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Global Collaboration in Information Management

US / EU cooperation and coordination

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Differences and similarities between Europe & N. America

[Extract from presentation for Congress visit to Europe 3rd April '07]

- **WEATHER**
  - **Severity**
- **ATM SERVICE**
  - **Nb & governance of Service Providers**
  - **Source of Finance**

- **SAME PRESSURES**
  - **Safety, Growth, Costs**
- **SAME COMMERCIAL CUSTOMERS**
- **SAME OBLIGATIONS**
  - **ICAO**
- **SAME CONSTRAINTS**
  - **Environment, financial**
- **SAME OPPORTUNITIES**
  - **High Competence**
  - **Advanced Technology**

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Impetus - Turning The Corner to NextGen
…*Requires Transformation Of the System*

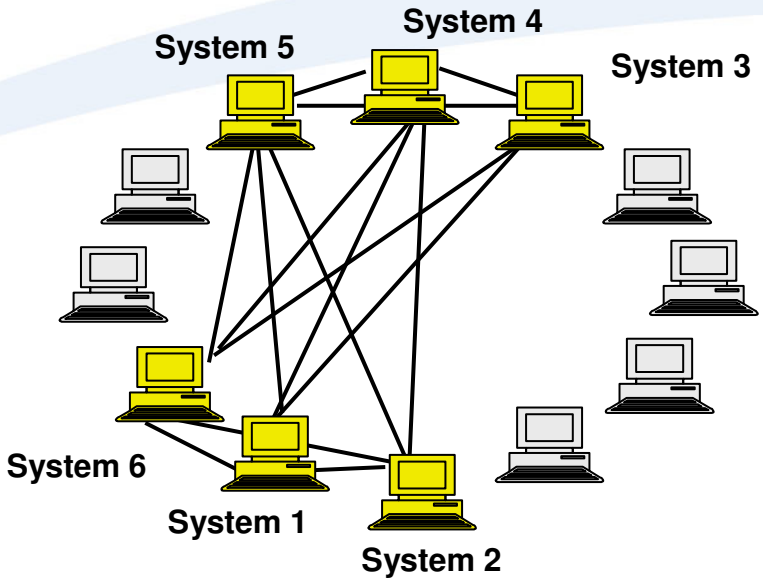
The current Air Traffic Control System provides information to the controller who then…

- needs to make a decision
  AND THEN
- relays this information with voice
  AND THEN
- provides all the monitoring with minimal support.

And the information going into the decision has grown

- **Tactical information to fit flight into flow**
- **Strategic Information to meet flow restrictions**
- **Security information to support airspace defense**
- **….**

There Is a Shortfall In Information



- Point-to-point connections among the disparate ANSP automation systems.
- Incongruent protocols and management.
  - *These issues make interfacing with customers and other ANSP problematic.*
  - *Information attributes are not harmonized, further compounding to the burgeoning interoperability problem.*
- **Information management ensure the disparate, emerging capabilities from various region of the world will achieve interoperability.**

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International Coordination

EUROCONTROL

- Japan, China, Australia, India

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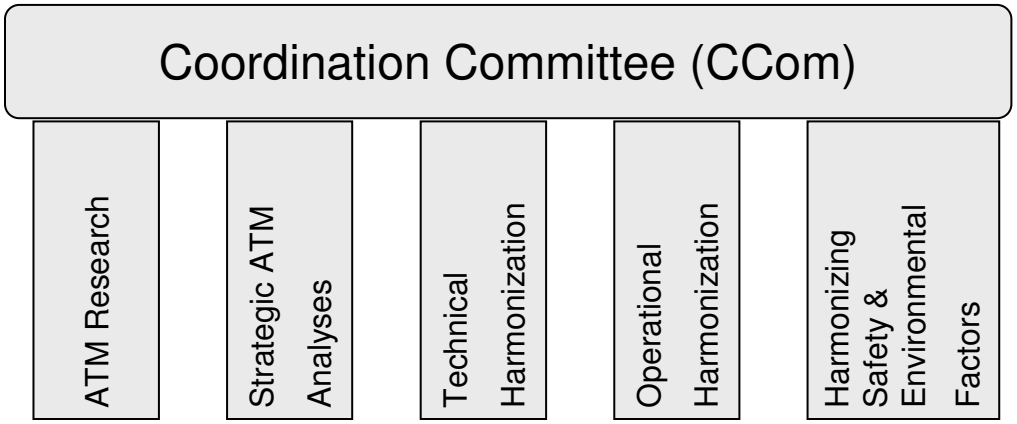
Memorandum of Cooperation

Establishes the term and conditions for mutual cooperation in the promotion and development of civil aviation.

