special purpose
telecommunication systems
custom made, to solve customer specific needs

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FITRE S.p.A.

100% Italian Company

Since **1943** designs and manufactures **Telecommunication Systems** and **Products** for:

- Oil&Gas and Petrolchemical Plants
- Power Plants
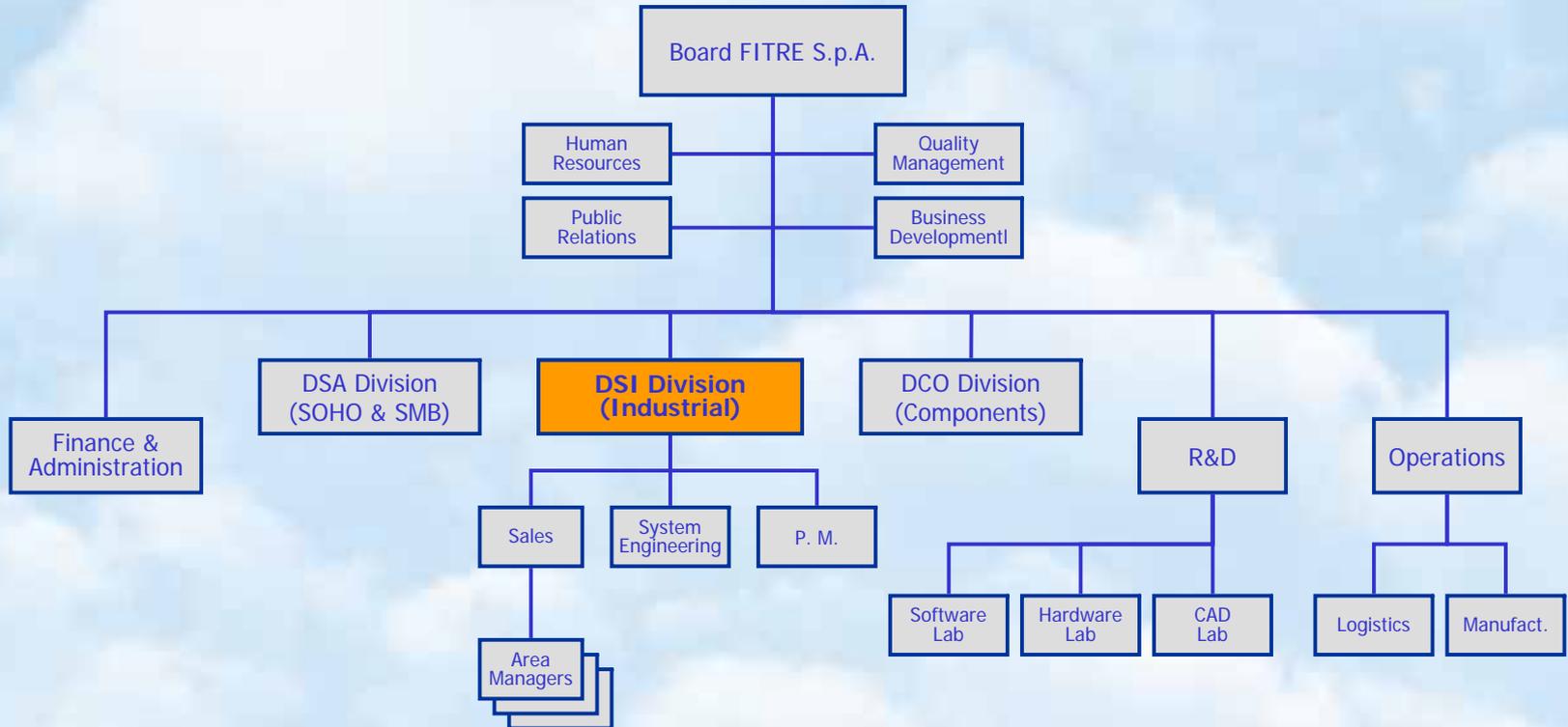- Heavy Industry Plants
- Transportation networks
- Public areas

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Quality System

Certified Quality System
according to
UNI EN ISO 9001:2008
Standards

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Organization

Board FITRE S.p.A.

- Human Resources
- Quality Management
- Public Relations
- Business Developmentl

- Finance & Administration
- DSA Division (SOHO & SMB)
- **DSI Division (Industrial)**
- DCO Division (Components)
- R&D
- Operations

DSI Division:
- Sales
  - Area Managers
- System Engineering
- P. M.

R&D:
- Software Lab
- Hardware Lab
- CAD Lab

Operations:
- Logistics
- Manufact.

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Solutions

FITRE solutions are tailored on **Customer's Specifc Requirements** and according to **Safety Requirements**

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Solutions Portfolio

FITRE's portfolio includes:

- **Phones** » analog and VoIP, weather and explosion proof
- **SOS Communication Systems** » handsfree terminals
- **Public Address Systems** » with anti-larsen feature
- **Intercom Systems** » page&party, selective, talk-back
- **Survival Communication** » sound-powered technology
- **Communication Supervision** » integration with CCTV etc.
- **Automatic Announcement** » Text-To-Speech
- **Surge Protection devices** » telecom and data lines
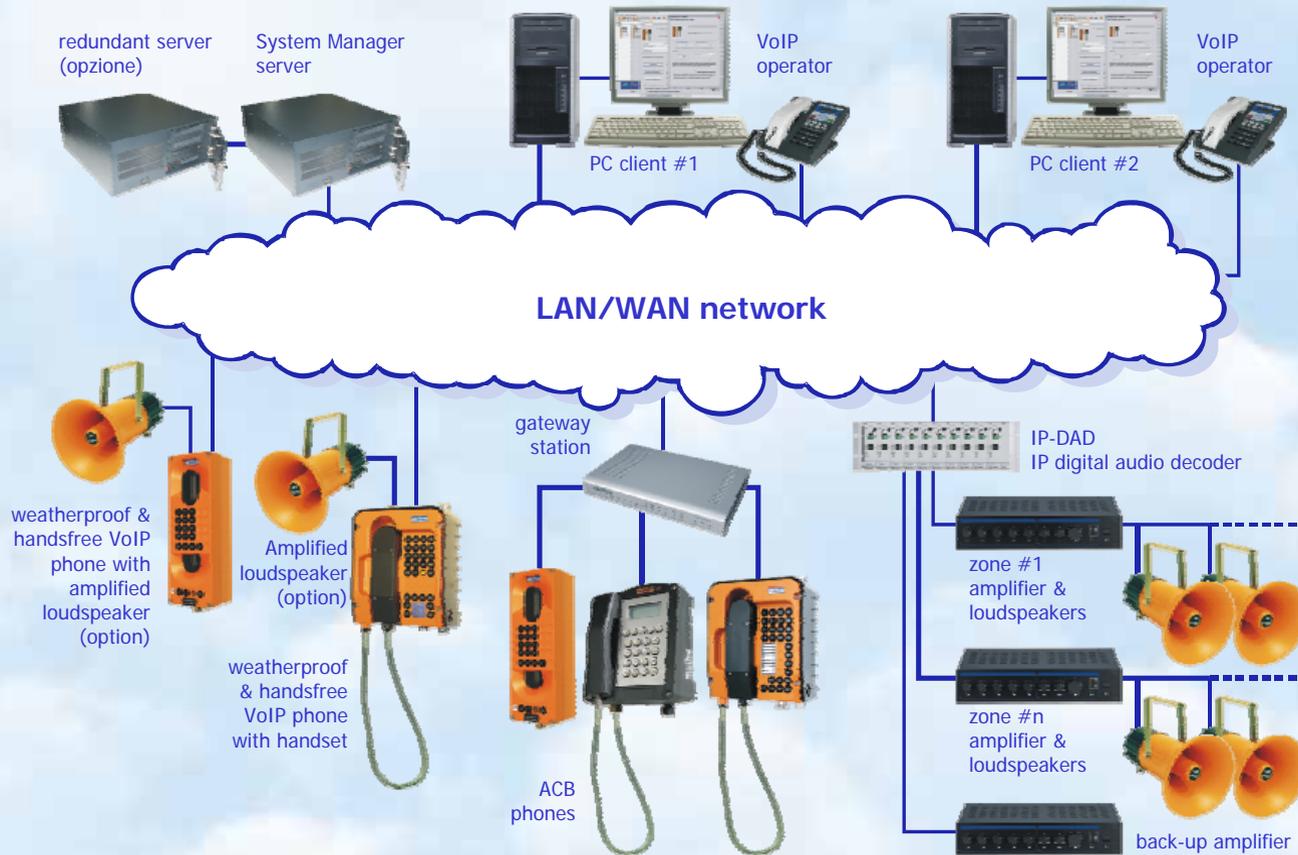
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Open Digital Architecture

Open, Flexible and Modular Digital Architecture

Ready to **integrate** all communications functions of **'third parties' systems** (CCTV, DECT, Fire&Gas, SCADA, etc.)

