CASE STUDY: SHOENET PROJECT AT INESCOP, SPAIN

Abstract

Footwear production requires the sharing of a great deal of detailed product specification information between the agents involved in the manufacturing process. This case study analyses the Shoenet project, and its implemention by the member companies of Instituto Tecnológico del Calzado y Conexas (INESCOP). The primary focus is on the architecture and methods for the exchange of data between the different agents involved in the process of designing and manufacturing footwear and with the company responsible for producing and distributing the end product.

Case study fact sheet

Full name of the company:	*Instituto Tecnológico del Calzado y Conexas (INESCOP)*
Location (HQ / main branches):	*Elda (Alicante)*
Sector (Main business activity):	*Footwear*
Year of foundation:	*1971*
Number of employees:	*No data available - Over 600 member companies*
Turnover in last financial year:	*Not applicable*
Primary customers:	*Businesses*
Most significant geographic market:	*Domestic-Spain*
Focus of case study:	*Standards for data sharing*
Key words:	*XML, data sharing*

Background and objectives

Shoenet (Shoe Information Network) was an IST-funded project, conducted in 2002-2004, under the 5th Framework Programme of the European Commission. INESCOP (ES) was the coordinator of the project, whose aim was to develop innovative solutions and tools addressing SMEs' specific needs in the areas of:

- CAD/CAM as a source of value chain integration;

- shoe data management systems; quality management systems;

- mobile systems as support to shoe vendors; and,

- integration with productive sites through mobile systems.

The case study reports the real life experiences of INESCOP, and its member companies, in the implementation of a system to improve the exchange of technical data between companies (shoe data management, quality data management, and technical support to vendors). The implementation of the system started in 2004 and is still ongoing.

The background is that most production companies in the footwear sector are small, and depend on an extensive network of suppliers for the various constituent components of their end products. Within this scenario, good relations with these suppliers and data sharing between them and the company responsible for production and/or distribution are essential for competitive success in the sector. Prior to the implementation of the project detailed in this case, the data sharing process had significant shortcomings. It involved a wide range of formats, thereby making the exchange of information cumbersome.

Within this context, the INESCOP Association decided to back the implementation of the Shoenet project. This project provides footwear manufacturers and the other associated companies with a standard system for the exchange of data and information that is understood and shared by all. In effect, the system helps to streamline the footwear production process.

e-Business activities

Project description

The project established a data sharing system between companies in the footwear sector and their suppliers. The aim was to provide a standard "data file template" that correctly details the characteristics of the "footwear" product, and which is understood and shared by all the companies involved. The achievement of this template was one of the project's core features and the one that has taken up the most time.

A simple system was then used for relaying information. A company conveys the required information in the new standard template (created in XML format), through its own network and via e-mail to all the other companies it deals with. Once the information has been sent, and before it reaches its destination, a server located at INESCOP is responsible for verifying and authenticating the information being relayed. In other words, it ensures that the information being sent complies with the conditions required by the standard template and also verifies the issuer's identity. For the latter, it uses a digital signature system, which INESCOP issues to user companies. Likewise, INESCOP has provided these companies with e-mail addresses to be used when sending information. In addition, the INESCOP server also guarantees the traceability of the information being sent. In other words, the issuer of the information can at any time check what information has been sent, to whom and its current status.

The project was implemented by the company Lineasoft 21 (http://www.lineasoft21.es) , a supplier of ICT products and services.

Project stages

The project was divided into the following stages:

1. Definition of the fields featured on the Data Template

The process of defining the fields involved a large number of companies in the sector with an interest in the project. This involvement was essential for the result to reflect the companies' needs, and thereby be of immediate use to them. The information the

companies provided led to the definition of over 600 different data fields and variables that describe different footwear components. Work concentrated on those variables that have a bearing mainly on the production process, and focused in particular on fields needed for data sharing between manufacturers and their suppliers.

2.   Development and Creation of the Data Template (XML)

The process of definition and subsequent implementation and development took approximately three years. The data template was developed in XML format by INESCOP, with the hands-on cooperation of companies in the sector and software development firms. INESCOP also created the digital signature system that guarantees the authenticity of those involved in relaying information. INESCOP is the certifying agency for the digital signatures granting access to the project. Moreover, the website www.shoenet.info was set up to cater for the companies involved in the project and its implementation.

3.   Implementation

Once the data template was defined and developed from a technical perspective, the implementation in the various companies taking part in the project was quite straightforward. The first implementation started in 2004 and the system has been running since then. There is no need to modify extensive software systems; it is only necessary to adapt the database software in use to the agreed common standard. Such software adaptation is a quick process. It takes a few days at most, and the training required is simple and easy for user companies to address. This is an extremely important aspect, considering the small size of the companies in the sector and the fact that many of them do not have an IT department. In order to take part in the project, a company has to register at the website www.shoenet.info. INESCOP subsequently provides the e-mail address to be used for sending the information and issues the user company its own digital signature.

Shoenet components[1]

The Shoenet system has two main software elements: Mercure and the Shoenet Website. The core of the Shoenet platform is the XML data model defined in the project, without which it is not possible to have a true data exchange.

The Mercure platform is a set of different tools that allow companies to interoperate through XML message exchange. It provides the necessary tools to allow companies integrate their enterprise resource planning (ERP) systems in a quick and easy way (by using programming libraries in different programming languages) and to exchange messages with partners in a secure, traceable and configurable way.

