CONSORT DIGITAL

YOUR PARTNER FOR CRITICAL COMMUNICATION

INTRODUCTION

Since 2007, Consort Digital has been serving the requirements of professional critical communication. Drawing on decades of industry experience in delivering carrier-grade products, Consort Digital heralds a new approach to the deployment and operation of mission-critical and business-critical communication solutions.

We support you throughout the entire network lifecycle. We will partner with you to ensure that your infrastructure and business model are structured in accordance with your specific requirements, local market conditions and the need of end users. From consultancy and design, through deployment and integration, to maintenance and operations, we offer a comprehensive set of professional services.

In 2015, Consort Digital PTE Ltd.was established to expand our geographical reach and expand to international markets.

OUR CORE CAPABILITIES AS AN ORGANIZATION INCLUDE:

- Consulting
- Detailed Design & Engineering
- Network planning
- Survey and Validation study
- Supply of equipments
- System Integration
- Installation & Commissioning
- Fleet mapping
- Operational and Maintenance training
- Application Development
- Operations & Maintenance
- Customer Support

MISSION AND VALUES

Consort Digital's mission is to provide simple, cost effective yet powerful solutions to our customers to meet their requirements of critical communication.

Our core values are based on the principles of :

Self Improvement — **Growth of Society** — **Long Term Relationships**

CONSORT DIGITAL - BRINGING TECHNOLOGY AND BUSINESS INNOVATION TOGETHER TO ENABLE CRITICAL COMMUNICATION SOLUTIONS

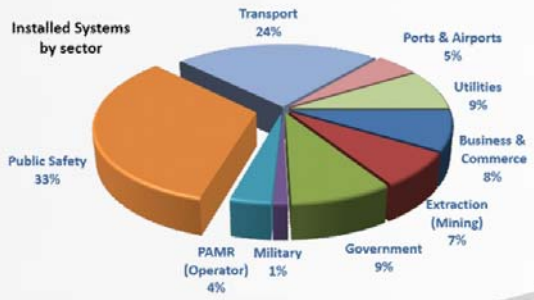
TECHNOLOGY

We deploy OPEN standard technologies that have been trusted by several large organizations worldwide. Open technologies ensure a healthy multi-vendor environment, cost effectiveness and choice of equipment to the end users.

TERRESTRIAL TRUNKED RADIO (TETRA)

TETRA technology is in use throughout the world, delivering secure, reliable and robust critical communications. TETRA standard was developed by ETSI in the 1990s, when the professional mobile radio community collaborated to write a standard to meet the requirements of public safety and government users, commercial professional users, operators, spectrum regulators, manufacturers and others involved in the implementation of critical communications.

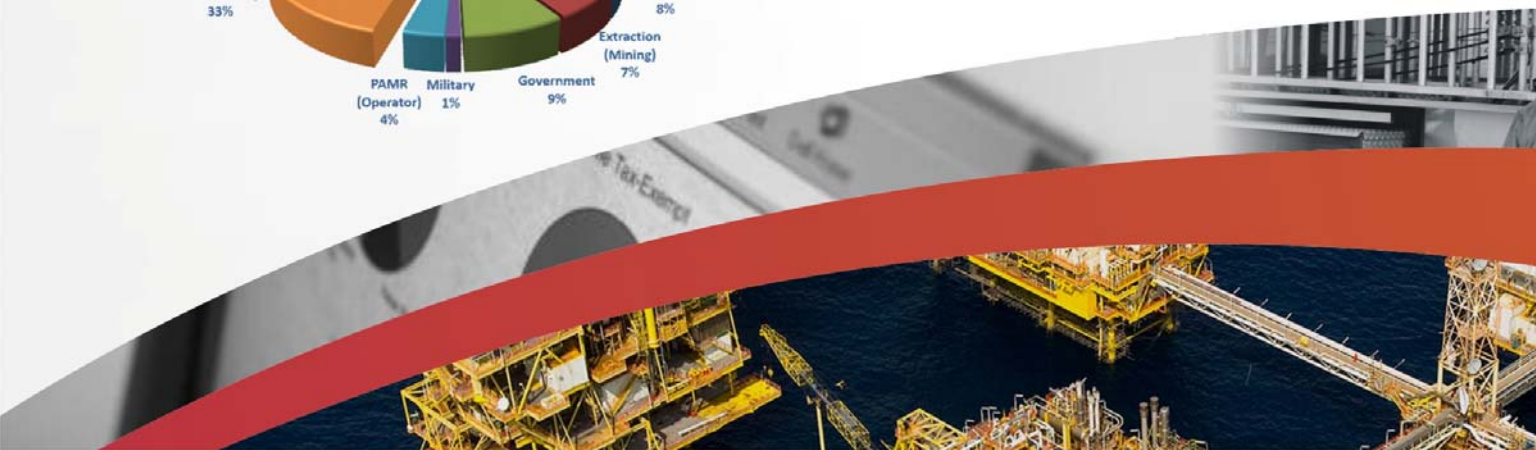
Today, even after more than 20 years, TETRA is the public safety communications technology used by all major governments around the globe looking to protect their citizens. The rapid adoption of TETRA technology by the public safety sector catalyzed its use in a wide range of markets. These include airports, railways, sea ports, utilities, oil and gas, mining, retail, large events and many others – benefitting from networks of all sizes , whether a single site or 4000 sites.



