



Terrestrial Trunked Radio -
The global standard for professional mobile radio communications

“Jeppe” Jepsen

Director

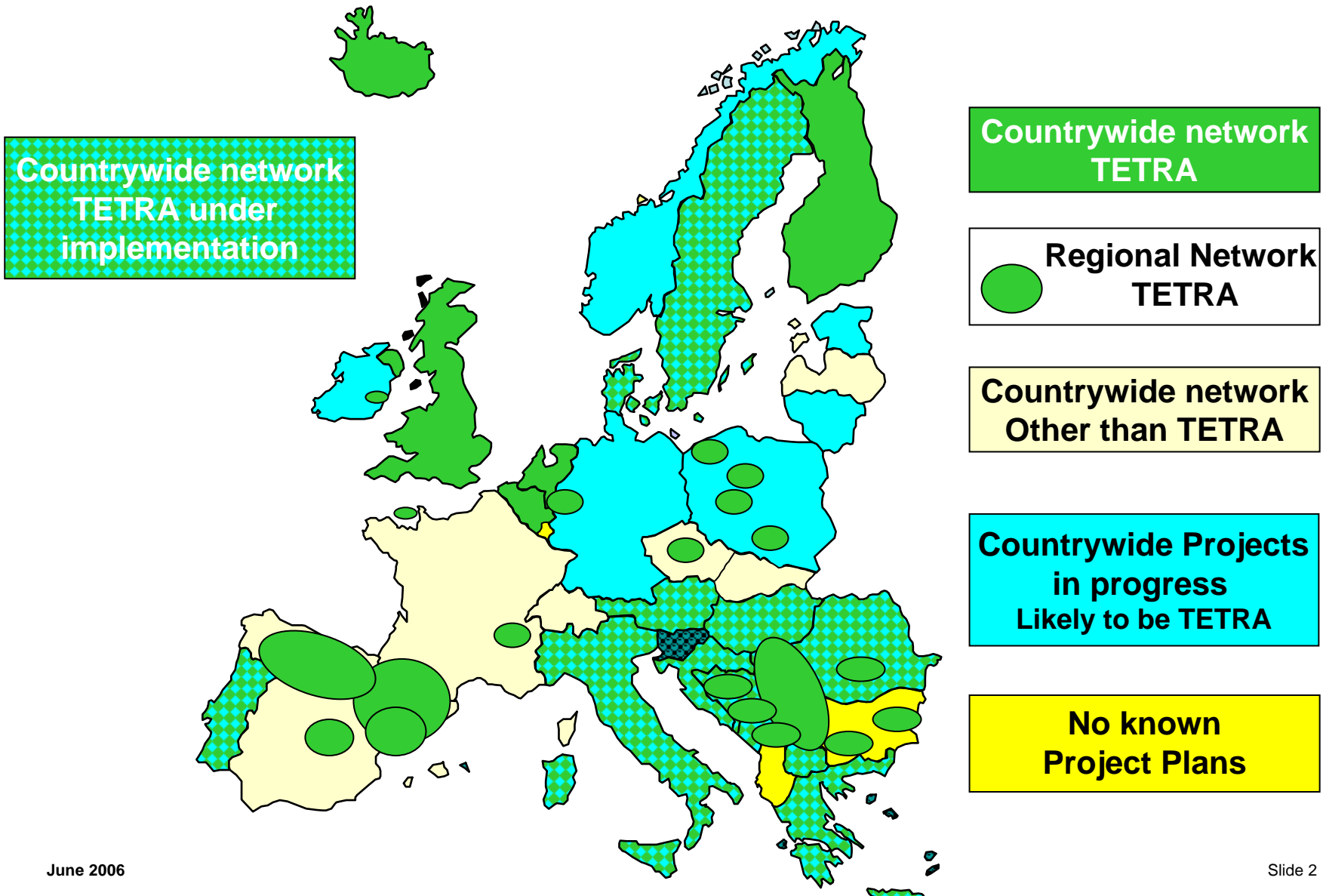
&

TETRA Association

Vice-Chairman



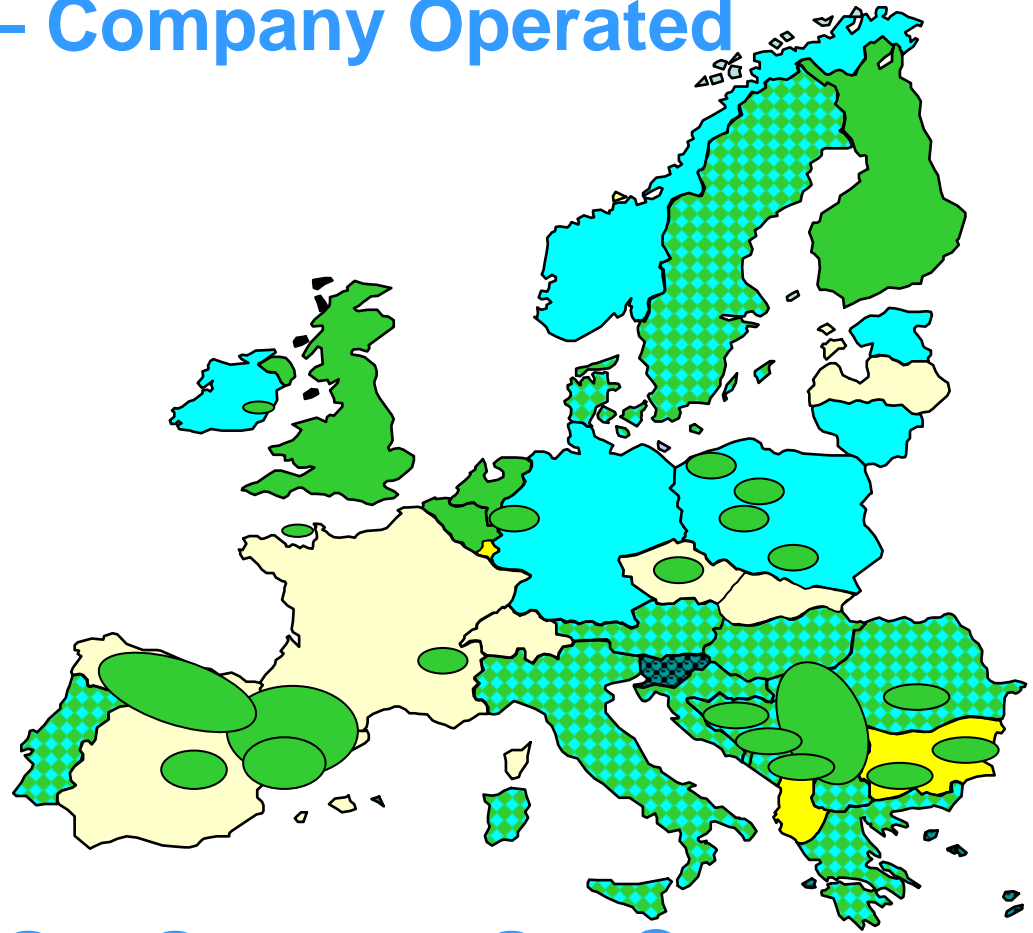
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Operator models – Co-Co Company Owned – Company Operated

- UK
- (Denmark)
- Austria
- Italy
- Portugal
- Hungary



Other models – Go-Go - Go-Co



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National Public Safety Service







Airwave

- Largest system in the world
- Covers - England, Scotland and Wales
- 3,300 base stations
- 180,000 operational users
- Ambulance contract announced summer 2005
- Fire & Rescue announced November 2005



<ul style="list-style-type: none"> <li style="background-color: #e0f0e0; padding: 2px;">+ Home <li style="background-color: #e0e0e0; padding: 2px;">+ About O2 Airwave <li style="background-color: #e0e0e0; padding: 2px;">+ Services & Solutions <li style="background-color: #e0e0e0; padding: 2px;">+ Corporate Responsibility <li style="background-color: #e0e0e0; padding: 2px;">+ Events <li style="background-color: #e0e0e0; padding: 2px;">+ Using Airwave <li style="background-color: #e0e0e0; padding: 2px;">+ News / Media Centre <li style="background-color: #e0e0e0; padding: 2px;">+ The Network <li style="background-color: #e0e0e0; padding: 2px;">+ Customer Service <li style="background-color: #e0e0e0; padding: 2px;">+ Alliance Programme <li style="background-color: #e0e0e0; padding: 2px;">+ Alliance Programme Login <li style="background-color: #e0e0e0; padding: 2px;">+ Firelink 	<h2 style="margin: 0;">Communication where and when it matters most</h2> <p>Responsiveness Guaranteed fast response with push to talk communications between users. Airwave gives you immediate data and voice communications access; carried end-to-end.</p> <hr/> <h3 style="margin: 0;">The key to creating effective mobile data applications</h3> <p>"You must examine your legacy business processes and understand how they can best be adapted to achieve the remarkable efficiencies available to you." John Rogers, Head of Mobile Data, O2 Airwave.</p> <p>more in Communicator [download PDF] +</p> <div style="float: right; text-align: center;">  </div> <hr/> <h3 style="margin: 0;">O2 Airwave delivers the UK's first National Police Communications Service</h3> <div style="display: flex; align-items: center;">  <p style="font-size: 0.8em; margin: 0;">O2 Airwave has expressed its pride in completing the TETRA network - on time and on budget - to provide every police force in England, Scotland and Wales with state of the art communications</p> </div> <p>View full press release View Home Office press release What PITO say...</p> <hr/> <h3 style="margin: 0;">Airwave Access Services</h3> <p style="font-size: 0.8em; margin: 0;">Tailored connectivity for public safety organisations</p> <p>more</p>
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Latest Press Releases

Release: 19th July 2005
O2 Airwave has been successful in its bid to provide a communications service to Ambulance Trusts in England.
 Patients will benefit from reliable voice and data services that will enhance the scope of care delivery by paramedics at incident scenes and help to improve ambulance response times.

