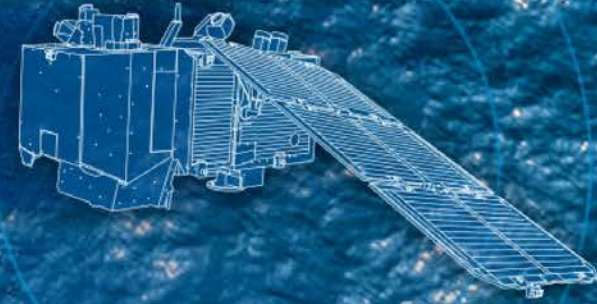


→ SPACE SOLUTIONS FOR RESILIENCE IN THE MEDITERRANEAN

27–28 June 2017 | ESPLORA, Kalkara, MALTA

Technology Developments for Security Observations

Josef Aschbacher, ESA
Director of Earth Observation Programmes



European Council, 22 Jun 2017



Security & Defence infrastructure

“...this is the sleeping princess of the Lisbon Treaty. Well, the princess is now awakening”

→ **SPACE SOLUTIONS FOR RESILIENCE IN THE MEDITERRANEAN**

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A new impetus for Security and Defense in Europe



“Strengthening EU cooperation on **external security and defense** so as to protect the Union and its citizens and contribute to **peace and stability** in its neighborhood and beyond”

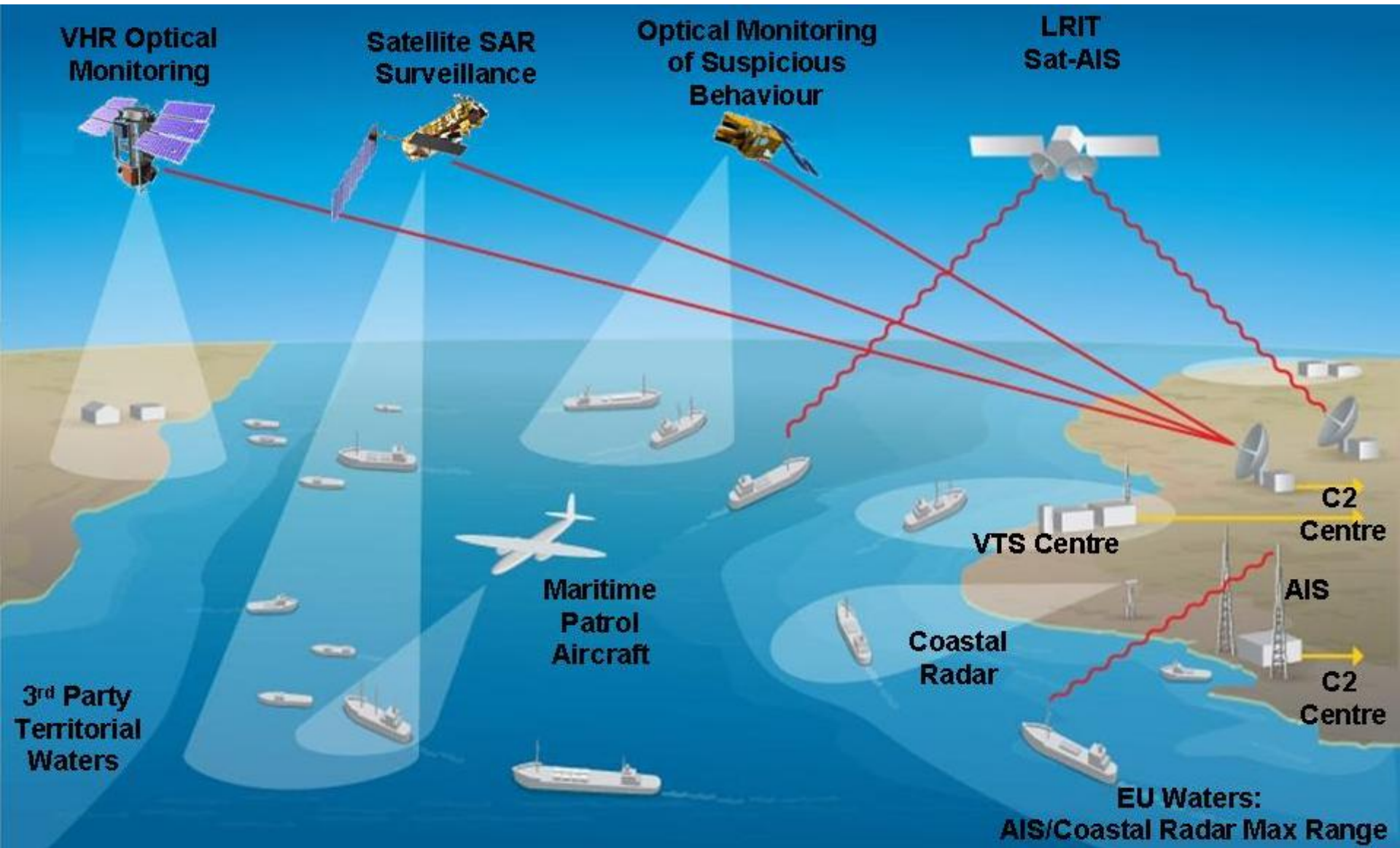
“Inclusive and ambitious **Permanent Structured Cooperation**”