TETRA is regularly deployed to ensure resilient and secure communications at major sporting events such as the Olympic Games, FIFA World Cup and Formula One Racing.

The first region to adopt TETRA was Europe; since then it has been used all around the world. Asia – Pacific is the fastest growing region in terms of TETRA implementations.

Over 15 billion USD have been invested by users to date on installed TETRA networks and terminals; the largest investment in any single technology.



DIGITAL MOBILE RADIO (DMR)

Digital Mobile Radio is an entry level digital wireless communication standard standardized by European Telecommunications Standards Institute (ETSI), and first ratified in 2005.

The standard is designed to operate within the existing 12.5kHz channel spacing used in licenced land mobile frequency bands globally. The primary goal is to specify affordable digital systems with low complexity. DMR provides voice, data and other supplementary services.

The DMR protocol covers unlicensed (Tier I), licensed conventional (Tier II) and licensed trunked (Tier III) modes of operation, although in practice commercial application is today focussed on the Tier II and III licensed categories.

LONG TERM EVOLUTION (LTE)

LTE is the standard for wireless communication of high-speed data for mobile phones and data terminals. It is based on the GSM/EDGE and UMTS/HSPA network technologies, increasing the capacity and speed using a different radio interface together with core network improvements. The standard is developed by the 3GPP (3rd Generation Partnership Project).

Till date, there are two separate technology families for providing wide-area wireless communications: commercial cellular networks and dedicated communication networks for critical users.

To provide the best service to both communities, there is now industry support for greater use of common technology. Work is on-going in Release 12 and 13 of 3GPP LTE standards to enhance LTE to meet requirements of mission critical users.

MARKET SEGMENTS

- Public Safety
- Ambulance and Fire Services
- Disaster Management
- Municipal Corporations, Smart Cities
- Railways & Mass Transit Systems
- Airports, Sea Ports and Bulk Terminals
- Oil & Gas – Upstream, Midstream and Downstream
- Power Generation & Distribution
- Mining
- Manufacturing Industries
- Racing Tracks, Leisure Parks, Resorts
- Large Events and Temporary Deployments

REFERENCES

MUMBAI MONORAIL

GAIL

Shell

ESSAR

MARUTI SUZUKI
Way of Life!

GMR
Creating tomorrow today

adani

BOSCH

ONGC

LAVASA

JINDAL STEEL & POWER

JSW

PRO ONE

SOLUTIONS

DAMM TETRAFLEX ® SOLUTIONS

For over 30 years, DAMM Cellular Systems, has kept teams involved in critical operations in touch by making advanced communication simple for customers worldwide. DAMM is dedicated to making communication easy to deploy for public safety, industrial and commercial customers.

DAMM TetraFlex ® is a fully featured digital software and hardware solution for single and multiple site radio networks.

BS 422

The BS422 is the second-generation Outdoor Base Station from DAMM. A one-box solution that includes multiple technologies:

- **TETRA**
- **DMR Tier III**
- **TEDS**
- **Analogue**

This makes it the only real cross-technology outdoor base station in the market.
Same hardware and software platform for all technologies, functionality controlled by dongle.

