Interactive Data Visualization

Strategies and Key Technologies

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Interactive Data Visualization: Strategies and Key Technologies

Though lazy clichés have cheapened most observations on the human spirit, the idea of man's inherent desire to explore holds its value. That need to dig deeper, go farther, and think bigger is manifest in the world of business intelligence (BI). Interactive data visualization tools allow end users to drill down from an initial finding and investigate the underlying data and its various contributors and implications. This report, based on 643 responses to Aberdeen Group's 2014 Business Analytics survey, examines the strategies and key technologies that accompany the adoption of interactive data visualization.

Different Strokes for Different Folks

Aberdeen asked data visualization adopters what strategic actions around BI they had taken or planned to take in the coming year (Figure 1). Going into 2014, those with interactive data visualizations are 48% more likely than static visualizers to have a strategy for creating more self-sufficient BI users. Interactive visual discovery tools enable the free exploration of information, and that user-reliance roadblocks should not encumber that freedom. Data visualization adopters want users to engage with data without an IT middleman. Every second wasted relying on others is a second that could have been spent generating insight. Creating more self-sufficient users also means building the user skillset necessary for optimized data interaction. Aberdeen's report, *Picture this: Self-Service BI through Data Discovery and Visualization*, touches upon additional connections between interactive and self-service BI philosophies.

Figure I: Differing BI Strategies
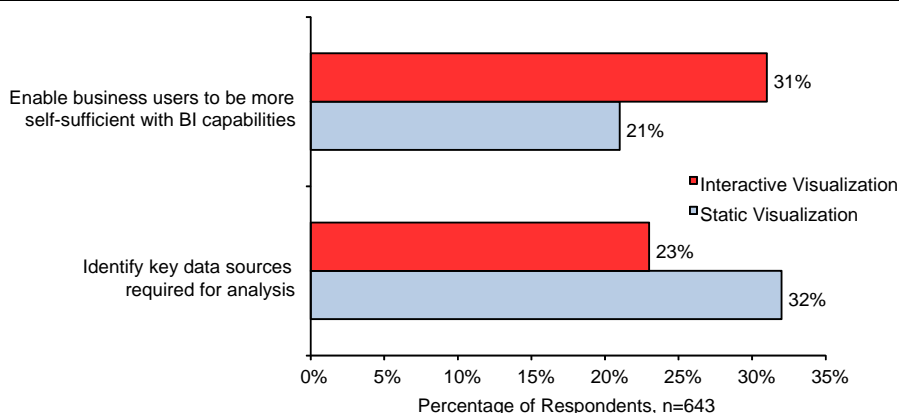
Source: Aberdeen Group, February 2014

Analyst Insight

Aberdeen's Insights provide the analyst's perspective on the research as drawn from an aggregated view of research surveys, interviews, and data analysis.

Survey Definition

Data was collected in February 2014 from 643 survey respondents using data visualization. Interactive visualization allows users to change the visual representation of data, select sub-sets of data, and connect directly to data sources to allow the user to drill down from summary reports to specific data points. Static visualization includes pre-packed spreadsheets or reports with flat images and minimal underlying data available. The breakdown of interactive versus static visualization adopters was as follows:

√ Interactive visualization: 219 respondents (34%)

√ Static visualization: 424 respondents (66%)

Those who lack freedom crave structure. Static visualizers are **39%** more likely to make the strategy of identifying key data sources required for analysis a top one for the coming year. Static BI users, constrained by the limitations of their visual tools, need to be guided down the proper analytical avenues. Interactive visualization adopters don't need to place as much focus on finding key data sources, because their users do it for themselves. The need to identify key data sources is also indicative of static visualizers lagging behind interactive visualizers in their overall data maturity. By drilling down into visuals and exploring fresh angles, users find the ideal data sources to examine. They also avoid the danger of analytical tunnel vision — focusing only on the neatly prepared data on their screen. Identifying data sources for analysis is also a strategy that leans on IT departments, and as _recent Aberdeen research_ shows, their plates are plenty full already.

