



**Selex ES**

A Finmeccanica Company

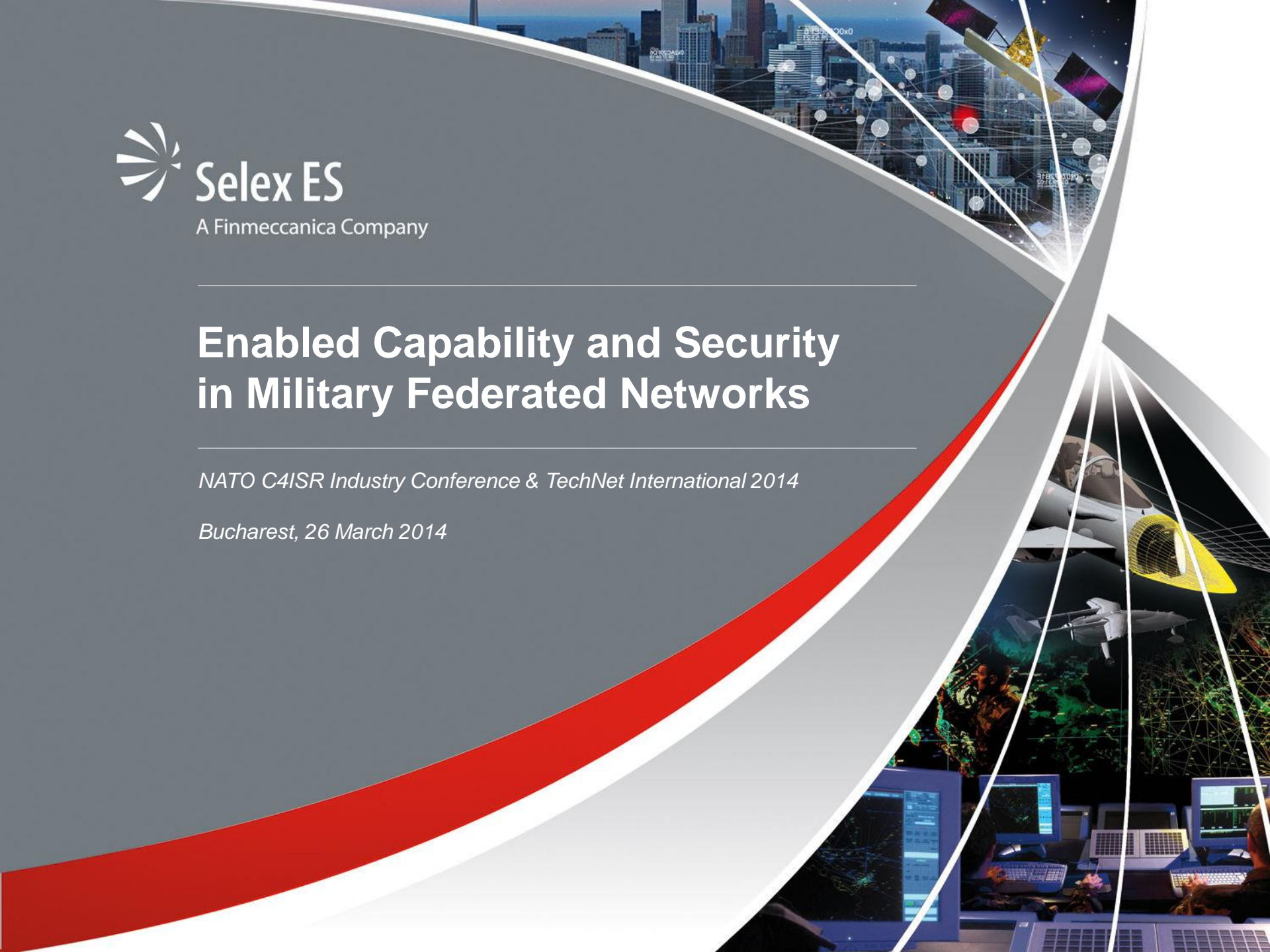
---

# Enabled Capability and Security in Military Federated Networks

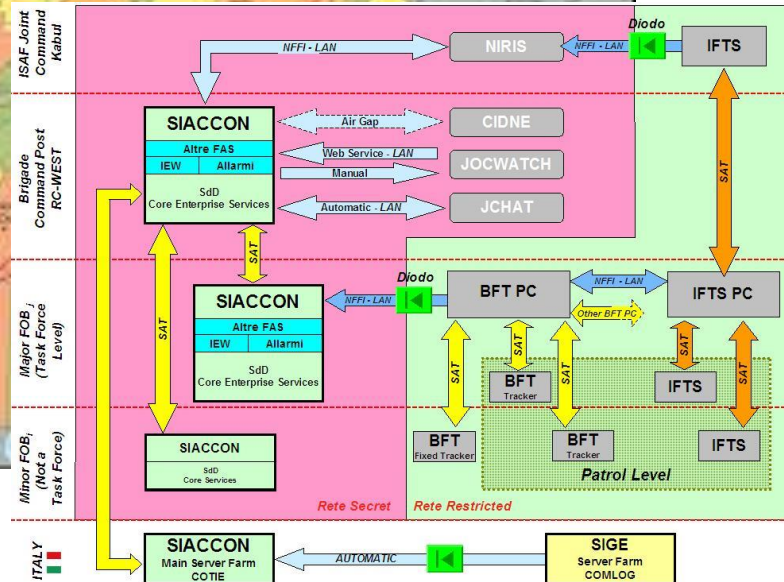
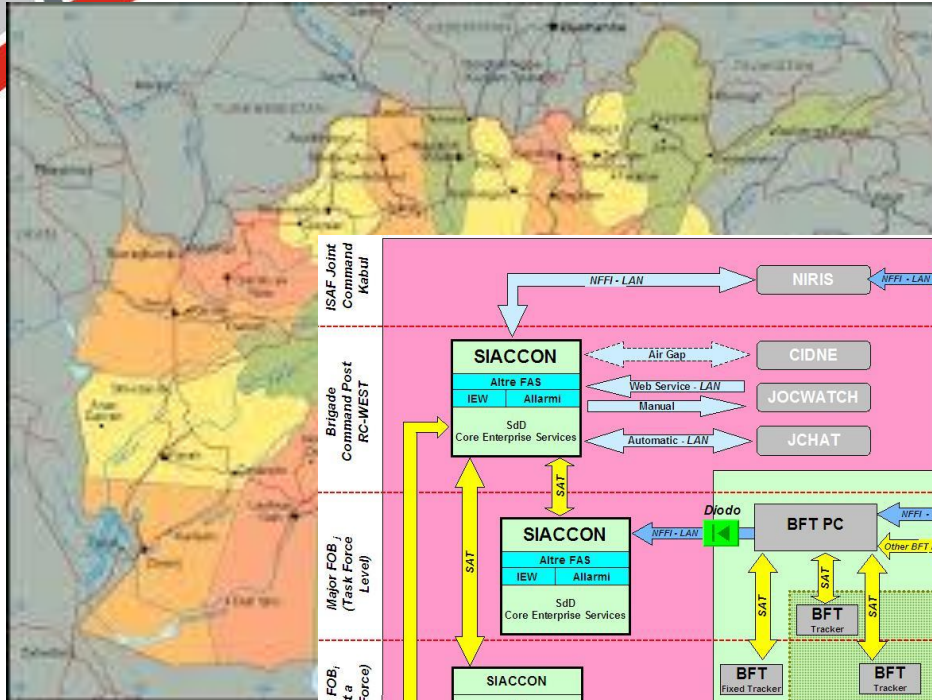
---

*NATO C4ISR Industry Conference & TechNet International 2014*

*Bucharest, 26 March 2014*



## AMN – Not a Federated Network The Italian Case

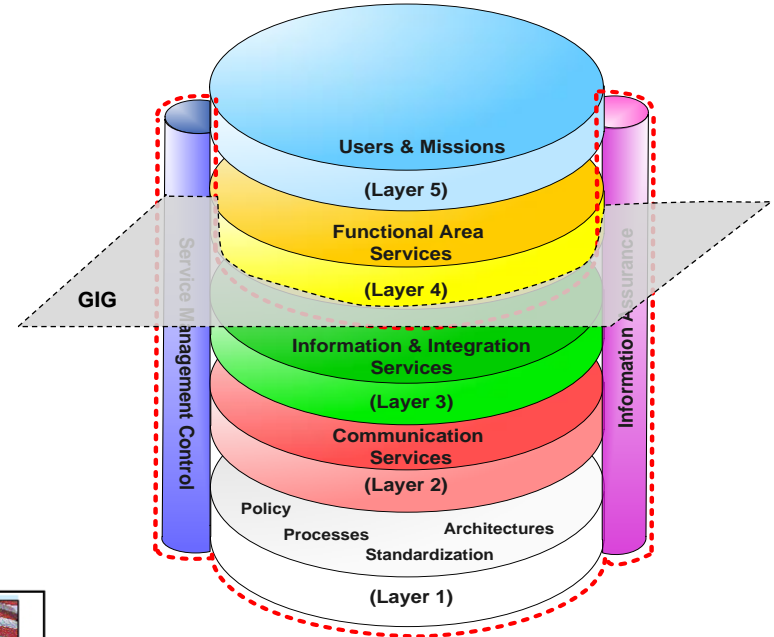
