



**Title:** *D9.3.3 Dissemination Report V3*

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## Summary

This deliverable describes the final PICOS dissemination report. It outlines the general dissemination strategy and explains activities which we conducted with regard to dissemination in the 3<sup>rd</sup> project period. The report in particular gives an overview how different channels (such as project website, conferences and publications) were utilized for dissemination. A further section summarises the main achievements and highlights the impacts of the PICOS dissemination work. In addition, the document outlines activities and opportunities for future dissemination and research. The report builds upon the previous dissemination reports and continues and extends them.



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Atos Origin	Spain
Deutsche Telekom AG	Germany
Leibniz Institute of Marine Sciences	Germany
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### The PICOS Deliverable Series

These documents are all available from the project website located at <http://picos-project.eu>.

D2.1 Taxonomy	July 2008
D2.2 Categorisation of Communities	July 2008
D2.3 Contextual Framework	November 2008
D2.4 Requirements	November 2008
D3.1.2 Trust and Privacy Assurance for the Design Platform v2	January 2011
D3.2.2 Trust and Privacy Assurance for the Platform Prototype v2	January 2011
D3.3.2 Trust and Privacy Assurance for the Community Prototype v2	January 2011
D3.4.1 A summary of PICOS WP3 sub-phase 3.1 deliverables	September 2010
D4.1 Platform Architecture and Design v1	March 2009
D4.2 Platform Architecture and Design v2	September 2010



### D9.3.3 Dissemination Report V3

D5.1 Platform description document v1	October 2009
D5.2a Platform prototype 2a	May 2010
D5.2b PICOS PHASE 2 Platform Description document	November 2010
D6.1 Community Application Prototype 1	December 2010
D6.2a Community application prototype 2	April 2010
D6.2b Community application prototype	October 2010
D7.1a User Evaluation Plan	December 2009
D7.1b Trial plan for the second community prototype	October 2010
D7.2a First Community Prototype: Lab and Field Test Report	February 2010
D7.2b First Community Prototype: Field Trial Report	August 2010
D7.3 Second Community Trial Report	April 2011
D8.1 Legal, economic and technical evaluation of the first platform and community prototype	April 2010
D8.2 Legal, economic and technical evaluation of the second platform and community prototype	February 2011
D8.3 Final Evaluation Report	May 2011
D9.1 Web Presence	February 2008
D9.2.1 Exploitation Planning	May 2009
D9.2.2 Exploitation Plan 2	March 2010
D9.3.1 Dissemination Planning	May 2009
D9.3.2 Dissemination Report V2	March 2010



## The PICOS Deliverable Series

### Vision and Objectives of PICOS

With the emergence of services for professional and private online collaboration via the Internet, many European citizens spend work and leisure time in online communities. Users consciously leave private information; they may also leave personalized traces they are unaware of. The objective of the project is to advance the state of the art in technologies that provide privacy-enhanced identity and trust management features within complex community-supporting services that are built on Next Generation Networks and delivered by multiple communication service providers. The approach taken by the project is to research, develop, build trial and evaluate an open, privacy-respecting, trust-enabling platform that supports the provision of community services by mobile communication service providers.

The following PICOS materials are available from the project website <http://www.picos-project.eu>.

### Planned PICOS documentation

- Slide presentations, press releases, and further public documents that outline the project objectives, approach, and expected results;
- PICOS global work plan providing an excerpt of the contract with the European Commission.

### PICOS results

- *PICOS Foundation* for the technical work in PICOS is built by the categorization of communities, a common taxonomy, requirements, and a contextual framework for the PICOS platform research and development;
- *PICOS Platform Architecture and Design* provides the basis of the PICOS identity management platform;
- *PICOS Platform Prototype* demonstrates the provision of state-of-the-art privacy and trust technology to leisure and business communities;
- *Community Application Prototype* is built and used to validate the concepts of the platform architecture and design and their acceptability by covering scenarios of private and professional communities;
- *PICOS Trials* validate the acceptability of the PICOS concepts and approach chosen from the end-user point of view;
- *PICOS Evaluations* assess the prototypes from a technical, legal and social-economic perspective and result in conclusions and policy recommendations;
- *PICOS-related scientific publications* produced within the scope of the project.



## Table of Contents

1	Introduction.....	7
2	Subject of Dissemination.....	7
3	Dissemination Strategy & Goals.....	8
4	Channels of dissemination.....	9
4.1	<i>Public Website</i> .....	9
4.2	<i>Publications/Conferences</i> .....	11
4.2.1	Publications.....	11
4.2.2	Conferences and Workshops.....	13
4.3	<i>Press</i> .....	17
4.4	<i>Cooperations and Liaisons</i> .....	17
4.5	<i>Other Channels</i> .....	19
5	Achievements & Impacts.....	21
	References.....	23

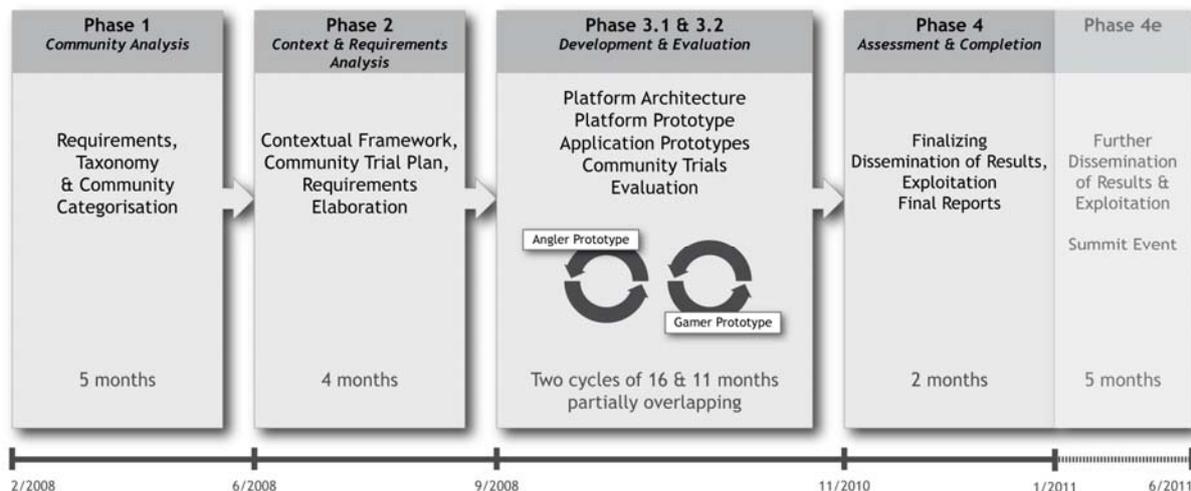


## List of acronyms

<i>ICT</i>	<i>Information and Communication Technology (exhibition)</i>
<i>FIA</i>	<i>Future Internet Assembly</i>
<i>WG</i>	<i>Working Group</i>

