

UDENRIGSMINISTERIET

EUROPAUDVALGET

Alm. del - bilag 346 (offentligt)

Medlemmerne af Folketingets Europaudvalg
og deres stedfortrædere

Asiatisk Plads 2
DK-1448 København K
Tel. +45 33 92 00 00
Fax +45 32 54 05 33
E-mail: um@um.dk
Telex 31292 ETR DK
Telegr. adr. Etrangeres
Girokonto 300-1806

Bilag
1

Journalnummer
400.C.2-0

Kontor
EU-sekr.

9. december 2002



Til underretning for Folketingets Europaudvalg vedlægges i forbindelse med Det Europæiske Råd i København den 12.-13. december 2002 Kommissionens arbejdsrapport vedrørende status over udviklingen af e-handel og digital forvaltning og om den rolle, som de elektroniske identifikations- og autentifikationsystemer vil kunne spille i den forbindelse, SEC (2002) 1326.

Bendt Bendtsen



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 2.12.2002
SEC(2002) 1326

COMMISSION STAFF WORKING PAPER

**Progress Report on the Development of e-Commerce and e-Government and the Role
that Electronic Identification and Authentication Systems play in this Context**

**Progress Report on the Development of e-Commerce and e-Government and the Role
that Electronic Identification and Authentication Systems play in this Context**

TABLE OF CONTENTS

SUMMARY AND MAIN FINDINGS.....	3
INTRODUCTION.....	4
1. E-COMMERCE	5
1.1. Policy Objectives.....	5
1.2. State of Play.....	5
1.3. Assessment	8
2. E-GOVERNMENT	10
2.1. Policy Objectives.....	10
2.2. State of Play.....	11
2.3. Assessment	12
3. ELECTRONIC AUTHENTICATION.....	14
3.1. Policy Objectives.....	14
3.2. State of Play.....	15
3.3. Assessment	16

SUMMARY AND MAIN FINDINGS

This report was requested at the Seville European Council (21-22 June, 2002).

Its objective is to report on progress in the EU in the fields of e-commerce, e-government and electronic authentication on the basis of facts and statistics gathered by the European Commission.

The report points out that growth in Internet penetration in EU households has been significant (from 18% in 2000 to 40% in 2001). Progress has been made in business-to-business e-commerce (26% of European businesses made online purchases in 2001), with a faster upward trend than the business-to-consumer e-commerce segment (currently about a third of Internet users have made purchases online, valued at around €10 billion).

The prospects for future growth in e-commerce and other information and communication services and applications over the next few years are very encouraging – especially as access to and use of broadband networks becomes more widespread. B2B and B2C figures are respectively expected to rise to €440 billion and €70 billion in 2003.

Development in the use of online government services has been promising with a recent survey indicating that one in every two Internet users in the EU has accessed e-Government services – an increase of 6% over 2001. However, more complex online government services remain a significant challenge for public administrations and data for example on the quality of these online services and their impact in terms of cost reductions and organisational change are scarce.

In the field of electronic signatures progress on establishing the legal framework in the EU has been encouraging, yet there are still many obstacles to overcome in the marketplace – not least the lack of confidence of users themselves and the relatively high cost of certificates. The Commission is in the process of launching a study to investigate both the legal and practical implementation of electronic signatures in the EU.

The upward trend in the use of information and communication technologies and services (ICTs) more generally in the economy and society – especially by businesses, is very encouraging. More progress is necessary in areas such as e-commerce and e-government, but it is the more generalised and pervasive use of ICTs, across a wide range of economic and social activities, supported by broadband networks, that is expected to bring about a profound and long-term impact on productivity growth.

The eEurope2005 Action Plan provides an effective response to these observations. Indeed, the findings of this report underline the importance of ensuring the rapid and effective execution of all the actions set out in the eEurope2005 Action Plan. The extensive use of a wide range of different ICT applications, content and services both by the public and private sectors will improve the productivity and competitiveness of the EU economy as a whole and make an important contribution to meeting the Lisbon agenda.

