

Supporting  
European  
Aviation



# Civil-Military cooperation support tools

ICAO South American Region  
Civil-Military Workshop, Lima  
3rd December 2019



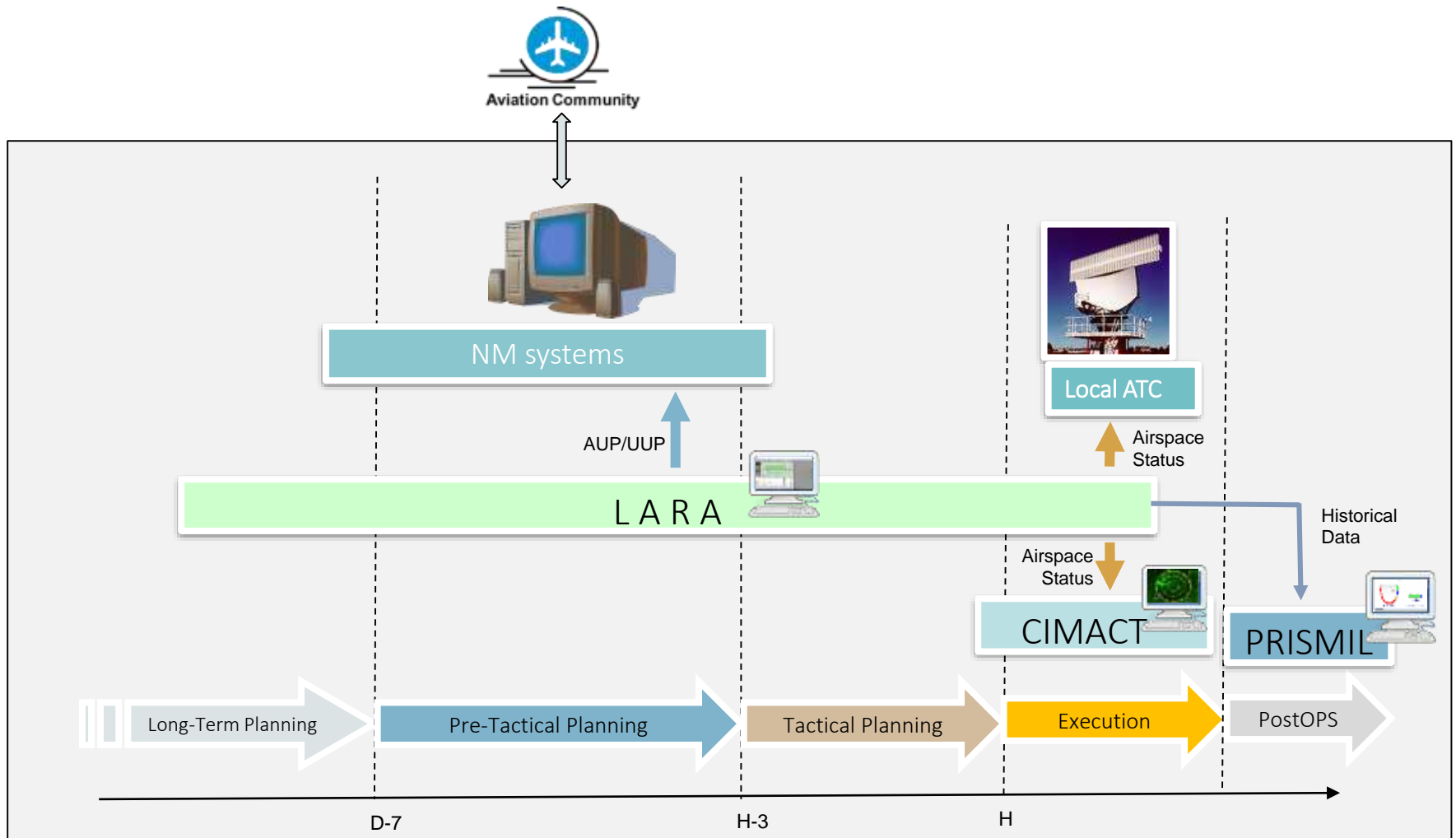
# Content

*FUA Implementation Support Systems  
developed and managed by EUROCONTROL*

- LARA
- CIMACT
- PRISMIL



# Support systems interlink



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# LARA

Local And sub-Regional ASM support system



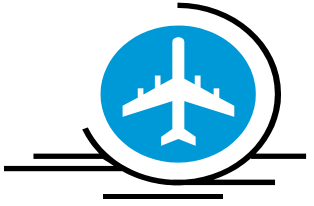
NETWORK  
MANAGER



# LARA

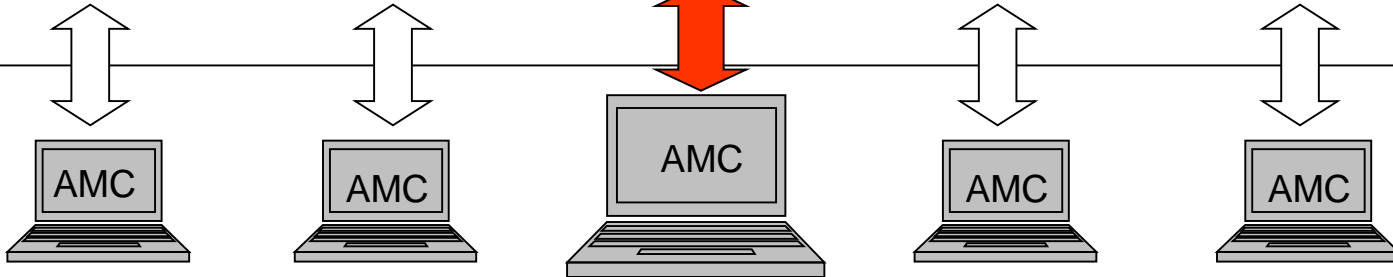
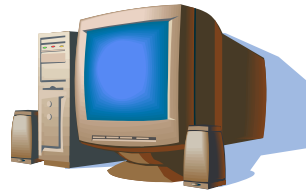
LARA (Local And sub-Regional Airspace Management Support System)

- provides an interface to allow online airspace reservation;
- enable transparent coordination and maximise automation of routine tasks;
- through a shared real-time airspace status display;
- situational awareness of all players is enhanced;
- designed to allow configuration to adapt to national procedures;
- contribute to the harmonisation of the application of the Flexible Use of Airspace Concept.

