SASI WS1-08

Safety assessment of FABs (feasibility study)

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Agency Safety Management System

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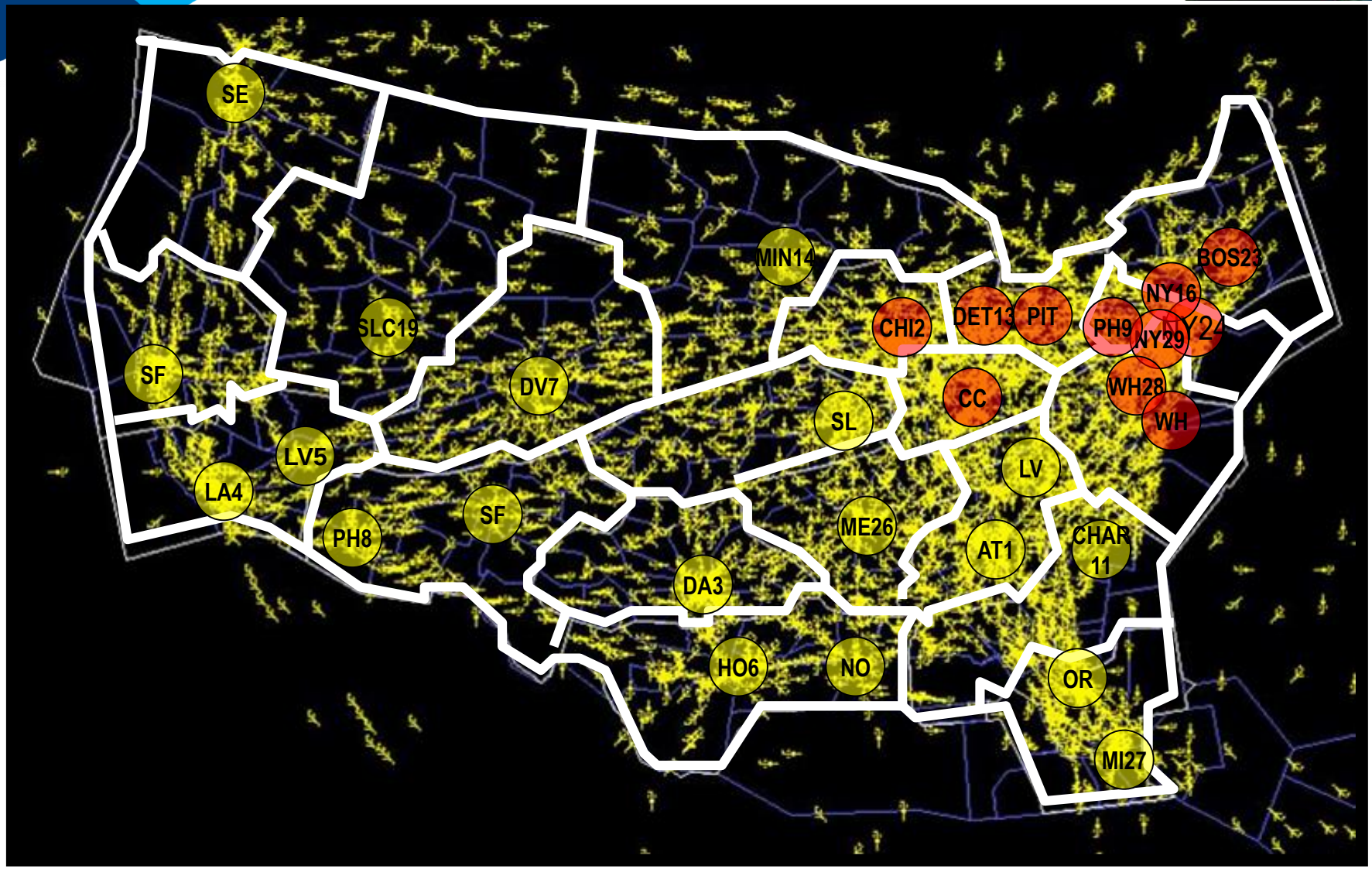
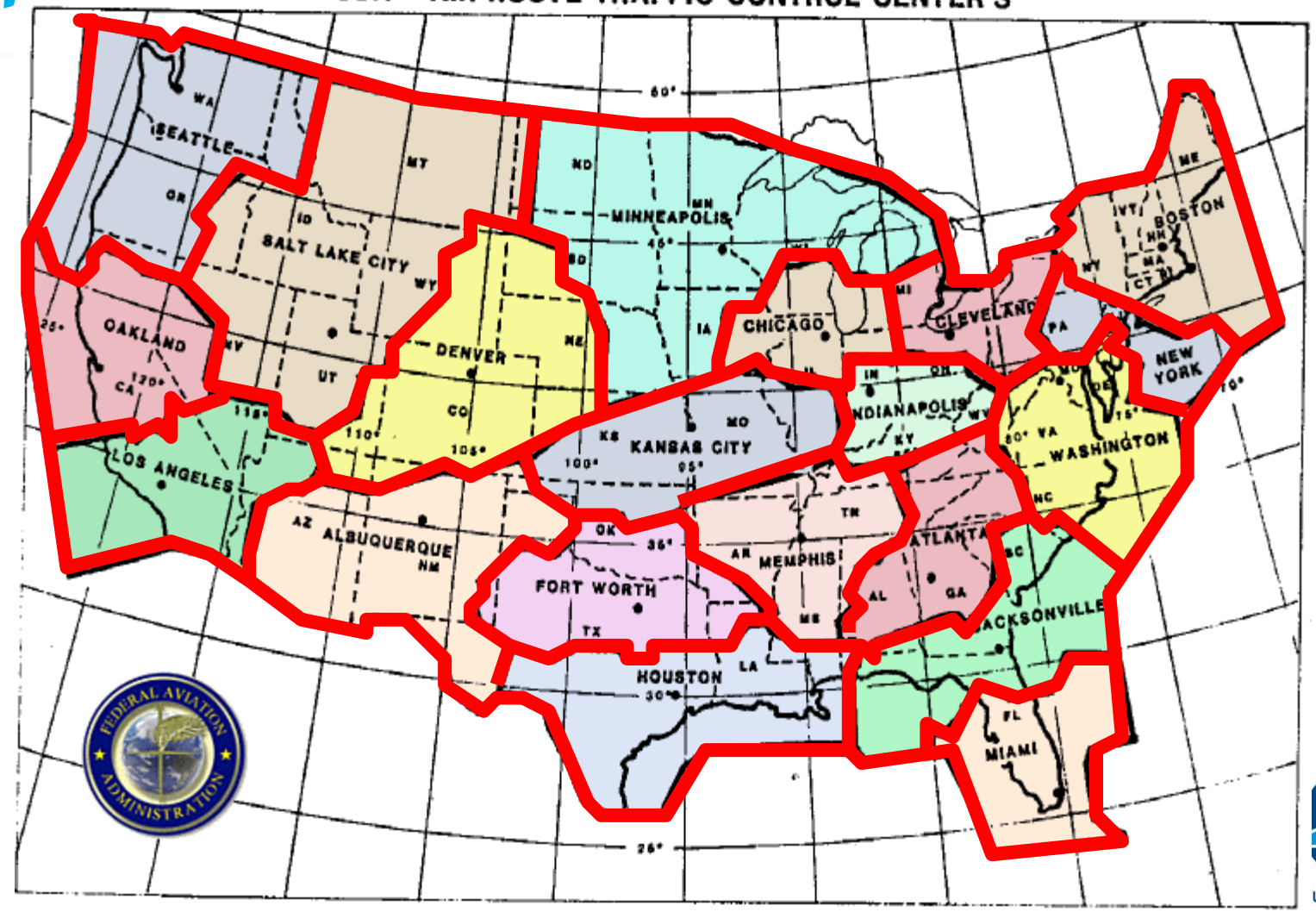
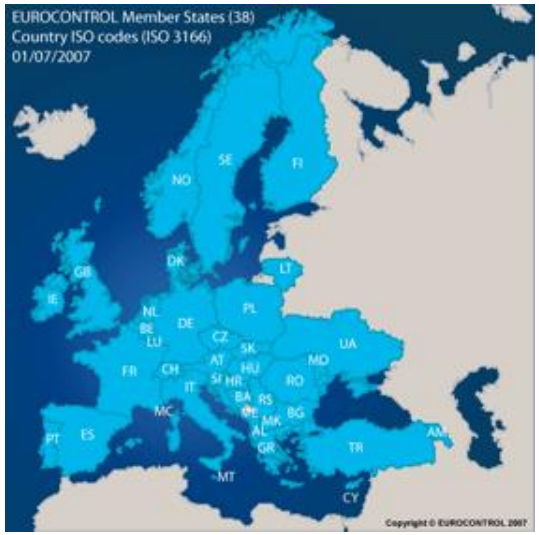
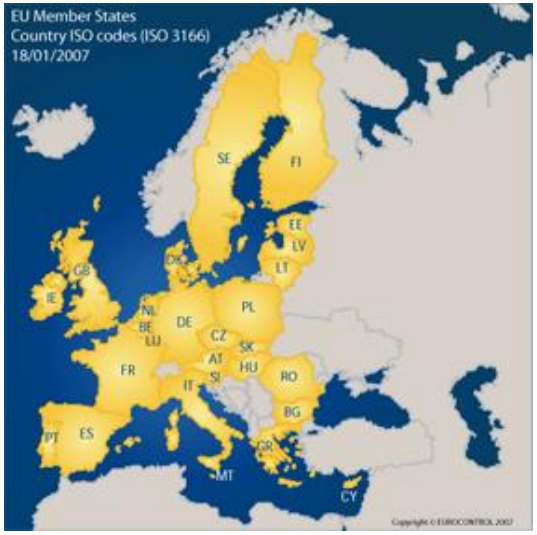


