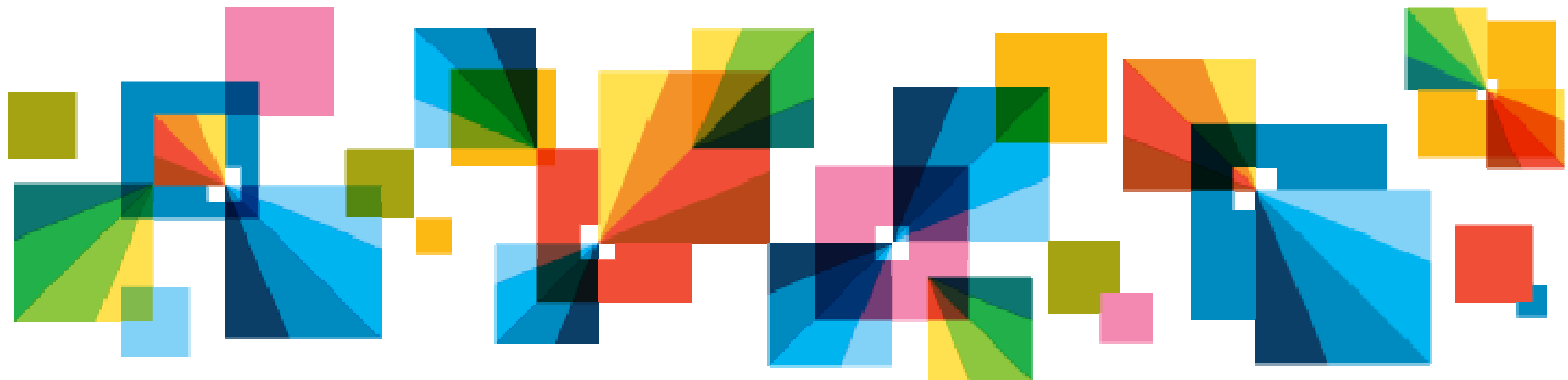
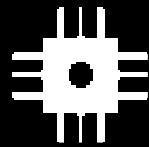


The Analytical Revolution

Colin Shearer
Global Executive, Advanced Analytic Solutions
IBM



Our world is becoming smarter



Instrumented



Interconnected



Intelligent

enabling organizations to make
faster, better-informed decisions

With this change comes an explosion in information ...

... Yet organizations are operating with blind spots



Lack of Insight

1 in 3 managers frequently make critical decisions without the information they need



Inefficient Access

1 in 2 don't have access to the information across their organization needed to do their jobs

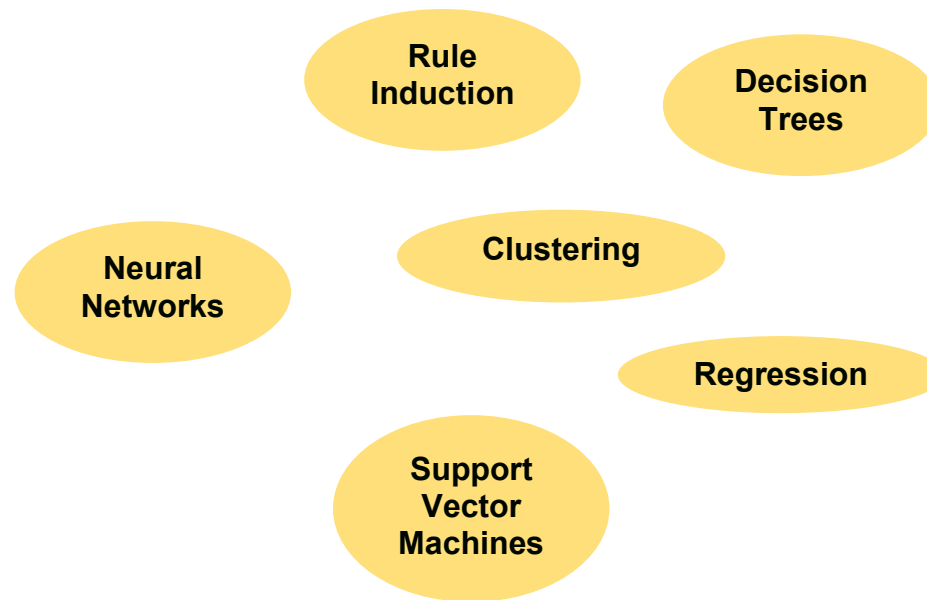


Inability to Predict

3 in 4 business leaders say more predictive information would drive better decisions

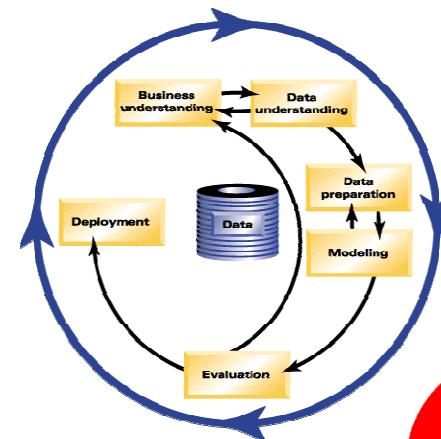
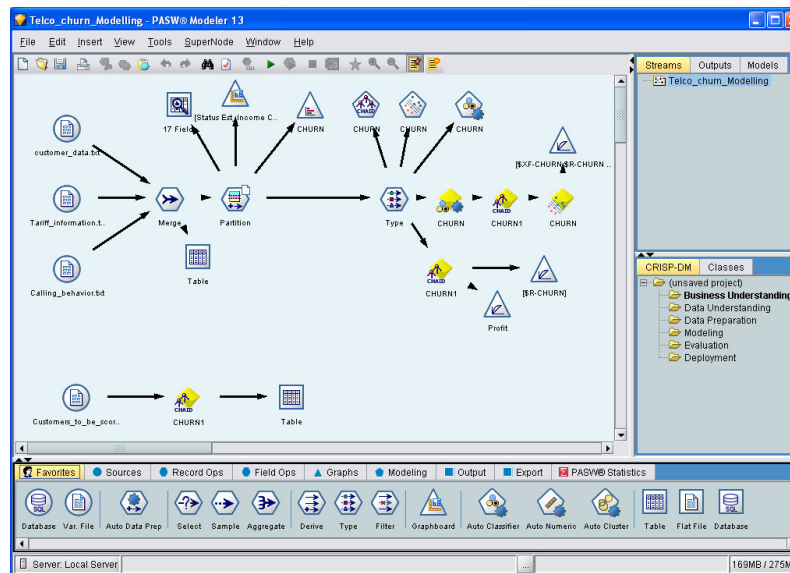
Predictive Analytics Evolution

