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IT & TELECOM STRATEGY

TETRA

Private Mobile Radio

- Critical Communications -

Thanks to our expertise in technologies and business processes

Summary

1. Tetra network principles
2. Tetra technology advantages
3. Benefits of a smooth migration to the TETRA latest version
4. Tetra network connectivity
5. Value Added Services
6. Solution scalability, 24/7 Exploitation & Maintenance
7. Method of calculating charges (royalty fees)

8. Contact

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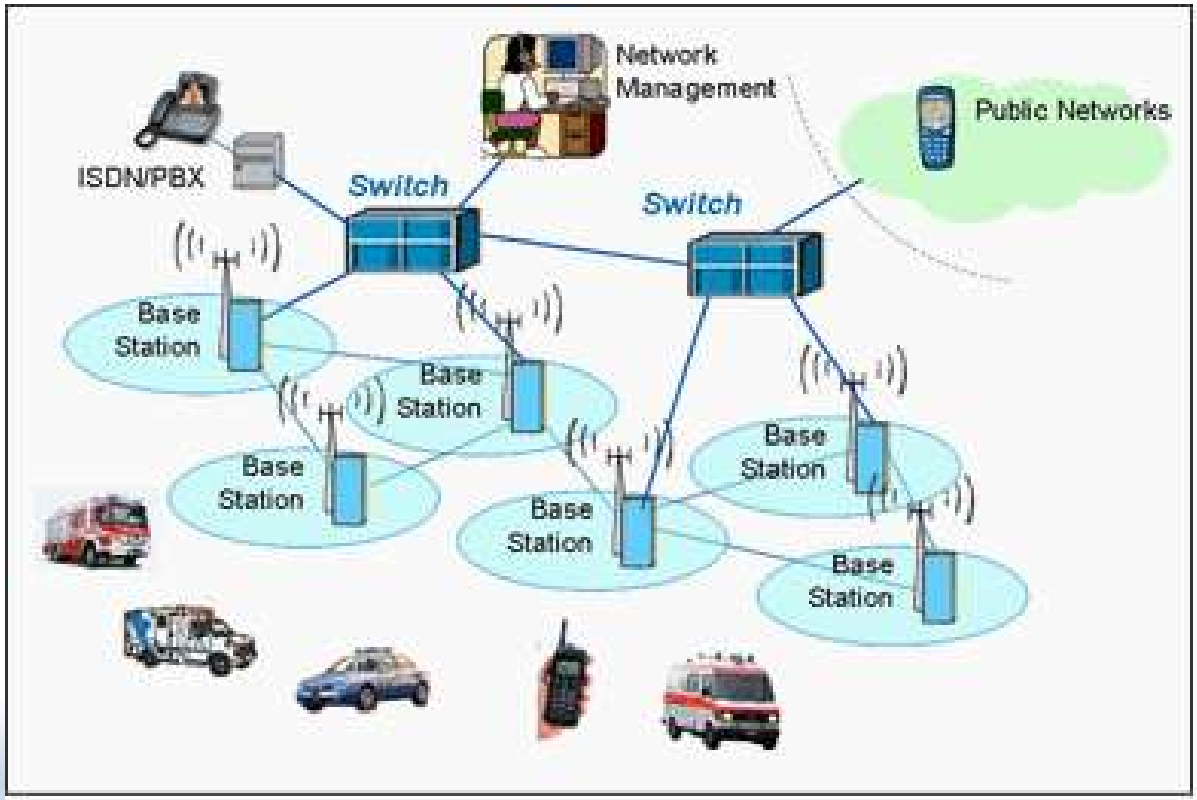
1. TETRA principles & Advantages

TETRA Private Mobile Radio represents mobile communication networks for special applications for the police, fire brigades, rescue and emergency medical services.
Other areas of application are airports, military, oil & gas and transportation, wherever public safety is of concern.

Such networks need to operate independently of Public Communication Networks.
They provide a slightly different set of features, such as point-to-multipoint communication, push-to-talk, closed user groups and coverage of large areas.
Popular standards to implement such networks are Tetra (in Europe) and P25 (in North America).



