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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

16-18 February 2015

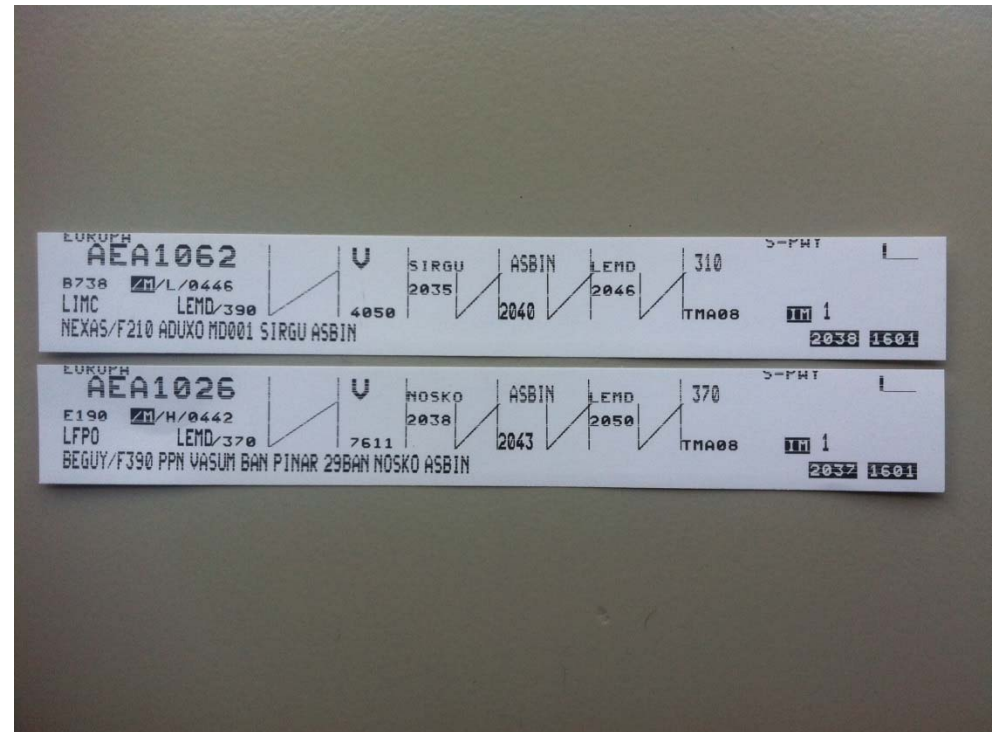
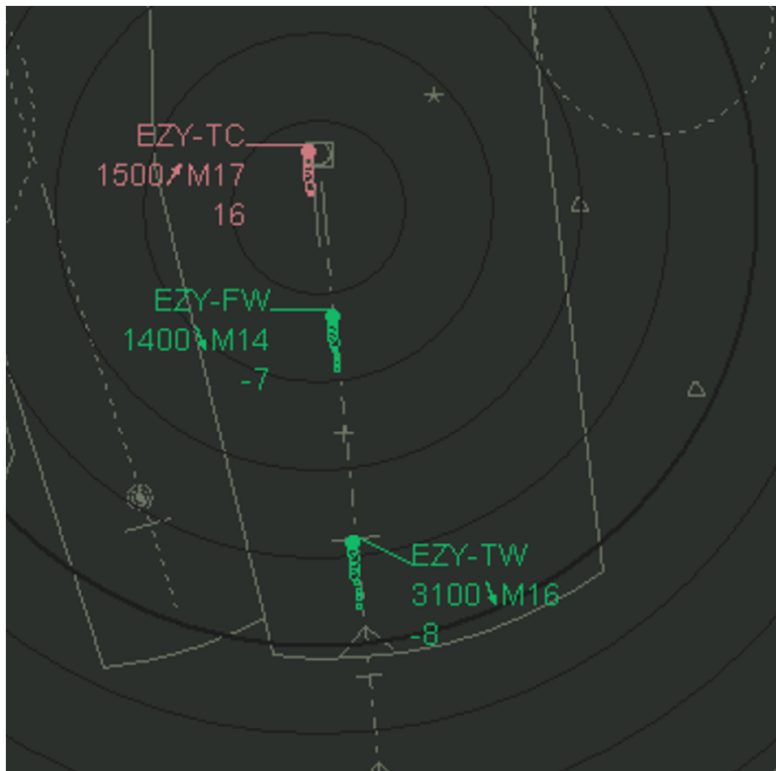
Richard Lawrence

Call Sign Similarity Project Manager

NMD/NOM/SAF

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”*
- European Action Plan for Air Ground Communications Safety released – 2006



AGC

European Action Plan for
Air Ground Communications Safety

Edition 1.0
May 2006

“Implementation of the recommendations should commence upon receipt of this Action Plan”



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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**

Call Sign Similarity Rules

General Similarity Rules (Applicable to flights within a single AO schedule, i.e. AO ICAO designator remains the same)

The following similarity rules are recommended by the CSS User Group. The order within the following table is significant with the most critical rules at the top.

