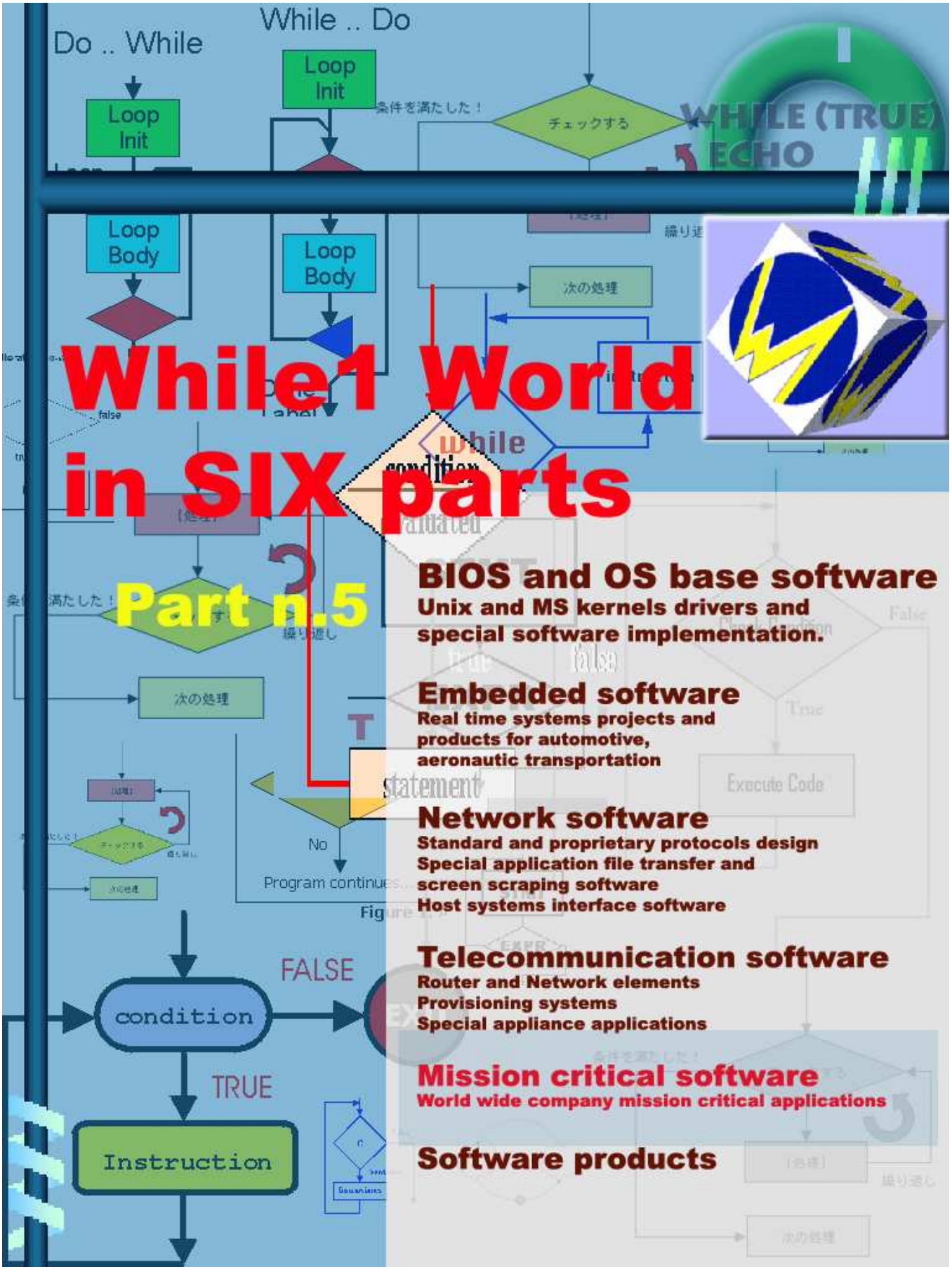


While1 World in SIX parts

Part n.5

BIOS and OS base software

Unix and MS kernels drivers and special software implementation.

