

COLLECTION OF RAW DATA

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**Electronic Collection of Raw Data (eCoRD)
A European Perspective**

For information

Electronic Collection of Raw Data (eCoRD) – a European Perspective¹

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Abstract

Electronic Data Reporting (EDR) can save a lot of time and money both for the data provider and the data collector. Activities in some areas of EDR within the European Union (EU) are reviewed in this document, including electronic questionnaires, standardisation and research and development. The final chapter draws some conclusions for the future direction of EDR in the EU.

Keywords

Electronic Data Reporting, Electronic Data Collection, Electronic Questionnaires, Standardisation, Research and Development

Document structure

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Complementary aspects
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INTRODUCTION

This document presents some aspects relating to the collection of statistical data within the EU. In this context, the collector usually is an administration, mostly a statistical office. But other administrations collect statistical data as well: Central Banks, Customs Authorities, Finance Administrations, and so on.

The expression Electronic Data Reporting (EDR) describes the process of data collection from the provider's point of view. If you take the opposite i.e. the collector's position, another valid name would be Electronic Data Collection. As the collected data are the raw material for the production of statistics, we extended this expression to Electronic Collection of Raw Data (eCoRD). EDR and eCoRD are two names for the same process.

EDR can save a lot of time and money both for the data provider and the data collector. EDR comprises various aspects:

- Extraction of data from existing information systems can be automated.
- Available data will have to be converted according to the collector's requirements, following specific transformation rules. Calculations may be required.
- Data has to be completed and validated.
- The collector expects data in a specific format agreed (maybe implicitly) with the provider.
- Data are transferred on-line, respecting certain security requirements.
- The collector has to implement the infrastructure needed to enable EDR.

The context of data collection in the European Union is an important factor: usually, data collection is done at national level within the 15 Member States, in 11 official languages. The competent national administrations decide how they collect data within a framework of national and Community legislation. For the compilation of EU statistics, the national bodies forward data to the competent EU bodies. In only a few cases does Eurostat collect data directly from businesses.

This document will look at four aspects of EDR:

- Electronic questionnaires, which are one way of reporting data electronically.
- Standardisation, which is important for co-operation and helps to save money.
- Complementary aspects, which include the need to co-operate with industry.
- Research and development, which is the basis for the future, not only in EDR.

Finally, I draw some conclusions about the future direction of EDR in the EU.

ELECTRONIC QUESTIONNAIRES

Over the last years, a number of electronic questionnaires have been developed within the EU. The first generation consisted of stand-alone off-line software packages for specific surveys. With the success of the Internet, a second generation evolved – web-forms that can be completed on-line with a web browser.

Some of the electronic questionnaires are outcomes of EU projects, managed by Eurostat. Others have been developed by the competent administrations at national level. There are also commercial solutions available on the market, comprising stand-alone packages as well as add-on statistical modules for business management software. In some cases there are even joint ventures between public service and private ICT service suppliers.

Off-line electronic questionnaires

IDEP/CN8 is an electronic version of the Intrastat questionnaire. Around 400,000 trading companies have to declare their intra-EU imports and exports on a monthly basis. IDEP/CN8 is a Eurostat product that is distributed in the Member States by the competent national administrations. Currently, IDEP/CN8 is used by about 40,000 companies in 12 Member States. Some more details on IDEP/CN8 can be found in annex A.3.

Looking at the way the IDEP/CN8 project is managed, one can see positive and negative aspects. The positive points include:

- A single development for all Member States makes the development and maintenance cheaper (even if IDEP/CN8 is used in only 12 Member States out of 15, its architecture allows the use of it in all Member States).
- The solution is available to Member States who have limited possibilities for their own developments of this kind.
- The correct statistical rules are implemented for all Member States, based on a very close and fruitful co-operation between the respective national and Community administrations.

The negative list includes:

- Funding is critical. Funding the support and maintenance of IDEP/CN8 places an on-going burden on the administrations' budgets.
- IDEP/CN8 is a highly complex multinational and multilingual product; national solutions would each be less complex.
- As IDEP/CN8 is a free product, there is not much incentive for the private market to develop comparable commercial products.

