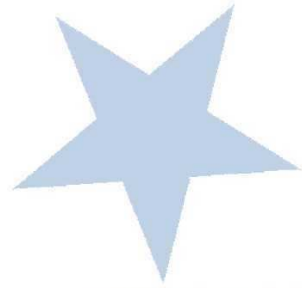


From SESAR to standardisation

February 2013,

*Patrick Souchu ,
DSNA SESAR program director
EUROCAE Council Chairman*



Agenda

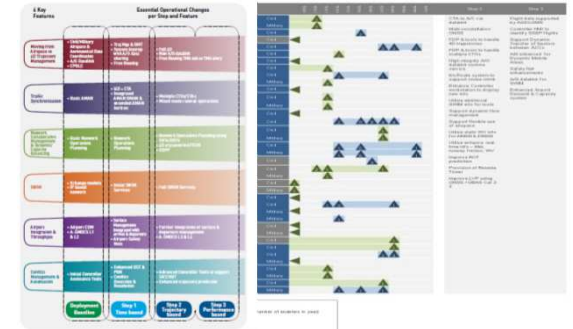


- **Update about typical SESAR activities**
- **Introduction of EUROCAE**
- **European standardisation roadmap**
- **SESAR results as input to standardisation**
- **Validation of standards**
- **Standards for deployment**

SESAR DEVELOPMENT

MASTER PLAN

PERFORMANCE NEEDS
 OPERATIONAL IMPROVEMENTS & ENABLERS
 HIGH LEVEL DEPLOYMENT & DEVELOPMENT TIMELINE



PROGRAMME

PERFORMANCE VALIDATION TARGETS
 CONCEPT & ARCHITECTURE
 OPERATIONAL & TECHNOLOGY SOLUTIONS
 CASES
 STANDARDISATION & REGULATION PREP.



R&D PROJECTS

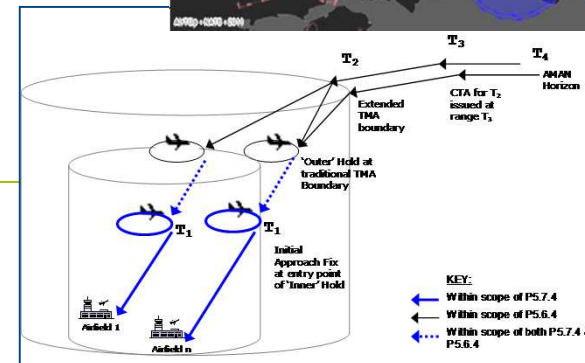
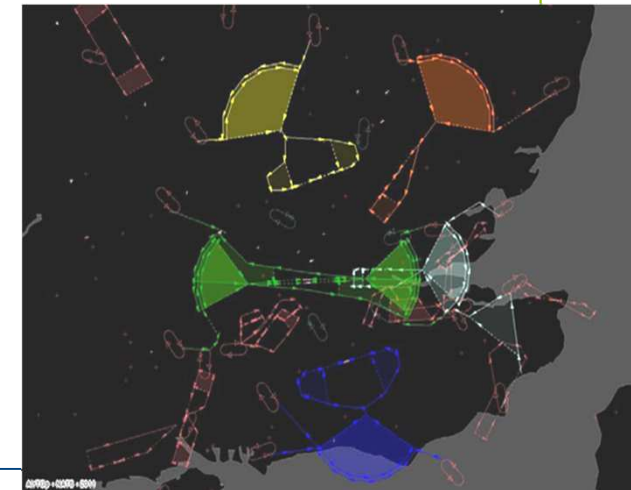
OPERATIONAL REQUIREMENTS
 SYSTEM PROTOTYPES
 VALIDATION ACTIVITIES & RESULTS



Release 3 Main Content (1/4)

□ Traffic Synchronisation

- Streaming techniques including Point Merge procedures in the frame of an extended horizon of the arrival manager in a multi-airports TMA.
- Development of tools assisting controllers in the application of the i4D concept & upgraded airborne system.

