Converging insightful, data-led applications with traditional web applications

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GOALS

- Brief introduction to how things have evolved
- Talk about what we have now
- Demo of this in practice
- Have fun!

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ASSUMPTIONS

- You have written a web app at some point in your life
- You know some basics of Spark and such

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WHERE ARE WE COMING FROM?

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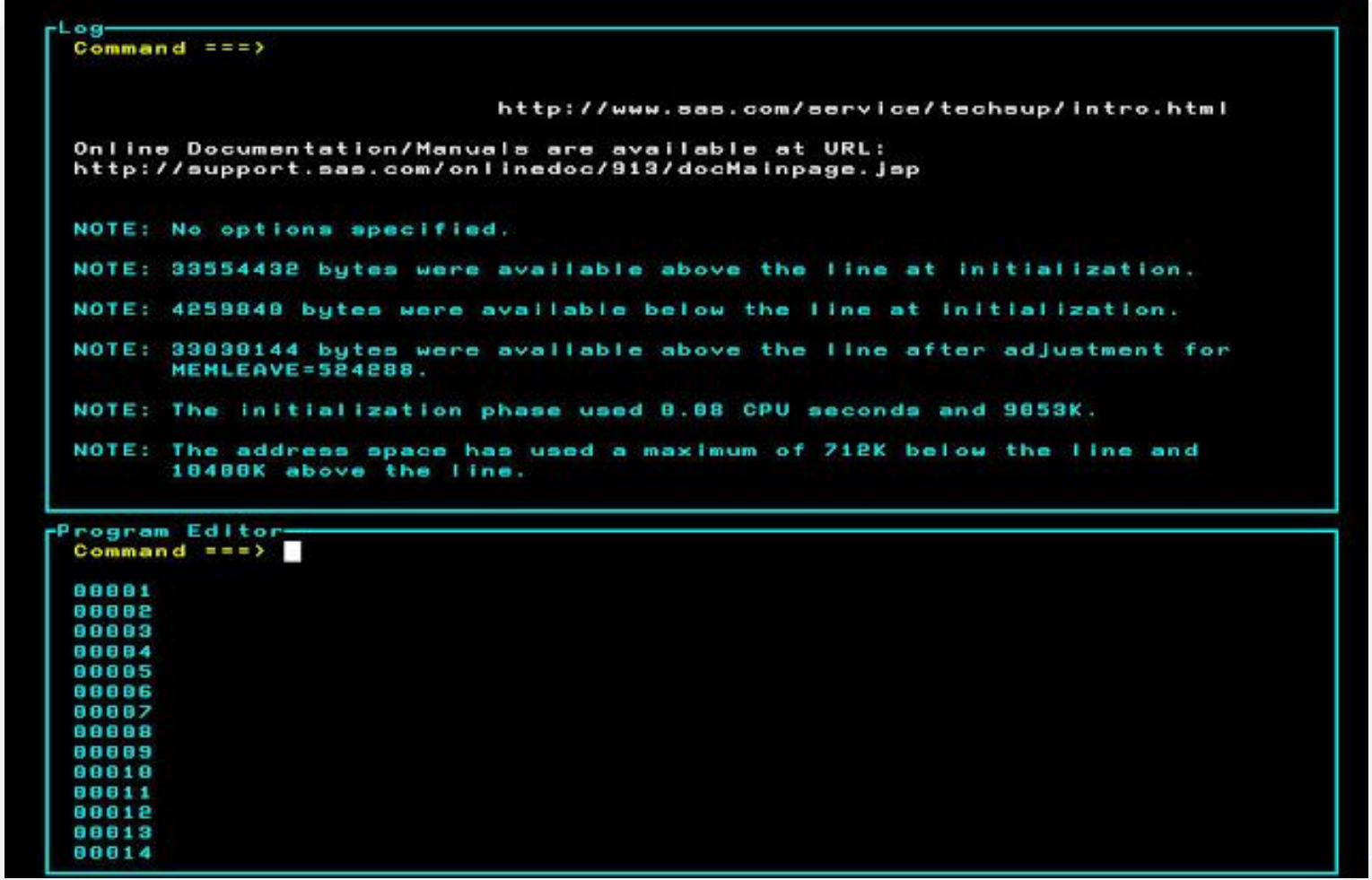
Log
Command ===>
http://www.sas.com/service/techsup/intro.html
Online Documentation/Manuals are available at URL:
http://support.sas.com/onlinedoc/913/docMainpage.jsp
NOTE: No options specified.
NOTE: 33554432 bytes were available above the line at initialization.
NOTE: 4259840 bytes were available below the line at initialization.
NOTE: 33030144 bytes were available above the line after adjustment for MEMLEAVE=524288.
NOTE: The initialization phase used 0.08 CPU seconds and 9853K.
NOTE: The address space has used a maximum of 712K below the line and 10400K above the line.
Program Editor
Command ===>
00001
00002
00003
00004
00005
00006
00007
00008
00009
00010
00011
00012
00013
00014

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```
DATA temp;
  input @1  subj 4.
        @6  f_name $11.
        @18 l_name $6.
        +3 height 2.
        +5 wt_date mmddyy8.
