Il contributo di un Gruppo industriale alle sfide della sostenibilità
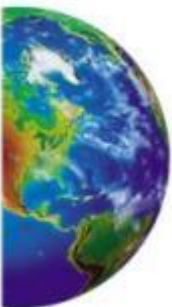
M.Cavanna
Finmeccanica GS
SVP Programmi internazionali, Energia e Logistica dei trasporti
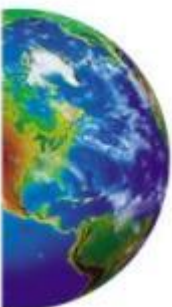
Genova, 10 novembre 2011

"D'una città non godi le 7 o 77 meraviglie,

ma la risposta che dà a una tua domanda"
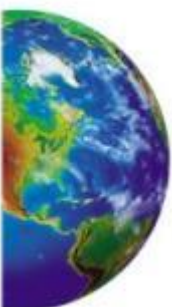
(Italo Calvino, Le città invisibili)

Città = "Sistema di sistemi"

Problematiche interconnesse (discipline e generazioni)

Come può il settore tecnologico contribuire alle sfide della sostenibilità nei grandi centri urbani?
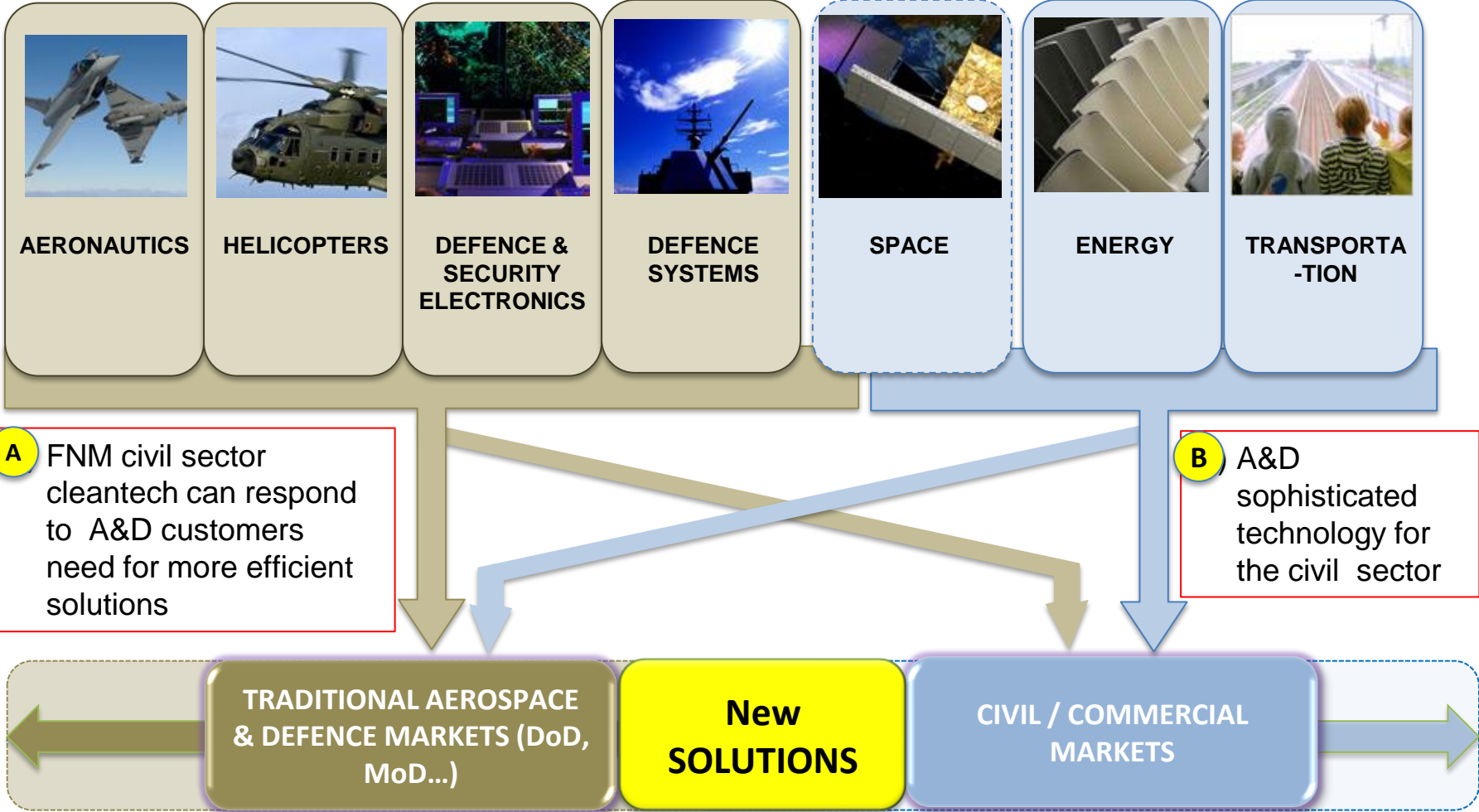
Approccio cross-settoriale

Soluzioni innovative e complesse

Impegno e collaborazione tra diversi attori

Dual use & technology cross-over

FINMECCANICA

| AERONAUTICS | HELICOPTERS | DEFENCE & SECURITY ELECTRONICS | DEFENCE SYSTEMS | SPACE | ENERGY | TRANSPORTA-TION |

A FNM civil sector cleantech can respond to A&D customers need for more efficient solutions

B A&D sophisticated technology for the civil sector

TRADITIONAL AEROSPACE & DEFENCE MARKETS (DoD, MoD...)

