

## Literatur

Decker, M., Grunwald, A., 2001: Rational Technology Assessment as Interdisciplinary Research. In: Decker, M. (ed.): Interdisciplinarity in Technology Assessment. Implementations and its Chances and Limits. Berlin, Heidelberg: Springer

Decker, M., 1997: Perspektiven der Robotik. Überlegungen zur Ersetzbarkeit des Menschen. Europäische Akademie Bad Neuenahr-Ahrweiler, Graue Reihe Nr. 8

Decker, M. (Hrsg.), 1999: Robotik. Einführung in eine interdisziplinäre Diskussion. Europäische Akademie Bad Neuenahr-Ahrweiler, Graue Reihe Nr. 16

Christaller, T., Decker, M. (Hrsg.), 2001: Robotik. Perspektiven für menschliches Handeln in der zukünftigen Gesellschaft. Materialienband. Europäische Akademie Bad Neuenahr-Ahrweiler, Graue Reihe Nr. 29

Christaller, T., Decker, M., Gilsbach, J.M., Hirzinger, G., Lauterbach, K., Schweighofer, E., Schweitzer, G., Sturma, D., 2001: Robotik. Perspektiven für menschliches Handeln in der zukünftigen Gesellschaft. Berlin, Heidelberg: Springer

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## The electronic Payment Systems Observatory – ePSO

by Knud Böhle, ITAS, visiting scientist at the IPTS und member of the ePSO-team between October 2000 and April 2002

In May 2000 the Institute for Prospective Technological Studies (IPTS), an institute of the European Commission's Directorate-General Joint Research Centre (JRC), started to set-up and operate an "electronic Payment Systems Observatory", ePSO for short. 24 months later the pilot operation of ePSO came to an end. The project is regarded a success not only by EU Commission services and the European Parliament, but also by industry. The ePSO project is well documented. A brief project description (<http://epso.jrc.es/Docs/ePSOBrochure.pdf>), all written material produced, and an ePSO Final Report (Maghiros 2002) summarising the project's activities are available from the project's website (<http://epso.jrc.es>). Although just a personal view, the present article aims to take a more analytical stance when sketching the project.

### Rationale and Scope of ePSO

ePSO was co-financed by Directorate-General Enterprise under the ISIS-Programme (Information Society Initiatives in Standardisation). ISIS was an industry- and market-oriented programme, and not an R&D initiative under the Fifth Framework Programme. Its aim was to reinforce standardisation activities in the domain of ICT (Information and Communication Technologies). This aim translated into the primary objective of ePSO: to enhance information exchange in the field of electronic payment systems. This objective can be further refined by pointing out that information exchange may help to raise awareness, to reconcile the interests of many disparate players, to support consensus building and to stimulate cooperative efforts like standardization. At the highest general level the project was to contribute to more efficient retail payment systems and help to promote e-commerce in Europe. In more theoretical terms, ePSO can be described as an instance (or at least a nucleus) of a new

approach to governance and policy making: the European Commission as moderator attempted to provide through ePSO a forum for debate among stakeholders, with interfaces to policy, society and the public in general.

Improvement of information exchange in the field of electronic payment systems might look like an easy task, but it isn't. First, European monetary and economic integration challenge the financial industries, which in the past developed along national lines, leading to fragmented and non-interoperable electronic retail payment systems. Second, electronic payment services are developed today for many application areas – such as communication, transport, health care, government – introducing many new stakeholders in the payment business. Third, global e-commerce with an ever increasing segment of commercial digital products and services, creates a new demand for standardised and widely accepted Internet payment systems and requires innovation processes with many partners involved. As a matter of fact communication across groups of actors, across sectors, and across borders in Europe has been limited. It is also worth pointing at the high political importance of payment systems innovation in Europe. A cheap, convenient, harmonized, and efficient retail payment system within the EU zone is clearly one of the most visible criteria of social and economic integration from the point of view of the citizens and SMEs alike.

Information exchange and communication has to be organized and requires input worth being communicated. A slogan of ePSO defining its task has been “communication & analysis”. “Analysis” was the input expected from IPTS and partners to make communication happen. According to the range of actors addressed, the *scope* of the project comprised all issues related to electronic retail payment systems. Special emphasis was laid however on Internet payment systems for B2C (Business-to-Consumer) e-commerce. This focus was reasonable as in this area the pace of technological innovation is high, many new players have emerged, the cross-border aspect is especially important, and the lack of data and information is paramount. An extract of the first *background paper* defining the issues to be tackled may give a better idea of the subjects of

analysis. Among the major issues identified in 2000 (Böhle et al. 2000, p. II) were:

- the impact of the EMI Directive (Electronic Money Institution) on payment systems innovation and its effects on Europe's global competitiveness in this field,
- the relationship between interoperability and standardization, and the role of bridging technologies,
- the potential for competition between bank-based payment networks and other networks (e.g. mobile phone networks),
- the effects of cheaper and faster online connections on the demand for off-line payment solutions (e.g. e-purses),
- the provision of privacy and security at reasonable cost and the trade-off between costs and security,
- the implications of digital signatures, public key cryptography and public key infrastructure (PKI) development for the various electronic payment schemes,
- feasibility of micropayment systems and the potential market for such solutions,
- new access products (e.g. credit transfer, direct debit) and the position of banks vis-à-vis non-banks in payments,
- ownership of multi-application smart cards (the financial industry, the application provider, the government or the individual),
- payment system integration in the wider context of online-shopping protocols and e-commerce standards.

The issues selected were already on the agenda of financial industries, technology providers, standardization bodies, policy, and research. Those issues were chosen, where information exchange and open debate looked promising. Before we take a closer look at the project structure, it is worth to have a look at forerunners of ePSO.

### **Some previous history**

The ePSO project has roots in two projects. In 1997 the IPTS was charged by the Committee on Economic and Monetary Affairs of the European Parliament to carry out a project entitled “*EMU and information society: key questions about the opportunity to combine the introduction of the Euro with new electronic*

*payment technology options*". The project was meant to provide a comprehensive panorama of the positions of all actors concerned with the European Monetary Union and the introduction of new payment systems within the EU. IPTS was supported by the ESTO network (European Science and Technology Observatory). ITAS, a member of the ESTO network, participated in and co-ordinated the ESTO study. ESTO contributed a report on Electronic Payment Systems in European Countries with a focus on Internet payment systems (Böhle et al. 1999), IPTS produced a report (Papameletiou 1999) containing the results of a large scale consultation among payment experts all over the world – Alan Greenspan included.

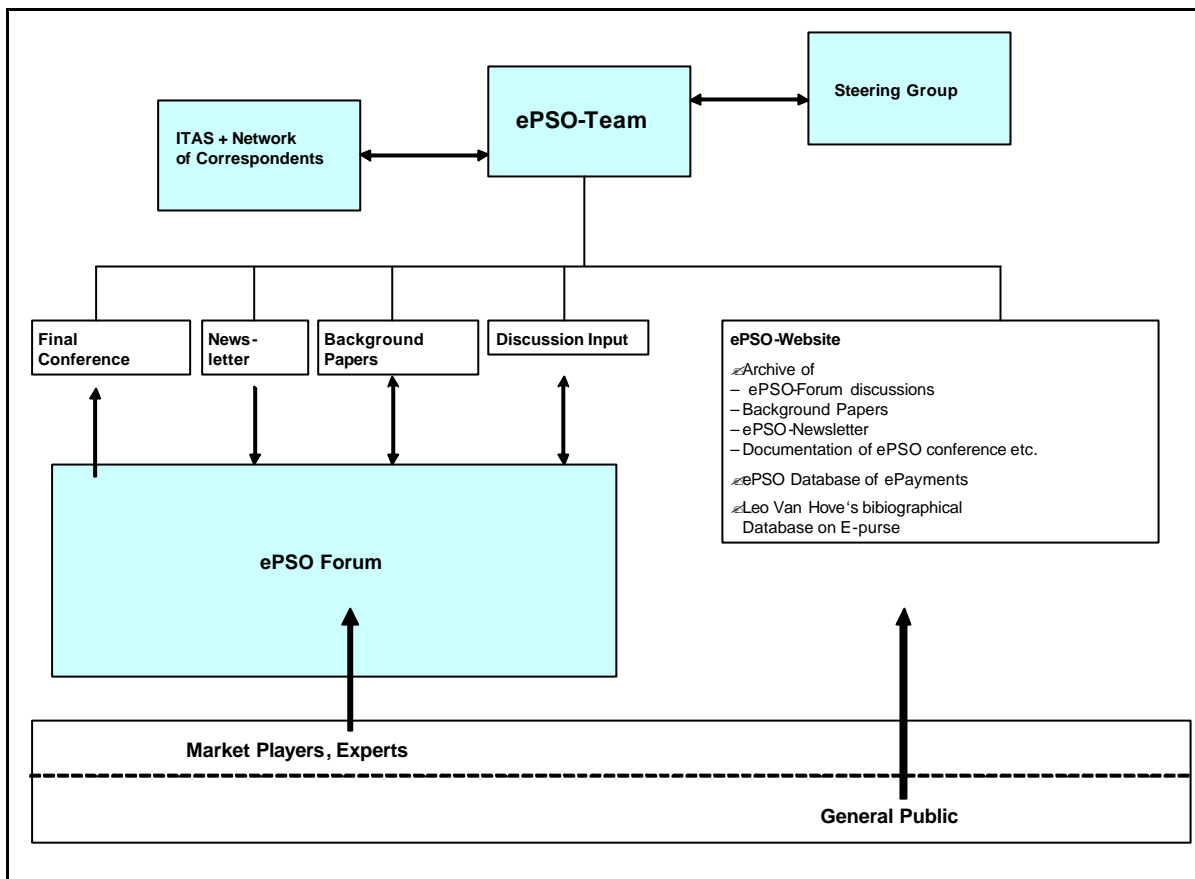
After completion of this project the European Parliament expressed *a need for a sustained monitoring and communication effort in Europe* in the field of electronic payment systems<sup>1</sup>. Proposing the ePSO project, IPTS built on experience of ITAS. Between 1997 and 1999 ITAS had carried out a technology assessment study on Internet Payment Systems for Digital Products and Services on behalf of the German Federal Ministry of Education, Science, Research and Technology. Innovative features of this project were an electronic discussion list (EZI-L) and an electronic newsletter (EZI-N). The introduction of "discourse elements" in this project turned out to be very favourable for the project's outcome and reputation (Riehm and Böhle 1999). These experiences were communicated to IPTS and were taken into account in ePSO. ITAS was later subcontracted to edit the electronic newsletter ePSO-N.

