



Hello Tomorrow



Evidence Based Training in Human Factors/CRM Training

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Evidence



The Start of CRM – Evidence then!

Ca: One eighty.

FO: We did something to the altitude.

Ca: What?

FO: We're still at two thousand right?

Ca: Hey, what

FO: We're going to lose an engine, buddy.

Ca: Why?

FO: We're losing an engine.

**FO's monitored –
Captains did not
listen**

FO: God, look
don't seem
that's not

CA: Yes it is, there's eighty.

FO: Naw, I don't think that's right.
Ah, maybe it is.

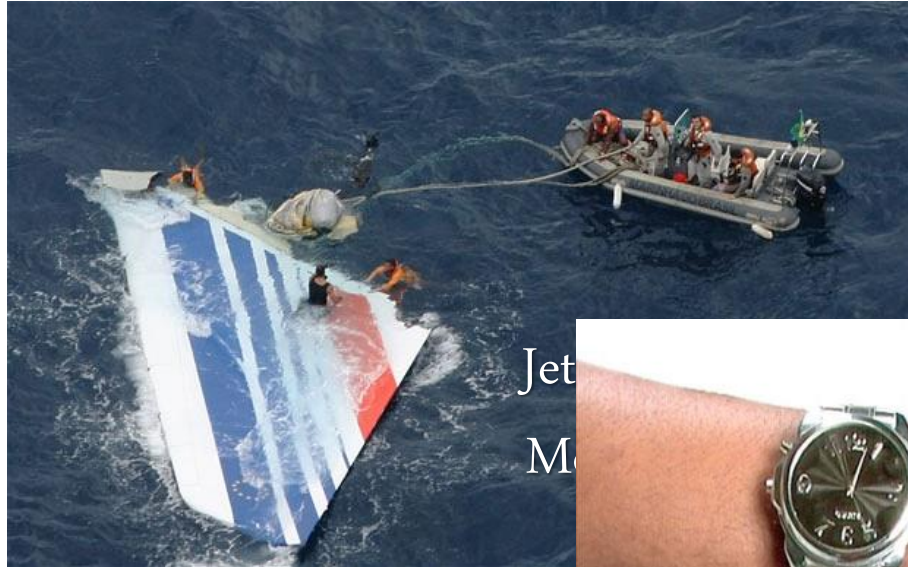
CA: Hundred and twenty.

FO: I don't know.

et af, die Pan
American? (Is he not off, the
Pan American?)

Ca: Jawel. (Oh yes.)

Evidence Now?



