIP (International Federation for Information Processing) working groups 9.2 (Social Accountability), 9.6/11.7 (IT Misuse and the Law) and 11.6 (Identity Management), and jointly with WP13's Privacy Summer School (D13.10). The Summer School addressed the theme of Privacy and Security in relation to current and future technologies in a variety of contexts.

Below are detailed the key aspects of the event, the full event programme is given in Annex 1 & 2, the program and organising committees are listed in Annex 3, the full list of participants in Annex 4.

3.1 Event synopsis

The event took the form of an academic conference, with keynote speakers and presentations of research by the participants. Both IFIP and FIDIS take a holistic approach to technology and support interdisciplinary exchange, and so contributions combining technical, social, ethical or legal perspectives were solicited. A series of keynote speeches (see Annex 1) provided a focus for the theme of the Summer School – privacy issues, wireless security and privacy, privacy and identity management, privacy for emerging technologies and applications, privacy awareness and individual control, virtual communities, anonymity, security policy – and the contributions from participants enhanced the ideas generated by the keynote speeches.

For submitted papers the review process consisted of two steps: Firstly, contributions for presentation at the Summer School were selected based on a review of short papers by the Summer School Programme Committee (see Annex 3). Successful papers were revised based on reviewers' comments, and presented and discussed at the Summer School event during structured workshop sessions (see Annex 2). After the Summer School, authors have the opportunity to submit their final full papers, having addressed issues raised during the discussions at the Summer School. These papers will be reviewed again and those selected by the Summer School Programme Committee or by additional reviewers according to common quality criteria will be included in the subsequent proceedings. The proceedings will include both keynote papers and submitted papers and will be subsequently published by the official IFIP publisher Springer Science and Business Media³.

By holding the Summer School jointly with FIDIS D13.10, it was possible to extend the event by an extra two days. This enabled additional interactive elements such as a computer security activity called "Capture the Flag" (CTF), where participants were taught and given the opportunity to try the basic skills of defending and attacking computer systems (see Annex 2). In order to maintain flexibility, these activities were held during an optional two days after the main conference activities.

Where applicable, students who actively participated, in particular those who presented a paper, were eligible to receive a course certificate which awarded 3 ECTS at PhD Level.

³ 'Future of Identity in the Information Society - Challenges for Privacy and Security', proceedings to be published by Springer Verlag.

3.2 Conclusion

This event proved to be notably successful, with 52 delegates from 14 countries actively participating, with notable intensive discussions between PhD students and senior acknowledged researchers from different disciplines. The participants' presentations are listed in Annex 2, and are available on the official site⁴, linked from the FIDIS internal portal. Annex 4 gives the full list of participants.

This Summer School event was certainly timely, with the theme of Privacy and Security in relation to current and future technologies in a variety of contexts tying in very well with ongoing FIDIS work, and highly active research topics. Equally, the co-operation of IFIP and FIDIS for this event worked very well and again proved highly complementary.

Overall, the feedback from the participants was overwhelmingly positive, especially with regard to the choice of topic, its relevance to their own work, and the wider work of their institution. Equally, the consensus was that a good balance between the represented disciplines was found to the benefit of the event and its participants and the approach taken for reviewing submissions worked well, resulting in a high quality published proceedings. More generally, it was widely acknowledged that the organisation, administration and location were of an excellent standard and that the event objectives were met to the satisfaction of all participants.

⁴ <http://www.buslab.org/SummerSchool2008>

Annex 1: Event Programme

Final Program

Monday, 1st September 2008:

09:45-10:00 Welcome, introduction

Historic Perspective - Lessons Learned Or Not? (Session chair - Vashek Matyas)

10:00-11:15 Keynote: Dieter Gollmann
Software Security - The Dangers of Abstraction

11:15-11:45 Coffee break

11:45-13:00 Keynote: Jan Holvast
History of Privacy

13:00-14:00 Lunch

14:00-16:55 Workshops 1 & 2 (Coffee at 15:40)

17:00- Welcome Reception

Tuesday, 2nd September 2008:

Wireless Security and Privacy (Session chair - Mireille Hildebrandt / Ronald Leenes)

