

Do .. While

While .. Do

Loop Init

Loop Init

条件を満たした!

チェックする

WHILE (TRUE)
ECHO

Loop Body

Loop Body

次の処理

While1 World in SIX parts

Part n.4

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

condition

FALSE

TRUE

Instruction



statement

Program continues...

Figure 1

FALSE

TRUE



繰り返す

次の処理



Some of the developed projects
for Big Companies
on telecommunication issue



While1

(www.while1.com)

**While1 main
customers for
Telco
developments:**



ITS-LAB Project

Development of new concepts on prototype platform for **ITS services, info-mobility and healthcare** to face problems related to **fleet control, urban center access control, persons and/or vehicles presence in defined areas**.

Prototype development includes trials on field on the involved aspects.

The development focus is composed by:

- Systems management and services full reliability and availability
- Security systems to avoid fraudulent access; reserved data protection (e.g. registered users data)

Software development platform realization in **WIZARD** and in **BEA Weblogic** environment. It allows application concepts realization “**workflow based**”. The concepts can access to Telco capabilities (SMS exchange, terminals localization etc.) interfacing dedicated software modules (named adapters). These adapters hide services access matters and simplify concepts development.

WIZARD and **BEA** choice allows the usage of a transactional, distributed and resilient environment; moreover, through “workflow based” development, it allows to build basic components (applications) re-usable in different contexts.

Base infrastructure (platform) has been tested via a realization of a group of prototypes in ITS info mobility and HealthCare: **TeleParking and ZAR (Regulated Access Zone), GeoFencing, Geo Server, WizHealth**. These concepts include User Interface developments: all Work-Flow data and operating semantics are available via web access.

Client applications interfacing user interface, work on heterogeneous devices: from **Symbian** base cell phones to **J2ME** ones, from dedicated devices to the ones installed on car production model (e.g. **Convergence on Fiat Cars Grande Punto**).



SPINA Adapters System

Analysis for the realization of a new version of a **services remotizer** (or **Adapters Services**) developed by third party. The system is used by **InfoMobility** applications in telecommunication. The new environment, named **SPINA (Service Pipe Innterface Automa)** has been developed using **Web Service** (Axis and BEA Service Bus) and is based on the following concepts:

Service Virtualization

Services are seen as generic concepts oriented to the matter instead of the device implementing them. Double layer Adapter / SubAdapter guarantees the higher concepts visibility without requiring the applications to be specialized to satisfy the requirements.

Application oriented

Provided services are applications oriented (not device oriented). Applications have simple interfaces and code is lightly affected by their use.

Single Sign On

There is a Single Sign On for all the available services. Applications do not see all access procedures required by devices. Using a dedicated configuration, a single login access gives access to all available services to a single user.

Distributed system

The system can be distributed on more servers. This characteristic leads to:

- *Load Balancing*: Services can be distributed on more systems to guarantee a high operations balancing
- *Resilience*: since services can be deployed on more systems, this can assure service continuity if some of them are offline

Scalable system

The system can grow (or decrease). Number and power of servers can change according centre needs.

Browsable system

It is possible to perform an automatic services discovery. The mechanism provides the chance to balance and distribute automatically jobs load. If a service is duplicated or tripled, it will be used trying to balance the load of the servers providing it. Clients, using browsing, can know available servers and the suggested one as the best to choose.

System monitor

All the entities composing the system can be monitored. On all the servers you can check working status of base and external used components.

Configurable/Tunable system

The system is configurable in all system access, security and load balancing related aspects.

100% Portable

All written code is portable on all common operating systems. So, it is possible to use servers with different OSS.

Urbano

Analysis and realization of a graphical application for mobile terminals (cell phones and palmtops). The project is an **Enforcement** procedure related to urban mobility application. It has been developed in **J2ME (midlet)** and the module allows to help a traffic policeman to verify the correct payment of checked vehicles. The module can send and receive **SMS/USSD**, send **photographs** to service centre and to receive **streets maps** via **Gprs**.

GeoServer

Analysis of a new service platform for **Geo positioning** applications (**GeoWeb**, **GeoFancing**) defined in experimental and production environments (e.g. Telecom Italia vehicle fleet positioning control system). The study led to a new services system definition that can be positioned as **Middleware**, developed using the most internal services level (**Telco Capabilities – SPINA**) and a group of modules able to satisfy **Scheduling, Check, Store and Alerting** policy. All the services are available on the network as **WebServices**.

