

# Data Science: Is accreditation important?

HoDoMS Annual Conference, 2023  
University of Birmingham

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School of Mathematics and Statistics

Friday 28<sup>th</sup> April, 2023

The slide features two decorative cyan arcs. One arc is in the top-left corner, curving from the left edge towards the top. The other arc is in the bottom-right corner, curving from the bottom edge towards the right. The main title is centered between these arcs.

# Alliance for Data Science Professionals

# Outline



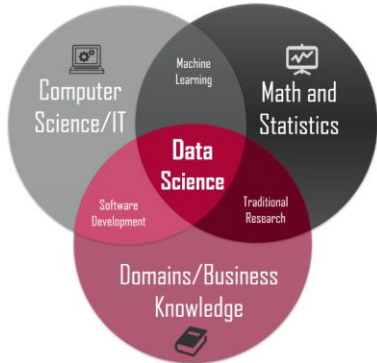
Is professionalisation of data science important?

AfdSP

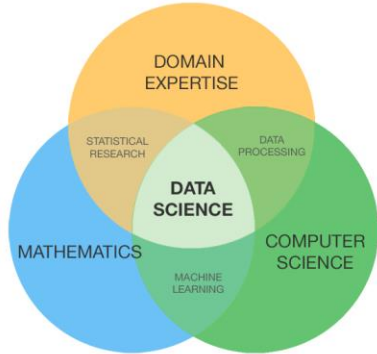
Challenges

Next steps

**What is data science?**



img source: <https://towardsdatascience.com/introduction-to-statistics-9d72a018755>



Source: Palmer, Shelly, *Data Science for the C-Suite*. New York: Digital Living Press, 2015. Print.

