

Use of Space Technologies for Security Management in Major Events

Giovanni Cannizzaro



Security in Major Events and Expanding Cities
First International Symposium
Abu Dhabi, UAE, 18-20 May 2009



at a glance

☛ Telespazio is a world class player in

- Satellite Operations
- Earth Observation and geo-information content
- Integrated Networking and Value Added connectivity
- Info-mobility solutions and Satellite Navigation.



Fucino space centre



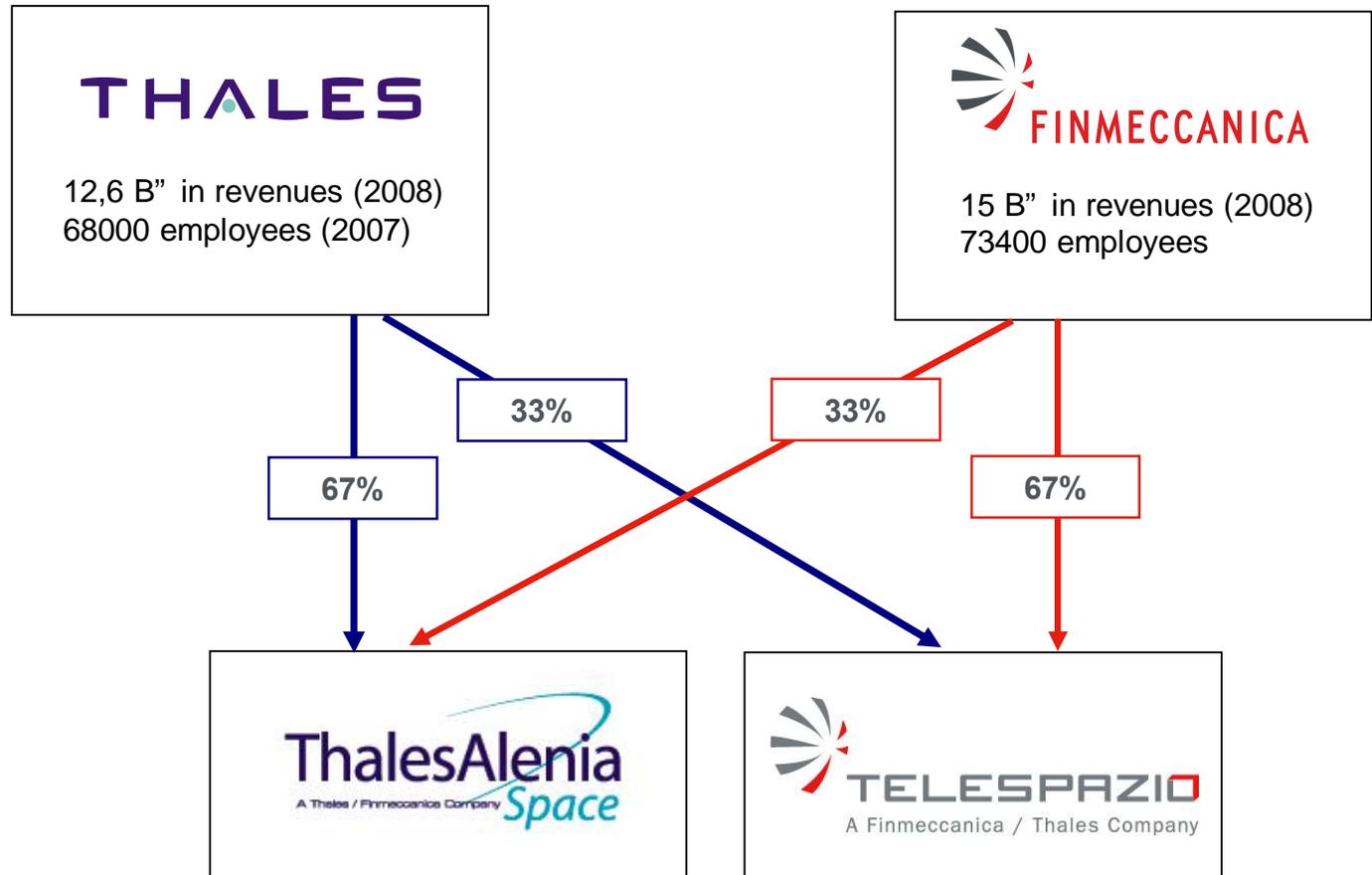
Matera space centre



Lario space centre



Scanzano space centre



The different security management phases (1/2)



Source: IMSK FP7 Project

ment operational needs

- . pre crisis/preparedness:
 - " Alert broadcast set up
 - " Patrol route optimisation;
 - " Areas at risk
 - " Emergency planning
 - " Scenario simulation

- . crisis phase/response:
 - " warning of citizens
 - " Resource deployment, monitoring, management
 - " Localize and assist injured
 - " networks re-establishment;
 - " Assess mission

- . post crisis/recovery:
 - " damage assessment;
 - " reconstruction monitoring



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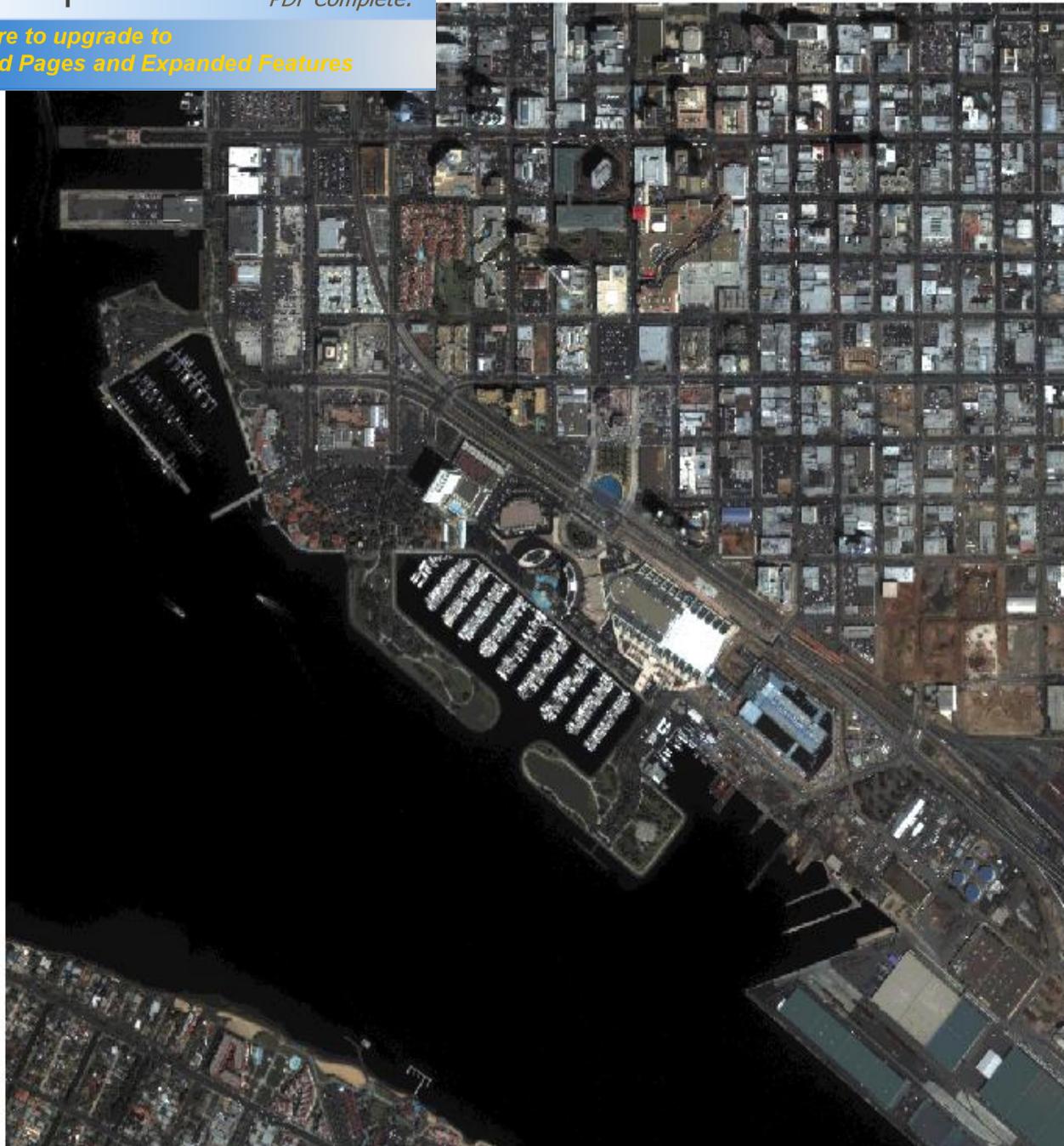
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- “ Major Events Security management needs and issues
- “ **How Space technology can help and in what phases**
- “ Specific examples and lessons learned
- “ Future perspectives

