```
library(dplyr)

r-ladies_global %>%
  filter(city = 'London')
```

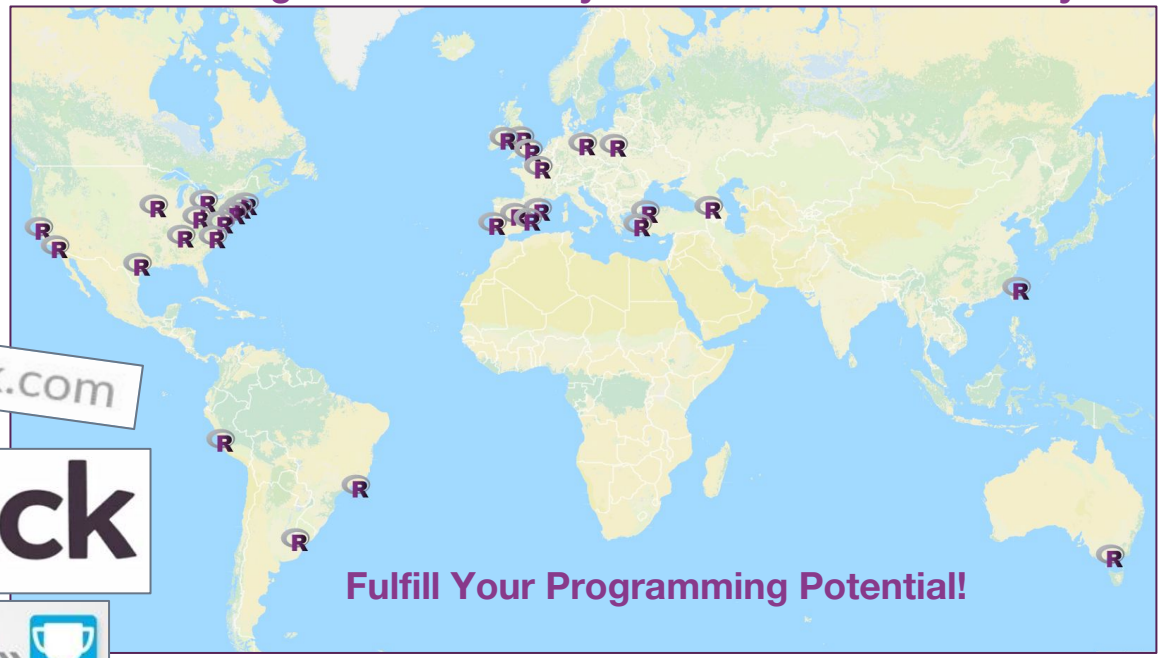
@RLadiesLondon
#RLadies

@alice_data
@AnalyticsPanda

Demystifying Data Science

Intro to R-Ladies

Promoting Gender Diversity in the Global R community

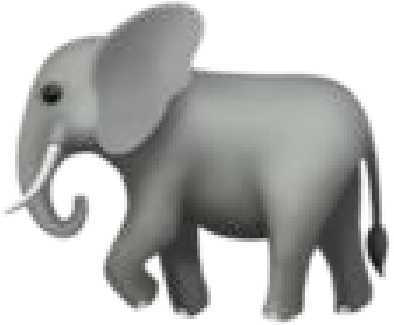


rladies-london.slack.com

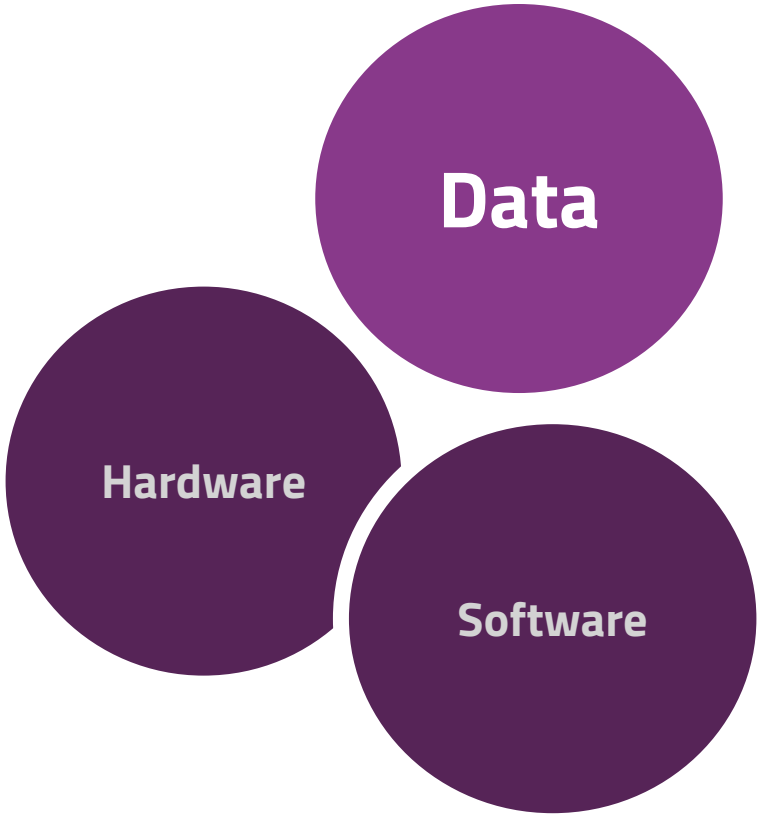
slack

useR!2017 BRUSSELS

Welcome



Tech Industry - not just Apps & Robots!

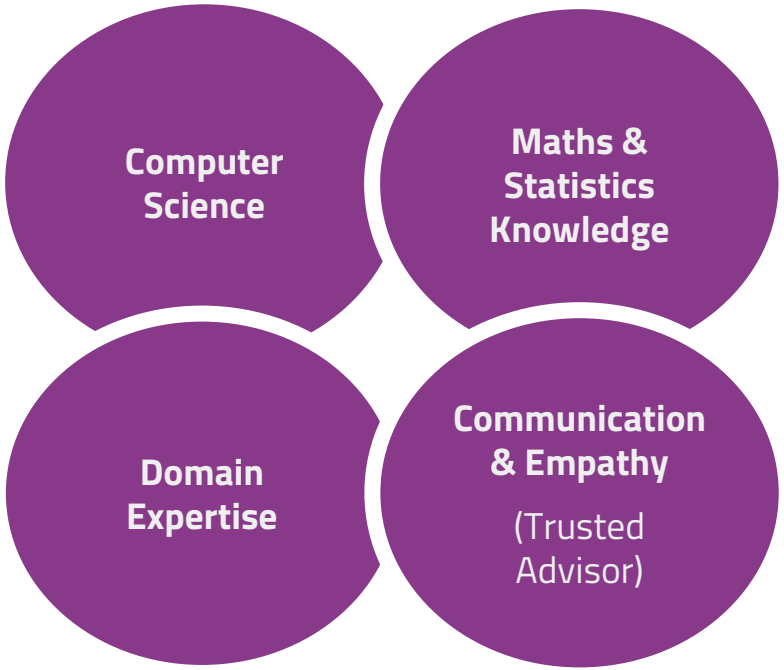


P.S you do NOT have to have a PhD in Computer Science to work in Tech!!

"69% of all (coders) tell us they are at least partly self-taught.

13% of respondents across the globe tell us they are *only* self-taught."

—Stack Overflow
Developer Survey Results (2016)
56,033 coders in 173 countries



What is Data Science?

