

2009



Fucina di idee – Fountain of ideas

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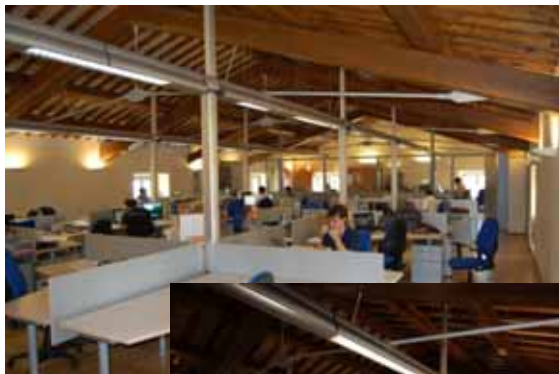
THE RESEARCH CENTRE



RESEARCH CENTRE IL PISCHIELLO

Pischiello – Centre for advanced research located in the heart of Umbria, by the Trasimeno lake in the district of Perugia, one of the most dynamic and avant-garde realities on national and international scale in electronic and electro-mechanic engineering sectors applied to automotive, aeronautic, naval, railway transport, aerospace fields and other high tech industrial sectors.

A real third millennium fountain of ideas set in a timeless environmental context, able to complete and promote the best in creativity.



MISSION

- To involve and **integrate** research activities with the industrial sectors.
- To promote this convergence through the “**verticalization**” of processes: research, development, industrialization, trade production and service implementation .
- To “verticalize” these processes: all gathered in **one structure**, located in a place encouraging new and strongly innovative ideas, project vision and team work.

VISION

The **mission** of Pischello is founded on a precise **vision**: the entrepreneurial development, the spreading of awareness and the strengthening of scientific and technological basis are achieved through synergistic relationships among the scientific community, the industrial world and the market.

PROFILE

The **profile** of Pischello Centre meet the requirements of a structure based upon these three elements (**industry, university, market**): a stable organization where these elements are always in connection in order to make a fast and continuous technological transfer possible. A steady organization where research results from the academic world are oriented towards applicative projects realized with the companies in order to give efficient answers to the always competitive demands of the markets.

The Centre operates on local, national and international levels even offering **consultancy and specific training to companies**.



CTS - Comitato Tecnico Scientifico Technical Scientific Committee

The Technical-Scientific Committee aims to be the first interface among the academic world, internal and external enterprises and potential clients. The CTS is the Centre's operational area whereby a constant technological transfer takes place to stimulate Pischello's growth strategies, by adapting them to market needs.



CENTRE & UNIVERSITY INSITUTE

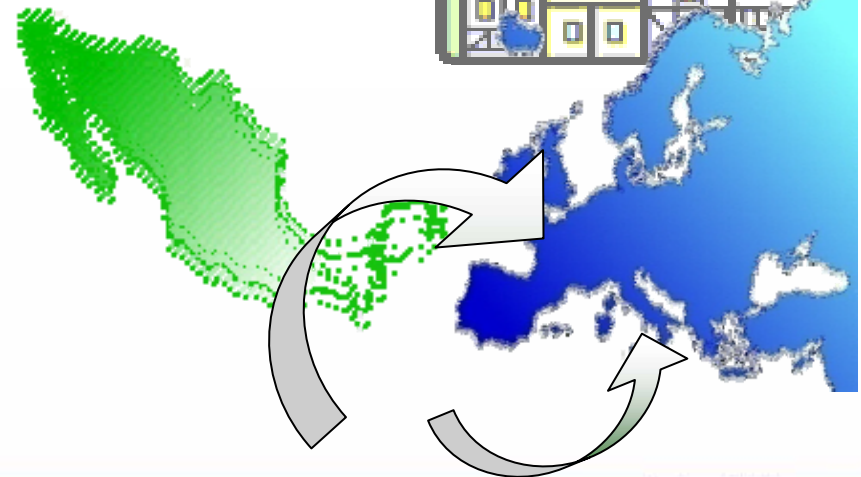
FIRST GOOL OF THE CENTRE:

To traslate the technological innovation of the university in product innovation and technical solution to satisfy the needs of the market.

Main collaboration and partnership:

- University of Perugia
- University of Padova and Pavia
- University of Torvergata (Roma)
- University of Firenze
- Fraunhofer Institute
- Giorgiatech Istitute of Technololy

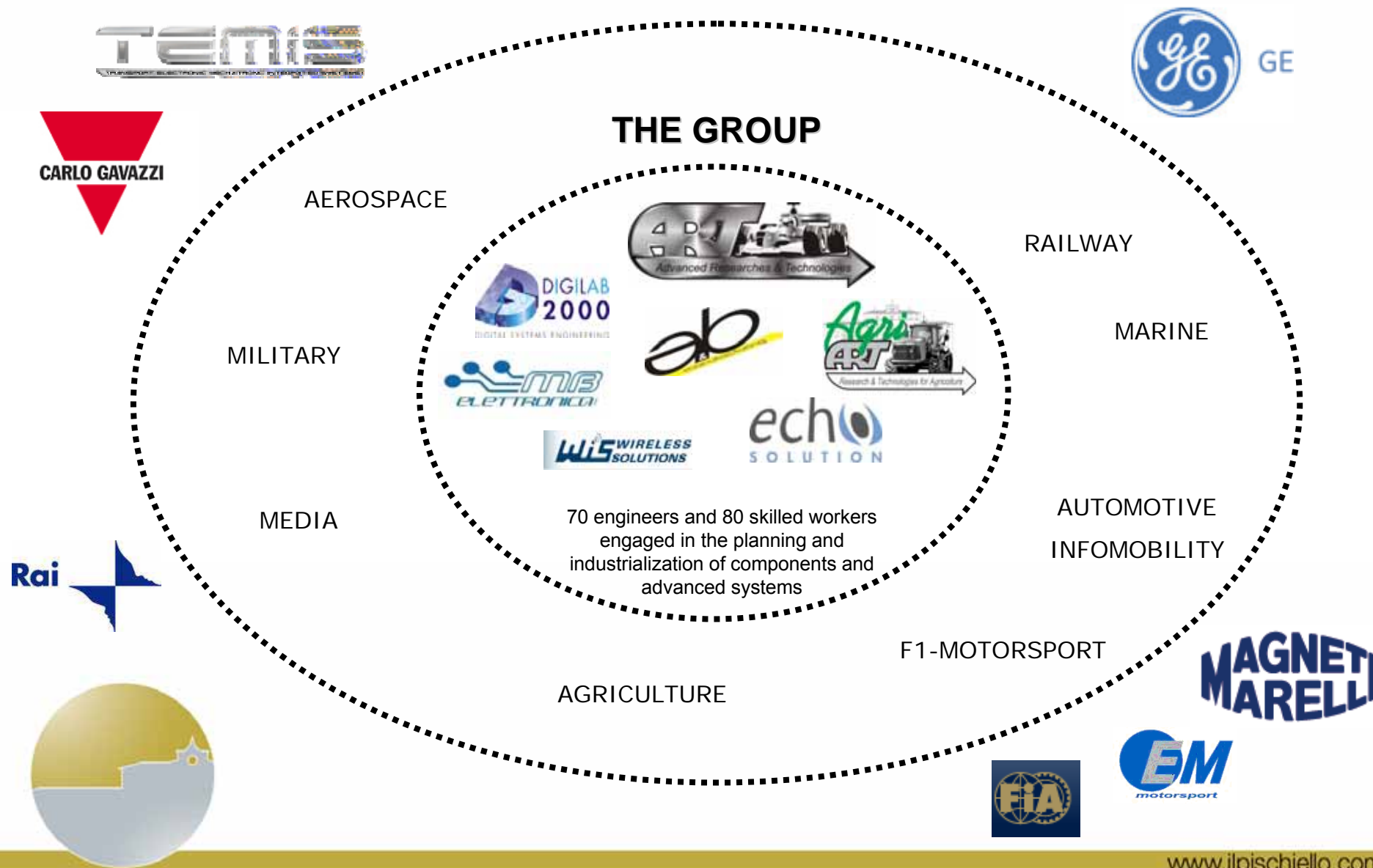
**World wide
Universities**



ART GROUP



PARTNERS & COLLABORAZIONI



SERVICES

The competences of the group are therefore structured on the customer's request in order to offer the following services:

- **research and innovation**
- **feasibility studies**
- **planning and development**
- **prototyping**
- **industrialization**
- **pre-serial products**
- **mass production support**
- **start up/ramp up**
- **training e tutoring**
- **recruitment**
- **after sale services**



LATEST PRODUCTS & CUSTOMERS

PRODUCTS	CUSTOMERS
Marshalling and race management for F1 Championship	FIA
ADR (Accident Data Recorder)	FIA
Telemetry systems	Magneti Marelli Motorsport
Flex (Fast Data Logger)	Magneti Marelli Motorsport
VTR 100 - UHF Transceiver	ITACO
Drive – Doppler radar identifier for vehicles	Autostrade S.p.A.
HW development for car navigator	Magneti Marelli S.E.
Application software for PND	Magneti Marelli S.E.
Hardware development for railways applications	General Electric
Tracking Container Box	Magneti Marelli S.E.



PRODUCTS (1/7)

WIRELESS SYSTEMS and RF SUBSYSTEMS

The experience in research, development and production of data transmission and management systems both for military and civilian applications has generated a technological and industrial know-how with benefits in many other electronic fields .

The latest examples of systems and subsystems developed are:

- **“ACTIVE” MICROWAVE SENSOR**

- CW radar in ISM band 24.150 MHz for traffic monitoring

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- **UHF VEHICULAR TRANSCEIVER**

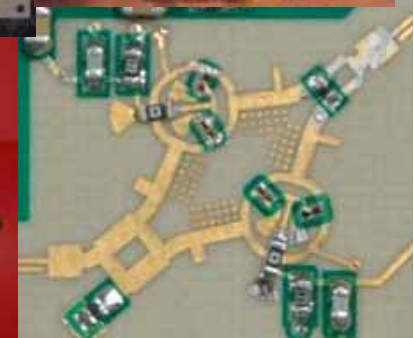
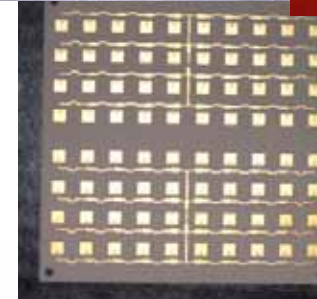
- Top-quality vehicular system designed for civil ATC communication for voice communications in the entire UHF band

- **MICROWAVE PASSIVE CIRCUITS**

- L band medium power amplifiers
- X band microstripe 4 ways splitter for beam forming network
- Ku band balanced mixer with microstripe rate race coupler

- **ANTENNAS**

- Planar patch antennas up to 30GHz
- X band waveguide antenna for microwave beacon



PRODUCTS (2/7)

EMBEDDED HARDWARE & FIRMWARE DEVELOPMENT FOR RAILWAYS APPLICATIONS

- SIL4 hardware real time systems design for signaling applications, using DSP FPGA and MCU;
- RTOS customization to match the SIL4 requirements;
- Validation & Verification for both hardware and software;
- Environmental testing and validation fulfilling standard requirements.
- Radar detection for obstacle detection in railways
- Radar beam forming algorithms implementation on embedded system



PRODUCTS (3/7)

EQUIPMENTS FOR MOTORSPORT

The companies at the Pischello Centre, by taking advantage of the business incentives deriving from Giancarlo Luigetti's thirty years experience in MOTORSPORT, have managed to interpret and respond to the demands of technical innovation for the gathering and transfer of information of the teams. Main features of the production proposed and successfully accepted by a restricted but significant market are:

- High technological innovation to guarantee maximum performance
- High level of quality and reliability as required by sectors standards
- Fast reply to product definition and modification requests maintaining performance and qualitative standards

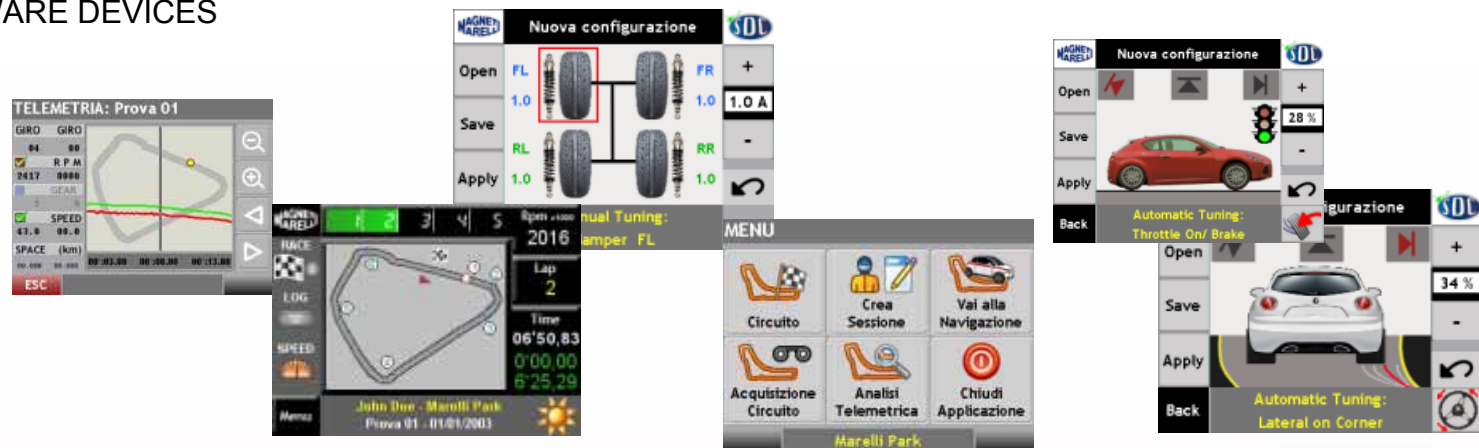
- MARSHALLING AND RACE MANAGEMENT FOR F1 CHAMPIONSHIP
- ADR (ACCIDENT DATA RECORDER) FOR GP2, F3 AND F3000 SERIES
- TELEMETRY SYSTEMS FOR F1 CHAMPIONSHIP
- FLEX DATA LOGGER (FCU-FPU) HIGH PERFORMANCE DATA LOGGER
- HIGH PRECISION LAP TRIGGER SYSTEM – RF SELF IDENTIFICATION SYSTEM
- POSITIONING SYSTEM FOR WRC
- POSITIONING AND TELEMETRY SYSTEM FOR A1GP



PRODUCTS (4/7)

AUTOMOTIVE APPLICATIONS

- **RADIO RECEIVERS**
 - TRADITIONAL FM RECEIVERS
 - DIGITAL RECEIVERS (SOFTWARE RADIO DEVICES)
- **PORTABLE NAVIGATION DEVICE (PND) HW & SW DESIGN AND DEVELOPMENT (CUSTOMER MAGNETI MARELLI):**
 - APPLICATION SOFTWARE BASED ON THE REAL TIME ACQUISITION, PROCESSING AND PRESENTATION OF THE ENGINE/ VEHICLE SIGNALS FOR ENHANCING THE CAR PERFORMANCE.
 - APPLICATION SOFTWARE BASED AND THE REAL TIME MONITORING AND THE CUSTOM CONFIGURATION OF THE ONBOARD ECUs VIA WIRELESS LINK.
 - APPLICATION SOFTWARE BASED ON INNOVATIVE TECHNIQUES FOR THE REAL TIME IDENTIFICATION OF THE DRIVE STYLE AND THE TRAINING OF THE DRIVER FOR REDUCING FUEL CONSUMPTION AND GAS EXHAUSTS.
 - NAVIGATION ENGINE FOR THE CALCULATION OF ECOLOGIC ROUTES.
 - HARDWARE DEVICES



PRODUCTS (5/7)

INFOMOBILITY

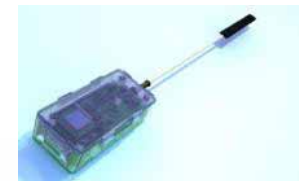
The competencies and experience of the group in products for automotive and transport fields are such to allow to provide and exploit services for tracking and monitoring of:

vehicles, merchandises and people for fleet management, traffic control, tourism, security, safety, both for private and public administrations.

The group is active in many projects and is able to design and delivery all parts of a service from devices up to the call centres.

Examples of developments are:

- **HARDWARE & SOFTWARE DEVELOPMENT FOR FLEET MANAGMENT APPLICATIONS BASED ON GSM/GPRS AND GPS TECHNOLOGIES.**
- **MODEM BOARDS:**
 - EMERGENCY CALL APPLICATIONS;
 - INTERNET CONNECTION THROUGH UMTS/HSxPA LINK:



PRODUCTS (6/7)

VIDEO- IMAGING & BROADCASTING

Another field in which university research and industrial business merged together is the Video-Imaging and Broadcasting. Starting in 1987 with a TI price as best University Project on DSP (A DVB-T Demodulator) the team designed and released many product in the Imaging / Video Field. Last step is D-Cinema with an official experimentation agreement with RAI in Italy and stable relationship with international player as Dolby Labs, Thales Multimedia, Grass Valley, Fraunhofer-Institut, TDF.

- **WIRELESS REAL-TIME DLP PROJECTOR (DiCOM)**
- **AGILE DIGITAL FILTERS FOR BROADCASTING (Teko Telecom)**
- **DVB-T EXCITER (ABE Telecomunicazioni)**
- **IPTV SYSTEMS FOR TELECOM OPERATORS (Teleunit, Fastweb)**
- **DVB-T / DVB-S IP RECASTING DEVICES (SAIET Telecomunicazioni)**
- **D-CINEMA BOARD (Thales, Fraunhofer IIS, RAI)**



PRODUCTS (7/7)

AVIONIC & SPACE

Experience in the design and manufacturing of specialized equipments, mainly matured for the equipments developed for the qualification flight of the VEGA launcher:

- **ACQUISITION & PROCESSING EQUIPMENT**

- Highly configurable system, used to manage 72 analogue inputs and 32 digital inputs (easily expandable).

- **DISTRIBUTION & SEPARATION EQUIPMENT**

- Configurable system, used to manage the battery supply and provide proper power pulses to the Separation Devices for the payload release.

- **EGSE**

- Complex systems composed of many programmable equipments, able to fully support the On Board equipments starting from the test and qualification campaign up to the operations at the launch site.



DIGITAL SIGNAGE



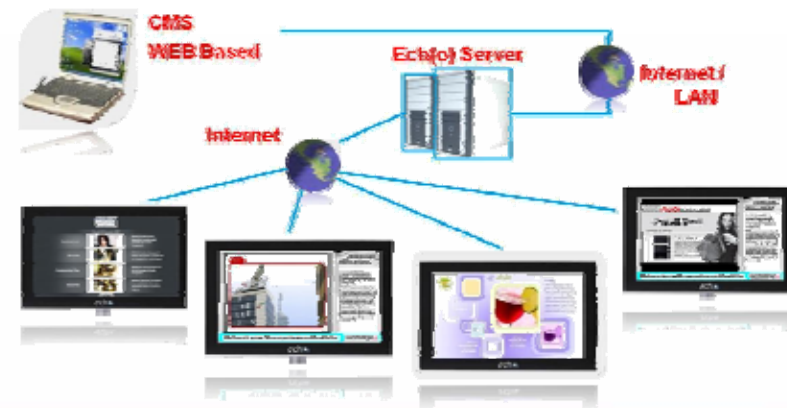
Ech(o) solution is an advertising digital signage system (fully designed inside Art Group) allowing to:

- manage, coordinate, update and visualize digital information, communication and /or promotion on a thematic channel
- send the communication directly to point of sale at the same time the customer is going to buy

BENEFITS & PURPOSE

- The different solutions Ech(o), through display located on national and/or international territory level or within its own business, allow communication in a dynamic, multimedia and real-time.
- It will also divest advertising spaces interesting with consequent economics benefits.
- With this system your PC connected to Internet will be able to run multimedia content for displays located in any part of the world. To update contents has never been so easy and so cost effective: only one click from your desk it is enough to update an entire display group. You can run real time and high quality contents. The system is compliant with the tools most used by graphic design professionals.