Space technology and applications of interest

- . Earth Observation
- . Positioning/ navigation
- . Telecommunications



High-Resolution

Ikonos Pan-sharpened RGB

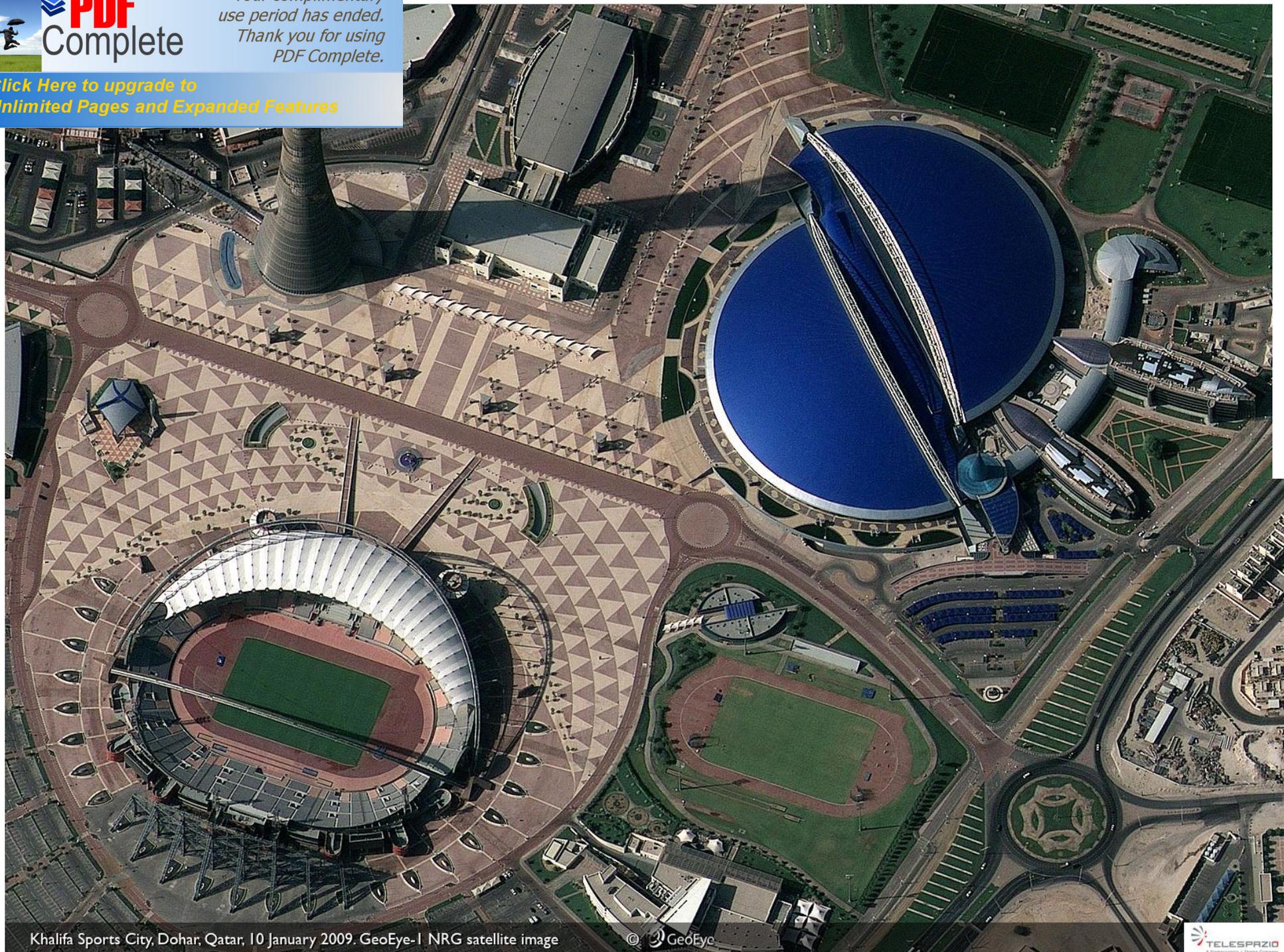
Resolution 1 metre

11 bits

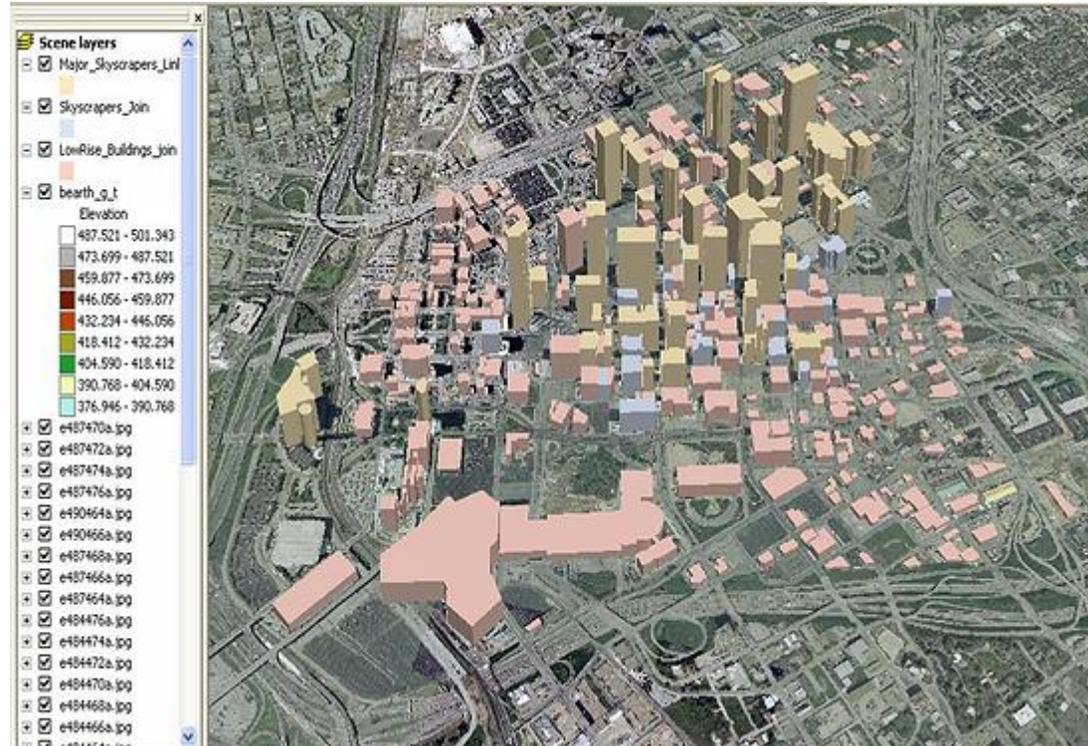
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graphic filename