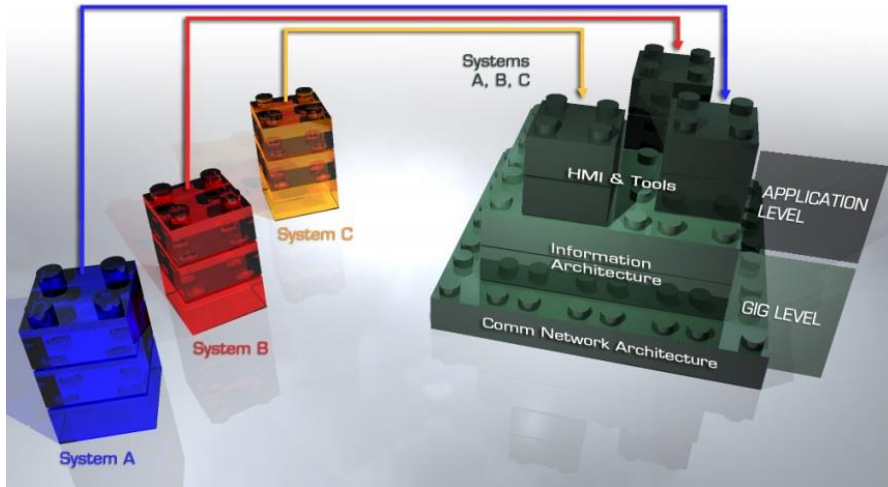


- The ISAF transportation network has been implemented by NATO prior to the deployment of the national systems
- IFTS (Interim Force Tracking System) devices have been assigned to Coalition Forces to grant interoperability with US Commands
- At Brigade Command Post level, interoperability with Italian FAS (SIACCON) has been achieved via NFFI gateways, standard Ethernet connection and manual procedures.