- **ECH(O) HORECA**
- **ECH(O) ADVERTISING SYSTEM**
- **ECH(O) ADVERTISING WEB PRO**
- **AUDIENCE MEASUREMENT SOLUTION**



AGRI-ART

Research & Technology for Agriculture

Agri-ART is the company dedicated to apply innovative technologies to provide products and services for the agricultural enterprises using the wide range of skills and knowledge of Art Group .

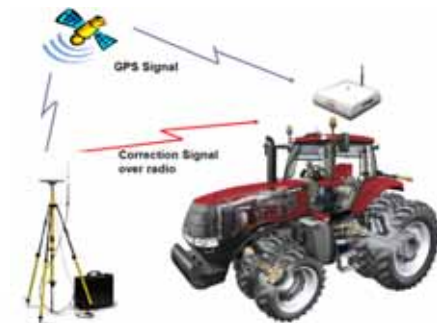
We can provide:

- Innovative solutions, products and equipments for the management of data, transmissions and commands to allow the centralization, optimization and control of agronomic activities of the farm
- Help desk, training and assistance for the technical staff of the farm together with remote control of agronomic activities

Our Products:

- **Precision Agriculture**
 - Equipment Management System and remote control of data transmission
- **Water management**
 - Remote Control System for water management "WIRRI"

We can provide **personalized innovative solutions** for all your needs starting from the planning phase to the development cycle up to the implementation and maintenance.



A&B Manufacturing



- EXTREMELY FLEXIBLE SYSTEM
- INTELLIGENT WAREHOUSE
- AUTOMATIC REAL TIME SOFTWARE
- HIGH FEEDER NUMBERS
- HIGH SPEED : 34.000 cph
- HIGH RESOLUTION VIDEOCAMERA
- HIGH RELIABILITY
- TIME WORKER REDUCTION
- MULTIPLE PCB LOADING



WHAT TO EXPECT FROM THE GROUP

- To integrate R&D, Engineering, Prototyping
- To reduce the new Product Introduction Time
- To improve the quality and the reliability of the final product
- To reduce the final product cost
- To increase the global efficiency from design to manufacturing.



EQUIPMENTS FOR MOTORSPORT



MARSHALLING AND RACE MANAGEMENT FOR F1 CHAMPIONSHIP



The Marshalling system, developed in conjunction with FIA is installed on all 2008 F1 and GP2 cars.

The system has been designed with the aim of increasing safety, provides almost full coverage operation for race control and management.

The system enables: individual car localization (via GPS), detection of slow or stopped car on (or off) track, traffic monitoring, communication of marshalling information to each car, transmission of crucial data from crashed car to Safety / Medical car, distribution of car position data to each team directly from Race Control to Pit, drives the electronic flags panels.



Car Positioning and Marshalling System Hardware Overview



CAR EQUIPMENT



GPS ANTENNA

Outdoor Device to be installed
close to pit Antenna



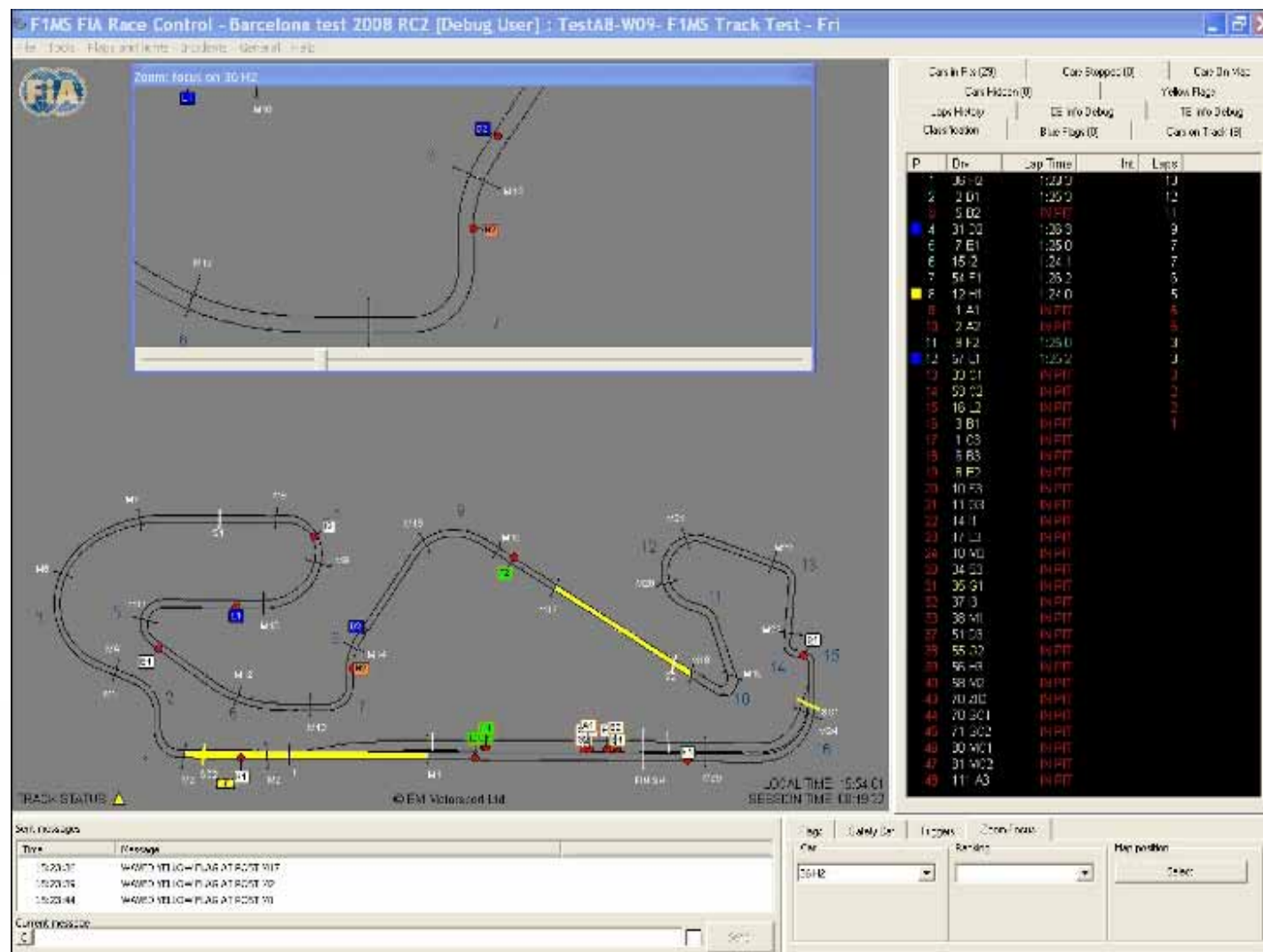
Race Management
Equipment (RME)



TX-RX
Antenna

- Indoor equipments made of PC Server and other racked units;
- 1 Pit aerial for all cars;
- 1 RME for all cars;
- Short RF loom to install;
- Ethernet link between outdoor and indoor devices.





ADR (ACCIDENT DATA RECORDER) FOR GP2, F3 AND F3000 SERIES



The product is a cost effective accident data recorder; it is targeted toward rally, touring cars and single-seater formulas. It is already installed on GP2, Formula 3 Europe and for the next year is planned to be installed in DTM and A1GP and others.

Data downloaded from the ADR can be exported to MATLAB or CSV format for in-depth analysis.

Main Features

Hardware:

± 150G tri-axial internal accelerometer, sampled at 1 kHz, 12-bit resolution.

± 300 °/s internal gyro, sampled at 1 kHz, 12-bit resolution

100 Mbit Ethernet link for data download

Ability to continue logging when disconnected from external supply, for up 2 minutes using the internal backup power supply.

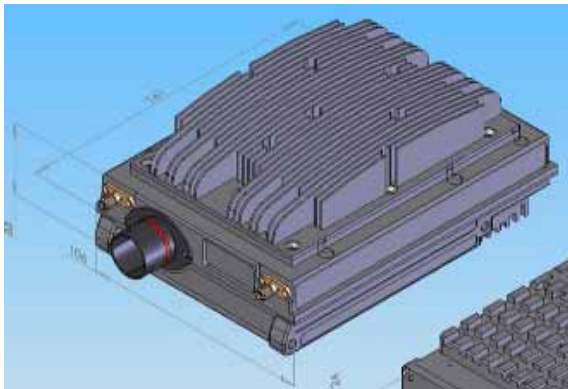
Software:

Ability to store 10 complete accident buffers based on accident detection algorithm



TELEMETRY SYSTEMS FOR F1 CHAMPIONSHIP

The system is based on a one-way wireless data carrier in the GHz frequency band (WBT=Wide Band Telemetry).



MTX (on board radio transmitter):

- Modes of operation: single or double channel;
- Frequency: 1.2-1.4 GHz and 1.6-1.7 GHz;
- Bit rate per channel: 810 kbit/s (net);
- RF output power per channel: 400 mW - 5 W (with self-protection);
- Connectivity: CAN, ARCNET;
- Coverage: full over the tracks, with the help of data buffering techniques;
- Temperature: up to 80 °C;
- Mechanicals: 102x141x33;





The system includes the unit at the pits for the data stream RX and distribution to the control stations for real time analysis.

GRX (ground radio receiver):

- Configuration: 19" single rack unit per car;
- Modes of operation: single or double channel;
- AGC: -15 to +35 dB gain;
- Sensitivity: -80 dBm;
- RSSI indication: from -90 to +5 dBm with ± 2 dB precision;
- Connectivity: 2 Ethernet 100 Mbit;
- Configuration: remote control of the performance by the user;



FLEX DATA LOGGER (FCU-FPU) HIGH PERFORMANCE DATA LOGGER

The system is based on a distributed architecture, acting as a hub in a telemetry system for automotive, military, aerospace applications.



FLEX Central Unit:

- CPU Processing: 400 MHz;
- Data storage (Compact Flash Card): up to 8 GB;
- Data throughput: 1 Mbyte/s;
- Acquisition Frequency: up to 1 kHz for standard channels, up to 100 kHz for fast channels;
- Acquisition lines: CAN, Arcnet, FlexRay;
- Download: 1 Gb Ethernet;
- Basic sw: Linux O.S.;
- Mechanicals: 98x82x30;



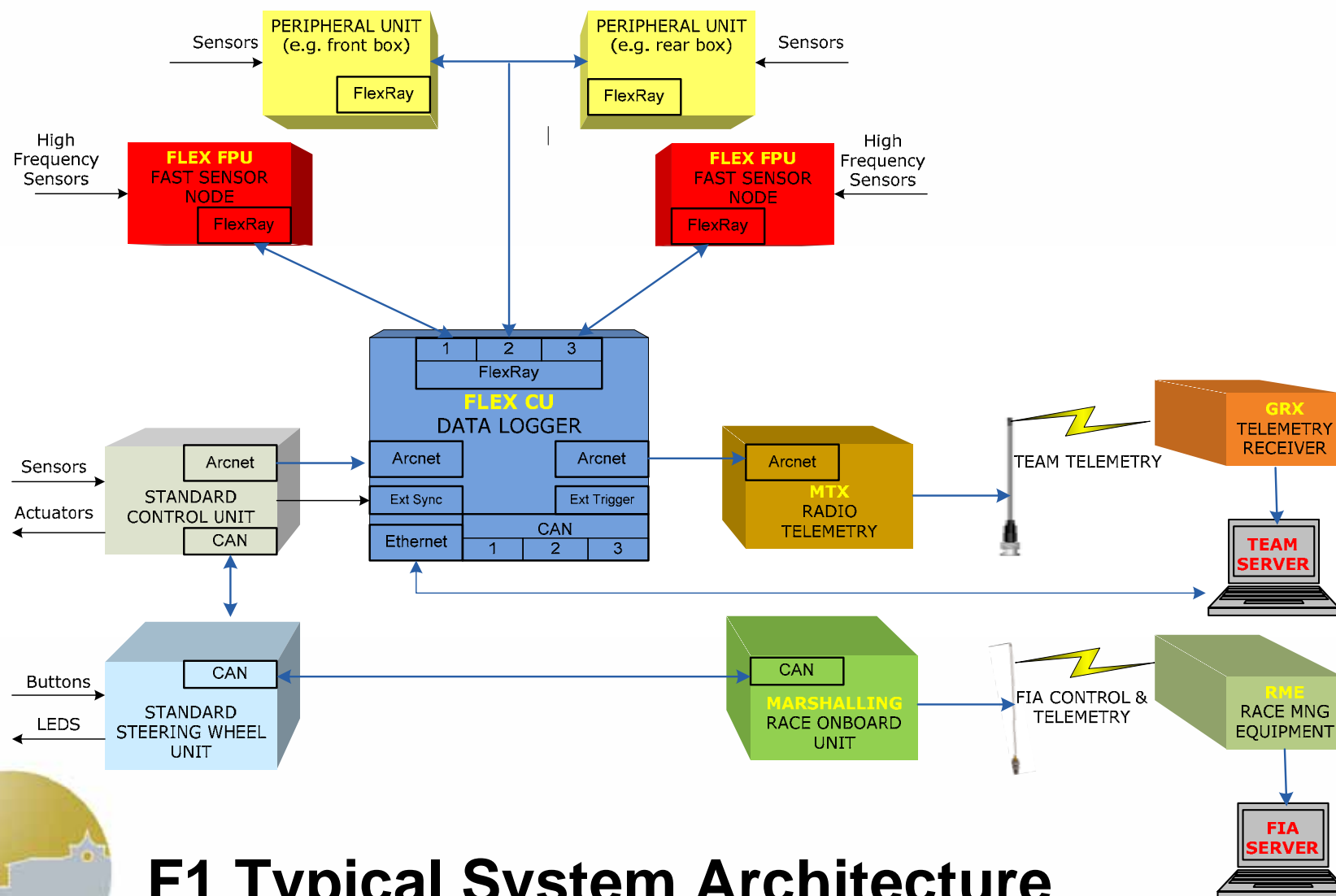
The system can include light and small sensor nodes that fit the acquisition of high frequency signals.



FLEX Fast Peripheral Unit:

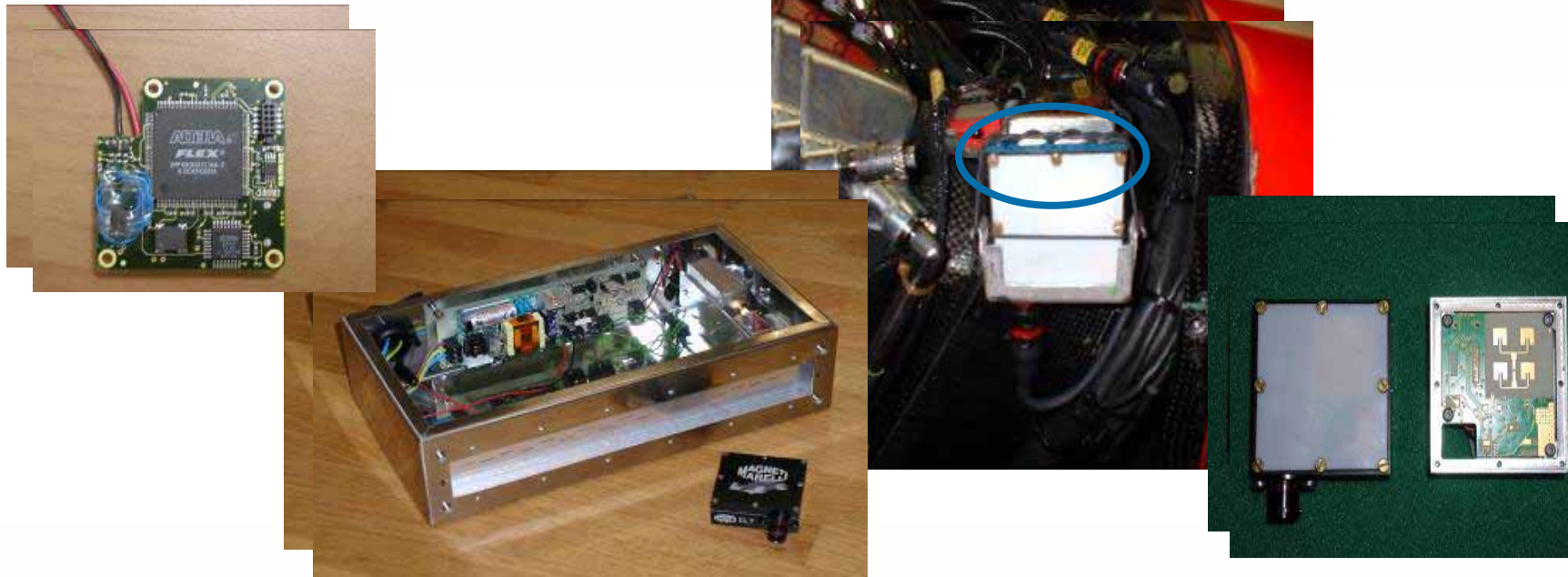
- CPU processing: 150 MHz;
- ADC: 5 channels @12 bit;
- Sampling frequency: 100 kHz;
- Sampling trigger: synchronization on external signal available;
- On-board digital filters: decimation to 50 kHz, 25 kHz, 12,5 kHz;
- Configuration: area in E2PROM for the download of user parameters;
- Data logging: real-time transmission to logger on FlexRay.
- Temperature: up to 115 °C;
- Mechanicals: 60x86x21;





F1 Typical System Architecture

HIGH PRECISION LAP TRIGGER SYSTEM – RF SELF IDENTIFICATION SYSTEM

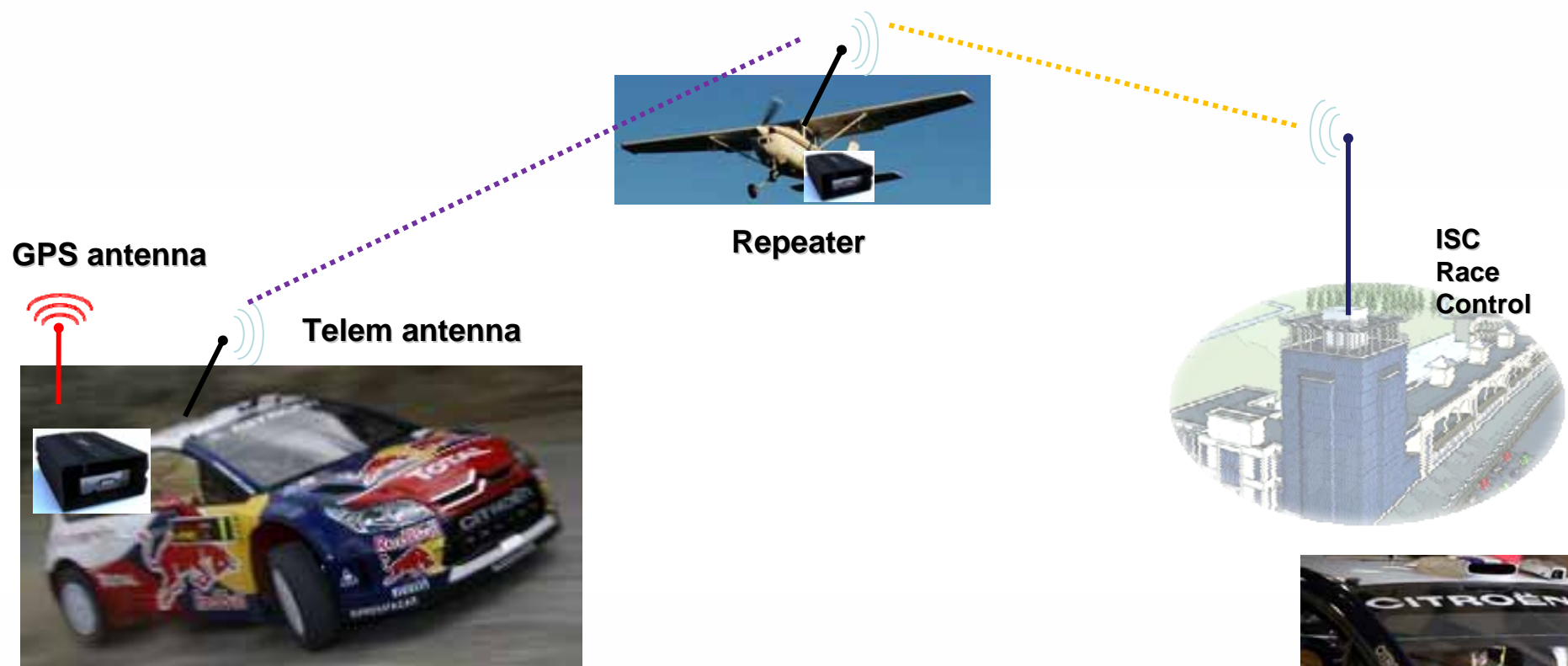


Codified synchronization devices with very high precision and reliability (immunity from wrong target, loss of goals, etc.)

