



# TETRA takes control of transport - by sea, by land



## Greater Copenhagen and Sealand Region – Denmark.

Denmark's capital, Copenhagen, houses the Royal Family, the Danish Parliament, and a number of government and financial institutions, as well as international organisations and company headquarters. In recent years, economic activity levels have increased significantly and, with the opening of a rail & road bridge between Copenhagen and Malmö (Sweden), the city has become a gateway to Scandinavia and the Baltic Area. Furthermore, the Copenhagen Airport serves as the main airport in northern Europe/Scandinavia.



The city boasts a well-developed public transport network in terms of local trains, metro lines and buses. But increasing traffic levels in recent years have led to congestion, which has renewed the focus on improving both traffic controls and public transport.



## Regional restructuring creates new communication challenges for Denmark's largest transport authority.

Movia Public Transport was formed in 2007, with the merger of HUR Trafik and two local county transit agencies – VT and STS. This was in response to major municipal restructuring undertaken by the Danish Government some five years earlier.

Today, Movia is Denmark's largest public transport agency, serving approximately 220 million passengers a year. It covers a population of some 2.4 million in Denmark's Capital Region (with the exception of Bornholm), including Greater Copenhagen and the rest of the Sealand Region.

Responsible for co-ordinating a fleet of 2,000 buses, 30 inter-urban commuter trains and Copenhagen's marina ferry service (all of which are operated by subcontractors), Movia manages some 600 bus routes, nine local railway lines and two ferries. It is also charged with provisioning a reliable communications infrastructure for use by the fleet. The subcontractors providing bus, train and ferry services, employ some 3,000 personnel in total, making efficient radio communication essential for smooth operation of Movia's transportation routes.

In 2002, the Authority decided to replace its ageing two-way radio system with a state-of-the-art digital solution that could support effective communications between drivers and dispatch, as well as providing traffic monitoring/control facilities and location-based services. Once deployed, the network was to be operated on behalf of Movia by local service provider, Dansk Beredskabskommunikation.

## Motorola TETRA solution integrates with traffic monitoring & control to speed public transport in Copenhagen.

Following a competitive tender process, Movia specified a Motorola TETRA solution, including Dimetra IP infrastructure and 1,200 MTM700 mobiles. The latter feature a Vehicle Integrated Unit (VIU) for deployment on buses, trains and ferries. Also provided were 100 Motorola TETRA portables, for use by service/field personnel.

Selected in preference to a TETRApoI-based solution put forward by EADS, Motorola was awarded three contracts by Movia in August 2003:

- Supply of mobile and portable TETRA terminals
- A 'Build-Own-Operate' contract for network infrastructure – under which Movia has access to the network on a 'fee-for-service' basis
- Maintenance & Repair of TETRA equipment

## Customer Profile

### Company

Movia Public Transport

### Industry Name

Transportation

### Product Name

- Dimetra IP TETRA system
- MTM700s with Vehicle Integrated Units
- MTH800 Hand-portables

### Solution Features

- Dimetra IP provides high performance
- Highly resilient network solution
- Fast, reliable call set up
- GPS Location Service

### Benefits

- Voice & text radio communications
- Centralised traffic monitoring & control
- Improved business efficiency & SLAs
- Increased passenger satisfaction

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**Mogens Buch-Larsen,  
Director Administration, Movia.**

**TETRA smoothes efficient operations for Movia's transportation routes.**

TETRA provides instant and reliable two-way radio communication for the smooth operation of Movia's transportation routes. GPS support enables integration with other systems such as traffic monitoring & control, allowing Movia to improve delivery of public transportation services across Greater Copenhagen and the Sealand Region. “We have been extremely happy with delivery of the system. TETRA works well and provides five 9s reliability,” states Mogens Buch-Larsen, Director Administration, Movia.

“Cost and functionality were our prime considerations when specifying the new radio system,” states Mogens Buch-Larsen, Director Administration, Movia. “Also important was the certainty of Motorola being able to deliver, manage and maintain the system.” Delivery of the voice network was completed by July 2004, with the TETRA terminals and data capability being implemented in July 2005 – on time and within budget.

The TETRA network now covers the Capital Region and connects 25 independent subcontractor facilities, enabling instant and reliable, two-way radio communications between drivers, field personnel, and their corresponding dispatch centres. GPS information is transmitted to the dispatch teams from antennas fitted to each vehicle within the fleet. Movia also has TETRA consoles installed at its customer operations centre and traffic control unit – from where services can be monitored and co-ordinated (although it does not control the fleet directly), and important information is communicated to drivers via voice or text.

Driver security has been assured using the Covert functionality enabled by Motorola's MTM700s. A hidden emergency button can activate the radio's silent audio monitoring facility, enabling dispatchers to hear what is happening on the bus, as well as being able to identify their location. A second emergency button on the radio enables drivers to request police, fire or ambulance assistance.

The data capability of Motorola's Dimetra IP TETRA solution has also proved essential. “Although we were obligated to deliver just the voice system, the data applications that TETRA can support were the extra motivation in making this investment – enabling us to move from having simply voice, to data capabilities that could ensure a modern service,” Buch-Larsen explains.

Movia uses a traffic monitoring & control system supplied by Sweden-based Hogia, which pulls GPS location data from the TETRA network, and displays it on-screen at dispatch consoles. Movia is now looking to interface TETRA with Copenhagen's road traffic control system, which would provide the ability to initiate green lights when a bus approaches. Another application being investigated is a system to ensure passengers can make connecting journeys.

As a municipal transport authority, Movia is also part of Copenhagen's disaster management plan, whereby the public transportation fleet could be used by rescue teams. As such, Movia's TETRA network is scheduled to become part of the 'SINE' network – the mission-critical public safety system being deployed for emergency services (fire, ambulance, and police).

SINE (SikkerhedsNETtet) is based on a nation-wide TETRA network known as 'Tetranet', which is owned, operated

and managed by Motorola under a ten-year contract. Commissioned in 2007, it is currently being piloted and will provide coverage across all of Denmark's regions over the next few years.

Movia's TETRA network is now to be extended on a project-by-project basis. For example, a new 'Kompakt' terminal is planned for the train station in Næstved (West Sealand) and TETRA will provide part of a technical solution enabling buses to be dynamically allocated a parking spot at the terminal. The aim is to maximise the utilization of available space .

**Taking control of transport and improving service levels.**

Movia's field service personnel use TETRA portables to feed back operational information such as whether buses are clean, passengers have tickets, and buses are following Movia's established routes. The GPS capability allows Movia to monitor and store the entire journey. “TETRA data applications have changed the way we conduct business with our subcontractors. The availability of real-time vehicle location information means that we can draft contracts based on SLAs (Service Level Agreements),” says Buch-Larsen.

This facility has also assisted in the planning of new routes, timing journeys and monitoring the progress of new drivers – who can be contacted if they have mistakenly taken a wrong turn. Drivers can also be alerted to any traffic congestion, while those at an end stop can be informed of when the next bus is due.

Moreover, service levels delivered to customers have been improved. Movia is able to verify the time a bus arrived at a particular stop and respond to any customer complaints accordingly. “It saves a lot of time in terms of administration, and also in disciplining drivers – since GPS provides the truth and nothing but the truth!” states Buch-Larsen.

Travellers can obtain real-time vehicle location information from a specific bus/train stop, by sending a text message from their mobile phones. Location data is also fed into the online national travel planner, which combines all the different modes of public travel.



For more information : [www.motorola.dk](http://www.motorola.dk)

