

HLSG

High Level Strategy Group
for ICT Standards

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Barriers to Electronic Commerce in support of SMEs

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1. Management Summary

In the context of its mission, defined as:

to identify and facilitate the provision of the timely standardisation and other actions in Europe, in order to ensure that European Industry plays a major leadership role in the creation of the new global ICT Markets,

the High Level Strategy Group on ICT Standards (HLSG) decided in early October 1995 to set up three projects based on concrete applications of Information Infrastructures.

The three projects are:

- Electronic Commerce in support of SMEs
- City Information Services
- Broadband Infrastructure Interoperability

This report summarises the findings of the HLSG team set up to carry out the project on Electronic Commerce.

Electronic Commerce is recognised as a major application which will drive the development of Information Infrastructures and establish the business dimension of the Information Society. Electronic Commerce is not a new concept. It has successfully been implemented through the EDI effort and is a large part of business to business relationships. The recent enlargement of public information infrastructures and the development of the Internet are adding new dimensions to Electronic Commerce. New domains of usage are appearing, especially to serve the consumer market. There is also a growing requirement to apply such services in the relationships between Public Administrations and citizens or businesses.

As Small and Medium Enterprises (SMEs) are important economical actors of the European Union, in term of their contribution to both the GDP and employment, it has been decided to focus the project on the study of the requirements for the development of Electronic Commerce that will fit the needs of SMEs.

As a result of a market need analysis, the HLSG project team first established three generic statements and four identified set of obstacles to the development of Electronic Commerce. This analysis grid was then applied to the different domains of usage (existing or emerging) and filtered by SMEs specific criteria.

10 recommendations arise as a result of the project. They cover the priority domains of use of Electronic Commerce for the business benefits of SMEs. They are addressed primarily to the ICT Standards Board (ICT SB) for those recommendations that are of standardisation nature, but also to the European Commission (EC) and to national governments for those recommendations that are more of a regulatory or legal nature.

The recommendations have been elaborated keeping in mind the *global* nature of Electronic Commerce. If some of the requirements which led to the recommendations arose from European specificity, care was given to take in consideration the orientations recommended by industry in other parts of the world. World-wide interoperability of solutions is the priority requirement for Electronic Commerce implementation.

From this point, the HLSG team will now work with both the ICT Standard Board and DG IIIB from the European Commission to refine and follow up the implementation of these recommendations in close co-operation with the two other HLSG project teams.

The HLSG Electronic Commerce team want to thanks all the persons who agreed, by their participation in the preliminary inquiry phase, to contribute to this project. It is the intent of the team to maintain this contact and to discuss and improve this report with them.

2. Scope of the Project

The scope of this project was taken to be the identification, in strategic terms, of what must be done to achieve a pan-European Electronic Commerce infrastructure that will serve the needs of all business actors in a world-wide context. Information Infrastructure could rapidly become an important vehicle of the Union economical development if the conditions for Electronic Commerce development are met. This is especially important for small and medium enterprises (SMEs) which represent a huge number of business actors, largely contributing to the European economy, both in term of global contribution to GNP and impact on employment.

In this respect, the project goes beyond a functional analysis of the standardisation requirements for commercial transactions on the Internet. It starts from the needs of a user population which could greatly benefit from the functionality of Electronic Commerce.

2.1. HLSG objectives

The objectives of the HLSG Electronic Commerce team were initially to mainly focus on the standardisation requirements in application of the HLSG mission, i.e. *to identify and facilitate the timely definition of missing, critical standards to enable the development of coherent Electronic Commerce solutions.*

What became very obvious as the project proceeded, was that the barriers were not only of a standardisation nature and that the frontier between standardisation and the legal or regulatory environment was not always easy to determine. In that respect the team extended the definition of its charter to cover *the identification of the minimum legal and regulatory environment necessary to give market actors and investors confidence in the deployment of such solutions.*

2.2. HLSG rationale

The starting point of the requirement analysis led by the team has been strongly influenced by the ETSI SRC6 report which in its section B 2.2 *"the Enterprise Model - a General Framework for examining the European information industry"* stresses the necessity to develop Enterprise Models built from a business needs analysis which will then allow for a market base definition of the Information Infrastructure services, which will in turn be the base for the identification of necessary standards.

Although the HLSG team has not yet been able to achieve the construction of a set of Enterprise Models in the SRC6 sense representative of the roles and players of in Electronic Commerce solutions, Model definition was a rational process to understand the relative positioning and the corresponding relationships between the different roles, and as such was very helpful in the expression of market needs.

