Research challenges examining normal operations

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Research Challenges

Why research?
- Confirming underlying theories
- Putting workgroup conclusions to the test
- Developing & testing new practices

Normal operations – easy?
- Realistic responses
- Non-normal responses

What is the perceived chance of a Go-Around...
- 99.9%
- 0.1%
Research Challenges

What is the problem?

Where does this come from?

What can we do about it?
How to examine the problem?

- Theory
- Operations
- Analysis
Why? Where does this come from?

Theoretical

Operational

Experimental
Manual Operations of 4th Generation Airliners

This research is funded as part of the FP7 2012 Aeronautics and Air Transport programme under EC contract ACP2-GA-2012-314765-Man4Gen
Where does this come from?

Experimental Analysis  
Approach Scenario  
Go-Around  
Events...
Normal Ops: Go-Around

Weather forecast – showers in the area

From 1000 ft: 30 kt tailwind introduced

- Visible on ND
- Unstable airspeed
- A/T compensates

Heavy rain at Decision Height

- Visibility reduces
- Lose runway visual
What do you measure?

**Crew behaviour**
- Instructor observers
- Airbus Assessment & Grading System
- ICAO Airline Pilot Competencies

**Data Measures**
- Actions
- Eyetracking
- Heart rate

**Debriefing & Analysis**
- Interviews
- Observations
What happened?

<table>
<thead>
<tr>
<th>Aware of the weather risk</th>
<th>Monitoring weather</th>
<th>G/A decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Updates</td>
<td>• Until short final</td>
<td>• Loss of visual</td>
</tr>
<tr>
<td>• Diversion</td>
<td></td>
<td>• Unstabilised</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tailwind</td>
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</tbody>
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*Note: These are provisional results from the initial analysis.*
Crew behaviour

Captain – Pilot Flying
- Flight Path
- Commander?
- Overview?

First Officer – Pilot Monitoring
- Communications
- Flight Path?
- Weather?
- Aircraft Systems?

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Research supports Operational Expertise
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