



APATS 2019

Integrating Eye-Tracking and Head-Up Display in Pilot Training

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Agenda

1. Introduction
2. Growth, Efficiency, Capacity
3. Monitoring Matters
4. Visual Scanning
5. Head-Up Displays
6. HUD Monitoring
7. Aviate-Navigate-Communicate...
Integrate
8. Conclusion



1. Introduction – What are they looking at?



1. Introduction – What should they be looking at?



1. Introduction

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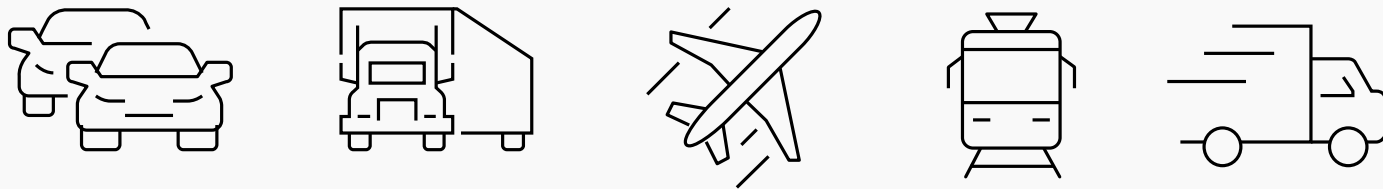


1. Introduction – Seeing Machines

Enhancing performance and safety through human understanding across multiple transport sectors

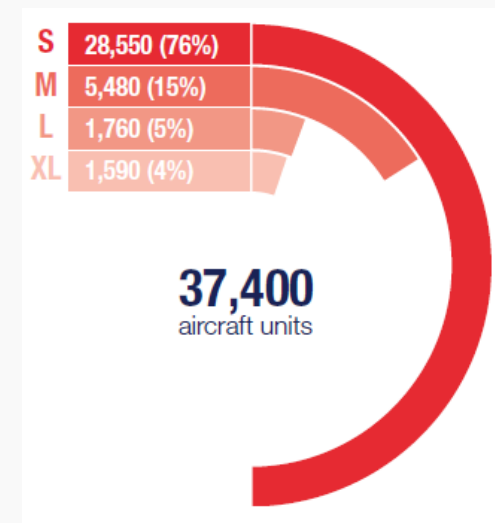
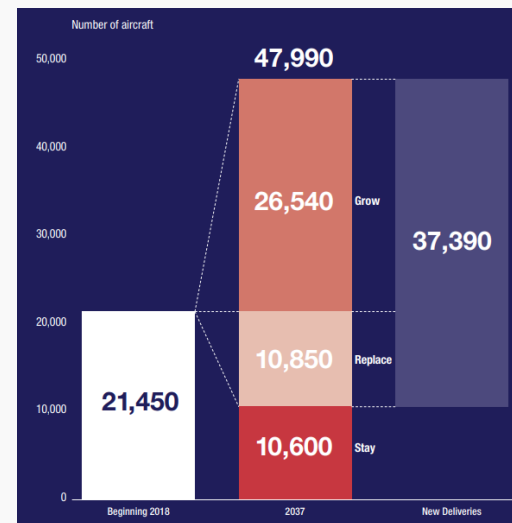
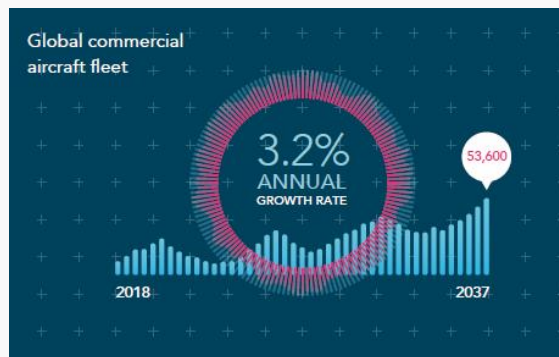
Global company, based in Canberra with over 200 full-time employees, listed on London Stock Exchange.

Offices and people in UK, Europe, USA, Asia.