        +1 calorie comma5.;
  format wt_date mmddyy8. calorie comma5.;
  DATALINES;
1024 Alice       Smith  1 65 125 12/1/95  2,036
1167 Maryann     White  1 68 140 12/01/95 1,800
1168 Thomas      Jones  2    190 12/2/95  2,302
1201 Benedictine Arnold 2 68 190 11/30/95 2,432
1302 Felicia     Ho     1 63 115 1/1/96   1,972
  ;
RUN;
```

```
PROC PRINT data = temp;
  title 'Output dataset: TEMP';
  id subj;
RUN;
```


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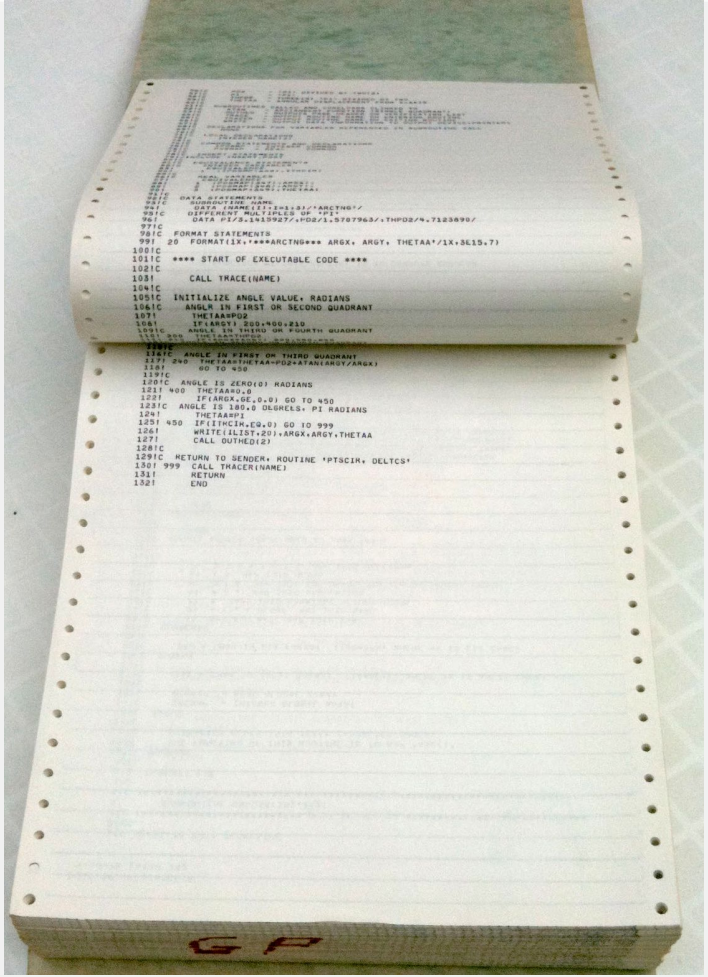
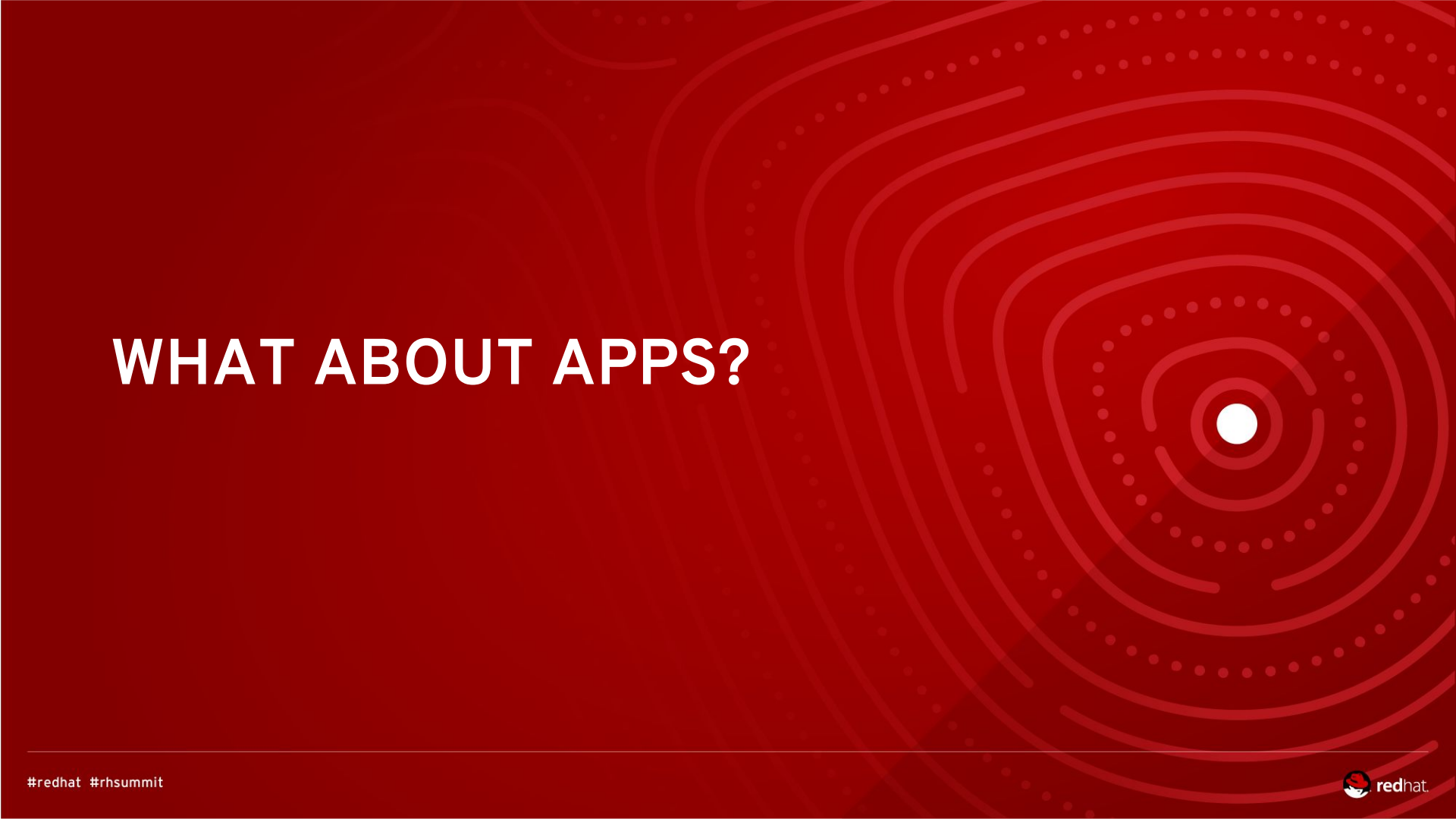


```
C   DATA STATEMENTS
C     SUBROUTINE NAME
      DATA (NAME(I),I=1,3)/'ARCTNG'/
C     DIFFERENT MULTIPLES OF 'PI'
      DATA PI/3.1415927/,PD2/1.5707963/,THPD2/4.7123890/
C
C  FORMAT STATEMENTS
 20   FORMAT(1X,'***ARCTNG*** ARGX, ARGY, THETAA'/1X,3E15.7)
C
C  **** START OF EXECUTABLE CODE ****
C
      CALL TRACE(NAME)
C
C  INITIALIZE ANGLE VALUE, RADIANS
C    ANGLR IN FIRST OR SECOND QUADRANT
      THETAA=PD2
      IF(ARGY) 200,400,210
C    ANGLE IN THIRD OR FOURTH QUADRANT
C
C  ANGLE IN FIRST OR THIRD QUADRANT
 240  THETAA=THETAA-PD2+ATAN(ARGY/ARGX)
      GO TO 450
C
C  ANGLE IS ZERO(0) RADIANS
 400  THETAA=0.0
      IF(ARGX.GE.0.0) GO TO 450
C  ANGLE IS 180.0 DEGREES, PI RADIANS
      THETAA=PI
 450  IF(ITHCIR.EQ.0) GO TO 999
      WRITE(ILIST,20),ARGX,ARGY,THETAA
      CALL OUTHED(2)
C
C  RETURN TO SENDER, ROUTINE 'PTSCIR, DELTCS'
 999  CALL TRACER(NAME)
      RETURN
      END
```

WHAT ABOUT APPS?



