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SESAR 2020 – PJ.17-03

SWIM TI “Green Profile”

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SWIM WS, EUROCONTROL 11/12/2019

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Introduction on SESAR 2020 PJ.17-03 SWIM TI Green Profile

1. Objective

The PJ.17-03 solution aims at enabling ground/ground civil-military SWIM-based coordination and cooperation at SWIM Technical Infrastructure level

2. Partners



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Air Defence military expectations

1. Availability of ATM flight data for Air Policing Situational Awareness

2. Exchange of sensitive data

3. Warning Information (QRA/Air Policing)

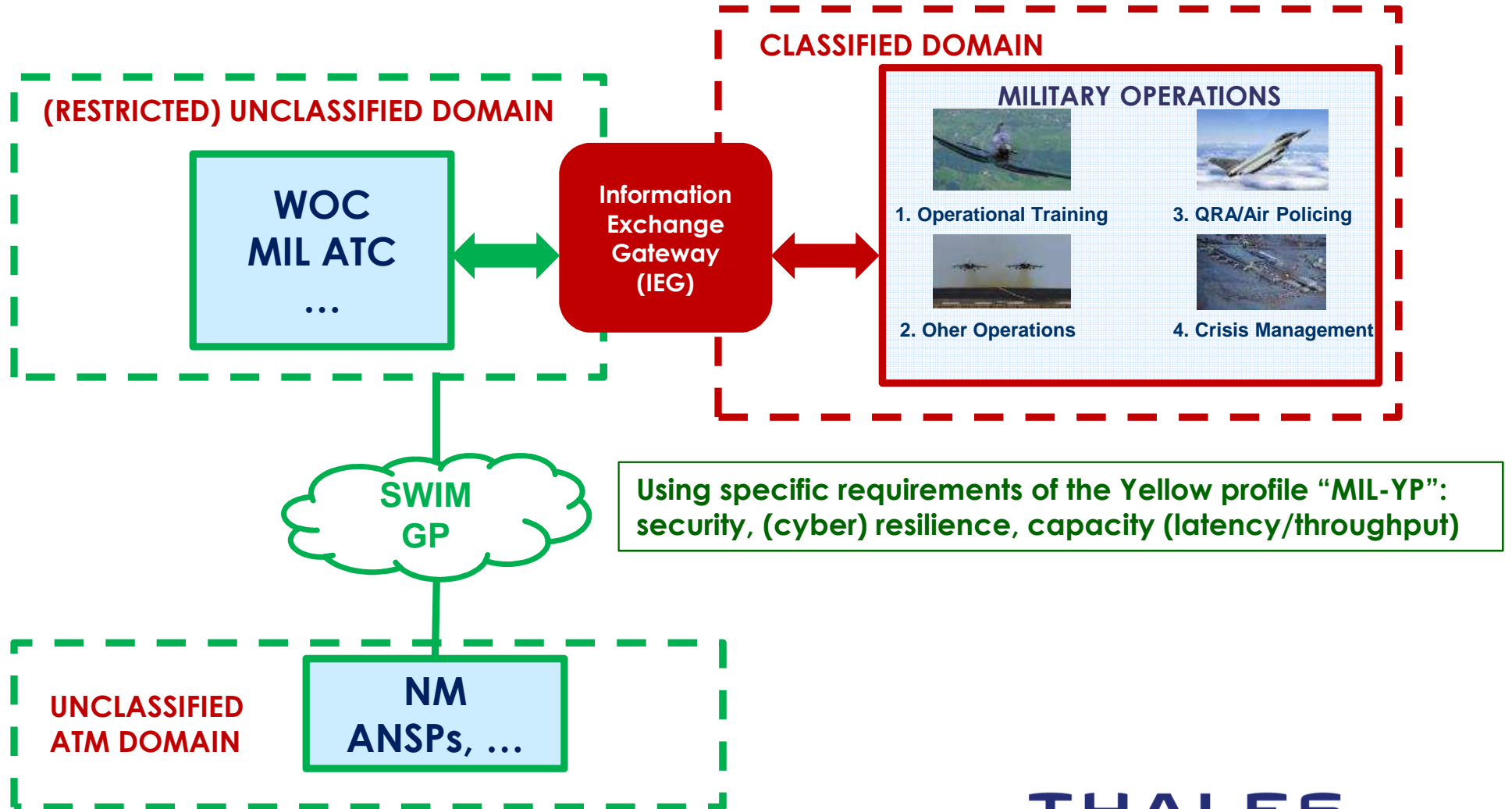
Any Military information provided to civil ATC for safety purpose, Examples: Quick Reaction Alert (QRA) with associated information:

- Track data about the non-squawker flights (detection by military primary radar)
- Current trajectory of the QRA interceptor (no flight plan)

4. Crisis Management (Search And Rescue (SAR), disaster,)

Air surveillance and Air traffic should be controlled by military C2 over the crisis area, providing surveillance tracks, and closely controlling the traffic.

Military Information sharing Concept with the SWIM Green Profile



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SWIM Green Profile versus Yellow Profile

Yellow Profile is used to support main civil-military information exchanges
(EUROCONTROL Specification for SWIM Technical Infrastructure (TI) Yellow Profile, Edition 1.0)

The Green Profile provides capabilities such as:

- 1. 1st step toward (cyber) resilience**
Independent specific resilience mechanisms handling identified
- 2. Secure sensitive data distribution**
Relies, among other mechanisms, on message-level security (end-to-end)
- 3. Capacity (latency/throughput) matching operational specific needs**
Consumption of flight data (OLDI over GP)
System tracks in to support air safety / crisis (QRA, SAR etc.)

