

*Surveillance Seminar for the NAM/CAR/SAM Region
Port of Spain, 18-20 June 2007*

European Surveillance Strategy

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EUROCONTROL
Surveillance Domain Manager

Content

The EUROCONTROL Organisation

The EUROCONTROL Agency

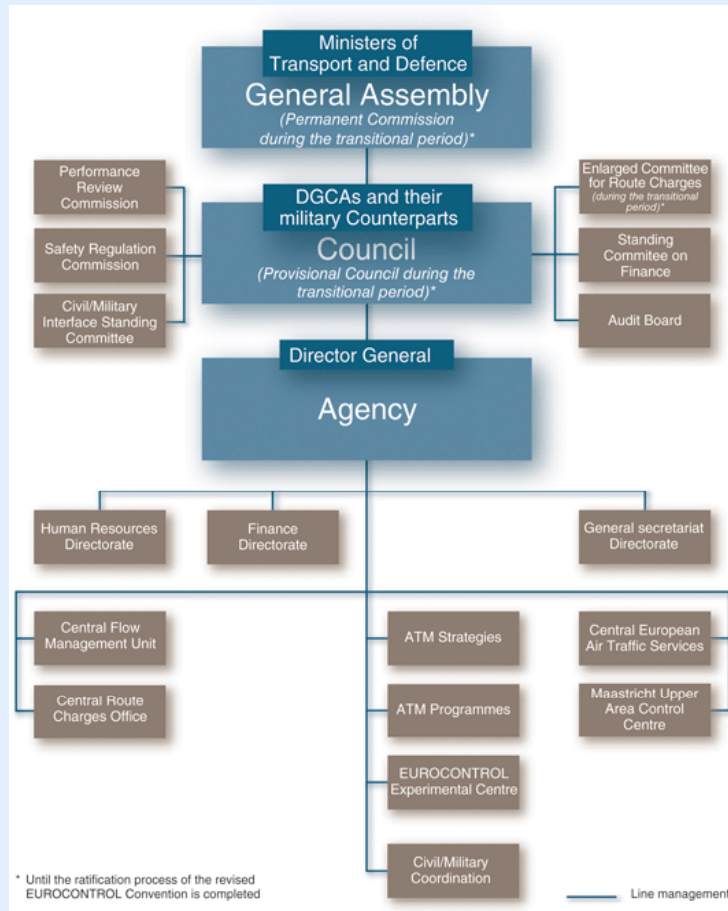
The Surveillance Strategy for ECAC

Single European Sky - Implementing Rules (IR)

Single European Sky ATM Research (SESAR)

Eurocontrol Products and Tools Strategy

The EUROCONTROL Organisation 1/2

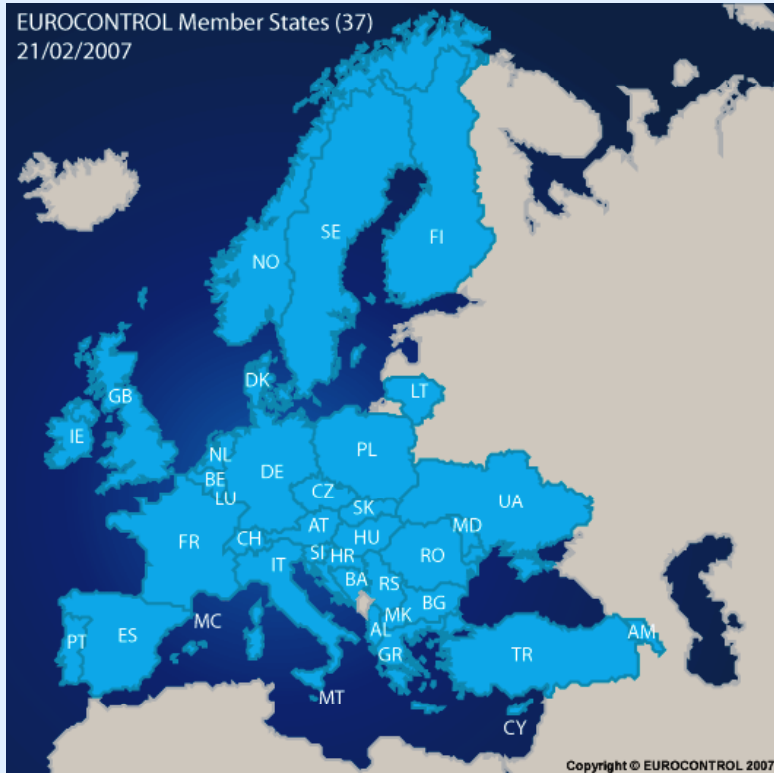


EUROCONTROL

is the European Organisation for the Safety of Air Navigation.

EUROCONTROL is a **civil and military Organisation** and has as its primary objective the development of a seamless, pan-European Air Traffic Management (ATM) system.

The EUROCONTROL Organisation ^{2/2}



Currently, the
EUROCONTROL Organisation
has 37 Member **States**



On 8 October 2002, the Member States and the **European Community** have signed a Protocol on the **Accession** of the European Community to EUROCONTROL.

Content

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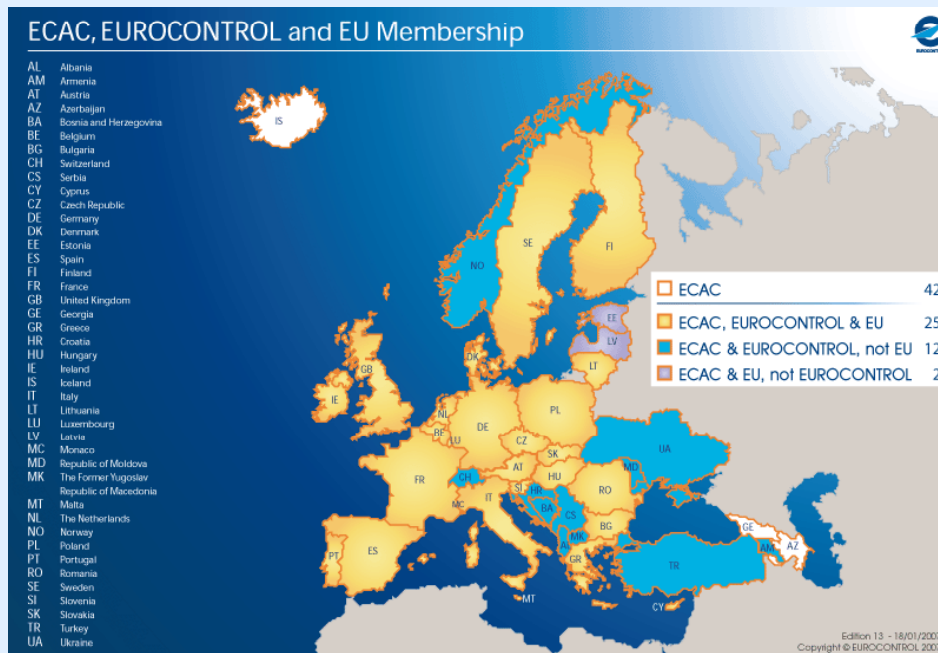
Eurocontrol Products and Tools Strategy

