Improvise is an information visualization builder and browser that has been used to explore census data, (shown at right), ham radio communications, historic hotel guest visitation patterns, election results, hydro-graphics, MP3 music collections, the chemical elements, and even the interactive structure of its own visualizations in situ.

In Improvise, users construct and explore highly-coordinated visualizations with multiple views interactively. By coupling a declarative visual query language with a shared-object coordination model, users gain precise control over how navigation and selection affects the appearance of data across multiple views, using a possibly infinite number of variations on well-known coordination patterns such as synchronized scrolling, overview+detail, brushing, drill-down, and semantic zoom. As a result, it is practical to build applications with more views and richer coordination than in other visualization systems.

Improvise is a fully implemented, open source Java application. Improvise visualizations are saved to and loaded from disk as serialized XML documents in a self-contained, platform-independent format. Building and browsing activities are integrated in a single, live user interface that lets users alter visualizations quickly and incrementally during data exploration.

Ongoing work in Improvise is focused on development of visual tools for exploring the space and time characteristics of human interaction in complex social networks. Visual identification and comparison of patterns of recurring events is an essential feature of such tools. One such tool (shown at left) enables exploration of hotel visitation patterns in and around central Pennsylvania at the end of the 19th century. A wrapping spreadsheet display, called Reruns, reveals cyclic patterns of geographic events in multiple overlapping natural and artificial calendars. Patterns of travel can be discerned by dynamically filtering on arbitrary groups of dates, guests, and hometowns. The tool is in active development through an iterative process of data collection, hypothesis, design, discovery, and evaluation in close collaboration with the historical geographers who use the tool in their research. Several discoveries have inspired ongoing data collection and plans to expand exploration to include historic weather records and railroad schedules.