

Overview

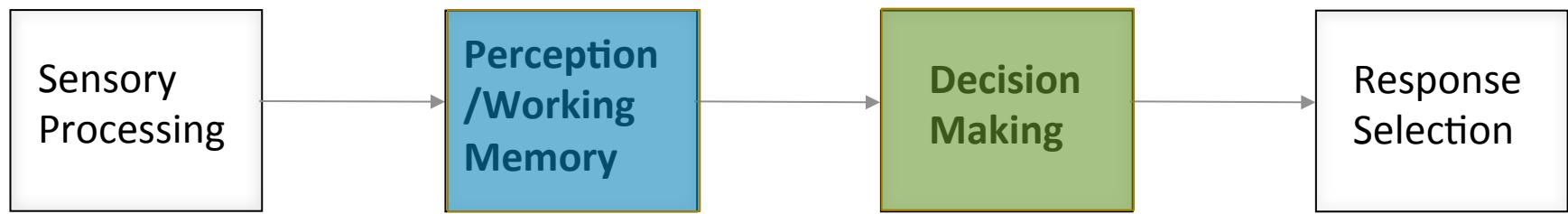
- Human Information processing
- CFIT, Runway Excursion & Incursion DNA
- Enhancing flight crew awareness
- Closing remarks



Presentation Objectives

Convey the role of flight deck systems in addressing
Controlled Flight Into Terrain (CFIT), runway excursion
and runway incursion occurrences

Information Processing - Simplified Model



Parasuraman, Sheridan, Wickens, 2000

Crew awareness impacts decision making

CFIT, Runway Excursion & Incursion DNA



Multiple factors are always involved

CFIT, Runway Excursion & Incursion DNA

Crew Awareness

- Aircraft position
- Terrain
- Energy
- Automation
- Traffic
- ATC clearance

Decision Making

- Fail to pull up
- Delayed pull up
- Press-on-Itis
- Fail to go-around
- Rushed approach
- Continue to taxi despite uncertainty

Environment

- Visibility (Wx)
- Darkness (Light condition)
- Runway condition
- Adverse winds

Pilatus PC-12 NG Apex Flight Deck



Gulfstream PlaneView Flight Deck





Advanced Vision Systems

Honeywell

Primary Flight Display Evolution



SYNTHETIC VISION OFF



SYNTHETIC VISION ON

ID-563855

Synthetic Vision System - Airborne



Synthetic Vision System – On Ground



ID-382303

Honeywell



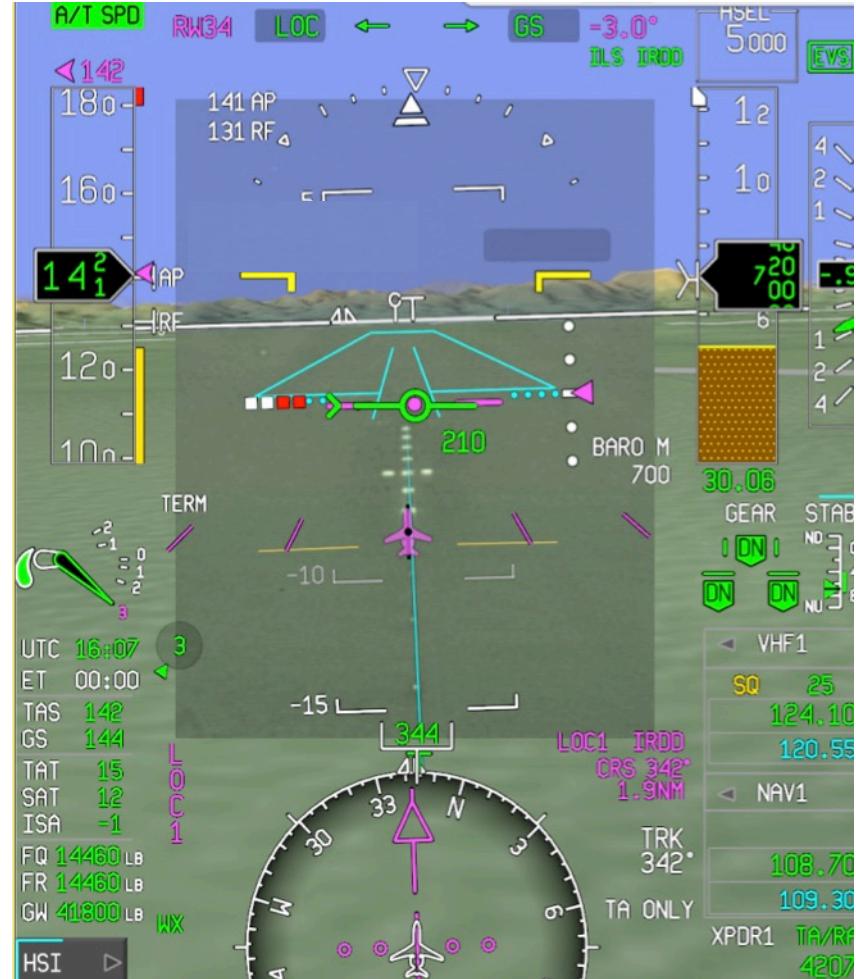
Gulfstream®
S V - P F D
SYNTHETIC VISION PFD