1st Generation:
It's all about the
algorithms



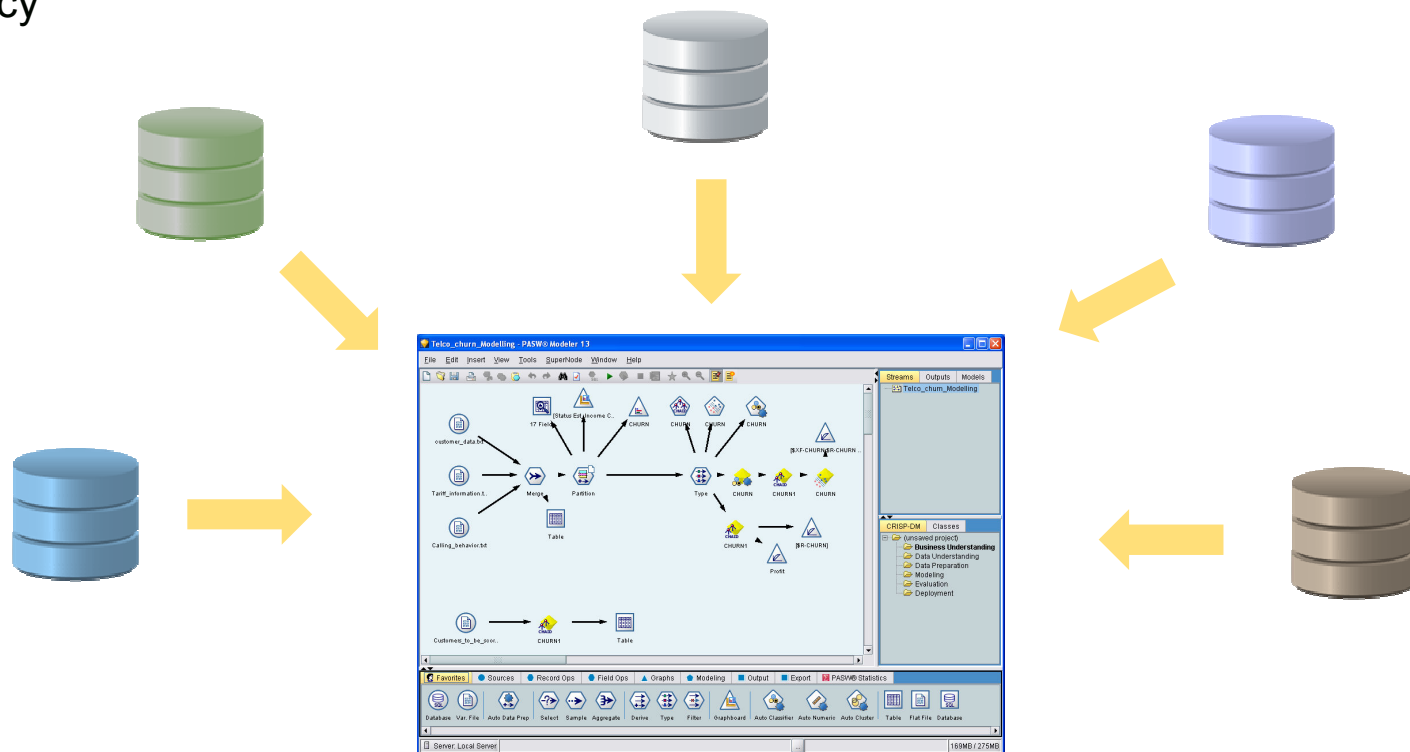
Predictive Analytics Evolution

2nd Generation:
It's about the process



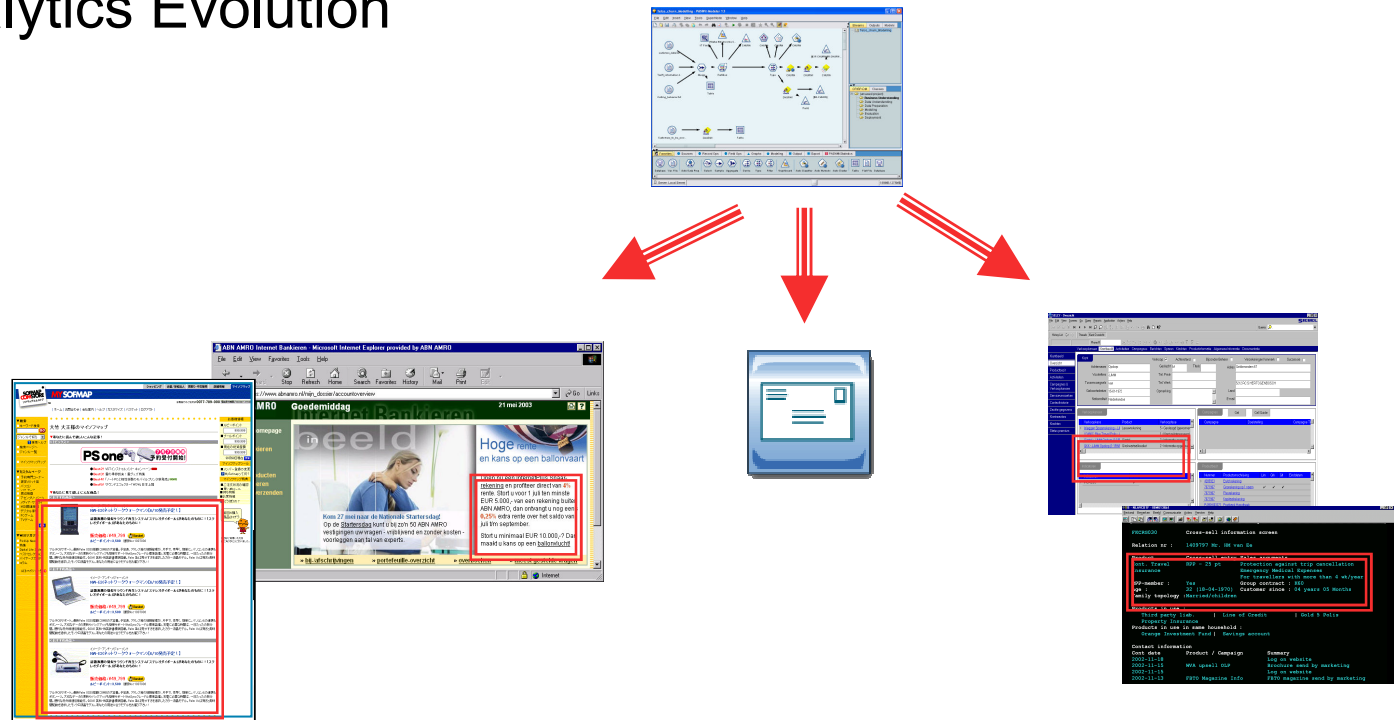
Predictive Analytics Evolution

3rd Generation:
 More data sources for deeper insights and greater accuracy

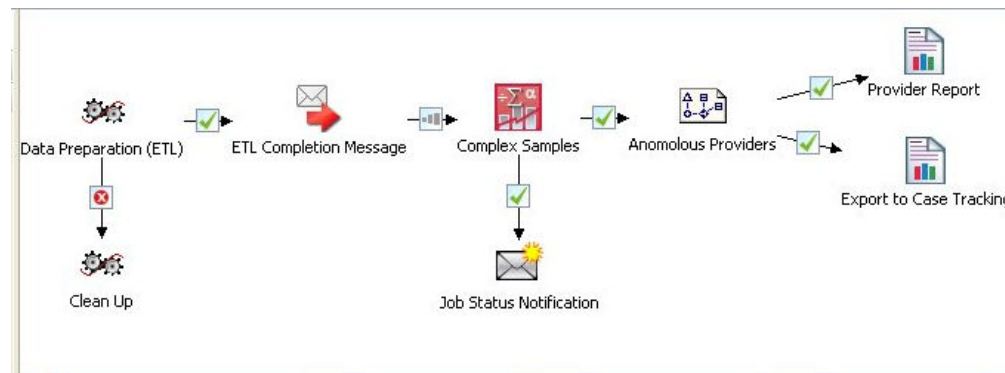


Predictive Analytics Evolution

4th Generation:
Deployment focus



5th Generation:
Automation and
“Industrialization”



Predictive Analytics Evolution

4rd Generation:
Deployment focus

5th Generation:
Automation and
“Industrialization”

*Key to delivering
business value*

Keys to revolutionising Predictive Analytics

Automation

Deployment

Operational Analytics

Operational Analytics: Automation of Analytical Processes

The issues

- Where do analysts spend their time?

Assessing new analytical projects

Building new models

Monitoring model
performance

Repeating typical
data prep

Exploring improved
analysis and modeling