R-Ladies suggested definition:

The application of scientific methods to Data which enable new discoveries to be made & utilised

- General consensus = There is no consensus
- DJ Patil & Jeff Hammerbacher purport they have first coined the term “data scientist” as a job title in 2008
- Hybrid & Interdisciplinary
- P.S Don’t assume the Organisation recruiting for a Data Scientist actually knows what a Data Scientist is

Data Science - Misconceptions

Data Science != Big Data

Data Science != Machine Learning

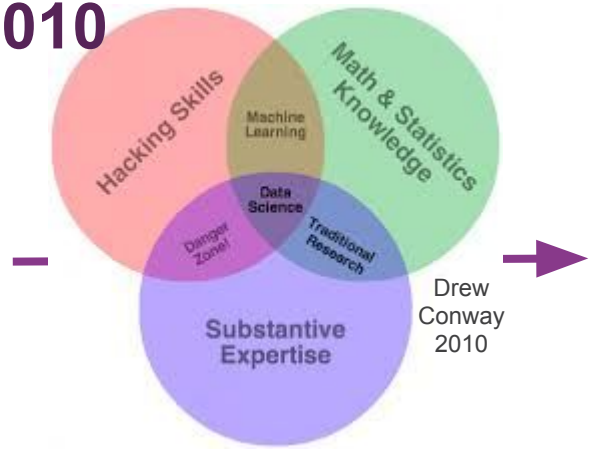
Data Science != Hadoop

Data Science != Just Coding

Data Science != Successful Data Science

Skills

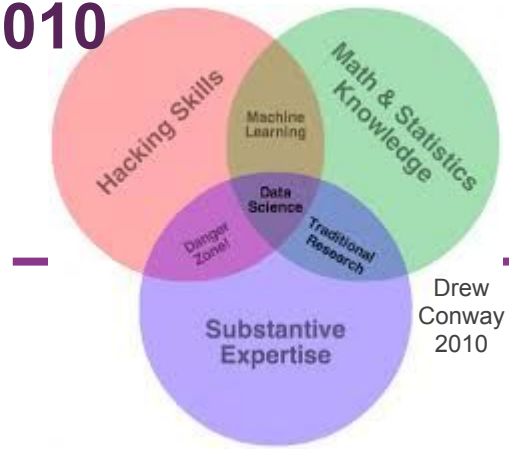
2010



Venn Timeline

David Taylor - http://www.kdnuggets.com/2016/10/battle-data-science-venn-diagrams.html

2010



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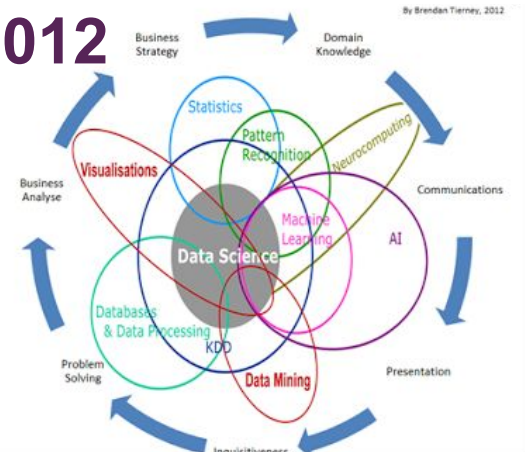
Drew Conway 2010

2012



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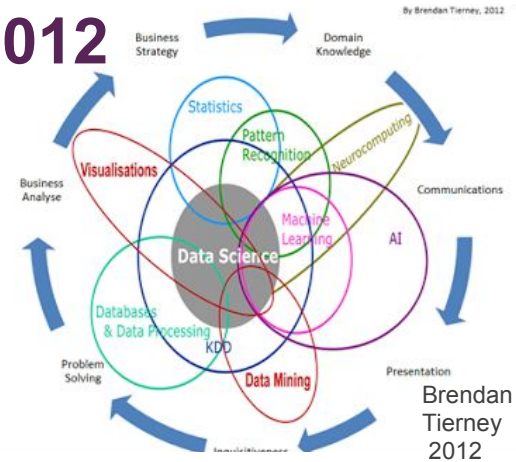
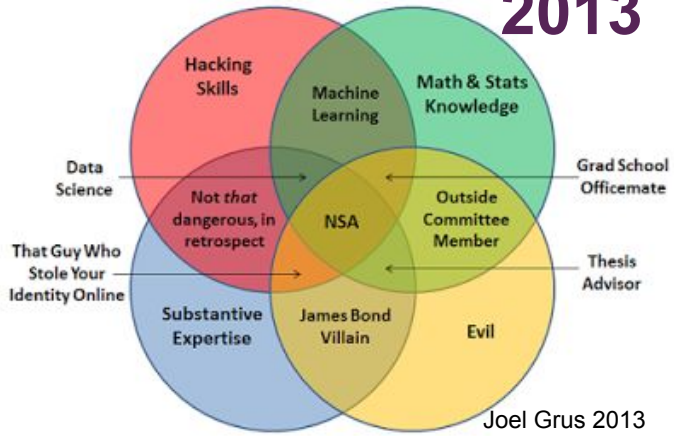


Brendan Tierney 2012

2013



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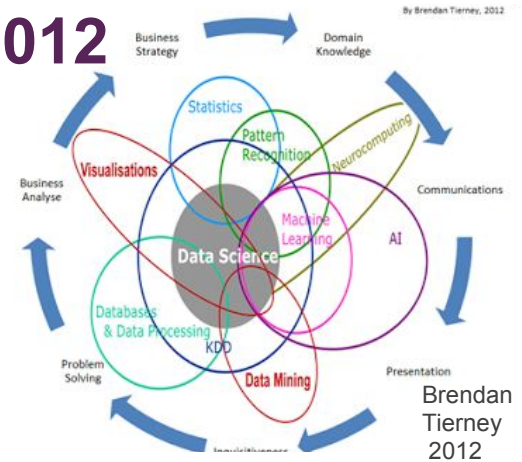

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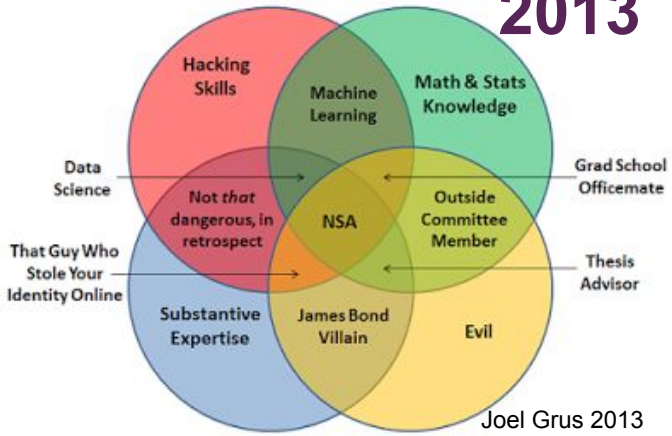

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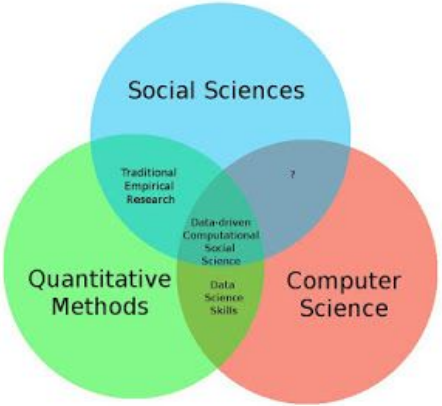

Ulrich Matter 2013

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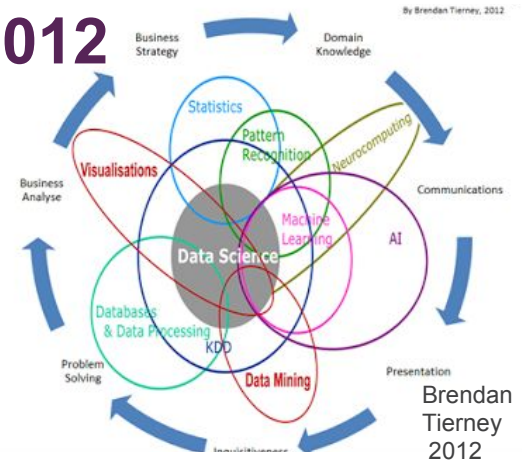

Brendan Tierney 2012

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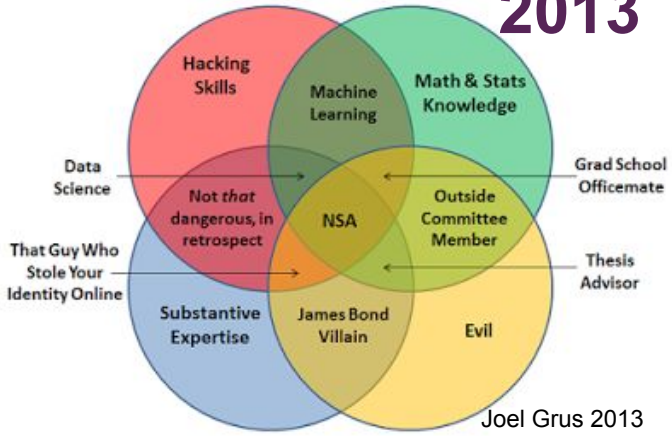