Jet
M

Pitch Up Illusion & Monitoring



Automation



Monitoring



Role of Human Factors and CRM

**SOPs – Automation
Reliability**

Threat

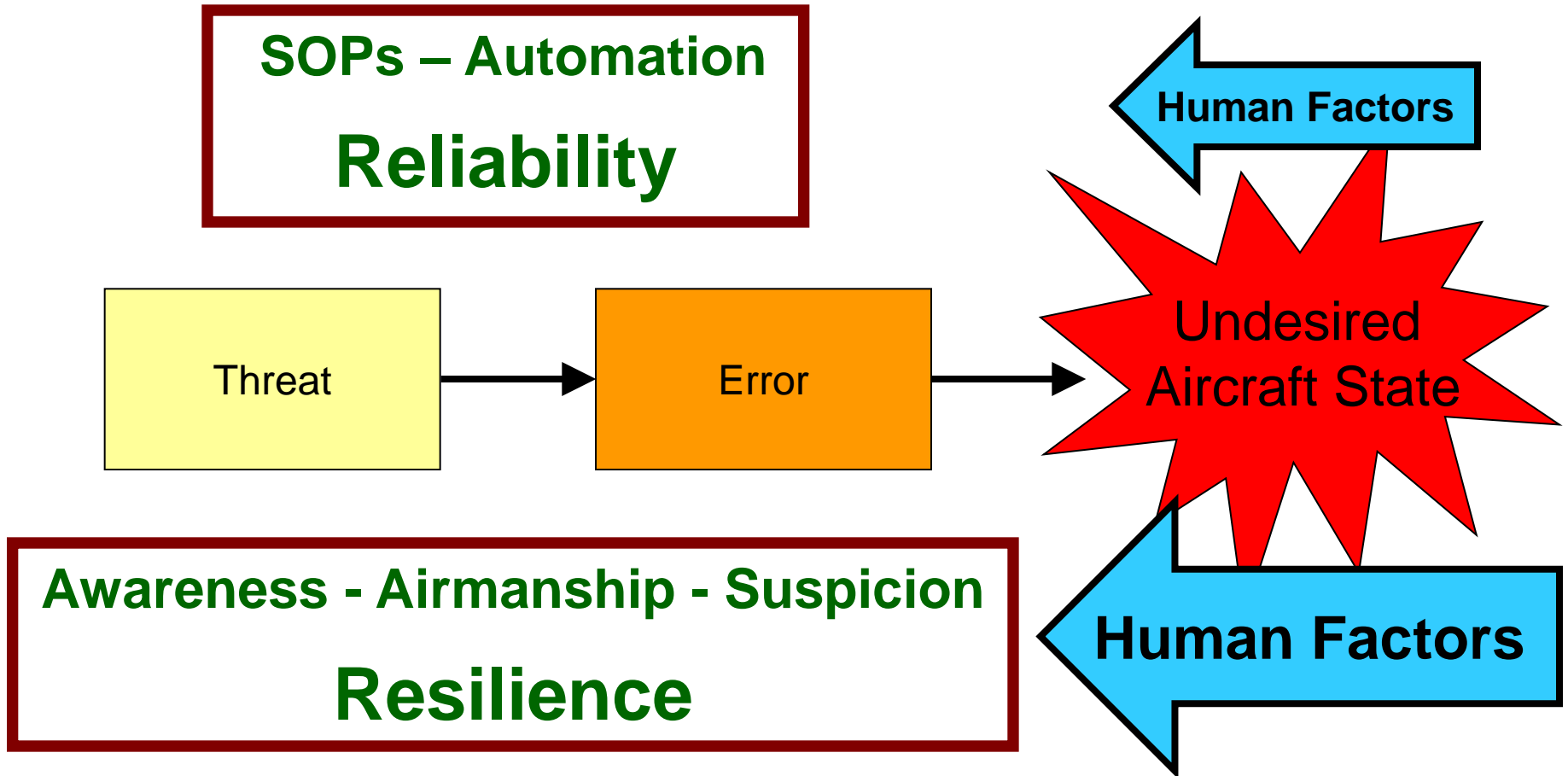
