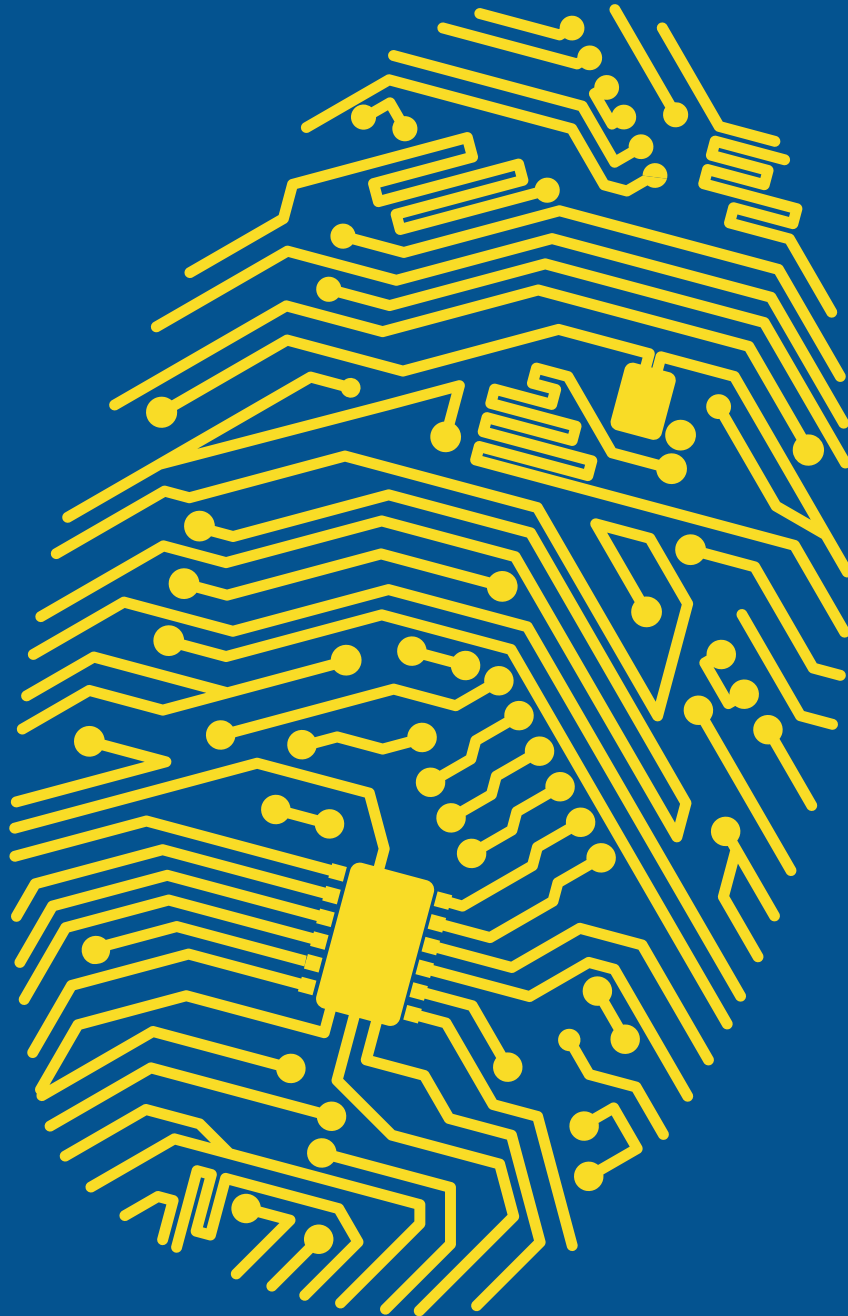


Report on Annual Privacy Forum 2012





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About ENISA

The European Network and Information Security Agency (ENISA) is a centre of network and information security expertise for the EU, its Member States, the private sector and Europe's citizens. ENISA works with these groups to develop advice and recommendations on good practice in information security. It assists EU Member States in implementing relevant EU legislation and works to improve the resilience of Europe's critical information infrastructure and networks. ENISA seeks to enhance existing expertise in EU Member States by supporting the development of cross-border communities committed to improving network and information security throughout the EU. More information about ENISA and its work can be found at www.enisa.europa.eu

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Acknowledgements

ENISA would like to thank the members of the Programme Committee, chairpersons, panellists, speakers and participants for their contributions to the 1st Annual Privacy Forum.

Thanks are also due to: Caspar Bowden, Scott Cadzow, Ioannis Krontiris, Aljosa Pasic and Claire Vishik for their feedback.

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1. Executive Summary

The first Annual Privacy Forum¹ (APF'12) was held in Limassol, Cyprus from 10–11 October 2012. The Forum was co-organised by the European Network and Information Security Agency (ENISA)² and the European Commission Directorate General for Communications Networks, Content and Technology (DG CONNECT),³ with the support of the Department of Computer Science of the University of Cyprus. APF'12 was endorsed as an official event of the Cyprus Presidency of the Council of the European Union.

As ICT technologies develop, they put a rapidly growing number of services and tools in the hands of users, companies and governments. This trend started accelerating with the widespread use of the Internet, developed with the Web 2.0 concept and is currently evolving towards the Internet of Things (also known as ambient intelligence, pervasive computing, or ubiquitous computing). The hot topic today in business events is 'big data'; this refers to the massive availability of data on all aspects of society. There is no doubt that these developments will transform society, with many beneficial effects on the quality of our lives. However, one of the main concerns is that these developments have a tendency to systematically erode our privacy. Addressing this challenge requires a deep understanding of the political, legal, sociological, psychological and technical aspects of these problems.

While there are many scientific events dedicated to privacy and privacy technologies, there is a need for an event at European level that brings together key decision-makers and scientists to discuss the latest developments. In order to achieve this mix, the programme of APF'12 had an unusual combination: it consisted of invited speakers and panels interleaved with a set of contributed papers that had undergone a scientific review process. But in contrast with most scientific events, researchers were encouraged to submit position papers or overview papers that offered a broader perspective on their research.

As a result of the Call for Papers (CfP) and the thorough review by the members of the scientific programme committee, 20 papers were accepted for presentation at APF'12. Following the completion of the forum, the accepted papers are being revised by their authors. This involves a second round of reviewing before publication by Springer Verlag's *Lecture Notes in Computer Science* series.