INTRODUCTION

The objective of this report is to respond to the request of the Seville European Council (21-22 June, 2002), which invited the Commission “*to report back to the Copenhagen European Council on the development of e-commerce and e-government and on the role that electronic identification and authentication systems could play in this context*” (Presidency Conclusions, paragraph 54).

The scope of this report is therefore to present and assess where Europe stands today with respect to these issues, based on recent statistical and other factual evidence. It will thereby provide the necessary background material for promoting relevant policy measures, taking into account the objectives of the *eEurope 2005 Action Plan*, as endorsed by the Seville Council as “*an important contribution to the [EU's] efforts towards a competitive, knowledge-based economy*” (the Lisbon target). This Action Plan specifically states that by 2005 Europe should have, *inter alia*, modern online public services, e-government services, and a dynamic e-business environment, while the Danish Presidency has already announced that it will focus its work in the context of *eEurope* on improving security and building trust.

1. E-COMMERCE

1.1. Policy Objectives

The Lisbon European Council established as one of its main Information Society goals to stimulate the use of the Internet. Among the specific areas earmarked for helping to achieve this goal was accelerating the use of electronic commerce and a number of policy objectives were outlined:

- *the Council and European Parliament should adopt all pending legislation on electronic commerce by the end of 2000; Member States should accelerate their implementation into national law, which should be finalised by 2001*
- *the Commission and Council should consider how to promote consumer confidence in electronic commerce, in particular through alternative dispute resolution systems*
- *the Commission, the Council and the Member States should ensure that it is possible for Community and government procurement to take place on-line by 2003*
- *the speed of technological change may require new and more flexible regulatory approaches in the future.*

The eEurope2002 Action Plan, adopted in June 2000, established the objectives and specific actions to meet these goals and drew up a list of benchmarking indicators against which progress could be measured.

1.2. State of Play

Policy

There has been significant progress in achieving these policy objectives.

In terms of the legal framework, the virtual completion of an Internal Market for Information Society services thanks to the adoption of important Directives, such as the Directives on electronic commerce (2000/31/EC, and), electronic signatures (1999/93/EC) and copyright and related rights in the Information Society (2001/29/EC), will help to provide more business certainty in carrying out electronic commerce across the EU's internal borders.

Directive 2000/31/EC on electronic commerce is of particular importance in this regard. Its objective is to establish a genuine Internal Market for electronic commerce in the EU. The Directive offers a light and flexible legal framework for electronic commerce, which provides legal certainty for businesses and consumers alike. It provides a horizontal framework and covers a wide variety of services provided on-line (referred to as "information society services") ranging from on-line newspapers and specialised news services such as business or financial information, distance selling of various products (books, computer hardware and software, pharmaceuticals etc) to the on-line provision of financial services (on-line banking, on-line investment). It establishes harmonised rules on issues such as the transparency and information requirements for service providers, commercial communications, electronic contracts and liability of intermediary service providers. The Directive is based on a country

of origin principle, which means that information society services are in principle subject to the law of the Member State, in which the service provider is established. In turn other Member States, in which the information society service is received cannot restrict the incoming service.

Further work is foreseen to complete the legal framework for consumer protection, including in relation to e-commerce, in the Green Paper (COM(2001)531 final) and follow-up Communication (COM(2002)289 final).

The Lisbon European Council also highlighted the importance of building consumer confidence in e-commerce.

Self-regulation plays a vital role in creating trust not only for consumers but also for online activities in the business-to-business context. The eEurope2002 Action Plan called on the Commission to promote self-regulatory initiatives: *“Commission to stimulate increased flexibility in e-commerce regulation by building more on co and self-regulation, inter alia through co-operation with relevant business groups such as the Global Business Dialogue.”*

More specifically in the field of consumer confidence, eEurope2002 aimed to *“boost consumer confidence in e-commerce in partnership with consumer groups, industry and Member States”* and , *“Promote alternative dispute resolution, trust marks and effective codes of conduct by working with stakeholders to develop general principles and by creating appropriate incentives.”*

In keeping with this objective, the Commission has supported a wide range of non-legislative initiatives, for example in the field of online dispute resolution and pan-European trustmarks promoting good online business practices, which have been encouraged by the Directive on Electronic Commerce (Directive 2000/31/EC, Articles 16 and 17) and the eEurope2002 Action Plan respectively. An increasing number of European private sector initiatives in these areas have been launched. The Commission has helped to co-finance several projects in the field of online dispute resolution (e.g. the “ECODIR”¹ and “Online Confidence”² projects) and technological research is underway at the Joint Research Centre (Ispra)³. The European Extra-Judicial Network (EEJ-Net)⁴ and FIN-NET⁵ are also being established in close co-operation with the Member States. The Commission is supporting the establishment of a *“pan-European online dispute resolution system”* as part of the eEurope2005 Action Plan.