Another electronic questionnaire for Intrastat is CBS-IRIS, developed by Statistics Netherlands. It is used in the Netherlands and Germany by about 15,000 enterprises.

EDISENT, an electronic multi-questionnaire, is also a Dutch product. EDISENT can contain more than one questionnaire for any administrative (not only statistical) purpose. EDISENT was developed under the TELER project (see the R&D chapter below).

It can be expected that more and more “on-line features” will be added to these originally off-line electronic questionnaires:

- sending declarations by e-mail;
- option to down-load the software or parts of it;
- on-line version control;

and so on. Some of these features are already implemented today.

However, it is not expected that off-line questionnaires will be replaced completely by on-line web-forms within the next few years. Off-line packages still offer a much higher level of complexity including:

- Local database support.
- Intensive validation of input.
- Link to business management systems.

On-line electronic questionnaires

Web-forms are another option for electronic data reporting. Web-form development within the EU mostly happens in the Member States at national level and not as a common centrally managed EU project.

In several Member States web-forms are used for statistical data collection. Taking Intrastat as an example again, web-forms for Intrastat are available in the United Kingdom (since 1998), in Finland (1999), Germany (1999) and France (2000).

These web-forms are normally HTML forms with JavaScript extensions. Target users are SMEs declaring a few lines only, typically less than 30. Take-up has been very promising in all cases.

The first version of the UK Intrastat web-form was a Java applet that could be downloaded from HM Customs and Excise’s web site. To save on telephone costs the form was completed off-line. For data submission, the software went on-line. The system also incorporated security checks and automatic up-dating of the applet. Meanwhile, HM Customs and Excise changed strategy: the form is no longer off-line; now it is an on-line HTML web-form with JavaScript extensions.

The Finnish Intrastat web-form is a co-operation with Finland Post Ltd. The project control is with Finnish Customs while Finland Post acts as service provider.

The German W3stat project will be presented at this EDR workshop by Statistisches Bundesamt.

In France there are two web-forms for Intrastat. The first one, WebEDI, is a private initiative, offered by France Telecom. The other one, DEB sur le Web, was developed by French Customs. It will be released on 1 October 2000. On 17 October, there will be a press presentation in Paris.

At Eurostat, the development of a web-based survey for a quarterly European Labour Price Index (ELPI) is now being planned. For the ELPI, data will be collected on hourly labour costs from at least 5,000 business units in EU Member States. The use of the web-form is expected to improve the timeliness of statistics at the European level, while keeping survey costs low. A feasibility study for the project is now underway and a pilot test is due to take place in 2001.

STANDARDISATION

Standardisation is important for co-operation, and it helps to save money. Co-operation between two partners requires bilateral agreement, for more partners standards are required.

The need for standards is most obvious in the area of electronic data transfer. Without standardised message formats, provider and collector will have problems to understand each other. The standard EDI format of the pre-web era is EDIFACT. With the web, different problems have come up; XML is one standard way to structure data in the web universe.

A buzzword in the statistical world of today is metadata. The ability to manage metadata is a precondition for the automation of many processes. This is a domain requiring a lot of effort and research within the coming years.

Electronic data exchange not only resolves problems but also creates new ones, especially regarding security. Widely accepted solutions for these problems are crucial for the success of EDR in the future. However, the security aspect will not be covered in this document.

Message formats

The European body for EDI standards is EBES, a UN/CEFACT organisation. EBES Expert Group 6 (EEG6) is dealing with EDI standards for statistics. EEG6 is chaired by Eurostat.

The EEG6 working groups (WG) cover different generic and specific statistical domains. There are three generic domains:

- Exchange of aggregated statistics (WG1).
- Exchange and transfer of classifications (WG3).
- Raw Data Reporting (WG4).

The specific domains are:

- Foreign trade statistics (WG5).
- Balance of payments and monetary statistics (WG6).
- Transport statistics (WG7).