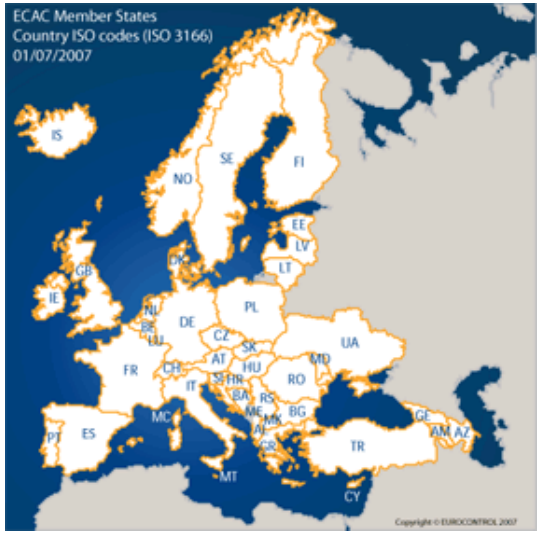
USA – AIR ROUTE TRAFFIC CONTROL CENTER'S



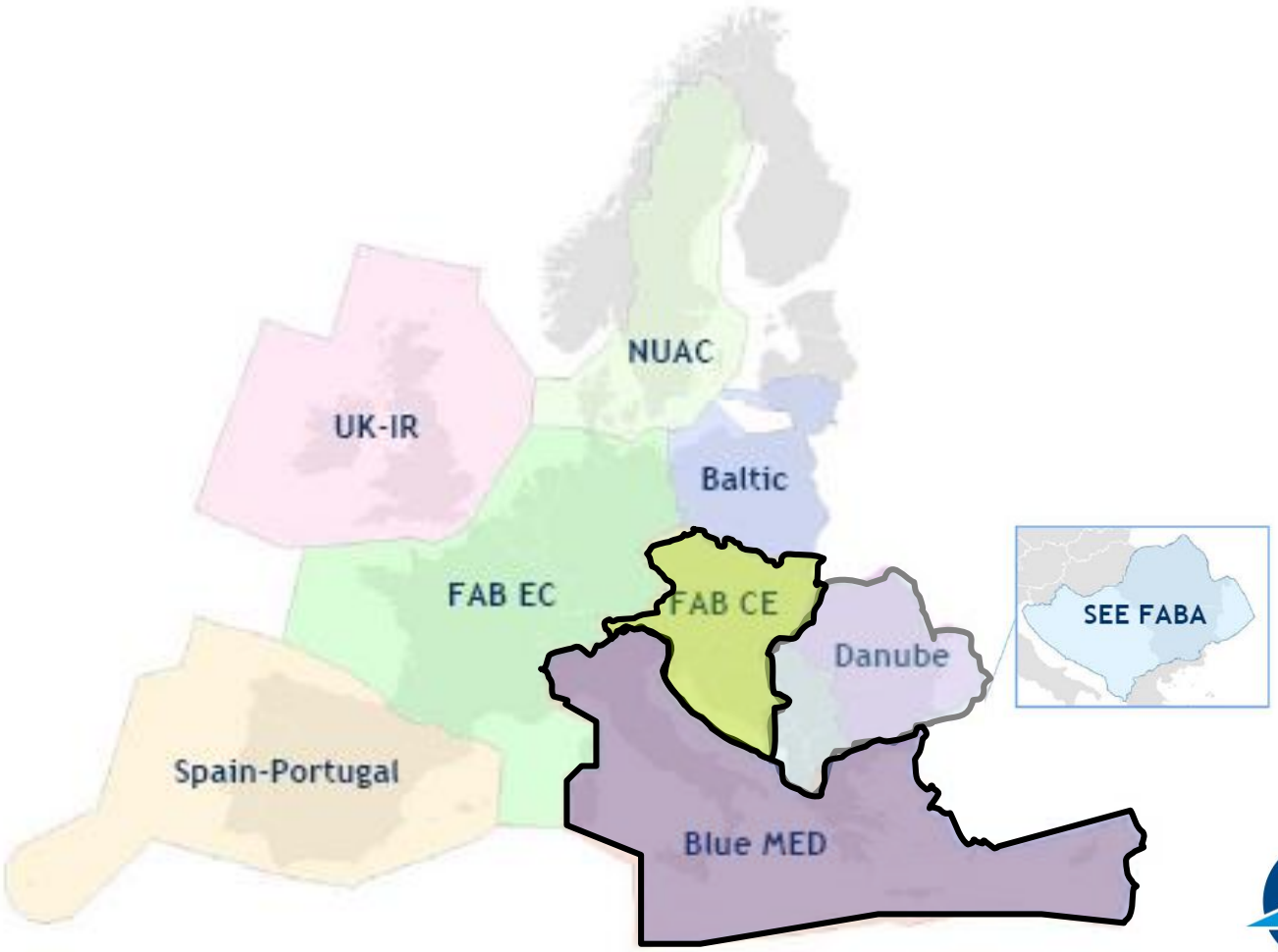
European context







FAB Initiatives



Fairly difficult because

- Feasibility study meaning CONOPS still high level
- The subject matter FAB itself
  - Basis is airspace design
  - Plus a number of knock-on effects (E,P,H)

How did we do the safety assessment?