The system operates in Ku band, and all HW and SW components are internally developed and produced, Radio Frequency / Intermediate Frequency / Base Band circuits, power supply, control circuits, programmable logic, aerials



POSITIONING SYSTEM FOR WRC



The system is a bidirectional modem able to transmit a GPS information of the rally cars on the track race. The modem acts as a translator between an RS232 interface and an RF signal.

This modem has been developed by ART for Magneti Marelli and it is used in a TDM application where the negotiations of the TDM slots are done by the software running in the ISC main board of the telemetry logger this board acquires also a GPS info from Trimble module.



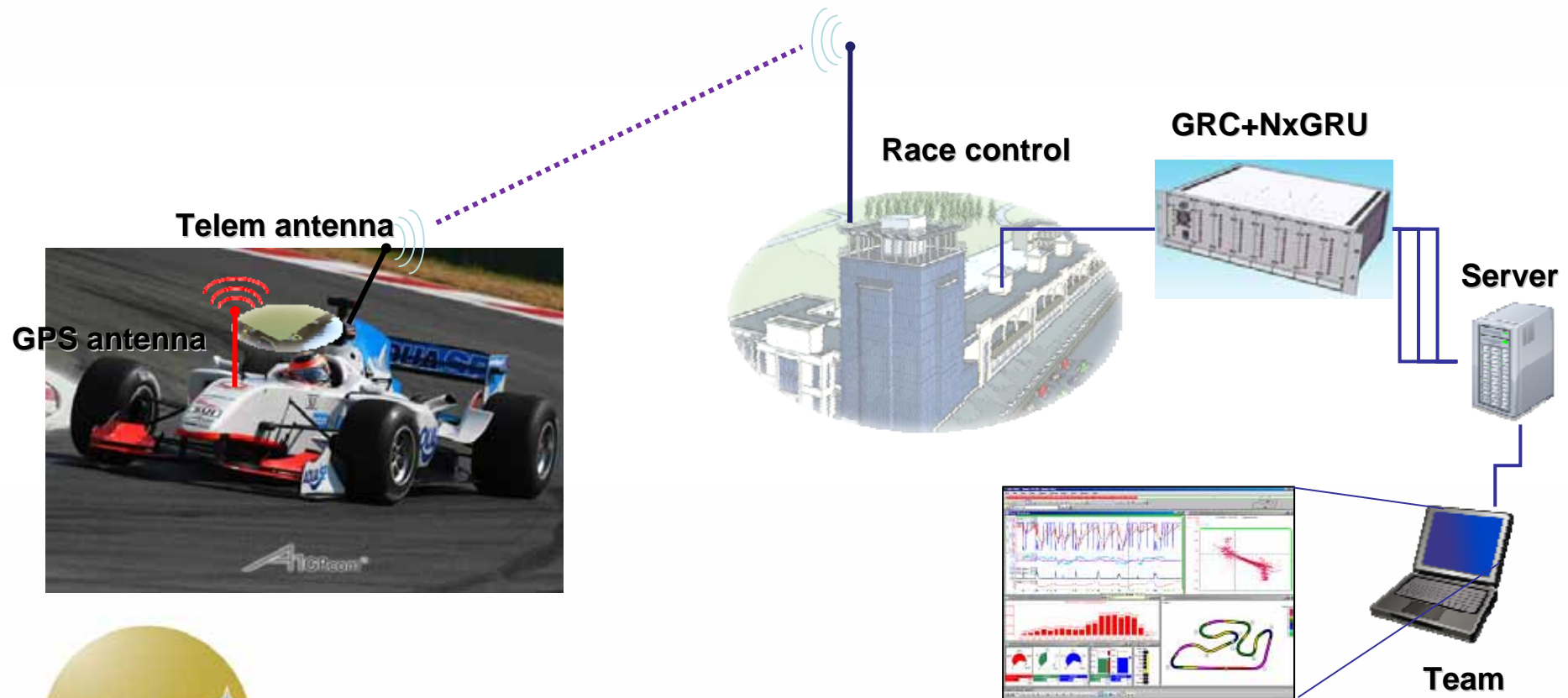
**ISC telemetry
box**



The CAR MODEM transmits on air at 3W maximum power with 4RC-FSK type of modulation. The operating bandwidth is 450-464MHz.



POSITIONING AND TELEMETRY SYSTEM FOR A1GP



The system is based on low datarate unidirectional radio designed for centralized telemetry purposes and race supervising that is able to manage up to 56 simultaneous cars.



A1GP-CGR. Car GPS Radio is a real-time telemetry on board device, capable to transmit data to the pits at a rate up to 5Kbit/s via an RF signals in the 387÷480MHz range. The CGR is also equipped with a GPS receiver that could be used to monitor the absolute car position over the ground.

The CGR can be fed with telemetry data to transmit from the on board data loggers via a single standard CAN line; management of the data streams is custom defined and developed by ART. Once received data are coded, encrypted, modulated and transmitted on air at 3W maximum power (in case of optimal device cooling).



A1GP-GRU. Ground Receiver Unit is a real-time telemetry receiver fitted into a standard 3U/10HP rack plug-in unit. The GRU is capable to receive data at a rate of up to 5Kbit/s via an RF signals in the 387÷464MHz range.



A1GP-GRC. Ground Receiver Cabinet is a standard 19' rack cabinet able to contain up to 1 power supply unit GRC-PSU and up to 7 ground telemetry receiver GRU. All signals, such as RF connection and power supply distribution, are routed in the backplane PCB allowing easily unit exchange, and hot-swapping (only for receivers).



AUTOMOTIVE & INFOMOBILITY



DAB/DMB Software Radio Receiver

A software radio receiver is designed to use DSP algorithms to perform baseband decoding for radio environment. It is very easy to update the DSP firmware to match a wide range of applications based on DAB standard.

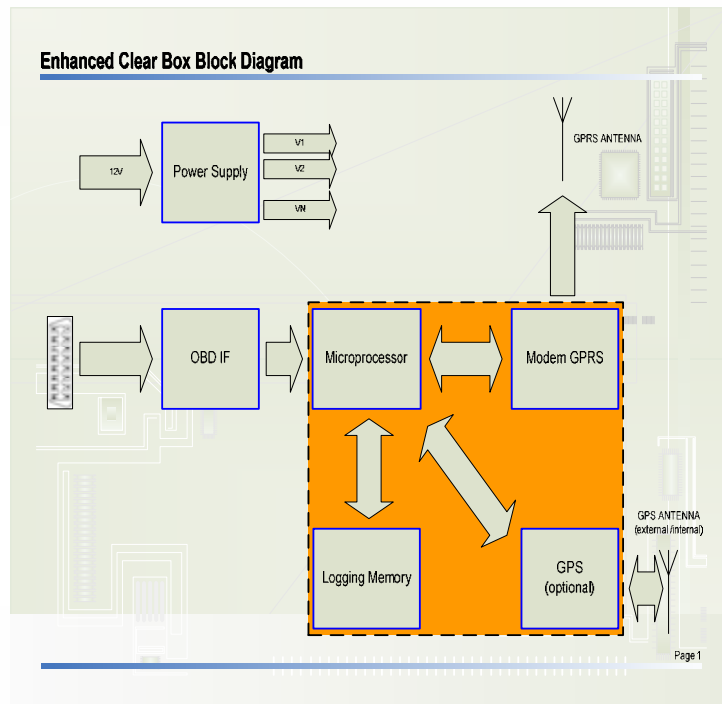
This product is able to provide a wide range of functionalities (ex.: platform for entertainment data stream and for broadcasting of informations about traffic conditions) in an very high integrated and flexible hardware solution that is embedded very easily in automotive applications.

Technical Specifications:

- Designed for DAB/DAB+/T-DMB audio and video reception
- VHF-Band III / L-Band
- Video (ITU656) and Audio (I2S) Output streaming
- Compressed Video Transfers from Host (High Speed SPI)
- Serial Interface for Control
- Baseband Decoding based on dedicated DSP Algorithms



OnBoardDiagnostic BOX



OBD Box is an electronic device designed to be used inside a vehicle.

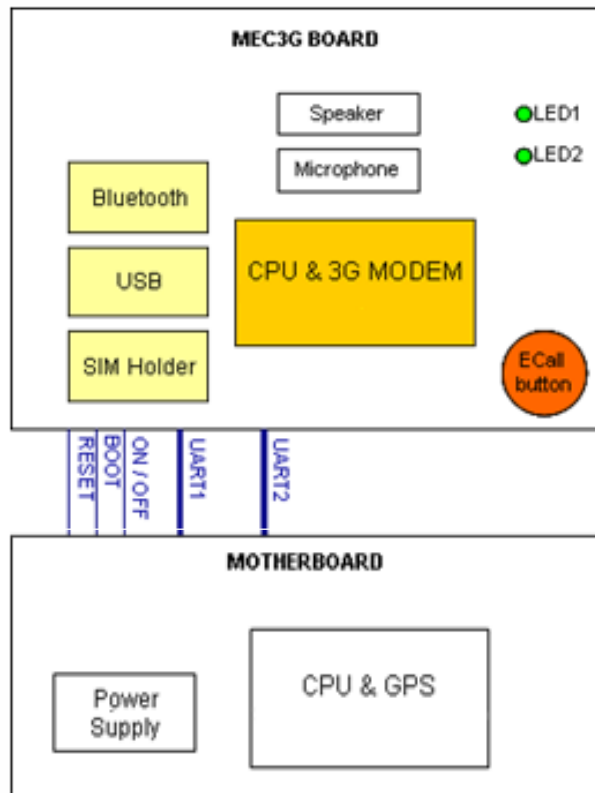
It is interfaced with the OBD port of the car, using data coming from sensors to define the car status and the characteristic of the driver's style. This is done with the help of different kinds of SW algorithms developed by ART.

This device is able to fix the position of the car (GPS module embedded) and to calculate the partial trip distance also in absence of the GPS signal, using a 3-axis accelerometer and a proprietary SW algorithm.

All these informations are then sent via GPRS to a central server to be used for different goals, like assurance statistics, traffic-monitoring, eco-information to the driver, etc...). It is possible also to log all these informations inside the device for delayed transmission.



eCall 3G Modem (MEC3G)



MEC3G is an electronic device designed to be used inside a vehicle to provide eCall functionalities and Internet connection to the car.

eCall is an European standard that has the goal to integrate into the car an emergency call system that, triggered by a particular alarm (ex.: airbag explosion or manual request by pressing a button), can send an audio call and an SMS (with the GPS position) to a Call Center.

With a 3G Modem inside the box, it is possible also to share 3G (UMTS/HSDPA) **Internet connection** inside the car (ex.: for infotainment system or hand held portable devices), using standard interfaces like BlueTooth and USB2.0

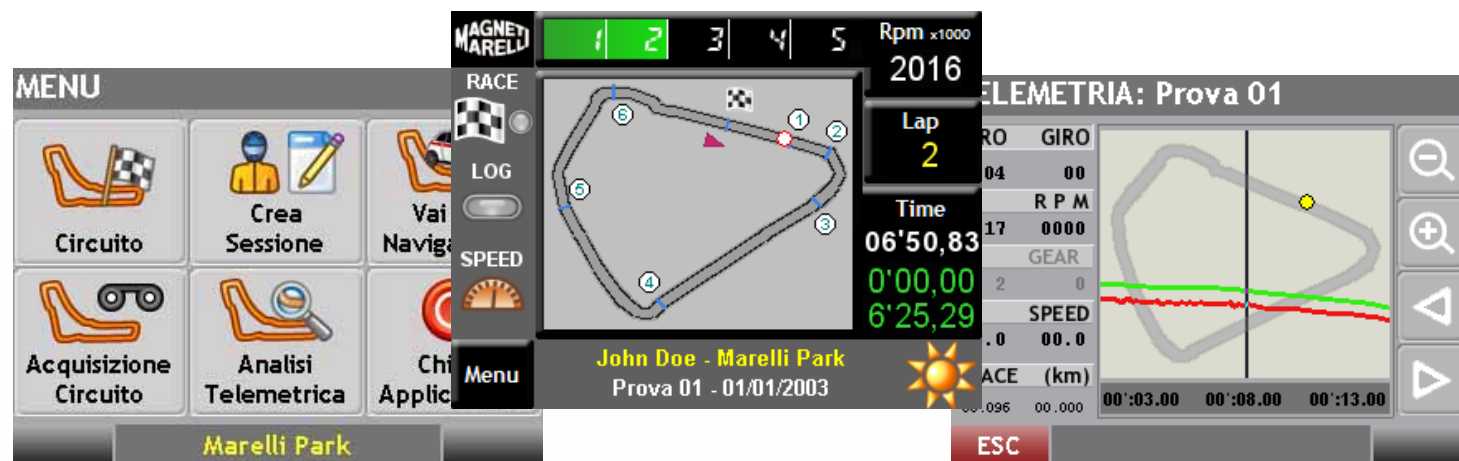


PND(Portable Navigation Device)

PND is a Magneti Marelli product, promoting a high level of integration with the onboard electronic system; with Bluetooth link it can exchange data with “Blue&Me”, the telematic unit that has full access to CAN network.

PND Motorsport is a special embedded application (on WinCE O.S.) that offers a set of functions supporting the driver in monitoring and enhancing the performance of the car:

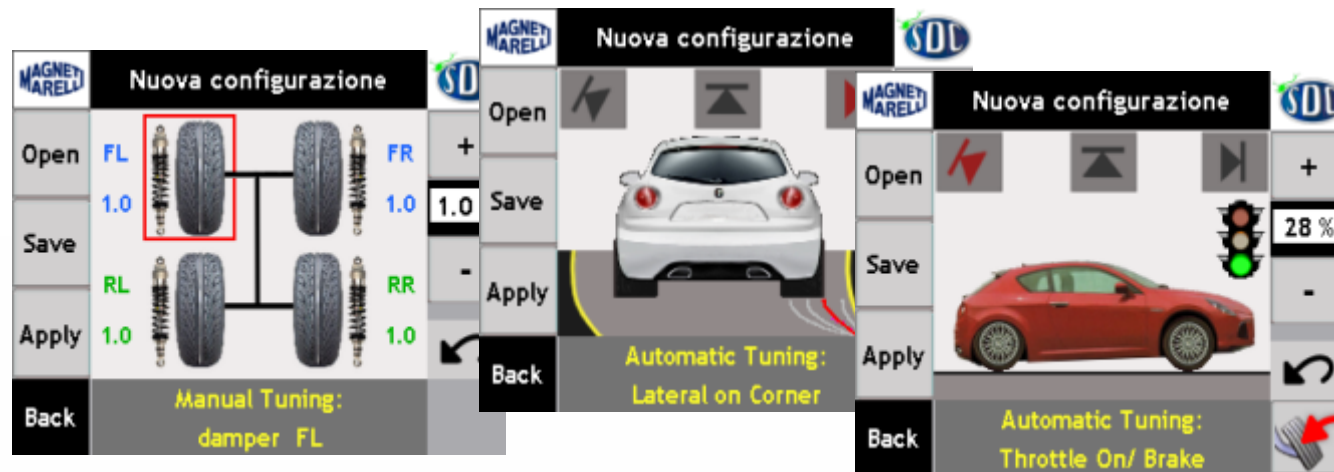
- Localization on the track and lap time calculation;
- Data logging and data analysis;
- Audio notifications (also according to rally standards);
- Track learning;



PND(Portable Navigation Device)

PND Hipertune is a special embedded application (on WinCE O.S.) that offers a set of functions supporting the driver in monitoring and enhancing the semi-active dampers control:

- Creation of custom profiles for the open loop control;
- Creation of custom profiles for the closed loop control;
- Application of factory or custom setup via remote requests;
- Improvement of dampers control with the support of navigation data and functions;



PND(Portable Navigation Device)

PND Eco-Nav is a new function supported by the route-planner; it is conceived to identify the best route to destination, following the application of criterions based on fuel saving and pollution reduction.

To achieve its goals, the navigation engine considers all the elements that can affect the efficiency of the process for the conversion of engine power. The decisional process will access the cartography and consider some features of the roads and the traffic regulations, assigning an ecological weight to each of them and finally calculating the overall "green" score.

A preview of the fuel consumption is also calculated and presented.



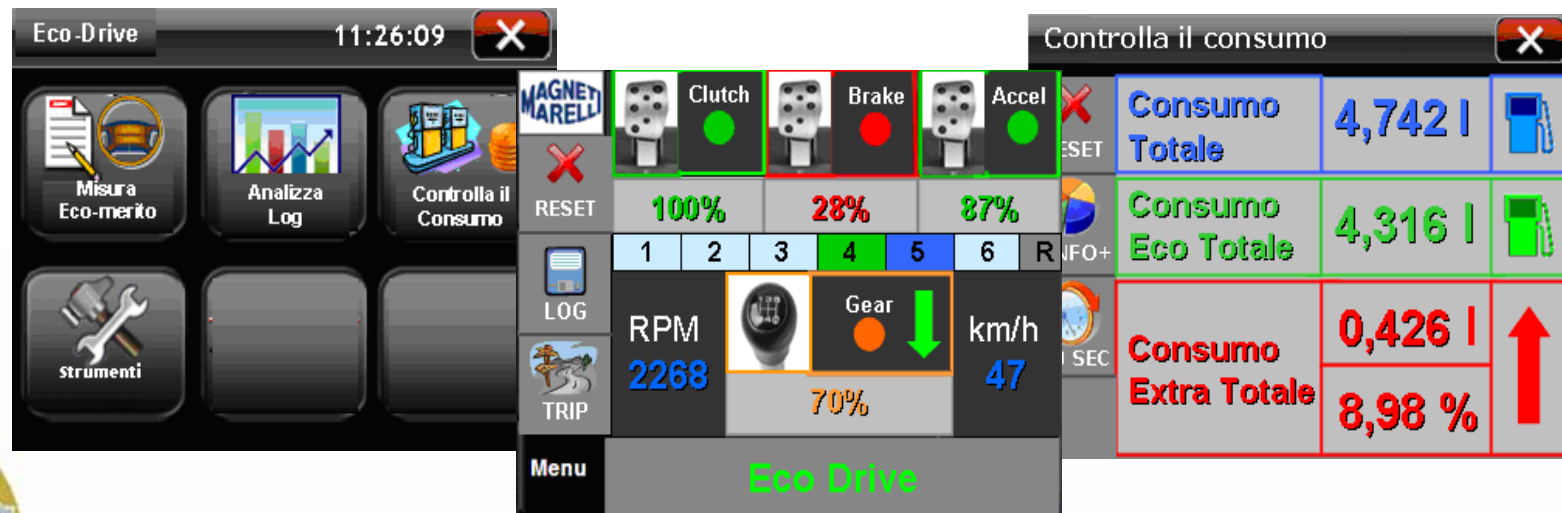
The screenshot displays a navigation application interface. On the left, a 'ROUTE COMPUTING OPTIONS' menu is open, showing three radio buttons: 'Fastest', 'Shortest', and 'Eco route' (which is selected). Below these are five checkboxes: 'Enable motorways', 'Enable ferryboats', 'Enable shuttles', and 'Enable unpaved roads'. At the bottom of the menu are 'Cancel' and 'Ok' buttons. To the right of the menu, a digital clock shows '12:25'. Further right, there are two panels comparing route options. The top panel, titled 'Fastest', shows an ETA of 13:20, a distance of 60 Km, a time of 0:55, a speed of 0 Km/h, an estimated consumption of 5.44 l, and an eco merit of **. The bottom panel, titled 'Eco route', shows an ETA of 13:21, a distance of 66 Km, a time of 1:01, a speed of 0 Km/h, an estimated consumption of 4.83 l, and an eco merit of ***. Both panels have a right-pointing arrow next to the eco merit. At the bottom of the screen, a status bar shows 'Menu' and 'JUVISY-SUR-ORGE'. A small circular icon with a yellow and blue design is visible on the left side of the screen.

