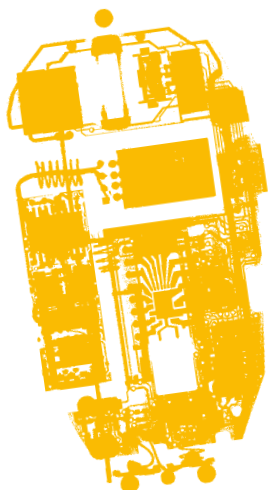


DVB-MONITOR

A DISTRIBUTED SYSTEM FOR MONITORING DTT SIGNALS



The introduction of digital broadcasting enhances the content that the television signal carries with it on two different fronts: service information for the broadcasting system and the real and useful content for users.

Existing monitoring systems, on the other hand, have limited access to the information that accompany the digital signal as they are not retained significant in controlling coverage and reception.

DVB Monitor answers the need for systematic analysis of this information in order to:

- identify/classify the digital TV services receivable in a determined area;
- monitor evolution over time with the introduction, for example, of a new TV channel in a Mux or the presence of new interactive MHP services.



SYSTEM ARCHITECTURE

A distributed system is made up of listening probes that are installed over an area and a central monitoring console that picks up and publishes the data and from which it is possible to request a certain probe to perform specific tasks.

The probes are located over the region at pre-established listening points and are connected by a fixed or mobile network to the central monitoring console. The system can add an indefinite number of new probes "on the spot" and automatically increase the ability to collect data. It is also equipped with an alarm system to warn of possible malfunctions concerning probes and links.

Data collected

- Frequency
- Parameters of physical modulation
- Received power
- Signal/noise ratio
- BER
- Signal ID
- TV Channels available
- Interactive MHP services available
- Other services available (for example IP-based services)
- Identification and description of every A/V stream or data transported by the signal
- Bit/rate of every A/V flow or data transported by the signal
- Information on possible conditioned access systems.

The system also allows the user to download data and run MHP applications locally



The monitoring console

The console's navigation system visualises the probes located over the area and accesses the data collected by each one together with alarms/announcements. Its graphic interface allows the user to manage the probes, visualize the collected data and interactively request specific tasks, for example, to download an application from a single probe.

The console manages the persistence of the most significant information:

- identification and state of the probes
- history of information received from the probes
- history of information on issuing, transmissions and applications
- alarm configuration
- alarm logs.

The console also generates an alarm in one of the following situations:

- Failed integrity check of the applications
- Absence of a TV program inside a specific Mux
- Impossibility to receive a broadcasting station (Mux) on a frequency specified in a certain location
- Fall of a probe (heart beat not received or fallen connection)
- System error registered by probe.

The console's software tools deploy downloaded applications onto a set top box connected to it in order to visualize the application running locally, if the application is a typology that allows this "off-line." Alternatively, the console might have an implementation of run-time MHP that allows downloaded applications to run directly on the console.

The probe for collecting data

The probe is a Linux-based machine with two DVB-T reception cards. The first one of these reception front-ends is dedicated to automatically locating the signal and collecting the data according to the pre-set listening cycles and is autonomously piloted by the application installed on the probe. The second front-end is dedicated to specific requests made by the operator who uses the central console interactively.

This is necessary, for example, to download an interactive application or carry out a specific check in real time, without waiting for the completion of the automatic cycles carried out on the first front-end. The probes are checked by the console via a TCP/IP connection that is set and kept active by the same probe. This approach avoids the necessity for a public address for every probe. A system is normally used by IDS probes, in order to work within Intranet networks too.

Functions:

- Tuning a frequency
- Collection of parameters showing quality of signal and modulation
- Collection of parameters of the Network
- Collection of available services (TV and data) and elementary streams
- Measurement of bit rate of services and elementary streams
- Collection and download of MHP interactive applications.

