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| *Author:* | *Christian Kahl (Goethe University Frankfurt), Elsa Prieto (ATOS Origin), Pete Bramhall, Stephen Crane (Hewlett-Packard Laboratories Bristol), Georg Kramer (T-Mobile International AG), Stefan Eicker, Erik Heimann (IT Objects)* |
| *Editor:* | *Christian Kahl (Goethe University Frankfurt)* |
| *Reviewers:* | *Vaclav Matyas (Masaryk University), Jean-Francois Coudeyre (Hewlett-Packard France)* |
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## Summary

The PICOS exploitation plan describes details about how we will exploit the project results, especially in an industrial context. This second version of the plan is a refinement of the first version. It considers refined plans of exploitation of partners considering the results of the 2nd project year, namely the prototypes of platform and community application, including according architecture models, the conceptual functionalities and so on.

## Members of the PICOS consortium:

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|---|---|
| Johann Wolfgang Goethe-Universität (Coordinator) | Germany |
| Hewlett-Packard Laboratories Bristol | United Kingdom |
| Hewlett-Packard Centre de Competence France | France |
| Universidad de Málaga | Spain |
| Center for Usability Research & Engineering | Austria |
| Katholieke Universiteit Leuven | Belgium |
| IT-Objects GmbH. | Germany |
| Atos Origin | Spain |
| T-Mobile International AG | Germany |
| Leibniz Institute of Marine Sciences | Germany |
| Masaryk University | Czech Republic |

## The PICOS Deliverable Series

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

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|---|---|
| D2.1 Taxonomy | July 2008 |
| D2.2 Categorisation of Communities | July 2008 |
| D2.3 Contextual Framework | November 2008 |
| D2.4 Requirements | November 2008 |
| D4.1 Platform Architecture and Design v1 | March 2009 |
| D5.1 Platform description document v1 | October 2009 |
| D6.1 Community Application Prototype 1 | December 2009 |
| D7.1 a Trial Design Document | December 2009 |
| D9.1 Web Presence | February 2008 |
| D9.2.1 Exploitation Planning | April 2009 |
| D9.3.1 Dissemination Planning | April 2009 |

# 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 eave 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

# List of acronyms

*CISO*   *Chief Information Security Officer*

*NFC*   *Near Field Communication*

*SRA*   *Strategic Research Agenda*

# 1    Introduction

The results developed in PICOS should reflect and address the previously gathered requirements of mobile communities. In order to improve community related products and services with regard to privacy and trust and thereby transfer the results of PICOS to the real world, exploitation is one essential part of the project. In the following chapters, the goals and the planned exploitation activities are outlined.

# 2    Objectives

According to the general plans for exploitation in PICOS described in PICOS Annex 1 (p. 93), it is the main goal within the exploitation process, to support community software and services along the "community business value chain". It is intended to achieve an application of the technical results in an industrial context and to specify interfaces and services in order to implement them in community related products and services.

This means that PICOS will allow especially the involved industrial partners, to extend and enhance their products and services by the integration and usage of PICOS developments regarding trust, privacy and Identity Management aspects and to develop new ones upon this basis. The variety of different companies participating in the PICOS consortium should ensure that the results of PICOS will have an impact at different levels of community related services. This will help to improve privacy and trust on these different levels, for instance, on the levels of a telecommunications provider as well as on the level of a community- or IT-service provider.

# 3    Exploitable Results

The primary exploitable results in this context will be the concepts and features which were prototypically implemented in the PICOS Platform Prototype (D5.1) and the Community Application Prototype (D6.1), while the community related requirements and other results of the first project period had a rather scientific character. The initial versions of these prototypes, including the according documentation were developed within the 2nd project period. The prototypes as a whole could serve e.g. for live demos at fairs and exhibitions. Their architectural implementation model (client/server model and interaction between a platform handling privacy/trust and a community services) and the functional concepts (such as e.g. sub-communities, partial identities, privacy advisor) may be integrated into new or enhanced services and products.

Furthermore, also the knowledge and best practices gathered within the prototype development will be subject to exploitation among the industrial partners, for the development or improvement of products and services. In this context the growing importance of social communities and location based services for such companies, needs to be considered.

The exploitation of the developed prototypes will take place in multiple contexts. First of all, a comprehensive documentation of the prototypes will be available on the PICOS Public Website[1]. Further, we will show the prototypes at industrial conferences or other appropriate events (e.g. trade shows). Therefore PICOS was also represented at the GSMA Mobile World Congress 2010.

Within the duration of PICOS and its 2nd period, each partner is involved in the creation of various artifacts. This may be for example documents, charts, images or software artifacts (code, documentation, etc.). The section B3.2.3 of the PICOS Annex 1 contains details about the use and dissemination of related foreground. Further aspects are described in the Consortium Agreement (CA).

