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Regional Health Care Networks

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1. Summary

Communication cross primary and secondary care, between organisations or between different types of professionals causes special problems. The communication often implies exchange of data between different computer systems. The INCO-COPERNICUS[1] project PRIMACOM (**PRIMA**ry **C**are **P**hysician's **COM**munication Network) demonstrates how such communication can be established in regions in Hungary and Slovenia. PRIMACOM is building on European messaging standards for EDI (Electronic Data Interchange) with practical experience from the Danish MedCom project. The paper points out the need for standardising health care messages and via the Danish MedCom project documents the return of investment.

2. Introduction

In modern health care, services are characterised by a high level of specialisation and division of labour. Without this specialisation it would not be possible to apply advanced technique and the many distinct functions provided by home care, consultants, laboratories, etc. At the same time, the patient requires a coherent service and expects the health care professionals involved having access to all relevant information. The authorities demand efficiency and quality in treatment, care and rehabilitation and the health care professionals want to deliver an esteemed and cost-effective service.

On average each hour of consultation with the general practitioner (GP) results in more than one message to another part of the health care sector. This generates a large flow of routine messages, such as prescriptions, referrals, examinations, discharge letters and laboratory results. When adding to the reimbursement communications (which makes up about one-third of the medical messages) the total number of messages exceeds the communication in the financial sector.

The cost of communication is equal to 1-2 % of the total health expenditures[2].
Because of the specialisation and division of labour, there is a need for extensive communication between the participants involved in the health care sector, i.e. communication of everyday routine messages such as prescriptions, referrals, discharge letters and laboratory results.

The PRIMACOM project addresses these challenges of the fragmented health care sector by using the experience from previous National and European projects by adaptation

and implementation of UN/EDIFACT (United Nations/Electronic Data Interchange for Administration, Commerce and Trade) standards. The IT-systems are integrated by building Regional Health Care Network. It is important to mention that the regional Health Care Network is logical network integrated through EDI standards. The physical networks can be built in many different ways, depending on local conditions. In some regions they use modem and normal telephone lines, X.25, X.400 and even the Internet can be used for transferring the data depending of the level of security.

Once the Regional Health Care Network has been established, the communication will be of such size that operations and further developments are expected to continue under normal commercial conditions.

3. The Technology

The participants have computer systems from many different vendors, but the Regional Health Care Network together with the developed UN/EDIFACT standards makes electronic communication between the systems possible. The systems used by the different health care participants can exchange structured information and not only e-mails with free text. Thus, the data entered in the senders system can be "understood" and reused in the receivers system.

The basic idea of PRIMACOM is to send structured electronic messages from one computer to another computer. This means that data entered once can be re-used elsewhere in the sector. To make this EDI (Electronic Data Interchange) work, standards for the communications format are needed. PRIMACOM will start with the implementation of the most needed communication link, the discharge letter. This is an achievable goal with a large impact and a success in one area will pave the way for later extensions.

After having tested the transfer of discharge letters in Hungary and Slovenia the system providers and users will be familiar with the technique, and it will be easier to extend to other messages i.e. laboratory results and referrals.

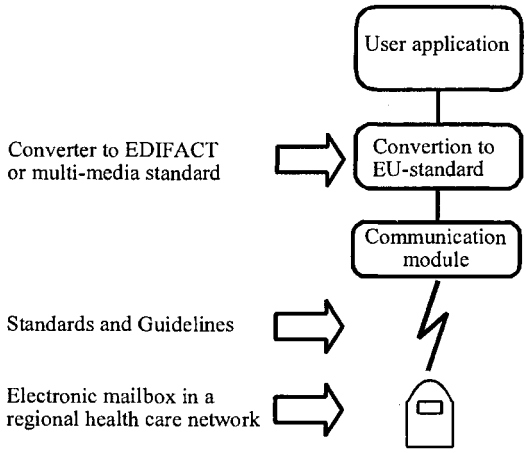

Figure 1 – The basic technology used in PRIMACOM

PRIMACOM is not inventing new technology, but is building on existing application, the most appropriate infrastructure in the specific situation, the European standardisation work and well-known mailbox technique to exchange data between the partners.

4. Standardisation

Standard messages are necessary to make large-scale communication from "all to all" in health care possible. Only if international standards are present and stable, market for integration can be developed. Therefore, several national and international organisations have been working with standardisation not only in the health care but also in trade, finance and commerce. In all these areas the UN/EDIFACT-syntax are used for interchange of structured data.

However, standardisation on this level is only the first step. Like in all other standardisation issues, the standardisation process is a dialectic process between general theoretically developed frameworks and practical work in pilot implementations. Only during practical testing, it is possible to develop real, functioning communication standards.

Today the European standardisation bodies have produced pre-standards and working documents for the classical messages in heath care. These standards are in nature broad, maximum frameworks using a pan-European generic terminology and are the first (but necessary) step towards European standards. In real implementation a much more precise description is needed using national terms and reducing the very complex European pre-standards. This precision and simplification can only be made during real implementation in pilot projects. In this process a consensus data list (CDL) showing exactly what part of the pre-standard are actually used in each pilot.

In the PRIMACOM project, a narrow EDIFACT and CDL for discharge letters have been made for the pilots and have been adjusted to specific needs in Hungary and Slovenia.

