Civil Aviation Authority

ATS Safety and IOP Regulation Aspects Related to C,N,S and other ATM Systems

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2nd October 2013

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In this role I am focused on Regulatory Models, Models of Regulation, Regulatory Risk, Risk Assessment & Mitigation techniques, Safety Case Development and Safety Case Evaluation for CNS/ATM services and systems.

The Civil Aviation Authority

- The CAA is the UK's specialist aviation regulator. Its regulatory activities range from making sure that the aviation industry meets the highest technical and operational safety standards to preventing holidaymakers from being stranded abroad or losing money because of tour operator insolvency.

The Requirements Challenge

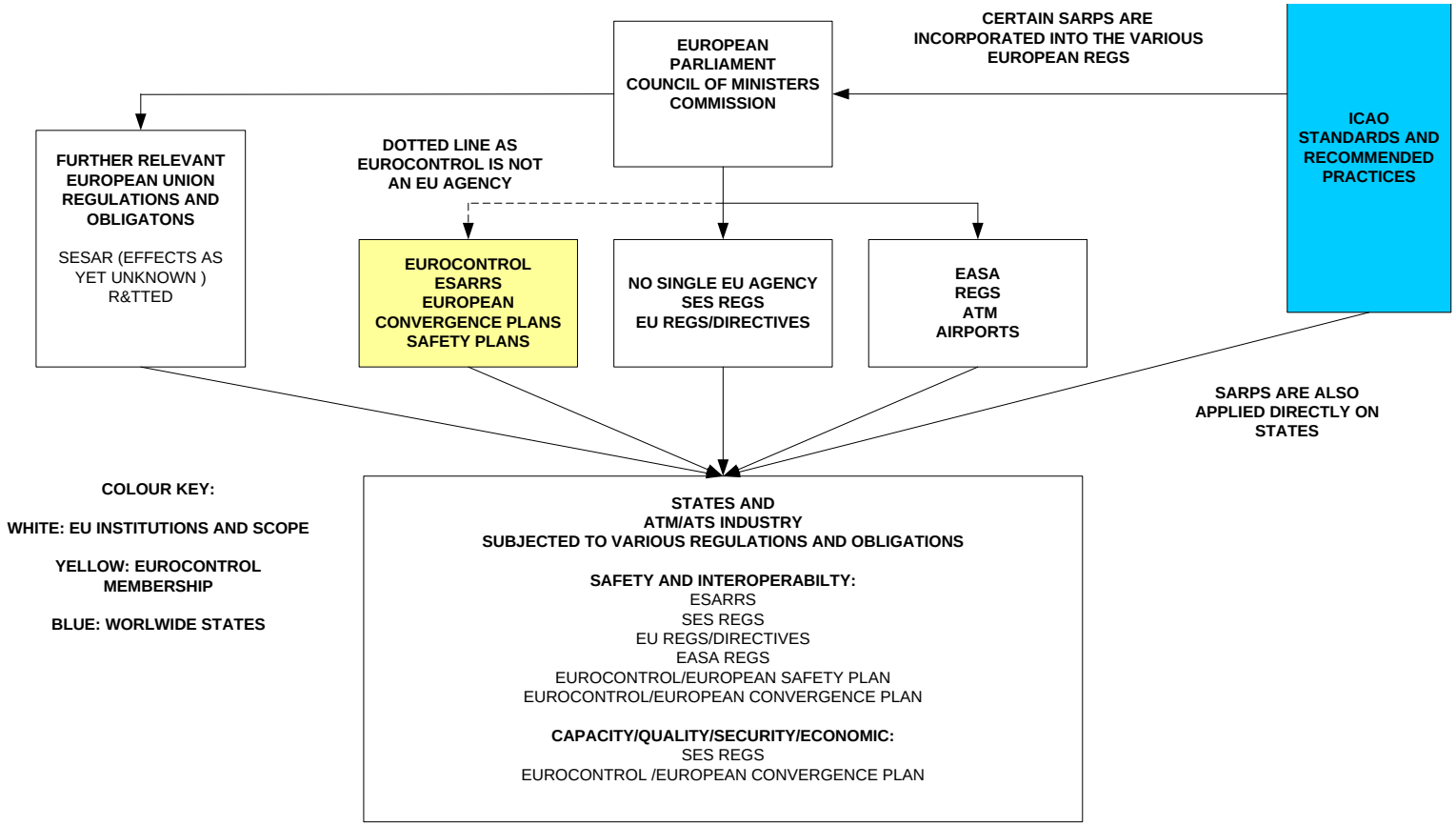
- Promulgating, understanding and bringing together requirements as illustrated in the following slides