# 4    Planned Activities

Besides the general plans for exploitation of the PICOS results, each involved partner pursues individual goals and plans, based on his business context and the products and services he offers. So far, among the industrial partners involved in PICOS mainly ATOS Origin has very concrete exploitation plans. Other industrial partners, such as HPL, ITO and TMO are still developing their plans for exploitation. The following parts of this document start with a detailed description of ATOS' exploitation plans and then also provide some insight into the considerations of TMO, HPL and ITO.

## 4.1    ATOS Origin

ATOS Origin delivers solutions for Business Risk Mitigation, Security Strategy and Compliance, Identity and Access Management, Security Infrastructure and Managed Security Services. ATOS Information Security Solutions is an end-to-end approach to business risk and information security, which address the full threat landscape from technology security, people and processes, security operations, security strategy, policies, procedures and governance. PICOS is placed inside of ATOS Origin Security Technical Advisory (STA) proposition. This proposition leverages ATOS Origin's experience and expertise in security architecture to facilitate the adoption of design principles and technology that streamline the management and daily operation of information security controls.
The Security Technical Advisory offering applies ATOS Origin's experience in IT integration and operations to CISO's (Chief Information Security Officer) challenges related to:

- Assessment of the existing Security Architecture
- Development of a Business case for the required security infrastructure solution
- Definition of a security infrastructure design, leveraging the four architectural principles described above
- Infrastructure Project Management

It is expected that PICOS results will contribute to the following objectives of the global STA solution portfolio:

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[1] http://www.picos-project.eu

- Address customer business risks and reduce costs (e.g. by reducing sources of possible complaints by online and mobile communities services users) incurred through security breaches and their subsequent recovery
- Improve the offering of privacy and trust enhancing technologies applied to different contexts and constellations of virtual communities
- Providing consistent user experience, usability and tangible perception of security mechanisms and tools for end-users
- Consistent approach to design of built-in privacy and identity management across open platforms and middleware solutions for building collaborative systems between business and private stakeholders

ATOS Origin will eventually utilise the security, trust and privacy enhancing technologies of PICOS in the custom solutions for its customers, to offer efficient and streamlined security and dependability assurance mechanisms in the development of IT systems for ATOS customers. ATOS Origin expects to strengthen with PICOS results its offering of streamlined security, identity management and privacy enhancing mechanisms for the development of customer-oriented projects in the core business lines of the company. ATOS indicates below some of the main lines where exploitation opportunities will be explored.

### 4.1.1   Industrial Perspective for Exploitation

The ATOS Origin group has a significant activity and specific economic weight in the mobile software and services industry in Europe, as does specifically Spanish ATOS Origin S.A.E.[2] (PICOS project partner). Thus, ATOS Worldline commercialises a mobile services platform, Worldline Padda, which could benefit from results of PICOS as it could integrate design principles, components and tools for enhancement of identity management, trust and privacy of its users. Beyond this, ATOS Worldline is also starting dissemination of solutions for near-field communications (NFC) for mobile applications, enhancing tangibility and trustworthiness of user experience in mobile social networks. Obvious synergies are already being explored for collaboration with PICOS and researchers of both teams met at the W3C Event on Social Networks in Barcelona this year.

Similarly, ATOS Origin S.A.E is providing its own mobile platform solutions for advanced Internet services to Spain's largest mobile operator, Telefónica Móviles, and could take a similar approach at a national level. Last but not least, Tempos21[3], a Spanish mobile services company, is also part of the ATOS Origin group and collaboration is already envisaged to explore potential synergies once PICOS results achieve a sufficient degree of maturity.

Formal liaisons with two other ATOS Origin-coordinated FP7 projects which also look at mobile solutions from different perspectives, My-eDirector 2012[4], for personalised media experience and delivery including mobile environments, and ComeIN[5] for e-Inclusion of marginalised youth through
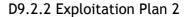
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[2] Sociedad Anonima Española
[3] http://www.tempos21.com
[4] http://www.myedirector2012.eu/
[5] http://www.comein-project.eu

mobile communities, will also provide synergies for exploitation of platforms, approaches and eventually implementation solutions. For both projects, we will build on already established relationships and already exchanged information (i.e. projects surveys and public deliverables mutually exchanged) in order to explore and offer application areas for respective and even combined project results with additional added value for our potential customers.

The same unit involved in PICOS within ATOS Research & Innovation is also leading two FP7 Coordination and Support Actions which could be relevant from the point of view of exploitation of PICOS results. STRAW[6] aims at providing a European Service of Technology Watch on Security Technologies not only advising European end-users and public authorities but also bringing together the defence and security research industry for developing new civil applications. INCO-TRUST[7] specifically targets international cooperation in the area of trustworthy, secure and dependable ICT infrastructures and represents a relevant forum for further assessment of exploitation opportunities for PICOS at a worldwide level.