Each group has developed or adapted one or several standard message formats for their respective domain:

- WG1: GESMES – the Generic Statistical Message. GESMES supports the exchange of statistical data together with its associated metadata (e.g. footnotes, methodological notes, data set structures). The appeal of GESMES is not confined to statistical organisations: any organisation which has a need to exchange data of a tabular, multi-dimensional or time related (time series) nature will find GESMES useful.
- WG3: CLASET – the Classification Exchange and Transfer message. CLASET has three functions: to transfer a selected set of information elements relating to a classification (whole or part of it); to transfer a selected set of information relating to relationships between classifications; and to request information relating to a classification. CLASET can transfer mono- and multi-lingual code lists, classifications and nomenclatures as well as any type of tree-structured hierarchical data like organisation charts.
- WG4: RDRMES – the Raw Data Reporting Message. The development of RDRMES was started by the US Bureau of the Census in 1993. Today, RDRMES meets the requirements of Europe, Australia and North-America.
- WG5: CUSDEC/INSTAT, CUSDEC/EXSTAT, CUSRES/INSRES – the messages for intra- and extra-EU trade declaration and the response message for both. These messages have been developed in close co-operation with the EBES customs group, EEG3.
- WG6: The BOP family of messages – BOPCUS, BOPBNK, BOPDIR and BOPINF. The European System of Central Banks is using the GESMES/CB message for their data exchange.
- WG7: The IFCSUM and CUSCAR messages, developed by EEG2, the EBES transport group, are used in the area of maritime and aviation statistics; but there is a trend to use the generic messages GESMES and RDRMES also in transport statistics.

All messages mentioned above are available in EDIFACT syntax and are in use. For some of them, SGML and XML versions have been created, for others the conversion to XML is currently being done. A draft XML version of CUSDEC/INSTAT will be available by the end of this year for adoption by the EU Member States.

Metadata

Metadata enable the automatic use of data from different sources i.e. different software and/or hardware platforms, different logical models, different networks, and so on. Commercial organisations wish to set standards and provide software solutions in this area where an explosive growth is expected in the next few years.

The IQML research project (see R&D chapter below) is examining the Common Warehouse Metamodel (CWM), a metadata standard proposed by OMG (Object Management Group). IQML studies the possibility to describe questionnaires through metadata using the CWM concept.

This work forms an interesting part of the future metadata standardisation work and will be followed closely by EEG6 and Eurostat.

There are other methods of EDR that should not be neglected. These include for example Touch-tone Data Entry (TDE) or sending of data to a Fax Server. Several projects are going on at national level, but we will skip them here.

Another quite interesting aspect is the co-operation with industry bodies. There are basically two different kinds of co-operation:

- Co-operation with software suppliers or their associations.
- Co-operation with industry federations as representatives of data providers.

Co-operation with software suppliers

Co-operation with software suppliers aims to stimulate the development of commercial solutions for EDR. Administrations have to provide software suppliers with all required rules (legal acts, code lists, message standards, etc) for data reporting. There must be incentives for software suppliers to develop commercial EDR tools, be it stand-alone electronic questionnaires or add-on modules for accounting packages or business management software.

There were a number of EU projects in this area including a sub-project of the TELER research project, the so-called EDIFICAS variant. EDIFICAS is a European association of accountants and auditors promoting the use of EDI in the accounting area. The EDIFICAS variant was investigating the integration of a statistical module into an off-the-shelf accounting software package in France. A prototype was tested successfully with several accountants and several administrations.

The possibility to integrate statistical modules into standard business software was also studied in Eurostat's SERT project, launched in 1992. A basic architecture was proposed for this purpose, named the BISE/SISE model. BISE is the blueprint of a database fed with all enterprise data required for statistical or administrative reporting. SISE defines the functions to load and exploit the database. This concept had some influence on the TELER project.

SERT was also conducting pilot implementations and studies. Currently, SERT is analysing if the EDISENT software can be combined with a standard accounting package in Greece. Concrete results are expected in 2001.