EUROCONTROL Agency 1/4

ECAC

European Civil Aviation Conference

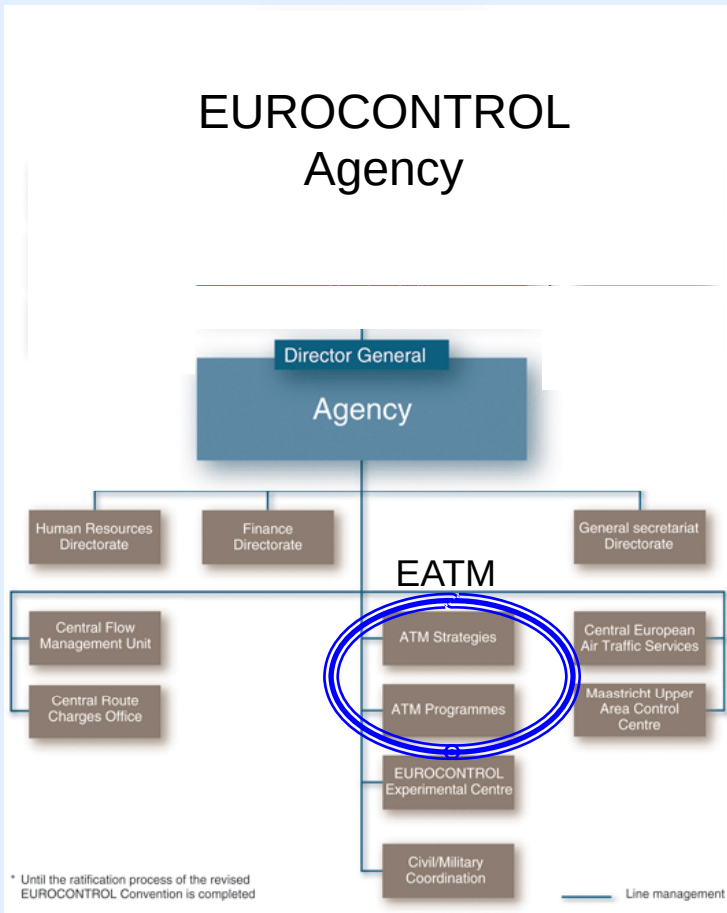
42 Member States



The EUROCONTROL Agency develops, coordinates and plans for implementation of short-, medium- and long-term pan-European air traffic management strategies for ECAC involving:

- national authorities,
- air navigation service providers,
- civil and military airspace users,
- airports,
- industry,
- professional organisations and
- relevant European institutions

The EUROCONTROL Agency ^{2/4}



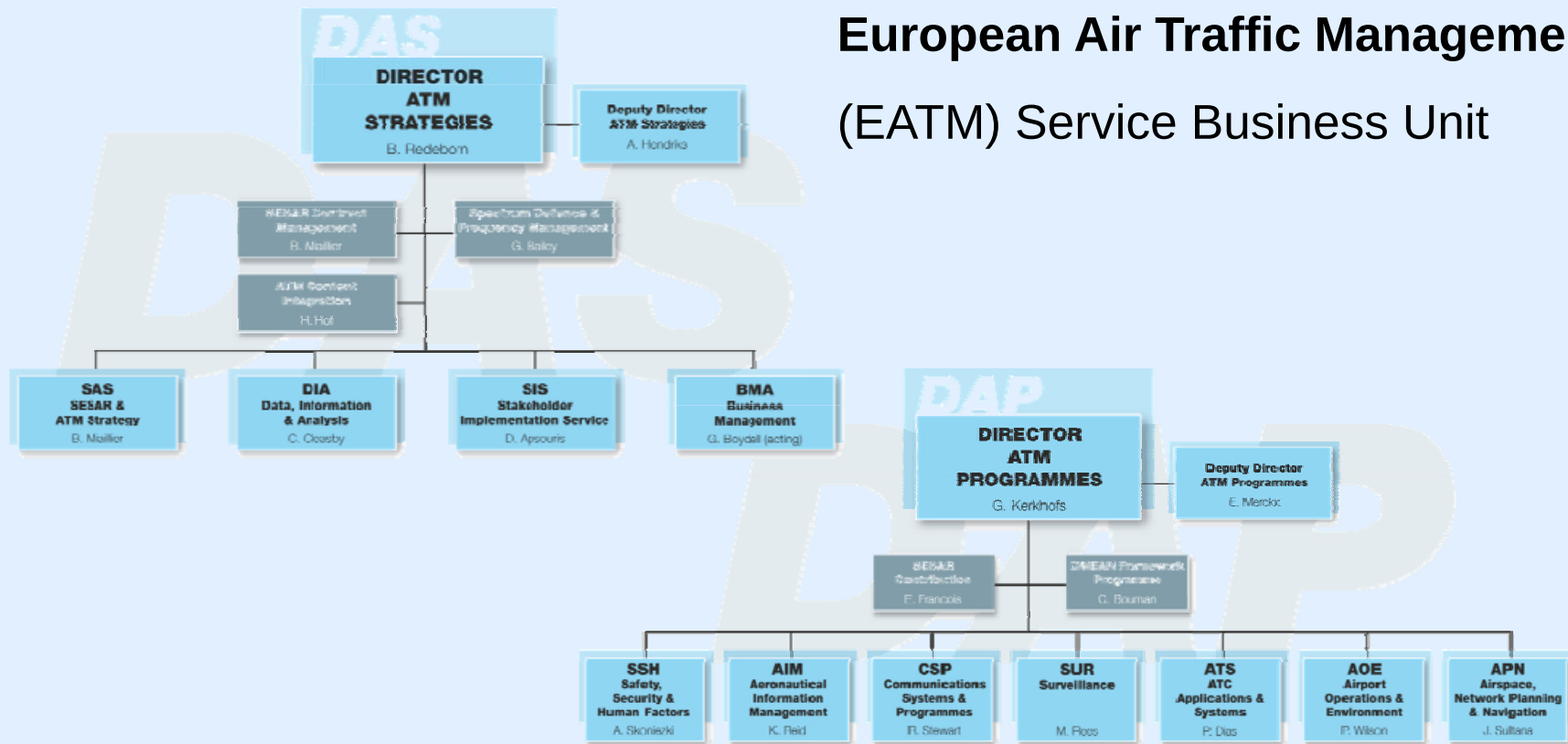
The EUROCONTROL Agency is the “working organisation” of EUROCONTROL:

EUROCONTROL premises:

- Brussels (BE)
- Bretigny sur Orge (FR)
- Luxembourg (LUX)
- Maastricht (NL)
- Karlsruhe (DE)
- Prague (CZ)
- Budapest (HU)

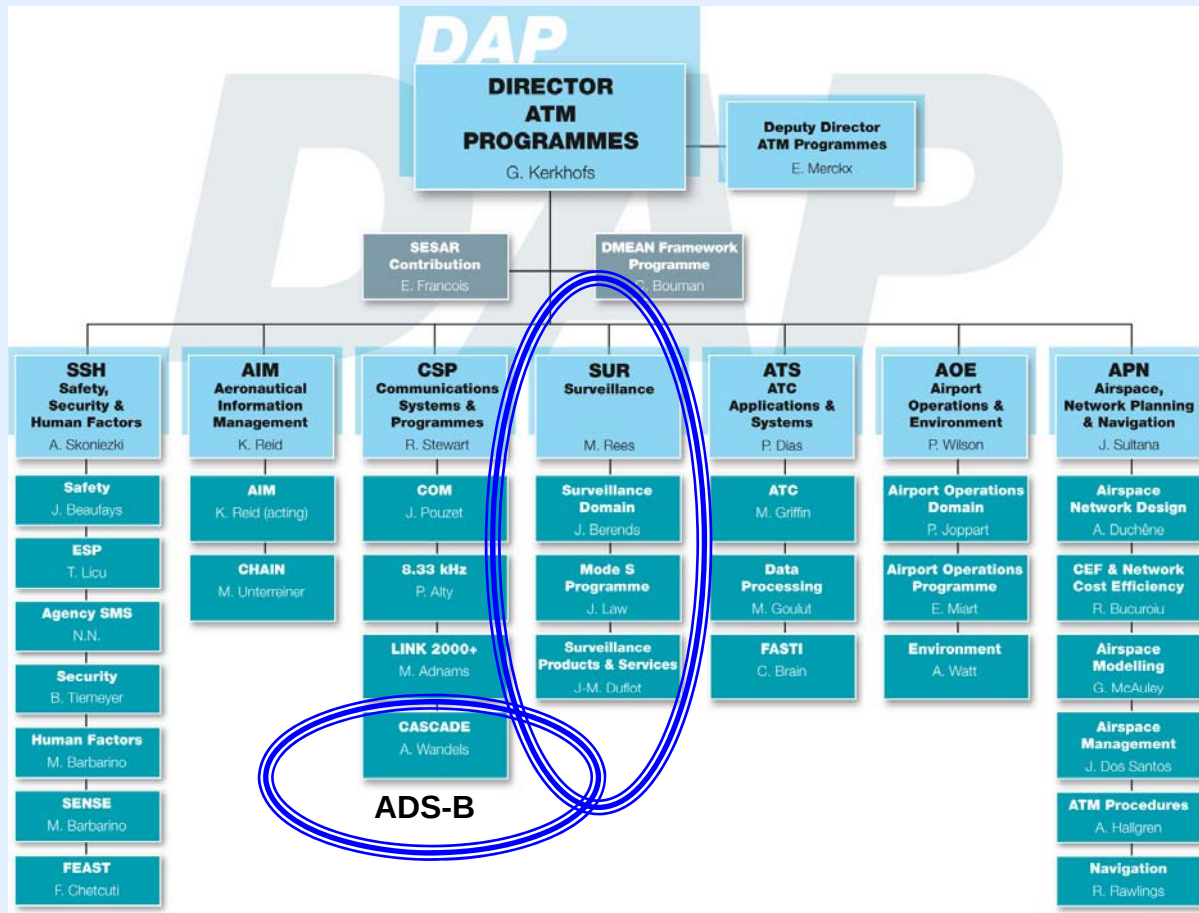
EUROCONTROL Agency 3/4

European Air Traffic Management (EATM) Service Business Unit



EUROCONTROL Agency 4/4

EATM – Directorate ATM Programmes



Content

The EUROCONTROL Organisation

The EUROCONTROL Agency

The Surveillance Strategy for ECAC

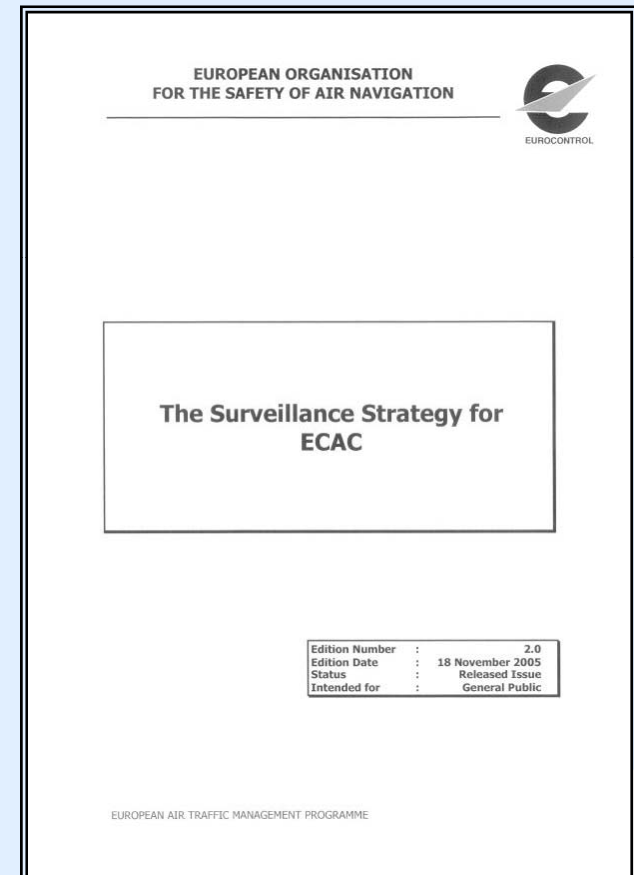
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Eurocontrol Products and Tools Strategy

Surveillance Strategy for ECAC 1/8

- Updated in 2005
- In cooperation with Stakeholders
- It does not mandate the use of a particular surveillance technology or technique
- Air Navigation Service Providers should select their systems based on:
 - Operational requirements
 - Cost Benefit assessment
 - Safety Assessment
- Anticipating on “Required Surveillance Performance” (RSP)



Surveillance Strategy for ECAC ^{2/8}

The Surveillance Strategy for En-Route and TMA airspace is based on three specific Surveillance principals for ground based surveillance.