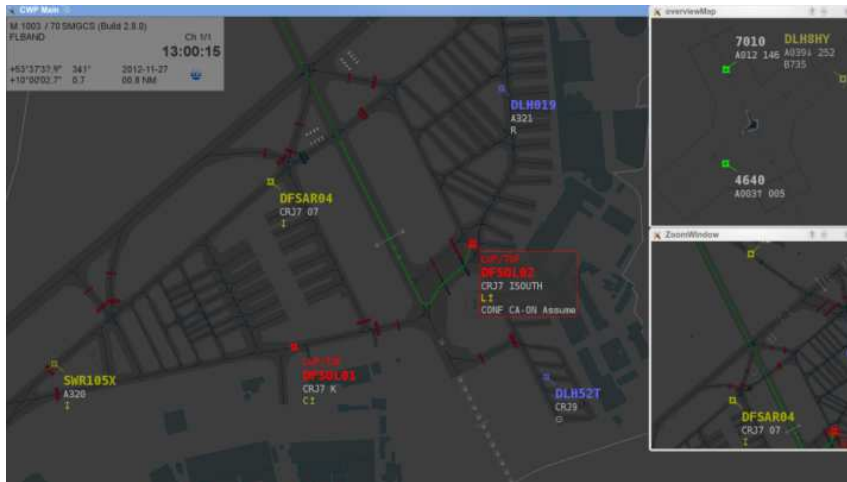


Release 3 Main Content (2/4)

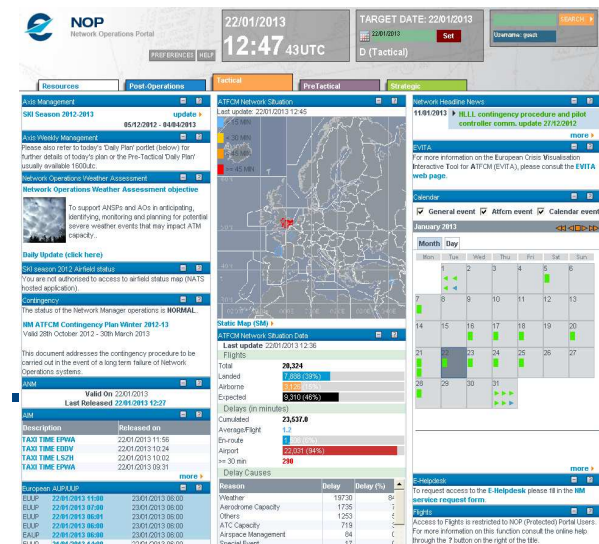


□ Airport Integration & Throughput

- Detection of runway incursion and infringements of restricted areas by aircraft and vehicles and alert to the ATC controllers and vehicle driver.



- Linking Airport Operations Plan with the Network Operations Plan for a better management of the arrivals based on the Target Time of Arrival (TTA).



Release 3 Main Content (3/4)



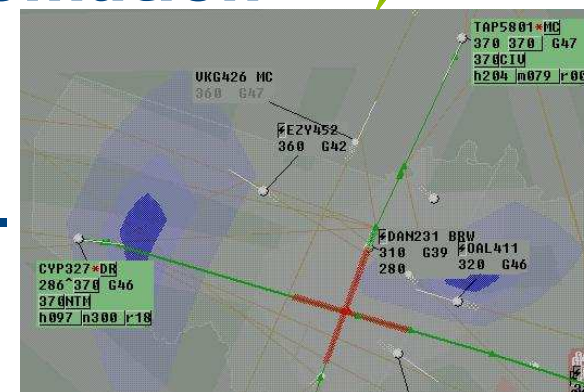
□ Moving from Airspace to 4D Trajectory Management

- Silent coordination between ATS Units through the utilization of Flight Object exchange mechanisms.



□ Conflict management and automation

- Enhanced Short Term Conflict Alert system using Mode S down-linked aircraft parameters.