Embedded software

Real time systems projects and products for automotive, aeronautic transportation

Network software

Standard and proprietary protocols design
Special application file transfer and screen scraping software
Host systems interface software

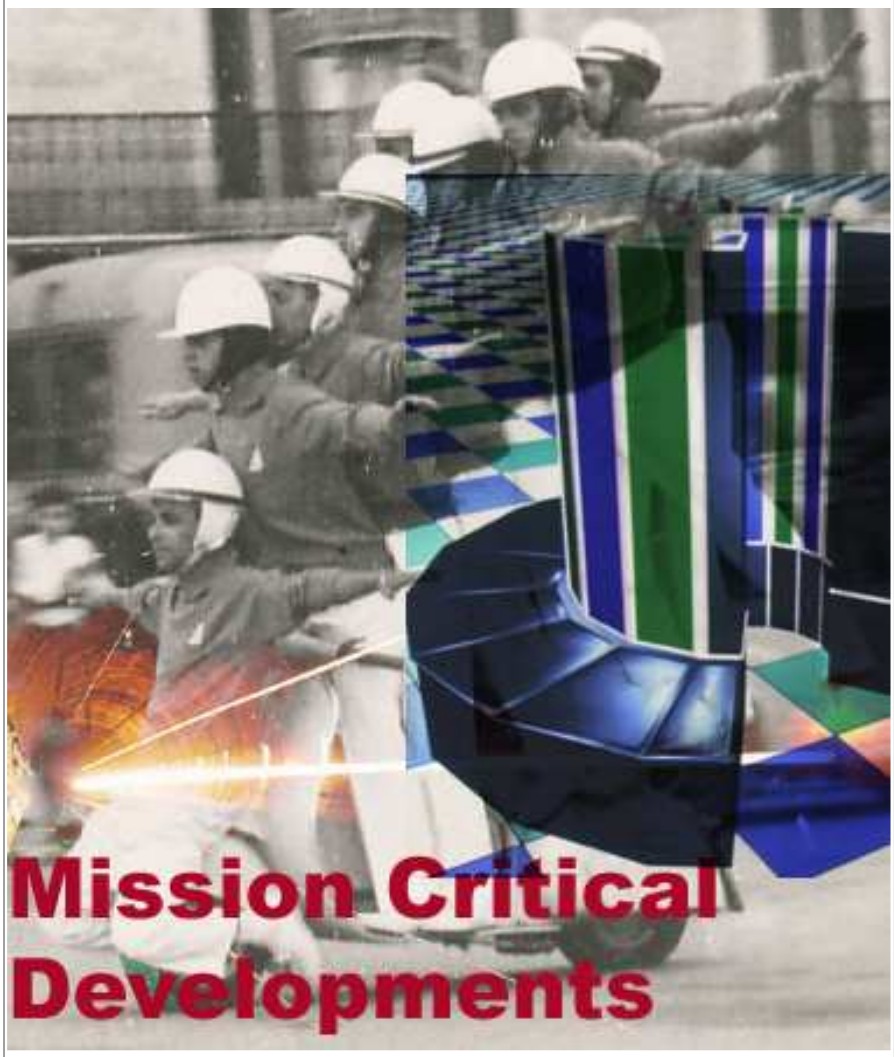
Telecommunication software

Router and Network elements
Provisioning systems
Special appliance applications

Mission critical software

World wide company mission critical applications

Software products



Some of the developed projects
for Big Companies
In Mission Critical System
and Applications

While1

(www.while1.com)

While1 main customers for
Mission Critial Developments

FIAT

IVECO

IBM

INTESA SANPAOLO

UniCredit

Tattile
Complete Vision Solutions

Avio
propulsione aerospaziale

LOTTOMATICA
italiaservizi

SEPA

FASY

3ware

adaptec

American Megatrends

WESTERN DIGITAL

Fiat Group Automobiles

DDU Project

Dealer Download / Upload (DDU) provides **full HTTP/S file transfer service** from company and its dealers network. DDU decouples central hosts and peripheral systems operations, since they have different needs in terms of data processing scheduling.

Central systems processes data according scheduling while peripheral processing is asynchronous based on web access.