1. Independent Non-cooperative surveillance

- to track non-cooperative targets that will be provided by Primary Surveillance Radar (PSR)

2. Independent Cooperative surveillance

- to track cooperative targets that can be enabled by Secondary Surveillance Radar (SSR) or Mode S or (1090 MHz) Multilateration

3. Dependent Cooperative surveillance

- based on Automatic Dependent Surveillance-Broadcast (ADS-B)

Surveillance Strategy for ECAC 3/8

Within En-Route and TMA airspace, the key operational drivers for the surveillance strategy are illustrated in figure 1.

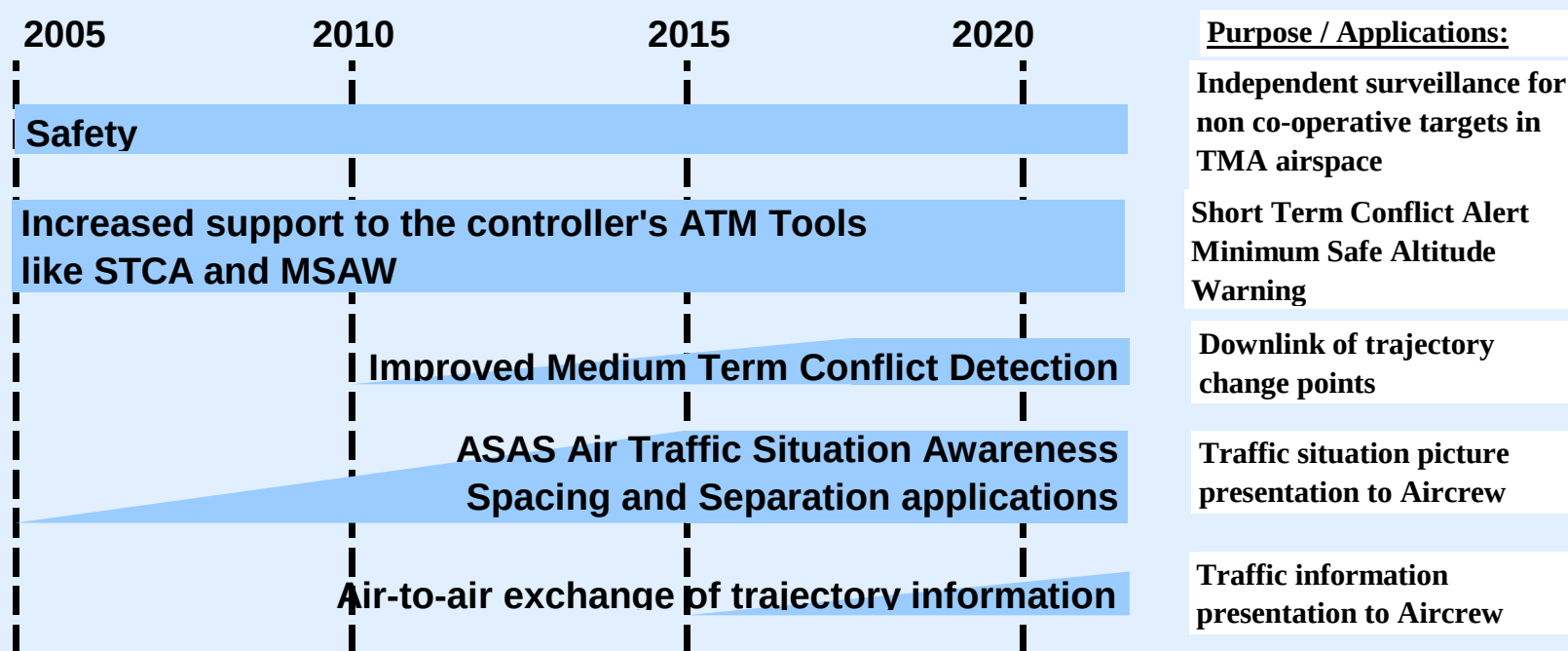


Figure 1. Key Operational Drivers for En-Route and TMA Surveillance Strategy

Surveillance Strategy for ECAC 4/8

The strategy for the ground based surveillance infrastructure to enable the ATM operational En-Route and TMA applications over the next twenty years is illustrated in figure 2.