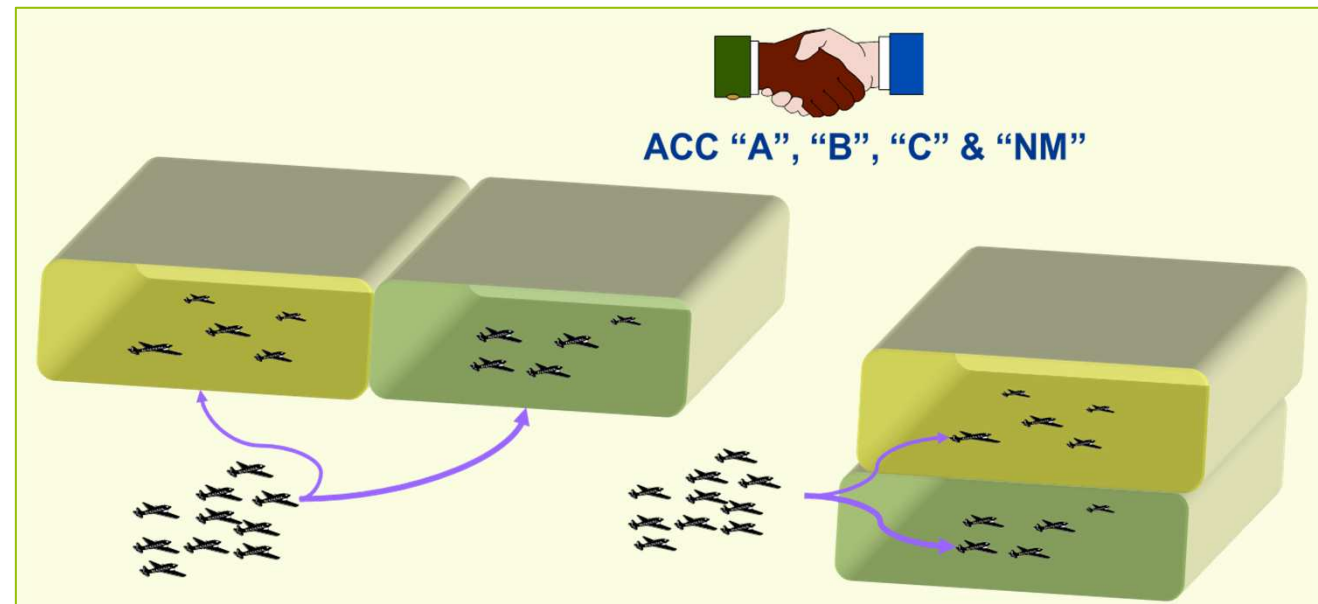
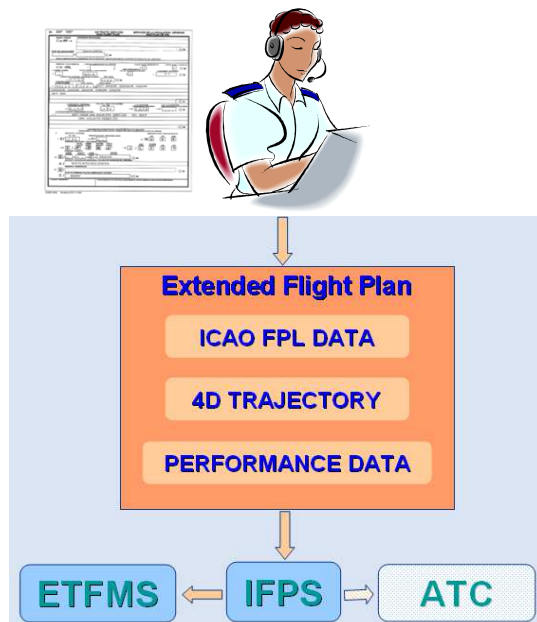


Release 3 Main Content (4/4)



□ Network Collaborative Management and DCB

- Further development of the Short Term ATFCM Measures coordination procedures.



- Enhanced FPL processing based on 4D profiles and aircraft performance provided by AOC.





EUROCAE – Dedicated to Aviation Standardisation

- Created in 1963
- Objective: to develop technical standards in support of the (mainly civil) aviation community
- Today: more than 130 members from over 28 countries
 - Manufacturing industry, ANSPs, Regulators, Research organisations, Universities, Airport, Airlines
 - SESAR Joint Undertaking, Eurocontrol, EASA,
- Well established relations with:
 - EC
 - European Standardisation Organisations
 - RTCA, SAE, ARINC,
 - FAA,
 - ICAO



EUROCAE – Areas of Activities

EUROCAE Working Groups

- currently **27 active WGs**,
- more than **1200 experts**, from all over the world, specialised in one or several aeronautic domains and working on a voluntary basis

Main areas of activities:

- Airborne systems and equipment
 - CNS and ATM
 - Other avionics and aircraft equipment
- ATM and airport ground systems and equipment
- Environment and multi-domain applications
- Close link to SESAR and NextGen activities