TETRA RADIO TERMINALS

Consort Digital provisions reliable, versatile and feature-rich TETRA handheld radios and mobile radios in vehicular or static configurations. The radio terminals are designed for different markets ranging from public safety to transportation, industrial to oil and gas sector. They are tested to greatest levels of interoperability with most of the TETRA Networks.

Radio terminals are certified to high level of Ingress Protection (IP Rating), wide operating temperatures and against dust and humidity exposure.

Specialized radio terminals that are ATEX certified for Oil & Gas industry and covert radio terminals for surveillance or specialized operations are also available. Wide range of accessories ensure that each radio can be customized for different use cases.

Consort Digital offers a comprehensive range of TETRA terminal support services to ensure reliable performance and maximum terminal uptime.

COMMAND, CONTROL AND COMMUNICATION SOLUTIONS

In mission-critical situations, accurate information is essential for effective communication, collaboration and decision making. Demanding operations require large amount of data to be provided, managed, analyzed and be made available at a glance at control rooms.

Consort Digital Command, Control and Communications Solutions allow for flexible deployment of control rooms in accordance with customer requirements, cost effectiveness and future upgradability. Consort Digital partners with reputed control room application providers and integrates solutions which help organizations deploy powerful, comprehensive, robust and maintainable Operational Control Centers (OCC). Solutions include:-

- Computer Aided Dispatching (CAD)
- Automatic Vehicle Location System (AVLS)
- Network Management and Monitoring (NM)
- Gateways to Telephony, Conventional Radio Networks
- Group Bridge Inter System Integration
- Fleet Tracking and Management Systems (FTMS)

CONSORT ON BOARD & WAYSIDE COMMUNICATION SOLUTION

Consort On-Board & Wayside Communication Solution is a cost effective yet versatile solution for enhanced critical communication for the transportation industry. The On-Board Rail Communication Solution combines all voice and data sub-systems installed in a mobile asset. Its provides easy and reliable integration to the telecom and signaling systems installed at wayside through TETRA or other reliable mobile broadband communication system.

Consort Digital Onboard Communication Solution includes:

- On Board Controller (OBC)
- Train Radio Control Panel (TRCP)
- Train Radios (TR)

Consort Digital Wayside Communication Solution includes:

- Radio Integration Server (RIS)
- Voice Integration Relay Server (VIRS)
- Radio Control Panel (RCP)
- Radio Access Units (RAU)
- Radio Control Workstations (RCW)
- Central Voice & Data Recording System (CVDRS)

