NETLINK Case Study

1. EXECUTIVE SUMMARY

Programme	Telematic application programme
Duration (effective)	07/1998 – 11/2000
Project budget / funding:	3.35 M € / 1.14 M €.
Number of partners: 8	Member States involved: D, F, I

Following a requirement raised by G 8, NETLINK aimed to define a standard for health smart cards and related networks to improve interoperability between the different nationwide infrastructures. GIE Sesam-Vitale, the manager of the French Vitale health card, was the co-ordinator. The other partners were the German Central Institute for Ambulatory Care (public research institution in the health area), Finsiel (the software company of a group belonging to Telecom Italia) and Motus (a company working on behalf of the Régie d'Assurance Maladie de Québec (RAMQ)).

The principal results of the project were: the definition of interoperability specifications for health smart cards and their transfer to standardisation bodies (ISO and CEN); a pilot site associating France and Germany, demonstrating the feasibility of planning and carrying out trans-frontier health treatments; the contribution to a prototype European Health smart card system.

The main impacts of these results are the following:

Interoperability specifications were formally adopted by leading standardisation bodies (CEN, ISO, e-Europe), subsequently approved by the G8 and further disseminated. Following a legislative agreement between the two governments, French patients can now receive dialysis treatment in Germany. Quality of life is improved in terms of improved healthcare and easier access to information. 400,000 NETLINK compatible regional service/national identity cards were deployed in Italy. A NETLINK compatible individual health card system was implemented in Slovenia: 2 million card holders and total expenditures of 18 M € by the Health Ministry. Such a system is planned to be implemented in Quebec for the whole population (8 million people, total expenditure of 110 M € by the Health Ministry). The impacts of these implementations are the facilitation of health treatments and administration, and additional sales for companies involved. The next generation of the French Vitale card was developed in conjunction with NETLINK and plans are also under preparation for 'smart' versions of the E111 and E112 forms.

The major impacts of NETLINK	
Standardisation:	Interoperability specifications adopted (CEN, ISO, etc) and disseminated (G 8)
Scientific and technological:	Next generation of Vitale card and smart E 111 and E 112 forms
Quality of life:	Facilitation of health treatments and administration: 2 M card holders in Slovenia, 8 M in Québec
Economic impact:	Additional sales for companies involved in the implementations in Slovenia (18 M €, achieved) and Québec (110 M € , expected)

Some factors have particularly influenced the impacts.

The G8 requirement for standards was a driving force and its approval of NETLINK specifications has had a significant effect on their dissemination and implementation. The presence of the chairman of three international standardisation committees in the consortium was essential in the standardisation process. From before the start of the project, the partners were part of a network of

technical operators; technical contributions from the network were therefore provided wherever necessary. The EU support was a factor of stability and continuity for the European partners as without it some partners would not have continued when they were faced with administrative obstacles.

2. THE PROJECT AND THE PARTNERS

2.1. Project Summary

Project objectives

Until now, the solutions regarding information systems in the healthcare sector - the cards in particular - were not interoperable and none of the existing health cards developed within a national programme could be used abroad. The printed paper forms E111 and E112 are generally used by citizens benefiting from Healthcare services in a foreign country, resulting in huge paper based administrative procedures. In terms of 'quality of care' it is also important that health professionals have access to reliable emergency information (or alert information) in their native language.

The NETLINK objective was to make these new nation-wide information systems interoperable for the benefit of patients (continuity of care, enhancement of quality of care, simplification of administrative procedures), health practitioners (communication facilitation, continuity of care, simplification of administrative procedures), health insurance funds (communication facilitation, simplification of administrative procedures).

The project answered political, societal and technical needs: political, because at the time of the project selection the smart card was strategic for the Commission which needed demonstrations of the feasibility of trans-national data exchange; societal, because European citizens needed a practical path for cross-border medical treatment; technical, because the industry needed standards to promote its products at the European or global level.