Production

- About 20 new documents (EDs) or updates per year

European Standardisation roadmap

EUROCAE develops and updates yearly its
Technical Work Plan

Input to SESAR project C3 (Standardisation and
regulatory roadmap)

European ATM Master Plan
(chapter 4.4.1)
Linkage with regulatory roadmap (chapter 4.4.2)



Standardisation roadmap

ATM Master plan extract for SESAR

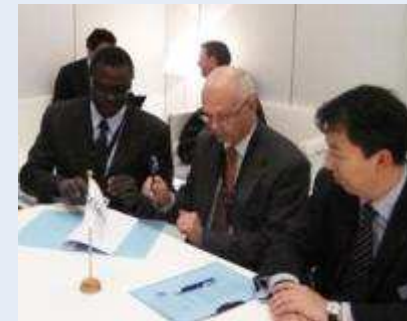
step 1

Standards for Step 1	Publication Date	Status, Organisations and Documents
I4D + CTA (ESSENTIAL)		
ATN Baseline 2, datalink communications	2013	Ongoing WG78/SC214 SPR & INTEROP ICAO Doc9880, PANS-ATM
Initial 4D operations	2013	Ongoing ICAO PANS-ATM
Enhanced Controlled Time of Arrival (CTA)	2014	Ongoing WG85/SC227 ICAO PBN Manual & ED75/ DO236
SYSTEM INTEROPERABILITY WITH AIR/GROUND DATA SHARING (ESSENTIAL)		
ATN Baseline 2, datalink communications	2013	Ongoing WG78/SC214 SPR & INTEROP ICAO Doc9880, PANS-ATM
VDL Mode 2: handover and multi-frequency	2013	Ongoing SC214/WG92, ED92a
Airport Surface Data Communication based on IEEE 802.16, WIMAX	2013	Ongoing WG-82 EUROCAE
Military air-ground datalink	2015	

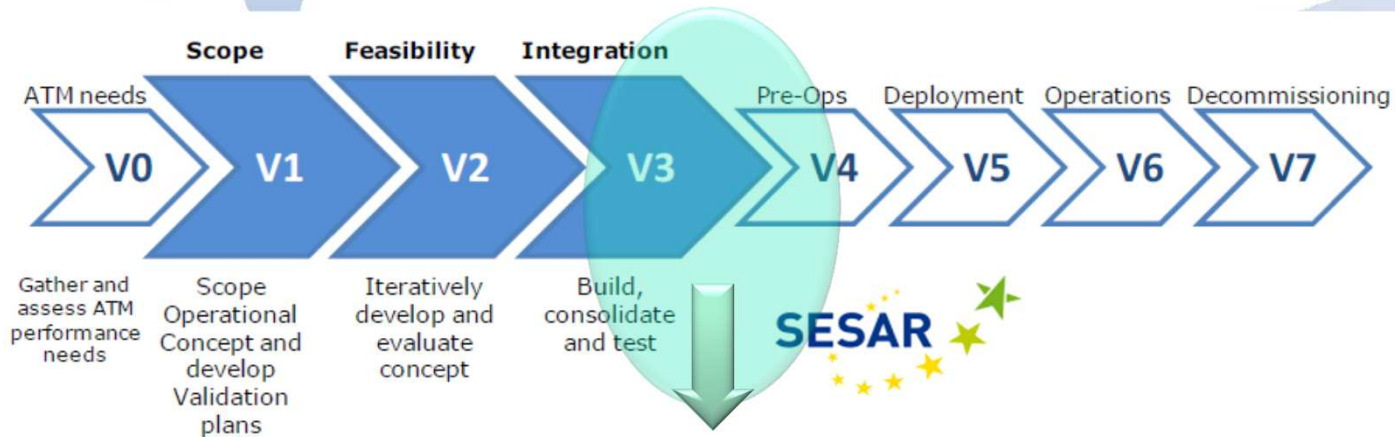


Standardisation coordination

- **SESAR JU and EUROCAE have signed a Memorandum of Cooperation at ATC Global 2012 to facilitate**
 - **standardisation of SESAR results**
 - **validation of standards by SESAR project**



