

Enabling Analysis of Complex Data with User-Centric Approaches to Data Visualization

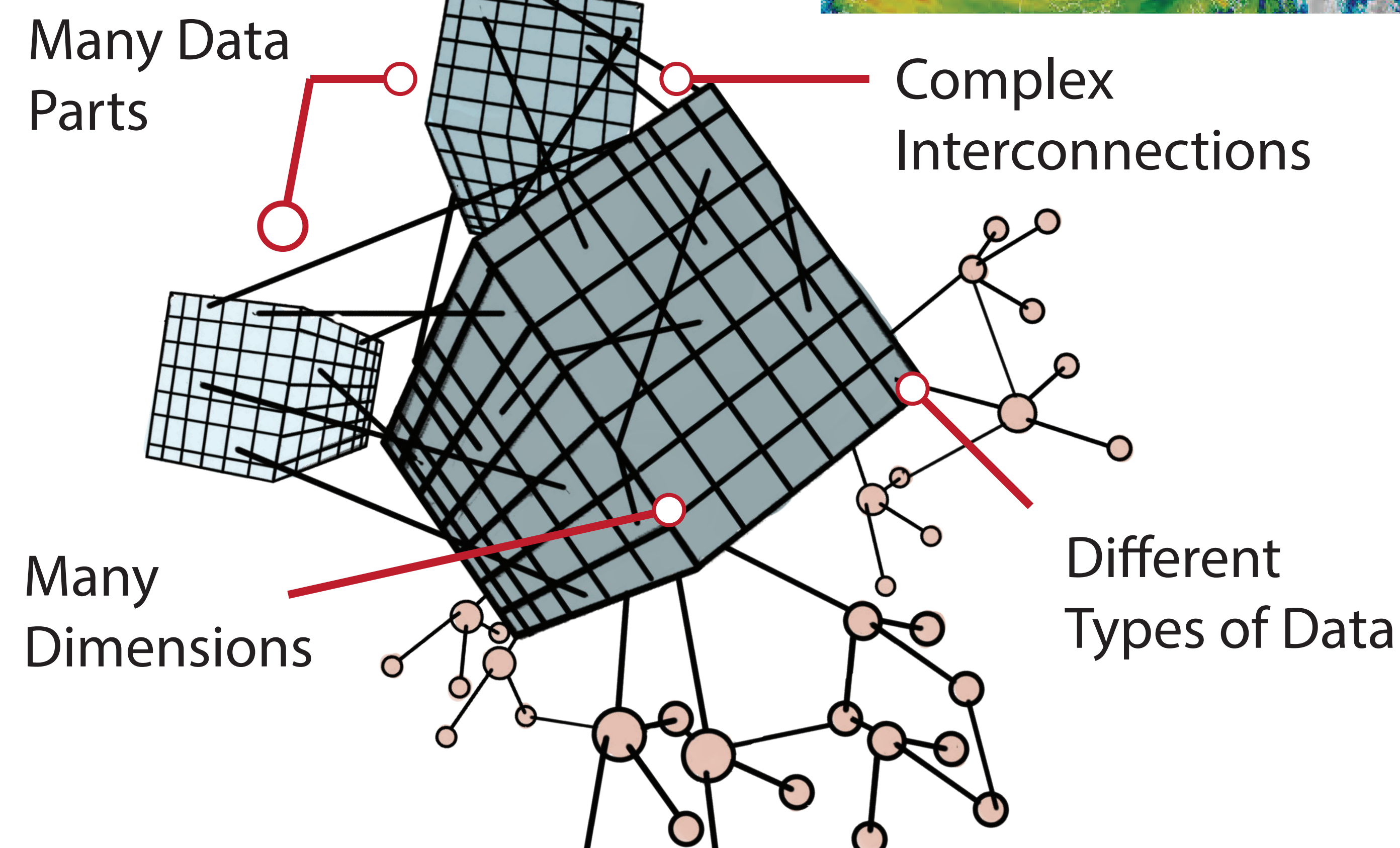
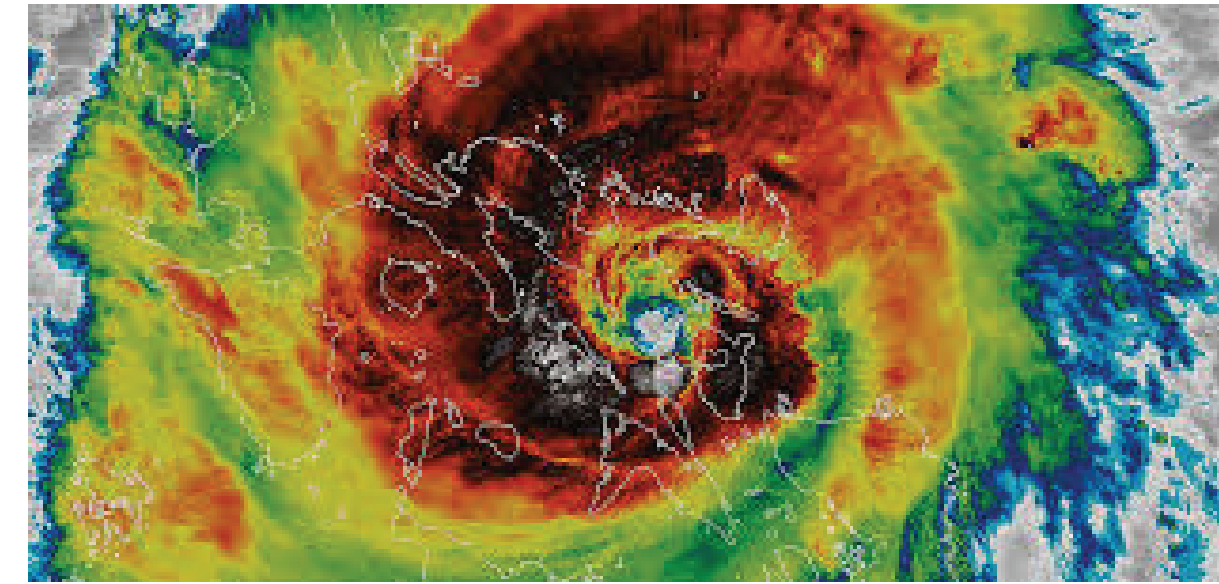
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Analysts are Overwhelmed by Complex Heterogeneous Data