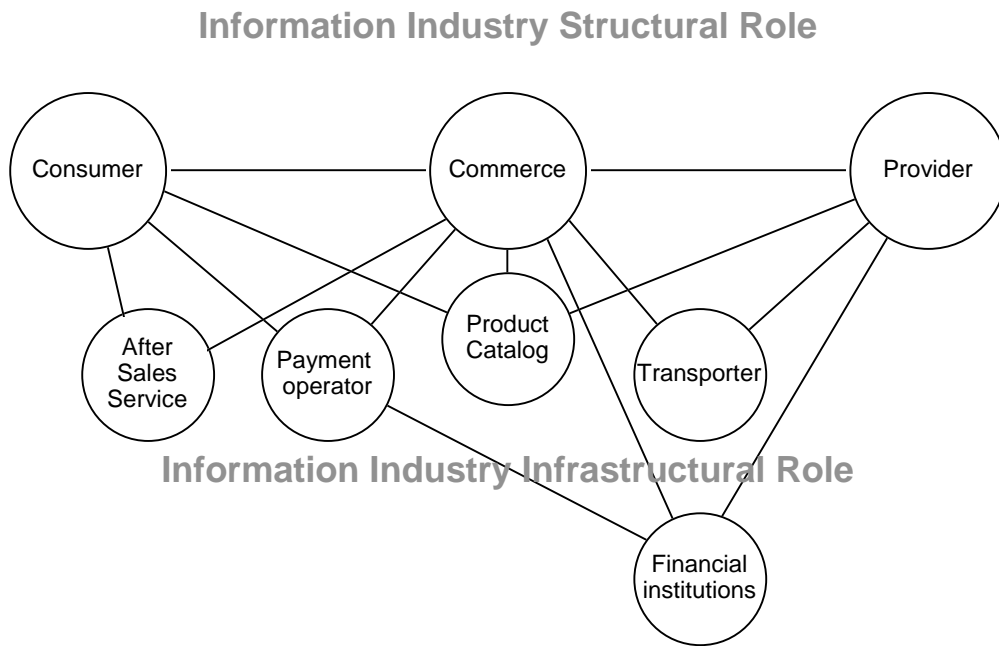


Fig. 1 : an Industry Model for electronic transaction

The HLSG team is convinced that as participants achieve a better understanding of the market behaviour, corresponding Enterprise Model descriptions should be consolidated. This will then become a very useful dialogue framework between all involved actors, from industry and services providers, financial institutions to users, achieving what is essentially missing today: a common understanding and definition of what is Electronic Commerce.

2.3. HLSG approach

In the course of the project, the HLSG team worked out a set of six basic principles that should be respected in order to properly achieve its objectives. These six principles are the following:

- the HLSG approach should be **market led**. The requirements either on standardisation or legal environment should be expressed in term of market needs with no or little technological justification;
- the requirements will essentially **focus on the services** to be **delivered by the infrastructure**. In reference to the three layer EII model, the team will concentrate on the identification of the standardised services to be provided by the *generic services* layer of the Information Infrastructure to the applications.

The diversity of trading situation addressed by Electronic Commerce (material or immaterial goods, product or services, sectoral dimension) could lead to a very complex definition of the domain if the definition of the infrastructure services are not bound to a generic framework. One could notice that such characteristic is not specific to this domain and that it is a general issue to carefully draw the boundary between application and infrastructure.

This principle was adopted by the team after some discussion. It was recognised that as the HLSG was composed of ICT industry representatives, it was not appropriate for the team to express requirements at an application level as they will inevitably be of sectoral nature (i.e. dependent of the domain of the application) and could not be defined without heavy user involvement;

- the expression of requirements should not be restricted to European needs: the HLSG expression should be **global** in term of domain of use;

- conversely, the HLSG approach should **integrate** the Union's **national** or **regional requirements**. The obvious example is the requirement for support of multilingual interfaces, messages or access to an information data base. A more subtle European specific which is of importance for Electronic Commerce is the very different behaviour of people regarding commercial transaction operations: the north of Europe is favouring anonymity of transactions, which means cash or electronic money payment while the south of Europe is adopting credit/debit card payment for easiness and security in usage;
- an important aspect in the expression of HLSG requirements is the expression of the condition for market acceptance, especially in term of cost of acquisition and cost of operation. **Affordability** is a major market discriminant in the emergence of any new solution;
- as it will appear later on as a result of this project, there is not one, but several concurrent models for electronic commerce. Each model is optimised for a sub-domain of the global market. Good understanding of the characteristics of each of those sub-domains is essential. Each definition will evolve in time, according to different parameters such as market acceptance (low, emerging, rapidly expanding, mature, ...), technology evolution, product price erosion. So the approach should be characterised by **openness in the model definition**, attentive to any parameter that will influence in time its behaviour.

3. Defining Electronic Commerce

Electronic Commerce is not a new concept. Using a communication infrastructure to exchange business data has been in use for several decades. EDI through the EDIFACT standardisation effort is a successful example of Electronic Commerce implementation, popular in such sectors as manufacturing, automotive and retail. The rapid public deployment in the past years of the Internet has induced the emergence of new open and diverging definitions.

The HLSG team felt that it was necessary to propose first a coherent definition, then to examine a prospective evolution of the services offered by Electronic Commerce according to both infrastructure and market readiness evolution, and finally to review the different key players.

3.1. Domain definition

Electronic Commerce could be defined as the set of tools and services used by trading partners to:

- reduce the reliability of exchanges in creating, moving, managing and processing the documents on which are built their relationships;
- improve the business processes by reducing the operating cost of business and improving overall quality;
- increase revenue by opening new opportunities in the way to conduct business.