As a matter of fact, interoperability is obtained through system homogenization, not through the integration of networks and orchestration of National Services

# From a Provider Network to Federated Networks

COMMON INFO & COMM ARCHITECTURE APPROACH



	DECONFLICT	COORDINATE	COLLABORATE	COHERENT
Operational	Land Forces SOF	Air Forces Maritime Forces	Land Forces SOF	Air Forces Maritime Forces
Functional Area Services	Standalone Applications	Integrated and Web Based applications	Applications as Services	Self orchestrating Applications
Information Integration Services	Standalone Information	Database Centric Information sharing	Service Oriented Architectures	Semantic Web capabilities
Communication Services	Multiple types of Networks	Migrate to a Single network type	Mobile Software defined networks	Self managing Adaptive networks

- No need of pre-existing infrastructure for immediate deployment
- Use of National Assets
- Deconflict different technologies and applications as the first step towards real federated networks
- Sharing Collaborative Services
- Sharing Situational Awareness Data

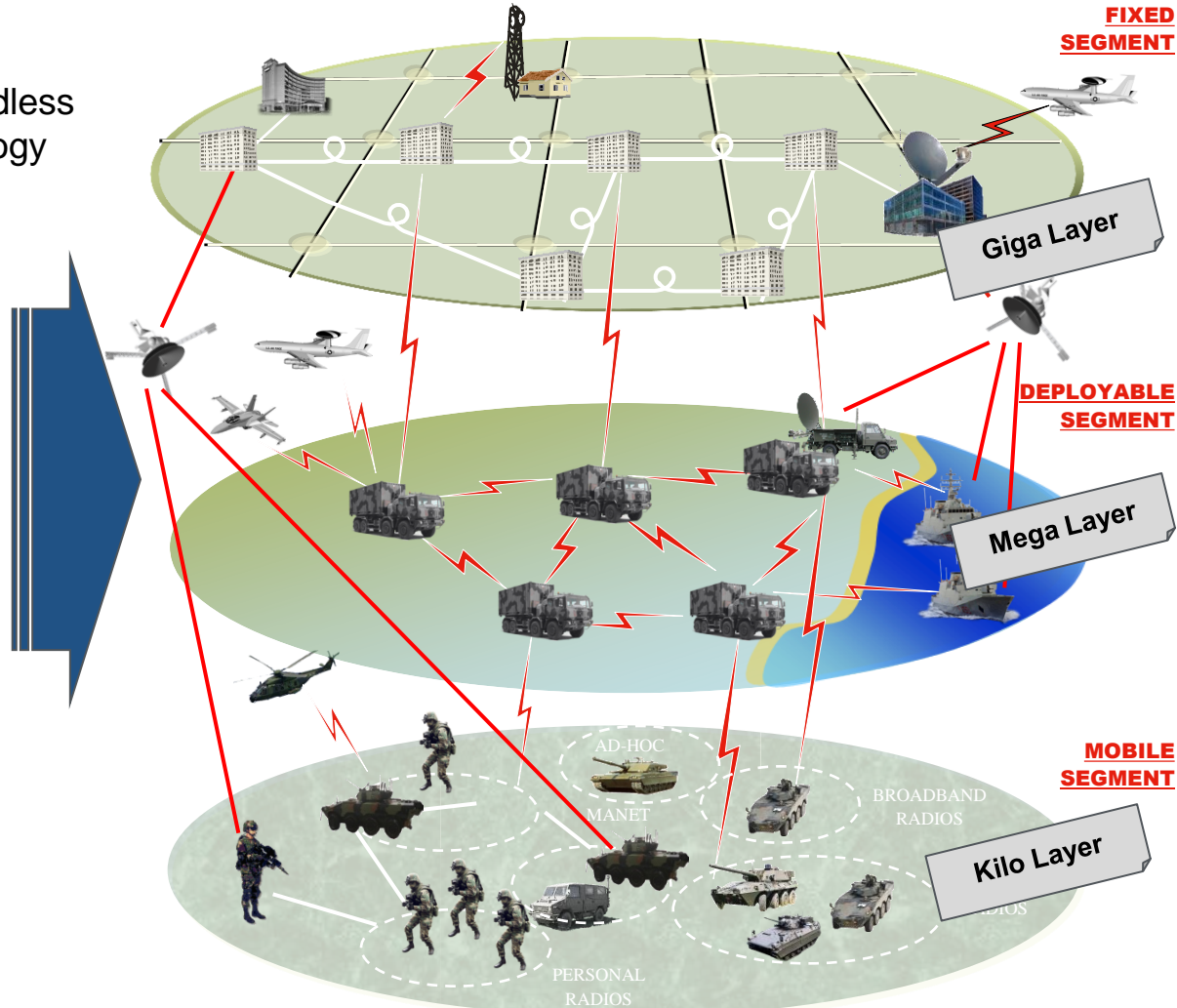
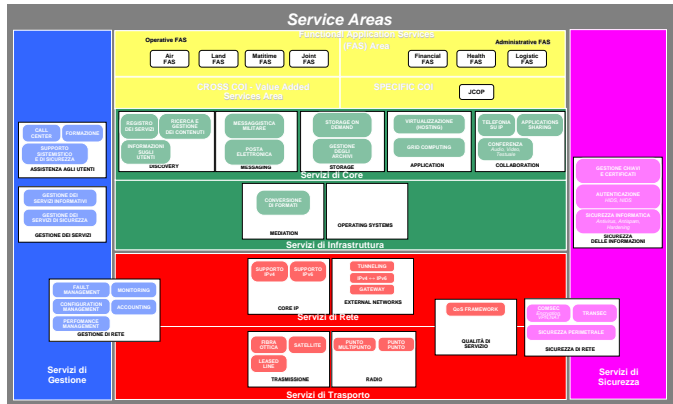


