

The analysis of the key Columbia slide on the preceding pages was posted at my website.¹⁰ Much of this material was then included by the final report of Columbia Accident Investigation Board (CAIB). In a discussion of “Engineering by Viewgraphs,” the Board went far beyond my case study of the Columbia slide in these extraordinary remarks about PowerPoint:

As information gets passed up an organization hierarchy, from people who do analysis to mid-level managers to high-level leadership, key explanations and supporting information are filtered out. In this context, it is easy to understand how a senior manager might read this PowerPoint slide and not realize that it addresses a life-threatening situation.

At many points during its investigation, the Board was surprised to receive similar presentation slides from NASA officials in place of technical reports. The Board views the endemic use of PowerPoint briefing slides instead of technical papers as an illustration of the problematic methods of technical communication at NASA.¹¹

The Board makes an explicit comparison: some tools are better than others for engineering, and technical reports are better than PowerPoint.

THEN, 2 years later, 7 members of the Return to Flight Task Group, a powerful external review group created by NASA to monitor the post-Columbia repairs of the shuttle, had something to say about engineering by PowerPoint. After seeing hundreds of PP decks from NASA and its contractors, the Task Group made direct comparisons of alternative presentation tools for engineering analysis and documentation:

We also observed that instead of concise engineering reports, decisions and their associated rationale are often contained solely within Microsoft PowerPoint charts or emails. The CAIB report (vol. 1, pp. 182 and 191) criticized the use of PowerPoint as an engineering tool, and other professional organizations have also noted the increased use of this presentation software as a substitute for technical reports and other meaningful documentation. PowerPoint (and similar products by other vendors), as a method to provide talking points and present limited data to assembled groups, has its place in the engineering community; however, these presentations should never be allowed to replace, or even supplement, formal documentation.

Several members of the Task Group noted, as had CAIB before them, that many of the engineering packages brought before formal control boards were documented *only* in PowerPoint presentations. In some instances, requirements are defined in presentations, approved with a cover letter, and never transferred to formal documentation. Similarly, in many instances when data was requested by the Task Group, a PowerPoint presentation would be delivered without supporting engineering documentation. It appears that many young engineers do not understand the need for, or know how to prepare, formal engineering documents such as reports, white papers, or analyses.¹²

¹⁰ “Columbia Evidence—Analysis of Key Slide,” March 18, 2003, Ask E.T. forum, www.edwardtufte.com

¹¹ Columbia Accident Investigation Board, *Report*, vol. 1 (August 2003), 191.

¹² Dan L. Crippen, Charles C. Daniel, Amy K. Donahue, Susan J. Helms, Susan Morrisey Livingstone, Rosemary O’Leary, and William Wegner, “A.2, Observations” in *Final Report of the Return to Flight Task Group* (July 2005), 190.