



National Aeronautics and Space Administration

# Cognitive Systems Engineering: The Next 30 years

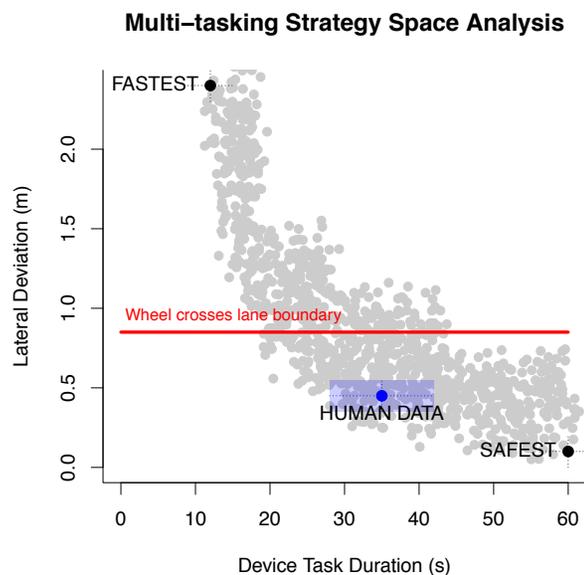
Michael Feary





# CSE in Design

- Design is a compromise
  - Have to “Buy your way onto the airplane”
    - implications, costs and benefits of a design decision
  - Robustness and distribution of performance
  - Information Content vs. presentation



Modeling

(Brumby, Howes, Salvucci, 2007)

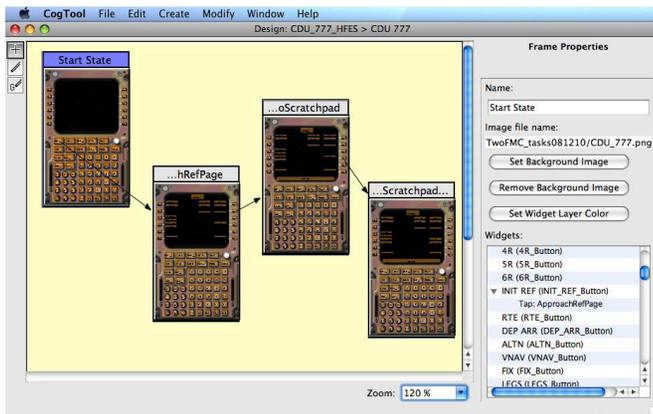


Picture by David Evans (RAeS)



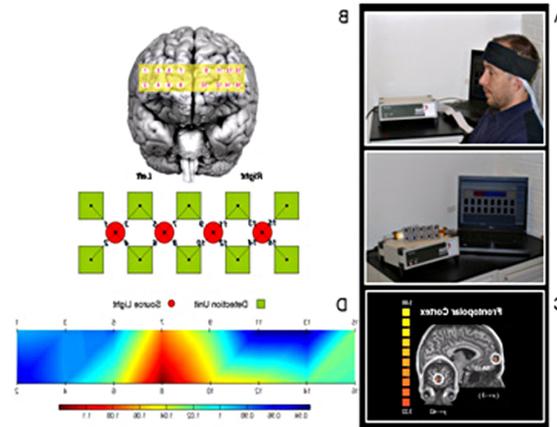
# CSE in Evaluation

- Evaluation should cover overall performance
- Evaluation vs. Certification
  - Acceptability rather than optimality
- CSE and resource allocation
  - New tools



CogTool (John et al., 2004)

Work Analysis



New Physio measures  
(e.g. fNIRS)



Empirical Validation

# Trends in Safety-Critical, Mixed-Initiative Domains

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- Increased use of automation emphasizes:
  - supervisory control tasks and need for evaluation of attention
  - unexpected, difficult decision-making tasks
  - need to account for strategic variation
- Accurate characterizations of the work are complex system evaluation of safety critical systems
- CSE can help to understand the problem and guide approaches to solutions



Thank You

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