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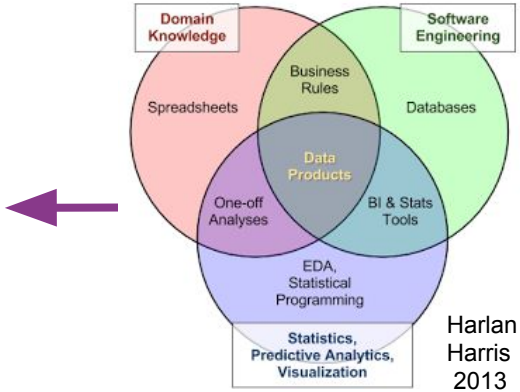
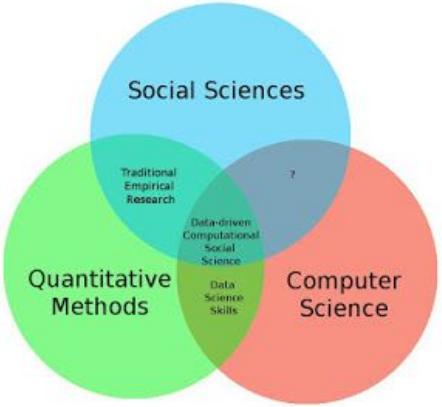


Harlan Harris 2013



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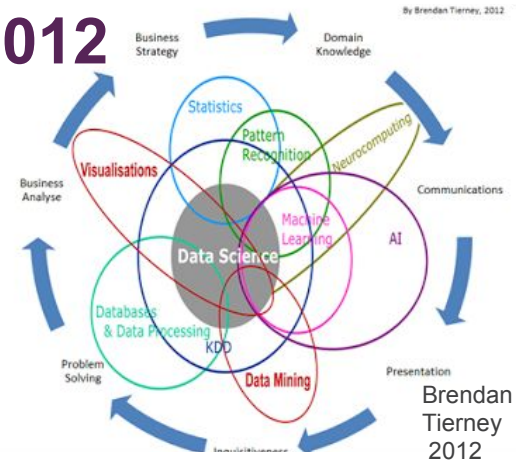

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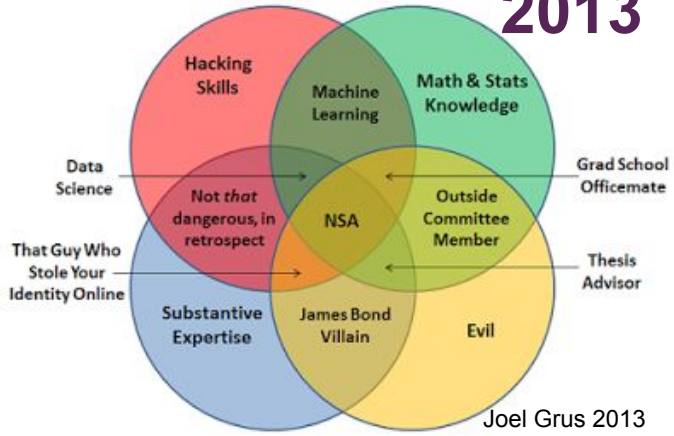
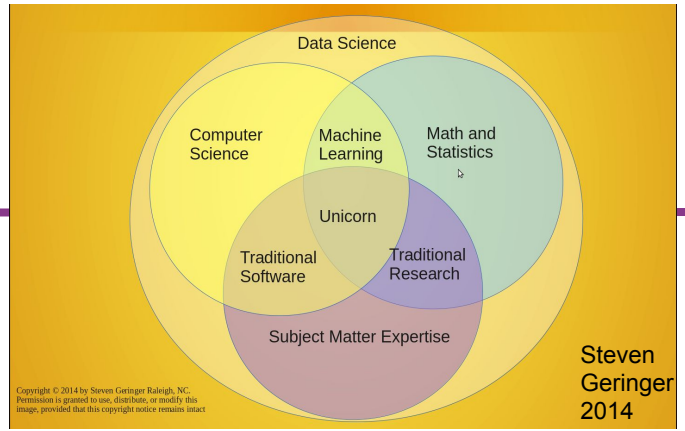
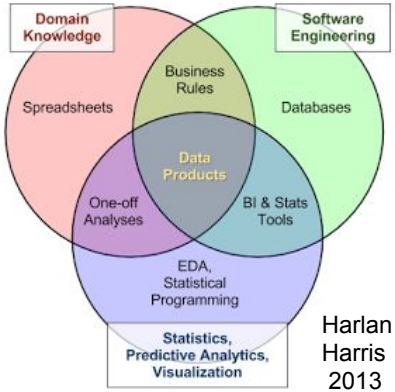


Joel Grus 2013

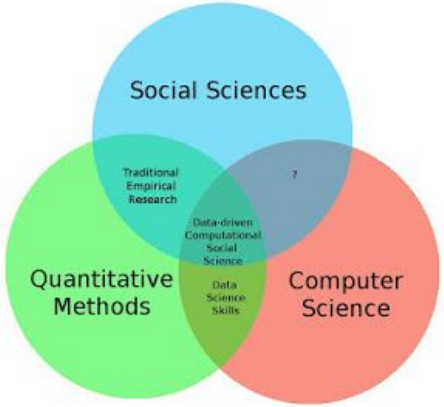
2014



Steven Geringer 2014



Harlan Harris 2013



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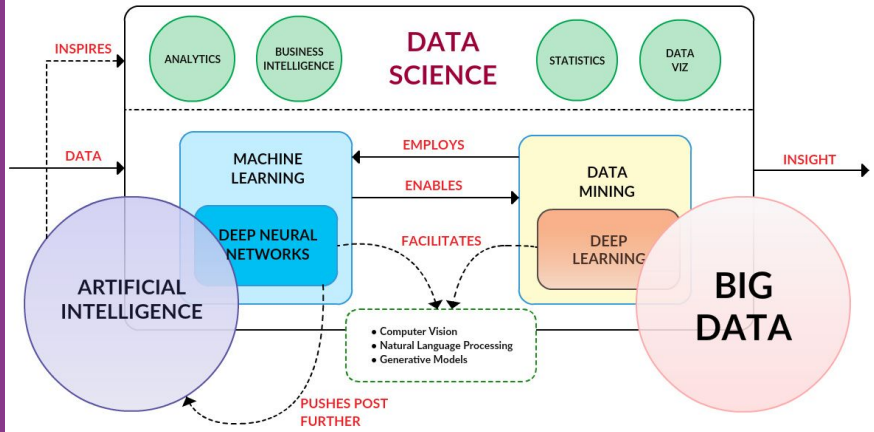
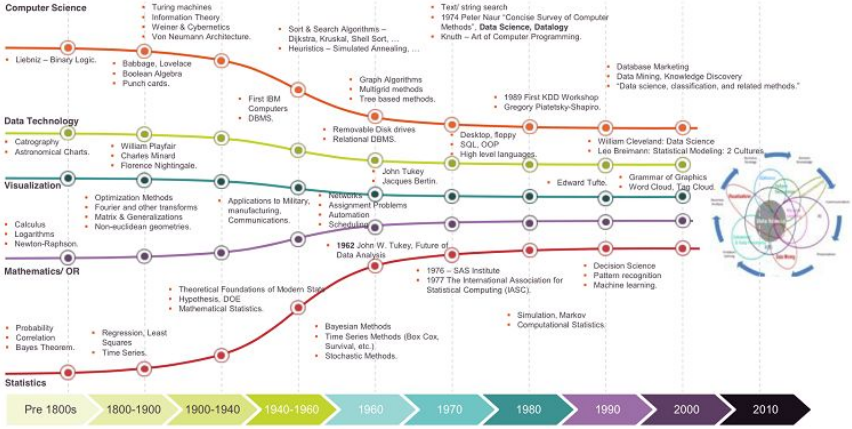
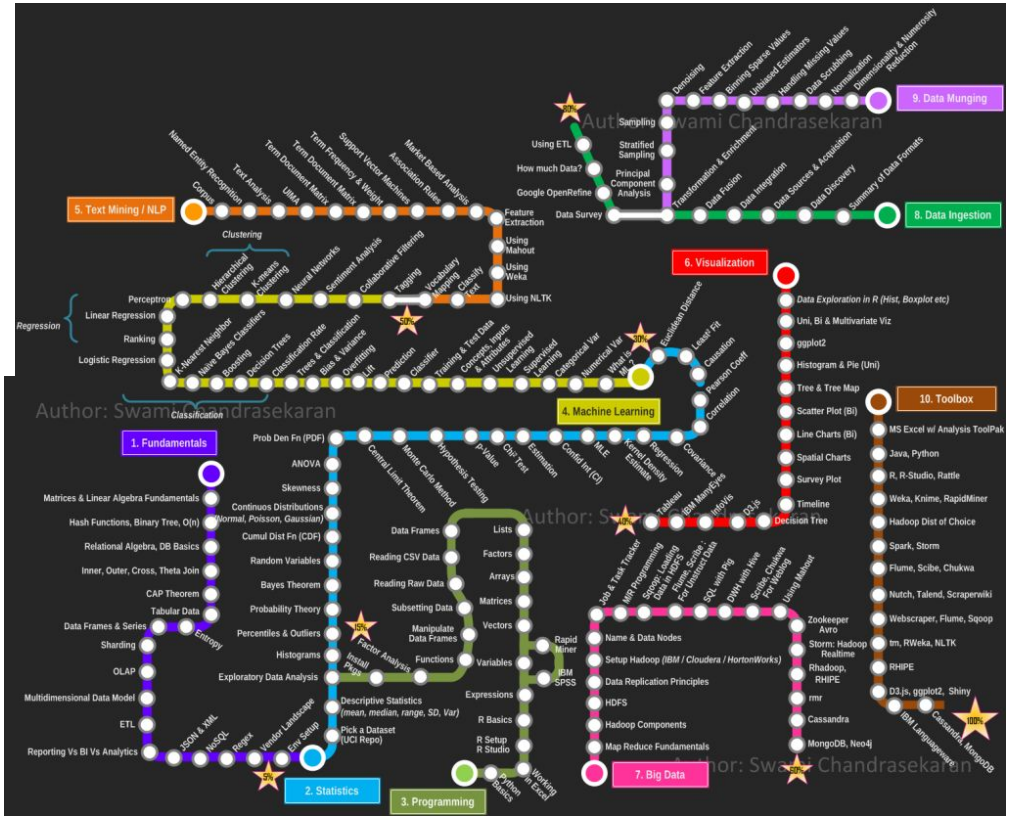