Achievements of the project

Technical specifications: NETLINK has developed the NETLINK requirements for interoperability specifications, which have been approved at the G8 level as the basis for the interoperability of health smart cards. Those specifications refer to the complete infrastructure of the smart card based network: procedures, card terminals, Health Professional Cards (HPC), Patient Data Cards (PDC), security architecture and network protocols. A methodology for implementation and validation of NETLINK compliant cards has also been developed.

Implementation and validation of pilot sites based on the NETLINK requirements: The French - German pilot site (pilot 1) enables French patients to be hospitalised in Germany for renal treatment. The results are located in a data base in Germany and the French doctors have access to this database.

The Italian and Quebec pilot sites (pilot 2) involve the diffusion of health smart cards compatible with NETLINK requirements to a part of the population. In Italy, during the spring 2000, 300,000 regional service cards were deployed in the regional services in Lombardy and 100,000 national identity cards at several sites. The next step will involve 1,000,000 national identity cards[1]. In Quebec 4,500 cards were distributed in the region of Laval in September 1999. The project concerned 30 establishments in the health network, 400 physicians in private clinics, 28 polyclinics and 76 community organisations.

The pilot sites demonstrate several aspects:

* Interoperability of Health Smart Cards between the countries involved (pilot 1).
* Access to distant medical databases (pilots 1 and 2).

[1] Part of the Italian pilot – transfrontier treatments - has not been implemented due to administrative obstacles between French and Italian governments

* Administrative procedure simplification for reimbursement of medical fees. Bilateral Protocol commitments are developed between the reimbursement organisations involved in pilot 1.
* Possibility of reading health cards in a third-party country and, therefore, checking that the subject is insured, as well as providing basic medical information (pilots 1 and 2).

Dissemination and pro-active contribution to standards definition: NETLINK partners have organised several workshops and have participated in several conferences and exhibitions. Additionally the secretariat of the G8 SP6 Health Cards group (working on the interoperability of Health Cards at the G8 level) was undertaken by NETLINK Management. Direct links with standardisation bodies concerning Health Cards and other European projects and initiatives were established (e.g. ISO/TC 215 WG5, NETLINK CEE, e-Europe initiative: Trail Blazer 11 (TB 11) focused on health and the editor of the "Smart card Charter"). These significant dissemination activities and pro-active contributions to standard definitions clearly demonstrate the European added value of the project. NETLINK demonstrated very clearly how these smart cards could be used in Europe and in the rest of the world in the framework of health information applications.

2.2. The partnership

The NETLINK project was carried out by three main partners from three member states plus one associate partner from Canada. The co-ordinating partner was the company GIE Sesam-Vitale, an Economic Interest Group 80% owned by the Caisse Nationale d'Assurance Maladie (CNAM). The other partners were the German Central Institute for Ambulatory Care (a public research institution in the health area), Finsiel (software company of a group belonging to Telecom Italia) and Motus (a company working on behalf of the Régie d'Assurance Maladie de Québec (RAMQ)) as associate partner. The consortium does not include any manufacturers: indeed the project consisted primarily of transmitting recommendations to be used on existing systems and, therefore, no technical development was necessary except for the integration of some components. In addition to the partners, the project benefited from the support of national and regional health ministries as well as health insurance organisations.

2.3. Chronology of the project

The NETLINK project is part of a group of 7 projects focused on smart cards and financed by the Programme during the last few years. These projects are QUASI-NIERE, SEISMED, TRUSTHHEALTH, CARDLINK, TRANSCARD and RETRANSPLANT, plus one accompanying measure, NETLINK CEE, which disseminated NETLINK results to the Czech Republic, Slovenia, Slovakia and Hungary. These projects involved different partners. Some of these partners made a joint decision to propose the NETLINK project. In parallel with these research projects, a concept was already under way within G8 regarding the interoperability of health cards.

The NETLINK consortium was established to propose a solution to issues concerning the interoperability of health cards. This initiative came from the French Ministry of Health who appointed GIE to conduct the project.