Standardisation of SESAR results



OSD,
SPR (Safety and
Performance),
Interop documents,
MOPS

Other
members
input →

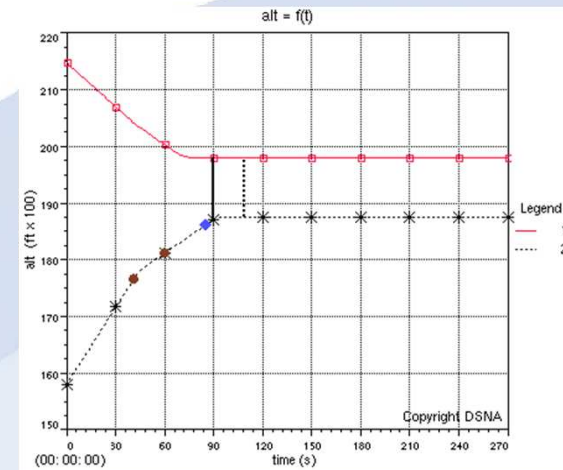


Standardisation of SESAR results

Examples

- SESAR Project « Evolution of Airborne Safety Nets” (4.8.2)
 - ➔ Benefits of coupling autopilot and ACAS
 - ➔ MOPS for Autoflight TCAS Coupling under development in EUROCAE WG75

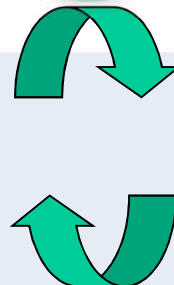
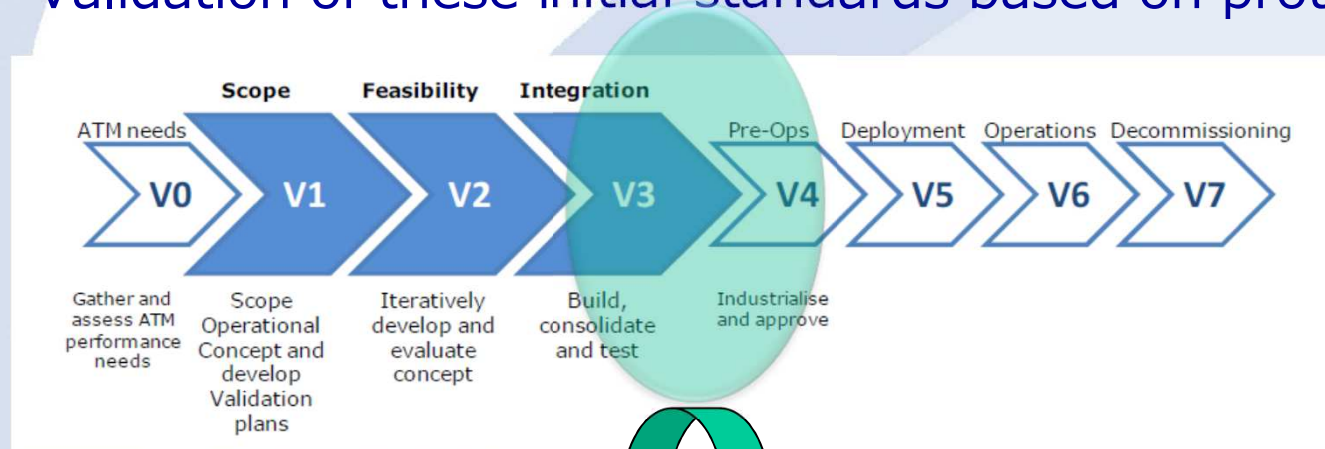
- A-SMGCS level 3 and 4 (Guidance and routing)
 - ➔ Significant progress in several SESAR projects
 - ➔ EUROCAE WG-41 reactivation
 - ➔ D-TAXI in EUROCAE WG-78