Co-operation with industry federations

Not every firm uses commercial software for data reporting. Large enterprises may develop their own software. Professional federations may offer data reporting services to their member firms. The latter is the case with EUROFER, the European Confederation of Iron and Steel Industries. EUROFER is responsible for statistical reporting for its members. As such, EUROFER was also a partner in the TELER project.

The EUROFER variant of TELER combined a set of commercial products, including a knowledge-based system capable of restructuring and transcoding data in many different formats, an intelligent database system, an automatic report builder and Eurostat's client-server data transmission tool STADIUM. The EUROFER system is in operation, reporting data to different administrations.

Research and development (R&D) is the basis for the future. R&D makes it possible to identify, examine and implement the most advantageous technologies for any domain.

The EU's research projects are funded through R&D Framework Programmes. In the EDR context, three EU projects are of particular interest, two under the 4th Framework programme (FP4, 1994–1998), and one project under FP5 (1999–2002). Statistical R&D projects under FP4 are co-ordinated through Eurostat's DOSIS programme; the EPROS programme is playing this role under FP5.

TELER, DATAMED (both FP4) and IQML (FP5) all investigate the use of new technologies for data collection; they aim at lowering the burden on enterprises and reducing the workload of data collectors. Many facets of these projects have already been described above; this chapter may serve as a summary.

TELER (1996–1999)

The objective of TELER (Telematics for Enterprise Reporting) was to demonstrate the feasibility of electronic data collection and to investigate its cost effectiveness. Three different approaches were followed:

- *NSI variant*: EDISENT, an off-line electronic multi-questionnaire, was developed and tested by a consortium of National Statistical Institutes (NSIs) led by Statistics Netherlands (CBS). At this EDR workshop, Statistics Netherlands will present EDISENT in more detail.
- *EDIFICAS variant*: The subject of this approach was the integration of a statistical module into standard accounting software (see co-operation with software suppliers above).
- *EUROFER variant*: This variant examined how standard software can be combined and used by an industry federation to report for their member firms (see co-operation with industry federations above).

Annex A.4, an extract from the final TELER report, contains more information on the project.

DATAMED (1997-2000)

The DATAMED (Data Capturing in Mediterranean Countries) project is built on the existing situation and perspectives of data interchange in the southern countries of the EU: Portugal, Spain, Greece and Italy. In these countries exist specific structural gaps in data collection and market areas for software, provision of data and for the application of original products.

While concentrating on the development of systems in the emerging areas of interest of these countries, as defined through comparative analysis by the partners, the objective of the project is to define prototypes that can be applied throughout the Union, taking as a point of reference results from the TELER project and other developments in more complex and developed environments.

DATAMED concentrates on very small enterprises (VSE) with less than 10 employees. In this sector the difference between company and household is fluid. New technologies like the use of web-TV for data collection have been examined. The final report is expected soon.

IQML (2000-2003)

IQML (Intelligent Questionnaire Mark-up Language) is an ambitious project based on XML and CWM. IQML will implement the relevant parts of CWM in five software products spanning the whole life cycle of electronic questionnaires from design through (manual and automatic) data capture up to loading of the statistical database. The five software packages are:

- Questionnaire designer: enables the user to define questionnaires at conceptual, logical and formal level. The questionnaire will be rendered into XML format. Metadata will be stored in a metadata repository.
- Metadata repository: supports the definition of metadata objects that can be accessed and stored using APIs.
- Questionnaire presentation tool: allows to view and complete questionnaires created with the questionnaire designer using a web browser.
- Database interrogation tool: supports the automatic extraction of data from business databases.
- Survey administration package: integrates questionnaires with registers and tracks dispatch and receipt of questionnaires.

The system will be tested in Ireland (balance of payments data collection) and Norway (Kostr questionnaire, data collection from municipalities). The project started in February 2000, the final report is due in March 2003.

CONCLUSION

I see Eurostat's role regarding electronic data collection in three areas: standardisation, R&D and accompanying measures.

Standardisation will move more towards object technology and metadata. It is difficult to forecast whether CORBA and CWM will be the future solutions, but now is the time to influence the development of the standards we need. One thing is for sure: the advance of web-technology and XML will continue, and statistical bodies will have to be prepared.