# 1 Introduction

Dissemination is and has always been a key activity within PICOS, because it complements the main phases of the project (Figure 1). Our dissemination activities are performed along the different project phases. They focus on the distribution and promotion of our research activities, results and achievements in order to support the impacts of our research work in academia and industry.



**Figure 1: Dissemination in the context of the PICOS project phases**

The dissemination reports in PICOS therefore presented continuously the current state of dissemination activities, as they were performed throughout the project phases. This 3<sup>rd</sup> and final Dissemination Report of PICOS is at the same time a report and a look to the future, beyond PICOS: More than the previous reports, it reflects our recent activities, as well as it provides a glance on currently ongoing activities and future activities and impacts.

The following chapters outline at first, the subject of our activities in this period (section 2). Then our dissemination strategy is explained and the goals which we aim to achieve (section 3). Section 4 describes our dissemination activities in different channels in detail and how they contribute to the overall PICOS dissemination strategy. As this is the final version of this report, it concludes with a section on the achievements and impacts of PICOS (section 5).

## 2 Subject of Dissemination

Within PICOS we developed concepts and ideas to improve privacy and identity management for mobile social community users. We prototypically implemented the concepts, manifested in our platform architecture and tested them in user trials to show their feasibility. All this led to new knowledge about communities, their users, and the perceptions and behaviour regarding privacy and



trust. The concepts and the knowledge, along with the experiences gained during the development of our prototypes, provide the basis for future enhancements in social communities as well as other related products and services (see also D9.2.3)<sup>1</sup>.

As this past period was the final period of the PICOS project, subject to dissemination activities were mainly the community application prototypes and the architecture and concepts they convey. Further dissemination activities covered aspects of the PICOS user trials, as well as the assurance and the evaluation work. Thus, again a broad variety of results was reflected in our dissemination efforts. We thereby build upon our plans, described in the previous version of this report (D9.3.2), to present our concepts in scientific publications and at the respective conferences, while live demos of the prototypes have been showcased at conferences, workshops and fairs.

Within the additional extension phase of the project, dissemination work was also dedicated to further research on specific aspects and concepts (e.g. privacy advisor, advertising). These are some of the aspects which we perceive to be very important for future research activities, which build on the foundation we have led with PICOS.

### 3 Dissemination Strategy & Goals

The activities of dissemination in PICOS are intended to present what PICOS is working on and which results we have achieved. We aim to achieve awareness for the topics and issues we cover and for the solutions we provide. In order to achieve these goals, and provide the foundation for an impact of our research in practice, we target basically three groups of people: end users (e.g. users of (mobile) social networks), researchers (from universities and research institutions) and practitioners (e.g. representatives and decision makers from companies). Thus, our results have been distributed on a scientific level (research articles, conference contributions, workshop participations, etc.) as well as on an industrial and practice oriented level (standardisation, product/service development, trade fairs/corporate events, etc.). In the former context, we targeted other researchers so that they can build upon our results and concepts and further advance them or apply them in new domains. In the latter context, we targeted companies (community providers, telecommunication operators, etc.) who can integrate the results and concepts of PICOS in services and products (e.g. community services) and end-users of social networks. The end-users can benefit from an increased awareness for privacy and identity management related problems and they can benefit from our research (e.g. privacy enhancing concepts) in their daily life and work.

We utilized various channels to reach these audiences and to reflect the diversity of our results in our dissemination activities. These include the public website, publications and conferences/events as well as liaisons and collaborations with other projects/institutions. The different channels, as described in the following sections, complement each other regarding aspects like the addressed audience and context.

The last period of PICOS was additionally extended by 5 months, until June 2011, in order to allow additional dissemination activities. This included the opportunity to hold a summit event of PICOS in

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<sup>1</sup> Available from <http://www.picos-project.eu/Public-Deliverables.29.0.html>



an international context at the 26th IFIP International Information Security Conference (IFIP SEC 2011), where we were able to disseminate the final PICOS results to an international audience, as well as a self organised workshop on privacy in social networks with internal and external experts (see 4.2.2).

## 4 Channels of dissemination

According to the dissemination strategy indicated above, multiple channels have been established and used for dissemination activities. These are namely the public website, publications and conferences/events as well as liaisons and collaborations with other projects/institutions. These channels were used in various ways during this 3<sup>rd</sup> project period, as described in the following sections.