ATOS Origin also participated in FP6 project SecurePhone and has experience for exploitation of security and mobile-related research and development results from European projects which is to be seen as a valuable asset for PICOS.

### 4.1.2    Exploitation Considering National and European Technological Platforms

In the area of Privacy challenges like implementation of privacy at design level, user centricity and user friendliness for transparency and privacy-enhancing technologies, pseudonymisation and anonymisation, mobile-based and web-based privacy-enhanced services, control of private data exchange between services, private data traceability, accountability, privacy risk management and finally awareness building and training of different users are all areas where mutual benefit can be expected (also for exploitation) between PICOS and initiatives and partners of technological platforms where ATOS Origin plays a prominent role.

The leadership of ATOS Research & Innovation of the NESSI European Technological Platform[8] in the Software & Services and Trust, Security & Dependability (where ATOS Research & Innovation has already co-authored a whitepaper on Privacy geared at defining NESSI's new SRA, taking into account knowledge derived from PICOS) represents also an excellent opportunity for early exploitation of results as they become available within the project's planning. In particular, NESSI is an excellent platform for an industrial platform like ATOS, to contact the key players in the industry to formalise agreements for exploitation in a context where potential partners are familiar with the idiosyncrasy of research and development projects results. ATOS Origin also plays a prominent role in the Spanish technological platform eSec[9].
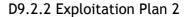
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[6] http://www.straw-project.eu
[7] http://www.inco-trust.eu/
[8] http://www.nessi-europe.com
[9] http://www.idi.aetic.es/esec/

Moreover, ATOS Origin also participates in the Spanish eMov technological platform[10] and its European Counterpart eMobility[11] both of which focus in their Strategic Research Agendas on aspects such as security, trust, privacy, threats on mobility and business models all of which are relevant for PICOS and where collaboration with platform partners could lead to identify future exploitation opportunities.

ATOS Research & Innovation is also working simultaneously in strong authentication solutions in the mobile environment, including biometric authentication, in the context of the Spanish national research and development project Segur@[12], using the same mobile handset model chosen for PICOS and the same rich mobile application platform which effectively means that results from both projects can easily achieve complementarities at the implementation level and therefore joint exploitation with an added value.

## 4.2    T-Mobile / Deutsche Telekom (TMO)

The PICOS project gives TMO new insights into privacy and identity management issues especially in the context of emerging social communities. TMO, in their role as a mobile communication operator also intends to incorporate PICOS approaches and concepts within existing products and services in the mobile market. In addition PICOS results may be integrated or applied to further product developments. The overall goal of TMO is to enhance the privacy for customers on the mobile operators' level. This may complement privacy enhancing efforts on services, provided by other parties e.g. service providers.

TMO sees benefits from the PICOS participation especially in the following areas:

- User to user interaction

  At the moment, the main focus of privacy enhancing techniques is related to user data exchange between the mobile operator and $3^{rd}$ parties, where the user has to give his consent so that the mobile operator is allowed to deliver the data to enable the $3^{rd}$ party to provide a service. With the results of the PRIME project[13], TMO was able to implement a significant enhancement in his network to control and monitor such data flow by the user. Nowadays, (mobile) community applications are emerging and the control and monitoring capabilities need to be enhanced so that also the data flow between users is under the user's control. With PICOS, we will gain substantial knowledge to enhance privacy here. Applications to support users in the context of community features are already on the horizon.

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[10] http://www.idi.aetic.es/emov/
[11] http://www.emobility.eu.org/about_us.html
[12] https://www.cenitsegura.com/joomla/index.php?lang=en
[13] https://www.prime-project.eu

- Usability

  With the PRIME results and the T-Mobile Privacy Gateway development, we have found out, that the usability from customer perspective is very important. The privacy topic is rather complex and normal users are usually not aware of all the details and do not fully understand all privacy related aspects. They just want to use a service and they abort the service usage, if they are forced to agree on something, that they do not understand immediately. The results from usability work, e.g. the concept of a privacy advisor and how to explain complex facts, is therefore very important for TMO's business and will be incorporated in future product development.

- Enabling services

  External applications and services more and more integrate with mobile operator network elements to ease data flow and to support more advanced services to the customer. The privacy aspects therefore become more important and research results will be reflected in further product developments.