Among the recommendations of the Forum are **the need for more privacy-respecting tools**, that research should seek innovative tools to empower users by **enhancing transparency**, that empirical understanding of data flows should be the **starting point for actors' agendas** and also **that data protection agencies** should analyse market failures in privacy technology, and **intervene with scientific and economic precision**.

A number of people contributed to the success of APF'12. First we would like to thank all the presenters, as well as the authors who submitted their work as a response to the CfP. We sincerely thank all the Programme Committee (PC) members (Annex II), who volunteered to review the papers and discuss the comments. APF'12 would not have been such a success without the tireless contribution of the staff of

1 Annual Privacy Forum website: www.privacyforum.eu

2 ENISA webpage: <http://www.enisa.europa.eu/> [accessed November 2012]

3 DG CONNECT website: http://ec.europa.eu/dgs/connect/index_en.htm [accessed November 2012]



ENISA. We would also like to thank the colleagues at the European Commission DG CONNECT as well as the Computer Science department of the University of Cyprus and in particular Prof. Marios Dikaiakos and Mrs Maria Poveda for their continuous support and collaboration throughout the organisation of this event.

Our gratitude is also extended to the Cyprus Presidency of the EU Council, which endorsed APF'12 as one of the official events of the Presidency.

Finally we want to express our gratitude to the Business Software Alliance (BSA), Austrian Airlines and the Cyprus Telecommunication Authority (CYTA) for their support. We would also like to thank our partners NESSOS, CEPIS, the Cyprus Computer Society and EGI.

We hope that this forum can play a stimulating role in the European and international privacy community – offering a forum for the exchange of views and ideas between policymakers, research communities and industry.

November 2012

Bart Preneel,
PC chair APF 2012, professor KU Leuven

Demosthenes Ikonou,
General Co-chair APF 2012, Head of Secure
Services & Project Support Activities Unit – ENISA

2. Introduction

In January 2012, the European Commission (EC) put forward its proposal on a reform of the EU's data protection rules with the aim of strengthening the online privacy rights of European citizens. Although it is widely acknowledged that privacy is a fundamental need and a basic human right, it is often the case that the use of online service comes at the cost of privacy. At the same time the EC, through the framework of the programmes of EU-funded R&D and in collaboration with industry, is investing in the investigation and development of a number of privacy-enhancing technologies. This demonstrates that citizens and industry can benefit from advances in electronic communications and online services without compromising citizens' privacy.

In light of the above, the former Unit 'Trust and Security' (F5) of the European Commission's Directorate General Information Society and Media (DG INFSO) and ENISA decided to organise the Annual Privacy Forum 2012 (APF'12), a two-day event designed to provide a forum for academia, industry and policymakers in the field. The first Annual Privacy Forum was held at Limassol on 10–11 October 2012, hosted by the Department of Computer Science of the University of Cyprus under the auspices of the Cyprus Presidency of the EU Council.

The EC and ENISA hope that the Forum will evolve into an annual event that will foster dialogue between the policy, research and industrial communities, with the aim of **'closing the loop from research to policy'**.

We are very pleased that our initiative has already attracted the support of well-known experts in the field of privacy and trust. This is also reflected by the fact that the conference was organised under the auspices of the Cyprus Presidency of the Council of the EU during the second half of 2012. APF'12 was attended by 71 participants representing researchers and academia, industry representatives and policymakers from 12 countries.



3. About the event

3.1 The organisation of the event

APF'12 consisted of the following three main elements:

- Four technical sessions. The papers selected for presentation in these sessions resulted from a published Call for Papers (CFP). The papers submitted as a response to this CFP were reviewed by the members of the PC representing the research and academic communities. The CFP was not restricted to submissions relating to research and technology, but also invited contributions on policy and standardisation. As a result of the review, 20 papers were selected for presentation at the technical sessions.⁴ The majority of the papers originated from research and academia although there were also some contributions by policymakers as well as international standardisation organisations (ISOs).
- Three panel sessions. Two of the panel sessions addressed the main theme of the conference: 'closing the loop from research to policy', through a combination of panellists representing all the different sectors addressed by APF'12. The third panel session focused on the R&D perspective, with well-known researchers in the field of privacy discussing the main challenges and advances in the area and their impact on the relevant policy initiatives. Finally, a workshop was organised by the FP7 NESSoS (Network of Excellence on Engineering Secure Future Internet Software Services and Systems).
- A number of keynote speakers were invited, representing the Presidency, the EC, industry and research.

Below we briefly present the main conclusions and key messages of APF'12. These are largely based on feedback received during and after the conference from a number of the participants.

The consensus on APF'12 was that the conference was successful, with the majority of the participants particularly appreciating its success in bringing together the research, industry and policymaking communities.

⁴ A number of these papers originated from research projects that are conducted in the context of the 7th Framework Programme of EU-funded R&D (FP7).

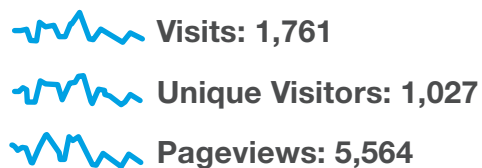


3.2 Visibility of the conference & feedback

APF'12 was attended by 71 participants representing researchers, academia, industry representatives and policymakers from 12 countries (from outside as well as within the EU), exceeding the objectives set. The website statistics of the Forum⁵ show that it had more than 1,000 visitors, with 1,700+ visits and 5,500+ pages viewed.