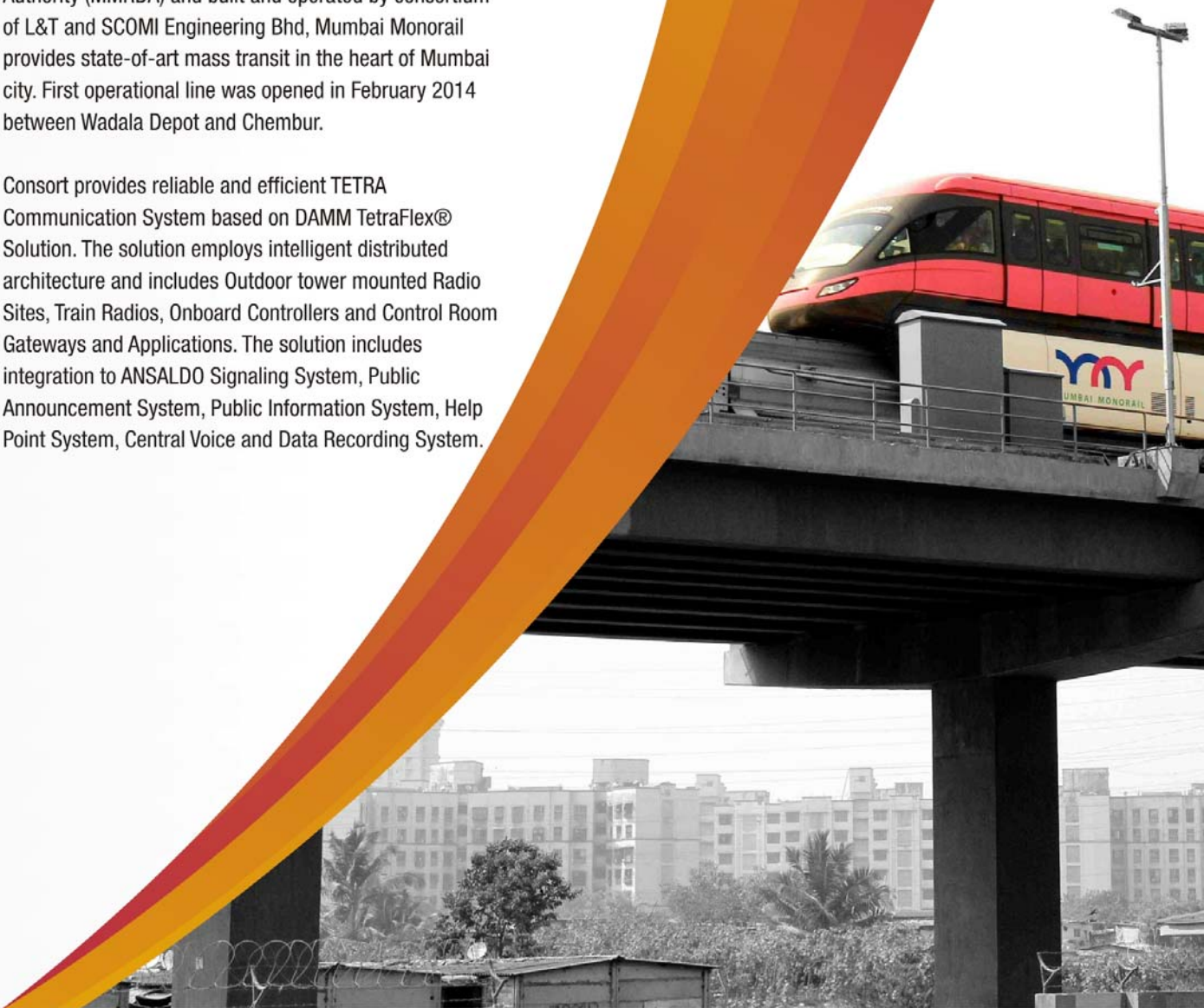

TABS
ON-TRAIN COMMUNICATIONS
CAB AIR CONDITIONING

CASE STUDIES

TRANSPORTATION - MUMBAI MONORAIL

Mumbai Monorail is the first Monorail system in India. Owned by Mumbai Metropolitan Regional Development Authority (MMRDA) and built and operated by consortium of L&T and SCOMI Engineering Bhd, Mumbai Monorail provides state-of-art mass transit in the heart of Mumbai city. First operational line was opened in February 2014 between Wadala Depot and Chembur.

Consort provides reliable and efficient TETRA Communication System based on DAMM TetraFlex® Solution. The solution employs intelligent distributed architecture and includes Outdoor tower mounted Radio Sites, Train Radios, Onboard Controllers and Control Room Gateways and Applications. The solution includes integration to ANSALDO Signaling System, Public Announcement System, Public Information System, Help Point System, Central Voice and Data Recording System.



TRANSPORTATION - WESTERN RAILWAYS

Western Railway within Mumbai is one of the busiest Mass transit systems in the world. The Western Railway carries over 3.5 Million commuters per day with a passenger density of 60,000 passengers per Km per day.

Consort Digital is upgrading the existing analog trunked radio system between Churchgate and Virar section covering 70 Kms and 28 stations. The new system will provide Western Railway with a reliable and modern communication system providing voice and data communication between OCC and trains. The solution is based on DAMM TetraFlex® System comprising of radio sites, Dispatching Workstations, Voice and Data Logging System and Integration to internal telephony and Onboard PA system. Specialized Train Radio Control Panel (TRCP) has been developed and provided as per specific requirements of the customer.

OIL & GAS – SHELL OIL FIELDS

Majnoon in Southern Iraq is one of the world's largest oil fields. Shell is the operator developing the field together with partners Petronas and Iraq's Missan Oil Company. SHELL is among one of the largest oil companies in the world. Majnoon oil field is a super-giant oil field located 60 km (37 mi) from Basra, Basra Governorate in southern Iraq with an estimated 38 billion barrels of oil in place. The production at Majnoon will move Iraq from the current 11th place to the 3rd among oil producing nations after Saudi Arabia and Iran.