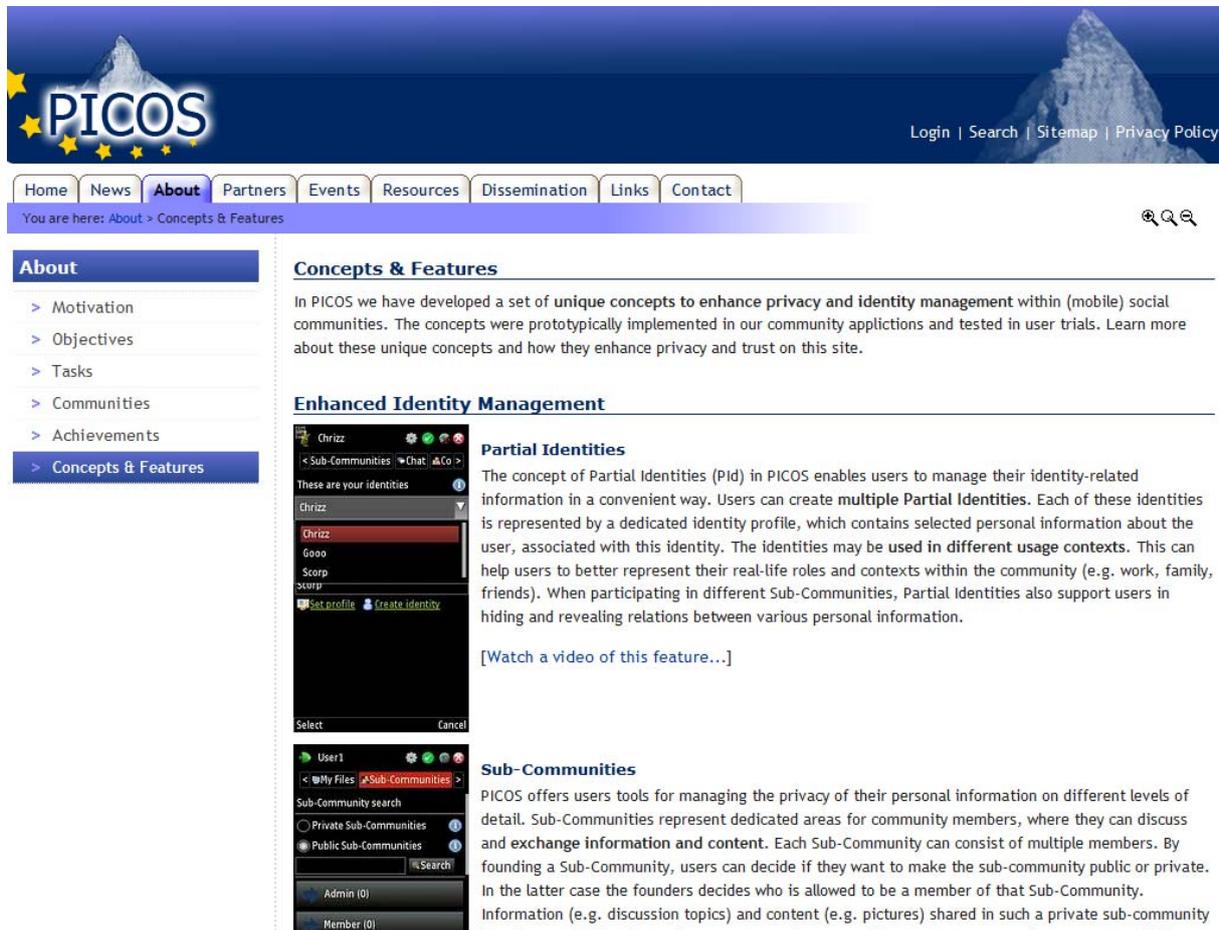
### 4.1 *Public Website*

The content on the public PICOS public website is updated continuously according to the project progress. In this 3<sup>rd</sup> project period, updates were made e.g. with regard to news, deliverables, achievements, events, publications and press articles. Main changes, as described in the following, included the extension of the achievements section, the restructuring and extension of the events section and the introduction of a dedicated section on dissemination.

After the “Achievements” section was introduced in the last period (see D9.2.3<sup>2</sup>), it was regularly updated with information about project results and progress. In addition we added a sub-section on the “Concepts & Features” of PICOS (Figure 2). This section features the main PICOS concepts regarding the enhancement of privacy, trust and identity management in mobile social communities. The concepts, such as Partial Identities, Blurring and the Privacy Advisor, are explained in text descriptions and illustrated by screenshots from the concepts’ prototypical implementation as feature in the PICOS community application prototypes. As planned already in the last version of this dissemination report, additional short feature videos demonstrate each feature and its usage in the prototype application. The “Concepts & Features” section outlines more clearly the unique concepts of PICOS and how they can provide benefits for community users with regard to privacy and trust. This shall help to increase the awareness not only for the possible privacy related problems in some communities but also to support the understanding for our existing solutions. We thereby also target community providers and common community users, who might not have been concerned with these aspects in more depths so far.

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<sup>2</sup> [http://www.picos-project.eu/fileadmin/user\\_upload/fmgr/Deliverables/WP9\\_Dissemination\\_and\\_Exploitation/D9.3.2\\_Dissemination\\_Report\\_2/PICOS\\_D9\\_3\\_2\\_Dissemination\\_Report\\_2\\_V1\\_0\\_Final.pdf](http://www.picos-project.eu/fileadmin/user_upload/fmgr/Deliverables/WP9_Dissemination_and_Exploitation/D9.3.2_Dissemination_Report_2/PICOS_D9_3_2_Dissemination_Report_2_V1_0_Final.pdf)



**Figure 2: PICOS Concepts & Features Website**

The “Events” section was updated and improved as well: In the context of the several events where we present PICOS results and promote the project, downloadable public documentation, i.e. presentations shown at such events, further illustrate the PICOS concepts and findings. These event-related contents are featured on so-called “event sites” which exist for specific events where we represented PICOS, such as the Mobile World Congress 2010 and the ICT 2010. The event sites provide an overview of an event and highlight what and how we have presented PICOS there. The event sites also include event-related materials to download (e.g. presentations, pdf documentation, helpful links, etc.). Further event sites in this project period were established for the ServiceWave 2010 conference and for the final closing event of PICOS at the IFIP SEC 2011. Besides the dedicated event sites, the main “Events” site provides a calendar of events, in which we represented PICOS. A new subsection named “Various” briefly lists further details on selected events which are not featured in a specific event site.

As a mean to concentrate information on dissemination activities, we further introduced a dedicated “Dissemination” section on the website, which covers dissemination related activities. It provides the complete list of publications which we worked out in the context of PICOS and an overview of “Press” articles about our project work. A number of articles were added to this sub-section in the period (see section 4.3 for more details). The new “Dissemination” section also comprises an overview

of cooperation and liaison partners and links to our representations on platforms such as Facebook and Wikipedia.



The information provided on the public website is complemented by a new Twitter<sup>1</sup> channel as well as a PICOS page on Facebook (please see section 4.5 for further details). Both aim to further and more quickly spread news about PICOS to researchers, practitioners and in particular community users. In order to additionally support this complementarity the public PICOS website provides access to the so-called "PICOS Live Feed"<sup>3</sup> which streams news distributed via Facebook as an RSS Feed. The Facebook site as well as the Twitter Feed are also integrated and promoted on the website, for easy access. The users are enabled to easily select their medium of choice to get news on PICOS and interact with the PICOS members and other users.