- Applied the Success/Failure approach
- Looked at interfaces
- Made the conclusions that could be made at this very first iteration
- Documents produced:
  - Safety considerations
  - Initial Safety Argument
  - Safety Plan

How did we do the safety assessment?

- Safety considerations
- Initial safety argument
- Safety plan

How did we do the safety assessment?

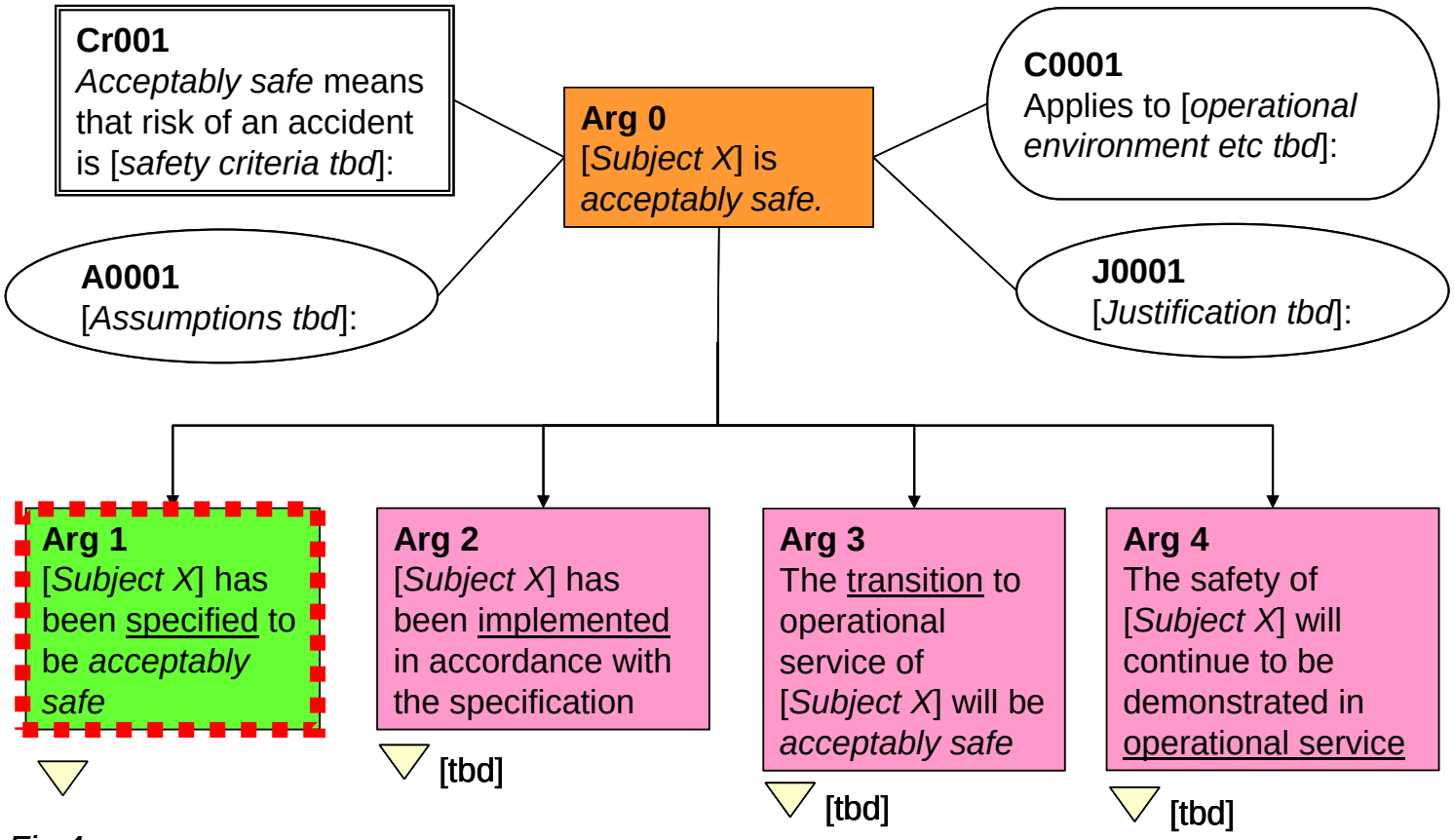
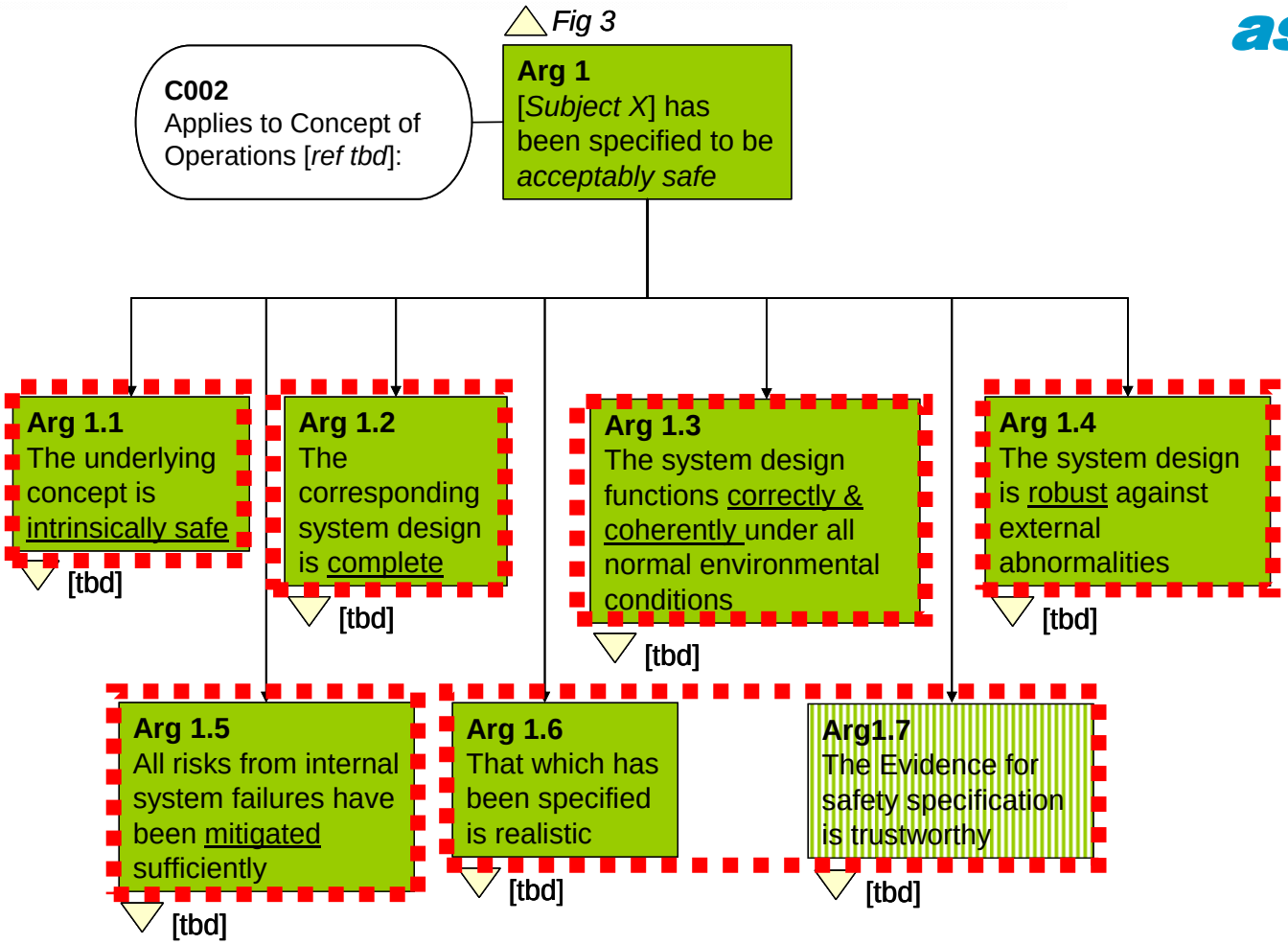