The proposal was submitted in April 1997. In particular, the project was selected because the Commission needed a demonstration of the use of smart cards in the transfer of health information. No major modification of the proposal was observed during the negotiation stage. The project was contracted as an RTD project but was 34 % funded as if it was a demonstration project.

The project started in July 1998. It was initially expected to be completed in 24 months. An extension was necessary to take account of the administrative difficulties (signature of the agreements by 5

different authorities) encountered with the launch of the German-French pilot test site. So the project was finalised on 30th November 2000. The development of the standards necessary for interoperability did not raise any major problem and the technical specifications were published on 31 March 1999. However the test phases went less smoothly.

The project was also confronted with administrative difficulties which were outside NETLINK control and responsibility. During the course of the project, the French government decided, for reasons unknown to the co-ordinator, not to deploy the Vitale II card[2]. This was a difficulty for the project as this card was supposed to incorporate the NETLINK interoperability specifications and to be used in the German-French pilot. Consequently, the interoperability tests were conducted with the existing Vitale 1 card. This required some modification to the software to make it able to recognise the Vitale 1 card but no implications were registered for the work plan.

The Italian government also decided to modify its policy concerning health cards. The Italian-French pilot site was not launched because the negotiations for co-operative agreement between the governments were not making enough progress. The Italian government launched two other projects integrating medical data either with the national identity card or with the regional service card. In both cases, the medical information is compatible with the NETLINK standards. However, the likelihood of rapid deployment of a special health card has considerably diminished.

The first interoperability demonstrations between the different cards took place in May 2000 in Miami, in September 2000 in Rome and in October of the same year in Paris. The German-French pilot phase started at the beginning of 2001. This delay originated in the negotiations between the French and German governments.

2.4. Socio-economic environment

Historically the two countries most deeply involved in the health smart cards were France and Germany: they were the first countries to distribute health smart cards to all of their citizens.

Mobility: The present context might be characterised by increased mobility of citizens inside and outside Europe: there is thus a need to be able to read the medical and health insurance information stored on the electronic health card outside the country of issue. It could also be important to allow the transmission of medical information in cases of emergency, including such basic information as blood group, vaccinations etc., an indication of certain pathologies and, where necessary, details about any doctor involved in the care of the patients concerned.

Legislation: Not all national legislations allow the storage, disclosure and transfer of medical information about patients or citizens. It is therefore necessary to “localize” the software in order that it reads the information stored on a card in compliance to the legislation in force in the country of the patient concerned. Several countries have authorised the recording of medical data on health smart cards: Québec, Italy, the USA (for military pensioners) and France but, in this case, only on an experimental basis. On the other hand national legislations are being developed e.g. to allow the use of the health smartcard on secure medical data servers for trans-frontier healthcare as well as the use of electronic E111 and E112 forms.

2.5. Exploitation of the results

[2] Despite this, the prototype of the Vitale II health smart card developed prefigures the new generation of heath smart cards in Europe.

The French-German pilot site is based on all the components of the NETLINK infrastructure while using the French Vitale 1 health card, developed before the NETLINK project, for reasons explained earlier. This pilot represents an important European added value element of the project. It proves the possibility of planning the treatment of patients from other European countries. From a technical point of view, NETLINK has provided the guidelines to be followed. However from the administrative point of view the different countries involved in such pilots or processes have to sign a governmental agreement like the one signed between Germany and France regulating major issues such as access to and reimbursement of treatments and access to medical and administrative information.

In Slovenia, the introduction of the Health individual card (HIC) system on a national scale is completed:

* 275 self-service terminals installed,
* 1,950,000 HIC and 16,700 health professional cards (HPC) issued,
* 5,800 card readers in the health card service upgraded,
* 17,000 healthcare professionals trained,
* 1 145 healthcare service providers.

The total budget spent to that end by the government amounts to 18,173,768 €. The individual health cards represented 46 % of the expenditures, the Secure Service Transfer network 24 %, the introduction within healthcare service providers 12%, the card readers 5 % and the other items (e.g. the training of healthcare professionals) 13%.