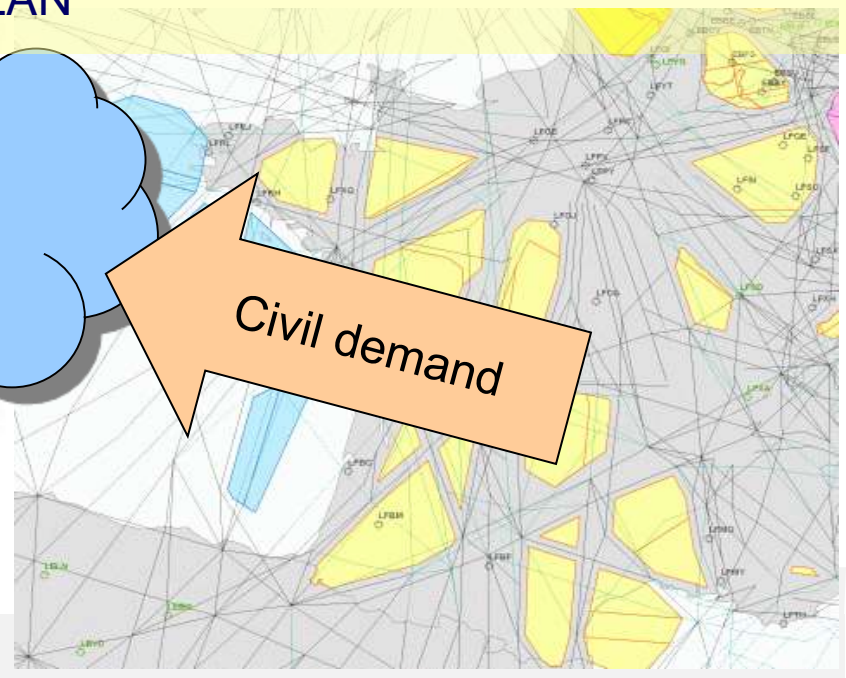


Aviation Community

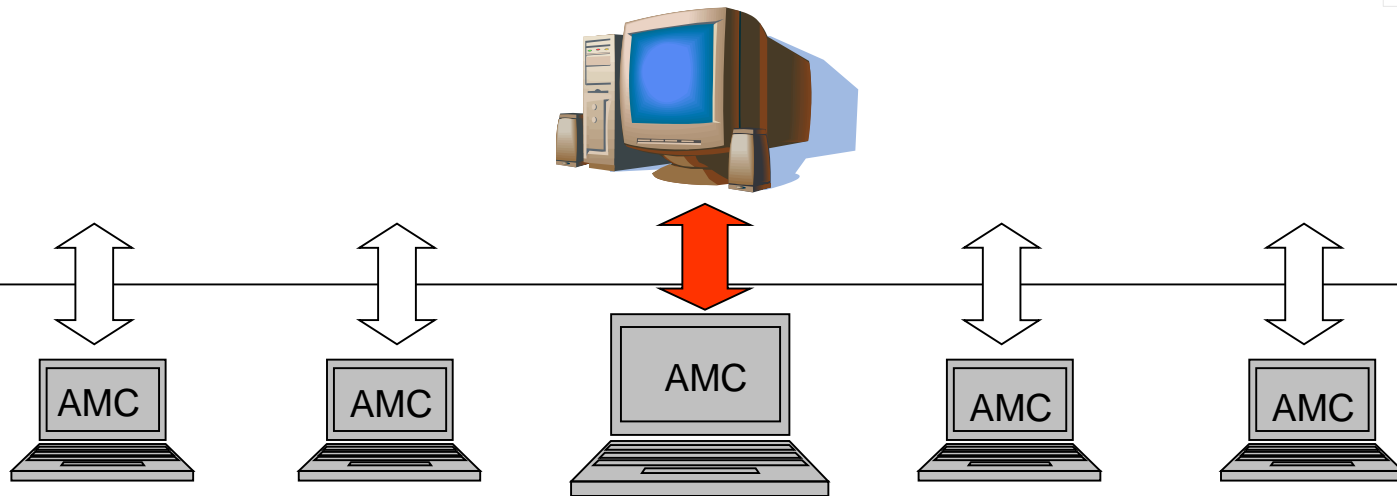
# NM SYSTEMS



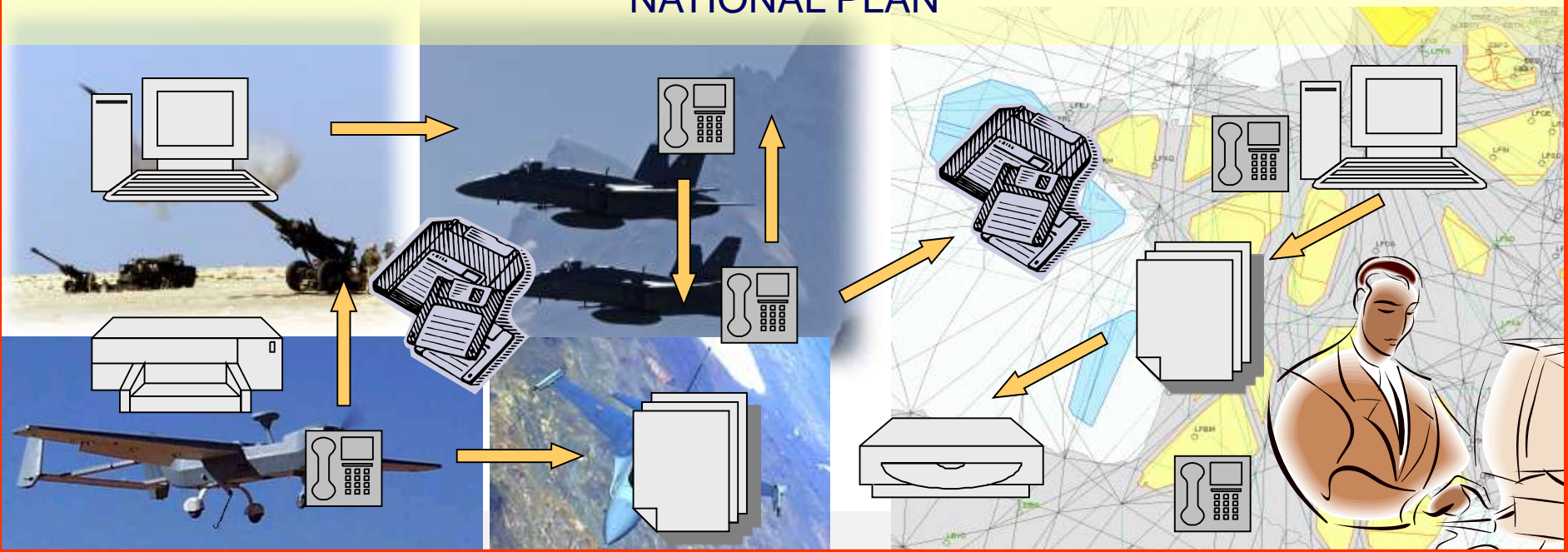
## NATIONAL PLAN



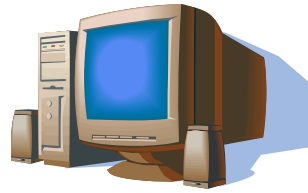
# NM SYSTEMS



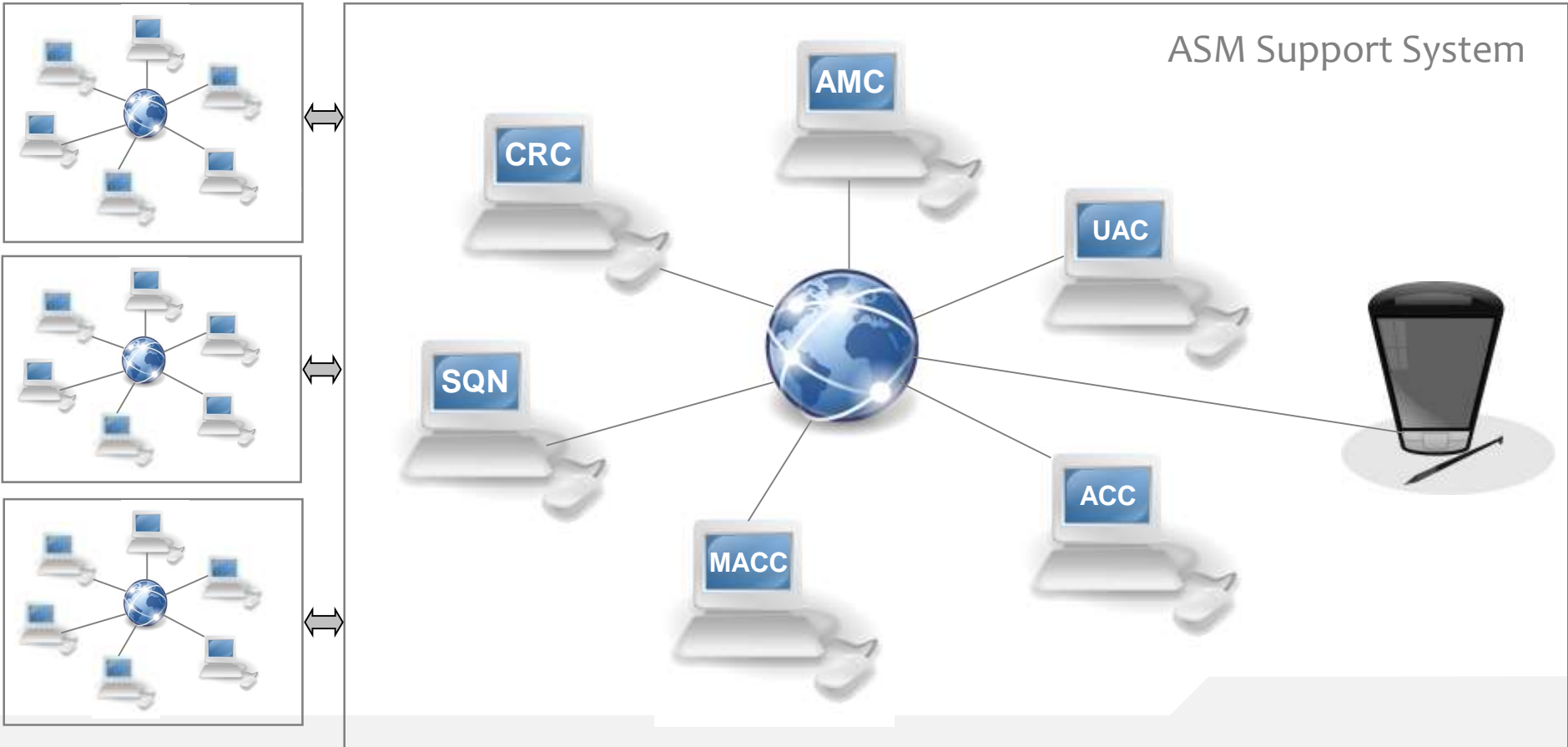
## NATIONAL PLAN



# NM SYSTEMS



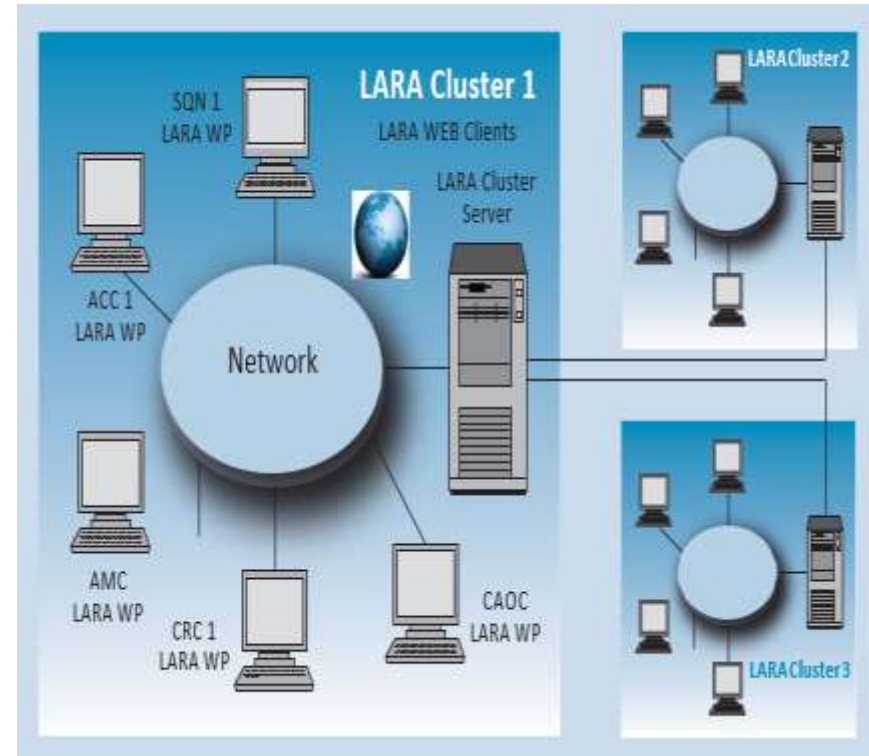
## ASM Support System



# LARA Software



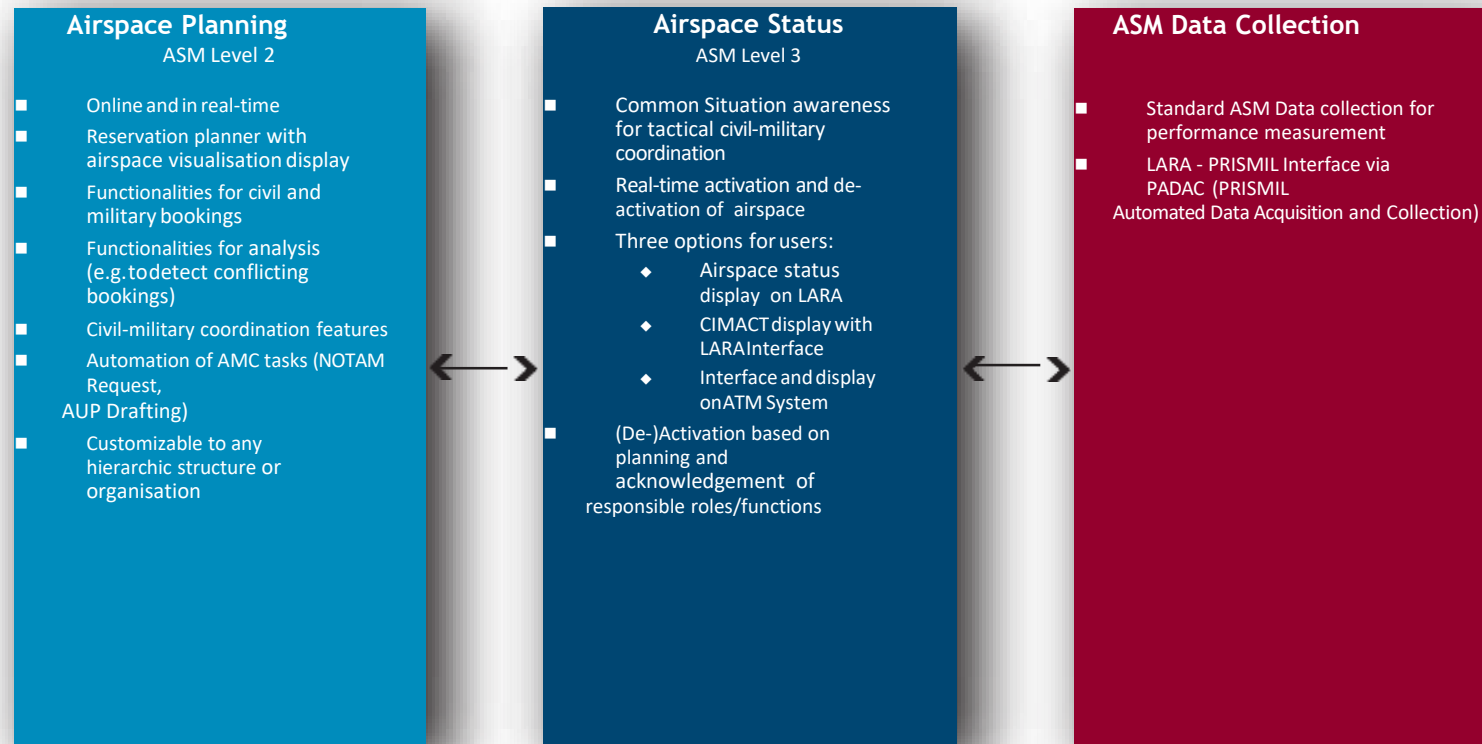
- The LARA software is coded in Java and can be operated on various operating systems including Windows, Linux and MacOs. It communicates on standard IP-networks and supports common encryption standards.
- LARA is organised in clusters, which are normally defined by national boundaries, but can be adapted to any organisation. Each cluster hosts a central server and connected clients. Clusters can be interconnected to allow cross border airspace allocation and collaboration.
- The LARA Server stores all static and dynamic data and manages the communication within the cluster



# LARA Overview



LARA's functionality encompasses all phases of airspace management – from the airspace planning process to real-time airspace activation and de-activation. LARA also provides necessary data for performance measurement.



