



Action Plan 5 & 9

Break Out Group On Scenario Uses

Scenario !

A scenario is defined by a traffic sample and a geographical area. A trial may involve runs with a variety of scenarios to gain generality in the results

Scenario

A scenario is a given set of conditions that include a specific environment (e.g. airspace, airport), platform configuration, traffic sample, event or set of events, procedures and any other controllable variables (e.g. weather, failure modes) that might affect the outcome of the study or simulation

Levels of Functionality for Uses of Scenarios

- *Exploratory*
- *Concept Demonstration*
- *Usability testing*
- *Operational Test and Evaluation*

Exploratory

- *Used to develop a concept and explore what-if questions.*
- *Useful methods include:*
 - *Cognitive walkthroughs*
 - *Part task simulations*

Demonstration

- *Used to show or exhibit a potential capability to a targeted audience*
- *Demonstrations show the concept but do not prove it*

Usability Testing

- *Used to determine the appropriateness of:*
 - *A tool*
 - *Procedures*
 - *Equipment*
 - *Etc.,*
- *Usability testing is for a specific use*
- *Examines preference and performance*

Operational Test and Evaluation

- *Used to confirm that the 'system' ** under test when stressed*
 - *Has no unexpected failure modes*
 - *Works as specified under all foreseen exceptions and failure modes*
 - *Provides the expected benefits with the expected costs*

***Important to set the right system boundary*

Goals of Scenario Development

- *The goals of scenario development depend upon the intended use of that scenario*
 - *Exploratory Exercise – simple ‘cognitive what-if scenarios’ or focused partial simulations identifying the boundaries of the concept*
 - *Demonstration – the simulation scenario is limited to normal events, to show the new concept in operation*
 - *Usability of a product (e.g. a tool or procedure) – the simulation scenario(s) should exercise the range of relative probabilities of tasks for which the product is expected to be used in ‘normal’ situations*
 - *Operational test and evaluation – the scenario(s) should, in addition to usability testing, stress the system being tested and explore all the less probable exceptions and abnormal situations*

Considerations for Concept Validation

- Safety – There needs to be a safety case or hazard analysis – no decrease in safety is likely to be accepted by stakeholders*
- Capacity – Normally expected to remain static or increase*
- Operational Capability – expected to increase*
- Detailed Cost Benefit for:*
 - Users (e.g. pilots, controllers, dispatchers) in terms of numbers, workload, changes in tasks*
 - Stakeholders (e.g. airlines, airports, ATS providers)*
- Environmental Impact Assessment*
- These values may have set ‘hard’ limits that, if breached, will invalidate the concept*

Baseline

- *‘You cannot change what you cannot measure’ - anon*
- *But what if you are creating a ‘green field’ capability e.g. a brand new airport*
- *Baseline can be defined as:*
 - *‘The set of measures with which the results of the simulation will be compared’*
 - *If possible the baseline should be validated*
 - *The baseline must be defensible*