RPGM

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R
A powerful language, but…

- Cannot create user-friendly interfaces for non-R users
- Difficult to create professional reports

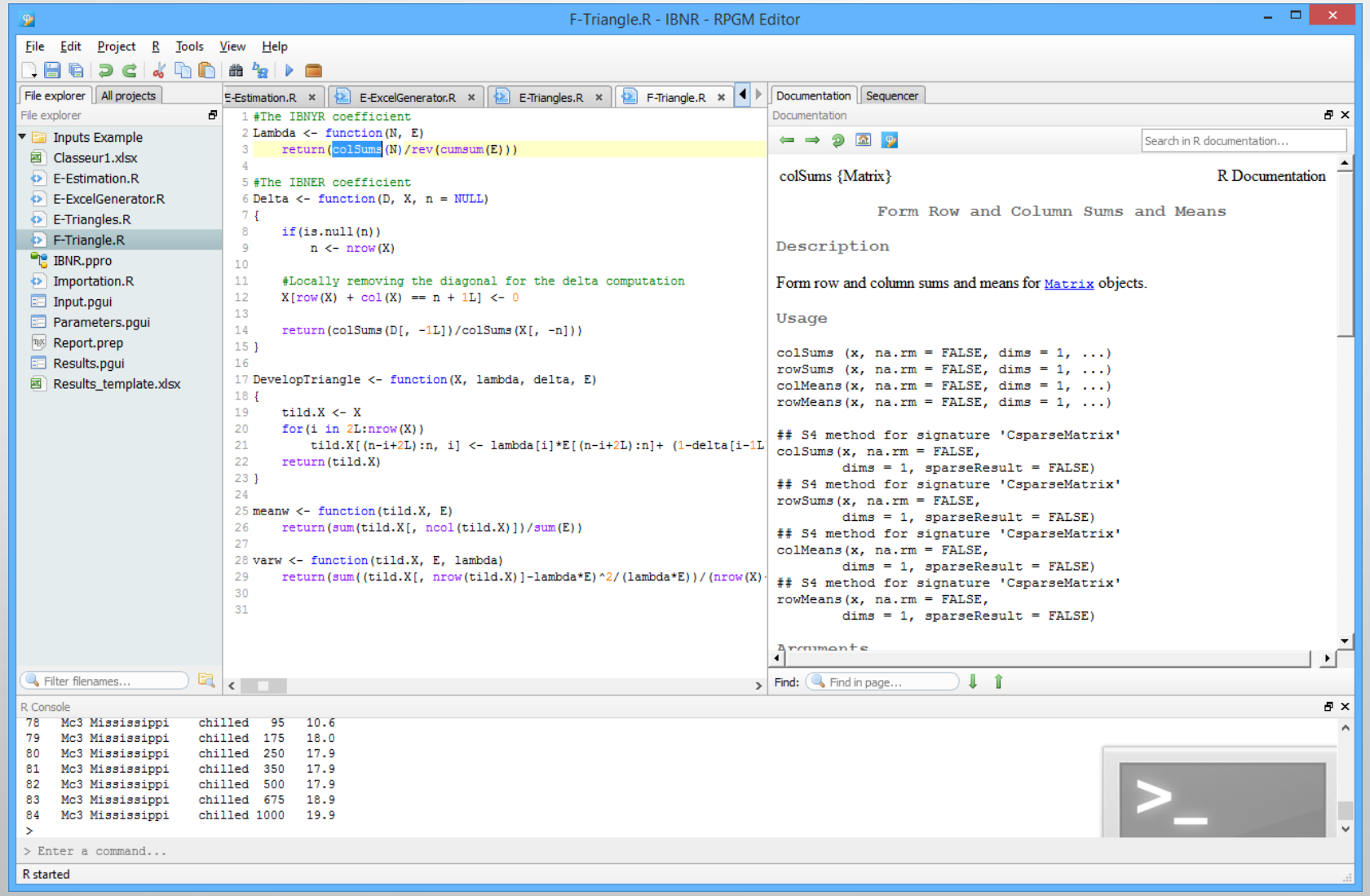
RPGM
Main features

- Creates user-friendly interface for end-users
- Creates PDF reports using LaTeX technology
- Deals with Excel spreadsheets

