

# Basic Performance of Flight Crew

Montreal, 01.03.2010



# Basic Performance of Flight Crew

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## Lufthansa Flight Safety Project ('97-'99)

- Analysis of Flight Safety
- Development of preventive measures
- Anonymous survey handed out to all pilots
  
- More than 2000 pilots participated describing:
  - Safety related situations
  - Contributing factors
    - Technical
    - Operational
    - Human Error
    - *Social (interpersonal)*

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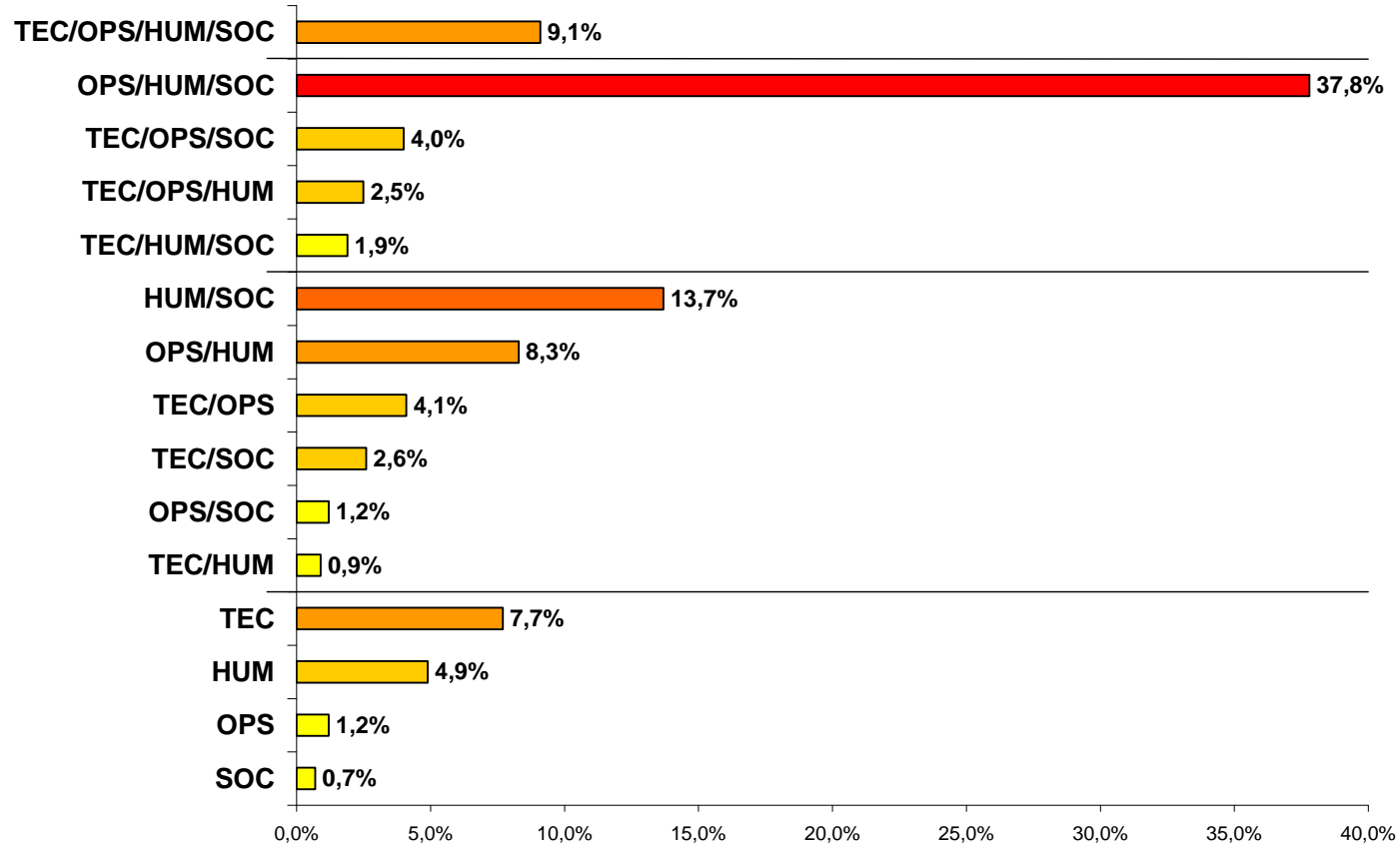
## Lufthansa Flight Safety Project ('97-'99)