# AIRSPACE PLANNING



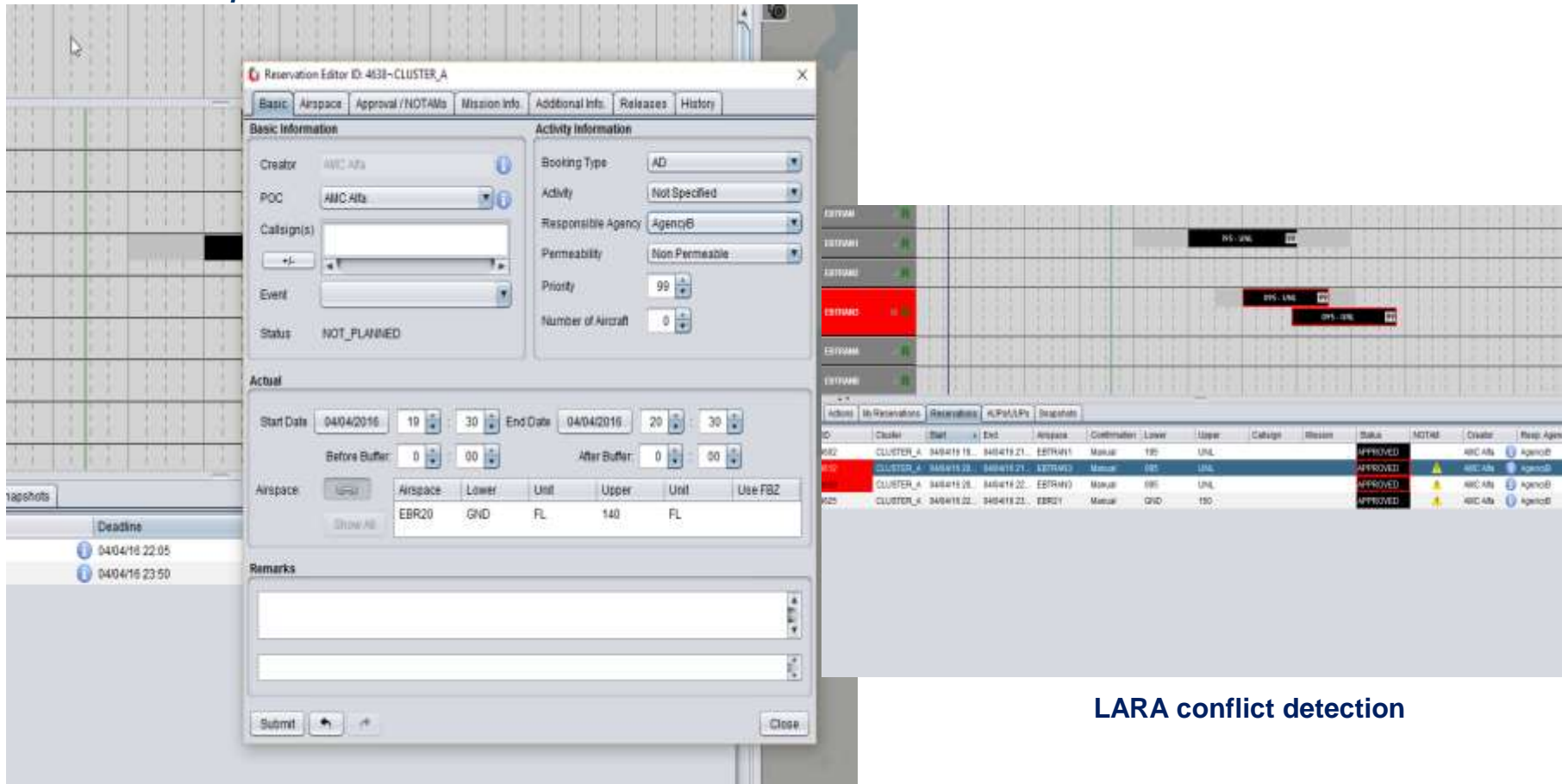
## *LARA airspace planning display*

The screenshot displays the LARA Airspace Planning Display interface. The main view is a timeline showing airspace events from 11:00 to 03:00. The timeline is divided into hourly slots. A table at the bottom lists activities with columns for Activity ID, Creator, Date/Time, Type, and Action Required.

Activity ID	Creator	Date/Time	Type	Action Required
1612	AMC Ada	04/04/16 22:55	NOTAM_SERIAL	Add NOTAM Serial ID
1625	AMC Ada	04/04/16 22:55	NOTAM_SERIAL	Add NOTAM Serial ID

# AIRSPACE PLANNING

## LARA airspace reservation editor



The screenshot displays the LARA airspace reservation editor interface. The main window is titled "Reservation Editor ID: 4638-CLUSTER\_A" and contains several tabs: Basic, Airspace, Approval/NOTAMs, Mission Info, Additional Info, Releases, and History. The "Basic Information" tab is active, showing fields for Creator (AWC/AFB), POC (AWC/AFB), Call sign(s), Event, Status (NOT\_PLANNED), Booking Type (AD), Activity (Not Specified), Responsible Agency (Agency B), Permeability (Non Permeable), Priority (99), and Number of Aircraft (0).

Below the basic information, there are fields for Start Date (04/04/2016 19:30) and End Date (04/04/2016 20:30), with Before Buffer (0:00) and After Buffer (0:00) options. The "Actual" section shows the reservation is for Airspace EBR20, Lower GND, Upper FL, with a Use FBZ checkbox. A Remarks field is also present.

At the bottom of the form are "Submit" and "Close" buttons. In the background, a conflict detection table is visible, showing a list of reservations with columns for Cluster, Start, End, Airspace, Controller, Lower, Upper, Category, Mission, Status, NOTAMs, Creator, and Resp. Agency. The table shows several reservations, with one highlighted in red, indicating a conflict.

Cluster	Start	End	Airspace	Controller	Lower	Upper	Category	Mission	Status	NOTAMs	Creator	Resp. Agency
CLUSTER_A	04/04/16 19:30	04/04/16 20:30	EBR20	Manual	GND	FL	UNL		APPROVED		AWC/AFB	Agency B
CLUSTER_A	04/04/16 19:30	04/04/16 20:30	EBR20	Manual	GND	FL	UNL		APPROVED		AWC/AFB	Agency B
CLUSTER_A	04/04/16 19:30	04/04/16 20:30	EBR20	Manual	GND	FL	UNL		APPROVED		AWC/AFB	Agency B
CLUSTER_A	04/04/16 19:30	04/04/16 20:30	EBR20	Manual	GND	FL	UNL		APPROVED		AWC/AFB	Agency B

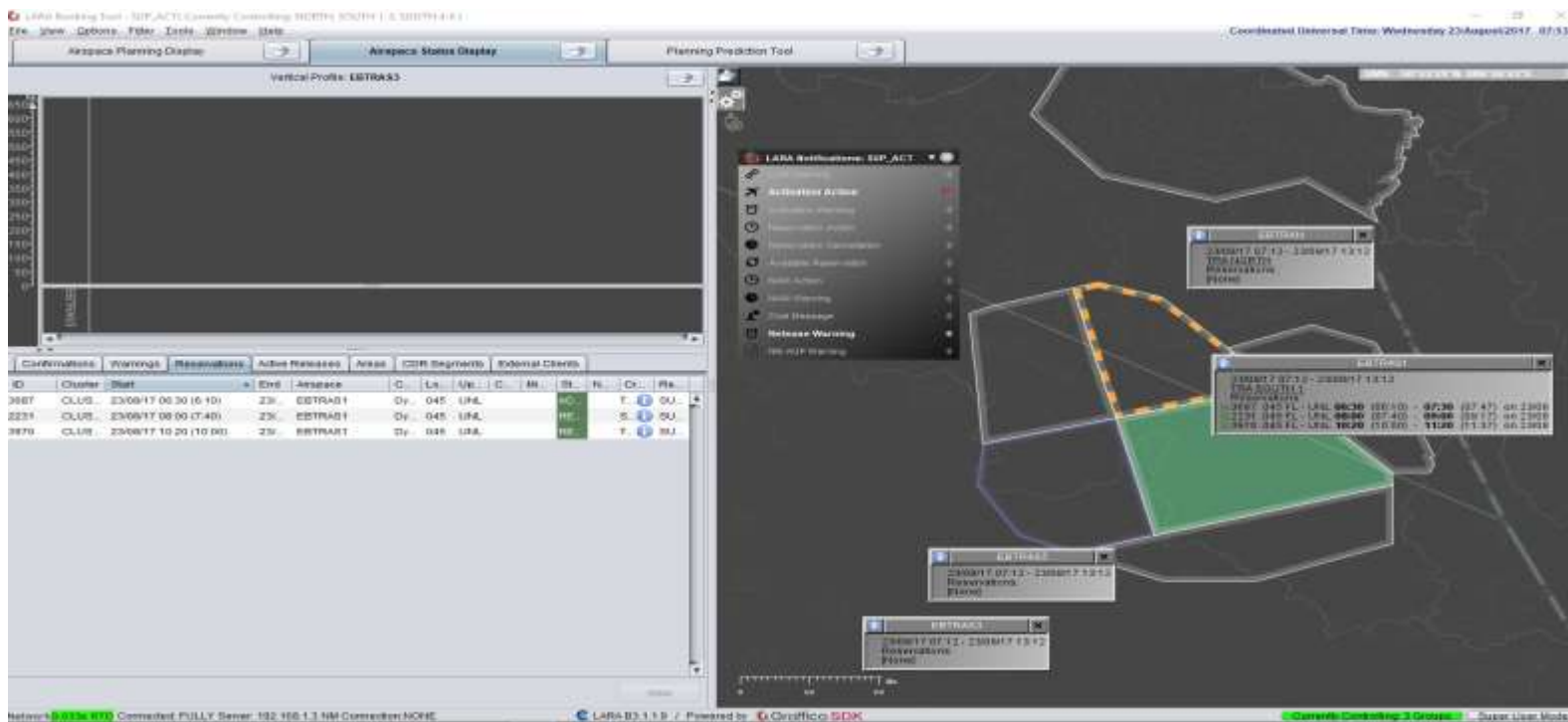
LARA conflict detection

# AIRSPACE STATUS

## *Tactical phase*

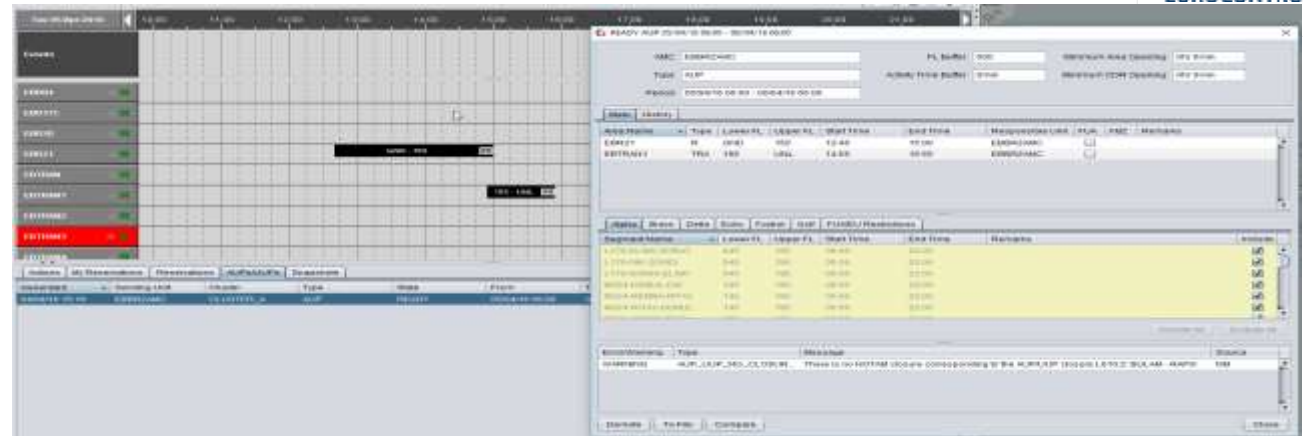
LARA provides the users with an additional overview, the Airspace Situation Display (ASD).

