



# U.S. Forest Service Fire Operations Risk Management Information Briefing Paper



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**Topic:** Information on Field Application of System Safety and Safety Management System (SMS).

**Background:** The Risk Management and Human Performance Group has been diligently working toward the implementation of the Safety Management System. This process is designed to place the application of safety to the field in a way that makes safety part of our daily tasks and operations.

**Key Points:** Currently the USFS establishes Occupational Safety and Health Administration direction as a primary safety program. This program is designed to be regulatory. As such, compliance becomes the key focus of the program. SMS is, by design, non-regulatory. Instead of fostering compliance with regulations, SMS encourages the operator to be involved and actually control the safety process. The method to accomplish this is by guiding operators to apply specific tools to evaluate conditions. Almost all of us employ these techniques daily in our personal lives. The tools provide a framework which formalizes the process, fundamentally to avoid missing a critical area.

The tools include a proactive assessment of the process being evaluated called System Safety Analysis. The second step is a field analysis, which heightens situational awareness by analyzing actual risk conditions and provides guidance in making a Go/NO-Go decision, called Risk Analysis Process. The final process reinforces situational awareness by helping operators recognize, react and communicate that which is “Dumb, Different or Dangerous”, this is a rapid, unwritten process to perform Operational Risk Management.

#### System Safety Analysis (SSA):

- Designed by Carnegie-Mellon University - Software Engineering Institute (SEI)
- Used as a software engineering practice for managing risks in development projects
- Key process in SEI’s Software Acquisition Capability Maturity Model (SA-CMM)
- Used by NASA in systems engineering

Risk Assessment Process (RAP): This process is based on risk areas, or conditions, identified in the SSA. It provides the user with a quick method to quantitatively evaluate the actual risk conditions faced that day and considers variables likely to be encountered during the planned operation(s). The user should be able to make a go/no-go decision or know when to elevate the decision to the proper level of management.

Operational Risk Management (ORM): This is the fast “on the fly” unwritten process, probably already in use by most of us informally to assess the unexpected. An example of this type of process is the “OODA Loop” (OODA = Observe, Orient, Decide and Act), designed for aerial combat to quickly adjust to rapidly changing conditions. This type of process is constantly reinitiated. The additional component of this is to communicate what is observed and reacted to. This focuses the user’s attention on the big picture and avoids cognitive fixation<sup>1</sup>.

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<sup>1</sup> J. R. Boyd, 1987, “A Disclosure on Winning and Losing”, Unpublished set of briefing slides, Maxwell AFB, AL