## 4.2 Publications/Conferences

A number of scientific publications were published in this period in the context of PICOS. The scope of these publications ranges from the description of the Big Picture of PICOS to specific research results, e.g. with regard to privacy enhancing concepts, advertising and assurance. Several conferences and workshops were used in addition, to present the results of PICOS and create awareness for the topics our research is concerned with and for the solutions we have developed. The choice of conferences and events included highly reputable events such as the IFP SEC conference series, and events organised by the Future Internet Assembly (FIA), as well as events dedicated to specialised topics.

### 4.2.1 Publications

In this final project period, the following articles were published.

- Rannenberg, K.; Kahl, C.; Böttcher, K.: "Communities, Mobilität und Datenschutz - Innovative Konzepte zum Schutz der Privatsphäre im Projekt PICOS". In: Forschung Frankfurt 1.2010, Goethe Universität Frankfurt, 2010.
- Kahl, Christian; Boettcher, Katja; Tschersich, Markus; Heim, Stephan; Rannenberg, Kai: "How to enhance Privacy and Identity Management for Mobile Communities: Approach and User driven Concepts of the PICOS Project". In: Proceedings of 25th IFIP International Information Security Conference Security & Privacy – Silver Linings in the Cloud (IFIP SEC 2010). ISBN: 978-3-642-15256-6. Springer (2010).
- Vivas, J. L.; Agudo, I.; Lopez, J.: "A methodology for security assurance-driven system development", In: Requirements Engineering, pp. 1-19, 2010. (<http://dx.doi.org/10.1007/s00766-010-0114-8>)
- Kahl, Christian; Böttcher, Katja; Tschersich, Markus; Heim, Stephan; Rannenberg, Kai: "Enhanced Privacy and Identity Management for Community Services – Demo of the PICOS project". In: Di Nitto, Elisabetta; Yahyapour, Ramin (Eds.): Towards a Service-Based Internet -

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<sup>3</sup> <https://www.facebook.com/feeds/page.php?format=atom10&id=139082282801691>

Third European Conference, ServiceWave 2010 (Proceedings), Ghent, Belgium, December 13-15, 2010. ISBN: 978-3-642-17693-7. Springer 2010.

- Kosta, E.; Kallionatis, Ch.; Mitrou, L. & Gritzalis, S. (2010) Data protection issues pertaining to social networking under EU law, *Transforming Government: People, Process, and Policy journal*, 4(2) (2010), pp.193-201, Emerald.
- Kosta E. (2010) The Freddi Staurs of Social Networking – A legal approach, in Bezzi, M.; Duquenoy, P.; Fischer-Hübner, S.; Hansen, M. & Zhang, G. (Eds.): *Privacy and Identity, IFIP AICT 320, Revised selected papers from the IFIP/PrimeLife Summer School 2009*, pp. 66–74, 2010 (Springer).
- Kosta, E. (2011) Unravelling consent in European data protection legislation – a prospective study on consent in electronic communications, Doctoral Thesis, Faculty of Laws, Katholieke Universiteit Leuven, Belgium, supervised by Prof. Jos Dumortier (co-supervisor Prof. Peggy Valcke), defended on 01.06.2011
- Kahl, Christian; Crane, Stephen; Tschersich, Markus; Rannenberg, Kai (2011) Privacy respecting targeted advertising for social networks, In: *Workshop in Information Security Theory and Practice (WISTP 11) - 5th Edition - Proceedings, 1-3 June 2011, Heraklion, Greece, Springer (2011)*.
- Gasson, M.; Kosta, E.; Royer D., Meints, M.; & Warwick, K. (2011) Normality Mining: Privacy Implications of Behavioral Profiles Drawn from GPS Enabled Mobile Phones, *IEEE Transactions on Systems, Man, and Cybernetics--Part C: Applications and Reviews*, Vol.41(2), p. 251-261, IEEE.
- Kosta, E.; Kallionatis, Ch.; Mitrou, L. & Kavakli, E. (2011) The “Panopticon” of Search Engines: The Response of the European Data Protection Framework, *Requirements Engineering*, Vol.16, p. 47-54, Springer.

The publications in this period addressed a variety of aspects, namely the PICOS community platform architecture (e.g. structure, concepts, privacy advisor and advertising) and its privacy enhancing concepts, which was published and presented at the IFIP Sec 2010, as well as our user driven approach and the particular aspect of advertising in mobile social communities. The article about PICOS in the German “Forschung Frankfurt” magazine, accompanied by a press release, was dedicated to a more general audience and gives an overview about the issues regarding privacy in social communities and the work PICOS has done to address these issues. The aspect of the platform architecture and the advertising approach applied in PICOS and the role of certain privacy enhancing features, such as the privacy advisor, was featured in the article for the WISTP 2011<sup>4</sup>. Complementing the publication on Assurance, also a summarizing deliverable within our Assurance work package was published (D3.1.4). The deliverable summarises the assurance work in PICOS and builds a foundation for the publication on assurance listed above.

Research on several aspects will be extended beyond the end of the project and further articles based on or related to PICOS results will be submitted in the future. They will feature in more detail the

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<sup>4</sup> <http://www.wistp.org/>



privacy enhancing concepts of PICOS, the results of the PICOS user trials and the aspect of advanced targeted advertising and its role in (mobile) social communities for specific application scenarios. The research on these aspects continues and will be intensified in the future. Among the articles in preparation are the following:

- Kahl, Christian; Crane, Stephen; Tschersich, Markus; Rannenberg, Kai (2011) Profit vs. Privacy – Advanced Targeted Advertising for Social Networks, MCIS 2011.
- Tschersich, Markus; Kahl, Christian; Böttcher, Katja; Heim, Stephan; Krontiris, Ioannis; Rannenberg, Kai Towards privacy enhanced Mobile Communities – Architecture, Concepts and User trials, Journal of Systems and Software.
- Kosta, E. (2011) Book chapter on Location privacy, in “Geographic data and the law: opportunities, challenges and pitfalls”, ed. K. Janssen, J. Cromptvoets, Leuven University Press (forthcoming, 2011)

The first article features the advertising approach of PICOS on a more detailed level and extends the original approach by certain aspects. The publication for the Journal of Systems and Software (JSS)<sup>5</sup> gives a deeper insight into the research approach our results regarding architecture and user trials.