New SOLUTIONS

CIVIL / COMMERCIAL MARKETS

4

FINMECCANICA's
PLANET INSPIRED solutions

FINMECCANICA

EARTH MONITORING & CLIMATE CHANGE	NATURAL RESOURCES MANAGEMENT	ENERGY MANAGEMENT	SUSTAINABLE MOBILITY	HEALTHCARE & EDUCATION
EARTH OBSERVATION	AIR & WATER MONITORING	TRADITIONAL GENERATION	PUBLIC TRANSPORT	FIRST AID COMMUNICATION SERVICES
CARTOGRAPHY, LAND AND CITY MAPPING	LAND & FOOD MONITORING	RENEWABLES &DISTRIBUTED GENERATION	MOBILITY MGMT SYSTEMS	TELEMEDICINE
ATMOSPHERE AND WEATHER MONITORING / FORECASTING	ENVIRONMENTAL LOCAL SENSORS SUITE	NUCLEAR ENERGY & DECOMMISS.	ALTERNATIVE VEHICLES / ENGINES / FUELS	BIO-MEDICAL ENGINEERING
	WASTE MGMT & DECONTAM.	ENERGY EFFICIENCY AND SERVICE	FUTURE AIRCRAFTS	TELE-WORK
	OIL & GAS MONITORING	SMART GRIDS		
		IT ENERGY SYSTEMS		
		CCS & FUEL CELLS		
		WASTE 2 ENERGY		
		GREEN ENERGY PROCUREMENT		

- **1 SET OF SOLUTIONS**
- **6 CAPABILITIES**
- **100+ products**
- **Active customers**

ENVIRONMENTAL SECURITY & RESPONSE

PUBLIC SAFETY & CRISIS MANAGEMENT

SIMULATION

CRITICAL INFRASTRUCTURES SURVEILLANCE

CYBER SECURITY

EARTH OBSERVATION

SURVEILLANCE

GREEN ROTORCRAFTS

GREEN PLATFORM AIRCRAFTS

WEATHER RADARS

WEATHER FORECASTING

TRAFFIC CONTROL & MOBILITY MANAGEMENT

LIGHT MASS TRANSIT VEHICLES

GAS-OIL EXPLORATION

WIND GENERATION ELECTRONICS

ECOSYSTEMS VULNERABILITY ASSESSMENT

INFOMOBILITY

FUEL CELLS

AIR & WATER QUALITY & TEMPERATURE MONITORING

ESSEL TRAFFIC MANAGEMENT

TELEMEDICINE

ENVIRONMENTAL CONTROL UNITS

ICT FOR ENERGY MARKETS

CIVIL PROTECTION SYSTEMS

ENERGY EFFICIENCY SERVICE

SOLAR

CRISIS MANAGEMENT SYSTEMS

COMMAND AND CONTROL

SECURE COMMUNICATIONS
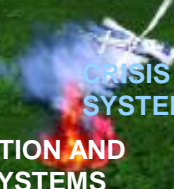
NUCLEAR ENERGY

FIRE DETECTION AND CONTROL SYSTEMS

GEOTHERMAL

SIGNALLING SYSTEMS

MICRO CO-GENERATION

TRADITIONAL POWER ST.

ATA FUSION

NETWORK CENTRIC TECHNOLOGIES

CROP MONITORING, BIOMASS USE

Protocollo di intesa
(efficienza energetica uffici, Sicurezza area Maddalena)
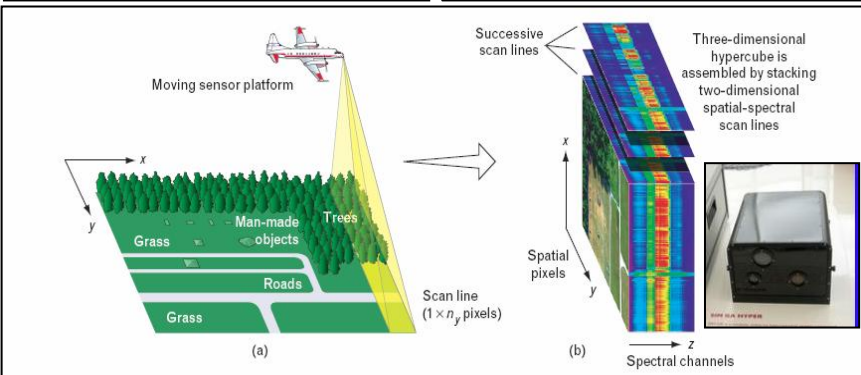
FINMECCANICA
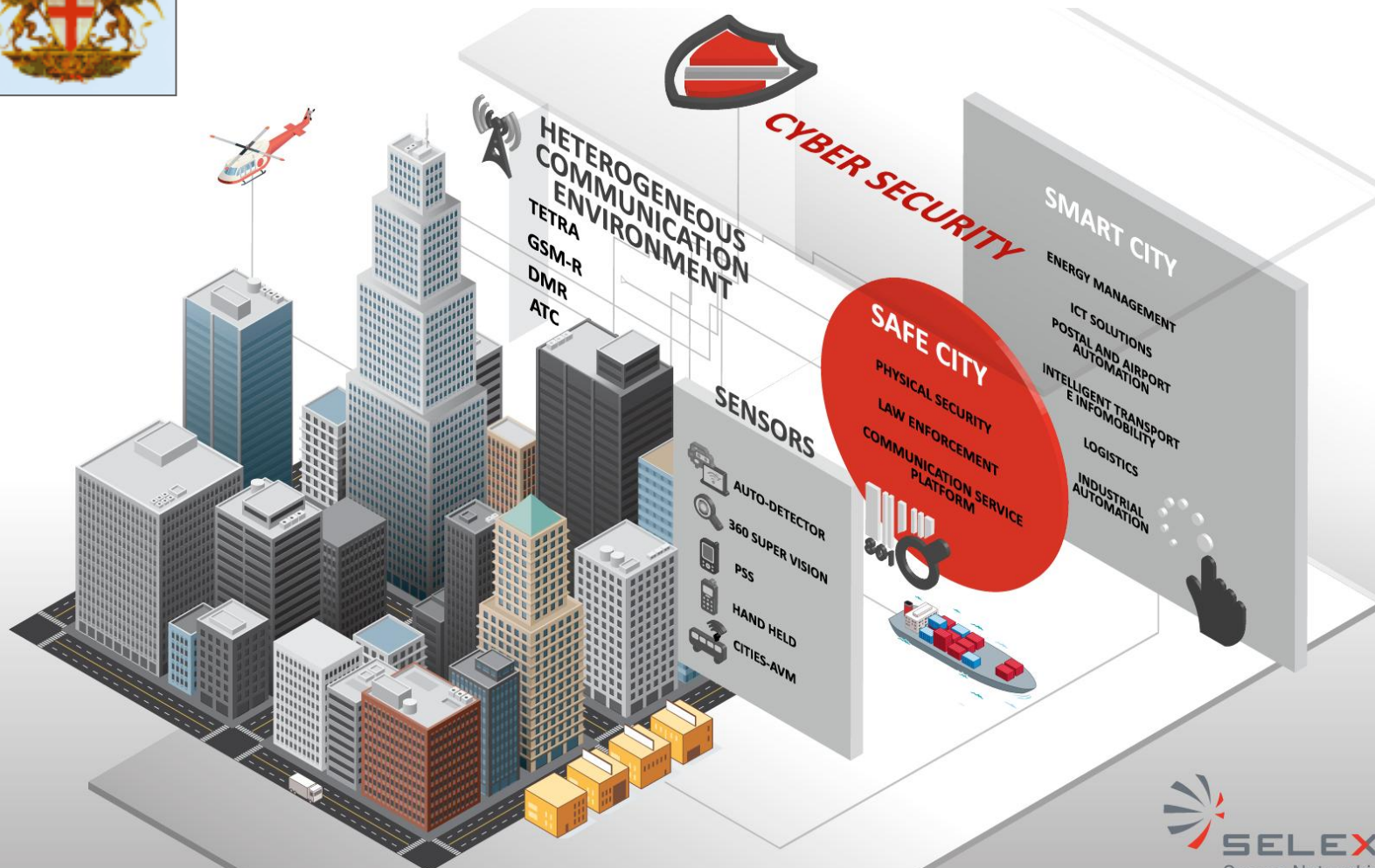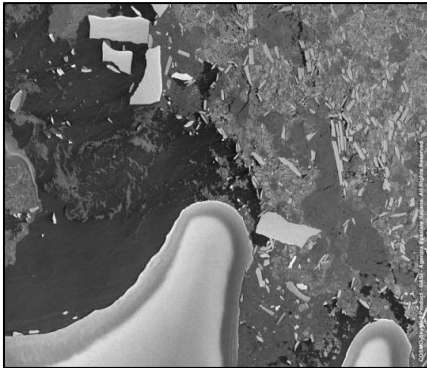
SATELLITE