Supporting Interactive Visualization

Interactive visualization doesn't just happen after strategies are drawn up. Successful implementation requires executive buy-in and deliberate supporting infrastructure (Figure 2). Sixty-nine percent (**69%**) of interactive visual adopters got to their current plane of BI enlightenment with the help of an executive-level champion for analytics. BI users benefit from an ally in the C-suite who understands their wants and needs, and will support innovative analytical initiatives. The executive champion can stump for new technologies and procure the resources BI projects need to impact decision making across the organization. BI investments, like the upgrade from static to interactive visualization, need a guiding hand to demonstrate potential return on investment (ROI) to other gatekeepers at the highest level.

Figure 2: Fostering Successful Visual Discovery
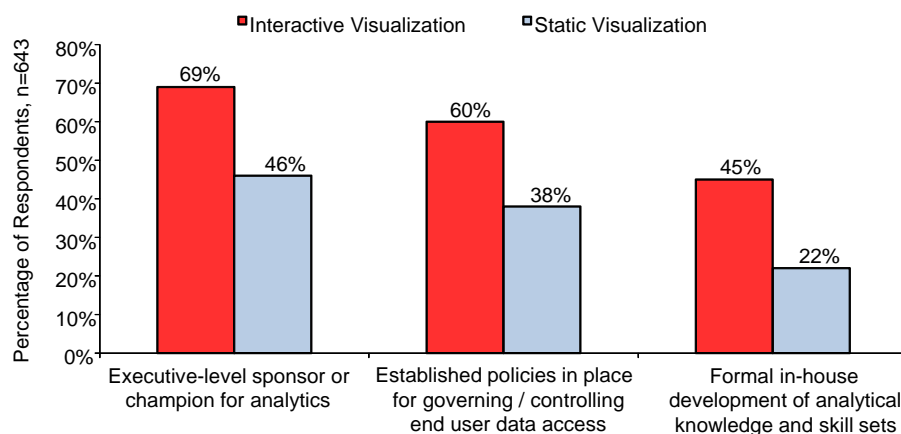
Source: Aberdeen Group, February 2014

Exploratory freedom is important to interactive visualization, but some organizations need to set limits. Sixty percent (**60%**) of interactive visualizers have established policies in place for governing and controlling end user data

Aberdeen's respondent pool of 219 interactive visualization users includes individuals in the following functions:

√ Information Technology: 22%

√ Corporate Management: 16%

√ Business Development / Sales: 13%

√ Marketing: 11%

√ Operations: 7%

√ Logistics / Supply Chain: 5%

access. As end users cull data and perform analysis, established data governance ensures compliance with internal policies and any pertinent regulations. Security and data privacy rules are paramount to remaining legally protected while actively encouraging data exploration. Limiting data access can also hush the statistical noise produced by an organization's full complement of data.

Limiting end users does not mean hamstringing their analytical empowerment. Interactive visualizers are over twice as likely as static visualizers to have formal in-house programs for the development of analytical skill sets and knowledge. This investment fosters truly self-sufficient users that will drill down from their dashboards to find buried insight. In-house programs can also build user skillsets that are tailor-made to explore data and get the most out of interactive visual discovery. Despite these benefits, more than half of interactive visualization adopters do not have in-house user development and miss out on opportunities for user-driven exploration.

Working with Faster, Better Data

Several valuable analytical technologies emerge as a supporting cast for interactive visualization. Seventy percent (70%) of organizations with interactive charts and dashboards have real or near real-time analytics, making them over twice as likely as static visualizers to work with streaming data. Not only are static visualizers working with rigid charts and graphics that preclude creative data exploration, the data feeding those visuals is likely to be stale or arriving too late. Aberdeen's report, _Real-Time Data Visualization: $%&# It! Do it Live!_, revealed that organizations with real-time visualization obtain critical information within their required decision window 22% more often than those without real-time reporting and analysis.