# From a Provider Network to Federated Networks Seamless Solutions across Systems and Layers

## Application Segments

### Federated Architecture

Same services at different layers regardless communication & networking technology

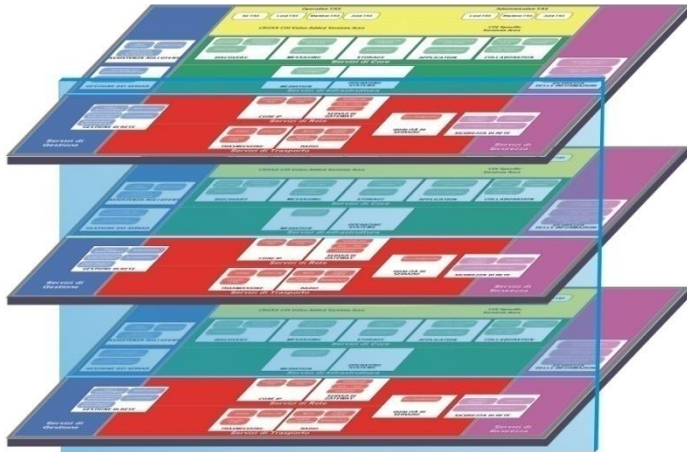


# From a Provider Network to Federated Networks Seamless Solutions across Systems and Layers

## Application Segments

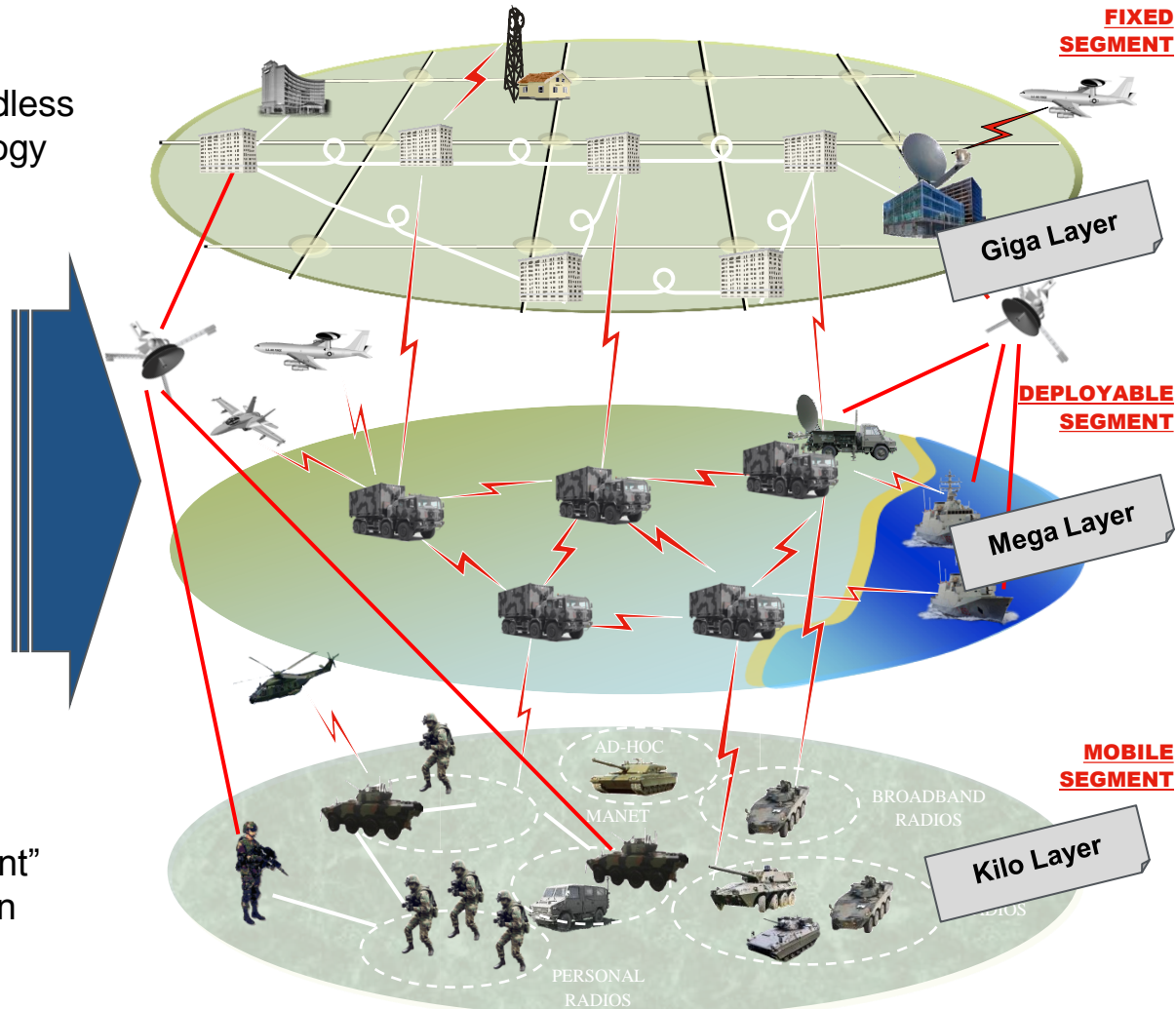
### Federated Architecture

Same services at different layers regardless communication & networking technology



