

Improving ATM operations performance with enhanced trajectory predictions with ADS-C EPP

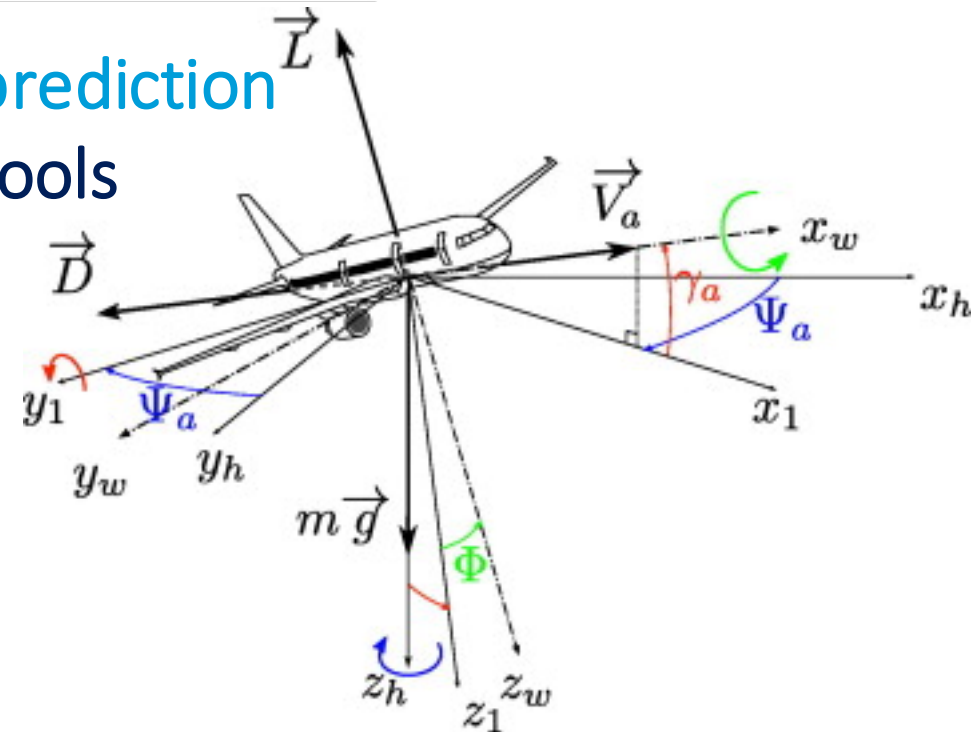
Tommas Damm (DFS) on behalf Hugo Salinas (Indra)
DISSEMINATION EVENT, EUROCONTROL, 21st MARCH 2023

These projects have received funding from the SESAR Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreements No 101017626 and 872320

PJ18-W2 SOL53 Global Overview



Improved ground trajectory prediction
enabling future automation tools



PJ18-W2 SOL53 Global Overview



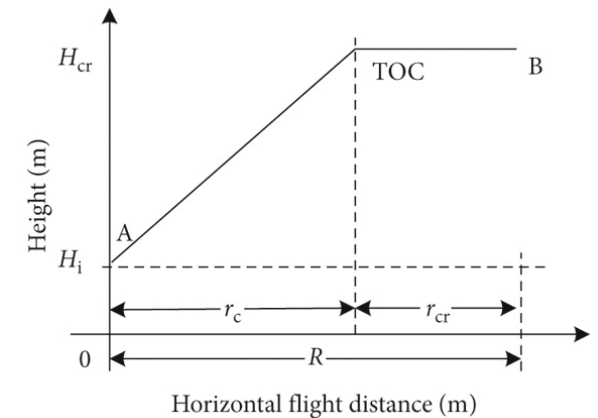
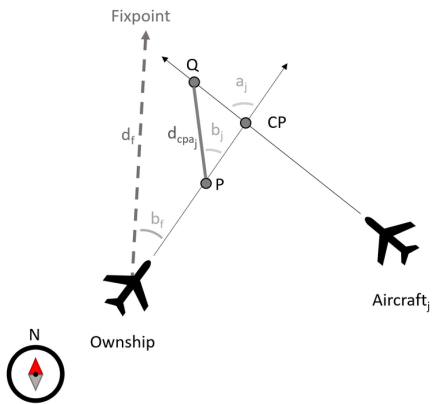
PJ18-W2 SOL53 Global Overview

Improved ground trajectory prediction enabling future automation tools



PJ.18-W2-53A
Increased Automation in Planning and Tactical Separation Management

PJ.18-W2-53B
Improved Performance of CD/R Tools Enabled by Reduced Trajectory Prediction Uncertainty