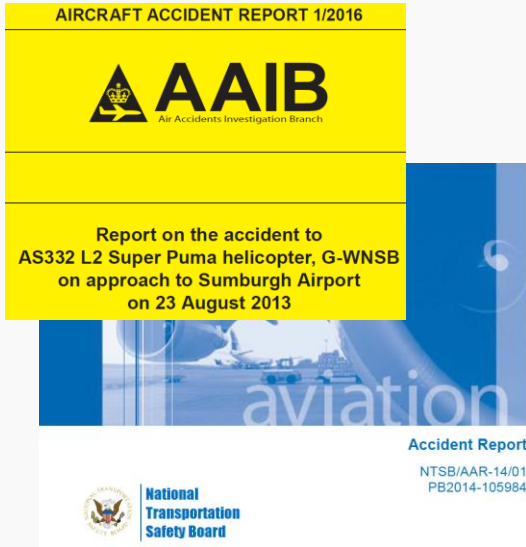


2. Growth, Capacity, Efficiency

Pilot Outlook by Region Map



3. Monitoring Matters; Active Aircrew Monitoring



NTSB, ICAO, CAA

- Poor flightpath (performance) monitoring issues involved in 50-90% of accidents

Active Pilot Monitoring

- Regulations do not explicitly address pilot active monitoring skills
- But, optimal scanning impacts flight performance



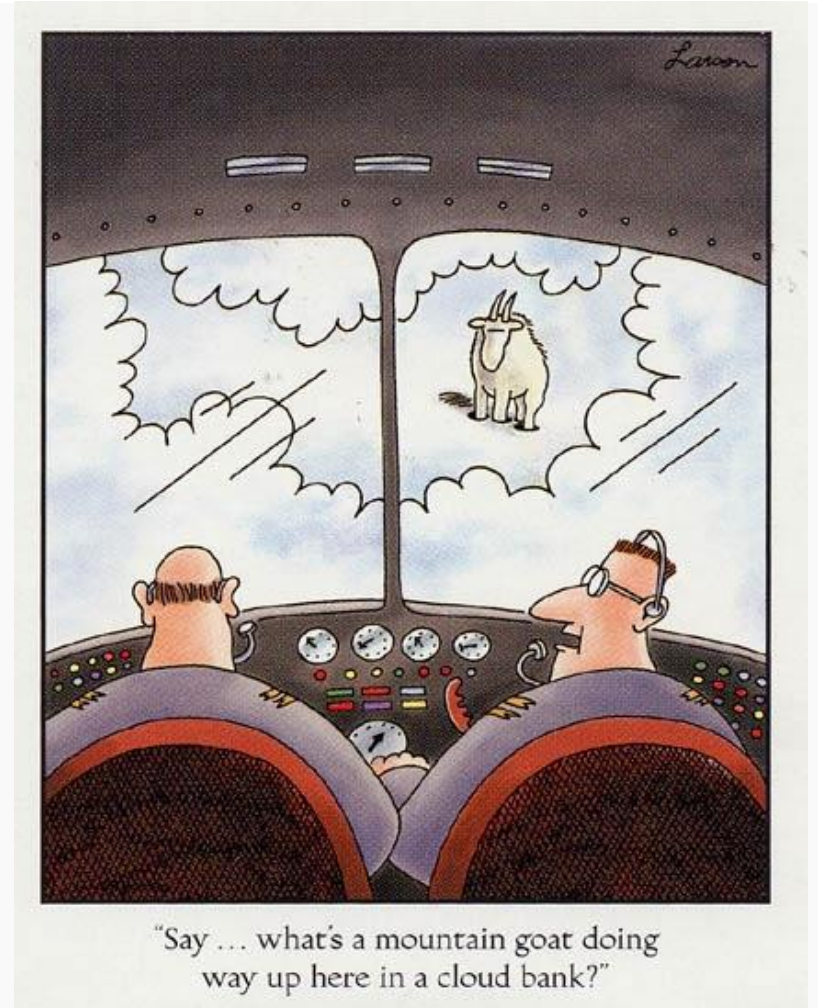
Evidence-Based Training:

- Support positive behaviours
- Debrief opportunities

4. Visual Scanning

“Pilots tend to spend more time fixating on the instrument panel than on the outside world.”