### Integration

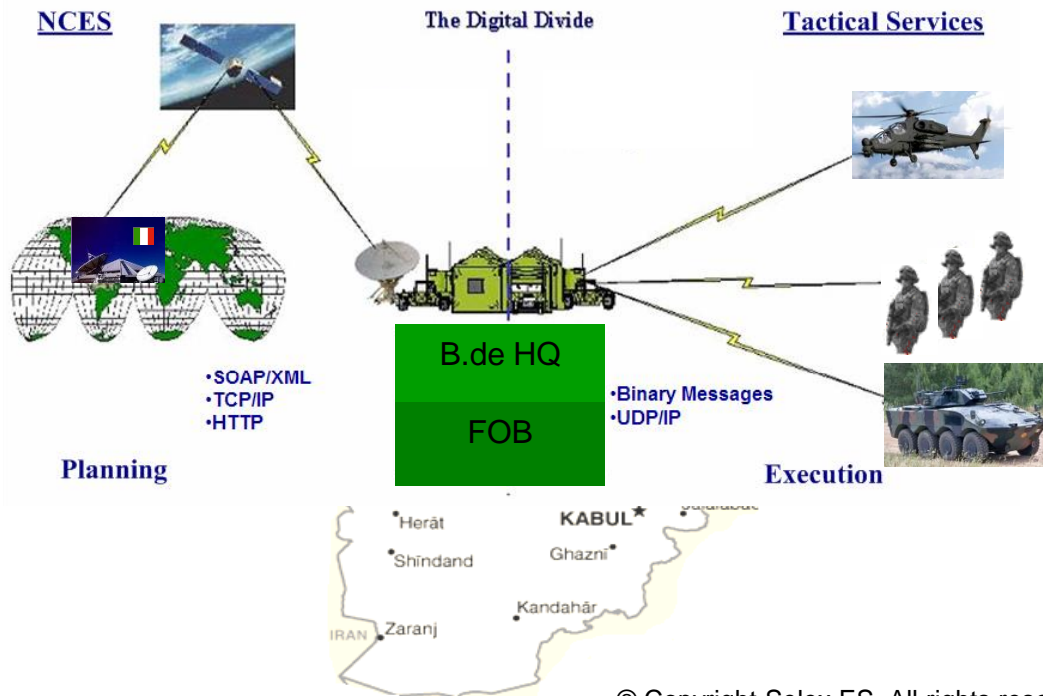
Adapting services to the actual communication & networking “environment” resulting in a “seamless” use of common applications



# From a Provider Network to Federated Networks Enterprise vs. Tactical

## Enterprise Environment (Net-Centric Enterprise Services)

- Provides strategic and operational planning
- Unconstrained Bandwidth (>10Mbps)
- Stable Communications Infrastructure; no mobility
- Need to pass large amounts of data in a timely manner, QoS through bandwidth over-provisioning
- Need to discover and share data across disparate systems without developing new interfaces
- Works well for NCES enabling technologies (XML, HTTP, TCP/IP, SOAP, etc)
- Typically based on COTS Technology



## Tactical Environment

- Provides operational execution
- Constrained by low bandwidth (< 10/100 kbps)
- Different radio technologies
- Constrained by unstable, dynamic communications networks and connections
- Needs information security and transmission protection
- Only needs the relevant data for their Area of Responsibility (AOR)
- Need to receive actionable information in a timely manner that has immediate relevancy
- Based on military equipment and devices

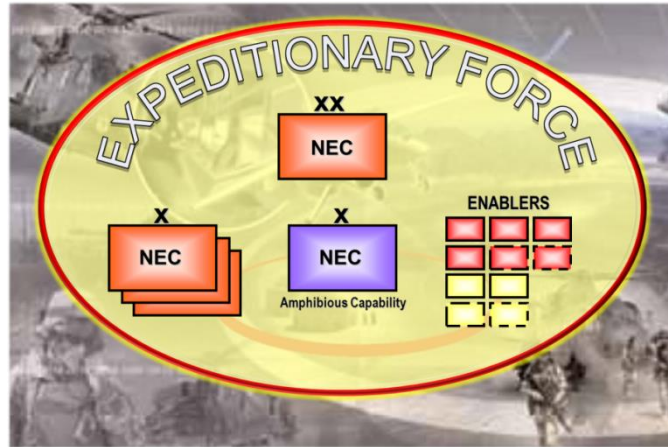
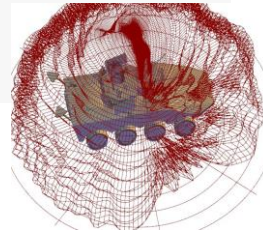
# Selex ES – Italian MoD Forza NEC Experience on