A number of pan-European electronic commerce trustmark and code of conduct initiatives have also been developed (e.g. Webtrader⁶, Eurolabel⁷, FEDMA’s “Ring of Confidence” initiative⁸), and a global initiative, the Global Trustmark Alliance (GTA) is underway.

1 www.ecodir.org

2 www.eurochambers.be

3 www.econfidence.jrc.it

4 www.europa.eu.int/comm/dgs/health_consumer/library/press/press197_en.pdf

5 http://www.europa.eu.int/comm/internal_market/en/finances/consumer/adr.htm

6 <http://whichwebtrader.which.net/>

7 www.euro-label.com

8 www.fedma.org

In the field of B2B, the Commission is analysing the trust-related barriers⁹ for the participation of business in B2B e-marketplaces. As part of the eEurope "Go Digital" initiative, the Commission has also established a number of e-business support facilities with a view to facilitating cross-border transactions for SMEs. These activities include the provision of online information systems, which give access to information on legal and regulatory issues in the field of e-commerce. More specifically, a European network of "Euro Info Centres" to provide legal information and assistance for SMEs has been established (ELEAS project).

In addition to these electronic commerce-specific initiatives, one should consider the impact of other related actions, such as the strengthening of competition in the telecommunications sector. Despite the difficulties being experienced currently, competition in this area has helped to bring down prices, stimulate innovation, and increase choice. This has stimulated a steady rise in the average level of Internet penetration in EU households from just over 18% in March 2000 to an average of 40% in June 2002. However, the number of Europeans that are actually familiar with using the Internet, notably in the workplace, is likely to be considerably higher. The new framework for electronic communications, adopted in 2002, will further strengthen competition in the sector and help to accelerate this upward trend in Internet penetration.

E-Commerce Penetration

In February 2002, the Commission presented its first eEurope Benchmarking Report¹⁰.

According to recent figures, the penetration of e-commerce has not increased rapidly, though prospects for future growth are very good, especially as access to and use of broadband networks becomes more pervasive. Some forecasts (source: IDC) claim that the value of B2B e-commerce transactions is expected to grow from €59 billion in 2000 to more than €440 billion in 2003, while B2C e-commerce is expected to increase from €10 to €70 billion (source: EITO).

Progress so far in the business-to-consumer (B2C) sector in the EU has been relatively limited when compared with retail sales as a whole. The generally accepted figure is that e-commerce represents approximately 1% of retail sales. Furthermore, cross-border B2C e-commerce transactions inside the EU are still only a fraction of total e-commerce activities.

According to the Commission's recent eEurope benchmarking surveys, only just over a third of Internet users claim to have bought products or services on the Internet, and frequent purchases are made by only 4% of them. The United Kingdom is the only Member State to have passed the 50% threshold of Internet users who have bought something on the Internet. The same surveys show that there has been only minimal growth in e-commerce sales between 2001 and 2002.

⁹ <http://europa.eu.int/comm/enterprise/ict/policy/b2b-consultation/b2b-trust-cons-sum.pdf>
¹⁰ eEurope Benchmarking Report, Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, COM(2002)62 final.

Though representing by far the largest proportion of e-commerce activity, growth in business-to-business (B2B) e-commerce has also been relatively slow. Business-to-business electronic commerce represents more than two-thirds of the total value of e-commerce transactions. According to the Commission's *E-Business Watch* report (March 2002), on average 26% of European enterprises practised online purchases in early 2001 compared to 19% actually selling online.