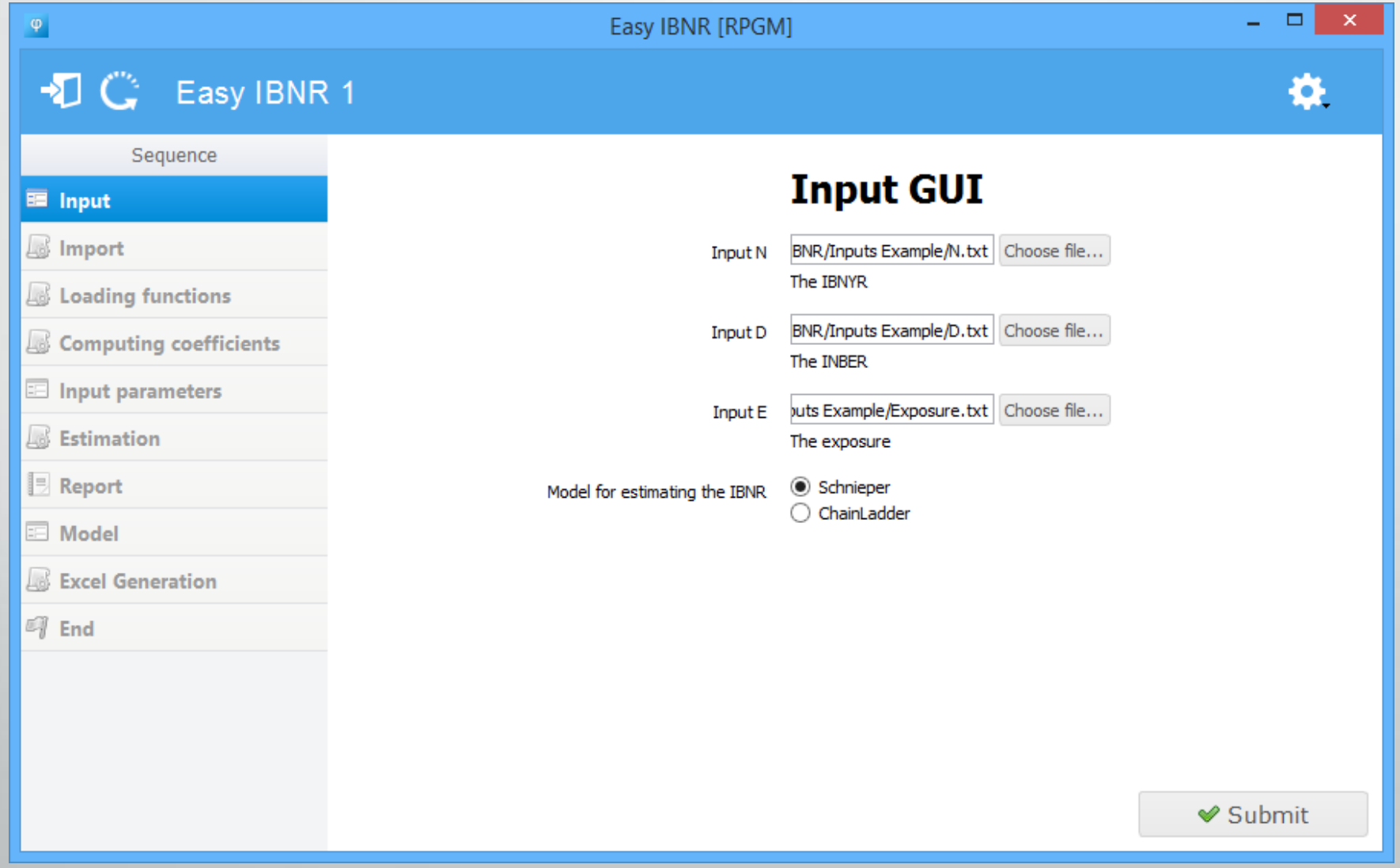
RPGM
How it works

- RPGM is separated into two softwares:
- An « Editor », to develop RPGM programs (used by actuaries)
- A « Client », to execute RPGM programs (used by end-users)

RPGM Editor


F-Triangle.R - IBNR - RPGM Editor
File Edit Project R Tools View Help
File explorer
All projects
Inputs Example
Classeur1.xlsx
E-Estimation.R
E-ExcelGenerator.R
E-Triangles.R
F-Triangle.R
IBNR.ppro
Importation.R
Input.pgui
Parameters.pgui
Report.prep
Results.pgui
Results_template.xlsx
#The IBNYR coefficient
Lambda <- function(N, E)
return(colSums(N)/rev(cumsum(E)))
#The IBNER coefficient
Delta <- function(D, X, n = NULL)
if(is.null(n))
n <- nrow(X)
#Locally removing the diagonal for the delta computation
X[row(X) + col(X) == n + 1L] <- 0
return(colSums(D[, -1L])/colSums(X[, -n]))
DevelopTriangle <- function(X, lambda, delta, E)
tild.X <- X
for(i in 2L:nrow(X))
return(tild.X)
meanw <- function(tild.X, E)
return(sum(tild.X[, ncol(tild.X)])/sum(E))
varw <- function(tild.X, E, lambda)
Documentation
Sequencer
colSums {Matrix}
R Documentation
Form Row and Column Sums and Means
Description
Form row and column sums and means for Matrix objects.
Usage
colSums (x, na.rm = FALSE, dims = 1, ...)
rowSums (x, na.rm = FALSE, dims = 1, ...)
colMeans(x, na.rm = FALSE, dims = 1, ...)
rowMeans(x, na.rm = FALSE, dims = 1, ...)
S4 method for signature 'CsparseMatrix'
colSums(x, na.rm = FALSE,
dims = 1, sparseResult = FALSE)
S4 method for signature 'CsparseMatrix'
rowSums(x, na.rm = FALSE,
dims = 1, sparseResult = FALSE)
S4 method for signature 'CsparseMatrix'
colMeans(x, na.rm = FALSE,
dims = 1, sparseResult = FALSE)
S4 method for signature 'CsparseMatrix'
rowMeans(x, na.rm = FALSE,
dims = 1, sparseResult = FALSE)
Arguments
R Console
78 Mc3 Mississippi chilled 95 10.6
79 Mc3 Mississippi chilled 175 18.0
80 Mc3 Mississippi chilled 250 17.9
81 Mc3 Mississippi chilled 350 17.9
82 Mc3 Mississippi chilled 500 17.9
83 Mc3 Mississippi chilled 675 18.9
84 Mc3 Mississippi chilled 1000 19.9
> Enter a command...
R started

