



The Migration of SES RAM regulations into EASA regulations

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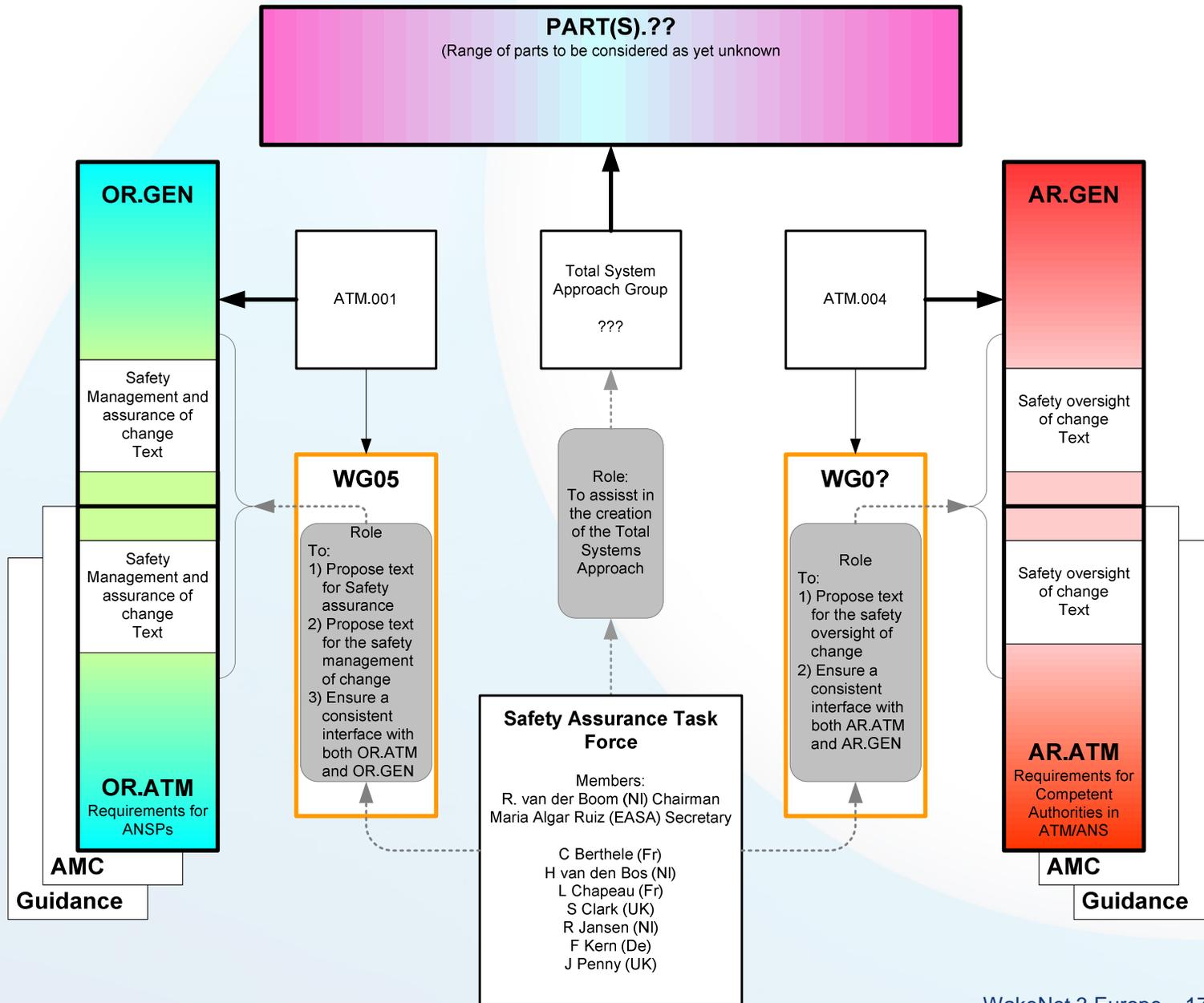
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RAM Regulations in SES



- Regulations covering the management, safety assurance and supervision of ATM change are currently in:
 - Common Requirements (SES – EC 2096/2004 – Articles 2 & 5, Annex I sections 3 & 8, Annex II sections 3.1 & 3.2)
 - Safety Oversight (SES – EC 1315/2007 – Articles 8 & 9)
 - Software Safety Assurance System (SES – EC 482/2008)
- EASA has taken competence in the safety regulation of ATM
- The safety elements of the SES regulations are being moved into EASA and implemented as Implementing Rules (IR)
- Changes will be made:
 - to accommodate the regulatory style of EASA and
 - to address substantive issues in the SES regulations.
- The EASA Safety Assurance Task Force (SATF) has been established to prepare the Implementing Rules (IR), Applicable Means of Compliance (AMC) and Guidance Material (GM) associated with the management, assurance and supervision of change.

