Where are we today?

About Safety in SESAR…

ACARE Workshop on Certification

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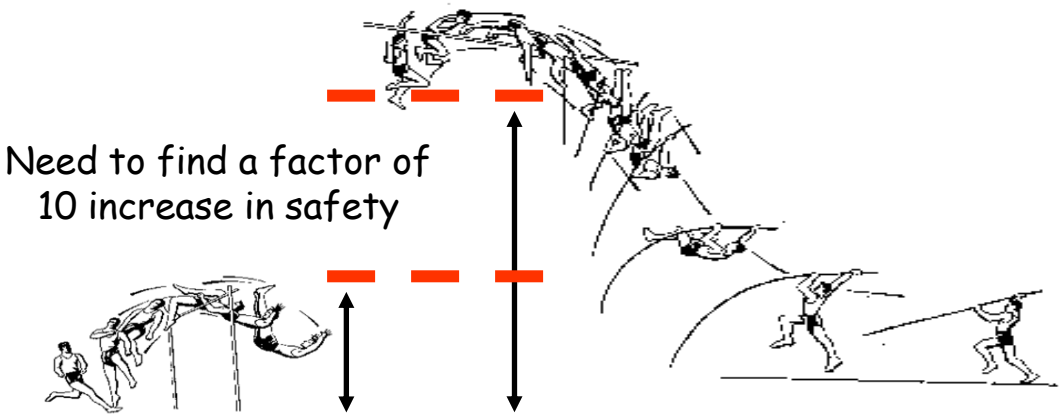
Bruno RABILLER
EUROCONTROL
Representing SJU

Agenda

- SESAR and associated challenges
- The augmented safety assessment framework for SESAR
- SESAR and Preparation for Deployment

