



ACROSS Overview

London (UK)

17-April-2013

ACROSS

Advanced Cockpit for Reduction Of Stress and Workload

Presented by
Daniel MOSQUERA (ISDEFE)

Prepared by
Daniel MOSQUERA (ISDEFE), Linda NAPOLETANO (DeeBlue)

The ACROSS overview for the CANNAPE 4th Workshop.

ACROSS/WP12/ISD/PRES/0007_v00

A European Commission Seventh Framework Programme

This document is produced by the ACROSS consortium and the research leading to these results has received funding from the European Community's Seventh Framework programme (FP7/2012-2016) under grant agreement no ACP2-GA-2012-314501



This document is produced under the EC contract ACP2-GA-2012-314501. It is the property of the ACROSS consortium and shall not be distributed or reproduced without the formal approval of the ACROSS Steering Committee.

“Unrestricted PUBLIC Access”

- ❑ ACROSS Fact Sheet
- ❑ Why ACROSS?
- ❑ ACROSS Aims and Solution
- ❑ Expected Results & Approach
- ❑ ACROSS Participants
- ❑ CANNAPE Intervention

ACROSS Fact Sheet

Name	Advanced Cockpit for Reduction of Stress and Workload
ACRONIM	ACROSS
Call	FP7-AAT-2012-RTD-1
Duration	42 months, started the 1st of January 2013
Cost	30.255.456€
EU contribution	19.482.059€ (64%)
Coordinator	Thales Avionics (FR) – Mr. Thierry MARET
EC Officer:	Mr. Ivan KONAKTCHIEV

Why ACROSS?

- ❑ **Crew performance** (especially in peak workload conditions) is one of the major remaining limitations to Air Transport **safety**.

- ❑ **Economic pressure calls for reduced crew operations:**
 - Long-haul flights / cruise phases (one active pilot, one “reserve” pilot)
 - Single-pilot cargo flights (night missions, traffic at a minimum)
 - Business jet / convoy operations

- ❑ **Single-pilot operation in most flights is the ultimate target for reduced crew operation.**

More support expected from Avionics :

- ✓ During **peak workload situations**
- ✓ Need to face **crew incapacitation situation and safe flight termination**

ACROSS Aims and Solutions

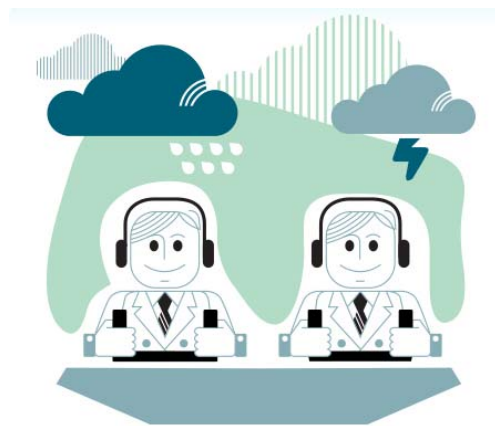
OBJ1: Peak crew workload situations.

- ❑ To develop, integrate and test **new cockpit solutions** that facilitate the management of the **peak workload situations** that can occur during a flight, in order to **improve safety** and ensure the reduction of accident risks through the **reduction of stress**.
- ❑ Solutions will be developed and demonstrated up to **Technology Readiness Level (TRL) 5**.

Fully capacitated crew with peak workload



High density traffic



Bad weather



Emergencies

OBJ2: Reduced crew operations.

- ❑ To develop, integrate and test **new cockpit solutions** that will allow **reduced crew operations** in a limited number of well-defined conditions.
- ❑ Solutions will be developed and demonstrated up to **Technology Readiness Level (TRL) 3**.

Long haul flight
Reduced crew



Pilot break for a limited
period of time during
cruise

One pilot incapacitated



Help remaining pilot to land
in safe condition

Short-medium range flight
Both pilots incapacitated



From cruise to landing
until A/C stops (no taxiing)

This document is produced under the EC contract ACP2-GA-2012-314501. It is the property of the ACROSS consortium and shall not be distributed or reproduced without the formal approval of the ACROSS Steering Committee.

OBJ3: Open issues for potential single-pilot operation.

- ❑ To identify the remaining open issues for the implementation of single-pilot operations, taking into account first learning about evaluations done on workload reduction (objective 1) and reduced crew operations (objective 2).

Two-pilot crew operations



Single-pilot operations



Expected Results & Approach

As expected outcomes, ACROSS will provide:

- ❑ A set of **new avionics functions** with the demonstration of global performance improvement, crew and system.
- ❑ **Cockpit applications and systems** could then be adapted to such challenging situations:
 - Decision support,
 - Prioritisation,
 - Progressive automation,
 - Decision sharing.
- ❑ A set of technology solutions matured for **crew monitoring** could offer the capability to **assess workload and stress levels of pilots**

As expected outcomes, ACROSS will provide:
































- ❑ A supplementary step in the technical capability to fully **control the aircraft for safe landing** in case of **crew incapacitation**.
- ❑ **Based on first human factor** evaluations, recommendations for management of reduced crew, and single operations: training, system evolutions.
- ❑ **Human factors, safety** and the identification of key issues for future **certification and regulation** will drive the approach.

ACROSS Participants

ACROSS Participants

ACROSS

Advanced Cockpit for Reduction
of Stress and Workload

Category	ACROSS partners
Airframers	  
Large Industrial Companies	           
National Research Centers	 
Research Centers inside large Industrial Groups	 
Universities	    
Small and Medium Enterprises	      

This document is produced under the EC contract ACP2-GA-2012-314501. It is the property of the ACROSS consortium and shall not be distributed or reproduced without the formal approval of the ACROSS Steering Committee.

External Expert Advisory Group.

- ❑ ACROSS will be in constant contact with operational end-users:
 - Airborne operations, with airlines and pilots
 - On-ground operations, with Airport and ATM representatives
 - Certification authorities, with EASA, national certification authorities

EEAG qualification

Airline Crew
Certification incl. authorities
Engineering
Crew trade unions
Crew training
Human Factors
Airframer
ATM / ATC
Weather
Medical
Law

Background of EEAG members cover the
ACROSS objectives.

CANNAPE Intervention

Contribute to the identification of one Canadian Expert for the ACROSS EEAG

- Mr. Robert Erdos. Chief Test Pilot, Flight Research Laboratory, NRC Canada.

This was possible by:

- 1st CANNAPE Workshop. Thales Avionics presented ACROSS in the session: *Ideas for AAT Research Proposals for the 5th Call and beyond*
- 2nd CANNAPE Workshop. Isdefe presented ACROSS in the session: *Avionics to support future air transport operations including* and opened the participation on the EEAG.
 - ✓ NRC expressed their willingness to participate in the EEAG and the collaboration was set.

Contact details.

MARET Thierry – Project Coordinator
thierry.maret@fr.thalesgroup.com

NAPOLETANO Linda – Dissemination Manager
linda.napoletano@dblue.it

Visit us at: www.across-fp7.eu
(available from June 2013)

Advanced Cockpit for Reduction Of Stress and Workload
ACROSS (314501)

This document and the information contained are ACROSS Contractors' property and shall not be copied or disclosed to any third party without ACROSS Contractors' prior written authorization.

Project co-funded by the European Commission within the
Seventh Framework Programme (2012-2016)