Fig 4

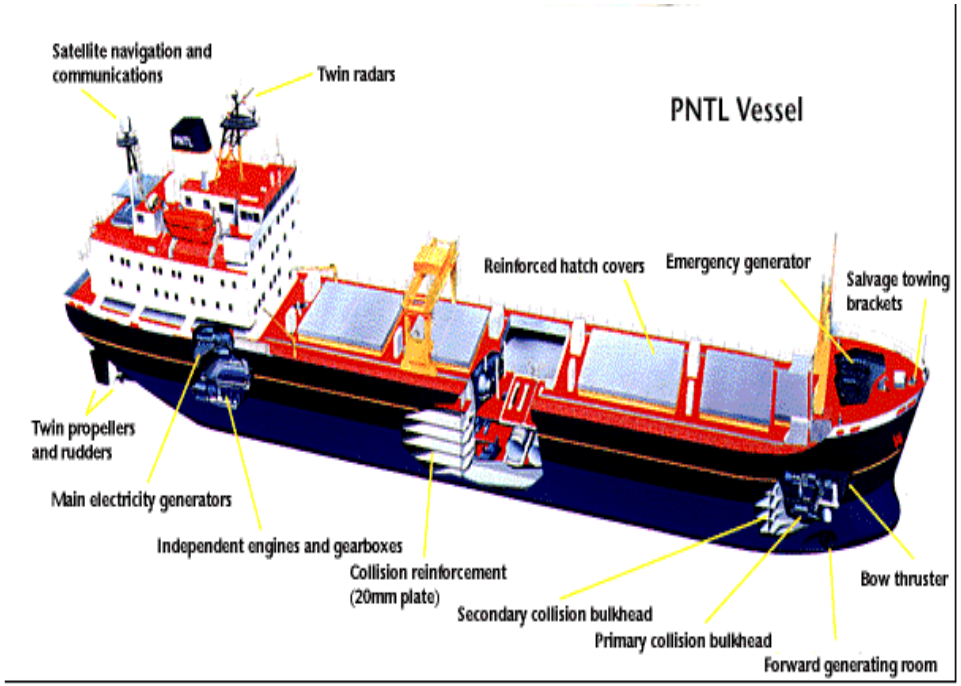
How did we do the safety assessment?