LOCAL

HYPERSPECTRAL

THE CHALLENGES

- **INCREASE AWARENESS ON:**
  - EARTH MORPHOLOGY EVOLUTION
  - ATMOSPHERE & CLIMATE CHANGE DYNAMICS
- **INFORMED DECISIONS** (DATA ANALYSIS & SIMULATION)

THE SOLUTIONS

- <u>**Mgmnt of COSMO SKY MED satellite const., with related VAS**</u>

- <u>**WEATHER AND SAR RADARS, HYPERSPECTRAL**</u>

- **LAND & CITY MAPPING** integration of multi-source data

- **COASTAL EROSION**

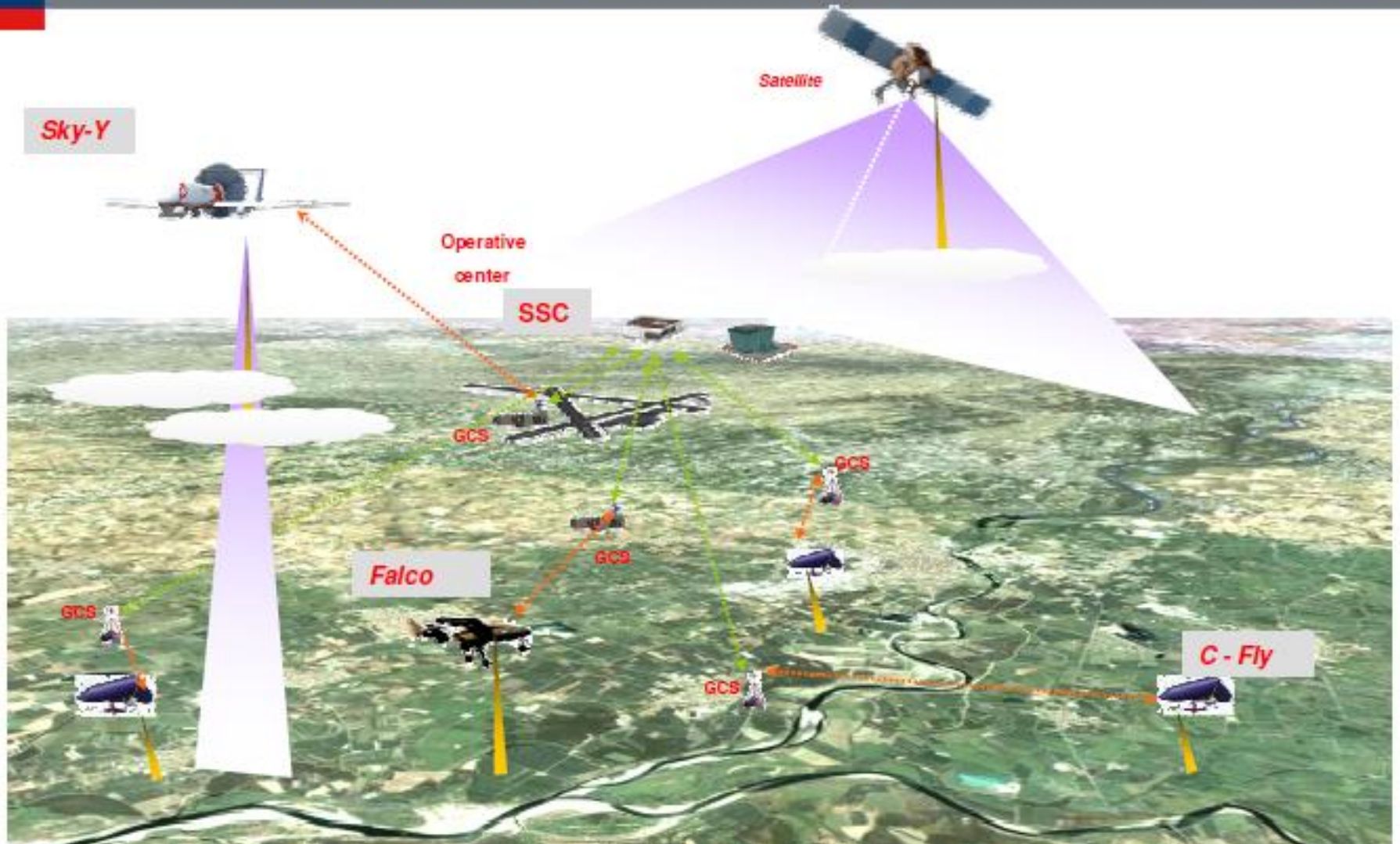- **OIL SPILLS**

- **DESERTIFICATION TRENDS**