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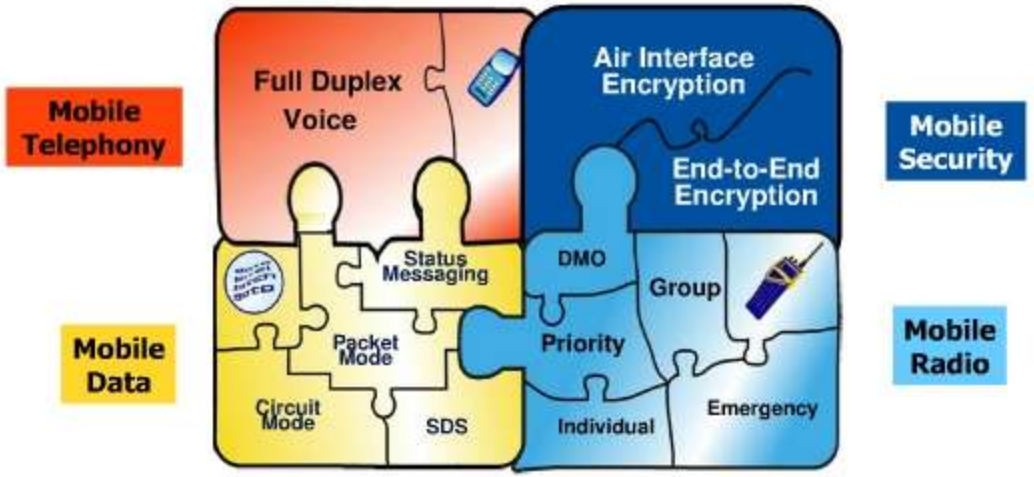
2.Tetra Technology advantages

- A multi-vendor market
- Shareability & affordability
- Conceived jointly with users
- A unique feature set tailored for PMR us
- High security
- Reliability
- Future proof
- Advantageous over other technologies

- TETRA is an open standard developed by ETSI
- Interoperability Certification Process
  - driven by the TETRA Association
  - supervised by independent Certification Authority
  - produces interoperability certificates publicly available on the web
- As a result…TETRA is a multi-vendor market
  - Competitive prices
  - Competitive quality
  - Innovation
  - Wide choice of solutions & applications

- Authentication
  - Radio terminal & network authentication (to prevent access from clones)
  - Authentication key distribution & management
- Multiple overlapping encryption schemes
  - Air Interface Encryption (for all information exchanged on the air)
  - End-to-End Encryption (for voice & data throughout the system)
  - Encryption keys distribution and management
- Disabling of stolen radios
  - Temporary disable (radio "stun")
  - Permanent disable (radio "kill")

Users that take advantage of these technologies are spread over many sectors of both public services and private companies, that need mobile communications to support their workforce



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3.Benefits of a smooth migration to the latest Tetra version

Market need	Issues	TETRA User Requirements
Mission critical multimedia data for multiple users	TETRA Release 1 can handle some multimedia (e.g. slow scan video), but with capacity implications	High Speed Packet Data (TEDS)
Roll-out of nation wide networks	Don't want to have to install extra sites when upgrading to TETRA 2 Continue to use TETRA 1 radios	TETRA R2 backwards compatible with R1. Operate inside TETRA R1 frequency bands.
Air to ground & linear utilities	Small proportion of applications operate over much larger distances.	Enhance coverage
Deploy TETRA for special operations	Specialist users want full duplex telephony to own networks	NATO codec
Complement 3G in PMR/PAMR	Need to optimise for 3G -compatible services, provisioning, roaming etc.	High Speed Packet Data (TAPS or TEDS) AMR codec, SIM evolution Spectrum efficiency, Network capacity, system performance, QoS, terminal optimisation