Consort Digital deployed a Multisite DAMM TetraFlex® Communication Solution to provide comprehensive and reliable coverage within the oil field. Intrinsically-safe handheld radio terminals, Vehicle mobile terminals and Static radio terminals at the Control room are used by the operational personnel for production, security and operational activities. The communication system is also provided with state of art Dispatching system to ensure complete control over the communication network at all times. Any emergency is notified to the control centre which then is able to dispatch to operational staff instantly.

OIL & GAS - ESSAR OIL REFINERY

Essar Oil refinery at Vadinar, Gujarat, is a world-class 20-million tonne fully integrated refinery with a captive power plant, port and terminal facilities. It includes rail, car and truck loading facilities and a Single Point Mooring (SPM).The refinery also produces middle distillates such as Aviation Turbine Fuel, kerosene oil and high-speed diesel, as well as LPG and transport fuels conforming to Euro IV and Euro V product quality standards.

Consort Digital provides state-of-art communication system based on DAMM TetraFlex® Communication System. Combination of DAMM Indoor Base Station within the refinery area and DAMM Outdoor Base Stations at Jetty and other areas provide a seamless and reliable communication system for Essar Oil. The communication solution also includes integration to the Essar Oil Analog Conventional Radio network, Marine Radio Network and internal Telephony Network. Motorola ATEX certified handheld radios along with mobile radio terminals for vehicles and static radio terminals for control rooms are provisioned over the network. In addition, Consort Digital provides managed services including 24/7 On-site support for this mission critical deployment.

OIL & GAS – ONGC OPAL

ONGC Petro additions Limited (OPaL), a multi-billion joint venture company was incorporated in 2006, promoted by Oil and Natural Gas Corporation (ONGC) and co-promoted by GAIL and GSPC. OPaL is setting up a grass root mega Petrochemical project at Dahej, Gujarat in PCPIR/SEZ. The complex's main Dual Feed Cracker Unit has the capacity to produce 1100 KTPA Ethylene, 400 KTPA Propylene and the Associated Units consists of Pyrolysis Gasoline Hydrogenation Unit, Butadiene Extraction Unit and Benzene Extraction Unit. The Polymer plants of OPaL has 2X360 KTPA of LLDPE/HDPE Swing unit, 1X340 KTPA of Dedicated HDPE and 1x340 KTPA of PP.

Consort Digital has supplied and commissioned a highly scalable and feature-rich TETRA Network based on DAMM TetraFlex® BS 418H solution. The solution includes control room applications including Network Management, integration to internal Telephony PBX network, Dispatching Workstations and Automatic Vehicle Location System.

SMART CITY – LAVASA

Lavasa is the first private Smart city developed in India. The city, developed by HCC, spreads across 25,000 acres. Consort Digital provides secure TETRA communication networks that extends to all stake holders within the Smart city including security, utilities service providers, hotels, resorts, motor sport events. The deployment establishes an efficient model where all agencies can work within the same communication network, utilizing the same physical infrastructure but separate logical nets for each agency. Each organization can continue to work without visibility or interruption from others while also be merged into one operational super-group during crisis or special situations.