- This involves rationalising the requirements for:
  - Safety
  - Security
  - EMC
  - Spectrum Management
  - Interoperability
  - Single European Sky (SES)

INSTITUTIONS

- Institutions generating ‘requirements’:
  - European Commission
  - EASA
  - State Regulators
  - EUROCONTROL
  - ICAO

INSTITUTIONS



Requirements/Standards Applicable to C,N,S Systems 1

State Level Regulations (increasingly less, as EU Regs develop)

- CAP 670 C,N,S Sections

European Regulations (European Commission - SES and EASA Regs)

- e.g. The Surveillance Performance and Interoperability Implementing Rule (EU) No 1207/2011

ICAO Level Regulations/standards

- e.g. Annex 10 SARPs

European Level Standards/community Specifications

- Community Specifications (Eurocontrol/ETSI) for application under the SES IOP Regulation EC 552/2004
- Eurocontrol system performance specifications

Requirements/Standards Applicable to C,N,S Systems 2

Eurocae/RTCA Specifications

- e.g. ED-117 - MOPS for Mode S Multilateration Systems for Use in A-SMGCS
- e.g. EUROCAE ED-142 Technical Specifications for Wide Area Multilateration System (WAM)
- e.g. ED-128 - Guidelines for Surveillance Data Fusion in Advanced Surface Movement Guidance and Control Systems (A-SMGCS)

ICAO Related Material

- ICAO Aeronautical Surveillance Manual - ICAO Doc 9924

Further European Regulations or initiatives to consider: e.g. SESAR ATM Master Plan

The main pieces of legislation 1

- EU/EASA Common Requirements 1035/2011 require ANSPs to perform risk assessment and mitigation in respect of change
- EU/SES IOP Regulations require manufacturers and ANSPs to show compliance with Essential Requirements (ERs) and Implementing Rules (IRs)
- IRs further define ERs for particular systems and provide European wide implementation dates
- Air Navigation Order 2010 – UK Aviation Safety Legislation

The main pieces of legislation 2

- An Approval under Article 205 of the UK Air Navigation Order is required for each C,N,S and ATM system (only issued when all relevant regulations complied with)
- The Radio and Telecommunications Terminal Equipment Directive (R&TTED) scopes in C,N,S systems for efficient use of spectrum and avoidance of harmful electromagnetic interference

Role of ATS (SARG)

- To oversee or ‘supervise’ the ATS provider industry compliance with safety and interoperability requirements
- Of particular interest to C,N,S and ATM systems:

  To oversee changes to operational systems and industry safety assessments of changes (as required by the Common Requirements EU No 1035/2011 and NSA Safety Oversight Requirements1034/2011)

  To supervise compliance with IOP Regulations EC No 552/2004

Role of Industry

- Employ a Safety Management System
- To perform risk assessment and mitigation of change and present this to ATS for approval in the form of a safety case or equivalent document.
- To prepare submissions in respect of the Interoperability (IOP) Regulations and provide these to ATS (SARG) for review

Dealing with the legislation requirements 1

- R&TTED: This may involve a Notified Body and requires a Declaration of Conformity and CE marking. ETSI R&TTE standards allow self certification
- IOP Regulation: C,N,S and other ATM systems manufacturers and ANSPs are required to provide 'IOP compliance' statements in the form of a Declaration of Suitability for Use, Technical File and Declaration of Verification to the IOP ERs.
- Community Specifications: (Eurocontrol/ ETSI) provide compliance to ERs and IRs

Dealing with the legislation requirements 2

- EU/EASA Common Requirements, risk assessment and mitigation.
  - Requires a safety case (CAE)
  - Requires Safety Support Cases (soon)
- Type Approval currently does not exist in the UK for ATM systems. Hence approvals are site/installation specific.

Current Initiatives

- EASA developing the Safety Assessment of Change IR
- Developing commonality of regulatory approaches across all domains
- Developing Safety Case Assessment Guidelines
- Developing the concepts of Dependability Cases rather than Safety Cases
- Better linking of hazards to accidents
- Better understanding of which organisations have a view of safety and hence need SMS and which need a safety support management system
- Developing a better requirements promulgation system and bringing together a wide range of requirements for systems, whether expressed at system level or service level

Web Based Information

- CAA ATS Requirements Overview Pages:
  http://www.caa.co.uk/default.aspx?catid=2004&pagetype=90
- EU IOP IR&CSs
  http://ec.europa.eu/transport/air/single_european_sky/implementing_rules_en.htm
  http://ec.europa.eu/transport/air/single_european_sky/community_specifications_en.htm
- Eurocontrol
  http://www.eurocontrol.int/ses/public/standard_page/sk_iop_status.html
- ETSI http://pda.etsi.org/pda/queryform.asp
- Eurocae http://www.eurocae.net/