High Quality components developed in **FITRE R&D Labs,** with total control over mechanical, electronic and software design

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Open Digital Architecture

redundant server
(opzione)

System Manager
server

VoIP
operator

PC client #1

VoIP
operator

PC client #2

LAN/WAN network

weatherproof &
handsfree VoIP
phone with
amplified
loudspeaker
(option)

Amplified
loudspeaker
(option)

weatherproof
& handsfree
VoIP phone
with handset

gateway
station

IP-DAD
IP digital audio decoder

zone #1
amplifier &
loudspeakers

ACB
phones

zone #n
amplifier &
loudspeakers

back-up amplifier

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Building Blocks

Analog and Digital Components

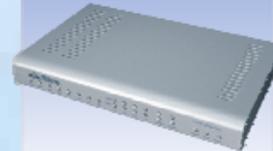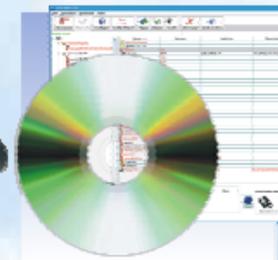|					
analog telephone sets	VoIP telephone sets	handsfree phone sets	VoIP gateways	IP-DAD gateways	amplifiers
loudspeakers	amplified loudspeakers	signaling devices	PC clients	operator terminals	software

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real world
application examples
taken from actual projects

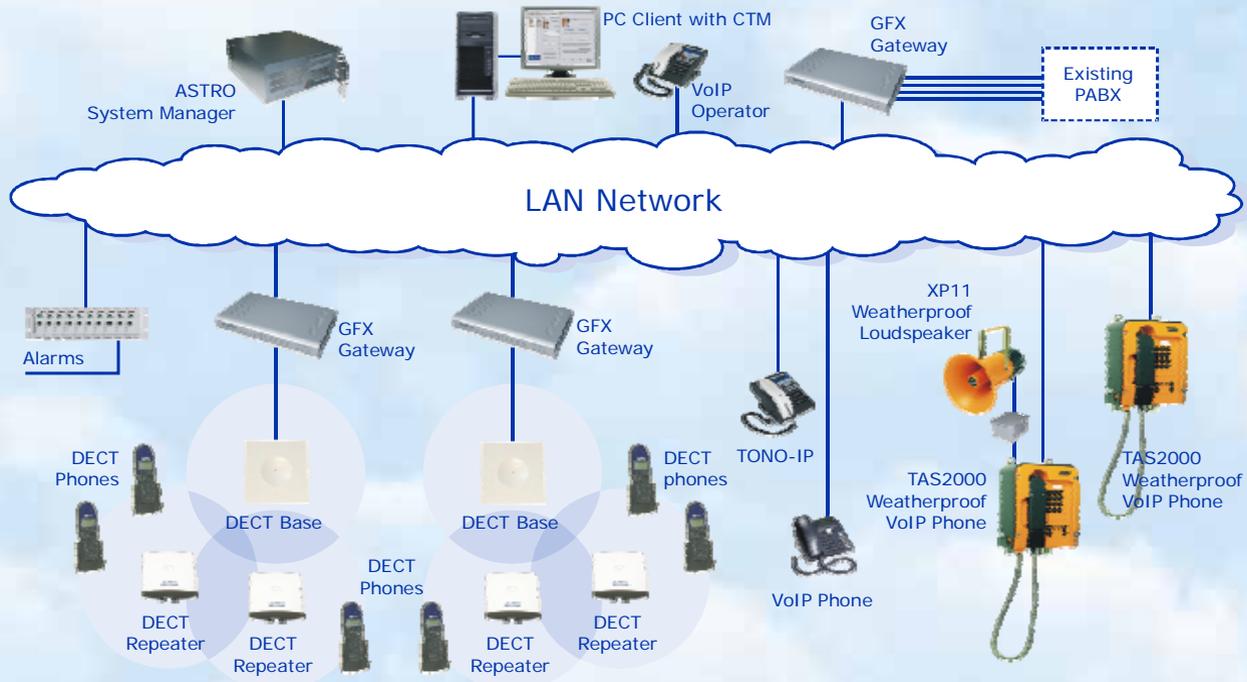**fitre**

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Steel Industry

Phone/Intercom System for ground and crane operators

PC Client with CTM

GFX Gateway

ASTRO System Manager

VoIP Operator

Existing PABX

LAN Network

Alarms

GFX Gateway

GFX Gateway

XP11 Weatherproof Loudspeaker

DECT Phones

DECT phones

TONO-IP

DECT Base

DECT Base

TAS2000 Weatherproof VoIP Phone

DECT Phones

DECT Repeater

DECT Repeater

DECT Repeater

DECT Repeater

TAS2000 Weatherproof VoIP Phone

VoIP Phone

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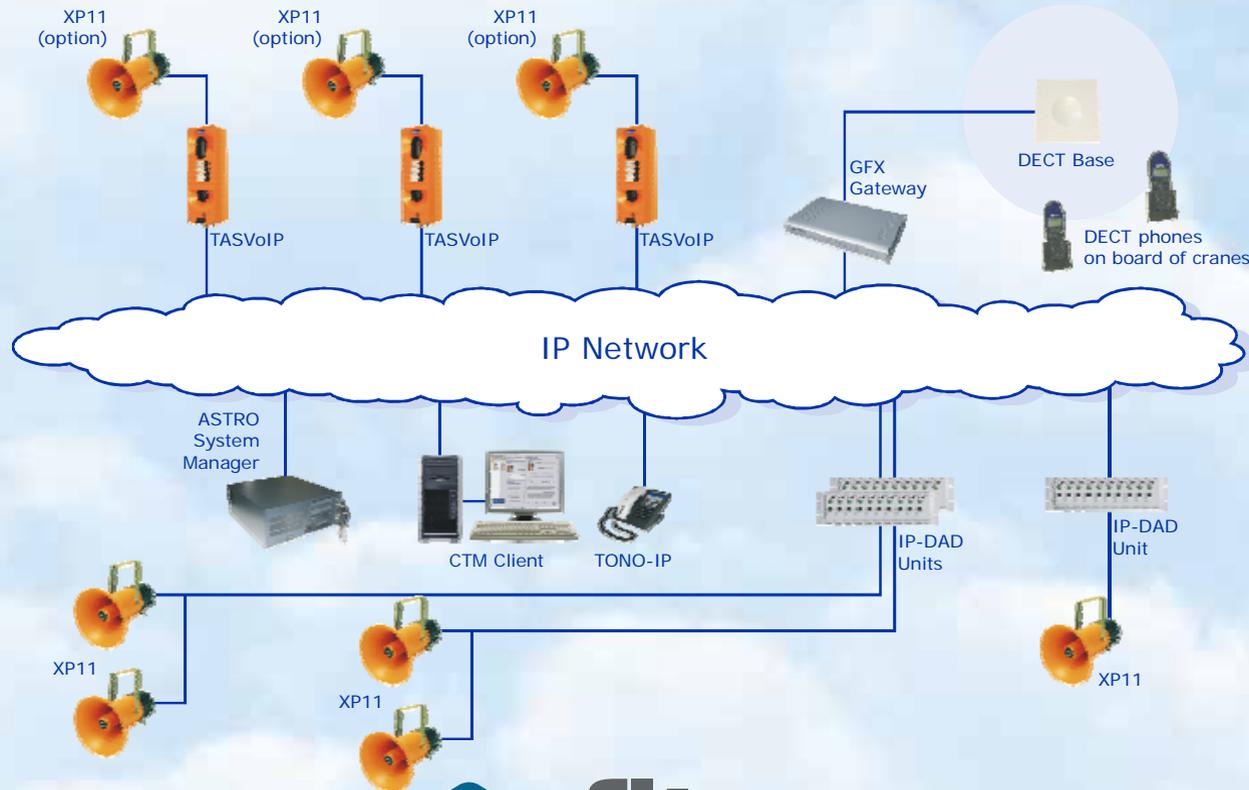**FITRE S.p.A. • electronics & telecommunications**