Main (MIL) SWIM GP technical characteristics

■ **SESAR 2020 Wave 1&2 SWIM TI Green Profile = future proposed extensions to EUROCONTROL SWIM TI YP 1.0 for supporting civil-military exchanges**

- YP is the GP baseline

■ **Interoperability: integrated bindings structured as follows**

- Contract and delegated responsibilities at SWIM-enabled application service interface
- Contract and delegated responsibilities at IP network interface
- Protocol stack
- Security

Bindings based on AMQP 1.0, SOAP and HTTP with various levels of security

■ **Support of time-decoupling between SWIM-enabled applications**

■ **(Cyber) resilience**

- “Lego blocks” as cross-cutting as possible among bindings

■ **Capacity**

- Check that identified GP capacity expectations are feasible with AMQP 1.0

SWIM Green Profile (YP-MIL) Roadmap

Wave 1: Verification of the GP Technical Specifications (TRL4 maturity)

- Gate TRL4 scheduled early February 2020
- SWIM GP implementation performed on top YP for PJ14.03 participants (TOPSKY for THALES)

Wave 2: Validation of the GP (TRL6 maturity) in relation with applications supporting civil-military coordination

- Additional technical requirements (security, resilience...)
- GP exercise in 2021 and Gate TRL6 early 2022

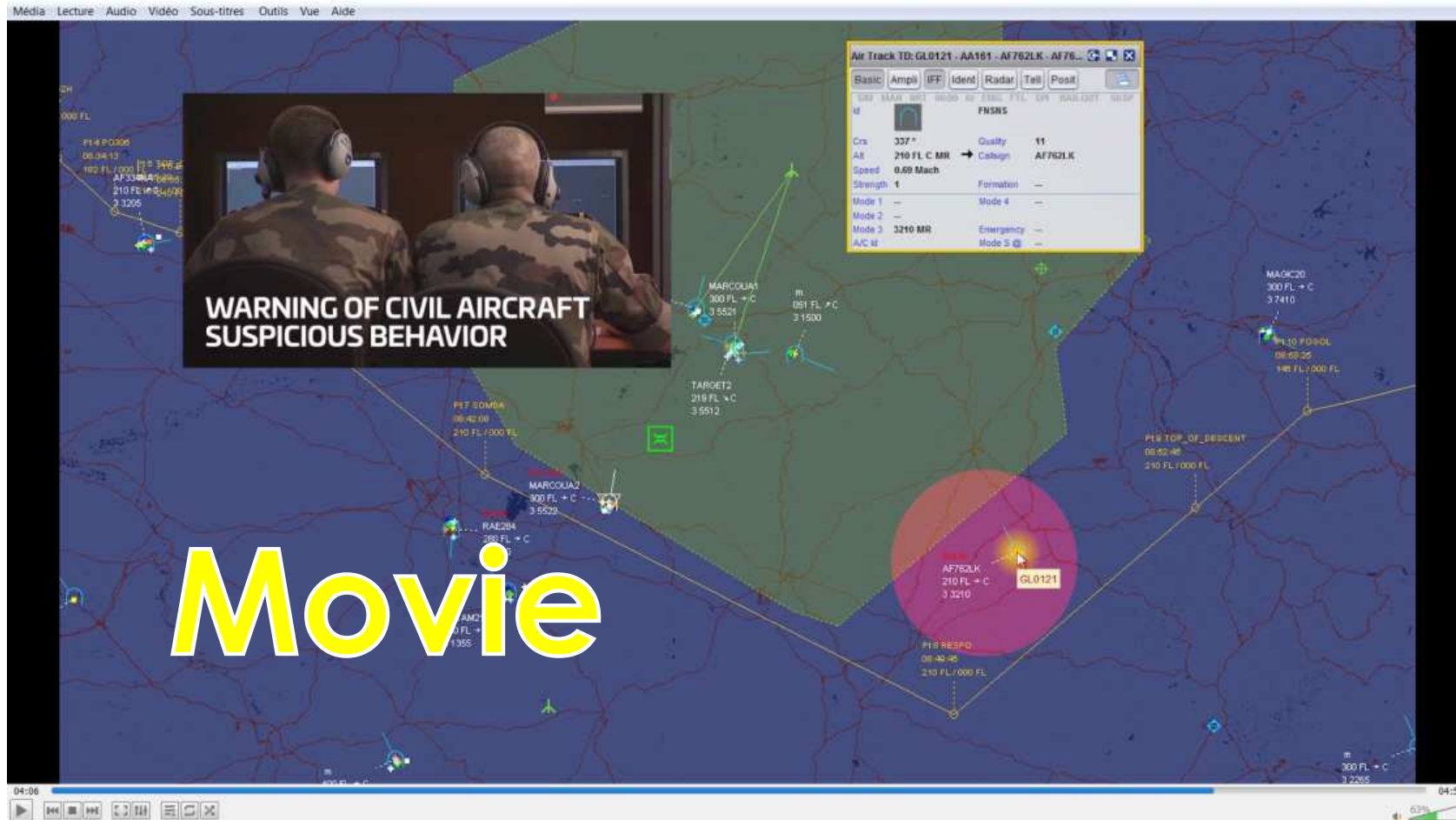
Post Wave 2 envisaged roadmap

- No earlier than Q2 2022: proposal of GP extensions to YP standardization (YP-MIL)
- By 2027: YP-MIL IOC expected for military C2 systems (ATC,AD), civil ATC systems and NMOC (FOC by 2030?)
- For information: BP branch of GP R&D to start post Wave 2 (address FO + MT at execution time)

Qualitative High Level Economic Appraisal performed for GP in TRL4, its cost facet is in line with the European ATM Master Plan 2015, so civil-military interoperability at lowest cost, because GP relies on extensions of YP (and BP)

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Illustration of SWIM GP employment for Training



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Discussions

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