Collaborative Synthesis of Visual Analytic Results

Benefit: *This experiment's results indicate that groups use a number of different approaches to collaborative synthesis, and that they employ a variety of organizational metaphors to structure their information. It is further evident that establishing common ground and role assignment are critical aspects of collaborative synthesis. These results suggest a set of general design guidelines for collaborative synthesis support tools.*

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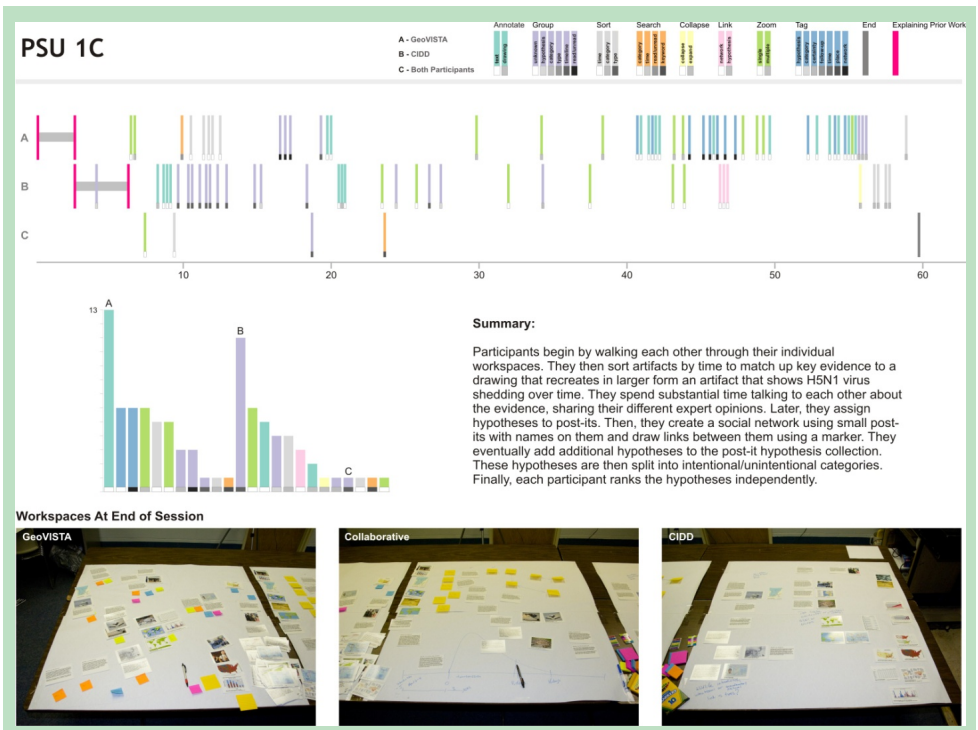
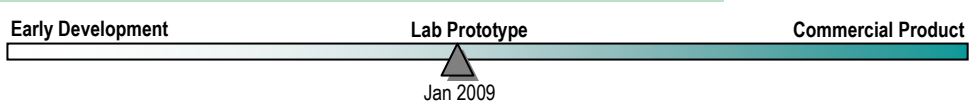
Visual analytic tools promise to supply analysts with the means necessary to tackle complex and dynamic problems. Most of the time we can expect analysts to work in teams, blending together expertise from a variety of related domains to address a multifaceted problem. Supporting collaboration among analysts requires attention not only to direct analytical support, but also to the challenge of organizing and making sense out of collections of analytical results. In 2007 we completed a research study to explore these issues in detail.

To observe how synthesis takes place an experiment was designed for participants to simulate the real-world task of determining the source of an avian influenza outbreak in the Pacific Northwest. Five geography experts from the Penn State GeoVISTA Center and five infectious disease experts from the Penn State Center for Infectious Disease Dynamics were recruited to take part in the experiment. First, they completed an individual task in which they had to develop hypotheses for the source of the outbreak using a set of analytical artifacts. Second, they worked in pairs to rank their hypotheses in a collaborative session. The basic experiment design features a synthesis activity in which participants organize and annotate a set of physical artifacts on a workspace, which they can modify as desired.

Videos of each experiment were coded to identify and characterize how artifacts were combined and given meaning. Additionally, the workspaces that groups developed were evaluated afterward to identify the types of organizational metaphors that were used. The results show that participants adopt roles when working together to synthesize information, and that they routinely make use of a wide range of organizational metaphors to organize their workspaces. Collaborative workspaces are no less unique than those created by individuals.



For more information, see: Robinson, A.C. (2008) Collaborative synthesis of visual analytic results. IEEE Visual Analytics Science and Technology Conference. Columbus, OH, October 19th-24th.



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