Research and development will support the standardisation process. Possible standards have to be examined, their use for practical solutions has to be tested. R&D allows us to find new methods for electronic data collection saving money and improving quality.

Accompanying measures include:

- co-ordination of EU activities on electronic data reporting;

- promotion of standards, products and best practice;
- prototyping of new technologies of common interest;
- technology watch; and importantly
- co-operation with industry.

These activities are co-ordinated at EU level by the CoRD (Collection of Raw Data) Task Force. This Task Force works under the STNE (Statistics, Telematic Networks and EDI) Working Group which co-ordinates the electronic data interchange between Eurostat and its partners.

A.1 Glossary

API	Application Programming Interface
BISE	Base d'Information Statistique de l'Entreprise (Enterprise Statistical Information Base) – a SERT concept
BOP	Balance of Payments
BOPBNK, BOPCUS, BOPDIR, BOPINF	BOP* family of EDIFACT messages
CBS	Centraal Bureau voor de Statistiek – Statistics Netherlands
CBS-IRIS	Electronic Intrastat questionnaire, developed by CBS
CEFACT	Centre for the Facilitation of Practices and Procedures for Administration, Commerce and Transport – UN standardisation body
CLASET	Classification Exchange and Transfer – EDIFACT message
CN, CN8	Combined Nomenclature (at 8 digit level) – Intrastat goods classification
CORBA	Common Object Request Broker Architecture – OMG's OO-based inter-operability standard
CoRD	Collection of Raw Data – Task Force of the STNE Working Group, forum for European EDR / eCoRD co-operation
CUSCAR	Customs Cargo Report – EDIFACT message
CUSDEC, CUSDEC/EXSTAT, CUSDEC/INSTAT	Customs Declaration and its subsets for intra- and extra-EU trade declaration – EDIFACT messages
CURSRES, CUSRES/INSRES	Customs Response and its subset as response to CUSDEC/INSTAT and CUSDEC/EXSTAT – EDIFACT messages
CWM	Common Warehouse Metamodel – an OMG standard
DATAMED	Data Capturing in Mediterranean Countries – R&D project
DOSIS	Development of Statistical Information Systems – Eurostat programme co-ordinating statistical R&D projects under FP4
EBES	European Board for EDI Standardisation – European branch of UN/CEFACT
eCoRD	Electronic Collection of Raw Data
EDI	Electronic Data Interchange
EDICOM	Electronic Data Interchange on Commerce – EU programme supporting Intrastat
EDIFACT	Electronic Data Interchange For Administration, Commerce and

	Transport
EDIFICAS	EDI in Finance, Accounting, Audit, Fiscal and Social domains
EDISENT	EDI between Statistics and Enterprises – software package, electronic multi-questionnaire
EDR	Electronic Data Reporting
EEG2, EEG3, EEG6	EBES Experts Group 2 (Transport), 3 (Customs), 6 (Statistics)
ELPI	European Labour Price Index
EPROS	European Plan for Research in Official Statistics – Eurostat programme co-ordinating statistical R&D projects under FP5
EU	European Union
EUROFER	European Confederation of Iron and Steel Industries
EUROSTAT	Statistical Office of the European Communities
FP4, FP5	R&D Framework Programme 4 and 5
GESMES, GESMES/CB	Generic Statistical Message and its subset used by the European System of Central Banks – EDIFACT messages
GNP	Gross National Product
HTML	Hypertext Mark-up Language
ICT	Information and Communication Technologies
IDA	Interchange of Data between Administrations – EU programme
IDEP/CN8	Intrastat Data Entry Package with the Combined Nomenclature at 8 digit level – software package, electronic Intrastat questionnaire
IFCSUM	International Forwarding and Consolidation Summary Message – EDIFACT message
INTRASTAT	Intra-Community Trade Statistics – statistics on intra-EU trading of goods
IQML	Intelligent Questionnaire Mark-up Language – R&D project
NSI	National Statistical Institute
OMG	Object Management Group
OO	Object Oriented technology
R&D	Research and Development
RDRMES	Raw Data Reporting Message – EDIFACT message
SERT	Statistiques d'Entreprises et Réseaux Télématiques (Business Statistics and Telematic Networks) – Eurostat project under IDA
SGML	Standard Generalized Mark-up Language
SISE	Système d'information statistique de l'entreprise (Enterprise Statistical Information System) – a SERT concept
SME	Small and Medium-sized Enterprises