approaches

Updating/refreshing
models

The issues

- Where do analysts spend their time?

Assessing new analytical projects

Building new models

Monitoring model performance

Repeating typical data prep

Exploring improved analysis and modeling approaches

Updating/refreshing models

These deliver the greatest value...

The issues

- Where do analysts spend their time?

Assessing new analytical projects

Building new models

Monitoring model performance

Repeating typical data prep

Exploring improved analysis and modeling approaches

Updating/refreshing models

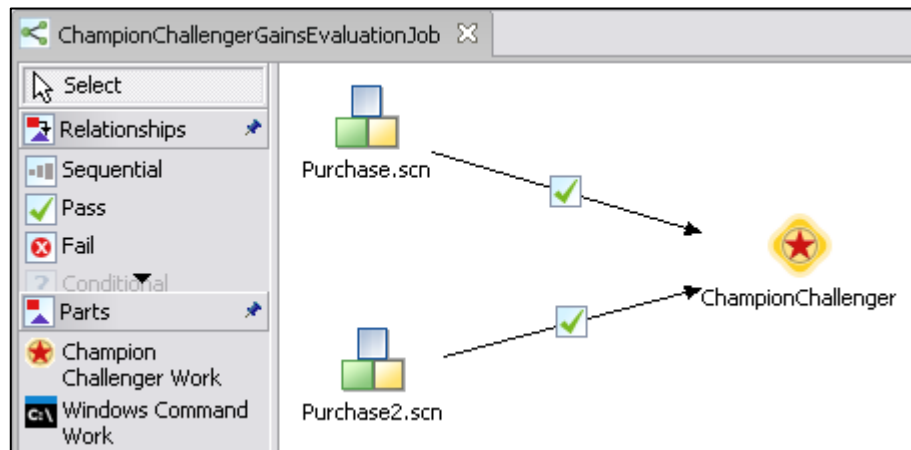
...but these consume the most time

The issues

- How do we scale to meet requirements?
 - *“All of our branches have their own customer bases; local models would do better than a single centralised one”*
 - *“We’ve shown we can build demand forecasting models that give us potentially huge savings – but we’d have to forecast for tens of thousands of items!”*