RPGM Client


Easy IBNR [RPGM]
Easy IBNR 1
Sequence
Input
Import
Loading functions
Computing coefficients
Input parameters
Estimation
Report
Model
Excel Generation
End
Input GUI
Input N
BNR/Inputs Example/N.txt
Choose file...
The IBNYR
Input D
BNR/Inputs Example/D.txt
Choose file...
The INBER
Input E
uts Example/Exposure.txt
Choose file...
The exposure
Model for estimating the IBNR
Schnieper
ChainLadder
Submit

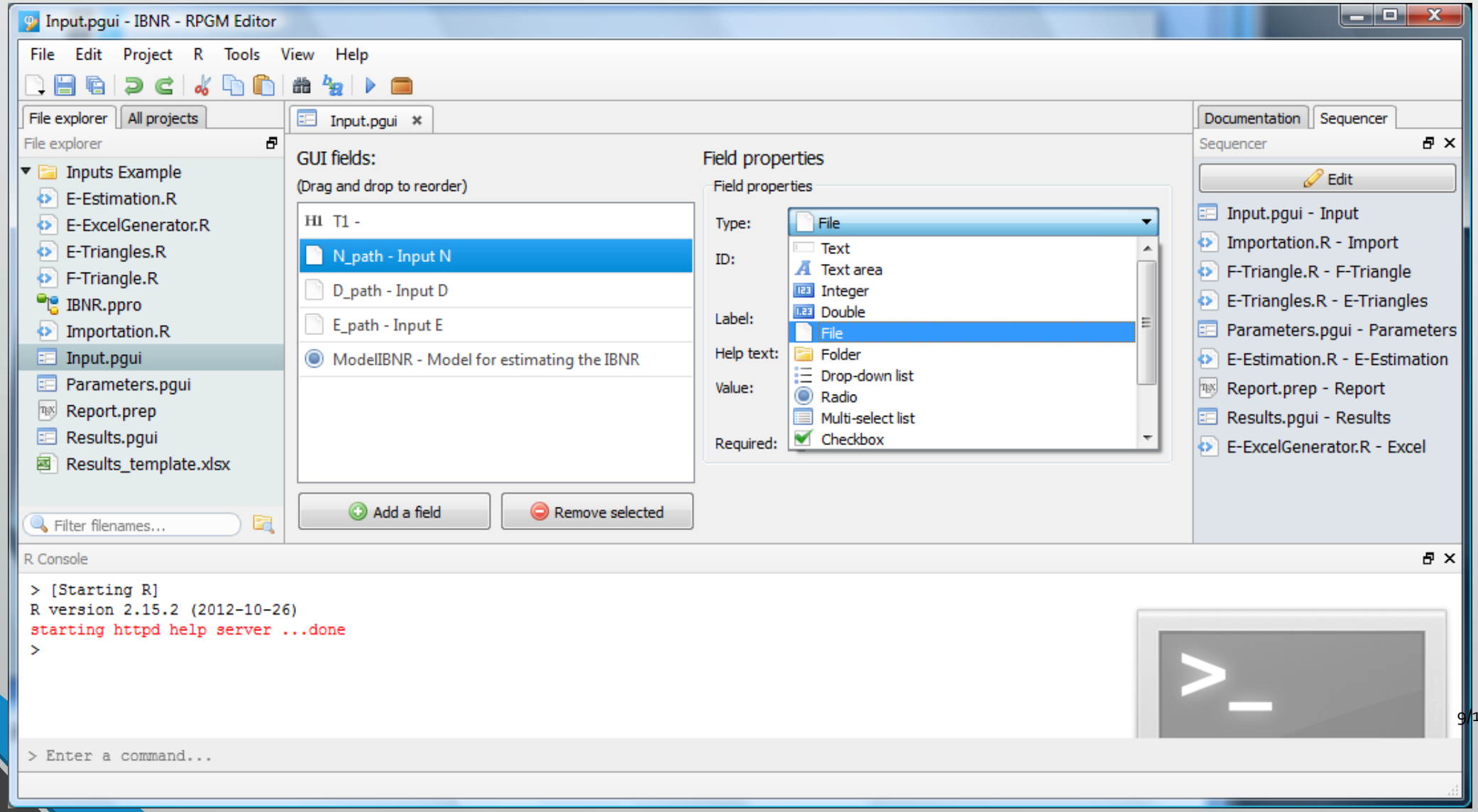
RPGM Editor

- Complete IDE (*Integrated Development Environment*) solution
- Easy to use and user-friendly
- Powerful R script editor with intuitive R help
- Wizards for creating interfaces, sequences and reports with no knowledge