Figure 1:

Visitors, visits and pages viewed

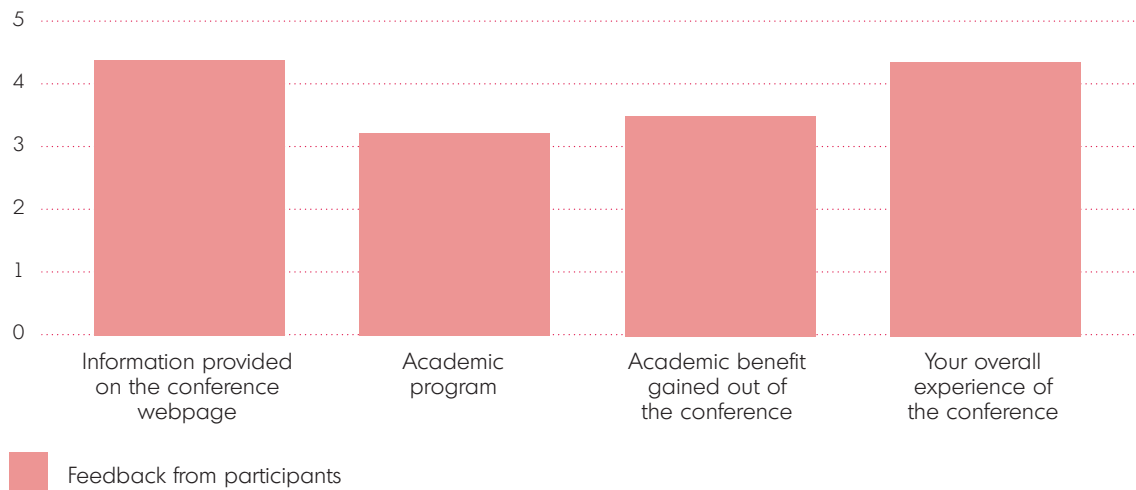


5 www.privacyforum.eu analytics

The positive feedback received from most conference participants is depicted in Figure 2. (Participant were asked to rate various aspects of the conference according to a scale from 0 (minimum) to 5 (maximum).)

Figure 2:

Feedback received (0 is the minimum and 5 points the maximum value)



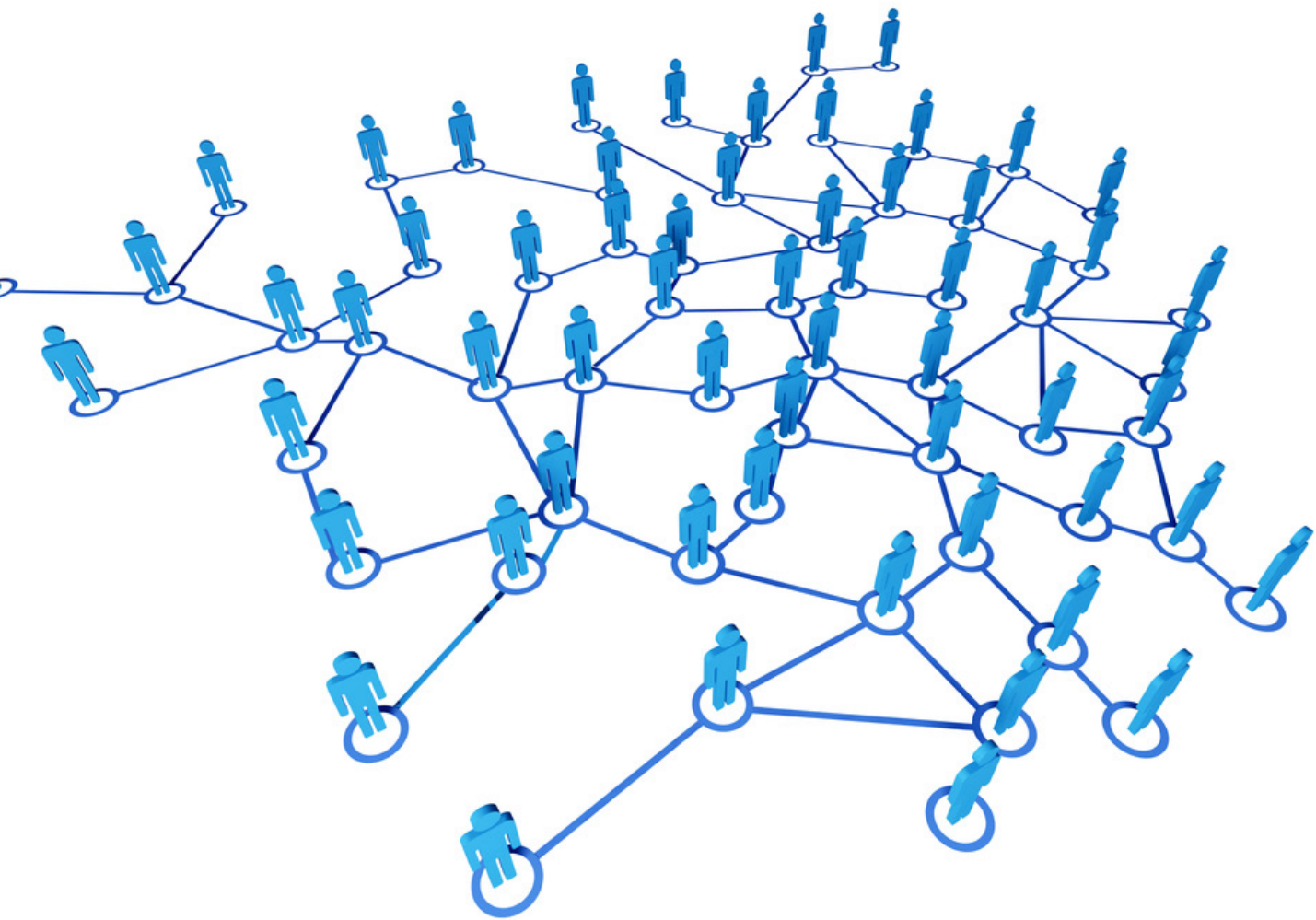
An example of the interest expressed on the social media channels used (e.g. Twitter) is provided by the following tweet.

Figure 3:

Media channels feedback

Every European Digital
Digital Agenda @DigitalAgendaEU
 Don't miss the Annual Privacy Forum 2012 in Limassol, Cyprus, 10 & 11 October ow.ly/dCo2g @PrivacyForum_EU





3.3 The message of the conference

The overriding message of the conference was that privacy is complex and easily manipulated in favour of the privacy invader – a message that was never really challenged throughout the event. Understanding of privacy is transient and can be manipulated by subtle modification of the content of the questions asked to initiate private data transfer, and further manipulated by asking for data outside the scope of the agreed consent after the consent has been given. The power of data linking and data farming to reveal detailed private data (even if all of that data is on ‘open’ resources) raises concerns. A number of presentations and invited talks indicated that privacy violation is simple, does not require any sophisticated tools or knowledge, and that any protection model that looks at single instances of private data will be inadequate.

