

## New Generation T&A Product Family

**AREA OF COMPETENCES:** Embedded Systems & Advanced Microelectronics  
**INDUSTRY:** Time & Attendance Systems

### CHALLENGE

#### AMANO

The client wanted to build a platform based on ARM 7™ processor called iTerminal in order to provide advanced support for four types of commonly used applications: Time & Attendance, Job Costing, Parking and Access.

The platform was to offer maximum flexibility to customers and integrators, so they can customize the applications build over this platform according to their needs. The software platform had to manage a large diversity of hardware components: Flash memory, Barcode readers, Magnetic readers, Proximity readers, Fingerprint, IC cards readers, RS232, RS485, relays, IO, Keyboard, LCD, many of them configurable through configuration files. As well, the platform was to offer Database support, SQL support, File System, Scripting interpreter, Windows system, Communication engine, Multilanguage support, and Drivers for most common devices. The platform also had to be accompanied by a set of Windows tools by the mean of which the application can be configured, and a server which processes the data collected by iTerminal terminals.

### SOLUTION

The solution developed and implemented by IP Devel accomplishes many expressed desiderates. We built a complex platform that includes: an advanced flash memory management using three different systems



(Database, Punch, and File System), a script interpreter engine that allows the client to customize the board behavior, management of files and virtual files via an integrated FTP server, SQL engine providing access to Database, a GUI/Graphical User Interface library for displaying forms on LCD, an Event engine which passes the generated events (keyboard, card events) to the script interpreter, a set of drivers for most common card readers, keyboard, LCD, relays, RTC, buzzers, led, EEPROM.

We also implemented a set of tools that helps the client to configure the iTerminal at the maximum, and a server called iServer that collects and processes data received from terminals. The application has remote-upload capability through TFTP communication.

## SYSTEM CONFIGURATION - LOGICAL

The iTerminal typically communicates with a server, called the iServer. Services can be “plugged-in” and the application layer is typically web-based. In the first stage, the iTerminal will only talk to the iServer; no peer communication is supported. Applications will have to pass the iServer in order to access the terminal.

The basic requirements for this middleware component [iServer] are:

- Save data in the database
- Implement communication protocol, including handshake and start-up mechanism
- Implement an event mechanism (keep pool of interested parties)
- Implement security layer
- Light architecture
- Scalable database access

Communication can be done over the companies intranet and the internet; in the latter case, HTTP will be used as communication protocol. In addition, special attention is paid to security issues.

## ABOUT OUR CLIENT

Amano offers total management solutions for time & attendance, payrolls, human resources, access, and cafeterias. Believing that people are a company’s most valuable resource, Amano offers human resources management tools for their optimization. With time recorder data integrated with other time & attendance, payroll and human resources, access, and cafeteria software packages, Amano offers total systems for time management to enable you to get the most of your people and to enable them to get the most of their time.