09:00-10:00 Keynote: Javier Lopez
Security & Privacy in Wireless Sensor Networks

10:00-10:30 Coffee break

10:30-11:45 Keynote: Dan Cvrcek
Security and Privacy Aspects of Wireless Communication

11:45-13:00 Keynote: Sandra Steinbrecher
Enhancing multilateral security in and by reputation systems

13:00-14:00 Lunch

14:00-14:50 Workshops 3 & 4

15:00- Optional program – Tour of the City centre

Wednesday, 3rd September 2008:

Challenges of emerging technologies (Session chair - Martin Meints)

09:00-10:00 Keynote: Zdenek Riha
E-passports Technology and Security

10:00-10:30 Coffee break

10:30-11:30 Keynote: Mireille Hildebrandt
Ambient Law: the challenge of Ambient Intelligence

11:30-13:00 Workshops 5 & 6

13:00-14:00 Lunch

Future of Identity in the Information Society (No. 507512)

14:00-16:55 Workshops 7 & 8 (Coffee at 15:40)

Thursday, 4th September 2008:**Virtual Communities (Session chair – Penny Duquenoy / Louise Yngström)**

09:00-10:00 Keynote: Ronald Leenes
Virtual Communities, Privacy and Trust

10:00-10:30 *Coffee break*

10:30-11:40 Keynote: Martin Meints
Overview to Security Standards and Their Impact on Privacy Management

11:40-12:50 Keynote: Kai Rannenberg
Mobile Identity Management -Trends and Business Factors

13:00-14:00 *Lunch*

14:00- *Social program - trip to caves*

Friday, 5th September 2008:**Anonymity (Session chair - Jan Holvast / Simone Fischer-Hübner)**

09:00-11:30 Keynote: Steven Murdoch
Future of Anonymity and Censor Free Publishing

10:00-10:30 *Coffee break*

10:30-11:40 Keynote: George Danezis
Mass Surveillance and Data Retention and the Value of Anonymous Communication

11:40-12:45 Keynote: Louise Yngström
Holistic Security

13:00-14:00 *Lunch*

14:00-15:40 Workshops 9, 10, 11 & 12

Saturday, 6th September 2008:

09:00-17:00 Workshop 13: Capture the Flag: Lexi Pimenidis

Sunday, 7th September 2008:

09:00-12:40 Interactive lab session on traffic analysis: George Danezis

12:40-13:00 Closing session: Vashek Matyas

Annex 2: Event Workshops

Workshop 1: Information, Ethics, Identifiers (chair - Simone Fischer-Huebner)

Diane Whitehouse, Penny Duquenoy

Applied ethics and eHealth: principles, identity, and RFID

Els Soenens

Identity Management Systems in Healthcare: the Issue of Patient Identifiers

Hans Hedbom

A Survey on Transparency Tools for Enhancing Privacy

Workshop 2: Privacy Issues (chair - Jan Holvast)

Thomas P. Keenan

When Spiders Bite: The Use, Misuse, and Unintended Consequences of “Silent Information”

Stefan Berthold, Rainer Böhme, Stefan Köpsell

Data Retention and Anonymity Services

Sebastian Pape

A Survey on Untransferable Anonymous Credentials

Workshop 3: Wireless Network – Privacy and Security (chair - Dieter Gollmann)

M. Zadina, J. Nagy

Security in Wireless Networks Based on IEEE 802.11: Case study

Workshop 4: Privacy and Identity Management (chair - Penny Duquenoy)

Gabriela Bodea

Identity management in a federated world – privacy considerations for the delivery of e-Government services

Workshop 5: Privacy for Emerging Technologies and Applications (chair - Dan Cvrcek)

Jiri Kur, Andriy Stetsko

Anonymity and Identity Issues in Wireless Sensor Networks

Darlis Mojarrieta Castaneda

Privacy and Identity Cards: The UK case

Future of Identity in the Information Society (No. 507512)

Workshop 6: Privacy-enhanced and Anonymous Applications (chair - Lexi Pimenidis)

Jorn Lapon, Kristof Verslype, Pieter Verhaeghe, Bart De Decker, Vincent Naessens

PetAnon: A Fair and Privacy-Preserving Petition System

Marian Novotny

Design and analysis of a practical e-voting protocol

Workshop 7: Business and Organisational Perspectives (chair - Zdenek Riha)

J.H. Hoepman, R. Joosten, J. Siljee

Comparing Identity Management Frameworks in a Business Context

Viktoria Skarler

eManaging the thin line between private and public identity in 3D-Network Organisations

Meghna Lowalekar, Ritesh Kumar Tiwari, Kamalakar Karlapalem

Security Policy Satisfiability and Failure Resilience in Workflows

Workshop 8: Privacy Awareness and Individual Control (chair - Diane Whitehouse)

Rowena Rodrigues

The user and the quandary of control

Stefanie Pöttsch

Privacy Awareness – A Means to Solve the Privacy Paradox?

