

Everyone -

Thanks again for taking the time to meet this morning regarding our NASA-NRA research. As a follow-up to the meeting, below are the notes and the action items I recorded. Please advise if I've missed anything.

****General notes on preparations for 1st lab study****

(1) Simulated airport approach for experiment trials should vary slightly from trial to trial so that pilots do not see same conditions in each trial (prevent boredom). However, differences among scenarios should not be so dramatic that they should be considered settings of controlled manipulation as part of experiment.

(2) Evaluations (ratings) of stimuli not presented during test trials will occur once, at end of experiment. Hsiang recommended not using an approach scenario as a basis for presentation of stimuli in order to assess independency of pairs of terms for describing clutter. Using a particular flight scenario may lead to correlations among terms because of pilot associations of concepts under certain flight conditions.

(3) 4-point semantic pairs rating scale (for use during trials) could be modified to visual analog scale with low and high anchors to allow for parametric analysis of data. (Disadvantage - This would prevent use of scantron for data coding.) Need to make group decision on scale to use.

(4) Order of presentation of pairs of terms in list, as part of rating form to be administered during trials, should be randomized. 8 or 16 different orders of pairs could be presented within a single test trial (same forms can be used across trials and across subjects).

(5) Other comments on rating form for use during trials - (a) ask subjects which pairs of terms describe clutter condition of current display; (b) ask subjects to look over all dimensions of clutter before making ratings; and (c) provide reference or basis for 20-point scale for overall rating (should visual analog scale be used here, as well?)

(6) Overall ranking form should be used at end of trials. Form forces pilots to identify, for example, "top-three" pairs of terms for describing display clutter. Ranking data can be used along with pair relevance assessments to identify pairs of terms to be used in 2nd lab study.

(7) Open-ended questionnaire - (a) subjects should be instructed to leave no blank fields; (b) could drop solicitation of additional comments or narrow scope of question (recommend asking subjects to define each pair of descriptors at end of experiment)

(8) Structured interview instrument - Seems to overlap open-ended questionnaire. Need to write detailed experiment protocol and determine whether enough time is available for completion of interviews as part of experiment. Advantage is interview yields pilot definitions of concepts. Disadvantage is exposure to dictionary definitions may widen pilot concept of clutter and bias responses by increasing perceived relevance of certain terms for them. May decrease ability to discriminate among pairs of descriptors in terms of relevance to clutter in final data analysis. Another question is how will data from interview be summarized and analyzed - transcription, parsing, encoding, inter-rater reliability assessment, etc.?

(9) The list of semantic pairs of descriptor terms is to be modified: (a) "high/low density" will be added to list based on historical definitions of clutter; (b) "crowded/empty" and "high/low density" should be considered as alternatives and one should be eliminated based on results of data collection; (c) consider removing "appealing/unappealing" as there may be no method for objectively quantifying pair later in research; (d) change "monochrome/colorful" to "monochromatic/colorful"; and (e) ensure consistency of arrangement of pairs of terms in list (i.e., high to low or vice versa)

****Action items****

(1) Kaber, Hsiang, Alexander - Draft of general flight scenario for experiment (carryover from 12/11/06 meeting) - 1/31/07.

(2) Cowley - NCSU to provide feedback on survey forms developed by Aptima - 1/31/07. Need to agree on forms, content and formatting by beginning of 1st study - 2/15/07.

(3) Kaber, Kim, Cowley, Kaufman - Identification of cockpit display features typically used in phases of approach - 1/31/07 (based on #1).

(4) Cowley - Summarize: (a) Keller et al. CTA; (b) Schnell report and paper; and (c) HUD specification - 1/31/07.

(5) Prinzel, R. Bailey - Identification of combination of SVS, EVS, TCAS, tunnel guidance and symbology that is least likely to be used by pilots – ASAP or 1/31/07.

(6) Stelzer, Kaber, Hsiang - Finalize selection of stimuli to be delivered at specific times during approach scenarios as part of experiment - 2/15/07 (based on completion of #1, #3 and #5).

(7) Prinzel, R. Bailey - Need images of various display configurations to be tested in experiment based on draft set of stimuli to use in scenarios – 1/31/07.

(8) Kim - Develop prototype displays for 1st study and setup for experiment - After 1/31/07

(9) Prinzel, R. Bailey - Arrange for expert/test pilots for evaluation of clutter descriptive terminology in experiment at NCSU – Sometime between 1/31-2/15/07.

These are all the items that I noted or recalled from the meeting. If I've missed points, please add to the list and distribute to the group.

I would like to plan for our next monthly project meeting on 2/12 from 10am-12pm. Please let me know if you are not available. I will arrange for a "meet-me" number