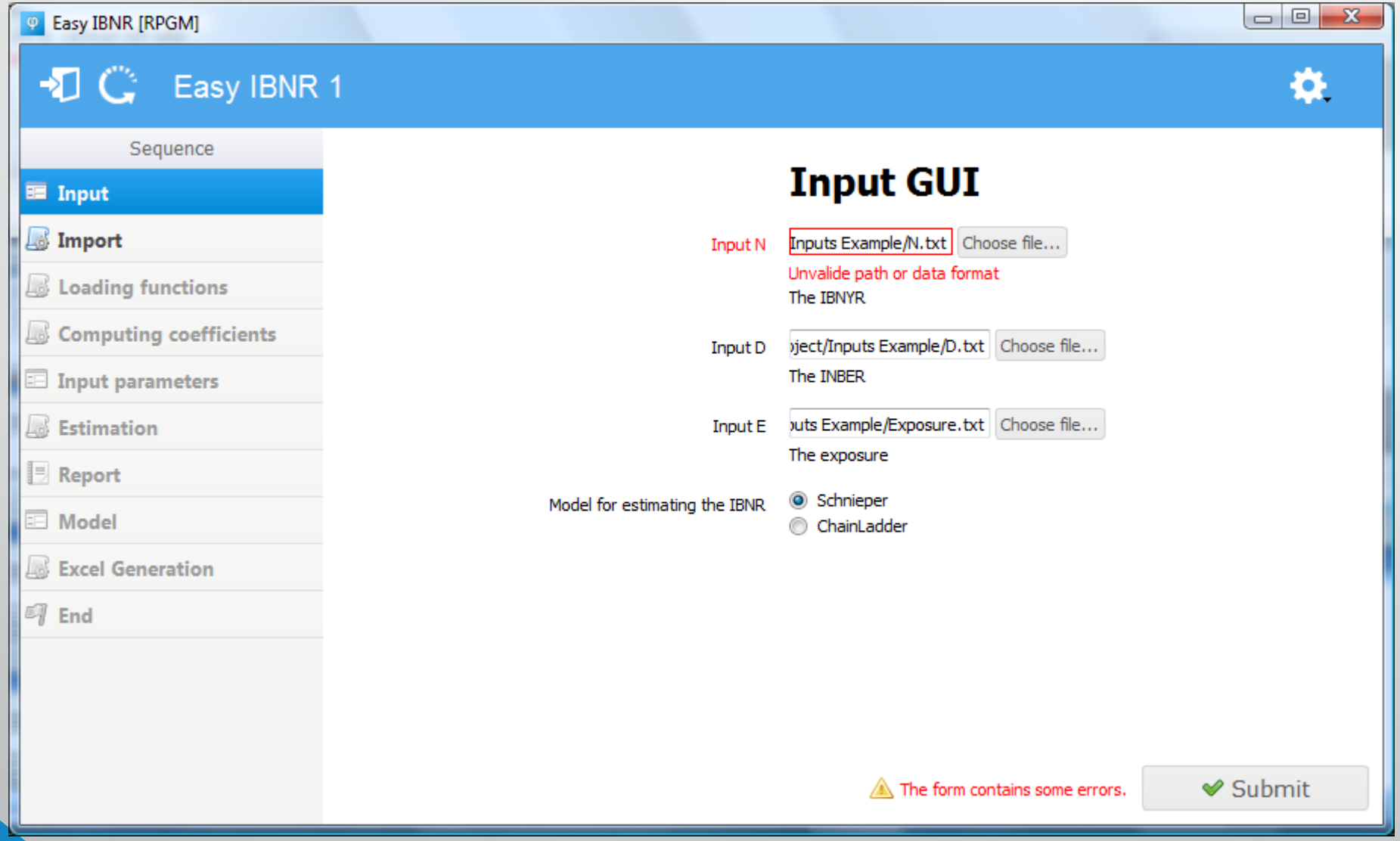
RPGM Client

- Loads and executes a program from the RPGM Editor
- Displays interfaces, executes R scripts and generates reports
- No need to know about R to use it
- Simple and clean, user-friendly and very fast

