

R Solutions for the Pharmaceutical Industry

While SAS remains an important tool in the Pharmaceutical industry, more and more companies are making huge efficiency gains from using R as a complementary tool to streamline their analytic processes.

Scientists and statisticians are benefitting from R's many capabilities in their day-to-day activities. However, R is still often seen as more difficult to learn, not professionally supported and too expensive to validate internally. Mango Solutions offers a wide range of services to help Pharmaceutical organisations overcome all of these issues. We can help your company break down these barriers and benefit from R's powerful analytics, graphics & reporting capabilities. Our customers praise our best-in-class R training, responsive helpdesk, experienced IT support and comprehensive validation services for the R language.

R Training

Mango Solutions have trained many thousands of people over the years. Our courses have evolved over this time driven by current best practice and advances in the art. Our client list includes Merck, GSK, Abbvie, Roche, Janssen, Novartis and Amgen to name but a few.

Over the last 10 years, we have developed a wide range of material with many courses focused specifically on the Pharmaceutical industry.

An example of our courses include:

- Introduction to R for SAS users
- Clinical trial graphics in R
- Automated report generation in R
- Trial simulations in R
- Interactive reporting in R with Shiny
- R for Pharmacometrics

R Consulting

Mango's PhD level Statisticians use advanced techniques to develop and support bespoke analyses and applications. Mango believes that the results of complex analysis should be effective and easy to use. We can provide a flexible offering that enables us to work within existing IT or departmental infrastructures, technologies and cultures. We assist in the complex decisions to be made by groups or by individual users.

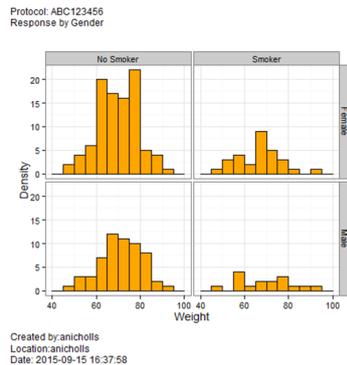
Examples of some of our R consultancy work include:

- Consulting services from *ad hoc* script generation to development and testing of R packages
- SAS to R Code conversion processes
- Code review and validation services
- Creation of user interfaces

SAS Macros that call R

One of R's strengths has always been in its graphics and reporting capabilities. The adoption of new tools can be a daunting task for large organisations with hundreds of users hence it can sometimes seem to be unfeasible.

At Mango we have helped our customers seamlessly integrate R into their existing workflows by building SAS Macros which call R, thus SAS users benefit from R's graphics and reporting capabilities without needing to learn R. These contribute to your existing standardised graphical outputs.



ValidR

The nature of the R language presents some key challenges to Pharmaceutical organisations. R is open source and distributed as 'packages' of community generated code. A large amount of cutting edge analysis is available, but the code quality is variable. Expert review is required to determine which certain packages can be validated.

In response to these challenges, Mango has created its **ValidR** product as a series of scripts and services to deliver a validated build of R to an organisation.

For each validated package we apply our ISO9001 accredited software quality process of identifying requirements, performing code review, testing that the requirements have been met and installing the application in a controlled and reproducible manner. We also validate new packages at your request. Each **ValidR** installation includes ongoing support and maintenance of that build.

Shiny Web Applications

Previously, creating an analytic application to communicate modelling results, provide processing and reporting for data files or to guide pipelines and workflows used to require significant development effort.

Using the JavaScript tools available in modern browsers, analytic applications can be created using the R package Shiny.

Shiny is a web application framework for R which allows users to turn their analysis into interactive web applications with no HTML, CSS or JavaScript knowledge.

Common requirements Mango can help with include:

- Developing bespoke reporting dashboards
- Building applications
- Sharing results

If you would like to find out any more about our services then please email pharma@mango-solutions.co.uk or call us on +44 (0)1249 705450