Mitigating Culture: Human Error in the Operational ATC World

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Human Error in the Operational ATC World

"Give me a fruitful error any time, bursting with its own correction"

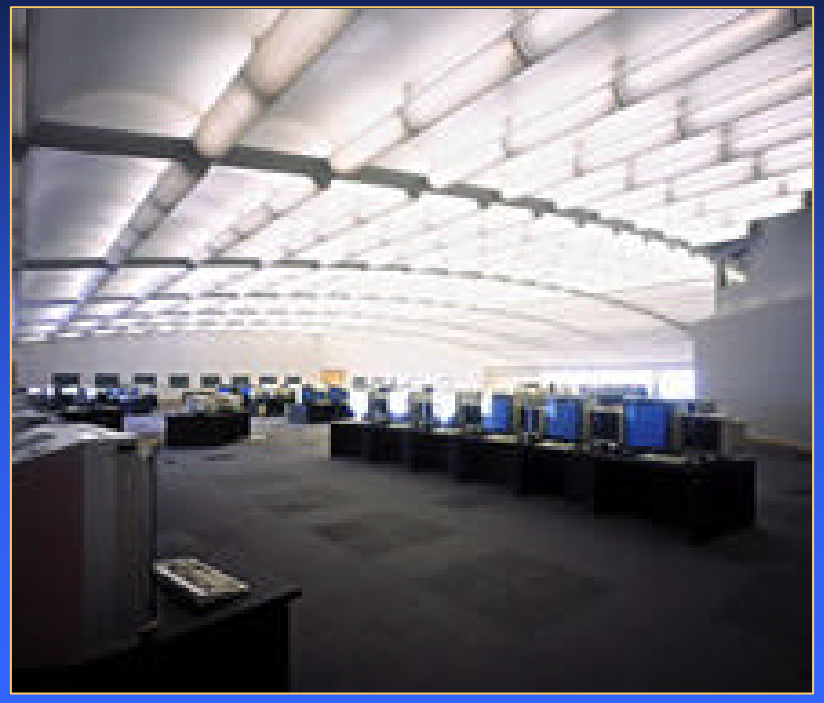
Pareto on Kepler 1870

- Attributes of the Operational World – focusing on en-route operations
- Reporting of Incidents
- Training and Mitigation
- Organisational Culture
- AGAS
- Conclusions

Attributes of the operational world

The ATC Watch (team)

- ATC watches or teams can be large groups of controllers and assistants
- ATC Engineers – deliver “safe systems”



ATC Technology

- “Controllers don’t just use the technology – they are the technology”
- Nature of errors?
- System development: ATC-ATM

Attributes of the operational world

- Closed World: organisational isolation?
- Operational community expect immediate change
- Cascading information - communication

Reporting of Incidents and Events

Reporting

- Critical to understanding errors
- Mandatory reporting – MOR
- Incident reporting and observations – in-house
- Confidential systems (CHIRP)

Specific Operational Problems

- Systematic failures or errors found from investigation
- Focused on one specific error type
  - altitude busts – procedure changes
  - Prolonged Loss of Communication (PLOC)

Investigation

- Local investigation at unit
- Tools – Separation Monitoring Function, ASMT(EUROCONTROL)
  - Culture and operational acceptance
- Techniques – TRACER, HERA/JANUS
  - Controllers trained as investigators

Communicating the message

- How to engage with controllers?
- What is the right format?
- Effectiveness of the message
- Transparency
- Feedback


Training for Mitigation

Training for Mitigation

- Poor system design often mitigated by training
- Operational environment is unforgiving, time critical and highly adaptable
- System behaviours variable (akin to FMS modes)

Maintenance of Mitigation

- Competence schemes where available
- Updating of safety cases with system changes
- Frequency of changes


Culture

Operational Culture

- ATC is a good example of a High Reliability organisation
- Sustains high performance across a range of conditions
- Perceptions of the operational community –barrier to culture change?

Safety Culture

- Organisational Culture(s) dictates safety culture: conflict between cultures?
- “Organisational climate”
- Trust
- External influences on organisational culture – resource limitations

Structures

- ATC involvement – Watch Safety Officer etc
- Incident & Investigation sections
- Unit management
- Headquarters functions
- Regulators

- How does this structure interface with the operational controller?

Human Factors

Role of Human Factors

- Applied to understanding human error in control task
  - Handovers
  - Separation in provision of Radar Advisory Service
- Can provide a direct input into procedures and training

Applying Human Factors

- Increasingly important to make ATC staff aware of factors that affect human performance

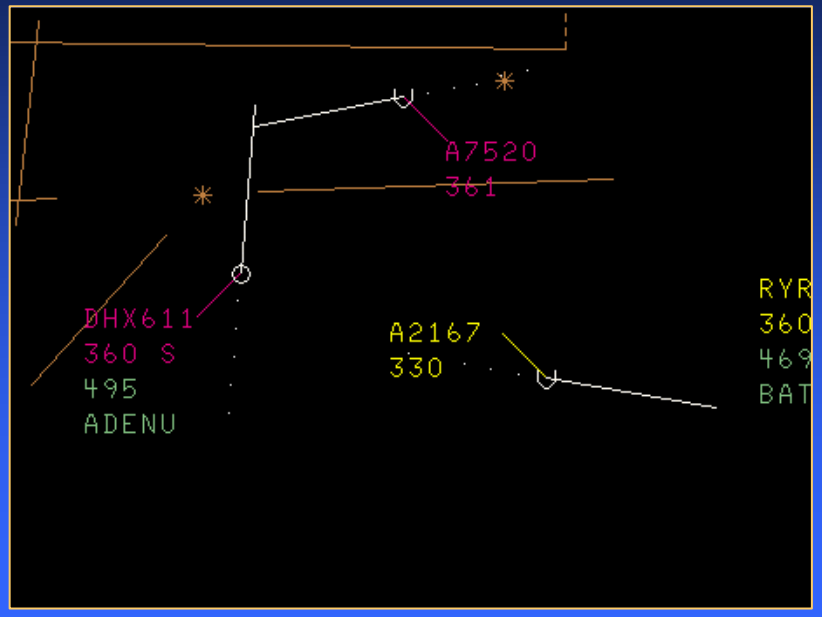
Human Performance

- Incorporated into Training from ab- initio and beyond
- Defences against perceptual errors
- Team Resource Management:

  ATC-TRM is not CRM


AGAS

AGAS - Action Group for ATM Safety



Established by EUROCONTROL Provisional Council as a result of Uberlingen mid-air collision

AGAS - Action Group for ATM Safety

- "Areas for Immediate Focus
  - Safety related human resources
  - Incident reporting and data sharing
  - ACAS - Additional actions
  - Runway Safety
  - Enforcement of ESARRs and monitoring implementation

Conclusions

- Considerable progress has led to changes in approaches to human error in ATC/ATM
- “A long game”
- New challenges with new systems and changing organisations
- Communication remains a problem

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