A number of technical approaches to solving the privacy problem were proposed, targeting different parts of the privacy architecture. Nevertheless, the lack of flagship initiatives in the area of privacy (e.g. an ‘Airbus’-scale project), where industry will set the requirements and initiatives synthesising a complete model, was once again highlighted.

Existing research has already addressed languages for privacy policy, but ensuring that this policy is actually enforced is still a problem. **We need some form of confidence that the ICT system managing data actually enforces privacy policies, and it is sensible to divide this assurance problem into areas of early (requirements, design phases) and late assurance (implementation and monitoring of operational environment).**

We are witnessing the emergence of Future Internet services and applications, which in terms of privacy are characterised by the correlation of traces coming from different devices that reveal new patterns with sensitive information. Examples presented at APF include obfuscation of location privacy or patterns from energy consumption. In addition, Future Internet services are composed of several more simple services (created and hosted by a variety of providers), each with its own security and privacy characteristics. Languages are used for inclusion of security parameters in service description and explicit description of security services. The service compositions are very dynamic in nature, and span multiple trust domains, resulting in a fragmentation of ownership of both services and content, and a complexity of implicit and explicit relations among the participants. **This can be extended to privacy parameters and this is why compositional features should be investigated. This would also enable accountability in and for clouds.**

There are a few success stories of deploying privacy technologies in practice, for example the use of anonymisation techniques in the communication layer of internet. However, in general, we are still far from large-scale deployments of privacy solutions that are also adopted by a large user base.

One reason for this is the lack of user awareness with respect to privacy problems, which can be partly attributed to a lack of transparency of data acquisition and the related information processing. The techniques for the latter are progressing very fast, while the progress in user awareness and even in developing corresponding protection tools has been very slow. A second reason lies in the complicated and laborious nature of control imposed on persons, as no legal standards or general consumer protection rules exist.

Besides issues related to user awareness, there is a lack of clear incentives for enterprises to manage personal data in a privacy-respecting manner, to design privacy-preserving products, or to make the use of personal data transparent to the data subjects. One of the reasons discussed at the conference was that when building applications, engineers often lack practical knowledge on incorporating PETs to achieve security and privacy protection. **Another reason mentioned was that there are not enough privacy-respecting tools offered in the form of software packages that are mature and easy to integrate.**



Where regulation is concerned, it was pointed out that, unfortunately, neither the current European legal framework nor the approach followed in the USA of industry self-regulation has been effective in protecting privacy online. One of the main problems affecting the current framework is the blurred distinction between personal and non-personal data. A meaningful advance in privacy regulation in Europe is being hindered by the global nature of the market for information and ubiquity of cross-border data flows. Further future refinements on the definition of personal data in the EU should not focus on maximising the profitability potential of personal data.

Several research challenges for the future were identified. To address the current mind-set that trust establishment requires full identification, it comes as an interesting challenge to establish trust without transferring too much personal data. Making the question of trust easier to understand is another challenge in front of us. **Trusting the client device is a relevant issue that requires attention in making clients stronger (i.e. more secure).**

Overall, research challenges should always try to improve the level of control that users have over their personal data. Anonymous-based credentials are one of the most advanced technologies we have to achieve this purpose and a lot of progress has already been made in making them efficient, even in the context of smartcards. But a crucial element of individual protection and autonomy is also the individuals' ability to understand and act on their context, assisted by appropriate and intuitive tools.

In order to achieve this, research should seek creative, innovative tools to empower users by enhancing transparency. This will require addressing how the implications of massive-scale data collection and processing can be made comprehensible and practically manageable for individuals. For example, new tools could help users before they engage in privacy-relevant activities online, but also as they act online. Finally, they should help users reconcile breaches of their expectations afterwards.

It becomes important to broaden the boundaries of research in order to include new types of data flows. This would include data processed or stored by cloud-based applications, sensors that interact with the physical environment, data communicated in smart grids or car2car applications, etc. **Regulatory and technical agendas need to be driven by empirical understanding of these data flows.**

Data protection agencies should analyse market failures in privacy technology, and intervene with scientific and economic precision.

Standardisation initiatives in the domain of privacy should take into account the specific nature of this field. The standardisation process involves multi-party negotiations between industry representatives with deep awareness of the strategic implications of technical alternatives. The negotiation reflects a common interest in an outcome which will suit their mutual commercial interest (IPRs, etc.). In the case of privacy standardisation civil society also needs to be represented with resources for analysing the implications of technical proposals. The EC and ISO should take this particular aspect in the area of privacy into consideration.

4. Conclusions and recommendations

4.1 Recommendations related to the structure of the event

Without any doubt the APF'12 was a success. This is evidenced by the following factors:

- The large number of participants at the first edition of a conference addressing an area where a considerable number of events are already established. In this light, the aim of organising a conference that will foster the dialogue between the policy, research and industrial communities has been well addressed by APF'12.
- The participants represented all the different sector actors that are active in this diverse field of work, namely the European Commission, the European Data Protection Supervisor, data protection agencies, international standardisation organisations, research (not only ICT but also social and economic sciences), industry, etc. At the same time the participants of APF'12 represented 12 countries from outside as well as within the EU.
- The positive feedback received from most conference participants both during and after the conference.
- The interest expressed on social media channels (e.g. Twitter).
- The interest expressed by key partners (i.e. DG CONNECT, EDPS) to start the discussions and planning for future editions of the APF (in the event that a decision is made to continue with the conference). This is complemented by the high interest expressed by industry representatives in getting involved in the organisation and planning of future events.
- The interest in getting involved in an e-community: 'Privacy@ENISA'.
- The high quality of the PC that supported the organisation event.

Some first (preliminary) exchanges of ideas for possible future editions of APF have been put forward. In this context, new ideas for improving the conference are being discussed, as well as ways to improve on shortcomings observed at APF'12.

- Improve the interaction in the panel sessions between the policymakers and industry. Ensure a better balance in order to increase the interest on the panels.
- Increase the industry involvement in the conference.
- Promote the CFP to the DPAs and ISO communities in order to increase their involvement in the technical session.
- Consider bi-annual vs. periodicity for the organisation of the conference.
- Creation of a demo area dedicated to demonstrators/test beds by research projects. A part of the demo area can be dedicated to a posters session.
- Continue the 'Student team' involvement in the conference and improve the interactions with peers by creating 'tutoring meetings'.

