ICB/10/3 Rev 1
7th June 2006

INDUSTRY CONSULTATION BODY

Report to ICB/10 by the Interoperability Sub-Group

The ICB Interoperability Sub-group met on the 10th February 2006 to discuss the ETSI Report on required Community Specifications and the 'Gap Analysis'. This paper summarises the recommendations of the sub-group.

1 Introduction

1.1 The ICB Interoperability sub-group met on the 10th of February 2006 to discuss the ETSI Report on required Community Specifications (CSs) and the 'Gap Analysis'. This paper summarises the recommendations of the sub-group.

2 ETSI Technical Report

2.1 Purpose

2.1.1 The ETSI Report was written in response to EC Mandate M/354 in order to:

- Produce an inventory of the current status of achieved ATM standardisation
- Identify areas where CSs may need to be developed
- Draft a work programme for the development of the proposed CSs.

2.1.2 The ETSI report is presented in two parts. The first part, 'the inventory', covers the first two points and the second, the 'work programme', the final point.

2.2 Part 1: Inventory

2.2.1 The inventory consists of recommendations for the development of 57 CSs grouped according to both priority and technical area. A CS is either:

- a standard *for systems or constituents* and is drawn up by the European Standardisation bodies in cooperation with Eurocae on a mandate from the Commission;
- or Specifications on matters of operational coordination between ANSPs drawn up by Eurocontrol, in response to a request from the Commission.

2.2.2 A CS is a voluntary standard and is used to show compliance to the relevant directives. Other means of compliance may be referenced in an Implementing Rule.

2.2.3 The sub-group reviewed the priorities placed on each CS by ETSI. The result of this review is presented in Annex A, and a rationale for where modification of CS priorities has been agreed is presented in Annex B.

2.2.4 In general the sub-group agreed with ETSI recommendations with the following observations:

- Development of a number of CSs is closely linked to the parallel development of related Implementing Rules by Eurocontrol.
- The proposed CS on Galileo needs to define more clearly which aspects of Galileo would be subject to a CS (airborne components or ground components).
- The equipment required to support ADS-B will require standardisation in a new CS on ADS-B equipment.
- Operational Concepts should not be specified at the CS level.
- For the CS on Interoperability of Flight Data Processing (Middleware ATM-ATM), it was noted that more work was needed to define implications for existing airport systems employing middleware. It was also observed that the

scope of this CS requires further clarification and that buy-in from key stakeholders (including industry) needed to be secured.

2.2.5 In line with these recommendations, the sub-group considers that the European Standardisation Organisations (ESOs) along with Eurocae and Eurocontrol should be invited by the Commission to start work on the following CSs in 2006:

- Software Assurance Levels
- Airport Collaborative Decision Making (A-CDM)
- Flexible use of Airspace
- Airspace Design (subject to adoption of related IR)
- Updated IFPS Users manual
- Data Exchange Formats (ADEXP)
- On-Line Data Interchange
- Interoperability of Flight Data Processing (ATC-ATC) (subject to clarification of the scope)
- A-SMGCS (Level 1 & 2).

2.3 Part 2: Work Programme

2.3.1 Part 2 of the ETSI Technical Report proposes a detailed work programme for development of the CSs, including the effort required to produce each CS, and the experts that might be required.

2.3.2 The sub-group considered that the work programme was unclear and required review. In particular, the effort and time required for each CS requires validation.

2.3.3 The sub-group were of the opinion that the Commission should request the ESOs, Eurocae and Eurocontrol to draw up a new work programme for the Group 1 CSs listed in 2.2.5, taking due account of the following factors:

- The most cost efficient process for development
- The lead organisation (ETSI/CEN/CENELEC, Eurocontrol or Eurocae) for the technical work
- The need for expert input from industry.

3 Gap Analysis

Helios presented a three stage process for determining areas where the Commission may consider an additional Implementing Rule. The three stages are:

- **Stage 1** – a review of existing initiatives to determine areas where early adoption of a technology or procedure could potentially lead to safety, capacity or cost efficiency benefits prior to the SESAR implementation phase.
- **Stage 2** – a filtering process against the following criteria to down-select the areas under consideration:
  - The required timescale: Proposed areas must offer operational benefits before 2011.

- Benefit level and industrial consensus: Only areas which have significant benefit and support will be considered. Areas without industry consensus should wait for SESAR.