Such tools and services are of special importance for Small and Medium Enterprises (SMEs) which are presently suffering of a lack of information technology usage. Electronic Commerce will be for them first an opportunity to increase their efficiency in their day-to-day business, then to sustain their business growth through the opening of new market channels.

3.2. Electronic Commerce evolution

Evolution of Electronic Commerce services in time could be illustrated by the following chart:

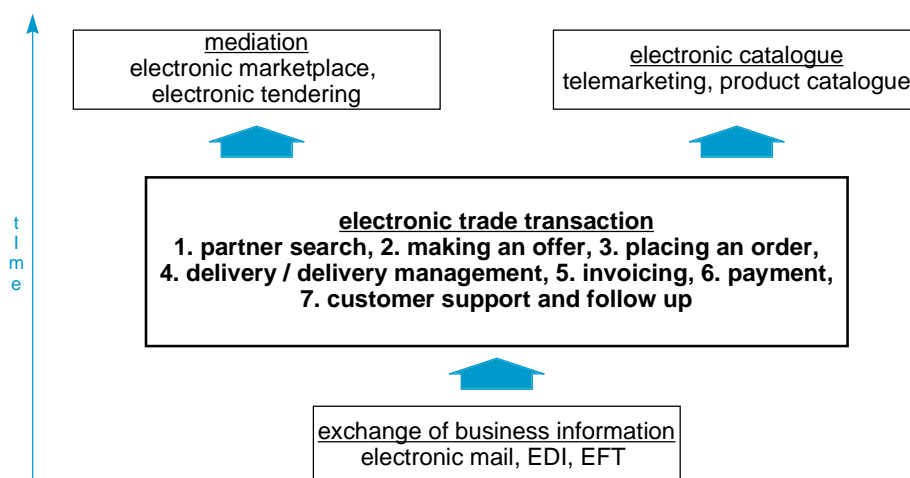


Fig 2 : Electronic Commerce services evolution

As mentioned earlier, Electronic Commerce has been successfully implemented between trading partners through the implementation electronic messaging, of automated exchange of formatted business information following the EDIFACT standards definition, and of exchange of funds. This step is well recognised and established. It is still active in standardisation by the enrichment of new exchange formats.

The rapid emergence of the Internet in the past years has induced the need for executing electronic transactions beyond the present free access or exchange of information. The development of services on the Information Infrastructures is highly related to the ability of the provider to receive from its customers the due payment for its delivered products or services. The definition of electronic trade transaction models is the present hot topic for all involved Information Infrastructure actors.

Beyond this step, one can foresee the need for more elaborated functionality exercised by service providers and providing brokerage functions between the end user (consumer or business) and goods providers (product or information). Such functionality is presently being investigated all around the world both in term of market solvability and technology readiness.

→ The HLSG team at this stage chose to focus its action on the present hot topic: the definition of electronic trade transaction models.

It does not mean that it will not pursue, in the follow up of the project, the analyse of standardisation and regulatory requirements for further services in the domains of information brokerage, electronic catalogue, etc.

3.3. Actors in Electronic Commerce

An important difficulty met by the HLSG team was the identification of the involved major players. Again, the approach has been to stay at the generic level in such a way that the defined models could cover a large domain of application.

The following chart illustrate the major players presently active in the definition of electronic trade transaction models.

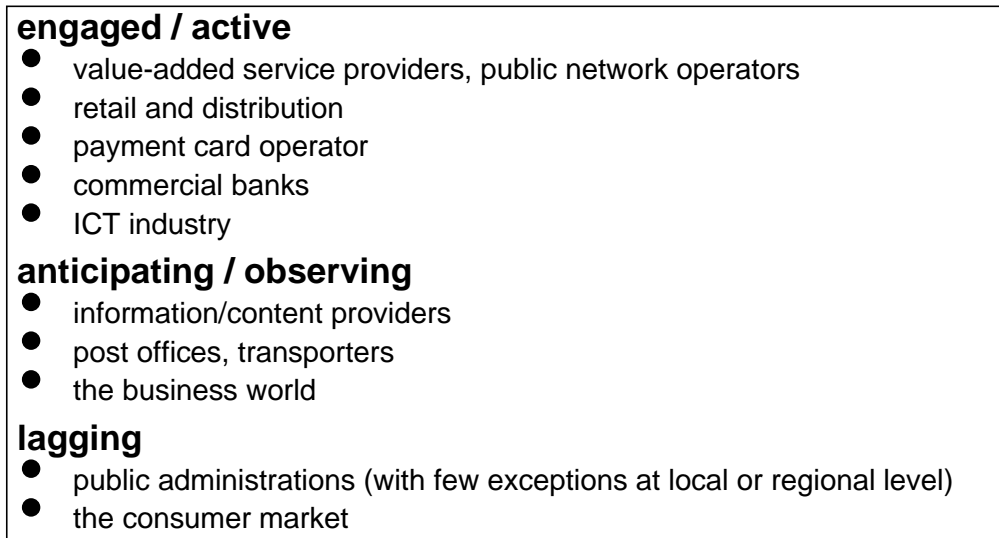


Fig 3. : Electronic Commerce players

4. Generic obstacles to Electronic Commerce development

In the course of the project, inquiries took place with representatives of player domains. As a result, it has been possible to draw a synthesis of the present generic obstacles to the development of Electronic Commerce. The followings is the expression of the findings.