SESAR and associated challenges

SESAR and its highly demanding Safety "target"…

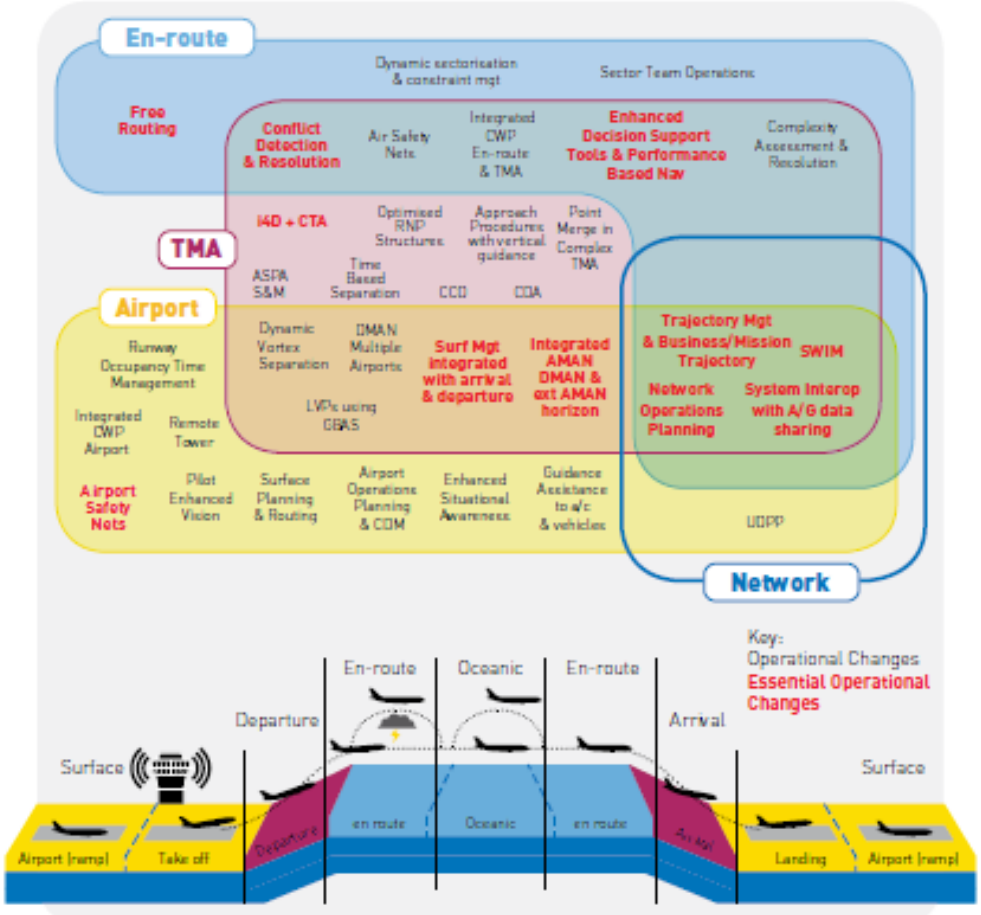


SESAR and its complexity

- Highly novel ATM and the need to show that any individual operational concept “works” properly (is safe) in the absence of failure

- Numerous ATM changes and the need to show that all operational concepts “work” properly altogether to deliver the SESAR Safety target

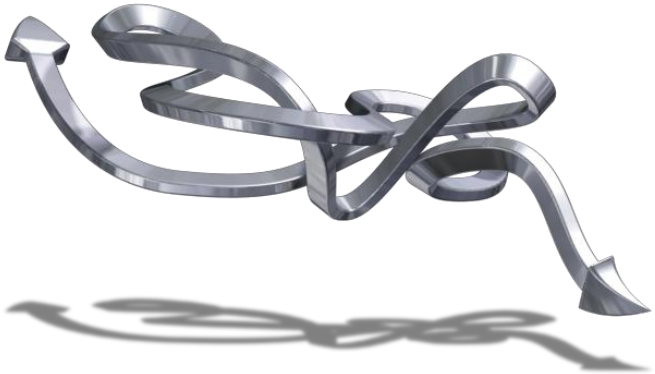
- Complex transitional issues from today to tomorrow (different baseline situations, implementation sequencing of numerous ATM changes, transition time) and the need to show that at any point in time we can ensure in the design that ATM will remain acceptably safe



SESAR is a large ATM improvement project

…Some key safety questions deserving answers

- Will the automation be as effective – in reducing aviation risks - as the humans that it will replace?
- When system failures do inevitably occur can they be safely managed by the humans in the chain??
- Where will the future safety come from with SESAR?
- How to deal with the aggregate risk and what can be a well informed process to deal with the apportionment of the risk budget?
- How to show that at any point in time we can ensure in the design that ATM will remain acceptably safe?



Highly demanding Safety Target

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Radical changes to ATM

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Complex transitional issues (sequencing, cherry picking, ordering high variability in departing points, transition times, etc.)