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NEXT ERA

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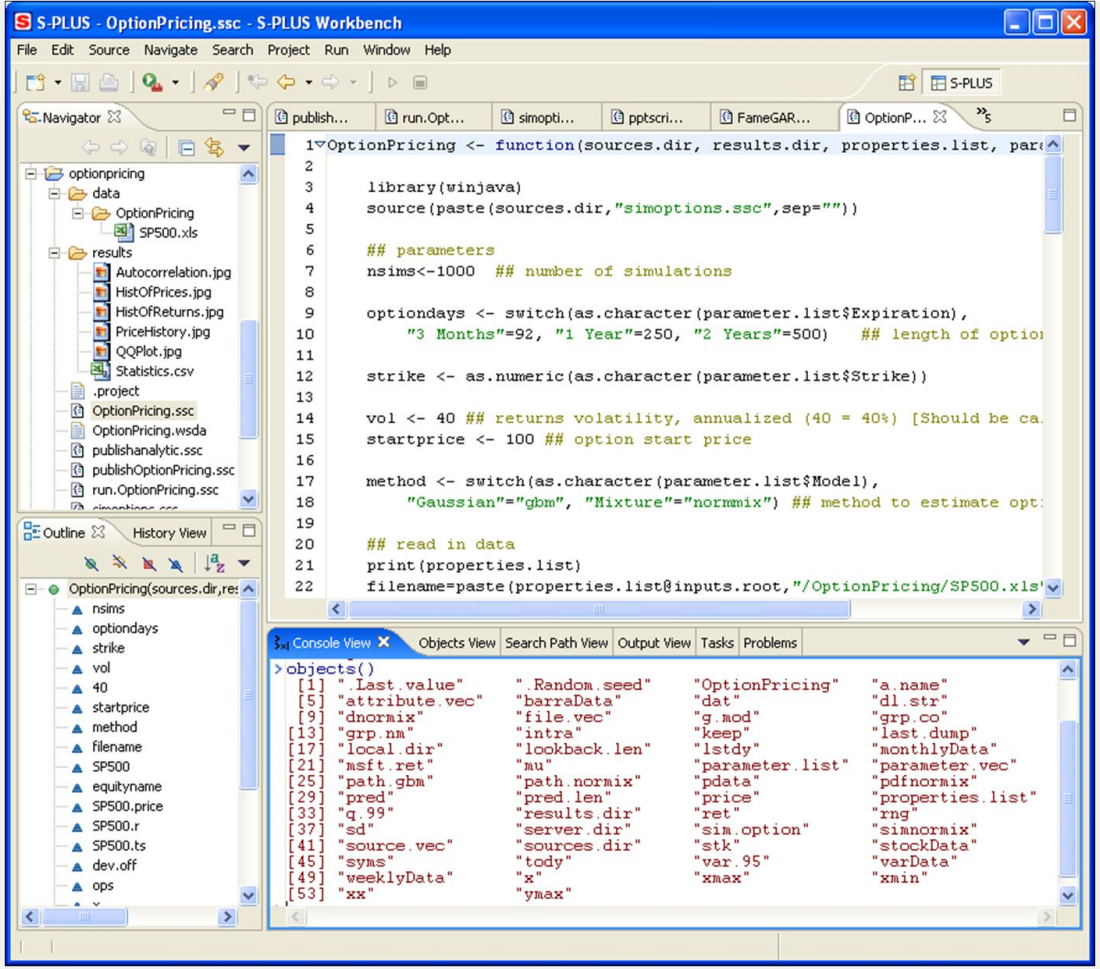
S-PLUS - OptionPricing.ssc - S-PLUS Workbench
File Edit Source Navigate Search Project Run Window Help
S-PLUS
Navigator
optionpricing
data
OptionPricing
SP500.xls
results
Autocorrelation.jpg
HistOfPrices.jpg
HistOfReturns.jpg
PriceHistory.jpg
QQPlot.jpg
Statistics.csv
.project
OptionPricing.ssc
OptionPricing.wsda
publishanalytic.ssc
publishOptionPricing.ssc
run.OptionPricing.ssc
Outline
History View
OptionPricing(sources.dir,res
nsims
optiondays
strike
vol
40
startprice
method
filename
SP500
equityname
SP500.price
SP500.r
SP500.ts
dev.off
ops
publish...
run.Opt...
simopti...
pptscri...
FameGAR...
OptionP...
