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

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