Rationale for the approach

- **Safety case meant to support decision making**
- **To make the decision to invest money one needs to know**
  - **What are the expected benefits**
  - **What are the possible inherent risks**

Rationale for the approach



Traditional approach:

Safety is OK because failures will not happen “often” and should they happen the consequences have been mitigated

Success approach (by tradition sort of implicit):

Safety will be improved because of……

However not easy

- **"Product" loosely defined therefore:**
  - **Not easy to say how good it is**
  - **Not easy to say what can happen**

However not easy

- Safety considerations helped identifying a first set of hazards
- One fundamental assumption: no unproven technology required
- Initial Safety Argument allowed to conclude that:
  - There would be safety benefits (success part)
  - There would be no difficulty in mitigating identified hazards (failure part)
  - There would be no difficulty to provide evidence to the above
- An initial Safety Plan could be derived

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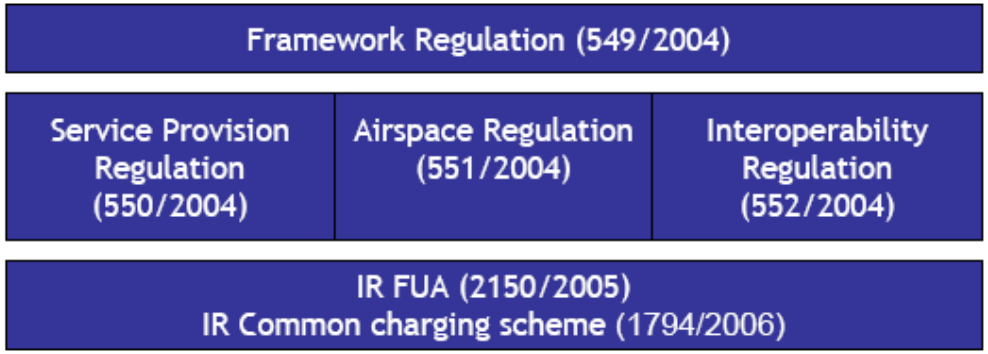
Figure 3-1: Overview of SES regulations



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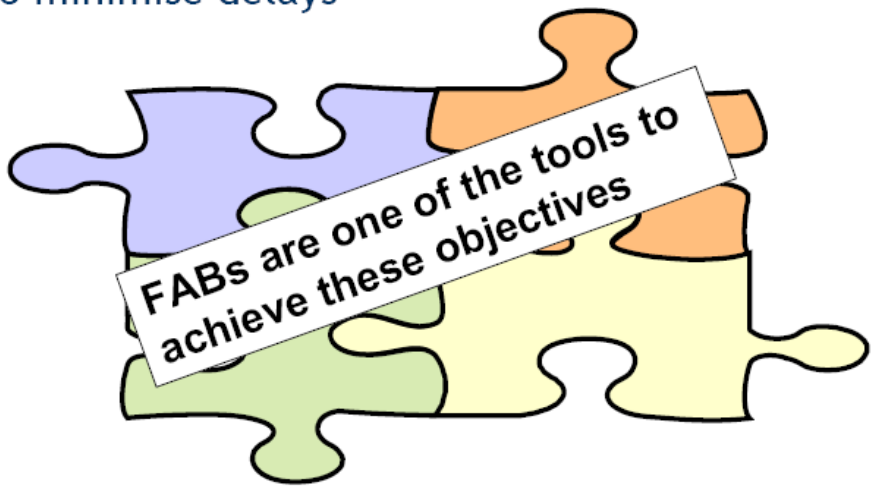
SES objectives (Art. 1, FR)

- Enhance current safety standards
- Enhance overall efficiency for general air traffic in Europe
- To optimise capacity meeting the requirements of all airspace users
- To minimise delays



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- **EC Request:** The European Commission asked the PRC to provide an independent "evaluation of the FAB initiatives and of their contribution to performance improvements" (May 2007)

- **Objective:** Assist the Commission in preparing its report on experience in implementing Article 5 of the Airspace Regulation related to the creation of FABs which is planned in two years time (i.e. 2009), according to the statement attached to the SES regulations:

- **Schedule:**

December 2007:	Interim Report
July 2008:	Draft Final Report
September 2008:	Final Report

- **Financing:** EC contribution

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Airspace Regulation *(Airspace Reg.)*

General objectives:

- "With a view to **achieving maximum capacity and efficiency** of the air traffic management network within the single European sky, and with a view to **maintaining a high level of safety**, the upper airspace shall be reconfigured into functional airspace blocks."