In Hungary, 1000 patients needing a kidney transplant have smart cards containing emergency data.

The Government of Québec is studying the possibility of replacing its current health insurance card with a health smart card during the fall of 2003. In this context, it recognizes that such a smart card could contain some data complying with the standards of interoperability developed within NETLINK and subsequently approved by the G8. The objective is to reinforce the delivery and administration of services, to offer Québec residents an electronic summary of clinical records, called the Health Card Record, while maintaining user privacy and modernising the mechanisms for managing health insurance plans at the level of the general health program. The anticipated budget for implementation is 150 million Canadian dollars (110 M €). The Québec Ministry of Health will finance these costs. The following partners and customers will be taking part in the project:

* nearly 8 million Quebecers and all users of the health system**,**
* some 100,000 healthcare professionals and other healthcare providers,
* roughly 500 public facilities (hospitals, CLSCs, CHSLDs, etc.),
* 6,500 private practices and clinics,
* 1,500 community pharmacies.

In Japan, the government is considering the contactless smart card as the next level of infrastructure. According to the new residence registration law, every local government will issue smart cards for their residents from early 2003. As the cards will be used by different public services, including medical services, the Ministry of Home Affair (MHA) envisages requiring the use of interoperable smart cards which have to be NETLINK compatible.

The United States Department of Veterans Affairs plans to develop a health smart card. Four million cards should be distributed to veterans.

Partners' expenses additional to the EU funding

	R&D	Investments
Finsiel	50 % of the EU budget of this partner (previous research)	1 FTE for the follow-up of the project
GIE	No	0,2 FTE for the follow-up of the project
ZI	No	No

3. THE IMPACT OF THE PROJECT

3.1. Sources being used

The techniques used to collect the required information were desk research and interviews.

Desk research was mainly based on the Exploitation plan, the Final report, the Technical annex and all the other deliverables produced by the consortium. The ex-ante evaluation report was not requested because, as discussed with the PO during the interview, it did not supply information on eventual weaknesses related to exploitation.

The project officer and several partners were interviewed.

As a first step the following partners were selected for face-to-face interviews: the co-ordinator (for obvious reasons) and Finsiel (as Italy is in the process of implementing the health card).

ZI was subsequently interviewed face-to-face as this partner mainly knew about the substantial impact of Netlink on standards. The person interviewed was an expert in standards and chairman of several committees. This interview concentrated more on the view of the expert than that of the partner ZI (this view was provided by the co-ordinator: ZI implemented the French–German pilot and was responsible for the related interoperability issues).

As a final step, RAMQ and the Slovenian Health Insurance Institute were contacted by phone in order to complete the information about the implementation of the NETLINK results in Québec and Slovenia[3] respectively.

3.2. The impacts of NETLINK at a glance

The main areas of impact were competitiveness, standards and regulation, the partner's organisations and intangible assets, quality of life and the scientific and technological level. These effects were assessed by using both quantitative and qualitative indicators. The effects identified during this exercise and specific methodological issues when applying such indicators are summarised in the table below.

[3] The Slovenian Health Insurance Institute was not a partner in the Netlink project but was a partner in Netlink CEE, a follow-up project to Netlink.

