EUROCONTROL Call Sign Similarity Project

Call Sign Similarity Project Overview
ICAO MID Region 1st Call Sign Confusion Ad-hoc Working Group
Abu Dhabi, United Arab Emirates
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Background

- Call Sign Similarity (CSS) – 2 (or more) aircraft operating in the same area, on the same frequency.
- Also visual – radar screens & flight strips.
Background

- Call Sign Similarity (CSS) – 2 (or more) aircraft operating in the same area, on the same frequency.
  - Can also visual – radar screens & flight strips
  - Can lead to flight safety events
- Temporary change - ICAO Annex 10 and PANS ATM 4444
- General advice - ICAO Doc 8585
- Some AOs and ANSPs doing it.
- But… only partial solutions
The Call Sign Similarity Problem

- Several types of call-sign similarities can be defined, for example:

  - **Anagrams:**
    - DEC – DCE
    - 152 – 125
    - 1524 – 1425
  
  - **Final identical figures / letters:**
    - ABC 458Z – ABC 179Z
    - ABC 45 MU – ABC 76 TU
    - ABC 648 – ABC 748
    - ABC 23 XG – DEF 56 XG

  - **Parallel figures / letters:**
    - 1458 – 1478
  
  - **Block figures / letters:**
    - ABC – ABO
    - ABC 128 – ABC 128T
    - ABC 573 – ABC 57
    - ABC 573 – ABC 575
    - ABC 52 – ABC 57
  
  - **Phonetic parallel:**
    - 712 – 7012

- **Only the second part, the Flight Identification, can be ‘de-conflicted’**
Background – Safety Initiative

- The Air-Ground Communication (AGC) Safety Improvement Initiative - launched by the EUROCONTROL Safety Team in 2004

- “Investigate the feasibility of using the flight planning process for systemic analysis, detection and de-confliction of similar callsigns”

Why EUROCONTROL?

- Need pan-European solutions
  - Current approach fragmented – only partial solutions
- Network Manager – ‘manages’ European flight plans
- EUROCONTROL coordinates safety programmes for ATM
- Central approach provides cost efficiency
EUROCONTROL Project – Callsign Similarity Risk Reduction

- Project initiated April 2008
- Formal launch December 2008

Reduce risks associated with Callsign Similarity/Confusion
CSS Project Strategy

- **Service Level 0**
  - Establish CSS User Group
  - Establish Call Sign Management Cell (CSMC)
  - Assume DSNA task
  - Develop CSS Tool
  - Publish Call Sign Similarity Rules

- **Service Level 1**
  - Single AO De-confliction
  - Supported by EUROCONTROL Call Sign Similarity Tool (CSST)
  - Reduction ratio = 74%

- **Service Level 2**
  - Multi AO De-confliction (between different AO schedules)
  - Reduction ratio 1 + 2 = 80%
Call Sign Similarity Service Levels

Service Level 0 – CSS UG & CSMC established; rules published  Done

NM NOP Portal & SKYbrary - April 2010
Call Sign Similarity Service Levels

**Service Level 0** - CSMC established; rules published  Done

**Service Level 1** - Single AO de-confliction. **Done**  March 2012:

Current Ops

October 2012: CSST automatic de-confliction and Sanity Check.

**Service Level 2**  Multi-AO de-confliction **TBD**

Future Ops??
Operational Concept – Use Cases

Use Case 1: Commercial Improvements
- Modification of the CFNs within a single AO's schedule.
- Examples of usage:
  - Changes to the numbering policy
  - New City Pair

Use Case 2: Pre-Seasonal Improvements
- Reduction in the number of similarities within a single AO's schedule by changing the ATC Call Sign
- Examples of usage:
  - When ATC Call Signs are assigned to a complete schedule

Use Case 3: Ad-Hoc Improvements
- Reduction in the number of similarities within a single AO's schedule by changing the ATC Call Sign
- Examples of usage:
  - After a Safety Report (CSMC)
  - After changes to the schedule (AO-OPS)

Use Case 4: Sanity Check
- After Pre-seasonal De-confliction
- Checks that De-confliction in AO's own Schedules has not created (many) new conflicts between Schedules

