WHITE PAPER

Dimetra™ LiTE
TETRA Made Easy

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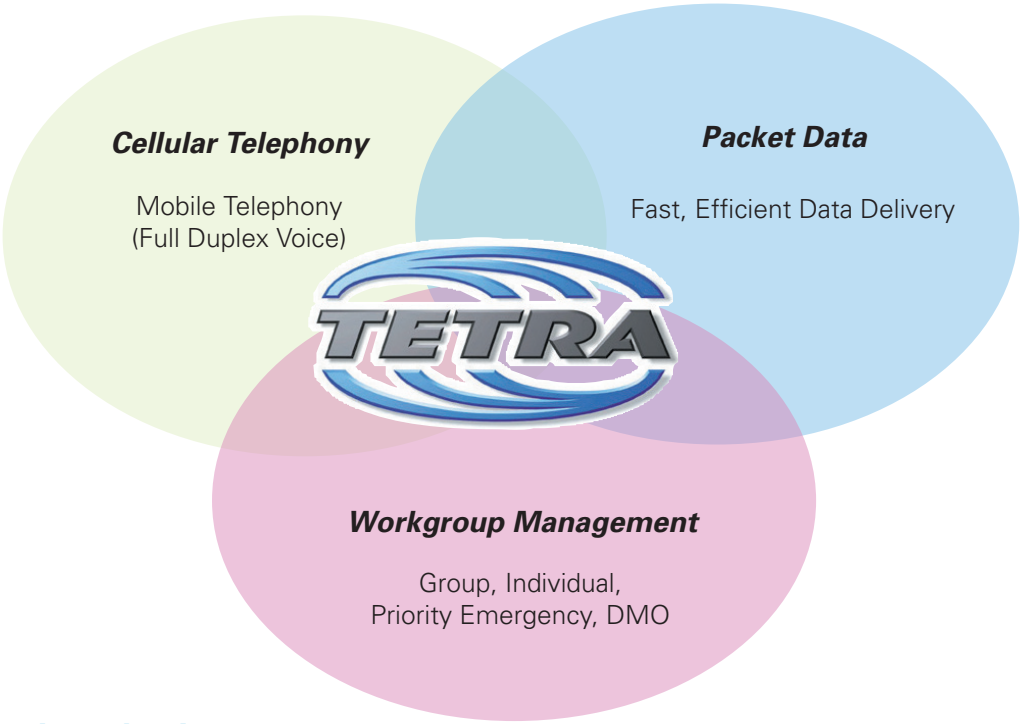


1 Introduction

The TErrestrial Trunked Radio (TETRA) is an open digital standard from the European Telecommunications Standards Institute (ETSI) representing a significant milestone in the development for Professional Mobile Radio (PMR) and Public Access Mobile Radio (PAMR) systems. TETRA provides the users with Cellular Telephony (Full Duplex Mobile Telephony), Packet Data (Fast Efficient Data Delivery) and Work Group Management (Group, Individual, Priority, Emergency, DMO etc) all in a secured platform.

TETRA's success can be seen by TETRA MOU being represented in 150 organizations from all continents of the world. 200 companies are involved in the development of applications and over 40% of nations have already adopted TETRA.

2 Benefits of TETRA being an open digital standard

TETRA being an open digital standard ensures that the customers enjoy the following benefits.

TETRA specifications are endorsed and accepted by the standard body (ETSI). The specifications then follow a very stringent compliance process. Standards compliance generally leads to compatibility between two or more vendors products.

Customers will not be restricted to proprietary designs. Being open standards also allow higher level of compatibility and interoperability between vendors where the customers will benefits the most.

- Multiple sources of manufacturers. No single source of supplier lock down.
- Compatibility and interoperability must be ensured to support standard.
- Availability of alternative suppliers if current vendor exits the market.
- Economies of scale due to the large market harmonized by the standard.
- Pricing will be kept competitive due to large pool of suppliers.
- Constant development and new improvement while protecting existing investment.
- Accepted and proven.