## Full Digitisation of Secure Deployable and Mobile Networks Multi-layered – Heterogeneous Technologies

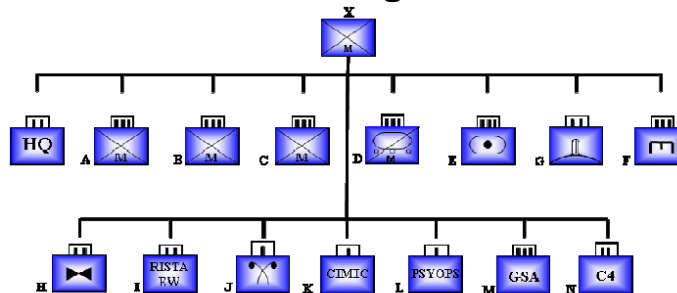


### Enabling Technologies:

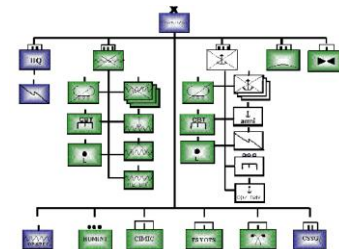
- Advanced Networking
- Tactical MANET
- SDR Technology
  - Waveforms NG,
  - Legacies
- SOTM X and Ka Bands
- Advanced BMS/SA
- Protection
- Sensors



### 3 x Land Brigades



### Landing Force LDF



# Selex ES – An Unparalleled Portfolio of Solutions and Capabilities

## Three Tier CIS Solutions Deployed Worldwide In Operation in many theatres



- ITA SDR Program
  - Develop Joint SDR Platforms
  - Promote SDR activities in Italy and EU
- ESSOR
  - EU ESSOR SDR Architecture Leader
  - Coalition HDR WF
- JTRS MDCS
  - Link 16 PA Design
  - Terminal integration
- EDA SCORED
  - Radio market evolution lead
- EDA WOLF
  - Advanced communications for dismounted nodes in urban environment
- WINTSEC
  - Civil applications
- SDR Forum 2.0
  - Member WINNF Board
  - SCA Steering Committee, SCA-NEXT Team
- NATO
  - C3SNR SDR WG (5 nations)
  - SDRUG



- The Italian Cyber Defense Capability system has been delivered and put in service by Selex ES in 2013.
- Selex ES is now supporting Italian MoD in the evolution of the capability framework to be integrated with NATO CIRC.
- Selex ES is supporting the Italian Government to set up the Cyber collaboration framework at National (Country CERT) and Sector level (MoD CERT; PA CERT, Critical National Infrastructure CERT, etc.)