Indicators	Impact of NETLINK	Use of the indicators
Impact on competitiveness		
Additional sales	Slovenia : achieved: additional turnover of 18 M € for the companies providing the system Quebec: expected: additional turnover of 110 M € for the companies providing the system. USA and Japan : expected : additional turnover for the companies providing the systems envisaged by those countries	The additional turnover was measured by considering the total budget spent or planned by the governments for the issue of smart cards, the implementation of the Secure Service Transfer network, the card readers and the other related costs. This indicator raises the attribution issue, i.e. to what extent is the decision to implement a national health smart card dependent on the appearance of the Netlink requirements or would this implementation have been carried out anyway, with or without Netlink? The answer is twofold: on one hand the Slovenian authorities would have implemented a health smart card infrastructure anyway – and the related expenses would have been spent. On the other hand, without Netlink the Slovenian card would not have been identical.
Impact on standards and regulation		
Contribution to the definition of standards	Achieved: adoption of interoperability specifications by the standardisation bodies, subsequent approval by the G8 and international dissemination.	Qualitative description of the type of contribution and the intensity of the impact by considering the extent to which the project work was integrated in the standard definition. Intensity of impact on standard definition was scored 5 (very high) by GIE and 4 (high) by ZI; impact on implementation of standard scored 4 (high) by GIE). Naming of the standard and of the related standardisation bodies
Impact on the partner's organisation and intangible effects		
Establishment of new networks	Achieved/expected: positive impact on the industrial networking of the partners due to the recognition of the NETLINK technical specifications by the G8.	Qualitative assessment: enhanced recognition within and outside the partner's organisation.
Business reorganisation	Finsiel : achieved: Creation of a new business unit within the company specifically to deal with medical information	Qualitative assessment based on information provided by interviewees
Enhanced reputation and visibility	Achieved/expected: Positive impact on the visibility of the partners due to recognition of the NETLINK technical specifications by the G8.	Qualitative assessment based on information provided by interviewees
Enhanced organisation's	Achieved: Improved technical knowledge in the area of data security, development of expertise in	Qualitative assessment based on information provided by interviewees

knowledge base	health smart cards, acquired knowledge on international standards	
Enhanced ability of the partners to co-operate at EU level	Achieved: enhanced ability to manage international projects	Qualitative assessment based on information provided by interviewees
Impact on quality of life		
Improvements of quality of life for the citizen	Realised and expected: Impact in terms of continuity of care, facility of administrative procedures, increase of efficiency in trans-frontier data transfers, for 2 million people in Slovenia (achieved) and 8 million people in Québec (expected) French patients are able to receive dialysis in Germany (achieved) Hungary : achieved: 1000 patients who need a kidney transplant have a health smart card containing emergency data	Semi-quantitative assessment based on information provided by interviewees: * improved healthcare, scored 2 (low) by ZI, 3 (medium) by GIE , 5 (very high) by Finsiel * easier access to information, scored 2 (low) by ZI, 5 (very high) by Finsiel. The impact on quality of life can be measured by four indicators in particular: * the number of card holders (indicator only quantified for Slovenia) * the number of card holders planning medical treatment in a foreign country * the number of countries where the smart card can be read and the number of readers in those countries * the frequency of use of emergency data inserted in the health smart card for foreign patients (to assess utility of interoperable cards for non-planned events). Assessing the precise impact on quality of life requires an analysis of the behaviour of the users of the system. Such analysis is beyond the frame of the present study.
Scientific and technological impact		
S&T added value	Expected: the prototype for the next generation of French Health smart cards prefigures the future European inter-operable system. Expected :“smart“ version of the E111 and E112 forms	Qualitative assessment based on information provided by interviewees

3.3. The impacts of NETLINK in detail

The main impact of the NETLINK project was to make the nation-wide Health Information Systems interoperable. This impact has societal as well as economic dimensions:

* Societal, because the system benefits patients, health practitioners and health insurance funds.

* Economic, as standards at European and global level might benefit industry in the processes of technological development, production and commercialisation. The publication of worldwide technical specifications might decrease the development costs of the smart cards that conform to this standard (less diversified and competing developments). However this decrease is potential as it depends on several factors such as the political willingness of implementation. Assessing such impact is however beyond the frame of the present work as it refers to a specific market study.

The impact on standards and regulation

The results of NETLINK were used by different standardisation bodies at European and world levels. The standards were tested in several countries at worldwide level and used by one accession country to pilot their implementation of health smart cards. Subsequently, the project had a substantial impact on the publication of standards relating to the health smartcard.

The project facilitated the definition of standards regulating the structure of medical data stored on the health smart cards, the interfaces linking the cards, the basic commands and the transmission of information between the cards and the databases.