4.1. Three statements

Statement 1: Electronic commerce will reach market acceptance when two business entities which do not have permanent relationships, even do not know each other, will be able to securely execute electronic business transactions;

Statement 2: Electronic commerce is by essence cross border. Its development assumes the application of defined and consistent tax regimes;

Statement 3: it is generally acknowledged that the necessary technologies are available, although:

- technology usage is not legally formalised,
- multiple present implementations are incompatible and do not guarantee interoperability.

4.2. Four identified obstacles

Obstacle 1: the absence of an agreed business transaction model framework, ensuring interoperability;

Obstacle 2: the lack of a credential or trusted third parties network which could in an independent manner insure the security of the transaction;

Obstacle 3: no consistent legal or regulatory environment for electronic trade;

Obstacle 4: the absence of independent and trusted certification instruments to guarantee according to an agreed regulation the validity of industry security models and their implementation.

5. Domains of usage

Coming back to the focused objective, i.e. **the definition of electronic trade transaction models**, the HLSG team explored the different domains of usage of Electronic Commerce. The three generic statements and the four identified obstacles have been then used as tools to express the requirements for standardisation and regulatory actions.

5.1. Overview

It has been very clear that there will not be a unique model for electronic trade transaction. Two domains of usage are presently recognised by the community of Electronic Commerce players : the **Consumer-to-Business (CtoB)** domain and the **Business-to-Business (BtoB)** domain. The specificity of each domain is well known and does need to be expanded in this report.

The HLSG team proposes to add a third domain of usage, namely the **Business|Consumer-to-Public Administration (B|CtoPA)**. Although this domain has no specificity which is not included in the two previous ones, it is felt that the present absence of co-ordinated actions between Public Administrations inside the Union to propose a consistent pan-European model was worth of a specific warning. As it will appear in the course of this report, no specific analysis nor recommendations for action have been proposed with the exception of this warning.

The following chart illustrates the analysis grid used to build HLSG recommendations:

	Consumer to Business			Business to Business		B C to PA
	> 20 ecus	< 20 ecus	micro payment	open env.	integrated env.	adminis. form.
<u>Transaction characteristics</u>						
<u>Mode of payment</u>	Credit/debit Card Electronic cheque Electronic funds transfer	Electronic Purse Electronic cash	Account (credit or invoicing) Subscription Electronic Purse	Electronic funds transfer	Electronic funds transfer according to trade regulation and usage	?
<u>Obstacle 1</u> : need for framework						
<u>Obstacle 2</u> : transaction security and guarantee						
<u>Obstacle 3</u> : legal & regulatory environment						
<u>Obstacle 4</u> : conformity assessment procedures						

Fig 4. : Transaction models analysis grid

5.2. Consumer to Business sub-domain

The Consumer-to-Business segment is presently the most active in the definition of transaction models: more than 25 model proposals between Europe and the United States. The rationale for such enthusiasm is quite straightforward: market studies forecast an explosion of the Internet retail sales revenue in the next 5 years [*Forrester Research, from .5 B\$ in 1996 to 6.9 B\$ in 2000*].

Experiments are flourishing involving banking institutions, service providers, credit or debit card operators, telecom operators, retail and mail ordering companies, with a growing interest from transporters.

The focus is clearly the implementation of the complete commercial transaction from catalogue consultation, ordering process, invoicing and delivery, payment, and not to be forgotten customer support and marketing follow up. Transactions cover intangible or physical goods and services. A recent prospective study comparing the evolution of the part of global retail and wholesale services purchases using new information infrastructures gives the following evolution of market share between year 1995 and year 2000 :

	On-line Internet	Mail Ordering	CATV	EDI
Y 1995	1%	8%	1%	3%
Y 2000	10%	6%	5%	6%

Fig. 5. : Evolution of retail and wholesale services purchase - Electronic Commerce segment

One important discriminant between the different models is the nature of the goods and their value. It is therefore proposed to split in three families of model that will differentiate according to the amount of the transaction.

5.2.1. high/medium value transaction

This family of transactions covers amounts greater than 20 Ecus. The amount is such that both consumer and provider want to operate in a safe and secure environment. The payment operator should offer such environment with strong guarantee, which in turn means that such services will have a cost. As this type of transaction represents presently a large part of the business of banking institutions and credit/debit card operators, the definition activity of this model is very high.