Prevention of Similarities: Integration of anti-similarity rules into AO's own alloc process

AO Marketing

AO-OPS

CSMC Operator

CSMC Operator Or AO-OPS
Operational Concept – Use cases

**UC1 – Commercial De-confliction**

- AO Marketing/Commercial
- 6-18 months before IATA Season
- Commercial Flight Number conflict detection and de-confliction
  - When changing the numbering policy
  - For new city pair
  - For new / changed schedule
Operational Concept – Use Cases

UC2 – Pre-seasonal De-confliction

- AO Operations
- 3-8 weeks before IATA Season
- ATC C/S conflict detection and de-confliction
  - Assign ATC C/S on a full schedule
Operational Concept – Use Cases

UC3 – Ad-hoc De-confliction

- during the IATA Season
- ATC C/S conflict detection and de-confliction
  - After a Safety Report User (User = CSMC Operator)
  - After changes to the Schedule (User = AO OPS)
UC4 – Sanity Check

- CSMC Operator
- 0-3 weeks before IATA Season
- Multi-AO detection of additional conflicts
  - After Pre-seasonal De-confliction
  - Check De-confliction in AO’s own Schedules has not created (many) new conflicts between Schedules
CSS Tool Overview

CSS Tool
1. Load Schedule
2. Initialise ATC C/S
3. Quality Check
   4a. Detect
   4b. De-conflict
5. Accept

CSST is an application hosted in the NM NOP Portal.
**CSS Tool and portlet**

- Web based
- Direct use by AOs via NOP
- NM ‘Token’ required for access

**Improvements compared to existing tools**

- Higher automation
- Increased coverage (full detection in NM area, aerodrome detection worldwide)

- User friendly – usable without intense training
- NM Service - covered in NM Agreement
CSS Service Level 1 - AO Participation - Users

- 55 AO have signed up for access to the CSST application
- 40 AO are actively using the CSST output in operations (Winter 2014):
  - easyJet
  - Ryanair
  - Germanwings
  - BA Cityflyer
  - Flybe
  - Jet2.Com
  - Aegean air
  - Turkish Airlines
  - Adria
  - Meridiana
  - Finnair
  - Tarom
  - HOP!
  - KLM
  - Sun Express
  - Iberia
  - Swiss
  - Monarch Airlines
## Similarity Reduction

<table>
<thead>
<tr>
<th>AO Season W14</th>
<th>Embedded conflicts</th>
<th>Conflicts remaining after deconfliction</th>
<th>% Reduction</th>
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<tbody>
<tr>
<td>FlyBe</td>
<td>810</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Finnair</td>
<td>2279</td>
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</table>
Call Sign Similarity Service/Tool

Aircraft Operator Example

Callsign Confusion Events: 2007-2012

**CSS Tool:**
- ECAC wide
- v1 – semi-manual deconfliction 6hrs
- v2 (fully automatic autumn 2012) <2hr
- 100% deconflicted
- Minimal similarities

**NATS Tool:**
- UK only
- Deconfliction process 2 x 8hrs

Network Manager
nominated by
the European Commission
CSS Tool - Performance Monitoring

EVAIR – EUROCONTROL Voluntary ATM Incident Reporting
CSMC Support to Aircraft Operators

- On-site visits by CSMC
- Hosting individual Aircraft Operators at EUROCONTROL
- Support via E mail (nm.csmc@eurocontrol.int)
- Advice on implementing Call Sign change programmes within the AO
- Diffusion to AO of national restrictions on change of Call Signs
- NOP Help and CSST User Guide
CSST is all about de-conflicting flight schedules. A flight schedule describes the flights that an aircraft operator intends to implement in a season.

Access to the CSST Portlet is restricted by security profile. This section may therefore not concern you.

**Accessing the CSST**

The URL to the CSST is:

https://www.cfmu eurocontrol.int/PORTALCSST/gateway/spec/index.html

Enter your UserName and Passcode, then select the **csmc_role** in the SATI domain.

Go next to the **Resource Tab**.