Research questions raised by the project work encouraged further research on privacy enhanced technologies. Some of these questions and aspects came especially up in the context of the 2nd architecture version, which included a so-called implementation thread (with features which were implemented in the gaming community prototype) and a research thread. The latter comprises concepts which were not implemented, but which build the basis for future research. Also the results of the PICOS user trials (D7.3<sup>6</sup>) implied further research, in particular with regard to usability aspects of privacy enhancing features. Based on this, a first study concerning the comparison of authentication system and their capabilities with regard to usability and security was conducted and submitted at a scientific conference. Also the advertising related research is further extended. Section 4.5 provides more details on current and future research activities.

#### 4.2.2 Conferences and Workshops

Members of the PICOS consortium presented research contributions at the various conferences mentioned in the previous chapter. Overall PICOS was represented at more than 50 conferences workshops and fairs along with the list of main ones that is given at the end of the section. These were used not only for presentations and showcases on PICOS but also for discussions with the interested audiences. This included, among others, the 25th IFIP International Information Security Conference Security & Privacy<sup>7</sup>, which was part of the 2010 World Computer Congress, and is one of the major conferences regarding security and privacy. Besides these conferences, further events were used to disseminate the PICOS results and achievements. All of these events were carefully chosen, based on

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<sup>5</sup> [http://www.elsevier.com/wps/find/journaldescription.cws\\_home/505732/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/505732/description#description)

<sup>6</sup> [http://picos-project.eu/fileadmin/user\\_upload/fmgr/Deliverables/WP7\\_Trials/D7.3\\_Second\\_Community\\_Prototype\\_Lab\\_Test\\_and\\_Field\\_Trial\\_Report/PICOS\\_D7\\_3\\_Second%20Community%20Trial%20Report\\_Final\\_v1.3.pdf](http://picos-project.eu/fileadmin/user_upload/fmgr/Deliverables/WP7_Trials/D7.3_Second_Community_Prototype_Lab_Test_and_Field_Trial_Report/PICOS_D7_3_Second%20Community%20Trial%20Report_Final_v1.3.pdf)

<sup>7</sup> [http://www.ifipte11.org/index.php?id=510&no\\_cache=1](http://www.ifipte11.org/index.php?id=510&no_cache=1)



aspects such as their importance/reputation and audience. To some of these events we were personally invited, due to our achievements and/or based on previous successful dissemination activities.

In February 2010 PICOS was represented at the GSMA Mobile World Congress (MWC)<sup>8</sup>, as a part of the booth of PICOS partner Atos Origin. Among the practice oriented events, we regarded the Mobile World Congress as one of the most important opportunities, to disseminate results of PICOS in an industrial context and to support their adoption in practice. The MWC is one of the leading industrial events on mobile communication technology worldwide, with more than 1300 companies exhibiting and more than 49,000 visitors attending the congress in 2010. The preparatory work for this event included work on the event website<sup>9</sup>, related information material (e.g. presentations, promotion), and coordination with the partner Atos with respect to organisation. In this context we also produced a PICOS Flyer and PICOS ID cards, which show PICOS and its concepts at a glance. Our stand at the MWC gave visitors the opportunity to test the PICOS community application prototype (v1), which was released at the end of 2009. The prototype, dedicated to the exemplary angler community<sup>10</sup>, features a number of the core PICOS concepts including Partial Identities, Private Rooms and Blurring. Additionally, we provided insights about the backgrounds and achievements of PICOS.

Another major dissemination opportunity was used with ICT 2010<sup>11</sup>. The ICT is a major event for European research in information and communication technologies. ICT 2010 comprised a "Conference" part, including sessions on various topics and guest speakers from science and practice, as well as an "Exhibition" part, including presentations by selected European research projects. As PICOS was one of these, we were represented with our own PICOS stand on the 10.000 m<sup>2</sup> huge "Exhibition" area. The Conference includes the PICOS Networking Session, which complements our appearance at ICT 2010. Besides the exhibition we conducted two networking sessions.

The preparatory work for this event included the arrangement and coordination of a team to represent PICOS at this event and the elaboration of an adequate concept for the exhibition booth and representation at the networking sessions. At our stand we presented the Gaming Community Application Prototype as an interactive demo for the first time in a public context.

The first of the two mentioned networking sessions ("Identity management throughout life – solutions, trends, side effects"<sup>12</sup>) was conducted in close collaboration with the projects PrimeLife, TURBINE, SEMIRAMIS and PetWeb II. The session was dedicated to present research results from these participating EU projects and exchange and discuss findings and experiences with an interested public. The second networking session was focused on "Networked Multimedia Technologies with Security and Privacy Aspects"<sup>13</sup>. It was concerned with the delivery and sharing of multimedia content in networks. Another area, which becomes increasingly important for communities and which is able to

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<sup>8</sup> <http://www.mobileworldcongress.com/>

<sup>9</sup> <http://www.picos-project.eu/Mobile-World-Congress-2010.mwc.0.html>

<sup>10</sup> <http://www.picos-project.eu/Anglers.185.0.html>

<sup>11</sup> [http://ec.europa.eu/information\\_society/events/ict/2010/index\\_en.htm](http://ec.europa.eu/information_society/events/ict/2010/index_en.htm)

<sup>12</sup> [http://ec.europa.eu/information\\_society/events/cf/ict2010/item-display.cfm?id=3435](http://ec.europa.eu/information_society/events/cf/ict2010/item-display.cfm?id=3435)

<sup>13</sup> [http://ec.europa.eu/information\\_society/events/cf/ict2010/item-display.cfm?id=3485](http://ec.europa.eu/information_society/events/cf/ict2010/item-display.cfm?id=3485)



benefit from our identity management concepts. An event site for the ICT 2010 appearance was also created as well as an update of the PICOS Flyer<sup>14</sup>.