http://www.kdnuggets.com/2016/10/deep-learning-key-terms-explained.html

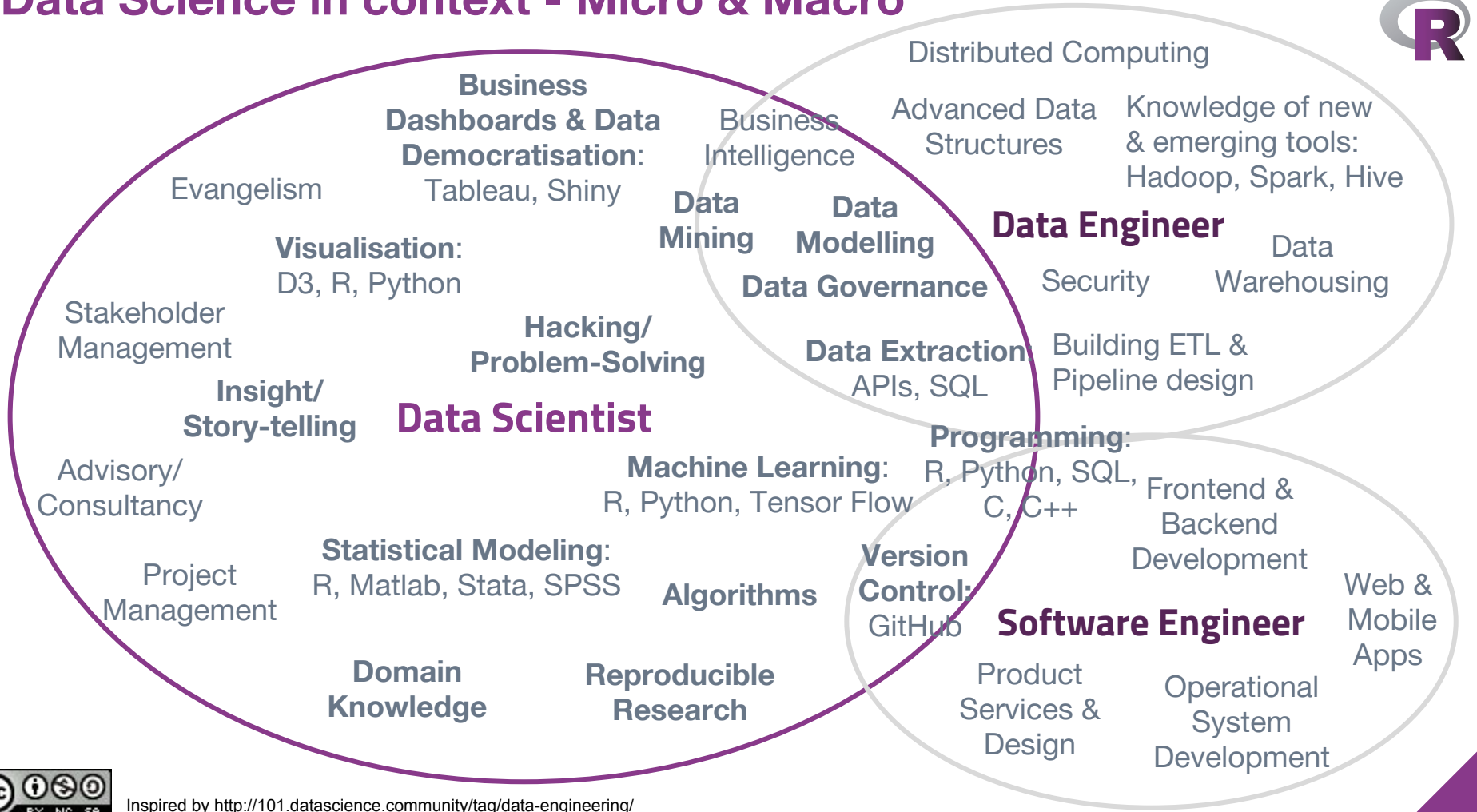


http://www.forbes.com/sites/gilpress/2013/05/28/a-very-short-history-of-data-science/



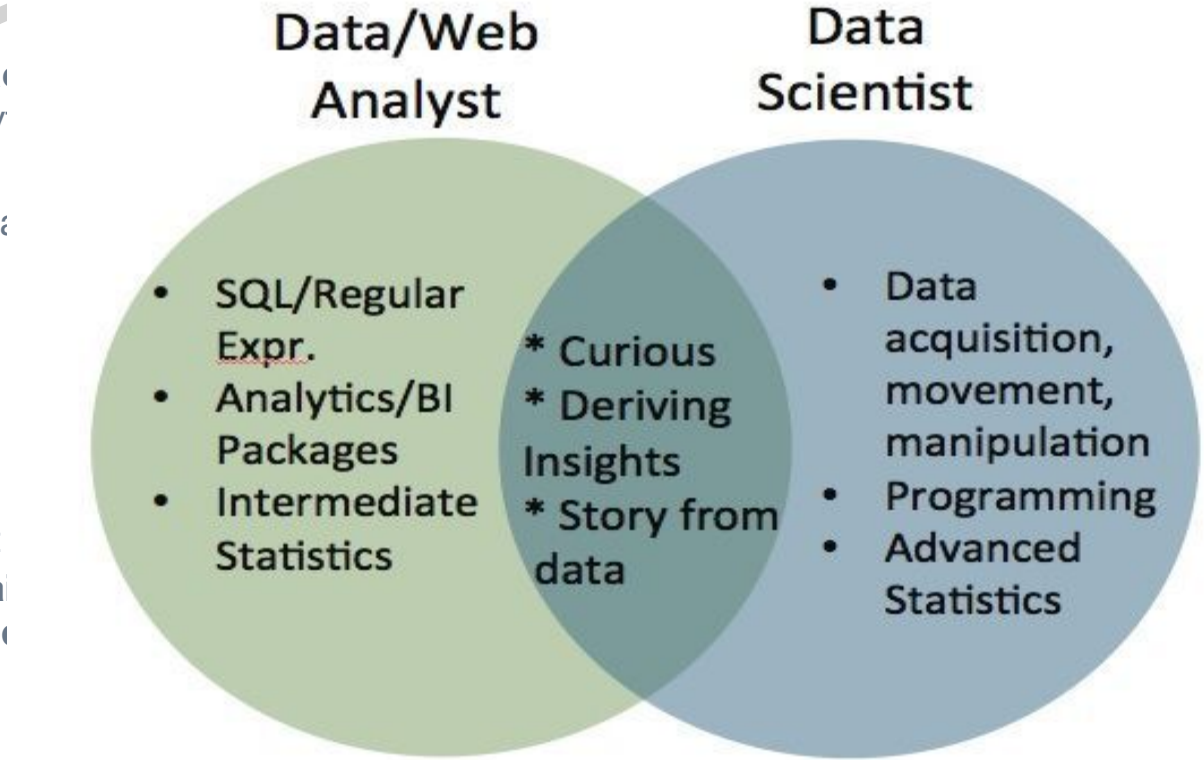
http://nirvacana.com/thoughts/becoming-a-data-scientist/