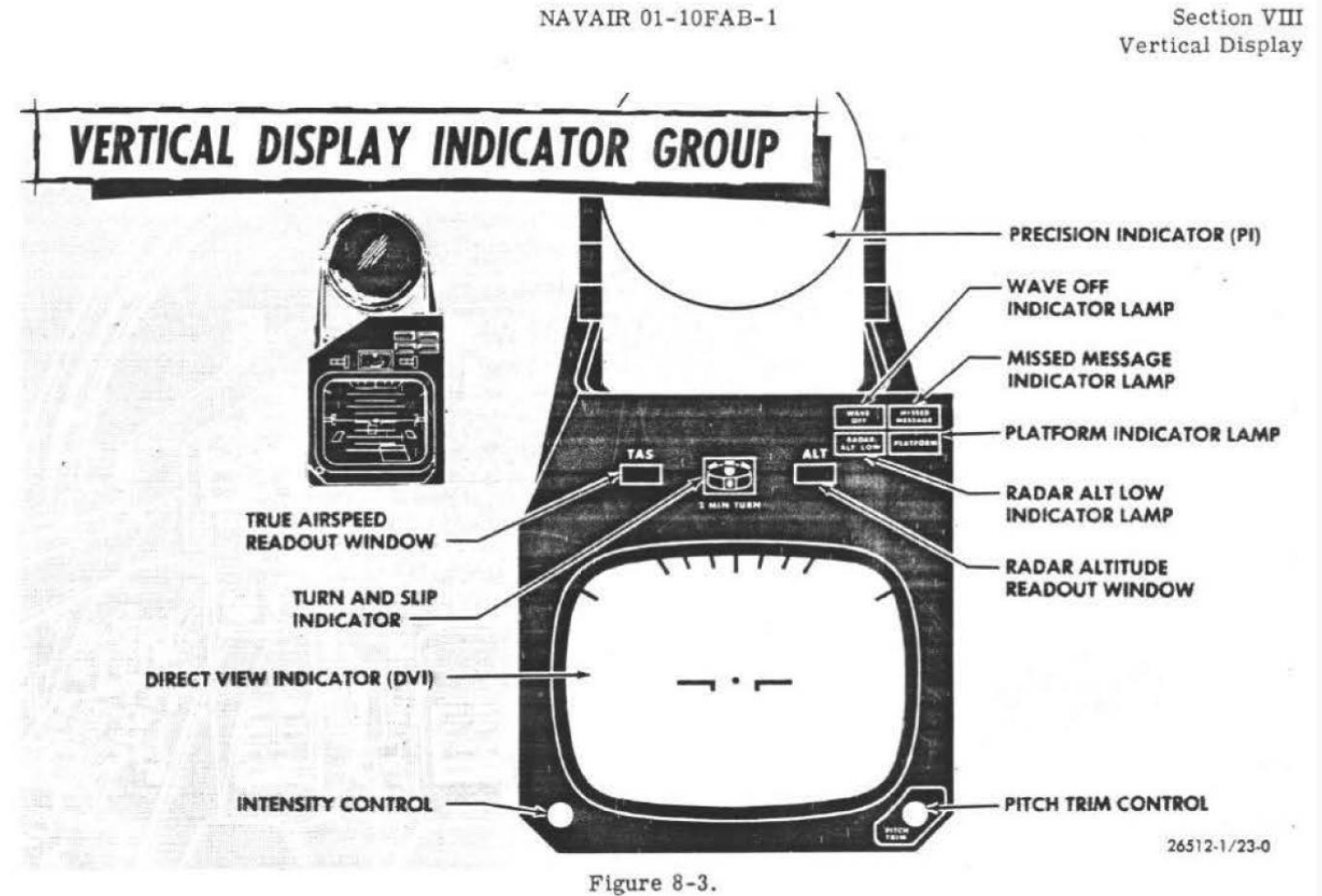
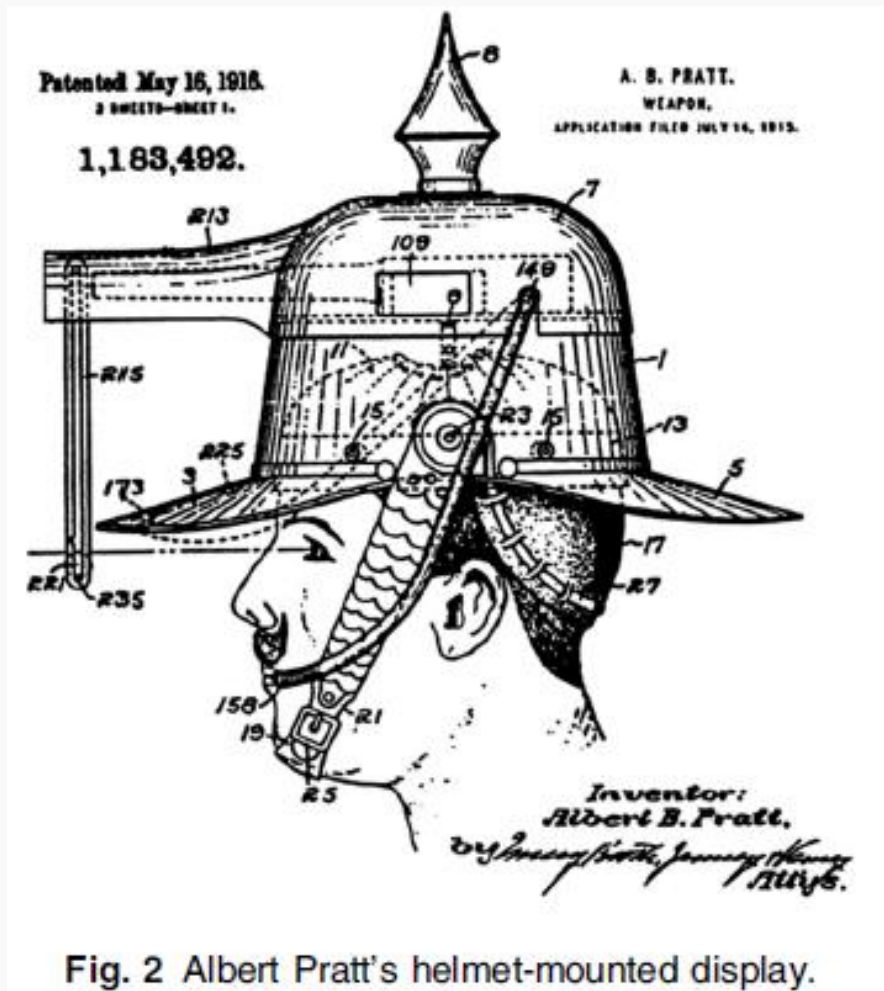
- Experienced v Inexperienced
- Performance Instruments, which ones?
- When to look outside?
- Explore v Exploit
- Attention, Selection, Saliency