The ASD provides the users with all information regarding the current status of airspaces.



LARA  
airspace  
status  
display

# LARA and AUP/UUP

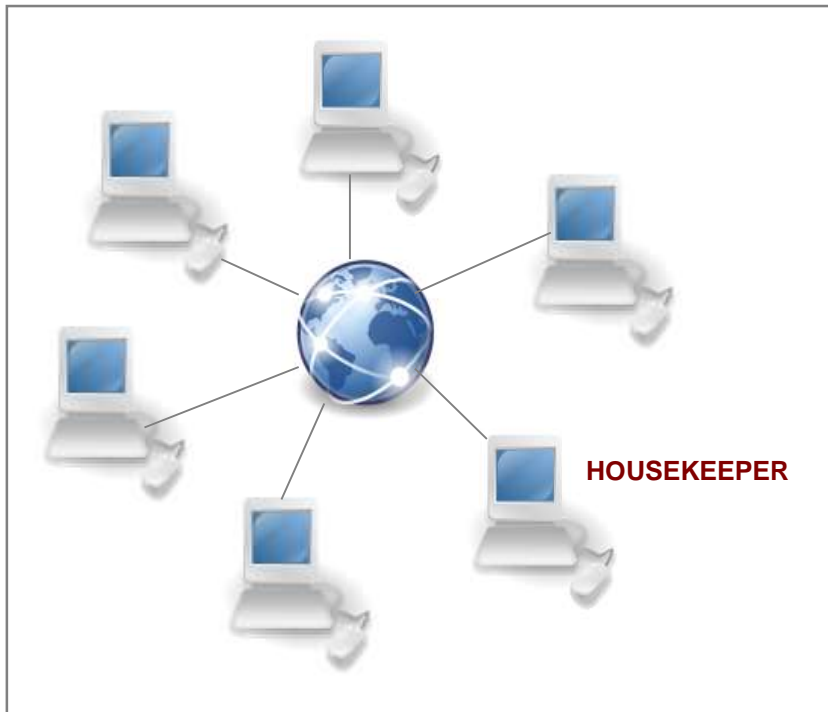


A LARA AUP in status Ready

- LARA has been designed to support the distribution of the Airspace Use Plan (AUP) and its updates (UUP).
- The AUP is generated by LARA on the basis of all reservation data available for the referenced time period.
- LARA is fully compatible with the latest NM B2B Web Services which allows LARA to create, update, delete, promote, and demote AUP/UUPs on the NM systems

# LARA Users

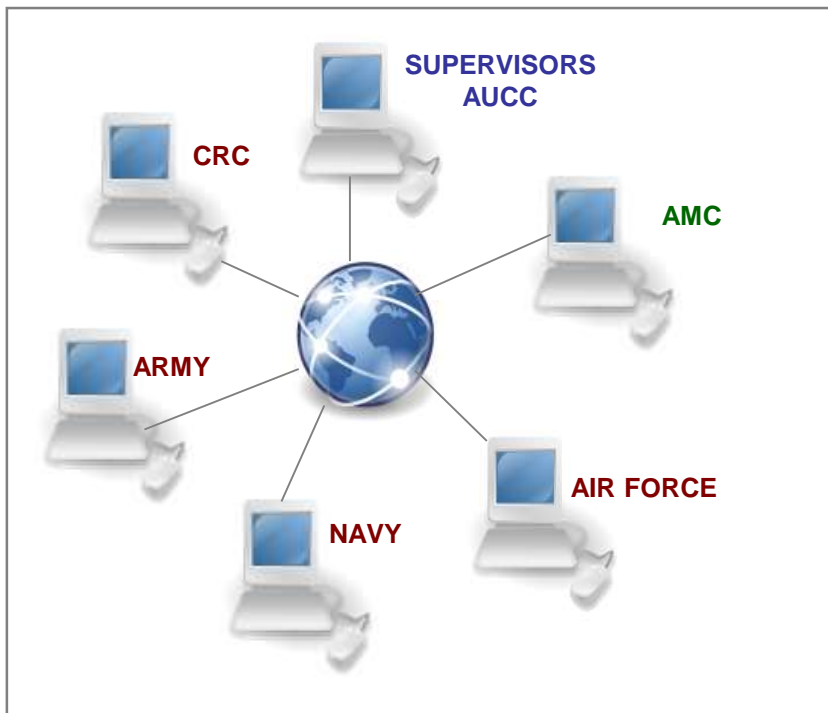
*Housekeeping tool - Managing Users, Privileges and the Approval Chain*



## HOUSEKEEPER

- administrates users, roles, users privileges, setup ASM approval process and applicable rules;
- manages airspace static data and all data associated with airspace reservations/restrictions and relevant mission

# LARA Users



AMC – responsible for airspace allocation and publication; AUP/UUP and NOTAM (if required) privileges

SUPERVISORS – activate/de-activate airspace structures, approve reservations if required

OPERATORS – request airspace structures; if relevant participate in the approval process

# Generic LARA Implementation Steps

- ✓ Implementation plan
  - Concept of use
  - Management – operational and technical teams
  - Technical set up
    - Implementation option
    - Network, Hardware, Software
  - Training
  
- ✓ Deployment
  - Legal aspects (Agreement)
  - Official acceptance
    - Test and validation
    - Safety Case (local SC)

# LARA

## *Enables*

- Combined, central DB for all airspace demands
  - *requests and their status are shared with all roles/functions involved in the ASM/ATFCM process*
- On-line and in real time
- Collaborative Decision Making (CDM)
  - *the decision makers are all connected, using the same data, taking informed decisions*
- Awareness
  - *all updates are presented in real time to all users involved in the ASM/ATFCM process*
- Consistent Data
  - *all users use a single source DB*
- Interface with
  - *ATC systems allowing timely updates of the airspace status on the ATCO working position*

