

Deployment Scenario Title	Improved ground trajectory predictions enabling future automation tools
Deployment Scenario Description	Improved ground trajectory predictions enabling future automation tools: this activity focuses on the operational validation of improved CD&R tools. The main goal is to increase the quality of separation management services, reducing controller workload and separation buffers, and facilitating new ways of organising controller teams. The foundation is the improvement of the ground trajectory predictor (EPP data beyond weight and CAS, known MET data or new MET data, capabilities, etc.).
Essential Operational Change	Trajectory Based Operations
Maturity	In development phase: Key R&D Activities


Applicable Operating Environment			
Airport	Terminal Airspace	En-Route	Network



Timeline																					
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035

Performance Contribution of the DS				
Capacity	Safety	Environment	Cost-efficiency	Operational efficiency

Stakeholders affected (at least one enabler to be deployed)						
ANSP		AO		AU		Network Manager
Civil	Military	Civil	Military	Civil	Military	
TWR, APP, ENR, CNS	TWR, APP, ENR, CNS			Scheduled, BA Fixed, BA Rotorcraft, GA	Transport, Fighter	

SESAR Solutions			
Solution Code	Solution Title	Solution Description	Related Elements
PJ.10-02a1	Improved performance in the provision of separation without use of ADS-C/EPP data	The Solution aims at improving the separation (tactical layer) in the En-Route and TMA...	PJ OI DS EOC ICAO
PJ.10-02a2	Improved performance in the provision of separation with use of ADS-C/EPP data	The Solution aims at improving the separation (tactical layer) in the En-Route operational...	PJ OI DS EOC
PJ.10-02b	Advanced Separation Management	Advanced Separation Management aims to further improve the quality of services of separation...	SOL PJ OI DS EOC
PJ.18-W2-53	Improved Ground Trajectory Predictions enabling future automation tools	This key R&D activity focuses on the operational validation of improved CD&R tools to...	PJ DS EOC

Operational Improvement Steps			
OI Step Code	OI Step Title	OI Step Description	Related Elements
CM-0206	Conflict Detection and Resolution in the TMA using trajectory data	The system provides real-time assistance to the TMA controllers in conflict detection and...	SOL OI EN DS ICAO
CM-0207-B	Automated Ground Based Flight Conformance and Intent Monitoring in En-Route Improved With Aircraft Downlinked Data	The system provides the En-route controller with warnings if aircraft deviate or will deviate...	SOL OI EN DS
CM-0208-A	Automated Ground Based Flight Conformance Monitoring in the TMA	The system provides the TMA controller with warnings if aircraft deviate from the calculated...	SOL OI EN DS ICAO 
CM-0208-B	Automated Ground Based Flight Conformance and Intent Monitoring in the TMA	The system provides the TMA controller with warnings if aircraft deviate or will deviate from the...	SOL OI EN DS
CM-0209	Conflict Detection and Resolution in En-Route using enhanced ground predicted trajectory in Predefined and User Preferred Routes environments	The system provides real-time assistance to the En-route controllers in conflict detection and...	SOL OI EN DS ICAO
CM-0209-b	Conflict Detection and Resolution in En-Route using aircraft data in Predefined and User Preferred Routes environments	The system provides real-time assistance to the En-route controllers in conflict detection and...	SOL OI EN DS
CM-0210	Ground Based Flight Conformance Monitoring in En-Route using enhanced ground predicted trajectory	The system provides the En-Route controller with warnings if aircraft deviate from the calculated...	SOL OI EN DS ICAO
CM-0210-b	Ground Based Flight Conformance Monitoring in En-Route using aircraft Data	The system provides the En-Route controller with warnings if aircraft behavior or aircraft intent...	SOL OI EN DS
CM-0211	Advanced Support for Conflict Detection and Resolution for ATC planning in En Route	The system provides real-time assistance to the En route ATC Planning in conflict detection and...	SOL OI EN DS
CM-0407	Enhanced Conflict Detection and Resolution in En-Route	The system uses shared trajectory information to provide enhanced assistance to the En-route...	SOL OI EN DS
CM-0408	Enhanced Conflict Detection and Resolution in the TMA	The system uses shared trajectory information to provide enhanced assistance to the TMA...	SOL OI EN DS
CM-0607	Separation Management in En-Route using RBTs with 2D RNP Specifications	The Reference Business Trajectory (RBT) is a 'precision trajectory' in that it may include...	SOL OI EN DS
CM-0608	Separation Management in the TMA using RBTs with 2D RNP Specifications	The Reference Business Trajectory (RBT) is a 'precision trajectory' in that it may include...	SOL OI EN DS

Enablers						
Required/Optional	New/Inherited	Develop/Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
			A/C-31a	Controller pilot data link communication (CPDLC) compliant with ATN baseline 2 (FANS 3/C)	Data link exchange for ATN/VDL2 baseline 2 (FANS 3/C) i.e. for Departure Clearance,...	STK OI EN DS 