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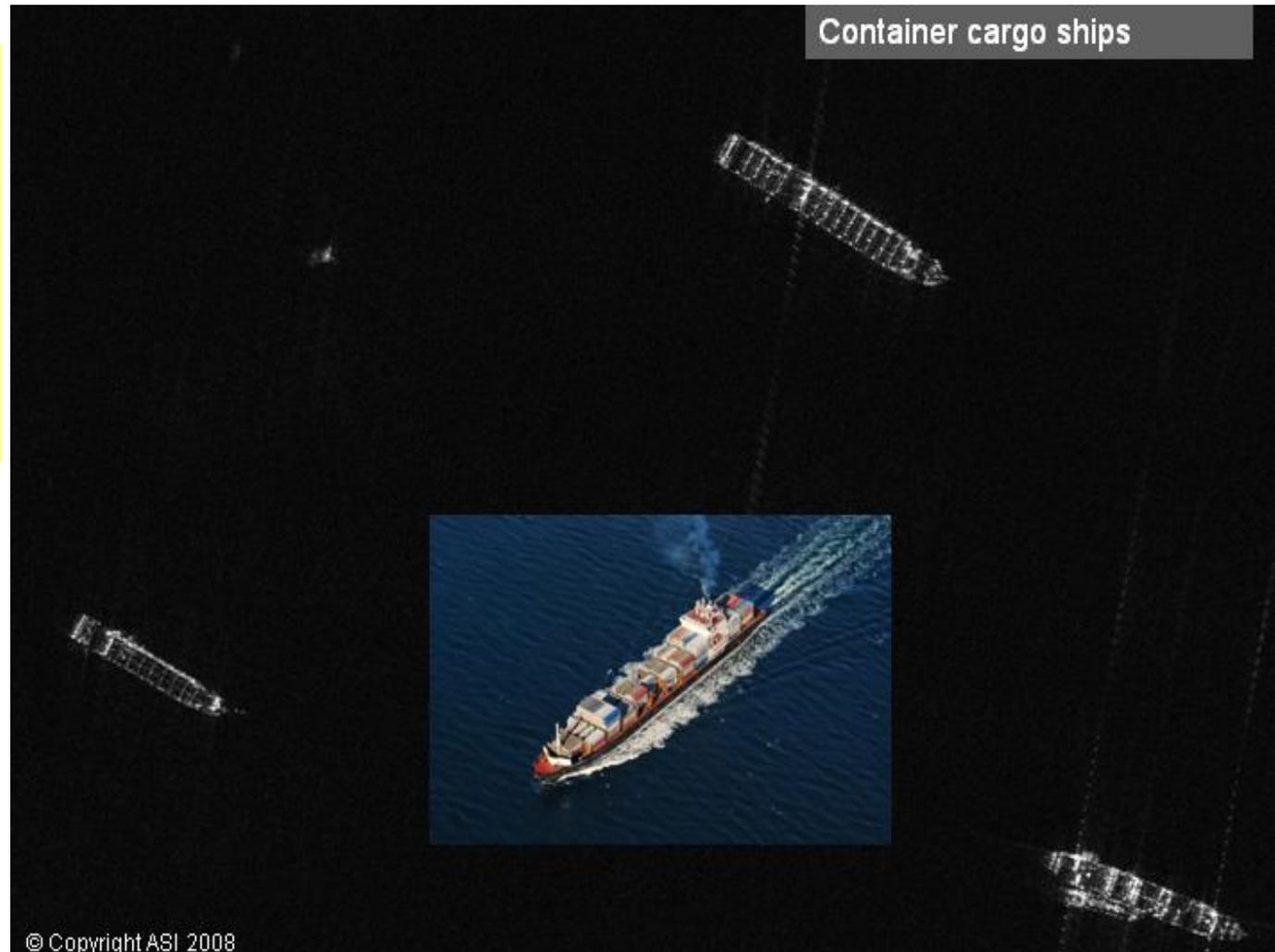
Khalifa Sports City, Dohar, Qatar, 10 January 2009. GeoEye-1 NRG satellite image



Source: Satellite Image Corporation

Cosmo-SkyMed 1

15 May 08
11:03 UTC



Space technology and applications of interest:

- . Earth Observation
- . **Positioning/ navigation**
- . Telecommunications

” Today:

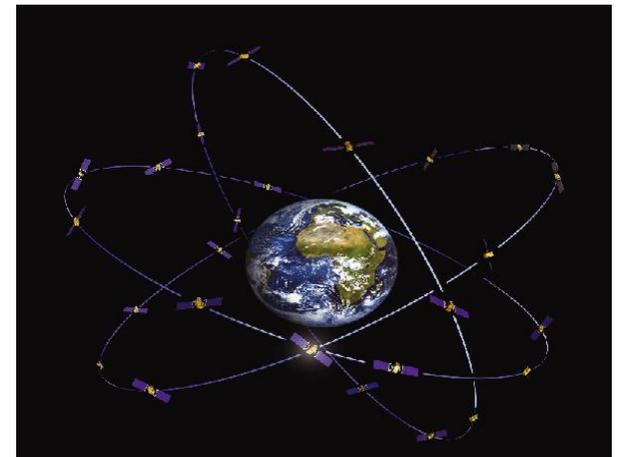
- . GPS, GLONASS, etc
- . Augmentation Systems (eg GPS corrections and integrity assessment sent through satcom), eg EGNOS (EU) , WAAS (US)

” Tomorrow:

- . Galileo
- . Improved GPS
- . Others

- “ EGNOS (now)
 - . Open Service (running in pre-op mode since 2008)
 - . Commercial Data Server (beta version running- 2009)
 - . Safety of Life Service (certification 2009-2010)

- “ Galileo (2011-2013 onward)
 - . Open Service
 - . Safety of Life Service
 - . Commercial Service
 - . Public Regulated Service
 - . Support to Search and Rescue



GPS/GLONASS: 10-20 m

+ EGNOS / WAAS: 2-5 m (EU and USA)



GPS + GLONASS + Galileo: 1-2 m

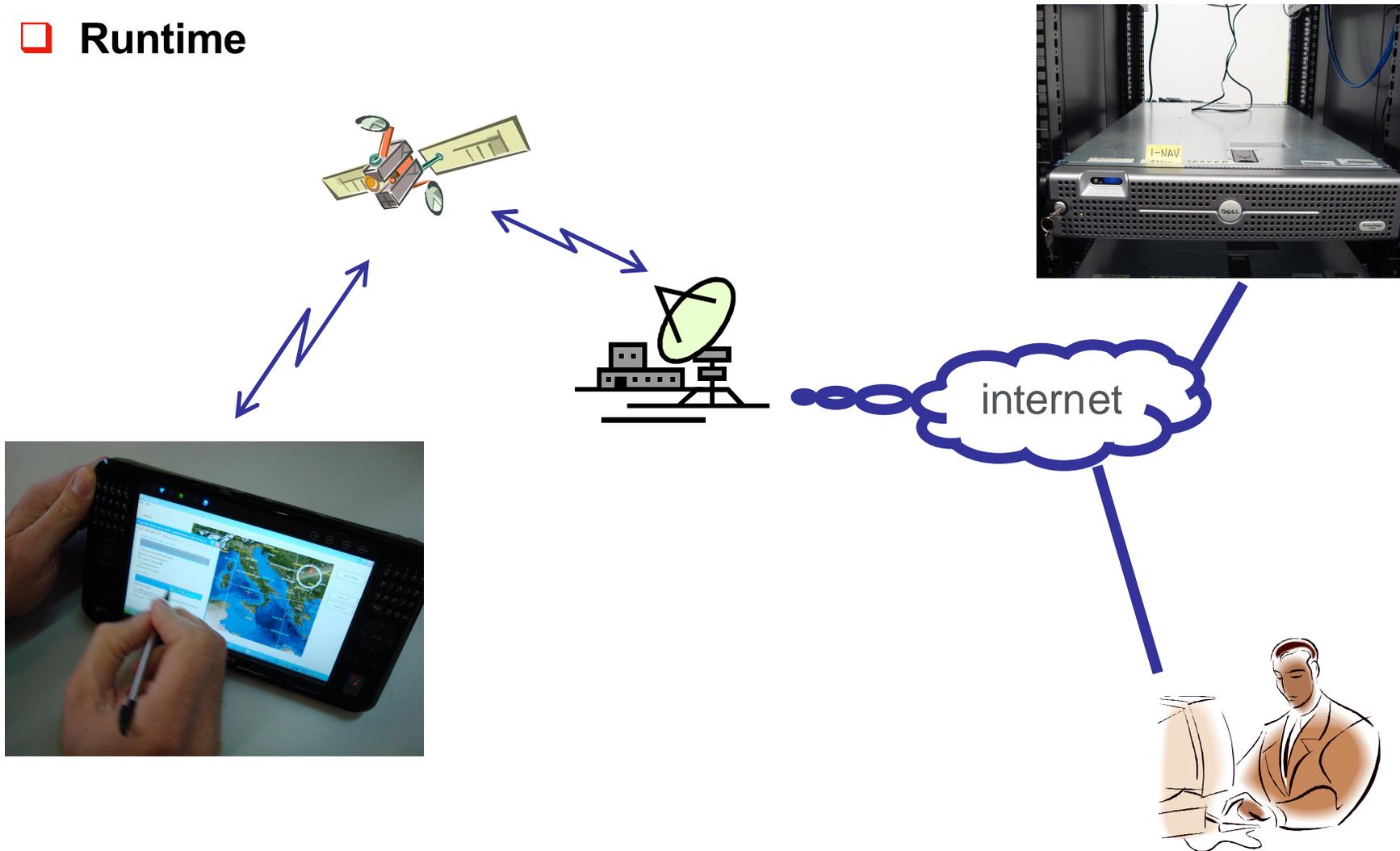
Space technology and applications of interest:

- . Earth Observation
- . Positioning/ navigation
- . **Telecommunications**

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Runtime





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- “ Major Events Security management needs and issues
- “ How Space technology can help and in what phases
- “ **Specific examples and lessons learned**
- “ Present and Future perspectives



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LIMES project – Big Event Planning

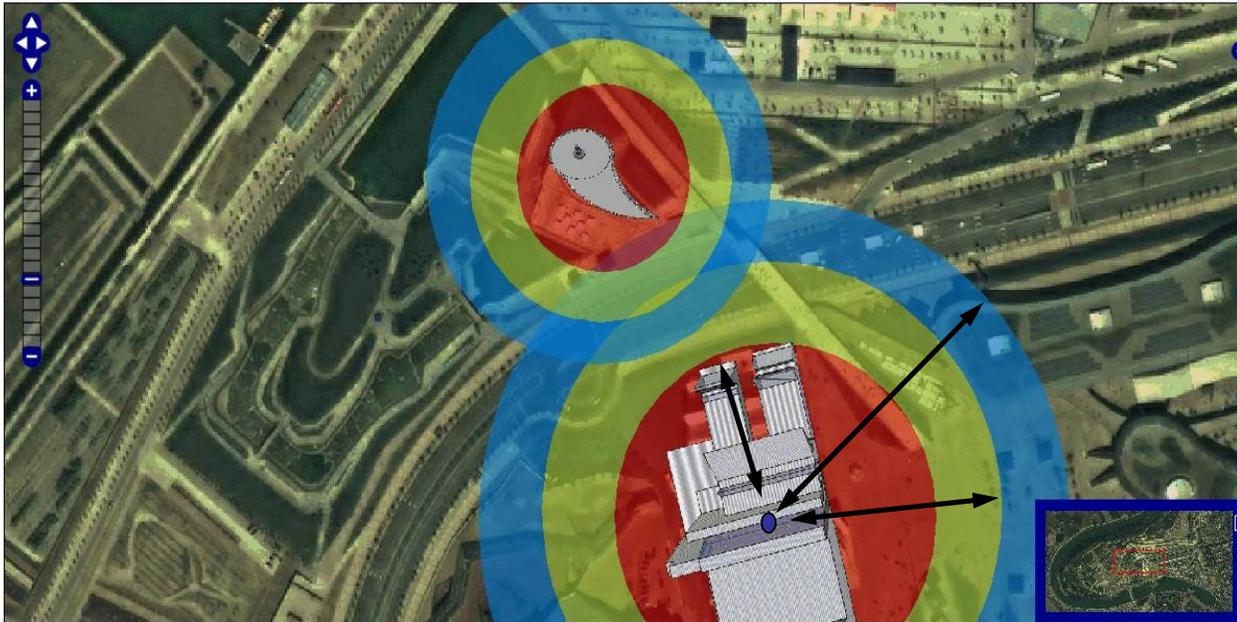


**EXPOAGUA 2008. Zaragoza
(ATOS Origin)**

**LIMA May 2008 Summit
(EUSC - EU Satellite Centre)**

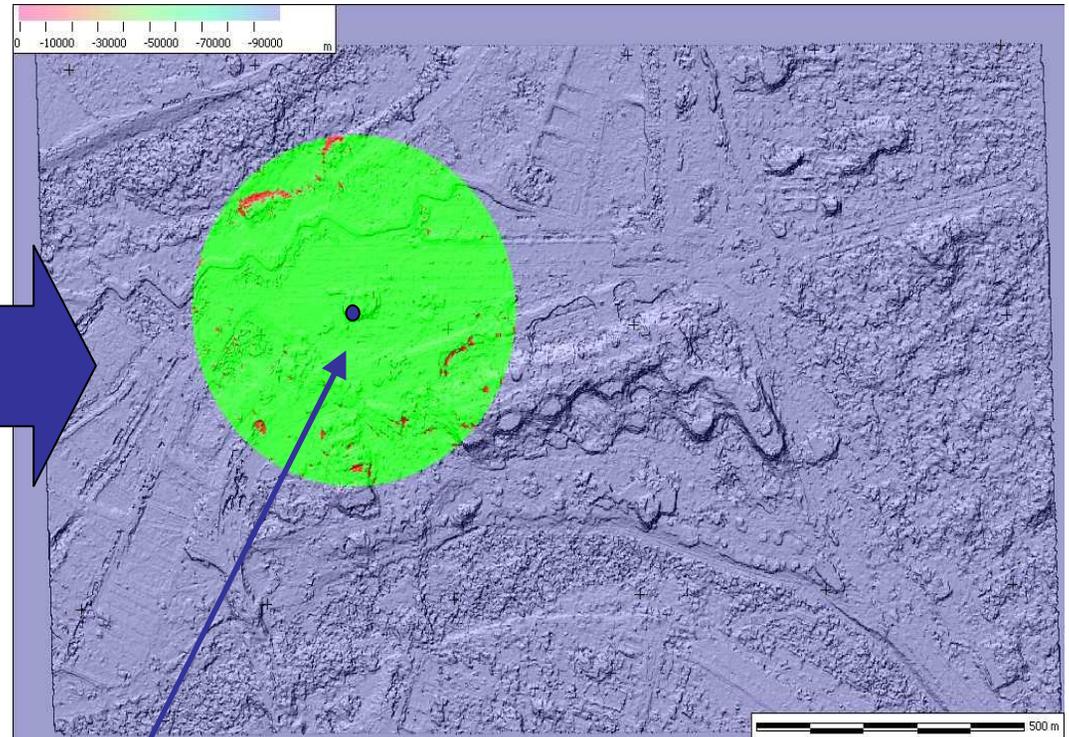
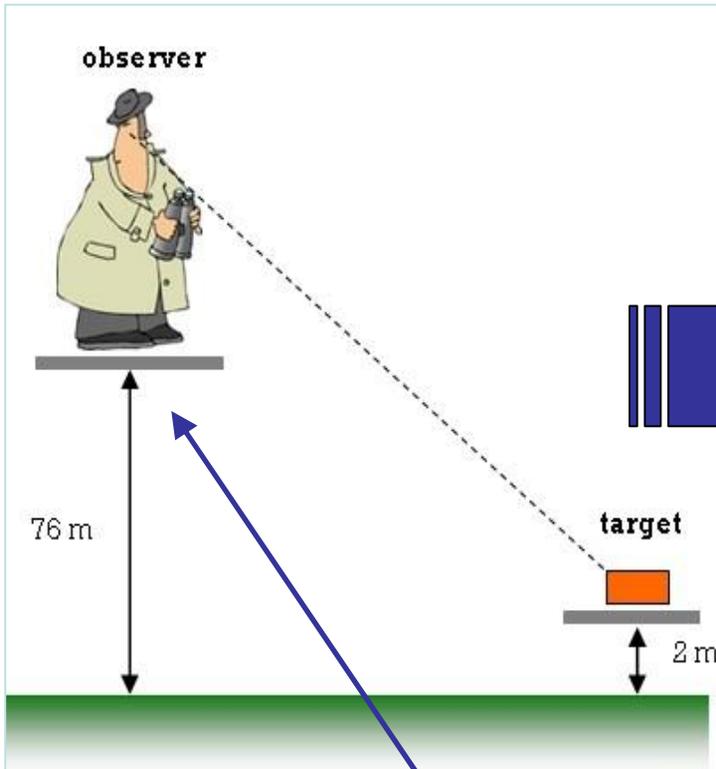
Source: LIMES project

