Welcome to “Resilient Societies” Session

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Resilient Societies

Philipp SCHEIDEMANN, EUSPA

Resilient Societies - Scope

Border Management

Police Operations

Customs Operations

Maritime Surveillance

Justice Actions

Diplomacy and International Relations

Increased use of **automated platforms** to minimize risks for humans, including robots, **drones** and **unmanned vehicles**

Protection against **cybersecurity threats**, such as jamming and spoofing

support **situational awareness** and a high level **PNT availability** in all **operational conditions**

Monitoring of land and maritime borders and counteract **illegal activities** in the area of:

trafficking and smuggling, illegal migration, illegal fishery, environmental crimes etc.

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Agenda of “Resilient Societies” Session

- Welcome to “Resilient Societies” Session, *Philipp Scheidemann (EUSPA)*
- EU Space Programme Components current state and future services for users, *(EUSPA)*

- Customs Operations: Digital transformation of Customs, *Michael Doherty (PEN-CP)*
- Customs Operations: Electronic Freight Transport Information (eFTI), *Jean-Philippe Mechin (CEREMA)*
- Customs Operations: National and international fast corridors, *Marco Mattiocco (Customs and Monopolies Agency ADM/Italy)*

Agenda of “Resilient Societies” Session

- Preventing trafficking and smuggling: Risk assessment in supply chain and trade, *Michael Doherty (PEN-CP)*
- Preventing trafficking and smuggling: Safeguard of cultural heritage, *Axel Kerep (PARCS)*
- Robots and automated platforms: Unexploded Ordnance, *Ettore Motti (UXORISK)*
- Discussion: Industry, Institutions and Member State end-users: How can #EUSpace provide resilience to the societies?
- User Requirements Discussion and Validation
- Conclusion and next steps

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Guidelines for the session

ZOOM rules

- Raise your hand for questions → wait for…
- Mute yourself once finished the interventions
- More to be provided by COM soon

- We have to respect the time constraints because …
- We will let you know (speaker) when to close
- …

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Conclusion and next steps

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Resilient Societies

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Conclusion

Different examples of the three sub-segments:

- Customs operations
- Prevention and suppression of trafficking and smuggling
- Robots and automated platforms

User Needs and Requirements discussed for GNSS, EO and SATCOM for the applications

→ GNSS generally used for **time tagging**, identifying/**locating targets** and mobile assets

→ EO mainly used for **monitoring changes**

Next steps

- EUSPA SATCOM report (technology + market)

- Governmental applications, supporting EU industry competitiveness
  - High TRL (7-0) → Horizon Europe
  - Support to start-ups and SMEs → CASSINI

CASSINI

- Continuity of network of governmental end-users
  - User intelligence
  - Market analyses: state-of-the-art & trends
  - User technology: challenges and opportunities
  - Workshops, demonstrations, pilots etc.
  - Training

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EU Space Programme components current state and future services for users

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Resilient Societies - *EUSPA User Consultation Platform*

Piotr SITEK

All the EU Space Components

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A new EU Space Programme

EU space activities **under one umbrella**

Galileo

Global navigation satellite system (GNSS)

More than **3 billion Galileo receivers** worldwide

EGNOS

EGNOS "Makes navigation signals more accurate and trustable for Safety-critical applications"

Operational in **400+ airports** & helipads in 23 countries

Copernicus

Earth Observation (EO) and monitoring based on satellite & non-space data

Nr.1 world provider of space data and information (>20TB/day)

GOVSATCOM

Secure satellite communications for EU governmental actors

Rapid support over crisis areas

Space Situational Awareness (SSA)

Surveys and tracks space objects orbiting Earth

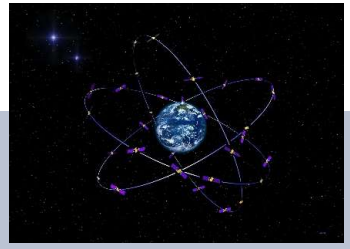
Space Surveillance and Tracking (SST)

Space Weather Events (SWE)

Near-Earth Objects (NEO)

Galileo (What is my location?)

In operations!



Galileo Initial Services are provided to worldwide users **since December 2016**

Open Service (OS)	Freely, worldwide **accessible** service for positioning and timing*
Public Regulated Service (PRS) – **Governmental Service**	**Encrypted service** designed for greater robustness and higher availability – secure satellite communication
Search and Rescue Service (SAR)	Locates **people in distress** and acknowledges that the distress signal has been received
High Accuracy Service (HAS)	Delivers high accuracy services, freely accessible
Under preparation	
Commercial Service Authentication (CS)	Delivers authentication services for commercial applications

New!

* OS Navigation Message Authentication (OSNMA) is currently under testing

Impact

Open Service present on more than 3.5 billion Galileo enabled devices worldwide

The key component of **security-critical** applications such as health services, emergency services, defence and law enforcement

Public Regulated Service (PRS) is service restricted to **government-authorised** users of sensitive applications, which require a high level of service continuity

SAR/Galileo service is Europe's contribution to an international satellite-based **search and rescue** distress alert detection system

Galileo Sites and Ground Stations

In operations!

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EGNOS (Can I trust my position?)

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In operations!

EGNOS services are provided to users since **October 2009**

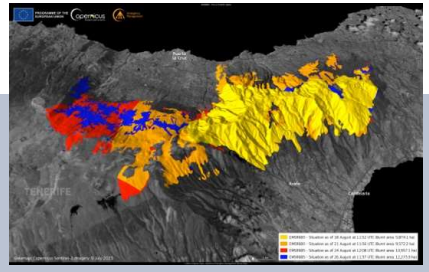
Open Service (OS)	Improving GNSS accuracy, intended mainly for high-volume satellite navigation applications for use by consumers
Safety of Life Service (SoL)	Providing a high level of integrity for users for whom safety is essential (e.g. civil aviation, in accordance with ICAO standards)
Data Access Service (EDAS)	Offering EGNOS data with greater added value through internet, intended mainly for professional or commercial use

Impact	**426 European airports/heliports** operate 804 EGNOS landing procedures APV-I and LPV200 service levels enabling RNP approaches down to **LPV minima**, equivalent to **Cat I** Most commercial and small aircraft models are equipped with EGNOS

EGNOS RIMS Stations

Copernicus (Can I see?)

*In operations!



Copernicus is the European Union's Earth Observation and Monitoring programme, looking at our planet and its environment to benefit all European citizens.

Atmosphere	Air quality & Atmospheric composition . Ozone layer & ultra-violet radiation.
Marine	Forecasting of ocean state for improved maritime safety. Coastal and marine environment.
Land	Systematic monitoring of biophysical parameters. Land cover & land use mapping.
Climate Change	Climate observations, reanalysis, forecasts and projections.
Security	Boarder and maritime surveillance; Support to EU security actions;
Emergency	On-demand Mapping, Early Warning and Monitoring Service (e.g or floods, wildfires, droughts)

Impact	Border surveillance. Maritime surveillance. Support to EU Security Action. Emergency: On-demand Mapping (all phases of the disaster management cycle). Early Warning and Monitoring Service (for floods, wildfires, droughts). Exposure Mapping (different indicators for exposure)

GOVSATCOM (Can I communicate?)

Under development

Governmental Satellite Communication system

GOVSATCOM is a **user-centric** programme with a **strong security dimension**.

It aims at ensuring the long-term availability of **reliable**, **secure** and **cost-effective** governmental satellite communication services.

The primary users of GOVSATCOM will be the public actors involved in:

- Crisis management;
- Surveillance;
- Key infrastructure management, including diplomatic communication networks.

Impact	Increase of **availability** of secure communication links. Increase of the **security** of the communication links and the infrastructure. Adequate and secure geographic coverage. Entry point for IRIS governmental users!
Facts	**>15 EU MSs** and >**7 EU** Agencies actively involved in definition of GOVSATCOM The global market for SatCom services is estimated to reach **EUR 126 billion** by 2025.

Space Situational Awareness (SSA) (Is my space safe?)

*In operations

SST Space Surveillance and Tracking (SST)

SST is the SSA subcomponent operated by EUSST Partnership with a front-desk operated by EUSPA as of 01/07/2023:

CA: Conjuction assessment (Collision avoidance)	Based on a network of ground-based sensors and national operations centres capable of detecting and tracking space objects, capable of warning space operators of a probability of collision
RE: Hazardous atmospheric re-entries	Monitoring the re-entry of objects into atmosphere and predicting impact zone, coordinated with Member-states
FG: Fragmentations in orbit	Monitoring of explosions or fragmentation of end-of-life satellites that create new debris, and monitoring of newly created debris

Security	Ensure the **protection of all the space assets** against intentional actions from third parties Emergency: Aim to take action in order to **avoid critical damages** to space assets against natural events or unintentional actions
Facts	More than **150 million** pieces of space debris > 1 mm are orbiting the Earth! EUSST currently provides surveillance and tracking services to **over 268 satellites** in space.

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Responsible for Engineering aspects of the Space Programme (We design and deploy!)

Service

Define and validate the services to be provided, in response to user needs, mission requirements and programmatic roadmaps.

Support the development of associated standards.

Support R&D actions on user segment and develop reference receivers for validation.

System-Infrastructure

Specify and implement infrastructure releases under the perimeter of responsibility.

System Prime of the System in Operation

Verify the technical implementation of infrastructure releases under external responsibility.

Security-Cyber

Ensure implementation of programme security requirements, analyse security risks, define associated mitigation actions and security measures, and follow up on their implementation.

Prepare inputs to support the accreditation process.

Cyber engineering and follow-up.

Responsible for Exploitation aspects of the Space Programme (We operate!)

Galileo

- Manage the end-to-schedule for all activities involving the Galileo System in operation and the Galileo 2nd Generation
- Manage consistency between technical, planning, financial and risk aspects of all the exploitation activities
- Elaborate the exploitation, constellation replenishment, and security risk treatment plans
- Elaborate and report on Galileo Service Minimum Performance Levels

GOVSATCOM

- Preparation of procurement of the ground infrastructure;
- Preparation of the exploitation concept of the GOVSATCOM system;
- *More to come;*

SSA

- Implementation of the HelpDesk (24/7)
- *More to come;*

Responsible for security aspects of the Space Programme (We protect!)

Security Governance

Ensuring the implementation of **Security** governance, policies, requirements and standards, cryptography, cybersecurity

Operational security of Galileo and EGNOS, security risks and threats analysis

Galileo Security Monitoring Centre

…is an integral part of the Galileo infrastructure, and it monitors and takes action 24/7 regarding security threats, security alerts and the operational status of systems components

Security Accreditation Board (SAB)

…is the Security Accreditation Authority **for all components of the EU Space Programme**

Gradually extended to all components of the EU Space Programme

Including tasks assigned under Decision No 1104/2011 (PRS access) and Council Decision 2021/CSFP/698 (security of the system and services under the Space Programme which may affect the security of the Union)

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Security and Cybersecurity of systems in operations

EUSPA provides strategic autonomy to the EU for the security of the space systems in operations

- Operational security of Galileo and EGNOS
- Implementation of cybersecurity governance
- Access to PRS service to Member States Competent PRS Authorities

GSMC & Security Operations

GSMC Saint-Germain-en-Laye

GSMC Madrid

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Customs Operations: Digital transformation of Customs

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Resilient Societies Session

Michael Doherty, CBRA & PEN-CP, www.pen-cp.net

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H2020 PEN-CP

1) PEN-CP, the Pan European Network of Customs Practitioners, acts as a European Customs innovation boosting network, powered by an innovation centric online platform, and tailored innovation intermediary services.

2) PEN- CP focuses on accelerating innovation efforts across three core Customs technical areas: Data and risk management; Detection technologies; and Laboratory equipment.

3) We have a broad variety of innovation and knowledge instruments in use, including Technology grants, Challenge competitions, Innovation awards, Annual studies and Expert reports.

4) Across our activities, we aim to connect innovation spirited Customs officers, helping them to find friends in Customs innovation'. In addition, our online platform, key events and few other activities aim to facilitate tangible networking between large numbers of Customs officers in Europe and beyond, in a broader Customs professional and knowledge sharing context.

5) The vision is to become a robust & permanent Customs innovation boosting network, helping to accelerate both incremental and radical innovations, for the direct benefit of Customs administrations in Europe and beyond.

6) The H2020 grant for PEN-CP runs from August 2018 until January 2025 & we have started the process to prepare for PEN CP 2.0, from February 2025 onwards (planned with a multi-year duration)

Michael Doherty *(Senior Customs Detection Technology Expert, CBRA*

- *Formerly Ass. Principal in Irish Customs Service with responsibility for research, procurement and deployment of detection technology applications, member of DG TAXUD Detection Technology Expert Group, WCO expert in non-intrusive inspection (NII)*
- *Currently participating in Horizon border management projects – ENTRANCE, MULTISCAN 3D, PEN-CP and CONNECTOR. Member of CERIS Border Management expert group*

Role of modern EU Customs authorities

- EU Customs authorities play a central role in safeguarding the safety and security of EU citizens while enabling the smooth flow of legitimate trade across the borders of the EU Customs Union. As the world undergoes transformative changes, customs agencies must evolve to effectively respond to new challenges.
- The core mandate of customs revolves around facilitating legitimate commerce as well as fighting illegal trade. In addition to the traditional cross-border threats of drugs trafficking, cigarette smuggling, weapons trafficking, duty and tax fraud, new threats such as trafficking in nuclear and radioactive materials, military and security-sensitive dual-use technologies, new psychoactive substances, counterfeit products, and illicit waste movements must be addressed.
- A report by the Wise Persons Group on the Reform of the EU Customs Union states that currently EU customs have to deal with 350 pieces of EU legislation dealing with prohibitions and restrictions across a wide range of policy areas.

