

U. S. & EU Communications Interoperability for Homeland Security and Public Safety Networks Markets & Technologies Forecast

2008 - 2012

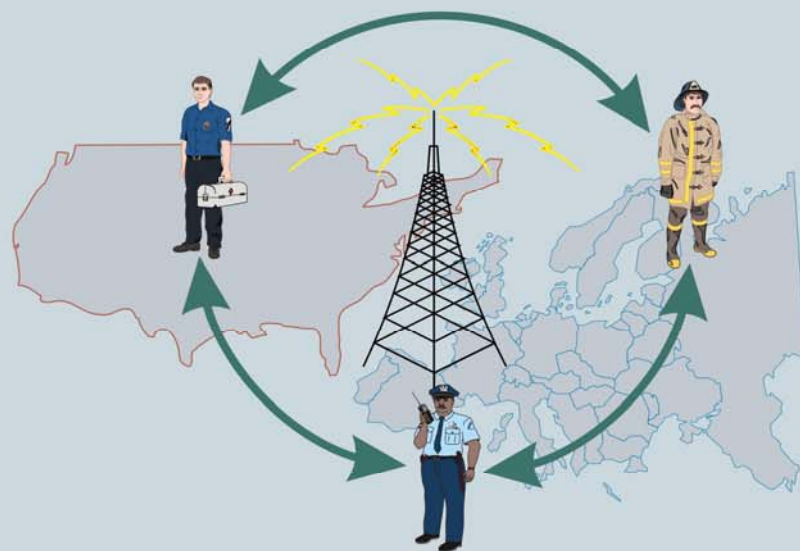


Table of Contents

- 1. Administration**
 - 1.1. Scope of This Report
 - 1.2. Methodology
 - 1.3. Basic Scenario Assumptions
- 2. Executive Summary**
 - 2.1. The Interoperability Challenge
 - 2.2. Advantages of Interoperable Communications
 - 2.3. Main Conclusions
 - 2.4. Additional Findings
 - 2.5. Additional Conclusions
 - 2.6. U.S. and Europe – Consolidated 2007 Market
 - 2.7. U.S. and Europe – Consolidated Market Forecast – 2008–2012
 - 2.8. U.S. and Europe – System Sales Market Forecast – 2008–2012
 - 2.9. U.S. and Europe – Service and Upgrade Market Forecast – 2008–2012
- 3. U.S. – 2007 Systems Market**
- 4. Europe – 2007 Systems Market**
 - 4.1.1. TETRA and TETRAPOL – Market Overview
- 5. U.S. Systems Market Forecast – 2008–2012**
- 6. European Systems Market Forecast – 2008–2012**
- 7. Service and Upgrade Market Forecast – 2008–2012**
 - 7.1. U.S. Interoperable Communications – Service & Upgrade Market Forecast – 2008–2012
 - 7.2. European Interoperable Communications – Service & Upgrade Market Forecast – 2008–2012
- 8. Drivers**
- 9. Inhibitors**
 - 9.1. The Obstacles to Interoperable Communications
 - 9.1.1. Finding a Suitable Technology
 - 9.1.2. Interoperability Funding
 - 9.1.3. Planning, Training and Coordination – The Collective Action Problem
 - 9.1.4. Defining a Common Frequency and Standard
- 10. Business Opportunities**
 - 10.1. Managed Services for Shared/Core Services
 - 10.2. Migration from “Simple” to “Integrated” Networks
 - 10.3. Increased Entry of Private Sector
 - 10.4. Homeland Security and Justice Department-Related Services
 - 10.5. Health Care Related Services
 - 10.6. Transportation Industry
 - 10.7. Training
 - 10.8. ROIP (Radio over IP) and Core Services
 - 10.9. Gateways and Software Interfaces

- 10.10. Confined Space Response (tunnels, buildings)
- 10.11. Intelligent Sensors
- 10.12. Intelligent Message Brokers
- 10.13. Situational Awareness and Consequent Management Software
- 10.14. “Plumbing” Experts
- 10.15. Mass Emergency Notification Systems

11. The Future of HLS / First Responders Interoperable Communications

- 11.1. Cellular Interoperable First Responder Networks
 - 11.1.1. Analysis of Cellular Network Interoperability Capabilities
 - 11.1.2. Network Emergency Response Vehicles (NERV)
- 11.2. Fourth Generation (4G) Interoperable Wireless Networks
 - 11.2.1. Fourth Generation Interoperable Wireless Networks – Deployment Forecast
 - 11.2.2. Fourth Generation Interoperable Wireless Networks – Market Outlook
- 11.3. IP-Based Solutions for First Responders’ Interoperable Networks
 - 11.3.1. IP-Based Safety Initiative (ISI)
 - 11.3.2. Radio over IP
- 11.4. Mobile Mesh Networks
- 11.5. Ultra Wide Band (UWB)
 - 11.5.1. UWB in the U.S.
 - 11.5.2. Possible Challenges with UWB
- 11.6. Satellite for Emergency Communications
 - 11.6.1. Satellite Premises
 - 11.6.2. Drivers and Inhibitors
 - 11.6.3. Iridium Services