Legend

Acceptable Format

Single AO Similarity Rule

Single Call Sign Similarity Rule

Name	Individual Rule Description	Special considerations for this rule	Examples		Rule ID
			Not acceptable	Acceptable	
C/S Format	Call Signs need to comply with the allowed formats (see ICAO Doc.4444 Field 7 (a), Aircraft Identification). Normal format: 3 letter ICAO AO designator followed by 1 to 4 alphanumeric characters (Flight Id).	The CSSUG have agreed that the following formats for the Flight Id should be adhered to: Pure numeric: n, nn, nnn, nnnn 1-final letter: nA, nnA, nnnA 2-final letters: nAA, nnAA	ABC 4B63, ABC F27	ABC 1, ABC 1234, ABC 23T, ABC 34TD	ZG00
Identical Final Digits	Checks for 2 identical final digits in the Flight Ids		ABC 234 vs ABC 534		AG02
Identical Bi-grams	Checks for blocks of contiguous characters which form a bigram.		ABC 224 KF vs ABC 36 KF ABC 36 KF vs ABC 528 KF		AG07
Letters To Avoid	Some single letters may be easily confused with digits and are therefore best avoided.	Single letters, eg. "O" vs "0", "I" vs "1"	ABC 8411, ABC 4600		ZG08
Anagrams	Checks for anagrams occurring within the Flight Ids		ABC 1366 vs ABC 1366 vs ABC 1638 vs ABC 1683 vs ABC 1836 vs ABD 1863 etc.		AG03
Identical Block Digits	Checks for Call Signs which form blocks of contiguous identical characters which are: <ul style="list-style-type: none"> the same length, or 2 versus 3 characters, or 3 versus 4 characters 		ABC 52 vs ABC 352 vs ABC 524 vs ABC 52L		AG04
Parallel Characters	Checks if characters composing the Call Signs form parallel alignment of identical characters.		ABC 41 vs ABC 401 vs ABC 4351		AG05
Identical Digit Roots	Checks for prefix blocks (roots) of identical digits.		ABC 57 vs ABC 573 vs ABC 5746		AG06
Identical Final Letter	Checks for Call Signs with identical final letter.		ABC 23L vs ABC 257L ABC 54L vs ABC 637L		AG08

NM NOP Portal & SKYbrary - April 2010

1



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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**

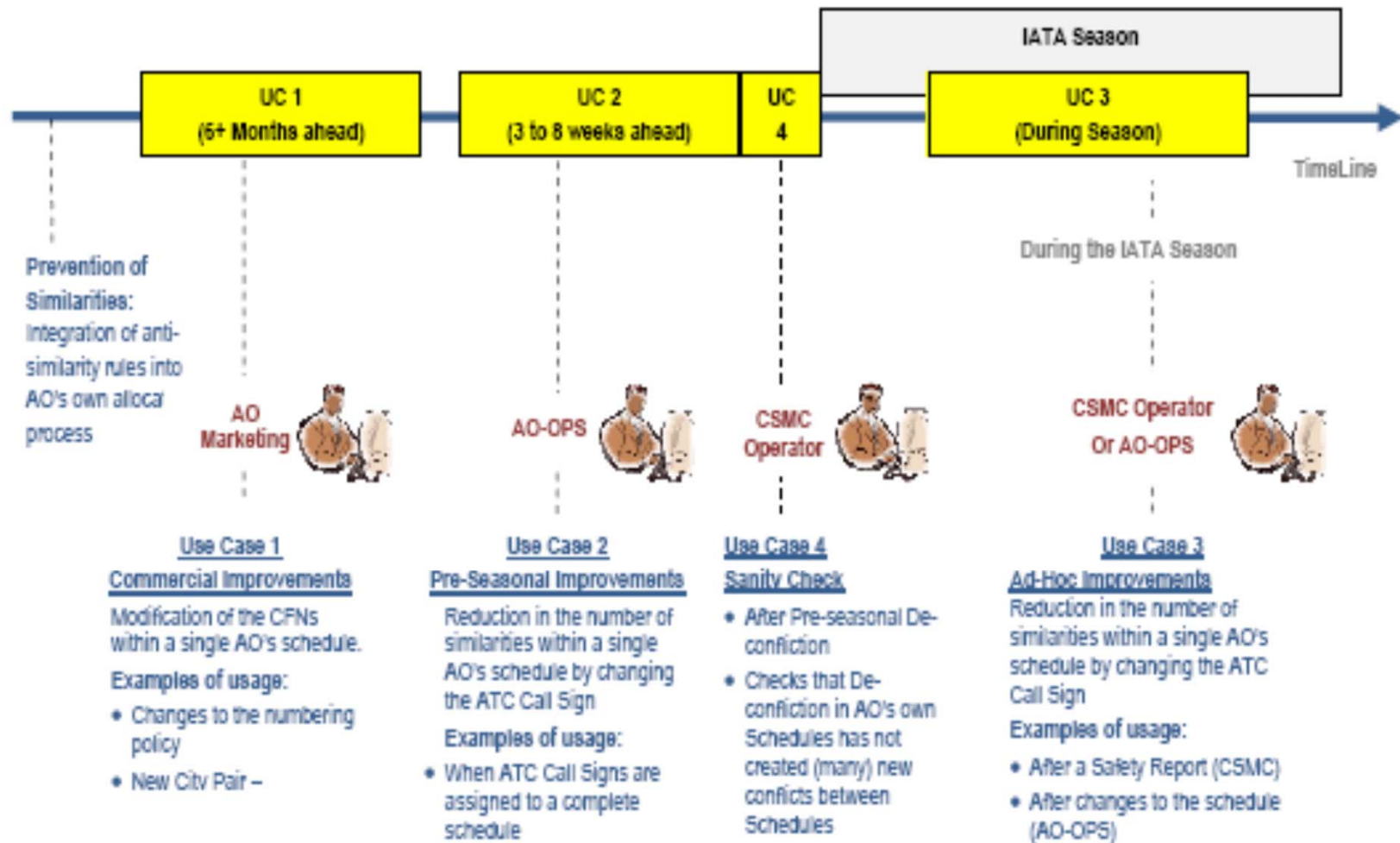
Future Ops??