As required by the Union Customs Code (UCC) all movements of goods across the Union`s borders (both import and export) are required to be declared to customs. In former times, paper declarations were used. Gradually, national administrations have introduced requirements electronic declaration systems, but not at a consistent level across the EU.

Milestones in the digitalisation of customs

- WCO Data Model – " compilation of clearly structured, harmonized, standardized and reusable sets of data definitions and electronic messages designed to meet operational and legal requirements of cross-border regulatory agencies (CBRAs), including Customs, which are responsible for border management" - 2002.
- EU Multi-Annual Strategic Plan for Electronic Customs (MASP-C) 2009, revised 2019
- EU Customs Data Model (EUCDM) 2015, revised 2019 to reflect UCC requirements
- The Import Control System introduced 2021 - a new customs electronic import platform that supports advanced pre-arrival safety and security risk assessment for all goods entering the EU. With its data analytics capabilities, integrated communications and real-time processing, the system is a key pillar of the EU strategy to strengthen customs risk management within the Common Risk Management Framework (CRMF). The full implementation of ICS2, encompassing maritime, road, and rail logistics, will conclude on 1 March 2024 with the launch of release 3EU
- Revision of Customs Risk Management System (CRMS) in 2022 to provide Member States with a state-of-the-art system known as CRMS2. It allows quick and easy real-time exchange of risk-related information between customs administrations, tools to speed up the communication between customs offices in the EU and a unique central database of risk and control related information.

- Customs Action Plan 2023 focussing on as improved use of data, better tools and equipment, greater promotion of compliance, more cooperation within EU and with customs authorities of partner countries and better preparation for future crises.

Benefits to customs and trade

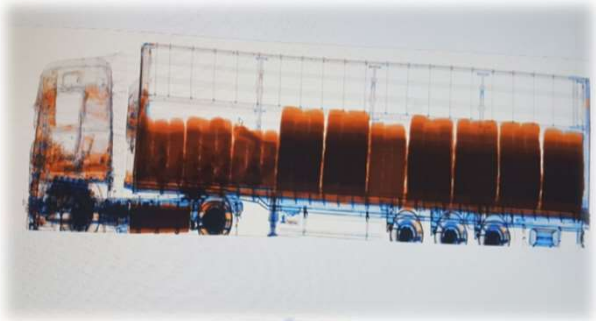
- Speed
- Efficiency
- Reduced cost
- Improved accuracy
- Better risk management
- Enhanced controls
- End-to-end security
- Research and innovation

Interoperation with technologies within supply chain

- Integration of digitised data within customs risk management systems to better inform the use of current detection technology applications
- Monitoring of duty suspended consignments crossing EU and 3rd country borders within the Common Transit System
- Monitoring of sensitive or dangerous goods, including for export

New and emerging technologies

- Satellite technology applications
- UAVs
- Electronic seals
- “Smart” containers



The Joint Research Centre (JRC) is studying the feasibility of deploying new technologies, such as the use of *composite materials* fitted with *embedded sensors* which can detect possible threats and wirelessly communicate their status to competent authorities. The aim is to improve security and ease customs operations, allowing a more comprehensive monitoring without manual inspection or screening.

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Case study for GNSS use

GNSS tracking devices, integrating electronic seals

- Before the departure from a third country port, an e-seal is installed on the intermodal transport unit under third country Customs supervision. In the course of the maritime shipment, the status of the e-seal (“tampered” or “not tampered”), and its identification number, are connected and checked via a central control group, which periodically transmits such information, in respect of all units on the vessel which bear e-seals to the central control group via satellite communication.
- Prior to the vessel`s arrival at the port of destination in EU, the Safety and Security Declaration (ENS) must be lodged with Customs. Where the e-seal or GNSS device indicates that it has not been tampered with, clearance procedures are simplified. Additional information such as document or physical inspections are rapidly notified to shipping terminals and Economic Operators. When the goods are cleared for free circulation and allowed to leave the customs control area, the position of the GNSS device is detected and the customs status of the goods is then updated to community goods.
- Conversely, where a “tampered” status is indicated, the container remains under customs control at the port of arrival until the required checks and controls are carried out by Customs.
- ***Consequently, the digitalisation of Customs operations is enhanced by accurate and reliable monitoring of intermodal transport units, significantly improving control procedures.***
- ***Benefits also accrue to terminals and Economic Operators, through speedier facilitation of legitimate trade.***

Thank you for your attention

Any Questions?

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Dangerous Goods Operations: Electronic Freight Transport Information (eFTI)

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Resilient Societies

Jean-Philippe MECHIN

Introduction

- *Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning:*
  - Public institution dedicated to support local authorities in public policies deployments, under the supervision of the *French ministry for ecological transition and regional cohesion*
  - The major French public agency for developing public expertise in the fields of mobility, urban planning, regional cohesion and ecological and energy transition for resilient and climate-neutral cities and regions
  - Public space and urban mobility, modelling, policies and services, intelligent transport system (ITS), travel safety

- *Jean-Philippe MECHIN (head of Traffic and ITS group)*
  - Expert on Intelligent Transport Systems, Transport of Dangerous Goods, GNSS applied to ITS
  - Involved in many important EU and national projects, Digital Transport Logistics Forum working groups on eFTI, UNECE WP15 on telematics for transport of Dangerous Goods (ADR, RID, AND), Expert for France at Digital Transport and Trade Facilitation Committee

EU Regulation 2020/1056 on electronic freight transport information (eFTI)

- Establishing a legal framework for Economic Operators to **share information in electronic format** with judicial Authorities regarding the **transport of goods by road, rail, inland waterway or air in EU**
- **Entered into force in August 2020, and expected to apply as of August 2024 with full application by August 2025**, for all types of freights (**including waste and dangerous goods**)

- **Obligations for Authorities**, to:
  - Accept and access eFTI data made available in electronic format by Economic Operators
  - Process the relevant information
  - Provide official validation, such as a stamp or certificate, electronically

- **Obligations for interested Economic Operators**, to:
  - Make use of data processed on certified eFTI platform (if applicable, through a certified eFTI service provider)
  - Make eFTI data available in a format that can be read by either an automated device, via an authenticated and secured connection to the data source of an eFTI platform, or by humans, on the screen of the operator's electronic device

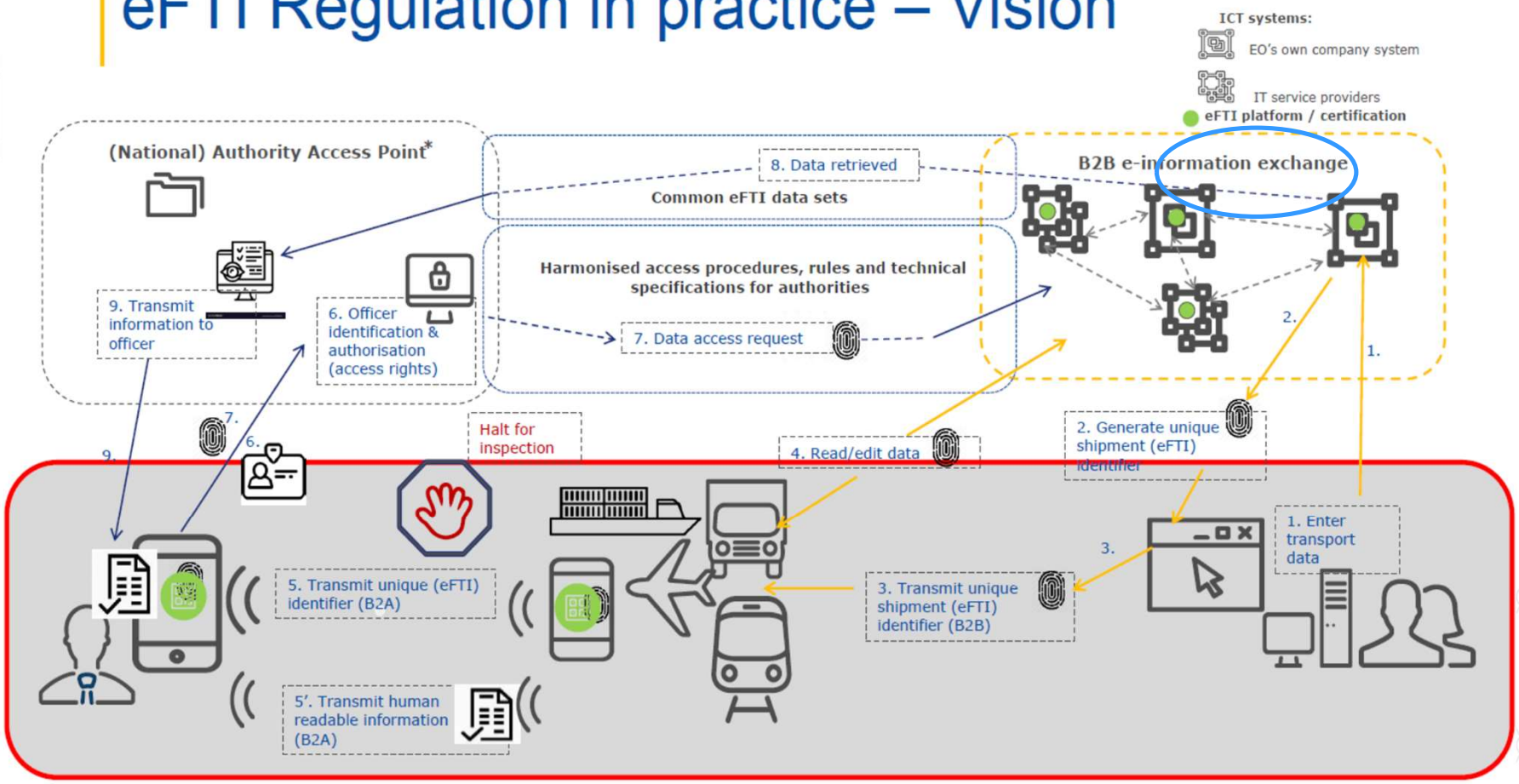
eFTI Regulation and role of multi-GNSS/EGNSS

- **Advantages generated by eFTI Regulation adoption**:
  - Reduction of administrative costs, improvement of efficiency and sustainability
  - Encouraging the exchange of information between freight transport/logistics companies and competent Authorities in digital format, and incentivizing the use of technologies

- **Role perceived for EGNSS in eFTI**:
  - The possibility to get the authentication of the position and timing information provided by using automated devices based on multi-GNSS/EGNSS, in the deployment of the eFTI platforms and eFTI service providers, among the mechanisms for the electronic official validation
  - EGNSS data as one of the eFTI data, **gathered from the goods in movement (already available from Economic Operators)**
  - Allowing value added functions for risk assessment, statistics on goods traffic flow, law enforcement
  - Supporting trust on information (timing)

GNSS in eFTI vision

eFTI Regulation in practice – Vision



- GNSS data coming from the tracking device already installed on board of the goods by Economic Operators
- Advantages for emergency responders (efficiency and safety)
- Requirements derived from the concrete experience of various past and on-going experiences and initiatives