Steel Industry

Phone/Intercom System for ground and cranes operators

Architecture based on ASTRO System Manager with VoIP terminals and mobile DECT terminals

❖ VoIP ground terminals, for highest audio quality in presence of high ambient noise and to exploit the existing LAN network

❖ Some terminals equipped with an additional 25W, adjustable amplified loudspeaker

❖ Reuse of existing indoor VoIP terminals (SIP standard) for office operators

❖ Interface with existing PABX and DECT system through GFX gateway units

❖ Each terminal can directly call any other terminal, which answers in "intercom" mode, automatically activating the hands free conversation

❖ Intercom calls can address a single terminal, a group of terminals or all the terminals of the system (general call)

❖ DECT terminals used by crane operators can access all the features of the system

❖ On/Off contacts provided by existing alarm systems can trigger the automatic broadcasting of pre-recorded messages/alarm tones through the speakers of the terminals and through the amplified loudspeakers

❖ Remote diagnostics and configuration performed via CTM client

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Steel Industry

Intercom and Public Address System for ground and crane operators

XP11 (option) — TASVoIP

XP11 (option) — TASVoIP

XP11 (option) — TASVoIP

GFX Gateway

DECT Base

DECT phones on board of cranes

IP Network

ASTRO System Manager

CTM Client

TONO-IP

IP-DAD Units

IP-DAD Unit

XP11

XP11

XP11

XP11

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Steel Industry

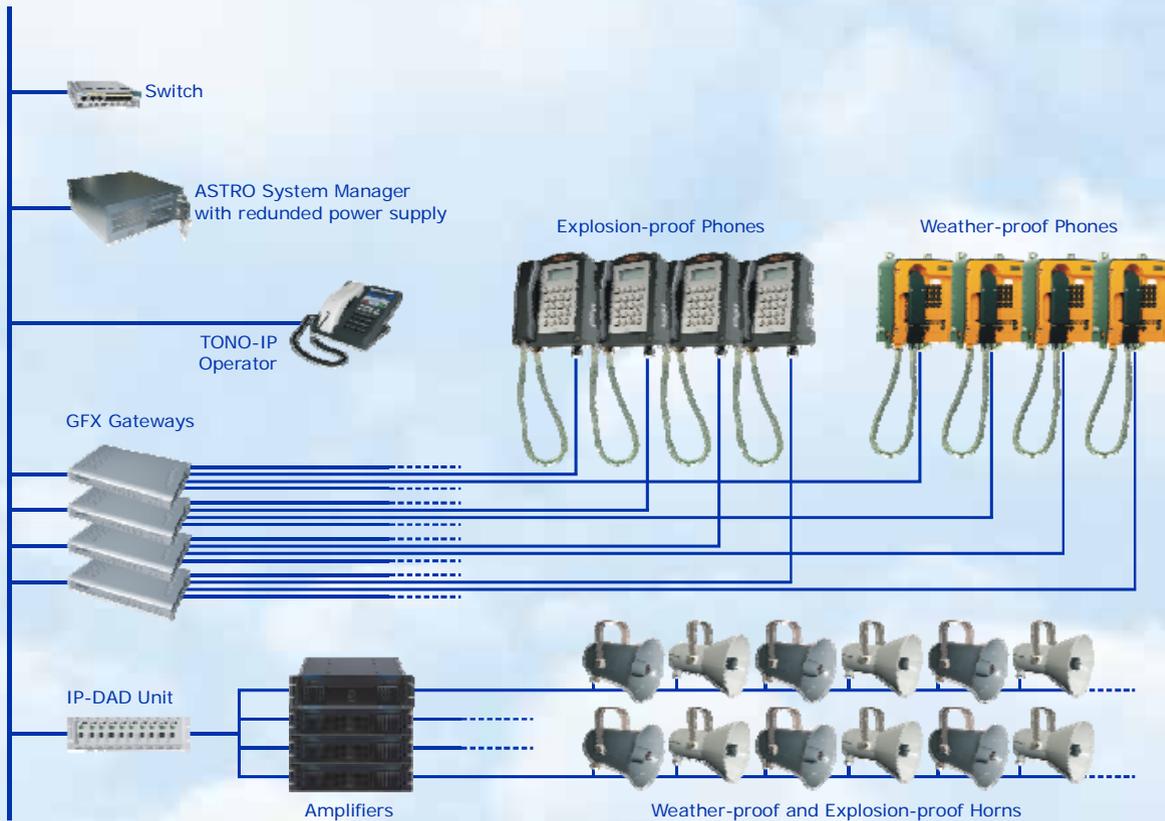## Intercom and Public Address System for ground and crane operators

Architecture based on ASTRO System Manager with IP-DAD gateways, VoIP terminals, amplified loudspeakers and mobile DECT terminals

❖ VoIP ground terminals connected through the existing LAN network, for highest audio quality in presence of high ambient noise

❖ Each terminal can directly call any other terminal which answers in "intercom" mode, automatically activating the hands free conversation

❖ Some terminals in heavy noise areas are equipped with an additional 25W adjustable amplified loudspeaker

❖ Public Address system implemented via IP-DAD units and amplified loudspeakers, with capability to address a single area, a group of areas or all loudspeakers areas

❖ DECT terminals used by crane operators can access all the features of the system

❖ Interface with DECT system through GFX gateway units

❖ Intercom calls can address a single terminal, a group of terminals or all the terminals of the system (general call)