1 OptionPricing <- function(sources.dir, results.dir, properties.list, par
2
3 library(winjava)
4 source(paste(sources.dir,"simoptions.ssc",sep=""))
5
6 ## parameters
7 nsims<-1000 ## number of simulations
8
9 optiondays <- switch(as.character(parameter.list$Expiration),
10 "3 Months"=92, "1 Year"=250, "2 Years"=500) ## length of optio
11
12 strike <- as.numeric(as.character(parameter.list$Strike))
13
14 vol <- 40 ## returns volatility, annualized (40 = 40%) [Should be ca
15 startprice <- 100 ## option start price
16
17 method <- switch(as.character(parameter.list$Model),
18 "Gaussian"="gbm", "Mixture"="normmix") ## method to estimate opt
19
20 ## read in data
21 print(properties.list)
22 filename=paste(properties.list@inputs.root,"/OptionPricing/SP500.xls'
Console View
Objects View
Search Path View
Output View
Tasks
Problems
> objects()
[1] ".Last.value" ".Random.seed" "OptionPricing" "a.name"
[5] "attribute.vec" "barraData" "dat" "dl.str"
[9] "dnormix" "file.vec" "g.mod" "grp.co"
[13] "grp.nm" "intra" "keep" "last.dump"
[17] "local.dir" "lookback.len" "lstdy" "monthlyData"
[21] "msft.ret" "mu" "parameter.list" "parameter.vec"
[25] "path.gbm" "path.normix" "pdata" "pdfnormix"
[29] "pred" "pred.len" "price" "properties.list"
[33] "q.99" "results.dir" "ret" "rng"
[37] "sd" "server.dir" "sim.option" "simnormix"
[41] "source.vec" "sources.dir" "stk" "stockData"
[45] "syms" "tody" "var.95" "varData"
[49] "weeklyData" "x" "xmax" "xmin"
[53] "xx" "ymax"

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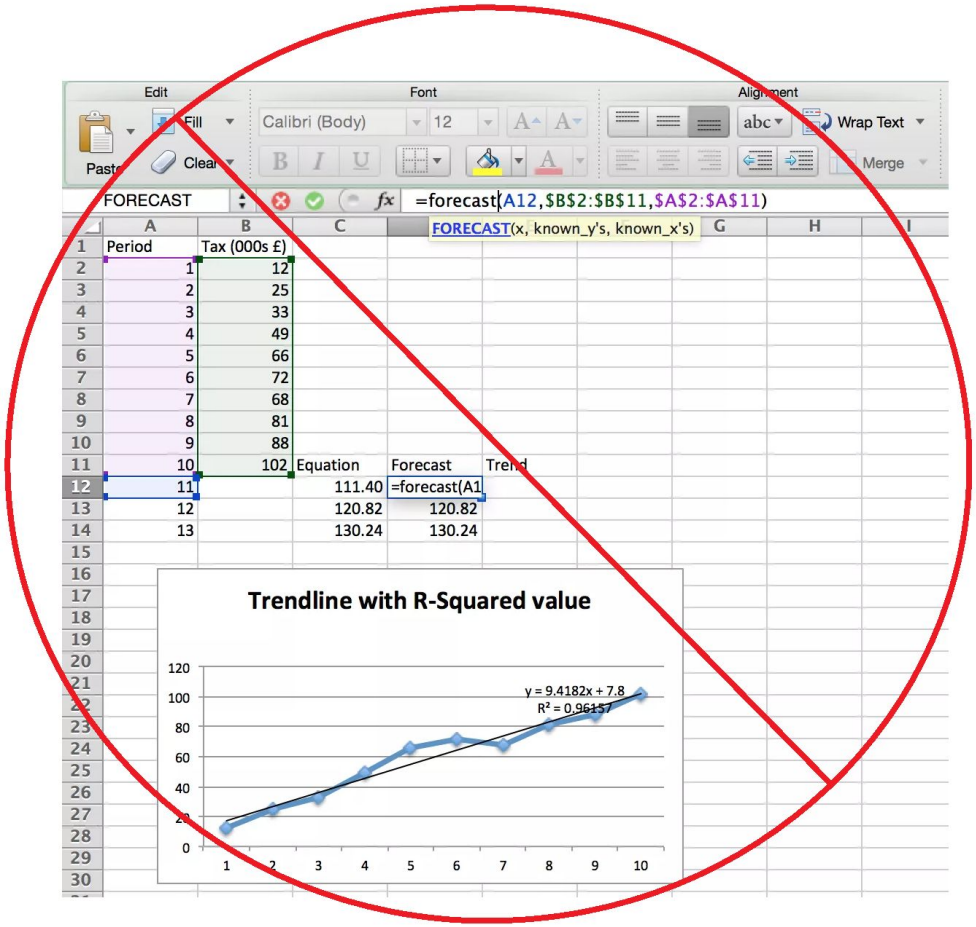
Edit
Font
Alignment
Fill
Calibri (Body)
12
Wrap Text
Clear
Merge
FORECAST
=forecast(A12,$B$2:$B$11,$A$2:$A$11)
FORECAST(x, known_y's, known_x's)
Period
Tax (000s £)
Equation
Forecast
Trend
111.40
=forecast(A1
120.82
120.82
130.24
130.24
Trendline with R-Squared value
y = 9.4182x + 7.8
R² = 0.96157

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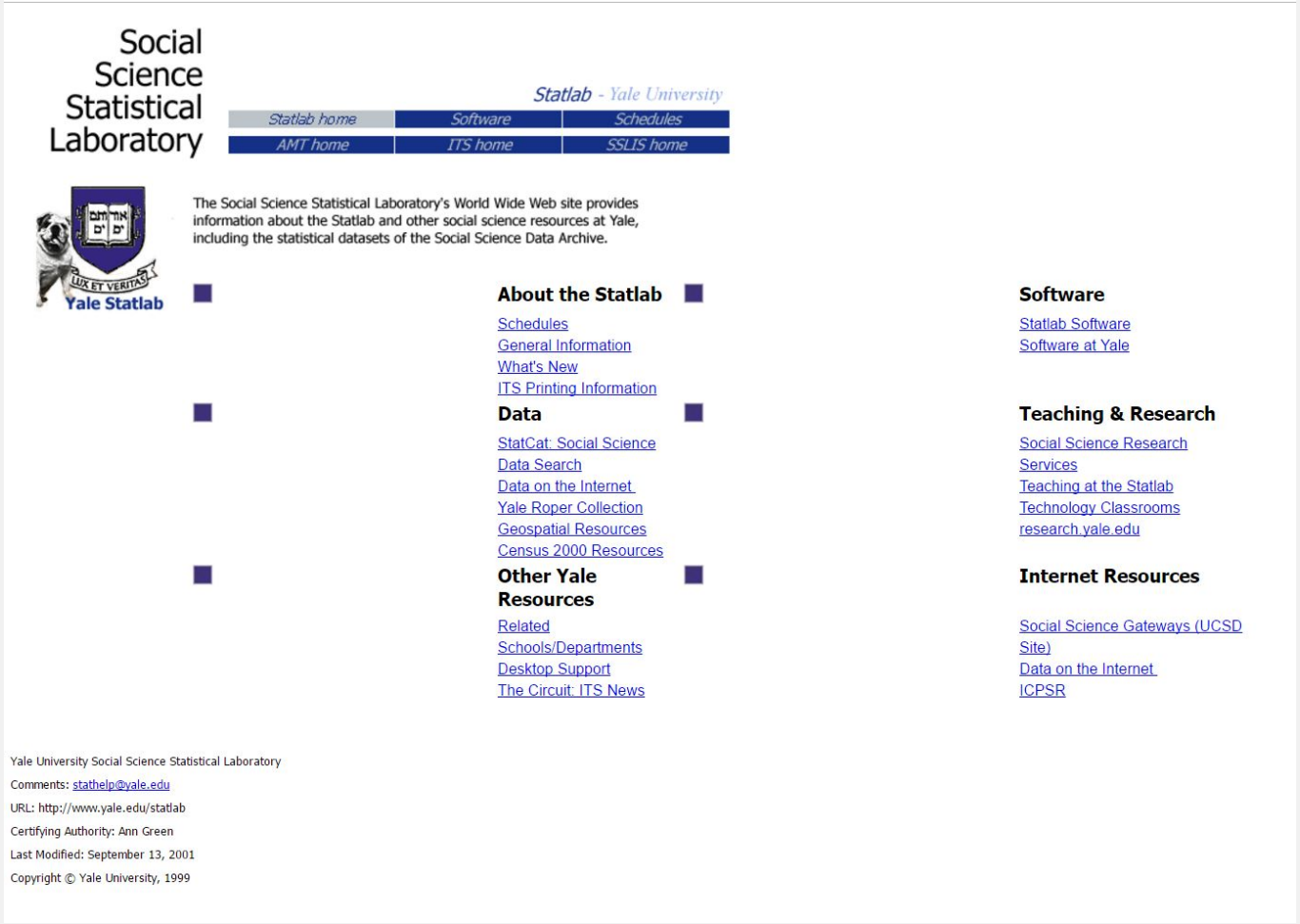
Social Science Statistical Laboratory
Statlab - Yale University
Statlab home
Software
Schedules
AMT home
ITS home
SSLIS home
Yale Statlab
The Social Science Statistical Laboratory's World Wide Web site provides information about the Statlab and other social science resources at Yale, including the statistical datasets of the Social Science Data Archive.