Implementing this separation from host and peripheral systems, DDU includes all translation process needed for the complete file transfer:

- Code page to code page (e.g. EBDCIC to ASCII and vice versa)
- Translation in different codepages depending on dealer's country
- Content translation at application level if necessary

DDU guarantees full **availability of exchanged files** in both directions Upload (from dealers to centre) and Download (from centre to dealers), maintaining trace of all of them

The system is fully configurable for the following aspects:

- Access security
- Data access authorization
- Type of exchanged data
- File retention time, before its removal
- File syntax check
- File content translation, if necessary

DDU can be interfaced via **Web Browser and via Web Services**; it includes also dedicated interface systems for environments requiring them, such as **IBM MQ Series** for host interface.

The system operates since October 1st 2006, by means of progressive rollout on markets coordinating former systems dismissing with third party managing them.

File transfer module, exchanging millions of files per month, is composed by a server and a client component (for legacy peripheral systems). Client component was developed to provide a DLL offering old interface compatibility to be installed without any change on preceding software. Server component has been developed in **Fiat Link** system context. It is composed by PHP modules. To offer a dynamic connectivity and the use of different application protocols, the server allows managing connectivity and transporting system using a **Dynamic Application Engine**. This component process defined algorithms using **State Machines** and/or **Workflows** dynamically loaded depending connected application.

- **7x7x24**
- **1 million file per month**
- **6000 Workstations**

XTI Client Connector

New version of **Felix** product named **XTI** able to solve all the Host terminal emulation problems in Web (ActiveX) environment. The project provides to **Web applications** a 3270 IBM emulator without a dedicated communication channel. The product operates with the following main characteristics:

- **3270E** emulation on browser through HTTP and/or HTTPS protocols
- user interface as host terminal emulator
- load balanced web server support
- scripting support to customize access
- automatic delivery and automatic update on the clients
- client support in Fiat Automobiles DCS configuration
- authentication policy management, regarding host access
- Fiat Automobiles resources (LU) assignment policy managemnt, regarding host access
- market codepages management

The system offers on-line access to host system exporting **3270 emulation on web pages**.

To offer a better security policy, this emulator includes access automation via navigation scripts and single sign-on web access; in that way, users reach desired functions in on-line access without follow all the masks preceding them. There are access limits based on:

- Number of negotiated connections for each market/dealer
- Enabled functions for each market/dealer

- **7x7x24**
- **millions of connection per month**
- **20000 workstations – 3000 Dealers**

DDS Project

Development of final version of **DDS** (Dealer Delivery Service) project on **Windows 2k** based servers. Original version was developed by Digital and Olivetti with Microsoft support. The project provided the realization of the communication with peripheral systems using a dedicated file transfer based on **MSMQ on TXP/IP**; in its core business logic is integrated with legacy systems through batch connection bases on **MSMQ/MQSeries**. The project operates on a worldwide network homogeneous in terms of host systems and connectivity, composed by 3000 points in Europe, Asia and Africa. Exchanged files contain reserved data such as purchase orders and invoices, with strong temporal constraints in file transfer from/to dealer network and central IT structure: a real mission critical project.

- **7x7x24**
- **1 million file per month**
- **3000 Dealers**

VCI Diagnosis

Requirements definition for all levels (HW, system, application both on Ruggedized PC and on VCI; media and **PCI – Ruggedized, Ruggedized and proprietary protocols**) for a new FIAT group **worldwide** diagnosis tool (**Fiat Automobiles, IVECO, CNH, Maserati**).

Team leading in definition and verification with proof of concepts of full compatibility between automotive market standards in terms of media (e.g. WiFi with ISO 9141, 14230, 15765) and operating systems (Real Time or standard with CAN and/or K/L).

Support on:

- technical strategies to pursue in medium (2-3 years) and long period (more than 5 years)
- in census and documentation of platform AS IS
- to integration of company departments towards a data platform common to all processes
- call for tenders

Realization of a **VCI** board emulator proof of concept and prototype with **SAE J2534** interface ad support of legacy implementation. Ready for:

- **7x7x24**
- **5000 Workstation**

Iveco IVECO

Dealership Management System INVASOR 1

Involvement in development and maintenance of a new version of Dealership Management System for IVECO dealers. Project name is Invasor and its target is to manage dealers activities as: purchase orders, incomes, warehouse, warrantees, relationship with IVECO and so on. The main project items and characteristics are:

- Operating system OS/400
- Relational data base
- Security
- Privacy
- Communication
- Application environment management (ACG base module)
- Languages: CLP, Cobol, RPG, SQL
- User scripts: Query/400. SQL
- Documentation
- Office automation

- **7x7x24**
- **3000 Workstation**

Dealership Management System INVASOR 2

Third party package modified to satisfy IVECO requirements in the following areas: **industrial vehicles selling, workshop, warehouse and accounting**.