12. U.S. – Interoperability Landscape

- 12.1. The Numbers
- 12.2. Funding
 - 12.2.1. U.S. Interoperability Grants and Funding Resources
- 12.3. U.S. Federal Funding
 - 12.3.1. U.S. Department of Homeland Security
 - 12.3.2. U.S. Department of Justice
 - 12.3.3. U.S. Department of Commerce
 - 12.3.4. U.S. Department of Agriculture
 - 12.3.5. U.S. Department of Health and Human Services
- 12.4. State-Based Interoperability Funding In The U.S.
 - 12.4.1. How much does it cost? Examples of Interoperability Projects
- 12.5. Private Industry Initiatives
 - 12.5.1. The National Public Safety Telecommunications Council (NPSTC)
 - 12.5.2. Cyren Call – The Public Safety Broadband Trust
 - 12.5.3. The First Response Coalition (FRC)
 - 12.5.4. Frontline Wireless
- 12.6. Relevant Legislation – Existing and Pending
 - 12.6.1. The Communications Interoperability Grant Program Act, H.R. 338, H.R. 863
 - 12.6.2. The Improve Interoperable Communications for Emergency. The Emergency Communications Act, S. 385

- 12.6.3. The DHS Appropriations Act for FY2008, H.R. 2638, S. 1644
- 12.6.4. The Public Safety Interoperability Implementation Act, H.R. 3116
- 12.6.5. The 9/11 Can You Hear Me Now Act, H.R. 3199
- 12.6.6. The Coast Guard Authorization Act for FY 2008, S. 1892.
- 12.6.7. The Urban Area Security Initiative Grant Enhancement and Authorization Act of 2007, H.R. 1020
- 12.6.8. The Homeland Security Trust Fund Act of 2007, S. 345
- 12.6.9. The Domestic Preparedness Act of 2007, H.R. 1715
- 12.6.10. The COPS Improvements Act of 2007, H.R. 1700, S. 368
- 12.6.11. The Firefighters Special Operation Task Force Act, H.R. 1351
- 12.6.12. The Implementing the 9/11 Commission Recommendations Act of 2007, H.R. 1
- 12.6.13. The Improving America's Security Act of 2007, S. 4
- 12.6.14. The Ensuring Implementation of the 9/11 Commission Report Act, S. 328
- 12.6.15. The First Response Broadcasters Act of 2007, S. 1223, H.R. 2331
- 12.7. State-Federal Interoperability Problems
- 12.8. Consideration of a U.S.–Wide Interoperable Communications System

13. Europe – Interoperability Landscape

- 13.1. Europe – General Layout
- 13.2. The European Interoperable Communications Landscape
- 13.3. Differences Between Wireless Broadband Applications for Public Safety and Public Works in EU and the U.S
- 13.4. Barriers to Municipal Wireless Broadband Deployments in Europe
- 13.5. Funding
- 13.6. Challenges for European Interoperability
- 13.7. Technology Choice in Europe
- 13.8. Broadband Challenges in Europe
 - 13.8.1. The Basic Premise
 - 13.8.2. Current Global Status
 - 13.8.3. Challenges for Europe
- 13.9. Frequency and Standards in Europe
 - 13.9.1. The Narrowband to Broadband Trend
- 13.10. Availability of Wideband PMR Spectrum
- 13.11. IP-Based Public Safety Communication
- 13.12. Pan- European Satellite Telecom Adaptor
- 13.13. TETRA
 - 13.13.1. TETRA International Presence
 - 13.13.2. The Story of Airwave Contract
 - 13.13.3. Alleged Airwave Problems
 - 13.13.4. TETRA 2 – The Future of TETRA
- 13.14. TETRAPOL
 - 13.14.1. TETRAPOL International Presence
- 13.15. TETRA vs. TETRAPOL
- 13.16. The NARTUS Project (EU Harmonization in Public Safety Communication and Information Systems)

- 13.17. Future European Potential Activity/Markets
- 13.18. Project MESA – Broadband Mobility for Emergency and Safety Applications
- 13.19. U-2010 – European Cooperation Initiative

14. Vendors/Products

- 14.1. Project 25 – Vendors
- 14.2. TETRA System – Vendors
- 14.3. SDR (Software Defined Radio) System Vendors
- 14.4. Mesh Networks System Vendors
- 14.5. IP and SW Vendors for Public Radio Interoperability
- 14.6. Additional Vendors