3 TETRA Suppliers

TETRA SUPPLIER BASE IS GROWING FAST!

TETRA Suppliers – Growth on Supplier Base

TETRA MOU

- MOU represents 150 organzitions from all continents of the world.
- More than 200 companies are involved in the development of applications.

Supplier Base 2000

1 Cleartone (Terminal)
2 Marconi (System and Terminal)
3 Motorola (System and Terminal)
4 Nokia (System and Terminal)
5 Simoco (System and Terminal)

Supplier Base 2009

1 Aeroflex (Formerly IFY, teste quipment)
2 Artevea (formerly Simoco, System)
3 Cleartone (Terminal)
4 Damn Cellular (System)
5 DeTeWe (Terminal)
6 EADS (formerly Nokia, System and Terminal)
7 Etelm (System)
8 Frequentis (System)
9 Motorola (System and Terminal)
10 Niros (Terminal)
11 R&S Bick Mobilfunk (System)
12 Rohill (System)
13 Selex (formerly Marconi & OTE, System & Terminal)
14 Sepura (formerly Simoco, terminal)
15 Siemens (System – OEM from R&S)
16 Teltronics (System & Terminal)
17 Team Simoco (formerly Simoco, System & Terminal)
18 Tyco Electronics (System)
19 Thales (System)
20 Zetron (Console)

TETRA being an open digital standard is supported by multiple manufacturers. In factor the suppliers' base has been growing.

Source from: http://www.tetramou.com

TETRA is being deployed in 105 Countries around the world.

4 Advantages of TETRA

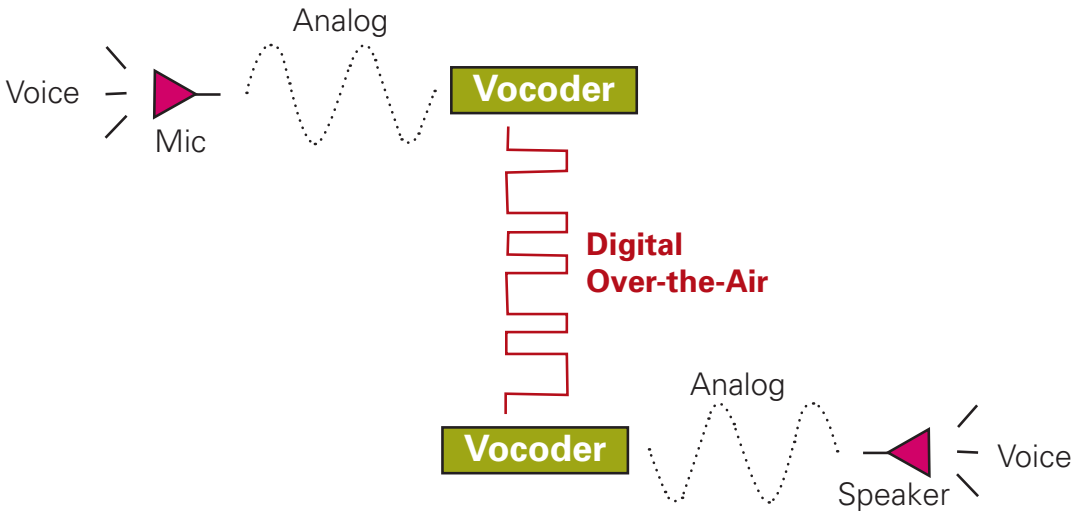
The TETRA digital trunked radio technology fulfilled the future trend and at the same time provides customers with the benefits of digital solutions outline as follows:

- **Increase Users Loading Thru Enhanced Spectrum Efficiency**
  TETRA uses the concept of Time Division Multiple Access (TDMA) that allows one 25 kHz channel to support four (4) physical channels (i.e. 1:4 efficiency) with the possibility of up to four different groups of users to communicate simultaneous.