Involvement in package new version development for IVECO subsidiaries on **IBM AS/400** initially intended for Italian market in order to substitute preceding version.

An important aspect of this activity was the support to the users during acceptance tests and control and co-ordination of third party involved in the project.

- **7x7x24**
- **1000 Workstation**

IBM

GlobalValue

Whas project

WHAS product development on **Windows 2003/Windows XP** operating systems. Development of an application server, web server independent, that supports and manages on the fly conversion towards html of legacy transitions both OS390 and OS400 concerning video (3270E, 5250E and VTxxx) and printers (3287, 3812 and LPD). Now it works in worldwide different internet scenarios. Easy, fast, upgradeable, it allows to painlessly export legacy application (formerly accessible just via host terminal on obsolete protocols) on Internet respecting security criteria. The following companies are currently using this product.

- **Case-New Holland**: as worldwide strategic product to access to main systems both on Extranet (selling network on Internet) and Intranet (world plants on private network)
- **SAVARENT:** to immediately make available to own agents in Italy the applications on internet
- **SAVA:** legacy applications access to own agents on internet
- **Fiat:** export of applications to Indian dealers on internet
- **AVIO:** export of applications on internet to Italian military plants

- **7x7x24**
- **25000 Workstations**
- **6000 Dealers**

eSigi++ project

Various components realization of a worldwide web 3 tie internet/intranet for the full management of vehicles after sale contract warrantee extension.

The application has a .NET front-end and uses an Oracle DB with more than **20.000 users and workstations** all over the world. Warrantee is completely managed in the whole process, from cost determination and applicability, warrantee extension till claim management and congruence verification and post-intervention coherence. It involves dozens of millions of euros per year. Because of its worldwide use, a great care was dedicated to reliability and internationalization.

- **7x7x24**
- **20000 Workstations**
- **6000 Dealers**

DDSX25 module

Developed on **Windows 2K/Windows 98** operating systems. It is a file dedicated file transfer for slow and obsolete connections (X28-X25) transferring data in transactional secured way to central system on **MSMQ** in both senses.

It operates on a heterogeneous world network (for host systems and connectivity). It has more than **6000** points in Europe, Asia and Africa. It carries important data such as purchase orders and invoices with temporal constrains concerning data exchange between network and IT structure with critical SLA.

- **7x7x24**
- **10000 Files per mese**
- **3000 Dealers**

Toms project

Analysis and realization of central system and communication modules (**MSMQ and TCP/IP Socket**) of a project named **TOMS**. Its goal is to coordinate all the transitions of data needed to manage **order** requests from **Fiat dealers** enabled to this service (**Lancia Cars dealers**). The project is based on a virtual machine development to follow a **state diagram** defined by the project manager. The module can be used for various scopes implying data flow management and synchronization with different entities (e.g. production, commercial, warehouse). **TOMS** is an application of this methodology that is proposed as development system for **EAI** project (Enterprise Application Integration).

- **7x7x24**
- **thousands of connection per month**
- **1000 workstations – 1000 Dealers**

SanPaolo INTESA SANPAOLO

FELIX product

FELIX product has been integrated into customer ICT architecture for automatic deploy over internet/intranet **HTTP/S** only connections of the unchanged mainframe applications from Human Resource Department to all banks subsidiaries. Mainframes to support are **IBM VM, IBM MVS** and **HP UNIX** and ICT architecture includes **Oracle server 9Is** and **Microsoft based Active Directory**.
The clients cover all Windows platforms from **Windows Me up to Windows XP**.
FELIX is used for remote printing **support** to **emulated mainframe printer** in order to provide to the end-user at the **browser** the **electronic printed** document from unchanged mainframe application.