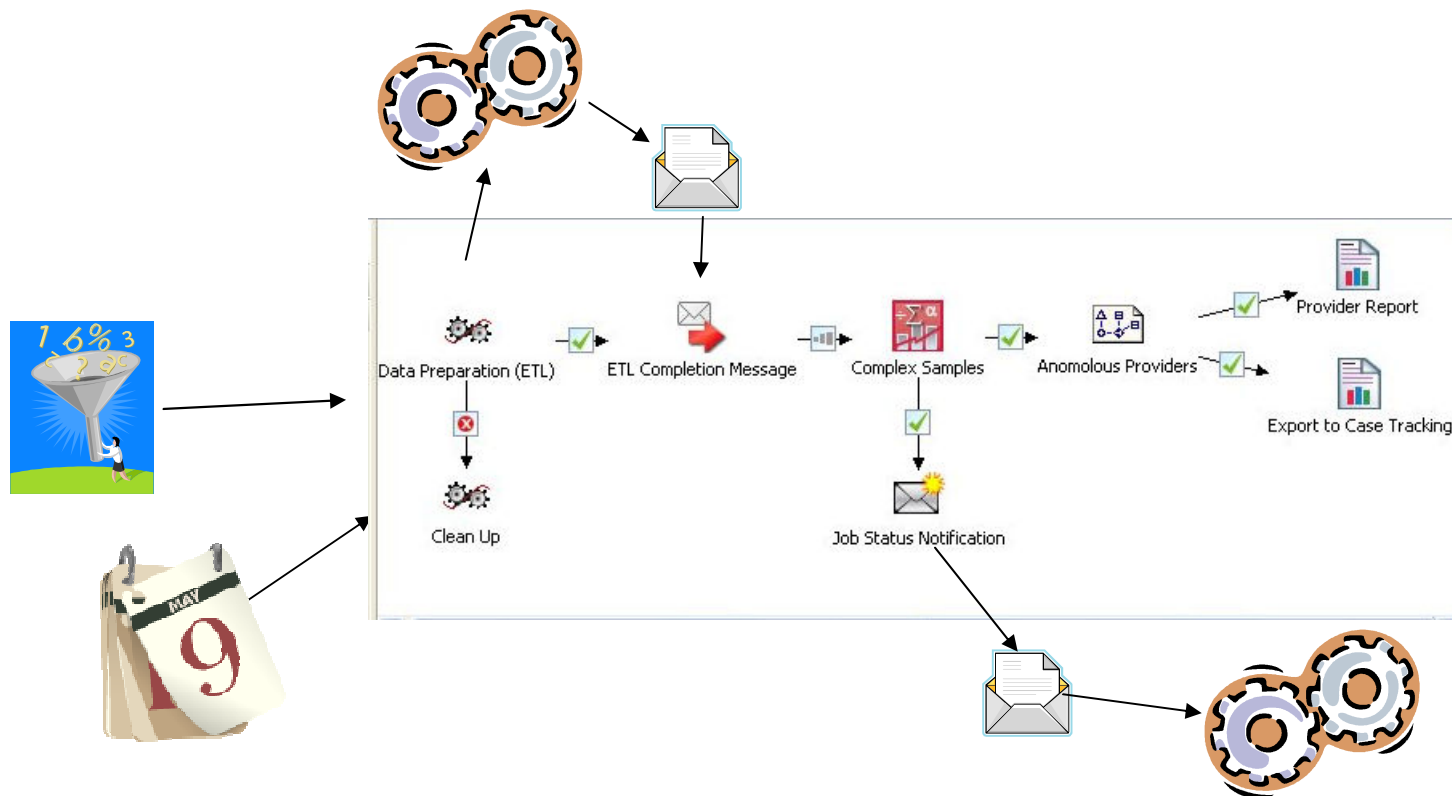
The Operational approach

- Ability to automate analytical tasks
 - “Instant” for most common tasks
 - Able to automate the most complex processes
 - Schedule/run without human intervention



The Operational approach

- Ability to automate analytical tasks
 - “Instant” for most common tasks
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Impact on Analysts

- Not de-skilling
- Focus on the tasks that require more skill and creativity
 - Tackle new analytical challenges
 - Design the processes which can be automated and replicated
- Frees analysts to be effective, productive and most valuable

Examples

- *Australian mobile telco provider*
- Model-targeted campaigns to prevent churn, stimulate increased usage, and cross-sell additional services
 - Analysts “owned” models they created, responsible for maintaining them
- Moving to more frequent, smaller campaigns
 - Increase number of models required
- Automated monthly rebuilding and scoring, implemented central management of assets and resources
- Results:
 - Campaigns more timely
 - Models always fresh and accurate
 - Analysts save 30 days per model per year

Examples

- *US police department*
- Needed to make effective and efficient force deployment decisions to reduce violent crime
- Automation to
 - Produce scores in real-time for each 4-hour shift
 - Capture new/emerging crime patterns by model refresh
- In first year of operation, reduced Aggravated Assault by 18% and Murder by 32%

IBM Analytic Answers

*A portfolio of **cloud-hosted solutions** that deliver directly-actionable predictive/prescriptive information to the line of business*

- Removes barriers to adoption of advanced analytics :



- Leverages IBM's deep analytics expertise but tailored to each client's business, using their data
- Built on IBM's analytic platform for unsurpassed scalability, analytical power, and performance
- No technical/analytical skills required
- Subscription based
- **Brings the power of advanced analytics to new users**

Initial areas: IBM Analytic Answers for...

Insurance Renewals



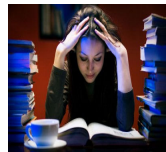
Which of my insurance policy holders are unlikely to renew next month? How could I persuade each one to stay loyal?

Purchase Analysis & Offer Targeting



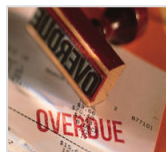
Which products do my customers tend to buy together? Can I leverage that knowledge to create combination offers and promotions that increase basket size and revenue per customer visit?

Student Retention



Which of our students are performing below their predicted potential? How should we intervene to get them back on track and avoid the possibility of their dropping out?

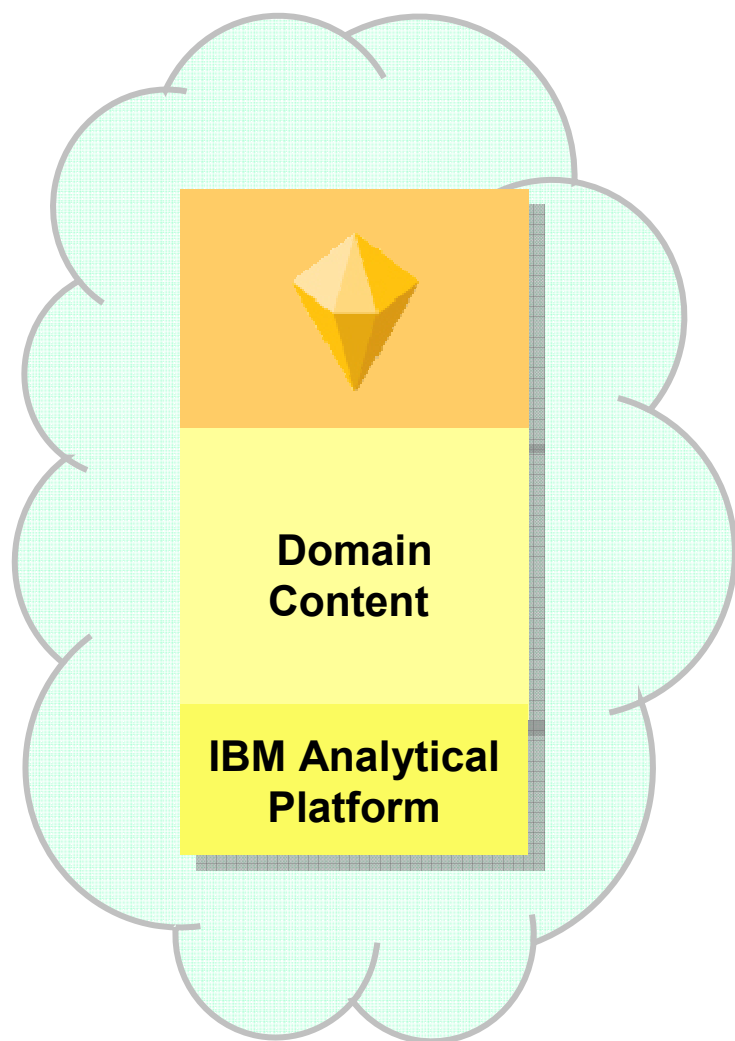
Prioritized Collections



Which of my overdue debtors are likely to pay? How much can I recover from them, and which treatment will be most effective for each?