[more](#)

Release: 1st April 2005
O2 Airwave delivers the UK's first National Police Communications Service
 Seamless communications service to improve public safety and reduce crime

[more](#)



Airwave – part of O₂

➤ Airwave

- 04/05 Turnover £169 Million
- 04/05 EBITDA £72 Million
- 04/05 Employees 500

- 04/05 Network investment 03/04 £218 Million

- Police contract value £2.9 Billion – 20 Years
- Ambulance (England) contract value £390 Million – 13 years
- FireLink contract value £400 Million



What is Airwave (1)

- Coverage
- Seamless national
- Encrypted
- Resilient
- Voice and Data flexibility



What is Airwave (2)

- A digital mobile solution dedicated to the emergency services
- Financed, built, owned & operated under Private Finance Initiative:
- Government's largest PFI
- Motorola Digital trunked technology to Terrestrial Trunked Radio standard (TETRA)
- 380 - 400 MHz (reserved for European Public Safety Users)
- Proven Voice and Data communications
- Data proven with both the Fire and Ambulance Services in the UK
- Seamless across England, Wales and Scotland



Where is Airwave

- Delivered Police implementation stage
- In delivery for England Ambulance
- In delivery for Fire
- Delivering hot standby switches for 100% network core



Network

- 3300 Base stations
 - 80 Air to Ground sites providing coverage at 2000ft AGL
- 170 Control rooms (Growing all the time)
- Disaster recovery switch and emergency response procedure



Functionality (Service)

- Talkgroups
 - Separate channels selectable/programmable
- Group call – one to many
 - Either dispatcher position or remote user
- Private call – one to one
 - Dispatcher or user
- Telephony
 - PTN (in and out)
 - PSTN (in and out)
- Emergency button
 - Advise all users, remote activation of PTT
- Packet Data
 - IP routing
- Short Data
 - SMS text
- Status message
 - On site, on route, attending etc.
- Stun/kill radios
 - Theft control
- Ambience listening
 - Remote no indication activation of PTT
- Patching
 - Mutual aid, inter-agency.



Operations

- RFS for Police is the start
- Provides coverage and functionality to port and Air interface
- Applications
- Gateways

- PPP/PFI includes operating the network



Customers

- Over 180 000 users migrated to Airwave
 - Positive impact on operational policing
 - 100 Lives saved in 6 months in one ambulance trust
- Continue rollout and sales to other emergency responders including -
 - British Transport Police, SOCA,
 - Reigate & Banstead Borough Council, Surrey Business watch Ltd
 - Highways Agency, Immigration service, HM Prison Service
 - British Energy, UK Atomic engineering agency
 - Harley Street Ambulance (Private)
 - MoD Police, UK Land Army, Royal Navy
 - Shropshire Fire, Lancashire Fire
 - Hereford & Worcester Ambulance, Merseyside regional Ambulance



The future

- Welsh and Scottish Ambulance Trusts– Bid in final stages
- National Fire Brigades – Contract signed
- Upgrade of functionality to remain technology leaders
 - Motorola releases
 - Applications
 - Devices
 - Gateways
- Licensed users list growth



The G8 summit



- Motorola deployed 24 hr support
- Additional base radios were added to key sites
- 3000 users were operating on two sites
- 1,547,777 PTT calls were logged between 2am July 4th & 2am July 9th



"July 7 has brought home more than ever **the need for trusted, resilient and reliable emergency communications...** one technology, one open standard."