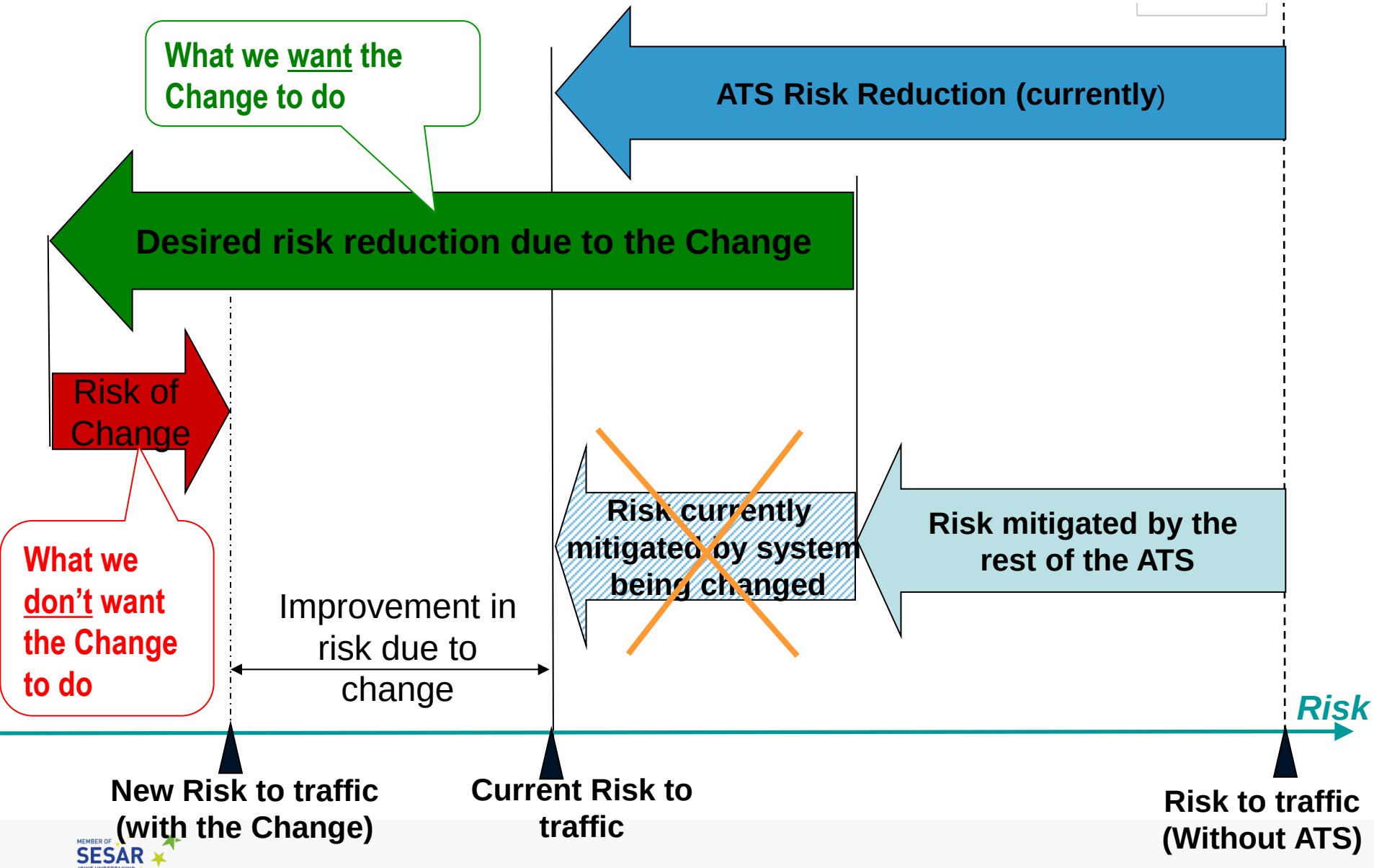
An augmented safety assessment framework is necessary