Validation of Standards

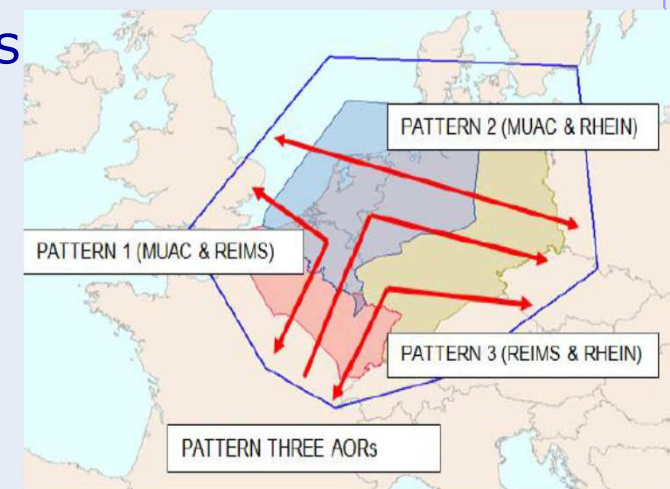
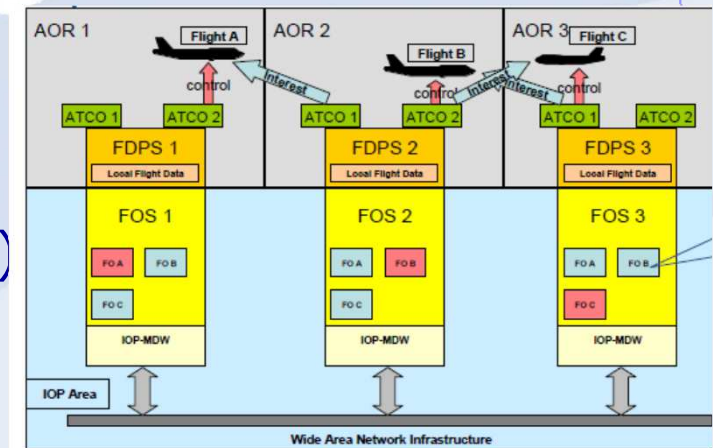
- Complexity of systems and standards requires more and more standard validation activities
 - Industry needs initial versions of standard to develop prototypes
 - Validation of these initial standards based on prototypes

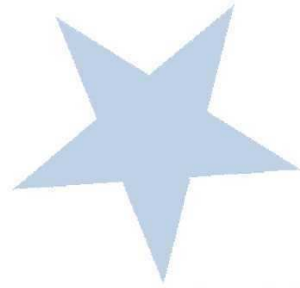


Example (1)

Validation of Flight Object and Ground-Ground Interoperability

- Validation of ED-133
 - Standardised in 2009 by EUROCAE WG-59 : ED-133
 - European new FDPS (iTEC/Coflight) Interoperability
 - DSNA-DFS-MUAC simulation in 2013
 - Further validation planned for Free Route and Extended AMAN concepts
 - Evolution planned for integration of Airborne Flight profile received by ADS-EPP
- A first step of ICAO FF-ICE



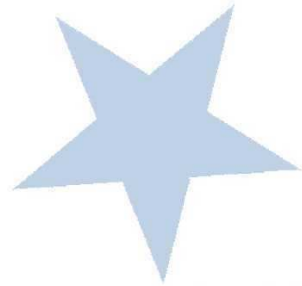


Example (2) VoIP for ATM

- Voice over IP for ATM
 - EUROCAE WG-67 has developed a set of 3 documents
 - ED-137 : interoperability standards for VoIP ATM components (radio, telephone, recording, supervision)
 - Validation by ETSI and SESAR project 15.2.10 (using Pan European Network Services)
 - ED-137B issued in February 2012
 - DSNA and EUROCONTROL MUAC are purchasing ED-137B compliant VCS
 - Used by FAA
 - ED-137B (vol 1 and vol 2) will be referenced in ICAO Annex 10.

Standardisation and Deployment

- Standardisation is essential for deployment
 - Harmonisation and Interoperability
 - Support to regulation
- Results from R&D have to be turned into standards
 - At the right time (not too early, not too late)
 - Availability for the industrialisation phase
 - Mature and validated standards for deployment
 - Standardisation must involve all relevant stakeholders at international level
 - Research, Universities, Laboratories
 - Industry,
 - Service providers
 - Regulatory organisations
 - Process and content needs coordination between industry standardisation organisations and ICAO



Conclusion

- SESAR has already achieved significant results
 - Candidates for deployment in Europe
- EUROCAE has successfully delivered standards for the last 50 years and will continue to support European and worldwide standardisation
 - 50th anniversary celebrated at next symposium in Paris (13-14th of June 2013)
- Standardisation is essential for deployment
 - Some results from R&D have to be turned into standards to enable an efficient, interoperable and harmonized deployment



Thank you for your attention



EUROCAE

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