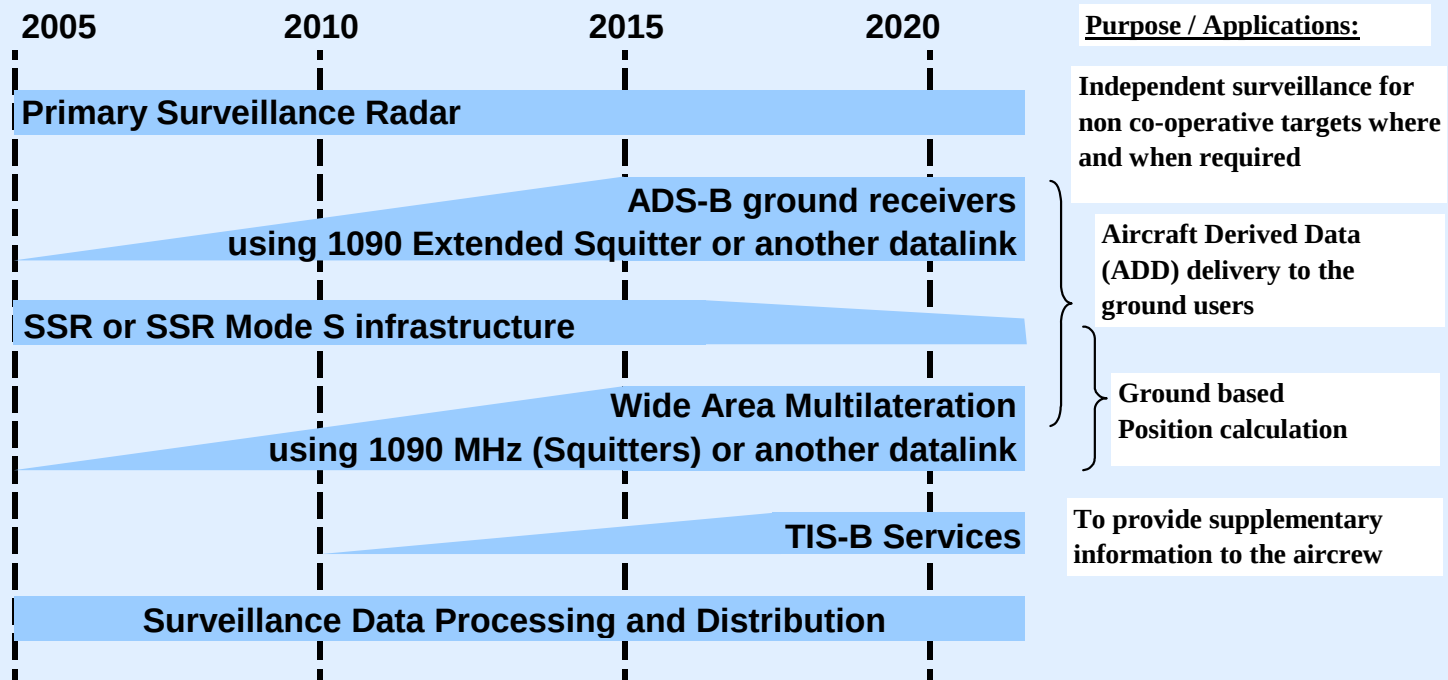


Figure 2. Ground based surveillance infrastructure for En-Route and TMA

Surveillance Strategy for ECAC 5/8

At Airports, the key operational drivers for the surveillance strategy are illustrated in figure 3.

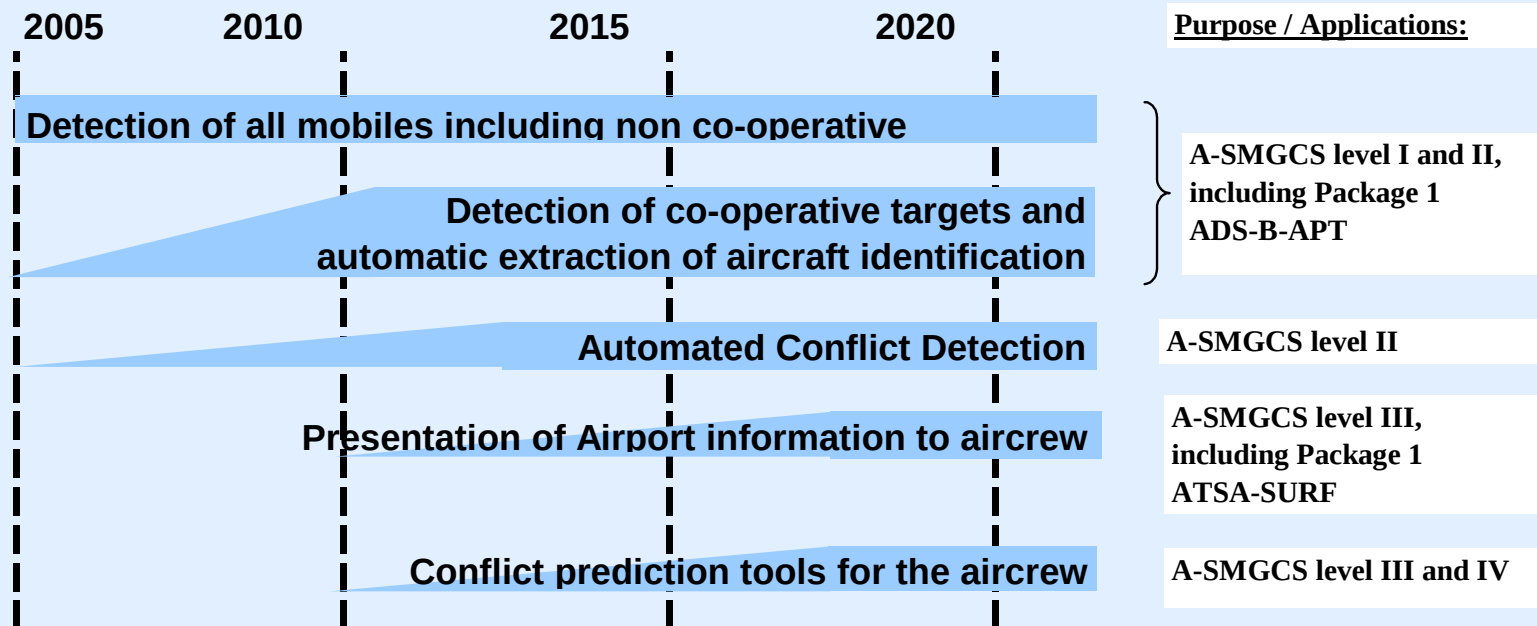


Figure 3. Key Operational Drivers for Airport Surveillance Strategy

Surveillance Strategy for ECAC 6/8

The strategy for the Airport surveillance infrastructure to enable the ATM applications over the next twenty years is illustrated in figure 4.