1.3. Assessment

Many theories and analyses have been put forward on the factors determining electronic commerce growth. These range from the cost of Internet access (including the cost of purchasing a computer as well as the cost of network access) to security and trust in this new environment.

One should not underestimate the time-lag necessary for individuals and organisations to adapt to these new services. On the demand side it takes time for consumers to change their habits, to become comfortable with new technologies and purchasing possibilities and to have the necessary confidence to shop electronically, particularly cross-border. On the supply side, it also takes time for the market and businesses to adapt, for the right business models to be tried and tested, and for good business practices to emerge.

For example, in B2C electronic commerce, there is a clear potential that the ever-increasing transparency of prices favours buyers (consumers) and therefore challenges businesses (and particularly small businesses). In fact, the re-balancing of power from the seller to the buyer in the B2C market seems likely to continue, fuelled by the introduction of the euro that is further increasing price transparency across Member States.

The application of the legal frameworks in the Member States to Information Society services through the transposition of the relevant Directives in most of the Member States is a major step forward, yet the impact in terms of increased legal certainty and protection will not be absorbed by businesses and consumers overnight.

Another factor determining growth of electronic commerce is the range of services on supply. To date, the most popular areas for online purchasing are: tourism and travel, books, videos/DVD, CDs, software, e-banking, erotic services, and online gaming. *eEurope2005* encourages policies that promote the rapid deployment of broadband networks, which can support attractive new services in the field of multimedia entertainment, e-Government, and e-Learning. The large-scale provision of many of these content-based services will also be conditional upon the deployment of effective Digital Rights Management Systems (DRMS), which is an area that the Commission is also promoting through a separate initiative involving the main stakeholders.¹¹

The current level of use of e-commerce should not be regarded as an accurate benchmark for the overall use of information and communication technologies (ICT) by society. For example, the surveys quoted above show that general Internet use has steadily increased. Indeed there is a discrepancy between the fast uptake of ICT by enterprises in general and the comparatively low use of these technologies for selling and purchasing online. The results of

¹¹ http://www.europa.eu.int/information_society/topics/multi/digital_rights/index_en.htm

a pilot survey on e-commerce and ICT usage by enterprises¹² show that, at the end of 2000, 92% of enterprises used computers, 74% had web access and 44% their own website, but only 25% of enterprises had implemented e-purchasing processes and only 17% used e-commerce to make sales. In other words, some online applications and services, such as consumers buying goods online, grow at a slower pace than others that are demonstrating considerable progress, notably online commercial communications and online financial services. It is also important to note that the pace of electronic commerce evolution varies from sector to sector to a large extent depending on the role of information exchange in businesses' value chains (cf. EITO 2001).

It can be reasonably argued therefore that while B2C e-commerce has not yet grown to its full potential (except in a few specific sectors), significant developments are taking place in B2B as well as in internal e-business processes. The steady integration of ICTs into business processes is having a significant impact on the economy as a whole in terms of efficiency and productivity gains and meeting the overall objectives of the Lisbon agenda.

It should also be pointed out that these economic benefits will also be felt more widely through the use of ICTs not only by businesses, but in the supply of government services (i.e. e-Government), and by citizens not specifically in making purchases online, but more significantly using them for a wide range of everyday activities.

The overall policy strategy, as put forward in the eEurope 2005 Action Plan, is to promote a wide range of different ICT applications and services which, when implemented together, will improve the competitiveness of the economy as a whole and contribute to meeting the Lisbon agenda. Therefore the development of the e-economy should not be judged or measured simply in terms of e-commerce but in terms of the take-up by society of the full range of "e-practices" and e-services.

¹²

The survey was launched by DG Enterprise and implemented by Eurostat. 13 Member States participated in this survey which was carried out during the first half of the year 2001 (with the exception of Denmark where the survey was conducted in October / November 2000). Cf. Eurostat: Statistics in Focus, Theme 4 – 12/2002. The survey will be continued in 2002 and 2003.