PND(Portable Navigation Device)

PND Eco-Drive is an application aiming at the real-time identification of the driving style and the measure of the ability to control the car in an ecologic and economic way.

It provides a set of eco-merit indexes that help the driver to correct his habits and improve the overall efficiency of the vehicle:

- “Gear eco-merit” (checks gear selection and includes a gearshift indicator).
- “Brake eco-merit” (identifies excessive braking).
- “Acceleration eco-merit” (measures the engine efficiency at the working point).
- “Clutch eco-merit” (captures the unnecessary actions over the clutch).




Radar in band ISM@24 GHz

Voltage supply [V]	8-32 Vdc
Absorption @12Vdc [mA]	min 100, typ 110, max 120
Temperature Range [°C]	-40°C;+70°C

Conformity	CE, EN300440, EN301489
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	Description	Notes
Antenna	Patch microstrip Antenna 9 ° x 18 °	9° Horizontal 18° Vertical
Sensor	Stereo Doppler-Radar (channels I/Q)	
Work frequency	24.125 GHz, K-Band	
Output power	100 mW EIRP	
Detectable direction	Single direction, in approach or in departure	Can be selected
Detectable speed range	0,5-255 Km/h	
Measure precision	v < 120 km/h: ± 2 km/h; v > 120 km/h: ± 2 %	
Range	Adjustable on 2 levels: ->= 270m ->= 160m	Can be selected through comand. Default (>= 270 m)
Interface I/O	RS232, relais, available on demand RS485 or serial wireless bluetooth	
Supported Bit rate	RS232: 9600 - 57600 Baud (can be arranged)	Default 9600 baud
Parameters RS232	8 bit data, 1 bit stop, no equality bits, Xon/Xoff	
Working conditions	Counting: speed vehicle detection in the cone of the antenna Tracking: speed vehicle detection in the cone of the antenna	
Format of output data	ASCII: -counting mode : one record per vehicle [date];[time];[speed];[lenght];[gap];[CR];[LF] -tracking mode: [speed in km/h]...[speed in km/h];[CR];[LF]	X = can be adjusted N=detected vehicules in X seconds MV=medium speed of vehicles ML=medium length

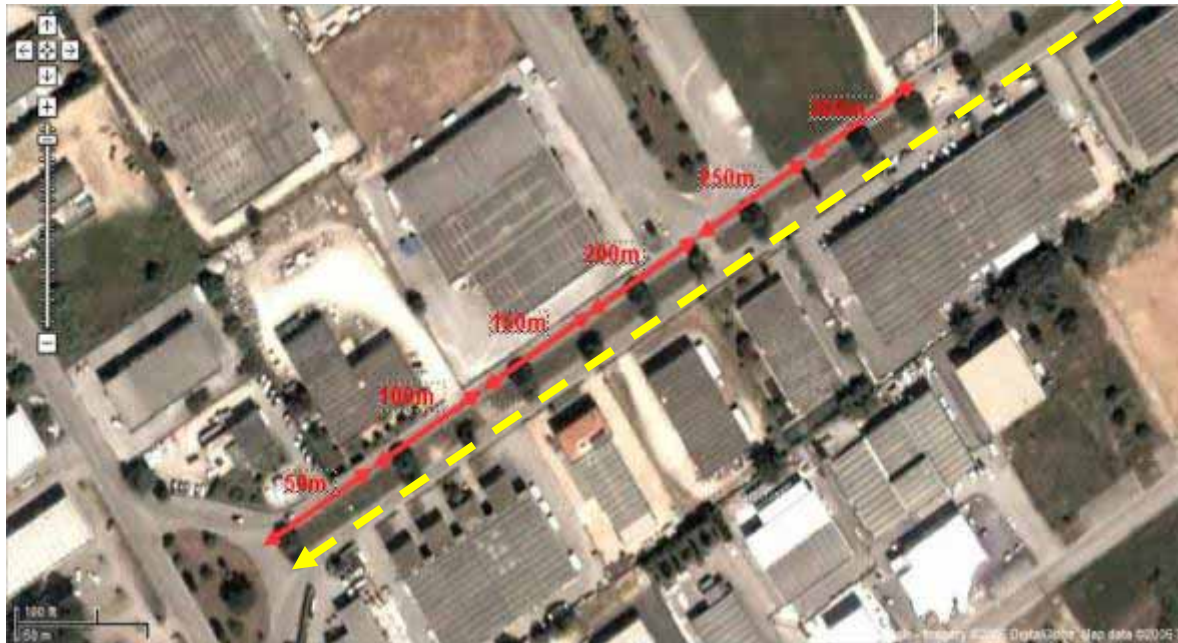


<p>Application</p> <ul style="list-style-type: none"> •Numeric speed displays •Length and speed estimation of the vehicle •Sensor for variable message signs (VMS), Inter-vehicle distance and speed warning signs 	
<p>Product description</p> <p>The device is a K-band microwave stereo doppler radar sensor for the speed measurement and length estimation of vehicles.</p>	
<p>Working principles</p> <p>The device has two different working modes: tracking and counting. In the tracking mode the visualization of the speed of the vehicles is possible even from a long distance (300/400m) with small aperture angles. When the radar is set in this mode, it is able to detect and show in real time the vehicle speed. In the counting mode the speed of the vehicle and the time interval between consecutive vehicles can be shown. In this mode the sensor is typically mounted with an horizontal angle of 45° with respect to the road at short distances. Side fire mounting and overhead mounting for lane selective measurements are possible.</p>	<p>Key features</p> <ul style="list-style-type: none"> •Speed and distance measurement •Counting of vehicles •Profile (length) measurement •Inter-vehicle-gap time •Real Time Clock •Real time data output by RS232, RS485, relais •Internal 4Mbit flash data memory



Doppler Radar in ISM band (24 GHz)

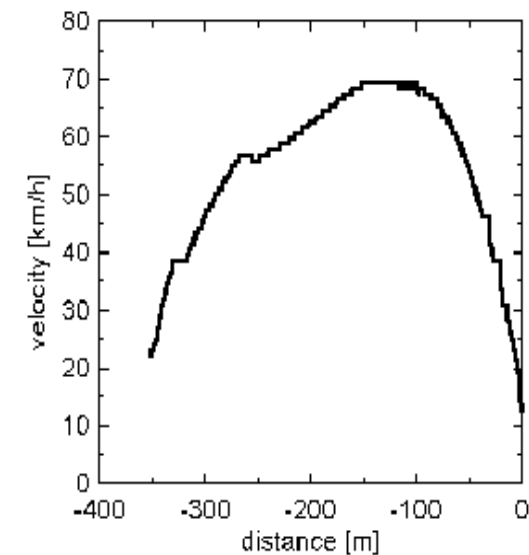
“Tracking” condition



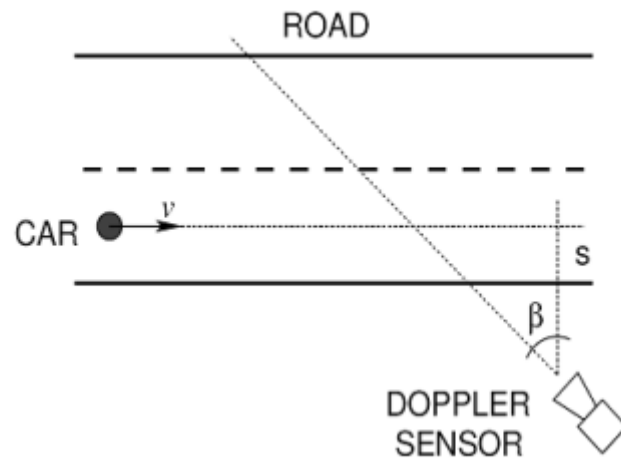
An example of scenario used during the test phase to evaluate the capability of “tracking” system: in yellow the direction of the vehicle



The radar showed a capability to detect and follow the moving vehicles at 350mts. distance



“Counting” Condition (I)



In case of an antenna infinitely directive ($\alpha_{3dB}=0^\circ$), the Doppler shift is dependent on the pointing angle β :

$$f_D = \frac{2f_0 \sin \beta}{c_0} \cdot v$$

Time t_c during which a car crosses the antenna range is given by:

$$t_c = \frac{l}{v}$$

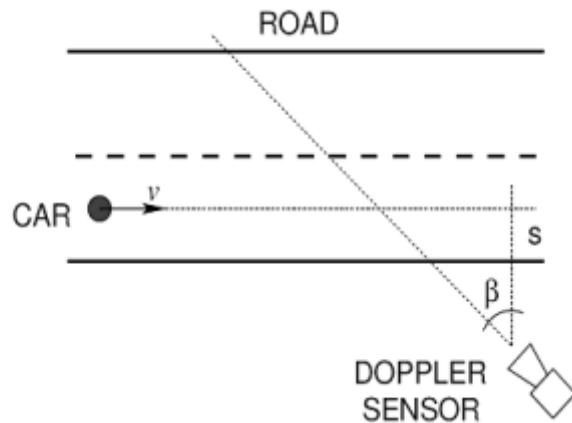
Number of doppler impulses N_D will be given by:

$$N_D = t_c \cdot f_D = \frac{2f_0 \sin \beta}{c_0} \cdot l$$

- The “counting” condition is used to determine the length of a moving object crossing the antenna range
- This kind of measure is particularly useful in traffic statistics as it allows to count the number of vehicles in transit and class them basing on length, by counting the number of doppler impulses given by the vehicle in transit.



“Counting” condition (II)



In case of an antenna with θ_{3dB} different from 0° , we have an effect of an apparently increase of length of the target of value l_F :

$$l_F = S \tan\left(\beta + \frac{\theta_{3dB}}{2}\right) - S \tan\left(\beta - \frac{\theta_{3dB}}{2}\right)$$

With S the distance between the position of radar and the “motion line”. We have therefore.



$$N_D = \frac{2f_0 \sin \beta}{c_0} \cdot (l + l_F)$$

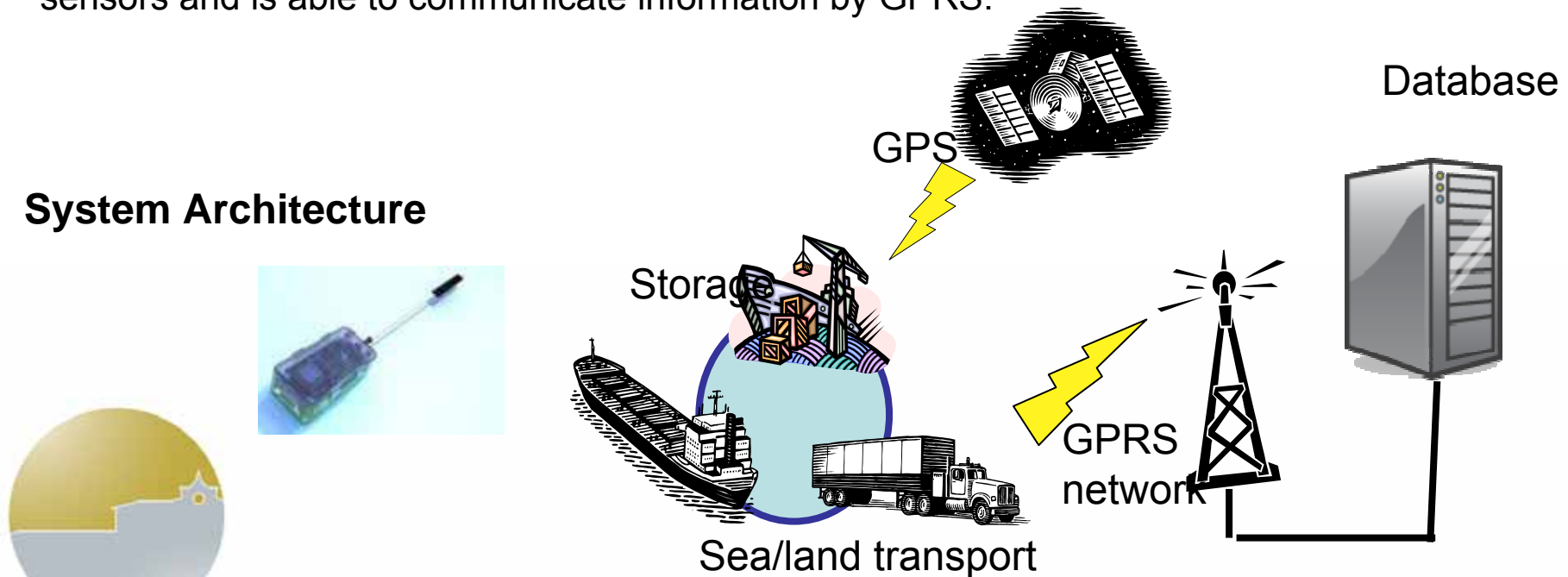
- During a test of the performance of the system, the sensor was pointed with an angle of $\beta = p/4$, in respect of the direction of the road
- The distance S put at 5 mts. and l_F put at 1.6 mts. with an angle of $+ 4.5^\circ$

car type	length [m]	N_D		error $\epsilon\%$
		theory	measure	
Volkswagen Golf	4.20	650	665	2.25
Ford Focus	4.49	680	698	2.57

Tracking Container

- The system is composed by is a small object, easy to be installed (even attached with magnets) and able to monitoring position and integrity of any moving container equipped with a mechanical sealing.
- It is able to signal non authorised access, a deviation from a fixed course, attempted tampering with the container.
- The system detect his position by GPS, is able to monitor the perimeter with some sensors and is able to communicate information by GPRS.

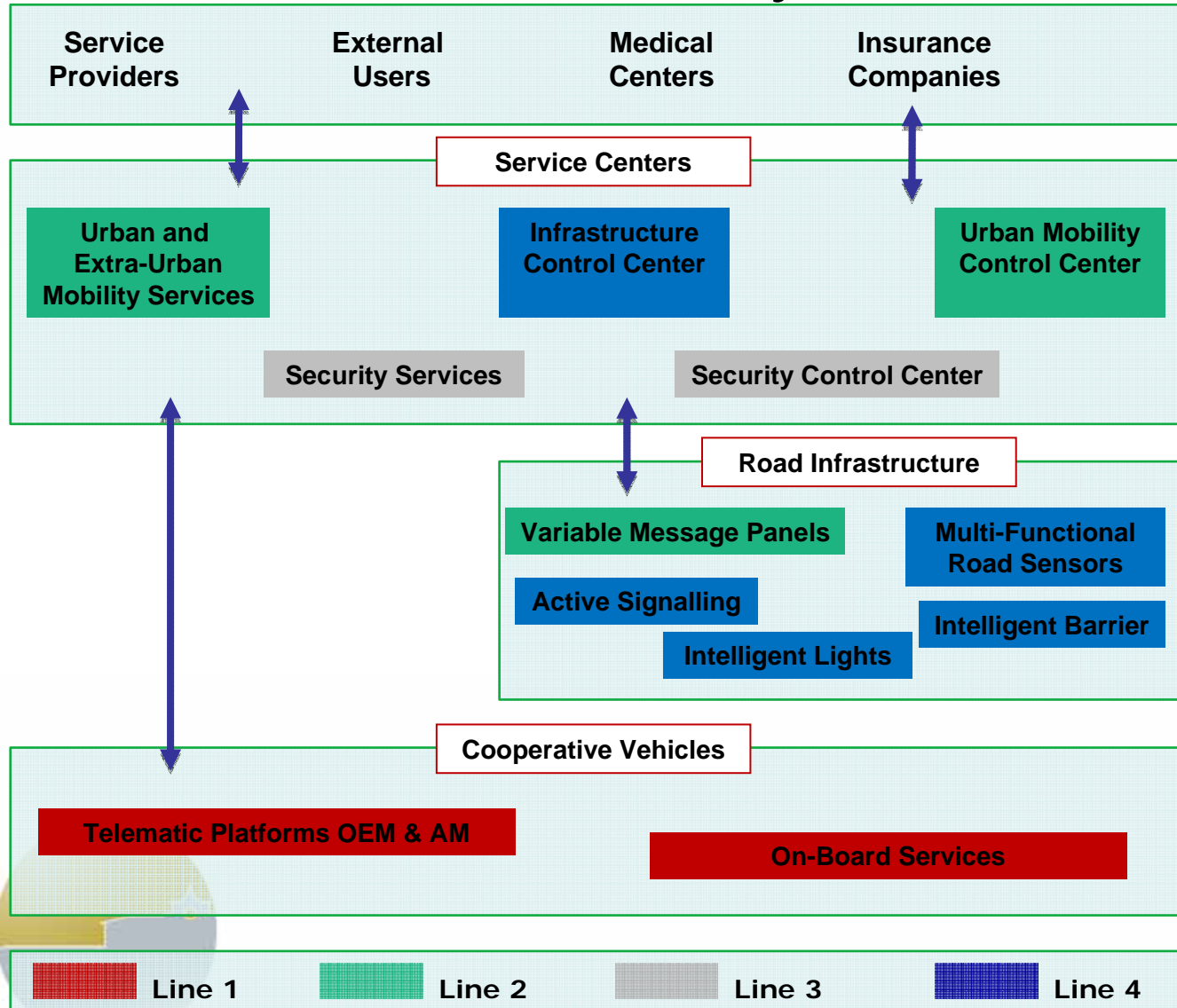
System Architecture



EASY RIDER



What Easy Rider is



Easy Rider is an Infomobility Italian National Program founded by the Economic Development Ministry

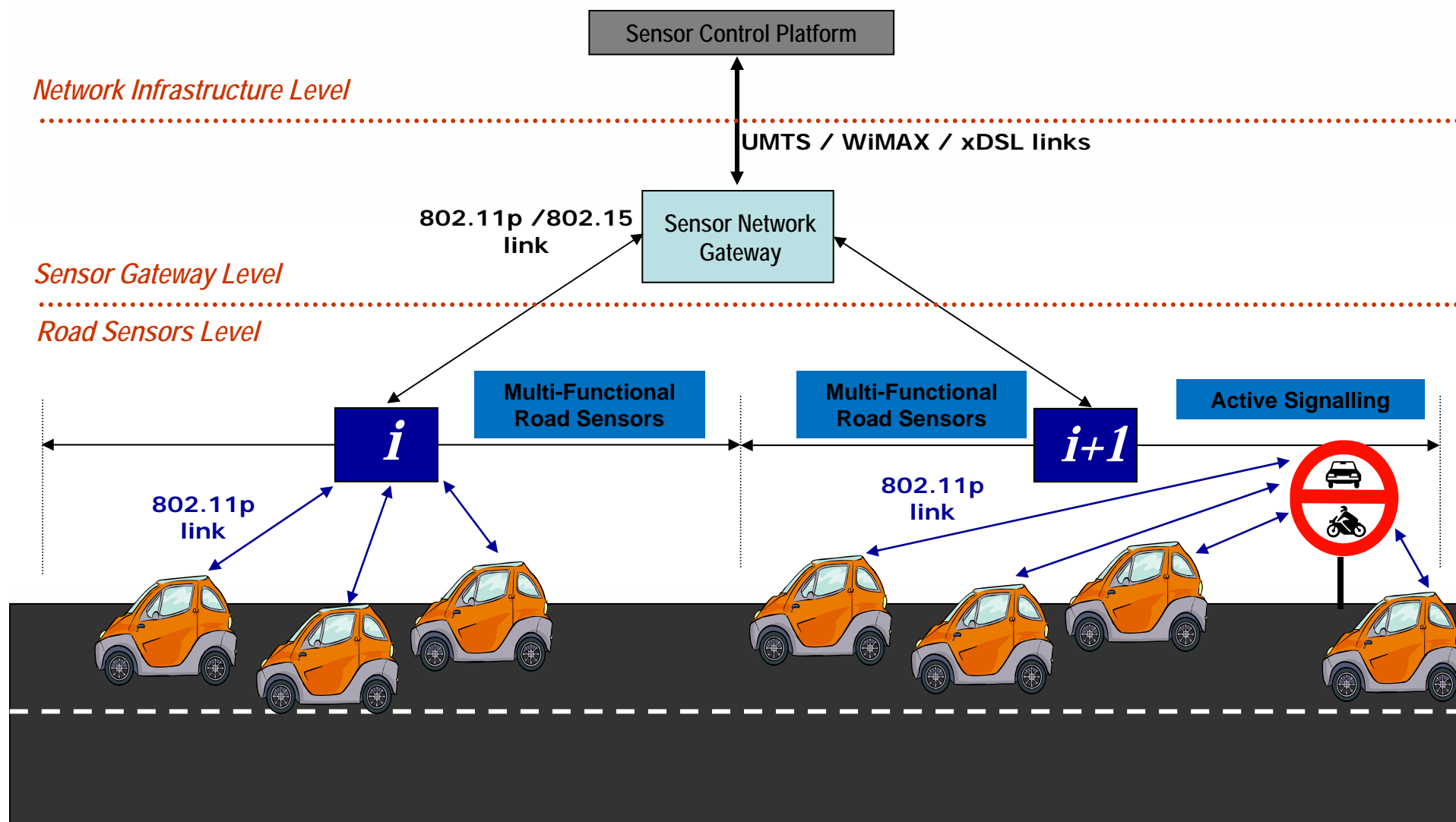
Easy Rider consorsium include more than 30 partners. The global investment is about 36 Meuros