Data Science in context - Micro & Macro



Inspired by http://101.datascience.community/tag/data-engineering/

Data Science in context - Macro & Micro



Advance data structures

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Project Management

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Mobile Apps

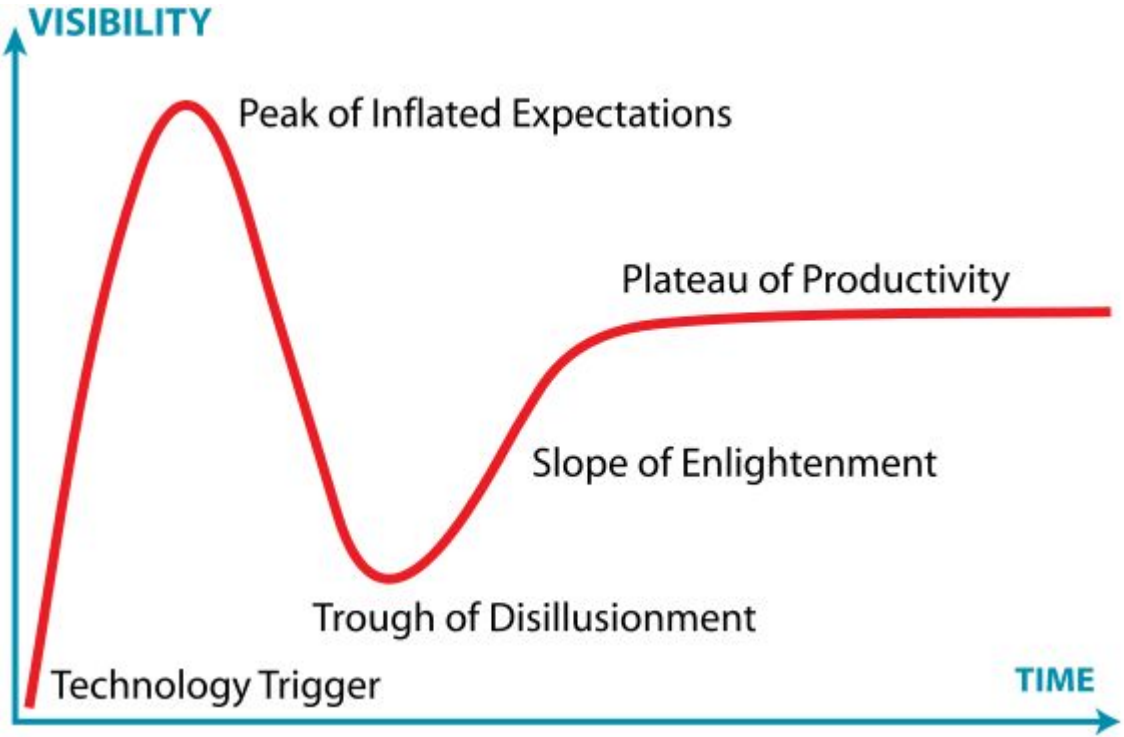
Insight

Operational
System dev

Inspired by http://101.datascience.community/tag/data-engineering/

Hype

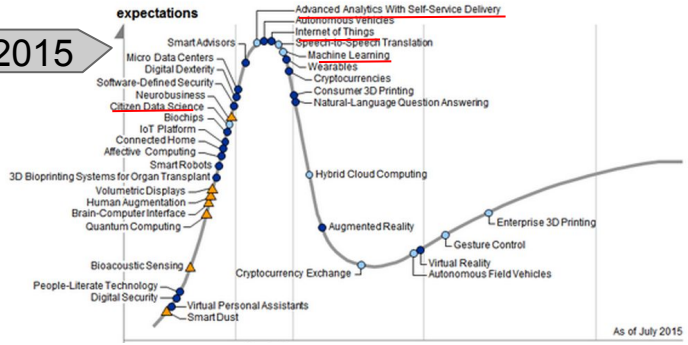
Hype Cycle



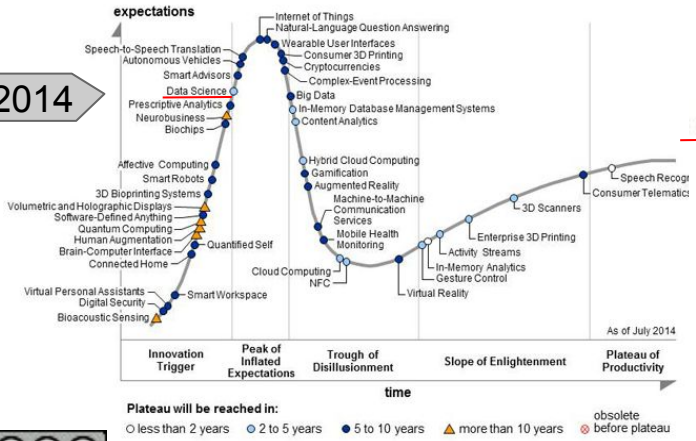
https://en.wikipedia.org/wiki/Hype_cycle

Hype Cycles - Expected 'Silver Bullets'

2015



2014



2016

http://www.gartner.com/

Hype Cycles - Has Data Science survived?

Data Science does not start by analysing big data but instead by asking key business questions.

What do we know?
What do we not know?
What have not been answered yet?
What are the known unknowns?
What are the known known?

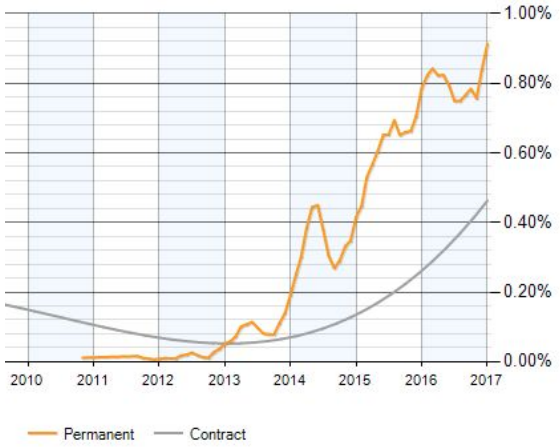
YES

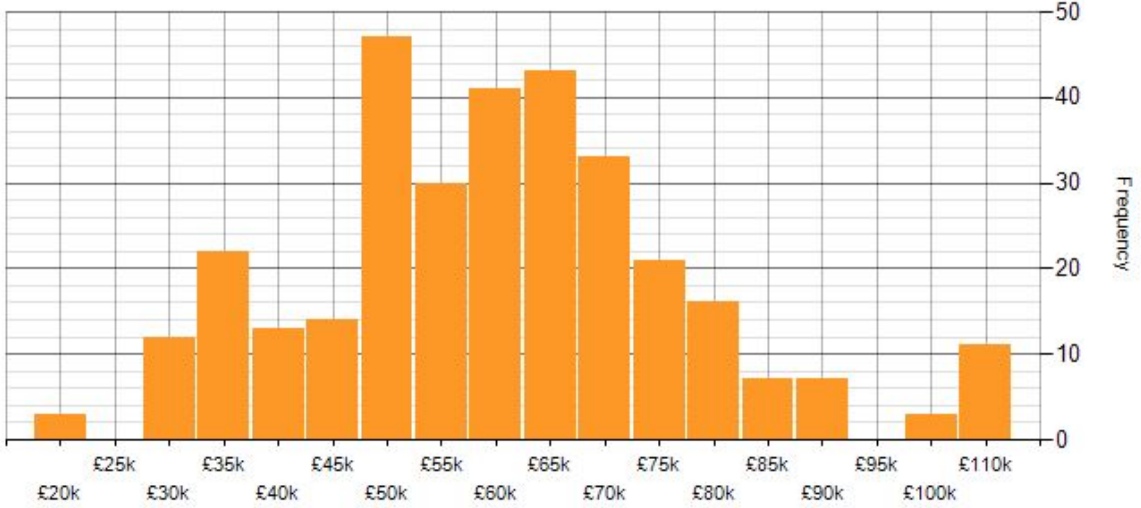
"Data Science is about discovering and showing people things they didn't know using data."

