Building Information Dashboards with R

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Information dashboards are potentially an important way to communicate the current state of a complex process. They are widely used in business and marketing to track the fundamental metrics, or “key performance indicators,” and to highlight exceptional trends and events; either good or bad. Unfortunately, actual implementations do not always live up to their potential (Few, 2006). Often lack of focus is a problem – both visual and data “clutter” distract from effective communication of key points.

The challenges in building an effective dashboard include

- Integrating data from a variety of data sources.
- Detecting trends and exceptional events.
- Building information rich graphical elements.
- Designing a visually attractive, but uncluttered, page.
- Automating timely refresh.
- Easy modification as understanding of requirements evolve.

R is well suited to help with all of these challenges. Data can be easily integrated from various sources: from databases for the core data though spreadsheets for budget numbers. R’s core strength is, of course, analysis and graphics. A number of exceptional time series tools are available. grid (Murrell, 2006) provides the base upon which to build a well structured and information rich page. While basic sparklines (Tufte, 2004) are easy to code in grid, the YaleToolkit package (Emerson & Green, 2007) has some interesting extensions.

The dashR package wraps these elements together into an integrated information dashboard toolkit. It also leverages OpenOffice Draw to visually design the dashboard layout and automatically generate nested grid viewports. Branding support eases inclusion of logos and the use of specific colors. A number functions generating graphing elements which have been optimized for dashboard use are included. In particular, bullet graphs (Few, 2008) are a clean replacement for meters and gauges often used in dashboards which take the metaphor too literally.

References