Five areas with strong coordination



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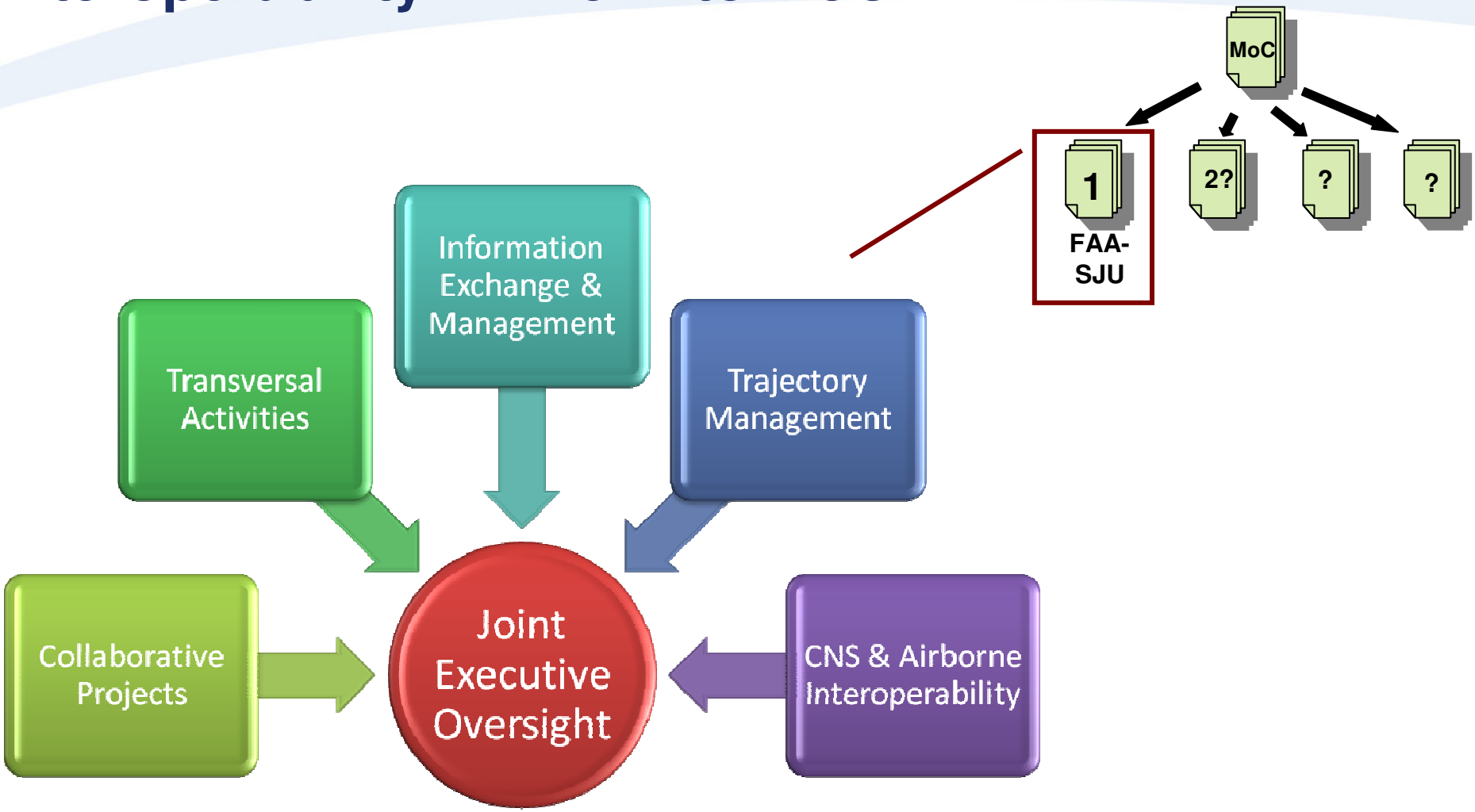
EA and Harmonization – Eurocontrol