- Technology impact: Only areas supported by known technology will be considered. Any requirements for new technology will be set by SESAR.

- **Stage 3** – a detailed analysis to determine if an Implementing Rule or other means would be the most acceptable way forward.

The meeting was tasked with supporting the completion of Stage 2. Twelve areas were put forward for analysis:

- A-SMGCS Levels 1 & 2
- Sequencing Tools
- Automation Tools: En-route
- Automation Tools: Terminal
- Airport CDM
- ATFM CDM
- Next-generation Datalink Applications
- Initial ASAS applications
- Approach with Vertical Guidance
- Landing Systems
- Rationalisation of Navigation Aids
- Information Security.

Of these, AEA proposed initial interest in considering the following five topics further: A-SMGCS Levels 1 & 2; Airport CDM; Approach with Vertical Guidance (APV); Rationalisation of Navigation Aids; and Information Security. The meeting agreed that the other seven topics required detailed deliberations by SESAR prior to widespread implementation.

Of the five topics discussed further:

- A-SMGCS and Airport CDM were accepted as priorities for CS development, allowing benefits-led adoption at critical airports. For this reason it was suggested that IRs might not be needed in these areas.

- Rationalisation of Navigation Aids was considered as an area which needed to take a lead from the previously proposed Implementing Rule on Area Navigation.

- Information Security was recognised as a significant concern; but one which would require significant R&D before standardisation occurred.

- Approach with Vertical Guidance was considered to be an area worthy of further discussion. AEA agreed to consult Airspace Users to determine if it was a sufficient priority.

The meeting recognised the need to re-consider the need for Implementing Rules at a later date.

4 Recommendations

The ICB sub-group recommends that the ICB:

- Informs the EC of the agreed priorities for CSs and asks that a more detailed work programme is drawn up before work commences.
- Informs the EC of the results of the Gap Analysis and supports a review of the work during 2007.

A Sub-group assessment of CS Priorities

The CSs are prioritised according to the following groups:

- Group 1 - to be developed from March 2006 onwards;
- Group 2 - to be developed, subject to review, from 2007 onwards;
- Group 3 - to be developed, subject to review from 2008 or later;
- Group 4 - to be developed dependent on need[1].

Those CSs where the group assigned by the Interoperability Sub-group is different from the ETSI group are shown in ***bold italics***. A rationale for the difference is provided in Annex B.

Where an asterisk (*) appears against the priority, this indicates that development of the CS is dependent on parallel development of a related IR by Eurocontrol.

CS	Group assigned by ETSI	**Group assigned by sub-group**
General		
Software Assurance Levels (SWAL)	1	1
Airport Collaborative Decision Making (A-CDM)	1	1
Cross Domain Information Sharing	2	2
Reference Concept of Operation (including long term)	3	***Not Required***
UAV Systems Operation	3	***2***
En-route and Airspace CDM	3	3
Airspace Management		
Flexible use of Airspace	1	1
Airspace Design	1	1*
ATFM		
Updated IFPS Users manual	1	1
Data Exchange Formats	1	1
Advanced Data Exchange Formats	3	3
European Air Traffic Flow Management[2]	3	3
ATS		
On-Line Data Interchange (OLDI)	1	1
Interoperability of Flight Data Processing (ATC-ATC)	1	1
A-SMGCS (Level 1 & 2)	1	1
Link Baseline 1 DL Services over ATN/VDLM2 in Continental Airspace	2	2*
DL Services over FANS-1/A in ATN Continental Airspace	2	2*
DL Services over ACARS in continental airspace	2	2*
Open ATC system architecture model	2	***3***
A-SMGCS (Levels 3 and higher)	2	***3***
Arrival management	2	2
Departure management	2	2
Surveillance Performance	2	2*
Interfaces between Controller Working Positions and Data Processing	3	3
Interface with Flight Data Operator Positions	3	3

[1] Priority 4 is defined such that it can allow for a CS to be developed quickly, if it is required, to support extension of existing implementations.

[2] The proposed CS would be a transposition of existing Eurocontrol documents and is therefore not needed urgently. Improvements in ATFM are anticipated through the DMEAN project, which could result in the need for additional CSs in the area.