Error

Undesired
Aircraft State

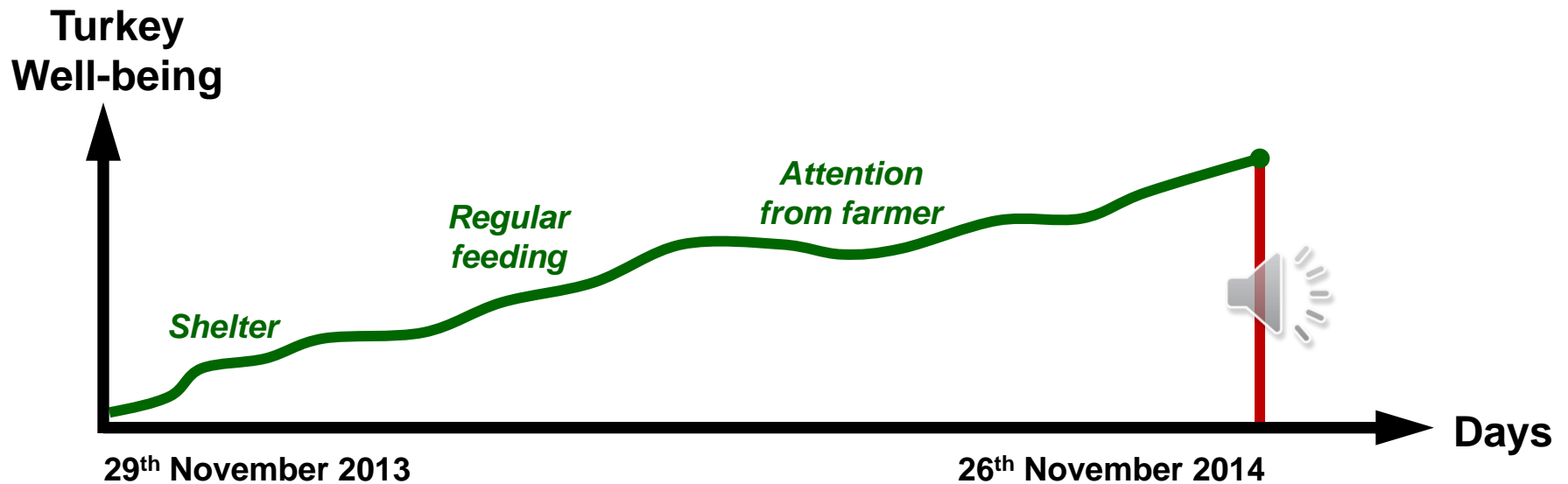
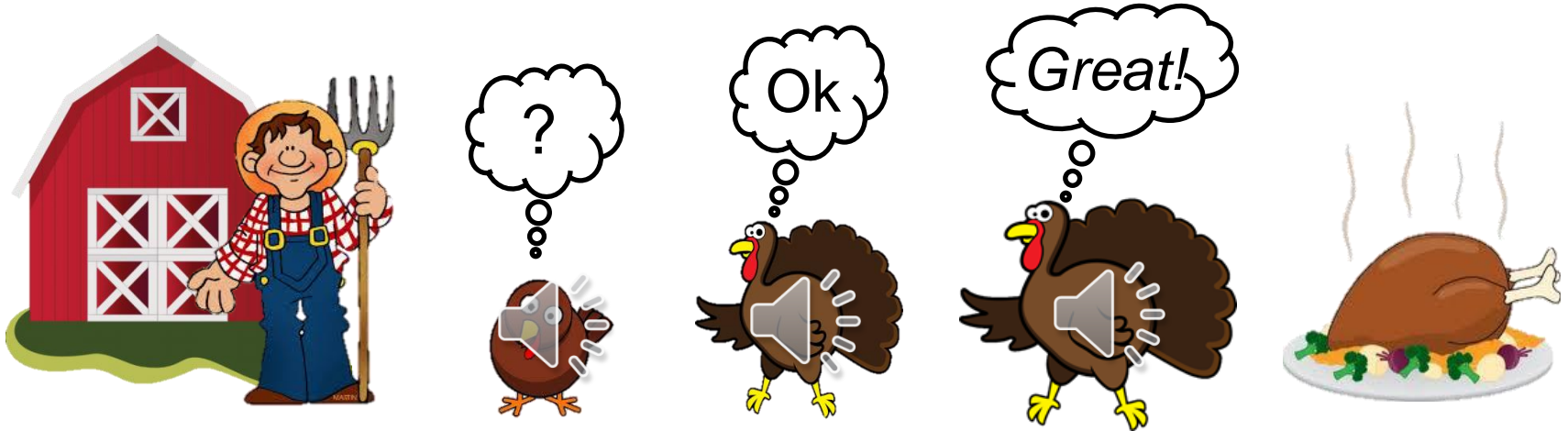
**Awareness - Airmanship - Suspicion
Resilience**