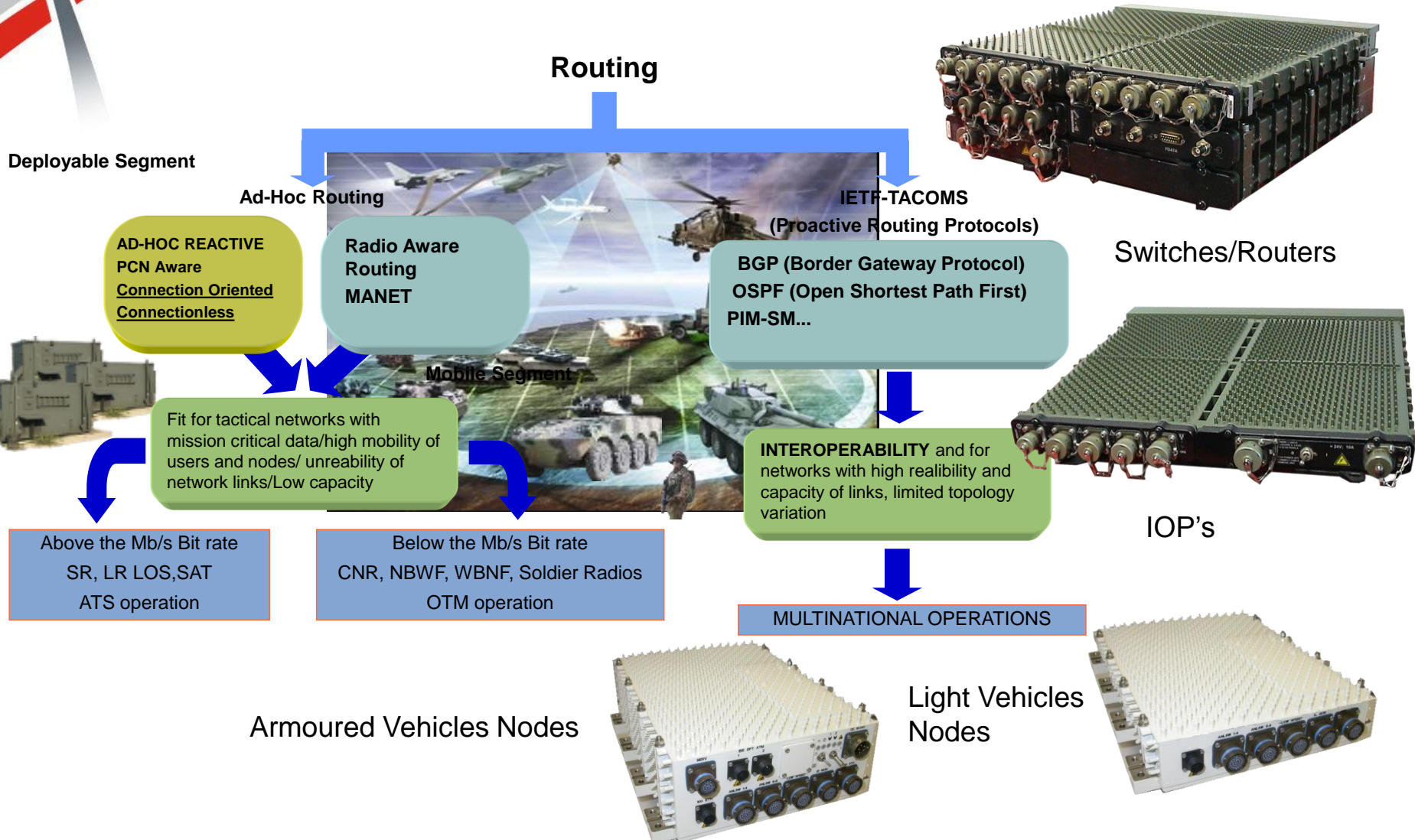
Selex ES Company Confidential

**Leader in SDR Technology  
NATO, Proprietary and  
New Generation Waveforms**

**Global Player for Information Security  
NATO NCIRC Programme undergoing**



# Selex ES – An Unparalleled Portfolio of Solutions and Capabilities - NETWORKING



# Selex ES – An Unparalleled Portfolio of Solutions and Capabilities – Software Defined Radios



**SWave™ Manpack, 2 Ch.s**



**SWave™ Handheld**



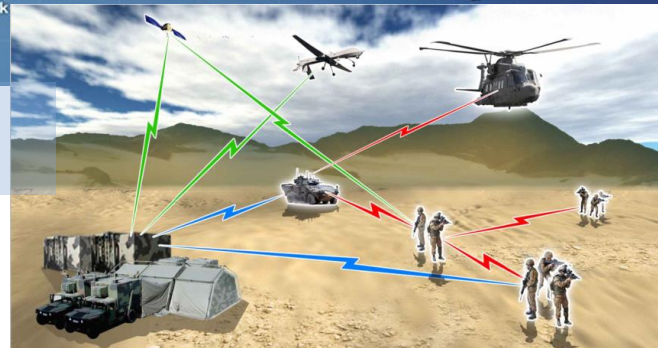
**SWave™ Vehicular 1 Ch**



**NB, WB WF's NATO, Popr.**

**SWave™ Vehicular 4 Ch.s**

SWave Vehicular Radio



# Selex ES – An Unparalleled Portfolio of Solutions and Capabilities – Satellite Comms

**Military Segment**  
X/Ka Band  
UHF Band

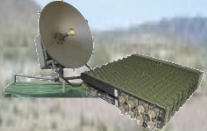


**Civil Segment,**  
Ku/Ka Bands

- Wide variety of multiband term.s
- Leader in SOTM/PAA Technology
- DVB/RCS-S2 Secure Modems
- Launching Ka-band Systems (Athena Fidus)
- National Backbone fully integrated with Expeditionary Assets
- Implementing NATO Satellite Ground Segment (SGS)