Adapters Layer

Analysis and realization of a system providing a services set to export in order to build a service enter and applications in **Telecommunications and urban mobility** environment. The study led to definition of a new infrastructure based on a group of **Telco Capabilities** able to provide through **WebServices** a block of adapters exporting a device-independent interface for the following services:

Message System

Sends and receives message using a transmission system
Devices: **SMS, MMS, USSD**

Positioning System

Get an object coordinates using a positioning system
Devices: **Telecom NIMBLE, Cisco WiFi, Ericsson MPS, Embedded GPS**

Maps System

Maps download and handling (pushpins adding, areas definition etc.)
Devices: **Map Point, Google Maps, Via Michelin, Yahoo Maps**

Geo System

Vectorial maps handling and navigation (navigation, proximity points, streets in a polygon, areas and perimeters calculation etc.)

Devices: **SHP, JPOS**

Ipc System

IPC system handling among internal and distributed processes (messages passing)

Devices: **FIPA, JMS, MQSeries**

Payment System

It allows to perform electronic payment transactions

Devices: **PayPal**

Scan System

OCR and Pattern recognition system

Devices: **JavaOcr, TesserAct**

Network System

Network system handling (Cell Broadcast, Cell ID etc)

Devices: **Telco**

ipTv Microsoft

Activities performed inside ipTV project. The testing and evaluation of Microsoft IPTV edition platform has been focused on installation, configuration, handling and dedicated "Telecom world" applications integration.

The team was involved in prototypes project of final user services. The goal was to improve TV offer usability on internet platform. The activity was composed by analysis and development (in collaboration with a Microsoft technical team) and contacts with Marketing department to define new services requirements.

ipTv Alcatel

In parallel with the activity on Microsoft platform, other activities of study and prototype development on open platforms (e.g. Pirelli Box) based on Linux OS. Development of embedded applications to manage browser and communications among resident applications.



WANTS/NNEM

WANTS (Workflow AgeNTS platform) / NNEM (Network Neutral Element Manager) is an agent system based on **JADE (Java Agent Development framework)** development framework. The goal is to provide a layer of connection with DSLAM Telecom Italia equipments.

The needs that led to this project are:

- To have a single framework that substitutes, at least for some processes, the great number of tools currently active
- To provide a common network view, avoiding the use of specific element managers (different for any equipment producer) and to keep Service/Network inventory updated

WANTS architecture has a layer of agents, named **Resource Proxy (RP)**, dedicated to communication with physical devices. RP execute workflows (in XPDL standard) including operations with equipments logic. This is abstract in respect to configuration and communication equipments characteristics. RP are controlled and coordinated from agents that are involved in higher level functionalities.

WANTS offers a web interface that allows to manage services and equipments in vendor independent way. WANTS platform finished prototyping phase and now is in production and manages some Telecom Italia equipments.



TopSpin

This product allows routers configuration and management using a “service” concept. This entity represents a group of objects and properties to assign to the equipments.

Services can be created, modified, canceled or simply detected on routers. Indeed, the system can automatically detect equipments configuration, “service” presence and “service” correct application. The actions to perform to implement the service are defined via a program (currently defined in Java). TopSpin uses an **automatic Audit** system to recognize the applied services. This action is performed using **Cisco (IOS/CATOS)** routers configuration standard syntax based on XML schemas.

The project has been developed to manage more routers and interact with them, activating and deactivating “services” on groups of them. There are applications and interfaces to allow “services” targeting, application spooling and visualization of “services” status. Data handling is in **XML (SAX, DOM, etc.)** and is based on **MySQL** data base.

Physical communication with routers is performed using a **While 1 TSMART** dedicated version with Java interface. Human interface is web based. It includes a dedicated html communication system named **PPC (Pipe Process Communicator)** that allows full-duplex client-server communication. Client can require a method/class execution on the server while also the server can require a method/class execution on client. This system was studied to allow graphical applet based applications (using proprietary **JVD** product) to communicate in two-way mode.

Project target was also **OSM** project integration to realize all functionalities connected to software configuration and auditing on equipments (**UniGate, DCN-IP, DCN-R3**) composing TIM (Telecom Italia Mobile) IP network. The goal was to provide to the operators a way to support at least a part of the common daily activities concerning IP equipments configuration based on parametric description of a services group.

Managed network devices are Router (Layer 3) and LAN switch (Layer 2) by CISCO equipped with IOS and CatOS (switch only).