It has however to be underlined that the rationale of the ePSO project is very particular. While the TA study of Internet Payment Systems by ITAS *added "discourse elements" to enhance the research process*, ePSO was by definition not a research project, and its rationale was different, *aiming primarily to organize communication among stakeholders*. The production and distribution of deliverables was meant to serve this purpose, i.e. to structure and to stimulate communication among stakeholders and experts. The ePSO structure is explained in more detail in the following section.

### **The organisational structure: the actors**

The organisational structure of ePSO can be described in terms of actors and deliverables: the ePSO team, ePSO partners and so called "virtual partners", a Steering Group, and the members of the ePSO-Forum were the main actors. The deliverables can be split into static and interactive ones. Background papers, the electronic newsletter, a database on Internet payment systems, and a bibliographical database on e-purses were the static elements, while the more interactive ones included the ePSO-Forum, Workshops and the final ePSO Conference. The ePSO website acted as hub informing about the project and documenting ePSO events, archiving the project deliverables and giving access to the ePSO Forum. This basic structure is presented in Figure 1.

Figure 1: The basic structure of ePSO



*The ePSO-team and ePSO partners*

The ePSO-team was composed of permanent staff of the ICT unit of IPTS and three external experts who had joined the IPTS temporarily. The permanent staff acted as project management (Yannis Maghiros, project leader), built and maintained the project’s website (Marcelino Cabrera and others), and built up a unique Internet payment systems database (G rard Carat). More IPTS staff was involved for specific events like the preparation of workshops and the final conferences. The temporary staff was composed of an economist specialised in monetary affairs and payment system innovations (Malte Krueger from September 2000 to September 2001), a telecommunication and banking technology expert (Clara Centeno, since May 2001), and a sociologist/information scientist with technology assessment experience in the field of electronic payment systems (Knud B hle, October 2000 to April 2002). These experts had to produce content, i.e. background

papers, articles for the electronic newsletter and input for the expert discussion Forum. They built the bridge between IPTS, and the payment experts joining the ePSO-Forum.

ITAS was partner of ePSO in charge of editing the electronic newsletter. Arnd Weber, Michael Rader and Ulrich Riehm shared this job in Karlsruhe. Some 20 experts from all over the world (see <http://epso.jrc.es/newsletter/whoiswho.html>) supported the effort forming an international network of correspondents. Further partners of ePSO, so called *virtual partners*, were CEN/ISSS (Comit  europ en de Normalisation/Information Society Standardization System) and FIWG (Financial Internet Working Group). As ePSO has been situated in the context of a standardisation programme, close contact with CEN/ISSS was natural as it was with FIWG, a project of the European Commission addressing in the first place high level executives of the financial service industries. ePSO and FIWG were com-

plementary as FIWG focuses more on whole-sale payments and e-banking, while ePSO focussed on retail payment systems and Internet e-commerce payments.