Easy Rider is made-up of 4 sub-projects each representing a line of activity:

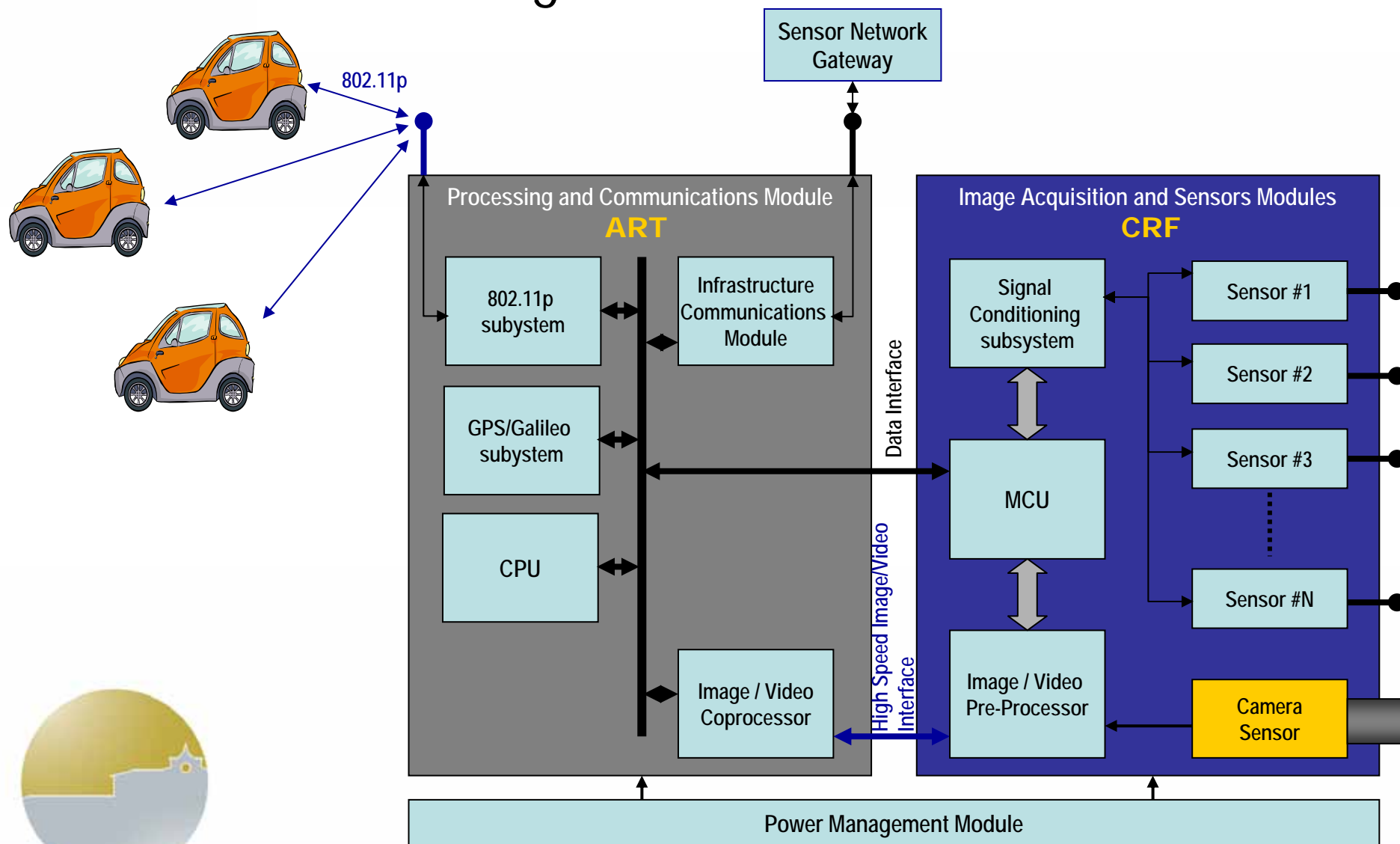
- Networked Vehicles
- Infomobility Services
- Security Services
- Networked roads

The aim of each activity is to develop an element of a complex architecture comprising cooperative vehicles, infrastructures and service centers.

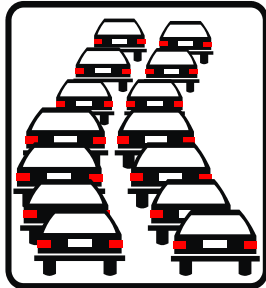
Hierarchical Network Infrastructure



Technologies: Multi-Functional Road Sensors



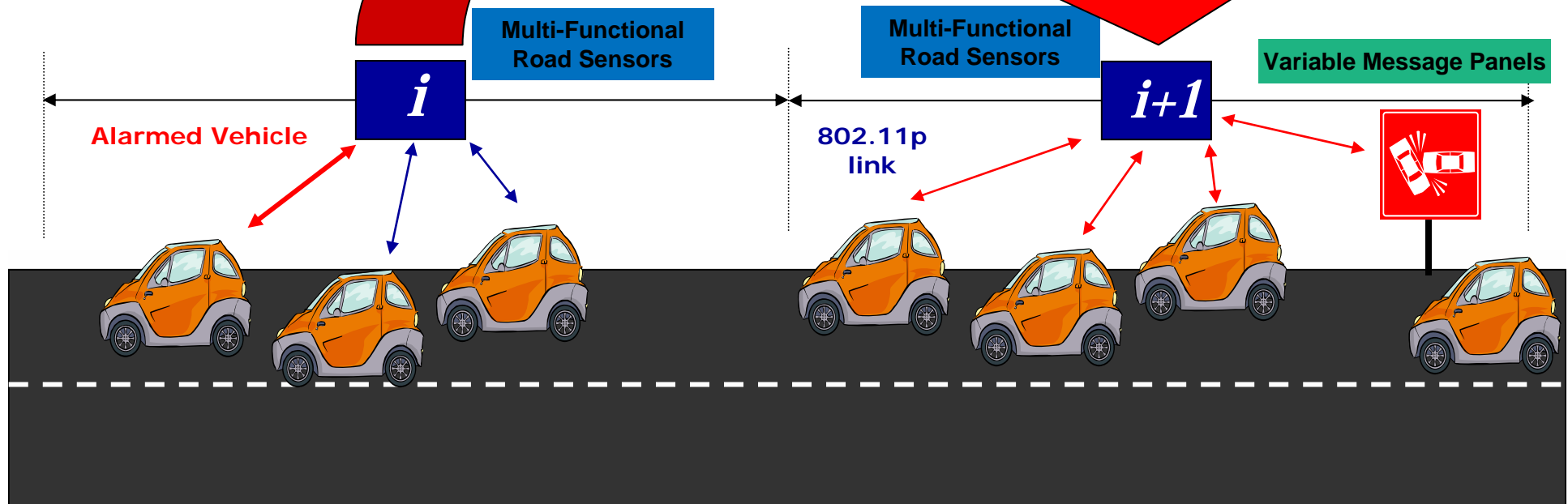
Technologies: Broadcast I2V Protocols and Emergency Signalling



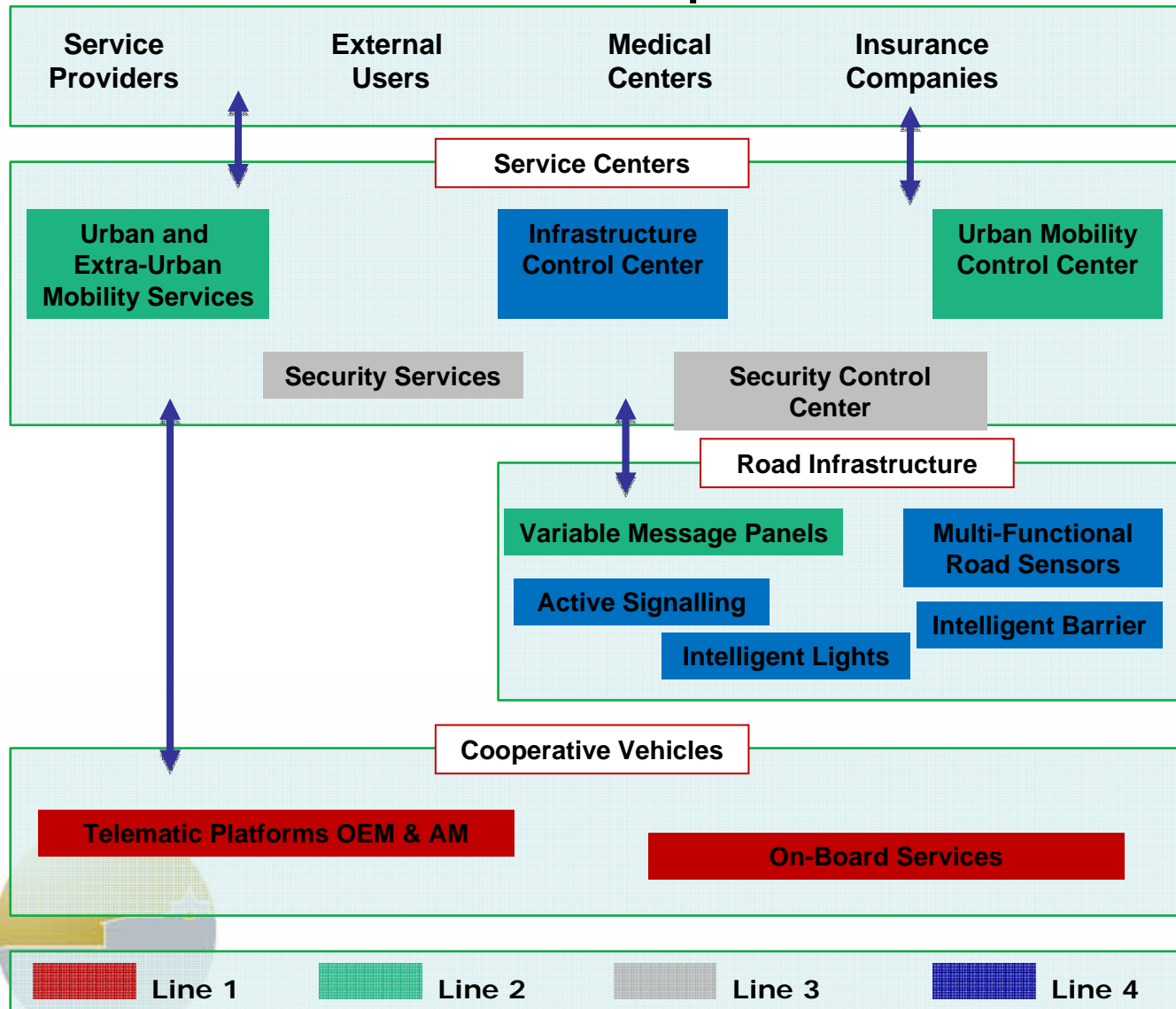
Emergency Signalling

- The emergency signaling is propagated among Road Sensors without involving hierarchically higher network levels.
- The emergency signaling is then retransmitted in a broadcast way to all vehicles and to all variable message panels in the coverage area

Road Sensors Level



ART-Group Involvement in Easy Rider



ART-Group plays a significant role inside Easy Rider.

ART-Group is involved in 7 innovative activities (out of 60 totals), being leader in a number of them:

- Telematic Platforms OEM&AM
- InVehicle Authentication Platform for payment and reserved services
- I2V and V2I communications
- Multicast Emergency Protocols
- Active Signalling
- Multi-Functional Road Sensors
- Intelligent barrier

ART-Group coordinates with **Telecom Italia** the Communication Expert Group inside **Easy Rider**

VIDEO-IMAGING & BROADCASTING



OUTLINE

- *Introduction*
- *Benefits of the proposal*
- *Proposed Architecture*
- *Why JPEG2000 and JPWL*
- *ART Group expertise in wireless data and multimedia transmission*
- *Conclusions*
- *References*



INTRODUCTION

- *Currently WRC events (and other main racing events as F1 and MotoGP) are covered in SD-TV and stereo (at best) audio quality*
- *WRC can gain tremendous appeal if supported by High Quality, High Definition, spectacular Video and multichannel HDR Audio.*
- *However there is a huge demand of HD-TV transmissions with multichannel audio, due to the success of Flat-TV HD-ready or Full-HD displays and home theatre installations*
- *Some providers started to broadcast up-converted SD-TV F1 contents in their HD channels. The quality is quite poor particularly for the “camera-car”*
- *The poor “camera-car” quality mainly depends on an analog SD-TV transmission and digitalization and encoding done at the direction and post-production sites*
- *While HD-TV transition is viable for fixed cameras around a WRC (only in selected tracks) , F1 or MotoGP circuits, a HD-TV transmissions from the car and Aerial unmanned Video coverage is technically challenging.*



BENEFITS OF THE PROPOSAL

- *ART proposes a completely novel technology for transmitting HD-TV high quality video and multichannel audio from “WRC Camera-CAR” and automatic WRC Car aerial video coverage from UAVs (Unmanned Aerial Vehicles).*
- *The system will provide comparable image quality with respect high-end HD cameras that may be used on the track, when applicable (e.g. Grass Valley – Viper).*
- *Clear, smooth HD Digital Video will be transmitted from the car to the Video Production Site using DVB-T radio-technology using highest quality intra-frame video-encoding, novel error resilience tools and virtual interleaving technologies.*
- *Transcoding to standard SMPTE 274M will be done at the production site for complete interoperability with existing HD Editing, Switching and Transmitting devices*
- *ART can provide demonstrators up to complete production grade systems thanks to the leading experience in F1 Telemetry Systems and Wireless Multimedia Transmission*



PROPOSED ARCHITECTURE (1/2)



- HD-CMOS based camera (720p or 1080i/p)
- JPEG2000 encoding +
- JPWL error protection +
- Virtual Interleaving
- MPEG2-TS packetization
- DVB-T transmission

Single Hop or
Multi Hops
transmission



- DVB-T reception
- MPEG2-TS de-packetization
- De-Interleaving
- JPWL decoding
- JPEG2000 decoding
- SMPTE 274M video out

- **Key points:**

- *Beam Steering car-roof antennas to provide link to the transponder*
- *JPEG2000 intra frame encoding (Low latency, scalability, Image quality at relatively low rates)*
- *JPWL error protection + interleaving (provides visually acceptable performance up to a 10^{-3} BER or 10^{-2} Packet Loss Rate)*



PROPOSED ARCHITECTURE (2/2)



- **UAVs Adoption**

- *UAVs may be used for:*
 - *transponding purposes in desert, poorly populated areas or where a Hi-Def Video Infrastructure is unavailable*
 - *Aerial low quote unmanned, GPS assisted WRC CAR video coverage*

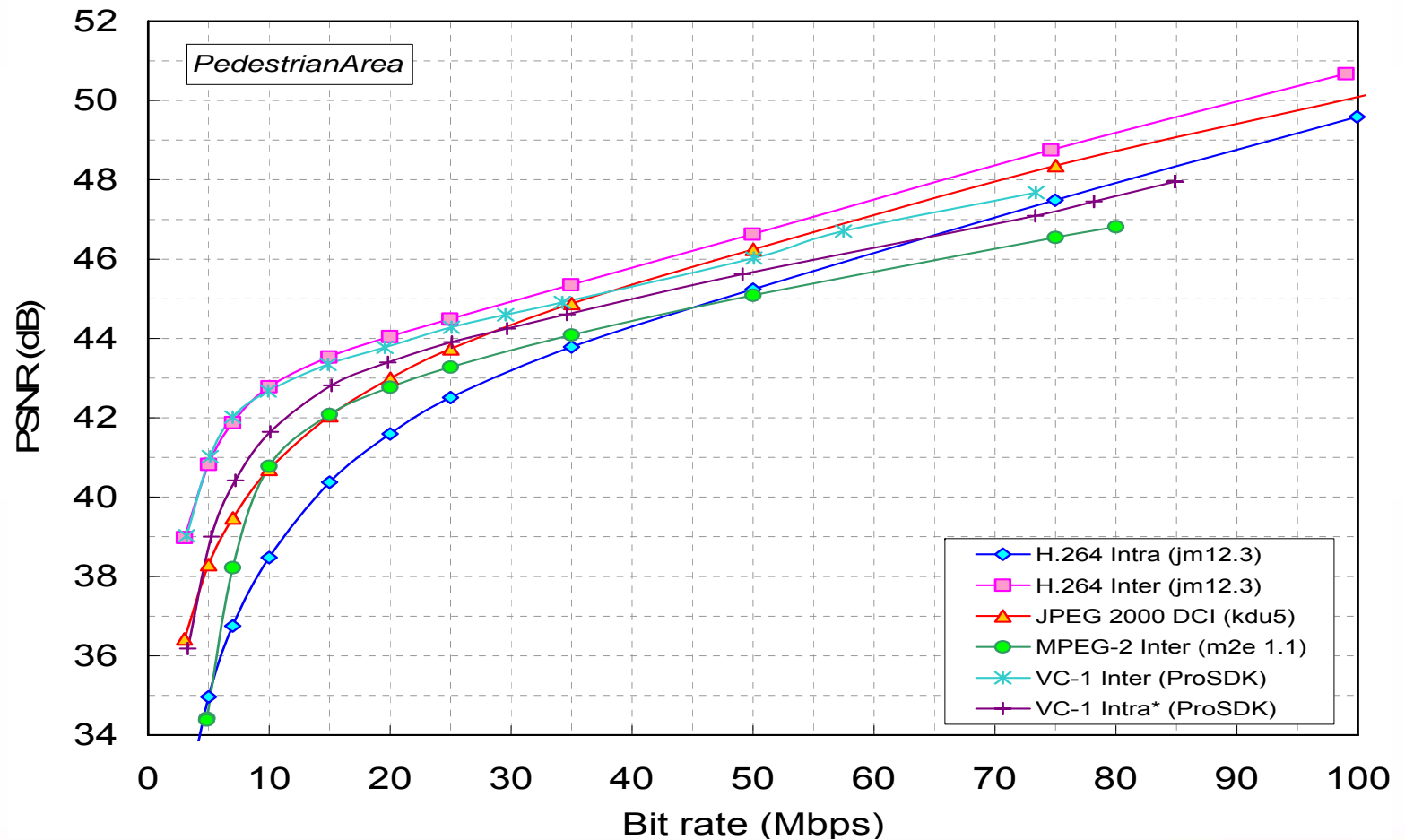
- **UAVs Key points:**

- *Unmanned take-off, mission coverage and landing*
- *GPS route programming (even tracking a specific WRC CAR)*
- *Up to 70 Kg payload*
- *Up to 9 hours flying time.*