In December 2010 PICOS was represented at the ServiceWave 2010 in Ghent (Belgium). The ServiceWave is a conference and fair for the exchange of academic researchers and industry practitioners in domains related to web-services and service oriented computing. In 2010 it was part of the Future Internet Week<sup>15</sup>. PICOS was one of only 24 selected research projects with an own exhibition booth. Our appearance at ServiceWave included the presentation of the latest community application prototype and background information. The PICOS appearance was supported by a respective event site at the PICOS website<sup>16</sup>.

Among further events were we represented PICOS, clearly a few should be highlighted, such as the “1st Privacy 2.0 International Summit”, an important event whose audience was composed of many practitioners from the telecommunications industry. At the “Conference on trustworthy ICT”, with more than 200 participants from research and practice, we presented a talk on trust and trustworthiness in the future internet<sup>17</sup>. In this PICOS concepts were presented as a mean to provide control for future internet services. At the Rising Pan European and International Awareness of Biometrics and Security Ethics (RISE) Workshop in Brussels, we discussed aspects such as context-awareness, privacy reconfiguration and the use of context information (physical environment, operational environment, policy etc.) in order to optimise configurations of privacy components (e.g. privacy policies). Also the opening key note at the “DroidCon 2010” should be mentioned here, which was attended by more than 400 participants from practice and journalists. DroidCon is a conference concerned with technical and economic aspects of the Android mobile operating system and hence it addresses numerous mobile application developers.

In the additional extension period (February – June 2011) we used further opportunities. This comprised a self-organised workshop on privacy in social networks, held at the K.U. Leuven. The workshop involved participants from the PICOS consortium as well as external experts, such as Luis Velasco (EDPS), Prof. Dr. Jeanne Pia Mifsud Bonnice (University of Groningen) and Dr. Seda Gürses (K.U.Leuven). Also the participation in the IFIP SEC 2011 conference and its preparation was a major part of the dissemination activities within the extension phase. At this major conference in the area of IT security and privacy research we organised an own sub-conference. The PICOS sub-conference included sessions on the diverse aspects we covered in our work, ranging from the gathering of requirements and the design and evolution of the PICOS architecture to the implementation and conduction of the user trials. The sessions allowed additional time for discussions with the audience. The PICOS community prototype applications were presented at the conference as well, in two interactive live demos, showing how users can interact within the PICOS community.

As stated in the beginning, PICOS was represented at numerous further conferences, workshops and fairs. The following list provides details on a selection of these.

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<sup>14</sup> [http://picos-project.eu/fileadmin/user\\_upload/Flyer\\_PICOS\\_2010\\_ICT\\_web.pdf](http://picos-project.eu/fileadmin/user_upload/Flyer_PICOS_2010_ICT_web.pdf)

<sup>15</sup> <http://fi-ghent.fi-week.eu/>

<sup>16</sup> <http://www.picos-project.eu/ServiceWave-2010.sw2010.0.html>

<sup>17</sup> [http://trustworthyict.inteco.es/docs/S2-04-Trust\\_and\\_Trustworthiness\\_in\\_the\\_Future\\_Internet- JM\\_Cabanillas.pdf](http://trustworthyict.inteco.es/docs/S2-04-Trust_and_Trustworthiness_in_the_Future_Internet- JM_Cabanillas.pdf)



- 1st Privacy 2.0 International Summit, Boston (USA), 03 February 2010
- Conference on trustworthy ICT, Leon (Spain), 10 February 2010
- GSMA Mobile World Congress 2010, Barcelona (Spain), February 2010
- DroidCon Conference, Opening Key Note, Berlin (Germany), 27 May 2010
- CTIT Workshop on Privacy in Online Social Networks, Enschede (Netherlands), 21 September 2010
- 25th IFIP International Information Security Conference Security & Privacy (IFIP SEC 2010), Brisbane (Australia), 20-23 September 2010
- ICT 2010, Brussels (Belgium), 25-27 September 2010
- ETIS Information Security Working Group Meeting, Stockholm (Sweden), 14-15 October 2010
- SENSIBLE/ITG/GI Workshop 2010 on Self-Integrating Systems for Better Living Environments, Wiesbaden (Germany), 12 November 2010
- Forschungstag Deutsche Telekom, Bonn (Germany), 01 December 2010
- FIA Future Internet Week / FIA ServiceWave 2010, Ghent (Belgium), 15 December 2010
- TURBINE final Workshop - CryptoBiometrics for Enhanced Trusted Identity Management: Dreams and Reality, Brussels (Belgium), 18 January 2011
- Workshop on Location-based Services and Privacy Assurance (LSPA), University of Luxembourg, Luxembourg, 04 February 2011
- Dagstuhl Perspectives Workshop 11061 Online Privacy: Towards Informational Self-Determination on the Internet, Dagstuhl (Germany), 07 February 2011
- Research and Innovation – Intro at Stakeholder Workshop Electronic identification, authentication and signatures in the European digital single market, Brussels (Belgium), 10 March 2011
- Effectsplus - 1st kick Off cluster meeting, Brussels (Belgium), 29 – 30 March 2011
- Trust in Digital Life Event, Duesseldorf (Germany), 05 – 06 April 2011
- PICOS Workshop on privacy in social networking, Workshop organised by PICOS, Leuven (Belgium), 03 May 2011
- Kahl, C.: Telco 2.0 – Executive Brainstorm / Personal Data 2.0 Workshop, London (UK), 11-13 May 2011
- Rannenberg, K.: FIA Panel Presentation on Security and Usability, Budapest (Hungary), 18 May 2011
- InterPM - Konferenz zur Zukunft im Projektmanagement, Glashütten (Germany), 21 May 2011
- Workshop in Information Security Theory and Practice (WISTP 11) - 5th Edition, Heraklion (Greece), 01 - 03 June 2011



- PICOS Summit Event, 26th IFIP International Information Security Conference (IFIP SEC 2011), Lucerne (Switzerland), 09 - 10 June 2011

### 4.3 *Press*

The PICOS project was several times subject to press articles and releases in this period. This includes articles in newspapers, (scientific) magazines, press releases and interviews. The table below lists all press related publications.