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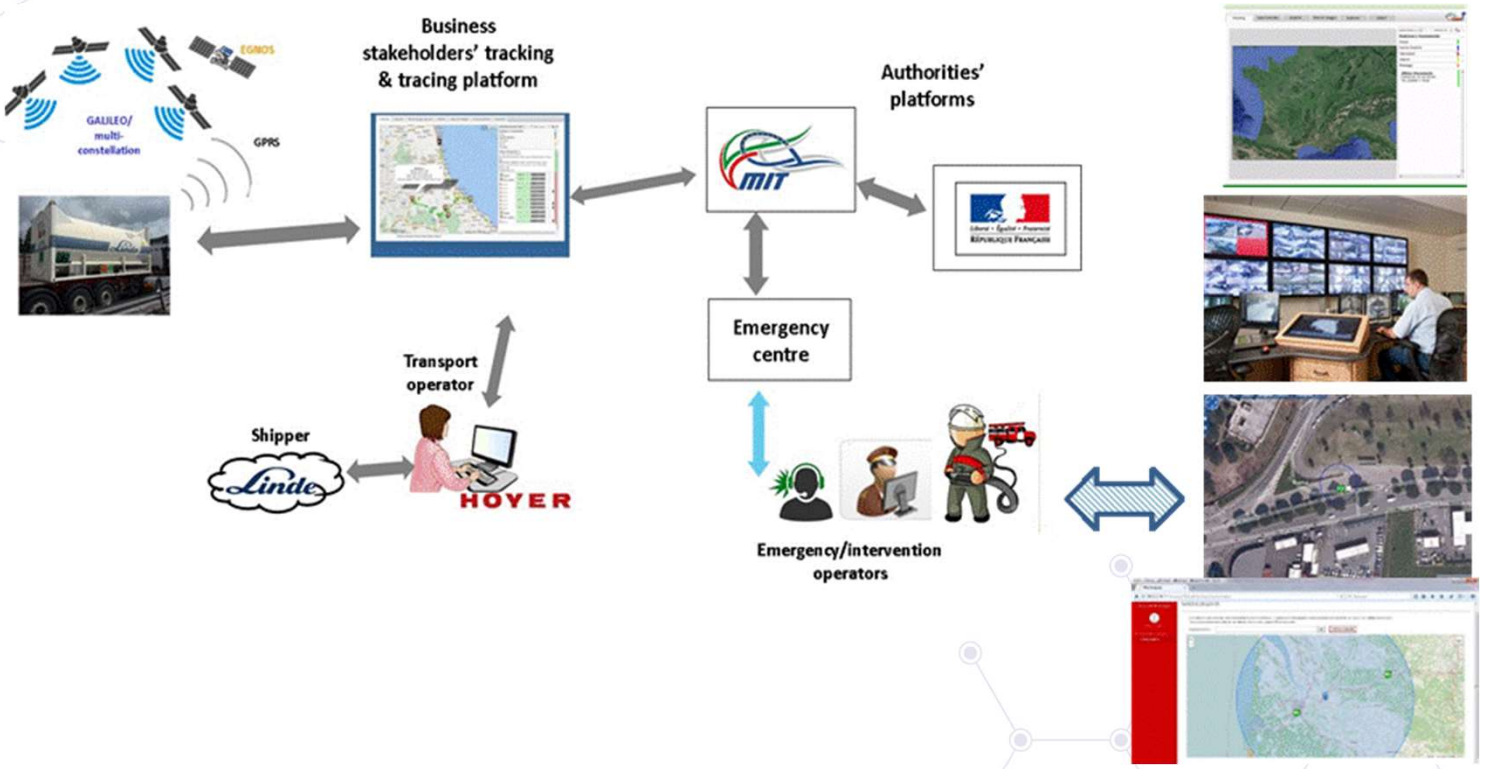
EU CORE project use case for dangerous goods (2019)



- **Multi-GNSS/EGNSS tracking devices** installed already:
  - Adaptation of available market-driven solutions
  - Today still operational on some fleets (especially road)
- Italian and French Authorities' Platforms
- **eTransport Document - unique across modes (road, rail) and cross-border**
- Combination with geospatial data and real-time information from Regions (and dispatching to Regione Piemonte in Italy) for risk assessment and emergency

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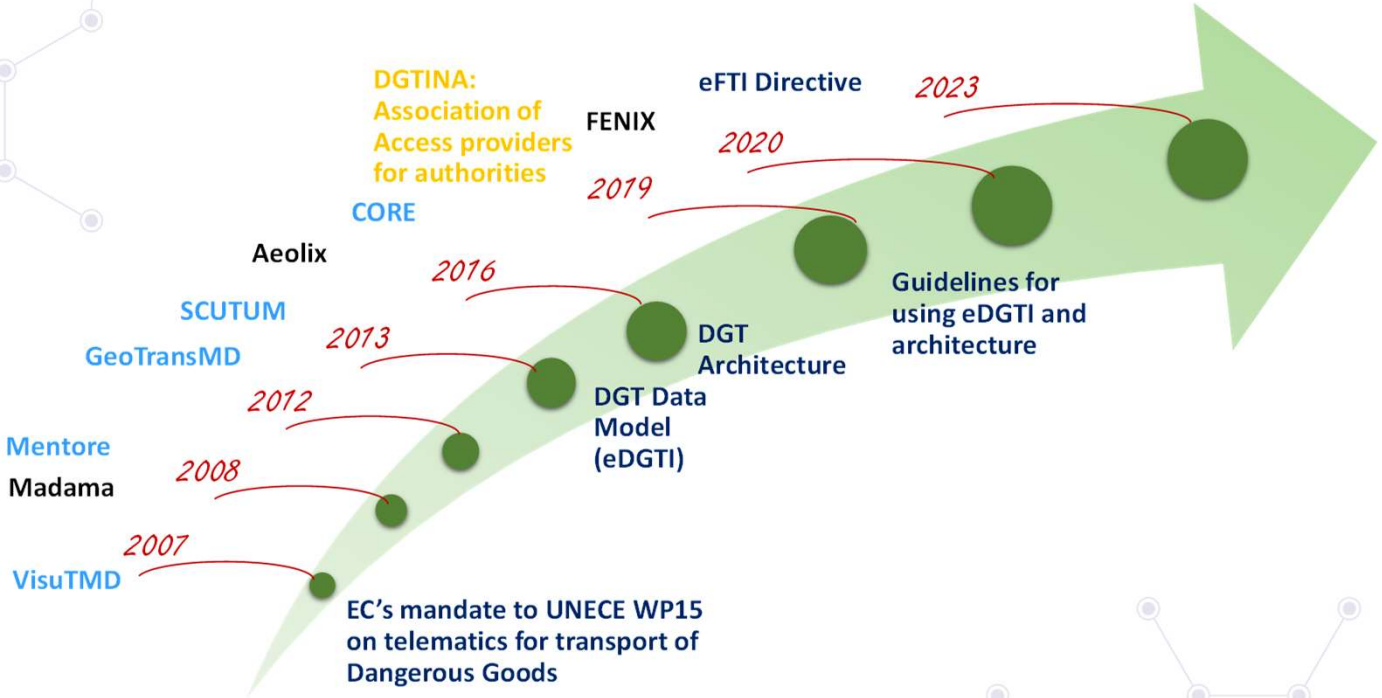
Important milestones



- Strategy initiated in 2007, combining aspects dealing with GNSS (blue projects/initiatives), data model and architecture
- In parallel with:
  - Research & development
  - **Requirements definition**
  - Standardisation effort
  - Costs & benefits validation
  - Inputs/contributions to regulations
  - Promotion & awareness
- Reuse of technology available & adaptation to follow the technology evolution (for GNSS, from GPS to multi-GNSS/EGNSS + Galileo Authentication)

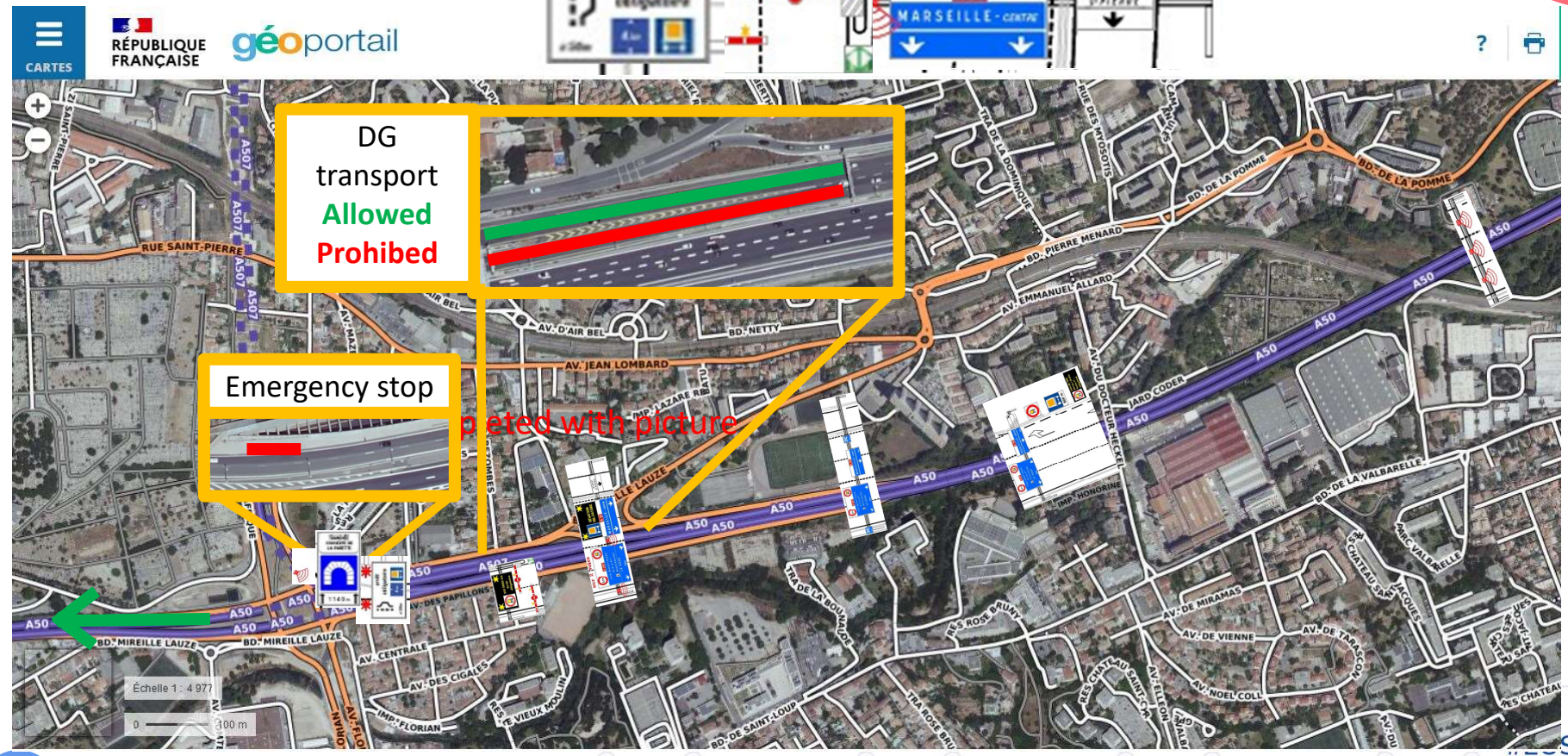
Perspectives (1)

- Having contributed to UNECE WP15 on Telematics for the transport of dangerous goods by road/rail/inland waterways (https://unece.org/transport/dangerous-goods): guidelines for the use of RID/ADR/ADN 5.4.0.2 (use of electronic data exchange eDGTI – electronic Dangerous Goods Transport Information) envisaging the use of multi-GNSS/EGNSS + Galileo Authentication

- Contributing to eFTI data set definition (on-going)

- Contributing to national future implementations, exploiting the **combination of multi-GNSS/EGNSS + Galileo Authentication, C-ITS and eFTI** able to generate additional gains, in terms of safety and efficiency

Perspectives (2)



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Thank you for your attention !

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Customs Operations: National and international fast corridors

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USER CONSULTATION PLATFORM – RESILIENT SOCIETIES SESSION

Marco Mattiocco

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Introduction

MARCO MATTIOCCO

Head of Section
Innovation and international IT projects
Organization and Digital Transformation
Directorate at ADM

In the last 16 years, in charge and involved in many Italian, EU and international projects/initiatives dealing with Digital Transformation

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Italy's Customs and Monopolies Agency
Main functions:

–Administration of customs duties (internal taxation of international trade and excise duties, ensuring tax assessment, collection);
–Management of customs services to ensure the application of the European Union Customs Code and of all measures related to international trade
–Prevention of and fight against tax evasion and illicit extra-tax offenses within its areas of competence (risk analysis and database management, checks, verifications and investigations in cooperation with involved national, local, EU and international authorities and bodies)
–Regulation and control in the sectors of alcohol, manufactured tobacco products and public gaming in Italy, with judicial police functions.

FAST CORRIDORS

Description:

- Realized According to Article 148 of Regulation (EU) No. 952/2013
- the “Fast Corridor” procedure (i.e., a system of “Customs corridors”) allows for the postponement of the Customs clearance of goods at the location deemed most convenient by the owner among different storage facilities.
- These are corridors for the movement of goods from the point of disembarkation to the temporary storage facility located at a destination logistics hub.
- The system is structured around the use of **monitoring and Internet of Things (IoT) technologies to ensure that the risk of fraud does not increase**.

FAST CORRIDORS

Advantages

- Reduction of the customs clearance time for goods
- Real-time monitoring of the cargo from the point of origin to the point of destination through interoperability among systems
- Increased competitiveness of national ports and airports

National fast corridors activated for goods travelling by road

Departure Point	Destination
La Spezia Port (TC 027V)	Piacenza (TC 14157Q)
Genova Port (TC 047X)	Piacenza (TC 14157Q)
Genova (TC 027V)	Piacenza (TC 14157Q)
Genova Voltri (TC 049Q)	Piacenza (TC 14157Q)
La Spezia Port (TC 030L)	Piacenza (TC 14157Q)
Genova (TC 049 Q)	Mondovì (TC 1F)
Savona (TC 025M)	Mondovì (TC 1F)

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DESIGNATED PLACE FOR CONTROLS

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Description:

In Santo Stefano Magra (dry port of La Spezia):

- first 'designated place' for customs controls in Italy within the meaning of Article 135(1) of the Union Customs Code (EU Regulation No. 952/2013).
- The designated place is connected to the terminals of the port area through an inspection corridor.
- The positions given by GNSS devices are utilized to remotely monitor and electronically track the movement during the transfer from the port to the hinterland.