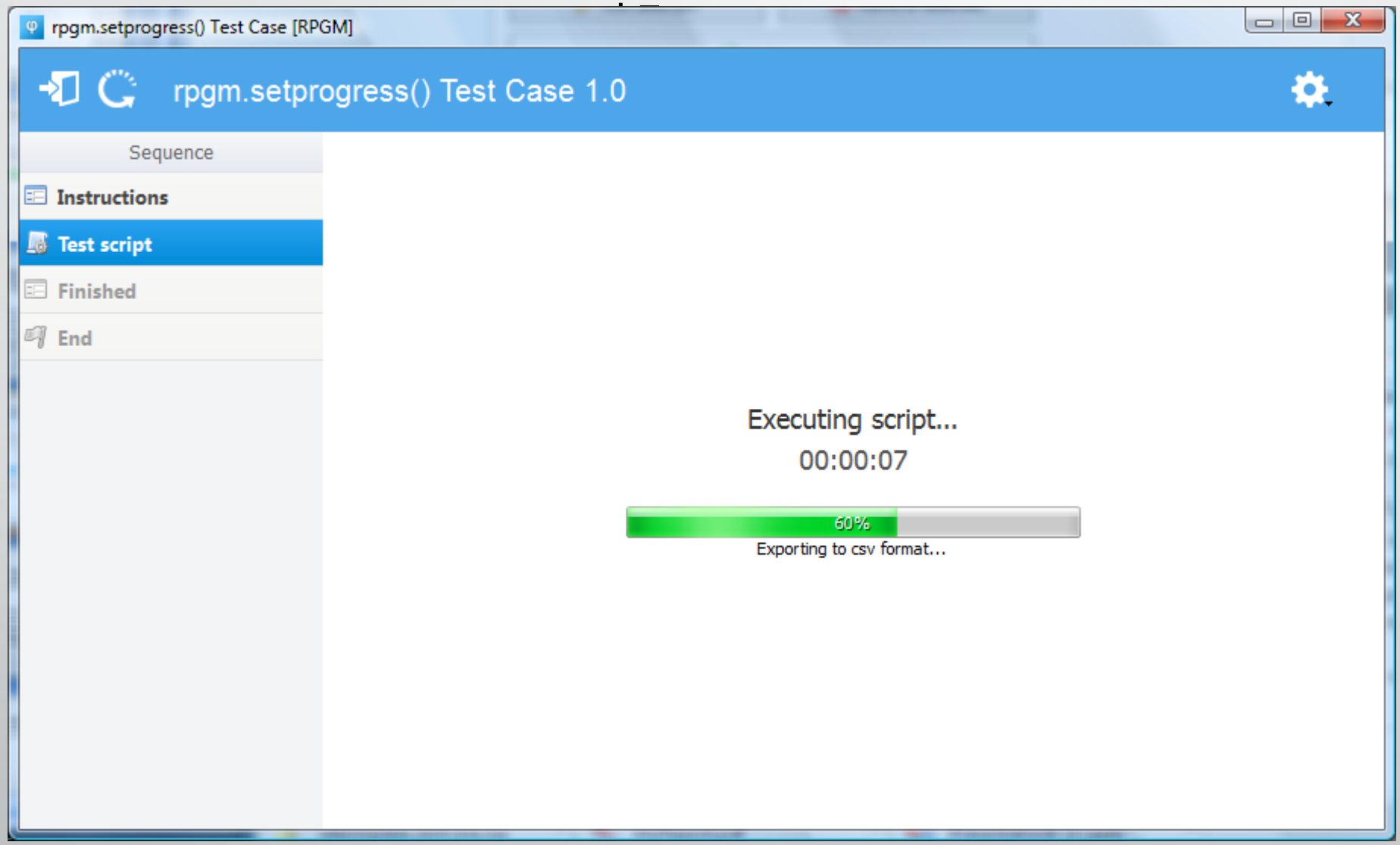
Lot of controls (text inputs, numbers, files, dropdown lists, radioboxes…)
Can be created/modified dynamically from R



