Matches, Mismatches, and Methods:
Multiple-View Workflows for Energy Portfolio Analysis

Matthew Brehmer*, Jocelyn Ng°,
Kevin Tate°, & Tamara Munzner*

*The University of British Columbia & °EnerNOC

IEEE InfoVis Submission #106
Supplemental Material: Research Artefact Examples
Note: slides that attribute individual energy workers or depict real portfolio data have been sanitized.
Fig. S1: 11 slide decks (302 slides) created between Nov 2013 and February 2014. Slide decks were iteratively refined research artefacts used to document the research and design process. Slides 3-12 contain sample slides from these decks.
Fig. S2: Partial summaries of findings from initial interviews with energy workers.
**Fig. S3**: Characterizing energy worker’s activities as abstract tasks according to the typology of Brehmer and Munzner (2013, IEEE TVCG / Proc. InfoVis)

Brehmer et al. IEEE InfoVis 2015 Submission #106 - Supplemental Material
Fig. S4: Partial characterization of data abstractions relevant to energy workers’ activities.
Fig. S5: Verifying the task and data abstractions with power user energy workers (left: summary of tasks; right: a mockup of a faceted line graph).
**Fig. S6:** Initial data sketches produced within the sandbox environment (left: faceted bar charts; right: an early version of the bar + bump plot).
Fig. S7: Following-up with the power user energy workers with designs from our sandbox design (left: calendar–partitioned time series matrix; right: view coordination mockups).
portfolio visualization: sketching environment

Note: the preceding visualizations were generated in this sandbox environment, which contains controls for filtering, selection, aggregation, and normalization, as well as a map of the portfolio.

Fig. S8: Early view coordination design depicting a matrix with auxiliary boxplots.
**Fig. S9:** Another iteration of data sketches produced using the sandbox environment (left: time series matrix; right: interactivity mockups).
**Fig. S10**: Proposed workflow design involving multiple views based on consolidated feedback from energy workers.
Fig. S11: Storyboards using sandbox screenshots based on power user workflows.
This slide contains screenshots of D3 prototypes developed in summer 2014 that address view coordination design.

**Fig. S12**: color stock charts* with juxtaposed line charts as alternative to matrix with juxtaposed boxplots. (* see Albers et al. Proc. CHI 2014)

**Fig. S13**: Values from the brushed time period are highlighted on the juxtaposed boxplots. http://blox.org/mattbrehmer/8be29724b9d7a63ff41d

**Fig. S14**: boxplot for the brushed time period (red) is shown alongside the boxplot for the entire time series. http://blox.org/mattbrehmer/287e44c9a2151967874
Development on the redesigned Energy Manager continued throughout Summer 2014.

During this time, we collected feedback on the new designs from 5 energy workers at EnerNOC.

**Fig. S15**: An example of how this feedback was documented, using a combination of screenshots from the redesigned Energy Manager and earlier mockups.