**Providing information that is
actionable at the level of individual cases**

IBM Analytic Answers: Advanced Analytic Solutions in the Cloud

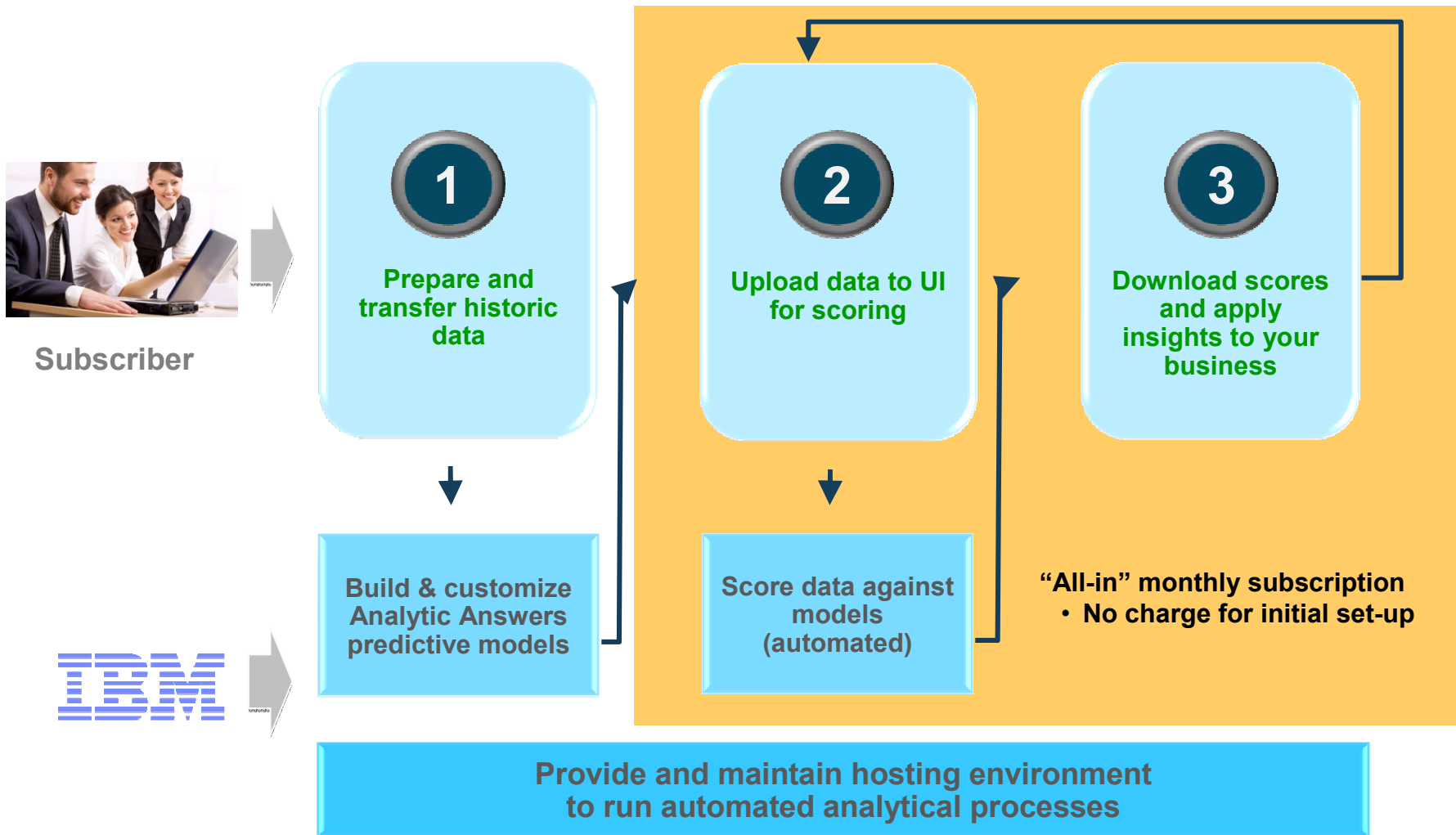


***Tailored to each client's business,
models built from their data***

***Embodies IBM's deep analytics expertise,
knowledge and experience***

***Scalability, analytical power, and
performance***

Analytic Answers in three simple steps



Automation: New Horizons

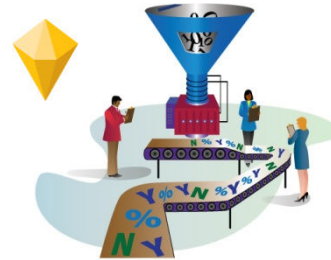
- Automation allows the application of analytics to be scaled *beyond the capacity of human-driven analysis*