*Steering Group*

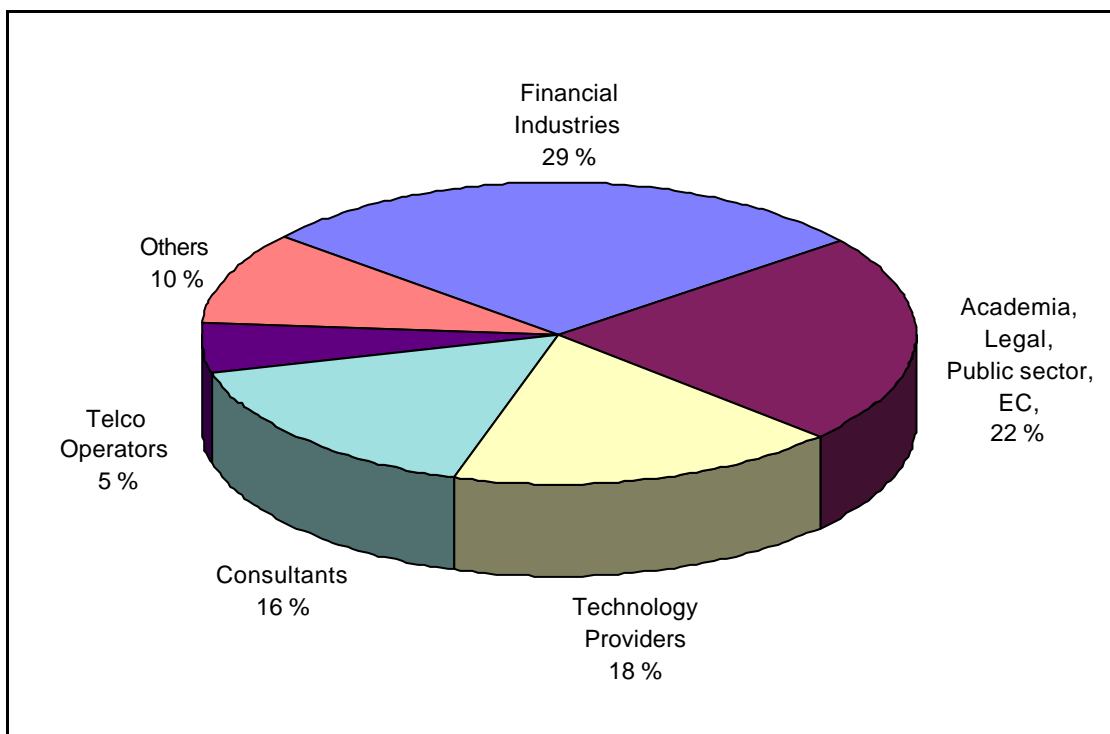
The ePSO Steering Group was chaired by Christa Randzio-Plath, MEP, the President of the Economic and Monetary Affairs Committee of the European Parliament (ECON). Bernard Clements, head of the ICT unit of IPTS moderated when she was not available. The group was further composed of representatives of those European Commission services concerned with electronic payments (DG Enterprise, DG Internal Market, DG Competition, DG Information Society, and DG Health and Consumer Protection). From the financial industries, the major credit card companies and the major banking associations at European level were present. Also ECB (European Central Bank) and ECBS (European Committee for Banking Standards) were invited. Consumer organisations and technology providers as further stakeholders provided further members. Independent experts from academia and payment consultants, as well as the already mentioned partners and virtual partners, comple-

mented the group. The composition of the Steering Group underlines *the common interest in payment matters of the European Parliament and the European Commission*. One major task of the Steering Group was to define the agenda of the project and to comment and later approve all background papers. At the same time the Steering Group has to be seen as a relevant feedback mechanism to standardisation bodies, European policy and industry.

*The ePSO-Forum*

The ePSO-Forum was set up as an electronic expert discussion list to bring together a large number of relevant market actors and experts for systematic exchange of strategic opinions. Technically a list-server distributed e-mails to the subscribers of the service and produced an archive of all discussions available at the project's website. The ePSO-Forum started in February 2002 with approximately 200 subscribers. A monthly net increase of about 10 % led to 750 members at the end of April 2002. Available data, presented at the Steering Group Meeting September 2001 by Yannis Maghiros, show the high level of industry participation (see Figure 2).