Three transaction models are in competition:

- electronic cheque
- credit card scheme
- EFT [Electronic Funds Transfer]

The following comments can be made:

- electronic cheque is not as much favoured in Europe as it is presently in the United States;
- EFT is fully operational. Its main drawback is the heaviness of the process, especially when consumer and merchant do not know each other and when the transaction must be executed "on the fly". Interbanking agreement could improve competitiveness, compared to real-time models as SET.
- several models built on the credit card scheme are presently in competition. The announcement, in February 1996, of the agreement between VISA and Mastercard, merging their two competing models (VISA STT [*Secure Transaction Technology*] and Mastercard SEPP [*Secure Electronic Payment Protocol*]) in the SET model [*Secure*

Electronic Transactions] cannot be underestimated. First analysis and experimentation of SET show that it is complex in implementation and weak in security on the terminal side. Both VISA and Mastercard have announced that it is their intention to open the process definition of the SET protocols and to submit them to international standardisation;

- Europe is not absent in this arena. Beyond several active experiments going on in different countries of the Union, it is worth mentioning the recently launched (September 1995) SEMPER [*Secure Electronic Marketplace for Europe*] European project supported by the Commission in the frame of the 5th FP (ACTS) which is bringing together 18 industry, financial and academic partners led by the IBM Zurich Research Laboratory with the objective:

“to develop, implement, trial and evaluate an open architecture for secure electronic commerce, especially taking in account multi-party security and privacy requirements”

Facts are that:

- SET impact cannot be underestimated. The world-wide coverage of the two payment card operators is answering the cross border requirement. Implementations of SET are in progress with the support and involvement of software industry partners as Microsoft and Netscape;
- Europe has expertise and deployment experience of the smartcard, not yet integrated into SET and which will improve its security performance.

5.2.2. medium/low value transaction

This family of transactions covers amounts in the range of .5 Ecu to 20 to 50 Ecus. The requirement of secure payment is still there, but the amount is such that both consumer and provider want to put the cost of security in perspective. As this type of transaction represents presently a very important part of present and future services on information infrastructures, all service operators are very active and imaginative in this domain with the clear objective to capture for their benefit all the market that they can reach. Competition is very high, openness spirit low.

Two transaction models are emerging:

- electronic cash or e-cash
- electronic purse

The following comments can be made:

- both models are answering a strong market requirement, i.e. customer anonymity. This is important, especially in Northern Europe;
- e-cash uses a very convenient scheme for electronic payment and is already being experimented in some countries of Europe. It is unfortunately suffering from rejection by national financing institutions because of its high counterfeiting risk;
- electronic purse implementations have started in all parts of Europe and should be largely deployed in the next few years. Electronic purse is built on smartcard technology and usage. It could be a very convenient electronic payment mechanism provided that ad hoc affordable smart card readers could be attached to terminals and that electronic purse issuers develop agreement on a clearing mechanism between customer and merchant. This does not seem to be presently the case for at least three reasons:
 - (1) electronic purse is mainly developed at a local or regional level with a larger usage scope (proximity services) than electronic commerce and with a clear objective of customers captivity;
 - (2) the necessary clearing mechanism to realise cross border usage of the electronic purse will generate an extra cost to the issuers and perceptibly reduce their margin;
 - (3) there is at this stage no visible political will at a European level to force pan-European interbanking agreement to include such a clearing mechanism.

This relatively negative analysis demonstrates that it would be difficult to get in a reasonable amount of time a universal pan-European payment model for medium/low value transaction. It does not mean that such models will not spread quickly all around Europe, but that they will be specific to regions or financial institutions.

5.2.3. micro-payment

This family of transactions covers amounts of the order of a fraction of Ecu. This is an important market already explored by most of the electronic service or information providers. Models used for this type of transaction are mainly built around subscription or account principle. Electronic purse is also a potential candidate, assuming that it is offering the right geographical coverage. The HLSG team has not presently explored this type of model for at least two reasons :

- (1) if the business activity of a SME has the need to recover such low cost transactions, it will deal with a service operator which is offering a "kiosk type" of services. The SME will not go directly in the process of collecting the payments of the goods or services it is delivering. In fact the SME will not trade directly with the buyer;
- (2) such models have a greater spectrum than electronic commerce and should be analysed in light of the larger problem of the billing of information infrastructures access by service providers.

5.3. Business to Business sub-domain

The Business-to-Business segment apparently represents the stable and proven face of Electronic Commerce. Business-to Business is inevitably associated with the EDI effort. Impressive results, both in term of standardisation activities and industrial implementations have been achieved on EDI during the end of the 80's and the beginning of the 90's. Recent actions on Interactive EDI (I-EDI), the emerging concept of Open EDI, the investment of the standardisation community in EDI security, and, last but not least, the EDIFACT effort show the vitality of EDI.

However the impudent emergence of the Internet is questioning the rather classical Data Processing model on which EDI is built. There is a definitive need to review not the objective of EDI but its methodology and approach to Electronic Commerce. It is in this spirit that the HLSG team has conducted its analysis and is making its recommendations.

5.3.1. classical EDI as an integrated environment

Present EDI is well suited to cover the relationships of business partners working on a daily or even real-time mode of interaction. It assumes a permanent investment from all involved parties. It provides synchronisation of tools and methods between the data processing equipment and applications of the participants to realise an integrated environment. The benefits of such a discipline are obvious: "just in time" manufacturing is one of its most explicit results.

The counterpart of such investment is the lack of versatility of EDI. The complexity and cost of the implementation and the massiveness of the architecture are discouraging most of the small or medium actors when they look into the possibility of electronic exchanges with their permanent or casual business partners.