Operational Analytics: Deployment

Degrees of Deployment



Visualization & Reporting



Batch Scoring



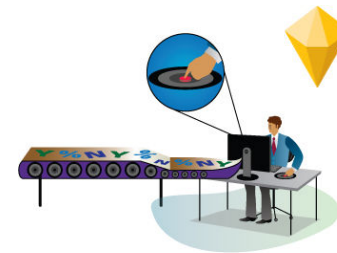
Optimized Decisions



Ad-hoc Discovery



Manual Scoring



Automating Decisions

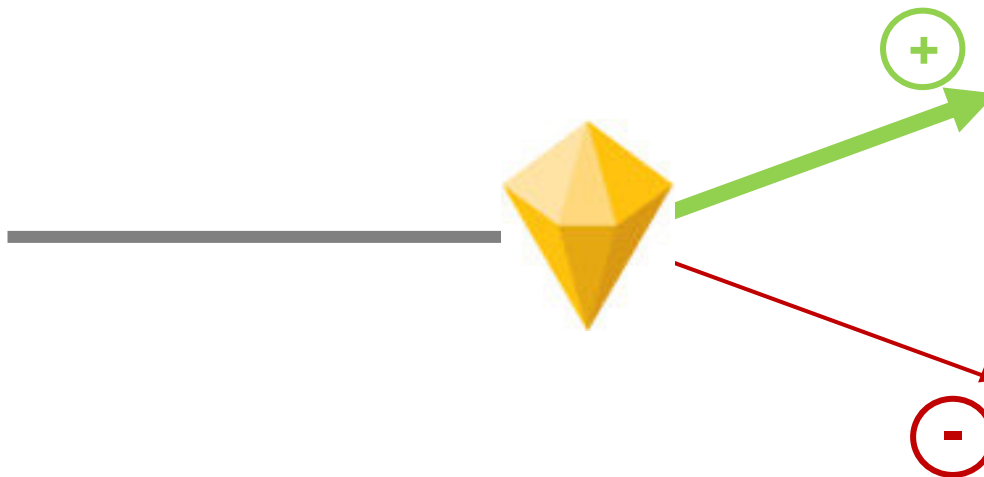


Degree of integration with operational systems and processes



Delivering ROI through improved decision making

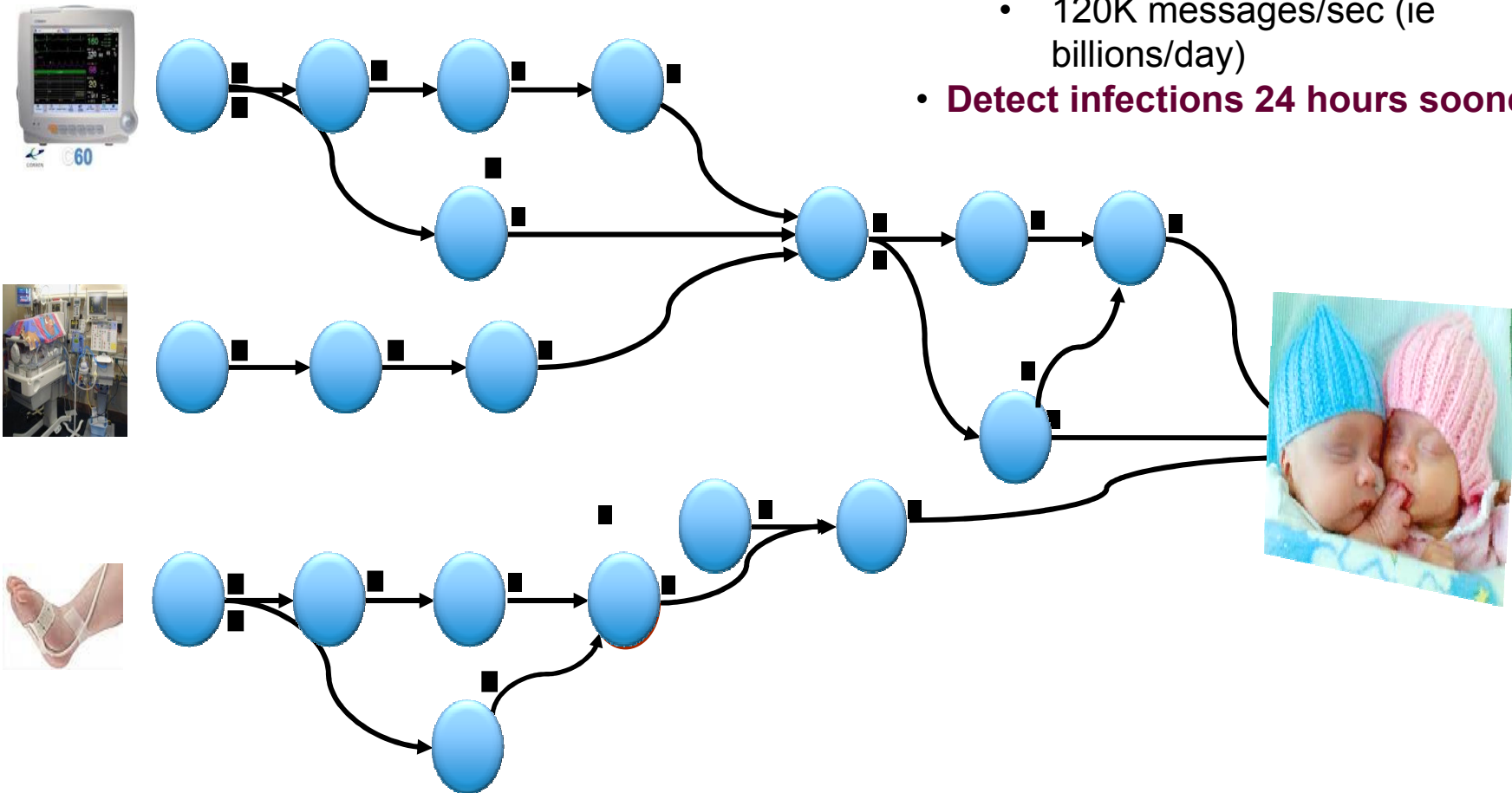
- Inserting “intelligence” at key decision points in business processes to improve outcomes – **and automate decisions**



Decisions on Streaming Data



- Neonatal monitoring
 - 120 children monitored
 - 120K messages/sec (ie billions/day)
- **Detect infections 24 hours sooner**



Which revolutions had the most profound effect on history?

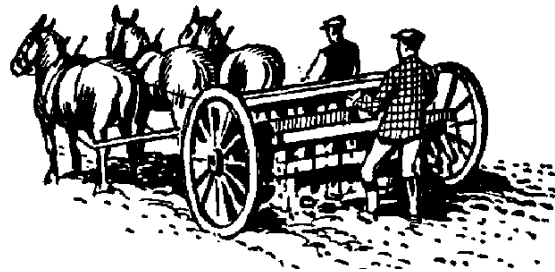
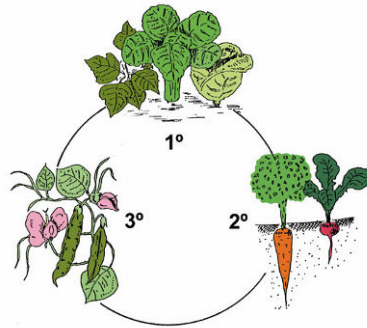
“Spirit of ’76”?