- **7x7x24**
- **500 Workstations**

Stocks and Bonds

Design, develop, integration and support of a special environment on **Unisys Unix systems** for application re-hosting from old ***BURROUGHS GEMCOS B1900 systems.***
The global project has following deliverables:

- **Automatic source code converter** from COBOL BURROUGHS to MF-COBOL 2.
- **Virtual operating system machine** of a **BURROUGHS GEMCOS-CMS** on **UNIX system V 3.0**.
- **Subsystem emulator for BURROUGHS peripherals support** (terminals, printers, communication lines).
- **Structured source code generator** in order to develop applications able to run on both systems.
- **Complete Porting** of **SAN PAOLO bank Stocks and Bonds** application (circa 100 Mb of source code).

- **7x7x24**
- **250 Workstations**

UniCredit

Printer System

Design, develop, integration and support of a printer system and related printer **Device Driver** for all Microsoft operating systems (**3x/9x/Nt/2k/Xp**) to allow automatic and transparent management of the **UNICREDIT** banking printers fleet. The system provides spooling, share and lock, remote messages and transactions management for all supported printers (**Olivetti, Epson, IBM**, etc) and protocols (IBM pro-printer, free running Olivetti, controlled Olivetti).

The system is in use since 1997 on all subsidiaries and workstations of UNICREDIT bank group.

- **7x7x24**
- **20000 Workstations**

Lottomatica

File Transfer & Worm disks

Design, develop, integration and support of a **file transfer** system between a special **STRATUS** system with **VOS** operating system and a **Windows NT** system with **Worm Disk**. The target is to allow the customer **Lottomatica** to archive and move data in a secure and fault tolerant environment from **FaultTollerant STRATUS** disks to Worm disks. The developed file transfer support encryption and compression algorithm that provide secure and optimized transfers.
The system is used to transfer and archive **all Lotto plays** into a final official storage that is used for later official results examinations. Therefore the marked importance of such data is evident.

- **7x7x24**
- **1000 files per month**

AvioGroup

Boat Telegraph Management System

Design, develop, integration and support of the whole software stack for management of telegraph for engines control. This system is used on battleships (**frigate**) for the communications among different areas (chief bridge, engine room, etc) and for automatic alarm management. Such alarms are automatically activated by the systems on communication error events or when commands from master areas (e.g. chief bridge) or high priorities commands are not executed or when specific triggers occurs from sensors.

Telegraphs are connected each other via a **redundant RS485 line**. While 1 develops a proprietary stack on top of this channel to resolve connectivity issues and to insulate applications from low level layers. The multi point **RS485 developed protocol layer** named ***WISP*** exposes a **socket like** session interface to the above applications and implements a almost full **TCP/IP like** protocol with all related features (collisions, retransmission, timeout management, etc).

The application realizes full diagnosis of all components in the system (communication line, display, keyboard …) and perform download on demand of the software updates on control units, watch dog refresh etc. Master/slave hierarchy is run-time dynamically defined according to configuration and commands requested by the operator. The single node can operate as master or slave according to operator requests and to requested command. The master send requests and wait for completion, the slave for that command execute requests and send responses, all other nodes can overview the status of each command and notify operator on general warning or specific related issues on commands in progress.

- **7x7x24**
- **10 Frigate**

Tattile

CAN Module for Alstom

Design, develop, integration and support of a whole communication system for **CAN/MVB** buses interactions. These buses are present onto railways systems produced by **Alstom S.p.a.**

The delivery of the project are:

- A system able to interface and manage **CAN** bus via **CANOPEN** protocol (**CIA specifications**: 301_v04000201) on **Alstom CA250 trains (Pendolino for China railways).**
- On top of this system a full set of micro web services that allow full management, via GET&PUT operations, of the complete set of variables designed operating management of the train.

This technology allows the clients to interact with the system in a protected and structured architecture by simply accessing services according provided WSDL (SOAP). To complete the SOA management all asynchronous notifications, alerting and changing policies are also implemented as specific web services and properly described and published via WSDL.

With this schema clients are automatically enabled and converted to **micro-server** that are able to publish new web services to main server and to allow large scale asynchronous event-driven architecture avoiding bus consumption polling activities.