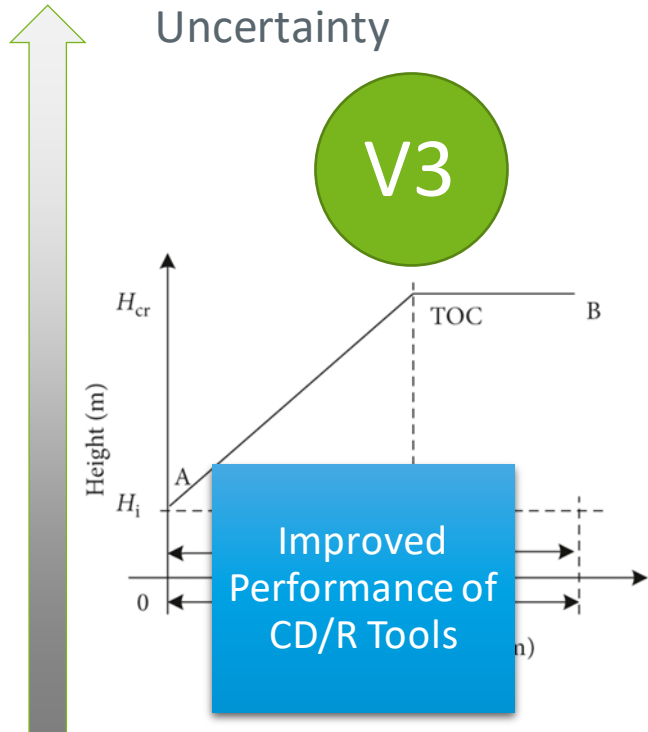


PJ18-W2 SOL53 Global Overview

PJ.18-W2-53B

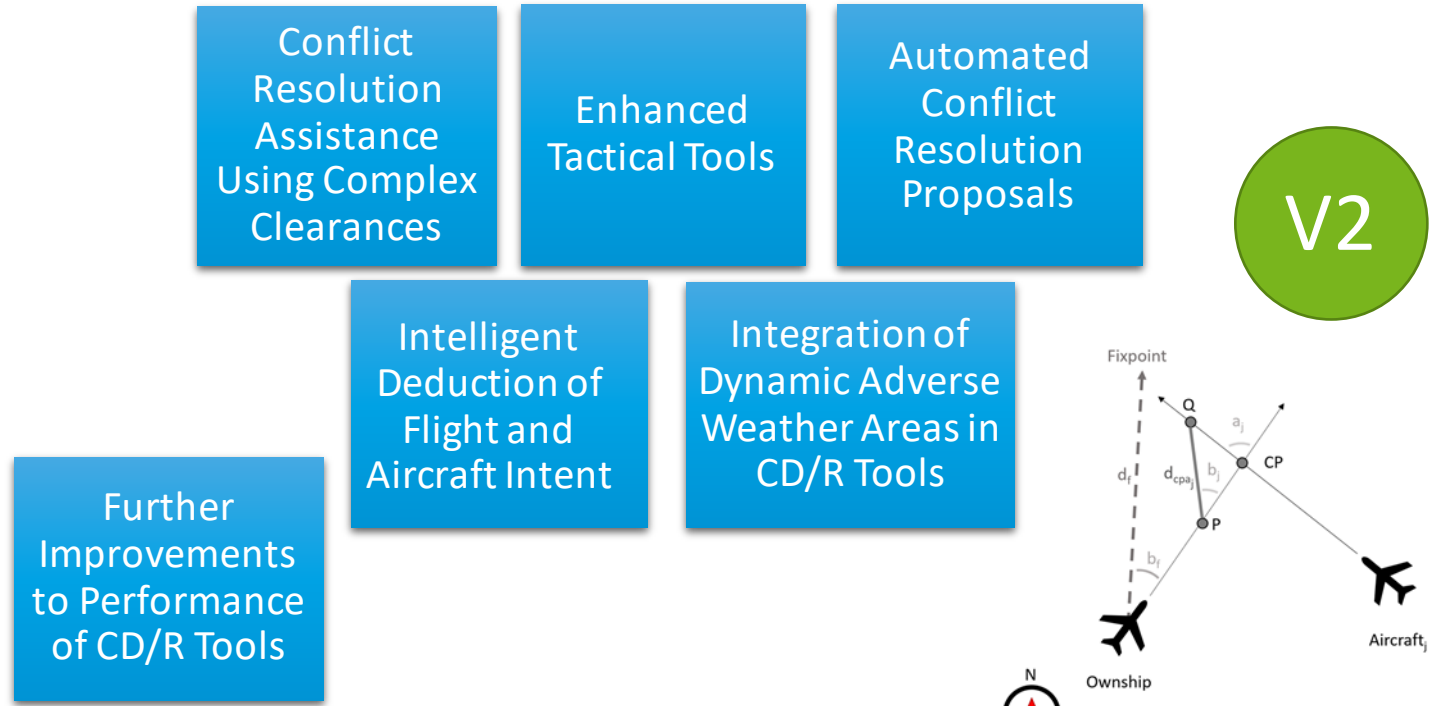
Improved Performance of CD/R Tools Enabled by Reduced Trajectory Prediction Uncertainty

Less mature



PJ.18-W2-53A

Increased Automation in Planning and Tactical Separation Management



Increasing automation

PJ18-W2 SOL53 Global Overview

PJ.18-W2-53A

Increased Automation in Planning and Tactical Separation Management

CD&R TOOLS ENHACEMENTS

➤ **EXE-001**  **LEONARDO**

Through aircraft trajectory information downlinked via ADS-C and Optimization Factors

