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TITLE: Discussion - Operations Visualisation 2

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## Discussion – Operations Visualisation II

A user needs to see varying levels of detail. Fisheye views may facilitate this, however, going into the fisheye requires the dimension of the expansion to be specified. A user should be able to get more information if they want to.

A sense of persistence of background is important. The background information should not be continually dumped on the user, instead a story line should be created.

The visual metaphor must be considered. The metaphors are often derived from or relate to the people, tasks, and data that are obtained from the user. The metaphors are derived from the people doing the tasks. In developing systems, metaphors that the customer already uses are often implemented. New presentations of the same metaphor or completely new metaphors imply learning and can be useful. Once a metaphor has been chosen, it must be tested to see where it leads.

It's important to know the information requirements. Cognitive task analyses can help in identifying the decision space, the information requirements for those decisions, and thus, the visualization requirements.

Flexibility is important in dealing with different people. Interaction between the user and the computer in creating the presentation could allow the user to customize the display and chose how they would like the information presented to them. Not all commanders want to see the same thing. What's important is that the critical information is communicated. The user can then chose how they can best extract that data.

Allow the user to "talk" to the data. Don't expect that people with different devices will interact with the data in the same way. The quality of the communication is what is important. Try to probe the use to ensure they received the message.

How the data is presented can influence how it is interpreted. Scientists like to say they are giving just the facts, while the entertainment and news communities presents facts in a context intended to lead to a conclusion. It is important to know if you are telling a story or inferring a story. In a case where a decision needs to be made based on fact alone, it is important to transmit the data without interpretation or corruption. If a commander wants to communicate a decision to a subordinated, the purpose of the presentation is not to allow the subordinates to come to their own conclusion, but to effectively communicate the decision.

"Facts" are a property of the medium as well as of the data. To understand how this works is critical. And also to remember that humans are not linear receivers. The general might get the facts, but what matters is how they integrate with the context that affects the consequences of the facts. How the facts are represented depends on the target audience. There may be a presumption of common background. The story line is important in at least some domains, not least because it allows a "fact" to exist, as well as to affect its implications.

Colour may be best used as a qualitative variable. May be very useful for reinforcing qualities.

The military tends to value the stability of methods. Commercial enterprises are in stable environments, the military are not. The military support environment must be more robust against external perturbation. The presentations over the last two days have talked about situations in which most of the time the user is in a "stable" state, but anomalies of kinds requiring innovation are important.

In all three (McCann, Kaster, Cunningham) the underlying issues seem very similar.

What happens when the computer has the intuition? As humans co-evolve with their tools it becomes less clear as to where the discovery comes from. The computer may have the bulk of the experience, and the most accurate memory. The computer is another assistant. the level of trust in the assistant will determine how extensively you evaluate whether it was a good intuition and the need to check its reasoning.