- Action Plan 4 of FAA/Eurocontrol MOU
  - SWIM
  - Flight Object
  - AIM *
  - Trajectory *
    - Expanded into individual action plans
- WXXM
- EA Activities
  - Concepts of Use
  - Operational Requirements
  - Standards
  - **ICAO coordination**
- **Continue and expand these activities with SESAR**

NextGen-SESAR Cooperation for Global Interoperability: Annex I to MoC



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SESAR – NextGen Collaboration Areas

Joint FAA SJU Exec Oversight

Transversal Activities

- Ops Concept & Roadmap
- Separation Provision
- Roadmaps, Standardisation, & Regulation
- Business Case & Investment Planning
- Environment
- ICAO Standards Coordination
- Safety
- Security

Collaboration Projects

- AIRE
- OPTIMI (TBD)

Information Management

- SWIM interoperability
- Information Mgmt Interoperability
- MET Information Exchange

Trajectory Management

- Common Trajectory Definition & Exchange
- ***Future Flight planning & Dynamic Flight Plan Updates***
- Traffic Management
- UAS Integration into ATM

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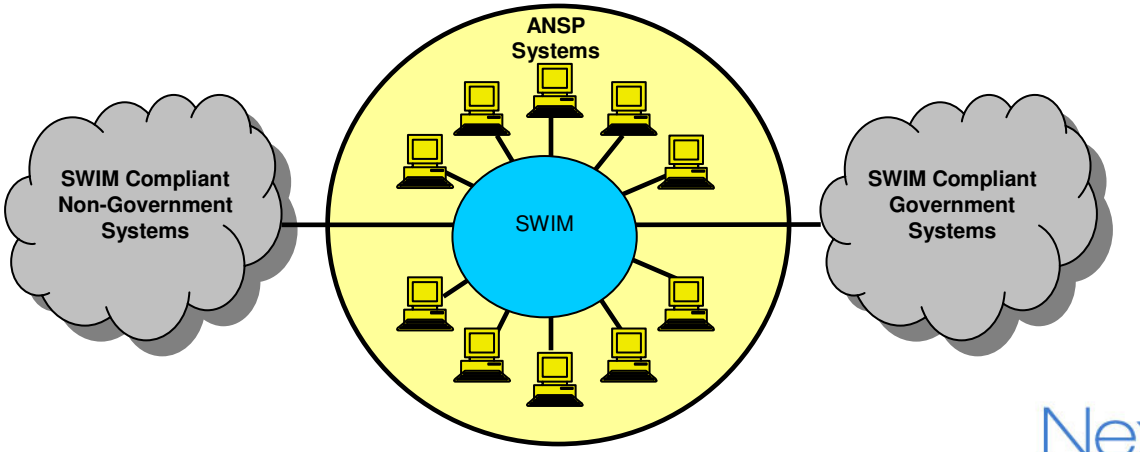
CP 2.1 – System Wide Information Management (SWIM) Interoperability

- SWIM system interface between regions should be coordinated to ensure interoperability.

- Focus on the role of SWIM in enabling data exchange to achieve European/US coordination including in both domestic and oceanic airspace.

- SWIM will be the primary mechanism of information exchange, and a crucial component in the realization of common, interoperable information management scheme.



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CP 2.2 - Information Management and Interoperability

- The scope of the coordination is aligned with ICAO GATM OC's concept on information management.

- The coordination also seeks to define a
    1. Terminology
    2. Quality of Service (QoS) - timely, accurate, and secure distribution of ATM relevant information.
    3. Facilitation of interoperability and meteorological, and flight planning information

- Common operational scenarios that are required to support information requirements in strategic planning, execution, and post flight.