2. E-GOVERNMENT

It is a sign of the success of the *e*Europe initiative that the electronic delivery of government services is being simultaneously implemented at all levels of government in Europe. So wide is the field of e-Government that the information in this chapter can but provide a trend analysis. It follows on the *e*Europe benchmarking report issued by the Commission at the beginning of 2002.¹³

2.1. Policy Objectives

The targets defined in the *e*Europe 2002 Action Plan are the yardstick of e-Government policies in the European Union. Through the *e*Europe+ 2003 Action Plan Candidate Countries, too, have subscribed to these. Representatives of enterprises and of civil society at large, too, have given their view of e-Government objectives.

*e*Europe targets

The call by the Lisbon European Council

- for public administrations to exploit new technologies to make information as accessible as possible
- and for Member States to provide generalised electronic access to main basic public services by 2003

is reflected in the *e*Europe target for all basic government services to be online by the end of 2002/2003. Measurement of progress was formalised through the definition of 20 surveyed services, 12 services to citizens and 8 to enterprises.¹⁴

Behind the list of *e*Europe targets lie three broader eGovernment objectives:

- to improve the quality and accessibility (equality of opportunity) of public services
- to improve the efficiency of public administrations themselves
- to reduce the costs of public service to citizens and enterprises and thereby to promote competitiveness.

¹³ *e*Europe Benchmarking Report, Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, COM(2002)62 final.

¹⁴ http://europa.eu.int/information_society/eeurope/benchmarking/index_en.htm

2.2. State of Play

Provision of e-Government services

According to a survey carried out in May and June 2002, one in every two Internet users in the EU has accessed online government services, a growth of 6% over 2001.¹⁵ With rising awareness and usage of e-Government services, the citizens and enterprises are assessing these against their requirements. Their views, which are being made heard through a range of channels and at all levels of government, are important for the success of e-Government implementations. However, the debate over prioritising e-Government services and on how to implement these is not formalised, and no uniform Europe-wide indicators exist to measure user satisfaction.

The eEurope initiative has been widely welcomed, and there appears to be broad agreement on the objectives for e-Government. Difference of view between governments, citizens and enterprises over the objectives of e-Government tend to be over which of its aspects is to be accentuated. Citizens and enterprises tend to view e-Government as part of their wider administrative environment and expect changes to the whole rather than to certain (technological) dimensions of it.

Another difference is over the national orientation of e-Government services. An open consultation and conference on pan-European government services¹⁶ carried out by the European Commission showed that enterprises and citizens are concerned about improved access to administrative information from other Member States and about support of linguistic and cultural diversity. Although failing to address these requirements in the development of e-Government e-services may result in the erection of barriers to the continued development of the single market, administrations look at the development of electronic services as a national issue and do not accord trans-border aspects priority.

In 2001, an estimated €5.2 billion was spent by public administrations on e-Government-related information and communication technologies, and this amount was predicted to rise by 28% in 2002.¹⁷ The measurement of what eGovernment in Europe has achieved against this remains largely quantitative and focussed on the online availability of services. Some initial work on qualitative aspects has been carried out for specific services.

The most authoritative assessment of progress towards the eEurope targets for government online are those provided by the eEurope benchmarking exercises. This assessment is based on an agreement of the EU Member States to focus on a set of 20 core services for citizens and enterprises, clustered around the concepts of live events and business episodes, and to adopt a classification scheme that places each of these services in a progression of four stages, from information to secure online transaction. Norway and Iceland are also covered by the survey, as of late is Switzerland.

¹⁵ Flash Eurobarometer 125, "Internet and the Public at Large", http://europa.eu.int/information_society/eeurope/benchmarking/list/source_data_pdf/report_eb125_en.pdf

¹⁶ The findings of the online consultation, the results of the conference and the report of the survey are available from <http://europa.eu.int/ISPO/ida>.

¹⁷ Source: European Information Technology Observatory 2002.

To date, two surveys of the online availability of e-Government services in Europe have been carried out at the end of 2001 and in spring 2002, respectively. The results of the second survey issued in May 2002¹⁸ indicate that as the end of the Action Plan 2002 approaches, online availability and sophistication of the surveyed public services has increased substantially but still lie at some distance from the aim set by the eEurope 2002 Action Plan.