Mike Bergmann

Testing Privacy Awareness

Workshop 9: Anonymity attacks and analysis (chair - George Danezis)

Stefan Berthold

Possibilistic Disclosure Attacks in Polynomial Time

Daniel Slamanig, Christian Stingl

Investigating Anonymity in Group Based Anonymous Authentication

Workshop 10: Security policy (chair - Martin Meints)

Martin Meints

Exercise on security policy analysis

Workshop 11: eHealth workshop (chair - Vashek Matyas)

Rieks Joosten, Diane Whitehouse, Penny Duquenoy

Towards a Meta Model for Identity and Identifiability Terminology

Workshop 12: Short presentations (chair - Steven Murdoch)

Tomaz Klancnik

*Privacy Protection in New Generation Peer-to-Peer Applications***Workshop 13: Capture the Flag (chair - Lexi Pimenidis)**

One item at the very core of computer security is the field of software vulnerabilities – ‘bugs’. Their presence is due to missing knowledge, false assumptions, or time pressures on any person in the process of designing, creating, installing, or simply using programs. The effect of a bug can be as vast as allowing any entity with the knowledge of its existence to take over the computer running the vulnerable software and forcing it to do arbitrary actions. The difficulties in finding and exploiting errors in computer systems are of varying degrees. It can range from trivial as in the case of most web applications, to tremendously difficult reverse engineering challenges which require in depth knowledge of hardware, OS, and applications.

In a security exercise like a “Capture the Flag” (CTF), participants are taught the basic skills in order to take a first view behind the scenes of defending and attacking computer systems. In a closed environment each group of players is given a virtual server running multiple applications containing typical security related flaws. It is the task of the players to find these flaws - and use these to gain control of the other players’ servers. After the game, a selected set of vulnerabilities and exploits will be disclosed to the players and discussed in as much depth as time remaining allows.

Annex 3: Programme & Organising Committees

General Chair:

Vashek Matyas (Masaryk University, Brno, Czech Republic)

Programme Committee Co-Chairs:

Dan Cvrcek (University of Cambridge, UK)

Simone Fischer-Hübner (Karlstad University, Sweden, IFIP WG11.6 vice chair)

Programme Committee:

Geoff Busby (Independent Consultant, UK)

David-Olivier Jaquet-Chiffelle (Berne University of Applied Sciences, Switzerland)

George Danezis (Microsoft Research Cambridge, UK)

Penny Duquenoy (Middlesex University, UK, IFIP WG 9.2 chair)

Mark Gasson (University of Reading, UK)

Dieter Gollmann (Technische Universität Hamburg-Harburg, Germany)

Marit Hansen (Independent Center for Privacy Protection, Kiel, Germany)

Dogan Kesdogan (Siegen University, Germany)

Kai Kimppa (University of Turku, Finland)

Mathias Klang (IT University/University of Göteborg, Sweden)

Elisabeth de Leeuw (Ordina, Netherlands, IFIP WG 11.6 chair)

Ronald Leenes (Tilburg University, Netherlands)

Marc Van Lieshout (TNO, Netherlands)

Javier Lopez (University of Malaga, Spain)

Leonardo Martucci (Karlstads universitet, Sweden)

Steven Murdoch (University of Cambridge, UK)

Lexi Pimenidis (University of Siegen, Germany)

Kai Rannenbergh (Goethe University Frankfurt, Germany, IFIP TC11 chair)

Leif Bloch Rasmussen (Copenhagen Business School, Denmark)

Zdenek Riha (Masaryk University, Brno, Czech Republic)

Morton Swimmer (John Jay College of Criminal Justice, CUNY, USA)