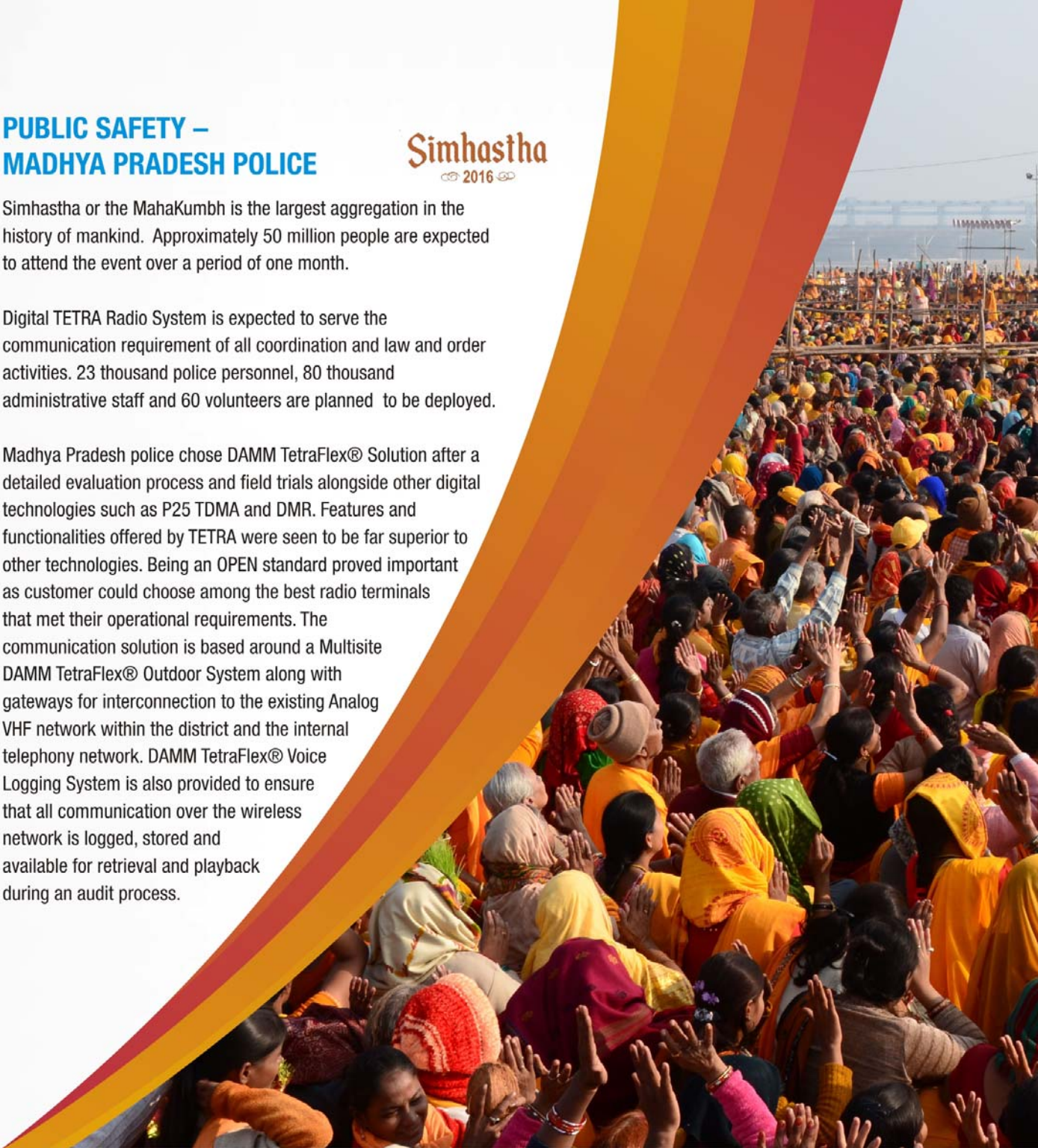
PUBLIC SAFETY – MADHYA PRADESH POLICE

Simhastha 2016

Simhastha or the MahaKumbh is the largest aggregation in the history of mankind. Approximately 50 million people are expected to attend the event over a period of one month.

Digital TETRA Radio System is expected to serve the communication requirement of all coordination and law and order activities. 23 thousand police personnel, 80 thousand administrative staff and 60 volunteers are planned to be deployed.

Madhya Pradesh police chose DAMM TetraFlex® Solution after a detailed evaluation process and field trials alongside other digital technologies such as P25 TDMA and DMR. Features and functionalities offered by TETRA were seen to be far superior to other technologies. Being an OPEN standard proved important as customer could choose among the best radio terminals that met their operational requirements. The communication solution is based around a Multisite DAMM TetraFlex® Outdoor System along with gateways for interconnection to the existing Analog VHF network within the district and the internal telephony network. DAMM TetraFlex® Voice Logging System is also provided to ensure that all communication over the wireless network is logged, stored and available for retrieval and playback during an audit process.



MINING – COAL INDIA

It is the largest coal producer company in the world and contributes around 81% of the coal production in India. WCL is one of the largest and most profitable subsidiary of Coal India.

Digital TETRA Solution provides reliable coverage across the mine and upto the coal face. One-to-many voice communication ensures that all personnel are always connected for coordinated mining process and health and safety is never compromised. Consort Digital also provides specialized coverage solutions to ensure complete coverage around the area of operation.

SEAPORTS – ADANI

Adani Ports and Special Economic Zone Ltd (APSEZ) is part of Adani Group – a $9.4 billion conglomerate with businesses spanning coal trading, coal mining, oil & gas exploration, ports, multi-modal logistics, power generation & transmission and gas distribution.