Safety Assurance Task Force



Method of work



- Safety assurance principles for regulation have been agreed.
- Areas in the regulations where challenges are known to exist have been identified:
 - Target levels of risk and their apportionment
 - Risk posed by change – the selection of safety cases for review and the depth and breadth of that review
 - The management and supervision of multi actor changes
 - Risk assessment and assurance where some actors do not have a view of safety
- These are studied by small working groups. Their solutions together with the principles, will be used to create the rules, means of compliance and guidance material.
- The SES regulations form the baseline for the rules and will be changed only where necessary

Safety Assurance Principles - Change



- Changes (that need to be assessed for safety) arise due to the following drivers:
 - business needs,
 - system needs,
 - changes in the environment of operations,
 - safety needs - safety needs arise from:
 - monitoring the safety performance of the operation
 - reviewing the system to establish if it can be made more safe (as safe as is reasonably practicable – strategic ‘alarp’)
- Day to day changes, maintenance activities and contingency should be covered in the current safety case. If they are not covered, painful though it is, they are considered to be changes.

Safety Assurance Principles – Management



- All ANSPs must have a management system that among other things – (Generalised for both safety and dependability):
 - Periodically reviews the system, the environment of operations and the state of the art and decides when change is needed.
(Note: change may also be needed for other business reasons)
 - Informs the users of its services and its regulator (NSA) of the intent to change.
 - Establishes a safety risk budget for the change that makes it acceptably safe.
 - Performs risk assessment and, where necessary, mitigates the risk in order to make the change meet its safety risk budget.
 - Where practicable reduces the risk (as low as is reasonably practicable – tactical ‘alarp’)
 - Ensures that the change is not introduced until:
 - a valid assurance case exists,
 - all other related assurance cases are valid,
 - And, where necessary, the change has been accepted by the NSA
 - Uses documented procedures that have been agreed with the NSA (as part of Certification).

Safety Assurance Principles – Safety Levels



- There needs to be an agreed level of safety
 - Safety risk is the surrogate for safety
 - Safety risk is the total or cumulative risk associated with ATS activities (it is not a risk per aircraft)
 - A European safety risk target is established
- There needs to be an agreed means of apportioning the agreed level of risk to individual airspaces (via individual states and ANSPs)
- Change should not alter the level of risk.
- Therefore, for each change the ANSP needs to argue the proportion of its risk that is allocated to the change (the safety risk budget). This may be:
 - by directly apportioning the quantitative risk or
 - by transforming the safety risk budget into surrogates (Safety Acceptance Criteria) and showing that the transformations are valid.

Safety Assurance Principles – Safety



- Safety assessment of change
 - Perform risk assessment and if required, mitigation
- Safety assurance of change
 - Create an assurance case
(Safety or Dependability assurance cases as required)

Safety Assessment



- Risk assessment and mitigation shall include:
 - (a) definition of the **scope** of the change, related interfaces and the environment of operations in which it is intended to operate;
 - (b) determination of the **safety acceptance criteria** applicable to the change;
 - (c) identification of **hazards**;
 - (d) **risk analysis** in relation to the harmful effects introduced or affected by the change;
 - (e) **risk evaluation** and, if required, **risk mitigation** for the change such that it can meet the applicable safety acceptance criteria; and
 - (f) prior to entry into operation, **verification** that the change does meet, and will continue to meet the safety acceptance criteria.

Impact on WakeNet?

(A personal view)



- The focus of WakeNet is: “to improve operational efficiency via a better understanding of wake turbulence and its effects”
- Currently standards for separation are described in ICAO – PANS ATM
- In general standards are used to imply consistency:
 - consistency of performance (standard levels) or
 - consistency of behaviour (standard form or physical property)
- Standards can also reduce workload:
 - The determination of the features that are to be standardised is only performed once. It is not performed each time someone wants to do something equivalent.
 - The evidence that an implementation meets a standard can be re-used each time the implementation is used.
- However the use of a standard does not imply that the operation will be safe

Impact on WakeNet – 2



- SES and EASA ATM regulations are fundamentally based on the use of:
 - Safety Management systems
 - changes are performed when necessary
 - The safety risk budget for the change is correct
 - Safety cases
 - the operation is safe enough after the change
- The use of a safety case grants ANSPs the freedom to choose whether to use a standard or not.
- Even if they choose to use a standard they would still have to demonstrate safe use of the standard.
- WakeNet will be of great benefit when it provides re-usable evidence on the causes and effects of wake turbulence.
- The ANSP can use this evidence to decide what separations are appropriate for his operation (and its interaction with neighbouring operations) and include it in his safety case.
- The ANSP also establishes the safety requirements for the change. These cannot be determined in advance and so groups such as WakeNet should be cautious when using the term 'safety requirements'.