Jozef Vyskoč (VaF, Slovakia)

Diane Whitehouse (The Castlegate Consultancy, UK)

Louise Yngström (Stockholm University/KTH, Sweden)

Chris Zielinski (World Health Organization, Switzerland)

Albin Zuccato (TeliaSonera, Sweden, IFIP WG 9.6/11.7 chair)

Organising Committee Chair:

Petr Švenda (Masaryk University, Czech Republic)

Organising Committee:

Honza Krhovják (Masaryk University, Czech Republic)

Marek Kumpošt (Masaryk University, Czech Republic)

Vašek Lorenc (Masaryk University, Czech Republic)

Kamil Malinka (Brno University of Technology, Czech Republic)

Andriy Stetsko (Masaryk University, Czech Republic)

Jiří Kůr (Masaryk University, Czech Republic)

Annex 4: List of Participants

Below is given a full list of participants from the FIDIS Summer School event. In all 52 people were actively involved with the event, representing 14 countries.

Bergmann, Mike	Technical University Dresden	Germany
Berthold, Stefan	Technical University Dresden	Germany
Bichsel, Patrik	IBM, Zurich	Switzerland
Bodea, Gabriela	TNO	Netherlands
Cvrcek, Dan	University of Cambridge	UK
Danezis, George	Microsoft Research Cambridge	UK
Duquenoy, Penny	Middlesex University	UK
Fisher-Hübner, Simone	Karlstad University	Sweden
Gollmann, Dieter	Technische Universität Hamburg	Germany
Hedbom, Hans	Karlstad University	Sweden
Hildebrandt, Mireille	VUB	Belgium
Holvast, Jan	Holvast & Partner	Netherlands
Joosten, Rieks	TNO	Netherlands
Keenan, Tom	University of Calgary	Canada
Klancnik, Tomaz	Jozef Stefan Institute	Slovenia
Köpsell, Stefan	Technical University Dresden	Germany
Krhovják, Jan	Masaryk University	Czech Republic
Kumpošt, Marek	Masaryk University	Czech Republic
Kur, Jiri	Masaryk University	Czech Republic
Lapon, Jorn	Katholieke Hogeschool Sint-Lieven	Belgium
Leenes, Ronald	Tilburg University	Netherlands
Lopez, Javier	University of Malaga	Spain
Lorenc, Václav	Masaryk University	Czech Republic
Lowalekar, Meghna	IIT Hyderabad	India
Malinka, Kamil	Brno University of Technology	Czech Republic
Matyas, Vashek	Masaryk University	Czech Republic
Meints, Martin	ICPP	Germany
Murdoch, Steven	University of Cambridge	UK
Nagy, Jan	Brno, University of Technology	Czech Republic
Novotny, Marian	Pavol Jozef Šafárik University in Košice	Slovakia
Pape, Sebastian	University of Kassel	Germany
Pimenidis, Lexi	University of Siegen	Germany
Pötzsich, Stefanie	Technical University Dresden	Germany

Future of Identity in the Information Society (No. 507512)

Preiss, Franz-Stefan	IMB, Zurich	Switzerland
Rannenberg, Kai	Goethe University Frankfurt	Germany
Riha, Zdenek	Masaryk University	Czech Republic
Rodrigues, Rowena	University of Edinburgh	UK
Rossero, Liliana	Thales Group	France
Slamanig, Daniel	Carinthia University of Applied Sciences	Austria
Soenens, Els	VUB	Belgium
Steinbrecher, Sandra	Technical University Dresden	Germany
Stetsko, Andriy	Masaryk University	Czech Republic
Švenda, Petr	Masaryk University	Czech Republic
Tavakolifard, Mozhgan	Norwegian University of Science and Technology	Norway
Tuček, Pavel	Faculty of Informatics, Masaryk University	Czech Republic
Valvis, George		Greece
Westermann, Benedikt	Norwegian University of Science and Technology	Norway
Whitehouse, Diane	The Castlegate Consultancy	UK
Yngström, Louise	Stockholm University	Sweden
Zadina, Martin	Brno University of Technology	Czech Republic
Zhang, Ge	Stockholm University	Sweden
Žilka, Roman	Masaryk University	Czech Republic