Security radii



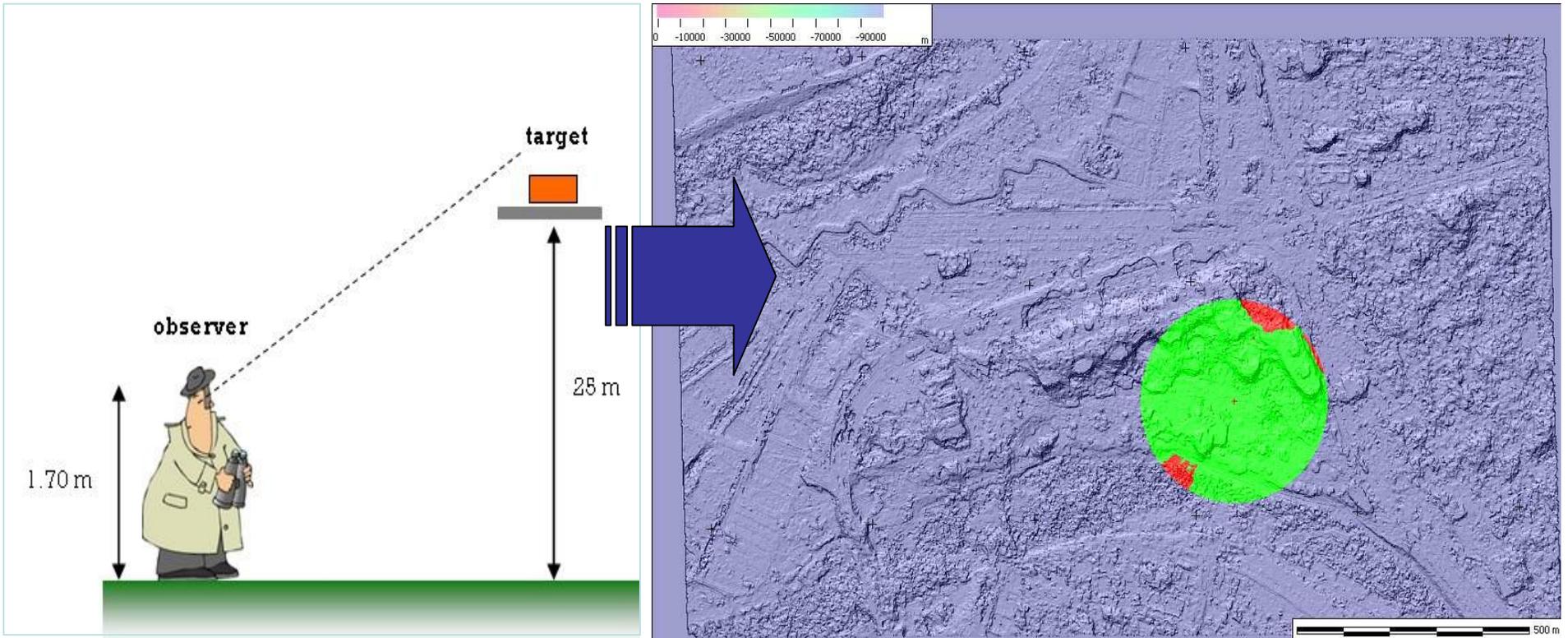
-  Relative level of risk
-  Medium level of risk
-  High level of risk

Visibilities



Water tower – The highest point of the site.

-  What is in the Line of sight
-  What is not in the Line of sight



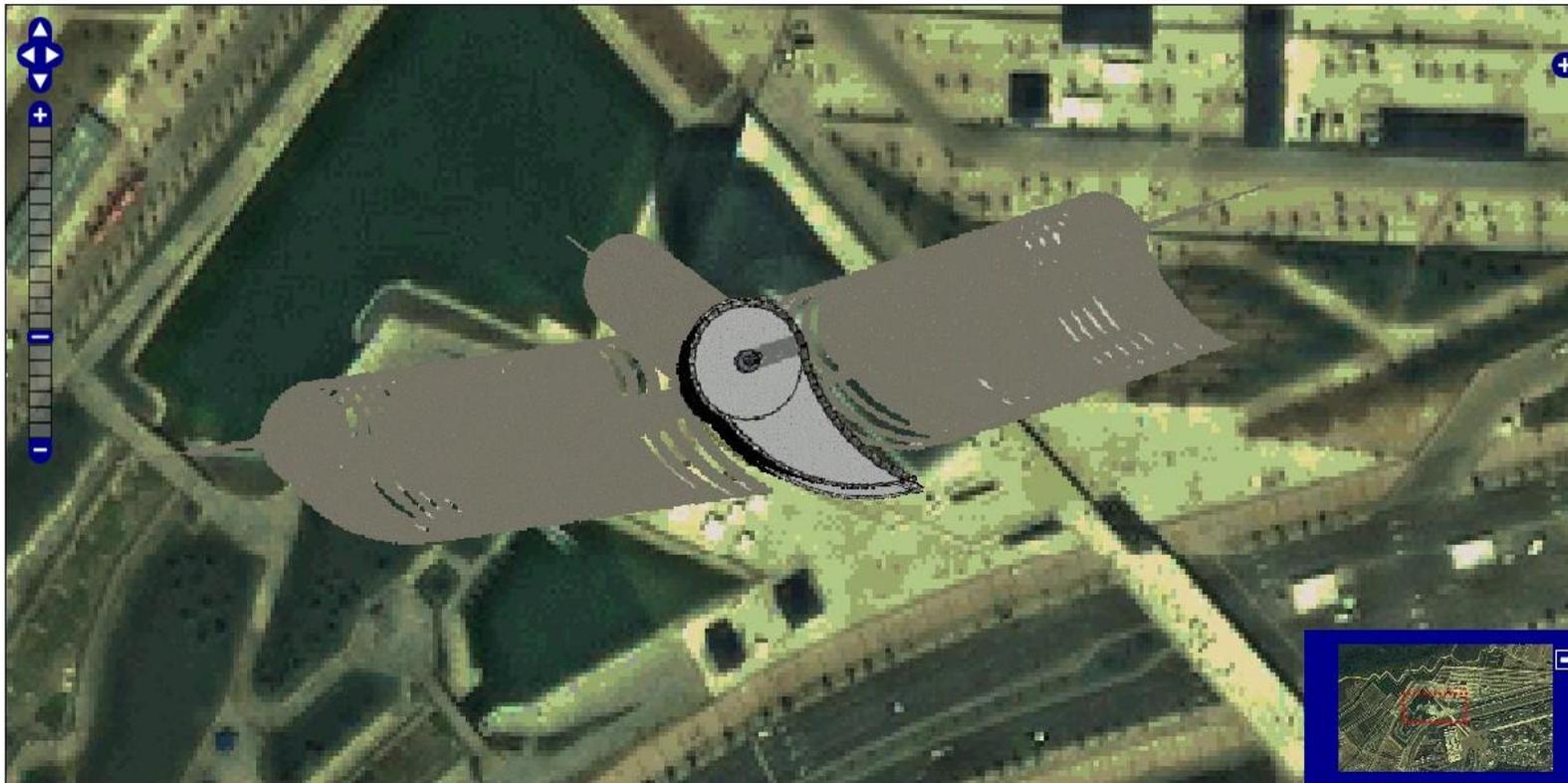
-  What is in the Line of sight
-  What is not in the Line of sight