In the EU, 57% (EU plus Norway, Iceland and Switzerland: 55%) of all surveyed government services are now available online, to varying degrees of maturity. This is an increase of 10% over the previous average, but the survey also confirms the trend for faster implementation of services for enterprises than for citizens (68% versus 47%). Strong differences also persist between types of service, which were grouped in income-generating services (79% available online), registrations (53%), returns (48%) and permits and licences (41%). The survey notes that the quickest progress was made where service provision is co-ordinated and services are simple, while progress is slower where service provision is dispersed and services are complex.

2.3. Assessment

General

While the measurements did not explicitly address questions of internal re-organisation of public administrations, the reported difficulties in achieving advances in areas where procedures are complex and service provision is dispersed indicates that the organisation of public sector service provision has become a major challenge. The work flows within public administrations and between these and their customers need to be reviewed and modernised not only for the sake of overall advances in the provision of e-Government services, but also in order to achieve another of e-Government's objectives, namely to increase the efficiency of public administrations. Few measurements of e-Government's contribution towards this objective as yet exist, but cost-benefit considerations will no doubt receive more attention as more services become operational.

The results of the eEurope benchmarking exercise are quantitative and do not imply conclusions as to the quality of the electronic services, nor as regards their effect on reducing the administrative burden, i.e. the monetary and non-monetary costs of interacting with government. Initial assessments of the usability, accessibility, and supply of two of the surveyed e-Government services confirm the secondary importance given to trans-border aspects of electronic government services: locating these services from abroad and using them in another than the national language is often not possible.¹⁹

In the Candidate Countries, performance against the e-Government targets is improving significantly. The overall situation at the end of 2001²⁰ was that 50% of the public services identified in the eEurope+ action plan are available at a basic level (information is posted online or there is one-way interaction). 8% of the services provide two-way interaction or full

¹⁸ http://europa.eu.int/information_society/eeurope/benchmarking/list/source_data_pdf/2nd_measurement_final_report.pdf

¹⁹ Report on the benchmarking of electronic service delivery in the public sector, http://europa.eu.int/information_society/eeurope/benchmarking/list/source_data_pdf/2nd_measurement_final_report.pdf

²⁰ eEurope+ 2003 Progress Report, June 2002, <http://www.europa.eu.int/eeuropeplus>

on-line transactions. Another 1% of the services are the subject of pilot projects, and plans are in place for 9%.

As in the EU, services to businesses are more advanced, with 46% of the services available on-line at basic level and two-way interaction and full on-line transactions implemented for another 11%. Implementations for another 11% of services are planned. Candidate country government websites are also being evaluated against the WAI accessibility guidelines (WAI = Web Accessibility Initiative). For Candidate Countries, ensuring access to their citizens and enterprises to the pan-European e-services of any public administration is a major concern.

Spread of good practices

However important the eEurope and eEurope+ benchmarking exercises are in establishing a comparison of achievements in the EU Member States and Candidate Countries, progress towards the eEurope objectives requires that experiences and solutions are shared between public administrations and that the e-Government activities at different levels of government are co-ordinated. The 2001 conference "*From Policy to Practice*",²¹ co-organised with the Belgian Presidency, proved a valuable contribution to this.

New instruments like the European Forum on eGovernment²² and the eGovernment Observatory²³ are providing the in-depth analyses required for the identification and replication of good practice. Member States are beginning to share eGovernment tools with other countries, and the feasibility of virtual software repositories and competence centres for eGovernment solutions is being assessed.²⁴

Provision of electronic identifiers as key determinant of the level of service

Electronic identifiers are an expedient and reliable solution for the provision of e-Government services that make customisation of information possible to allow citizens and enterprises to fully interact with government online. They may, however, create specific risks for the privacy of citizens and the protection of their personal data and have to be assessed taking full account of relevant Community legislation, in particular Directive 95/46. It should be noted that the Working Part 29 as advisory body set up by the Directive has this issue on its agenda with a view to finding ways to reconcile e-Government with the data protection rules.

At the end of 2001, nine of the EU Member States had introduced single identification numbers for natural persons in their country, one country was planning to introduce such a scheme while five countries had no such plans.²⁵ Where identification numbers do exist, there is not always a single scheme per country. This means that in all but three Member States the ID-numbers are not multi-purpose. This might make the organisation of customised –

²¹ <http://europa.eu.int/eeurope/frompolicytorpractice>.