Figure 3: Key Accompanying Technologies
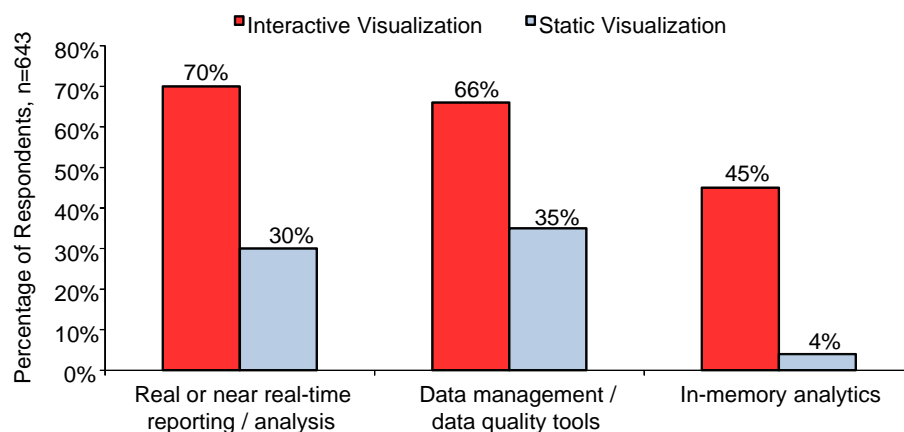
Source: Aberdeen Group, February 2014

Giving users free range to explore enterprise data (likely in real-time) means handling a lot of data and doing it quickly. Sixty-six percent (66%) of interactive visualization adopters have data management and data quality tools. Data management tools help IT with the considerable task of corralling all data types from multiple sources so interactive visualization users are free to explore. For instance, fresh streaming data can be integrated with historical data to give it context. Data quality tools ensure that the information that feeds visuals is complete and truly reflects the situation on the ground.

Finally, 45% of interactive visualization adopters currently use in-memory analytics, compared to just 4% of organizations with static visuals. Users of in-memory visual analytics never wait while data is lethargically pulled from disk storage, and can truly interact with data in real-time. Aberdeen's report, *In-Memory Computing: Enabling Real-time Access to Big Data*, revealed that users of in-memory analytics process over three times the volume of data, at speeds over 100-times faster than non-adopters. In-memory adopters can work, explore, and manipulate large data volumes at the speed of business.

Key Takeaways

The strategies and key technologies around interactive data visualization are fairly simple. BI users want to explore their data, and enlightened organizations provide them with tools and support to facilitate new analytical perspectives and deeper discovery. Organizations with interactive visualizations exhibit the following trends:

- **Interactive visualizers foster self-sufficient users that will find the data they need.** Organizations with interactive data visualization are 48% more likely than static visualizers to have a strategy for making BI users more self-sufficient in 2014. Interactive visualization users need to explore data without continuously relying on IT support. Static visualizers require more guidance on what data sources to analyze, as they lack the necessary infrastructure and freedom to drill down and mine insights at will.

- **Executives must champion data visualization and build intelligent processes and infrastructure around BI tools.** Sixty-nine percent (69%) of interactive visualizers have an executive-level champion for analytical initiatives. C-level promoters of BI tools secure investments in new technologies and ensure that end users are properly supported. Adopters of interactive visualization are also significantly more likely to have established data governance policies and in-house analytical training.

- **Interactive visualizers work with live data moving as swiftly as possible.** Interactive visualizers are over twice as likely as static visualizers to have real-time analytics. Users have the opportunity to work with streaming data and examine multiple angles on business events as they happen. Interactive visualizers are also more likely to

adopt data management and quality tools as well as in-memory analytics.

The human desire for exploration has found a welcome conduit in interactive data visualization as BI users venture towards new analytical horizons.

For more information on this or other research topics, please visit www.aberdeen.com

Related Research	
Real-Time Data Visualization: $%&# It! Do it Live!; October 2013	_In-Memory Computing: Enabling Real-time Access to Big Data_; March 2013
Visualization: Set Your Analytics Users Free; August 2013	_Picture this: Self-Service BI through Data Discovery & Visualization_; March 2012
Analytics Trends 2013: The IT Perspective; April 2013	

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