❖ Remote diagnostics and configuration performed via CTM client

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Power Industry

Telephone, Intercom and Page&Party System

Switch

ASTRO System Manager
with redunded power supply

Explosion-proof Phones

Weather-proof Phones

TONO-IP
Operator

GFX Gateways

IP-DAD Unit

Amplifiers

Weather-proof and Explosion-proof Horns

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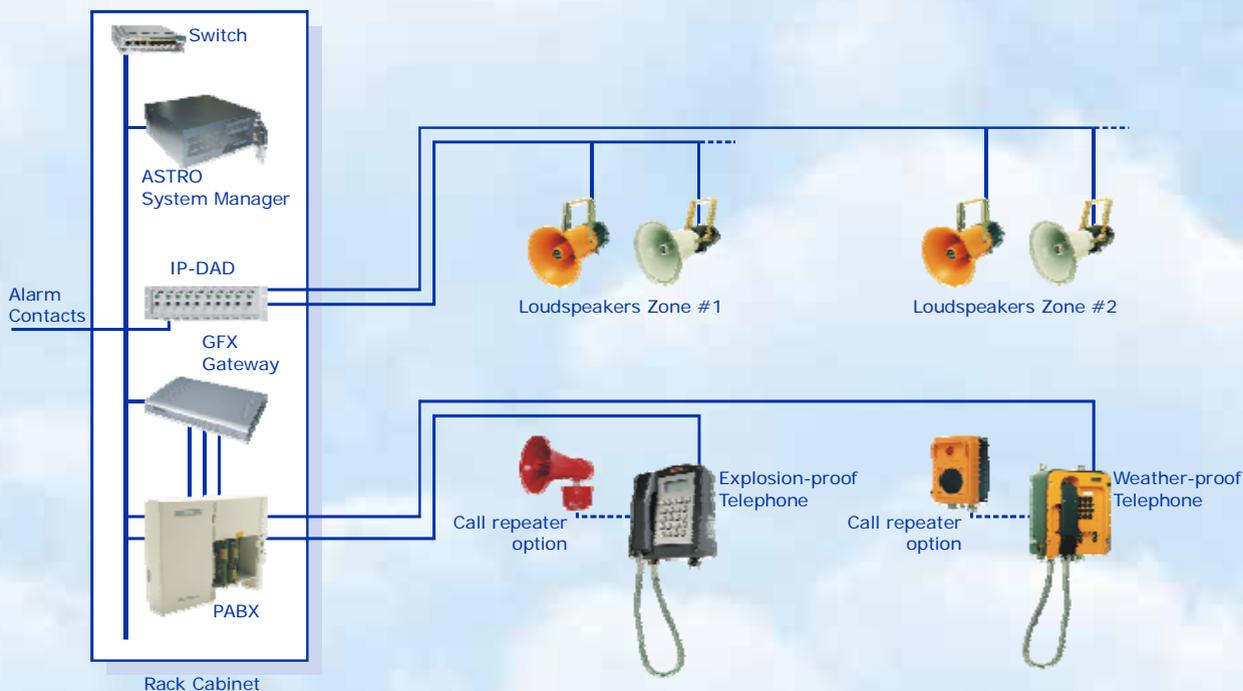
Power Industry

Telephone, Intercom and Page&Party System

Architecture based on ASTRO System Manager with GFX and IP-DAD units

❖ Analog weather-proof and explosion-proof terminals and VoIP operator console

❖ Simultaneous management of telephone and intercom call functions with paging through the speakers network

❖ Management of multiple paging areas and of general call

❖ No interference between telephone and intercom calls

❖ Each terminal is equipped with keypad to allow both page&party calls and selective phone calls to any other terminal of the system

❖ Management of one or more "page" lines and capability to page on one or more paging areas

❖ Two or more "party" lines for simultaneous conversations with no crosstalk or interference whatsoever

❖ Direct call to the control room

❖ Activation of functions through a single key (direct dial)

❖ Possibility to interface with PABX and/or DECT systems via GFX gateways

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Petrochemical & Gas

Public Address System with single/multiple zones calls and general calls activated by telephone sets

Switch

ASTRO System Manager

IP-DAD

Alarm Contacts

GFX Gateway

PABX

Rack Cabinet

Loudspeakers Zone #1

Loudspeakers Zone #2

Call repeater option

Explosion-proof Telephone

Call repeater option

Weather-proof Telephone

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Petrochemical & Gas

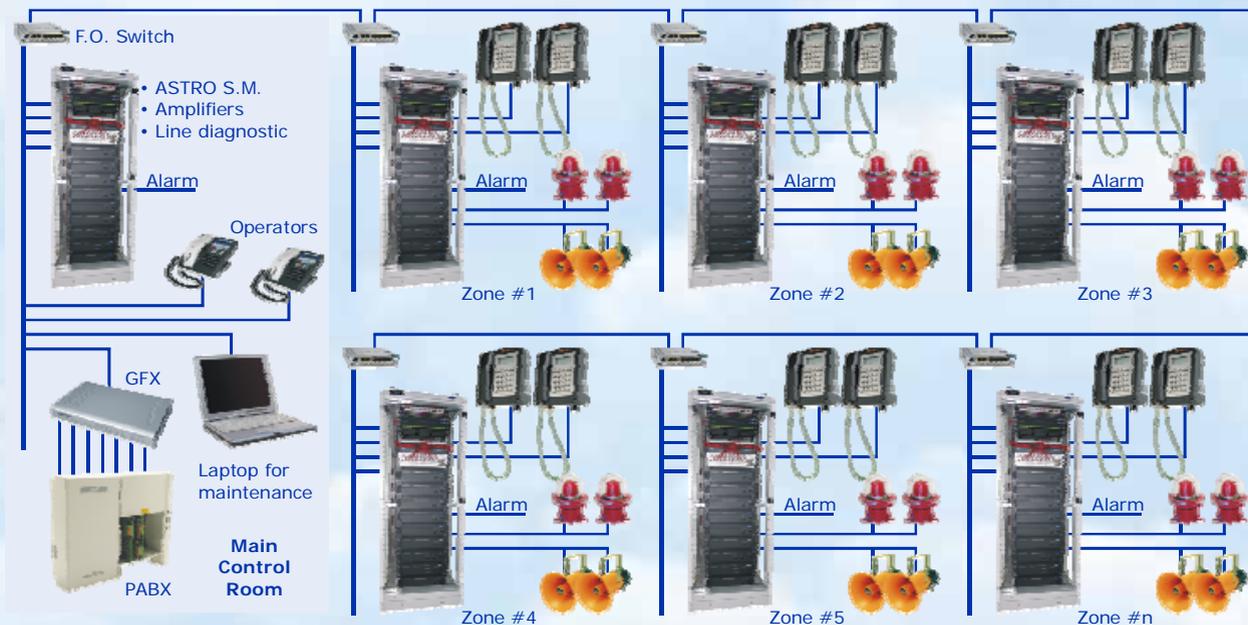## Public Address System with single/multiple zones calls and general calls activated by telephone sets

Architecture based on ASTRO System Manager with PABX and IP-DAD

❖ Communication through PABX exchange and analog phone terminals, weather-proof and explosion-proof (ATEX EExd IIC T6), to reuse the existing copper network

❖ Each unit is equipped with optical and acoustical signalling devices (for telephone calls), either weather-proof or explosion-proof

❖ Each user can directly call any other terminal (selective call) or access the Public Address system (single zone, group of zones, general call) to broadcast his message using the telephone

❖ ASTRO automatically eliminates the risk of feed-back noise (Larsen effect) to allow message broadcasting even if the telephone is close to one or more speakers.

❖ Automatic broadcasting of pre-recorder messages activated by of ON/OFF contacts provided by existing alarm systems

❖ Each speaker zone is managed through an IP-DAD unit, including the amplifier diagnostic circuit

❖ Management of priority levels between users and audio sources.

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Telephony & PAGA System (non-redundant configuration) distributed through existing fiber optic cables

F.O. Switch

• ASTRO S.M.
• Amplifiers
• Line diagnostic

Alarm

Operators

GFX

Laptop for maintenance

Main Control Room

PABX

Alarm — Zone #1

Alarm — Zone #2

Alarm — Zone #3

Alarm — Zone #4

Alarm — Zone #5

Alarm — Zone #n

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Petrochemical & Gas

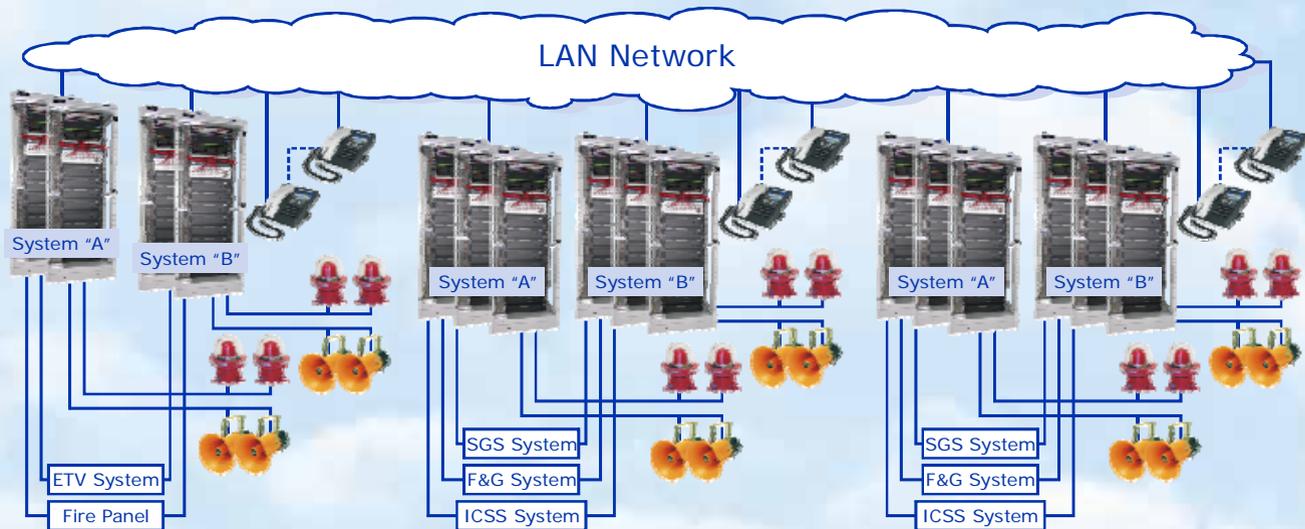## Telephony & PAGA System (non-redundant configuration) distributed through existing fiber optic cables