- Invite representatives of the EP to contribute to the discussions of panel sessions.
- Consider the organisation of thematic workshops on topics such as standardisation, international cooperation, etc.
- Considering that there is still diversity of opinion on many aspects of privacy, a debate may be suggested, to make the next APF even livelier and more interactive.

4.2 Recommendations related to the content of the Forum

The key messages are mentioned below in order to set the agenda for future discussions:

- Empirical understanding of data flows should be the starting point for actors' agendas.
- Research should seek creative, innovative tools to empower users by enhancing transparency.
- Data protection agencies should analyse market failures in privacy technology, and intervene with scientific and economic precision.
- Standardisation initiatives in the domain of privacy should take into account the specific nature of this field.
- The need for more privacy-respecting tools offered in the form of software packages.
- Establishing confidence that the ICT system managing data actually enforces privacy policies; the desirability of dividing the assurance problem into areas of early and late assurance.
- Accountability in and for clouds should be enabled.
- Establishing a trust relationship between client devices and the provider.

Privacy is an area that is multidisciplinary by nature. Regulations, legal frameworks, technology, user adoption, and economic considerations are all necessary components in elevating privacy to a norm generally observed in a society. In this regard, gatherings that include multiple stakeholders in privacy assembled for a candid dialogue are clearly important and valuable. The 1st Annual Privacy Forum in Cyprus was one of these events.



Annex I: Organising Committee of APF'12

General Co-chairs:

Giuseppe Abbamonte, European Commission (DG CONNECT Unit H4 Trust and Security)

Dr. Demosthenes Ikononou, European Network and Information Security Agency (ENISA)

Prof. Marios Dikaiakos, University of Cyprus

Organising Committee

Santiago ALVAREZ, ENISA

Daria CATALUI, ENISA

Slawomir GORNIAK, ENISA

Martin MUHLECK, DG CONNECT

Maria POVEDA, University of Cyprus

Rodica TIRTEA, ENISA



Annex II: The Programme Committee of APF'12

Programme Committee chair:

Prof. Bart Preneel , Katholieke Universiteit Leuven

Programme Committee:

Dr. Alessandro ACQUISTI, Carnegie Mellon University

Aljosa PASIC, Atos Research

Dr. Alma WHITTEN, Google USA

Dr. Andreas ALBERS, University of Frankfurt

Prof. Bart PRENEEL, KU Leuven

Dr. Carmela TRONCOSO, COSIC KU Leuven

Caspar BOWDEN, independent expert

Dr. Claire VISHIK, INTEL

Dr. Claude CASTELLUCCIA, INRIA

Prof. Claudia DIAZ, KU Leuven

Dr. Daniel LE-METAYER, INRIA

Prof. Elena FERRARI, University of Insubria

Dr. Eleni KOSTA, KU Leuven

Prof. Elisa BERTINO, University of Purdue

Prof. Evangelos MARKATOS, FORTH

Dr. Florian KERSCHBAUM, TU Dresden

Dr. George DANEZIS, Microsoft Research Cambridge

Dr. Giannis MARIAS, Athens University Economy & Business

Dr. Ioanna DIONYSIOU, University of Nicosia

Dr. Jacques BUS, University of Luxembourg

Dr. Jan CAMENISCH, IBM Zurich Research Laboratory

Prof. Kai RANNENBERG, University of Frankfurt

Dr. Nick PAPANIKOLAOU, HP Labs Bristol

Nick WAINWRIGHT, HP Labs

Dr. Nicola JENTZSCH, DIW Berlin

Paul FRANCIS, Max Planck Institute for Software Systems

Dr. Paul de HERT, University of Tilburg

Dr. Periklis PAPAKONSTANTINOU, Tsinghua University

Dr. Rainer BOEHME, University of Münster, Germany

Dr. Rodica TIRTEA, ENISA

Prof. Simone FISCHER-HUEBNER, University of Karlstad

Prof. Sokratis KATSIKAS, University of Piraeus

Dr. Sotiris IOANNIDIS, FORTH

Dr. Stefan SCHIFFNER, TU Darmstadt – CASED

Prof. Tassos DIMITRIOU, Athens Information Technology – AIT

Annex III: Final Programme

7.1 Wednesday 10/10/2012

08:00 – 08:50	Registration
08:50 – 09:45	<p>Opening notes & keynotes</p> <p>Welcome note: Polys Michaelides, Commissioner for the Regulation of Electronic Communications and Postal Services of Cyprus</p> <p>Chair & opening note from the local organiser: Marios Dikaiakos, General Co chair APF 2012, Professor University of Cyprus</p> <ul style="list-style-type: none"> • Udo Helmbrecht, Executive Director, European Network and Information Security Agency – ENISA  • Rosa Barcelo, Policy Coordinator Trust & Security Unit, European Commission – DG CONNECT • Stelios D. Himonas, Permanent Secretary of the Cyprus Ministry of Justice and Public Order, representative of Cyprus Presidency of the Council of the EU
09:45 – 09:50	Break
09:50 – 11:15	<p>Keynotes</p> <p>Chair: Bart Preneel, PC chair APF 2012, professor KU Leuven</p> <ul style="list-style-type: none"> • Nicolas Dubois, Data Protection Unit, Directorate General Justice, European Commission • Marisa Jimenez, European Privacy Policy Senior Counsel, Google. 'Embracing Privacy Reform for Economic Growth: The Role of the Internet'  • Alessandro Acquisti, professor, Heinz College – Carnegie Mellon University. 'Would "Privacy in the Age of Augmented Reality" work?' 
11:15 – 11:30	Coffee break