- New business models

  The advancement of new business models for mobile operators like advertising, co-operations with partners, new billing models etc. is ongoing and needs to be accompanied by enhanced privacy solutions. The angler community prototype will be a good example for a private community that demonstrates many new facets that could be applied to existing or new products.
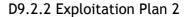
Based on the results of the predecessor project PRIME, TMO was able to build a new system, called Privacy Gateway, to enhance the privacy of our customers by enabling them to control their personal data when dealing with services which are offered by external partners. With PICOS, we are able to extend the scenarios to customer to customer communication - typical for communities. Here Deutsche Telekom has already products and services in place and is currently developing new versions. Consequently, the PICOS results, especially the prototypes, helps TMO to demonstrate privacy features and concepts in real world scenarios and to elaborate, together with marketing and security people, concepts which can afterwards be integrated in our products. The focus lies on location based services on mobile phones. Thinkable are also privacy enhancements in our existing community applications, network addressed phonebook and multimedia content sharing services.

## 4.3    Hewlett-Packard

Hewlett Packard Company is participating to the PICOS project through 2 entities: HPF and HPL. Hence, the value and results of the PICOS work will be subject to further exploitation in two very complementary directions.

HPF, through its Communication and Media Solutions (CMS) Business Unit is in charge of developing and delivering communication infrastructures and applications for Telecom Service

Providers. In that perspective, the PICOS project gives HPF leading knowledge and insights on privacy, trust and identity management domains as they relate to user to user communication within community services. Listening to their customers emerging demand in this domain, HPF will value the PICOS work when engaging in future related product and solutions development.
HPF sees the PICOS work bringing value in the following areas:

- The new functional concepts enhancing privacy and trust management as the lab and field trials demonstrate their acceptance by end-users, leading into broader usage of communication services within mobile communities. Increased usage of voice and data communication service remains the key trigger for Telecom Operators decision of launching new services.
- The tiered architecture model between a "privacy & trust management" platform and community services allowing flexible business models for Telecom Operators and Community Service providers. This is key in the complex communication environment, where no single player can own the complete value chain.
- The client - server model allowing to achieve the usability goals while insuring portability over a range of end-user devices.

HPL, with a more forward looking mission, will use the knowledge gained from the PICOS project to:

- inform the choices it will make about future research activities, their directions and approaches, particularly in information security
- brief HP businesses on how best to ensure their products and services can make use of various privacy-enhancing technologies to meet the emerging informational needs of their customers, and of their customers' customers
- brief HP's internal Privacy Office on the project's findings and how these may be incorporated into future developments of HP's internal privacy policies, practices and processes
- brief senior company management about the impact of privacy considerations and the potential use of relevant IP that is available to HP from PICOS in determining future investment choices

## *4.4 IT Objects*

IT-Objects GmbH (ITO) develops innovative web platforms, especially community systems, and innovative mobile applications. For example people from ITO were involved in the development of a community platform for the corporate audit of E.ON AG and in the development of location-based mobile applications in an Urban Systems project, in which the infrastructure for the European Cultural Capital Ruhr Area 2010 has to be contrived.

ITO will include concepts and technologies of PICOS in its software development projects. Furthermore, ITO will enhance its business portfolio: It will offer to develop community platforms using PICOS concepts and technologies and to enrich existing community platforms. In this business area ITO especially will analyze how open source community systems can take advantage from the knowledge and experiences of the PICOS project. Especially the Elgg community platform which was

used by ITO as a basis to develop the PICOS components Private Room, Private Sub Community, and Public Sub Community will be a candidate. Thereby it is planned to establish some of the PICOS concepts within open source community development tools such as ELGG, in order to enable communities to integrate these features.

Prof. Eicker is one of the proposers of the EU Network of Excellence Nessos. Subject of Nessos is the embedding of the security perspectives in all stages of the software development and maintenance process. Prof. Eicker will try to bring in the concepts and results of the PICOS project in the corresponding discussions and work packages of Nessos.

## 4.5    Further plans

Aside from the industrial perspectives, the close contact with representatives from the three focused communities, will allow us, to exploit the developments of PICOS within these communities. For instance IFM-Geomar plans a web portal, which is under development and which is intended to serve as a virtual community for anglers. We plan to integrate the angling community application prototype of PICOS or elements of it into this community, in order to achieve a practical application of the PICOS developments.

For the 2$^{nd}$ prototype community a similar approach might be used. In the case of the gaming community, either game developers who are also managing the communities which emerge within their games or external community providers, who provide community services for specific or different games could use the concepts to enhance their services. As PICOS partner BRNO has been in close contact to the Travian community throughout the project, this is regarded as a possibility for such an integration of PICOS concepts.

Further exploitation activities can also include research work which will be part of the 3$^{rd}$ project period, e.g. with regard to the PICOS Architecture (D4.2), which intends to cover aspects which have not been completely covered so far (e.g. advertising). Such research activities should also be seen as a potential enabler for further respective research by partners.