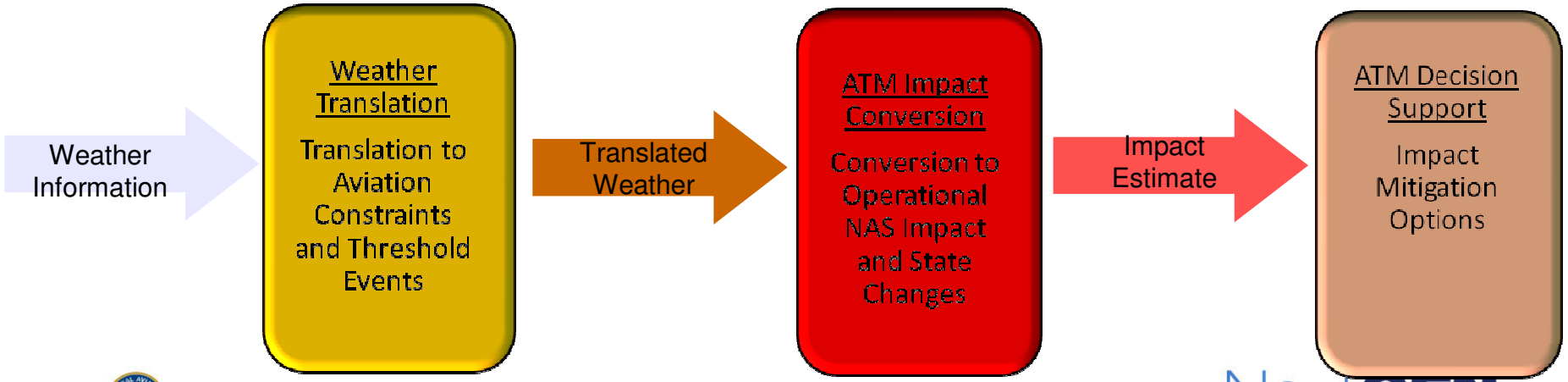
- Common and interoperable information performance requirements.

CP 2.3 - Meteorological Information Exchange

- CP 2.c (Meteorological Information Exchange) focus on achieving consistent translation of atmospheric state into ATM impacts to support strategic planning, execution, and post flight.

- Quality of Service (QoS) of translation and a global, common information exchange model (e.g. WXXM) are also areas of coordination.

- Common performance requirements that lead to greater integration of weather translation into ATM.



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CP 3.2 – Flight Planning and Dynamic Flight Plan Updates

• This coordination plan covers the development of all aspects of 4D Trajectory Flight Planning and associated 4D Trajectory Dynamic Flight Plan updates

• Coordination should take account of the common 4D trajectory definition and associated operational scenarios covering strategic flight planning, flight-planning during flight execution, dynamic updating of the flight plan during flight execution and post flight analysis and archiving.

• It should be focused on the activities related to Flight Object and FF-ICE, and the use of this future flight information capability to support the operations including ownership of the object, subscription, and authorization to access for individual flight elements and individual element update rights

Similarities/differences SESAR/NextGen

Common Umbrella: ICAO

Similarities

- Global context taken into account
- Cooperation need recognised
- Performance approach
- Industry involvement need acknowledged
- Implication of institutions

Differences

- Scope
  - ATM / Aviation
  - Airport infrastructure in /out
  - Magnitude of weather issues low/high
- Governance