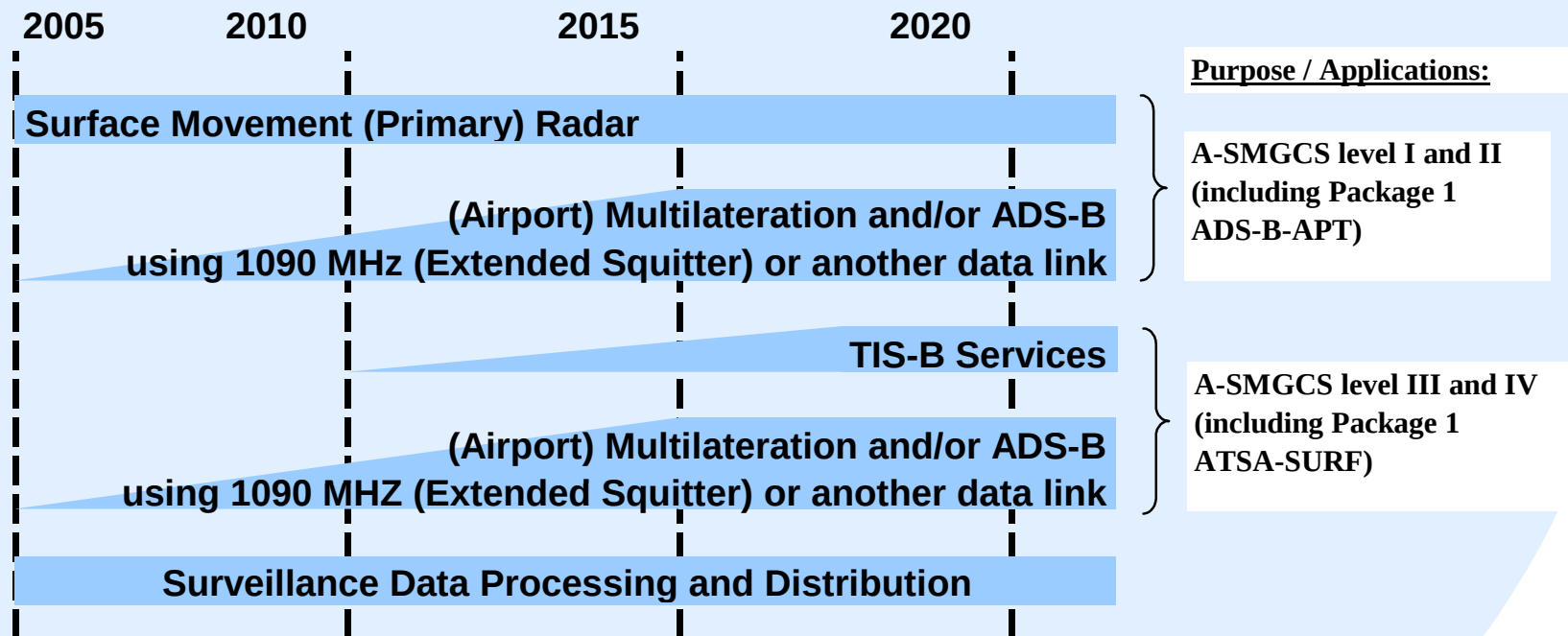


Figure 4. Surveillance Strategy at the Aerodrome

Surveillance Strategy for ECAC 7/8

The strategy for the Airborne surveillance infrastructure to enable the ATM applications over the next twenty years is illustrated in figure 5.

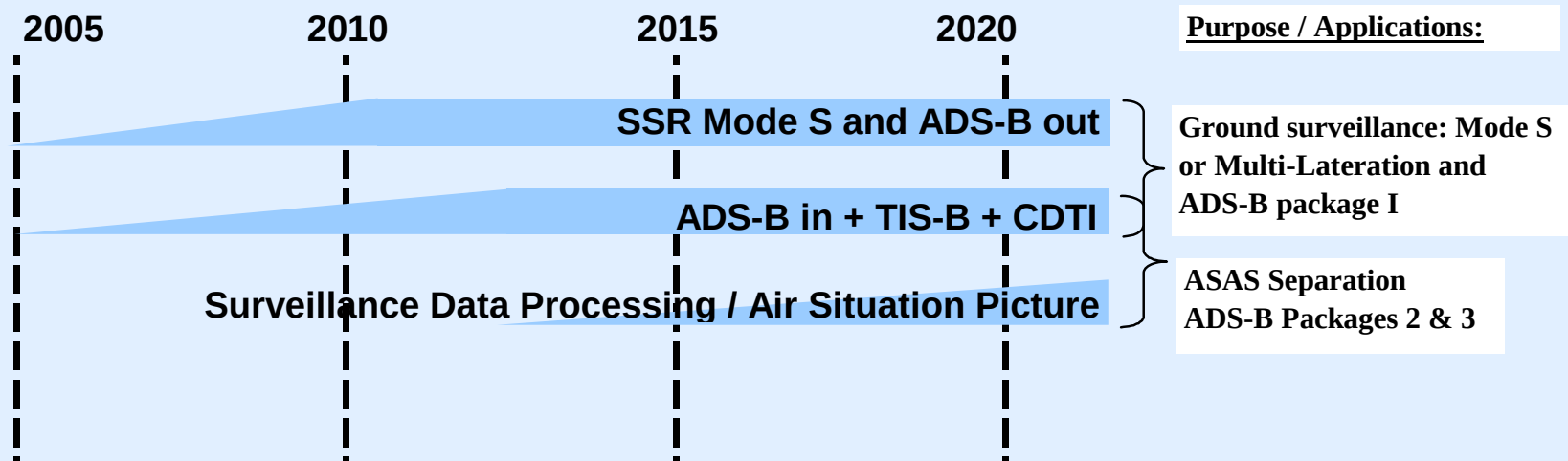


Figure 5. Airborne Surveillance Strategy

Surveillance Strategy for ECAC 8/8

Status of En-Route/TMA Surveillance deployments in ECAC

Primary Surveillance Radar	Widely deployed in “major” TMA’s Also En-Route (like UK, DE)	Total about 100 PSR’s combined with SSR (Mode-S)
Secondary Surveillance Radar	Widely deployed in En-Rout and TMA	More then 300 civil SSR + Mode-S radars
SSR Mode-S	Widely deployed in “core area” of Europe and beyond	Currently more then 100 Mode-S radars (most civil but some military)
Wide Area Multilateration	Implementation and deployment is accelerating in Europe	In 2 States operationally used for ATC services More planned in next years
ADS-B “out” ground surveillance	Local deployment in Non Radar Areas, validation on going	Operationally in Sweden with VDL Mode4

Content

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The EUROCONTROL Agency

The Surveillance Strategy for ECAC

Single European Sky – Implementing Rules (IR)

Single European Sky ATM Research (SESAR)

Eurocontrol Products and Tools Strategy

SES Implementing Rules

Single European Sky – Implementing Rule (SES IR)

- High Level requirements that becomes a law in the European Community States
- (Interoperability) Implementing Rules can be supported by “Community Specifications”
- Two Surveillance SES Implementing Rules in preparation
 - Mode S Interrogator Code Allocation
 - Surveillance Performance and Interoperability

Content

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The EUROCONTROL Agency

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SESAR

SESAR: Single European Sky (SES) ATM Research (Programme)

The objectives of the SESAR programme, a **joint initiative of EUROCONTROL and the European Commission**, are to eliminate the fragmented approach to ATM, transform the European ATM system, synchronise the plans and actions of the different partners and federate resources.