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Windows

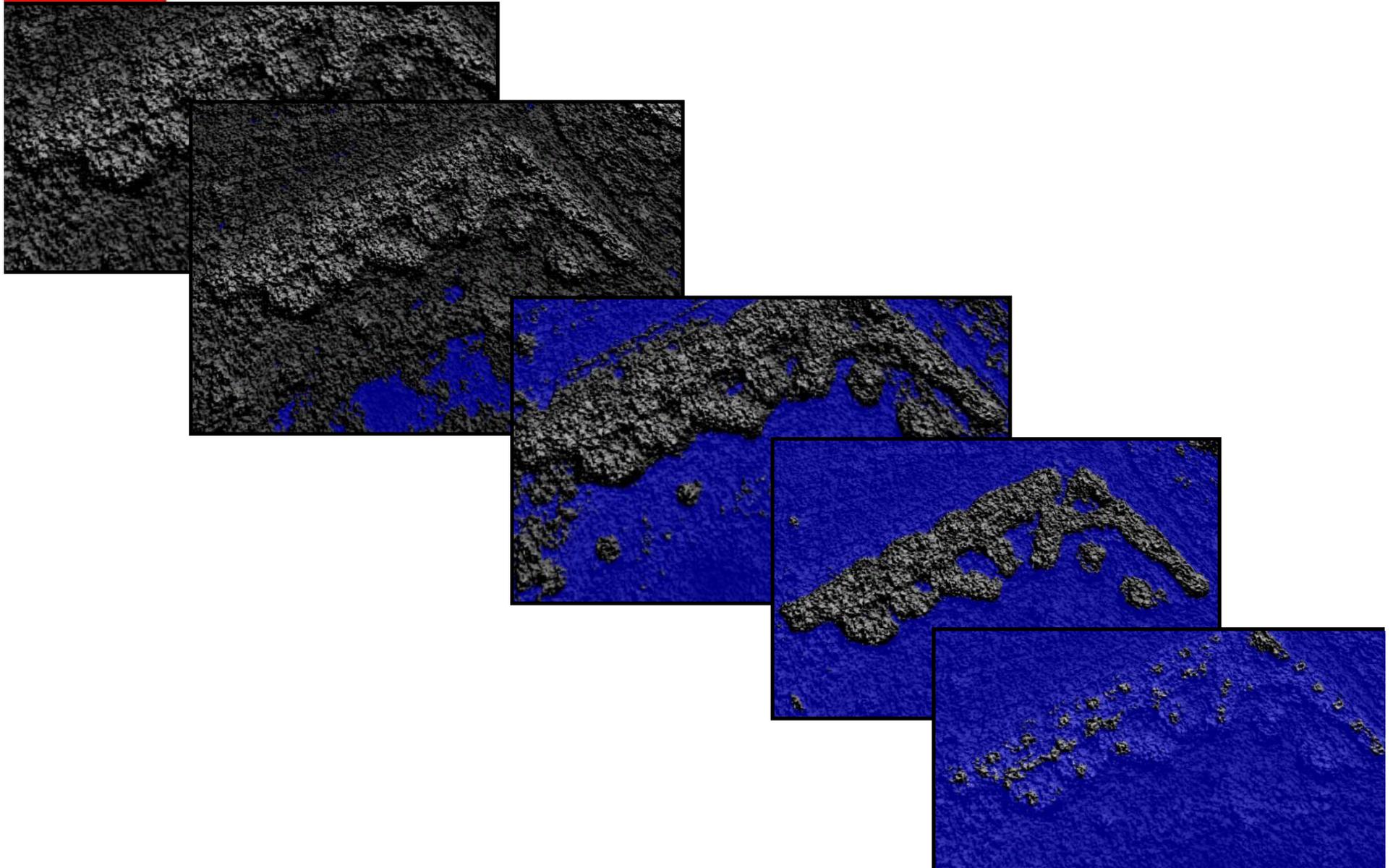




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ood risk





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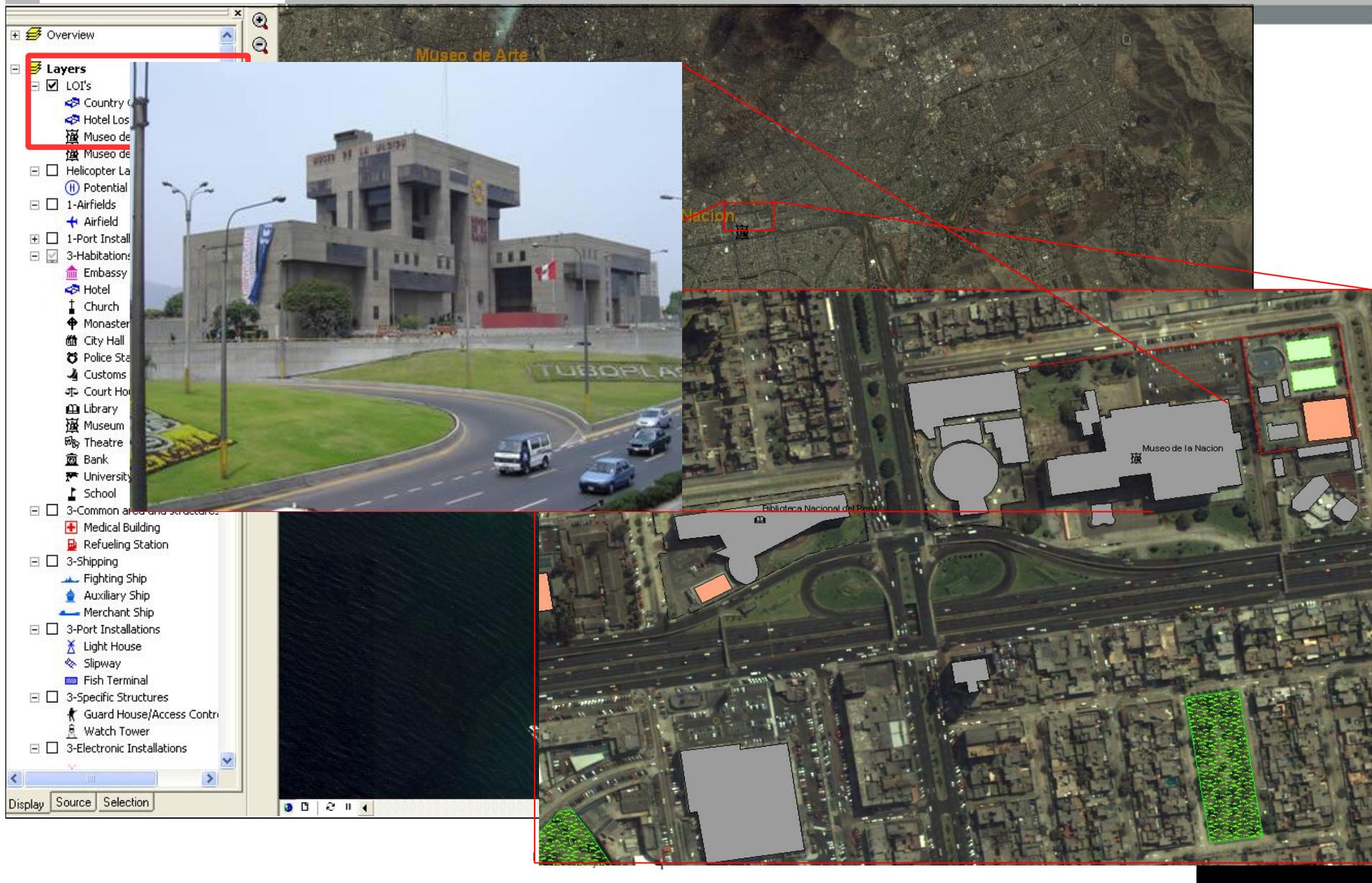
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LIMA SUMMIT 2008