### *Social (interpersonal) Factor:*

- Communication quality
- Information management
- Crew atmosphere

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## Lufthansa Flight Safety Project ('97-'99)



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## Lufthansa Flight Safety Project ('97-'99)

### Results:

#### The social or interpersonal factor

- is usually not endangering the crew performance during normal operations
- can have significant negative effects when crews have to deal with operational or technical problems
- can hinder crews in resolving human errors

***Needs to be addressed in training!***

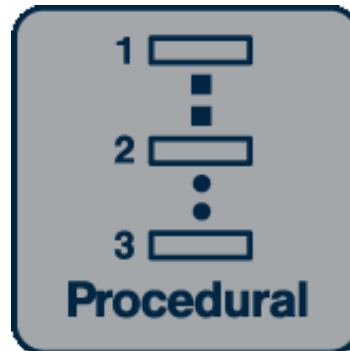
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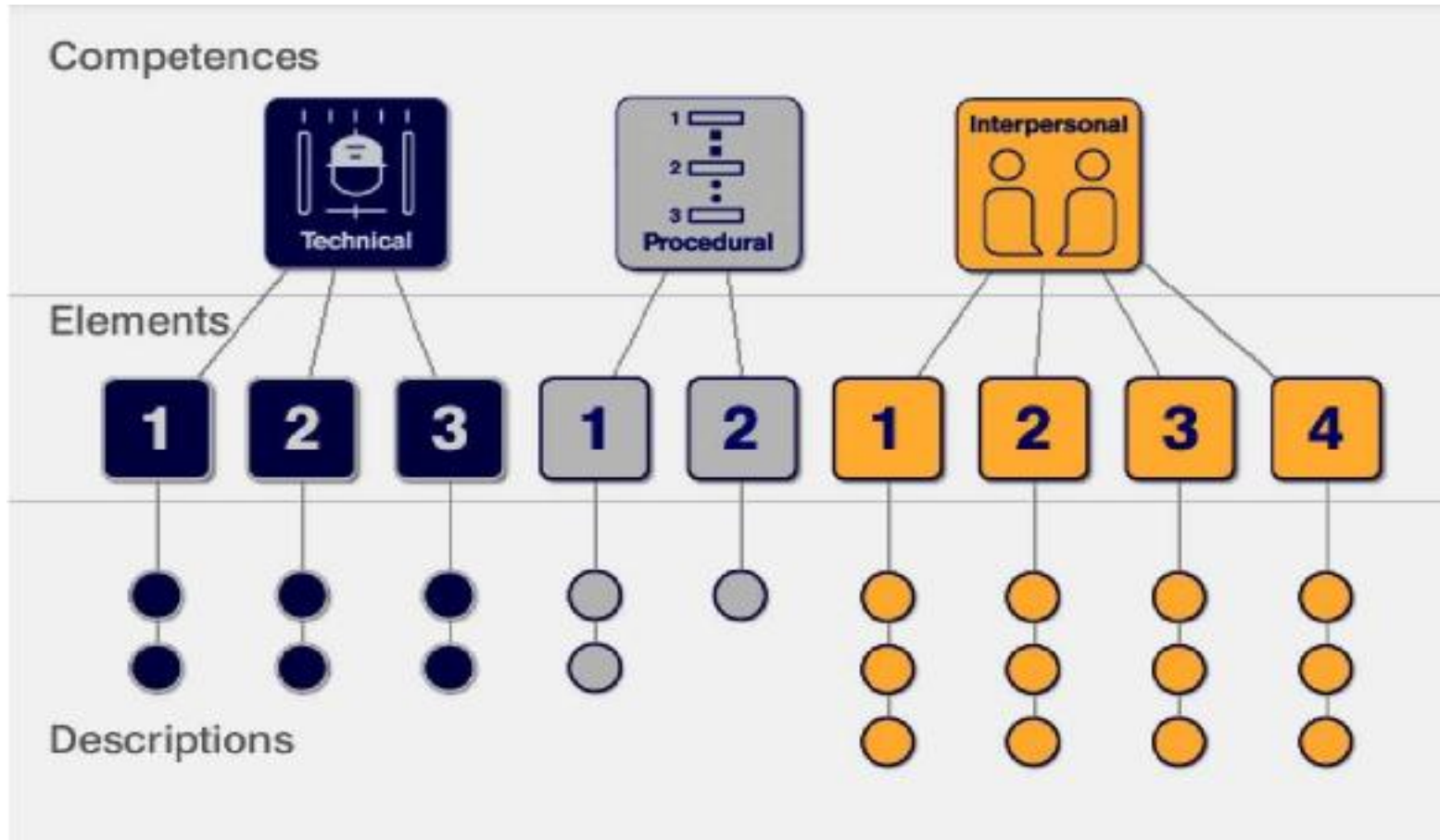
Lufthansa Flight Safety Project ('97-'99)