SESAR will be run in three major phases:

Definition Phase (2005-2008)

Development Phase (2008-2013)

Deployment Phase (2014-2020)

The SESAR **Definition Phase** was officially launched on November 17th 2005.

Content

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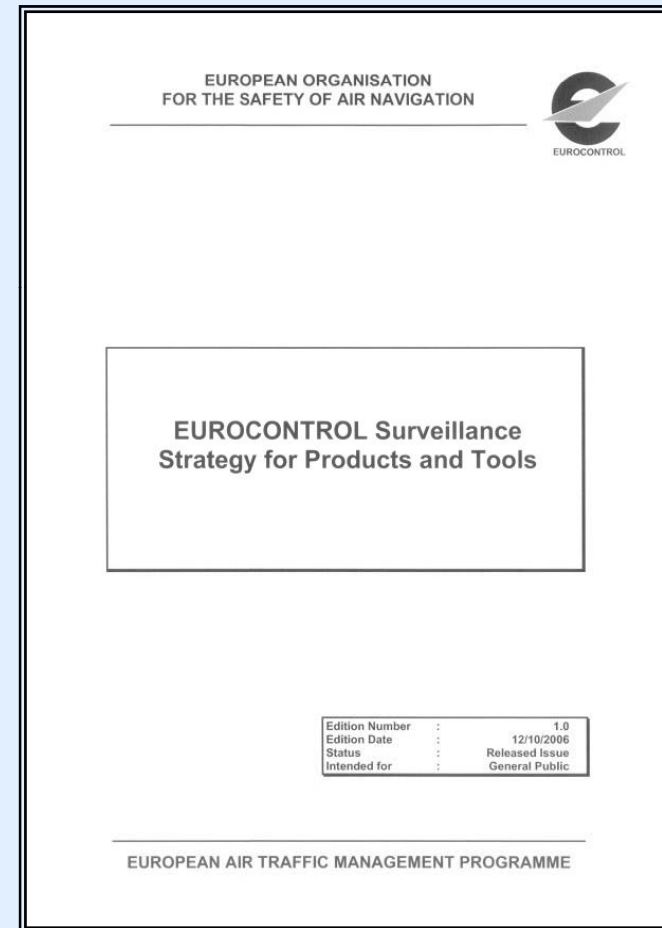
Surveillance

Products & Tools Strategy ^{1/7}

EUROCONTROL develops and maintains a number of Products and Tools which can be categorised as follows:

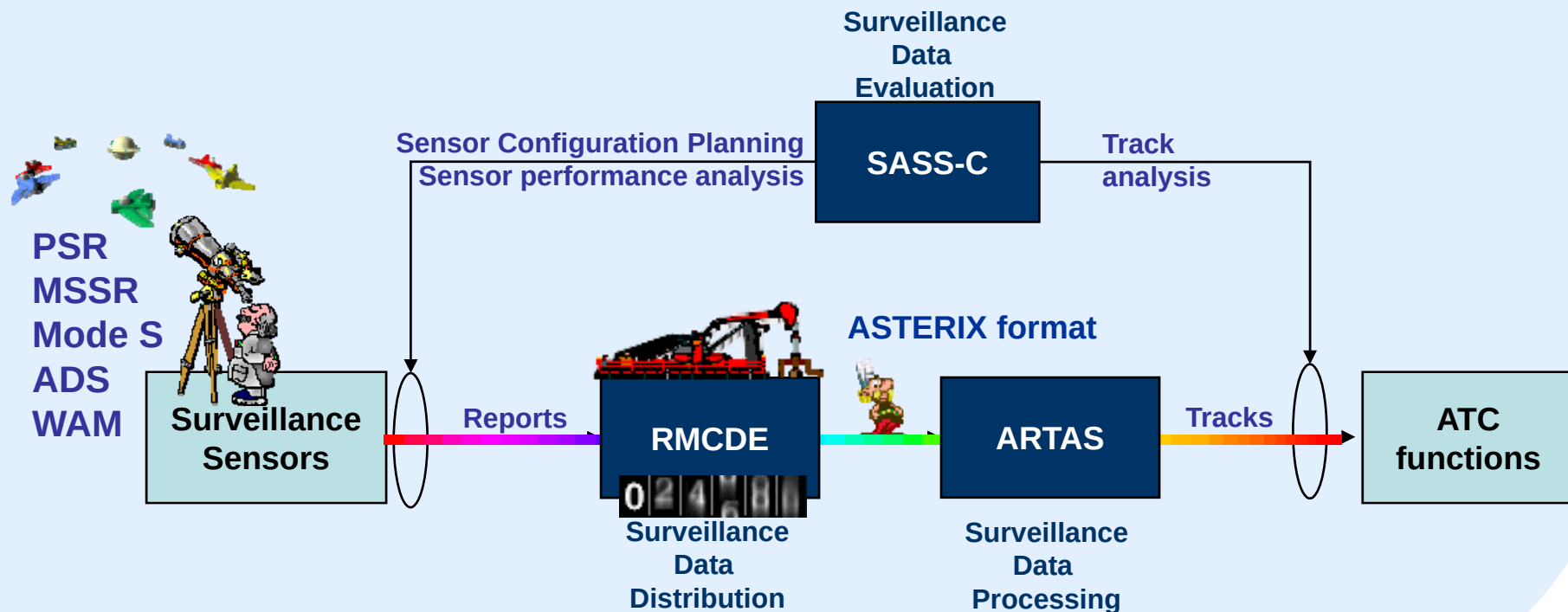
- for **ATM operational use**;
- to **assess operational systems** or new surveillance concepts or techniques;
- to support EUROCONTROL Programmes or Domain activities.

The objective of the surveillance products and tools strategy is to define an evolutionary path such that the surveillance system evolution outlined in the Surveillance Strategy for ECAC can be achieved in a timely manner.