**Figure 2: ePSO-Forum member affiliation**



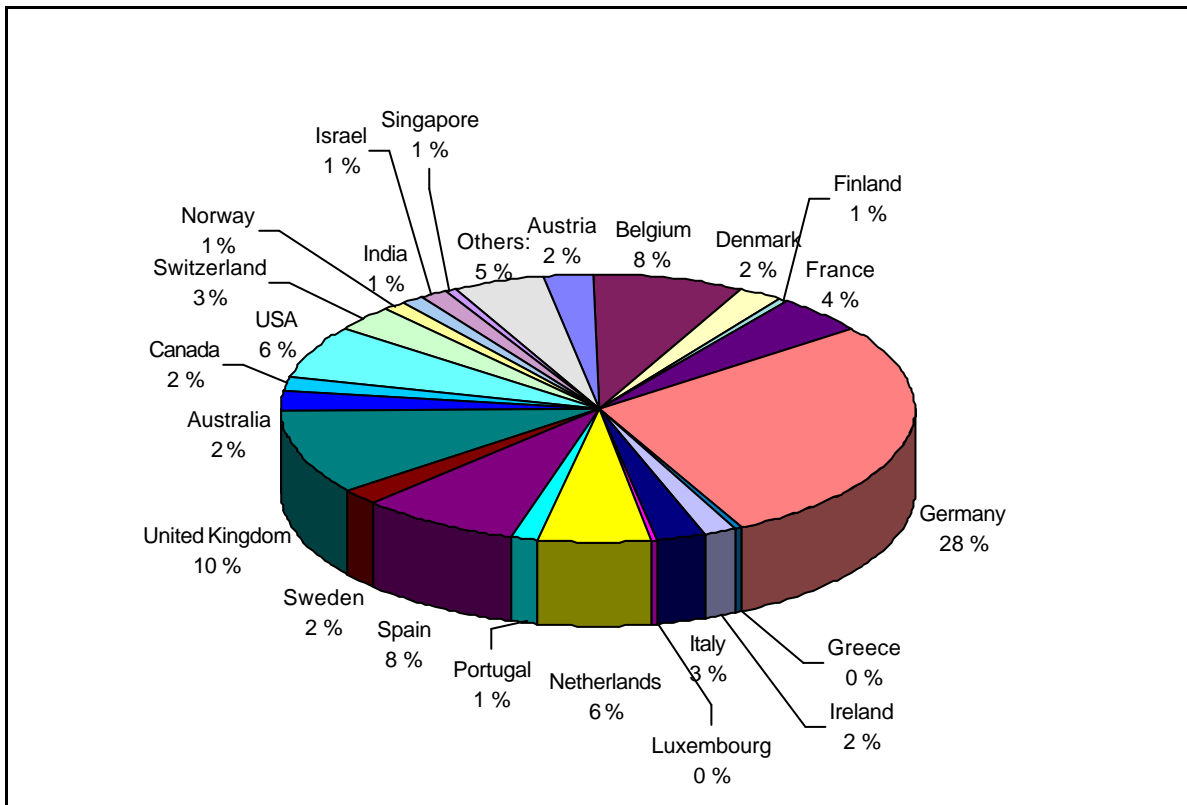
A closer analysis of the Forum discussions (cf. Maghiros 2002) reveals that the open Forum was relatively active with an average of 55 messages per month. While at the beginning, the ePSO-team had to take the lead and to push debate, industry participants took over subsequently and started to stimulate debate on their own. The number of 200 experts (excluding ePSO staff and partners) who actively participated in discussions is an indicator for the involvement of stakeholders. In some months up to 10 % of the subscriber base were participating actively. More than 20 threads were longer than 20 postings.

Another indicator of acceptance is that major credit card organizations, payment service providers, payment solution providers, EC representatives, renowned consultants and researchers showed up. The soundness of the list can also be underlined by the remarkable absence of spam and off topic messages. The ePSO experts were obviously able to establish a useful give and take relationship with the Forum. ePSO stimulated debate (15% of post-

ings), sent the ePSO-newsletter regularly to all Forum members, and sent drafts of background papers to the Forum for comments. This feedback loop introduced a participatory element and helped to improve the ePSO deliverables. The Forum worked well for the announcement of recent EU policy regulations and policy documents. Experience with the ePSO Forum indicates the feasibility of an open forum as a means of “community building” within Europe to the benefit of decision-makers in policy and industry. Forum membership distribution per country is shown in Figure 3 (presented at the Steering Group Meeting September 2001 by Yannis Maghiros).

What has been achieved at pilot stage should however not be overestimated. Further efforts are required to extend the subscriber base and to include new sectors and more countries; more systematic expert moderation is required if *specific* policy issues and new topics (e.g. digital rights management, automatic road toll, payments in transition economies etc.) are to be introduced.

Figure 3: ePSO-Forum membership distribution per country



**The organisational structure: the deliverables**

*Background papers*

Background papers were meant to analyse the issues identified as most relevant by the Steering Group (cf. Table 1) and to feed the results into the ePSO-Forum and wider public debate. Comments by the Steering Group, by ePSO-Forum members, and purposeful contributions to the electronic Newsletter by correspondents supported the production of these papers. They are of some 20 to 30 pages each, with a special section on policy options and open questions. Although they focus on current problems, the analysis attempts to be prospective with a perspective of 5 to 7 years ahead. It may be worth highlighting that one of the purposes of these papers was also to attack common prejudices and the mind boggling hype surrounding pay-

ment innovations. Instead of going into detail of the papers' content, two examples are given where common assumptions are challenged.