Monitoring Matters & Visual Scanning



5. Head-Up Displays



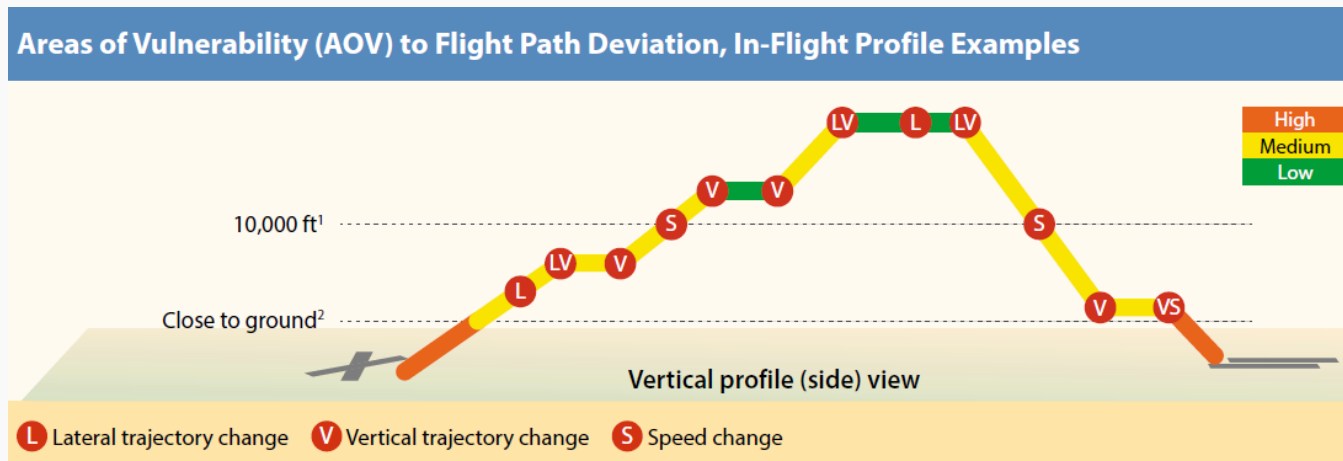
5. Head-Up Displays



5. Head-Up Displays

Benefits:

- Eyes-Out
- Situational Awareness
- See what you need



5. Head-Up Displays

Potential Problems:

- Attention capture
- Brightness
- Non-intuitive, mode confusion
- Sensitivity
- Transition to and from HUD & Head-Down instruments
- Reliance (“HUD junkie”)



6. HUD & HGS Monitoring



Value to:

- Pilot
 - Real-time, debrief
- Instructor
 - Real-time, debrief
- Flight Training Organisation
 - Aggregate, standardisation

7. Aviate-Navigate-Communicate...Integrate



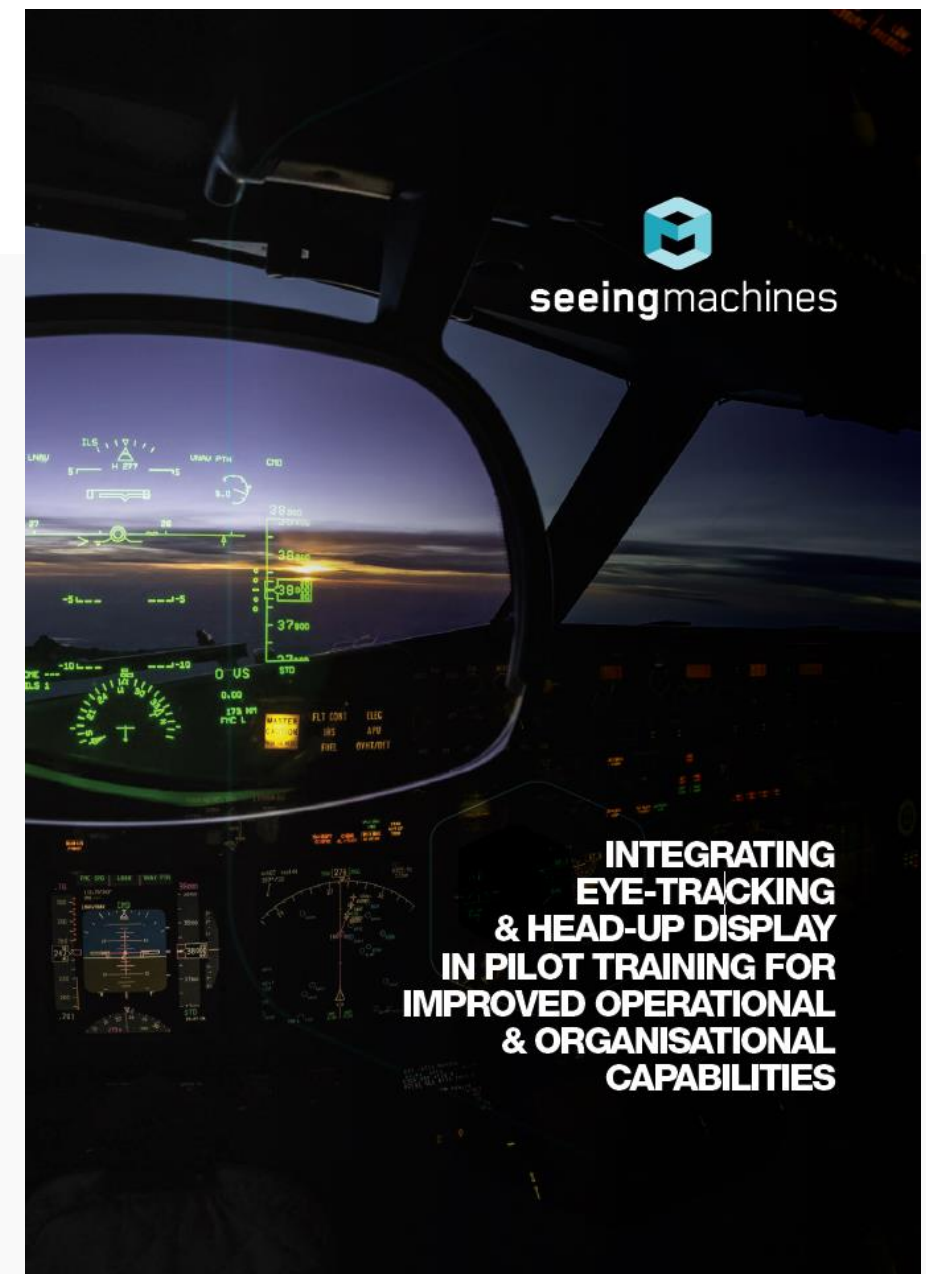
7. Aviate-Navigate-Communicate...Integrate



8. Conclusion

- Efficiency +
- Effectiveness +
- Safety +
- Capability +
- Value to:
 - Pilots
 - Instructors
 - Flight Training Organisations

Whitepaper: www.seeingmachines.com/aviation





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