- ATOS Origin Press Release on GSMA Mobile World Congress (English), 11-02-2010
- "Communities, Mobilität und Datenschutz", Article in Forschung Frankfurt 1.2010 (German) (pdf), 28-05-2010
- Press Release: "Mehr Datenschutz in sozialen Netzwerken", Goethe University Frankfurt (German), 28-05-2010 (Also available on: BSOZD, pressrelations.com, Informationsdienst Wissenschaft, innovations-report.de, pressemitteilungen-online.de, silicon.de, uni-protokolle.de, myscience)
- "Das Netz vergisst nichts", Article in Frankfurter Neue Presse / Taunus Zeitung (German), 04-06-2010
- "Wenn Angler online gehen", Article on Frankfurter Rundschau Online (German), 08-07-2010
- Interview on HR1 Radio (Hessischer Rundfunk), broadcasted 22-07-2010
- Press Release: "Verbesserter Datenschutz für soziale Netzwerke", Goethe University Frankfurt (German), 24-09-2010
- Guest Article on "Privacy by Design", Deutsche Telekom, (German), 28-01-2011
- "Atos Origin is defining the new trust and privacy models for Internet Communication", Article for the internal Atos Identity, Security and Risk Management (ISRM)18 Newsletter (English). May 2011.

### 4.4 *Cooperations and Liaisons*

Among our collaborations especially the liaison with ISO/IEC SC 27 WG5 with regard to standardisation was intensified. PICOS had previously submitted the architecture defined in PICOS deliverable D4.1 to this WG as an example for use in ISO/IEC 29101 – Privacy Reference Architecture. Represented by our dedicated liaison officer Zdenek Riha, we continued our active contribution to this liaison, in the recent period. Our contributions included especially the draft of ISO/IEC 29101 titled 'Privacy reference architecture' and the draft of the ISO/IEC 29100 titled 'Privacy Framework'. An example architecture based on the PICOS architecture was included in an annex of the document, which was the result of joint efforts of PICOS partners. As standardisation can

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<sup>18</sup> [http://www.na.atosorigin.com/en-us/services/solutions/identity\\_security\\_risk\\_management/default.htm](http://www.na.atosorigin.com/en-us/services/solutions/identity_security_risk_management/default.htm)



have major impacts in practice, and relates to the sustainable use of the PICOS concepts, it is featured in more details in the Exploitation Plan v3 (D9.3.3).

PICOS also participated in a meeting of the PrimCluster projects, to present its work and discuss aspects of community-oriented privacy problems and research project contributions to the solution of these. The Effectsplus meeting mentioned in section served as an opportunity to present the PICOS outcomes and concepts to a number of new research projects in the area of trust and security. They were encouraged to build upon our research as they are in many case concerned with similar problems and questions in different application areas. Thereby we aim to provide a benefit for these projects and a foundation for future research in this area and in related areas.

Other dissemination/exploitation activities included the establishing of a first contact with a seaplane flyer community. The community is interested in the usage of PICOS concepts, wherefore the contact with them is aimed to be further intensified in a future project. A similar approach was pursued with our participation in the Trust in Digital Life initiative, which consists of a number of European research projects and academic and industrial institutions. With our participation we aimed to ensure the sustainability of the PICOS concepts and results and foster research collaborations.

Regarding the existing collaborations, further discussions took place with the MOBIO project, which is concerned with mobile services that are secured by means of biometric authentication. We considered a possible integration of their already developed biometric authentication techniques. However, after intensive discussions it was decided that whilst the biometric authentication technology had a role to play in mobile communities, the benefit of demonstrating such technology in the PICOS project had limited target appeal. This also needs to be seen against the background of the PICOS trust model, with a trusted community operator. The biometric authentication would have been a more important consideration, with a PICOS architecture that was more client-based, with a less trustable operator. With regard to our collaboration with the TURBINE project we organised a joint networking session at the ICT, as mentioned before (section 4.2.2). We also participated and held a session on identity assurance at the final Workshop of the project. The collaboration with the projects ComeIn and My eDirector 2012 was kept up, but the exchange in this period was more limited than originally expected, mainly due to the different scopes of the projects.



## 4.5 Other Channels

Besides the mentioned means to disseminate PICOS results and achievements, further channels were used for this purpose in order to address different other groups of interest. The PICOS flyer for



**Figure 3: PICOS Facebook page**

instance, was distributed at several of the events mentioned in section 4.2.2. Furthermore, a PICOS feed on the popular micro-blogging service Twitter<sup>1</sup> was launched to quickly distribute news about the project and create an additional channel for our findings. We also aim to address more community end users. For the same reasons, also a site on one of the most popular social networks Facebook<sup>1</sup> was launched. With regard to the latter, a discussion about the need and possibilities to disseminate PICOS concepts in existing communities had previously taken place among the project partners. We identified the need, to address users in their common usage context, where actual privacy related issues might come up. Hence, to support the creation of awareness for such issues and for the related PICOS concepts, the need to disseminate in particular the PICOS concepts in such communities was supported by some of the results of our User Trials, as users emphasised the usefulness of PICOS concepts in the context of communities like Facebook. This also needs to be seen against the background that these communities tend to become increasingly mobile (e.g. Facebook Places, Foursquare). The Facebook page provides information about background and current news on PICOS as well as dedicated presentations of PICOS concepts, such as the Blurring concept.

Also a PICOS Facebook Application, which implements some of the PICOS concepts, was subject to internal discussions. However, the idea was finally postponed due to doubts in the technical feasibility of such an effort based on the Facebook developer interface.



**Figure 4: PICOS Concepts explained on Facebook**

The epractice.eu platform was used to represent PICOS to a broader audience within the research community. ePractice.eu is a web portal dedicated to support the representation and exchange of European research projects. The site usually focuses on projects from the domains of eGovernment, eHealth and eInclusion. Hence, our representation on the site remarks an opportunity to distribute our concepts and ideas to further areas of research and to new application fields. PICOS was additionally selected as “Editor’s Choice” project soon after its appearance.