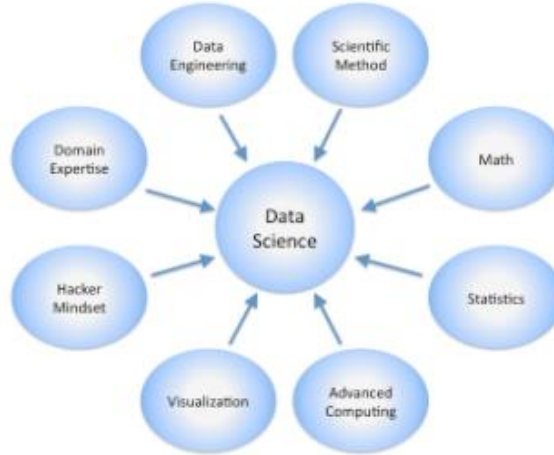
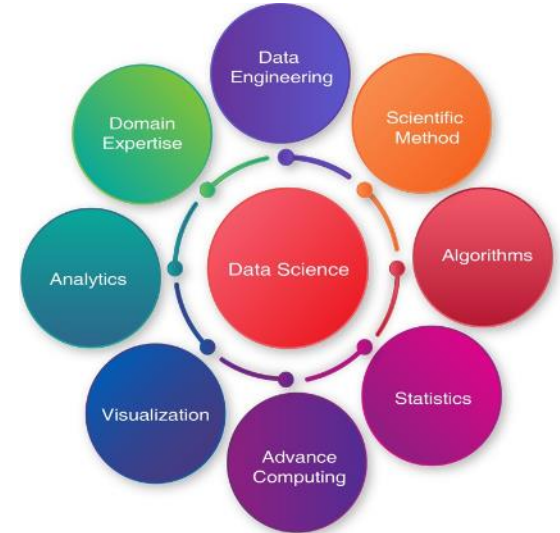
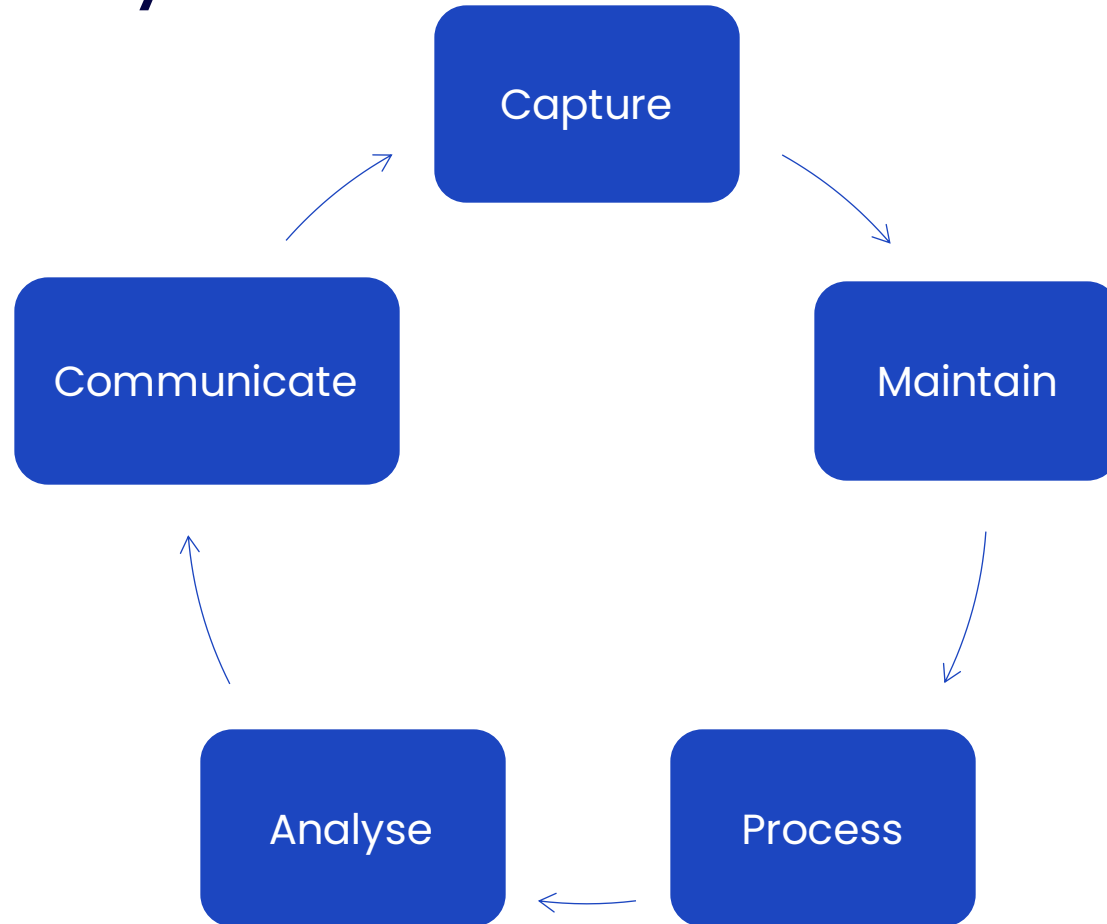


Image from Flatiron School



The main subjects in Data Sciences.  
(Courtesy: RxLogix)