The Open EDI effort has the objective to make EDI available to all parties without requiring special permanent agreement between partners. However it does not seem that the present Open EDI approach is answering the major requirement of the business community: a more versatile way to make business through the use of the new information infrastructures.

5.3.2. lite-EDI to bring an open environment

When discussing the above with representatives of SME, the need for what could be call a "lite-EDI" is recurrently coming on the floor.

What should be the attributes of lite-EDI ?

- low investment cost: PC driven, standard configuration (hardware and software), simple communication adapters;
- low usage cost: lite-EDI software should come mainly "off the shelf", with no need for costly local customisation;
- low operating cost: using simple e-mail communication exchange and standard directory services offered by access providers;
- large range of business usage:
 - business information exchange,
 - product information,
 - contract setting,
 - electronic payment,
- easy to use,
- easy to expand,
- multilingual based on agreed dictionaries

It is very clear that most SMEs will not be able to support such a system by themselves. They should receive such support from a large number of local service companies at reasonably cheap price, which implies that such companies could develop quickly the necessary expertise and entertain their skills without heavy specialisation. Lite EDI must proceed from an "off the shelf" approach. A special effort is also required to bring to those companies the guidelines and verification tools to ensure conformity of implementation and interoperability of solutions.

One of the biggest challenges of a lite-EDI approach is to take advantage of the huge existing EDI definition and to use it without loss of semantic on new equipment in the new environment of the "Information Infrastructure age". In a sense it is not a matter of reinventing, but rather transferring from one environment to an other.

5.4. SMEs priorities

As a result of the arguments developed in the previous paragraph, the HLSG team decided to concentrate its present action on the three “white” columns of the analysis grid as illustrated in Fig 6. below. Those columns include de facto the highest priority requirements for the development of electronic commerce in support of SMEs. This does not mean as mentioned earlier, that the “shadowed” columns have no interest in the development of Electronic Commerce: they should be explored in the follow up of the project.

	Consumer to Business			Business to Business		B C to PA
	> 20 ecus	< 20 ecus	micro payment	open env.	integrated env.	adminis. form.
<u>Transaction characteristics</u>						
<u>Mode of payment</u>	Credit/debit Card Electronic cheque Electronic funds transfer	Electronic Purse Electronic cash	Account (credit or invoicing) Subscription Electronic Purse	Electronic funds transfer	Electronic funds transfer according to trade regulation and usage	?
<u>Obstacle 1</u> : need for framework						
<u>Obstacle 2</u> : transaction security and guarantee						
<u>Obstacle 3</u> : legal & regulatory environment						
<u>Obstacle 4</u> : conformity assessment procedures						

Fig 6. : Transaction Models and SMEs priorities

6. HLSG recommendations

6.1. Overview

The present chart illustrates the 10 recommendations of the HLSG team on Electronic Commerce in support of SMEs. Those recommendations are developed in the next paragraphs.

The recommendations use a "standard" presentation form which should facilitate the follow up HLSG procedure for their consolidation and exploitation with the involved parties.

	Consumer to Business			Business to Business		Business to PA
	> 20 ecus	< 20 ecus	micro payment	open env.	integrated env.	adminis. form.
<u>Transaction characteristics</u>						
<u>Mode of payment</u>	Credit/debit Card Electronic cheque Electronic funds transfer	Electronic Purse Electronic cash	Account (credit or invoicing) Subscription Electronic Purse	Electronic funds transfer	Electronic funds transfer according to trade regulation and usage	?
<u>Obstacle 1</u> : need for framework	HLSG rec. 1,2	HLSG rec. 3		HLSG rec. 4, 5, 6		
<u>Obstacle 2</u> : transaction security and guarantee	HLSG recommendations 7, 8					
<u>Obstacle 3</u> : legal & regulatory environment	HLSG recommendation 9					
<u>Obstacle 4</u> : conformity assessment procedures	HLSG recommendation 10					

Fig 7. : Transaction Models : HLSG recommendations

6.2. The need for transaction model frameworks

6.2.1. High/medium value transaction model

6.2.1.1. Converging on one agreed model

title : high value secured electronic commercial transaction model	rec-id : EC01
functional need : one agreed model for high-medium value electronic commercial transaction. The model should cover the whole range of operations necessary in a commercial environment, including payment, should provide for highly secure environment should be recognised world-wide, should include the definition of standards for terminal equipment.	
recommendation and rationale : SET model proposed by Visa-Mastercard is presently gaining world-wide momentum. ICT European industry must actively participate in the definition of this model and its upcoming evolutions, bringing in its valuable experience in smart card security solutions.	
attribution : ICTSB	links to other rec.: EC02, EC03
expected results and availability : SET model assessment, improvement feasibility study. Interim report by September 96	

