

SABARECO

satellite based project reporting for the construction industry

The challenge

Construction management companies often have to manage several very complex construction projects simultaneously. The projects can be in different phases and the construction sites can be in different, sometimes remote, parts of the world.

Some sites may be so remote (e.g. projects in the desert) that it is impossible to establish efficient and reliable communications using locally available infrastructure. Indeed communications can be a problem in the early days of any project, when the on-site management team is working from temporary offices and has to co-ordinate the activities of the many local subcontractors, some of them SMEs.

An additional complication is that the construction sites may be in different time zones from the offices of the construction management company and that the various projects may have different working languages. Furthermore projects have to be carried out in accordance with local working conditions and practices.

This means that the ICT systems used by construction management companies have to reflect the multicultural and multilingual requirements of the distributed teams working on the various projects.

The technical solution

The IST project [SABARECO](#)¹ has developed and deployed a satellite based system for browsing and updating project information, which supports the scheduling, management and control of multiple construction projects involving teams all over the world.

An application server, located at the headquarters of the construction management company provides the interface to the individual construction teams. The application server combines five important elements:

1. FORgest, a commercial Enterprise Resource Planning system developed by the Portuguese partner FORDESI. This application is used for managing materials procurement.
2. GIGROS, a commercial project management system developed by the German partner UNIQUE and specifically designed for one-of-a-kind projects and multi-project management.
3. An Audit Manager from PRODUTEC to support on-site inspections and progress reports.
4. Native application databases created by these applications. Most applications rely on relational database technology (MS SQL Server, MS Access).
5. Standards data, a database (or data files) storing subsets of information to be used by all applications. These use established industry standards.

The Internet is used to exchange information between this server and clients at the individual construction sites. The client computers are equipped with client software to support the specialist applications, although the Audit Manager only needs a simple web browser. Communications between the applications server and the clients are encrypted to ensure the confidentiality of the information exchanged.

Where the local communications infrastructure can not provide satisfactory Internet access at the construction site, a broadband satellite link (the InterSky system from the Israeli partner SHIRON) is used. This provides 8 Mbit/s downstream and a minimum of 256 kbit/s upstream. If sufficient satellite capacity is available, a maximum upstream rate of 4 Mbit/s is possible. The compact InterSky satellite earth station is no more difficult to install than a satellite TV receiver and users require only a minimum of training to set up and operate it.

¹ The project is led by the German company Produtec and has partners from Germany, Portugal and Israel. The project started in December 2000 and ran for 18 months. A more detailed description of SABARECO can be found on the project's website <http://www.sabareco.com>



The results

The system was tested by the Portuguese partner CONSULGAL, which manages large construction projects world wide. Staff based at the company's headquarters are responsible for:

- Management of several simultaneous projects
- Planning and scheduling of main tasks (multi-project planning)
- Main resource allocation
- Accounting
- Reporting for customers, authorities etc.

Project managers at the individual construction sites are responsible for:

- Planning and scheduling of tasks
- Resource allocation
- Reporting to headquarters.

Instead of reporting progress in the traditional way (phone, fax, personal visits), the SABARECO solution allows on-site managers to report directly to the project management applications. This reduces the possibility of errors caused by retyping data from faxes, etc. The information collection and editing work needed to produce progress reports is reduced because the relevant information can be extracted automatically from the databases. Finally the current status of a project can be made visible to all interested parties (customer, suppliers, etc.).

The trial has successfully demonstrated the functionality of the SABARECO system and the project partners are evaluating its effectiveness against a set of business, technical financial and human criteria relevant to the construction industry

Conclusions

SABARECO has successfully tested a satellite based Information and Communications Technology solution for supporting the day-to-day distributed management of large construction projects in different parts of the world. The solution is not only of benefit to staff at the headquarters of the construction management company but also to the management teams at the individual construction sites. The members of the SABARECO consortium are now evaluating the costs and benefits of the solution, with a view to developing and marketing a commercial version in the near future.