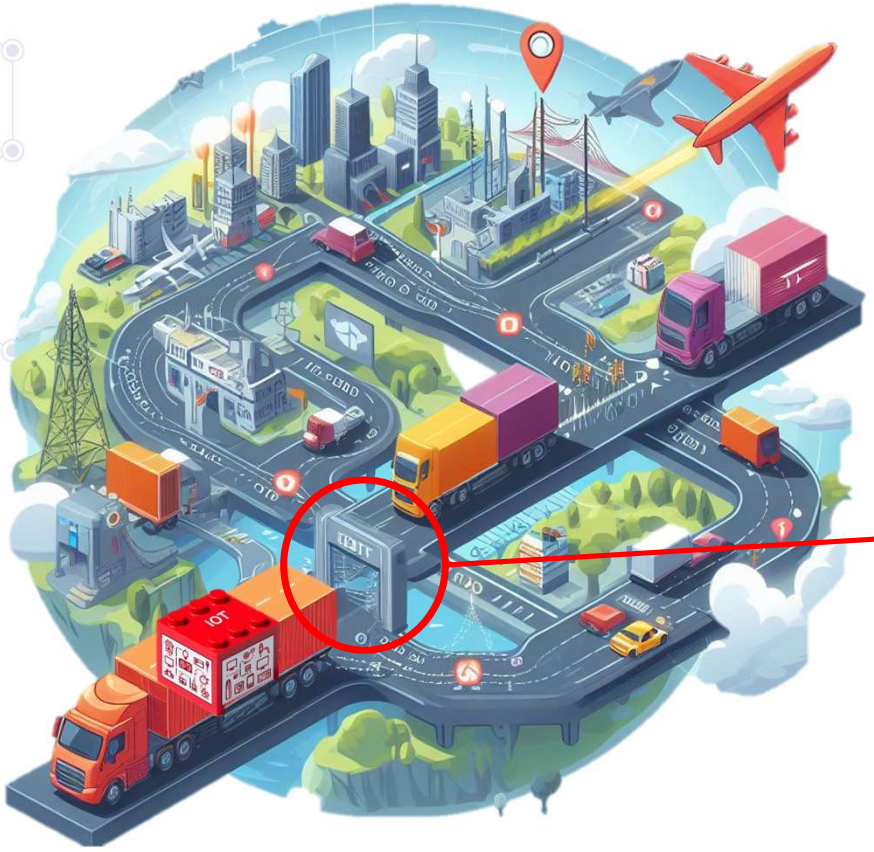
HOW IT WORKS

The monitoring of moving goods is possible by sharing the following information:

- The identifier of the **customs declarations**
- The information on the **intermodal transport unit (ITU)** associated with goods (one or two among: vehicle license plate, BIC code of container, intermodal loading unit (ILU) code of the track, swap box identifier, seal number or goods identifier on the electronic manifest of departing/arriving goods)

These **two sources** of information are combined, creating a unique identifier defined, in the logic of the Internet of Things, "IOT_ID", which is generated unique identification code generated in the UUID format, and is exchanged through interoperability among the subjects envisaged by the process in question, **in the planned logistic nodes.**

HOW IT WORKS

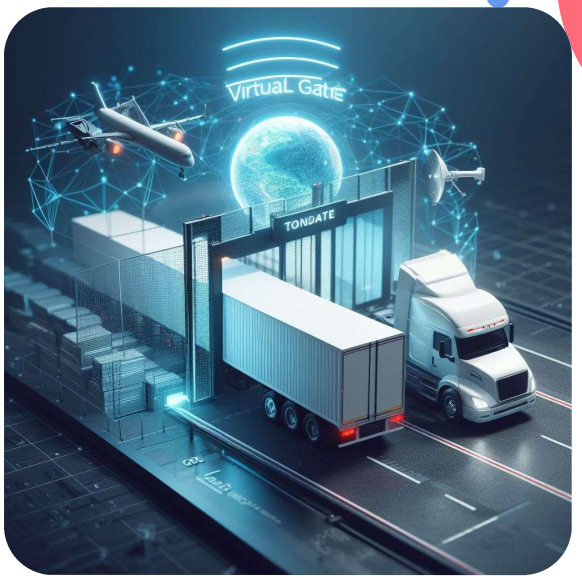


- **A Mission path** covers the IOT-ID journey between a logistic node of departure and a logistic node of the destination.
- The exit and arriving of **IOT** in the logistic nodes is read by **physical GATES** through ("OCR", "RFID", "BARCODE" type device)
- The IOT route is followed by **GNSS system** on the TRACK.
- Exits from the signposted route are monitored and recorded

FUTURE SCENARIOS?

GNSS devices integrated with sensors (such as cameras) are adopted to monitor and geofence the movement of the vehicles transporting goods across the Italian territories and entry points/nodes (national fast corridors).

The GNSS positions and information from sensors are received and processed at the Italian Customs informative system, able to identify moving vehicles Thanks to this implementation, it is possible to check that no additional frauds are injected.



The characteristics of multi-GNSS/EGNSS and Authentication (i.e., higher availability and reliability, authentication of the position and timing information) could be fundamental to have a higher trust and additional assurances enabling to implement international fast corridors, as well as to provide the possibility of virtual gates instead of expensive and slow physical gates that ensure the seamless entry and exit of designated logistics nodes without interrupting the logistical flow of goods.

Thank you for your attention!

Marco MATTIOCCO
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Customs Operations:
Preventing trafficking and smuggling:
Risk assessment in supply chain and trade

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Resilient Societies Session

Michael Doherty PEN-CP

Main targets/ “threat” materials and modes of transport

- Illicit drugs + precursors
- Tobacco products
- Currency
- Alcohol
- Weapons, explosives
- Evasion of duty/tax and trade regulations
- Counterfeit/piracy
- Radioactive and nuclear materials
- Endangered species (CITES - Convention on International Trade of Endangered Species)
- Cultural goods
- Illicit waste
- Dual use/sensitive goods/sanctions/ embargoed goods
- High value goods (e.g., gold)

Transport Mode	Format
Maritime	Containerised cargo
Maritime	Bulk cargo
Maritime	Ferries
Maritime	Passengers
Maritime	Baggage
Maritime	Fishing / pleasure craft
Road	Containerised cargo
Road	Bulk cargo
Road	Vehicles
Road	Passengers
Road	Baggage
Rail	Containerised cargo
Rail	Bulk cargo
Rail	Passengers
Rail	Baggage
Air	Passengers
Air	Baggage
Air	Cargo
Air	Private aircraft
Postal/Express courier	Parcels/letters

Risk assessment in the supply chain

Risk assessment is a critical component of the customs control architecture. Given the scale of cargo movements - (76.58 m TEUs in top 15 EU ports in 2022), customs must optimise their capability to identify and target risk movements in order to apply detection controls efficiently and effectively.

A wide variety of data across the supply chain, together data stored in customs and other official databases, enables the enhancement of risk assessment functions. The application of blockchain and artificial intelligence techniques provides further opportunities.

Programmes such as Authorised Economic Operator (AEO) provide additional benefits for customs and other supply chain actors.

Continuous monitoring of goods and transport modes provides the possibility to increase confidence levels, reduce levels of intervention, speed up controls, reduce costs and free up resources.

Potential use cases for GNSS/EGNSS

- Maritime surveillance of suspect vessels
- Customs “controlled deliveries”
- Movement of dangerous goods
- Illegal waste movements
- Movements of (excise) duty suspended high value goods
- Monitoring of medicines for potential substitution of counterfeit
- Monitoring of diverted goods to evade restrictions
- Monitoring of “Narco Submarines”
- Anti-fuel fraud monitoring of oil movements

Case study for GNSS use

MV Matthew departs Curacao STC fertiliser

Georgetown Guyana

Departs Canary Islands- destination Gdansk

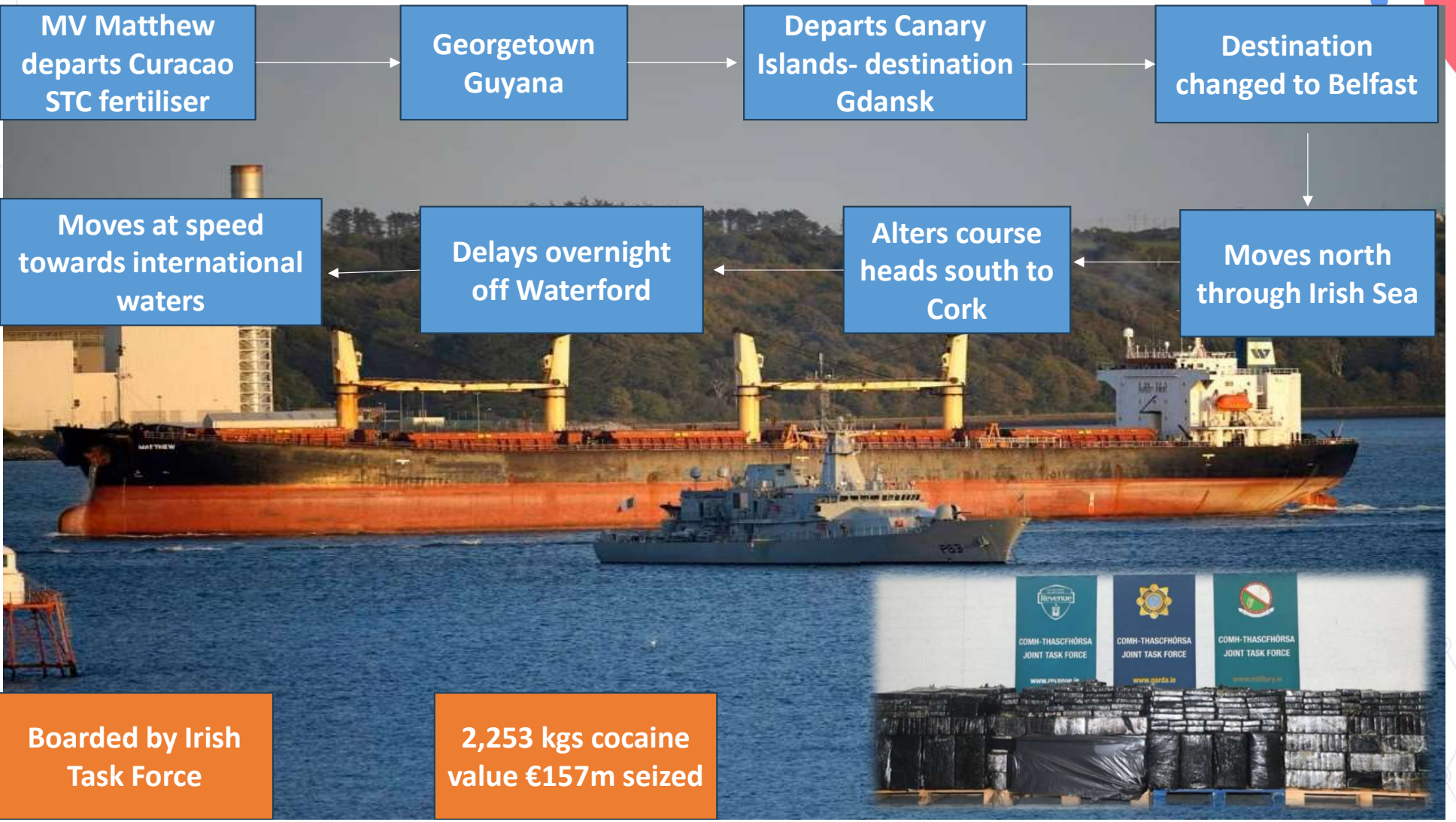
Destination changed to Belfast

Moves north through Irish Sea

Alters course heads south to Cork

Delays overnight off Waterford

Moves at speed towards international waters



Boarded by Irish Task Force

2,253 kgs cocaine value €157m seized

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EMSA initiative – CISE
Horizon Europe project - CONNECTOR

CISE (Common Information Sharing Environment) www.emsa.europa.eu/CISE

Commission`s Third Progress Report on the Implementation of the EU Strategy and Action Plan for Customs Risk Management highlights the value of the development of a common information sharing environment (CISE) in the maritime domain. CISE is currently managed by the European Maritime Safety Agency (EMSA) in close cooperation with the Member States, several other EU agencies (EFCA, Frontex, European Union Satellite Centre - SatCen, European Defence Agency – EDA) and the European External Action Service (EEAS). The CISE interconnects existing surveillance systems and networks and provides all access to the information needed for their missions at sea. Thanks to CISE, different systems interoperate to easily exchange data and other relevant surveillance information through the use of modern technologies.

CONNECTOR (Customs Extended Interoperable Common Information Sharing Environment)

https://vcl.iti.gr/projects/customs-extended-interoperable-common-information-sharing-environment/

The CONNECTOR project kicked off October 2023 and aims to build on the work of CISE by extending its membership to more customs administrations and by expanding the operational environment beyond maritime.