The *Mercure Message Dispatcher* is the main piece of software of Mercure. It is server software that allows the companies to register their data and profile, checks the security of the messages and ensures the traceability of the exchange of messages. It has been implemented on Java [2], allowing thus independency of the operative system of the server where it will be installed. It is also independent of the data base provider, allowing the customer to better profit from the software investments already done.

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[1]   Description of the Shoenet architecture is drawn from TEXTILMODA 2004, SHOENET, Electronic Design and Management Data Exchange between Footwear Companies by Enrique Montiel and Pascual Martínez, INESCOP, Spain.

[2]   Java is a technology developed for machine-independent software

The Web site includes the main Shoenet functionalities (from the system management to Shoenet specific services) and provides a Graphic User Interface (GUI) for the different access modes. The main characteristics of the web site are

- multi-language;
- comprehensive GUI;
- easy to use and to customise (including replication, and customisation, of database security for new installations)
- secure access; possibility to change the RMDB;
- fully synchronised with Mercure Message Dispatcher using mail server.

The following scheme shows the physical architecture of the system.
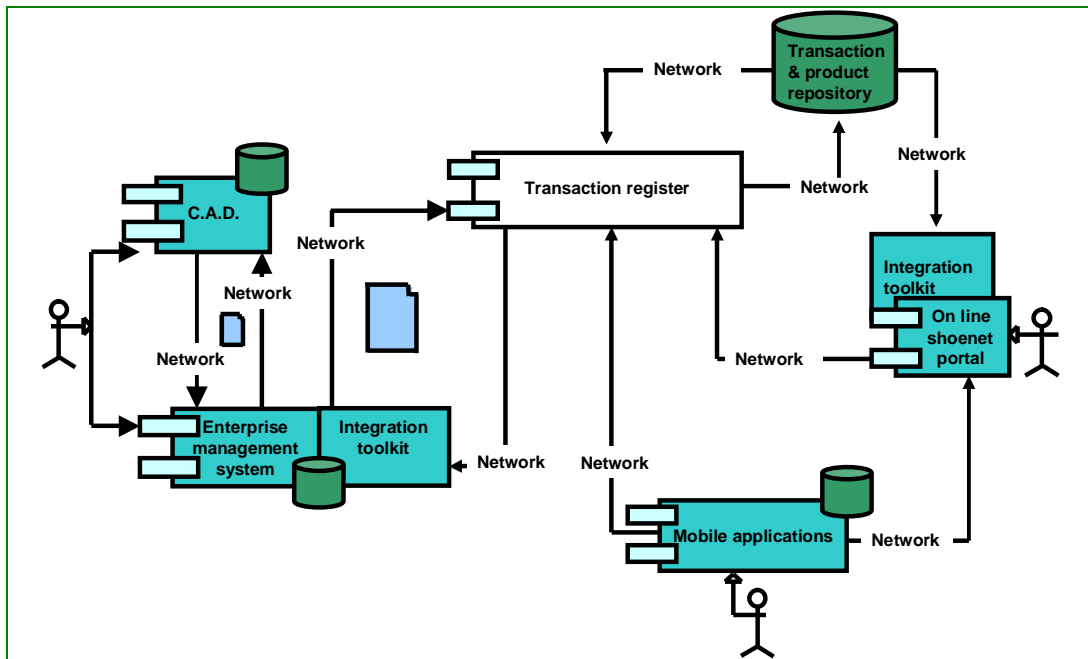
The platform can be "located" on a server where the database and the transaction are hosted. Both are based on web technology and for this reason the physical location of the server is not relevant, it can be hosted by a hosting company or by one of the companies that wants to improve the collaboration with suppliers and providers. Documents that could be exchanged among the companies in the manufacturing process, from design until the finished product, include everything from order to invoicing. The system can be used via the ERP system or through web interfaces.

Project costs

The costs for user companies to participate are extremely low. Participation in the project (registration, provision of e-mail account, digital signature) is free. The sole cost incurred by companies involves adapting their database software in order to upgrade to the XML format. The cost of this operation varies, depending on the user company's ERP, but in general, it is a small amount. The process for upgrading the software takes around 5 days.

System enlargement and enhancement

The project is up and running, and is already being expanded and improved, with the inclusion of new fields that contain additional information that some companies require. In addition, efforts are being made to extend the project's sphere of application to other

functional areas in the companies. The data template has so far focused on the production area. Work is under way to extend the project's scope to other areas, such as complaints and enquiries, invoicing, etc. Furthermore, the experience the footwear sector has gained through this project may be applied to other business fields.

Impact

The project's main impact has been to <u>improve the data sharing process between footwear manufacturers and/or distributors and their suppliers</u>. In addition, the following effects have been achieved:

- Streamlining the sending of information
- Monitoring the status of information sent
- Minimising errors in the sending of information
- Greater professionalism in the process of relaying information

Around 40 companies are currently taking part in the Shoenet project. One of these is Disgramarc, a company that manufacturers and distributes footwear. It has been involved in the project since 2004 and the main improvement it has detected is the significant time saving achieved in the production process through the adoption of this data sharing system.

Lessons learned

The main lesson learned is the need to work closely with companies in the sector, whereby the proposed solution caters for their needs and adapts to their specificities. Only in this way will it be of immediate use and participating companies will be sufficiently encouraged to implement it. Furthermore, another lesson learned is that the system's simplicity and user-friendliness are vital factors underpinning the project's success. This is especially important in the case of sectors made up of small companies, such as footwear.

References

Research for this case study was conducted by DBK, S.A. C/Juan Bravo, 3. Edificio C. 28034 Madrid (Spain) on behalf of e-Business W@tch. Sources and references:

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