Enablers						
Required/Optional	New/Inherited	Develop/Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
🔒			A/C-34	On-board management of clearances or instructions revising trajectory	On-board management of clearances or instructions revising trajectory with associated RNP and/or...	STK OI DS
🔒			A/C-37a	Downlink of trajectory data according to contract terms (ADS-C) compliant to ATN baseline 2 (FANS 3/C)	Downlink of trajectory data (waypoints or pseudo waypoints with associated constraints and/or...	STK OI EN DS PCP
🔒			A/C-48a	Air broadcast of aircraft position/vector (ADS-B OUT) compliant with DO260B	Air broadcast of aircraft position/vector (ADS-B OUT) compliant with DO260B	STK OI EN DS
🔒			APP ATC 155	ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA	Development of conflict tools providing automated assistance to ATC for detecting conflicts in...	STK OI DS
🔒			APP ATC 168	ATC System Support for Advanced Conformance Monitoring in the TMA	Enhance conformance monitoring approaches, associated algorithms and controller HMI functions to...	STK OI DS
🔒			CTE-C02b	A/G Datalink over ATN/OSI - Single frequency	A/G datalink using ATN/OSI over VDL2 to support continental ATC services (SES IR) - ATN/OSI B1,...	STK OI EN DS ⚙️
🔒			CTE-C02c	A/G Datalink over ATN/OSI - Multi frequency	Enhanced A/G datalink using ATN/OSI over VDL2 to support continental ATC services - ATN/OSI B1...	STK OI EN DS PCP ⚙️
🔒			CTE-C02e	New A/G datalink using ATN/IPS over L-band	A new terrestrial A-G datalink (LDACS) to augment the VDL2 supported A-G datalink services based...	STK OI EN DS ⚙️
🔒			CTE-C02f	Future Satcom for ATM: SATCOM Class B in Multilink	A new satellite A/G datalink to provide service redundancy to the existing terrestrial datalink...	STK OI EN DS ⚙️
🔒			CTE-S03b	ADS-B station for RAD and APT surveillance	ADS-B station for provision of Radar and Airport surveillance, compliant with EUROCAE ED129A and ...	STK OI EN OBJ DS ⚙️
➔			ER APP ATC 100	4D Trajectory Management by Synchronization of Air and Ground Trajectories through EPP	ATC system updates the planned trajectory with data contained in the EPP.	STK OI DS PCP
🔒			ER APP ATC 103	Enhance Monitoring Aids to Use RBT/RMT Constraints and Commitments	Monitoring aids functionality is upgraded to take into account the specific constraints and...	STK OI DS ⚙️
➔			ER APP ATC 104	Adapt Controller Conflict Detection and Resolution Tools to Use Enhanced Ground-Based Trajectory Prediction	Controller tools are adapted to use an enhanced Trajectory Prediction model obtained through the...	STK OI EN DS
➔			ER APP ATC 104b	Adapt Controller Conflict Detection and Resolution Tools to Use Enhanced Trajectory Prediction	Controller tools are adapted to use an enhanced Trajectory Prediction model obtained through the...	STK OI DS
➔			ER APP ATC 104c	Adapt Controller Conformance Monitoring Tools to Use Enhanced Ground-Based Trajectory Prediction	Controller tools are adapted to use an enhanced Trajectory Prediction model obtained through the...	STK OI DS

Enablers						
Required/ Optional	New/ Inherited	Develop/ Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
→			ER APP ATC 104d	Adapt Controller Conformance Monitoring Tools to Use Enhanced Trajectory Prediction	Controller tools are adapted to use an enhanced Trajectory Prediction model obtained through the...	STK OI DS
🔒			ER APP ATC 120	Enhance Conflict Detection and Resolution to Use the RBT/RMT	Conflict detection determines interactions between trajectories, based on the current RBT/RMT,...	STK OI DS
🔒			ER APP ATC 125	Management and Delivery of 2D RNP Clearances	Changes required to trajectory prediction and management, controller HMI, and air-ground datalink...	STK OI EN DS
🔒			PRO- 046b	ATC Procedures for Using Advanced System Assistance to Medium Term Conflict Detection and Resolution	-	OI DS
→			ER APP ATC 82	Enhance EN/APP ACC to use eFPL data	Modification of the EN APP ATC functions in order to use eFPL data for the trajectory prediction.	STK OI EN DS
→			ER APP ATC 149a	Air-Ground Datalink Exchange to Support i4D - Extended Projected Profile (EPP)	Air/Ground datalink management is modified to support the acquisition of the EPP via ADS-C. The...	STK OI EN DS PCP
→			ER APP ATC 160	ATC to ATC Flight Data Exchange Using The Flight Object	Implement ground-ground flight data exchange between ATC units through the use of Flight Object...	STK OI EN DS PCP
→			ER ATC 157	Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route	Conflict Management is updated to integrate conflicts derived from multiple trajectory types in...	STK OI EN DS