- Project Coordinator: Georgios Kampas, Satways LTD. g.kampas@satways.net
- CSG Manager: Andrew Grainger, CBRA andrew.grainger@cross-border.org

Thank you for your attention
Any questions?

Michael.Doherty@cross-border.org

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Prevention and suppression of trafficking and smuggling - Safeguard of cultural heritage

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Session: RESILIENT SOCIETIES

Axel KEREP

PARCS SOLUTIONS

SOLUTIONS POUR LA PROTECTION DES BIENS

INDUSTRIAL PARTNER

IN RESEARCH & APPLIED INNOVATION

https://www.parcs.solutions/

Axel KEREP

ARCHEOLOGIST

ARTE-FACT © PROJECT MANAGER

ARTE FACT

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Sky for Artefacts - from Satellite site protection to fight against **illicit trafficking of Antiquities**

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Remote sensing of looted archaeological sites

Dilbarjin (Afgh.) Google Earth images © 2019. Courtesy of ICONEM

Examples of typical looting features in satellite very high resolution (VHR) optical images

Analysis :

- Mixing and correlating different image sources
- Interpretation of pseudo-color temporal composites
- Investigation of the multi-temporal spectral profiles
- Correlations between the spectral bands

Courtesy of ICONEM ©

Examples of typical looting features on the ground

- Usually round features
- Found in clusters

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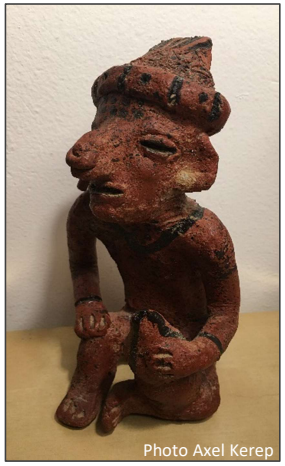
Protection of Heritage - a question of **provenance**



Looted artifact seized
« proof »

Looted sites of origin ?
« crime scene »

The great difficulty of the archaeologist is to link an artifact to a looted site in order to prove its illicit nature and illegal provenance…

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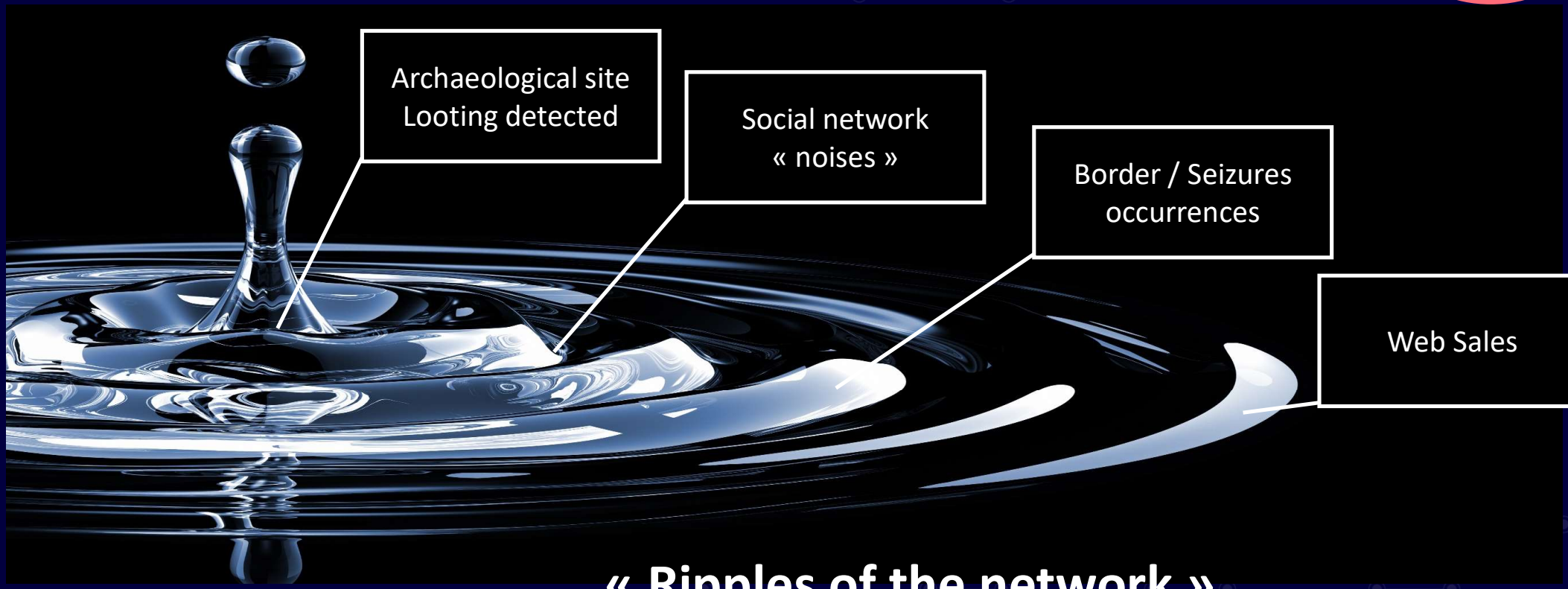
How to connect Satellite surveillance to field operation and provenance search?



« Ripples of the network »

A hybrid approach to remote archaeological site protection - **ANCHISE case study**

ANCHISE
NEW SOLUTIONS FOR CULTURAL HERITAGE PROTECTION

Funded by the European Union

https://www.anchise.eu/

Task Leader: iconem

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Hybrid Technologies:

Drone technology
+
Satellite Imagery : Optical, Synthetical
+
Photogrammetry
Utilizing photogrammetric scanning technology for the comprehensive examination of archaeological sites

Source:

NASA ESA open data
+
proprietary imagery

- Airbus
- Maxar
- Planet

Facilitates the identification and detailed analysis of potential traces of illicit excavation and looting

Automation

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Integrating/ interconnecting technologies

- Expert Network
- Field alert
- Social platform

ANCHISE PLATFORM

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- Satellite surveillance
- Looting detection via remote sensing

iconem

- Web Crawling
- Web Surveillance

Fraunhofer

ICCS ΕΠΙΣΕΥ

- Field detection
- L.E.A support

Through Mobile app

PARCS SOLUTIONS

ARTEFACT

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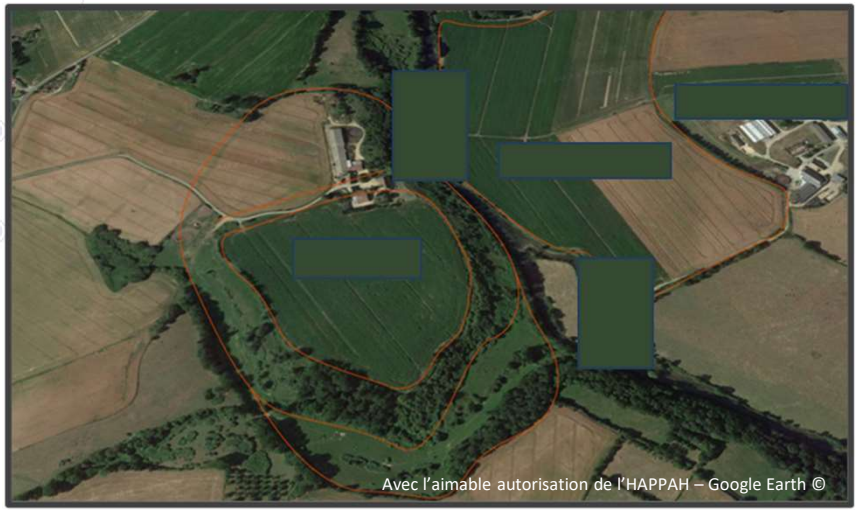
A European use case

Massive looting is not only happening « overseas »…



…a race for technologies…Looters also use EO data

OSINT* satellite imagery
*Open Source Intelligence

High tech field detection devices

New approach and Higher resolution for European territories

Abnormal human density

Human activities surveillance near sensitive zone ?

Car gathering / period

Higher resolution : looting pits max approx. 30cm
Cluster to Scattered looting features > adaptive model

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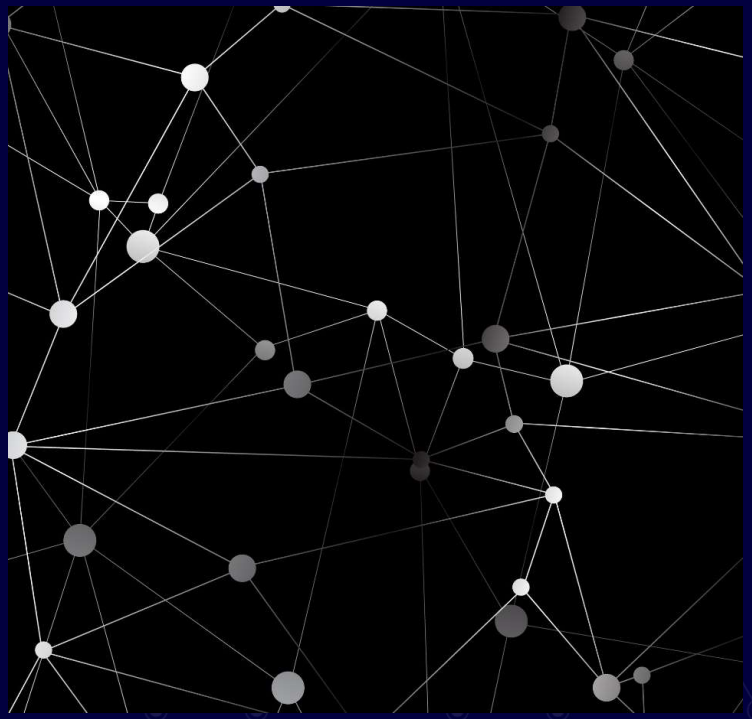
How to optimize **EO Data** for the fight against **Heritage destruction**

- More interconnected tools using satellite imagery
- Integrated alert systems for local archaeologists using geolocalisation linked to border control/Law Enforcement Agencies
- Link with « side remains » of looted sites (connecting archaeological evidence)
- Web sales analysis for better « ripples detection »
- User friendly interface for LEAs



Thank you for your attention !
Questions ?

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Robots and automated platforms - UXO disposal

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USER CONSULTATION PLATFORM – RESILIENT SOCIETIES SESSION

Ettore MOTTI /Camilla LA GIOIA

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INTRODUCTION - Company

UXORISK is an Italian company specialized in UXO risk management both on land and at sea. Our goal is to build a solid and durable relationship with the Client, during the entirety of his project (in the planning phase and in the execution phase) to support him in evaluating, managing, and optimizing every aspect related to the UXO risk.

- **Main skills are:**
  - ✓ UXO risk assessment;
  - ✓ UXO risk management and mitigation;
  - ✓ Preliminary geophysical UXO surveys
- ***Mission ;***
- ***Values ;***
- ***Quality requirements ;***
- ***Compliance with Commitments ;***
- ***Professionalism.***

Ettore MOTTI Director

Camilla LA GIOIA Administrator / UXO surveys expert

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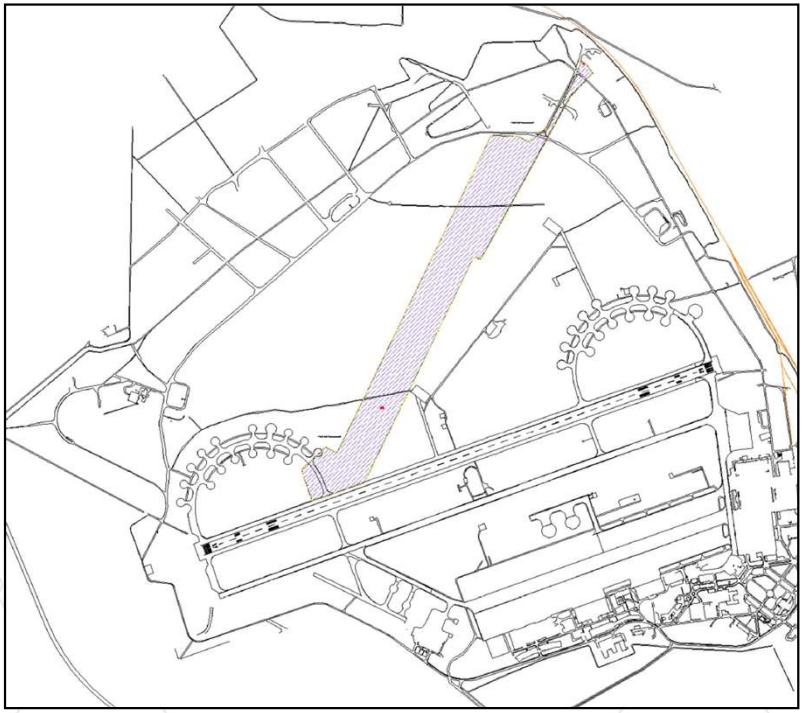
INTRODUCTION - Capabilities

The list below summarizes UXORISK's areas of expertise in consulting, technical assistance, survey activities related to the threat of UXO, in particular as remnant of War.