Architecture based on ASTRO System Manager, GFX and IP-DAD gateways

❖ The site is divided into areas linked together via fiber optic cables, but each area is provided with copper cables to connect terminals and speakers.

❖ Full redundancy of ASTRO System Manager is not required, but system is equipped with High Availability hardware (redundant power supply and HDD subsystems)

❖ Each terminal can call any other terminal of the system (selective call) or place a direct call to the operator (hot-line call)

❖ Each area of the plant is divided into one or more public address zones. ASTRO can address a single zone, a group of zones or all zones in an area, as well as a single area, a group of areas or all areas at the same time

❖ On/Off contacts provided by existing alarm systems can trigger the automatic broadcasting of pre-recorded messages/alarm tones to specific zones/areas

❖ Management of signaling lamps associated with the broadcast announcement

❖ Interface with existing PABX through GFX gateways

❖ Remote diagnostics and configuration performed via CTM client

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PAGA System (redundant configuration) distributed through existing fiber optic cables

LAN Network

System "A" System "B"

System "A" System "B"

System "A" System "B"

ETV System
Fire Panel

SGS System
F&G System
ICSS System

SGS System
F&G System
ICSS System

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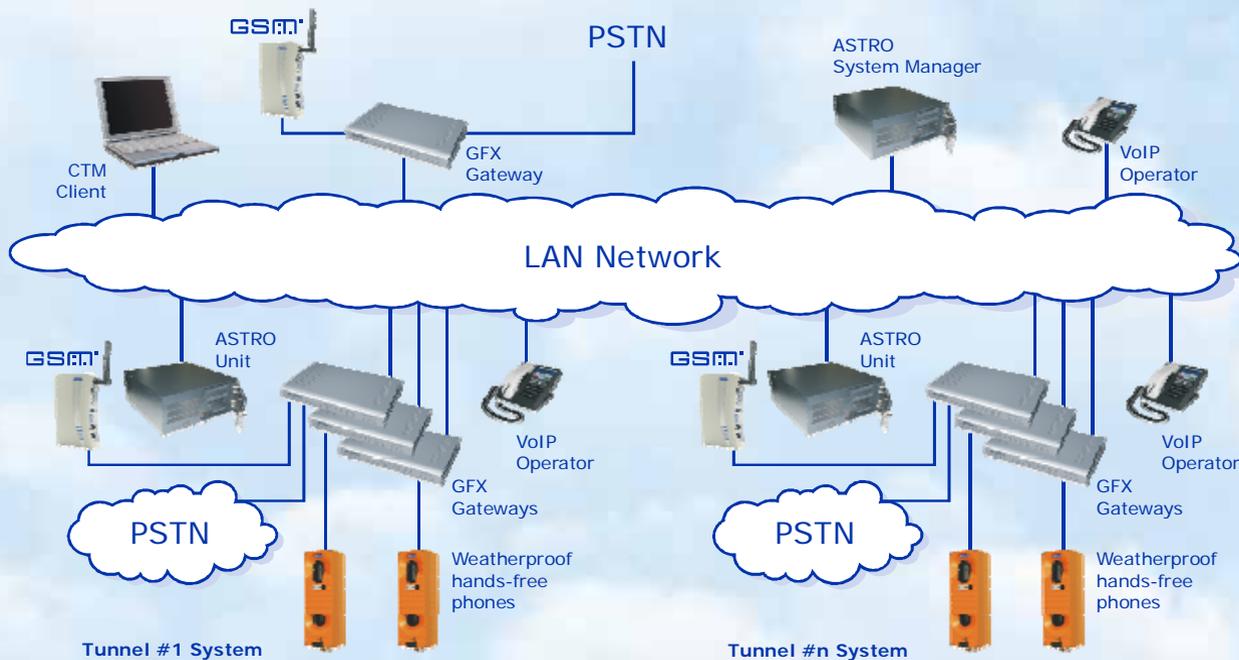## PAGA System (redundant configuration) distributed through existing fiber optic cables

Architecture based on ASTRO System Manager, IP-DAD gateways and VoIP terminals

❖ Fully redundant "A & B" architecture: each zone is provided with two identical systems, each managed by an ASTRO control unit; in case of failure of one control unit, the second one is able to manage the entire zone without loss of functionality

❖ All units of the plant are linked together via fiber optic cables, but each area is provided with copper cables to connect speakers and signalling lamps.

❖ Announcement are made by VoIP terminals, which can be placed in any point of the network, totally independent from the position of the amplification rack; these terminals can also make selective calls among them

❖ Each area of the plant is divided into one or more public address zones. ASTRO can address a single zone, a group of zones or all zones in an area, as well as a single area, a group of areas or all areas at the same time

❖ On/Off contacts provided by existing alarm systems can trigger the automatic broadcasting of pre-recorded messages/alarm tones to specific zones/areas

❖ Management of signaling lamps associated with the broadcast announcement

❖ Remote diagnostic and configuration performed via CTM client

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Roads & Highways

Emergency System for Road and Highway Tunnels

PSTN

ASTRO
System Manager

GSM

CTM
Client

GFX
Gateway

VoIP
Operator

LAN Network

GSM

ASTRO
Unit

ASTRO
Unit

GSM

PSTN

VoIP
Operator

GFX
Gateways

PSTN

VoIP
Operator

GFX
Gateways

Weatherproof
hands-free
phones

Weatherproof
hands-free
phones

Tunnel #1 System

Tunnel #n System

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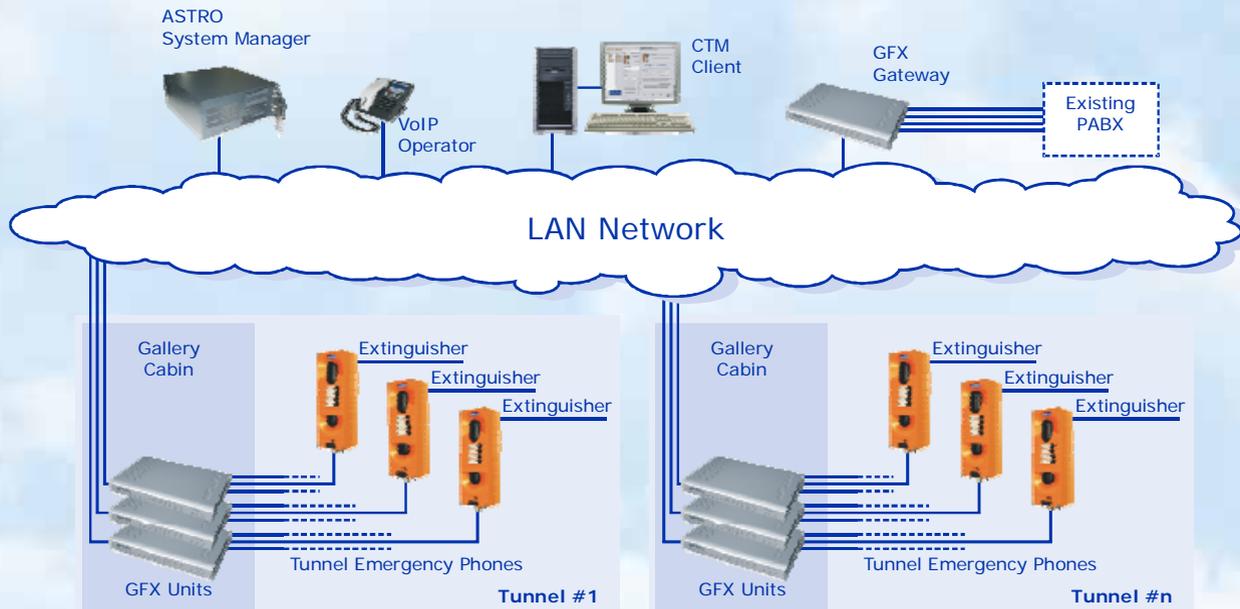# Roads & Highways

