“Mol common communication system for interaction and coordination on TETRA standard”
WHAT IS TETRA

- **TETRA** is an European Standardization Institute for telecommunications (**ETSI**) Standard for digital radio systems;
- The name is an abbreviation it derives from "**TErrestrial Trunked RAdio**";
- **TETRA** is a cellular radio system, similar to the GSM systems;
- Standard **TETRA** was designed to provide reliable communication media to the public safety services. It also is a professional mobile radio (PMR).
Main functional characteristics

TETRA

• Flexible control and effective usage of frequency resource by technology TDMA;
• One TETRA base station could be used by several users, simultaneously;
• Remote creation of dynamic communication groups for interaction between different public safety services.
Main functional characteristics of TETRA

• Information Assurance by air interface encryption;
• Capable of working in repeater mode (FALLBACK) of base station in accidental failure of connection to the DXT;
• Function of verifying the users access to the network (authentication), by authentication keys;
• Integrated communication services: voice calls, data exchange and localization of TETRA subscribers.
Communication capabilities

• Group calls (half-duplex);
• Call subscriber - subscriber (duplex);
• Calls to/from PABX (departmental telephone exchange) (duplex);
• Direct mode operation between subscribers (simplex) without usage of the network;
Communication capabilities

• Send/receive short data services (SDS) to the users or groups (similar to SMS in GSM network);
• Establish DATA channel to access to database;
• Centralized system for automatic vehicle location (AVL) by GPS.
Remote creation of dynamic groups for interaction
Air interface encryption (AIE) and End to End encryption (E2EE)
Transmitting Emergency signals by pressing a button on the terminal
Building a data channel for access to databases
Using data channels over TETRA network

• Access to the Schengen IS for ID checks;
• Provides maximum information assurance concerning private data and access to databases;
System for automatic vehicle location (AVL) of TETRA terminals
AVL client application
Communication system of MoI over TETPA standard

• Stationary TBS - 136;
• Mobile TBS - 5;
• TETRA digital exchanges (DXT) - 3
  one in Sofia and one in Burgas;
• AVL work stations – 41, capable of localization of
  up to 6000 users;
• Dispatcher work stations – 17.
• Monitoring and Control Centre;
• 12 000 users.
TETRA radio terminals in use in MoI

- Airbus

- Motorola

- Hytera

TETRA gateway
Mobile TETRA Base Stations

• Connection to TETRA via satellite communications;
• Secured power supply;
• Providing TETRA coverage in areas with poor communication infrastructure;
• Extend the coverage where and when it is needed.
Mobile TETRA Base Stations
MoI TETRA network – opportunity for common usage from public safety services

- Rescue Teams
- Fire Brigade
- Road Police
- Criminal Police
- Building and support
- Transport
- Emergency medical support

MINISTRY OF INTERIOR
DIRECTORATE “COMMUNICATION AND INFORMATION SYSTEMS”
Perspectives in MoI TETRA network development

• Providing communications for interaction on national level;
• Achieving 100 % coverage over the territory of the country;
• Increasing the traffic capacity of the network;
• Introduction of broadband technology for sending data /TEDS/ - TETRA Enhanced Data Services (TEDS)
Perspectives in MoI TETRA network development

- Control and management of early warning and announcement systems;
- Control and management of transport traffic;
- Using TETRA network by all public safety services in whole country;
- Integrated JAVA applications for access to MoI database.
- NP Kozlodui
Increasing types of services in MoI TETRA network

- Building channels for early warning and announcement system;
- Transfer of images and video;
- Road traffic management;
- Access to databases from a car by using JAVA applications.
Combined terminal

checking personal data from ID cards and passports, finger prints, images and number plates
Applications, that could use TETRA network

- Radiation sensors
- Road cameras
- Early warning system
- Coordination and control centers
- Fire sensors
THANK YOU VERY MUCH
FOR YOUR ATTENTION!