EU Satellite Centre

Locations of Interest



Legend

- Layers
- LOT's
- Helicopter Landing Sites
- Potential Helicopter Landing
- 1-Airfields
 - Airfield
- 1-Port Installations
- 3-Habitations
 - Embassy
 - Hotel
 - Church
 - Monastery
 - City Hall
 - Police Station
 - Customs Offices
 - Court House
 - Library
 - Museum
 - Theatre
 - Bank
 - University
 - School
- 3-Common area and structures
 - Medical Building
 - Refueling Station
- 3-Shipping
 - Fighting Ship
 - Auxiliary Ship
 - Merchant Ship
- 3-Port Installations
 - Light House
 - Slipway
 - Fish Terminal
- 3-Specific Structures
 - Guard House/Access Contr
 - Watch Tower
- 3-Electronic Installations
 - Antenna
- 3-Power Installations
- 3-Industrial Installations

- Airfield
- Harbour
- Embassy
- Hotel
- Church
- Monastery
- City Hall
- Police Station
- Customs Offices
- Court House
- Library
- Museum
- Theatre
- Bank
- University
- School
- Medical Building
- Refueling Station
- Fighting Ship
- Auxiliary Ship
- Merchant Ship
- Light House
- Guard House/Access Contr
- Watch Tower
- Antenna
- ATC Tower
- Helipad/Potential Helicopter Landing Site
- LSC
- VO P / DDA / MD B
- Water Tower
- Water Tank
- Bridge
- Tunnel
- Highway
- Main Road
- Secondary Road
- Minor Road
- Railway
- Canal
- Drainage/Irrigation
- Wall
- Fence
- Low Dam
- Sealing Tank
- Water Tank/Tower
- Sport Field
- Swimming Pool
- Tennis Court
- Building
- Storage Tank
- Liquid Storage Tank
- Gas Tank
- Runway
- Taxiway
- Apron
- Shoulder
- Overrun
- Airfield Unit / Border
- Military Area
- Naval Base
- Port Unit / Border
- Seelidyard Area
- River
- Green Urban Area
- Golf Course
- Port Features

Data dictionary

(data model to define elements of interest, based on specific standard)

Symbology

(standard for all EUSC maps)



Outcomes

Jorge Chavez INTERNATIONAL AIRPORT

UNCLASSIFIED For Official Use Only COGM0801 / N01 ISSUE 1

Date: 27 March 2008

Lima - Jorge Chavez International Airport (Peru) RP: 12°01'18" S 077°05'51" W

Category 01: Airfields.
Type and Function: Joint, military main operating base and civil airport.
Status: Serviceable and operational.

Activity: Numerous airliners, military transport aircraft and helicopters were observed throughout the airfield.
Defences: None observed.

Description: Jorge Chavez International Airport (Lima) is Peru's main airport for international and domestic flights. The airfield's operating surfaces include one single, asphalted runway (RWY) with a length of 3,600 m and a width of 45 m. It is orientated 154°03'34" (T) and known as RWY 15/33. The RWY is accessible via a parallel taxiway (TWY) which has six link TWYs to the runway and fourteen link TWYs to the aircraft parking areas. The surface material of all TWYs is concrete. A total number of 20 aircraft parking areas were noted. Three of which were used mainly for military helicopters. Other facilities include aircraft maintenance areas.

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UNCLASSIFIED For Official Use Only COGM0801 / N01 ISSUE 1

Date: 27 March 2008

Lima - Callao Harbour and Naval Base (Peru) RP: 12°02'49" S 077°09'22" W

Category 14: Port installations.
Type and Function: Tidal military and commercial port.
Status: Serviceable and operational.

Equipment and Activity: At the time of imagery acquisition, one cruiser (De Ruyter-class), eight frigates (Carvalhal/Lupo-class), six fast attack crafts (Vendurde-class), six submarines (probably Angamos/Islay-class), four landing ships (Pallas-class), one sail training craft (Marie-class) and one unidentified submarine were noted inside the military mooring area and the ship building/ship repair facilities. Additionally, there were several auxiliary/survey and research ships, harbour tugs, self-propelled barges and coast guard vessels present. In the commercial port, four container ships, two dry bulk cargo carriers, one barge, and several auxiliary/ support vessels were observed. Furthermore numerous fishing boats were noted at and close to the probable fish terminal. Furthermore, one tanker was berthed at the oiling pier.

Defences: None observed.

Description: Callao Harbour is a tidal harbour which is protected by two peninsular breakwaters. It consists of a naval base, a commercial port which is mainly used for container and dry bulk cargo handling, a ship building/ship repair facility and one probable fish terminal. The naval base has three quays, three finger-piers, a patent silo, administration buildings, storage/support buildings and sports facilities. The commercial port comprises five finger-piers, five quays, one L-shaped pier, one oiling pier, transhipment buildings, one grain silo, three conveyor belts and open storage areas. The ship building/ship repair facility has three dry docks, three floating dry docks, a finger-pier, a quay, open storage areas and buildings for administration, storage, fabrication, assembly, erection and fitting out. The fish terminal has one quay, two small finger-piers, open parking areas and one storage building.

Damage: None observed.

Additional information: Adjacent to the northern part of the naval base is a headquarters/lockers area with administration buildings, storage/support buildings, accommodation buildings, sports facilities and a fence-secured explosives/ammunition storage area. Approximately 5,500 m NE of the RP is a ship building facility with a finger-pier. Furthermore, south of the LOI, there are six finger-piers, a small harbour basin protected by two moles and two marinas secured by peninsular breakwaters.

IA Comments: The ship building/ship repair facilities noted inside Callao Harbour are probably used for military and civil construction works.

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CALLAO HARBOUR & NAVAL BASE

Benefits for the Users

Slovensko predsedstvo EU 2008
Slovenian Presidency of the EU 2008
La Présidence slovène de l'UE 2008

REPUBLIC OF SLOVENIA
MINISTRY OF DEFENCE

National representative in EU SATCEN Board

Date: 09-05-2008
Ref. No.: 8593- 7/2008-16

EUROPEAN UNION SATELLITE CENTRE
Mr. Tomaž LOVRENCIČ
Deputy director
Apartado de Correos N° 511

E-28850 TORREJÓN DE ARDOZ
MADRID – SPAIN

Dear Mr. Lovrenčič,

I wish to thank You sincerely for the cooperation of the European Union Satellite Centre regarding the realization of the task request of Slovenian Presidency asking for support to security planning for the European Union - Latin America and Caribbean (EU-LAC) Summit.

Centre responded and carried out the task very quickly. Slovenian users of Your product are very pleased with it and they find it very useful.

I am convinced that this will contribute to the strength of cooperation between the Republic of Slovenia and European Union Satellite Centre and will also promote further development of this cooperation.