Emergency System for Road and Highway Tunnels

Architecture based on multi-ASTRO System Manager and GFX gateways

❖ Each tunnel, as well as the control center, are managed by dedicated ASTRO control units, interconnected via an existing optical fiber network which is shared with other systems (PLC automation, smoke monitoring, traffic lights control, fans, etc.)

❖ Analog Emergency terminals (VOX series) to reuse the existing copper network

❖ In case of failure of the LAN network, each tunnel is able to operate independently: emergency calls are diverted to local PSTN or GSM connections, and all events are recorded by the local ASTRO, which updates the center unit once it is online again

❖ Emergency calls are managed by the center operator (queuing, event management with date/time and dialogues registration), in case of lack of response, they can be diverted to PSTN or GSM connections

❖ Each tunnel is provided with a tunnel operator console, usually dedicated to maintenance activities

❖ Remote diagnostics and configuration performed via CTM client

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Emergency System for Tunnel
with detection of presence/absence of fire extinguisher

LAN Network

ASTRO System Manager

VoIP Operator

CTM Client

GFX Gateway

Existing PABX

Gallery Cabin

Extinguisher
Extinguisher
Extinguisher

GFX Units

Tunnel Emergency Phones

Tunnel #1

Gallery Cabin

Extinguisher
Extinguisher
Extinguisher

GFX Units

Tunnel Emergency Phones

Tunnel #n

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FITRE S.p.A. • electronics & telecommunications
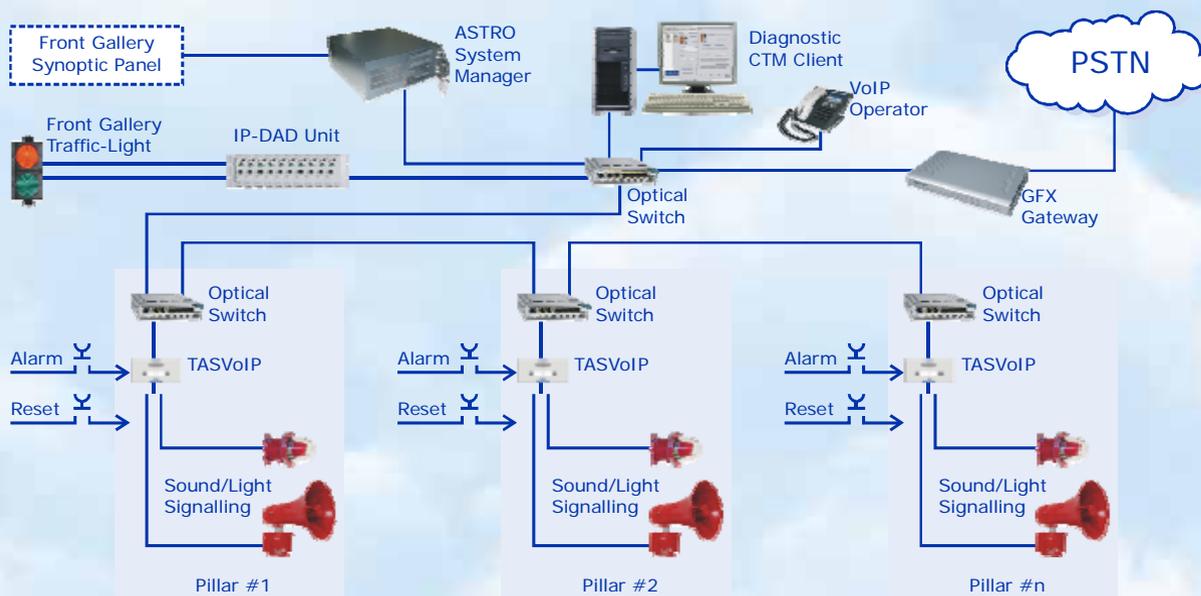
Roads & Highways

Emergency System for Tunnel
with detection of presence/absence of fire extinguisher

Architecture based on ASTRO System Manager and GFX gateways

❖ ASTRO System Manager unit in the control center is interfaced to PSTN network, to allow the transfer of emergency calls directly to public services

❖ Each tunnel is connected to the control center via an existing optical fiber network

❖ Each tunnel is managed through GFX gateway units, to connect analog Emergency terminals (VOX series) to reuse the existing copper cables

❖ Emergency terminals are equipped with an additional 2W amplifier, to ensure good audio quality even with high ambient noise (vehicles in transit)

❖ Each terminal is also equipped with an I/O card to manage the On/Off contacts from the extinguisher hook, to report the status of the extinguisher to the control center

❖ Emergency calls are managed by the center operator (queuing, event management with date/time and dialogues registration)

❖ Remote diagnostics and configuration performed via CTM client

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Emergency System for Tunnel
with management of alarm events

Front Gallery Synoptic Panel

ASTRO System Manager

Diagnostic CTM Client

VoIP Operator

PSTN

Front Gallery Traffic-Light

IP-DAD Unit

Optical Switch

GFX Gateway

Optical Switch

Optical Switch

Optical Switch

Alarm

TASVoIP

Reset

Alarm

TASVoIP

Reset

Alarm

TASVoIP

Reset

Sound/Light Signalling

Sound/Light Signalling

Sound/Light Signalling

Pillar #1

Pillar #2

Pillar #n

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Roads and Highways

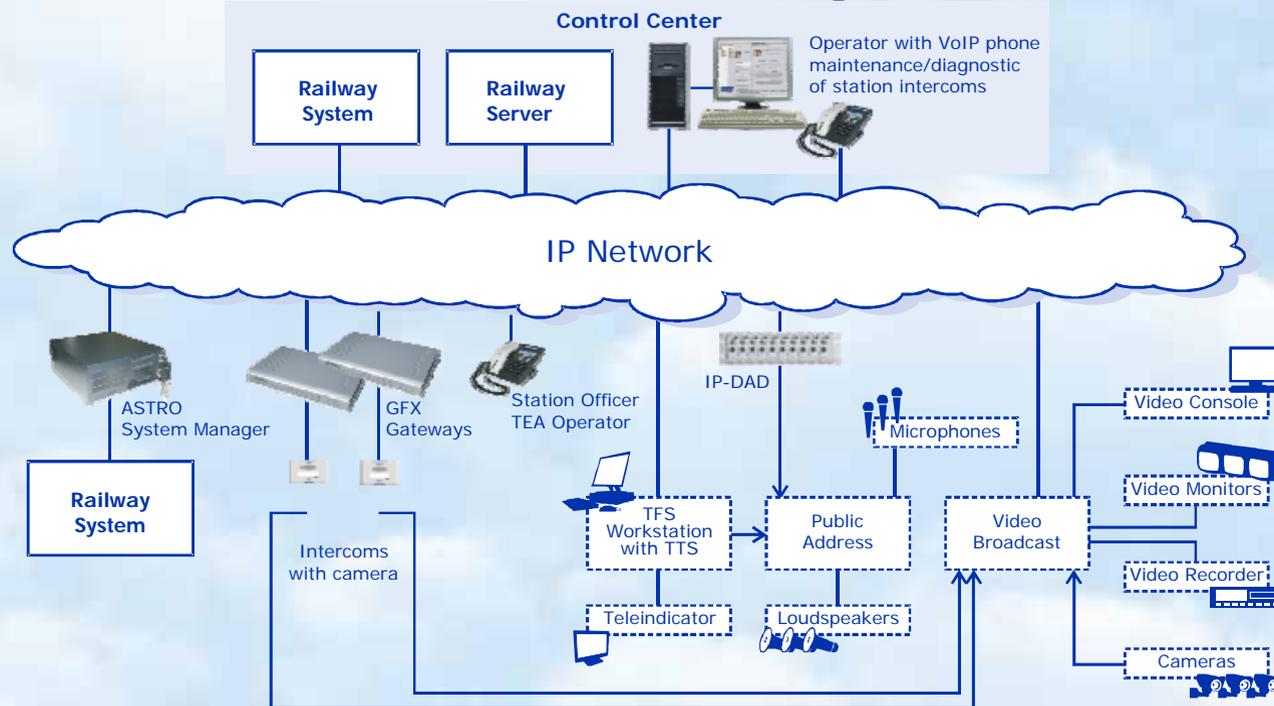## Emergency System for Tunnel with management of alarm events

