**Key ideas**

* We have three diverse case studies case studies of creativity workshops being used in successful visualization projects --- different domains, cultures (academic vs industry), and levels of existing tech in the field
* These workshops are supposed to look like they’re open and free but in reality they’re quite structured and constrained. Most constraints likely cause more specific output from the workshop. E.g., SG’s prompt for WS#3 paper was way more specific than EK’s prompt for WS#2
* Differentiate between know/see/do – SG saw a large difference in these prompts. See/do almost became requirements on their own. “Know” became a test for whether or not the goal was accomplished. “Know” is evaluative.
* Tracking provenance of ideas throughout the workshop is very useful. To show emergence of ideas and to provide validation.
* Understanding the workshops output is iterative. And we refined our language throughout the project, so what we saw in the end was very polished.

**Detailed notes**

What are differences between SG and EK’s workshops?

Is level of interest in visualization a difference? SG chose analysts who were interested in visualization. This was based on responses in the questionnaire -> they had replied instantly that they were interested.

Common thread between SG #1 and #2 workshop – “there wasn’t anything that they knew they had to build, but they were excited by the data … and they were excited by what’s possible and also wanted to see the visualizations.”

SG: Analysts know there’s potential in the data, but you don’t know how to get there. Together with 5-10 people…you’re trying to get an common idea.

SG: Those who were completely external to the project (the users) were the ones most excited with the workshop and visualization.

EK: Another reason we did our workshop was to establish buy-in from senior members of the lab. To avoid the “talk to my post-doc” reply that they would give us.

SG: Get people to trust you and think about ideas outside of the current scope. People had been thinking about vis in this area before, but trying to get outside constraints is where things got interesting. Some people hated this.

EK: Workshop provided gentle introduction to paradigm shifting or paradigm breaking techniques.

SG: This could probably be done more.

Looking at where we got participants. Table is comparing the projects is probably good. What is useful from the table? It should probably not be in the paper. What is the takeaway from it?

The takeaway from the table is: mix of 3 different workshops, different domains, existing technology in the field, different cultures – lab vs industry, slightly different sizes.

SG: more than a dozen people => split the group into sub-groups. But it would be nice to do feedback.

What is the output of the workshops?

EK: tangible and intangible outputs. Intangible: trust, availability, engagement. Tangible: list of 10-12 opportunities for visualization that became driving problems for visualization.

Emotional output vs practical output? What are these different types of output called? Emotional vs actionable?

SG: Picking and choosing requirements might not work. Example from the energy analysts project shows that there are limitations to picking from the list of outputs. They all need to be addressed.

SG: Output of workshops may not be transferrable. If “we” left the project, would we be able to hand off the requirements to someone else to build?

SG: Analyzing workshops outputs are biased. Should we account for this?

SG: Tried to make the output of the workshops more effective in the second workshop. Emphasized how do they think these things can actually them?

More about is more likely to get useful ideas. But more about leads to more noise. Gather as many artifacts are you can, but some of that is not going to be useful.

SG: WS #1 fed into design workshop. That was more effective because more people involved in designing lead to more ideas. Would have been nice to run creativity workshop for vis design. Something like what we tried to do for discovery jam.

SG: I was trying to give back to the domain: what are the requirements for vis software? Her goal was to continue work in the domain. My job is to articulate this to this group: “what do the users really need?” Can the outputs of the workshop live beyond the visualization designer’s involvement in the project?

Thinking about output:

EK: mistakes that were made involved over quantification of the output. And things that biologists want the most aren’t necessarily what have the greatest impact on them.

SG: workshop output was weighted based on quantity of times it was mentioned and where it came up in the workshop. But she didn’t communicate those weights to the designers.

SG: much more interested in when it came up à things that came up early but not mentioned later were not likely useful.

Making sense of output is hard. What are the key differences and similarities between output?

Similarities: in all workshops we aggregated the results. grouped output into topics/themes…and these form requirements.

Differences in coding strategy:

Differentiate between know/see/do – SG saw a large difference in these prompts. See/do almost became requirements on their own. “Know” became a test for whether or not the goal was accomplished. “Know” is evaluative.

SG: Tracking provenance of ideas throughout the workshop is very useful. To show emergence of ideas and to provide validation.

SG: Understanding the workshops output is iterative. And we refined our language throughout the project, so what we saw in the end was very polished.

SG: How to prioritize results? Goals of different parties. Prioritization depends on the audience or motivation.

SG: Workshops were constrained based on the available data.

Goals of the workshop depend on the goals of the funding agencies. Collaborators and vis researchers all have different goals.

The desired output is different depending on these goals. Paper output vs software prototypes?

How does workshop change based on goals? More goals are probably good. Constraints!

What is the role of constraints?

Do more constraints cause less buy-in from collaborators?

Guideline: what are the goals for the day? Iterate on this. Use the activities to fulfill this.

SG: These workshops are supposed to look like they’re open and free but in reality they’re quite structured and constrained.