Mission Critical User Needs
The main needs of the mission critical PMR users, such as the ones representing the Public Safety and Security (PSS) forces can be briefly categorized as follows:

- **Specialized functionality**
  - Instant connection
  - Security
  - Dynamic management of talk groups
  - Emergency calls
  - Prioritization of communications
Mission Critical User Needs

- **Response times**
  - Typical requirements for voice call set-up time are in the range 0.3 to 1 second

- **Seamless radio coverage**
  - Throughout the whole served area, including guaranteed availability of coverage under exceptional conditions, including the means to maintain communication during network outage
Mission Critical User Needs

- **Incident capacity**
  - the need for radio capacity increases during major incidents and accidents and that capacity must be guaranteed to the rescue and law enforcement forces

- **Uncompromised voice quality**
  - allowing the listener to recognize who is speaking, even under excessive background noise
Mission Critical User Needs

- **Radio coverage**
  - Complete coverage under normal operating conditions
  - Mechanisms to guarantee coverage for rescue forces under exceptional conditions

- **Members always hear**
  - A mechanism usually called Late Entry is needed to rejoins lost talk group members in the call
Mission Critical User Needs

- **Network Cost**
  - Also sharing of network infrastructure with commercial users should give cost benefit.
  - **Mobile terminals cost**
Available Public Safety Communication Systems PMR

- Available public safety communication systems PMR
  - Conventional single repeater Systems
  - Simulcast Radio System
  - Multicast Radio System
  - Trunked Radio System
  - TETRA Radio System
What is TETRA?

- **UHF** Radio network
- **TETR** TERrestrial Trunked RAdio (TETRA) is the modern digital Private Mobile Radio (PMR) and Public Access Mobile Radio (PAMR) technology.
- TETRA uses Time Division Multiple Access (TDMA) technology with 4 user channels on one radio carrier
- TETRA provides voice and data communication and suits a wide range of users.
TETRA

- Adopted by 77 countries (Europe – Asia – Africa and South America)
- 1076 contract around the world to date
- www.TETRAmou.Com
- ETSI standard – non proprietary
- Multi vendor subscriber units
- Low cost – more features – continuous development
Voice Communication Services

- Excellent voice quality
- Fast call set-up
- Individual (one-to-one) calls (Full duplex)
- Express calls (push & talk)
- Group communication
  - Broadcast groups
  - Group calls
  - Scanning of groups
  - Dynamic regrouping
- Emergency calls
- Direct Mode
- Supplementary services
- Extensive security:
  - Authentication of radios
  - Encryption of voice, data & signaling
What makes TETRA unique

- Unique group communication package in total
- Fast call set-up time
- Direct Mode (DMO)
- Queuing of channel resources
- Signalling during voice call
- Pre-emptive priorities, ambience listening
- Multiple security schemes & algorithms
  - authentication of radios (& networks)
  - air interface & end-to-end encryption
  - disabling of stolen radios
Supplementary Services

- Busy Queuing and Call Back
- Queuing Priority
- Recent User Priority
- All Start / Fast Start
- Late Entry
- Critical Site Assignment
- Requested Sites
- Talking Party Identification
- Calling Line Identification Presentation
- Dynamic Site Assignment
- Valid sites
- Dual Tone Multi-Frequency Overdial
- Priority Monitor

- Pre-emptive Priority Call
- Pre-emptive Priority Call – Busy User Pre-emption
- Site Wide Call
- Barring Incoming Calls
- Barring Outgoing Calls
- Air Interface Encryption
- Authentication (MSO initiated)
Transportable Dimetra Site

VSat Satellite

E1 Link

Dimetra Master site

MTS 2

Transportable Dimetra Site
For rural area and temporary coverage
Wireless Console

Tetra Network

Conventional Network

Tetra Radio

Conventional Radio

Cross Patch Operation

To PSTN
Data Communication Services

Status Message
- User sends pre-coded message to the console
- Sent from radio keypad or interface
- Database inquiry
- Predefined Auto reply

Short Data service
- Messaging to and from a host
- English text messages up to 140 characters
- Arabic text messages up to 70 characters
- Simultaneous “voice & short data”

Packet Data
- Similar to short data
- Larger data file transfer
- Photos, reports…etc
- Tailored WAP applications

Going to lunch

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Short Data Applications

Short Data Application Examples:

- iSDS
- Work orders, group messaging.
- Reports.
Tetra Coverage Map

- Mediterranean Sea
- Western Desert
- Gulf of Suez
- Sinai
- Cairo
- Ismailia
- Sharm
- Hurgada
- Red Sea

Cities and locations marked on the map.
Thank You

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