*First example:* There is much talk about telecommunication operators becoming payment service providers (especially m-payments), challenging or even substituting banks. ePSO argued that using the mobile phone as another access device to banking networks and bank accounts doesn't change that much; that a move into large-scale payment provision by telcos would provide considerable new challenges in risk-management for telcos; that for some payment services, telcos would even have to become Electronic Money Institutions or banks. The argumentation was later elaborated pointing at the extremely difficult technical and organizational task for telcos to build efficient systems for third party billing at large scale, and the lack of interoperability and standardisation of existing mobile payment serv-

**Table 1: Overview of background papers**

<i>Authors</i>	<i>Title</i>	<i>Date</i>
Böhle, K. et al.	Electronic-payment systems – Strategic and Technical Issues	December 2000
Krueger, M.	The Future of M-payments – Business Options and Policy Issues	August 2001
Böhle, K.	The Potential of Server-based Internet Payment Systems.	July 2001
Böhle, K.; Krueger, M.	Payment Culture Matters – A Comparative EU-US perspective on Internet payments	August 2001
Krueger, M.	Innovation and Regulation – the Case of e-Money Regulation in the EU	January 2001
Centeno, C.	Securing Internet payments – the Potential of Public Key Cryptography, Public Key Infrastructure and Digital Signatures	January 2002
Centeno, C.	Security and Consumer Trust in Internet Payments – the Potential of 'Soft' Measures	April 2002
Böhle, K.	Integration of electronic Payment Systems into B2C Internet Commerce – Problems and Perspectives	April 2002

Legend: All papers are available at <http://epso.jrc.es/backgrnd.html>

ices. Data from the ePSO database on ePayments confirmed that in most cases telecommunication operators co-operate with banks for m-payment services (Carat 2002).

*Second example:* There is a widespread assumption that public key cryptography (PKC), digital signatures and public key infrastructure (PKI) will lead to secure Internet payment systems and solve the authentication and non-repudiation problems of e-commerce. An additional assumption often heard is that the common interest of financial industries and government in digital signatures and PKI would lead to synergies and push their adoption. ePSO argued that although public key cryptography is widely used to provide data confidentiality for communication via SSL on the Internet, digital signatures are still in their infancy with regard to B2C e-commerce and G2C (Government-to-Citizen) e-government. It could be shown that after the failure of the most ambitious project by credit card companies to secure card payments based on digital signatures, namely SET, more and more server-based solutions replace the early approach. A revival of cheap to implement and simple to use PINs enabling access to central payment servers seems to rule out the concept of digital signatures consciously used by customers. ePSO further argued that in spite of potential synergies, the different interests and requirements of banks and governments might not easily be reconciled. Decision making of governments and banks is quite different: while governments' decision making process may be top-down, banks have a need to organise the support of many players in order to agree on common actions; banks may demand international schemes, while governments may prefer national ones. Stronger co-operation between the private and the public sector may also increase data protection and privacy risks ("big brother").

#### *Electronic Newsletter ePSO-N*

ePSO-N, the electronic Payment Systems Observatory Newsletter, was designed by ITAS, produced and edited by expert staff of ITAS, the ePSO team and an international network of correspondents. The initial network of correspondents was open for new members and grew during the course of the project. ePSO-N was also open for contributions by experts from outside the network. The "spirit" of the network was proclaimed in the Editorial of the first issue. In contrast to the IETF (Internet Engineering Task Force) motto attributed to Dave Clark (We reject presidents, kings and voting, we believe in rough consensus and running code) it says "We don't have blind faith in banks, credit card organizations, politics or internet gurus, but believe in reasoning and running discussion". The network of correspondents usually discussed draft articles, improving quality, before the articles were published. The network also suggested topics and looked for suitable authors from outside when needed.

ePSO-N was intended to stimulate ePSO-Forum debate and to attract a broader public. Therefore ePSO-N and the searchable ePSO-N-archive were made available on the Website. Each ePSO-N issue focused on a special theme (listed in Table 2). In addition, country reports, reports about EU-funded projects, conference reports, interviews, news items, and reviews of surveys, studies and scientific literature were on offer. All in all 15 issues were produced, i.e. 120 articles. Of these 120 articles 47 were written by ePSO and ITAS staff, 56 by correspondents of the network, and 17 by external experts

If ePSO-N has been well received, it is probably because of its emphasis on Internet payment developments, its dedicated European view, its mix of news and analysis, its independence, and because it was free.