6.2.1.2. Capitalising on SEMPER project expertise

title : SEMPER project contribution to electronic commerce model framework	rec-id : EC02
functional need : SEMPER (Secure Electronic Marketplace for Europe), a research project to develop fundamentals of secure electronic commerce led by a consortium of European industry, financial and academia partners and backed by the European Commission has the objective to develop a coherent security model and a generic, open security architecture for the electronic marketplace.	
recommendation and rationale : SEMPER project in its first phase to actively support standardisation activity in line with ICTSB programme of work and in its subsequent phases to open the way to more advanced services.	
attribution : HLSG & ICTSB	links to other rec.: EC01, EC03
expected results and availability : setting of a co-ordination process between HLSG, ICTSB and SEMPER Steering Board. Interim report by September 96	

6.2.2. Medium/low value transaction model

title : interbanking agreement for interoperable use of Electronic Purse inside the Union		rec-id : EC03
functional need : Electronic Purse concept is recognised as an efficient payment mechanism for medium/low value electronic commercial transactions, providing for anonymity and acceptable processing cost. Moreover, electronic purse is currently in implementation process all over Europe.		
recommendation and rationale : no intensive standardisation activities for interoperable use of electronic purse inside the Union are realistic unless and until interbanking agreements become a reality.		
attribution : EC	links to other rec.: none	
expected results and availability : timeframe for definition of automated clearing house mechanisms suitable for electronic purse. Availability to be defined with DG IIIB		

6.2.3. Business to Business open environment model

6.2.3.1. Assessing the need for "lite" EDI

title : "lite" EDI functional requirement definition		rec-id : EC04
functional need : the need for a "lite" EDI is recognised as a priority requirement for the development of electronic commerce in SMEs. For all business exchanges, SMEs should be offered low investment cost, low usage cost, built on market products and services, flexible and easy to use solutions.		
recommendation and rationale : industry led market analysis of precise needs and requirements of "lite" EDI for "SMEs only" partnerships EDIFACT solutions are mainly covering the need of business exchanges for integrated environments involving big industry partners. Such solutions are not economically affordable for "SMEs only" partnerships.		
attribution : ICTSB in liaison with HLSG & DGIII F (P.Timmers)	links to other rec.: EC05, EC06	
expected results and availability : "lite" EDI requireemnt to be assess in term of necessity (market needs) and feasibility by end of 96. Interim report by September 96		

6.2.3.2. Ensuring a successful standardisation environment

title : “lite” EDI standardisation environment definition		rec-id : EC05
functional need : main challenge of “lite” EDI approach is to take advantage of EDIFACT investments both in terms of continuity with existing implementations and exploiting new market opportunities. Key success factors are (a) establishment of methodology guidelines to ensure definition consistency, (b) verification process for implementation.		
recommendation and rationale : priority involvement of ICTSB in the definition of a “lite” EDI standardisation environment (principles, methodology, tools and processes)		
attribution : ICTSB	links to other rec.: EC04, EC06	
expected results and availability : to be defined according to EC04 results		

6.2.4. A unified model for Business|Citizen to Public Administrations transactions

title : “lite” EDI as foundation of electronic exchanges between Citizen/Business and Public Administrations		rec-id : EC06
functional need : An important dimension of Electronic Commerce covers the relationships of Business actors (especially SMEs) and in a broader sense Citizens to Public Administrations. European Union has not yet defined a consistent framework for such exchanges. Numerous national or international initiatives are presently in development. “lite” EDI effort should create the opportunity for an agreed European common orientation.		
recommendation and rationale : “lite” EDI to become the foundation for electronic exchanges between Business or Citizens and Public Administrations (European Institutions, Member States, regional and local public administrations). Political support of such initiative by both the Commission and the Council of Ministers will be a strong incentive to accelerate Electronic Commerce deployment in the Union.		
attribution : EC, Council of Ministers	links to other rec.: EC04	
expected results and availability : to be defined		

6.3. Securing electronic business transactions

The requirement for strong security in electronic business transactions is universally expressed. Trade activities are built on confidence. In the "virtual" relationship established through Information Infrastructures, it is essential that the parties mutually authenticate themselves, that confidentiality of the exchanges be ensured and that integrity of information be guaranteed.

Technologies for building solutions to such requirements exist, using cryptography algorithms. Cryptography usage has been always controlled by governments. Current legislation in most countries is restricting the use of cryptography. This position will evolve as those governments recognise that cryptography will be an essential tool to ensure security on Information Infrastructures.

As governments want to keep control of cryptographic tools, the compromise is built on the concept of Trusted Third Parties [TTP], defined as independent organisations that will administrate the creation and the management of cryptographic keys with the legal obligation under stated circumstances to deliver the keys to public authorities.

It is of utmost importance that such schema which is receiving world-wide agreement in its principle, be quickly endorsed by national governments inside the Union and that a pan-European network of Trusted Third Parties be put in place all over Europe.

6.3.1. Networks of Trusted Third Parties for Electronic Commerce

The HLSG is stressing the importance of the rapid implementation of a network of Trusted Third Parties in Europe and is pressing governments to come to agreement on the corresponding legal and regulatory environment.