About the Statlab
Schedules
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What's New
ITS Printing Information
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Data
StatCat: Social Science Data Search
Data on the Internet
Yale Roper Collection
Geospatial Resources
Census 2000 Resources
Teaching & Research
Social Science Research Services
Teaching at the Statlab
Technology Classrooms
research.yale.edu
Other Yale Resources
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The Circuit: ITS News
Internet Resources
Social Science Gateways (UCSD Site)
Data on the Internet
ICPSR
Yale University Social Science Statistical Laboratory
Comments: stathelp@yale.edu
URL: http://www.yale.edu/statlab
Certifying Authority: Ann Green
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WELCOME TO PARADISE

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WE HAVE HAD SOME GREAT DEVELOPMENTS

- People figured out how to make commodity hardware do great things
- Distributed software has gotten better
- Programming languages have gotten easier
- CS has put effort into statistical libraries
- The browser has grown up

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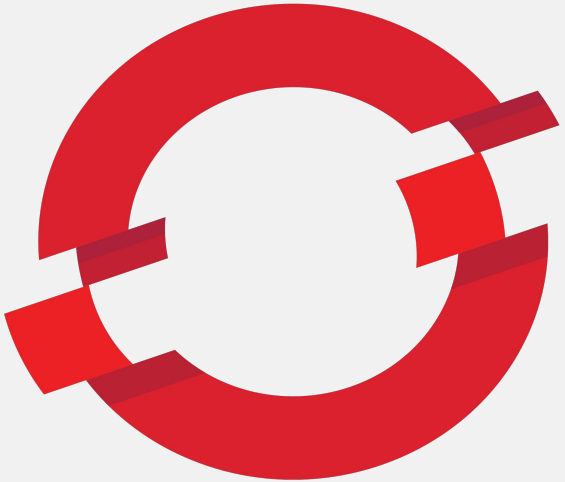
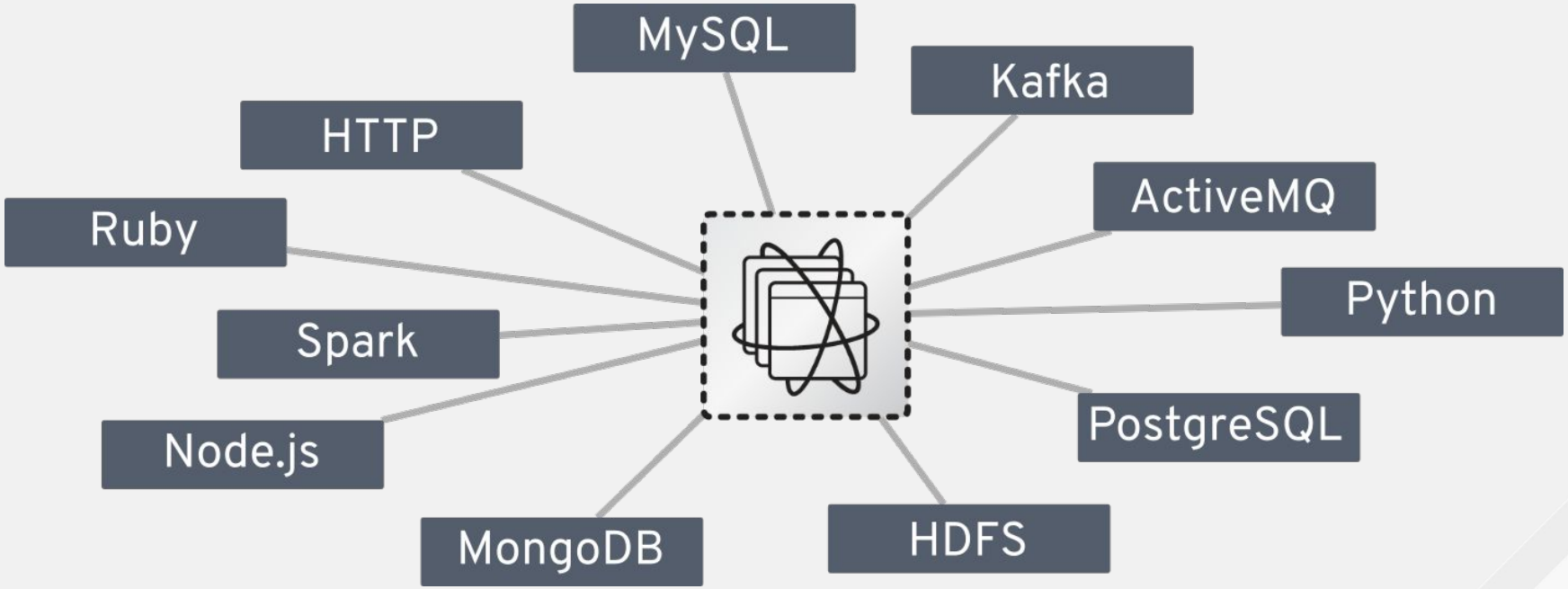
WHAT DOES CONVERGENCE LOOK LIKE?