Human Factors

Human Factors



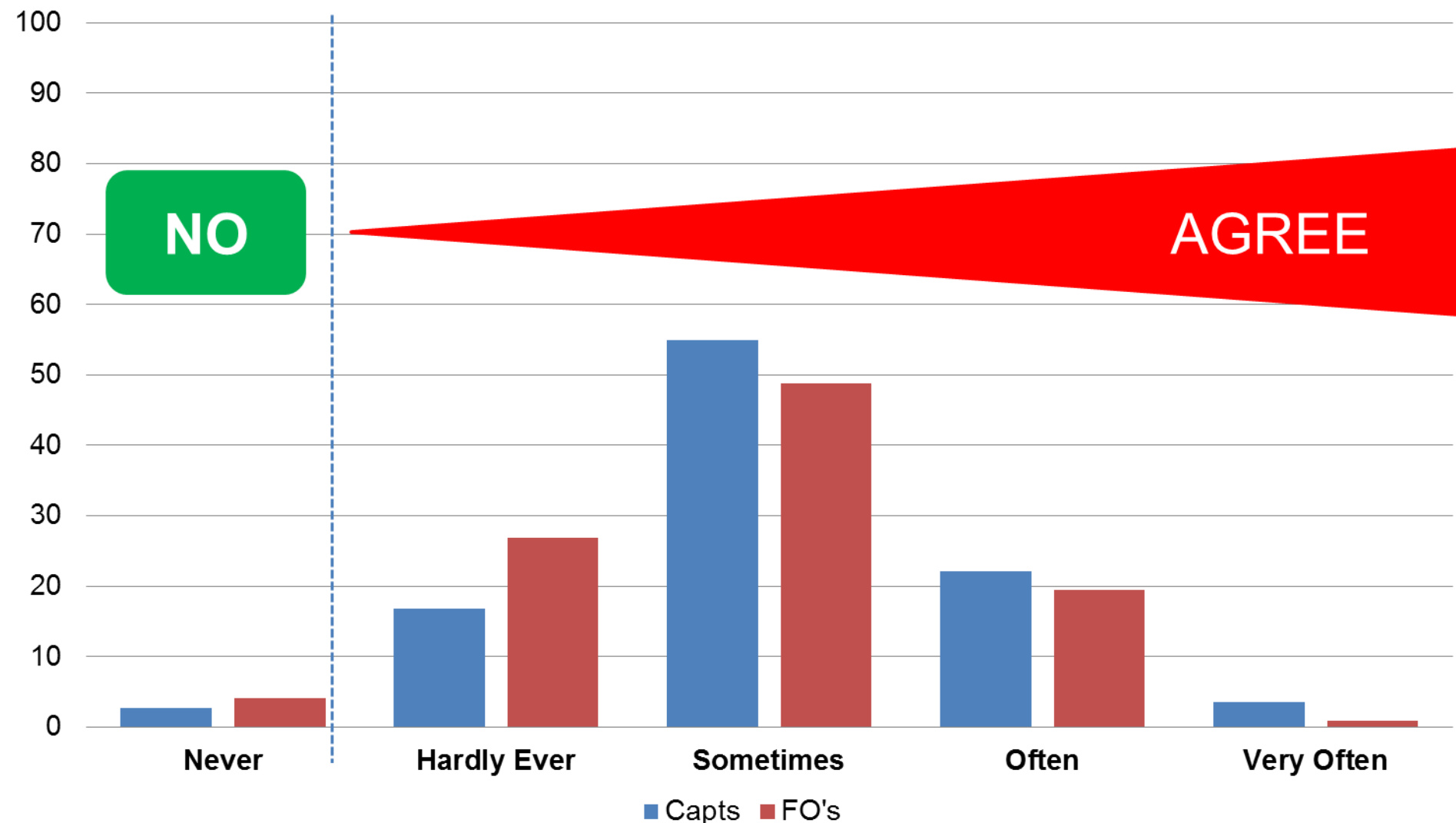
A Story about Safety



Do Operators report everything?



"I tend to ignore minor mistakes by the other pilot when I think they are inconsequential"

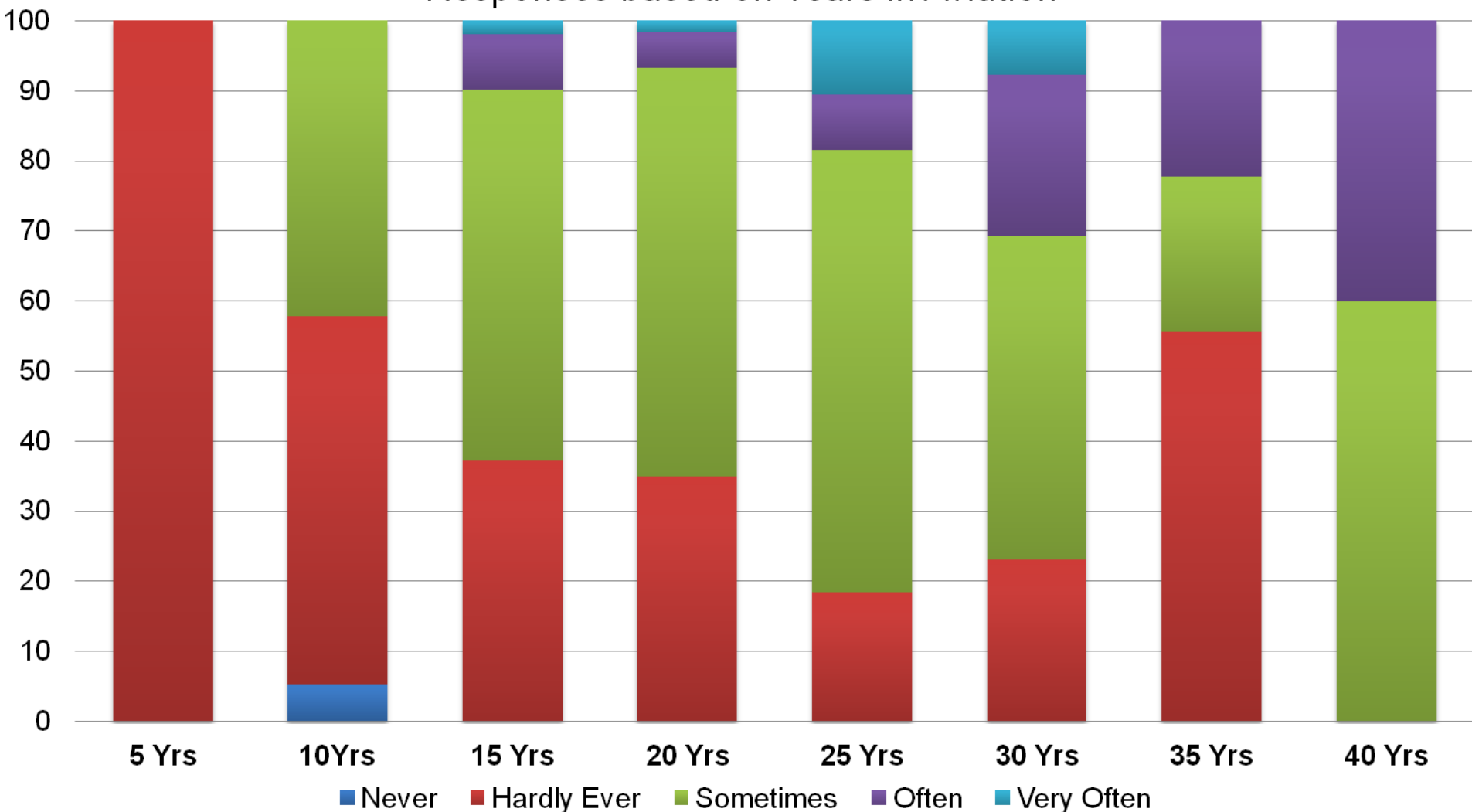


Source: EK Monitoring & Automation Questionnaire (326 Pilots : 145 Captains & 161 FO's)