Consequences:

Flight Crews must be competent in all areas:



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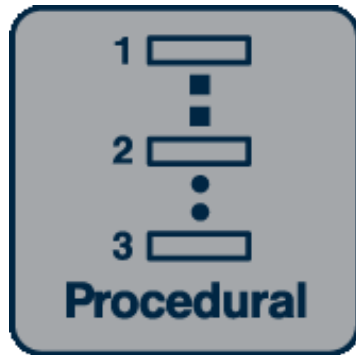
- Manual Airplane Control
  - ...
- Knowledge of Systems
  - ...
- Use of Automation
  - Be able to manage all modes of automation
  - Use optimum mode of automation
  - Use automation to reduce workload
  - Be aware of active mode of automation
  - Be aware of mode changes
  - Be flexible in changing level of automation



# Basic Performance of Flight Crew

## Knowledge of Procedures

- Know normal procedures for all phases of flight
- Be thoroughly familiar with all relevant standard operating procedures
- Know how to handle an abnormal situation
- Know memory actions by heart
- Be familiar with relevant abnormal procedures



## Adherence to Procedures

- Strictly apply required published procedures
- Perform procedures disciplined and accurately
- Deviate from procedures only if a higher degree of safety is achieved

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- Communication
  - Atmosphere
  - Information Transfer
  - Information Management
- Leadership and Teamwork
  - Command Ability
  - Team Ability
  - Conflict Management
- Workload Management
  - Task
  - Time
  - Stress and Error
- Situation Awareness and Decision Making
  - ...

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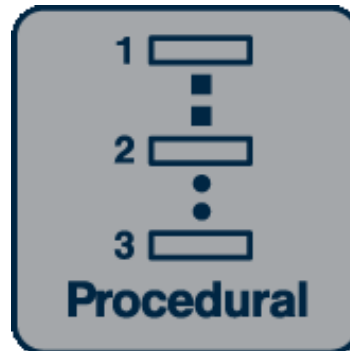
- Communication
  - Information Transfer
    - share information
    - assure reception
    - assure understanding
  - Information Management
    - clearly state plans and intentions
    - announce ambiguities
    - announce uncertainties
    - speak frankly about problems within the crew