11:30 – 13:00	<p>Session 1</p> <p>Chair: Rodica Tirtea, PC member APF 2012, expert ENISA</p> <ul style="list-style-type: none"> • ‘Integrating Anonymous Credentials with eIDs for Privacy-respecting Online Authentication’, Ronny Bjones, Ioannis Krontiris, Pascal Paillier and Kai Rannenberg  • ‘Privacy-preserving Identity Management in SEMIRAMIS’, Charles Bastos Rodriguez, Ruben Torres Dieguez, Silvio Soracce, Tiago Batista, Ricardo Azevedo, Juan Manuel Marin Perez, Jorge Bernal Bernabé, Gregorio Martinez and Dominik Lamp; Aljosa Pasic  • ‘A Method for Analysing Traceability between Privacy Policies and Privacy Controls of Online Social Networks’, Pauline Anthonsamy, Phil Greenwood and Awais Rashid  • ‘Collection and storage of personal data: a critical view on current practices in the transportation sector’, Eleni Kosta, Hans Graux and Jos Dumortier  <p>NOTE: presenter’s name in bold.</p>
13:00 – 14:00	<p>Lunch</p>
14:00 – 15:30	<p>Session 2</p> <p>Chair: Claire Vishik, Security, privacy standards and policy manager, Intel</p> <ul style="list-style-type: none"> • ‘Privacy-Preserving Computation (Position Paper)’, Florian Kerschbaum  • ‘A Problem-based Approach for Computer Aided Privacy Threat Identification’, Kristian Beckers, Stephan Faßbender, Maritta Heisel and Rene Meis  • ‘Privacy Concerns and Actions: Evidence from a Large-scale Hybrid Experiment’, Nicola Jentsch • ‘Electronic Footprints in the Sand: Technologies for Assisting Domestic Violence Survivors’, Martin Emms, Budi Arief and Aad Van Moorsel 
15:30 – 15:45	<p>Coffee break</p>

15:45 – 17:15	<p>Panel Session 1 ‘The economic dimension of data protection’</p> <p>Chair: Giorgos Rossides, Special Advisor – Data Protection Reform, Cyprus Presidency of the Council of the EU</p> <ul style="list-style-type: none"> ● Alessandro Acquisti, Associate Professor of Information Technology and Public Policy at the Heinz College at Carnegie Mellon University (CMU), co-director of CMU Center for Behavioral Decision Research (CBDR)  ● Melina Violari, Policy and Privacy Manager, Facebook Europe ● Andreas Krisch, president EDRI (European Digital Rights), VIBEIAT 
17:15 – 17:20	<p>Break</p>
17:20 – 18:20	<p>Workshop organised by NESSoS (Network of Excellence on Engineering Secure Future Internet Software Services and Systems) – ‘Privacy By Design and Secure Software Engineering’</p> <p>Chair: Aljosa Pasic, Chair of the Industrial advisory board of NESSoS</p> <p>Workshop speakers:</p> <ul style="list-style-type: none"> ● Jorge Cuellar, Siemens: ‘The need to standardise location privacy protection policies – A look at the IETF’  ● Claire Vishik, Intel: ‘Principles of Privacy by Design in Smart metering: issues of importance to privacy engineers and technologists’  ● Slim Trabelsi, SAP: ‘Use of USDL-SEC for privacy goals’  ● Aljosa Pasic, Atos: ‘Model Driven Privacy: Does it exist?’  ● Nick Wainwright, HP Lab: ‘Accountability for the Cloud.’ 
20:00	<p>Conference Dinner</p> <ul style="list-style-type: none"> ● <i>Sponsor’s Brief note ‘Innovation Forecast: A Data Protection Framework for the Cloud’</i>, Thomas Boué, Director of Government Affairs, EMEA

7.2 Thursday 11/10/2012

08:30 – 10:00	<p>Second day opening notes and keynotes</p> <p>Chair and welcome note: Steve Purser, Head of Technical Department, ENISA</p> <ul style="list-style-type: none"> • Stephen Deadman, Privacy Officer, Vodafone Group  • Andreas Krisch, President EDRI (European Digital Rights), VIBEIAT, 'Data Protection: the Enabler for Innovative Information Technologies' 
10:00 – 10:10	<p>Coffee break</p>
10:10 – 11:20	<p>Session 3</p> <p>Chair: Ioannis Krontiris, Senior Researcher, Mobile Business and Multilateral Security group at Johann Wolfgang Goethe University in Frankfurt</p> <ul style="list-style-type: none"> • 'Conceptual Framework and Architecture for Privacy Audit', Alan Hartman, Ksenya Kveler, Kirsten Bock, Pietro Colombo, Tamar Domany and Elena Ferrari  • 'A solution, but not a panacea for defending privacy: The challenges, criticism and limitations of Privacy by Design', Demetrius Klitou  • 'Current Status and Prospect of Acts on Privacy in Korea', Jae Suk Yun and Yong-Jun Jeong  • 'ICT and Privacy: Barriers', Antonio Kung 
11:20 – 11:30	<p>Break</p>
11:30 – 13:10	<p>Session 4 Short Talks</p> <p>Chair: Sławomir Górnjak, expert ENISA</p> <ul style="list-style-type: none"> • 'Privacy in ETSI Security Standardisation', ETSI, Carmin Rizzo  • 'The role of standards in privacy protection', Scott Cadzow  • 'Federated Identity as Capabilities', Harry Halpin and Blaine Cook • 'FutureID- Shaping the Future of Electronic Identity', Heiko Roßnagel, Jan Camenisch, Lothar Fritsch, Thomas Gross, Detlef Houdeau, Detlef Hühnlein, Anja Lehmann, Jon Shamah  • 'Designing Privacy by Design', Jeroen van Rest, Daniel Boonstra, Maarten Everts, Martin van Rijn and Ron van Paassen, Sander van Oort  • 'Enhancing Privacy by Design From a Developer's Perspective', Christoph Bier, Pascal Birnstill, Erik Krempel, Hauke Vagts and Jürgen Beyerer  • 'GINI Position Paper', Lefteris Leontaridis  • 'Privacy preserving course evaluations in Greek higher education institutes: an e-Participation case study with the empowerment of Attribute Based Credentials', Vasiliki Liagkou, George Metakides, Apostolis Pyrgelis, Christoforos Raptopoulos and Yannis Stamatou 