CS	Group assigned by ETSI	**Group assigned by sub-group**
Interfaces with Local centre sub-systems (Surveillance, Supervision, Recording and Data Analysis Systems; Adaptation Database)	3	3
Flight Plan Information Subscriber systems (for e.g. Airline Operators and Airports)	3	3
Interoperability of Flight Data Processing (Middleware ATM-ATM)	3	3
Surveillance Data Processing	4	4
Communication		
ATS Message Handling System (AMHS)	2	2
VoIP (ground-ground) for use in EATMN	2	2
Telephone used for ATC purposes in the EATMN	2	2
Directory Service in support of AMHS	3	3
VoIP (including air-ground VoIP/Ethernet) for use in EATMN	3	3
Ground and mobile stations in the aeronautical mobile service (AM radio telephone installations) operating in range 117.975 – 137 MHz	4	4
HF radio equipment	4	4
UHF for use by civil ATC	4	4
Navigation		
Space Based Augmentation Systems	2	***4***
Galileo, GNSS	2	***3***
Distance measuring ground equipment (DME)	3	3
Instrument Landing System ground equipment	3	3
Microwave Landing System	3	3
Ground Based Augmentation Systems (CAT II/III)	3	3
Non-directional beacon (NDB) ground equipment	4	4
Omni-directional radio range ground equipment (VOR, D-VOR)	4	4
VHF Marker Beacon ground equipment	4	4
Ground-Based Augmentation Systems (CAT I only)	4	4
Surveillance		
Ground-based primary radar equipment for use in the EATMN	2	2
Multilateration Equipment for use in the EATMN	2	2
Surveillance Data Exchange	2	2*
Surveillance services using ADS-B	2	2*
ADS-B equipment	n/a	***Added***
CS on ground-based secondary radar systems for use in the EATMN	4	4
AIS		
AIS - Generic data process & Principles	2	2*
Integrity of Aeronautical Information - Data Origination	2	2*
Integrity of Aeronautical Information - Data Publication	2	2*
Aeronautical Information Exchange (AIXM)	3	3
Use of Met		
Systems and Procedures for the Use of Meteorological Information	2	2

Table 1: CS priorities selected by the ICB Interoperability Sub-group (see right-hand column)

B Rationale for Modification of CS Priorities

The following table provides a summary of the discussion that led to the selection of Group for those CSs where the decided Group was different from that in the ETSI Inventory Report.

CS	Group assigned by ETSI	**Group assigned by sub-group**
Reference Concept of Operation (including long term)	3	***Not Required***
Rationale for change: The SESAR programme already had a task to develop a future Concept of Operation together with associated guidance material. A CS on a Reference Concept of Operation would simply be duplication of existing operational concepts. There was a general view that it was not needed at the CS level and should therefore be deleted.		
UAV Systems Operation	3	***2***
Rationale for change: UAVs were not a major topic within SESAR. Consideration of UAVs was important and deserved a higher priority. There was a new Eurocae UAV group starting shortly and this would aim to aim to have something concrete for 2007. Also an Operational Concept was being developed within Eurocontrol. RTCA had already started a group of around 100 members and were moving ahead quickly. The start of 2007 was a good time to review what had been done, and therefore Group 2 was appropriate.		
Open ATC system architecture model	2	***3***
Rationale for change: Doubts were expressed that this CS was needed. The development of this CS depended on parallel development of the associated IR. Placing this in Group 2 would mean trying to develop a CS too early. Hence the meeting agreed Group 3.		
A-SMGCS (Levels 3 and higher)	2	***3***
Rationale for change: Eurocontrol proposed Group 3 for this CS. Eurocae and ACI Europe agreed. The meeting agreed on Group 3.		
Space Based Augmentation Systems	2	***4***
Rationale for change: AEA proposed Group 4 for this CS. Airspace users had a very clear position on the use of SBAS: that it did not bring any tangible benefits. The meeting agreed to change this to Group 4 (on demand).		
Galileo, GNSS	2	***3***
Rationale for change: There was uncertainty surrounding the scope of this CS. The CS needed to define more clearly which aspects of Galileo would be subject to standardisation (ground systems, or avionics, or both). It was agreed that this would be Group 3 and subject to review.		
ADS-B equipment	n/a	***Added***
Rationale for change: It was clarified that the CS on surveillance services using ADS-B referred to ADS-B services at a high level, and did not imply any specific technical implementation. It was agreed that for consistency reasons, and to complement the CS on surveillance services using ADS-B, there was a need to develop an additional CS covering ADS-B equipment.		