The augmented safety assessment framework for SESAR

The augmented safety assessment framework in SESAR

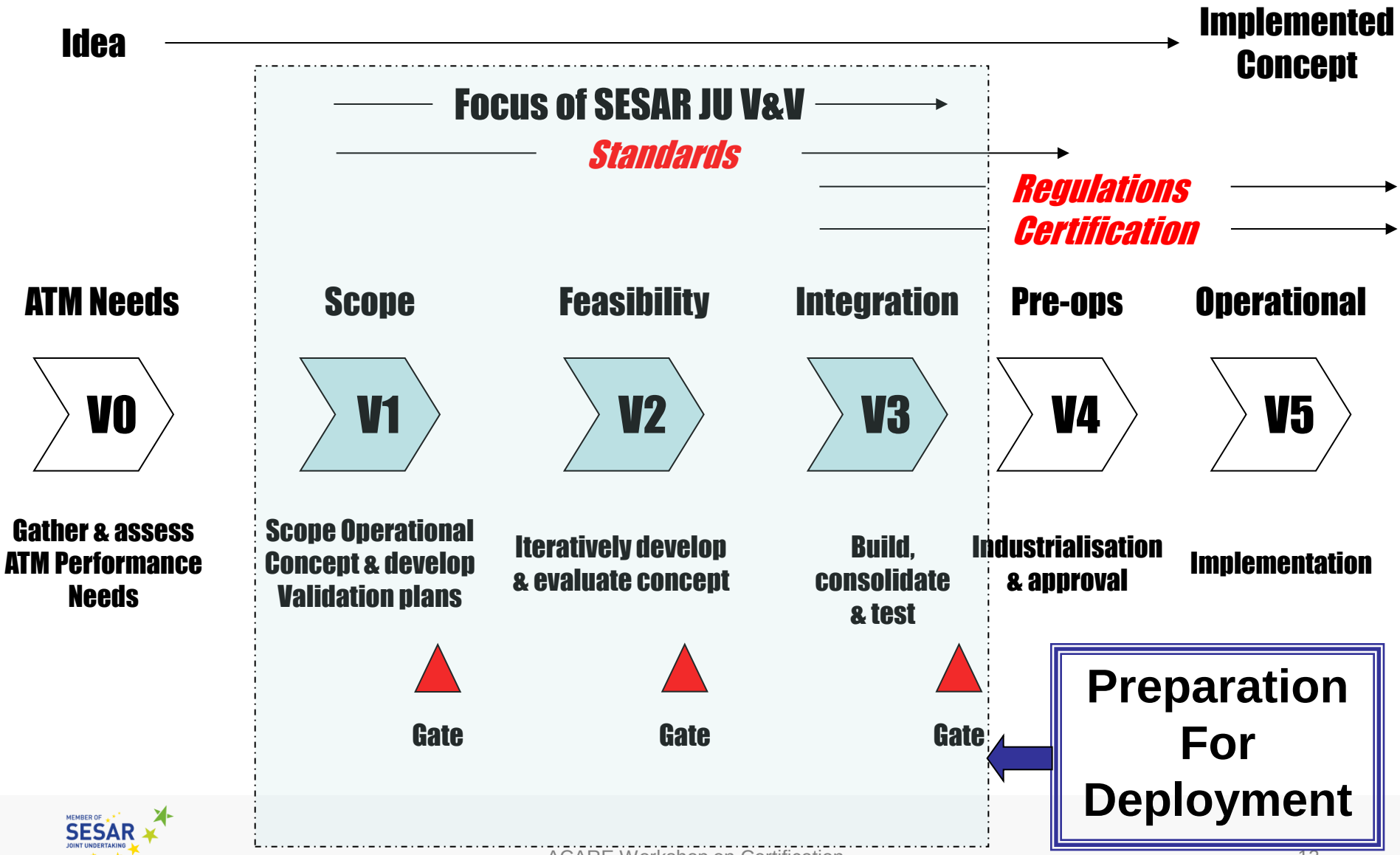
- Broader approach to safety assessment
  - Success approach in addition to the “traditional” failure approach
- Usage of an aviation Accident-Incident Model (AIM) to:
  - apportion the ECAC-wide safety target into safety design hurdles
  - Define severity and risk classification schemes suitable to SESAR design
  - Provide measurable safety validation objectives to HITL RTS & Flight Trials
- Safety Assessment coordinated with Human Performance