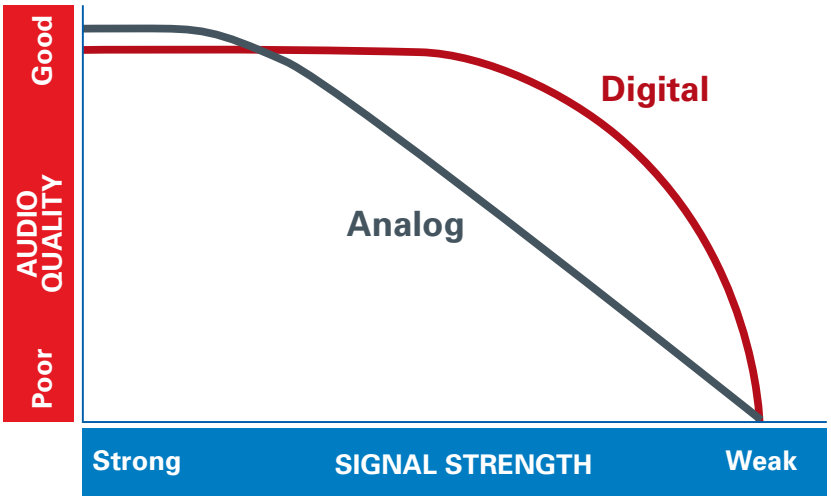
1 analog radio channel supports ONE conversation (in a 25kHz channel)

1 digital radio channel supports FOUR simultaneous conversations! (in a 25kHz channel)

- **Inherent Voice Privacy**
  TETRA voice is based on Algebraic Code Excited Linear Prediction (ACELP) speech encoding algorithm. Hence, without the corresponding decoding devices, causal eavesdropper will over hear white noise over the intercepted transmission.



- **Improved Voice and Signal Quality**
  As shown in the above chart, there will be an improvement in voice and signal quality with TETRA digital system over existing analog system showing greater consistency over the entire coverage area.



- **Improved Encrypted Voice Quality**
  Customers that use encryption of voice on analog radio systems know how the audio quality varies when in the encrypted mode. For years, customers have accepted degraded encrypted audio quality for the benefit of secure voice transmissions. With digital radio systems, encrypted voice now has no perceived degradation of voice quality – encrypted voice sounds the same as clear voice on a digital radio system.

- **Capability to support Voice & Data**
  You can now have both voice and data services such as short data services on one subscriber terminal. Short Data Services allows short messages of up to 140 bytes to be sent: thus supporting services such as Text Messaging, Automatic Vehicle Location (AVL), and Telemetry.

5 Functions and features of TETRA

TETRA is designed to support mission and business critical users with key unique features and functionality that ensure reliability, safety and operational efficiency. Only one device to meet all your communications needs! Highlighted features of TETRA:

- Basic two-way radio features: one-on-one and/or one-to-many calls, full-duplex private call, direct mode operation (DMO).
- Connectivity to land line or GSM cellphone through TETRA.
- Advanced features such as priority call, dynamic regrouping and call pre-emption.
- In-built authentication, AIE, and E2E features for security implementation.
- Wireless Data Application like position reporting and SMS are also supported by TETRA short data services.

Two-Way Radio
- Group Call: One to Many
- Individual Call: One to One
- DMO

Security and Safety
- Advanced Encryption & Authentication
- Emergency Call

Telephone Interconnect

Advanced Radio Features
- Priority Level
- Dynamic Regrouping
- Call pre-emption
- Etc.

Short Data Services

6 Value Proposition of TETRA

TETRA is:
- Proven and widely accepted Open Digital Standard (by ETSI).
- Growing customers base (More than 2232 contracts in 105 Countries).
- Technically superior radio standard.
- Features and functions rich.
- One device that can fulfill all your communication needs.

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