Why JPEG2000 and JPWL (1/3)

HD results: *pedestrianarea* @ 25 fps - PSNR



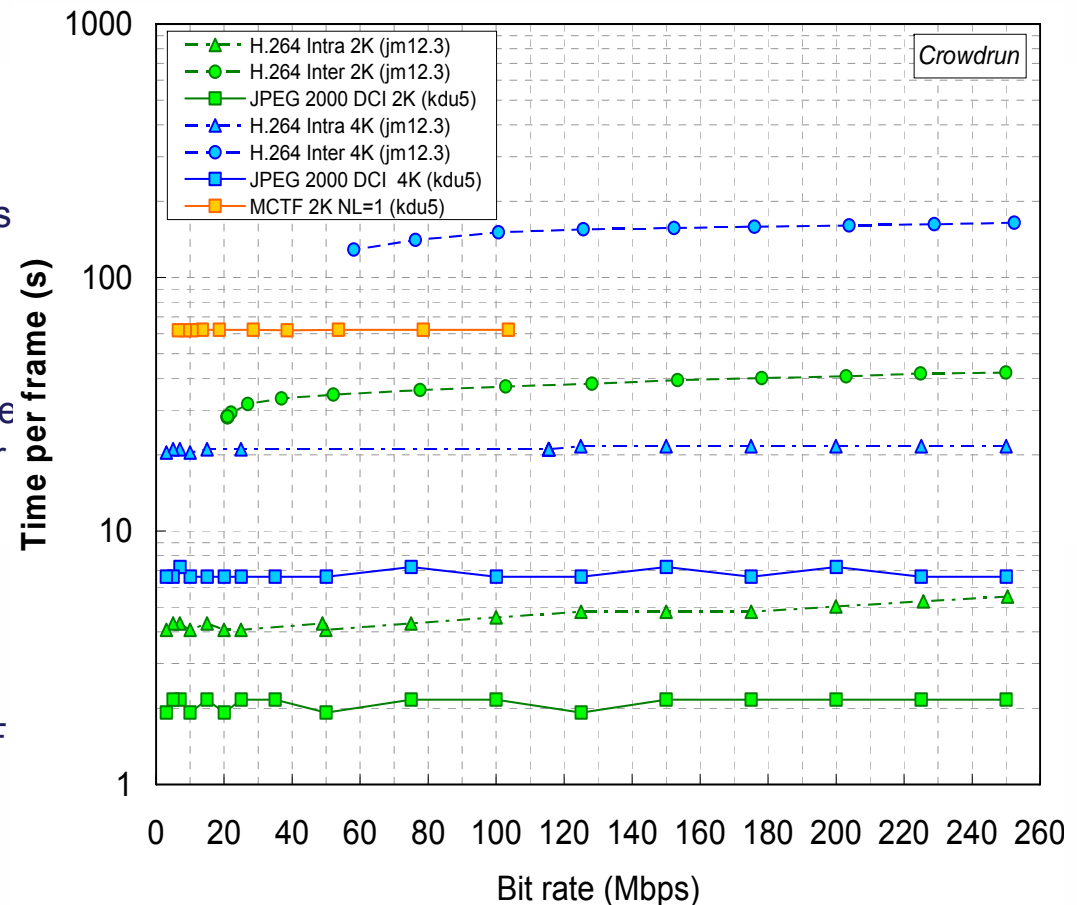
Why JPEG2000 and JPWL (2/3)

DC 2K & 4K results: *crowdrun* @ 24 fps - complexity

Software only complete compression /decompression cycle, averaged over 250 frames, and expressed as average time per frame

The fastest method is always represented by the JPEG 2000 Intra, both for 2K and 4K sequences, followed by H.264 Intra and H.264 Inter

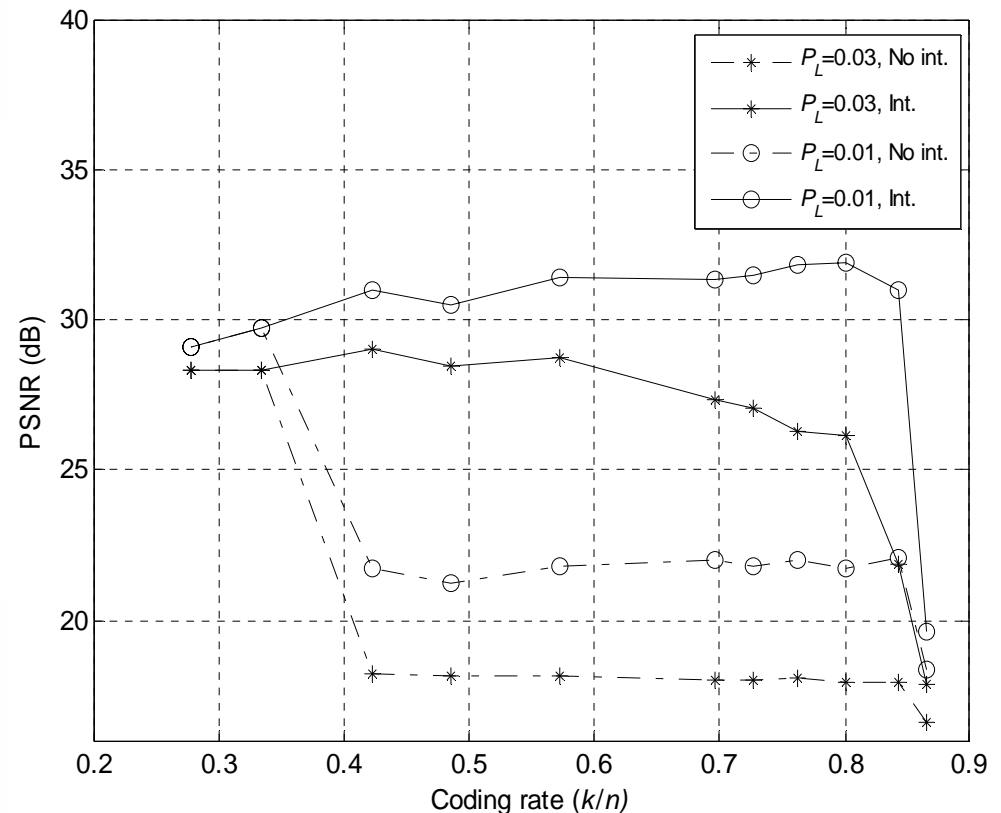
The slowest method is represented by the MCTF



Why JPEG2000 and JPWL (3/3)

DC 2K & 4K results: *crowdrun* @ 24 fps – JPWL + VI

- PSNR versus channel coding rate for two different packet loss rates (1% and 3%, RS(46,32)).
- The results are shown with and without interleaving.
- The advantage of interleaving is clear: only at higher protection rates, the two approaches converge to the same values;
- since the total codestream size (data + redundancy) is kept constant, a compression rate increase results in a lower PSNR.



EXPERIENCE IN WIRELESS DATA & MULTIMEDIA TRANSMISSION

ART Group can prove a consolidated experience in wireless data and multimedia transmission:

- Design, implementation of F1 Telemetry Systems, adopted by top racing teams (e.g. Ferrari, Renault, BMW, Toyota, Honda, Red Bull..)
- Design, implementation of F1 Marshalling System for FIA
- Involvement in ISO/IEC WG1 Standardization Committee (JPEG/JPEG2000/JPEG-XR)
- SMPTE members
- ISO JPWL editor and co-chair
- ISO JPWL reference software providers
- Involvement in WorldScreen and ED-CINE EU project (technical coordination of D-Cinema Wireless Distribution work-packages)
- Cooperation with Thales Communication and Grass Valley for the Wireless Viper camera
- Cooperation with Fraunhofer IIS for D-Cinema Wireless Distribution and JPEG2000 Encoding/decoding HW/SW
- Cooperation with Dolby Labs for Standardization of JPEG2000 for HD-TV (Production to PostProduction Wired/Wireless Video Links)
- Cooperation with RAI for experimenting HI-Def and D-Cinema Wireless transmission and encoding/decoding systems



CONCLUSION

- *ART may represent a solid technological partner to design, develop, integrate and operate compact solutions able to provide state-of-the-art video/audio quality in critical installations as in WRC Racing Championship*
- *The relevant experience in in wireless data and multimedia transmission is good base for guaranteeing reliability of results and time-to market*



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AIRBORN, ERROR-FREE WIRELESS HD-VIDEO LINKS



Benefits

- *ART Group proposes a completely novel technology for transmitting HD-TV high quality video and multichannel audio from aerial video coverage from UAVs (Unmanned Aerial Vehicles) and helicopters.*
- *The system will provide comparable image quality with respect high-end HD cameras that may be used on the field.*
- *Clear, smooth HD Digital Video will be transmitted from the AIR to the Video Production Site using DVB-T / DVB-T2 radio-technology using highest quality intra-frame video-encoding, novel error resilience tools and virtual interleaving technologies.*
- *A Ground Station or an Airborne Transponder are supported for Video Link*
- *Transcoding to standard SMPTE 274M will be done at the production site for complete interoperability with existing HD Editing, Switching and Transmitting devices*
- *High-Quality, artifacts free, single frames available for WEB publishing and mobile users, or gaming.*
- *ART can provide demonstrators up to complete production grade systems thanks to the leading experience in F1 Telemetry Systems and Wireless Multimedia Transmission*

The Airborne Camera



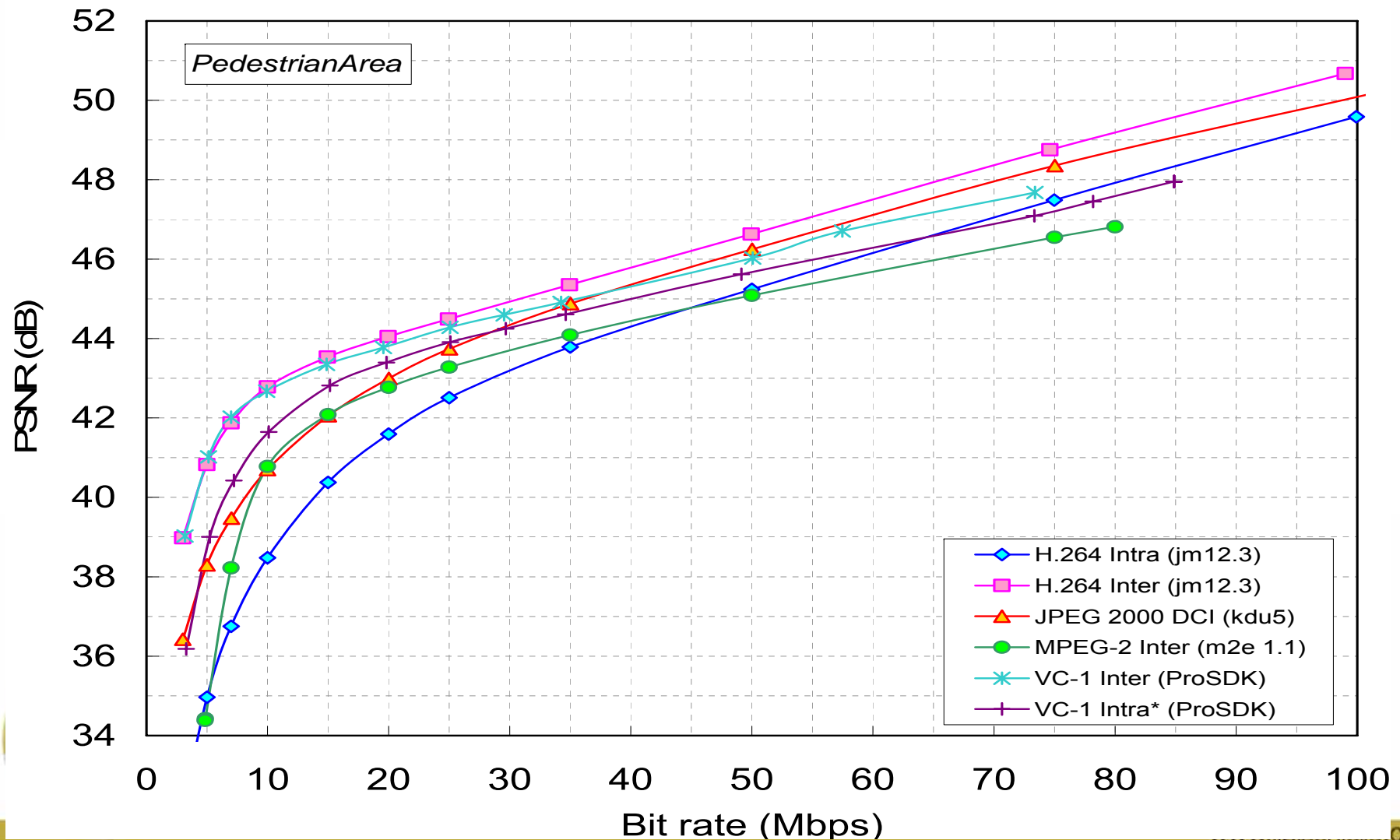
- The Cineflex V14 HD System is a state of the art 5-axis gyro-stabilized, fully digital servo control system with an integrated high definition daylight camera and laptop controller.
- The V14 system offers high performance in a compact package designed for surveillance and security in addition to its natural pre-eminence in broadcast, production and news gathering applications.
- **HD Daylight Imager**
 - Camera Sony HDC-1500
 - Imaging Device 3-CCD 2/3"
 - Effective Pixels 1920(H) x 1080(V)
 - Aspect Ratio 16:9
 - Frame Rates 1080/50i, 60i, 30P, 25P, 24P, 720/60P, 50P
- **Dimensions**
 - Item Weight Dimensions
 - Turret 65-74 lbs. 14.5" x 19.5"

The Encoding

- Real Time, State-of-the-Art JPEG2000 Encoder with HD and DCI Digital Cinema profiles support.
- 24p/25p/30p/48p/50p support
- World Premiere: JPWL + Virtual Interleaving
- On-Board Storage (up to 10 Hours footage on SSD Drives) and Real-Time, Low Latency Transmission (less than 4 frames).
- Bit Rates from 25 to 250 Mbit/s
- Robust Video Transmission: No degradation up to 10^{-2} Packet Loss Rate.
- Airborne Transponder and Ground station modes

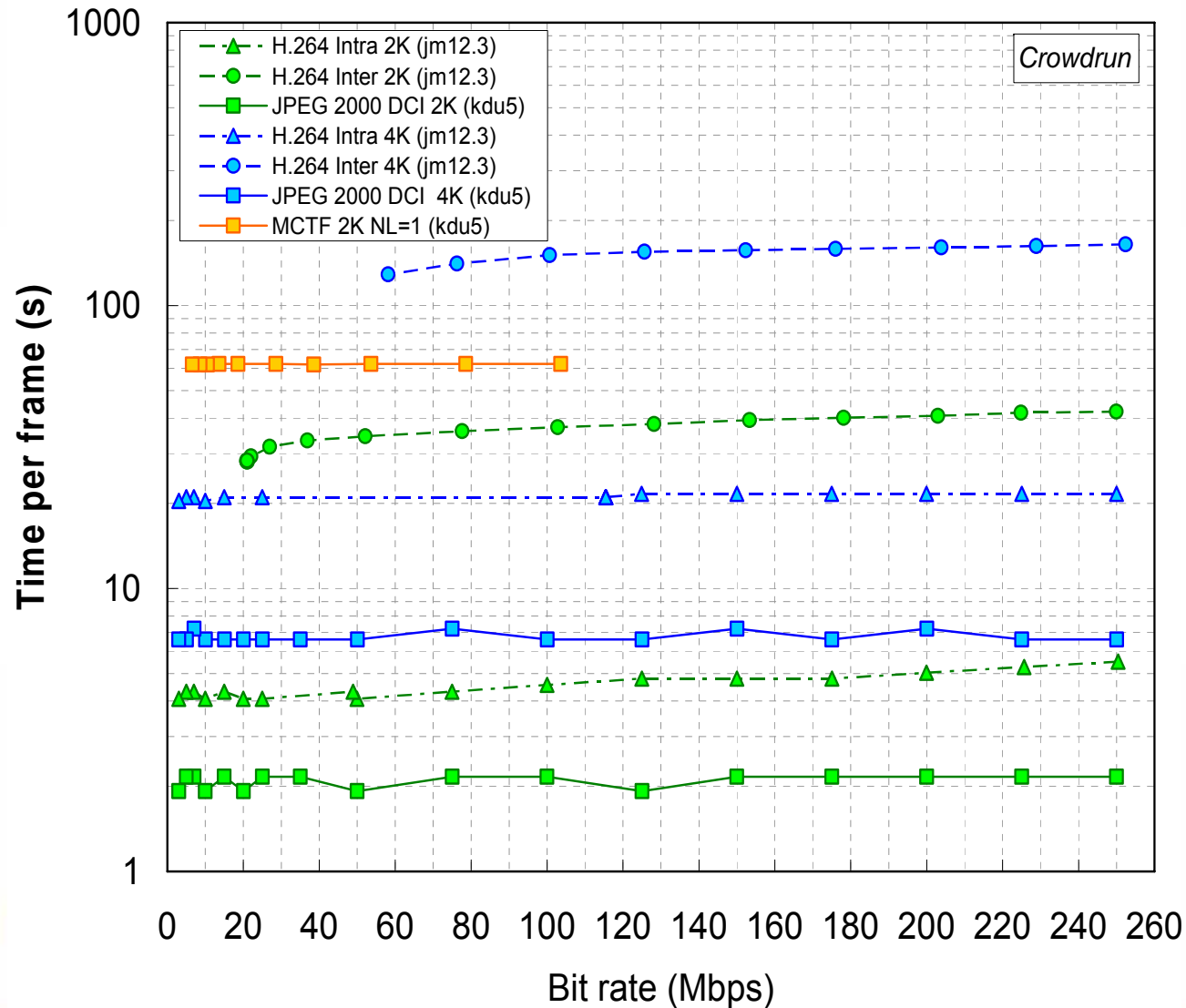


- HD results: *pedestrianarea* @ 25 fps - PSNR



The Technology: why JPEG2000 and JPWL (2/3)

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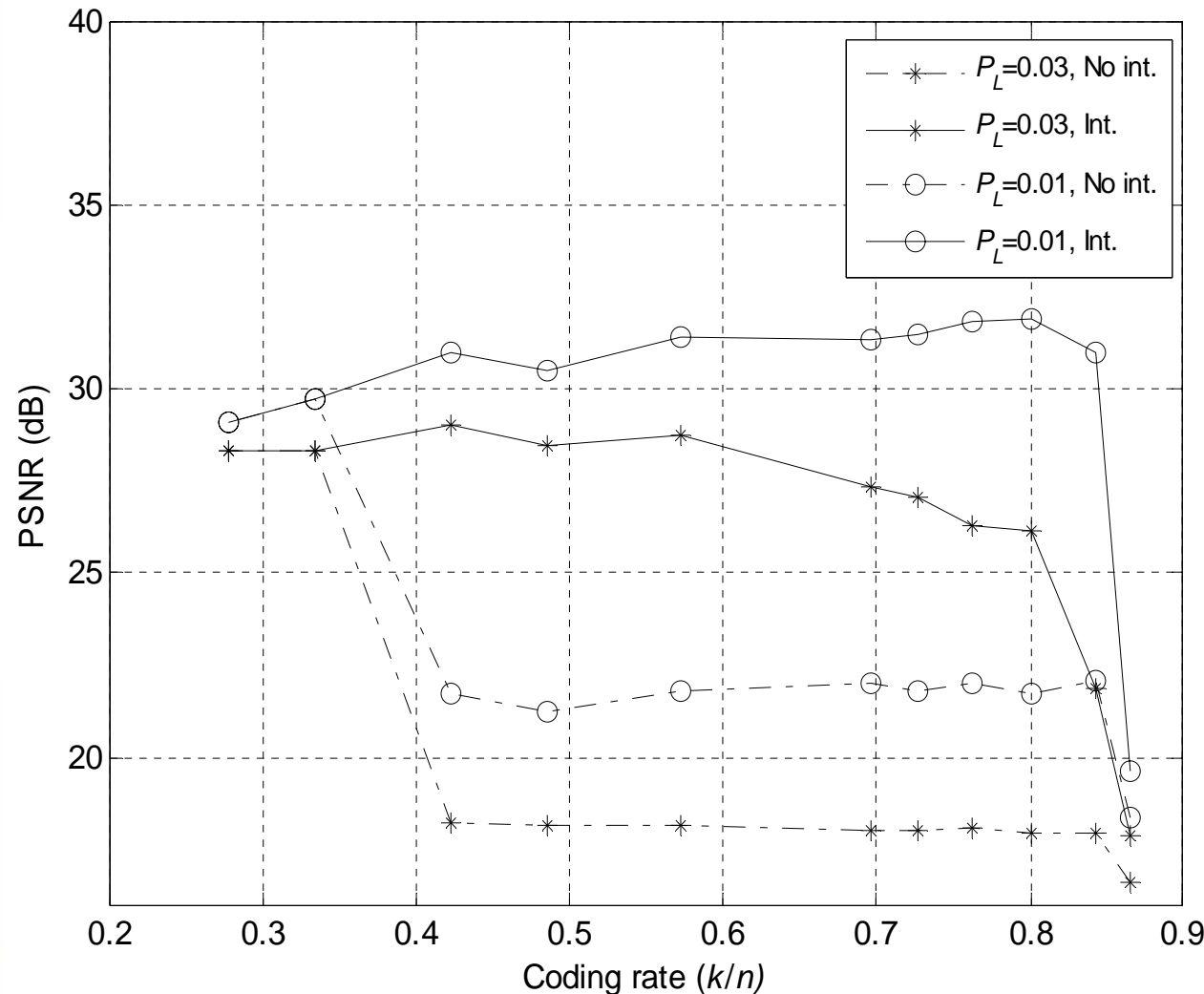