http://datasciencelondon.org/data-science-london/

Hype Cycles - Data Science Jobs & Salaries

Median London Salary
Data Scientist = **£65k**

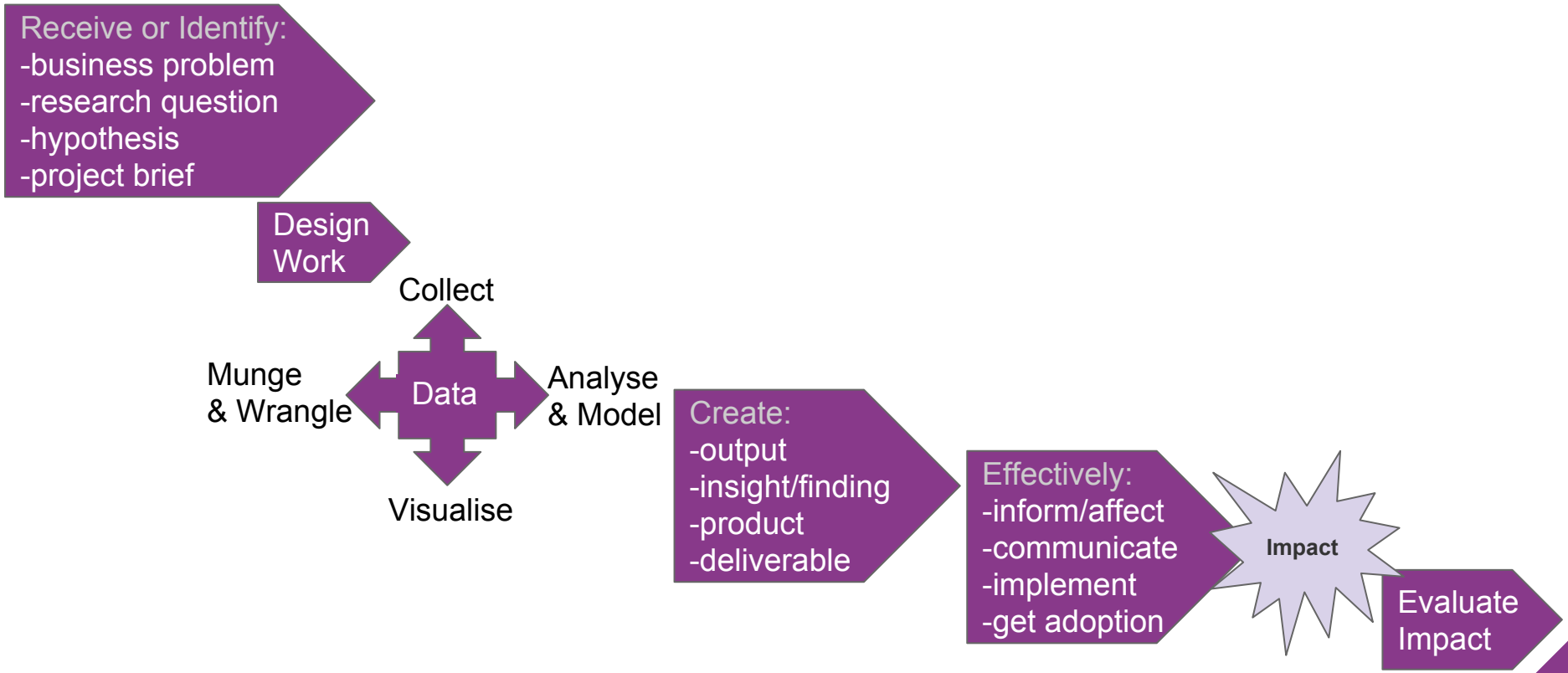




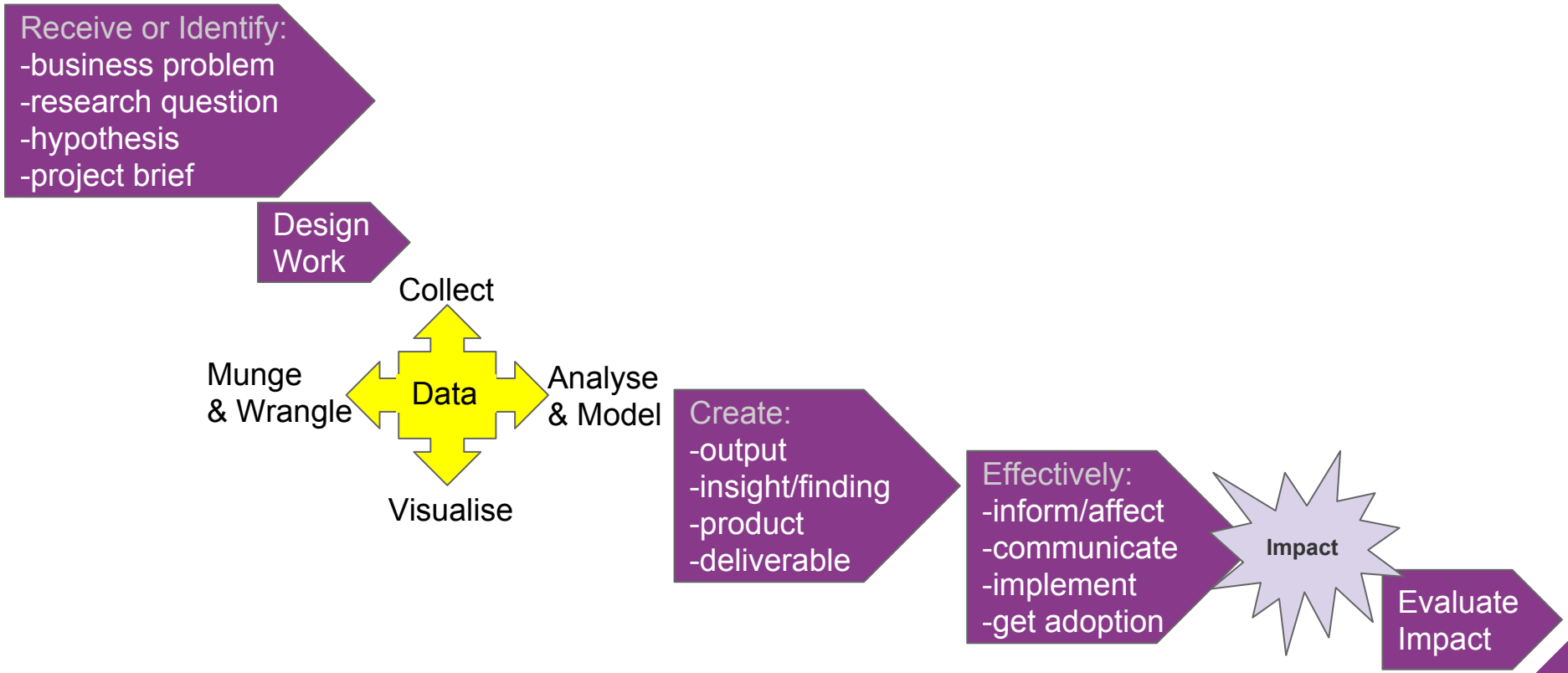
http://www.itjobswatch.co.uk

Workflow

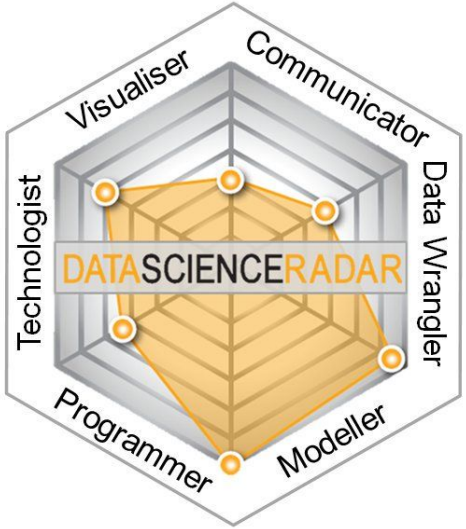
Data Science - Workflow



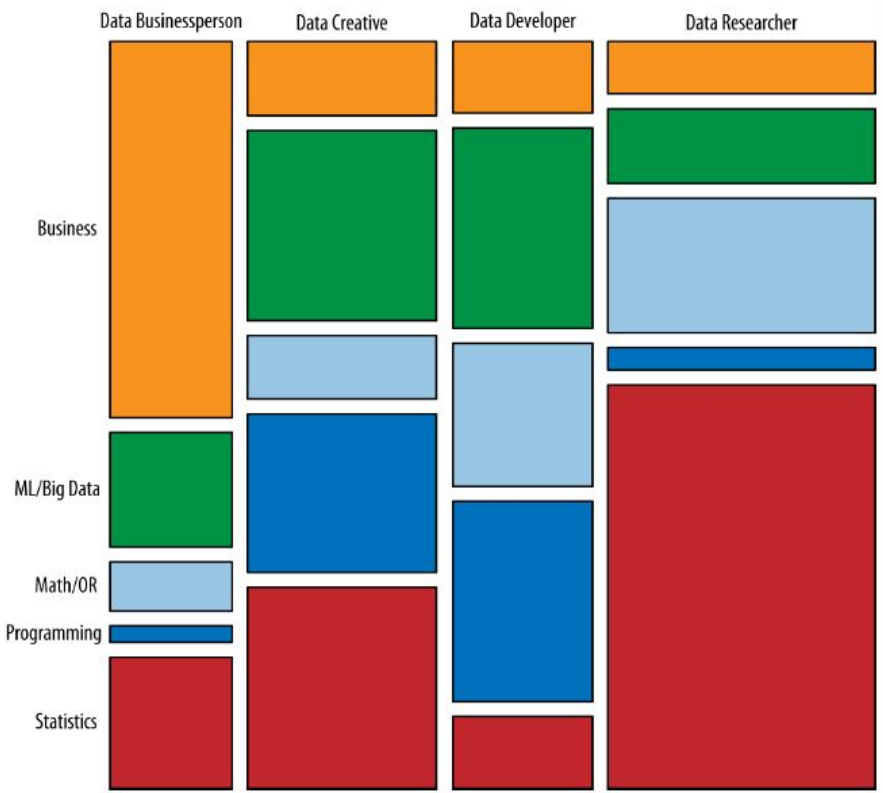
Data Science - Workflow



Data Science - No Unicorns/Divide & Conquer



https://www.mango-solutions.com/radar/



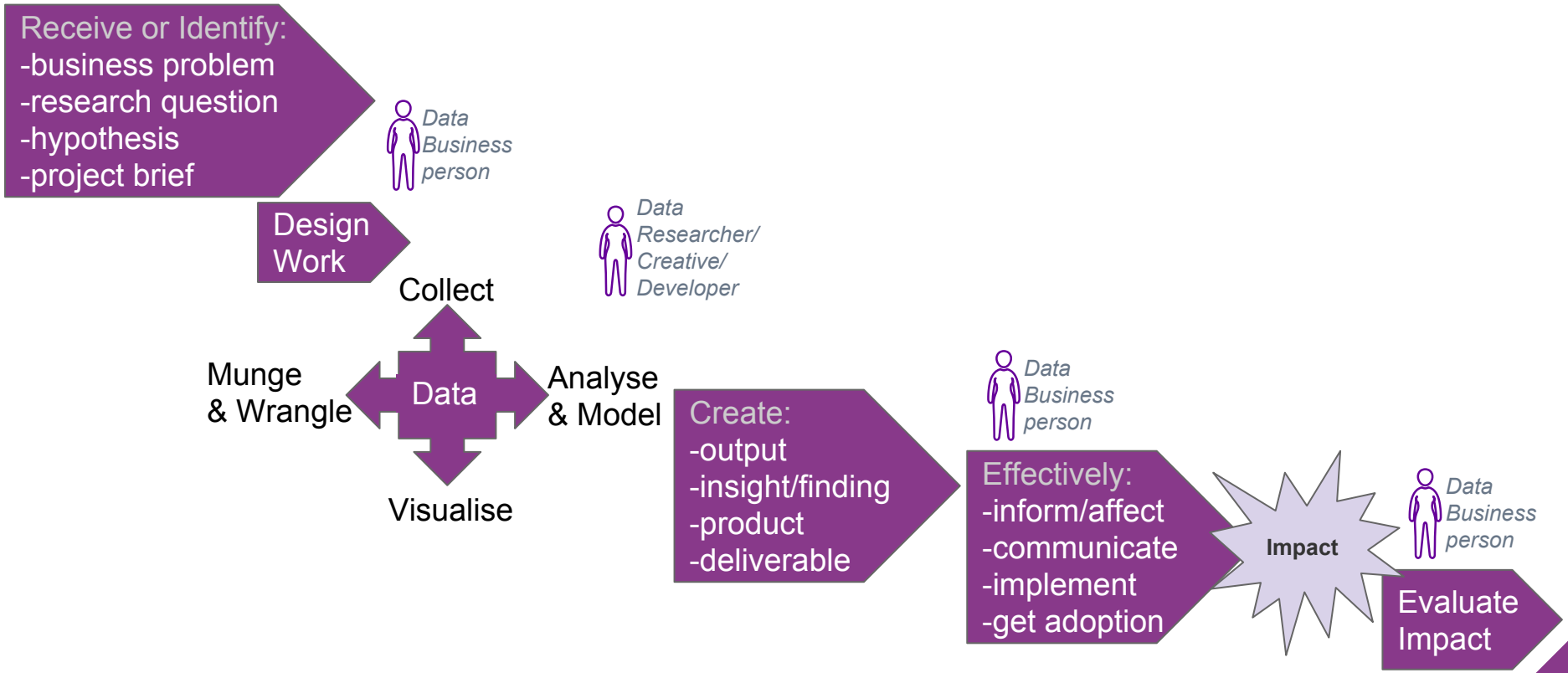
http://radar.oreilly.com/2013/06/theres-more-than-one-kind-of-data-scientist.html

Data Science - No Unicorns/Divide & Conquer

- **Data Businesspeople** are the product and profit-focused data scientists. They're leaders, managers, and entrepreneurs, but with a technical bent. A common educational path is an engineering degree paired with an MBA.