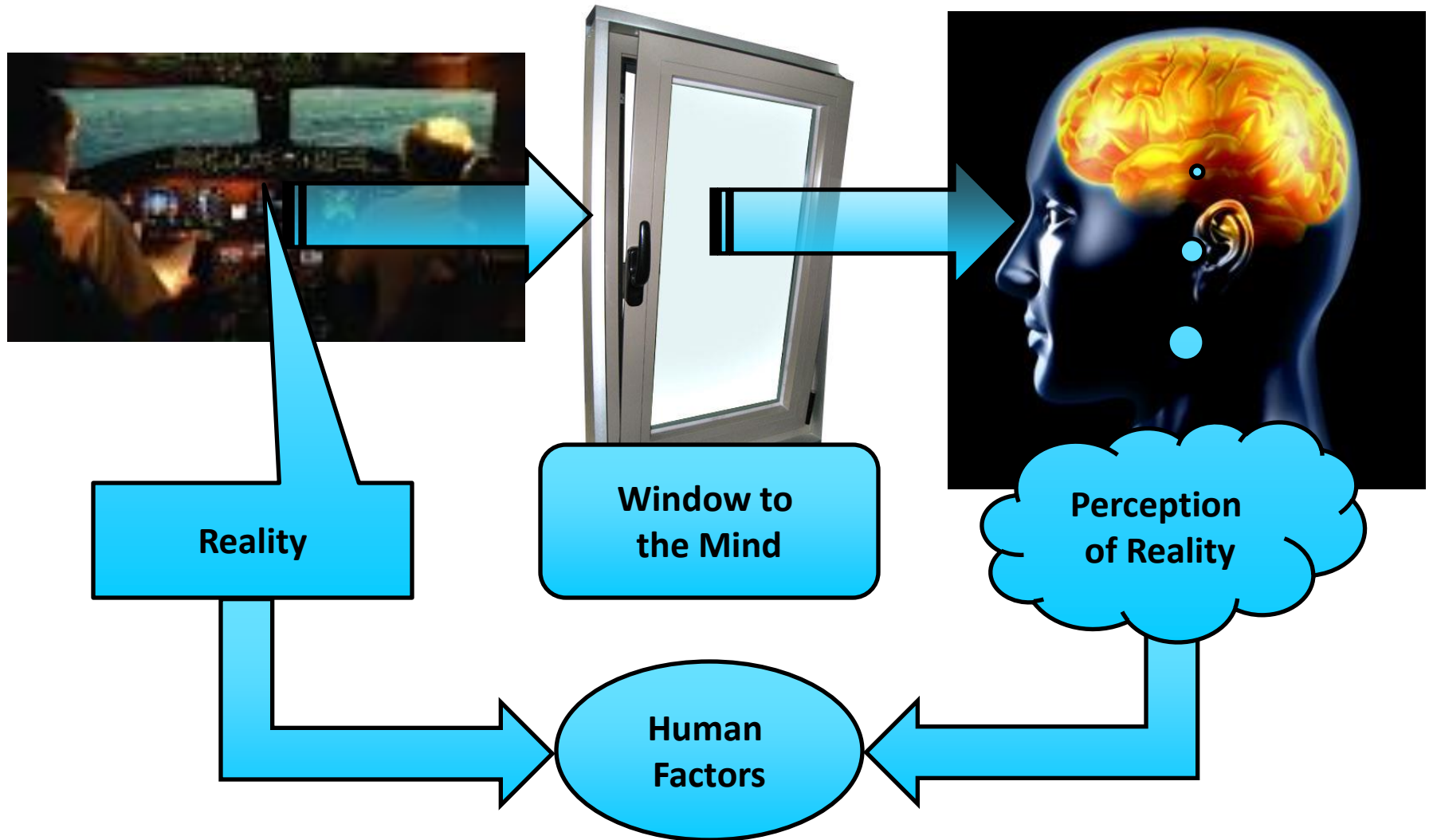
Knowledge & Experience

"I have observed the other pilot make errors due to lack of knowledge /understanding of the automation"

