Interactive graphics progresses us beyond the limitations of static statistical displays, particularly for exploring data, and analyzing models. A long missing feature in \textit{R} graphics systems (either base or grid graphics) is support for interactivity. A number of standalone systems exist, GGobi, MANET and Mondrian, which support interactive displays of multivariate data, but they lack the extensibility, and tight integration with modeling that \textit{R} furnishes. There have been several attempts to provide interactive graphics in \textit{R}, from \texttt{locate()} (ages ago!) and \texttt{getGraphicsEvent()} in base \textit{R}, to packages \texttt{RGtk}, \texttt{RGtk2}, \texttt{rggobi}, \texttt{tcltk} and \texttt{iplots}. Iplots, the most recent, provides extensive interactive graphics, using the Java backend. It is fast and includes most common types of plots; basic operations in interactive graphics such as selection and zooming are also supported. However, it lacks some features such as the tour or direct support for color palettes.

In this talk, I will introduce a new \textit{R} package, \texttt{cranvas}, which is based on several other packages to make fast (Qt), flexible (\textit{R}) and elegant interactive statistical graphics in \textit{R}. The drawing is based on two packages \texttt{qtbase} and \texttt{qtpaint}, which provide API's to the Qt libraries in \textit{R}. The data structure is based on plumbr and objectSignals, which bring forward a new data structure called “mutable data”. These packages set up signals and listeners on data (implemented purely with \textit{R}), so that changes in data can trigger changes in plots. The mutable data is also the foundation of a “data pipeline” behind cranvas, where events of statistical analysis importance, like variable transformation or dimension reduction, can be propagated through to the displays. The cranvas package aims to borrow from the design of \texttt{ggplot2}, which is based on a grammar of graphics (Wilkinson, 2005). Currently this package includes common statistical graphics, histogram, scatterplot, bar plot, boxplot, parallel coordinate plot and map, and tours, and common interactions, brushing, identifying, deletion, zooming, panning and different types of linking. Color palettes are supported. This talk will show examples of the usage, how the ideas relate to other interactive graphics work, what is under the hood, and what we are planning in the future.

References

Xie et al. (2012). cranvas: Interactive statistical graphics based on Qt. URL: \url{https://github.com/ggobi/cranvas}.  