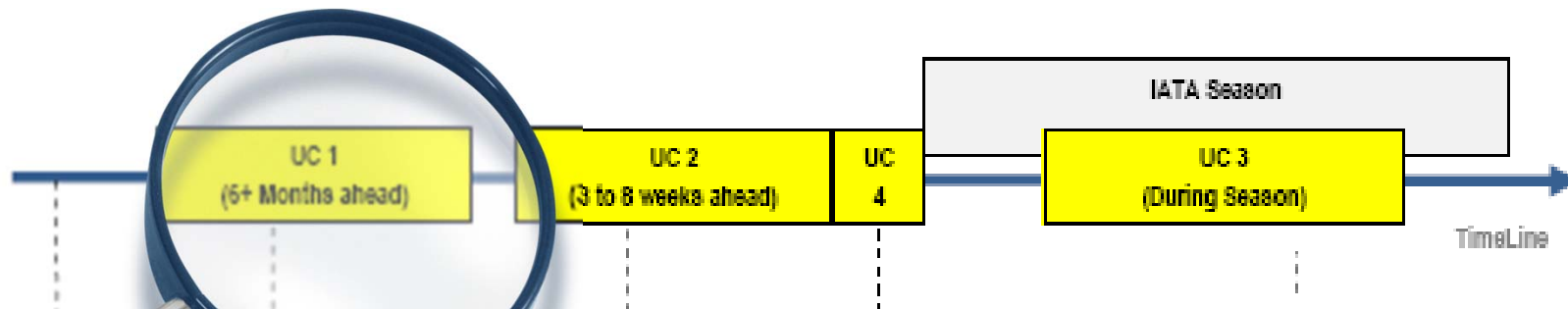
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Operational Concept – Use Cases



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

Prevention of anti-competitiveness of anti-competitiveness rules into AO's own allocation process



Use Case 1

Commercial Improvements

Modification of the CFNs within a single AO's schedule.

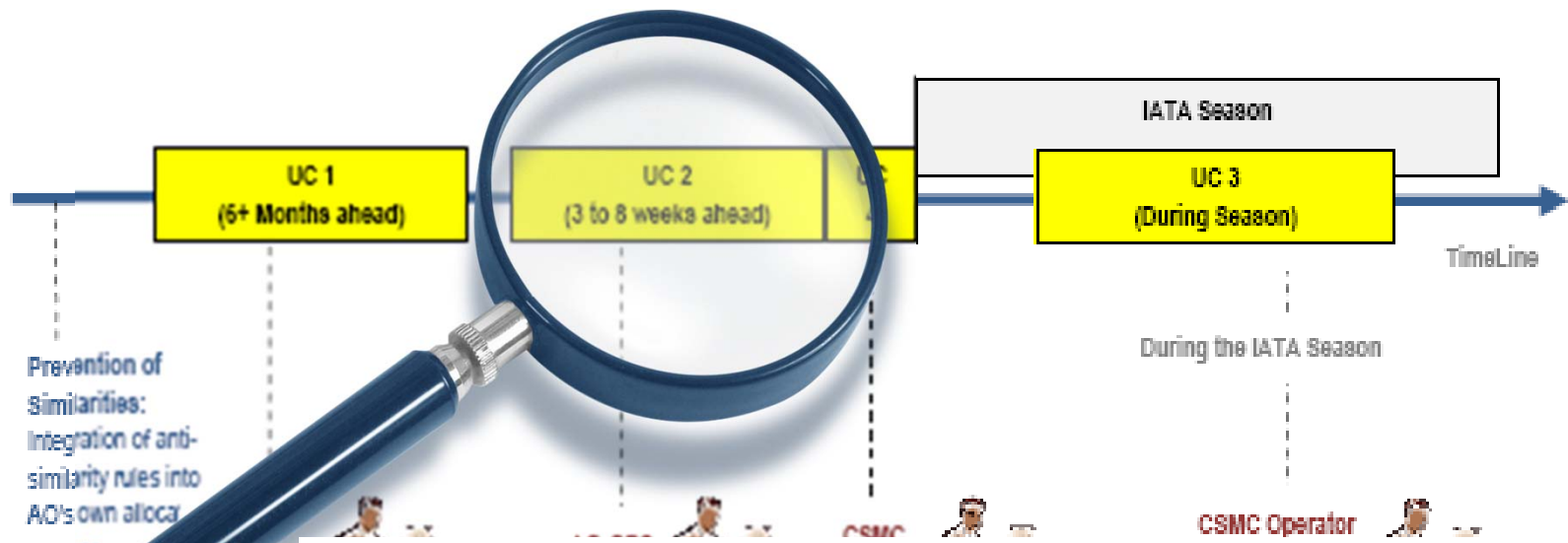
Examples of usage:

- Changes to the numbering policy
- New City Pair –

Pre-S

Red similar AO's the / Exam
 • When assign schedule

Operational Concept – Use Cases



UC2 – Pre-seasonal De-confliction

- Use Case
- Commercial Impr
 - Modification of the (within a single AO)
 - Examples of usag
 - Changes to the policy
 - New City Pair –

AO Operations

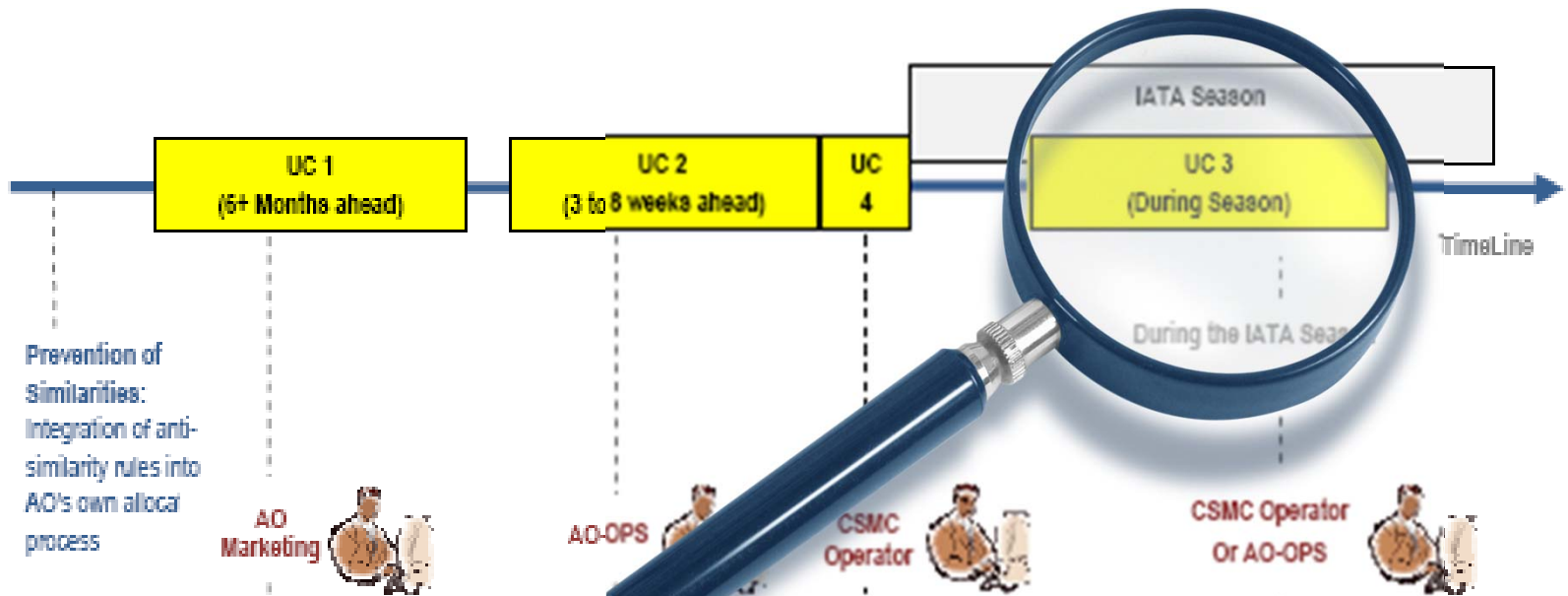
3-8 weeks before IATA Season

ATC C/S conflict detection and de-confliction

- Assign ATC C/S on a full schedule



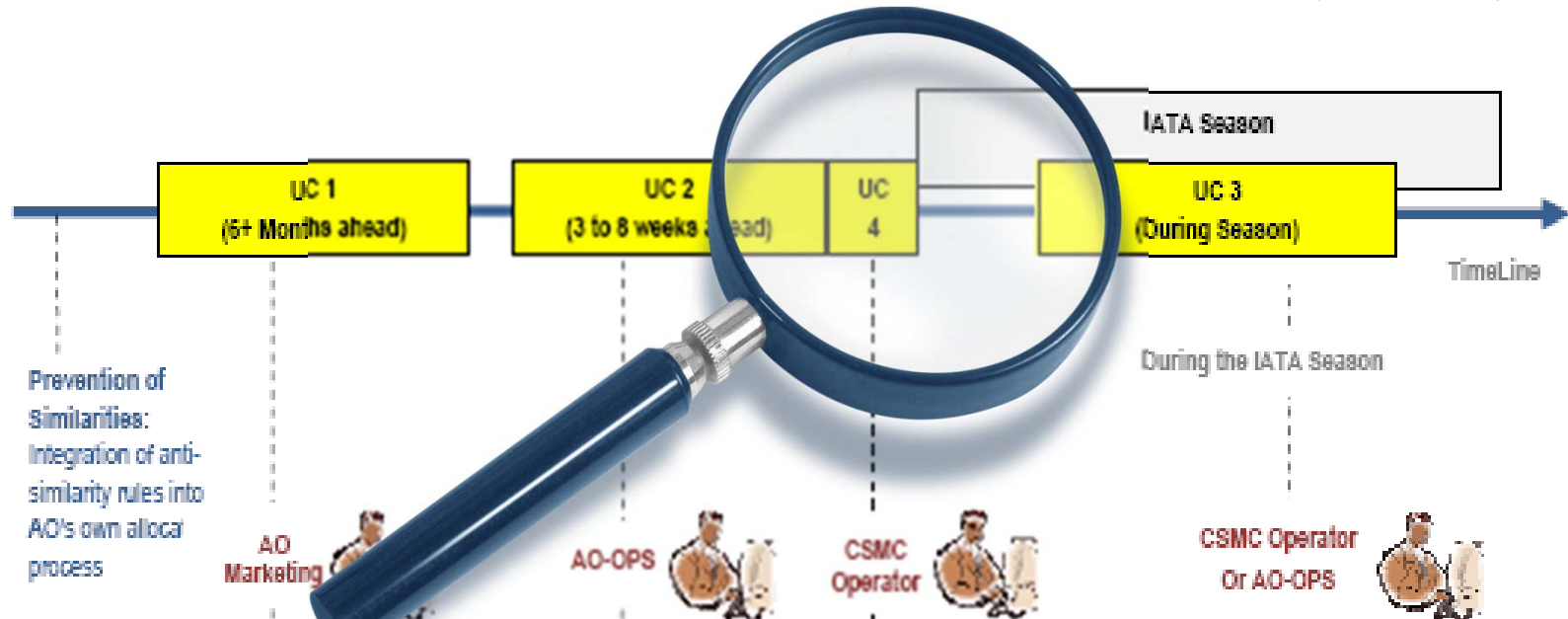
Operational Concept – Use Cases



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)