Architecture based on ASTRO System Manager with VoIP terminals

❖ Emergency VoIP terminals (TasVoip series) for the highest audio quality even with high ambient noise (vehicles in transit)

❖ ASTRO System Manager unit in the control center, interfaced to PSTN network to allow the transfer of emergency calls directly to public services

❖ Each tunnel is connected to the control center via an existing optical fiber network

❖ Each Emergency terminal is equipped with an I/O card to manage alarm events

❖ Emergency calls are managed by the center operator (queuing, event management with date/time and dialogues registration)

❖ In case an alarm is detected, it is reported to the control center operator and all the sound/light signaling devices coupled with each terminal are activated; only the operator can clear the alarm once the proper actions have been undertaken

❖ All events are automatically recorded by ASTRO System Manager

❖ Remote diagnostics and configuration performed via CTM client

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Integrated System for Emergency/video Communications and Public Address for the Railway Stations in Milan

Control Center

Railway System

Railway Server

Operator with VoIP phone maintenance/diagnostic of station intercoms

IP Network

ASTRO System Manager

GFX Gateways

Station Officer TEA Operator

IP-DAD

Microphones

Video Console

Railway System

Intercoms with camera

TFS Workstation with TTS

Public Address

Video Broadcast

Video Monitors

Video Recorder

Teleindicator

Loudspeakers

Cameras

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Railway Station - Underground

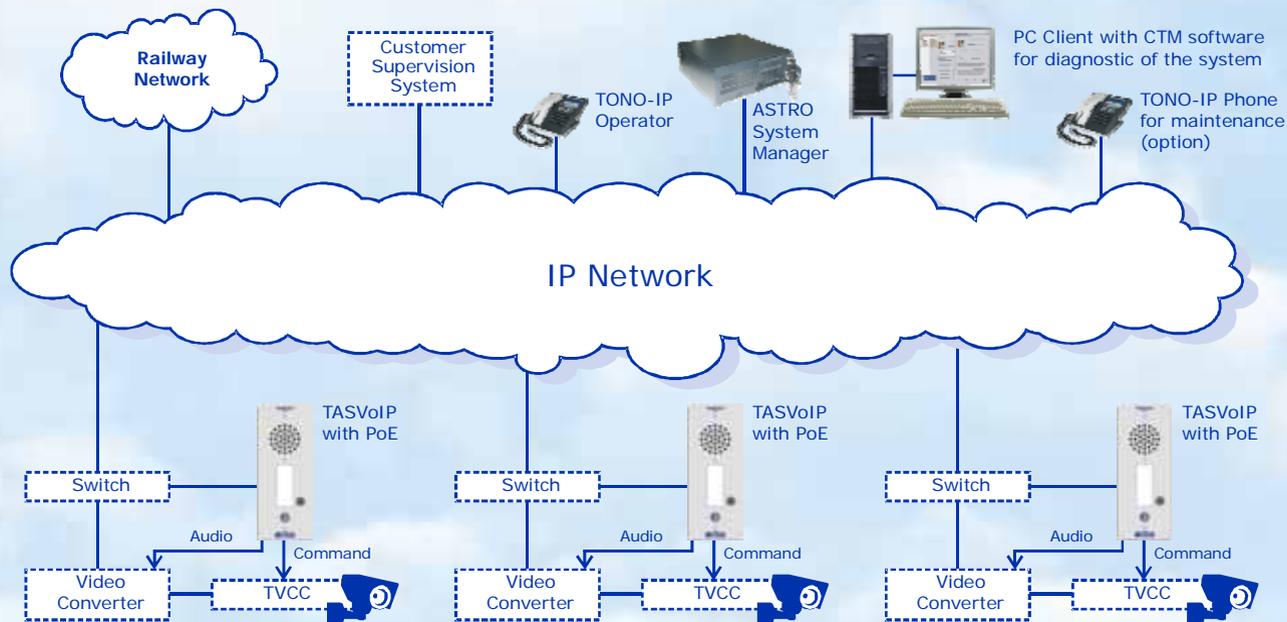## Integrated System for Emergency/video Communications and Public Address for the Railway Stations in Milan

Architecture based on ASTRO System Manager with GFX and IP-DAD Interfaces.

❖ Communication management by the existing supervisory systems

❖ Integration with an audio system from another supplier via IP-DAD gateways

❖ Management of one or more remote operators (geographically installed in other sites in the WAN/LAN network) allowing operators to operate phone/intercom communications and public address annoucements from the same console

❖ Priority levels management among different users and audio resources

❖ When an user presses the emergency call button of a phone, a command is sent to the camera associated with it (CCTV system from other supplier) to activate the recording of images related to the emergency call

❖ Analog Emergency terminals (VOX series) to reuse the existing copper network

❖ Devices are connected to the control center via GFX gateway units interconnected via optical network

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Railways

SOS pillar for Stations - Integrated Emergency System with CCTV system for video-surveillance

Railway Network

Customer Supervision System

TONO-IP Operator

ASTRO System Manager

PC Client with CTM software for diagnostic of the system

TONO-IP Phone for maintenance (option)