Video 1 - SVS Pilot Training

Combined Vision Systems (CVS)

- Combines Enhanced and Synthetic Vision Systems
 - Database image is combined with colorized sensor image
- Improves position awareness through enhanced awareness of airport environment
- Under development





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Video 2 – CVS LFBD Landing



Airport Moving Maps (AMM)

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2D Airport Moving Map With Traffic





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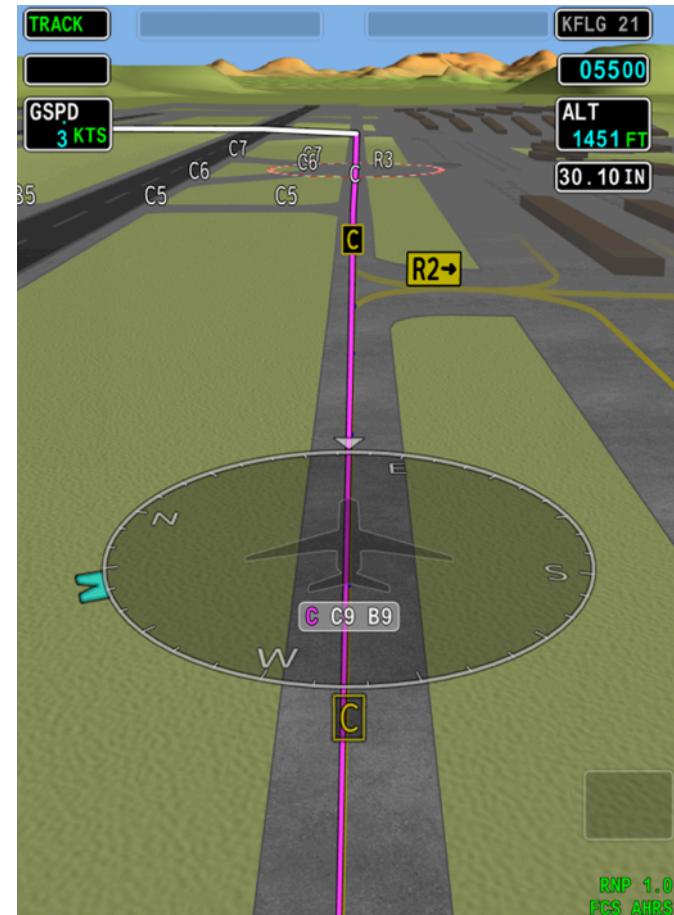
Video 3 – 3D AMM Early Prototype



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Video 4 – Chicago Taxi

Early Taxi Wizard Prototypes



Closure

- Advanced Vision Systems, EGPWS & Airport Moving Maps offer promise as safety nets
 - Enhancing crew awareness and tactical decision making
 - BUT they are only a part of the solution
- Human centered design must be applied to information automation system development
 - Every pixel must buy it's way onto a display to support the crew
 - Provision of flight crew training & SOPs is not an after thought



**KEEP
CALM
EGPWS
ONBOARD**