Consort Digital provides a modern TETRA Communication System for 24/7 reliable communication between all users at the port. The communication system is vital for all the coordination activities at the port including vessel operation. Specially customized Radio terminals are installed in each Crane to ensure loud, clear and hands-free communication.

POWER PLANT – GMR

GMR Energy is a part of the GMR Group, which is one of the largest diversified Infrastructure Conglomerates in India. With an operating capacity of over 2500 MW , it has a balanced fuel mix of coal, gas, LSHS as well as renewable sources of wind and solar energy.

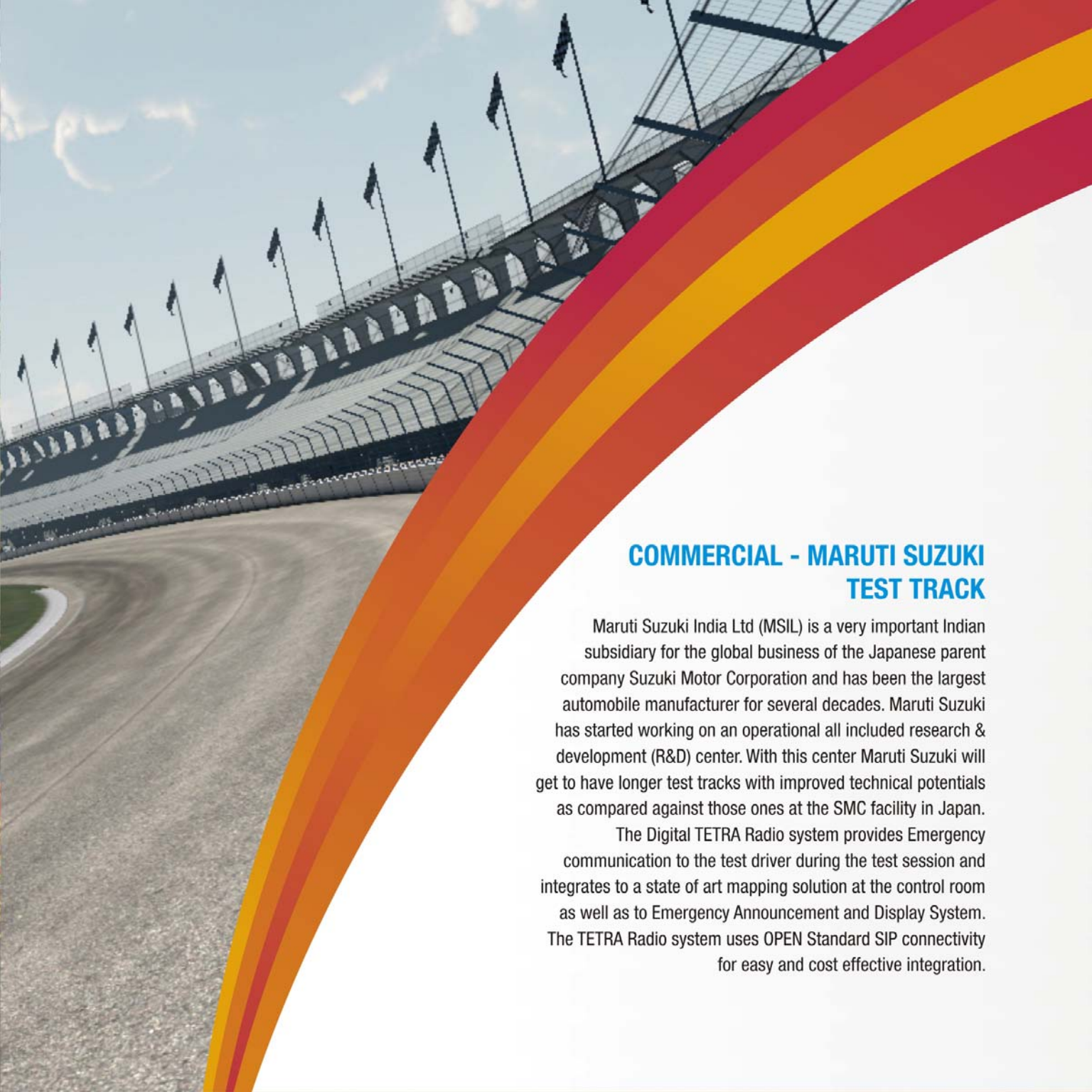
Consort Digital provides reliable and efficient communication solution based on DAMM TetraFlex® Outdoor System. The Outdoor system which is a combination of Base Station and Service Box is easy to install and maintain and is the perfect solution for power plants as it allows for mission critical voice communication alongside the possibility of narrowband critical data within the plant area.