13:10 – 14:30	Lunch
14:30 – 15:30	<p>Panel Session 2 'Research Challenges in Privacy'</p> <p>Chair: Bart Preneel, PC chair APF 2012, professor KU Leuven</p> <ul style="list-style-type: none"> ● Caspar Bowden, independent expert ● Kai Rannenberg, professor University of Frankfurt ● Florian Kerschbaum, professor University of Dresden  ● Antonio Kung, TRIALOG 
15:30 – 15:45	Coffee break
15:45 – 17:30	<p>Panel Session 3 'European Policies and Technological Innovation in Privacy and Data Protection'</p> <p>Chair: Rosa Barcelo, Policy Coordinator Trust & Security Unit, European Commission – DG CONNECT</p> <ul style="list-style-type: none"> ● Nicolas Dubois, Data Protection Unit, Directorate General Justice, European Commission ● Michael Waidner, SIT Research Group, Chair Fraunhofer SIT, Director CASED and EC-SPRIDE  ● Peter Schaar, the Federal Commissioner for Data Protection and Freedom of Information (BfDI) ● Gwendal Le Grand, Commission Nationale de l'Informatique et des Libertés (CNIL), Head of IT experts group ● Caspar Bowden, independent expert ● Giovanni Buttarelli, Assistant Supervisor, European Data Protection Supervisor (EDPS)
17:30 – 17:40	<p>Closing remarks</p> <p>Demosthenes Ikonomou, General Co chair APF 2012, Head of Secure Services & Project Support Activities Unit – ENISA</p>

Annex IV: Description of Panel Sessions and Workshops

8.1 Panel 1: The economic dimension of data protection

Chair: Giorgos Rossides, Special Advisor – Data Protection Reform | Cyprus Presidency of the Council of the EU

This panel examined the interaction of the fundamental right to the protection of personal data with the economic imperatives of the 21st-century digital internal market. The innovative business models of this market have, in recent years, come to depend increasingly on the utilisation of personal data. While this fact may carry significant advantages in terms of the personalisation and customisation of web-based services, it also brings with it considerable risks for the protection of personal data and calls into question the regulatory regimes that are in place to ensure this protection.

Key questions explored:

- What are the changes that have happened since the adoption of the EU data protection regulatory framework in 1995? How do these changes challenge our existing legal framework for the protection of personal data?
- What are the economic trade-offs between the provision of ‘free’ digital services and the uptakes of these services by individuals? Is personal data the currency with which these services are paid for?
- Have technological advances rendered privacy and data protection irrelevant? Do people care?
- What would be the best solutions to ensuring the protection of personal data without stifling innovation and entrepreneurship on the internet?
- Will the proposed EU data protection reform help foster the economic growth, innovation, job creation it envisages, particularly for micro and medium-sized enterprises, in the currently negative economic environment?

Panel Composition:

- **Alessandro Acquisti**, Carnegie Mellon University
- **Melina Violari**, Policy and Privacy Manager, Facebook Europe
- **Andreas Krisch**, president EDRI (European Digital Rights), VIBE!AT



8.2 Panel 2: Research Challenges in Privacy

Chair: Bart Preneel, PC chair APF 2012, professor KU Leuven

The developments at EU level in the policy framework related to privacy represents one of the most interesting and fast evolving sectors in EU policy. At the same time, for a number of years the EU has been making a significant investment in collaborative EU-funded R&D in the areas of NIS and privacy.

The main purpose of ENISA is to enhance the capability of the Community, the Member States and, as a consequence, the business community to prevent, address and respond to Network and Information Security (NIS) problems. To this end, ENISA has observed that many of the innovations occurring in the programmes of EU-funded R&D are not feeding into the relevant policy initiatives in the areas of NIS and privacy. In a similar way the strategic priorities of EU policy in the area of privacy are not feeding to research priorities.

The Agency therefore proposed a panel where experts working in the area of privacy discussed and addressed these gaps. With this panel we covered topics such as 'privacy by design' between objective and practice, technical implementation issues for the 'right to be forgotten', etc. Furthermore the goal was to identify with key experts topics that should receive priorities for funding in the near future in order to address the policy agenda of the EU.

Panel composition:

- **Caspar Bowden**, independent expert
- **Kai Rannenberg**, professor University of Frankfurt
- **Florian Kerschbaum**, professor University of Dresden
- **Antonio Kung**, TRIALOG

8.3 Panel 3: European Policies and Technological Innovation in Privacy and Data Protection

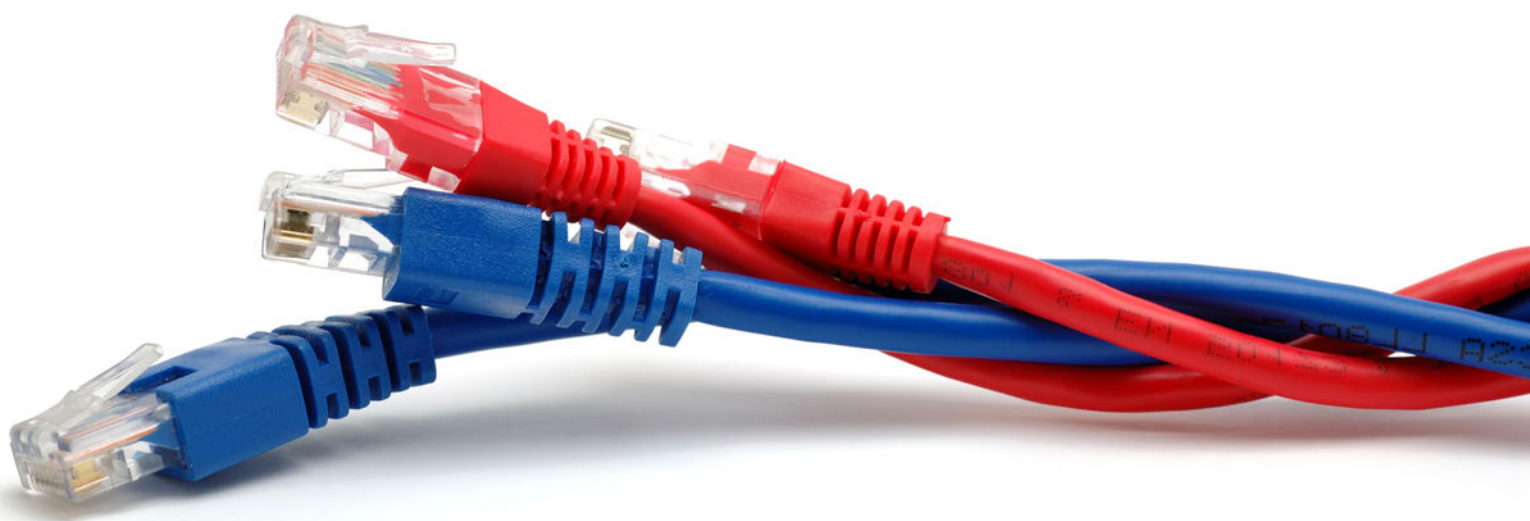
Chair: Rosa Barcelo, Policy Coordinator Trust & Security Unit, European Commission – DG CONNECT