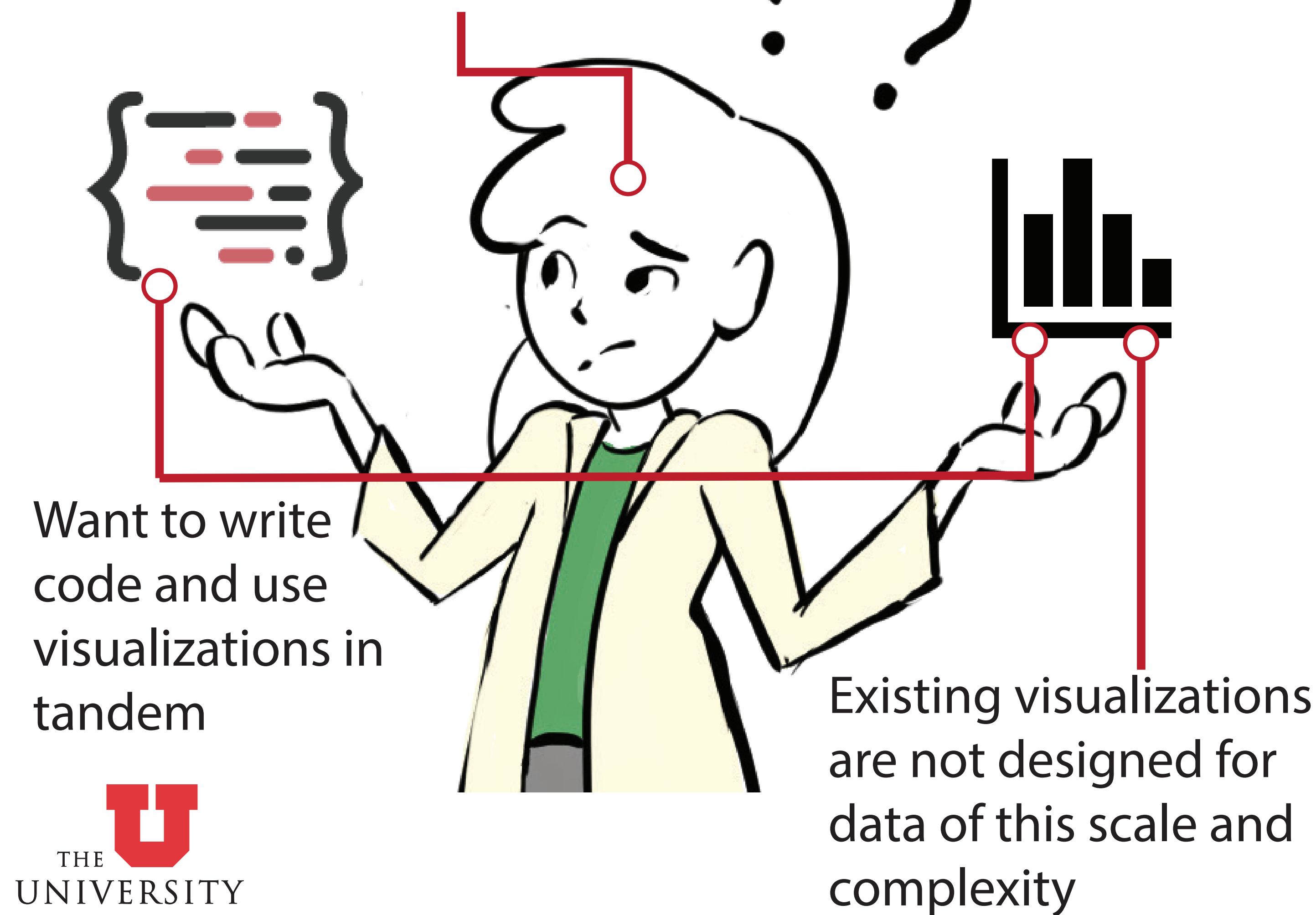
Heterogeneous Datasets

Many runs of scientific simulations can produce heterogeneous data



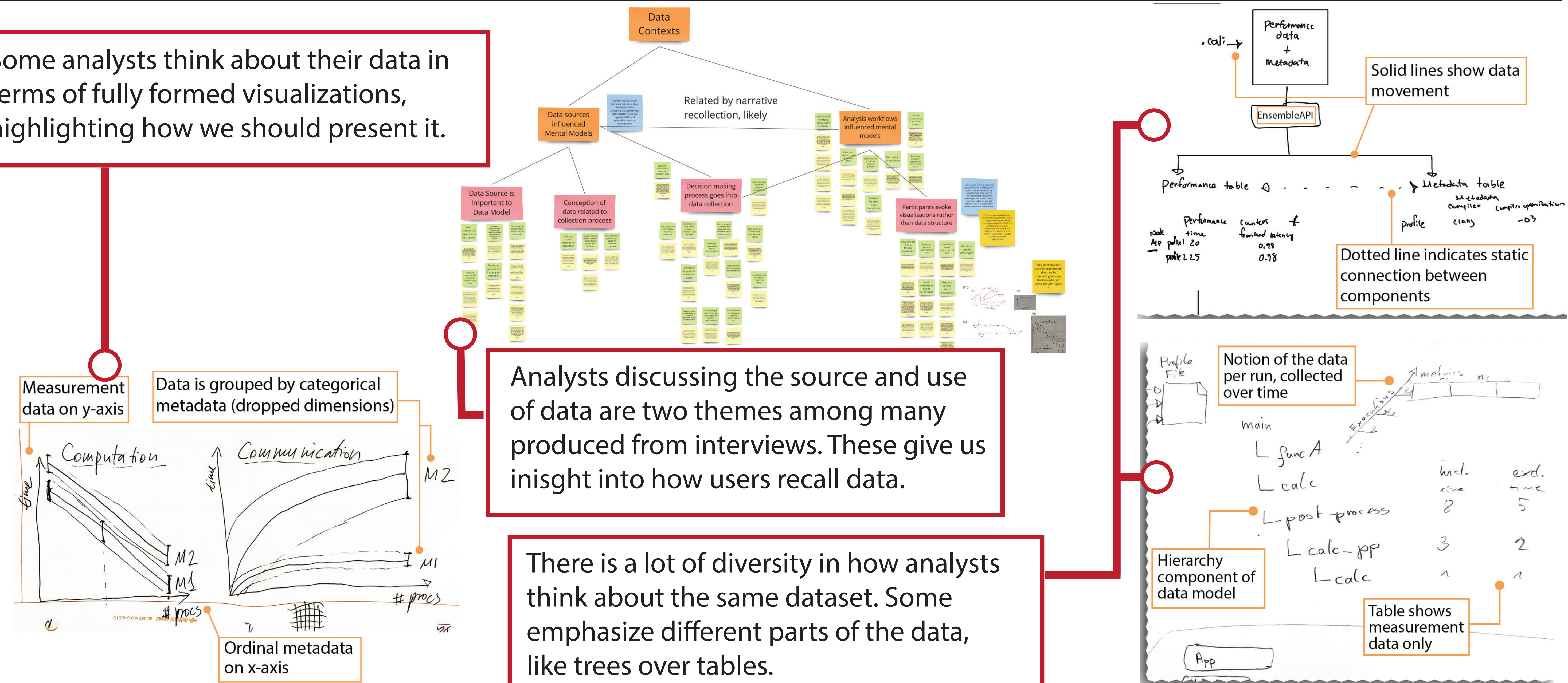
