

TransLumen Technologies, LLC - Visual Noise Remediation Briefing

OVERVIEW

According to National Transportation Safety Board U.S. General Aviation Reports, between 2000 and 2006, there were **11,822 aviation accidents** of which **2,305 had fatalities** resulting in **4,192 deaths**.

Per the U.S. Navy Safety Center, between 1997 and 2002, **190 Sailors and Marines lost their lives in aviation incidents**. Those incidents resulted in **\$4.3 billion in direct costs** and approximately **\$25 billion in additional in-direct costs** (i.e. litigation, investigations and program delays). The Center also reported that on average there are 6.64 military accidents per 100,000 Flight Hours, which result in **1.3 deaths in those 100,000 Flight Hours**.

While the number of incidents has reduced over time (2,494 accidents in 1987 to 1,515 accidents in 2006), the human and capital losses are still unacceptable.

ISSUE

The majority of aviation accidents are caused by human error. Most studies estimate that 66% of aircraft accidents are caused by pilot error and according to a study of Cockpit Task Management (CTM) by Oregon State University and NASA, CTM errors occurred in 23 % of aviation accidents.

The problem is not insurmountable. The NASA/Oregon State study concluded that good Cockpit Task Management can be practiced and learned. This was supported by a 1999 Federal Aviation Administration study on Air Traffic Control Specialist (ATCS) information scanning and visual noise. That study determined that most incidents occur because of shortfalls in training. The study also concluded that there was a tremendous need to fund state-of-the-art simulators and data-centric systems. The study also revealed that visual noise had a significant impact on workload perception during high traffic loads and an even greater impact during slower periods.

This reinforces that theory that visual noise directly impacts cockpit task management and performance. This by-product of the scientific advancement (or inundation) of multiple screen stimuli adds complexity to tasks and interferes with the correct perception and management of prioritized information.

POTENTIAL SOLUTION

Improvements in cockpit task management and performance during training, in ATM situations and during local aircraft operations should reduce the number of aviation accidents and fatalities.

Cockpit Task Management entails

- ⊕ Initiating New Tasks
- ⊕ Monitoring On-Going Tasks;
- ⊕ Prioritizing Tasks;
- ⊕ Properly Allocating Human Resources to Priorities
- ⊕ Interrupting, Resuming and Terminating Low-priority and/or Irrelevant Tasks

TransLumen's v-INDICATOR™ can aid

- ✓ Load balancing using non-invasive monitoring and feedback leading to better operator decision-making
- ✓ Reduced screen clutter (visual noise) complexity
- ✓ Improve the operator's decision making for 1st awareness response and return to task times
- ✓ Allowing the operator more time to concentrate on critical tasks
- ✓ Reduce training costs across diversified demographics

An appropriate proper Visual Cue Feedback Indicator imbedded into a control monitoring station or at the local operator (pilot) level, would improve cockpit task management and performance. There are also potential benefits in providing the enhancement during training and simulation exercises.