The developed protocol allow to implement according to **CANOPEN** standard both **Master** and **Slave** semantic, giving developers one tool and one layer for both components. It also allows to easy develop emulators and test pattern. The whole product has been developed for embedded HW with proprietary customer operating system and **Linux Debian**.

- **7x7x24**
- **150 Trains**

SEPA

Passenger Information System for ADTRANZ trains

Design, develop, integration and support of a whole communication system for **Adtranz** customer. The target is to provide a PIS (Passenger Information System) for the audio and voice plus display, informational devices (this and next stations, junctions, etc) and messages management on locomotives **E464.** Equipped trains are composed by **E464** locomotive and a series of **UXC-Z1** railroad cars.

The PIS is hosted by a system based on Motorola **MC68360** processor and communicates with several peripherals: **MVB *Bus***, ***Bargellini Keyboard***, ***Flash card***, ***linee RS485/422/232***. The adopted operating system is a While 1 proprietary real time **kernel** named **WMTK.** The application performs all user informational actions (messages, voice announces, etc) driven by data on RAM card and managing all information from train sensors such as speed, door status (ope, close, etc), dedicated center←→train telephone, etc.

- **7x7x24**
- **300 Locomotives**
- **1000 Railroad cars**

Passenger Information System TAF trains

Design, develop, integration and support of a whole communication system for TAF named trains (Treno ad Alta Frequentazione, High Volume Passengers Train) with same architecture used for **Adtranz** but on different trains.

- **7x7x24**
- **100 Trains**

KEEPER safety system

Design, develop, integration and support of the whole framework for the **Keeper** system. The goal is to have a centralized system for monitoring of alarms and sensors according to CEI specifications; the system must also be ready for easy and fast integration of different and various control units for different alarms, fire alarms and monitoring systems.
Keeper manages **2000** alarm **control units** connected via ISDN and/or PSTN. The system is full CEI compliant and therefore respects all acceptable response times for each attached sensor and control unit plus guarantee the maximum times for displaying messages and alarms to the operators according priorities of each sensor. As requested by the end customer (INPS, Italian Welfare Institute) Keeper is also able to manage a whole front end crash and therefore up to 2000 control units disconnection events.

- **7x7x24**
- **2000 Control Units**

3WARE (USA)

BIOS GigaRaid

Design, develop, integration and support of a brand new **BIOS** for **DiskSwitch GigaRaid** intelligent board from **3WARE** These boards are able to manage up to 8 IDE disks each even in RAID configuration with all features required by and full compliancy to **PC97** and **PC98** standard (multi-board, multis-egment organization, BBS support, PMM support, VDS support, INT13 ext., etc.). Delivery and final acceptance test on field at **3WARE Inc**. labs **in PaloAlto (CA - USA).** This software has been installed on each board produced and sold by 3Ware that is hundreds of thousand pieces.

- **7x7x24**
- **300000 Boards**

OpenBoot GigaRaid

Design, develop, integration and support of a **Forth** module to be used **SUN OpenBoot (OpenFirmware)** environment required for SPARC processors based systems. The target of the project is to support **system boot** from any of the disks connected to a 3Ware GigaRaid Board. It's an equivalent to BIOS software component for Sun proprietary platforms and must support and expose all the services required by SUN OpenBoot for first boot phase (the equivalent to Int 13H support for Intel platforms). A second Forth module has been provided as additional deliverable. This module, as a part of the SUN OpenBoot, can be activated at boot time and used by administrator for management and configuration of the 3Ware board and for configuring attached disks (e.g. RAID configuration). Delivery and final acceptance test on field at **3WARE Inc**. labs **in PaloAlto (CA – USA).** This software has been installed on each board produced and sold by 3Ware that is hundreds of thousand pieces.

- **7x7x24**
- **10000 Boards**

Sun Solaris SCSI Device Driver

Design, develop, integration and support of a new **device driver** for **SCSI** subsystem on **Solaris** operating system for both **SPARC** and **INTEL** platforms. The deliverable object is a one tree source only that can generate drivers for all platforms and for **Solaris 2.x, 7.x, 8,.x** versions with full compliancy to SUN **SCSA** interface.