Analyst's Plight

Existing visualizations do not consider their mental models



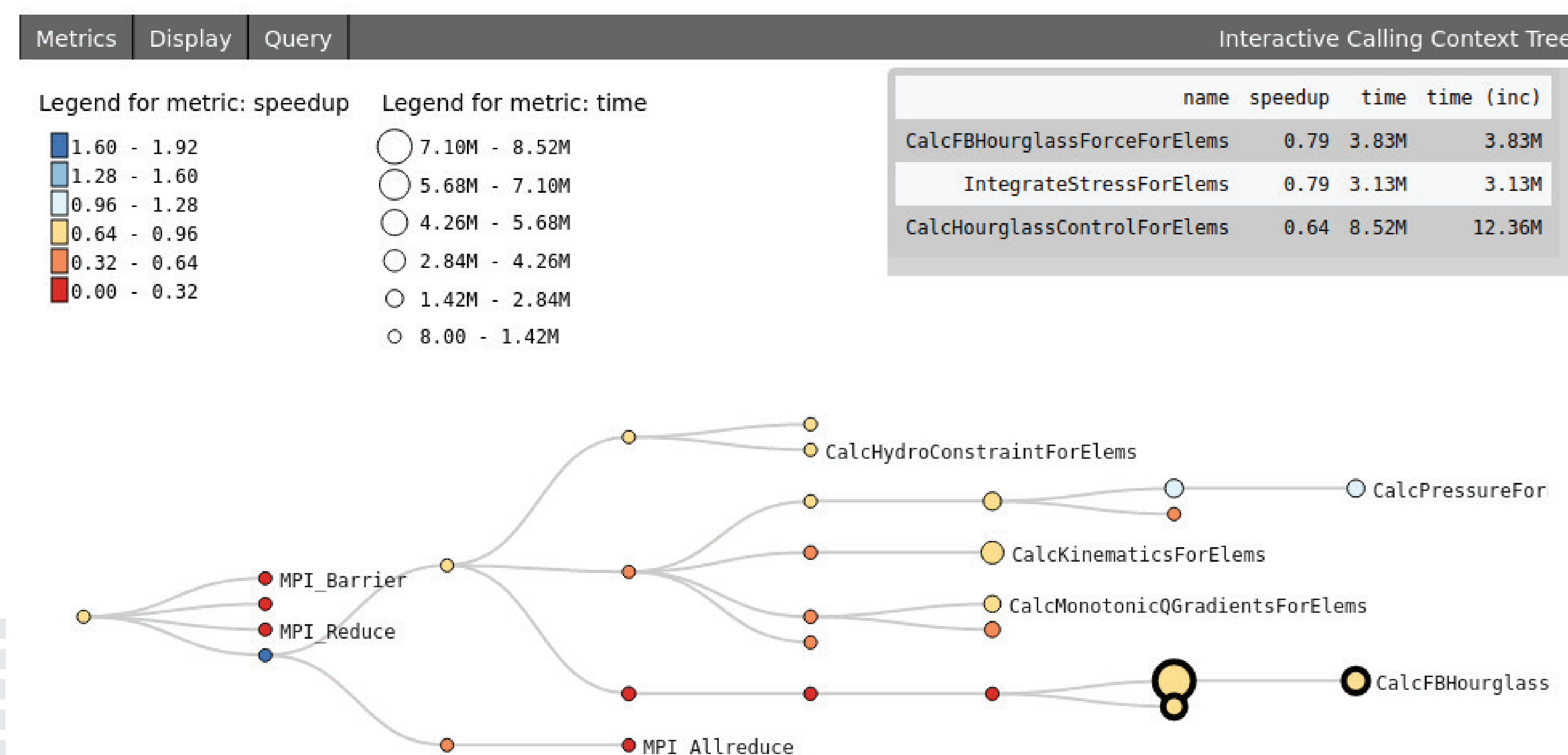
1. We Interviewed Analysts to Understand How They Think About and Work With Complex, Heterogeneous Data¹

Some analysts think about their data in terms of fully formed visualizations, highlighting how we should present it.



