Integrating R with Existing Software in the London Market

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UMACS

Underwriting Management and Actuarial Consultancy Services

14 July 2014

Overview

1. Brief intro to UMACS
2. The limitations of current software
3. Why R is the answer
4. Real-world case studies

Who are UMACS?

UMACS is a Lloyd's & London Market actuarial consultancy.

UMACS has technical expertise in the London Market, but strong focus on practical solutions which deliver value for the business.

- Set up in 2007 by Tony Jones and Fiachra McLoughlin
- Expanded to14 people in 2014, covering a range of pricing, capital modelling and reserving projects for Lloyds syndicates, brokers and International Reinsurers
- Emphasis on adding value for clients through technical expertise with a strong focus on practical solutions
- R is a close fit for many UMACS projects and our clients

The state of software - spreadsheets

Lloyd's is a £30bn marketplace. A high proportion of big data analysis (pricing, capital, reserving, MI) is done in Excel.

Is this fit for purpose in the 21st Century?

The state of software - spreadsheets

Actuaries use spreadsheets heavily – too heavily?

- ❑ Very good for quick analyses
- ❑ Easy to pass data around
- ❑ A lot of people are comfortable with spreadsheets

However

- They are being pushed beyond their intended function
- Tend to become unwieldy and slow for large data sets or simulations
- Once they get complicated they get very hard to understand e.g.

=IFERROR(IF(P2<100, “SMALL”, IF(Q2=0, 0, SUMIFS(X2:X2001, A2:A2001,”=“&INDIRECT(“Sheet1!”&S2), B2:B2001, VLOOKUP(T2, Sheet1!A2:F5, 3, FALSE)), 0)), “”)

The state of software – actuarial products

Actuaries use other pieces of software for specialised work

- ❑ Tend to be easy to use for a given application
- ❑ A relatively small number of products – so become market 'standards'
- ❑ Support is often available

However

- These software can be expensive
- Off-the-shelf rather than bespoke solutions
- They tend not to 'talk' to each other
- They tend to be 'point and click' which reduces auditability/reproducibility
- They can be 'black boxy'

Why R is the answer

R can overcome the limitations of spreadsheets

- Using RExcel, or UMACS software Ulytica, R can handle all the calculations from Excel quickly and manage the data via a database connection
- R is auditable and code works 'linearly' so reproducible and easy to de-bug
- R makes the best use of different softwares:

Back End	Calculations	Front End	Reporting
SQL Server	R	Excel	Sweave/KnitR
Oracle	C++	Web (Shiny)	LaTeX

Why R is the answer

R means bespoke software, not expensive of the shelf pseudo-solutions

- A proficient R user can circumvent the need for certain softwares
- Transferrable skills- R programming skills can be applied to almost any problem and code can be re-used saving huge amounts of time in the longer term
- R/Database/Front-end solution can be same cost as outsourced Excel model
  - Open code
  - Maintainable and developable by client
  - Can talk to other applications
- … instead of same price for annual license which is locked in.

UMACS Case Studies

Real world case studies

- Integrating pricing and reporting using an Excel front end, a SQL database and Latex reports

- RI options - explore different options quickly from Excel using R and C++ to run the complex simulations

Roundup

- Excel is no longer appropriate for large data sets and simulations
- R is a practical alternative to licensing multiple vendor-models
- R can manage the interface between front-end (XL), data bases (SQL), computer code (C++) and reporting (LaTeX)
- How can the R community get the market to move beyond spreadsheets into R?

Focus on adding value, not just looking cool

Questions?

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