The partners were in contact with the following standardisation bodies:

* ISO Technical Committee 215 Working Group 5: this working group (WG) aims[4] to produce standards in the field of healthcare usage of machine readable cards compliant with the physical characteristics, including dimensions, defined in the standard ISO/IEC 7810. The WG places special emphasis on technology independent data structures leading to interoperability and compatibility including the communication of data. It shall focus on cards used to identify both patients and healthcare providers. It also focuses on patient data cards intended to convey a healthcare data set of medical importance that may not be immediately available or useable by other means.

* CEN (European Committee for Standardization) Information Society Standardisation System (ISSS) committee: The mission of ISSS is to provide market players with a comprehensive and integrated range of standardization-oriented services and products, in order to contribute to the success of the Information Society in Europe. ISSS was created in mid-1997 by CEN as the focus for its ICT (Information and Communications Technologies) activities. CEN recognized that the market needs of the Information Society could not be met through traditional standardization methods alone, and that a new solution was required.

* The Trail Blazer (TB) 11 group from the e-Europe Initiative: the objective of this group was to contribute to a European wide interoperability of healthcare cards, be it patient data cards or health professional cards and their usage in networks. The group covers administrative data as well as healthcare/health related data which could be seen on three different cards with different functionalities, e.g. ID-card, signature card and health card or could also be combined on one card.

[4] The scope of the activity of this working group was set by the ISO Technical Committee in November 1999 at its 3rd meeting in Tokyo.

Finally, plans are in preparation for 'smart' versions of E111 and E 112 forms.

The impact on the quality of life

This project allows for benefits in terms of continuity of care, facility of administrative procedures, and increase of efficiency in trans-frontier data transfers. Those benefits concern the patients but also the administrative personnel in hospital and social security administration, medical staff, etc. This concerns as much as 2 million people in Slovenia and will concern 8 million people in Québec in the coming years. The large scale implementation of NETLINK compliant cards will also facilitate administrative procedures for all people having to obtain healthcare abroad, whether planned or accidental.

In particular, this project enabled French patients to receive dialysis in Germany, only a few kilometres from their home. This avoided long wasted journeys to large French towns as far as 100 km away. In the future, trans-frontier interoperable cards and related systems can contribute to a more efficient matching of the supply and demand of healthcare.

Finally, in Hungary, 1,000 patients who need a kidney transplant already have a health smart card containing emergency data.

Impact on the partner organisations and intangible assets

The recognition of the NETLINK technical specifications by the G8 has had a great impact on the visibility and the industrial networking of the organisations and companies involved in the project.

Finsiel acquired knowledge on an international standard and they are now able to use it for the design of an Italian health card. After completion of the project, a new business unit was created within Finsiel specifically to deal with medical information.

Finsiel and GIE improved their technical knowledge, principally in the area of data security. Both also enhanced their ability to manage international research and demonstration projects and they have acquired the corresponding reputation that could bring them additional consultancy contracts.

GIE Sesam-Vitale developed expertise in health smart cards and acquired a European reputation in this domain. Within GIE, the department responsible for international projects was recognised for its contribution.

Motus acquired knowledge on an international standard and developed the ability to transfer the specifications of a health card compliant to an international standard to Quebec.

Economic impact

The Health Insurance Card System has been successfully implemented throughout Slovenia since October 2000. This generated additional turnover of about 18 M € for the supplying companies.

As potential future economic impact, additional turnover will be generated for the companies supplying:

* the Québec implementation of 8 million health smart cards and related equipment in 2003, expected to generate 110 M € for the supplying companies,

* the contactless smart cards considered by the Japanese government and the US Department of Veterans Affairs.

Scientific and technological impact

The project has contributed to a prototype European Health smart card system. As a result of the EU support, the original French-based initiative was set on a European level and a legal agreement on interoperability was signed between France and Germany. This demonstrated the possibility of planning the treatment of patients from other European countries.

