OPERATOR'S EXPERTISE IN EBT

Malfunction Clustering

Luciano Pisano

- **Alitalia Captain on A320 Family**
- **Senior Type Rating Examiner**
- **Head of CRM Department**
- **Project Leader for ATQP and EBT**
- **PhD in Cognitive Psychology**

EBT:
A Project Based on Broad and Deep
EXPERTISE

EBT

Requires

the Contribution of

OPERATOR'S EXPERTISE

MALFUNCTION

CLUSTERING

RATIONALE APPROACH

TO ELICIT

TRAINERS' EXPERTISE

DELPHI

Technique

DELPHI: Short History

- Rand Corporation during Cold War (1950s)
- To forecast impact of new technology on warfare
- Later on extended to other applications

DELPHI

A TECHNIQUE FOR ELICITING

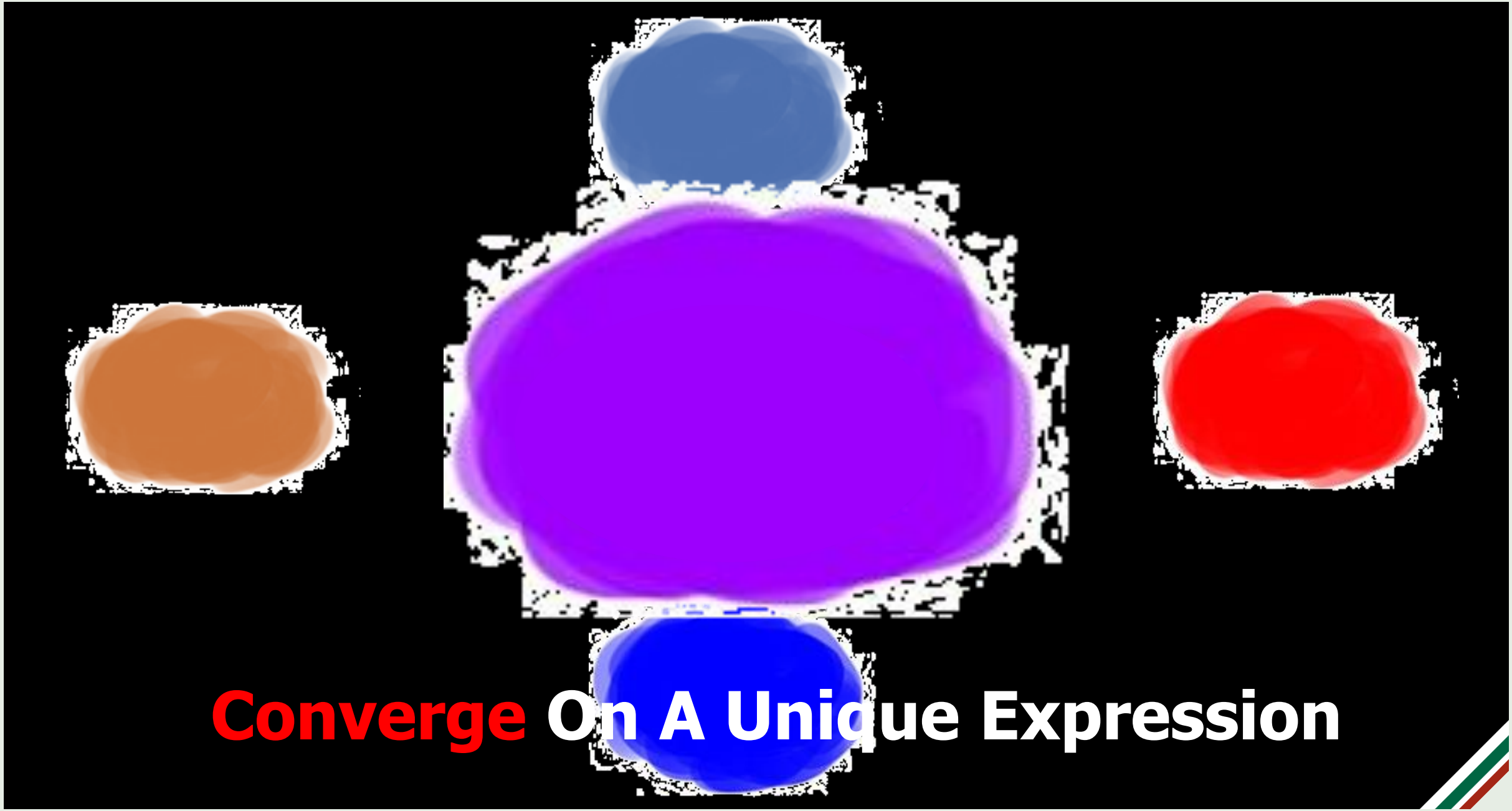
EVALUATIONS, JUDGMENTS, IDEAS

FROM A PANEL OF EXPERTS

Not Phisically Hosted In The Same Location

DELPHI

To Make A More Shared And Complete Opinion…


Converge On A Unique Expression

DELPHI *Procedure*

DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | step 5 | step 6 | step 7

Nomination of the* Moderator *in charge

DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | step 5 | step 6 | step 7

Selection and Indoctrination of

Panel of Experts

DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | step 5 | step 6 | step 7

1° *Round*

of Questioning

(instructions and time limit)