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# CIMACT

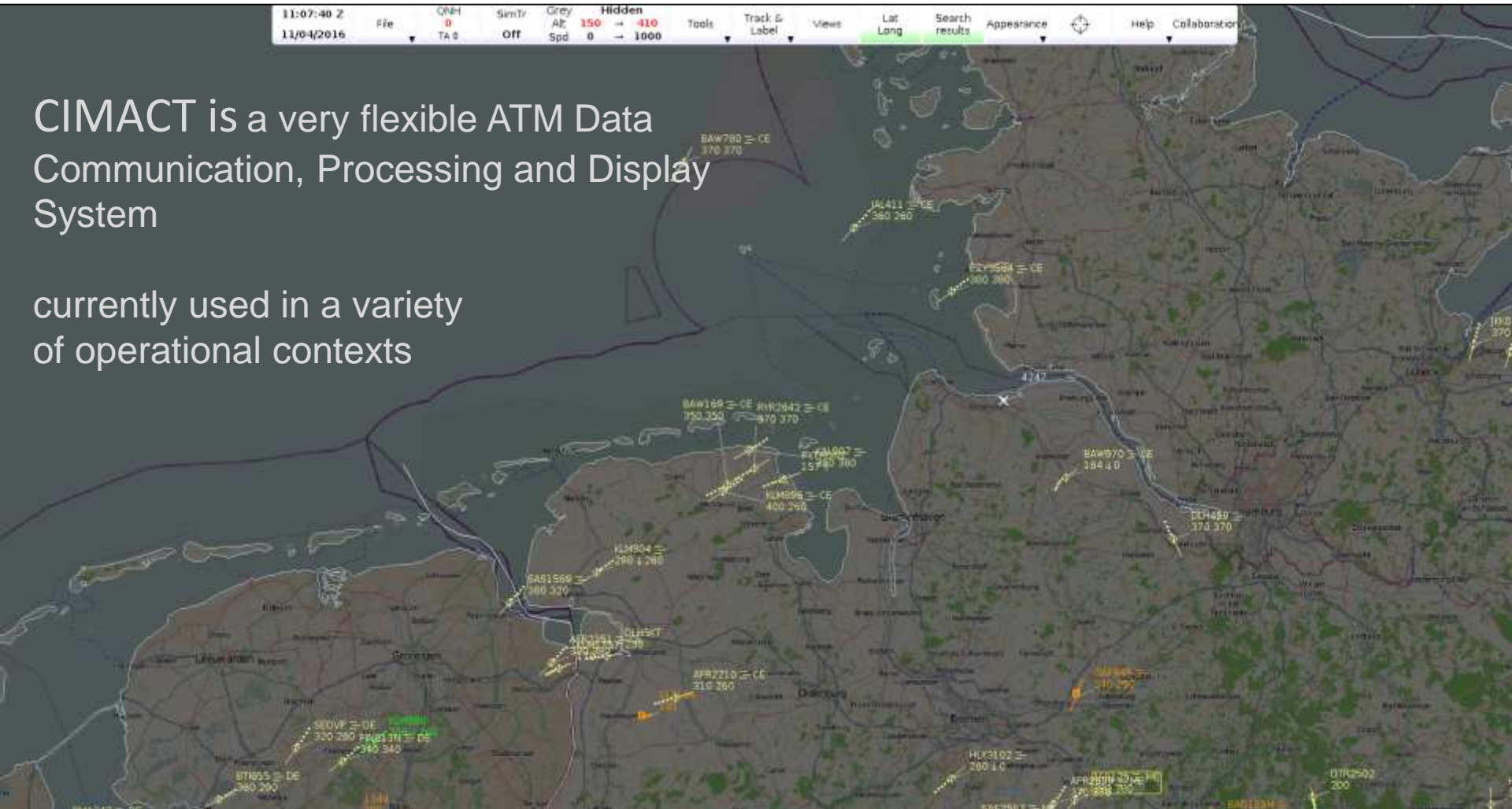
Civil-Military ATM Coordination Tool



# CIMACT Civil-Military ATM Coordination Tool

CIMACT is a very flexible ATM Data Communication, Processing and Display System

currently used in a variety of operational contexts



# CIMACT operational use

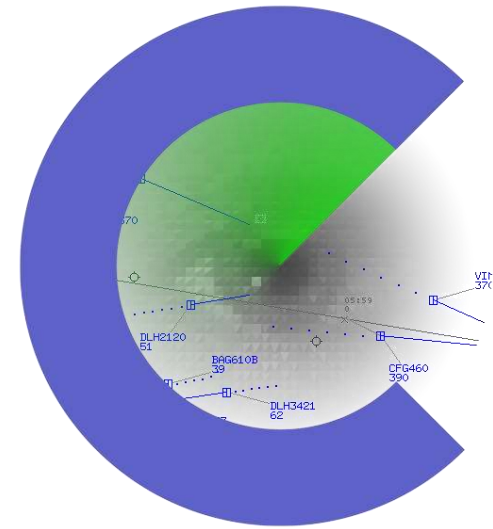


## CIMACT is used for:

- Monitoring and coordinating airspace activations
- ATM security
- Identification support
- Radar assisted flight information
- Fall-back system
- RADAR approach control

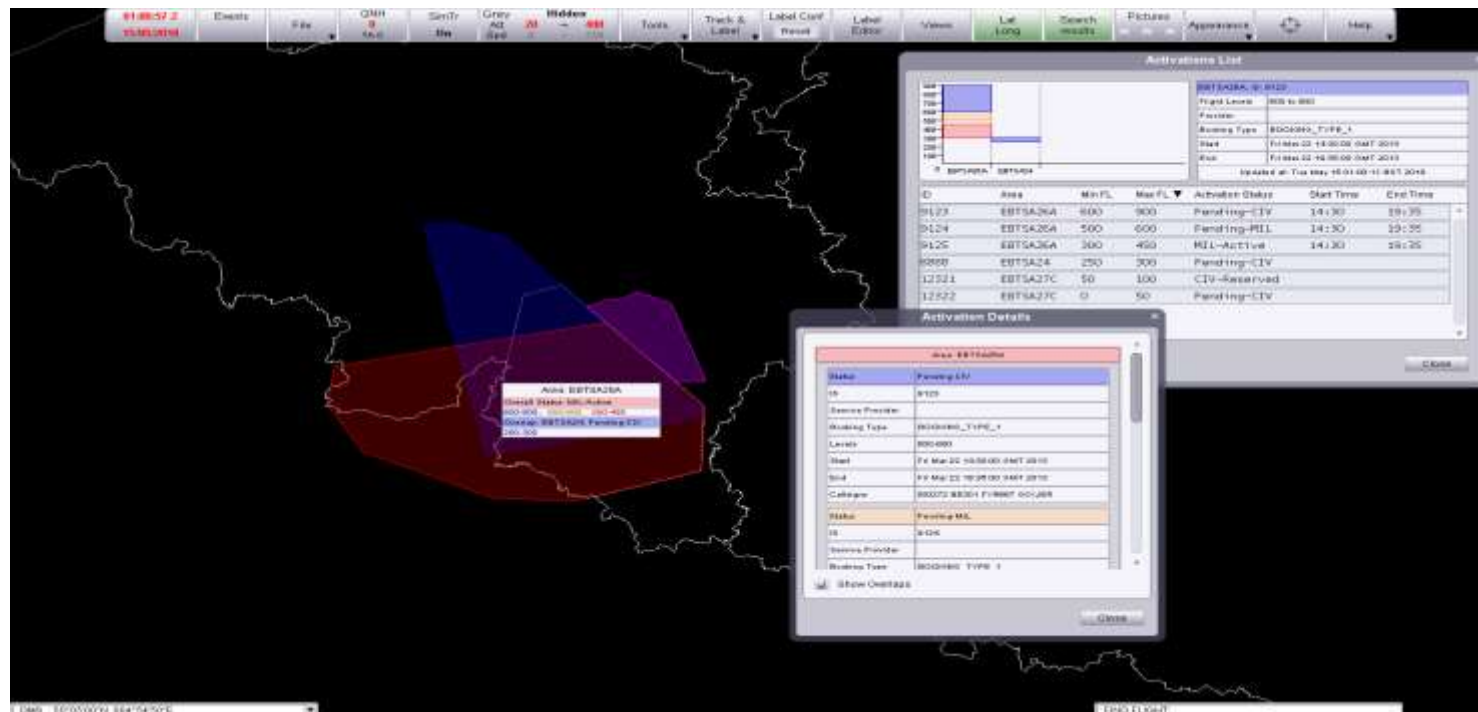
# CIMACT main features

- Decoding of multiple types of surveillance (tracks/plots) and flight plan data
- Produces one correlated air picture
- Communication over various networks and protocols (TCP/IP, UDP, X.25, UMTS, etc.)
- Coordination, Filtering and Highlighting capabilities
- Interfacing to several tools and databases (LARA, EAD, EDQ, WX Systems)
- Simulation capabilities



# CIMACT interface with LARA

- Quickly identify the civil flight and approve the transit;
- Reduce workload;
- Situational awareness;
- Enhance performance of the ATM system.