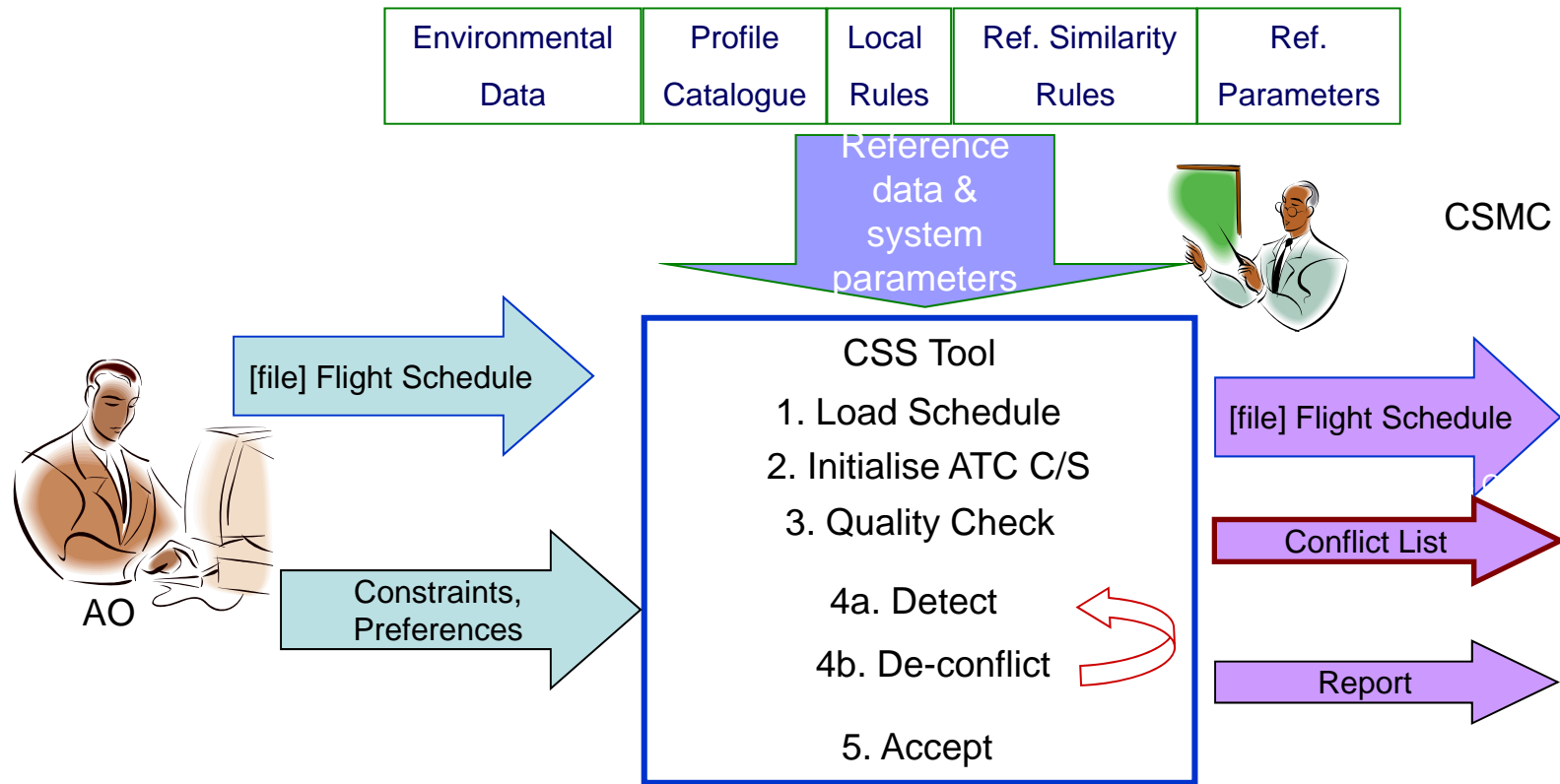
Operational Concept – Use Cases



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



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



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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