**Deployable Communications**

**Manportable**  
X Band  
FDMA/DVB



Up to 1Mb/s SOTM/X  
DVB



**Sheltered Tactical Hub**  
X/Ku/ka Bands – FDMA/DVB



UHF Tacsat

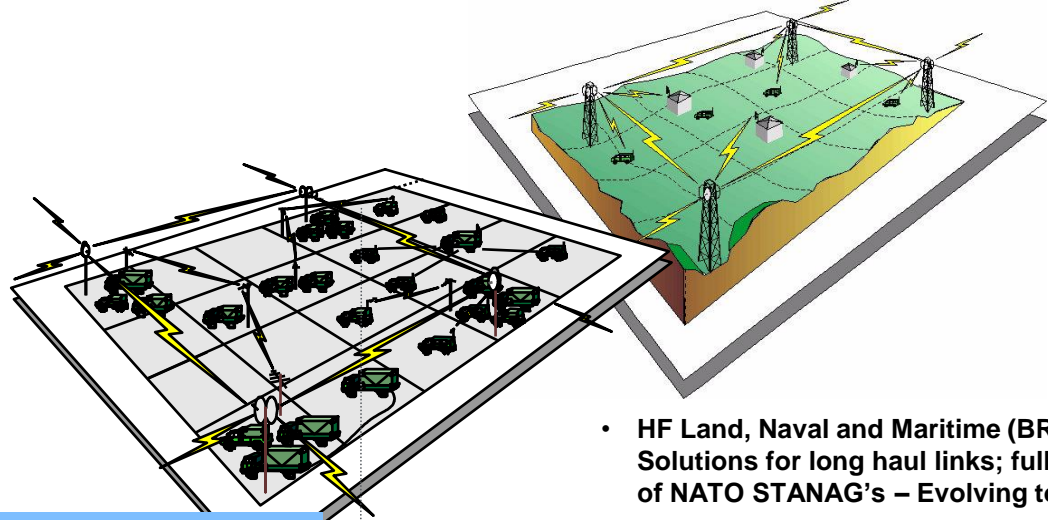
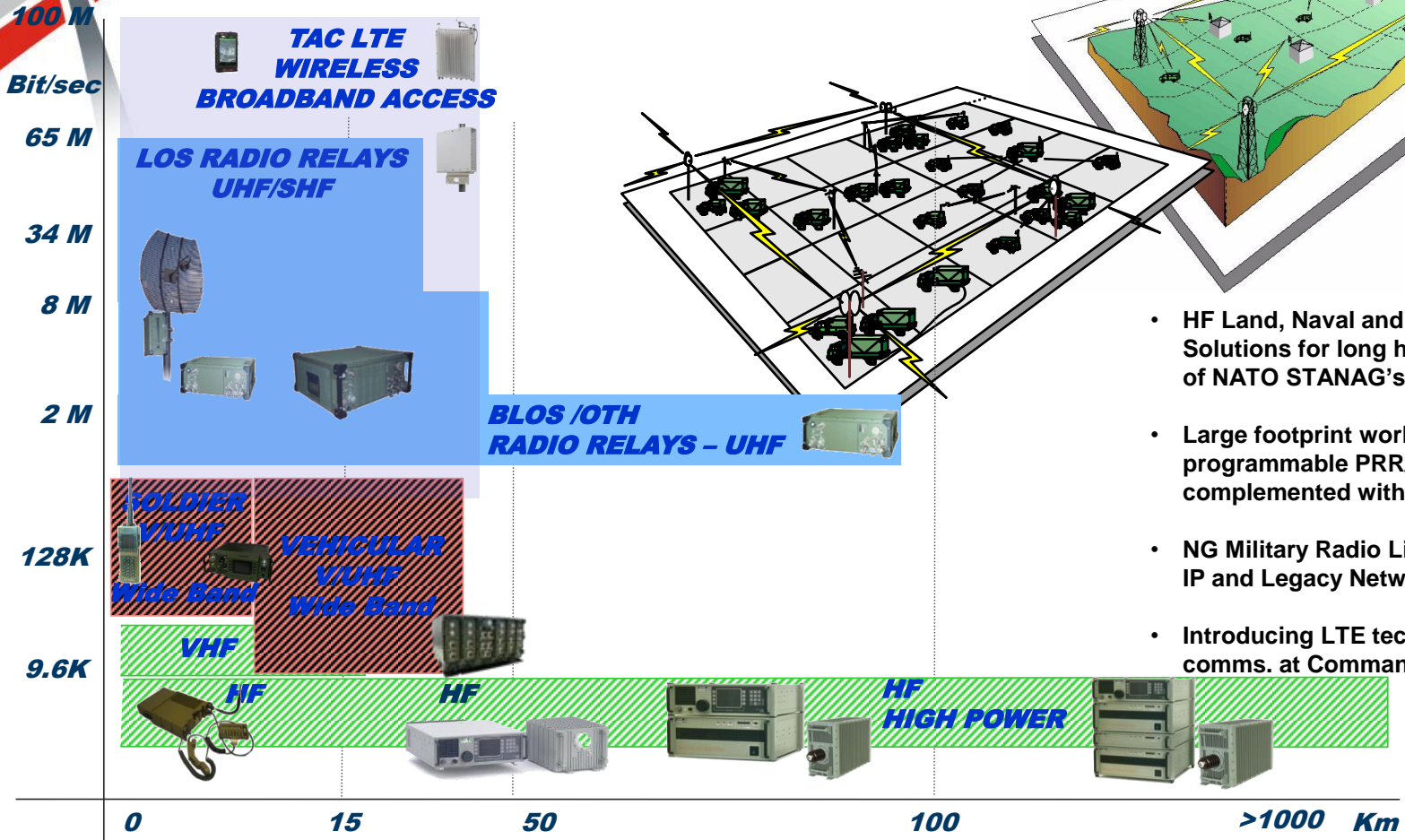


**Mobile terminals**  
X/Ku Bands – FDMA/DVB

N \* 2 Mb/s



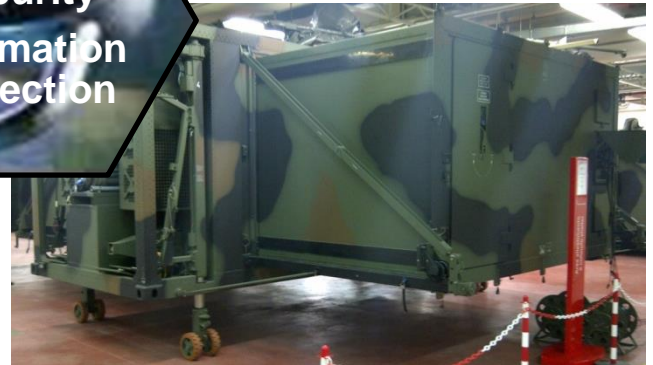
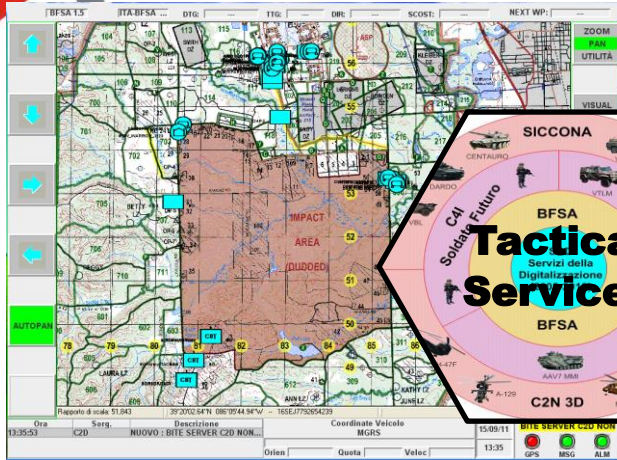
# Selex ES – An Unparalleled Portfolio of Solutions and Capabilities – Ground LOS/BLOS Comms



- HF Land, Naval and Maritime (BRASS) Solutions for long haul links; full support of NATO STANAG's – Evolving to SDR
- Large footprint worldwide with SW programmable PRR/SSR radios now complemented with NG SDR solutions
- NG Military Radio Links supporting ALL-IP and Legacy Networks
- Introducing LTE technology for wireless comms. at Command Posts level

**LOS**

**BLOS/OTH**



---

## **Selex ES S.p.A.**

Via Tiburtina Km 12,400  
00131 Rome, Italy  
Tel. +39 06 4150.1

---