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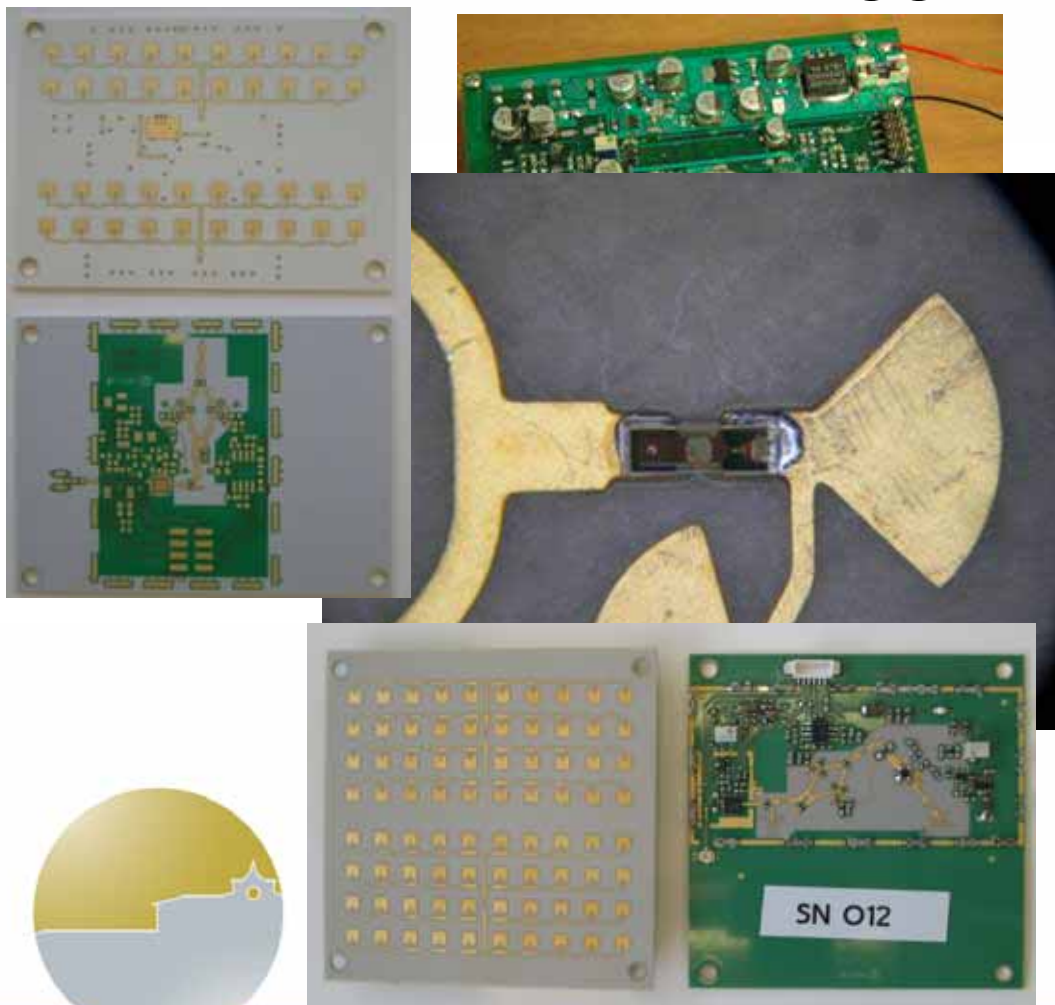
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WIRELESS SYSTEMS and RF SUBSYSTEMS



Prodotti (1/6): Radar CW 24GHz per monitoraggio traffico



Product features

Operating frequency	24.150 GHz ISM
Antenna main lobe	Azimut +/- 3.5°
Principle of operation	Doppler radar
Coverage	300 m LOS
Output power	20 dBm EIRP
Data logger	Integrated with RTC
Operating modes	Tracking and counting (selectable)
Interface	RS232

Prodotti (2/6): Traguardo radio a microonde F1

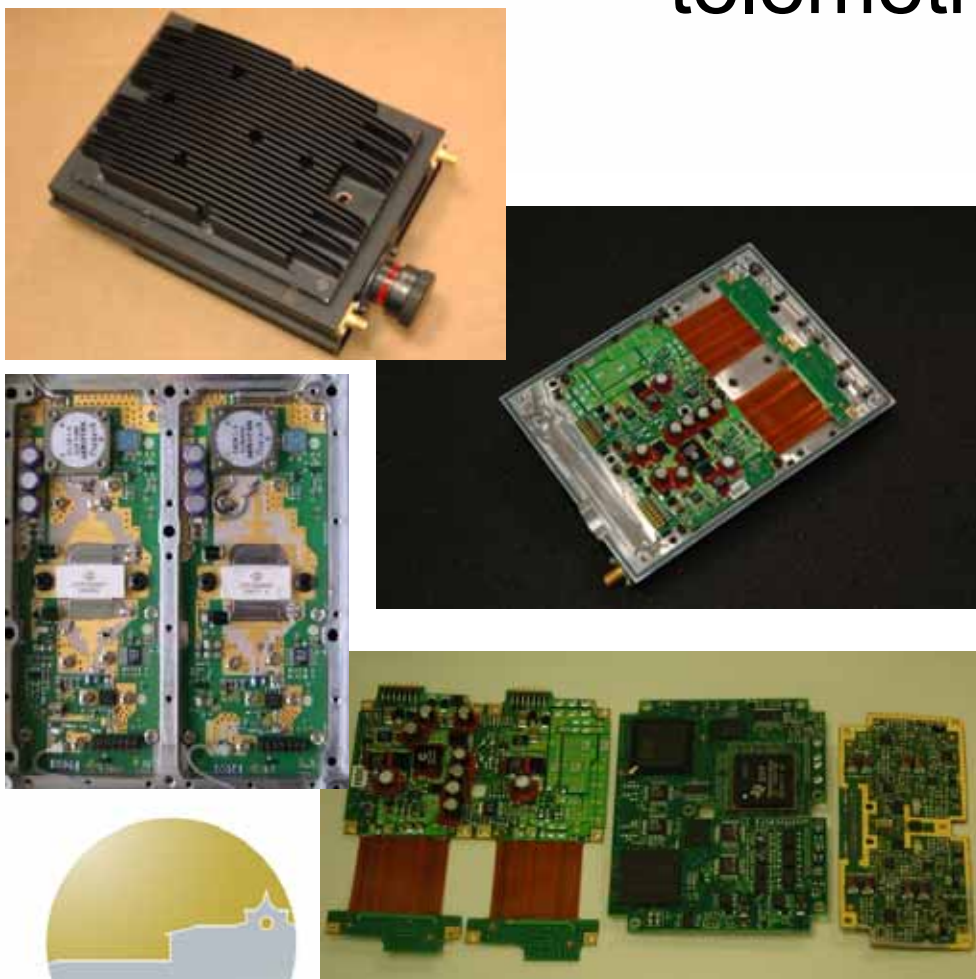


Product features

Number of channels	60
Operating frequencies	15.2 – 15.6 GHz
RX power supply	9 - 18V
RX antenna lobe	+/- 25°
RX sensitivity	-75dBm
TX output power	0 dBm EIRP
TX antenna lobes	Azimuth +/- 3° Elevation +/- 60°
TX antenna side lobes	-20 dB
Trigger accuracy	+/- 20 cm



Prodotti (3/6): Trasmettitore in banda L per telemetria F1

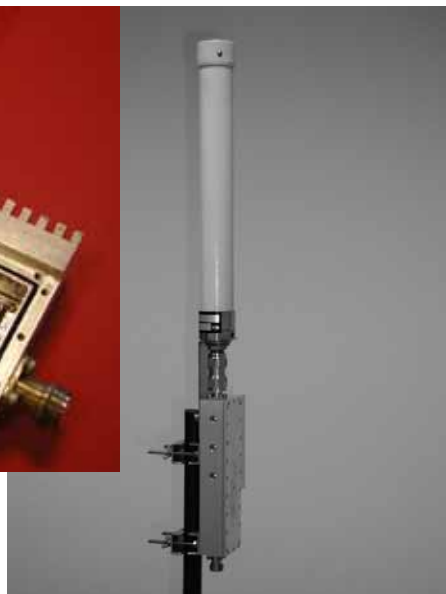
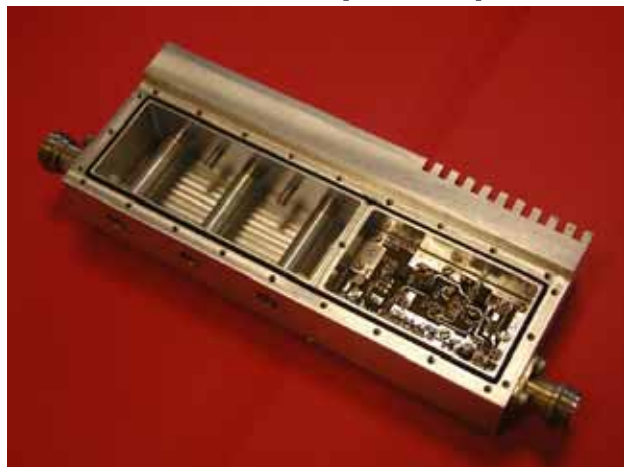


Product features

Dual operating frequency bands	WBT1 1285-1420 MHz WBT2 1638-1698 MHz
Telemetry rate	WBT1 + WBT2 Up to 2.5 Mbit/s
Modulation type (WBT1 & WBT2)	OFDM
Signal bandwidth	1.6 MHz
RF out power (WBT1 & WBT2)	23 to 36 dBm (Programmable)
Data & Control Interface	CAN, ARCNET, RS232
Operating voltage	9.5 to 18 V
Absorption@13.4V	6.2A (WBT1@36dBm, WBT2@36dBm)
Absolute max. ratings	80°C
Protection class	IP65



Prodotti (4/6): LNA in banda L per telemetria F1



Product features

Operating center frequency	1200 MHz 2000 MHz
Bandwidth @ 0.05 dB ripple	up to 20 MHz
Bandwidth @ -3 dB	up to 30 MHz
Bandwidth @ -30 dB	Min 130 MHz Typ 145 MHz Max 150 MHz
Return loss	up to 23 dB
IIP3	> 10 dBm, typ 13 dBm
P1 dB	Min 11 dBm Typ 12.5 dBm Max 13 dBm
Gain	Min 24 dB
NF	<2 dB
Power supply	Min 9.5 V Max 11 V
Current consumption	Min 280 mA Typ 290 mA Max 300 mA
Max input Power	-3 dBm
IP	65
Connectors	in line N-Type
Operating temperature	-10° 60°
Temperature Gain derating	< 1 dB



Prodotti (5/6): Ricetrasmittitore veicolare UHF



Product features

Operating frequencies	225 MHz – 399,975 MHz
Number of channels	7,000 @ 25KHz
Modulation type	A3E AM voice
Transmitter power	30W peak
Modulation depth	30% - 95%
Receiver sensitivity	≤ -97 dBm @ 30% modulation index with 12 dB SINAD
Dynamic range	≤ 6 dB variation in the audio output from -97 dBm to +3 dBm
Blocking	≥ 70 dB
Cross-modulation	≥ 70 dB
ETSI compliance	



Prodotti (6/6): Microtrasmettitore UHF



Product features

Operating frequency range	300-340MHz
Type of modulation	FHSS with FSK (AES 128bit encryption)
Power output	17dBm max.
Number of channels	67 fixed frequency 15 FHSS set
Audio bandwidth	8KHz (in stereo operation)
Remote control for wake-up and others commands	315MHz, FSK 20dBm
Dimension	50mmx30mm
Coverage	350m LOS
Absorption @3.6V	ON 120mA Stand-by 300uA



RF & MICROWAVE INSTRUMENTATION

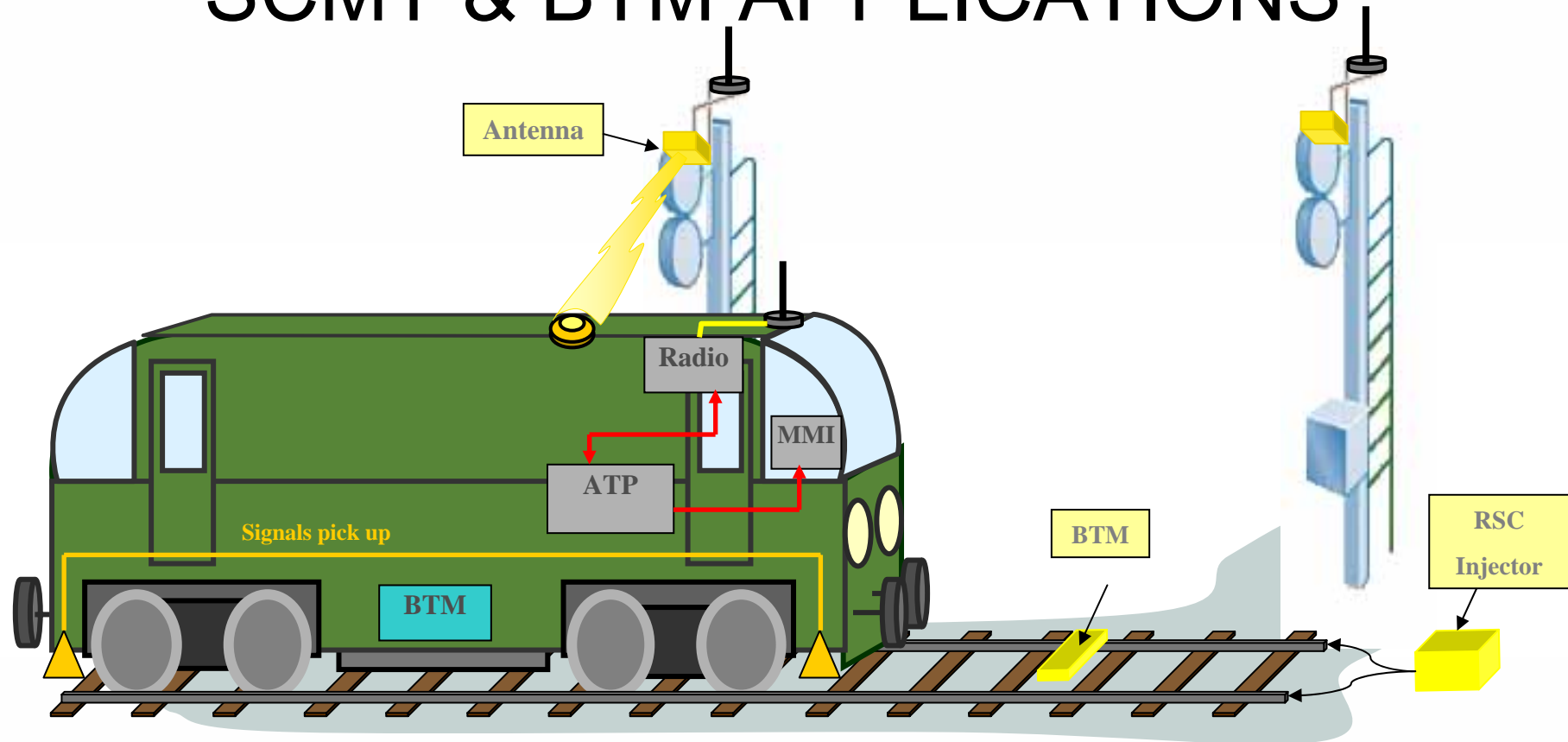
- NVA Anritsu MS4623b 0.01-6 GHz
- NVA Anritsu 37369D 0.04-40 GHz
- NVA HP 8752A 300KHz - 3GHz
- SA R&S FSP-30 30 GHz
- SA Anritsu MS2721A 7 GHz
- Sig. gen. HP 8657b 0.1MHz-2 GHz
- Sig. gen. R&S SMR-20 20 GHz
- Pw. meter Anritsu ML2407A
- 2 Test set R&S CMS52 1GHz



RAILWAYS APPLICATIONS AND DEVELOPMENTS



SCMT & BTM APPLICATIONS



Integrated system receiving railways signaling to be sent to the train driver helping him in the machine management

Signaling Sources

- ANTENNAS on MASTS ALONG the RAILWAYS
SSC system helping the train driving
- BTM BUOYS installed between the rails
SCMT system to control the train speed
- Induced currents in the rails:
RSC system implementation



System features

- Receiving & decoding all signaling coming from previously described sources
Signaling forwarding to the on board system management to assist the train driving system
- Higher security system (SIL4 compliant) implemented through a “2oo2” architecture
 - Two galvanically isolated sections processing the same signaling
 - The two main processors are hardly synchronized between them and with an external reference signal, performing periodic voting operations
 - Hardware watchdog implemented with discrete devices to control system coherence.
 - Every data mismatch between the two processors causes In case a system fault



Further designs and activities

- **Driving Static events recorder**

- Data acquisition through MVB
- Speed acquisition from sensors and GPS, and positioning recording GPS
- Wi-Fi data download

- **High Speed monitoring**

- communication via GSM-R
- Detection railways status (free or busy)

- **SIL4 system validation & verification**

- Environmental testing (temperature, vibrations, EMC)
- Software *Unit testing* (Black & White box)

- **Wireless Diagnostic systems**

- System monitoring through Bluetooth & Wi-Fi links



AGRICULTURE APPLICATIONS AND DEVELOPMENTS



Products & Services for agriculture

In the first part of 2009, **ART Srl** and **Tecnidee Srl** founded **AGRIART Srl**, dedicated to apply innovative technologies to provide products and services for the agricultural enterprises.



Structure

Technical Staff	Technical Committee Feasibility study Development Production
Commercial Staff	Sales Management Commercial Office Product Managers
Staff of Technical Advice and Assistance	Technical Advice Office Staff of Technical Assistance and Training



Mission

- **Centralization, optimization and control** of agronomic activities of the farm;
- Development of **personalized innovative solutions, products and equipments** for agricultural enterprises.