²² www.eu-forum.org

²³ europa.eu.int/ISPO/ida

²⁴ Examples of e-Government applications that have been provided by Member States for usage by others are an e-procurement platform developed by Germany and an information broker for dispersed public data conceived by Sweden. Both are being assessed for their usability by other countries within the IDA programme. IDA is also working at creating a network of European e-Government competence centres.

²⁵ The Electronic Identification of Citizens and Organisations in the European Union: State of Affairs, unpublished report drawn up on request of the Belgian Presidency by the European Institute of Public Administration for the 37th meeting of Directors-General of the Public Services of the Member States of the European Union.

Government services for citizens more complex. One should at the same time be aware that the identification of multiple services under one identifier creates specific concerns about compliance with the data protection rules.

3. ELECTRONIC AUTHENTICATION

3.1. Policy Objectives

The legal level

Directive 1999/93 on a Community framework for electronic signatures aims at the legal recognition of electronic signatures.²⁶

However, the validity and the conclusion of contracts, notarial acts and, more generally, solemn contracts and certain formalities of a non-contractual nature are not covered.

National provisions, which require the use of "paper-based writing" for certain types of contracts are not contrary to the principles of the Directive. This principle must, however, be seen in the light of the application of the Electronic Commerce Directive, Article 9, which states that "*Member States shall ensure that their legal system allows contracts to be concluded by electronic means. Member States shall in particular ensure that the legal requirements applicable to the contractual process neither create obstacles for the use of electronic contracts nor result in such contracts being deprived of legal effectiveness and validity on account of their having been made by electronic means*".

Aspects related to electronic contracting, such as an obligation for the Member States to ensure that their legal system allows contracts to be concluded by electronic means, obligation to remove obstacles for the use of electronic contracts and certain minimum requirements the service providers need to follow both prior to the placing of the order and in the context of placing of the order, are covered by Directive 2000/31/EC on electronic commerce.

With regard to electronic signatures exclusively used within systems, which are based on voluntary agreements under private law between a specified number of participants (commonly called closed network), the Directive states that the freedom of parties to agree among themselves the terms and conditions under which they accept electronically signed data should be respected to the extent allowed by national law and that the legal effectiveness of electronic signatures used in such systems and their admissibility as evidence in legal proceedings should be recognised.

In addition to the legal recognition of electronic signatures, the other principles of the Directive are the free circulation of electronic signatures products and services. The Annexes to the Directive lay down the general requirements to be met by qualified certificates, certification service providers issuing qualified certificates and secure signature creation devices.

The deadline for the transposition of the Directive was 19 July 2001. So far, all the Member States except three have notified their national transposing measures to the Commission. The three Member States which are late in transposing the Directive (Portugal, the Netherlands

²⁶ OJ L 13, 19.01.2000, p.1.

and Finland) have proposals in place which will normally be adopted before the end of 2002. Genuine success in this area is taking shape.

In order to prepare the ground for the future review of the Directive, which is planned for 2003, a study and a broad consultation procedure will be launched very soon.

3.2. State of Play

The legal and regulatory obstacles have largely been overcome, but there is still some reluctance to introduce electronic signatures in practice.

The application of electronic signatures is in the technical, commercial and administrative fields.

Technically, widespread use of electronic signatures requires interoperability between systems. Today, public key infrastructure (PKI) is still the supreme technology for electronic signatures and is based on asymmetrical cryptography, which uses two keys and a digital certificate which identifies the owner.

It is therefore technically possible to deploy such an infrastructure, but the following elements need to be incorporated into it: in order to be sure of having a "recognised" signature, it must among other things, use qualified certificates, indicate the date and time, ensure non-repudiation, provide security for all aspects of the chain, transmit the private key in a secure manner and, above all, preserve the certificates securely.

Confidence in electronic signatures depends on the reliability of all the stages in the system.