Alitalia

DELPHI *Procedure*

step 1 | step 2 | step 3 | **step 4** | step 5 | step 6 | step 7

1°

Elaboration of Answers

DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | **step 5** | step 6 | step 7

2° *Round*

of Questioning

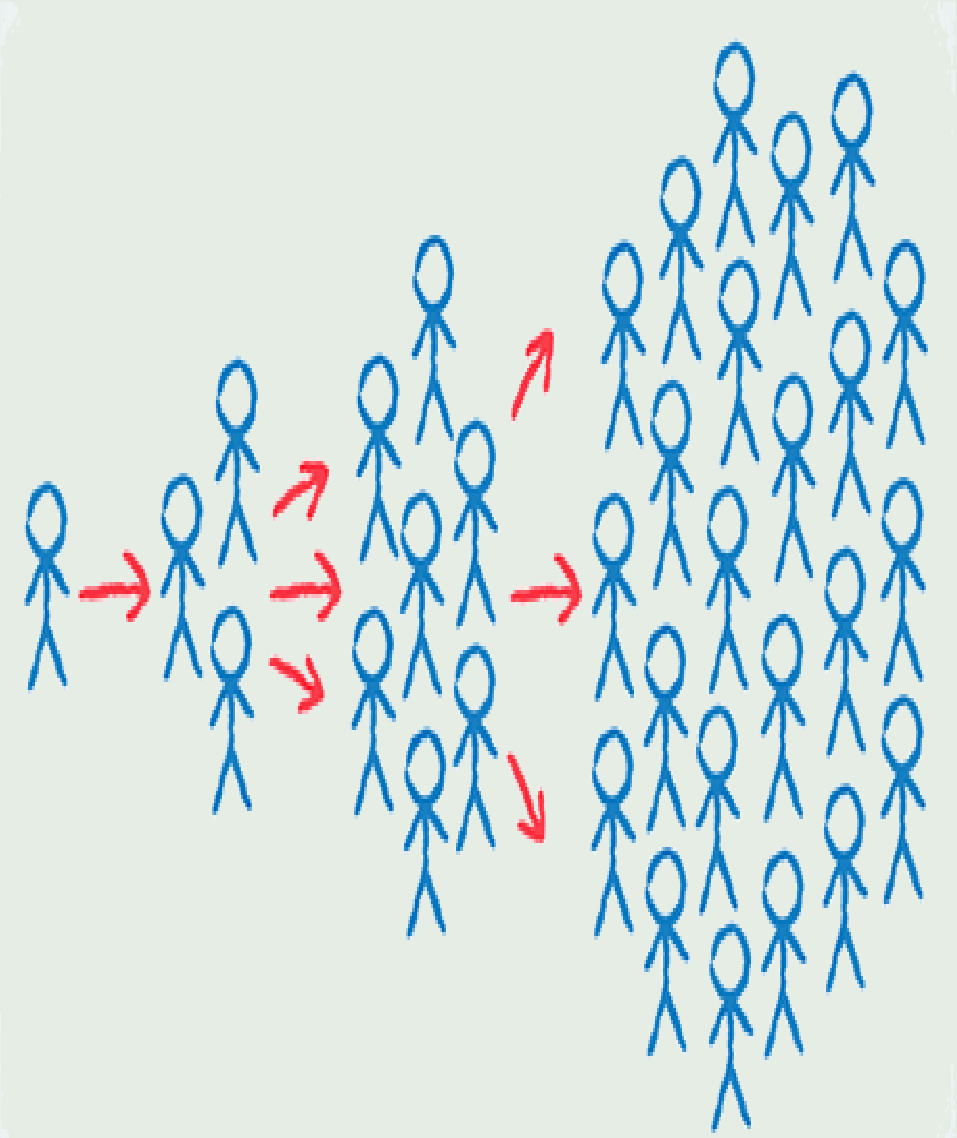
(syntesis of results and new time limit)

DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | step 5 | **step 6** | step 7

2° (final)

Elaboration of Answers



DELPHI *Procedure*

step 1 | step 2 | step 3 | step 4 | step 5 | step 6 | **step 7**

Delphi final Report

&

Dissemination

BY DELPHI WE CAN:

- **Elicit Qualified Expertise**
- **Get Synthetic Response**
- **Rooted into Operator's Professional Culture**

EBT SYSTEM MALFUNCTION CHARACTERISTICS ANALYSIS 2017

RUN 2

Experts:	15
Role Experience (years):	10
Aircraft Experience (years):	16

A/C: A320

ID	ATA	WARNING TITLE	EBT SYSTEM MALFUNCTION CHARACTERISTICS – Average Grading: -					Total Average Score
			IMMEDIACY	COMPLEXITY	DEGRADATION OF AIRCRAFT CONTROL	LOSS OF INSTRUMENTATION	MANAGEMENT OF CONSEQUENCES	
1	21 - AIR CONDITIONING	CAB PR EXCESS CAB ALT & EMER DESCENT	5	3	1	1	5	15
2	24 - ELECTRICAL POWER	ELEC EMERG CONF	4	5	3	3	4	19
3	27 - FLIGHT CONTROLS	F/CTL FLAPS LOCKED	4	3	3	1	4	15
4	27 - FLIGHT CONTROLS	F/CTL STABILIZER JAM	4	3	4	1	4	16
5	28 - FUEL	FUEL LEAK	3	4	1	1	5	14
6	28 - FUEL	FUEL L (R) WING TK LO LVL	3	2	1	1	4	11
7	29 - HYDRAULIC POWER	HYD G + Y (LO PR)	4	5	5	1	5	20
8	32 - LANDING GEAR	LOSS OF BRAKING	5	2	1	1	2	11
9	34 - NAVIGATION	NAV ADR DISAGREE	4	5	3	4	3	19
10	34 - NAVIGATION	NAV IR DISAGREE	4	3	3	4	3	17
11	70 ENGINE	ENG DUAL FAILURE	5	5	3	2	5	20
12	70 ENGINE	ENG 1(2) REVERSE UNLOCKED	4	3	3	1	3	14

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11	70 ENGINE	ENG DUAL FAILURE	5	5	3	2	5	20
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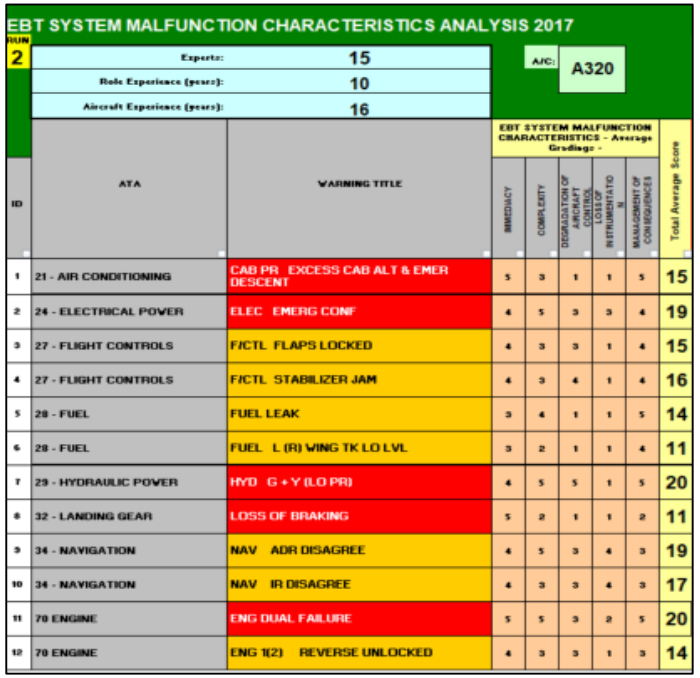
EQUIVALENCY WITHIN SYSTEM

27 - FLIGHT CONTROLS	F/CTL FLAPS LOCKED	4	3	3	1	4	15
27 - FLIGHT CONTROLS	F/CTL STABILIZER JAM	4	3	4	1	4	16



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EQUIVALENCY BETWEEN SYSTEMS

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A Delphi-Malfuction Clustering allows:

IDENTIFY

'EQUIVALENT' MALFUCTIONS

DEFINE

TRAINING POLICIES

FUTURE PURPOSES:

- Evaluate DELPHI for other High Value issues
- Explore other structured techniques
- Share experience among operators

THANK-YOU
HAVE SAFE FLIGHTS

EBT TEAM

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LUCIANO PISANO EBT Project Leader

MASSIMO GIAVALISCO Training Delivery

ANGELO BOCCUZZI Airbus Programs Design

FABIO BERTI Boeing Programs Design

STEFANIA VIGGIANO CRM Programs Design

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MIA ZINHOBL CYL Training Manager