

## The ELPIS research project: "hope for life"

An advanced telecommunications system for the automatic and immediate notification of volunteer blood donors

Contributor: Kyriakos Prokopi, R&D Director, eMedi8 digital solutions Ltd.

ELPIS is a research project whose aim was the design, development and installation of a prototype pilot information system for the automated handling of (regular and temporary) cases for which there is lack of blood units. The project was developed in Cyprus by a network comprised of the University of Cyprus, the Thalassaemia Centre at Arch. Makarios III Hospital, Nicosia, the Medical Services/Public Health Services of the Ministry of Health of Cyprus, the Thalassaemia International Federation, and eMedi8 Digital Solutions Ltd, a private research and information technology company.

### Psychological factors in blood donation

Most investigations to date have focused on the main reasons why existing blood donors voluntarily donate blood. The innovative aspect of the ELPIS programme was the study of the psychological factors that prevent a person from becoming a blood donor, or influence their decision to stop donating.

A questionnaire-based study was conducted to examine various factors relevant to blood donors and the psychosocial and inhibitory factors that would lead a person to or donate only once, or never. Questionnaires were given to 800 persons over 18 randomly selected from the whole of Cyprus. Another 100 questionnaires were given to blood donors during their visit to the Blood Bank. Factors such as gender, age, educational level, blood donation and family history of volunteering were studied, along with the need for blood donation from a known person, the need for blood donation by the same person at some stage of life, confidence in the government mechanism for blood donations, and personal values and principles of the individuals who took part in the research.

Because campaigns for the recruitment of new blood donors are primarily aimed at attracting non-donors, it is important to design these campaigns according to the psychological factors which motivate a person to give blood for the first time.

But – equally importantly – there is a need for campaigns to retain and encourage existing blood donors. The regular blood donors are the ones who keep a non-remunerated voluntary system operational and efficient.