→ **Objectives stated in qualitative terms**

Specific requirements
Supported by safety case
Enable optimum use of airspace
Be justified by added value through a Cost Benefit Analysis
Ensure flexible and fluent transfer between service units
Ensure compatibility between upper and lower airspace
Comply with regional ICAO conditions
Respect regional agreements (including with those outside Europe

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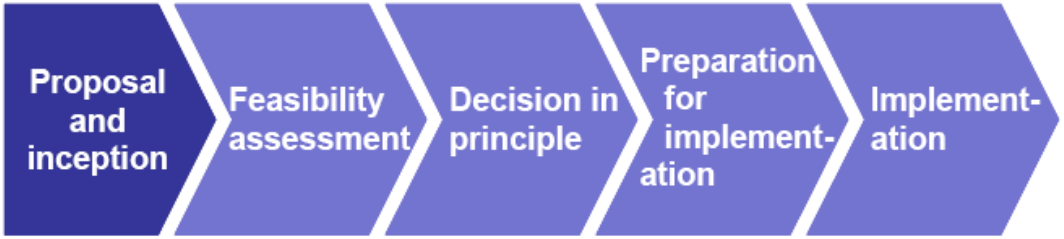
Progress with implementation framework (1/5)



- High level concept elaborated
- Possibility of a FAB agreed by Member States in outline form
- Agreement to proceed with detailed studies
- Governance arrangements for feasibility assessment stage agreed
- Project charter (terms of reference) defined
- Project plan defined
- External support procured (if required)

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Progress with implementation framework (2/5)

- Define geographical scope
- Define operational concept (airspace design, etc)
- Technical solution and implementation plan defined
- Define institutional and regulatory arrangements
- Define financial arrangements, including charging
- Options for civil/military co-operation
- Human resources and change management
- Preliminary safety case / Safety management plan
- **Consultation with stakeholders**

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Progress with implementation framework (3/5)

- Shortlist of options
- **Cost benefit analysis of each option**
- Safety risk assessment
- Environmental impact assessment
- **Select preferred option**

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Progress with implementation framework (4/5)

- Consult with Member States and European Commission
- Consult with other stakeholders - users, staff, military
- Finalise arrangements
- Develop implementation plans
- Obtain outline safety case
- Commission notified of common charging zone (if applicable)
- Final decision to proceed
- Commission notified of agreement
- Date at which FAB takes effect published in OJEU

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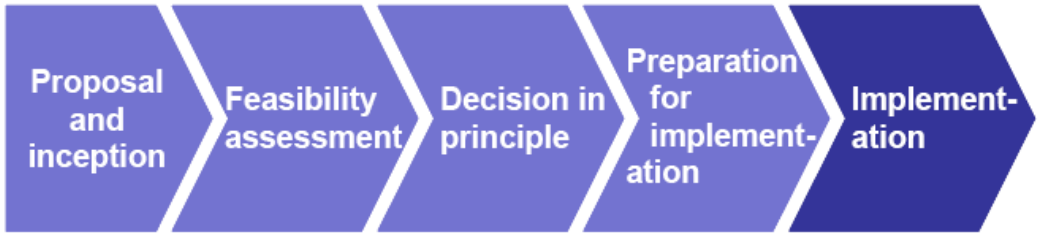
Progress with implementation framework (5/5)



- Mechanism for FAB supervision established
- Final safety case
- Recruit staff and management team
- Implement technological solution
- Operational procedures implemented
- Migrate existing staff (if needed or where applicable)
- Member States to designate service providers within the FAB
- Start operations

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Safety	Efficiency	
	Economic	**Operational**
• Incidents reports • Safety maturity scores	• Financial cost-effectiveness as in ACE ▪ ATCO employment costs per output metric ▪ Support costs per output unit	• ATFM delays per flight-hours • Horizontal flight efficiency

Technical efficiency	Airspace use and design	
Interoperability of ATM systems	FUA – multinational cooperation	Airspace Design
	Extent of delegation of ATS **Share of delegated ATS**	