Centralized management of activities

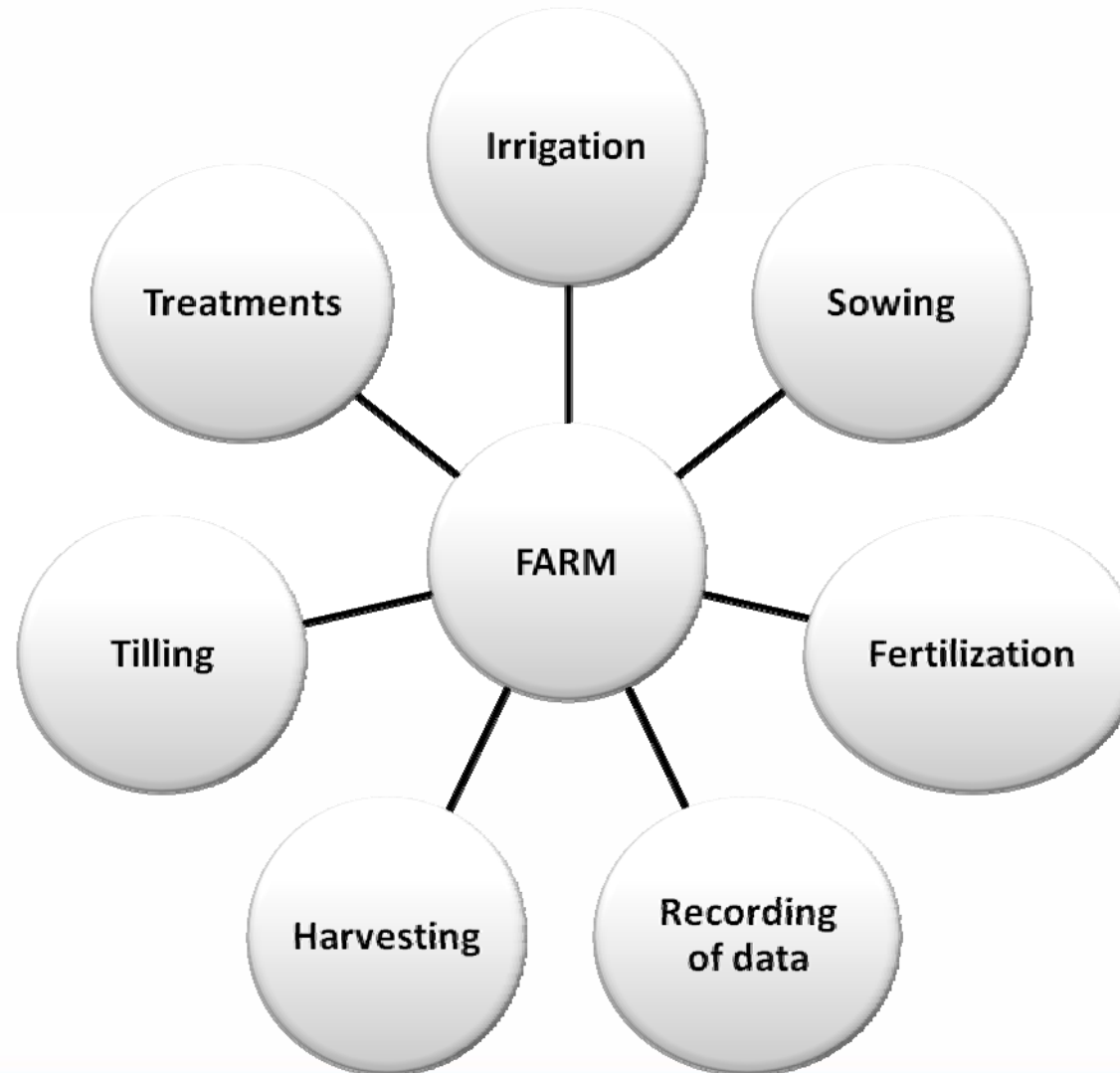
Today, Agriculture demands improved productivity and efficiency.
To compete in domestic and global markets is essential:

- cutting costs;
- saving time;
- ensuring the entire agricultural enterprise is more efficient;
- ensuring the entire agricultural enterprise is more accountable.

Optimized Resource Utilization Drives Competitive Success.



Centralized management of activities



Innovation

- Conceiving new products;
- Feasibility study;
- Planning and creating personalized solutions.



Products

- ***Precision Agriculture***

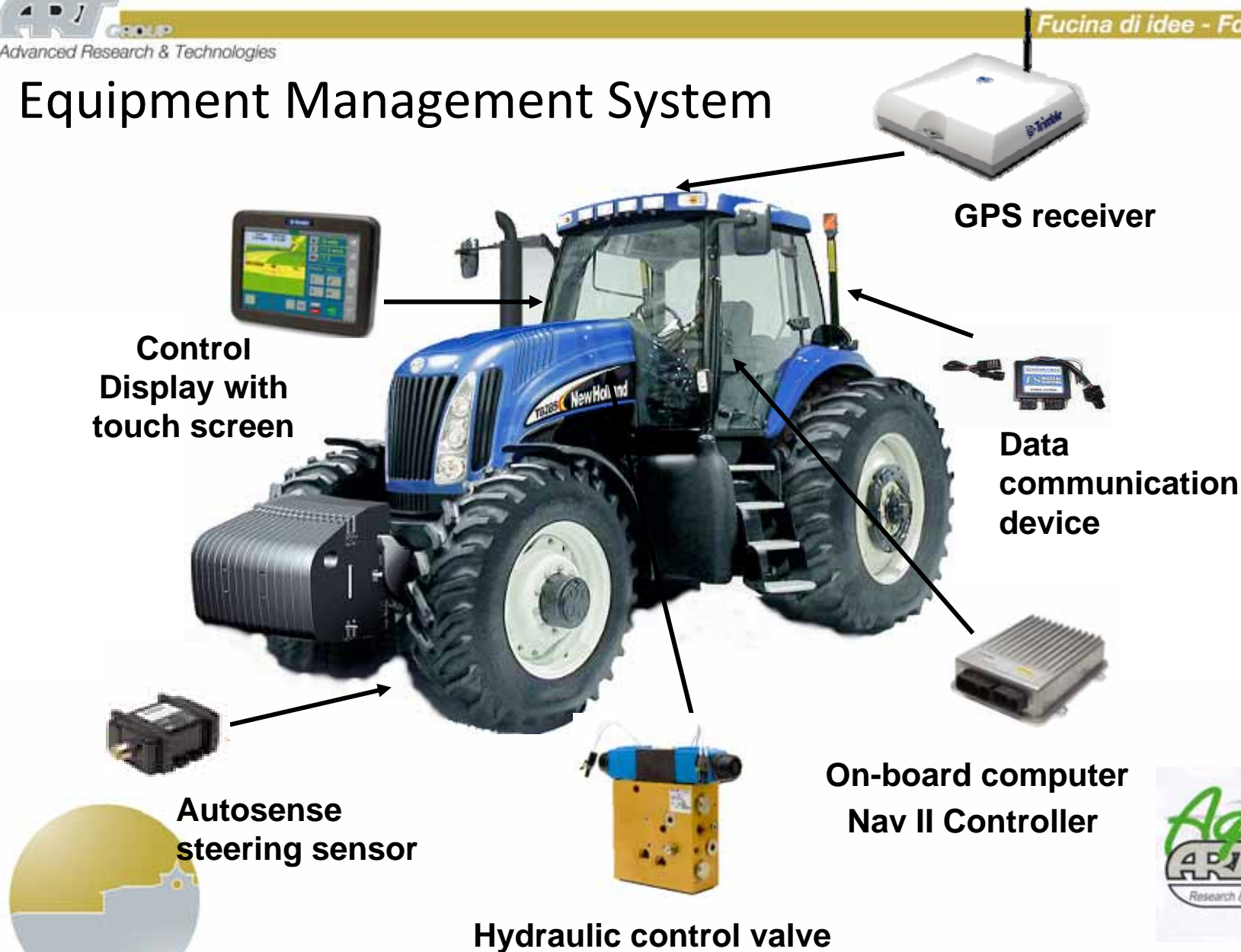
- Equipment Management System

- ***Water management***

- Remote Control System for water management WIRRI



Equipment Management System



Remote Control System for water management WIRRI

Remote Control System provides a remote water centralized management.
This device is easy to use and can manage your irrigation system without bury the cables.

WIRRI Interface Unit



Allows the communication with either a centralized command control system (already existing) or a stand-alone modality (using SW). The device works using the radio link (i.e. the radio kit is necessary)
The user can switch on, switch off, pause and start again the irrigation
Allows to switch off the system
Compatibility with the existing devices
Allows to manage up to 12 valves at the same time, expandable to 48 valves
Range (line of sight) up to 5 Km with standard antenna (environmental condition permitting)
Installation on DIN rail or on wall
Power supply 220VAC/12VDC (included)
Serial cable RS232, for expansion unit (included)
Standard USB cable, for PC (included)
Power LED and mode LED
Multi-function button

Valve Control Unit



Allows to switch on and off the irrigation units
Allows to switch off the system
Allows to manage up to 3D.C. latching solenoids
Range (line of sight) up to 5 Km (environmental condition permitting)
IP68 Compliant
Installation kit for post (included)
Power supply by internal lithium battery 3.6V (not included)
Battery operating life 12 months under typical usage condition
Station ID programmable by the user
Test LED for communication check with the WIRRI Interface Unit
Integrated antenna
External power supply, without battery (Optional)

Irrigation Transmitter Unit



Allows to switch on and off the irrigation units
Allows to switch off the system
Allows to manage up to 48 stations
Range (line of sight) up to 5 Km (environmental condition permitting)
IP65 Compliant
Installation kit for post (included)
Power is supplied from WIRRI Interface Unit
Serial control RS232
Omni-Directional antenna (included)
For distances greater than 5km a directional antenna can be used (optional)

Services

Once the customer needs are clearly defined, AgriArt provides a personalized solution starting from the implementation to the supplying up to the management:

- Installation;
- Help desk, training and assistance for the technical staff of the farm;
- Timely intervention by the Agri Art staff (in case of problems);
- Management & experience
 - Evolutionary maintenance of software and maps
 - Technical Adaptation in case of need
 - Management of additional components.



What we can do for you

The Research Centre “Il Pischiello” has a wide range of skills and knowledge to meet the variety of needs of the customer.

We can provide *personalized innovative solutions* for all your needs starting from the planning phase, to the development cycle up to the implementation and maintenance.

We work with professionals able to find appropriate solutions, respecting dead lines.



What we can do for you

Our **values** are:

- accuracy in everything we provide;
- thinking new relevant solutions;
- professionalism.

Our primary aim is to give complete satisfaction to the final customer.



DIGITAL SIGNAGE



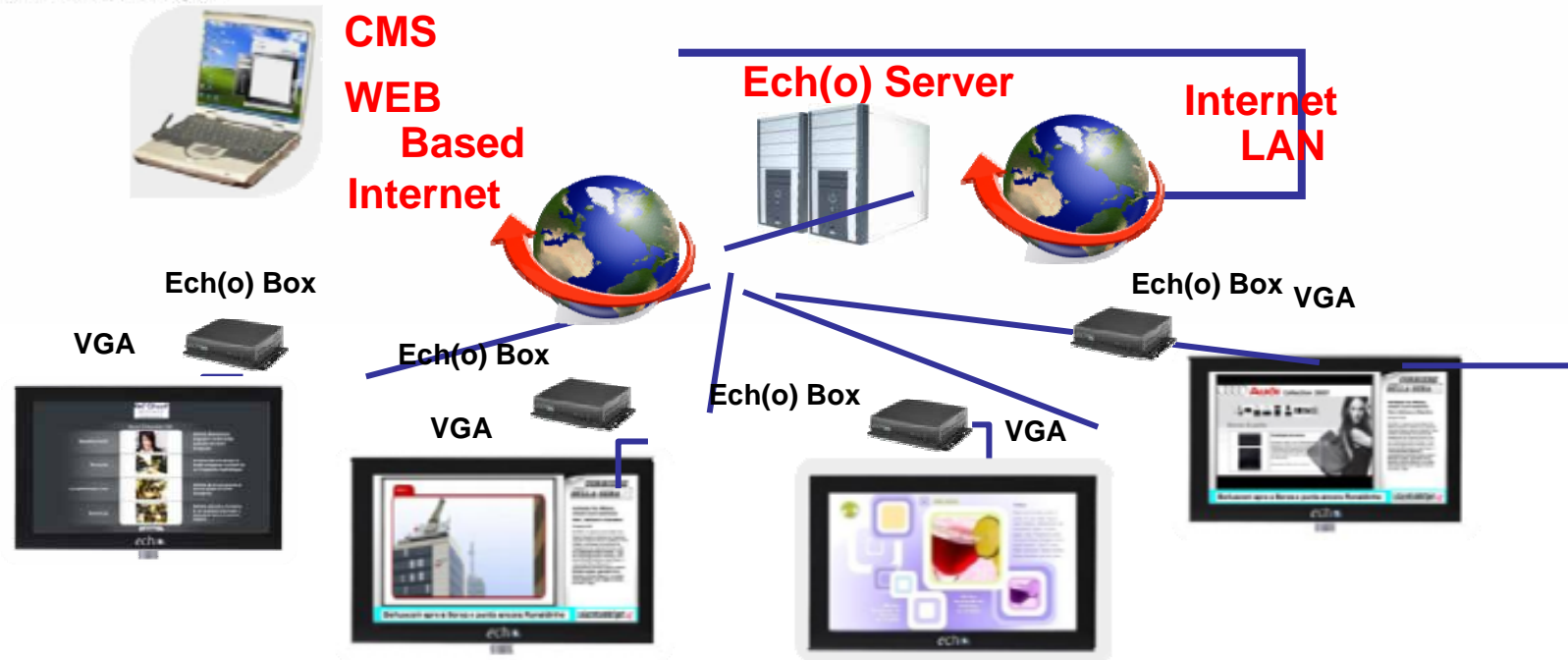
System allowing to manage, coordinate, update and visualize a thematic channel digital information, communication and /or promotion.



Purpose and Benefits

- The different solutions Ech(o), through display located on territory national and/or international level or within its own business, allow communication in a dynamic, multimedia and real-time.
- It will also divest advertising spaces interesting with consequent economics benefits.
- With this system your PC connected to Internet will be able to run multimedia content for displays located in any part of the world. To update contents has never been so easy and so cost effective: only one click from your desk it is enough to update an entire display group. You can run real time and high quality contents. The system is compliant with the tools most used by graphic design professionals.





Applications

- Infotainment Services for public places
- Promotion of products and services
- Posting electronic systems for the management concession of advertising space
- Multimedia Network for the management of corporate communications

Segments Reference

- Managers of public places (Hotel, Restaurant, Bar, Pub, etc...)
- Retail
- Estate Agencies
- Travel Agencies
- Showroom of all kinds (Cars, furniture, clothing, etc.)
- Advertising Agencies
- Franchising
- Public government (municipalities, provinces, regions)
- Exhibitions Centers
- Large Companies (Corporate TV)

Ech(o) Solution “il nuovo modo di comunicare!”

Digital Signage Made in Italy

- Con Ech(o) Solution® **diventi editore di un network privato**. Puoi gestire a tuo piacimento ed in tempo reale la tua rete di display senza bisogno di intermediari offrendoti anche la possibilità di rivendere spazi di sicuro interesse.
- Con questo sistema un solo personal computer connesso in internet potrà gestire contenuti multimediali di display dislocati in Italia e/o in qualsiasi parte del mondo.
- Aggiornare i contenuti non è mai stato così facile e così economico: basta un singolo click e dalla tua postazione di lavoro aggiornerai un intero gruppo di display.
- I contenuti sono dinamici e di alta qualità: il sistema è compatibile con gli strumenti più usati dai professionisti del Design Grafico e possono essere gestiti con le tecniche del WEB Marketing.



Vantaggi caratteristiche e benefici

- **Flessibilità al tuo servizio**

Questo nuovo canale informativo è lo strumento che stimola la creatività delle tue campagne informative più innovative.

- **Veloce e semplice aggiornamento dei contenuti**

E' possibile aggiornare e cambiare i contenuti della rete di display da un'unica postazione remota connessa ad internet ed è possibile personalizzare le informazioni visualizzate su ogni singolo schermo o gruppo di schermi.

Così variare la comunicazione e le informazioni in qualunque momento ed in qualunque parte del mondo non sarà mai stato così facile!

- **Riduzione dei costi e risparmi di tempo**

Non è necessario stampare e distribuire 'materiale di alcuna natura' ogni volta che vengono cambiati il messaggio o i contenuti di una campagna pubblicitaria o informativa: vengono eliminati i costi della stampa e si risparmia tempo e relativi costi nei processi di distribuzione e posa in opera.

Quello che si ottiene con l'Ech(o) Solution è una programmazione immediata con contenuti informativi, d'intrattenimento e/o promozionali di alta qualità

- **Maggiore efficacia del messaggio**

La comunicazione attraverso i display video di ultima generazione ha maggior efficacia rispetto alle comunicazioni convenzionali. Una volta attirata l'attenzione dei potenziali clienti si hanno maggiori probabilità di influenzarne le decisioni.

- **Guadagnare grazie alla rete di display multimediali**

E' possibile trarre profitto dalla rete di display realizzata con gli apparati Ech(o) Solution in modo simile ad un canale televisivo, vendendo spazi pubblicitari. Il servizio può essere offerto a inserzionisti più numerosi rispetto alle pubblicità statiche su carta



I vantaggi di una applicazione Web-based

- ✓ **Aggiornamento:** le applicazioni Web-based sono sempre aggiornate. Gli aggiornamenti sono semplici e veloci perché distribuiti via internet/intranet.
- ✓ **Immediatezza di accesso:** le applicazioni Web-based non hanno bisogno di essere scaricate, installate e configurate. Basta l'autenticazione online da parte dell'utente (login e password).
- ✓ **Libertà di lavoro:** le applicazioni Web-based lasciano libero l'utente di poter svolgere il proprio lavoro dal luogo che ritiene più opportuno.
- ✓ **Sicurezza dei dati:** le applicazioni Web-based garantiscono la maggiore sicurezza; meno rischi di perdere i dati inseriti.
- ✓ **Memorizzazione dati:** le applicazioni via Internet garantiscono il back up automatico dei dati.
- ✓ **Riduzione costi di gestione:** le applicazioni Web-based consentono di abbattere i costi delle licenze d'uso, in quanto possono funzionare su diversi Sistemi Operativi open source, come Linux.
- ✓ **Compatibilità cross-platform:** le applicazioni Web-based possono essere utilizzate da un qualunque sistema (Windows, Linux, Mac, etc.) che abbia disponibile un browser.
- ✓ **Nessun conflitto:** le applicazioni Web-Based, non installandosi sul sistema, non vanno in conflitto con altri applicativi usati dall'utente.
- ✓ **I dati si muovono anche online:** passare da applicazioni locali a Web-based permette un accesso ai dati diverso, in ogni parte del mondo, basta un browser ed una connessione ad Internet.

Soluzione adeguata alle esigenze dei professionisti

- ✓ **Gestione:** avere una visione completa della situazione di ogni display in ogni momento. Tramite l'interfaccia Web-based, da ogni postazione connessa ad internet, sarà possibile monitorare lo stato di ogni display (connesso/non connesso, playlist visualizzata, monitor acceso/spento) in maniera intuitiva e veloce.
- ✓ **Raggruppamenti:** organizzare i display secondo le caratteristiche del monitor, della location, ... dell'utente. L'interfaccia mette a disposizione dell'utente delle etichette personalizzabili (tag) con cui classificare e quindi filtrare e/o ordinare ogni box, facilitando la visualizzazione e l'aggiornamento di un notevole numero di display.
- ✓ **Agenda:** programmare temporalmente la proiezione dei contenuti. Pianificare la proiezione di una playlist di contenuti sarà facile come inserire un evento in un'agenda.
- ✓ **Velocità:** trasferire solo i nuovi contenuti. Il trasferimento differenziale, ovvero solo dei nuovi contenuti, è stato studiato per funzionare sia dal proprio pc al server (up-load dei contenuti), che dal server ai singoli display (download dei contenuti). Ciò permetterà di risparmiare tempo e banda nell'aggiornamento dei contenuti.
- ✓ **Template:** utilizzare e riutilizzare slideshow collaudate e graficamente allettanti. L'esperienza maturata nel mercato ci ha spinto a implementare il sistema di template che permette di preparare velocemente contenuti a forte impatto multimediale. Grazie ad un layout predefinito sarà quindi possibile preparare uno slide show multimediale semplicemente aggiungendo immagine e testo.