As mentioned in the current Exploitation Plan v3 (D9.3.3), the PICOS community application prototype was meanwhile ported to further mobile platforms, namely Android and WebOS. These exploitation activities, led by PICOS partners IT-Objects and Hewlett-Packard France, were also part of dissemination in an academic context. Parts of the Android Application were subject to teaching in courses and lectures at the University of Duisburg-Essen (Germany).

Aside from the perspectives of our industrial partners, as expressed in the mentioned exploitation plan, we intend to exploit the PICOS results in further research projects and activities. For instance, PICOS partner *Masarykova Universita Brno (MU)* started a national-funded project and also a broader research activity in the area of privacy in wireless sensor networks. This project builds on the experience gained within PICOS work and activities.

*University of Malaga (UMA)* is planning to build upon research activities from PICOS and intends to develop (1) a formal multimodal language for the specification of privacy requirements, rules and concepts in social networking, and (2) a tool to support the construction of assurance cases according to our assurance methodology.

By testing the PICOS prototypes with users in a real-world setting, interesting research questions were raised by long and short term usage of the application, which will be in focus of further research by



*Center for Usability Research & Engineering (CURE)*. As described in detail in the WP7 Deliverables on the test and trial results (D7.2a, D7.2b and D7.3) the users were interested in the PICOS concepts and implemented features but were partly confused or annoyed while using it. Additionally to progress made during the PICOS project further research on mobile patterns with focus on privacy enhanced features is motivated. Especially during the field trials users mentioned that they would appreciate a web-frontend for a more efficient handling and having a broader overview of more complex features (e.g. the policy manager). How these more complex features could be designed to guarantee and easy handling even on the way is of interest for further research.

An already on-going research study is conducted focussing on the “Blurring” feature of the PICOS application. Users seem to be very interested in this feature. A lot of questions during the tests and trials were raised regarding how this feature works exactly. Different methods to cloak the own position were compared measuring user preferences and user comprehension. Results of the study will be summarized and a respective publication is planned for the end of the PICOS project.

*Goethe University Frankfurt (GUF)* will exploit the results and findings from PICOS for new research projects in the domain of privacy, identity management and mobile marketing/advertising. In particular, aspects of targeted advertising and viral marketing in the context of (mobile) social networks, which we started to investigate within PICOS, will be investigated on a deeper level. Also the enhancement of the privacy related concepts will be in further focus, especially against the background of social networks and mobility.

## 5 Achievements & Impacts

Complementing and refining the first two Dissemination Reports of PICOS (D9.3.1 and D9.3.2<sup>19</sup>), the previous sections of this third report provided a detailed overview on how different results were disseminated within the project. This concluding section of the Exploitation Plan provides a summarising outline of the main achievements and highlights our main impacts. Some of the impacts will only be seen in a longer term. As this is the final Exploitation Plan of the PICOS project, this section is dedicated to the impacts PICOS has achieved so far but it also serves as an outlook on how PICOS can and will have a sustainable impact in the future.

The following can be regarded as the main achievements of PICOS with regard to dissemination:

- **Strong involvement of end-users** <sup>(20, 21)</sup>  
Throughout the project, end users and their requirements, especially with regard to privacy and trust were considered. This approach ensured to integrate privacy on the design level of the PICOS architecture and applications right from the beginning. The two development cycles of PICOS allowed to take this feedback into account, learn from it and to improve our concepts within the 2<sup>nd</sup> cycle.

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<sup>19</sup> Both deliverables are available from <http://www.picos-project.eu/Public-Deliverables.29.0.html>

<sup>20</sup> See also: (Tschersich et al., 2011)

<sup>21</sup> See also: (Vivas et al. 2010)



- **Unique set of concepts and practical feasibility** <sup>(22, 23)</sup>

In a holistic approach the PICOS architecture includes established and proven concepts such as privacy policies, enhances them, and combines them with innovative concepts such as the privacy advisor. This led to a unique set of concepts which give users control over their personal information. Additionally, with a novel approach to integrate advanced advertising in social communities we showed that how advertising can be seamlessly integrated in social communities and that privacy are not necessarily contradictory. The advertising approach supports marketing activities in an innovative combination of targeted advertising and viral marketing.

The implementation and the user trials have further shown the technical feasibility of these concepts. Being part of our extensive exploitation activities (see D9.2.3) the concepts can thereby impact future products and services related to various communities.

- **Access & Awareness**

Utilizing multiple dissemination channels, we provided a quick, easy and convenient access to PICOS results. Complete deliverables, as well as publications, presentations, videos/pictures and brief descriptions on our website, provided different levels of detail on our results, in order to address various audiences. Complemented by representations on further platforms, such as Facebook, Twitter, Wikipedia and ePractice and presentations at various conferences and workshops. To some of these events we were only selected or invited due to previous successful presentations (e.g. ServiceWave 2010, Effectsplus Cluster Meeting, EU-Canada exchange meeting; see section 4.2.2). This counts not least also for the PICOS summit event held at the IFIP SEC 2011 conference in Lucerne (Switzerland). All these efforts supported us to create awareness for our achievements and for the topics we covered, and thereby support our exploitation work with regard to practice.

- **Transfer to Practice**

The PICOS work is about to have multiple impacts in practice. This includes the developed mobile client application based on the Android operating system, named PICOSlight, an application, which is intended to be used by end-users. Thereby PICOS concepts are directly integrated in an end-user application, which can provide an important basis for a broader application of such concepts in social communities. Further impacts are assumed from the integration of PICOS concepts in commercial products related to communities, e.g. by ATOS, HP, ITO and Deutsche Telekom AG (see D9.2.3 for full details). These are notable indicators for a further and sustainable impact of our concepts and achievements in practice in the future.

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<sup>22</sup> See also: (Kahl et al., 2010)

<sup>23</sup> See also: (Kahl et al., 2011)



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- Kahl, Christian; Boettcher, Katja; Tschersich, Markus; Heim, Stephan; Rannenberg, Kai: "How to enhance Privacy and Identity Management for Mobile Communities: Approach and User driven Concepts of the PICOS Project". In: Proceedings of 25th IFIP International Information Security Conference Security & Privacy – Silver Linings in the Cloud (IFIP SEC 2010). ISBN: 978-3-642-15256-6. Springer (2010).
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