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Visualization for Equity Analysts: Using DSM in Stock Picking

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We used the Design Study Methodology (DSM) in a short term project to apply visualization to equity analysis. We did so in light of existing work on financial data visualization (e.g. [1, 2, 3]) to determine whether a visual approach to data exploration improves this process, with a view to developing the visualization capability in Thomson Reuters’ flagship financial product: Eikon.

**DSM**

DSM helped structure the design process by providing the four nested levels of **vis design**: domain, data/task abstraction, visual encoding/interaction idiom and algorithm. Each level requires validation and consists of a set of activities and a required output.

**Domain**

To understand the domain, gather the requirements, and abstract and validate the tasks [Figure 1], we had access to 7 different domain experts. Requirements gathering happened throughout the project. We used sketches, interviews and other techniques to elicit these requirements.

**What, why, how?**

We used the "What data?, Why vis?, How to encode?" framework [4] to abstract the tasks, explore visualizations and create interaction paradigms that would fulfill these tasks.

**Short term**

DSM is usually applied in long term projects because understanding the domain and validating each vis design level is time-consuming. However, being part of the team and the use of parallel prototyping [5] to explore different encodings facilitated discussion and contributed to rapid feedback loops.

**Prototype Evaluation**

The evaluation used a real data subset with which users performed various activities derived from the task abstractions.

Evaluation tasks were designed using Visual Data Reasoning (VDAR) [6] in order to measure the degree of knowledge generation the visualization provided. For VDAR tasks the number of findings about the data was recorded. For other tasks, error rates and task times were measured.

These metrics were analyzed in the context of rich qualitative feedback.

**Conclusion**

Our interactive prototype was positively received and our work suggests that this approach to design and the application of the DSM to short term visualization projects has potential in stock picking and more broadly in financial analysis.