Sequence and Error management



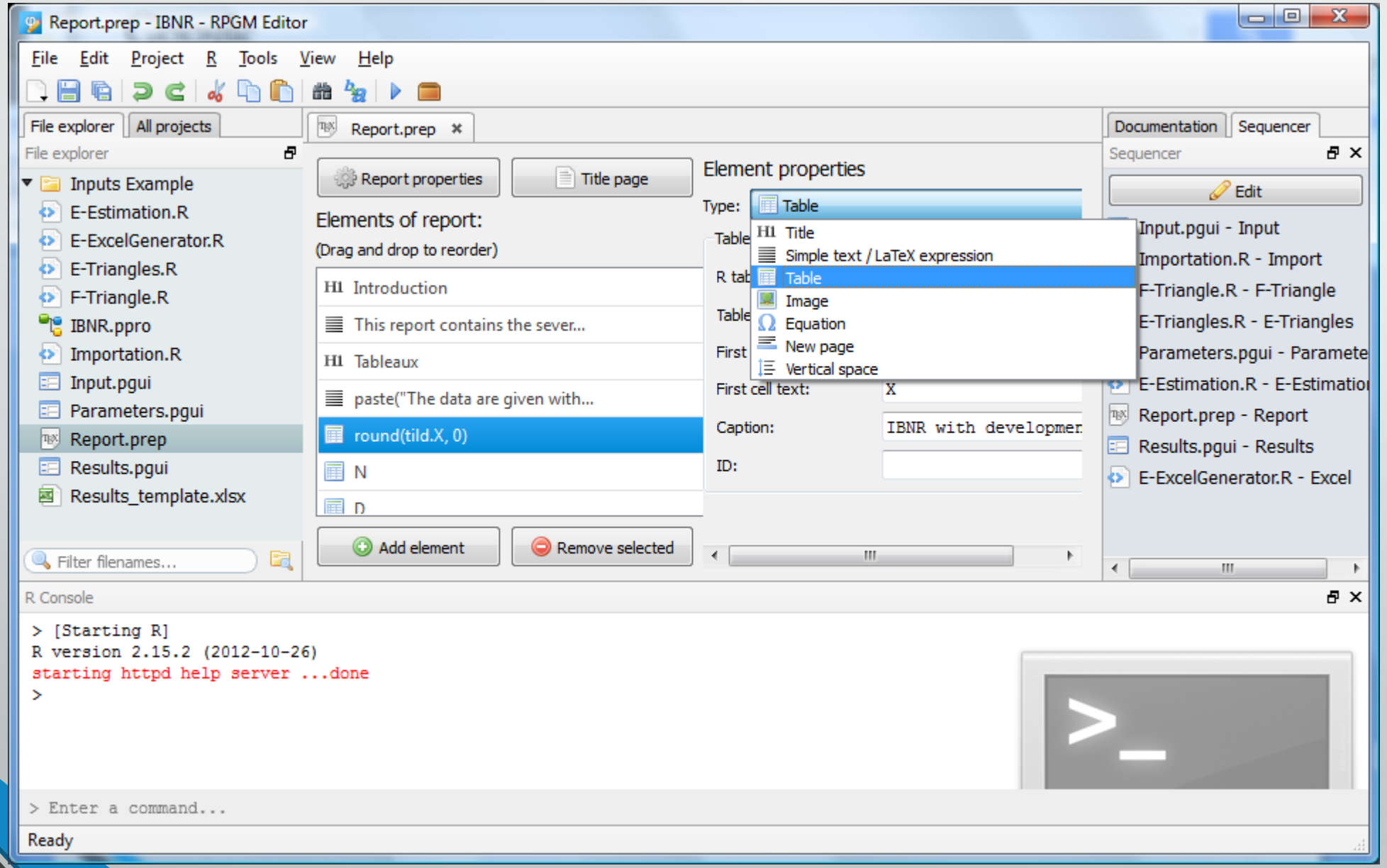
Timerbar with a custom message during execution



RPGM
PDF Report

- No need to know what LaTeX is, even for the developper…
- … but if you know it, you can type raw LaTeX commands anywhere
- Can insert titles, texts, tables, charts created by R, equations…

PDF Editor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IBNR.ppro
Importation.R
Input.pgui
Parameters.pgui
Report.prep
Results.pgui
Results_template.xlsx
Filter filenames...
Report.prep
Report properties
Title page
Elements of report:
(Drag and drop to reorder)
Introduction
This report contains the sever...
Tableaux
paste("The data are given with...
round(tild.X, 0)
N
D
Add element
Remove selected
Element properties
Type:
Table
Title
Simple text / LaTeX expression
Table
Image
Equation
New page
Vertical space
First cell text:
X
Caption:
IBNR with developmer
ID:
Documentation
Sequencer
Sequencer
Edit
Input.pgui - Input
Importation.R - Import
F-Triangle.R - F-Triangle
E-Triangles.R - E-Triangles
Parameters.pgui - Paramete
E-Estimation.R - E-Estimatio
Report.prep - Report
Results.pgui - Results
E-ExcelGenerator.R - Excel
R Console
> [Starting R]
R version 2.15.2 (2012-10-26)
starting httpd help server ...done
>
> Enter a command...
Ready

The final output generated by the end-user with the Client

Report.pdf - Adobe Reader

Fichier Edition Affichage Fenêtre Aide

2 (3 sur 4) 78,4% Commentaire

Signets

- Introduction
- Tableaux
- Inputs and Development

Introduction

This report contains the several results computed with Easy IBNR.

1 Tableaux

The data are given with **6** years.