- Non-technical and Technical Surveys (compliant with UN-IMAS standards)
- Large areas Detection (Land Magnetometric Multi-Sensor systems)
- Technical Survey through UAVs (Unmanned Aerial Vehicles)
- Technical Survey through Underwater Drones

CASE STUDY : UXO survey and clearance in Orleans (France) (1)

- Customer: French Ministry of Defense ;
- Date : 2020-2021 ;
- Scope of work: UXO survey, UXO clearance, UXO survey control and delivery of UXO clearance certificate ;
- Location: French military air base near Orléans (in the south of Paris) ;
- Surface: 31 hectares.



CASE STUDY : UXO survey and clearance in Orleans (France) (2)

UXO SURVEY

Realization: 7 days ;

Used Equipment: magnetometer multi-probes SENSYS MXPDA + GNSS (figure on the left) ;

Technical report: Georeferenced Magnetic mapping (figure on the left) and pUXO* list (Target's number, X, Y).

Accuracy (in X, Y) must not exceed 10 cm, as this would entail responsibility not only for pUXO mapping but also for the subsequent decontamination's works (UXO clearance) if necessary.

*possible Unexploded Ordnance

CASE STUDY : UXO survey and clearance in Orleans (France) (3)

pUXO RELOCATION and UXO CLEARANCE

Realization: 2 months ;

Used Equipment: magnetometer SENSYS SBL10 + GNSS (figure on the left) ;

Final report: UXO clearance certificate (Target's number, X, Y, Z).

Firstly the re-location (GNSS) of pUXO from survey's conclusions;

Then the pUXO verification, by means of an equipment consisting of an excavator and a technician with a SBL10 magnetometer SENSYS;

Lastly, the UXO survey control using a magnetometer multi-probes SENSYS MXPDA + GNSS;

After UXO decontamination works, a certificate is delivered to customer to guarantee the quality of service and to assume responsibility for the proper execution of UXO clearance. This certificate contains all GNSS coordinates of

- Initial project (X, Y and Z);
- UXO found (X, Y and Z);
- Decontaminated areas (X, Y, Z).

DRONES in UXO ACTIVITIES

Surveying and locating landmines, unexploded ordnance (UXO) and explosives remnants of war (ERW) using unmanned technologies for effective mine action on large areas is very challenging, particularly when they are buried.

However, traditional methods of mine action standards used to survey and clear very large areas are very long.

Our objective was to demonstrate the UAV capabilities of detecting ERW, UXO & landmines on wide areas in a short time and focusing on the procedure of implementing different technologies.

Our technical approach is based on the implementation of a DJI brand UAV platform model M300RTK with different tools.

All equipment are georeferenced in real time by a fixed DJI D-RTK2 GPS station to bring an accuracy of less than 10 cm to all this data.

REQUIREMENTS FOR SATELLITE TECHNOLOGIES

- Currently, positioning is a key factor for many essential activities in our business and will become even more important with the advent of new technologies and systems.

- As end-users of the system, the development of more stringent requirements in terms of accuracy, ease of use, availability and robustness is of paramount importance.

CONCLUSION

Uxorisk's future prospects are related to achieving the following goals related to the use of GNSS equipment:

- to maintain the levels of precision and accuracy of surveys using equipment that is as technologically advanced as possible but also easy to use;
- guarantee the customer a level of reliability and accuracy that benefits the safety of operators and construction sites;
- to be able to work easily and accurately anywhere in the world.

Thank you !

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www.uxorisk.com

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Robots and automated platforms – Dog robot for UXO disposal

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USER CONSULTATION PLATFORM – RESILIENT SOCIETIES SESSION

Giacomo NIZZI

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Company overview

Smart software, advanced robotics and human capital are our main assets to help and support client companies in exploiting all the opportunities offered by change.

2016	Headquarter founded in Perugia, Italy
2020	Appointed FT1000. Fastest Growing Company in EU
2022	Core Sales: €30 Million
2022	€7 Million Minibond Issued in July
2023	Expanding our footprint abroad

Giacomo Nizzi
COO Eagleprojects

EAGLEPROJECTS
Technology Factory

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What we do

We operate in three different sectors, offering cutting-edge services tailored to each client.

Software

The software we develop are designed to meet the control, monitoring, and management needs of our operations and various projects.

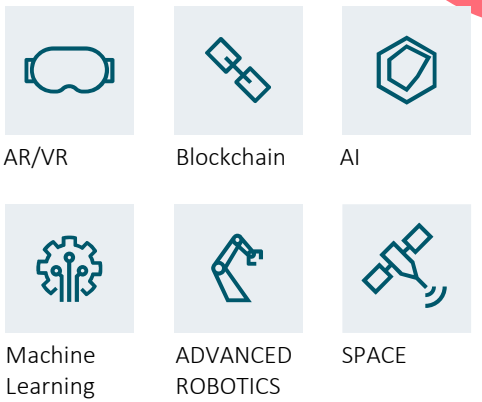
Engineering

The design and engineering services cater to industries such as telecommunications, water, energy, infrastructure, smart cities etc.

Robotics

We specialize in the study of algorithms and programming of advanced robotics device such as robot dogs, robotic arms, and other forms of computer automation.

Main R&D areas:



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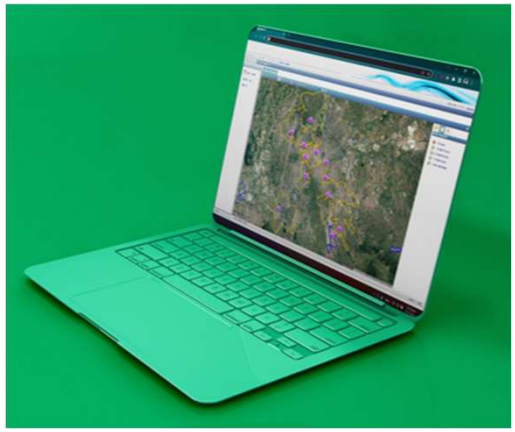
Our products based on Digital Twin and Digital Cartography

Detailed digital 2D and 3D mapping, enriched with complex information (e.g., land surveying and mapping activities, along with subsequent data processing) for various applications (e.g., traffic analysis, public green monitoring, prevention of calamitous events such as landslides and floods)

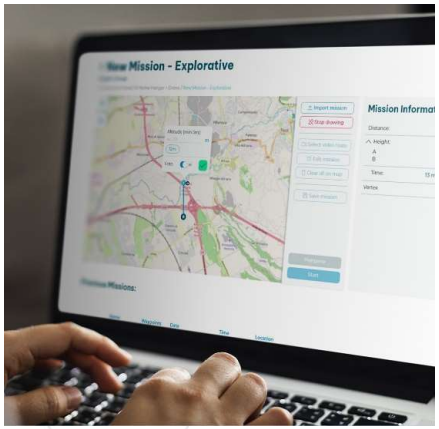


GISFO®

GIS-based software for Fiber Optic infrastructure design

SPHERE

Scalable web app for georeferenced building data.



DRONE VISION

Drone flight planning module for both photogrammetric and inspection missions, including Data Collection

3EYE

Web platform developed for the visualization of 2D and 3D geospatial data, such as 3D point clouds, shapes, orthophotos, photospheres, and GISFO® projects

Robot dogs

Customising and optimising the functionalities and user experience of robot dogs for territorial mapping and monitoring of extensive areas, tailored on several purposes:

DETAILED DATA COLLECTION

Robot dog can reach places that are otherwise impossible for humans or conventional tools to access

TRANSPORTATION

Each robot dog can support a dynamic payload based on its size. This enables the safe transportation of objects and essential goods, making it valuable for assistance activities and humanitarian purposes.

SURVEILLANCE AND SECURITY

Robot dogs can be employed in surveillance and control activities. Through integration with IoT monitoring systems, it's possible to automate the robot dogs' responses to environmental stimuli.

GNSS can be integrated in combination with other sensors (e.g., LIDAR, infrared, different types of cameras, inertial technologies) and AI techniques for the mapping of the area and the localisation of the target, and for the movement of the automated dog-robots.

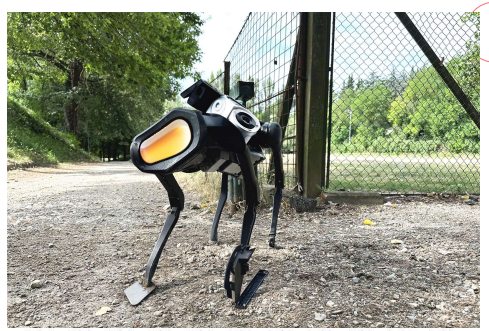
Robot dog for UXO finding

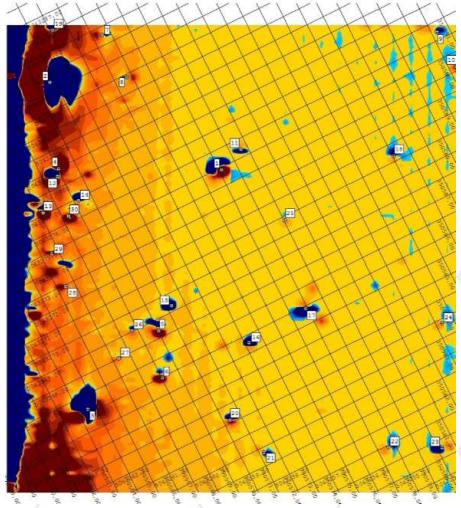
GISBO

GIS-based software for web and app management functions.

Data elaborated by means of GISBO support activities in several phases related to UXO clearance operations :

- Technical investigation
- Creation of comprehensive soil investigation maps
- Computerized scanning of the land
- Logistic planning to support soil investigation, involving both human resources and equipment
- Removal of explosive devices
- Removal and/or destruction of all hazards related to wartime ordnance
- Organization of construction sites, self-sufficient mobile operational units
- Mapping of mined fields
- Administrative and operational management





The company, which has introduced the software GISBO to the markets, is an international leader in the clearance, detection, and recovery of wartime ordnance in civil construction sites, including various public, railway, road, port, and maritime projects. The company has executed and planned interventions for mine clearance in difficult regions.

Conclusions and perspectives

Automated dog-robots are able to explore difficult and risky area in a safer and more effective way for the technicians.

GNSS-based product is used in many activities when UXO has to be located/re-located/positioned, in combination with other sensors, technologies and software techniques.

The more precise the position is, the more accurate is the mapping of the area and the localisation of the target (as shown in the figure above), moreover the better is the ability of the automated dog-robots to easily move through obstacle and difficult terrains.

Accurate position measurements enable more effective and precise clearance operations, carried out by a different company: the more the position of the target is accurate, the better the specialists and technicians are enables to re-locate it (for the check, verification and necessary activities).

Advanced technologies enable the development of several services, products and applications to be developed also in other sectors.

Thank you for your attention !

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ASGARD: Experience in resilient navigation

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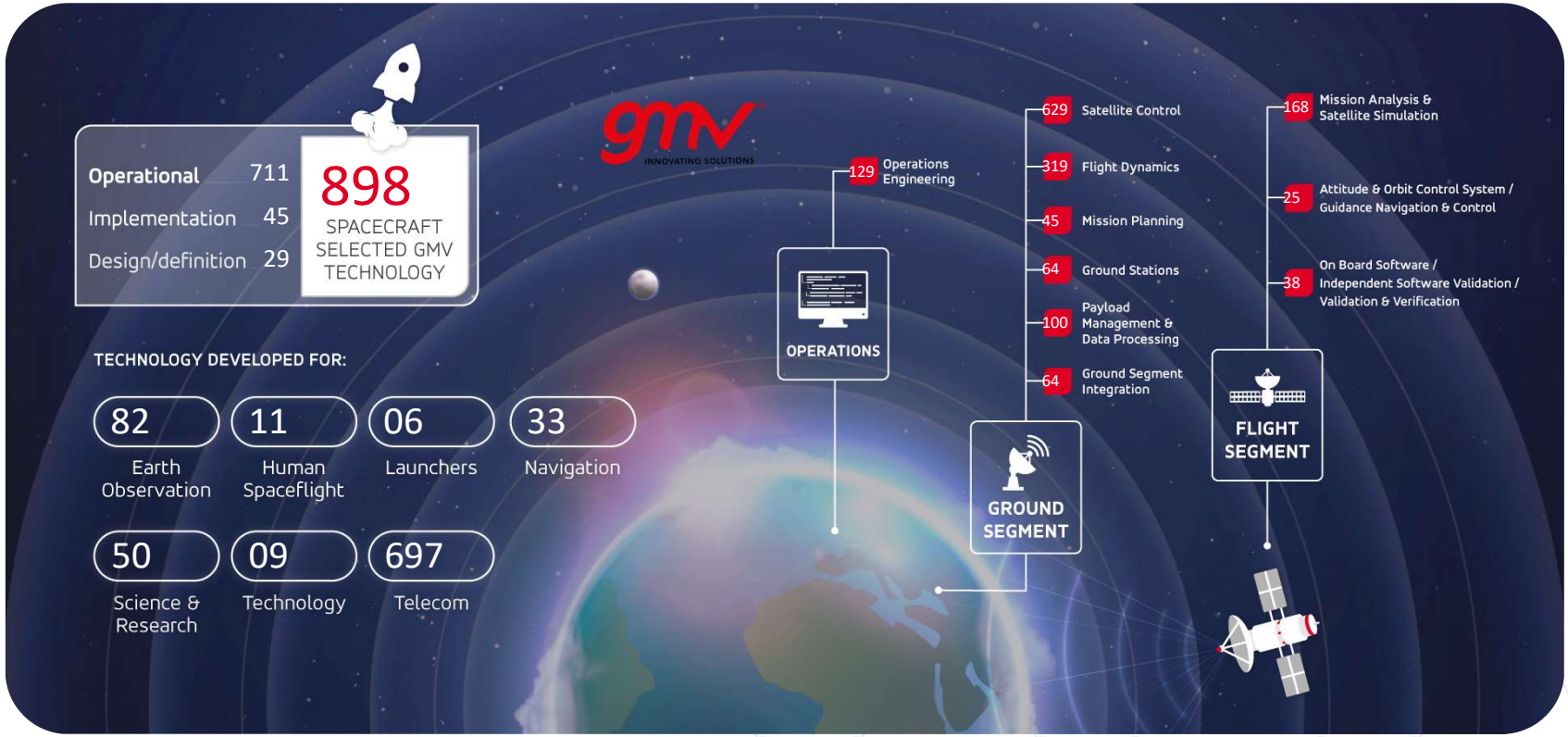
Resilient Societies