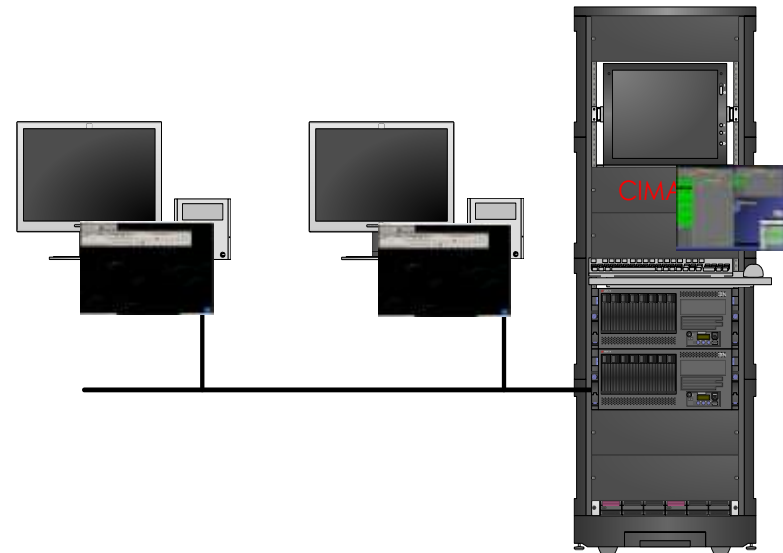


LARA information displayed on CIMACT

# CIMACT technical aspects

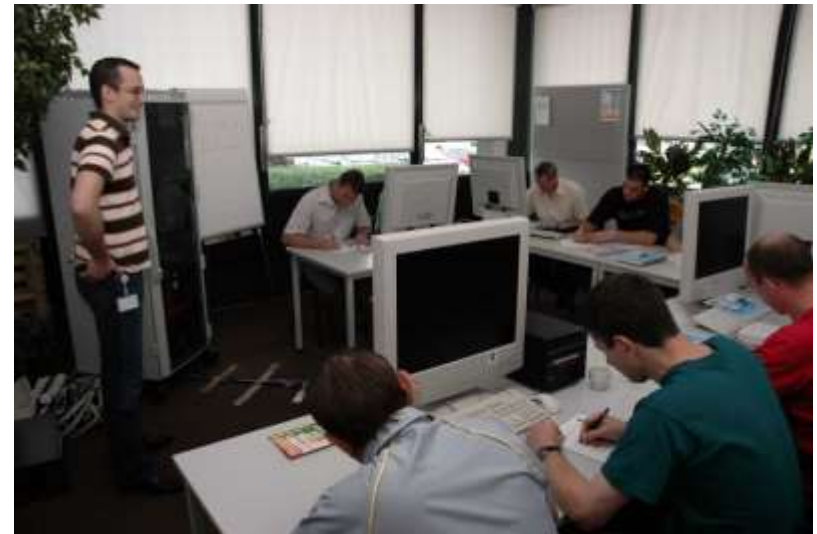
## hardware and software

- Consists of a central server and working positions
- Operating on COTS hardware
- LINUX OS, coded in C++ and JAVA
- SWAL 3 compliant, Declaration of conformity and a generic safety case



# CIMACT Support

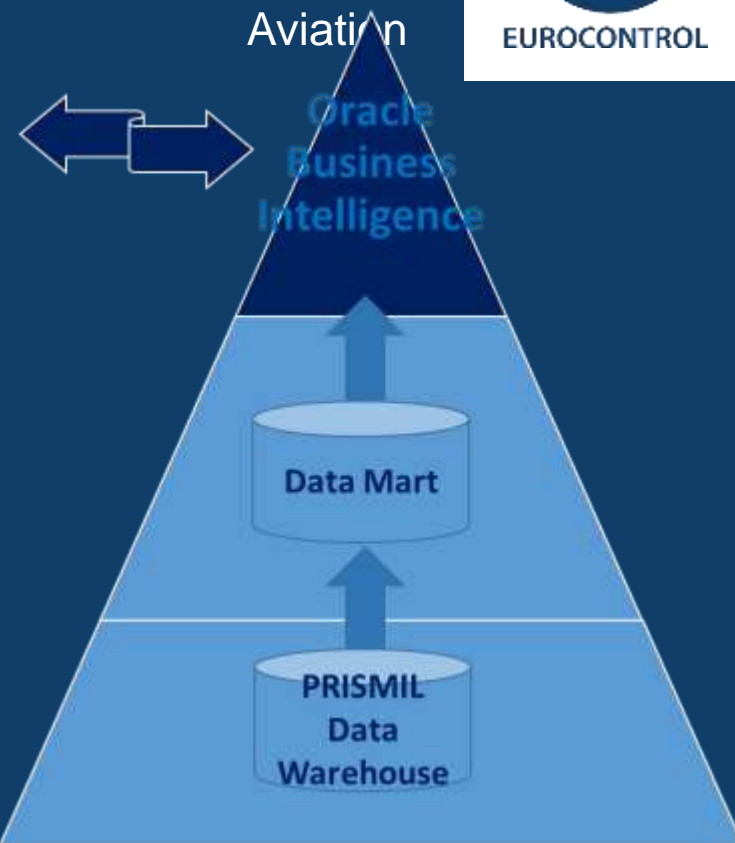
- ❑ **Regular training courses** are provided for system administrators (3 days at EUROCONTROL MUAC)
- ❑ Helpdesk
- ❑ Regular updates and releases
- ❑ Invitation to the CIMACT User Group
- ❑ Initial installation, additional service requirements and new developments are charged on the cost-recovery principle.



# CIMACT Implementation Steps

- Official request to EUROCONTROL (Letter to DG)
- Special Agreement
  
- Technical analysis by CIMACT Team (data recordings, ICD etc.)
- Site Survey (if required)
  
- Development or adaptation of an interface (if required)
  
- Hardware procurement (by BH)
  
- Installation and Training on Site
  
- Operational Concept / Letter of Agreements
- Data Sharing Agreement

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# PRISMIL/CURA

**P** - Pan European

**R** - Repository of

**I** - Information

**S** - Supporting Civil

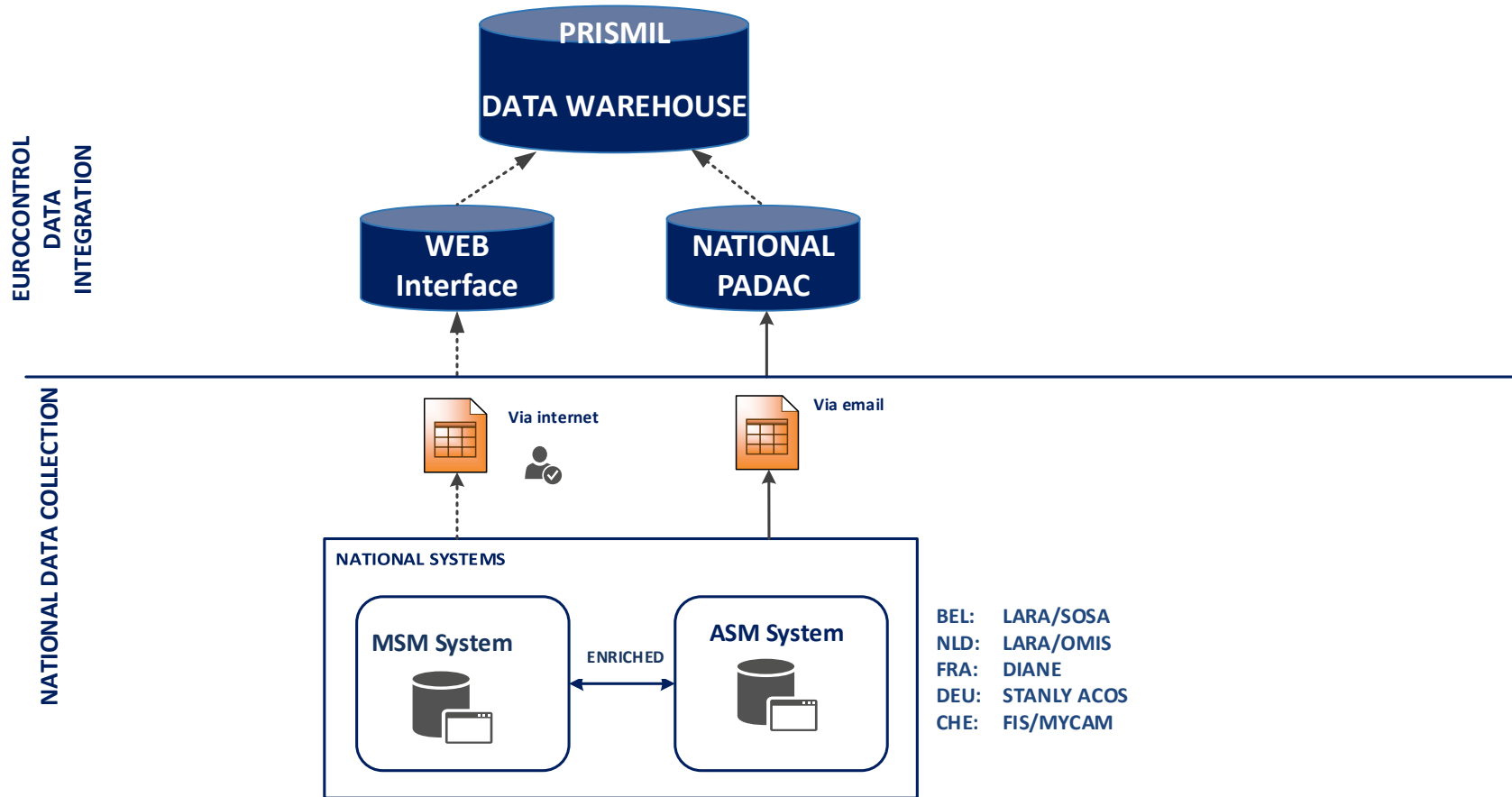
**MIL**- Military Performance Monitoring

PRISMIL is an **On-line Civil-Military Performance Measurements System** at national, FAB and pan-European level which provides:

## Key functions:

- ❑ Data collection and integration
- ❑ Pre-built Performance indicators with Multidimensional view and aggregation
- ❑ Combined use of civil and military performance indicators
- ❑ On-line data querying , reporting and dashboard with Data access control

# PRISMIL Data collection and integration

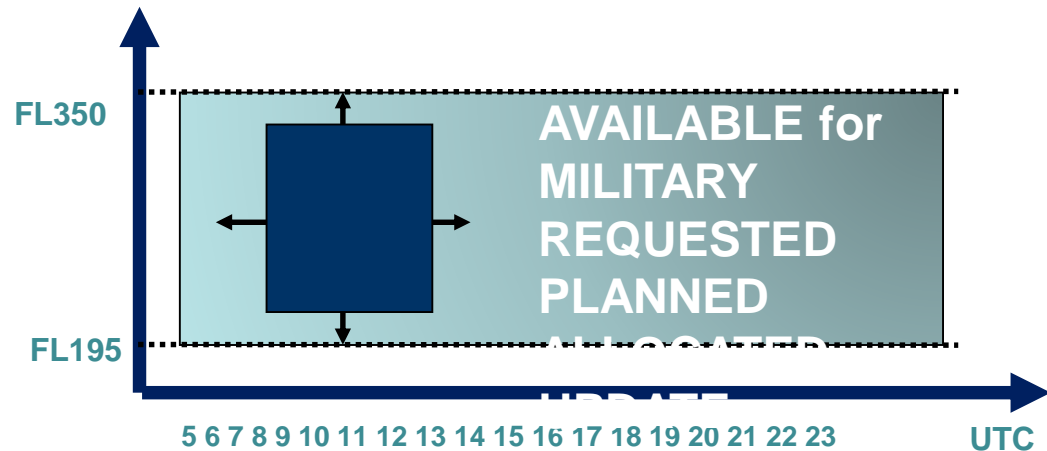


# PRISMIL – Data Content



- ❑ Aeronautical Information Publication (Airspace design)
- ❑ Airspace Reservation
- ❑ Mission Data

*Under Bilateral Agreement*



# Bilateral agreement





- General description of PRISMIL Service
- Obligations of the parties (EUROCONTROL and State)
- Data Provision, Use and Management
- Data security and confidentiality**
- Costs
- Annexes

# PRISMIL - Query – Report – Dashboard



**DASHBOARDS**

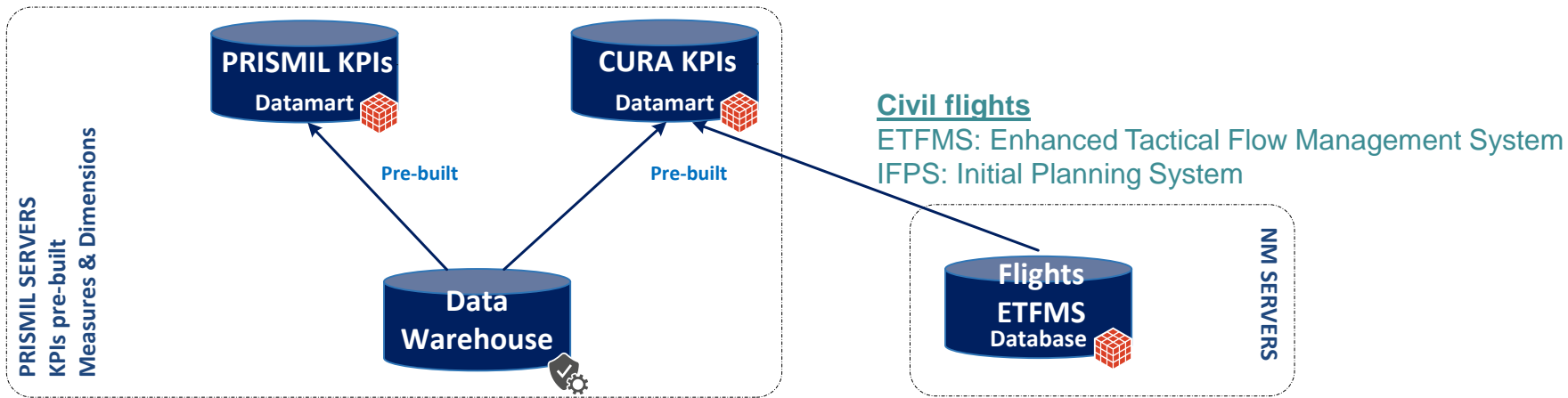



**REPORTS**

Number of Reservations - Used / Allocated

BELGIUM		
Month	Used / Allocated	
	2010	2011
January	63.03%	48.86%
February	57.79%	48.77%
March	82.00%	57.17%
April	73.72%	57.61%
May	82.70%	51.77%
June	57.92%	58.44%
July	57.10%	46.52%
August	81.24%	55.79%
September	83.71%	60.02%
October	87.82%	58.42%
November	66.78%	60.55%
December	35.92%	46.49%
<b>Grand Total</b>	<b>69.01%</b>	<b>53.45%</b>

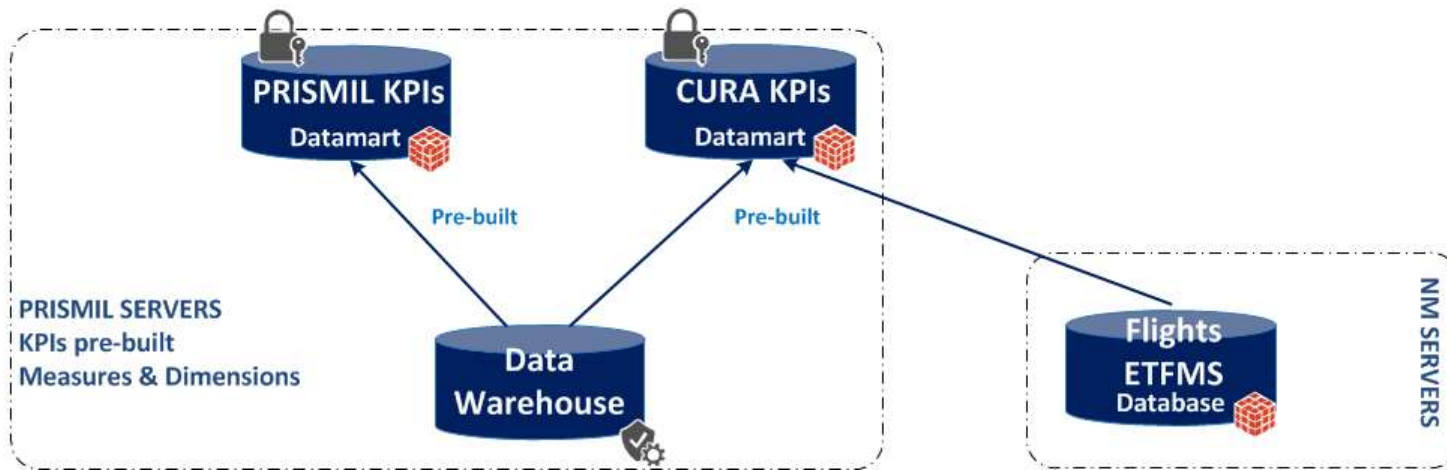
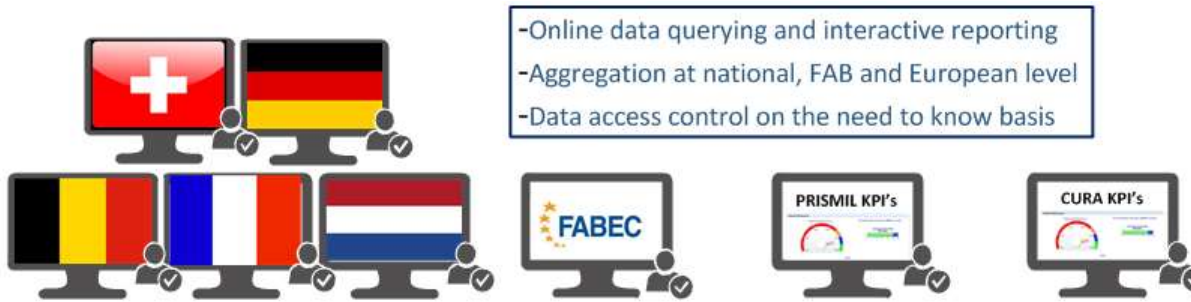
**QUERY**



# PRISMIL Dashboard



DASHBOARDS



# PRISMIL Objectives

## □ Support to the states at NATIONAL Level

- Civil-Military performance monitoring system (FIWG)

What's the density of GAT (number/time of flights) within orange/black slot when approved by military?

What's the density of GAT (number/time of flights) within airspace released (pre-tactically, tactically)



How the civil requests (orange/black slots) are managed by military?

Customized performance dashboard for civil military user(s)