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## OM-A

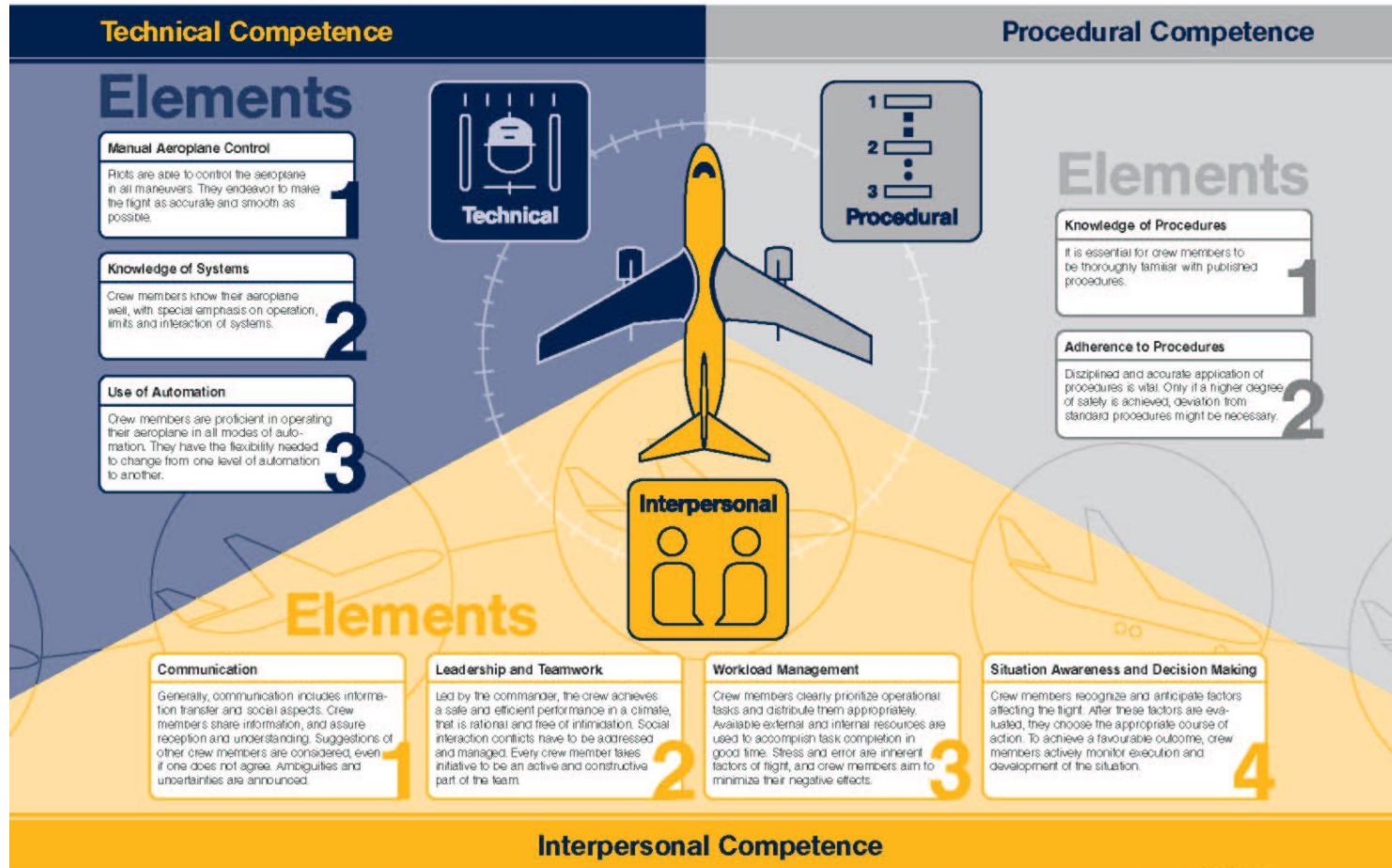
- To assure a safe and efficient operation, each flight crew member must be proficient in three areas of competence: technical, procedural and interpersonal.
- Each area consists of vital elements. Optimum overall performance is achieved by integrated application of these elements



# Basic Performance of Flight Crew

## Basic Competence for Optimum Performance

Competence Criteria for Lufthansa Flight Crew Members. All CRM skills required by JAR-OPS and JAR-FCL are included.



Lufthansa Training Standards FRA NT Lufthansa

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## ➤ Is all this required by law?

### Regulatory Framework *acc. Appendix 1 to JAR-FCL 1.240 & 1.295* (*Excerpt*):

#### Height

- Generally +/- 100 feet
- Starting a go-around at decision height + 50 feet/-0 feet
- Minimum descent height/ altitude + 50 feet/-0 feet

#### Tracking

- on radio aids +/- 5°
- Precision approach half scale deflection, azimuth and glide path

#### Heading

- all engines operating +/- 5°
- with simulated engine failure +/- 10°

#### Speed

- all engines operating +/- 5 knots
- with simulated engine failure +10 knots/ -5 knots

**Only part of the  
picture!**

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## Conclusion:

- Proficiency required in all 3 areas
- Detailed descriptions required for effective training and checking
- Definition of requirements more important than definition of training situations

# THANK YOU!