In addition, during the course of the project, GIE Sesam Vitale developed the prototype of the Vitale II health smart card. This prototype is one of the first steps in the implementation of the second generation of health cards in France and prefigures the new generation of health smart cards in Europe. NETLINK has also described the specifications for "smart" E 111 and E 112 electronic documents to be included in a future electronic health card to eliminate the use of paper documents.

4. THE KEY SUCCESS FACTORS REGARDING THE IMPACT

Three factors emerge as having mainly contributed to the impact:

* The EU funding was critical to establish a strongly international consortium and to allow the project to continue despite major obstacles raised outside the project itself.

* The project responded to real needs and, in particular, to international requirements formulated through the G 8.

* The project and its partners joined networks (standardisation, industrial, etc.) interested in the topic. Such co-operation contributed much to the usability, use and impact of the results and to solving problems raised in the course of the project.

4.1. The role of participation in EU funded RTD

European financing allowed the establishment of an international consortium grouping organisations from three large European countries and one large non-European country, all four being members of the G 8. This, together with the G 8 approval of NETLINK specifications, created the critical mass for the dissemination of the results and their impact.

Still more important, European financing allowed this project to continue despite the changes in the administrative situation in France (no deployment of the Vitale II card so far) and other administrative obstacles encountered.

Without the European contract and its contractual obligation to achieve results, the demonstration of the interoperability between France and Germany would have been abandoned, which would have implied *de facto* the failure of the project.

Impact scenario without the IST project

The province of Québec had the strategic objective of using a health and insurance smart card compliant to international standards. They would therefore have carried out a project anyway. Even if NETLINK was not at the origin of this objective, the EU project allowed Québec to take direct advantage of the results and of their adoption by standardisation bodies.

Without EU financial assistance, some partners would have tried to build a project but it would certainly have been abandoned when France decided not to deploy the Vitale II card and in view of the difficulties of negotiation with certain authorities.

Therefore, for the European partners, the project with its broad international character would not have existed without the European funding and organisational framework.

4.2. Factors at partner and partnership level

The primary factor is the previous experience of GIE which had already developed the Vitale card in France. This experience was very useful in terms of a comprehensive understanding of the issues relating to health cards, even if the NETLINK standards are not based on those of the Vitale card.

The person in charge of the project at the German central institute for ambulatory care (ZI) is the chairman of the three standardisation committees involved in smart cards (ISO TC 215 WG5 committee and the CEN ISSS committee, TB 11 (e-Europe Initiative)).

The user-oriented character of the project enabled the technical design and specification activities to be adapted to the constraints of the effective use of the systems. The project was also directed at responding to real needs (political, societal and technical).

Additionally to the associate partners and sponsors, the industrial companies involved in the smart cards business, the relevant committees of standardisation bodies and reflection committees, the G8 SP 6 Health Cards group and e-Europe initiative TB 11, were regularly informed on the progress and results of the project.

The quality of the project results – definition of the technical specifications – has made them usable by the standardisation committees and has therefore significantly contributed to the overall impact.

The quality of the project management by the co-ordinator ensured proper progress despite the problems encountered (cancellation of the Vitale II card and difficulties in negotiation with the German and Italian authorities).

The project included more than 15 associate partners and sponsors. This inclusion has contributed to solving issues such as administrative difficulties (e.g. effective access to health data), definition of medical data, health insurance data and access rights to that data. This inclusion has also contributed to creating a climate favourable to the practical achievement of the project.

From before the start of the project the partners joined a network of technical operators (card producers, mask producers, network providers, etc). This was a significant success factor in terms of the technical contribution that the network provides wherever necessary.

4.3. External factors

The international requirement for standards formulated in the framework of the G8 was the main driving factor of this project. The approval of the NETLINK specifications by G8 has also contributed significantly to their dissemination and implementation.

Legislative developments allowed the project to develop its activities. In fact, various countries modified their legislation to take into account electronic versions of E111 and E112 as well as the integration of emergency medical data either on the health cards or in the central secure databases. The basic information included in the medical databases concerns vaccinations, blood group, etc, as well as information on certain pathologies and, in some cases, details concerning practitioners to contact in cases of emergency.