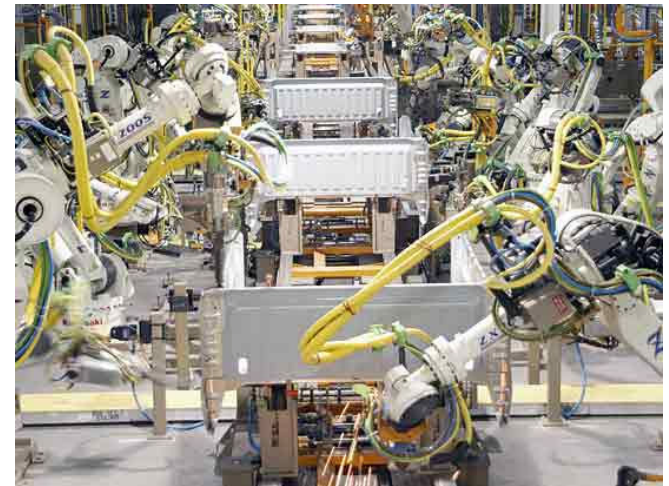
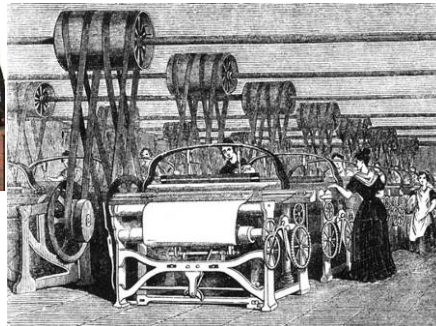
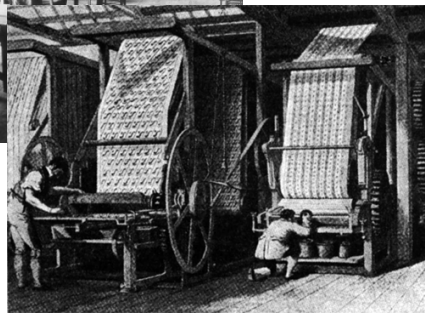
“Liberté, Egalité et Fraternité”?



The Agricultural Revolution – from ~1700



The Industrial Revolution – from ~1780



What revolutions do for the world...



Agricultural Revolution



Industrial Revolution



Scale the effects...

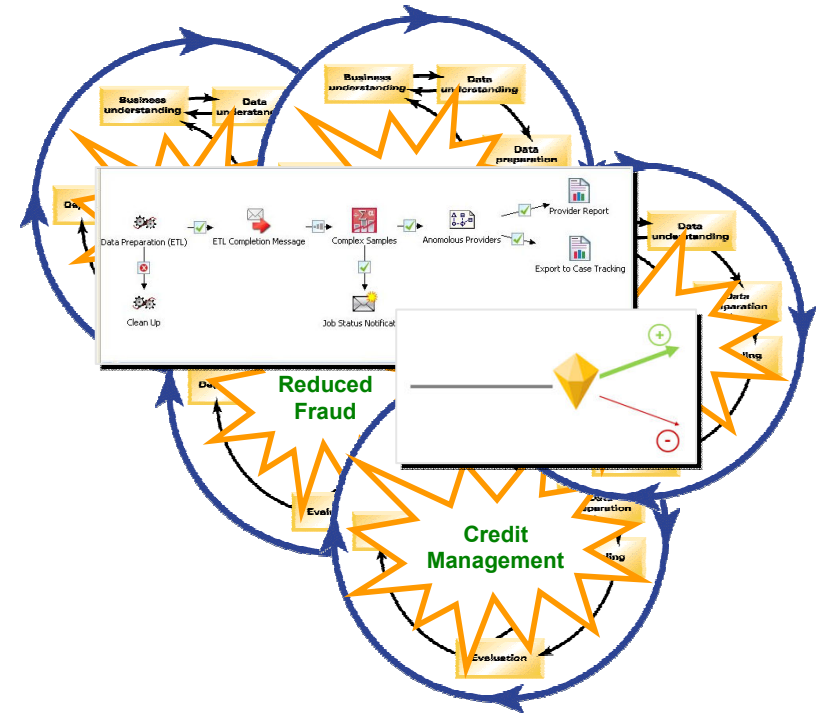
...multiply the benefit...

...by orders of magnitude...

...and make a far broader range of consumers

able to benefit.

What revolutions do for the world...



Scale the effects...

...multiply the benefit...

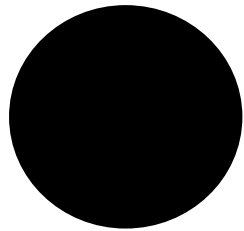
...by orders of magnitude...

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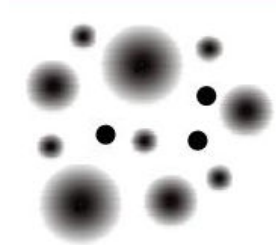
Welcome to the Analytical Revolution.

Big Data:

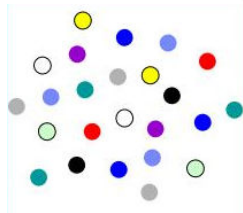
What does it mean for the evolution of advanced analytics?



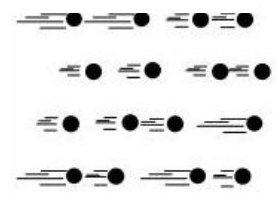
Volume



Veracity



Variety



Velocity

Unprecedented opportunities for organisations to use advanced analytics to gain value

But...

Concern #1: Risk of losing business focus

“You’ll be able to find something interesting in your data!”

- Analysis is not a data driven process!
 - CRISP-DM starts with Business Understanding for a good reason

Concern #2: The “Data Scientist” role

“The Sexiest Job of the 21st Century”

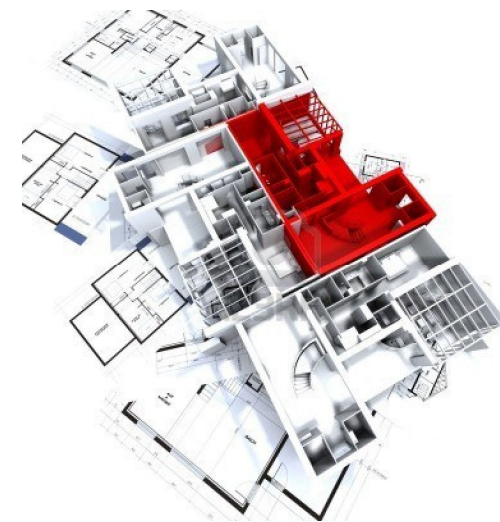
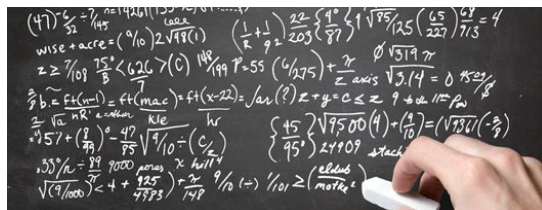
Let's suppose.....