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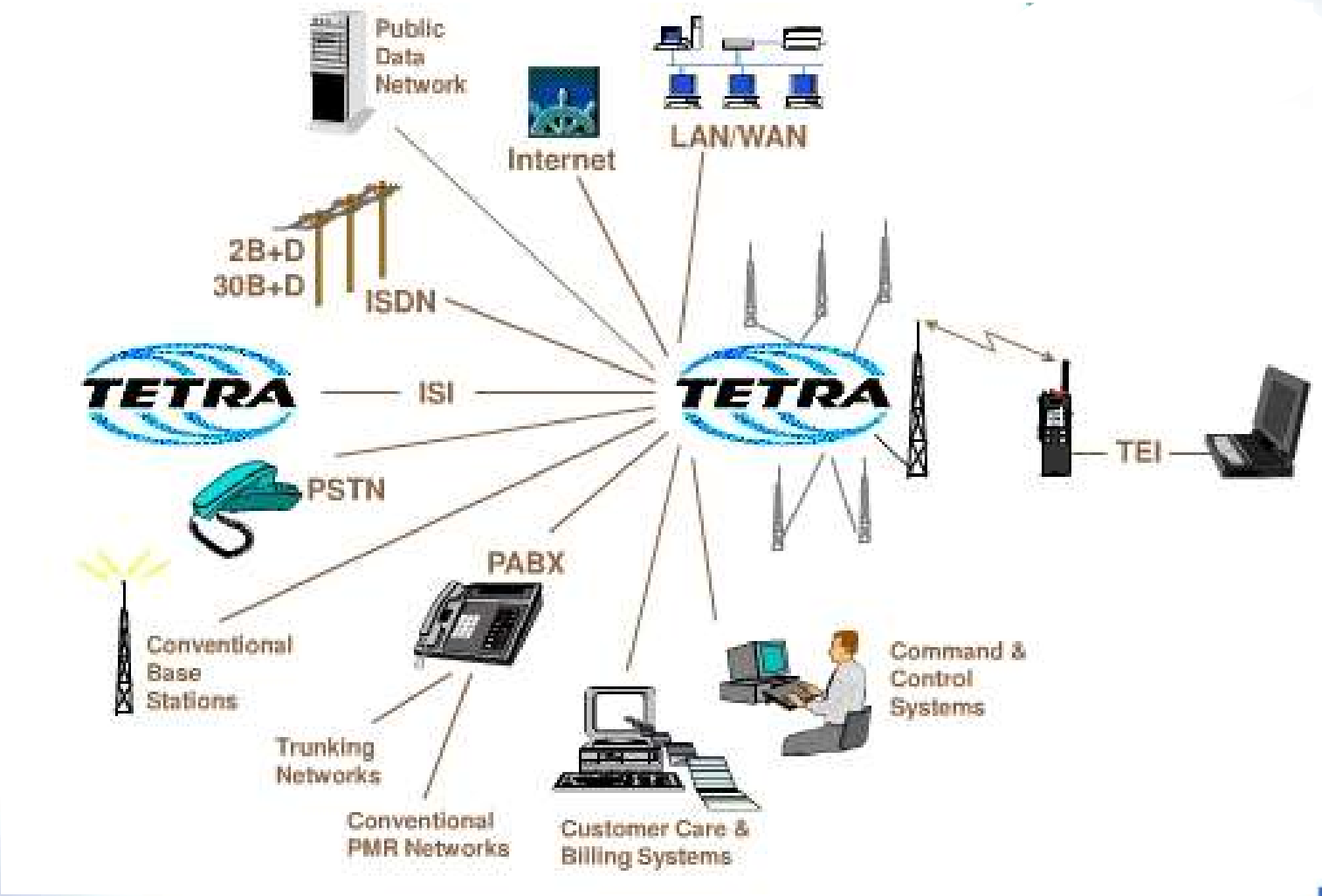
4. Tetra connectivity



5. Value Added Services (VAS)

Supplementary Services - Public Safety priorities

Call Authorised by Dispatcher CAD
Area Selection AS
Access Priority AP
Priority Call PC
Late Entry LE
Pre-emptive Priority Call PPC
Discreet Listening DL
Ambience Listening AL
Dynamic Group Number Assignment DGNA

Direct Mode Communications

- *Allows direct terminal to terminal communication without using the network.*
- *Can also be arranged so that terminals remain in contact with the network either directly or via a gateway.*
- *Emergency Services value this facility (e.g. for possible 'fireground' use) and have actively supported its development.*

Extending the Network

- *Making full use of the possibilities offered by direct mode communications and associated repeaters and network gateways.*
- *Difficult/costly to cover terrain becomes accessible to network users.*
- *Areas around national borders, where network coverage from either side may be poor, can be made operationally accessible to security/public safety services.*

Open Channel

- *The traditional method of operation for some Emergency Services for many years.*
- *The option of dedicating a resource (radio channel) will always exist even if it causes problems.*
- *TETRA can offer "pseudo" open channel by combining supplementary services and retaining network control of the resource.*

Video

- *Increased data rates, the ability to concatenate resources, advances in picture formatting and coding, make quality video a realistic option.*
- *This opens up new applications opportunities for police, fire, paramedic and other services.*

TETRA Security Features

- *Aliasing*
- *Authentication*
- *Air-Interface Encryption*
- *End-to-End Encryption mechanisms*
- *Lawful Interception*
- *Features include:*
  - *Time Stamping*
  - *OTAR*
  - *SIM ME Encryption.*

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6. Exploitation, Administration & Maintenance

We can provide all daily operations from the "Handle incident ticket", to the "Close ticket" :

➔ On the infrastructure network (from antennas to the core network switches)
➔ On end-users terminals

Network operations must includes both preventive and curative maintenance services, according to SLA*, previously agreed.
QoS*, TTR*,… must be jointly defined to deliver high level of services on a PMR network, and for each services.

A monthly report will allow you to analyze the traffic, and to check SLA.

SLA: Service Level Agreements
QoS : Quality of Service
TTR : Time to Repair

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7. Method of calculating charges (royalty fees)

Based on :

- national board of frequency bands distribution
- a formula calculation (allocated bandwidth, covered area, frequencies number,…)
- by assigned frequency.

Annual fees consist of a combination of a management fee ,and a provision fee.

We can also accompany Communication Regulatory Commissions in different countries to define theses fees, if it is not already done.

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ITU and climate change

BlasCom IT *is a company participating in the 'Global compact Local Network ' charter of the United Nations, to make a commitment in favor of practices, among others, of development and distribution of environment-friendly technologies.*

BlasCom IT *has also been incorporated into the DCICC: Dynamic Coalition on Internet and Climate Change, depending on the International Telecommunication Union (ITU) and counting 51 companies and/or authorities at world level.*

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