IP Network

TASVoIP with PoE

Switch

Audio

Command

Video Converter

TVCC

TASVoIP with PoE

Switch

Audio

Command

Video Converter

TVCC

TASVoIP with PoE

Switch

Audio

Command

Video Converter

TVCC

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Railways

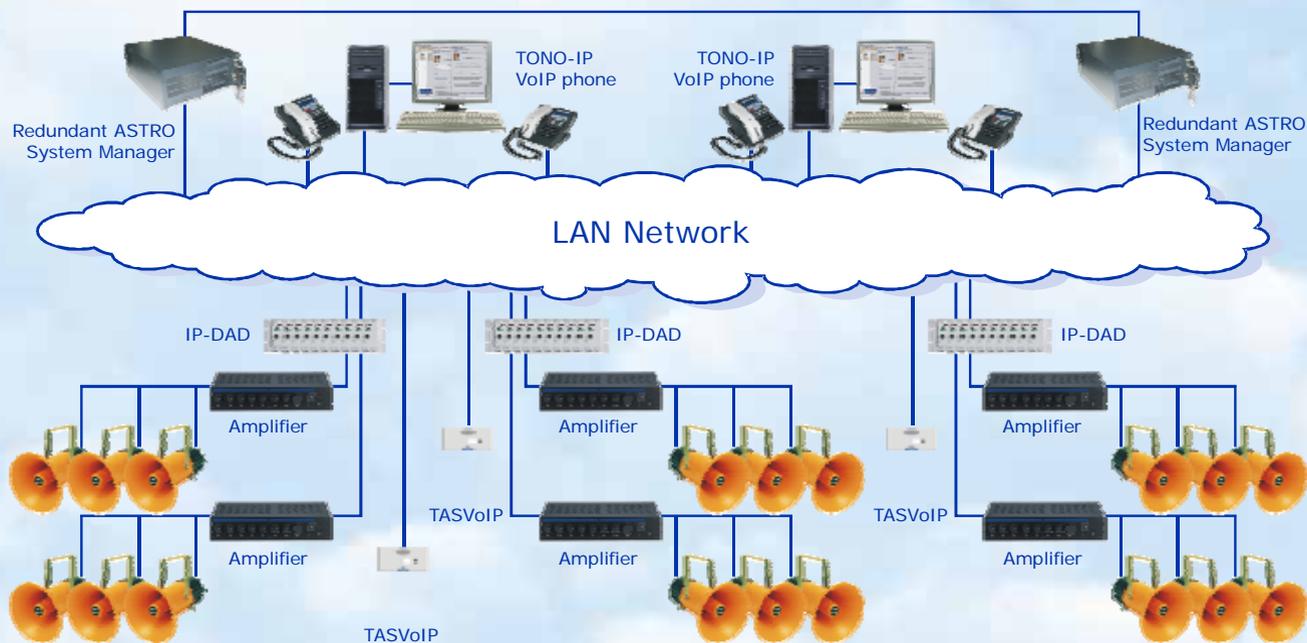## SOS pillar for Stations - Integrated Emergency System with CCTV system for video-surveillance

Architecture based on ASTRO System Manager, digital VoIP emergency apparatus.

❖ Architecture based on ASTRO System Manager and VoIP emergency terminals

❖ Management of all emergency calls from VoIP consoles, with queuing and caller identification

❖ VoIP terminals for SOS pillars, with audio integration with third parties' IP cameras to guarantee integrated audio/video recording

❖ I/O boards equipped on the VoIP terminals to manage of local alarms (anti-tamper, rolling, burglary, etc.)

❖ Rich management interface, based on web-service technology, towards a third party Supervision System, which allows the operator to perform both maintenance and calls management activities using the GUI interface

❖ Management of "silent listening" function from every SOS pillar

❖ Remotes Maintenance and Configuration via one or more maintenance clients (CTM)

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Emergency and Public Address System for Railway Tunnels

Redundant ASTRO System Manager

TONO-IP VoIP phone

TONO-IP VoIP phone

Redundant ASTRO System Manager

LAN Network

IP-DAD

IP-DAD

IP-DAD

Amplifier

Amplifier

Amplifier

Amplifier

Amplifier

Amplifier

TASVoIP

TASVoIP

TASVoIP

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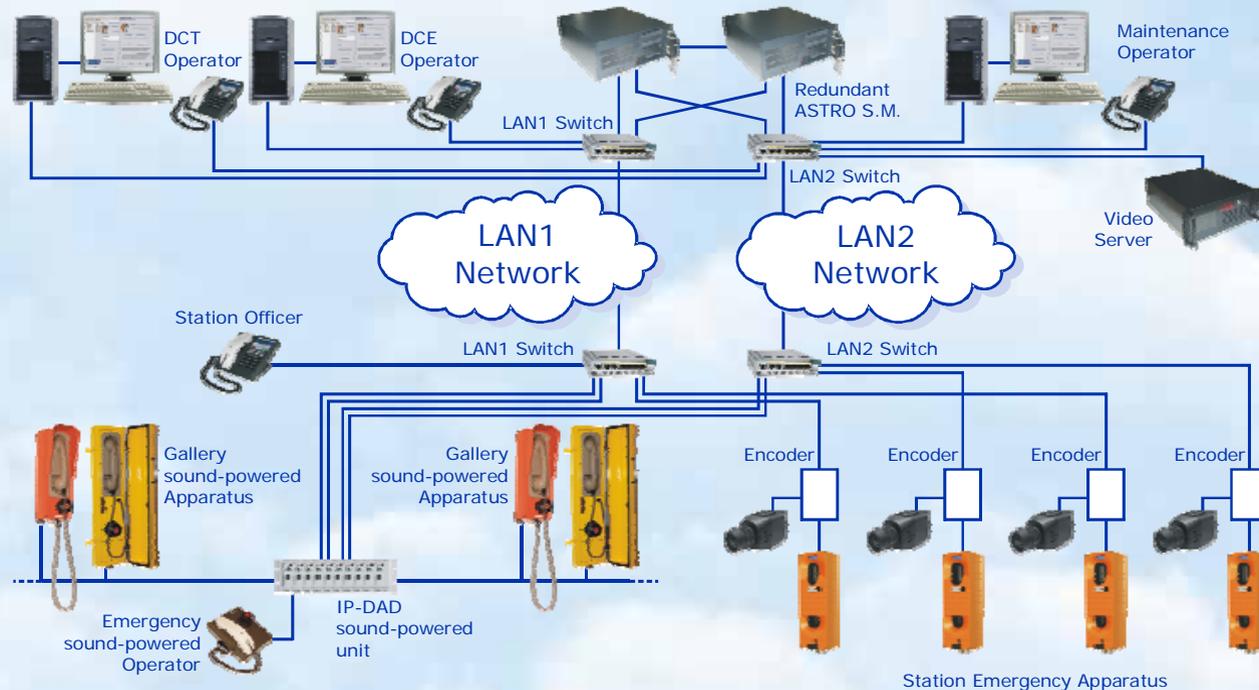33

Emergency and Public Address System for Railway Tunnels

Architecture based on ASTRO System Manager, IP-DAD units and VoIP SOS terminals designed to comply with RFI requirements

❖ Fully redundant architecture, with two Astro control units placed in geographically distant sites and operating in "Hot-Spare" configuration (in case of failure of one unit, the second unit takes the control without any service interruption or limitation)

❖ All components of the system are connected via an optical network, except for loudspeakers inside tunnels which are connected via copper cables

❖ SOS VoIP terminals with a "mushroom shape" button available to passengers to activate an emergency call and a special Key Lock available to RFI staff to place an emergency call or to directly operate the public address system in the tunnel

❖ Speakers and amplifiers with 4 kV insulation to match Railway specifications; redundant amplifiers with n+1 or 1+1 configuration and control of speakers integrity

❖ Capability to address multiple tunnels simultaneously.

❖ Management of all events with recognition of the button and/or position of the key activated for each device in the tunnel.

❖ Remotes Maintenance and Configuration via one or more maintenance clients (CTM)

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Metropolitan Railways

Digital VoIP Emergency System integrated with video surveillance and sound-powered equipment for tunnel

DCT Operator

DCE Operator

Maintenance Operator

Redundant ASTRO S.M.

LAN1 Switch

LAN2 Switch

Video Server

LAN1 Network

LAN2 Network

Station Officer

LAN1 Switch

LAN2 Switch

Gallery sound-powered Apparatus

Gallery sound-powered Apparatus

Encoder

Encoder

Encoder

Encoder

Emergency sound-powered Operator

IP-DAD sound-powered unit

Station Emergency Apparatus

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Metropolitan Railways

Digital VoIP Emergency System integrated with video surveillance and sound-powered equipment for tunnel

Architecture based on ASTRO System Manager, VoIP emergency terminals for train stations, integration of CCTV functions and sound-powered emergency terminals for tunnels

❖ Fully redundant architecture, with two Astro control units placed in geographically distant sites and operating in "Hot-Spare" configuration (in case of failure of one unit, the second unit takes the control without any service interruption or limitation)

❖ Dual redundant LAN network for higher network reliability

❖ Availability of emergency calls in tunnels even in total absence of power supply and/or in case of failure of the LAN connection, thanks to the use of sound-powered terminals connected to the center via IP-MAG gateways and fiber optic network

❖ Automatic activation of the CCTV system, with concurrent recording of audio and video streams related to the emergency call

❖ Integration with existing Public Address system via IP-DAD gateways

❖ Remotes Maintenance and Configuration by one or more maintenance clients (CTM)

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Communications First

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