OPENSHIFT

+

ARCHITECTING YOUR APPLICATION



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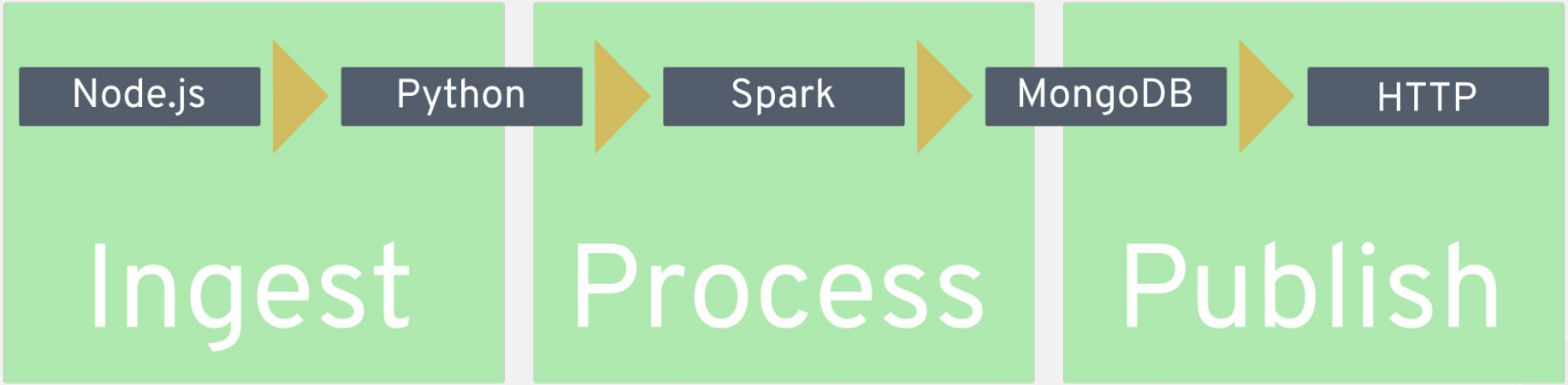
HAMMERING YOUR APP INTO SHAPE



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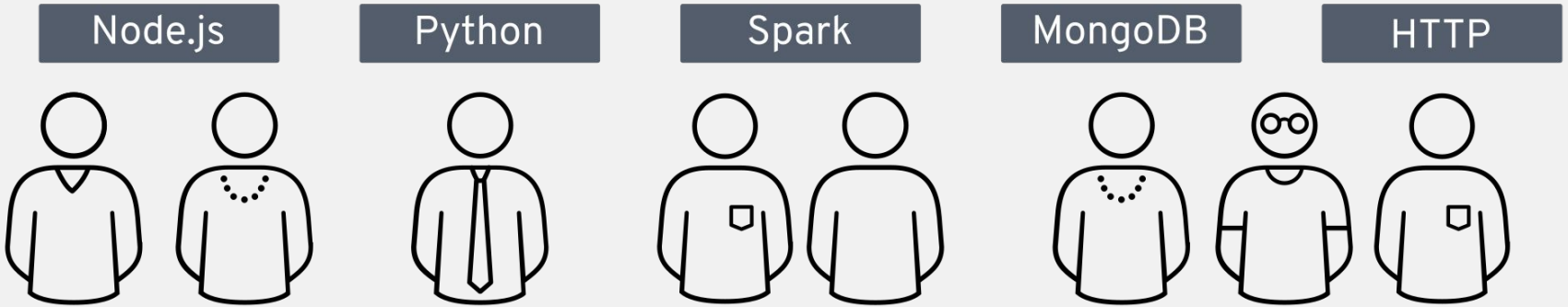
BUILDING AS A TEAM



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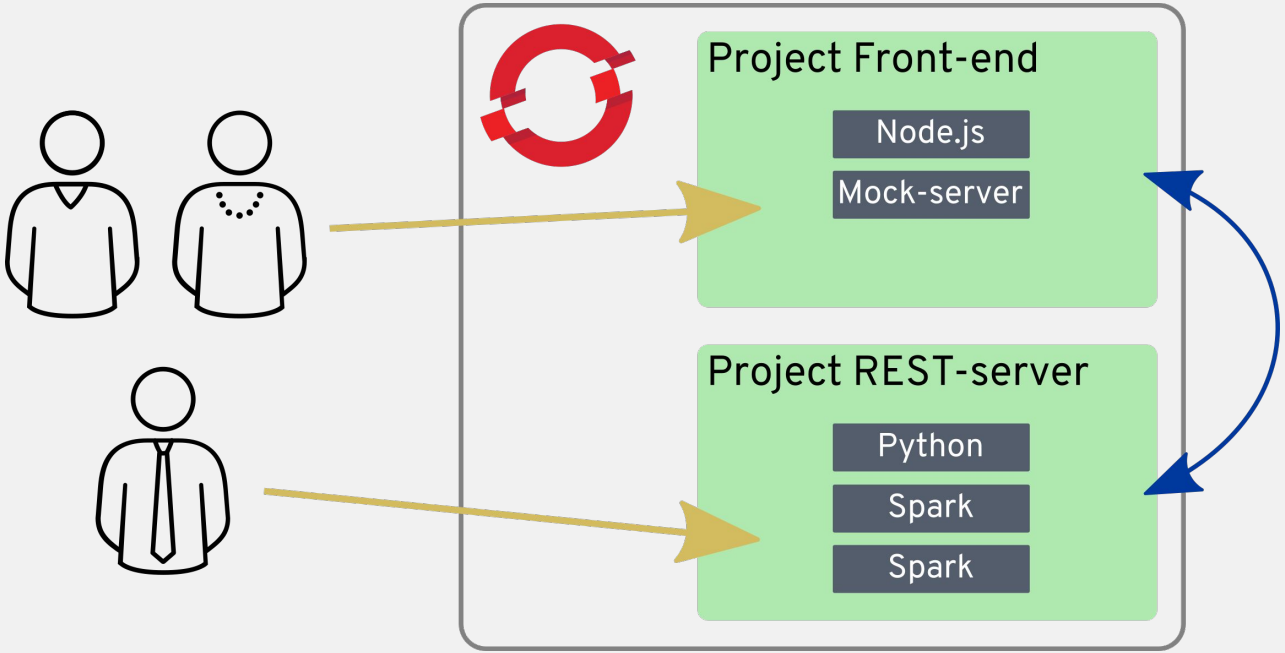
TAKING IT TO THE NEXT LEVEL



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CASE STUDY: OPHICLEIDE

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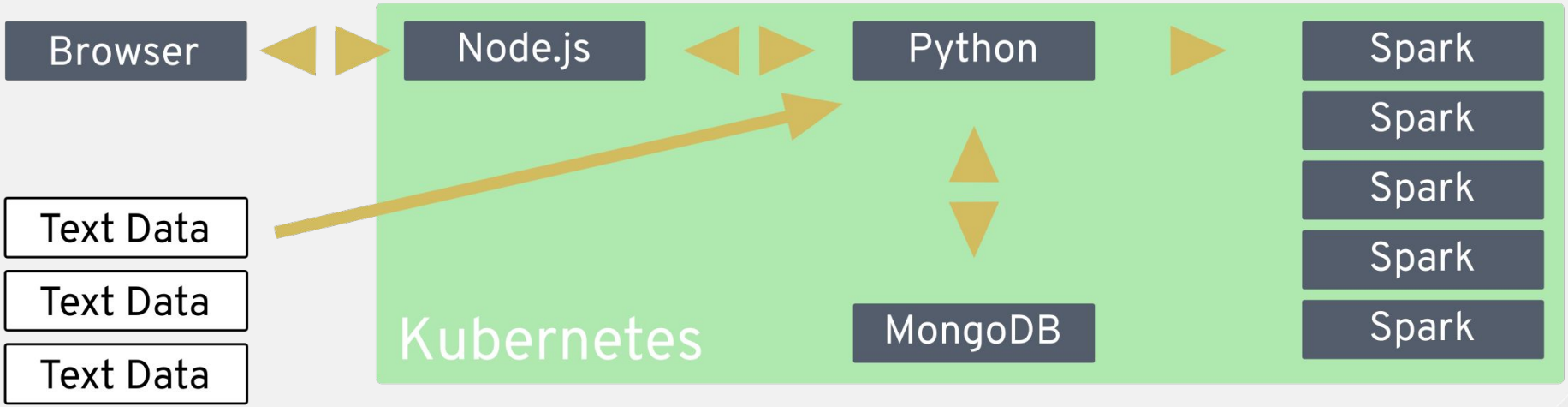
WHAT DOES IT DO?