X	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6
Year 1	250	400	410	410	420	415
Year 2	280	370	370	370	370	366
Year 3	240	390	410	400	405	400
Year 4	200	280	330	327	332	328
Year 5	300	460	484	480	486	480
Year 6	310	460	485	481	487	481

Table 1: IBNR with developments

X	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6
Year 1	250	50	0	0	5	0
Year 2	280	10	10	0	0	0
Year 3	240	80	0	0	0	0
Year 4	200	30	20	0	0	0
Year 5	300	40	0	0	0	0
Year 6	310	0	0	0	0	0

Table 2: IBNYR

D	Dev 1	Dev 2	Dev 3	Dev 4	Dev 5	Dev 6
Year 1	0	-100	-10	0	-5	5
Year 2	0	-80	10	0	0	0
Year 3	0	-70	20	10	0	0
Year 4	0	-50	30	0	0	0
Year 5	0	-120	0	0	0	0
Year 6	0	0	0	0	0	0

Table 3: IBNER

Report.pdf - Adobe Reader

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3 (4 sur 4) 78,4% Commentaire

2 Inputs and Development

The Figure 1 is the corresponding representation.

2

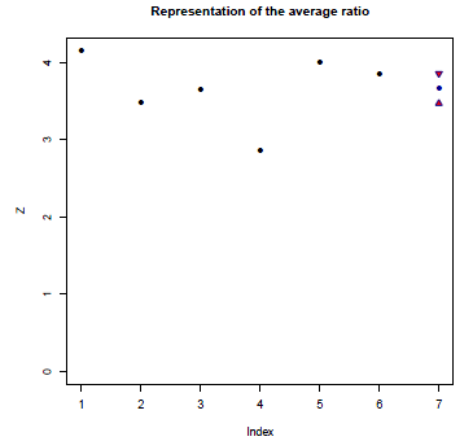


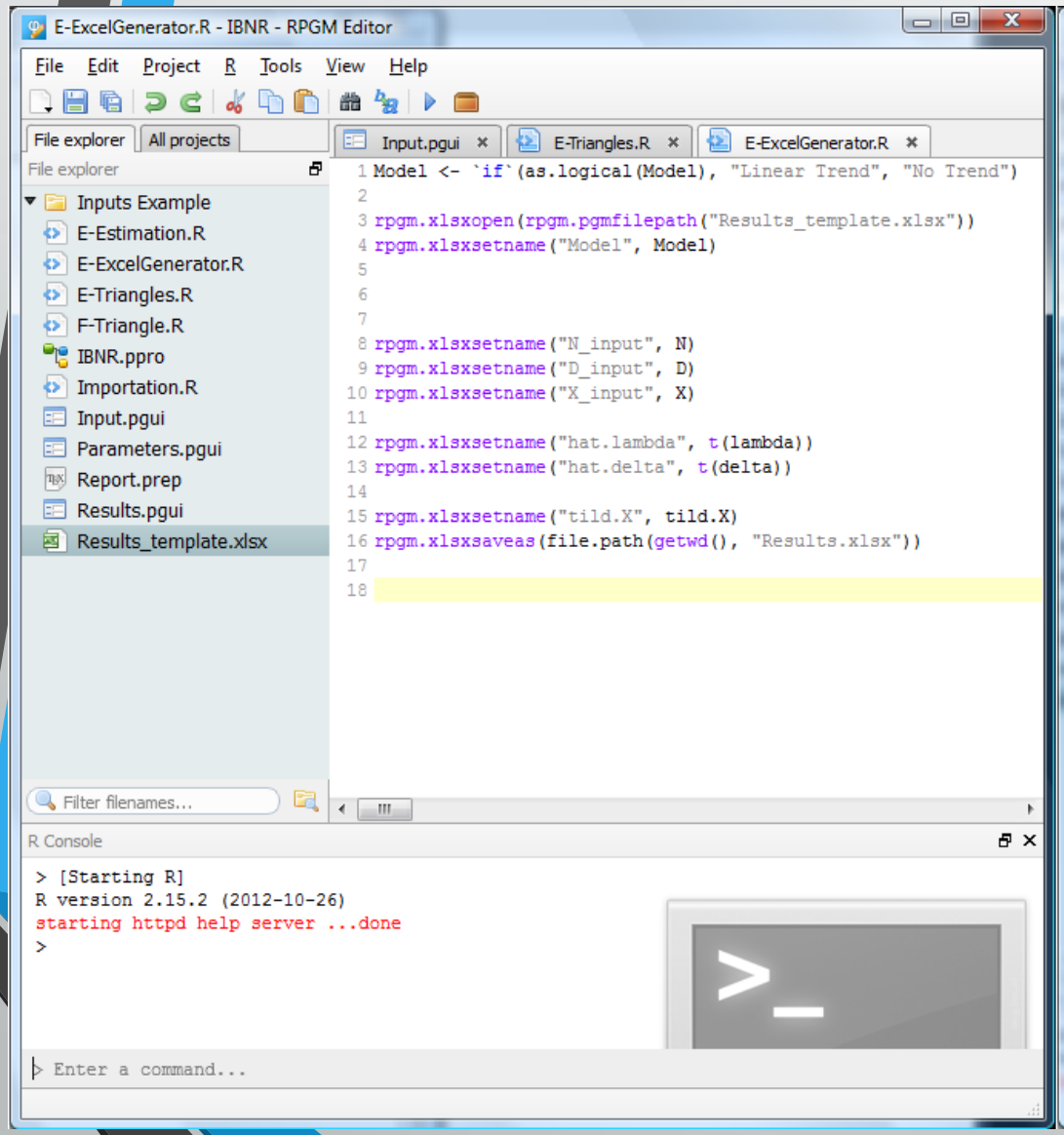
Figure 1: The évolution of the claim ratio and the mean estimator for next year

