The adoption of Open Source KA9Q TCP/IP stack based Ethernet connection of LED displays enabled the company to improve product functionality , function and flexibility system , reducing time to market and design risks .

TecnoVISION S.p.A.

Since 1987 TecnoVISION has been dedicating to the manufacture of LED DISPLAY of indoor and outdoor application, for example in advertisement, sport and entertainment events, live concerts and road information.
The company is nowadays S.P.A. (joint-stock company) and associated to Assolombarda Confindustria, ISA member .
Quality System ISO 9001:2000 certificate by TÜV Cert. is guarantee for customers in world market .
Now TecnoVISION with 55 employees and 10.000 K€ turnover (yr.2002) has reached the position of a leader company in Italy .
R&D , design , manufacturing , service , administration are now located in a new factory building where it is possible to have training course for customers

ECONOMIC BENEFITS

The integration of new capabilities to efficiently provide remote monitoring control enables now the company to gain a wider market share. The market leading technology adopted will deliver reduced time to market and low design risks of new products.

- Expected return on investment of 350% over three years;
- Main competitivity for this kind of business increase 40% sell in market ;
- The added functionalities of the new solution allows a higher price estimated with the customer with a 30% reduction cost for the producer ;

PRODUCT IMPROVEMENTS

Main improvements of the enhanced product are:

- Standard Ethernet 10/100 network connection.
- The unit is remotely controlled by means of TCP socket connections
- The ability to update data with Telnet and FTP protocol;
- The ability to remotely adjust the settings of the installed equipments;
- The ability to verify sign status using internet connection;
- The capability to connect more than one displays to the same PC using the Ethernet connection

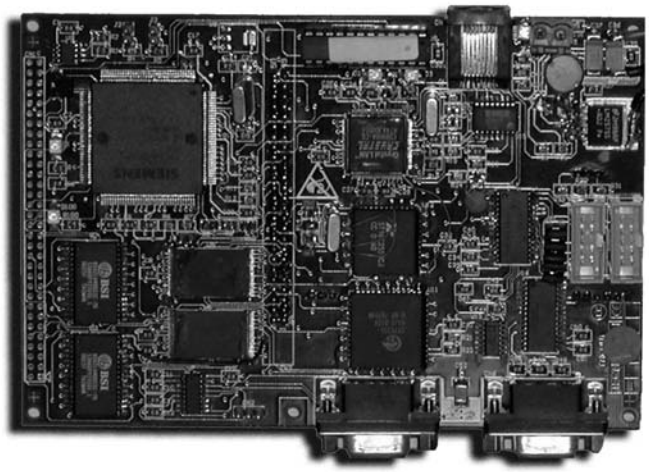
The rationale for the technology selection was the following:

KA9Q Open Source : The use of an open source KA9Q TCP/IP stack in the control board ensured a reduced time to market, low risk design, low costs, possibility to customize sign functionality in a very short time, possibility to implement a TCP/IP connection in a short time without risks, possibility to design powerful user interfaces.

Ethernet TCP/IP: The Ethernet-TCP/IP connection was adopted to connect more than one control unit with a local server using standard services. The TCP/IP connection has been also used to implement a remote connection for system debug and firmware update.

TECHNICAL IMPLEMENTATION

Hardware development
1 Infineon C167 CPU.
1 Mbytes Flash memory.
1 Mbytes RAM memory.
1 Ethernet port.
3 serial ports.
1 Dual port RAM for fast connection with sign control board.
The main open source SW used was
KA9Q TCP/IP stack.
Software development
Embedded application SW development.
Implementation of interface of local Telnet, FTP and HTTP server with Sign Control Board functionality.



EUROPEAN COMUNITY PROGRAMMES

EC IST Programmes aim to improve the competitiveness of European enterprises by promoting the adoption of under deployed or emerging technologies.

This will enable these enterprises to increase their competitiveness and enhance their economic growth. The demonstrator described here is one example of the many Best Practice projects undertaken.

Further details of projects covering a wide span of applications, industry sectors and technologies can be found on **www.euroines.com**

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For information on EC IST Programmes:
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