IP services handled are:

- Point to point Link on HDLC protocol
- Point to point Link on PPP protocol
- Point to point Link on FR protocol
- ATM Point to point Link
- Multilink PPP
- Loopback configuration
- VLAN
- Tunnel GRE
- ACL standard
- ACL extended
- HSRP

MTA

In **Telecom Italia Lab's** project named **MTA** for automatic remote **CISCO** router setting (developed by While 1) complete analysis and development of a new **graphical nodes and connection representation**.

The module is a **java applet**. It allows visualization both topological (on geographical maps) and virtual of all the entities composing administrated networks. It includes the editing of configuration with resource allocation directly on network graph. Since the implementation is based on **graphs** technique there is the chance to handle all routing properties with path visualization and routing choice according to network structure and channels load. Moreover the project includes real-time nodes status management. Applet receives from a server all the needed information to represent a synoptic chart including current operations on single nodes status.

Monres (Infracom)

MONRES is a Telecom Italia Lab research project for **real-time monitoring and data collection** of network resources via **SNMP protocol**.

While1 was involved developing some project modules (such as SCUBE poller, see below) and product porting on Windows and Linux (the original product run on HP-UX).

Linux MONRES version was sold to Società Autostrade (now INFRACOM) that required several customizations and developments. Some of them were implemented by While 1.

Finally, since Telecom Italia focus was research and not marketing of its projects, a deal between While 1 and them allowed us to directly manage product development and maintenance for Autostrade customer. This deal led to new developments including samples values collected from Marconi equipments interpolation, new objects representation, new data processing etc.

Poller Scube

Complete design and realization of a **SNMP poller** named **SCUBE** (**SNMP Shot Sentinel => S3 => Scube**). It is a distributed application able to collect information coming from systems and devices exporting them via SNMP protocol. The project was developed to replace the one included in **HP Open View** since it was too slow and barely scalable. Final product can work both on **Unix** and **Microsoft** operating systems with high performance, highly scalable, portable, completely SNMP compatible, using low amount of system resources and distributable on more systems.

Tsmart

Realization of a remote devices (**Routers, Host systems** etc.) automatic programming system. The module, named **TSMART**, is a control system providing a programming language and primitives allowing an easy way to manage a transmission with a system. The scope is to avoid the human interaction with an application with an automatic control of all data flow situations usually manually managed. It includes the definition of a scripting language, named **TQL** (**Transiction Query Language**). With TQL you can specify, easily and rapidly, interactions with a host system for all data exchange phases with tty and screen oriented applications.

Central equipments graphical control system

Development of a **complete control system** for telecommunication **Narrow Band Marconi** equipments. The project extends the preceding project developed for the same customer concerning **V5.2** board configuration. The board manages up to 16 physical 2 Mbit/s links in input that can remapped on 32 bi-directional links subscriber side. Each 2 Mbit/s is configured describing the ports (**ISDN/PSTN**) composing it. Board configuration is based on a command interface (message-set) remapped on a **SNMP** interface to allow remote access. The complexity of the project target required a complete review of board firmware and related command interface. It included the introduction of a group of "facilities" allowing the operator to execute off-line configurations, save complex configurations on file, perform automatic download, manage automatic switch from a backup board with service interruption and more.

Actor system

Development of a software module implementing an "**ACTOR**" interfaces to control and execute "noise" test on communication lines on equipment with individually addressable boards. The equipments belong to telephone exchanges working on **Narrow Band** connections. The project has its roots from a twin one already developed by While 1 for MV36BLT environment (in C language). The goal is to integrate ACTOR interface in a new OPEN_NSU environment JAVA based including a brand new architecture.

New version of Mat15 software

Maintenance and development of **Narrow Band** telecommunication equipments control and configuration software in Marconi **MAT15** environment. The product provides a graphical interface developed using **Motif**. It is based on ISO-OSI protocol for network communication with remote equipments.

SHDLS boards configuration system

Marconi SHDL boards configuration module via SNMP. It gives access to related line and ATM parameters.

Access Hub backup/restore system

Configuration backup and restore module. It works via telnet-protocol accessing to **Marconi Access Hub**.

Performance Monitor

Performance Monitoring for Marconi Access HUB equipments. Configuration and data collection module of performance data for STM1, E3/DSX3, ADSL, SHDSL boards and related ATM levels. Threshold levels configuration for each counter.