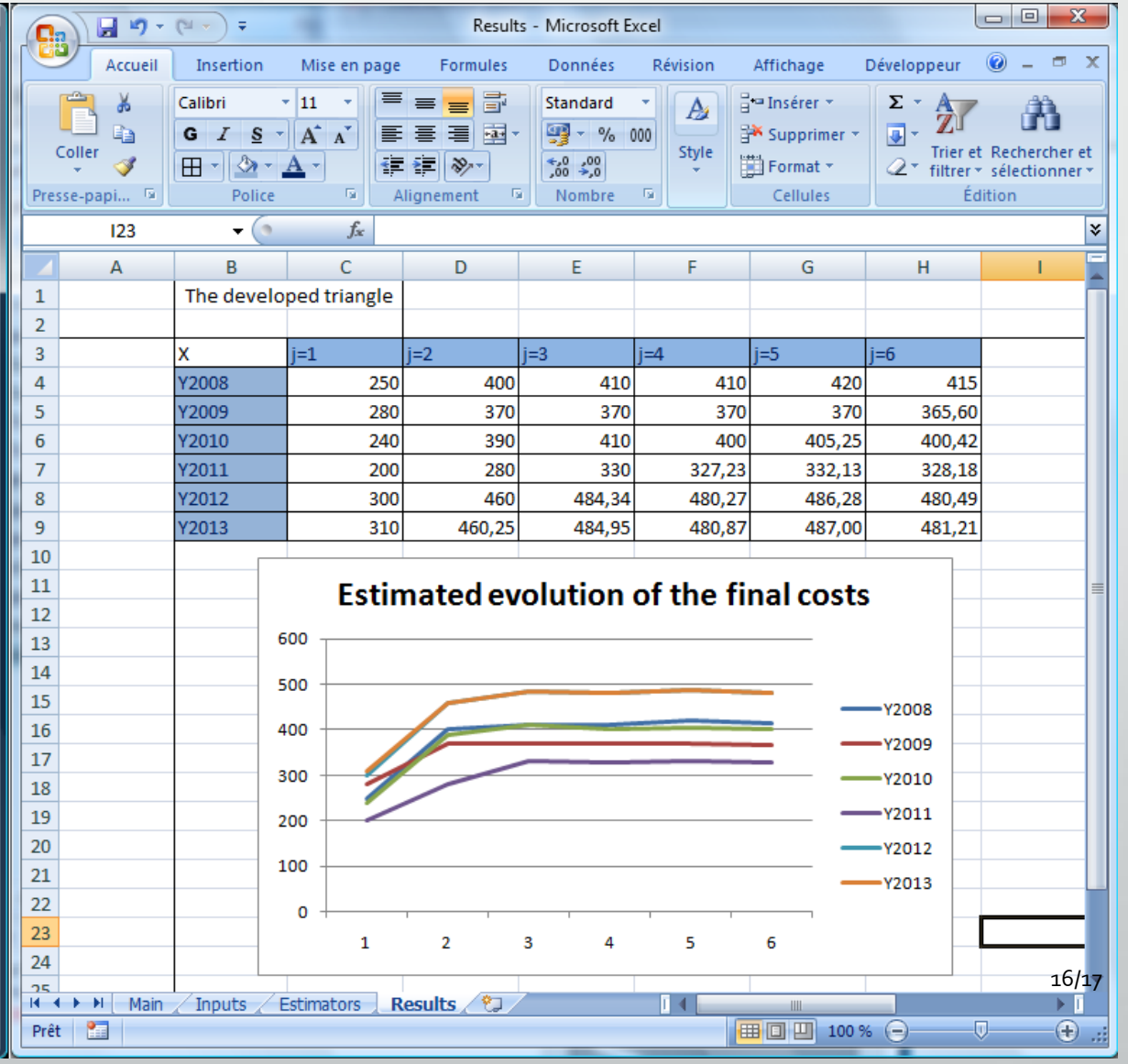
RPGM
Spreadsheets

An easy way to work with spreadsheets

- Create a spreadsheet and name the cells corresponding to your results
- Tell RPGM to write R values to specific cells
- You will automatically get your Spreadsheets with your results

Excel spreadsheet in the Editor and as an output in the Client





Software integration

- One version of R and MiKTeX installed by network
- Can use every version of R and MiKTeX
- Once the installation is done, no maintenance for IT