Privacy is a fundamental need and a basic right in Europe. New information and communication technologies have given it a completely new dimension, for instance in terms of accessibility of personal information online, transparency of the use of data and the availability of personal data in the future. The dynamic uptake of new communication devices and forums online often comes with new challenges and costs for preserving one's individual needs for privacy protection. European policies and research efforts address these challenges, most recently with this year's Commission proposal of a major reform in the protection of personal data. At the same time, R&D results from the scientific communities in Europe outline new approaches for privacy in the digital age.

This panel discussed how Europe can deliver a regulatory environment for the privacy needs of its citizens that keeps pace with technological developments and stimulates growth and innovation. A question raised was how regulatory efforts and technological innovation for online privacy can complement each other to ensure the effective protection of citizens' rights. Another point for discussion was how policies and research can support a fundamental change from a reactive mode of adapting privacy rules to new online forms of communication to privacy rules applicable for any emerging online environment. European decision-makers of privacy policies discussed with research and industry representatives as well as the participants of the Forum their views and approaches on these questions.

Panel composition:

- **Nicolas Dubois**, Data Protection Unit, Directorate General Justice, European Commission
- **Michael Waidner**, SIT Research Group, Chair Fraunhofer SIT, Director CASED and EC-SPRIDE
- **Peter Schaar**, the Federal Commissioner for Data Protection and Freedom of Information (BfDI)
- **Gwendal Le Grand**, Commission Nationale de l'Informatique et des Libertés (CNIL), Head of IT experts group
- **Caspar Bowden**, independent expert
- **Giovanni Buttarelli**, Assistant Supervisor, European Data Protection Supervisor (EDPS)



8.4 Workshop organised by NESSoS – Privacy By Design and Secure Software Engineering

Chair: Aljosa Pasic, the Chair of Industrial advisory board of the Network of Excellence on Engineering Secure Future Internet Software Services and Systems (NESSoS)

'Privacy by Design' is a hot topic. Virtually all stakeholders agree that it is better to build in than to bolt it on later, but the European security industry has expressed concerns⁶ about vagueness and ambiguity of this concept. In order to come with a structured process, industry might need to take a look at requirements engineering, formal languages, programming environments and the other areas of engineering secure software-based services. The engineering of secure software services is based on the principle of addressing security concerns from the very beginning in system analysis and design, thus helping to reduce the amount of system and service vulnerabilities and enabling the systematic treatment of security needs through the engineering process.

This panel aimed to examine the interaction of privacy by design and secure software and service engineering. For example, most current requirements engineering approaches consider security only at the technological level, failing to capture the high-level requirements of trust or privacy. In parallel we are witnessing the emergence of Future Internet services and applications. They are composed of several services (created and hosted by various organisations and providers), each with its own security and privacy characteristics. The service compositions are very dynamic in nature, and span multiple trust domains, resulting in a fragmentation of ownership of both services and content, and a complexity of implicit and explicit relations among the participants.

Key questions explored:

- What are the best practices for Privacy by Design in practice?
- What impact has service-orientation on privacy by design and on secure software and service engineering?
- How do we combine the software engineering and data management sides of the (compositional) privacy by design principle?
- What does location privacy mean for secure software engineering?
- What solutions or approaches do you foresee to solve the challenges and fill the gaps?

Workshop speakers:

- Jorge Cuellar, Siemens: 'The need to standardise location privacy protection policies – A look at the IETF'
- Claire Vishik, Intel: 'Principles of Privacy by Design in Smartmetering: issues of importance to privacy engineers and technologists'
- Slim Trabelsi, SAP: 'Use of USDL-SEC for privacy goals'
- Aljosa Pasic, Atos: 'Model Driven Privacy: does it exist?'

⁶ <http://www.eos-eu.com/?Page=pos>

Annex V: Visual material

The materials below were used for the 1st Annual Privacy Forum and third parties can use them in order to make reference to the Forum.

THE ANNUAL PRIVACY FORUM 2012 APF' 2012

THE ANNUAL PRIVACY FORUM 2012 APF' 2012

Wednesday 10 th October	Thursday 11 th October
Sessions from 08:00 to 20:00	Sessions from 08:00 to 17:40
Including:	Including panel sessions:
Panel session:	- "Research Challenges in Privacy"
- "The economic dimension of data protection"	- "European Policies and Technological Innovation in Privacy and Data Protection"
Workshop organized by NESoS:	
- "Privacy By Design and Secure Software Engineering"	
Official conference dinner from 20:00	

Speakers of APF' 2012

Alessandro ACQUISTI - Associate Professor of Information Systems at the Heinz College, CMU.
 Giovanni BUTTARELLI - Assistant Supervisor, European Data Protection Supervisor.
 Stephen DEADMAN - Head of Legal Privacy, Security & Content Standards, Vodafone.
 Maria JIMENEZ - European Privacy Policy Senior Counsel, Google.
 Andreas KRISCH - President of European Digital Rights, EDRI.
 Gwendal LE GRAND - Head of the IT experts department, CNIL.
 Bart PRENEEL - PC chair APF 2012, professor KU Leuven.
 Peter SCHAAR - Federal Commissioner for Data Protection, BFDL.
 Melina VIOLARI - Policy and Privacy Manager, Facebook Europe.
 Michael WAIDNER - Director of the Fraunhofer Institute for Secure Information Technology.

<http://privacyforum.eu/registration>

10th and 11th of October Limassol, Cyprus

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Closing the Loop
from Research to Policy

Wednesday 10th October

Sessions from 08:00 to 20:00

Including:

Panel session:

- "The economic dimension of data protection"

Workshop organized by NESSoS:

- "Privacy By Design and Secure Software Engineering"

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