This paper has mainly focused on the specific syntax – EDIFACT – for electronic data interchange (EDI). However, EDI can take place using other syntaxes and communications technologies. Regardless of which syntax is used, the core of the standardisation process, i.e. the consensus process and the harmonisation of terminology and concepts, can not be avoided.

5. MedCom - the Danish Health Care Network

In recent years IT systems have been widely introduced into the Danish health care sector and IT systems are now used for the most common tasks in most hospitals, medical practices and pharmacies.

The spread of electronic patient record systems in general practice is Denmark started in spring 1983 and experienced explosive growth in 1994-95, following a slow development phase lasting 10 years. This course of developments is typical of many IT-systems in the health care sector. The development of electronic communication has probably been an important factor for the rapid growth of the patient record systems in general practices. The Danish Centre for Health Telematics has been a driving force in the dissemination of cross-sector electronic communication in Denmark through its co-ordination of regional and national programmes and European projects.

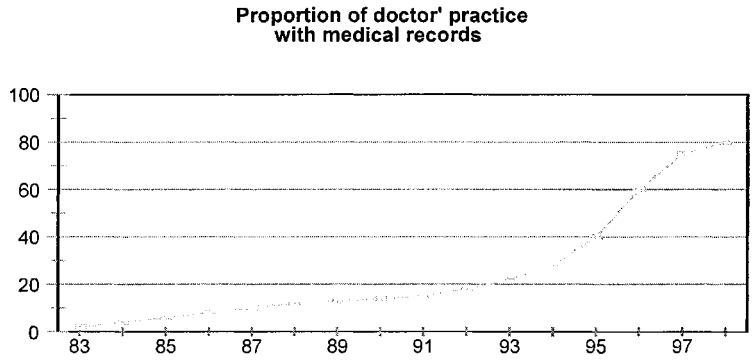

Figure 2 – The development in medical records, 1983-1998.

The Danish Centre for Health Telematics was established in December 1994 based on an initiative from the County of Funen. Three project groups under the same management are sharing facilities in the centre, all having implementation of Electronic Health Care Networks as the focal point. The three project groups are the regional networks FynCom, the national network MedCom and European projects working with standardisation and network in Europe. Furthermore, the centre provides Consultancy as well as project-support concerning Telematics in the health care sector.

The objectives of the centre are:

- to strengthen the quality, service and coherence in the health care sector by establishing electronic communication between parties in the health care sector,
- to utilise the centre's expertise to boos the commercial use of EDI in the health case sector in the County of Funen, in Denmark and internationally,
- to maintain and develop the expertise and jobs on Funen within the electronic communication in the health care sector.

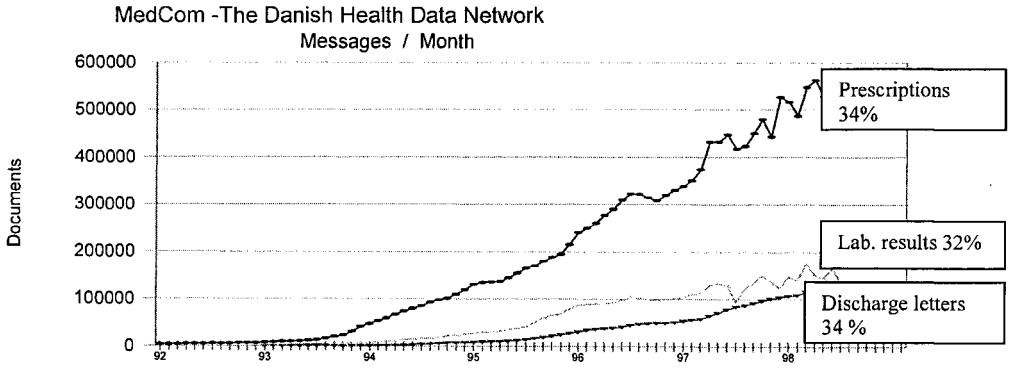

Figure 3. Messages per month in the National MedCom project. In total, approximately 1 million messages are exchanged per month.

The purpose of MedCom is to establish a nation-wide Danish health and social care data network. The most frequent types of health care messages are covered, based upon international EDIFACT-messages. Solutions using Internet, i.e. a combination of EDI and Internet, are also implemented. Today 35% of the prescriptions, laboratory results and discharge letters are sent through the network. The goal of the project is to increase this to 66% in year 2000, to extend the use of to other messages and to explore the use of Internet[3].

The project facilitates a standardised, open market for electronic communication (EDI). The individual SW-supplier develops and markets systems with communication capabilities. As a part of the project, pilot projects are being launched country wide, involving all Danish counties and more than 30 SW-suppliers for the health care sector.

The National Board of Health, the Danish county association and the Danish Telecom Company has made the financing of MedCom. The total investment in MedCom is DKK. 50 mill over five years and the direct saving in year 2000 are estimated to DKK. 250 mill per year.

6. PRIMACOM contractors and associated contractors:

DK	Danish Centre for Health Telematics.
	RAMBOLL Informatics.
H	VariMed.
	FADAM – Family Doctors Association of Miskolc.
	Semmelweis Hospital.
SI	FAGOR –Family Doctors Association of Kranjska Gora.
	INFONET.
I	TSD-Projects Srl.

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