From NOTECHS to LH Behaviour Markers
An Implementation Case Study

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Overview

- **Principles of Behaviour Assessment in NOTECHS/JARTEL**
- Development of Lufthansa‘s New Behaviour Marker System
- Crosslinking NOTECHS to LH Interpersonal Competences
- The Implementation Case: Lufthansa‘s Evaluation Method
- Usability Study
- Summary
NOTECHS/JARTEL
Principles and Practice of Behaviour
Marker Application

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Boeing Research & Technology Europe
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JAR OPS (2001) 1.940, 1.945, 1.955, and 1.965, asking for an evaluation of flight crews’ CRM skills.

“the flight crew must be assessed on their CRM skills in accordance with a methodology acceptable to the Authority and published in the Operations Manual.” (1.965)

“The purpose of such an assessment is to: provide feedback to the crew collectively and individually and serve to identify retraining; and be used to improve the CRM training system.” (1.965).
For the purposes of the project, non-technical skills (NoTechS) were defined as...

“the cognitive and social skills of flight crew members in the cockpit, not directly related to aircraft control, system management, and standard operating procedures (SOPs)” (Avermaete, 1996)

Requirements for NOTECHS…
- to assess the skills of an individual pilot, rather than a crew
- assessments based on observable behaviours
- precisely defined, culturally robust, reliable, and practicable
- to be suitable for use across Europe by both large and small operators
Information Sources

- In-depth literature study on selected NTS concepts
- Airlines’ current practices
  - Air France
  - KLM (WILSC / SHAPE)
  - Dutch CAA (RLD)
  - University of Texas Line-LOS Checklist
  - Lufthansa (Quick Reference List)
The NOTECHS System

Non-technical skills

Co-operation

Leadership & management skills

Situation awareness

Decision making

Team building & maintaining

Considering others

Supporting others

Conflict solving

Helps other crew members in demanding situations

Offers assistance

(Avermaete & Kruijsen, 1998)

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The NOTECHS Framework

<table>
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<tr>
<th>Categories</th>
<th>Elements</th>
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<td>Co-operation</td>
<td>Team building and maintaining</td>
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<td></td>
<td>Consideration of others</td>
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<td>Supporting others</td>
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<td>Conflict solving</td>
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<td>Leadership &amp; Management skills</td>
<td>Use of authority/assertiveness</td>
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<td>Maintaining standards</td>
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<td>Planning and co-operation</td>
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<td>Workload management</td>
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<td>Situation Awareness</td>
<td>System awareness</td>
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<td>Environmental awareness</td>
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<td>Anticipation</td>
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<td>Decision Making</td>
<td>Problem definition/diagnosis</td>
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<td>Option generation</td>
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<td>Risk assessment/option choice</td>
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<td>Outcome review</td>
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(Rhona Flin et al., 2003)

H.-J. Hoermann, NOTECHS & LH-IPCs, RAeS, Apr. 2004
Influence of cultural differences on the use of NOTECHS across Europe
Inter-rater agreement and consistency when assessing the same scenarios
Applicability and usefulness in real check situations

Study 1: Experimental approach
- N = 105 IPs from all over Europe assessing eight recorded scenarios with good and bad examples of NTS behaviours after a half day familiarization course

Study 2: Operational approach
- N = 25 IPs from five airlines participated in the feasibility check of applying NOTECHS in real training and check situations
The 5 principles of NOTECHS application in practice:

- Only observable behaviour is to be assessed
- Need for a technical consequence
- Repetition required
- Rating shall distinguish between acceptable and unacceptable NTS
- Explanation required
**Behaviour** is defined in the dictionary as *action or reaction of something under specified circumstances.*

- **Overt behaviours**
  - Actions that others can directly observe, like activities, movements, postures, gestures, positions, facial expressions, speech, or social interactions

- **Covert behaviours**
  - Processes, that cannot be directly observed, like thoughts, cognition, feelings, physiological responses

**Behaviour observation** is the planned collection of behavioural data while subjects are engaged in various activities in certain situations with the intention to assess the collected behavioural data against specified standards.
Results of an airline audit - NOTECHS to identify training needs

(Study conducted by German Aerospace Center (DLR), 02/2000)

Average scores of 17 airline pilots

Behavioural Elements of NOTECHS
NOTECHS Application – An Example

- Results of an airline audit - NOTECHS to examine training effects
  (Study conducted by German Aerospace Center (DLR), 02/2000)

Bar chart showing the comparison of behaviour elements of NOTECHS before and after CRM implementation on a 5-point rating scale.
Results of an airline audit - NOTECHS to identify training needs

(Study conducted by German Aerospace Center (DLR), 02/2000)
References

Aberdeen website: www.psyc.abdn.ac.uk/serv02.htm
EAAP website: www.eaap.net
Sofreavia website: www.sofreavia.fr/JARTEL


What Next?

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