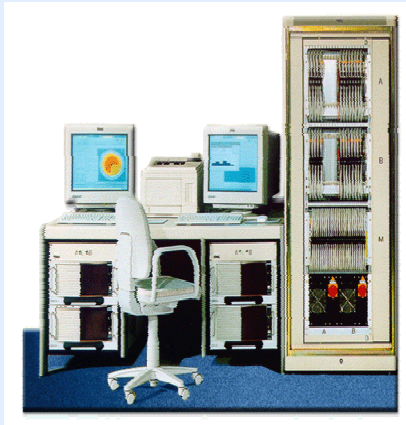
Surveillance Products & Tools Strategy ^{2/7}

The Surveillance Products and Tools Strategy includes ARTAS, RMCDE and SASS-C that are complementary products, designed to operate in the same Surveillance environment



Surveillance Products & Tools Strategy ^{3/7}

Some EUROCONTROL Products and Tools that are subject of this Strategy:



Radar Message Conversion & Distribution Equipment

- Network node for surveillance data distribution networks
- Surveillance data front-end processor and distribution system in an ATS Unit environment

Surveillance Products & Tools Strategy ^{4/7}

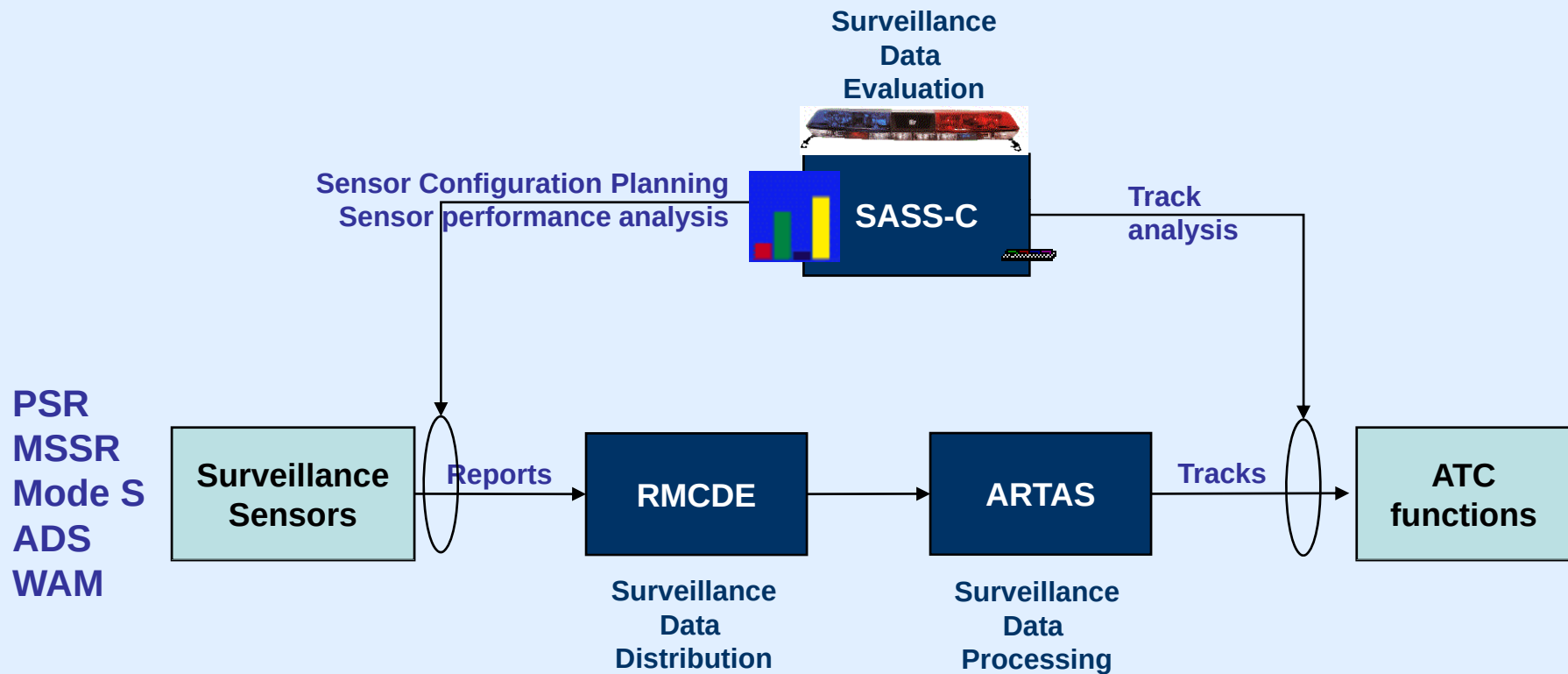
Some EUROCONTROL Products and Tools that are subject of this Strategy:



ATM
suRveillance
Tracker
And
Server

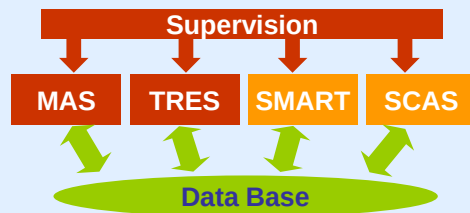
- Europe-wide distributed Surveillance Data Processing System

Surveillance Products & Tools Strategy 5/7



Surveillance Products & Tools Strategy ^{6/7}

Some EUROCONTROL Products and Tools that are subject of this Strategy:



Surveillance Analysis Support System for Centre

SASS-C Toolbox:

MAS Multi Source Acquisition Suite

TRES Trajectory Reconstruction and Evaluation Suite

SMART Simulator for Multi-radar Analysis of Realistic Traffic

RASCAL RAdar Sharing CALculation

CAPT Coverage Analysis and Planning Tool

Surveillance Products & Tools Strategy 7/7

Surveillance Analysis Support System for Centre are widespread used in Europe for:

- Multi-Sensor Surveillance performance analysis using opportunity traffic
 - Surveillance Data Acquisition
 - Assessment of performance of sensors and trackers
- Sensor Configuration Planning tools
 - Coverage and screening computation
- Simulation tool
 - Simulation of Traffic and Surveillance data (all sensors)



European Surveillance Strategy

Questions

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Surveillance Products & Tools

If you are interested How to get EUROCONTROL Products or Tools

EUROCONTROL policy:

- The Surveillance Products and Tools are made available to third parties **free of charge for their own and non-commercial** purposes (subject of an Agreement)
- Required equipment and Commercial Of The Shelf (COTS) licences have to be procured by the third party
- **No EUROCONTROL services** will be provided outside the ECAC area

SASS-S Surveillance Analysis System and Support for Sensors

is an 'indicative' toolkit for validation of surveillance sensors. SASS-S is a commercially available toolkit.