- **ICE AREAS**

MAIN PROJECTS

- **GMES EUROPEAN PROGRAM**
- **ESA**
- **ITALIAN CIVIL PROTECTION**
- **OTHER CONFIDENTIAL CUSTOMERS**

Unmanned Aircrafts
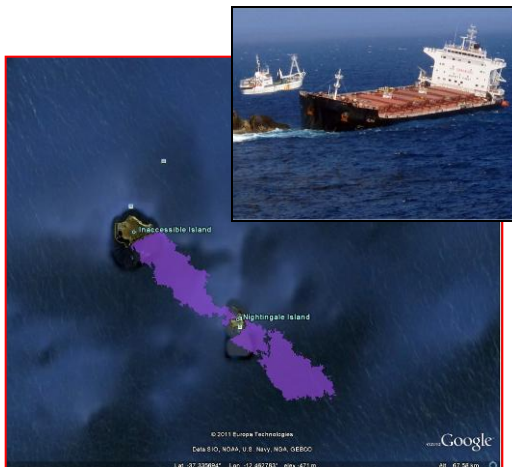
FINMECCANICA

**Flood Mapping
Veneto, 2010**

**Post earthquake
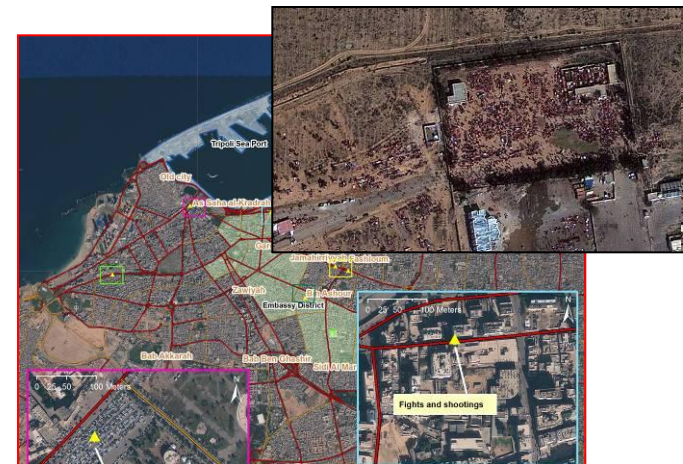trafficability analysis
Haiti, 2010**
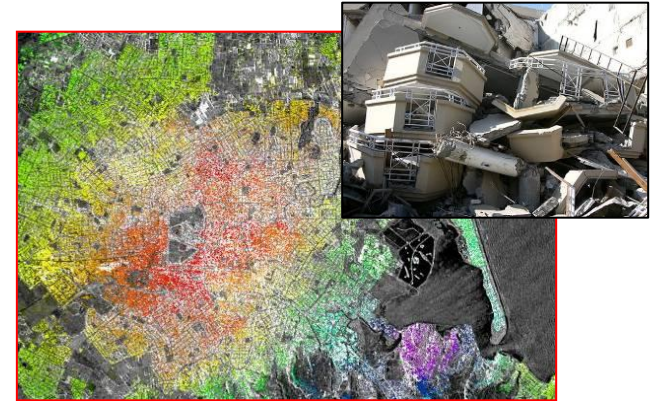
**Earthquake displacement map
New Zealand, 2011**

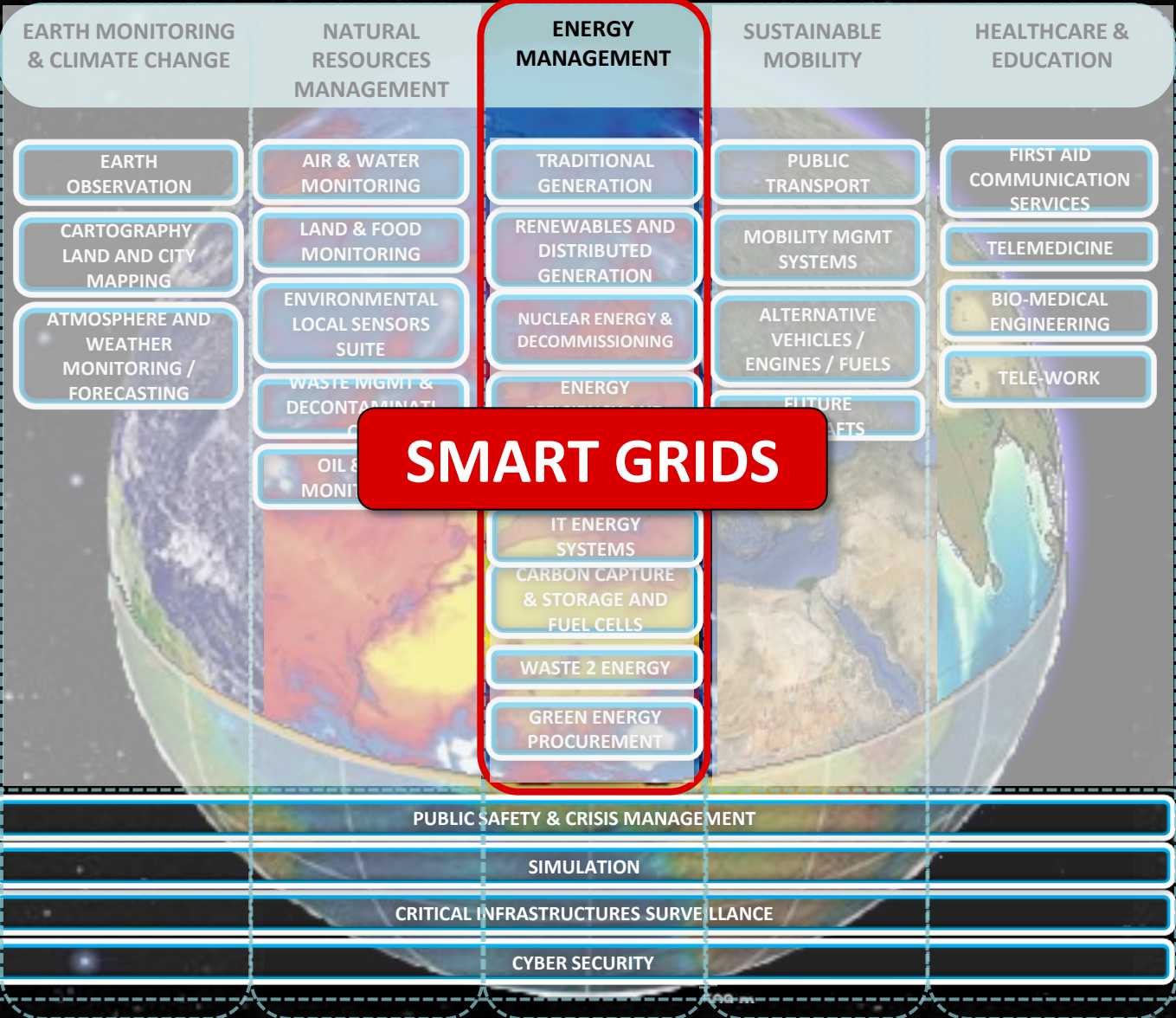**Oil spill detection,
Tristan da Cunha, 2011**