STADIUM	Statistical Data Interchange Universal Monitor – Eurostat product, a client-server system for data transmission
STNE	Statistics, Telematic Networks and EDI –Working Group coordinating the electronic data interchange between Eurostat and its partners
TDE	Touch-tone Data Entry
TELER	Telematics for Enterprise Reporting – R&D project
TF	Task Force
UN	United Nations
UK	United Kingdom
VAT	Value Added Tax
VSE	Very Small Enterprises
WG	Working Group
XML	eXtensible Mark-up Language

A.2 Sources of further information

Europa (European Union's server)	http://europa.eu.int
Eurostat (Statistical Office of the European Communities)	http://europa.eu.int/comm/eurostat
Eur-OP (Office for Official Publications of the European Communities)	http://eur-op.eu.int
CORDIS (Community Research and Development Information Service)	http://www.cordis.lu
IDEP/CN8 and Intrastat Web-forms	http://forum.europa.eu.int/Public/irc/dsis/edicom/library
EBES/EG6	http://forum.europa.eu.int/Public/irc/dsis/eeg6/library
VIROS (Virtual Institute for Research in Official Statistics)	http://europa.eu.int/comm/eurostat/research
TELER and EDISENT	http://europa.eu.int/comm/eurostat/research/dosis/teler/
DATAMED	http://www.istat.it/datamed/datamed.htm
IQML	http://www.epros.ed.ac.uk/iqml/
OMG (Object Management Group)	http://www.omg.org/
CWM (Common Warehouse Metamodel)	http://www.cwmforum.org/

A.3 IDEP/CN8 – A summary

IDEP/CN8 was developed in 1992 in preparation for the completion of the European Internal Market on 1 January 1993. Until then data on trade in goods between the EU Member States was taken from customs documents. Since 1993, data has been collected directly from traders on a monthly basis. This new statistical system was named Intrastat; its legal basis is the European Council's Intrastat Regulation of 7 November 1991. Over 400,000 trading companies were affected by the change. Projects like IDEP/CN8 were designed to alleviate the new administrative burden.

The Intrastat questionnaire requests a limited number of variables on exports and imports for each type of goods. The Intrastat goods classification – the Combined Nomenclature – comprises about 10,000 items. The questionnaire is available in different versions (e.g. 'simplified' or 'detailed') as the declaration is possible with different levels of detail, based on a system of thresholds. Data are collected on a monthly basis by the competent national administrations, who forward aggregated data to Eurostat. Each Member State offers the questionnaires in the local languages (there are 11 official EU languages) with some national variations (e.g. additional national variables). Some Member States combine the Intrastat survey with the VAT declaration.

IDEP/CN8 is an electronic version of the Intrastat questionnaire together with the complete Combined Nomenclature. It is used in 12 Member States (out of 15) in the respective local languages (more than one language for some Member States), covering the different detail levels and national variations. IDEP/CN8 has to be installed on a PC. Data are entered manually or imported from business management systems. IDEP/CN8 stores data in a local database. The user is supported as much as possible in preparing a declaration (conversion between enterprise and statistical codes; automatic validations; search utilities for classification codes; etc). There are supplementary functions like the generation of reports (various selection criteria), multi-user and local network support, and so on. Declarations are generated in EDIFACT format (CUSDEC/INSTAT), to be submitted on diskette or on-line via mailbox systems (bulletin board systems) or Internet e-mail.