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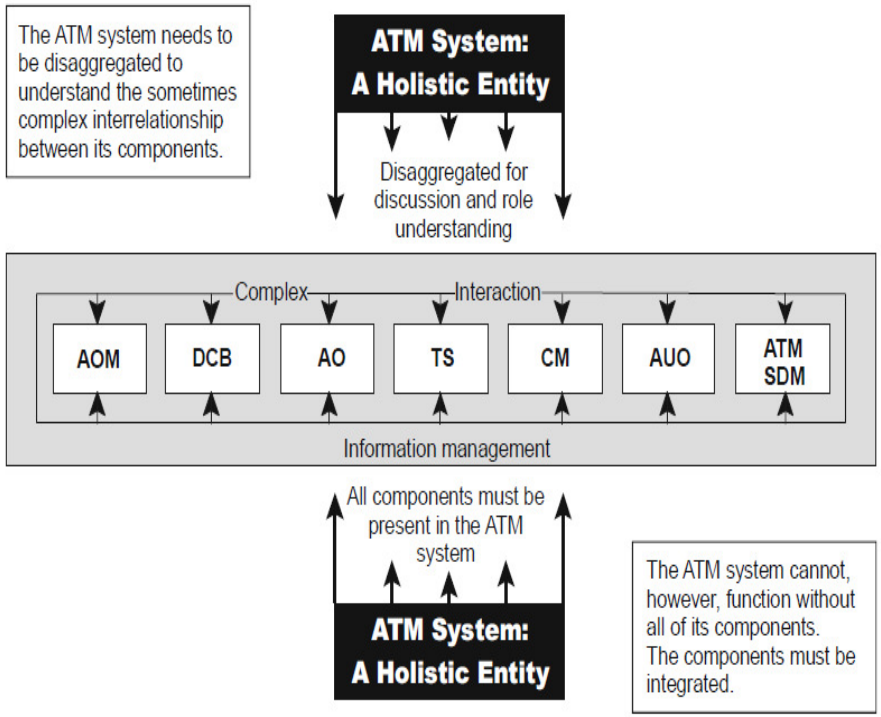
Information Management in ICAO Global ATM Operation Concept (GATMOC)



AOM — Airspace organization and management
DCB — Demand/capacity balancing
AO — Aerodrome operations
TS — Traffic synchronization
CM — Conflict management
AUO — Airspace user operations
ATM SDM — ATM service delivery management

- Information Management is the lynchpin of all 7 concept components in the Global ATM Operational Concept (GATMOC).

- The ICAO GATMOC envisions Information Management will
  1. provide and share quality assured and timely information
  2. enables the tailored delivery of relevant information
  3. harmonize information attributes around the world

• The Operational Concept envisions Information Management to be the facilitator of collaborative decision making.

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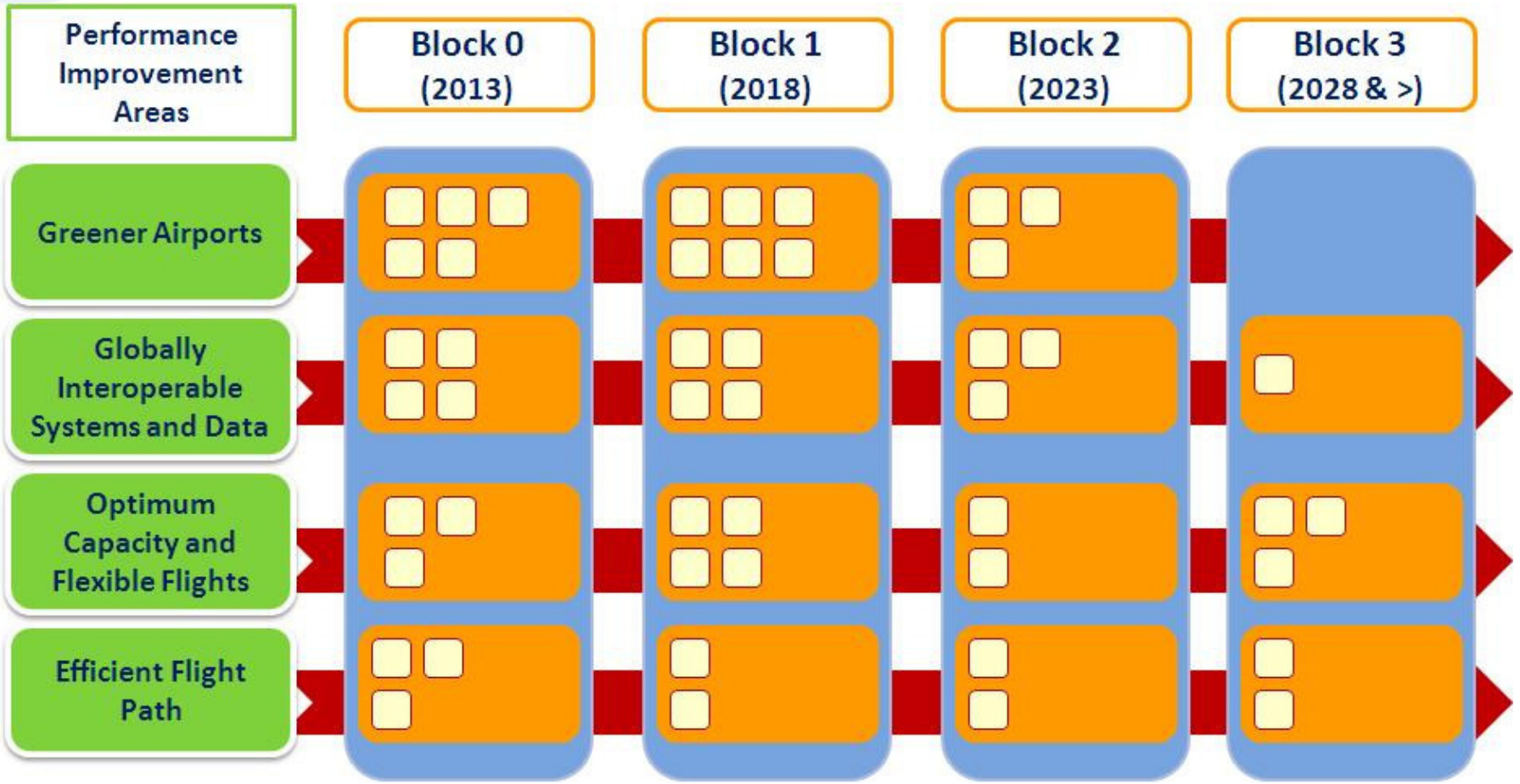
ICAO Block Upgrades