**Ship detection – pirates
Somewhere, 2011**

**Civil unrest – evacuation plans
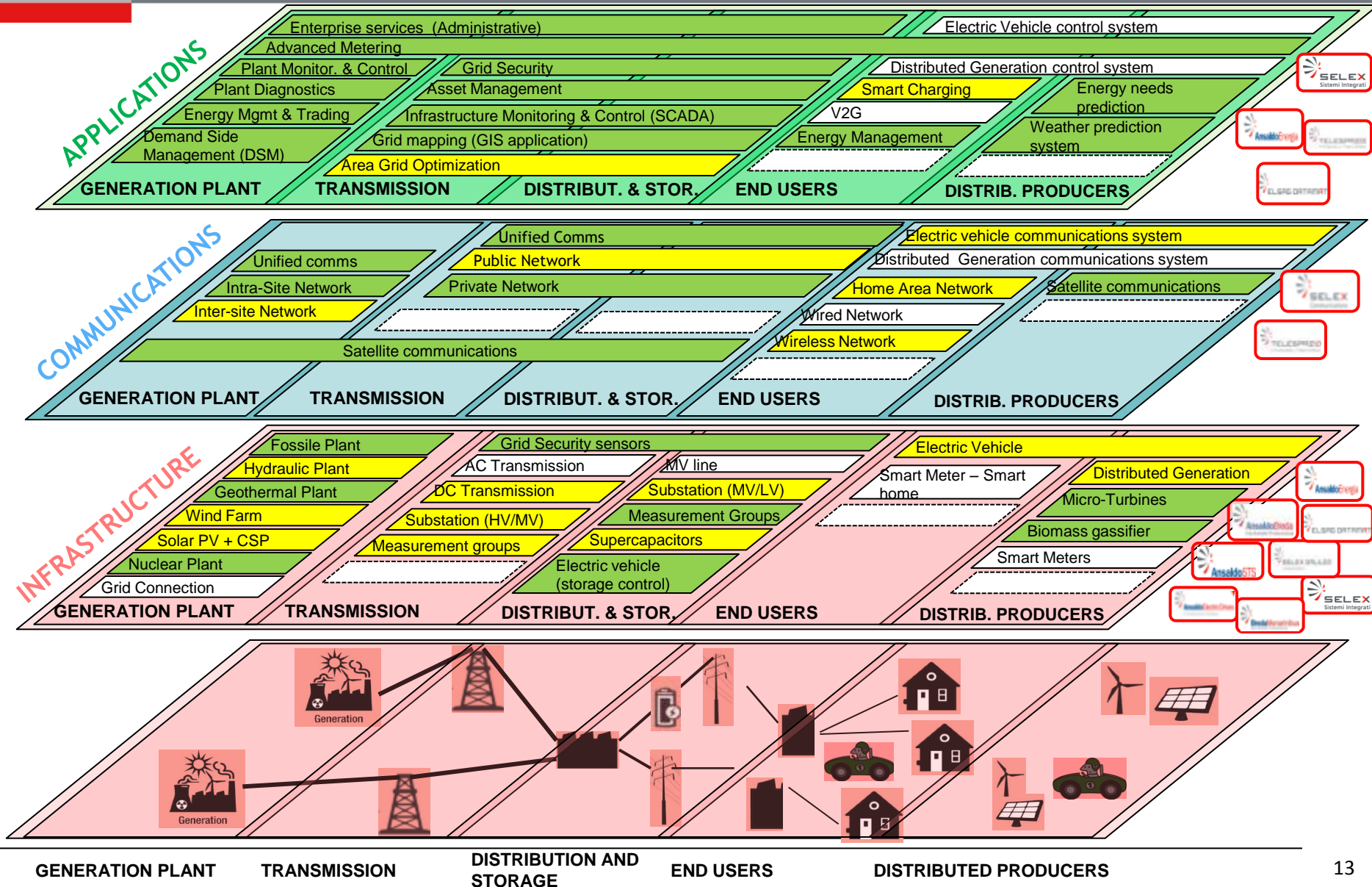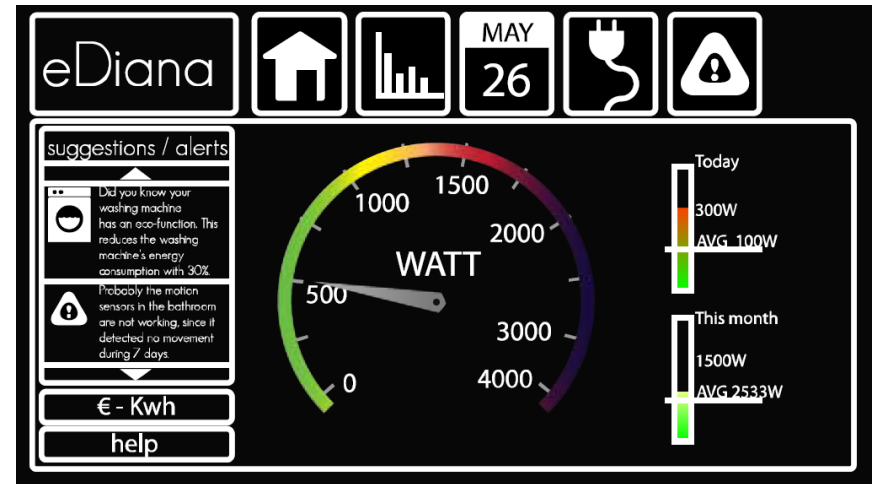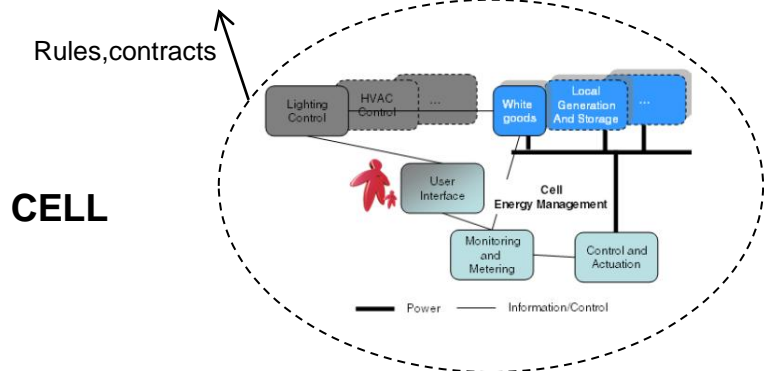and border surveillance
Libya, 2011**