Illustration of the broader approach to safety assessment

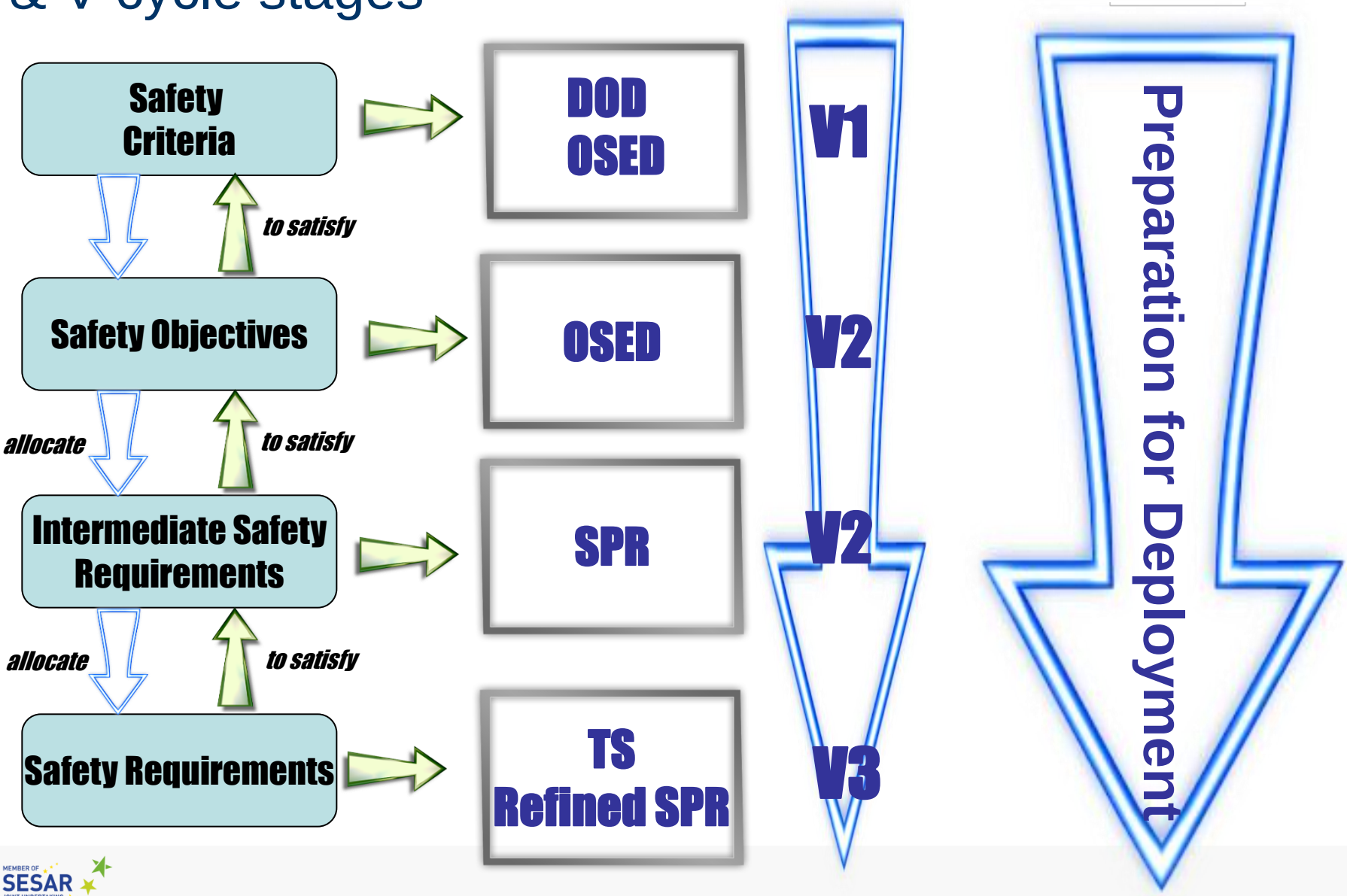


SESAR and preparation for deployment

SESAR and the Concept Lifecycle Model



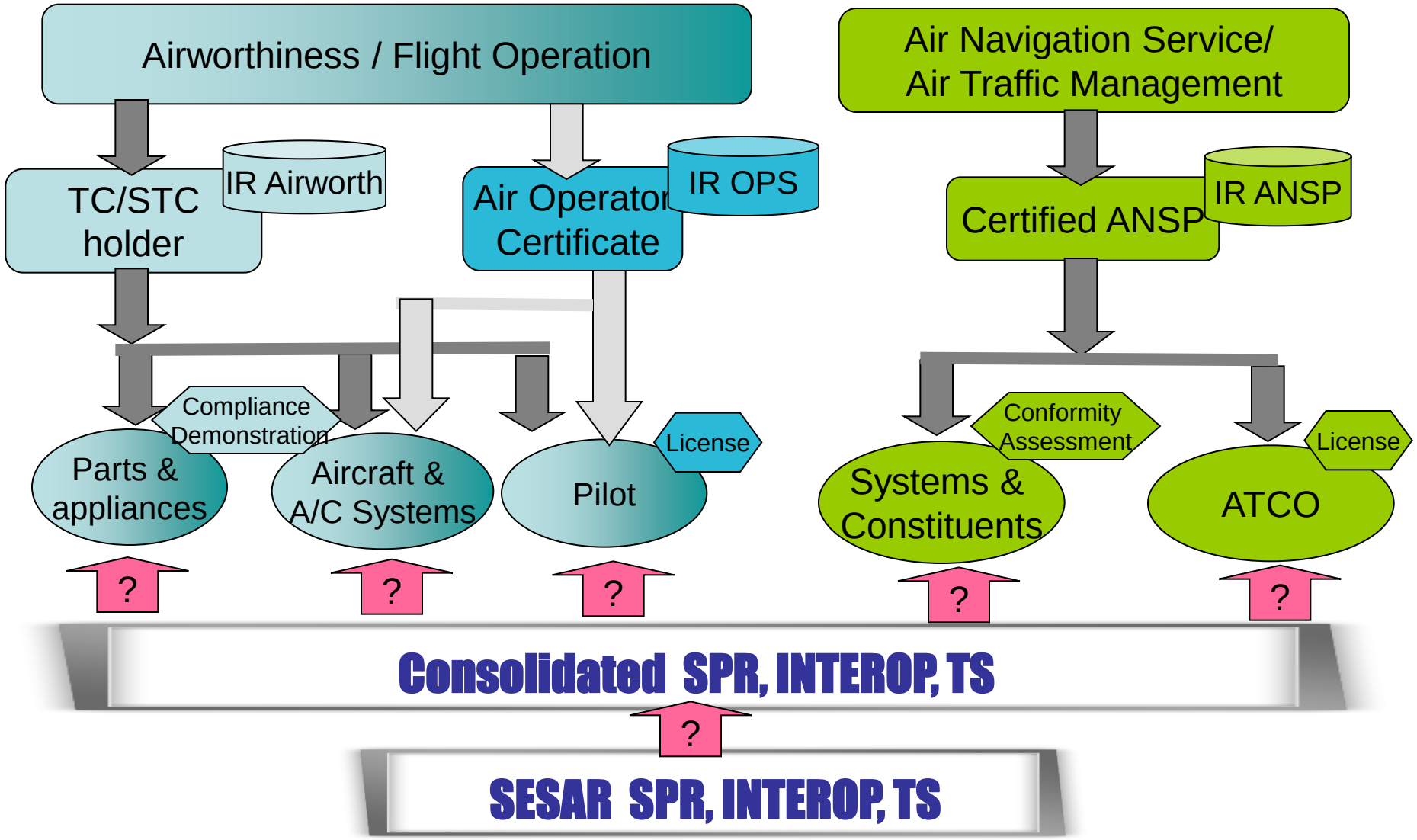
Main safety assessment outcomes, formal recipients & V cycle stages



Preparing for Deployment

The next Steps are outside of SESAR scope

The next Step and the different « Certification » processes



Need for a Total System Aviation Approach

Conclusion

- A broader safety assessment framework accompanying the SESAR development lifecycle
  - Stopping at V3 level (Pre-industrial development & integration)

- The broader approach addresses operational concept in an holistic way (Ground, airborne, spatial, equipment, procedure and human aspects)
  - From a success point view (to deliver safety performance in normal conditions)
  - From a failure point of view (the “traditional” way of addressing safety)

- The broader approach led to the identification of Safety requirements (Functionality/Performance and Integrity/Reliability):
  - To be implemented in order to deliver the required safety performance
  - Addressing all ATM elements relevant for the operational concept (ground and airborne elements, Controller, Pilots, ATC procedures, Flight crew procedures, …)
  - All requirements are captured in SESAR deliverables (OSED, SPR, TS,..).