**Table 2: ePSO-N Focus per issue**

<i>Issue</i>	<i>Focus Subject</i>
No.1 July 2000	Mobile phone payment systems I
No.2 October 2000	Mobile phone payment systems II
No.3 November 2000	E-purses
No.4 January 2001	Interchange fees
No.5 February 2001	Internet payment systems I
No.6 March 2001	Internet Payment Systems II
No.7 May 2001	EMI-directive
No.8 July 2001	Security in internet payments
No.9 September 2001	Security and the consumer
No.10 November 2001	Authentication, privacy and regulation
No.11 December 2001	Money Services Regulation in US and EU
No.12 February 2002	Integration of payment systems
No.13 March 2002	ePayments in transport
No.14 May 2002	Cross-border payments
No.15 June 2002	South East European transition economies

Legend: First compiled in Maghiros 2002

**Databases**

ePSO offers two online-databases to the public. Both have been well received and apparently are useful for academics, industries, and the public.

*Leo Van Hove's database on E-purses* is a bibliographical database with today some 1.500 records about e-purses, e-money and related matters. Leo Van Hove, an economist and researcher at the Free University of Brussels, provides abstracts and where possible a direct hyperlink to the referenced document for download. As outstanding expert in the field he was also member of the ePSO Steering Group, and had his own column in the electronic Newsletter ("Leo's corner"). He agreed to offer his bibliography via the ePSO website. ePSO, namely computer scientist Marcelino Cabrera, added value by making a searchable database out of the annotated list of records. This database is a lively site, updated regularly by its owner and one of the most often visited sources on the ePSO-website.

The second database, the *ePSO Database on ePayments* is mainly about Internet payment systems, related projects and initiatives. Its geographical scope is Europe, but relevant activities outside Europe are also taken into account. It was built up by Gérard Carat, IPTS. For each payment system, name, creation date, the companies involved, the geographical area of deployment, the state of deployment, and the application type are covered. In addition there is a description of how each system works from the user's point of view, and where available usage figures were presented. Of course a link to the system's homepage, further references and comments were included. The database contains some 180 records with more than 100 devoted to Internet payment systems. It is the most complete database on Internet payment systems in the world publicly available, although towards the end of the ePSO project it was not updated any more. To increase the value of the database and to involve industries, the records were sent to the respective companies to complete and validate the information.

A sign for the success of this database is its frequent use, and the fact that payment system providers have started to contact ePSO asking to be included.

*ePSO-Website and Dissemination*

The ePSO-Website, to be maintained at least till the end of 2002, fulfils mainly three functions. First, it describes the project, informs about project events like workshops and the

Final Conference, and gives contact details. Second, it serves as a repository of ePSO deliverables: the archive of Forum-discussions, the archive of the Newsletter, and all background papers. Third, it provides two databases, as described in the previous section.

As content grew, the number of visitors, downloads and hits also grew. The remarkable increase in use is shown in Table 3.

**Table 3: ePSO-Website statistics**

<i>Month</i>	<i>Visits per month</i>	<i>Page downloads</i>
August 2000	n.a.	3010
September 2000	n.a.	1304
October 2000	1050	3567
November 2000	956	3240
December 2000	1292	4871
January 2001	1958	7118
February 2001	2055	7263
March 2001	2264	7325
April 2001	3190	12070
May 2001	3293	10439
June 2001	4336	12845
July 2001	5255	14195
August 2001	4690	13579
September 2001	4689	15736
October 2001	6955	19823
November 2001	7574	23626
December 2001	6526	19592
January 2002	7845	21980
February 2002	7927	26216
March 2002	7703	27794

Legend: Maghiros 2002; visits of ePSO staff and IPTS were not counted

## Summary and Outlook

At the ePSO Final Conference, February 2002, DG Enterprise (which co-financed ePSO), Christa Randzio-Plath, chair of the European Parliament's Economic and Monetary Affairs Committee (ECON) (also chair of the ePSO Steering Group), and further representatives of the European Commission acknowledged *expressis verbis* the success of ePSO. There are probably five success factors worth taking into account for further and similar activities:

1. In the case of ePSO, *new forms of governance* involving stakeholders, policy and the public met *a real demand* for open discussion across borders in the field of electronic payments in Europe.
2. To establish a pre-competitive communication space accepted by stakeholders, it was necessary to *actively produce new information not available elsewhere* (database on ePayments, Leo Van Hove's database on e-purses, the ePSO-Newsletter, Background Papers). The value of the ePSO deliverables for the recipients is probably due to their neutrality, a rather frank analytical style, and the introduction of scientific and prospective long-term elements into debate.
3. *Community building* requires involvement and mutual benefits. This mutuality is obvious when draft papers were improved by ePSO-Forum members, when companies asked to have their systems included in the database of payment systems, when ePSO-Forum members were invited to the ePSO-Final Conference, and very active members recruited to the ePSO-N network of correspondents. Active ePSO-Forum members were recruited for the ePSO-N network of correspondents.
4. The *interdisciplinary mix of foresight and TA experts on the one hand and electronic payment experts on the other hand*, within the ePSO team and the network of correspondents, was essential for the reputation of ePSO.
5. The *involvement of IPTS*, a body of the European Commission, was essential as it facilitated communication with Commission Services, and for industries the IPTS connection to Brussels was probably attractive as it could be assumed that communication

or co-operation with ePSO might have an echo somewhere in Brussels.