e-geos

TELESPAZIO
A Finmeccanica / Alcatel Company

Smart Grids Taxonomy

APPLICATIONS

GENERATION PLANT	TRANSMISSION	DISTRIBUT. & STOR.	END USERS	DISTRIB. PRODUCERS
Enterprise services (Administrative)				Electric Vehicle control system
Advanced Metering				
Plant Monitor. & Control	Grid Security			Distributed Generation control system
Plant Diagnostics	Asset Management		Smart Charging	Energy needs prediction
Energy Mgmt & Trading	Infrastructure Monitoring & Control (SCADA)		V2G	Weather prediction system
Demand Side Management (DSM)	Grid mapping (GIS application)		Energy Management	
	Area Grid Optimization			

COMMUNICATIONS

GENERATION PLANT	TRANSMISSION	DISTRIBUT. & STOR.	END USERS	DISTRIB. PRODUCERS
	Unified Comms			Electric vehicle communications system
Unified comms	Public Network			Distributed Generation communications system
Intra-Site Network	Private Network		Home Area Network	Satellite communications
Inter-site Network			Wired Network	
Satellite communications			Wireless Network	

INFRASTRUCTURE

GENERATION PLANT	TRANSMISSION	DISTRIBUT. & STOR.	END USERS	DISTRIB. PRODUCERS
Fossile Plant	Grid Security sensors			Electric Vehicle
Hydraulic Plant	AC Transmission	MV line	Smart Meter – Smart home	Distributed Generation
Geothermal Plant	DC Transmission	Substation (MV/LV)		Micro-Turbines
Wind Farm	Substation (HV/MV)	Measurement Groups		Biomass gassifier
Solar PV + CSP	Measurement groups	Supercapacitors		Smart Meters
Nuclear Plant		Electric vehicle (storage control)		
Grid Connection				

GENERATION PLANT	TRANSMISSION	DISTRIBUTION AND STORAGE	END USERS	DISTRIBUTED PRODUCERS

eDIANA
Embedded Systems for Energy Efficient Buildings

ENERGY MARKET / ENERGY NETWORK
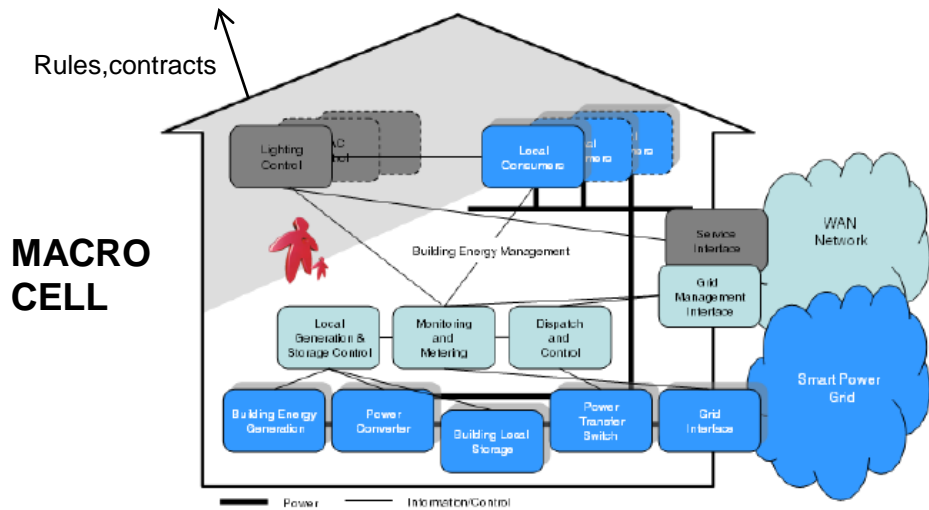
MACRO CELL

CELL

The CELL and MACROCELL embed a WEB service so that information can be accessed anywhere from any PC, Tablet or Smartphone

THE CHALLENGES

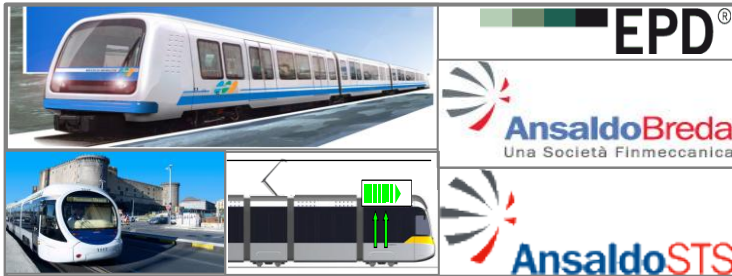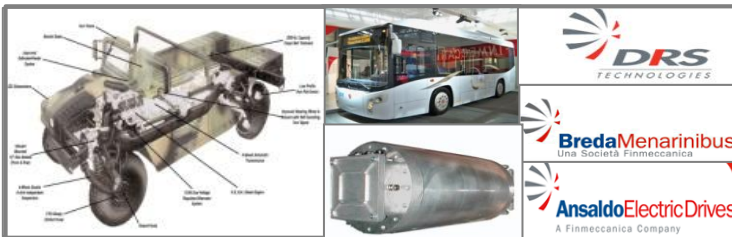- **REDUCE THE TRANSPORTATION INDUSTRY ENVIRONMENTAL FOOTPRINT (>20% OF CO_2 EMISSIONS)**
- **IMPROVE VEHICLES DESIGN (weight, engines, fuels, usage)**
- **LIFECYCLE ANALYSIS (5-30% CO_2 IMPACT IN PRODUCTION)**

THE SOLUTIONS

- **EU CLEAN SKY PROGRAMME: "GREEN ROTORCRAFT", "GREEN REGIONAL AIRCRAFT"** (led by AW and ALENIA AERONAUTICA)
- **TILTROTOR** vertical take-off aircraft (BELL-AGUSTA)
- **COMPOSITE AEROSTRUCTURES** (Alenia Aeronautica)
- **MASS TRANSIT energy efficient turn-key stations** (ASTS)
- **ANSALDOBREDA ENVIRONMENTAL PRODUCT DECLARATION FOR A RAIL VEHICLE** (90% OF RECYCLABLE PARTS).
- **HYBRID MARITIME INSTALLATION** (DRS)
- **ELECTRIC VEHICLES** (Ansaldo Electric Drives, Brm)