Marcos López Cabeceira (GMV)

GMV in Space



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GNSS in GMV




GNSS Infrastructure	GNSS Services	GNSS User Segment Technology	Precise Timing Solutions

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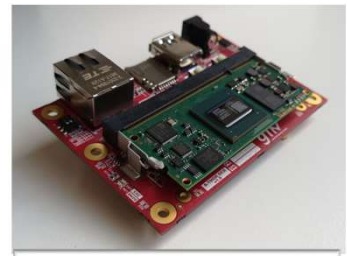
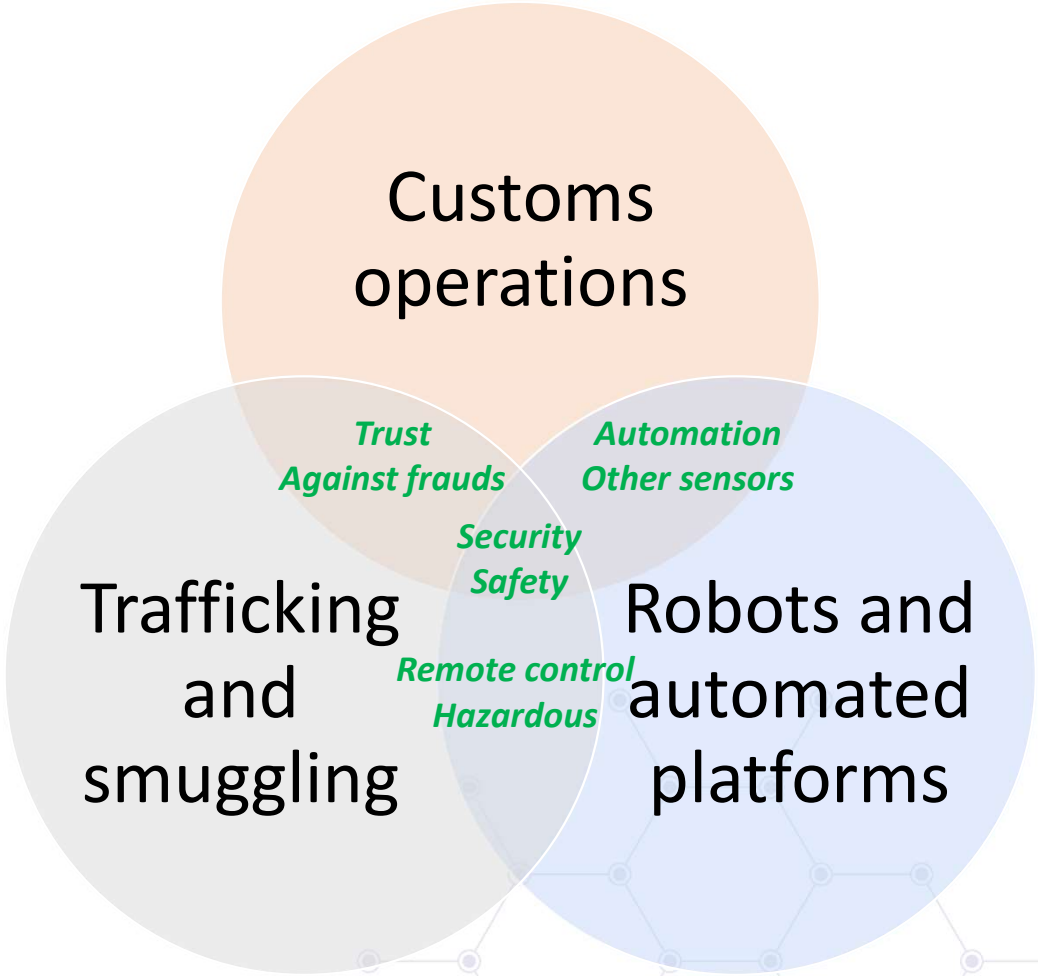
ASGARD GNSS receiver

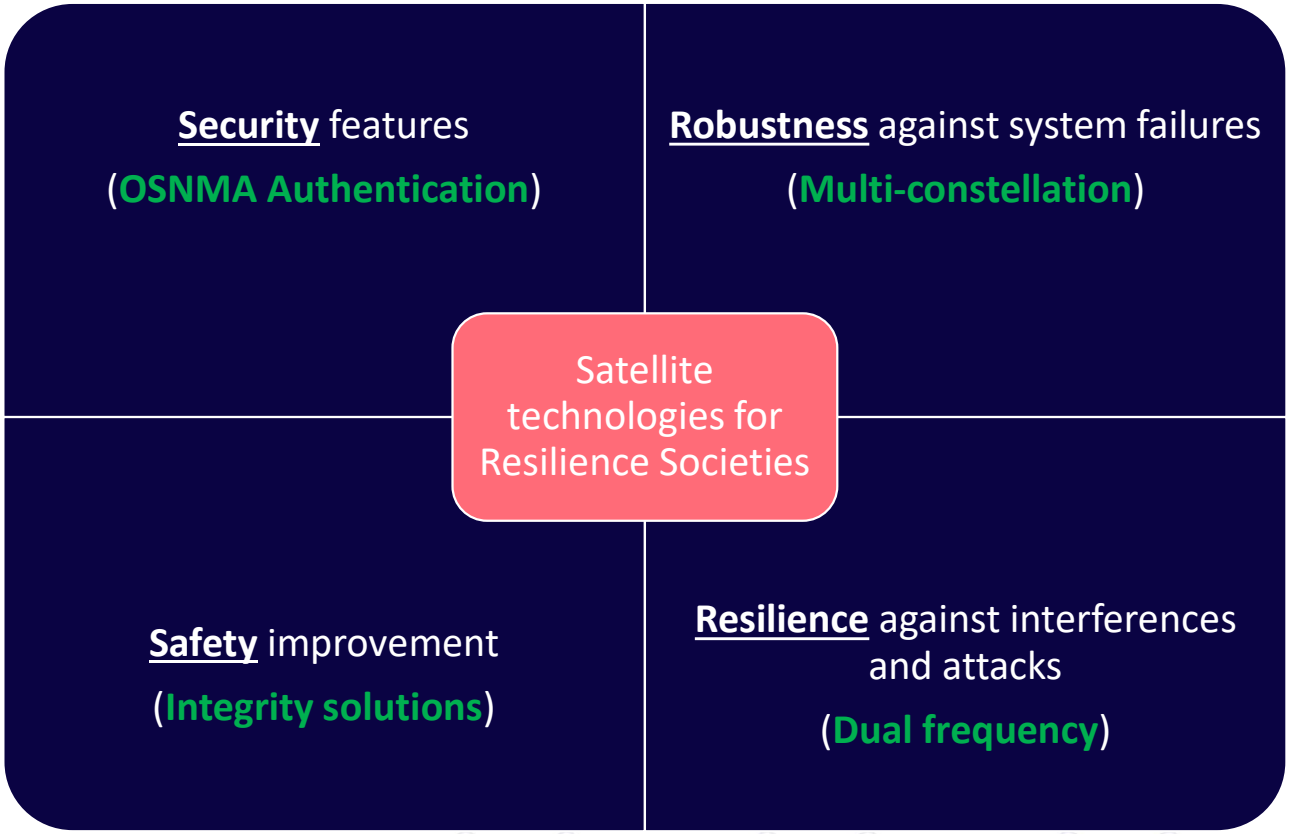
- Galileo **Open Service Navigation Message Authentication** (OSNMA) implementation:
  - Robustness and resilience to spoofing attacks.
- Dual-frequency multi-constellation (DFMC) shipborne receiver:
  - Compliant with maritime regulations IEC 61108-1, IEC 61108-3.
  - Application of IMO concept for multi-system receiver (MSR): MSC 401 (95) and MSC 432 (98).
- Supported GNSS signals:
  - GPS: L1, L5
  - Galileo: E1, E5a
- Operational modes:
  - Galileo only mode, GPS only mode and Galileo + GPS
- Receiver Autonomous Integrity monitoring features (RAIM).
- Output:
  - Standardized communications interfaces (IEC 61162-1 approach)



Resilient societies user needs and requirements: first ideas



Answer to user needs: advantages of Satellite technologies **today**



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OSNMA aspects as key differentiator

- Improvement of **trust** operations and information with OSNMA capability.
- OSNMA as a tool for improving **security** and **safety** applications.
- OSNMA includes capacity to detect some spoofing attacks.
- **Currently available** in SIS* with the signal aligned with OSNMA Service phase ICD** (OSNMA use confirms that received Galileo Open Navigation Data was originated by the Galileo system and has not been modified by any other source.)
- ASGARD has tested OSNMA in different ways:

EUSPA Test vectors

To assess the functional implementation

Spoofing simulations

To assess the spoofing protection

On field tests

To assess the operational features

*Signal In Space
**Interface Control Document

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Answer to User Needs: Future perspectives

Improvement of robustness:

Current constellations
+
other improved services such as EGNOS V3
+
FutureNAV program focused on LEO PNT solution

Improvement of Safety:

Enhanced Integrity solution

GNSS receiver solutions

+

EGNOS solutions

Improvement of resilience:

Current used frequencies
+
Improved signals with Galileo 2nd generation
+
New bands (Band C, K, UHF, and others)

Improvement of security:

Capability to authenticate pseudoranges

+

Capability to authenticate other constellations.

Conclusions

- OSNMA is an interesting tool to improve cybersecurity in GNSS receivers.
- Ready technology is available to be proven and experimented in real operations and use cases, in order to validate the benefits of OSNMA.
- The EGNSS programme is in a good way to keep improving the resilience throughout the improvement of Satellite technologies.
- There is a need to guide the manufacturers and solution providers through some standards to ensure the correct implementation and use of OSNMA.

Thank you for your attention !