- **7x7x24**
- **10000 Boards**

ADAPTEC (USA)

BIOS SCSI Jalapeno

Design, develop, integration and support of several **BIOS (**MS-DOS**)** for **ARO/AAA** e **ANAHEIM/FIERO/JALAPENO** (**I960 based**) board Disk-Raid. The BIOS supports all required by standard **PCxx** features (multi-board, multi-segment organization, CDROM boot, BBS support, PMM support, VDS support, INT13 ext., ecc.). Delivery and final acceptance test on field at **ADAPTEC Inc**. **in Milpitas (California) and Nashua (Massachusetts).** This software has been installed on each board produced and sold by ADAPTEC that is hundreds of thousand pieces.

- **7x7x24**
- **100000 Boards**

Bios SCSI Aro

Design, develop, integration and support of a brand new **BIOS (**MS-DOS**)** for **ADAPTEC Viking** and **Aro** RAID disks boards. The BIOS supports CDROM boot in all formats as required in **ElTorito** specifications. The project required support of all services from INT 13h/15h/19h for RAID disk devices and integration of all **BBS** specifications (**Phoenix/Compaq/IBM**). For HW limitations (ROM smaller than 64K) the project required to develop also a special **compress/uncompress feature at run-time for the code** to allow efficient usage of small size ROM. Delivery and final acceptance test on field at **ADAPTEC Inc**. **in Milpitas (California).** This software has been installed on each board produced and sold by ADAPTEC that is hundreds of thousand pieces.

- **7x7x24**
- **300000 Boards**

Bios SCSI 2940

Design of enhancements, develop, integration and support of some new features of **BIOS (**MS-DOS**)** for **ADAPTEC 2940** RAID disks boards. Delivery and final acceptance test on field at **ADAPTEC Inc**. **in Milpitas (California).** This software has been installed on each board produced and sold by ADAPTEC that is one million of pieces.

- **7x7x24**
- **One Mililion of Boards**

AMI (USA)

Cache Filter Driver

Design, develop, integration and support of **special filter drivers** for **Windows NT/2K/95/98/Me** that implements a block oriented configurable cache layer below native file oriented system cache from Microsoft for performance improvement in specific use cases. The **cache algorithm** is capable of **READ-AHEAD** and **WRITE-BACK** features. The algorithm is system independent and therefore usable on different operating systems, different layers or directly on board. One of the deployed environment is the integration of cache object into the Miniport (driver) for AMI **HyperDisk** board as last level cache for the entire SCSI chain. Delivery and final acceptance test on field at **AMI Inc**. **a Atlanta in Georgia (USA).** This software has been installed on each board produced and sold by AMI that is some thousands of pieces**.**

- **7x7x24**
- **20000 Boards**

WESTERNDIGITAL (USA)

SCSI Device Driver

Design, develop, integration and support of several **Host adapter device drivers** for management of **SCSI WD7296** board for **PCI bus** by **Western Digital**. The required platforms are SCO ODT3.0, SCO OPEN SERVER 5.0, UNIXWARE 1.1, UNIXWARE 2.1, SOLARIS 2.4, SOLARIS 2.5.
Delivery and final acceptance test on field at **Western Digital in Los Angeles (California).** This software has been installed on each board produced and sold by Western Digitals that is thousand pieces.

- **7x7x24**
- **20000 Boards**

FASY

Document Digest

Design, develop, integration and support of a **universal printer grabber** system for **grabbing, modifying and redirecting any printer job** from any **unchanged application** in **all Microsoft operating system** environment (from DOS up to Windows 2003). The printer job (text or graphical) is marked in each page with a digest computed using a dedicated secure id hardware and based on document information automatically identified and retrieved by the system (such as author, date, subject, cost, etc). The target is to mark as original the document and to discover (checking the digest) any unapproved manipulated documents (e.g. invoices).
Deliverables of this system are: **TSR** for DOS, **VXD** for DOS, W3x, W9x, **Virtual Printer Driver** and **Printer Processor** for W9x, Wme, Wnt, W2k and Wxp managing all flavors of **EMF** for all systems. There're **thousands of installations** in Europe.

- **7x7x24**
- **80000 systems**

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