This is how the CSST Portlet looks like:

- **CSST**
  - Call Sign Similarity Tool
  - Connect

Lastly, click on the **Connect** button to access the CSST.

You may be prompted to **Reconnect** or **Cancel** - in case there is a session was left open.

When successfully (re)connected, this is what the Portlet looks like, allowing you to:

- Disconnect
- Setup Management
- View Management

**See Also**
CSS Service/Tool – Development Timeline

- **CSS Tool Development Contract**
  - April 2010

- **Initial CSS Tool WP1 Development**
  - (Single AO manual/semi automatic de-confliction)
  - April 2010 - February 2011

- **CSS Tool WP1 Refinement**
  - CSS Tool WP1 Initial Release
  - Start of CSS Tool WP2 (automatic de-confliction)

- **CSS Tool WP1 Operational Release**
  - Service Level 1 start

- **CSS Tool WP2**
  - Evaluation Release

- **CSS Tool WP2 Development**
  - Summer 2011

- **CSS Tool WP2 Refinements**
  - Summer 2012

- **CSS Tool WP 2**

- **CSS Tool WP 2 Refinements**

- **Multi AO Tool Service Level 2**

- **TBD**
  - 2013 - 14
  - Autumn 2012
  - Spring 2012
  - Summer 2012
CSS Project Communications

- NM User Forum – January 2011 -14
- Operations and Development Sub-Group (OPD SG)
- Airline Operations Group (AOG)
- Safety Improvement Sub Group/Safety Team meetings
- EVAIR - Safety Bulletins
- NM Release Notes
- Transmit, Controller, Focus magazines + FlyBe and BA City Flyer
- CSS “Flyer”
CSS Project Communications - Web Pages

Call Sign Similarity (CSS) Service

The use of similar call signs by aircraft operating in the same area, on the same radio frequency gives rise to potential and actual flight safety incidents.

The Call Sign Similarity (CSS) project has been initiated by EUROCONTROL with the aim of establishing pan-European CSS solutions centred on a coordinated service operated by EUROCONTROL’s Network Manager Operations Centre (NMOO). The aim is to reduce the level of operational call sign confusion events and therefore improve levels of safety.

The issue - Call Sign Confusion

The use of similar call signs by aircraft is referred to as “call sign similarity”. The danger of an aircraft taking and acting on a clearance intended for another due to call sign confusion is a common occurrence. This was identified in the European action plan for air-ground communication safety as a significant contributor to air-ground communication issues.

Further studies have indicated that the best defence against call sign confusion consists of eliminating, or reducing the chance of having two (or more) aircraft with similar call signs on the same radio frequency at the same time.

How can the Network Manager help aircraft operators?

A stepped approach is being taken:

The Network Manager has put in place a Service Level 0 that includes a Call Sign Similarity Management Cell (CSMC). The CSMC provides the aircraft operators with the similarity rules to be applied in the process of the detection and resolution of conflicts.

March 2012 saw the formal launch of Call Sign Similarity Service (CSS) Service Level 1 operations, i.e. the detection and deconfliction of call sign similarities with a single aircraft operator's schedule using the EUROCONTROL Call Sign Similarity Tool (CSS Tool).

If Service Level 1 is successful, Service Level 2 will provide de-confliction between multiple aircraft operator schedules.

Benefits

The main benefits associated with the implementation of the CSS Project are:

- Elimination over 60% of the CSS incidences
- Improvement of safety
- Economies of scale

Monitoring Call Sign Similarity Service and Tool

http://www.eurocontrol.int/services/call-sign-similarity-cs-
The Way Ahead

- Increase size of core set of users.
- Refine monitoring process – need more ANSPs to report similarities/confusions.
- Improve awareness of CSS issues.
- Support users implementing call sign changes.
- Make the case for detecting and resolving similarities across multi-AO schedules for a pan-European approach.
Contact us…

EUROCONTROL Web site:

http://www.eurocontrol.int/services/call-sign-similarity

NM Service Catalogue
http://www.eurocontrol.int/services/css-service-call-sign-similarity-service

Your questions and other requests related to the CSS project:

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Questions?