- **Data Creatives** are eclectic jacks-of-all-trades, able to work with a broad range of data and tools. They may think of themselves as artists or hackers, and excel at visualization and open source technologies.
- **Data Developers** are focused on writing software to do analytic, statistical, and machine learning tasks, often in production environments. They often have computer science degrees, and often work with so-called "big data".
- **Data Researchers** apply their scientific training, and the tools and techniques they learned in academia, to organizational data. They may have PhDs, and their creative applications of mathematical tools yields valuable insights and products.

http://radar.oreilly.com/2013/06/theres-more-than-one-kind-of-data-scientist.html

Data Science Workflow



Pitfalls

Data Science - Pitfalls

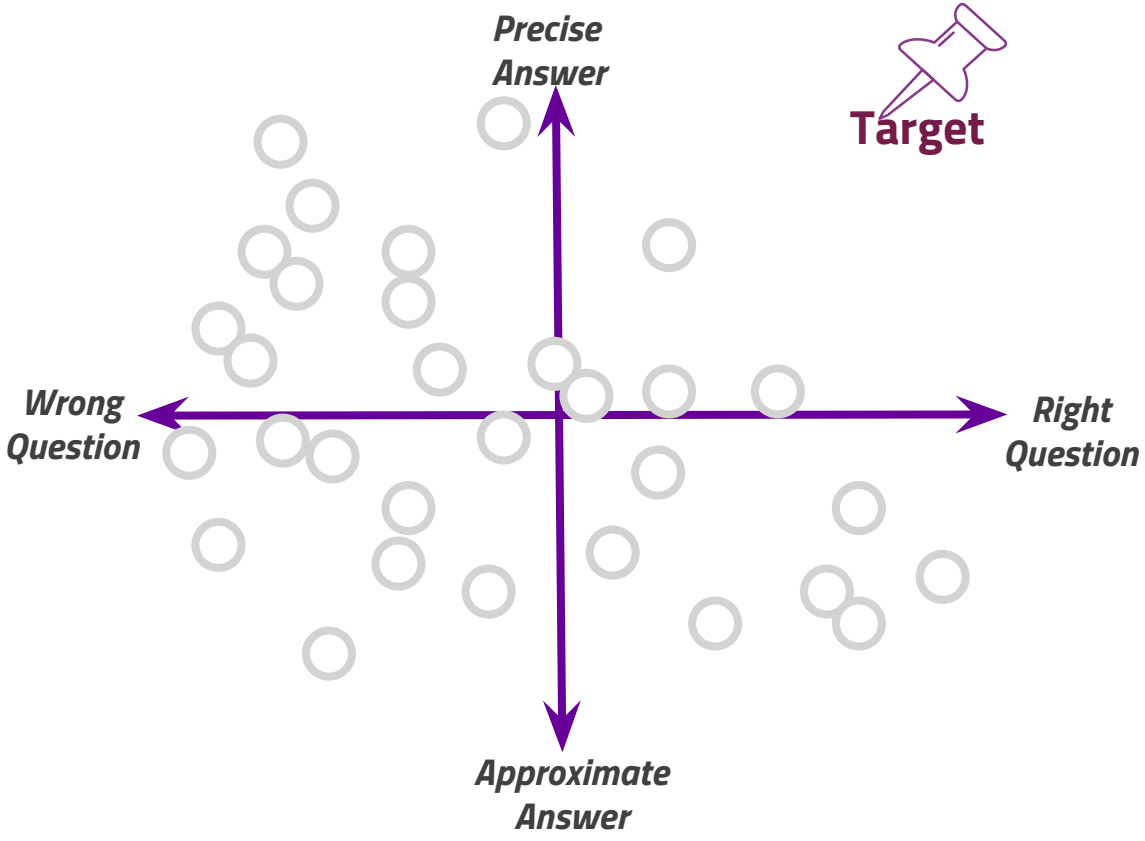
Data Science - Pitfalls
Beware of the HiPPO!