Vodafone



J2ME Test Suite

Support to definition of requirements, applicability, and certification of mobile services on **J2ME platform** before market release. Before putting on the market a new service, it is necessary to clearly define:

- Minimum software requirements (JSR needed by the service to support)
- Minimum of operating requirements (security domains, operator and third party certificates, working workflow with service interaction, device and network infrastructure etc.)
- Devices on the market that should host the service and with which user experience
- Next devices that could host the service

J2ME requirements definition

Collaboration with Vodafone Global board to define **requirements in J2ME platform** requested to the operator specifically for a device class in terms of version (production year) and market bracket (low, medium and high, game device or business device etc). Board is a team composed by operators coming from the countries in which Vodafone group operators (Italy, France, Germany, UK, Spain etc.). Requirements specification are defined in terms of:

- HW Requirements (heap memory display, keyboard, SIM, etc.)
- JSR standard to support (MIDP 2.0, PDA, MMA, WMA etc.)
- Specifications required in standard environment (clarifications)
- Specifications required outside standard environment (DRM, BT connectivity, etc.)
- User experience (messages, prompts, configuration, etc.)
- Interoperability (interaction between J2ME applications and other device clients, embedded or not, and/or with active or incoming calls)
- OTA (Over The Air provisioning)
- Security (domains, certificates, etc.)

J2ME new test procedures definition

Charge of procedures definition (test specification) focused to verify Vodafone requirements implementation on prototype devices in Vodafone portfolio and on devices already on the market. Procedures refer both on market standard test tool (**SUN TCK and JDTS**) and dedicated test suites. Management of technical relationship with all worldwide Vodafone Operator Company and all handset vendors for Vodafone (**Nokia, Motorola, Samsun, LG, Huawei** etc.)



Alcatel-Lucent

Lucent

Cell Association Pipe

Complete analyses to realize a module able to execute all provisioning phases to manage **Cell-HZ association** problem for **IN system** internally named **CAP (Cell Association Pipe)**. Definition of four main sections respectively responsible data capture (**connector**), processing (**processor**), distribution (**distributor**) and system control (**control**).

AAA Authentication, Authorization, Accounting

Complete analysis to realize an environment able to execute all phases known as “AAA” (**Authentication, Authorization, Accounting**) for subscribers working on internet through a WiFi system internally named **ACUBE**. The goal of the system is to monitor HTTP accesses via **WiFi hotspots** and corresponding to dynamically assigned IP by DHCP defined for the subnet to monitor. The main analyzed issues are related to access capture, user recognizing and security management. Access regulation was defined using Radius server usage.

Map Provisioning Gw Solutions

Complete definition of an environment able to execute all provisioning phases to manage **Map Provisioning Gw Solution** issue. The system allows manipulating all data required by **Wpr2 architecture** and the transport towards **OMX-P** systems using a XML interface and towards **Lucent eSM** systems via a Corba interface. Wor2 Provisioning GW was designed to implement functionality specifications of data distribution with the highest traffic optimization and robustness.

The component role is to receive and store in dedicated repositories, profiles coming from a system identified as Vodafone Upstream Provisioning Clients (CORBA interface); then to distribute all the information to all Network Elements defined in managed network. This phase will be executed perfectly synchronized with any Vodafone system change on its system.

StarSip project (with Telecom Italia Lab)

In StarSip-SeaSip project environment, development of some protocols (**MSRP**, **Diameter**) inside **SeaSip** stack. Full protocols compliance verification and code integration with pre-existing architecture.

CPM200 Shelter/Campale

Realization of a **Power-on and On-line Self-diagnosis** environment for **ITALTEL CPM-200** packet switching station. The project includes **test** definition and implementation related to **CPU** board, **RAM** board, **ROM** board, **I/O controller** and **EL controller**. There is also a hardware/software **interconnction self diagnosis** among the boards composing the system (some involved chips are **I80386**, **I82380**, **AMD8516**, **ZSCC8530**).



WHILE 1 S.r.l.
The measure of quality

www.while1.com

www.biospc.com

www.unix-drivers.com

www.ms-drivers.com

www.scsi-drivers.com

info@while1.com

Italy Headquartier : Corso Turati, 70 - 10134 Torino

Italy office : Environment Park Via Livorno, 60 - 10144 Torino Tel./Fax. +39 (011) 2257721

Italy office : ICO Centrale, Via Jervis, 9 - 10015 Ivrea (To) Tel./Fax +39 (0125) 641607

USA office: 405 El Camino Real #219 - Menlo Park CA 94025 Tel. +1 (650)317.19.74