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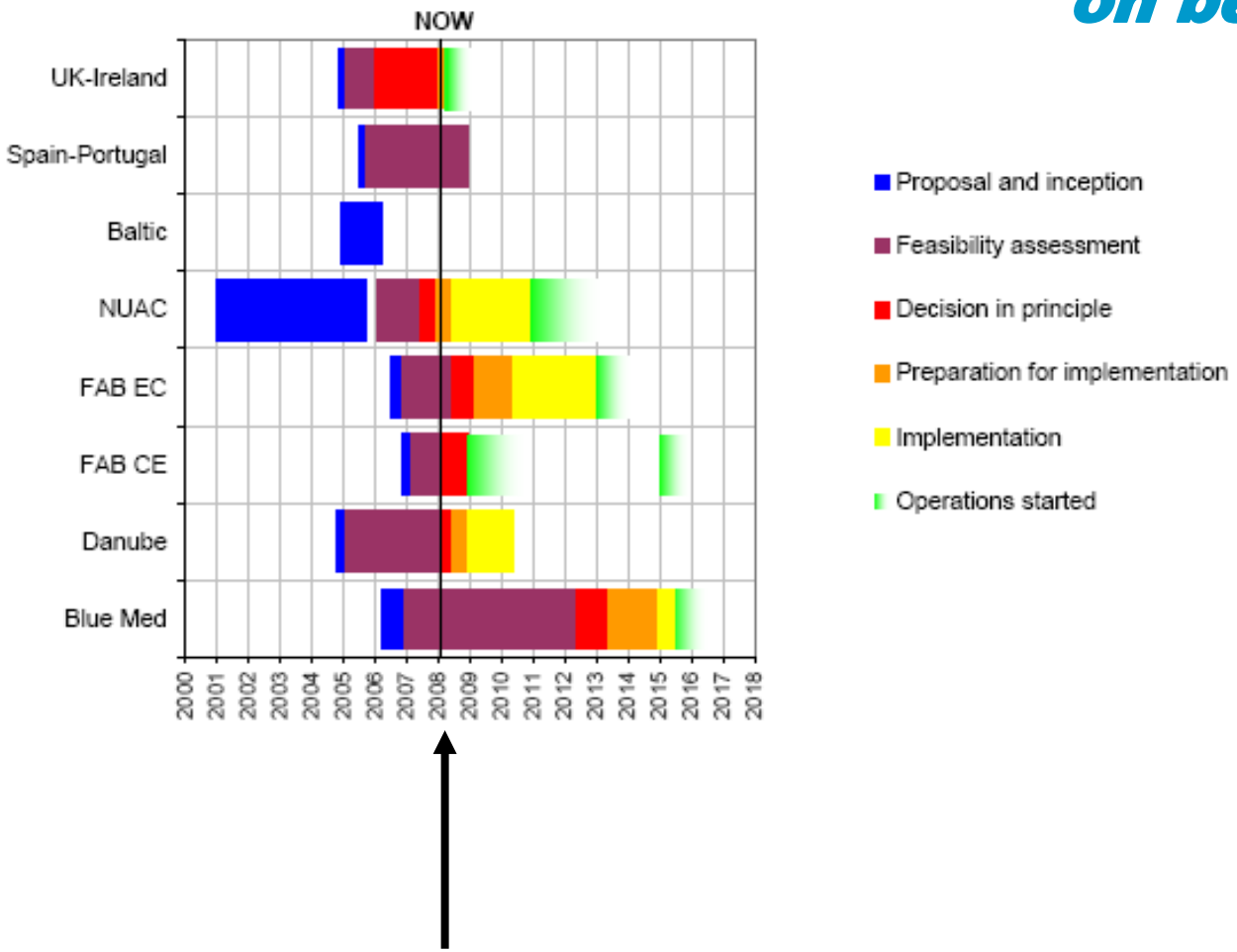

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Figure 5-5: Status of the FAB initiatives

Programme name	Status
Baltic FAB	Inception stage – progress unlikely without agreement regarding Kaliningrad
Blue Med	Feasibility assessment stage (results of feasibility study expected in February 2008)
Danube FAB	Early stages of development (results of the second phase of the feasibility assessment expected in May 2008)
FAB Central Europe	Feasibility assessment stage (results of feasibility study expected in March 2008)
FAB Europe Central	Feasibility assessment stage (results of feasibility study expected in June 2008)
NUAC Programme	Completing feasibility assessment stage (Decision to be taken)
FAB Spain Portugal	Initial work undertaken only. Initiative on hold, with the scope being reviewed
FAB UK Ireland	Feasibility assessment completed. Initial objectives totally reviewed. Decision in principle completed, discussions ongoing about form and timing of implementation.

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Figure 5-7: Key elements of the current initiatives

Programme name	Key changes to be introduced by the FAB
Baltic FAB	Not yet decided. Under consideration are: airspace design; interoperability; commonality for purchase of new equipment; and support function cooperation
Blue Med	Key changes are in airspace design and improved interoperability, to create a 'virtual centre', defined as a group of remotely located interconnected ACCs operated by different ANSPs, operating as a single ATM centre.
Danube FAB	Are considering a similar range of scenarios as the NUAC programme, including airspace design, technology and support services under full integration, partial integration and alliance scenarios.
FAB Central Europe	The FAB is operationally driven, and the feasibility assessment is considering 'quick wins' and long term airspace redesign solutions using a common operational concept and the identification of sector families and groups.
FAB Europe Central	Plans not finalised but most important changes likely to be in terms of airspace design and the operational concept, including establishment of a FAB ATM-ATFCM function. It will also include changes to systems in order to improve interoperability and operational and financial performance, and other areas for co-operation are also under consideration (for example, ancillary services).
NUAC Programme	The key changes depend on the option that is selected but in all scenarios will include improvements to airspace design, technology and support services. In the merger scenario, it would also include integrated service provision and therefore staffing.
FAB Spain Portugal	Not yet decided, as initiative under review. Latest documentation discusses airspace design, interoperability and common training as key issues that might be addressed.
FAB UK Ireland	The recommended option, due for implementation in 2008, would create a tripartite FAB Management Board with both ANSPs and an airline representative. This Board would be responsible for investigating potential improvements in airspace design, service provision and safety management on a case by case basis. However, the business case to support these would need to be created and approved by the respective executive boards of the ANSPs and State regulators.

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Expectations... and reality

...and little guidance on which approach to pursue

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Thank you for your attention