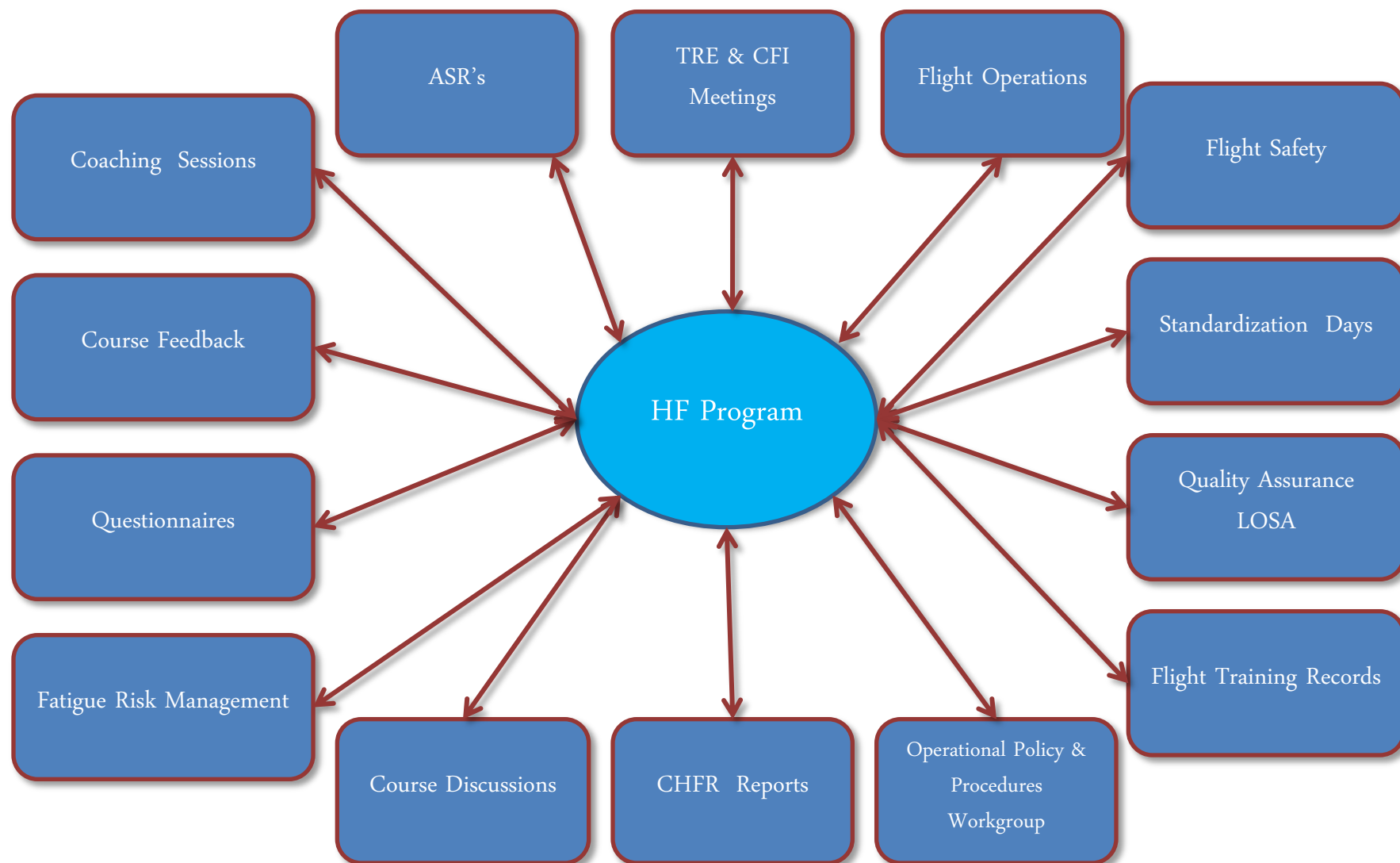
Responses based on Years in Aviation



Human Factors



The Evidence – based on what?