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Information In Block Upgrades

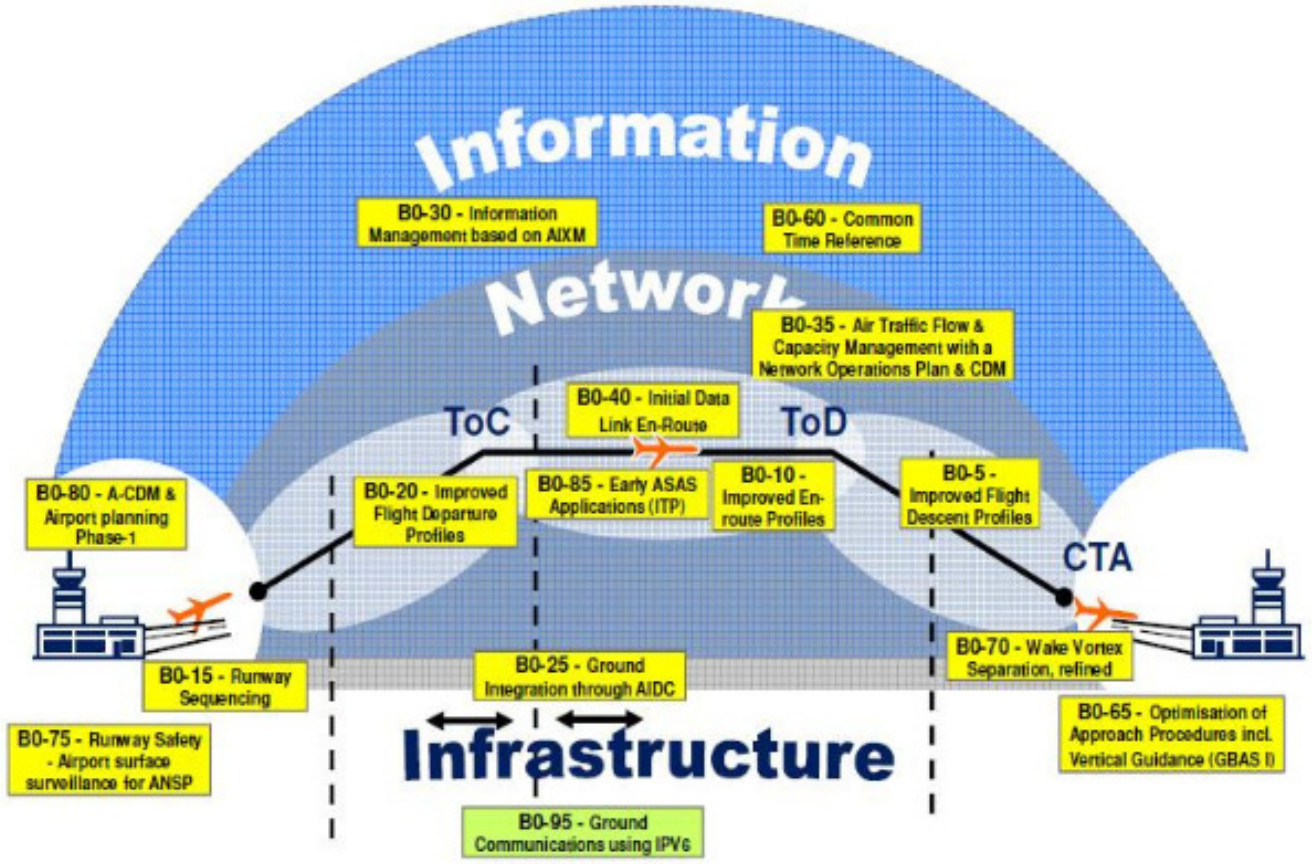

Figure 2. Block 0 in Perspective

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RTCA and EUROCAE Coordination

- Coordination of standards group facilitates common information management and interoperability
- Coordination is typically achieved at working groups, with each working group responsible for an area of expertise at RTCA and EUROCAE respectively.
- MET information will be refined within RTCA SC206, SC 214 is responsible for trajectory.
- Flight information, aeronautical information, trajectory information, and weather information are all examples of areas of collaboration between RTCA and EUROCAE.

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International Considerations for Success

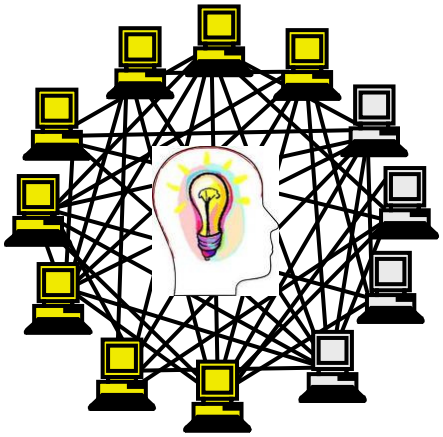
- NextGen needs coincidental and synchronized public and private spending to provide the NextGen capabilities and benefits