Pete Richardson, 02 Airwave



- In the London area the Airwave service is used by British Transport Police (BTP), the City of London Police and the Metropolitan Police
- Metropolitan Police requested support from other police forces including Thames Valley Police, Kent, Hampshire, and Essex Police forces, all of whom are using the Airwave service



The Airwave system worked well

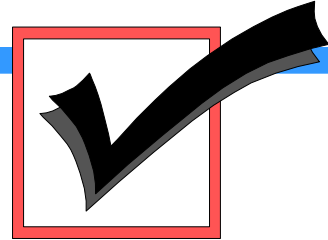
- The Airwave service remained operational and fully functional when other forms of communication were suffering due to the number of people using mobile and fixed networks
- Airwave established and incident room at 10.00am and Motorola immediately opened and incident desk which was continuously manned for the next 30 hours
- Additional radios were acquired, programmed and driven to Airwave in London within 4 hrs



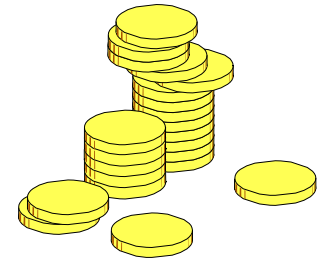
“We’ve had Airwave for quite some time — and we think it’s one of the best pieces of kit we’ve ever had,” says Andy Trotter, deputy chief constable, British Transport Police.

“Airwave vehicles were sent out to Russell Square and Kings Cross, and they dropped so-called ‘leaky feeders’ down into the tunnel so that Airwave could be used underground. Searchers said it was a massive help to be able to talk to each other.”

The choices to make: Fee/Cost Structure



- How to split/differentiate between organisations
 - Same price for primary users and secondary users?
 - Number of radios
 - Usage of the network
- Different cost structures:
 - Monthly fee per radio/user organisation
 - Pro: Stimulates the operator to perform
 - Con: Users may hesitate to use the new network
 - Central budget
 - Pro: Stimulates the users to use the new network
 - Con: The operator may not perform and become inefficient
- Service Level Agreements (SLAs) for use of network
 - Clear agreement on operator performance
 - (Monthly) reports showing network performance and actual usage



Airwave Direct services matrix

	Airwave Direct Voice	Airwave Direct Plus	Airwave Direct Complete Local	Airwave Direct Complete
Hand-held radio terminal	✓	✓	✓	✓
Minimum contract term	2 years	2 years	2 years	2 years
Coverage	National	National	Local	National
Interoperability	✓	✓	✓	✓
Radio terminal is GPS-enabled	X	✓	✓	✓
Fleetmap:				
Standard Fleetmap (1 talkgroup per 5 radios)	✓	✓	✓	✓
Bespoke Fleetmap (1 talkgroup per 5 radios)	X	X	✓	✓
Voice Services:				
Free-To-Talk (FTT)	✓	✓	✓	✓
PSTN Inbound & Outbound calls	✓	✓	✓	✓
Inclusive PSTN minutes	10 minutes per user per month	20 minutes per user per month	20 minutes per user per month	30 minutes per user per month
Use of Emergency Button	✓	✓	✓	✓
Radio usage included within the Busy Hour	2 mill Erlangs per radio terminal	5 mill Erlangs per radio terminal	5 mill Erlangs per radio terminal	5 mill Erlangs per radio terminal
Data Services:				
Short Data Service messaging *	✓	✓	✓	✓
Status Messages **	X	Additional Cost	✓	✓
IP data **	X	Additional Cost	✓	✓
Training:				
User Guide & Quick Start guide	✓	✓	✓	✓
Induction Support, including training (more than 20 radio terminals)	1 day	1 day	2 days	2 days
Induction Support, including training (less than 20 radio terminals)	Additional Cost	Additional Cost	Additional Cost	Additional Cost
In-Life Support				
Service review	Every six months via telephone	Every six months via telephone	Quarterly face-to-face	Quarterly face-to-face
Service credits	✓	✓	✓	✓
Customer reports	✓	✓	✓	✓
Airwave Helpdesk access 24 x 24	✓	✓	✓	✓
Replacement of faulty radio terminals	✓	✓	✓	✓
Planned Engineering Work notifications	✓	✓	✓	✓
Fault notifications	✓	✓	✓	✓
Terminal software upgrades	Additional Cost	✓	✓	✓
Replacement batteries for radio terminal	Additional Cost	Additional Cost	✓	✓
Fleetmap changes - Airwave network	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Fleetmap changes - Radio terminal	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Disabling of radio terminal				
Temporary	✓	✓	✓	✓
Permanent	✓	✓	✓	✓
Re-activation of disabled radio terminal				
Temporary	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Permanent	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Car Kits				
Car Kit	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Car kit installation				
Standard installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Non-standard installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
HGV installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Site survey and design for non-standard installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Engineer call-out (service call)	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Desktop Cradles				
Desktop Kit (inc. standard aerial)	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Installation				
Standard antenna installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Site survey and design for non-standard antenna installation	Additional Cost	Additional Cost	Additional Cost	Additional Cost
Engineer call-out (service call)	Additional Cost	Additional Cost	Additional Cost	Additional Cost

*SDS communications between a control room and radio terminal users is subject to the customer purchasing equipment from the Control Room optional services portfolio

**Use is subject to the customer purchasing equipment from the Control Room optional services portfolio



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Thank You

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