MAIN PROJECTS

- **BELL-AGUSTA BA609**
- **BOEING 787**
- **ANSALDOBREDA Urban Transport -** worldwide customers for Conventional Metro, Driverless Metro, Regional Railways, Light Rail Vehicles, Heavy Rail Vehicles
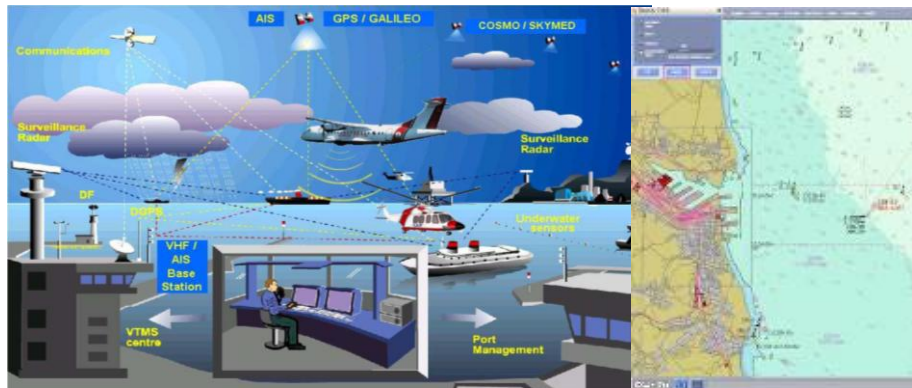- **BREDAMENARINIBUS** – various electric & GPL city Buses

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AIR TRAFFIC MANAGEMENT

VESSEL TRAFFIC MANAGEMENT

RAILWAY SYSTEMS

THE CHALLENGES

- **OPTIMIZE CAPACITY RESPECTING: SAFETY, SECURITY, COSTS AND MINIMIZING ENVIRONMENTAL IMPACT**
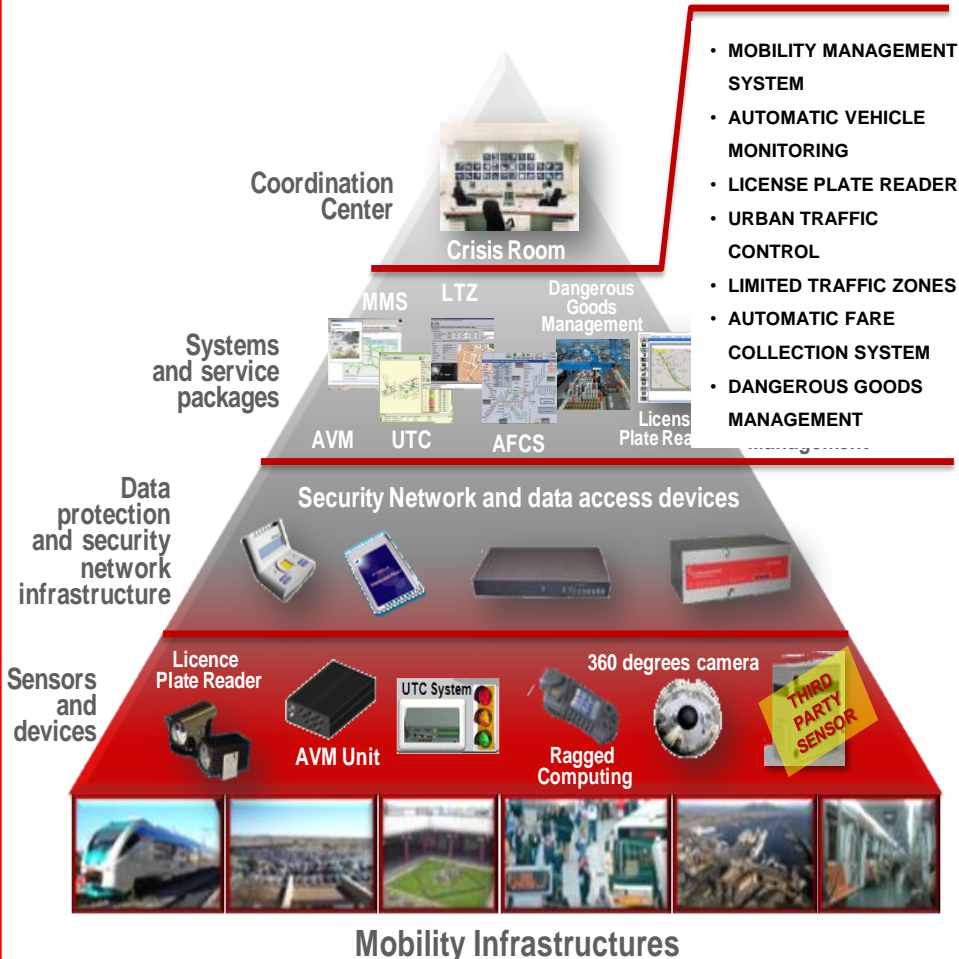
THE SOLUTIONS

- **ATM SYSTEMS:** Radars, Displays, Processors, Data Communications Systems and C2 for military and civil traffic control. SXSI is member of the **SESAR European Programme**
- **VESSEL TRAFFIC MANAGEMENT SYSTEMS:** safe and secure Maritime Operations, providing Port Authorities with intelligible complete and up-to-date information
- **RAILWAY TRAFFIC CONTROL SYSTEMS:** ensure Communications, automatic controls, failure detection and recovery, train positioning information, surveillance

MAIN PROJECTS

- **ATM SYSTEMS FIELDED IN 150 COUNTRIES (SelexSI)**
- **ITALIAN NATIONAL VTMS, THE LARGEST IN THE WORLD**
- **50%* OF THE SIGNALLING TECHNOLOGY FOR ALL HIGH SPEED LINES WORLDWIDE (ANSALDO STS)**

