INTEGRATED SOLUTIONS

Real Time Architecture

MAGALI : Modular real time architecture

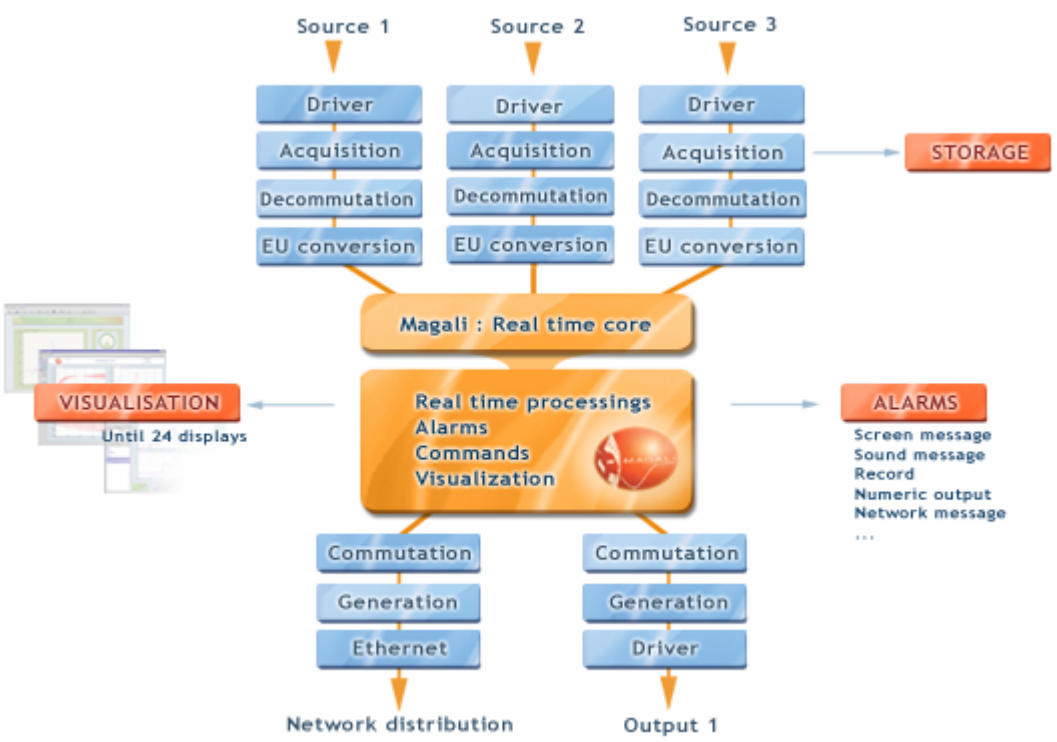
Including a set of standalone functional modules, **MAGALI** real time architecture adapts very easily to all kinds of signal acquisition and generation. The architecture is called « **multi-sources** », i.e. every **MAGALI** system manages several inputs either independently or simultaneously, whatever the format. For example, 'Analog + PCM IRIG' or 'Discrete + 1553 + ARINC 429', etc. This automatic management allows working in a unique environment.

Features

- Flexibility
- Upgradable
- Multi-sources
- Unique environment
- Efficiency

Multi-sources

- Source synchronisation
- Acquisition
- Generation
- Network distribution (NDA)
- Processing
- Conversion in engineering units
- Alarms
- Visualisation



Key points of MAGALI real time architecture

- ***Acquisition and generation*** for many data formats : telemetry, MIL-STD-1553, ARINC429, analog, serial, Ethernet, discrete, counter, specific.
- ***Multi-source architecture*** : automatic synchronisation of the sources whatever the format.
- ***Unique working environment***.
- ***Network distribution*** of data in raw values or engineering units via NDA architecture. **MAGALI** monitoring and visualisation stations can directly receive and operate data.
- ***Acquisition and processing channel generations*** in real time, using standard and specific operators and functions.
- ***Test configuration*** remains as trivial as a mono-source system : each module is standalone and is separatly configured. Then, real time synchronization of sources is automatic.

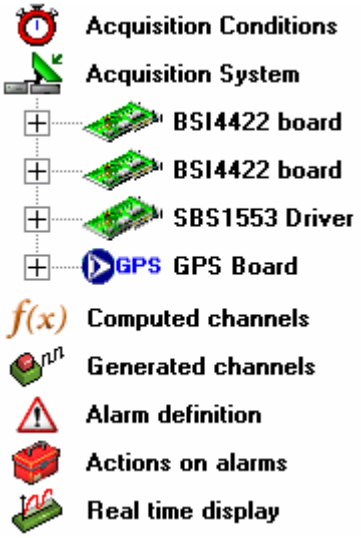
Real Time Architecture

MAGALI : Modular real time architecture

Acquisition / Generation

- Telemetry (PCM)
- MIL-STD-1553
- ARINC429
- Analog
- Serial
- Ethernet
- Discrete
- Counter
- Specific

Example



Description

Real Time Core

Represents the engine of **MAGALI** real time. It makes the link between the different functions :

- Initialization of all modules according to the test configuration.
- Synchronization of the different modules, multi-sources and scheduling.
- Data stream management.

« ACQUISITION » modules

- **Acquisition** : acquisition system management, data reception and transmission in block form to other modules.
- **Storage** : direct storage of raw data blocks onto disk (this module has high priority). At acquisition end, data are available for analysis.
- **Decommutation** : parameters extraction coming from data blocks. After extraction, those parameters are available in raw values.
- **EU conversion** : raw values conversion to engineering units using several kinds of functions : linear, polynomial, value charts, etc.

« PROCESS » modules

- **Calculation** : calculation from the acquisition parameters, issued from different sources and other processing parameters. Each processing parameters is defined by a standard or specific mathematic function (specifics functions are developed with MAGALI real time development toolkit).
- **Alarms** : threshold overpassing or profile overpassing will produce an alarm, physically represented by different ways : bip or sound message emission, display a message on screen, l record event in a file, activation of a discrete output (option), send a Ethernet/Internet/phone message (option). Other actions more specific are possible.
- **Graphic displays** : they are used to display data. They can be customized using the Graphic Editor, which contains object palettes for all requirements concerning real time visualization, (counter, bar-graphs, curves, displays, LEDs, dynamic objects, ActiveX, etc).
- **Raw data display** : The module is designed to display data blocks from the acquisition, before or during decommutation : blocks, frames, packets, zone, …) the display is on different format, hexadecimal, binary, decimal, …

Data Distributions

- **Network distribution** : data frames emission on Ethernet network. This distribution can be integrated to **MAGALI** NDA architecture.
- **Commutation** : from data streams, the module is designed to built data frames with the format required by the specified output (Analog, PCM, IRIG, 1553, ARINC429, …).
- **Generation** : in the same way than acquisition module, it manages generation system(s) according to equipment used.

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