Data Science - Pitfalls

"Far better an **approximate answer to the right question**, which is often vague, than an exact answer to the wrong question, which can always be made precise."

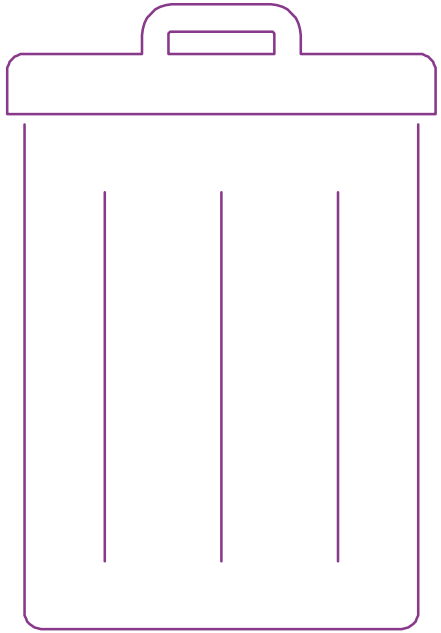
—John W. Tukey

The Future of Data Analysis (July 1961)



Data Science - Pitfalls

"80%
of Data Science projects never go to production"



Pitfalls - Blind Leading the Blind?

Data Scientist

The Co-op

Manchester, England

£60,000 to £80,000 p.a

We're looking to recruit an experienced Data Scientist to join our team, and unearth information from our data assets that'll help Co-op make smarter decisions for our members. You'll work as an internal data consultant with people from right across the Co-op family to find simple solutions to complex problems. And if you can bring us the combination of data expertise and great people skills we need, we can offer you a unique opportunity to help build our data capabilities from the ground up. To be successful as a Data Scientist at Co-op, you'll need to be an established data expert. Statistical models will be your speciality, but in addition to tried and tested technical ability, it's important you've got the skills to put these techniques to good use in our business. For someone possessing this rare combination of commercial and technical talents, this role represents the chance to create solutions that will help to change communities for the better.

What you'll do:

- Understand Co-op objectives, and create algorithms that deliver positive impacts for members
- Be capable and confident in tackling the most complex data-driven and analytical problems
- Work across several simultaneous projects with partners from various Co-op businesses
- Take on different roles on different projects (expert adviser/statistical guru/lead developer)
- Write code when you need to in order to tackle and troubleshoot the most complex tasks
- Make sure new problem solving approaches comply with existing Co-op rules and values
- Plan projects over a 12 month horizon, and manage budgets using Agile principles
- Contribute to the coaching and mentoring of a pool of less experienced colleagues
- Design solutions that create outputs which are accessible to non-technical audiences
- Be a great advocate for Data Science, promoting our services to Co-op colleagues

Pitfalls - Blind Leading the Blind?

Data Scientist

Telegraph Media Group

London, GB

Requirements:

- Robust experience in SQL (Hive QL or any other flavour) with databases spanning tens of millions of records.
- Solid fundamental understanding of statistics, and experience with statistical analysis using R or Python from university degree or previous role.
- Be knowledgeable about the digital ecosystem.
- You are a communicative person that values building strong relationships with colleagues and stakeholders and have the ability to explain complex topics in simple terms.
- A self-starter who's comfortable working autonomously
- Solid commercial skills and business awareness

To be successful in this role, you will need:

- Outstanding logical thinking, a very strong background in a quantitative discipline such as mathematics,physics, engineering, operations research, data science or similar, and a scientific approach to problem solving
- Demonstrate ability to manage stakeholder, show diplomacy and be an effective influencer
- Good technical skills (at least some practical experience with statistical/pattern recognition/machine learning methods)
- A sharp focus on getting results and insights using the most practical and fastest approach (even if it's not the most challenging or interesting for you)
- Ability to perform in a high pressure, fast paced environment and be comfortable with a high level of ambiguity
- Ability to communicate complex concepts concisely and clearly, including to senior level executives
- High energy and a can do, no-excuses attitude
- Curiosity and passion for making an impact
- Good interpersonal skills

Behavioural Competencies:

- Bright, driven, love challenges and want to change the editorial world.

Wanna be a Data Scientist?

Example Pathways - Alice

BSc (Hons) & MSc 1st
-Science
-Maths
-Modelling

Modeller
-code conversion
C to R
Matlab to R

Monitoring & Evaluation Officer
-Set up monitoring scheme
-Global impacts reporting & databases
- R, SQL

Data Scientist
-Data Driven org. Leadership
-ML & Analysis & Vis
-Data Pipeline
- R, SQL, Viz

Example Pathways - Chiin

BA (Hons)
-Economics
-Development

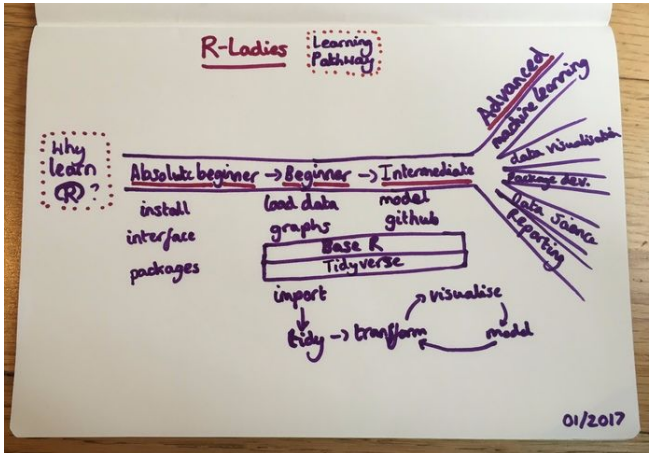
Management Consultant
-Excel
-Powerpoint

MSc (Dist.)
-Management
-Econometrics
-SPSS

Digital Analytics & Marketing Science
- Lead Practitioner
- Team Lead
- SQL

Head of Data Science
- Leadership
- R

Want to be a Data Scientist?
R-Ladies can help!!



Algorithms

Statistical Modeling

Data Mining

Machine Learning

Data Extraction

Hacking/ Problem-Solving

Data Scientist - R Programming

Visualisation

Business Dashboards & Data Democratisation

Reproducible Research

Version Control

@RLadiesLondon

@alice_data
@analyticspanda

#RLadies

Thank you!

london@rladies.org

Abstract

Demystifying Data Science

We all know the description of the Data Scientist being “The Sexiest Job of the 21st Century”, but do you have a clear understanding of what Data Science actually is?

In this talk, Data Science practitioners Alice and Chiin will present experience-based insights that enable clarity about this undoubtedly red hot but nebulous trend, by sharing coherent definitions, frameworks, and facts that help clear up some of the key areas of confusion. They will outline their view of Data Science best-practices, common misconceptions, pitfalls, and practical tips for those looking to make a career transition. This talk will ultimately deliver awareness about the reality of the Data Science profession, and help demystify the hype.

Alice Daish

Alice Daish is the Data Scientist at The British Museum focusing on making the museum data-driven by 2018. Co-Founder of R- Ladies Global and mentor at R-Ladies London. Registered Scientist previously trained in ecology and quantitative biology. Interests include R and data science, datafication, data analysis, predictive modelling, data visualisation, data communication, gender diversity in STEM.

Chiin-Rui Tan

Chiin is the Head of Data Science at the Foreign & Commonwealth Office, leading the establishment of a new data science capability. She has an Economics degree from the University of Cambridge, and interest in applied microeconomics topics. Founder & Co-Founder of R-Ladies London & Global, Chiin is a keen R evangelist and active promoter of computing to underrepresented minorities. Professional specialisms include data-centric leadership, econometrics, digital analytics, visualisation, data democratisation, and strategic insight.

END