* Japan not included

GROUND TRANSPORTATION

Coordination Center

Crisis Room

MMS   LTZ   Dangerous Goods Management

Systems and service packages

AVM   UTC   AFCS   License Plate Reader

Data protection and security network infrastructure

Security Network and data access devices

Sensors and devices

Licence Plate Reader   360 degrees camera   THIRD PARTY SENSOR

AVM Unit   UTC System   Ragged Computing

Mobility Infrastructures

- MOBILITY MANAGEMENT SYSTEM
- AUTOMATIC VEHICLE MONITORING
- LICENSE PLATE READER
- URBAN TRAFFIC CONTROL
- LIMITED TRAFFIC ZONES
- AUTOMATIC FARE COLLECTION SYSTEM
- DANGEROUS GOODS MANAGEMENT

ELSAG DATAMAT   SELEX Communications A Finmeccanica Company

THE CHALLENGES

- SMART CITIES
- INCREASE USE OF PUBLIC TRANSPORT (<CO2/CAPITA)
- REDUCE POLLUTION/ TRAFFIC CONGESTION
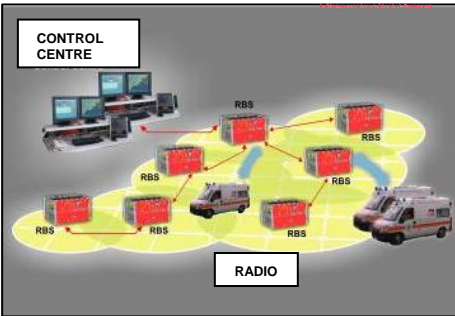
THE SOLUTIONS

- INTEGRATED MOBILITY SYSTEM:
  - COORDINATION CENTER
  - APPLICATIONS
  - DATA PROTECTION/ SECURITY
  - SENSORS AND DEVICES

MAIN PROJECTS

- CITY OF ROME (2.7 MIO INHABITANTS) & GENOA (0,6 MIO INHABITANTS)
- MILAN ECOPASS APPLICATION (1.3 MIO INHABITANTS)
- OTHER SIGNIFICANT EXAMPLES IN SALONICA, RYIADH, EGYPT…

FINMECCANICA

TELEMEDICINE & COMMUNICATION SERVICES
TELESPAZIO

WATER PURIFICATION
DRS TECHNOLOGIES

	Expeditionary Water Packaging System	Local Procurement / Transportation
Operating costs		
Fuel		
Personnel		
Convoys		
Availability	Independent operation	Dependent on supplies
Logistics safety	No transport of bottles	Risk of attacks

HEALTHCARE IT SERVICES
ELSAG DATAMAT

THE CHALLENGES

- **PRESERVE AND IMPROVE HEALTH CONDITIONS** (ORDINARY/FIRST AID, DEVELOPED/DEVELOPING COUNTRIES)
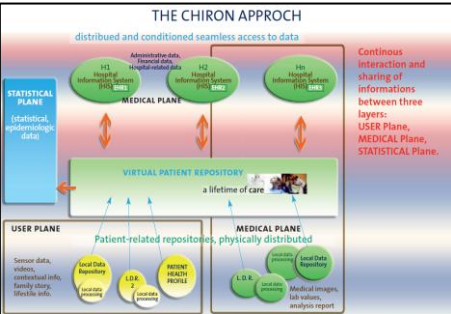- **TO GUARANTEE EASIER ACCESS TO EDUCATION**

THE SOLUTIONS

- **FIRST AID COMMUNICATION SERVICES**
- **TELEMEDICINE SERVICES** (SATELLITE COMMS)
- **WATER PURIFICATION and BOTTLING SYSTEMS FOR FORWARD OPERATING BASES**
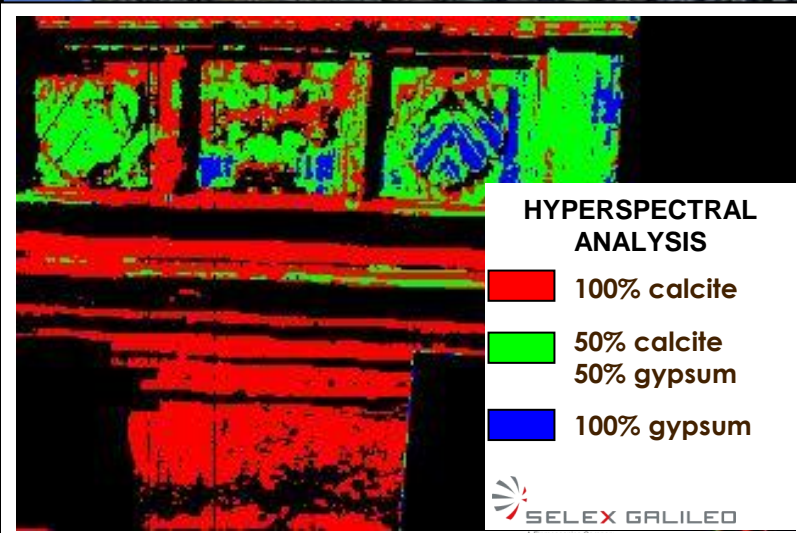- **ICT FOR HEALTHCARE SERVICES**
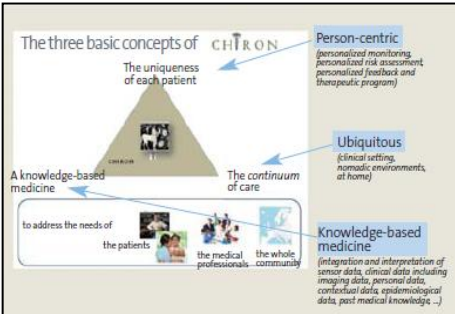
MAIN PROJECTS

- **ITALIAN NATIONAL AMBULANCE NETWORK**
- **MILITARY APPLICATIONS**
- **CONFIDENTIAL CUSTOMERS**

FLORENCE - BASILICA OF SANTA MARIA NOVELLA
MARBLE DETERIORATION ASSESSMENT

HYPERSPECTRAL ANALYSIS

100% calcite

50% calcite
50% gypsum

100% gypsum

SELEX GALILEO
A Finmeccanica Company

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Conclusioni

- **Città di Genova come "sistema di sistemi"**
- **Il settore tecnologico può contribuire a renderla "smart" grazie alle soluzioni di cui dispone**

- **Individuazione delle priorità**
- **Iniziative che si ripaghino anche grazie ai risparmi che generano (es sostenibilità - energia)**
- **Esplorare Modelli di servizio innovativi**
- **Coinvolgimento degli stakeholders:**
  - **Cittadinanza - Utenti**
  - **Policy Makers - incentivi**
  - **Centri di ricerca e Università**
  - **Tessuto industriale**
  - **Players tecnologici per coprire filoni prioritari**
  - **…**

Grazie

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