  - Investments based on international standards and procedures
- NextGen needs stability of international plans and standards
  - Provisions and requirements can't change in mid-development
  - It's not just the same standards, but the same versions in many cases

But there is more…

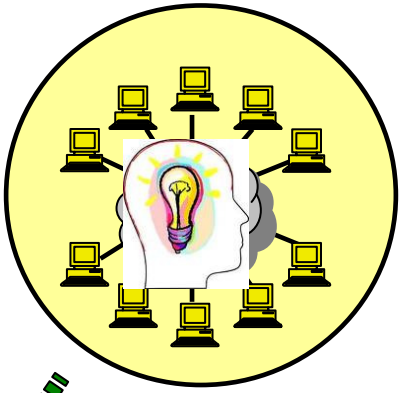
System Wide Information Management (SWIM)

Today: Point to Point Information Management

NextGen: System Wide Information Management



Business as Usual (NextGen without SWIM)



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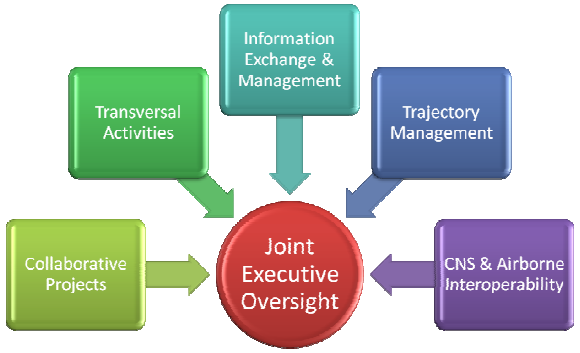
Final thoughts

- Successful harmonization of information management requires more than harmonization of information technology
- Benefit and curse
  - The technology will let us do anything we want
- Success is dependent on all the areas of cooperation



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