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User Requirements Discussion and Validation

RESILIENT SOCIETIES

Antonella DI FAZIO (FDC)

European Commission

EUSPA
European Union Agency for the Space Programme

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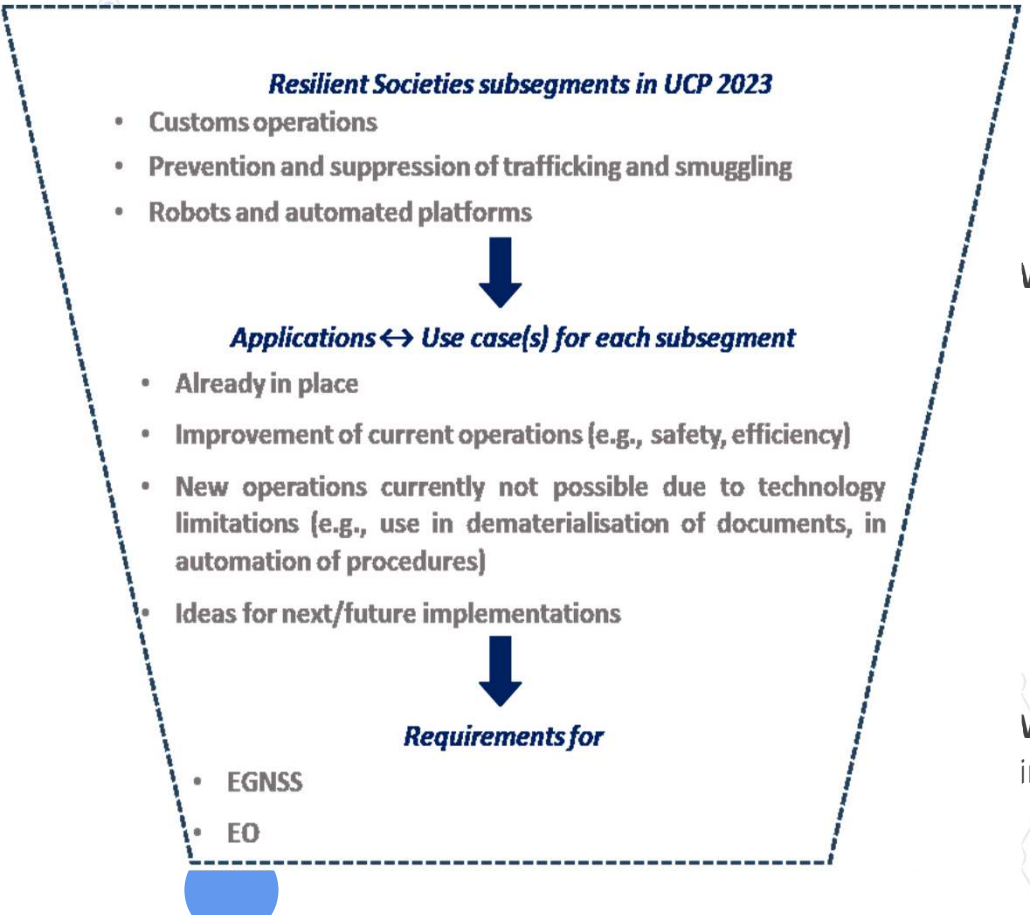
Objective

- Gathering from the stakeholders today's/future needs and requirements, and opportunities for possible exploitation
- EU Space Programme components:
  - European Global Navigation Satellite System (**EGNSS**, including **Galileo** and **EGNOS**)
  - EU Earth Observation (**EO**) system **Copernicus**
  - EU Secure Satellite Constellation for enhanced communication capacities to governmental users and business (**GOVSATCOM** and **IRIS²**)
  - Space Situational Awareness (**SSA**)
- Market segment Resilient Societies/subsegments (**<u>for the first time, starting with 6 applications</u>**):
  - *Customs operations (3 applications)*
  - *Prevention and suppression of trafficking and smuggling (2 applications)*
  - *Robots and automated platforms (1 application)*

Methodology



- RUR (**Report on User Requirements**):
  - Living and evolving document periodically updated by EUSPA with the most up-to-date user needs and requirements
  - Acting as a reference to the EU Space Programme and for the Resilient Societies community (users and industry)

Where we are now:

- **Draft RUR** including requirements for EGNSS and EO in the form of 7 tables
- **Inputs from stakeholders**, mainly from the user communities and entities developing solutions based on users' needs
- **Several iterations**, including during the presentation preparation
- **Draft RUR** still under review of further stakeholders

Where to go: **finalised RUR** based on today's discussions and any further inputs

Applications and use cases

Market segment	Application subsegment	Application number	Application name	Use of EU Space Components services	Use case(s)
Resilient Societies	Customs Operations	1	Digital transformation of Customs		Combination of GNSS positioning and sensors integrating different technologies for enhancing customs services/clearings at port or to a border entry point and port operations
		2	Electronic Freight Transport Information (eFTI)		GNSS in eFTI for dangerous goods GNSS in eFTI for eCMR (electronic Convention des Marchandises par Route)
		3	National and international fast corridors		National fast corridor for the exhibition of goods in the dry port of La Spezia (Santo Stefano Magra) instead of the port of La Spezia
	Prevention and suppression of trafficking and smuggling	4	Risk assessment in supply chain and trade		GNSS in eCMR with EBSI (European Blockchain Services Infrastructure) GNSS in preventing illegal trafficking in the West Mediterranean Sea
		5	Safeguard of cultural heritage		PITCH (Prevention of Illicit Trafficking of Cultural Heritage) initative ANCHISE (Applying New solutions for Cultural Heritage protection by Innovative, Scientific, social and economic Engagement) project
	Robots and automated platforms	6	UXO risk assessment and clearance		GNSS in UXO survey, UXO clearance, UXO survey control and delivery of UXO clearance certificate for the French Ministry of Defence GNSS in UXO finding

Use of GNSS

Combined use of EO and GNSS

GNSS and EO combined/integrated with other sensors/ technologies

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GNSS user requirements for **Application 1: Customs operations - Digital transformation of Customs**

GNSS user requirements for Application 1: Customs operations - Digital transformation of Customs		
Accuracy	Horizontal	2 m
	Vertical	2 m
Availability	Urban canyon	No
	Natural canyon	Yes
	Canopy	Yes
	Indoor	Yes
	Better than 95%	High
	Better than 99%	Medium
Robustness		High
Integrity and reliability		High
Size, weight, autonomy	Relevance	Yes
	Time a device can run	>12 months
TTFaF	In hot start	Less than a minute
Service area	Geographical coverage	National/Regional/Worldwide

GNSS user requirements for **Application 2: Customs operations - Electronic Freight Transport Information (eFTI)**

GNSS user requirements for Application 2: Customs operations - Electronic Freight Transport Information (eFTI)		
Accuracy	Horizontal	2 m (this is the required minimum distance to recognise which road/side of the road/direction)
	Vertical	3 m (this is the required minimum distance in the case of transport road and bridges to distinguish the height, being 4.8 m the maximum height of a road vehicle allowed to transit under bridges by regulation)
Availability	Urban canyon	Yes
	Natural canyon	Yes
	Canopy	Yes
	Indoor	No (in tunnels there are other technologies such as cameras)
	Better than 95%	High
	Better than 99%	Medium
Robustness		High
Integrity and reliability		High
Size, weight, autonomy	Relevance	Yes
	Time a device can run	>12 months for intermodal shipment ≤1 month for road-only shipment
TTFaF	In hot start	About 1 minute
Service area	Geographical coverage	National/Regional/European

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GNSS user requirements for **Application 3: Customs operations - National and international fast corridors**

GNSS user requirements for Application 3: Customs operations - National and international fast corridors		
Accuracy	Horizontal	2 m
	Vertical	2 m
Availability	Urban canyon	No
	Natural canyon	Yes
	Canopy	Yes
	Indoor	Yes
	Better than 95%	High
	Better than 99%	Medium
Robustness		High
Integrity and reliability		High
Size, weight, autonomy	Relevance	Yes
	Time a device can run	>12 months
TTFaF	In hot start	Less than a minute
Service area	Geographical coverage	National/Regional/Worldwide

GNSS user requirements for **Application 4: Prevention and suppression of trafficking and smuggling - Risk assessment in supply chain and trade**

GNSS user requirements for Application 4: Prevention and suppression of trafficking and smuggling – Risk assessment in supply chain and trade		
Accuracy	Horizontal	2 m
	Vertical	2 m
Availability	Urban canyon	No
	Natural canyon	Yes
	Canopy	Yes
	Indoor	Yes
	Better than 95%	High
	Better than 99%	Medium
Robustness		High
Integrity and reliability		High
Size, weight, autonomy	Relevance	Yes
	Time a device can run	>12 months
TTFaF	In hot start	Less than a minute
Service area	Geographical coverage	National/Regional/Worldwide

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EO user requirements for **Application 5: Prevention and suppression of trafficking and smuggling - Safeguard of cultural heritage**

EO user requirements for Application 5: Prevention and suppression of trafficking and smuggling - Safeguard of cultural heritage	
PITCH	
Users	WCO and UNESCO, LEAs and Academics
Operational scenario	Ports and open sea, throughout the shipment/journey
Size of area of interest	Local/Regional/Worldwide
Scale	Ten-meter level
Frequency of information	Every hour
Data type/Spectral range	Optical
Other (if applicable)	Availability of the service to the involved Authorities throughout the shipment
Temporal resolution	N/A
ANCHISE	
Users	LEAs and Academics
Operational scenario	Sites protection and data processing alert system
Size of area of interest	Local/Regional (Mediterranean area)
Scale	50 cm to 15 m (images from satellites)/5 cm to 5 mm (images from drones)
Frequency of information	Every day
Data type/Spectral range	Optical, synthetical (SAR) (images from satellites)/spatial, volumetric (images from drones)
Other (if applicable)	N/A
Temporal resolution	Variable, depending on the coverage/source. 1 to 16 days
Service Provider Offer/ What the service does	Provision of images (e.g., standardised, customized) to be suitably used for the automated identification and detailed analysis of potential traces of illicit excavation and looting, through the models of the data processing alert system
Service Provider Offer/ How does the service work	Utilising photogrammetric scanning technology for the comprehensive examination of archaeological sites
Satellite data sources	NASA and ESA open data + proprietary imagery (Airbus, Maxar, Planet)

GNSS user requirements for **Application 6: Robots and automated platforms - UXO risk assessment and clearance**

GNSS user requirements for Application 6: Robots and automated platforms - UXO risk assessment and clearance		
Accuracy	Horizontal	1-10 cm
	Vertical	1-10 cm
Availability	Urban canyon	Yes
	Natural canyon	Yes
	Canopy	Yes
	Indoor	No
	Better than 95%	High
	Better than 99%	Medium
Robustness		High
Integrity and reliability		High
Size, weight, autonomy	Relevance	Yes
	Time a device can run	>8h
TTFaF	In hot start	Less than a minute
Service area	Geographical coverage	National

EO user requirements for **Application 6: Robots and automated platforms - UXO risk assessment and clearance**

EO Requirements for Application 6: Robots and automated platforms - UXO risk assessment and clearance	
Users	Companies operating in UXO surveys and UXO clearance
Operational scenario	Open environment, rural and urban areas
Size of area of interest	Local/Regional/Worldwide
Scale	Meter level
Frequency of information	Every hour
Data type/Spectral range	Optical (today commercial digital maps are used)
Other (if applicable)	Availability of the service to the involved Authorities throughout the shipment
Temporal resolution	N/A
Service Provider Offer/ What the service does	N/A
Service Provider Offer/ How does the service work	N/A
Satellite data sources	N/A

Next steps/perspectives

- RUR to be based on feedbacks collected during today's discussions
- Distribution among European Commission and potentially other stakeholders
- Revision based on received comments
- Final version to be made publicly available

- *Very promising subsegments*
- *Very interested community*
- *First iteration on the basis of what is familiar for the stakeholders*
- *Common expectation for satellite technologies' ability to improve current operations, or to enable new operations today not possible, or to stimulate ideas for future implementations*
- *Integration with other sensors, technologies and techniques*
- *Need for awareness activities to enlarge the stakeholders' base*
- *Need for more practice/implementations to collect other use cases and/or refine needs and requirements (for the future)*
- *A lot of potential for further iteration(s)*

Thank you for your attention !
Questions ?

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Use of Satellite Communications (SatCom)

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RESILIENT SOCIETIES

Xabier MENDAZA (FDC)

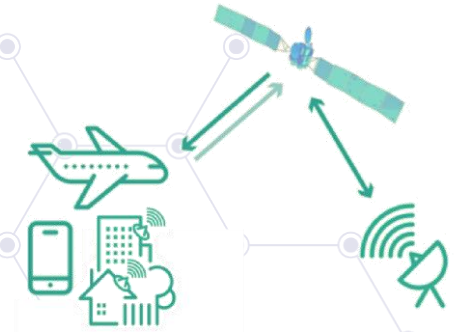
Satellite Communications in Europe

- Communications services are provided by satellites that relays and amplifies radio telecommunication signals, with many different uses (television, phone, internet) and applications (civilian, military, segments)

- This type of communications is growing rapidly at worldwide level.

- Status at European level:
  - The EU Space Programme considers SatCom as one of its key components
  - EU Regulation published establishing the Union Secure Connectivity Programme for 2023-2027
  - Target: EU Secure Satellite Constellation for enhanced communication capacities to governmental users and business (**GOVSATCOM** and **IRIS²**)

GOVernmental
SATellite
COMmunications



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Applications and Use Cases

- SatCom component will benefit to all Market segments (many uses in Resilient Societies)
- Examples of new Resilient Societies applications:
  - *CUSTOMS INTERCONNECTIVITY EXCHANGE:*
    - Many National Authorities rely on information sharing in some operations against illegal activities.
    - The use of Governmental secured satellite channel can contribute to the establishment of a robust and resilient environment for communication/data exchange.
  - *eFTI ARCHITECTURE IMPLEMENTATION:*
    - Secured satellite communications may contribute to strengthen the implementation of the eFTI framework across EU.
    - Added value in coping with the required authenticated and secured connectivity and high demand of connections.
- Requirements to be set for each application:

  - Geographical Coverage
  - Data rate (Throughput)
  - Latency
  - Availability
  - Confidentiality
  - Integrity
  - Specific frequency bands
  - Types of terminal

Next steps/perspectives

- Next RUR versions will add SatCom information
- Use Cases and applications will continue to expand through:
  - EUSPA's fostering activities
  - User participation
- Many interesting opportunities and services to come. We encourage to:
  - Visit relevant links:
    - *European Union Agency for the Space Programme (EUSPA)*: https://www.euspa.europa.eu/european-space/govsatcom
    - *ENTRUSTED project*: https://entrusted.eu/
  - Contact EUSPA (Philipp.Scheidemann@euspa.europa.eu)

Thank you for your attention !
Questions ?

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