A follow up of the ePSO pilot should however be more than a mere continuation of ePSO. There are more and new challenges around, not covered yet or out of scope of the ePSO pilot. To mention just five:

1. Little is still known from a European perspective about *consumer behaviour, concerns, and preferences* with regard to e-payments and e-commerce.
2. Little is still known about the development of *eContent markets in Europe* and the required technical innovations such as micropayment systems and digital rights management systems.
3. Little is still known about payment system options in *sectors like health, transport or government*.
4. The focus on Internet payments should be extended covering *multiple channels*, like m-commerce and interactive TV, and *addressing convergence*.
5. Analysis and communication would be helpful in all these areas. The major challenge for analysis and communication however is without doubt *e-payments in an enlarged European Union*.

In June 2002 the pilot operation of ePSO came to an end. A "more permanent solution" is now under discussion, as ePSO project leader, Yannis Maghiros, communicated to the ePSO-Forum. The outcome of this discussion is however unclear and action is not expected before autumn<sup>2</sup>.

Taking the opportunities the Sixth Framework Programme offers, ITAS (with the support of many partners) has submitted an Expression of Interest proposing an Integrated Project called "electronic Payments Futures". Lessons learnt from ePSO and other projects on e-money (cf. Böhle et al. 2001) are taken into account. It picks up new issues and strengthens the research orientation towards foresight activities including roadmapping of payment technologies. It is believed that "long-termism" is what makes Technology Assessment and Foresight interesting for decision makers in industries and policy and allows a longer-term co-operation between the two communities, the foresight and TA community,

on the one hand, and electronic payment stakeholders and policy-makers, on the other hand.

### Notes

- 1) Communication of Demosthenes Papametiou, JRC, to Arnd Weber, ITAS, 14.09.01.
- 2) Communication of Yannis Maghiros to the ePSO-Forum 28<sup>th</sup> of May 2002; <http://epso.jrc.es/cgi-bin/wa?A2=ind0205&L=epso-forum&F=l&S=&X=L6BE5B810993B371264&Y=knud.boehle@itas.fzk.de&P=4149>

### Literature

*Böhle, K.; Rader, M.; Riehm, U. (eds.)*, 1999: Electronic Payment Systems in European Countries. Country Synthesis Report. Karlsruhe: Forschungszentrum Karlsruhe 1999; <http://www.jrc.es/pages/projects/docs/Final-EPS-Vol.1.pdf>

*Böhle, K.; Krueger, M.; Herrmann, C.; Carat, G.; Maghiros, I.*, 2000: Electronic Payment Systems. Strategic and Technical Issues. Background Paper No. 1. Electronic Payment Systems Observatory (ePSO), EUR 19933 EN, December 2000; <http://epso.jrc.es/Docs/Backgrnd-1.pdf>

*Böhle, K.; Rader, M.; Riehm, U.; Weber, A.*, 2001: Technology Assessment and electronic Money – Between Consultancy and Oversight. In: Institut für Technikfolgenabschätzung und Systemanalyse, VDI/VDE-Technologiezentrum Informationstechnik (Hrsg.): Innovations for an e-Society. Challenges for Technology Assessment. Teltow: VDI/VDE 2001, S. 1-11; <http://www.itas.fzk.de/e-society/preprints/contents.pdf>

*Carat, G.*, 2002: ePayment Systems database. Trends & Analysis. Electronic Payment Systems Observatory (ePSO), EUR 20264 EN, March 2002; <http://epso.jrc.es/Docs/Backgrnd-9.pdf>

*Maghiros, I.*, 2002: EPSO Final report. ePSO-Newsletter – No. 15 – June 2002; <http://epso.jrc.es/newsletter/vol15/docs/ePSO-N15.pdf>

*Papametiou, D.*, 1999: Study on Electronic Payment Systems for the Committee on Economic and Monetary Affairs and Industrial Policy of the European Parliament. Brussels and Luxembourg: 1999; <http://www.jrc.es/pages/projects/docs/ESTOCSRfinal.pdf>

*Riehm, U.; Böhle, K.*, 1999: Elektronische Kommunikation im Projekt Elektronische Zahlungssysteme (PEZ) – Auswertung zum Diskussionsforum EZI-L und Dokumentation des Newsletters EZI-N. Karlsruhe: Forschungszentrum Karlsruhe, Wissenschaftliche Berichte, FZKA 6207 (Juli 1999); <http://www.itas.fzk.de/deu/Itaslit/ribo99a.pdf>

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