....you want to commission an opera house for your city



We want an aesthetically stunning building that makes a bold statement. It needs acoustics fit for its purpose. It should be constructed, and operate, in an environmentally sound manner

It needs to stay up



What makes a Data Scientist?

My Suggestions for becoming a “Data Scientist”

(Michael Manoochehri, Google)

Short term skills:

- Code
 - A working understanding of R
 - Become fairly proficient in Python and JavaScript
 - iPython

- Moving and asking questions about data
 - Learn SQL
 - Learn how to work around a UNIX shell, learn sed, awk, grep, “pipes”

- Distributed Data tools
 - Run a Hadoop instance locally
 - Write a Streaming MapReduce job in Python
 - Build a toy project using non-relational database

Long term skills:

- Dive into statistics
 - Start with basics, understand correlation, significance
 - Learn about mathematical models

- Visualization:
 - Explore the rich world of data visualization - read, read, read, share, collaborate
 - Don’t share a data visualization until you have subjective questions about your own work

What makes a Data Scientist?

3 Key Skills Of Successful Data Scientists

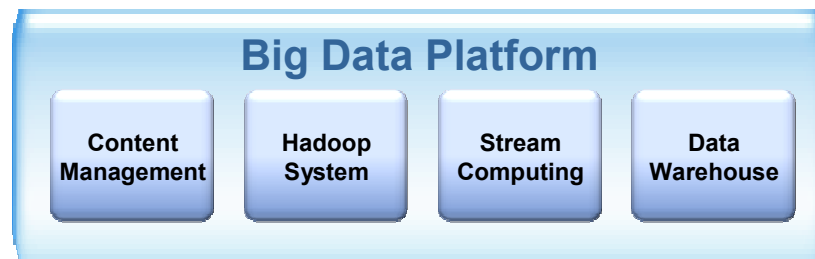
(Andrew Jennings, FICO)

1. Problem-Solving Skills
2. Communications Skills
3. Open-Mindedness

Big Data and Analytics?

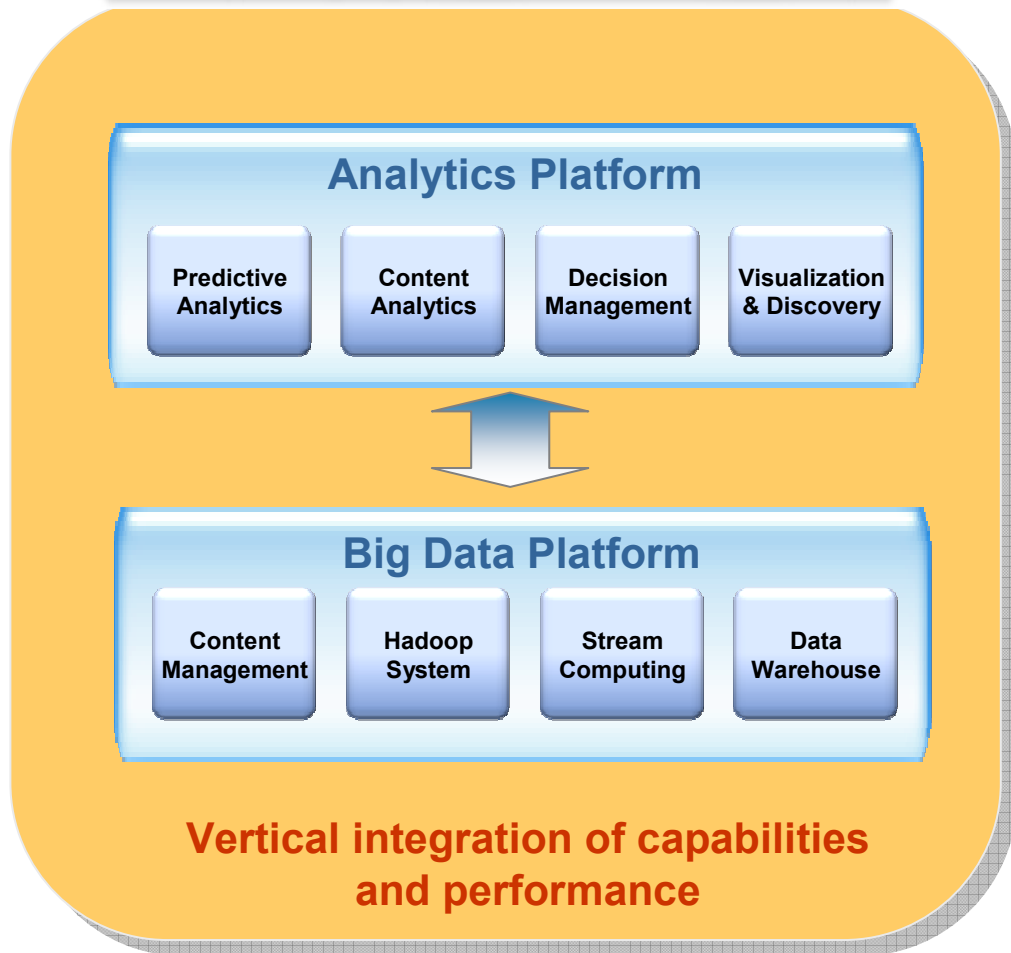


Smart People writing code



Big Data and Analytics

No Less Smart People, using 20 yrs of tools / best practice development to solve business problems



In Summary

- We are at a crucial stage in the evolution of advanced analytics, as a discipline applied to real-world problems
- Explosive increase in demand/acceptance can only be addressed by the industrialisation of technology and practices
 - Automation and deployments are key focus areas
- The advent of Big Data presents a huge opportunity for organisations to gain value by applying advanced analytics to internal and external data asset
- But in applying analytics to Big Data, it is crucial that we:
 - Ensure projects are driven by genuine business need, and not “data excitement”
 - Don’t ignore decades of work and experience in analytics tooling and best practice!

Thank you!