15. Making Interoperability Cost-Effective

- 15.1. Handset Market (U.S. and Europe)

16. Standards

- 16.1. U.S. Project 25
 - 16.1.1. P25 – History
 - 16.1.2. P25 – Vision and Practice
 - 16.1.3. P25 - Standards Status
- 16.2. Relevant Standards
- 16.3. Europe – ETSI

17. Interoperability – Impetus, Problems and Solutions

- 17.1. The Impetus for Interoperable Communications
- 17.2. Who is Guiding Interoperable Communications?
- 17.3. Types of Interoperability
- 17.4. Interoperability Levels
 - 17.4.1. Level One – Swap Radios
 - 17.4.2. Level Two – Talkaround or “Directed Net”
 - 17.4.3. Level Three – Mutual Aid
 - 17.4.4. Level Four – Gateway (Console Patch)
 - 17.4.5. Level Five – System-Specific-Roaming (Trunked & Conventional)
 - 17.4.6. Level Six - Standards Based Shared Systems (Trunked & Conventional)
- 17.5. Why is Interoperability Important?
- 17.6. Interoperability Problems
 - 17.6.1. 800 MHz Misconceptions
 - 17.6.2. Limitations of 800 MHz Systems at Large Scenes
- 17.7. Trunked vs. Untrunked Networks
- 17.8. The Difference Between Mobile Cellular and Professional Mobile Radio (PMR)
- 17.9. Potential Interoperability Solutions
- 17.10. Interoperability – Available Spectrum
 - 17.10.1. Status in U.S./Asia
 - 17.10.2. Status in Europe
- 17.11. U.S. Public Safety Spectrum Band

18. Glossary

List of Figures

2. Executive Summary

Figure 1 - Topology of Interoperable Communications Network

Figure 2 - Consolidated U.S. and Europe Interoperable Communications – 2007
Market Share by [%]

Figure 3 - U.S. and Europe Interoperable Communications Consolidated Market
Forecast by [\$B] – 2008–2012

Figure 4 - U.S. and Europe Interoperable Communications System Sales Market
Forecast by Market Segment by [\$B] – 2008–2012

Figure 5 - U.S. and Europe - Interoperable Communications – Service & Upgrade
Forecast by [\$M] – 2008–2012

Figure 6 - U.S. and Europe – Interoperable Communications – Service & Upgrade
Forecast – 2008, 2010 & 2012

3. U.S. – 2007 Systems Market

Figure 7 - U.S. Interoperable Communications – Market Share by Segments by
[%] – 2007

4. Europe – 2007 Systems Market

Figure 8 - Europe Interoperable Communications – Market Share by Segments by
[%] – 2007

Figure 9 - TETRA and TETRAPOL – European Public Safety Network Deployment
– 2007

5. U.S. Systems Market Forecast – 2008–2012

Figure 10 - U.S. Interoperable Communications Systems Market Forecast by
Market Segment [\$B] – 2008–2012

Figure 11 - U.S. Interoperable Communications Systems Market Forecast by
Market Segment [\$B] – 2008, 2010 & 2012

6. European Systems Market Forecast – 2008–2012

Figure 12 - European Interoperable Communications Systems Market Forecast by
Market Segment [\$B] – 2008–2012

Figure 13 - European Systems Market Forecast by Market Segment [\$B] – 2008,
2010 & 2012

7. Service and Upgrade Market Forecast – 2008–2012

Figure 14 - U.S. Interoperable Communications – Service & Upgrade Market
Forecast by [\$M] – 2008–2012

Figure 15 - U.S. Interoperable Communications – Service & Upgrade Market
Forecast Share – 2008, 2010 & 2012

Figure 16 - European Interoperable Communications – Service & Upgrade Market
Forecast by [\$B] – 2008–2012

Figure 17 - European Interoperable Communications – Service & Upgrade Market
Forecast Share – 2008 & 2012

9. Inhibitors

Figure 18 - Obstacles to Interoperable Communications

11. The Future of HLS / First Responders Interoperable Communications

Figure 19 - IP-Based Concentric Network Architecture Model

Figure 20 - Comparison of narrowband (NB), spread spectrum (SS), and ultra-wideband (UWB) signal concepts

12. U.S. – Interoperability Landscape

Figure 21 - SAFECOM Structure

Figure 22 - Interoperability Continuum

Figure 23 - SAFECOM – Interoperability Baseline Project Phases

13. Europe – Interoperability Landscape

Figure 24 - European Union – 2007

Figure 25 - TETRA Worldwide Contracts – 2007

Figure 26 - TETRA Worldwide Deployment Chart

Figure 27 - Public Safety Part of TETRA's Worldwide Deployment

Figure 28 - TETRA's European Public Safety Network – 2007

16. Standards

Figure 29 - Project 25 Interfaces

17. Interoperability – Impetus, Problems and Solutions

Figure 30 - Interoperability Model – Interactions Between Technical and Organizational Components