The HLSG fears that there could be some confusion in the implementation of TTP for Electronic Commerce. Financial institutions are already using the cryptography technologies to secure payment and funds transfer. They already received government agreement to use such technologies. They constitute in fact the first TTP candidates for Electronic Commerce.

title : Trusted Third Parties for Electronic Commerce		rec-id : EC07
functional need : commercial partners require guarantee of secure environment to conduct transactions, including permanent partner authentication, integrity & confidentiality of exchanges. Payment operations induce another level of security requirement. Industry through the use of cryptographic technologies is able to provide solutions. Use of such solutions are dependent of governmental approval both at national and international level.		
recommendation and rationale : establishment of Trusted Third Parties seems to be the foreseeable solution agreed by governments. Such a service is already operational between financial institutions : blunt trend is to entrust such institutions to cover all electronic commerce security services and to act as Electronic Commerce TTPs. This trend needs to be recognised and confirmed.		
attribution : EC		links to other rec.: none
expected results and availability : to be defined		

6.3.2. Business directories to minimise commercial risks

title : business directories for Electronic Commerce		rec-id : EC08
functional need : Key for development of electronic commerce is confidence in the development of the relationship between business partners. This is especially important for SMEs getting access to broader market. There is a need for access to reference information that will allow fair assessment of business risks.		
recommendation and rationale : development of "trade directories" able to deliver up-to-date business and legal information on commercial actors inside the European Union. Such a service will be a key incent for the development of electronic business relationships. It assumes a common regulation inside the Union for public availability of such information.		
attribution : EC		links to other rec.: none
expected results and availability : to be defined		

6.4. The need for a Union-wide consistent legal and regulatory framework

The need for a consistent legal and regulatory framework is well recognised. Efforts are on going in all part of Europe and inside European institutions to develop such a coherent framework. The domain covered is quite large and this is not the mission of the HLSG make detailed recommendations. However it cannot be forgotten as directives application will influence the definition and implementation of the models. As an example, it has been stressed in 4.1. above [Statement 2 of *generic obstacles to Electronic Commerce development*], it is very important that the tax regime definition and the terms of its application be urgently known as it will have a definite impact on the definition of the transaction process.

title : legal and regulatory environment		rec-id : EC09
functional need : most of the legal environment for trade is presently based on a "paper based" set of processes. Moreover this environment is specific to national, even regional usage in the Union. There is presently a move to adapt the present environment to electronic commerce. Such evolution must integrate as a first priority the European Union dimension, but must simultaneously cover global exchanges.		
recommendation and rationale : consistent legal framework inside the European Union to be established as soon as possible. Lack of such a framework or delay in its establishment will severely retard the development of a European Information Infrastructure able to support Electronic Commerce and Information Services.		
attribution : EC, Council of Ministers		links to other rec.: none
expected results and availability : to be defined		

6.5. Conformity assessment procedures for Electronic Commerce solutions

As Electronic Commerce must guarantee to its users an increasing level of security, the service providers and operators must achieve a corresponding high level of confidence in the security processes that they will develop. Part of the effectiveness of those processes are of organisational matter. Europe made impressive progress in this direction with the definition of the *Information Technology Security Evaluation Criteria* [ITSEC] which assess the overall security process of an IT system for use in specific environments. Such an assessment is not achievable without a thorough verification of the technical security mechanisms used by the system. As electronic commerce operations are distributed between several interoperable entities, end-to-end security verification becomes more complex and assumes an upstream effort in term of assessment of security solutions.

Two levels of verification are felt necessary:

- transaction model and associated protocols must be proven fully secure;
- industry implementation of those models must receive a conformity agreement.

Beyond this first effort, the ITSEC criteria will have to be measured in term of their appropriateness and capability to cover the new situations created by electronic commerce models.

Europe must put in place the necessary methodology and tools to achieve this strategic objective

title : conformity assessment procedures for electronic commerce security models	req-id : EC10
functional need : as electronic commerce users require a high level of security, service providers, especially financial institutions, are requesting a high level of confidence in industry proposed solutions. Requirements cover two levels : (1) security models and associated protocols must be proven and fail-safe; (2) implementations must receive conformity agreement.	
recommendation and rationale : industry to pursue the definition of conformity assessment procedures applied to electronic commerce security model and their corresponding implementations. Establishment of such procedures will largely contribute to the development of market confidence in the completeness and effectiveness of electronic commerce solutions.	
attribution : HLSG	links to other req.: EC07
expected results and availability : principles of conformity assessment procedures for secure Electronic Commerce.	

7. History

Date	Event
30 October 1995	HLSG decision to launch the Electronic Commerce project
26 February 1996	Presentation to HLSG of the principles and methodology used for the Electronic Commerce project
9 May 1996	Presentation to HLSG of the draft recommendations of the Electronic Commerce project and HLSG approval
11 June 1996	Presentation of the Electronic Commerce project recommendations to the ICT Standard Board
9 July 1996	Presentation of the Electronic Commerce project recommendations to and discussion with the ICT Standard Board Group on Electronic Commerce
12 July 1996	Report Draft V1 of the Electronic Commerce project
2 Sept. 1996	Report Draft V1.1 with integration of (a) HLSG member comments; (b) ICTSB EC/HLSG meeting actions report
20 Sept. 1996	Report Draft V 1.2 with integration of Eurobit member comments
22 Oct. 1996	Edition 1.0