

## **NCSU/Aptima – NASA NRA-09 Research**

5/4/09

Team Members: Arthur, Kaber, Kaufmann, Kim, Naylor, Stelzer

Agenda:

Review of current tasks in preparation for checkout:

Draft flight scenario and simulator review (Kaufmann, Naylor) – DRAFT  
COMPLETE

Kaufmann summarized outstanding needs on 4/21

Need altitude and speed information for various events.

Kaber completed review on 4/24

Need to address outstanding items

(Due date: Extended to 5/8.)

Draft training scenario (Naylor)

See follow-up notes based on 4/9/09 meeting for outline

Need status

(Due date: Draft by 5/4)

IRB Protocol (Kaber, Kim) - DONE

Prepared revision to consent and application (5/1)

All experimenters must have CITI or equivalent certification up-to-date

Pilot briefing and intro to experiment (Kim, Kaufmann, Naylor, Kaber)

See follow-up notes based on 4/9/09 meeting for outline

Need status

(Due date: Draft by 5/15. Need as guide for checkout activities.)

Development of graphical object models (Kim) – DRAFT COMPLETE

Kim completed model on 5/1

All files are in OpenFLT format

Need object bearing and range information in table for Arthur

(Due date: Basic set of objects was due on 4/16. Models should be implemented in simulation by checkout – 5/15)

Brownout model programming for simulator (Arthur)

Need status

Need to test at checkout

(Due date: Ready by checkout - 5/15)

Guidance system failure programming (Norman)

Mike completed logic for programming on 4/16

Need status

(Due date: Ready by checkout - 5/15)

Develop simulation display features (Arthur)

Need status

Confirmation of features to be included – PFD, ND, symbology, EVS, SVS, tunnel

Confirmation handling of guidance cue in ND

(Due date: Ready by checkout - 5/15)

Experiment case coding system (Kim) - DRAFT COMPELTE

Kim completed draft on 4/15

Kaber reviewed and sent to Prinzel and Arthur

Need feedback from NASA on acceptability

(Due date: To be tested during checkout – 5/15)

Review of tasks in preparation for experiment:

Recruiting subjects (Regina Johns, Prinzel)

Prinzel submitted “support and subject request” on 3/18

Need status

(Due date: 5/29)

Identify and define response measures to be collected during experiment  
(Alexander, Stelzer, Kaufmann, Naylor)

Need status

Consider dividing data in two blocks – (1) all first trials; (2) all other trials

Use approach to assess utility of displays for detecting:  
previously unseen off-nominal events; or previously experience  
off-nominal events

(Due date: Draft was due by 4/30)

Preparation of experiment materials (Kim, Alexander, Stelzer)

Discussed at last meeting

Need to include in current task list

See Agenda for 4/9/09 meeting for details

(Due date: 5/25)

#### Current issues:

Participation and agenda for checkout at Langley – 5/15

All persons participating in actual experiment will need to attend (Alexander, Kaber, Naylor, Stelzer)

All other team members are welcome to attend.

(Note: In order to conserve on travel funds, only one vehicle will be used for this trip from NCSU.)

Team will run through experiment procedures:

Sample pilot briefing

Sample training session, including simulator configuration testing

Sample test session, including simulator configuration testing

Sample post-experiment interview and debrief.

Participation in full experiment at Langley - 6/1-12

Primary experimenter – Pilot briefing, case specification for each trial, ATC role play, halting test trials, subjective rating form administration, manual observations on performance, post-experiment interview, debriefing.

Kaber – 6/1-2

Alexander – 6/2-4

Kaber – 6/8-10

Stelzer – 6/10-11

Confederate PNF – Directing training session, serving as PNF during all test trials.

Naylor – 6/1-4

Naylor – 6/8-11

(Kaufmann – Committed to GSRP and ACM-DAS studies.

Kim – Graduation and possible employment outside NCSU.)

### Year 2 and 3 Outcomes:

(Need to stay focused on these goals.)

Prepare journal article on Y2 results (ASEM)

Identify differences in visual properties between Y3 and Y2 displays.

Use HUD image analysis software (post-experiment)

Need still images of each display configuration (Arthur, Prinzel)

Use predictive model of clutter to project impact of visual properties on pilot perceptions of clutter

Validate predictions based on experiment data

Identify differences in relevance of display information across phases of flight (from FW approach to V/TOL approach).

Conduct cognitive task analysis and subjective information relevance assessments with expert pilots - see Follow-up notes from 4/9/09 meeting

(Due date: 6/18)

Make predictions on how differences in information relevance will impact performance and perceptions of clutter.

Validate multidimensional measure of clutter.

Conduct correlation analyses on clutter scores with measures of display visual properties.

Assess consistency in clutter scores across pilots for specific display condition.