



EASA

European Aviation Safety Agency

Proposed actions regarding 'weather information to pilots'

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AWO workshop

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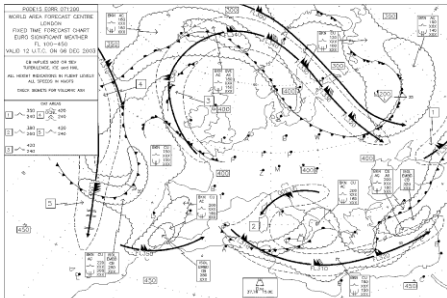


Introduction



Weather

Type, Impact



Information

Type, Dissemination



Pilots

Need



Outline

- Background
- Problem statement
- Objectives
- Approach
- **Proposed actions**
- Project considerations



Background

2015

- EASA workshop on 'Weather information provided to pilots'
- EASA roadmap/vision for weather information (WIP)
- WIP as subproject of AWO rulemaking task

2016

- WIP Action Plan (endorsed by AWO Steering Committee)
- April 2016 : WIP quick-off



2016 activities

» Meetings, webex, telecom (April-Sept)

- » SESARJU
- » EUROCONTROL
- » EUROCAE
- » PILOT'S ASSOCIATIONS

» Expert group meeting (18-19 Oct)

- » Industry
- » Pilots
- » MET providers
- » International organisations
- » EASA experts





Problem statement

Today, the weather information displayed in the flight deck does not always enable pilots to efficiently assess and anticipate significant weather phenomena in-flight.



**“My team has created a very innovative solution,
but we’re still looking for a problem to go with it.”**



Main objective of the project

- **Find means to reduce the risk for aircraft to fly in severe weather conditions**
 - Reduce crew and passengers injuries
 - Reduce situations where aircraft can be exposed to unsafe conditions





The approach

- Analyse the weather threats to aviation
- Classify the risks induced by those threats
- Identify potential areas of improvement
- Propose solutions/change requirements





Proposed actions





Weather threats

» *Identify the weather threats*

- » *Identification*
- » *Current mitigation*
- » *Deficiencies*
- » *Prioritisation*





Identified major weather threats

- ✓ *Clear-air turbulence*
- ✓ *Convectively-induced turbulence*
- ✓ *High altitude crystals*
- ✓ *Icing*
- ✓ *Windshear*





Weather threats

➤ *How to mitigate the threats*

➤ *What do we need to do?*

➤ *Propose appropriate and feasible solutions*

➤ *How can we do it?*





Areas of potential actions or improvement

» *Weather information*

» *On-board WX radar*

» *Uplink means*

» *Training*





Weather information



➤ *Identification of*

- *the kind of data to be provided to the pilot;*
- *the way to display the weather information;*
- *'quality' data to be provided on board;*
- *who is entitled to provide weather products.*



Weather information

➤ **Quality**

- *Coloured graphics;*
- *Moving maps with aircraft flight plan;*
- *Higher refresher rates of weather information;*
- *Continuous updates, or on pilots request, as weather conditions change;*



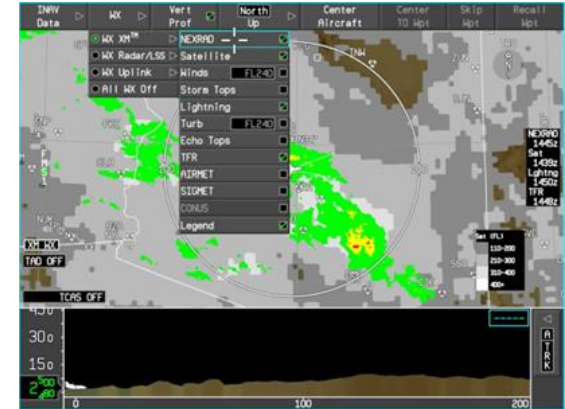
On-board WX radar

➤ Limitations

- *Old radars*
- *New generation of radars*

➤ Identification of advanced functionalities

- *Automatic tilt/scanning*
- *Predictive windshear*
- *echo attenuation compensation and identification;*
- *enhanced turbulence detection;*
- *independent left side / right side range settings;*
- *convective hazards prediction (hail, lightning)*





Uplink

➤ *Limited benefits of some current used technologies*

➤ *Voice, ACARS*

➤ *Identification of pragmatic solutions*

➤ *EFBs*

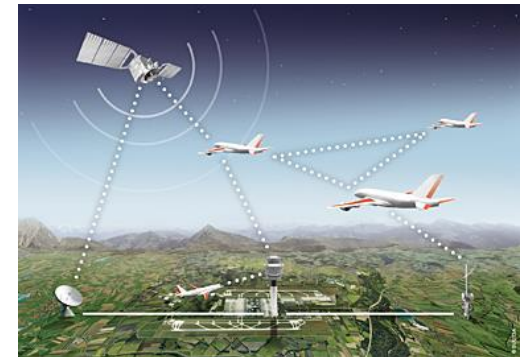
➤ *Broadband connectivity*

▶ *2Ku*

▶ *Ku-Band satellite*

▶ *3G/4G/LTE*

➤ *Use modern connectivity (Satcom)*





➤ **Weather information**

- *Decisions that are taken at all levels will vary depending on the actors' experience and their general knowledge of the weather information interpretation.*

➤ **On-board WXR**

- *is only helpful, if the flight crew is able to fully use the capability of the system and interpret the information.*

Where weather puts the aircraft at higher risk, the contributions of involved actors can determine whether an incident will end up being a fatal accident.





Some considerations





Main deliverable of the project

European strategy paper

1. Objective
2. The current situation
3. Problem Statement
4. Rationale for change
5. Challenges
6. Expectations
7. Proposed solutions/change requirements
8. Regulation requirements
9. Long-term vision



Scope?

➤ **Operations**

- All IFR flights

➤ **Updates/refresher requirements**

- Long-haul flights/medium haul flights

➤ **On-board WXR**

- pressurised aeroplanes;
- non-pressurised aeroplanes with MCTOM of more than 5 700 kg;
- non-pressurised aeroplanes with an MOPSC of more than nine.

➤ **Geographical scope**

- EU operators (in and outside Europe)
- Foreign aircraft crossing EU territory



Impact assessment

**To be further developed
when
the change requirements are known**



Timeline

Weather Info Project	2016																2017													
	Apr	May		Jun		Jul		Aug	Sept		Oct		Nov		Dec		Jan	Fev		Mar		Apr		May		Jun	July			
week	w2	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4	w1-2	w3-4		
START	Project Plan																													
Phase 1	Assessment - initial contact																													
activities phase 1	Mtg SESAR			Mtg Vcockpit	Mtg ECTRL	Mtg SESAR	Webex HoneyThales																							
phase 2									Draft strategy paper development								Strategy Paper													
activities phase 2													Tech mtg	AWO WS		Tech mtg		Tech mtg												
Phase 3																			Development of IR											
Phase 4																						Development of AMC/GM								
END																												END		





Further steps

- **9-11 Nov 2016: AWO Workshop**
- **13-14 Dec 2016 : Technical meeting (tbc)**
- **February 2017 : Final strategy paper**
- **NPA – Q2/Q3 2017**



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European Aviation Safety Agency

Thank you for your attention

Let's discuss

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