PAMs and Training

- Knowledge
- Procedures
- Handovers
- Information

Individual

Reliability

- *Easily identifiable*
- *May have clear links*
- *Short-term change possible*

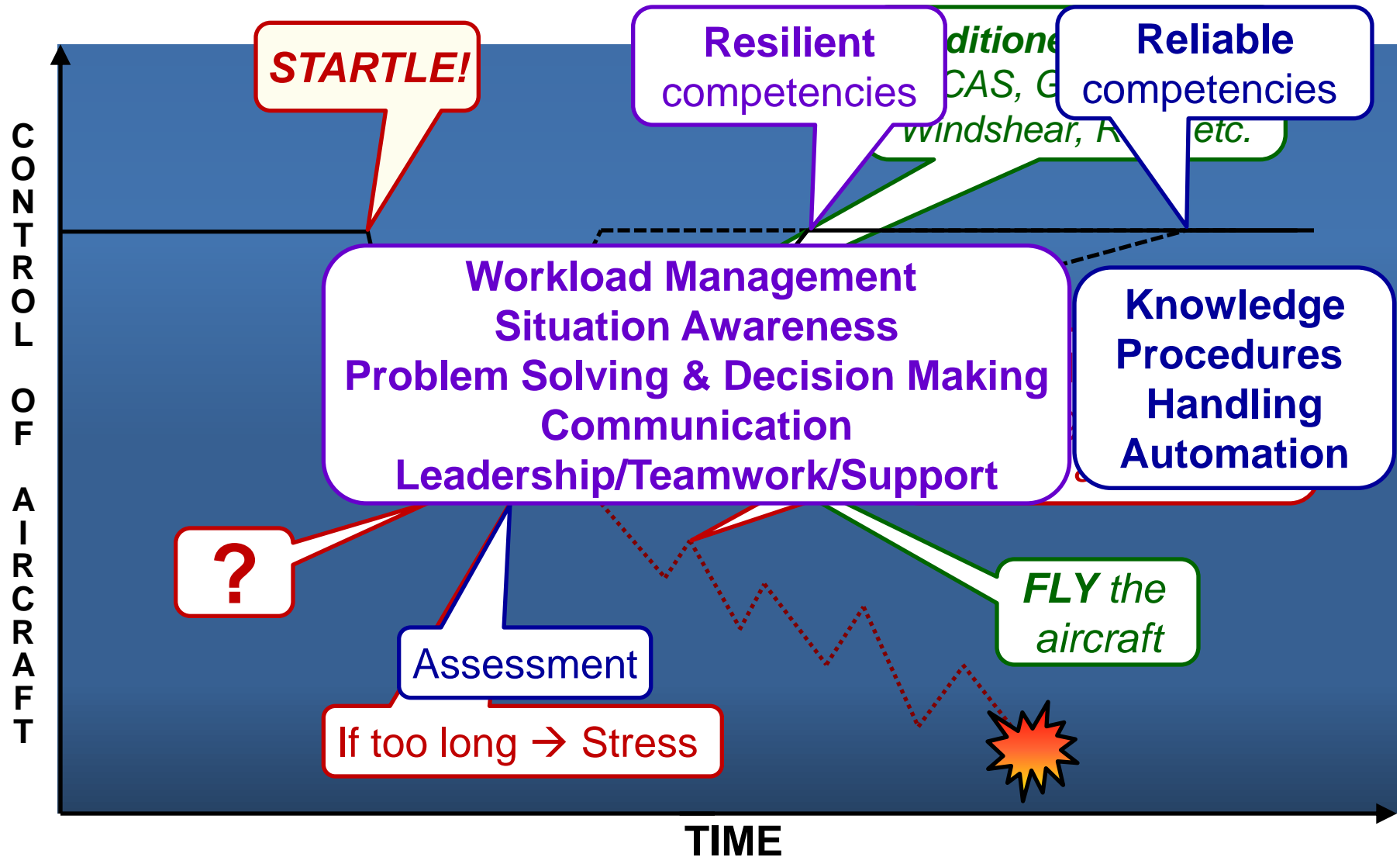
- Workload
- Situation Awareness
- Decision Making
- Communication
- Leadership, Teamwork & Support

Shared

Resilience

- *Not easily identifiable*
- *Linked in complex ways*
- *Often require long-term change*

Startle Effect and Management



Adult Learning Principles



- Adults are **internally motivated** and **self-directed**
- Adults bring life **experiences** and **knowledge** to learning experiences
- Adults are **goal orientated**
- Adults are **relevancy orientated**
- Adults are **practical**
- Adult learners like to be **respected**

How Pilots are...