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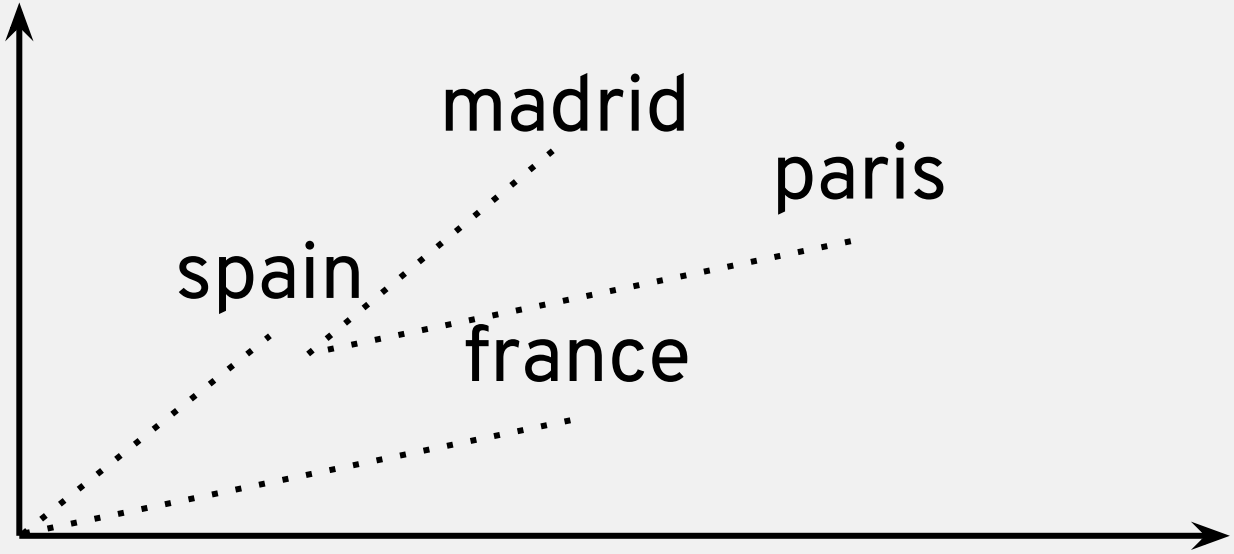
WHAT IS WORD2VEC?




```
v("madrid") - v("spain") + v("france") ≈ v("paris")
```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DEMO

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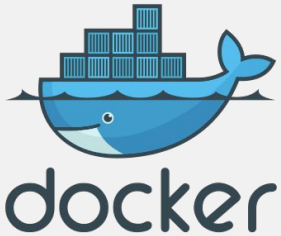
THINGS THAT HELPED OUR COLLABORATION



THINGS THAT REQUIRE GREATER COORDINATION

- API construction
- Compute resource affinity
- Persistent storage

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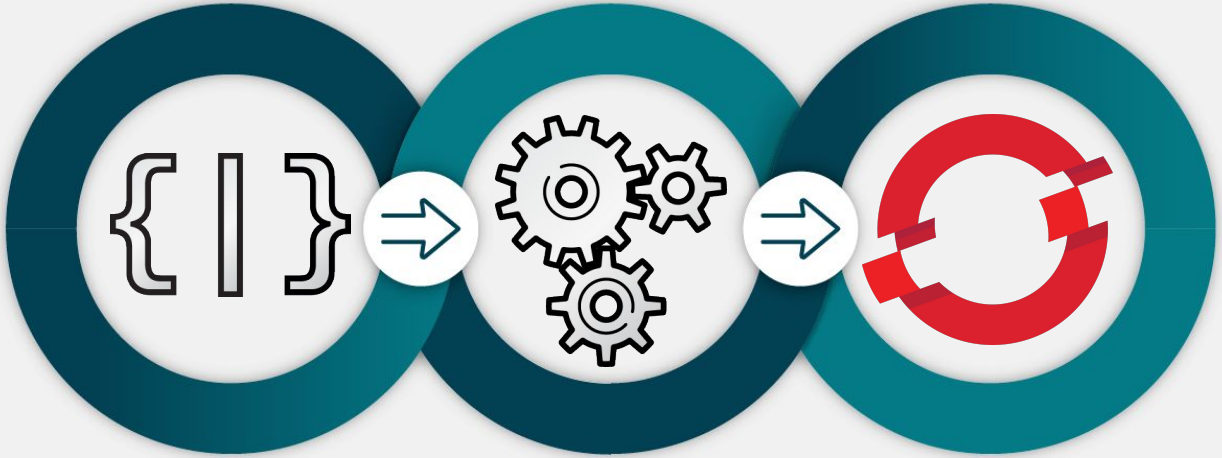
WHAT ABOUT THE DEVOPS?