IDEP/CN8 was developed and is maintained by Eurostat. It is updated every year. In order to cope with the many possible variations in the Member States, a generic master version in English is produced by Eurostat and sent to the competent national administrations. They translate the screen and help texts, set national parameters and prepare user manuals. The national administrations care for the mass production (copies on diskettes or CD-ROM), distribution (by mail) and also the local user support. Eurostat has set up a second level support for the national administrations.

The original DOS version of IDEP/CN8 is still in use but will be replaced gradually by the current 32-bit Windows version (Windows 95, 98, NT, 2000). The last DOS release will be the one for 2002. Around 40,000 firms are using IDEP/CN8. The IDEP/CN8 project was funded through EDICOM, an EU programme supporting Intrastat. EDICOM ended in December 1999. A 5-year follow-up, EDICOM II, is currently under preparation.

A.4 TELER – Extract from the final report

LOWERING THE DATA REPORTING BURDEN FOR ENTERPRISES

The TELER project proved that three kinds of solution result in considerable reduction of costs for an enterprise in answering the questions of governmental collectors. The solutions feature an automated extraction from the enterprise's computerised information systems, complemented where necessary by manual data capture. This extraction enables the automatic filling in of various questionnaires and their sending to data collectors, or a data repository, BISE, used for subsequent extraction by various data collectors.

Setting the Scene

The TELER project aimed at lowering the administrative burden on enterprises caused by data collection of governmental institutes, which costs Europe over 0.6% of its GNP. Basically, software modules extract data items from enterprise computerised information systems, from which the requested variables are computed automatically. This seemingly simple approach had first to cope with an amazing complexity of situations of data reporting. Much had been done for the development of "electronic questionnaires" before, but TELER was more ambitious: to drastically cut the burden of form filling.

Approach

The consortium consisted of two types of partners: the NSIs representing the data collectors, and EUROFER and EDIFICAS representing the intermediaries collecting and disseminating data on behalf of the enterprises. To cover the variety of reporting situations, it was decided to develop three variants. After a common investigation of the user requirements a conceptual model was designed as a basic structure for these variants. The three demonstrators have basically the same functions (extract, transform data, format output file onto an EDIFACT message, encrypt and send file) but with specific features to meet specific needs.

Results and Achievements

The three variants were developed and evaluated using common references. The software module (EDISENT) developed by the NSIs has been demonstrated at more than 70 enterprises, 3 accounting firms and by 9 data collectors in Sweden, Finland, Germany, the Netherlands, Spain, Portugal, Italy and Slovenia. Besides the software prototype itself, detailed specifications and a "trial kit" are available and free for the market.

The solution of EDIFICAS has been developed and demonstrated in France, involving two accounting firms and two data collectors. The prototype, developed as a module integrated into an accounting package, is operational. The specifications are available and free for the market.

The EUROFER variant was developed and demonstrated in France; the prototype is also applicable in other countries. The specifications are available and free for the market.

The trials proved that:

- (i) the concept developed by TELER led to viable solutions, whether directly or via intermediaries;
- (ii) these solutions yield savings of up to 90% of the administrative burden on enterprises and intermediary organisations;
- (iii) standardisation of metadata (i.e. the meaning of data) used by the respondents is not necessary, but may ease the process;
- (iv) standardisation of metadata used by the data collectors is favourable for the process;
- (v) the situation concerning standardisation of metadata varies between the EU countries.

Conclusions and Plans for the Future

EDISENT proved to work in all kinds of situation: countries with and without standardisation on the side of the data collectors or the respondents. The solution of the professional organisation and the module integrated in the accounting package were both demonstrated in a country with a high level of standardisation on both sides. More research is needed to create a clear European market for the software developers and service providers.

EDISENT will be used in all 8 countries involved so far. Current calculations show that the total cost savings for the European business society could exceed 50 million Euro during the next three years as a result of these exploitation plans. Statistics Netherlands will exploit the EDISENT module and provide services to the other NSIs.

The chain of software packages built by EUROFER will be exploited in France, the United Kingdom and partially in Germany. EUROFER will further promote the concept in the EU, and its members will provide services to exploit the results in other professional organisations. EDIFICAS will continue the promotion of the concept within the accounting profession in the EU.