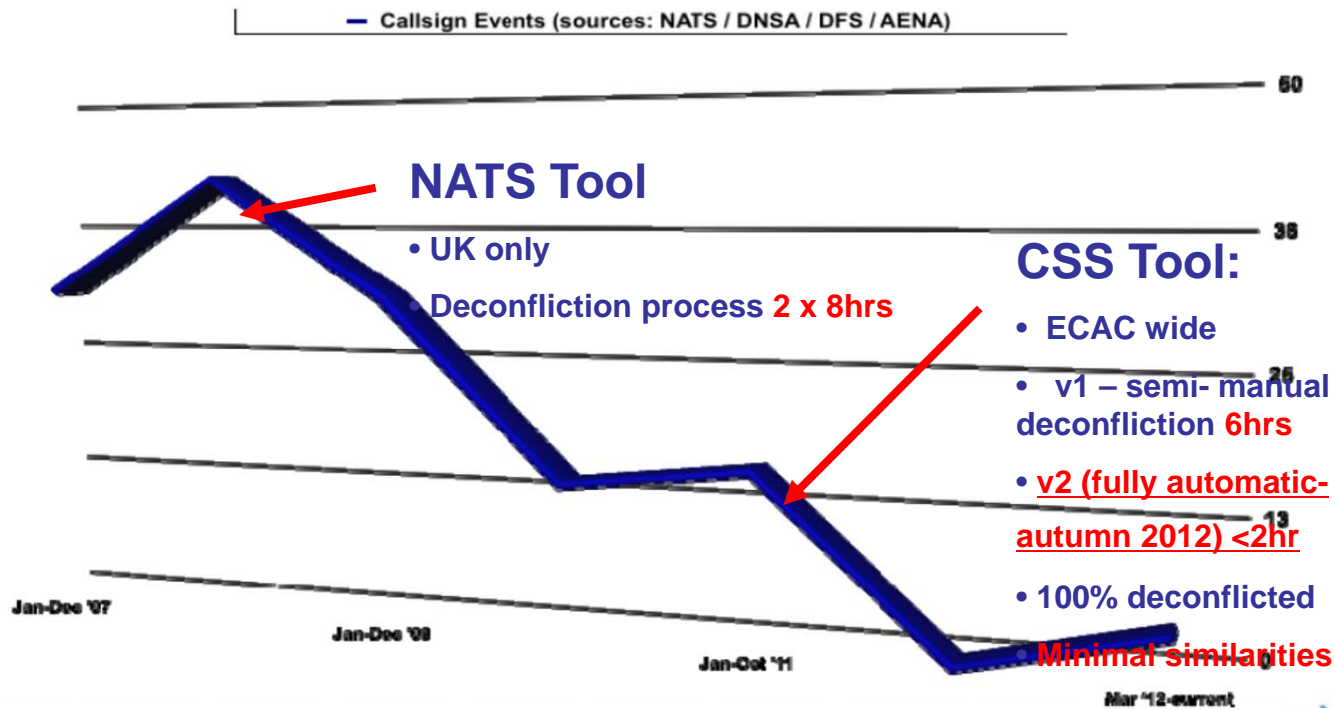
Similarity Reduction

AO Season W14	Embedded conflicts	Conflicts remaining after deconfliction	% Reduction
FlyBe	810	0	100
Finnair	2279	389	83
Meridiana	367	109	70
Swiss	4014	312	92
BA City Flyer	112	0	100
Monarch Airlines	589	115	80
HOP	477	138	71
Jet2.com	1001	32	96.8
KLM	1675	751	55

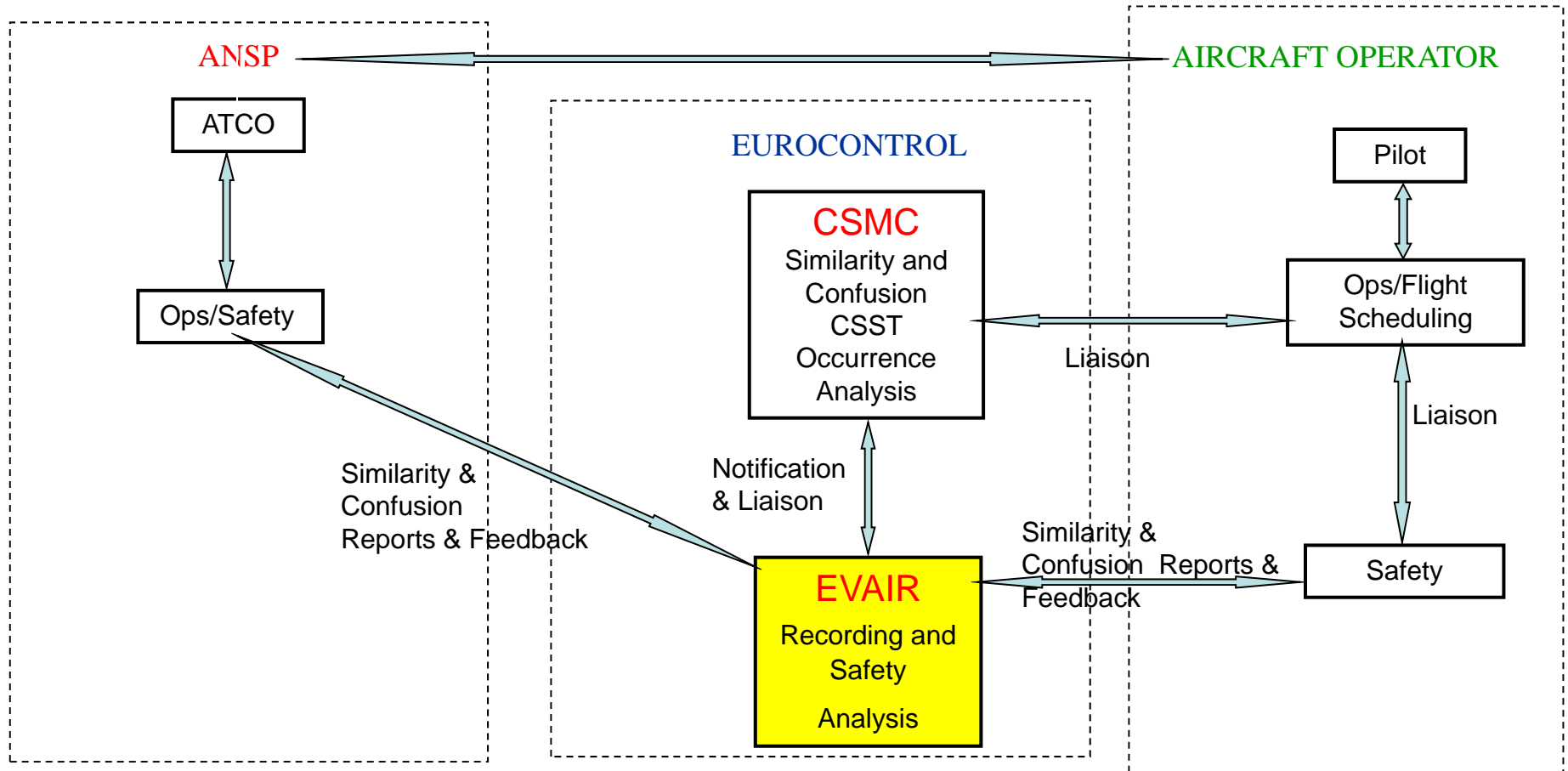
Call Sign Similarity Service/Tool

Aircraft Operator Example

Callsign Confusion Events: 2007-2012



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

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 - ATFCM Events
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 - ATFCM Scenarios
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 - DMEAN Best Practices
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CSST