➤ **EXE-002**  **COOPANS**
REAL COOPERATION, REAL RESULTS

Through optimal FL Data

➤ **EXE-003**  **dgac**
 **DSNA**

Through airborne downlinked MET and EPP trajectory data

TACTICAL and PRETACTICAL Conflict Detection Resolution

➤ **EXE-004**  **EUROCONTROL**

Through machine learning and enriched data

➤ **EXE-005**  **NATS**

Through ADS-C data

TP improvements with ML/AI

➤ **EXE013**  **PANSAs**

Through the identification of subtle navigation factors (preferred speeds)

➤ **EXE-007**  **ENAIRe**

Through Machine Learning and Big Data techniques

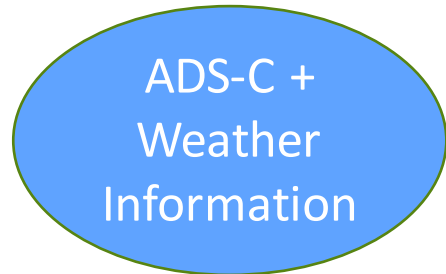
Adverse Weather Areas (AWAS)

➤ **EXE-006**  **COOPANS**
REAL COOPERATION, REAL RESULTS

AWAs and CD tools integration

PJ18-W2 SOL53 Global Overview

PJ.18-W2-53B Improved Performance of CD/R Tools Enabled by Reduced Trajectory Prediction Uncertainty



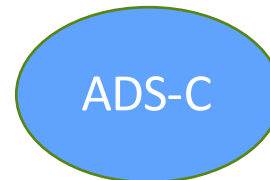
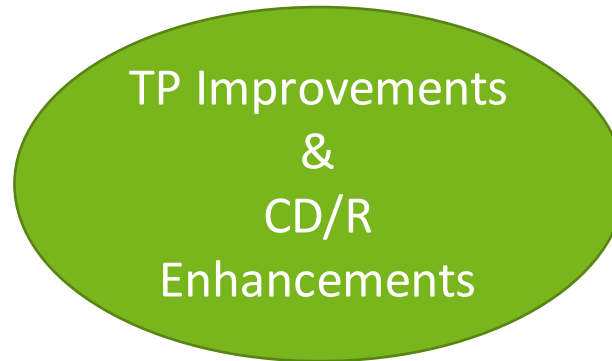
Through ADS-C data, improved weather information, and AWAs management



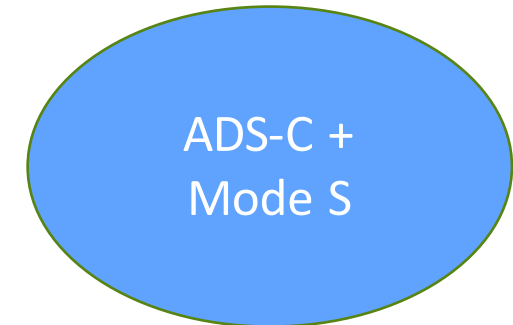
Through ADS-C data and improved weather information



Through ADS-C data, weather nowcasting, and improved tactical tools



Through ADS-C data



Through multiple data sources (ADS-C, Mode S)

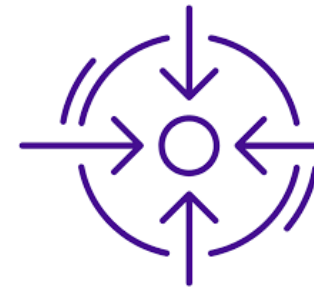
PJ18-W2 SOL53 Global Overview

PJ.18-W2-53B Interim results before extrapolation

En-Route OE			TMA OE		
<u>CAP 2</u> 3-10%	<u>CEF 2</u> 6.38%	<u>PRD 1</u> N/A	<u>CAP 1</u> 9.02%	<u>CEF 2</u> 7.95%	<u>PRD 1</u> N/A
<u>ENV1</u> 25-33 kg/flight	<u>FEFF1</u> 8-10 kg/flight	<u>SAF</u> <i>To be defined in SAR</i>	<u>ENV1</u> 222-339 kg/flight	<u>FEFF1</u> 69kg-105 kg/flight	
<u>TEFF1</u> N/A	<u>HP</u> <i>To be defined in the HPAR</i>		<u>HP</u> <i>To be defined in the HPAR</i>	<u>SAF</u> <i>To be defined in SAR</i>	

PJ18-W2 SOL53 Global Overview

PJ.18-W2-53A



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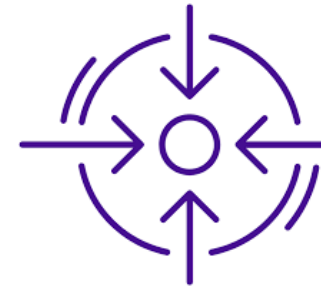
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PJ18-W2 SOL53 Global Overview

PJ.18-W2-53B



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THANK YOU FOR YOUR ATTENTION

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