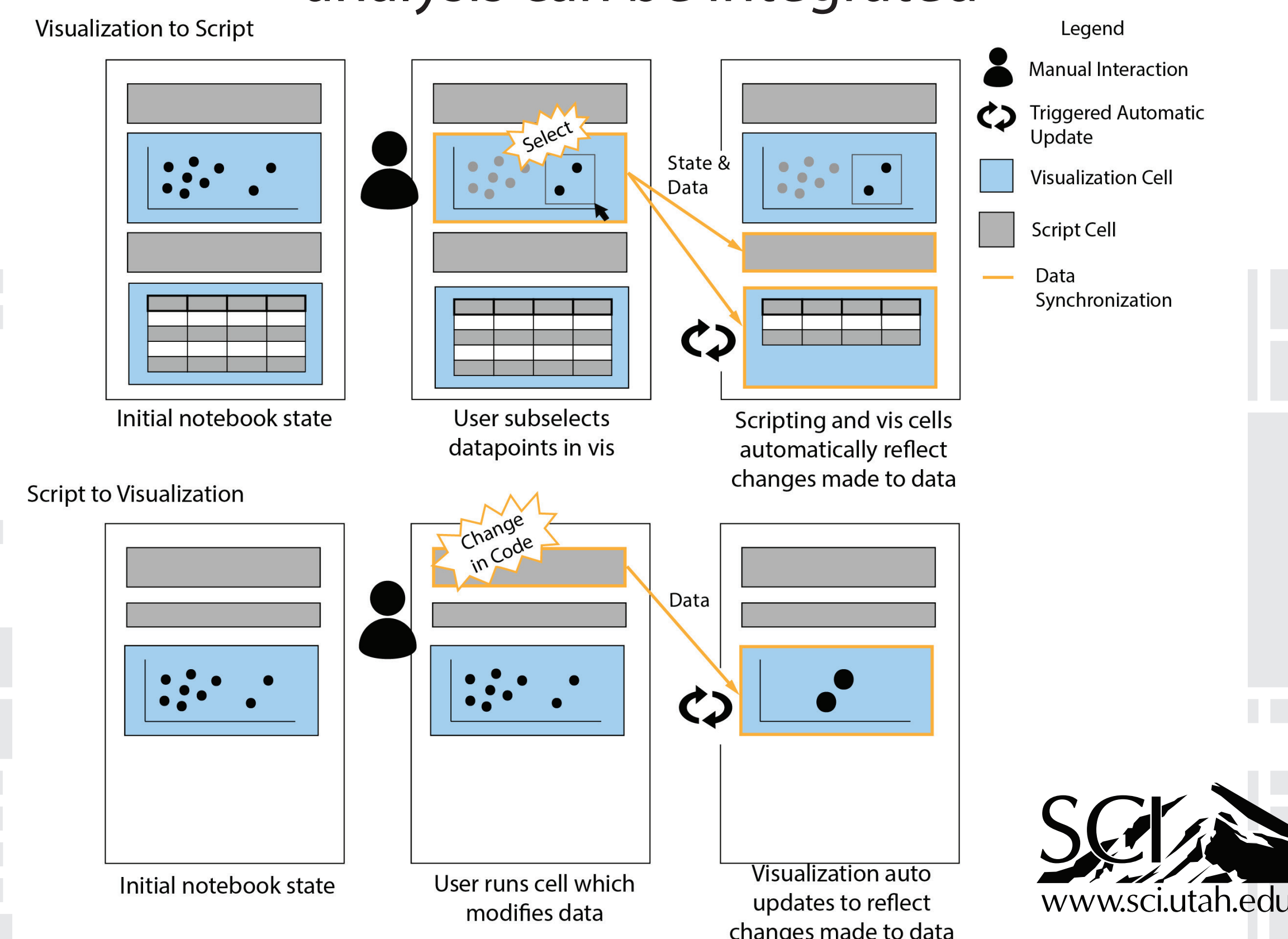
2. We Build Visualizations Tailored to Analysts' Workflows and Mental Models²

Designing visualizations for code-based environments gives analysts the the flexibility of coding and the power of visual perspectives on data, enabling rapid insight generation.



%CCT: A tree visualization designed for embedding in code environments

A model of how visualization and code-based analysis can be integrated



1. Scully-Allison, Connor, Katy Williams, Stephanie Brink, Olga Pearce, and Katherine E. Isaacs. "A Tale of Two Models: Understanding Data Workers' Internal and External Representations of Heterogeneous Data" Submitted to: IEEE VIS (2024).

2. Scully-Allison, Connor, Ian Lumsden, Katy Williams, Jesse Bartels, Michela Tauber, Stephanie Brink, Abhinav Bhatel, Olga Pearce, and Katherine E. Isaacs. "Design Concerns for Integrated Scripting and Interactive Visualization in Notebook Environments." IEEE Transactions on Visualization and Computer Graphics (2024).