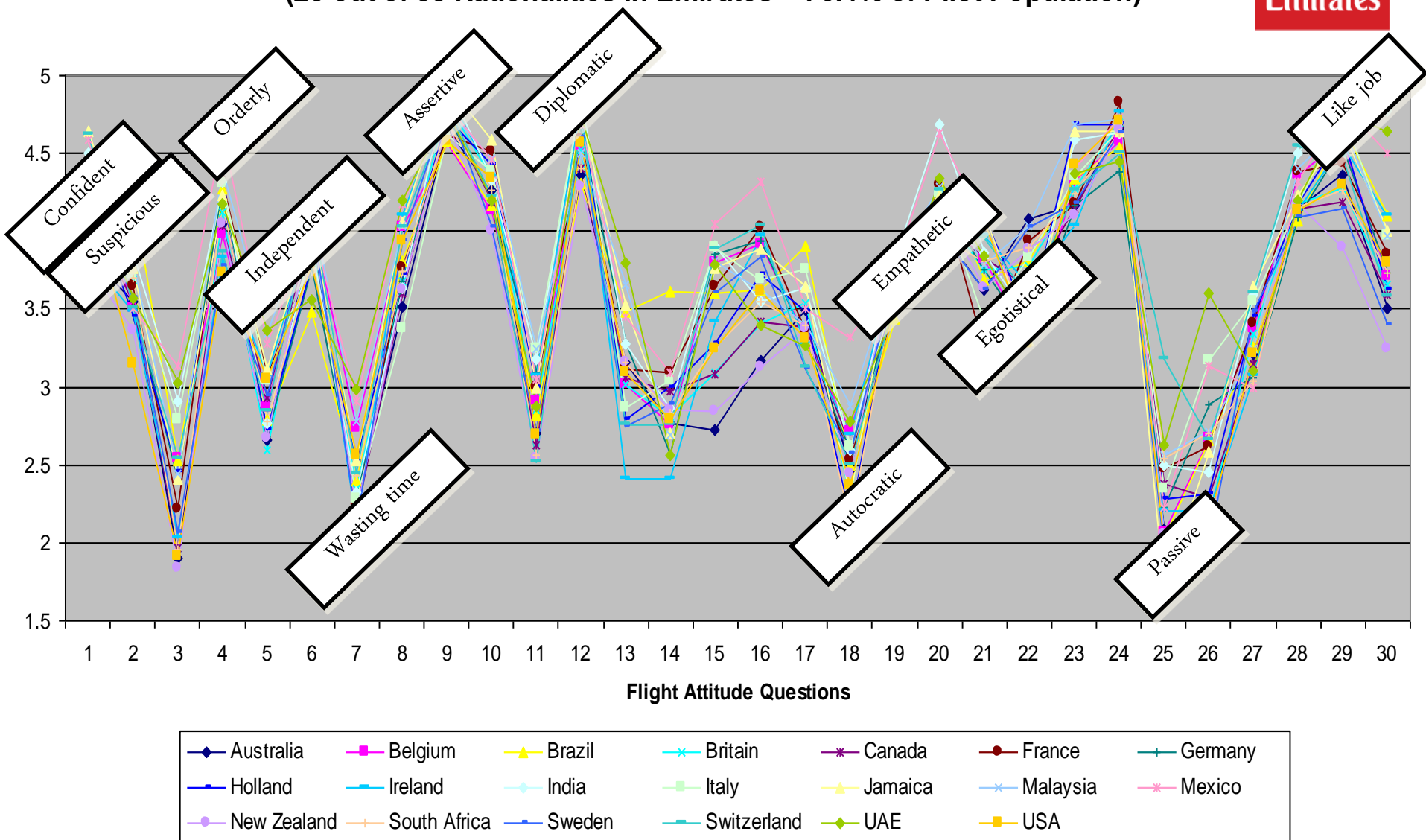


- “**Reality based**” and self-sufficient
- Difficulty trusting anyone – even suspicious (a little paranoid)
- **Intelligent** but are typically not intellectually oriented
- Like “toys” – boats, cars, motorcycles, big watches etc.
- **Concrete, practical, linear thinkers** rather than abstract, philosophical or theoretical
- **Analytically oriented**
- Extremely **reality-** and goal-oriented
- **Bimodal**: on/off, black/white, good/bad, safe/unsafe, regulations/non-regulations
- Need excitement, competitive

Average Emirates Pilot



(20 out of 83 Nationalities in Emirates - 76.4% of Pilot Population)



Say the Colour



Red

Blue

Yellow

Green

Blue

Yellow

Red

Yellow

Green

Blue

Red

Yellow

Say the Colour



Red

Blue

Yellow

Green

Blue

Yellow

Red

Yellow

Green

Blue

Red

Yellow

Say the Colour



Желтый

Зеленый

Синий

Красный

Желтый

Зеленый

Синий

Красный

Синий

Желтый

Зеленый

Красный

Say the Colour



Red

Blue

Yellow

Green

Blue

Yellow

Red

Yellow

Green

Blue

Red

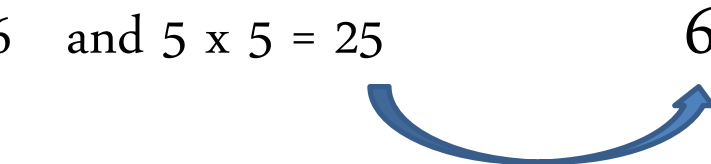
Yellow

Squaring numbers with 5

- Anytime you square a number with five as the last digit, multiply the digits preceding the 5 with one number more than itself, and then write this result in front of 25.

- E.g: 25^2 35^2 65^2
625 1225 4225

- 25^2 : $2 \times (2+1) = 6$ and $5 \times 5 = 25$ 625



- Now try the following: 45; 75; 135; 235; 445; 625

Multiplying by 11

23	35	45	63
x11	x11	x11	x11
<hr/>			
253	385	495	693

- Find 11 times 23 = 253

**Beware of Instructor
Centric training**

- 11

79 (16)

869

Summary



- What **Evidence** are you using?
- What are you **basing** it on?
- How are you **training** your flight crew?



Hello Tomorrow



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Thank You