[See Also](#) [Send Feedback](#)

Portlets from A to Z > CSST

Typical Scope: RES

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.cfm.europa.eu/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:



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

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

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

- Disconnect
- [Setup Management](#)
- [View Management](#)



See Also

NOP - On Line Help

NETWORK OPERATIONS CSST USER GUIDE



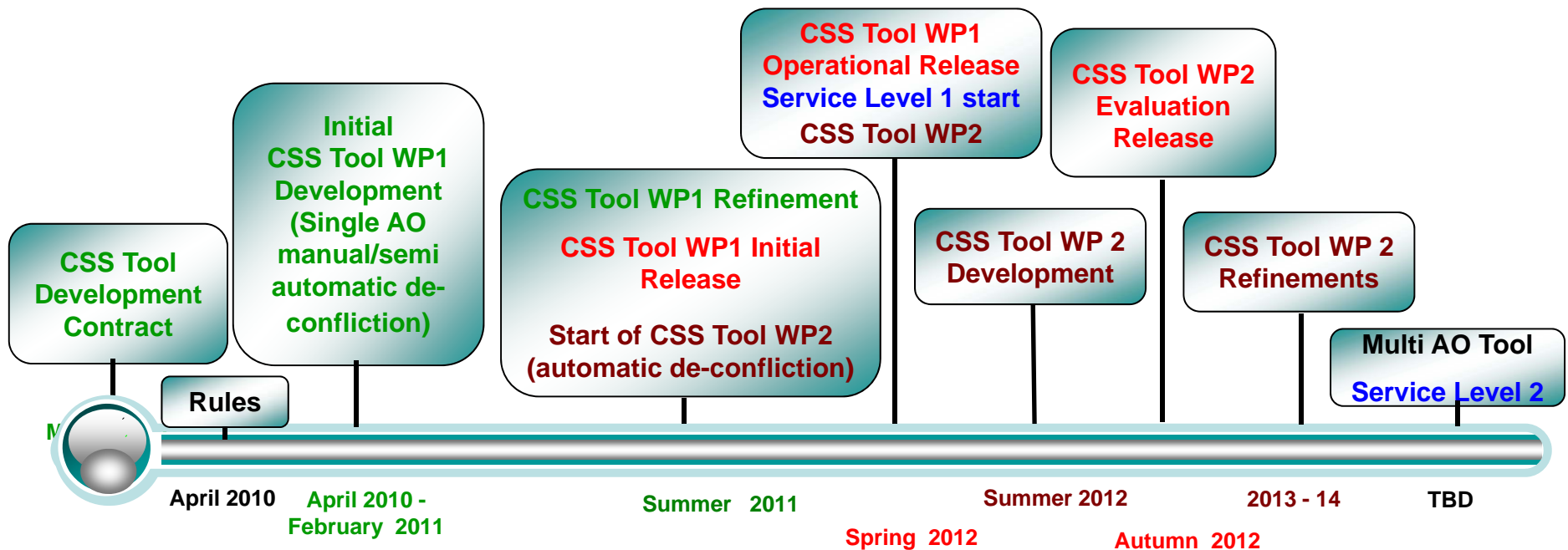
EUROCONTROL

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User Guide

CSS Service/Tool – Development Timeline



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



The screenshot shows the EUROCONTROL website's 'Call Sign Similarity (CSS) Service' page. The page layout includes a top navigation bar with links like 'Contact', 'How to find us', 'Jobs', 'Procurement', and 'OneSky Online Extranet'. Below this is a secondary navigation bar with categories such as 'About', 'Network Manager', 'Research & SESAR', 'Civil-military', 'Pan-European Single Sky', 'MUAC', 'Route Charges', 'Projects', 'Services', and 'Media'. The breadcrumb trail indicates the user is in 'Home / Network Manager / Safety / Call Sign Similarity'. The main content area is divided into a sidebar and a main column. The sidebar contains a 'Network Manager' section with a list of links including 'About', 'Strategy & development', 'Safety', 'Call Sign Similarity', 'CSS User Group registration form', 'European Safety Programme', 'Human Performance', 'Safety & operations', 'Safety Culture', 'Safety Nets', 'ACAS II', 'PASS Project', 'RA Downlink', 'I-AM-SAFE', 'SAM', 'Safety policy', 'Safety Library', 'Disruption and crisis', 'Forecast, monitoring & analysis', and 'Network Operations'. The main content area features the title 'Call Sign Similarity (CSS) Service' followed by a paragraph explaining the project's goal to reduce call sign confusion. It then discusses 'The issue - Call Sign Confusion' and 'How can the Network Manager help aircraft operators?'. A 'Benefits' section lists the elimination of 80% of CSS incidences, improved safety, and economies of scale. The page also includes a 'Monitoring Call Sign Similarity Service and Tool' section and a 'Feedback' button on the right.

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

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?