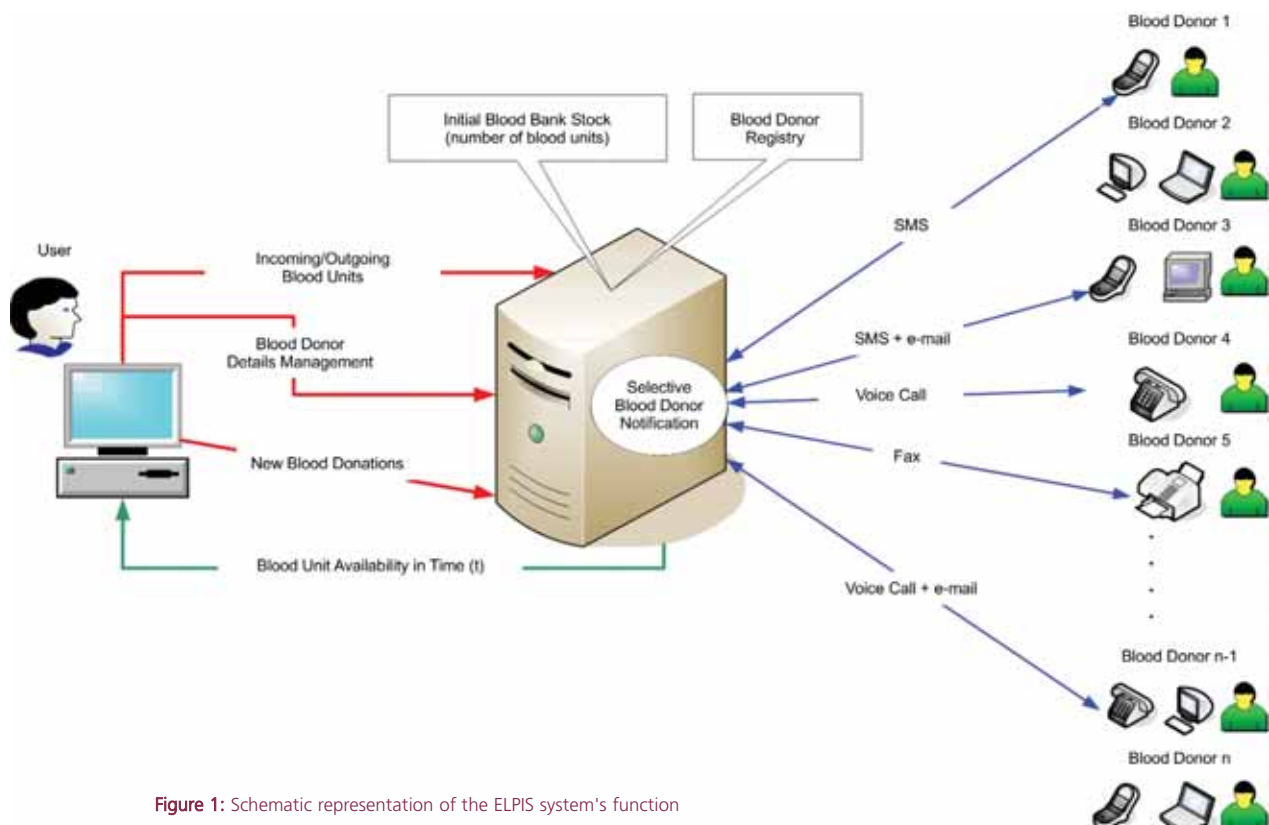


Figure 1: Schematic representation of the ELPIS system's function

In Cyprus, and in many other European countries, voluntary blood donation is the only source of blood for transfusion. The current internationally-followed procedure for handling emergency incidents, where large quantities of blood units are needed, involves the organisation of blood donations in hospital departments and blood banks. In such situations a general message is broadcast via the media (radio, television, etc) to alert blood donors. Despite the significant problems with this procedure, it is the only one currently used internationally.

The ELPIS research project has achieved the following milestones:

- A human interaction model has been developed for medical practitioners and blood donors (human interface design).
- The software system has been implemented, based on obtained data and experience from previous work packages.
- The system has been tested, evaluated and subsequently modified, using test data and actual sample data.
- An integrated management system has been installed for incidents where large amounts of blood units are required, as developed through the project. Diagram 1 describes the operation of the information system.
- The results of the ELPIS project have been disseminated internationally at the "9th International Conference on Thalassaemia & Haemoglobinopathies" in Dubai in 2006, and the "TeleMed & eHealth" conference in London in 2007.

#### How the ELPIS system operates

The ELPIS project system works as an ERP platform with healthcare functionality. The system effectively manages blood products, virtual storage areas, information workflows, blood donors, patients, health-care staff and several other relevant data objects. It provides for role-based multi-level access to information with a system-wide privacy and security mechanism that enables the handling only of information relevant to the specific functions of a healthcare user's role.

Sensitive personal medical information is protected at all times via a rule-based system that filters what information should be available to which user or role.

The ELPIS project's system operation effectively (a) manages blood donors and patients, (b) manages blood products and their storage, (c) accepts and processes requests for blood units, (d) automatically checks the blood bank's stock levels to fulfil incoming requests, (e) automatically notifies volunteer blood donors (via mobile SMS, e-mail or other means) that there is a need for their specific blood type, (f) accepts blood donor's responses and monitors the relevant blood donor's activity, and (g) notifies responsible health-care staff of blood unit availability and dispatches messages to health-care workers that interface with the system.

#### Conclusion

There are important economic and social benefits to be gained through a more effective procedure for managing blood unit shortages incidents, and the cost of such a system is expected to be less than the current process: (a) an increase in the number of volunteer donors; (b) a reduction in the response time of volunteer blood donors to emergency calls; (c) a reduction in the response time of hospital departments and healthcare institutions to emergency situations; and (d) an optimisation of the existing procedures used for communication between departments and healthcare institutions.

The ELPIS network is currently working on identifying further partnerships for practical application and implementation of the technologies.

For further information please contact:

**Kyriakos Prokopi**, R&D Director, eMedi8 digital solutions Ltd at [kyr@emedi8.com](mailto:kyr@emedi8.com)

## Help a fellow patient in need: donate your Desferal pump! Have you been on Desferal and moved on to oral chelators? Somebody could use your pump!

Thousands of patients throughout the world have no access to iron chelation treatment. Others may be able to get Desferal, but do not have a pump and so are forced to have the treatment at a medical centre. Many families find travelling to such a centre too expensive, and for those who can afford it, this involves hours of waiting, often in uncomfortable surroundings. Having a pump of their own, enables the patients to have their treatment at home – a much better option and one that ensures the treatment is administered on a more regular basis. In other words, it means better health for the patient and less trouble for the parents.

Patients who are moving from Desferal to oral iron chelators can do a wonderful service to other thalassaemia patients by donating the pumps they no longer need, to TIF. **TIF will then forward the pumps to patients in need.**

Please forward your old pumps to TIF at :  
Thalassaemia International Federation  
PO Box 28807, 2083 Nicosia, Cyprus

Thank you for your kindness – every pump donated means someone's life just got better!