Figure 31 - Interfaces Needed to Access Emergency Services

Figure 32 - Gateway/Console Patch Interoperable Network

Figure 33 - System - Specific Roaming

Figure 34 - Standard Based Shared Systems

Figure 35 - U.S. Public Safety Spectrum Bands

List of Tables

2. Executive Summary

Table 1 - Communication Systems in a Typical Metropolitan City

Table 2 - Consolidated U.S. and Europe Interoperable Communications – 2007 Market by [\$M]

Table 3 - U.S. and Europe Interoperable Communications Consolidated Market Forecast by [\$B] – 2008–2012

Table 4 - U.S. and Europe Interoperable Communications Consolidated Market Forecast Share by [%] – 2008–2012

Table 5 - U.S. and Europe Interoperable Communications System Sales Market Forecast by Market Segment by [\$B] – 2008–2012

Table 6 - U.S. and Europe Interoperable Communications System Sales Market Forecast Share by Market Segment by [%] – 2008–2012

Table 7 - U.S. and Europe - Interoperable Communications – Service & Upgrade Market Forecast by [\$M] – 2008–2012

Table 8 - U.S. and Europe - Interoperable Communications – Service & Upgrade Market Forecast Share by [%] – 2008–2012

3. U.S. – 2007 Systems Market

Table 9 - U.S. Interoperable Communications – System Sales Market Share by Segments by [\$M] – 2007

4. Europe – 2007 Systems Market

Table 10 - Europe Interoperable Communications – Market Share by Segments by [\$M] – 2007

5. U.S. Systems Market Forecast – 2008–2012

Table 11 - U.S. Interoperable Communications Systems Market Forecast by Market Segment [\$B] – 2008–2012

Table 12 - U.S. Interoperable Communications Systems Market Forecast by Market Segment by [%] – 2008–2012

6. European Systems Market Forecast – 2008–2012

Table 13 - European Interoperable Communications Systems Market Forecast by Market Segment by [\$B] – 2008–2012

Table 14 - European Interoperable Communications Systems Market Forecast by Market Segment by [%] – 2008–2012

7. Service and Upgrade Market Forecast – 2008–2012

Table 15 - U.S. Interoperable Communications – Service & Upgrade Market Forecast by [\$B] – 2008–2012

Table 16 - U.S. Interoperable Communications – Service & Upgrade Market Forecast by [%] – 2008–2012

Table 17 - European Interoperable Communications – Service & Upgrade Market Forecast by [\$B] – 2008–2012

Table 18 - European Interoperable Communications – Service & Upgrade Market Forecast by [%] – 2008–2012

Table 19 - Challenges with Available/Incoming Radio Spectrum

11. The Future of HLS / First Responders Interoperable Communications

Table 20 - “Traditional” Safety Network Comparison to Cellular Networks -
Network and Handset Features

12. U.S. – Interoperability Landscape

Table 21 - First Responders Figures in the U.S.

Table 22 - U.S. Non-First Responders Communications Interoperability Users

Table 23 - PSIC State/Territory Allocation

13. Europe – Interoperability Landscape

Table 24 - First Responders Figures in Europe

Table 25 - TETRAPOL Public Safety and Emergency Services Networks
Worldwide

Table 26 - Project 25 System Vendors & Products

Table 27 - TETRA System – Vendors & Products

Table 28 - SDR (Software Defined Radio) System Vendors & Products

14. Vendors/Products

Table 29 - Mesh Networks System Vendors & Products

Table 30 - IP and SW Vendors & Products for Public Radio Interoperability

16. Standards

Table 31 - Status of Project 25 Interfaces

17. Interoperability – Impetus, Problems and Solutions

Table 32 - Interoperability Levels, Level One – Swap Radios. Advantages &
Disadvantages

Table 33 - Interoperability Levels, Level Two – Talkaround or “Directed Net”.
Advantages & Disadvantages

Table 34 - Interoperability Levels, Level Three – Mutual Aid. Advantages &
Disadvantages

Table 34 - Interoperability Levels, Level Four – Gateway (Console Patch).
Advantages & Disadvantages

Table 34 - Interoperability Levels, Level Five – System-Specific-Roaming (Trunked
& Conventional). Advantages & Disadvantages

Table 37 - Interoperability Levels, Level Six – Standards Based Shared Systems
(Trunked & Conventional). Advantages & Disadvantages

Table 35 - U.S. Interoperability Communications – Bandwidths, Spectrums and
Technologies

Table 36 - Europe - Interoperability Communications – Bandwidths, Spectrums
and Technologies