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DEMO

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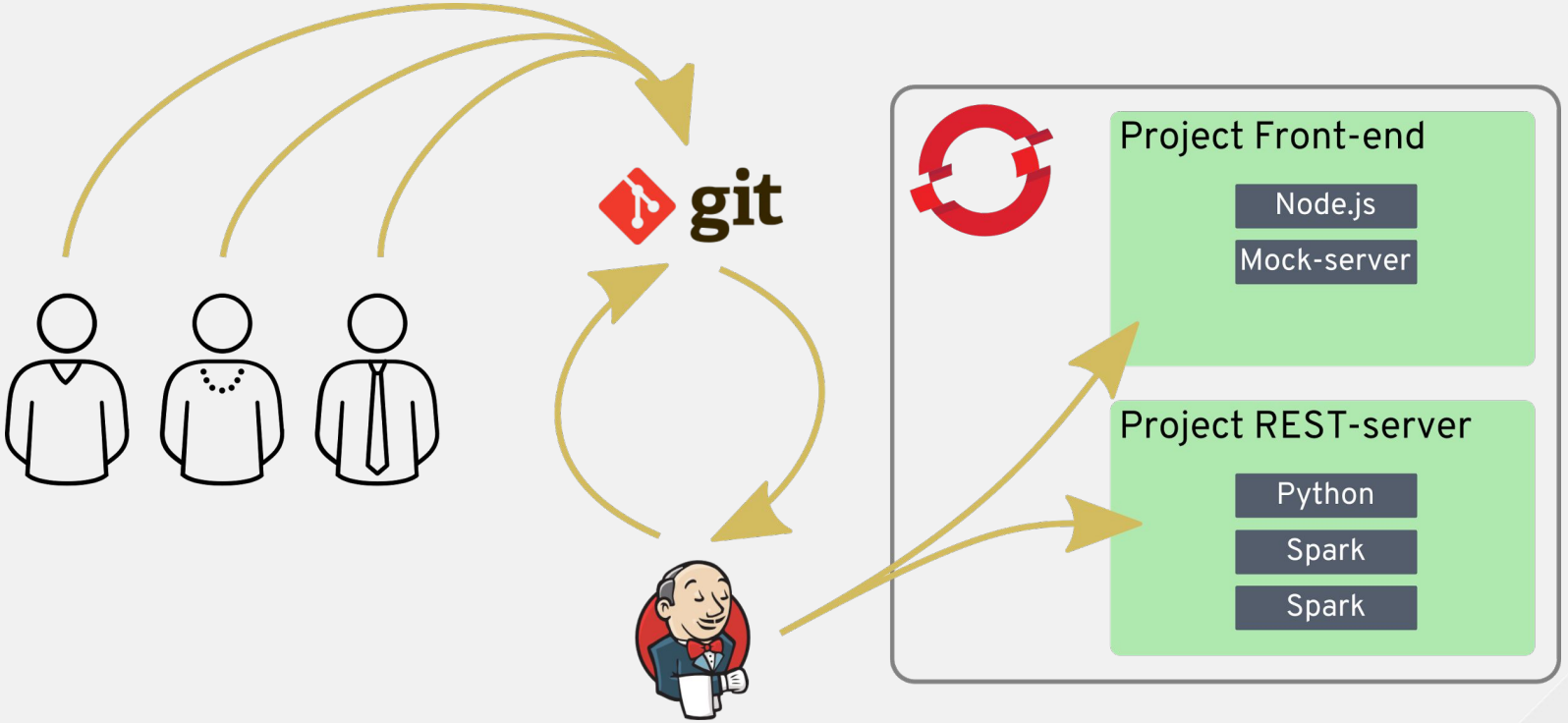
IMPROVING THE PROCESS



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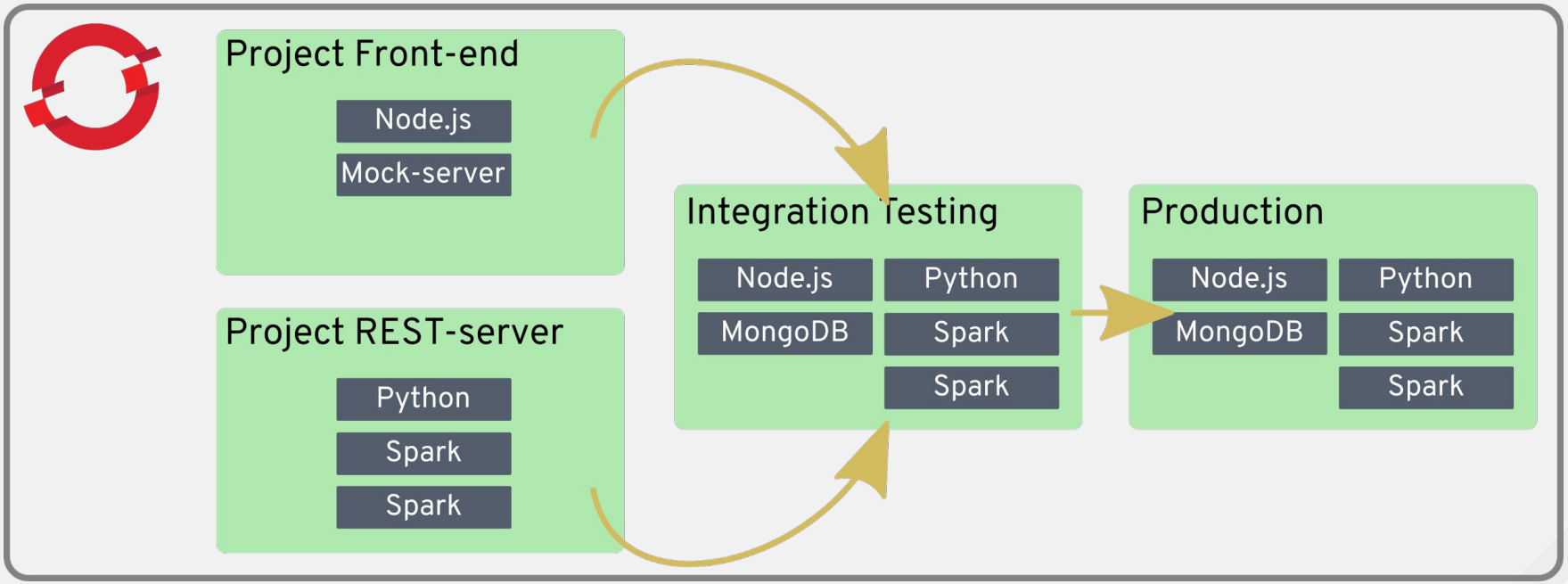
FROM DEVELOPMENT TO PRODUCTION



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TEST DRIVE IT!

More projects, tutorials and examples can be found at

RADANALYTICS.IO

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CONTACT US

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- elmiko on Github and IRC
- @FOSSjunkie on Twitter

Steven Pousty

- TheSteve0 on Twitter, IRC, SmugMug, Github, Ingress, Instagram and Skype

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THANK YOU

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