CASE STUDY DETAILS OF NETLINK PROJECT

Project descriptors and interview data

Project descriptors	
Project acronym:	NETLINK
Project title:	Validation and Co-ordination of the Implementation of Interoperable Data Card Systems and Intranet Solutions prior to Nationwide Implementation
Programme:	Telematic application programme (health care)
Contract no.	HC 4016
Duration:	01-07-98 to 30-11-00, 29 months
Project budget:	3,35 M €
Project funding:	1,14 M €

Interviews data	face-to-face	phone	dates
PO: Petra Wilson	x		06-09-01
GIE Sesam-vitale	x		05-09-01
ZI	x		12–09-01
Finsiel	x		14-09-01
RAMQ		x	16-11-01
Slovenian Health Insurance Institute		x	19-11-01

The partnership

- **GIE – Groupement d'intérêt économique Sesam-Vitale – Le Mans, France:**

Role in the project:	Prime partner:	Yes
	Initiator:	Yes
	Function:	User
Type:	Economic interest group (SME)	
Size (no. of FTE):	SME (160 FTE)	
Budget 2000:	22,9 Mio €	
Independent:	No: owned by the different members, in particularly by CNAM at 80%	
Industrial sector (NACE):	Compulsory social security activities (75.3)	
Key business activities:	Management of sickness insurance cards for France	
Strategic interest related to the project:	To facilitate the cross border information flows concerning the cross border medical treatments (Sesam-Vitale being in charge of compensating the related invoices and payments)	
Remark:	GIE was appointed by the French Ministry of Health.	

- **ZI – The German Central Institute for Ambulatory Care – KOLN, Germany**

Role in the project:	Prime partner:	No
	Initiator:	No
	Function:	Supplier
Type:	Public research institution in the field of health	
Size (no. of FTE):	30 FTE	
Annual Sales 2000:	n.a.	
Independent:	n.a. public department	
Industrial sector (NACE):	Research and experimental development in social sciences and humanities (73.2)	
Key business activities:	Research in the field of health	
Strategic interest related to the project:	Provision of expertise	

- **Finsiel- Roma, Italy**

Role in the project:	Prime partner:	No
	Initiator:	No
	Function:	Supplier
Type:	Company of the Finsiel group which belongs to Telecom Italia	
Size (no. of FTE):	2,500 FTE in Finsiel (7400 FTE in Finsiel Group)	
Annual turnover:	1,212 Mio € (Finsiel Group)	
Independent:	No	
Industrial sector (NACE):	Software consultancy and supplier (72.2)	
Key business activities:	IT, consultancy, outsourcing	
Strategic interest related to the project:	Development of new concepts	
Remark	Finsiel is contracted by the Italian government for the co-ordination of health card projects both at national and regional levels.	

- **Motus – Quebec, Canada**

At the start of the project the partner was Motus a company working on behalf of the Régie d'Assurance Maladie de Québec (RAMQ) for the design of a Quebec health card compliant to an international standard. The person in charge of the project within Motus was released from the Régie d'Assurance Maladie de Québec. During the course of the project, this person returned to the Régie and brought with him the participation to the project.
This partner was responsible for implementing the NETLINK results in Québec. It has not been financed by the Programme.

Complementary to those principal contractors, the consortium was supported by a network of associated partners constituted by:

* Health Insurance Organisations: CNAM (F), AOK (Bundesverband der Allgemeinen Ortskrankenkassen, DE), INPS (I).
* Healthcare Professional Organisations: CNOM and CNPS in France, KBV in Germany, Federazione Nazionale degli Ordini dei Medici in Italy.
* Government agencies in charge of security regulations.
* Research and Technical Organisations in charge of providing services to non profit institutions: GSF and QUASI-NIERE in Germany, GIP CPS in France.

Additionally Healthcare and Governmental Authorities sponsored the project: Ministry of Health in France and in Italy, Regional governments in Italy.