“**European Defence Fund**, composed of a **research window** and a **capability window**”

ESA-EU: a strong cooperation framework

- EU/ESA Framework Agreement (2004) with two flagship programmes: Galileo and **Copernicus**
- Joint statement ESA-EC and European space strategy (2016)
- “Structured Dialogue on Space and Security” (2007)
- EC/EDA/ESA “European Framework Cooperation for Defence, Civilian Security and Space-related Research” (EFC) (2009)
- EMSA/ESA Cooperation Agreement (2010)
- EDA/ESA Administrative Arrangement (2011)
- EUSC/ESA Administrative Arrangement (to be signed 2017)

Space technologies relevant to security



→ SPACE SOLUTIONS FOR RESILIENCE IN THE MEDITERRANEAN

EO Technology vs Security Users

- **ESA EO technology** developments can serve both **civilian and defense** users (Optical/SAR VHR, TIR, Hyper-Spectral, etc)
- Current ESA technology activities can be easily **adapted** to specific security needs
- The loop between **users** and technological developments should be closed through an **institutional process**
- **Added value of ESA** consists of a vision of security spanning the entire domain from space technology developments and systems to various user applications

Preliminary Needs and Identified Gaps

Main needs	Identification of gaps
Mission preparation and provision of reference maps	<ul style="list-style-type: none">▪ High resolution and 3D information in urban areas
On-demand provision of images	<ul style="list-style-type: none">▪ Resolution▪ Acquisition time and frequency
Continuous monitoring of areas of interest	<ul style="list-style-type: none">▪ High resolution and large coverage▪ Acquisition time and frequency
Situation monitoring and support to operations	<ul style="list-style-type: none">▪ High resolution and large coverage▪ Acquisition time and frequency▪ Delivery time to in-field operators

Technology Challenges

- **Space system architectures** based on **existing EU and MS assets** to monitor large areas with high spatial/temporal resolution for a broad view on crisis situations
- Extract information via **automated procedures** tailored to “big data”
- Development of **new products** (crisis indicators for dynamic situation assessment) for security related geo-spatial information
- **Integrate detailed and large-scale analyses**, based on multi-scale, multi-sensor and multi-indicator approach

ESA planned activities for HAPS

Goals

- Work with Member States, EU and its agencies in a new R&D area
- Demonstrate ESA's unique potential in connecting systems, payloads and users leading to end-to-end HAPS projects
- Provide first demonstrations of added-value and synergies between HAPS and EO satellite programmes
- Start collection of all elements required for future programme proposal

Specific near term (2017-18) activities

- Studies for HAPS demonstration projects
- HAPS simulation campaigns (frequent revisit, resolution) + application study
- HAPS-related payload developments (e.g. P/L miniaturisation, SAR feasibility etc)

User Workshop, 9-10 October 2017 (ESTEC) bringing together Industry, Users and Application experts

Future actions in support to Law Enforcement

Environmental Crime	timber/charcoal extraction and trafficking
	minerals extraction and trafficking
	poaching and ivory trafficking
	IUU fishing and trafficking
	waste trafficking
War crimes/crimes against humanity	detection and monitoring of onset of violence
	monitoring movement of military assets
	FTF activity location
	historic investigation support
Counter-proliferation	Detection of anomalies at nuclear facilities (mines, power plants, waste facilities etc)
	Support to monitoring of trafficking activity
	Monitoring facilities relevant to OPCW and UN1540
Terrorism and Organized Crime	Detection of terrorist training facilities
	Detection of illicit crop growth and trafficking
	Detection of maritime trafficking activities (weapons, contraband etc)
	Change detection at borders and along trafficking routes