Sincerely yours,



Janez Ilnikar
Janez Ilnikar
National representative in EU SATCEN Board
and National POC

EUSC REGISTRY			
D	09	05	2008
Fin			DM
GS	MAY 27 2008		Lib
Tr			Reg
Prod	Reg N°: 54713		2008
	File N°: 84029		PSO

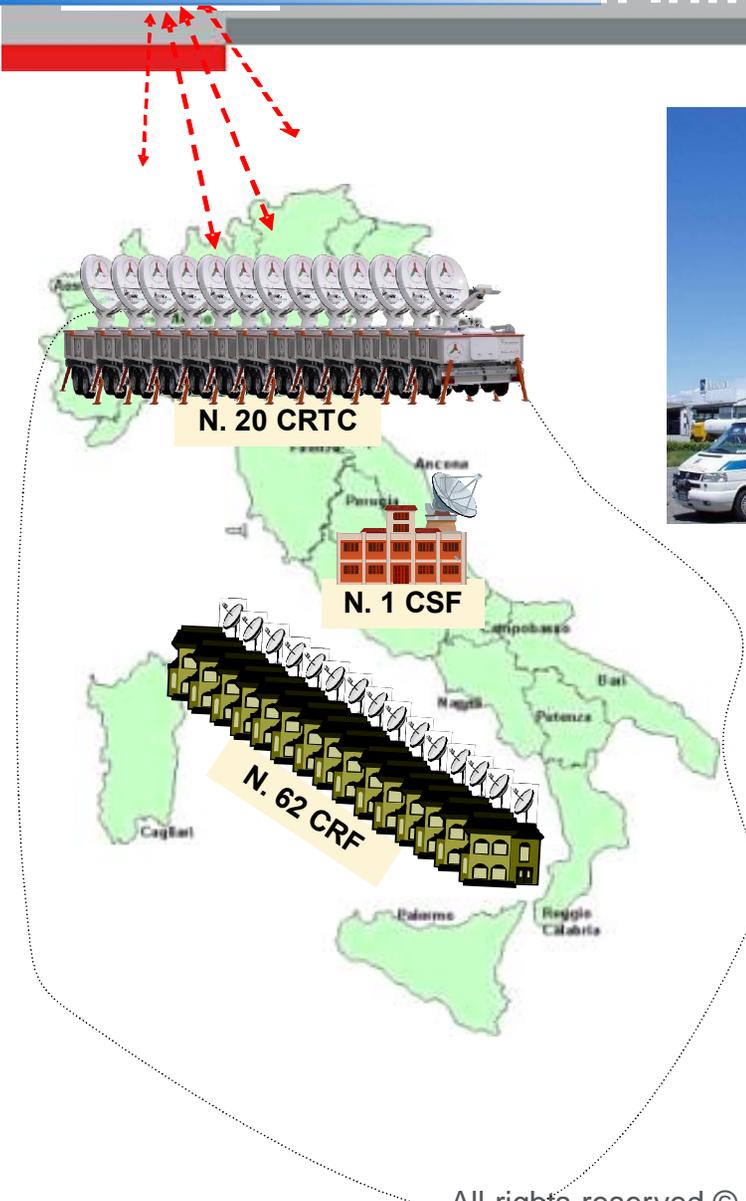
eu2008.si

- Support to decision makers
- Improved Security
- Reuse of technologies

Feedback from End User:

- Acknowledgements for the cooperation and for the product prepared in collaboration with LIMES
- Added value product

Emergency Satellite Communication Infrastructure



N. 20 CRTC

N. 1 CSF

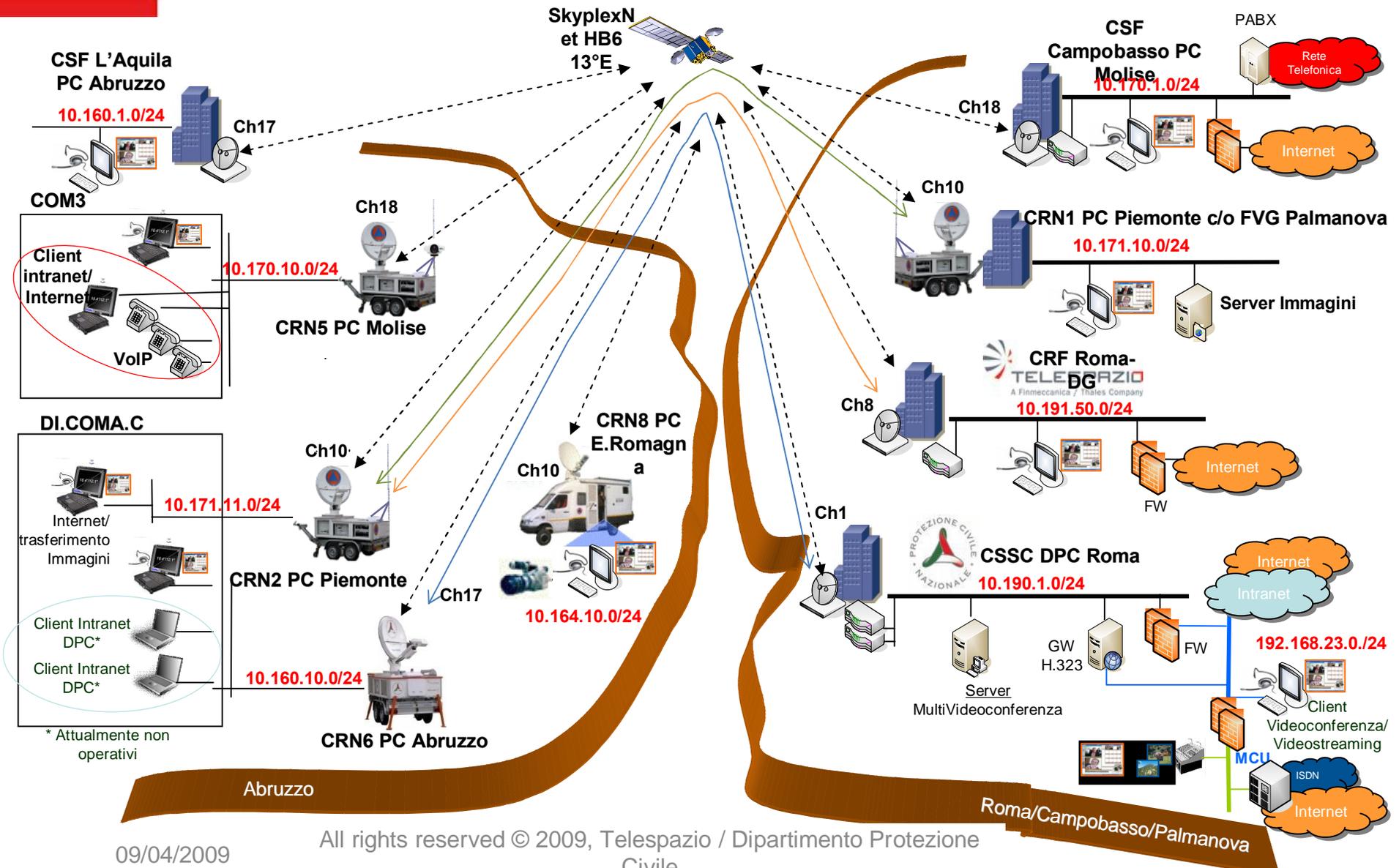
N. 62 CRF



- “ N.1 Fixed Service Centre (Sala Italia D.P.C.)
- “ N.62 Tx/Rx Fixed Centres in the Regional Civil Protection sites
- “ N.20 Nomadic/elitransportable TLC Gateways on Trailers

CRN: Centro Ricetrasmittente Nomadico
CSSC: Centro Ricetrasmittente Satellitare Centrale
CRF: Centro Ricetrasmittente Fisso
DI.COMA.C. Direzione, Comando e Controllo
SSI: Sala Situazione Italia

SkyplexN et HB6
 13°E



Abruzzo

Roma/Campobasso/Palmanova

Satellite telecommunication enable the :

- Quickly set up of backbone and local network
- Support full interoperability with other systems
- Enable exchange of updated cartography, geoinformation and other data

Overall benefits of Space-based solutions:

- . High Performance/accurate
- . AccurateRapidly deployable;
- . Transportable/movable;
- . Enable redundancy;
- . Mature and innovative technology;
- . Enable integration with legacy and ground systems

“ Earth Observation

- . New satellite constellations, including radar satellites
- . Dual use (civil-defense) systems

“ Telecommunication

- . Higher performance (eg Ka band)
- . Better interoperability among mobile, fixed satellite telecom systems

“ Positioning and Navigation

- . New civil satellite constellation (eg Galileo)
- . Enhanced performances
- . System integrity



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