Subject: 8. Professional Workstations. Visual Analytics. Virtual Environments

Re ideas that your National Academy of Science project might be able to use:

I was part of a CSIS working group, in the 1990s, to assess digital age technologies to increase intelligence and learning rates/public diplomacy in the international system. There might be an overlap of ideas - i.e., although you might be focusing on how all of the world's relevant information can be vacuumed into a Washington-based system, analyzed, and synthesized into the ultimate single decision document/briefing for one user with the highest security clearance, the US President.

1. Global system architecture; Professional workstations, large-scale collaboration systems.

We recommended a new generation of professional workstations to accelerate international co-operation. http://www.reliefweb.int is a good example. It is used to manage complex humanitarian emergencies. It was built by the UN, foundations, and NOGS with US government participation. It includes map displays - for example, at the moment I am looking at this morning's just-updated map of international relief efforts in the Philippines in response to Typhoon Cezanne. The last feedback about the project, that I had from a US Assistant Secretary of State responsible for these issues, was that everyone uses it (including coordination across US government agencies and at overseas Embassies and SAID workers in the field.) He checked it every evening at home, and every morning (for more current information) before his CIA briefing and senior staff meeting.

We thought that the State Department and CIA (now DNI) budgets should create such online workstation capacities for large-scale collaboration in every area. There could be a classified version, where necessary, and agency-restricted versions. But we thought that everyone's time &

collective intelligence in the US government, and an entire universe of international cooperation, could benefit. www.reliefweb.int now includes a My ReliefWeb customization capability. It's helpful just at the level of finding documents.

2.) <u>Visual Analytics</u>

Re new visual analytics for knowledge display and management: You might want to check-out Bob Horn's work (a level beyond Tufte, distorted map displays, etc.). He's at Stanford's Center for the Study of Language and Information: http://www.stanford.edu/~rhorn. The technology may be especially useful re inter-analyst cooperation and for policy networks/international working groups/negotiations that bring analysts of other countries (and their government decision makers) up to speed with how U.S. analysts think about the problem, esp. complex problems (e.g., avian flu cooperation).

There are simple ideas, like using information murals to display scientific ignorance, improved encodings via the light and darkness metaphor, or paler colors, for less reliable information, etc. that also might help people to connect more viscerally to, and remember, what is going by in a verbal briefing.

Bob - in addition to backgrounds in political science, computer science, and graphics design - also includes psychology in his expertise. However post-Axelrod/Bonham cognitive mapping of International Relations/negotiations evolves, it probably will use some of the tools and ideas that Stanford is developing.

3.) <u>Virtual Reality & User Interfaces</u>

If Admiral Blair is interested in evaluating/developing the kinds of user interfaces and 3-D virtual reality/holographic systems that Hollywood designed for fast navigation by Keanu Reeves in <u>The Matrix</u>, the best connections are probably via computer gaming people who Bob would know. I'm not sure that US intelligence analysts have that much information, that must be processed this quickly. But if you see how quickly 11-year-olds process information in computer games v. the speed of the average desk worker, there may be a lot of potential for productivity assistance.

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