The industrial viewpoint

The implementation of PKI (which was originally designed for closed communities) for the provision of advanced electronic signature services is cumbersome and demands costly investment. The manner in which the requirements of the Directive have to be converted into technical specifications has been left very open, in particular as regards the certificates and their life cycle management. Standard X509v3 (format of certificates), which is used for the certificates and comes from the telecoms sector, provides for a number of options, whether or not they are used, which makes interoperability difficult and costly. Furthermore, nothing has been said about the security levels required in the products and systems, creating confusion in the market. Companies therefore regard the Directive as too open-ended and any investment in the development of products and services as expensive and risky.

The user's viewpoint

The number of users of electronic signatures outside of closed communities is still small, partly because the confidence infrastructures are too "universal", too bureaucratic and too remote from users. Confidence is traditionally linked to locality (the local bank, post office, etc.). The major certification providers are totally unknown to most users. Furthermore, the concept of electronic signatures is presented to users in technical, abstract terms, in particular as regards certificates. The problem is to create confidence for users at the beginning of the chain in their normal area of confidence. Interoperability is therefore necessary to establish chains of confidence and to overcome the perception of uniformity through subsidiarity. PKIs should be promoted for each trade, geographical area, etc., i.e. closer to the user. In addition, research is being conducted into mechanisms which are lighter than PKIs such as SPKIs (Simple PKIs).

The commercial applications of electronic signature are promising: these concern operations between businesses, such as invoicing, contracts, orders, invitations to tender, etc. Electronic signature provides a security feature: documents are unalterable and the author is identified, thus providing increased efficiency and abolishing the need for ordinary mail. While the technical obstacles can be overcome (by obtaining the software tools needed for signature and the certificates and incorporating them into a business's applications), the organisational aspect is more sensitive, involving reviewing the flow of information within a company, deciding who will sign and why. An entire climate of confidence needs to be brought about together with a change in mentality.

Other prominent areas in which electronic signature can be used concern use by administrations. Various projects are in progress in this respect, e.g. a VAT statement is available on the Internet in France and there are projects for electronic identity cards in Belgium and Finland.

3.3. Assessment

There appear to be two major obstacles to the dissemination of electronic signature technologies:

- the cost of the certificates: a low-cost certificate is not reconcilable at the moment with the secure technical requirements of electronic signature which make it attractive, such as storage costs, display of date and time, etc;
- large-scale use of electronic signatures also depends on the level of use of the Internet.

The standardisation work being conducted under the European Electronic Signature Standardisation Initiative (EESSI, launched by CEN and ETSI) is intended to come up with solutions to facilitate the application of the Directive. These solutions must satisfy both legal and market-related requirements and must therefore be aimed at creating an environment which is open to interoperable products and services. The Commission is working on a draft Decision which will include a list of reference numbers of generally recognised standards for electronic signature products and which therefore create a presumption of conformity with the Annexes to the Directive. The Decision may possibly be followed by a Commission Recommendation for the other standards in order to guarantee the coherence of the business model proposed by the EESSI.

The Decision and Recommendation are eagerly awaited by the Member States and will enable them to adopt joint technical standards for products and services in order to promote overall systems interoperability. This could have a positive impact on the development of new applications and competition could bring down prices to consumers.

The *eEurope* action plan already contains a specific action line entitled *on-line government: electronic access to public services* which includes a measure for promoting electronic signature in the public sector.

Within the IDA programme a study has been carried out on the feasibility of a European Bridge Certification Authority (CA)²⁷ as a practical way to achieve interoperability between

²⁷ <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&parent=news&documentID=581>

different certification services providers in Europe. The recommendations of the study will be implemented in a pilot with participation from the Member States.

In this context, two working groups within "eEurope SmartCards" (public identity and identification/authentication) are actively working on the use of chip cards for electronic signature.

The study, which will be launched shortly and will provide a basis for the amendment of the Directive, will also cover the practical applications of electronic signature. The results of this study will enable examples of good practice to be identified and thus promoted.

The revision of the 6th VAT Directive to provide for electronic invoicing²⁸ will play a positive part in promoting the use of electronic signature. The standardisation requirements in this field will be established through a direct link with the work of the EESSI being conducted in the field of electronic signature.

²⁸

Directive 2001/115/EC – to be implemented on 1st January 2004