INDUSTRIAL - ESSAR STEEL PLANT

Essar Steel is a global producer of steel with a footprint in India, Canada, USA, the Middle East and Asia.

Essar Steel in Hazira, Gujarat have built a fully integrated flat carbon steel manufacturer – from iron ore to ready-to-market products – with a current capacity of 14 million tonnes per annum (MTPA). Essar Steel products find wide acceptance in highly discerning consumer sectors such as automotive, white goods, construction, engineering and shipbuilding.

Essar Steel plant in Hazira also has the distinction of being the first steel plant in India to deploy TETRA technology after a thorough selection process of the right technology for their industrial complex. Amongst key evaluation factors were the need to have a flexible and scalable communication system that could cater to the communication requirement of Essar Steel for the next fifteen years. The system also had to be spectrum efficient so as to accommodate maxmim number of subscribers in minimum spectrum. Seven years since then, TETRA communication system provided by Consort Digital has been one of the important productivity tools that ESSAR uses to ensure maximum productivity, worker safety and cost effectiveness within their industrial complex.



COMMERCIAL - MARUTI SUZUKI TEST TRACK

Maruti Suzuki India Ltd (MSIL) is a very important Indian subsidiary for the global business of the Japanese parent company Suzuki Motor Corporation and has been the largest automobile manufacturer for several decades. Maruti Suzuki has started working on an operational all included research & development (R&D) center. With this center Maruti Suzuki will get to have longer test tracks with improved technical potentials as compared against those ones at the SMC facility in Japan.

The Digital TETRA Radio system provides Emergency communication to the test driver during the test session and integrates to a state of art mapping solution at the control room as well as to Emergency Announcement and Display System. The TETRA Radio system uses OPEN Standard SIP connectivity for easy and cost effective integration.

AIRPORTS - SALALAH & MUSCAT AIRPORT

Oman Airport Management Company (OAMC) has undertaken the task to provide Muscat and Salalah International Airports with an enhanced state of the art digital TETRA System for its Ground Service Radio Communication operations. The TETRA System is being set up to provide instant communications in the Airport premises for hundreds of TETRA users as well as Telephone users of various organizations involved in airport operations such as OAMC, Oman Aviation Service (OAS), Fuelling Companies, Airlines, Catering, Cargo, Fire and Safety, Sea Rescue teams.

Consort Digital is providing the Engineering Services such as TETRA Network Design Documentation, Test & Commissioning Documentation, Installation and Commissioning, Programming and Configuration of TETRA infrastructure and TETRA Radio Terminals (Hand Portable, Vehicle-mounted and Fixed Stations). Consort Digital's services are offered through SEERACOM-Oman who is the supplier of the TETRA system to the Main Contractor (Thales) for implementing the TETRA network as part of the IT infrastructure of the airports.

OIL & GAS - GAIL PIPELINE PROJECT

GAIL (India) Limited, the national Natural Gas Transmission company of India has set up compressor stations at Kailaras (MP state) and Chainsa (Haryana state).

Consort Digital has installed and commissioned the TETRA Telecom System for instant voice and data communications in the two plants. The TETRA solution consists of DAMM TetraFlex® Base Stations, Intrinsically-Safe Handheld (ATEX) and Static Radio Terminals used by the security and plant operations personnel. The radio system provides seamless and instant Group Communication including Emergency Calls and Short Data Service throughout the plant area with digital clarity and comprehensive coverage among various Talk-Groups within the plant organisations.

MOBILITY

CRITICALITY

RELIABILITY

CONSORT DIGITAL [P] LIMITED

10/33 Ward No. 1
Yogmaya Complex, Near Qutab Minar,
Mehrauli, New Delhi - 110030 INDIA

+91 11 26646615
+91 11 26646616
info@consortdigital.com

CONSORT DIGITAL PTE LIMITED

Regd Office : 30 Cecil Street,
#19-08 Prudential Tower,
Singapore 049712

+65 83015443
info@consortdigital.com