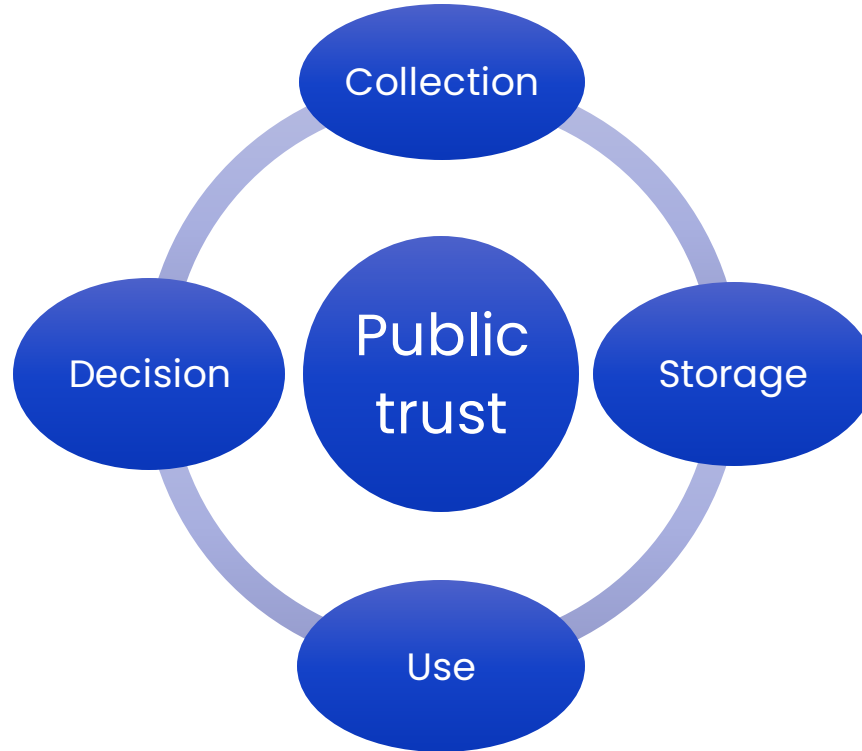
# Data Science lifecycle



# Professionalisation of Data Science

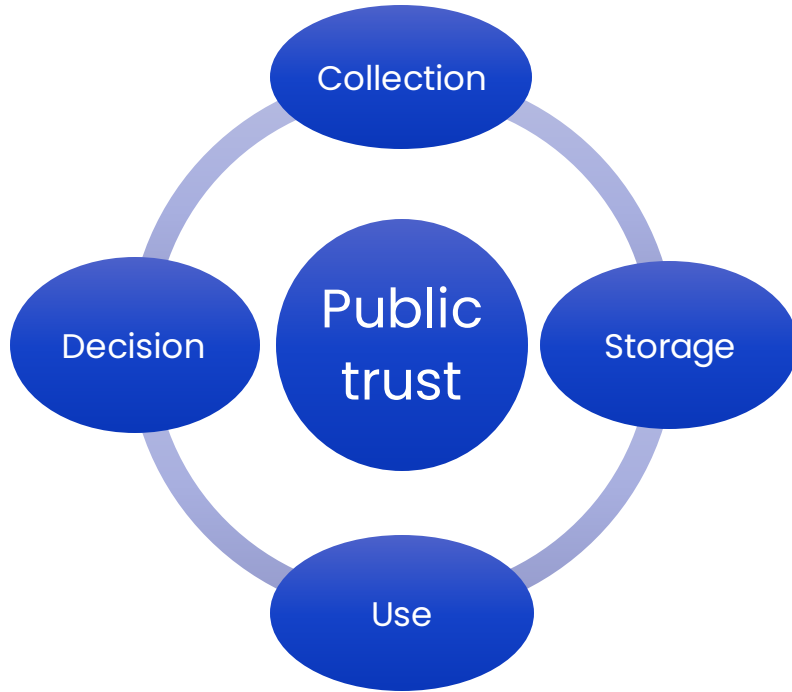
# Data Science Professionalisation

Ethics and efficacy





# Ethics

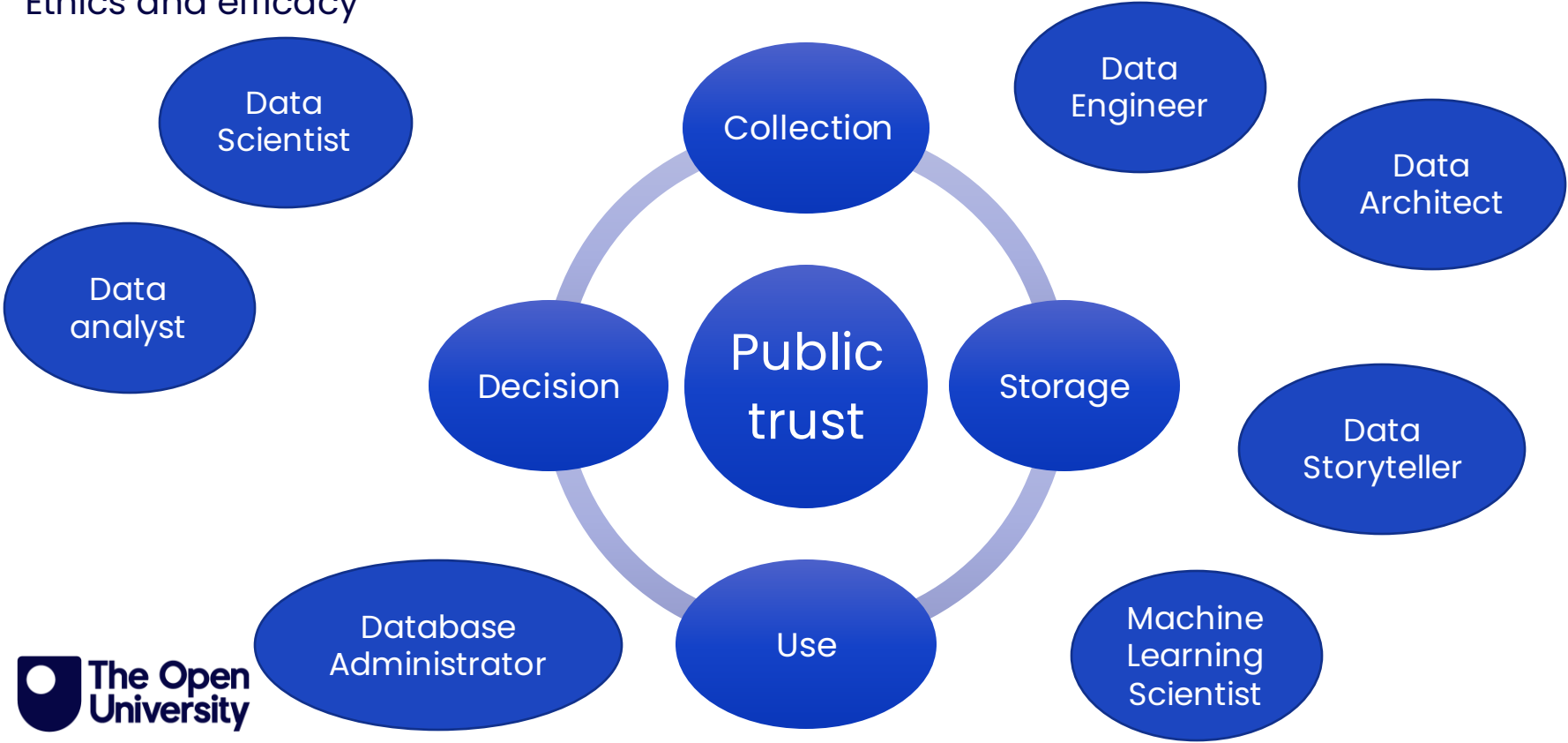


A guide to ethical data science:

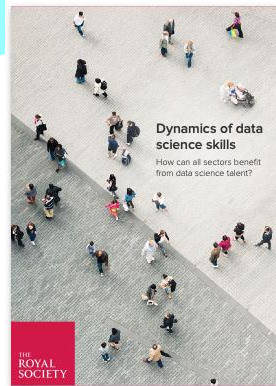
- Seek to enhance the value of data for society
- Avoid harm
- Apply and maintain **professional competence**
- Seek to preserve or increase trustworthiness
- Maintain accountability and oversight

# Data Science Professionalisation

Ethics and efficacy



# The Alliance for Data Science Professionals



**Recommended action:**  
Develop data science as a profession

May 2019



Contents:  
 Ministerial foreword  
 Executive summary  
 1. About the National Data Strategy  
 2. The data opportunity  
 3. Missions  
 4. Data foundations: ensuring data is fit for purpose  
 5. Skills: Data skills for a data-rich economy and data-rich lives  
 6. Availability: ensuring data is appropriately accessible  
 7. Responsibility: driving safe and trusted use of data  
 8. Next steps  
 Glossary  
 Annexes: List of actions and milestones



This will build on industry initiatives, such as [the Royal Statistical Society-led project](#) to establish industry-wide professional standards for data science

December 2020

Supported by:

**THE ROYAL SOCIETY**



# It's Tuesday, it's 4pm and it's...

## IMA

Paul Glaister CBE  
Rosalind Azouzi

## RSS

John MacInnes  
Ricky McGowan

## OR Society

Gavin Blackett  
John Hopes

## BCS

Paul Martynenko  
Russel Friend

## NPL

Neil Stansfield

## ATi

Matthew Forshaw

# Why do we need something new?

- CStat, GradStat
- CMath, CMathTeach, CSci
- CITP
- CSci





### Alliance formed to create new professional standards for data science

23.07.21 | Statistics news

A new alliance has been formed to create industry-wide professional standards for data science. 'The Alliance for Data Science Professionals' is defining the standards needed to ensure an ethical and well-governed approach so the public, organisations and governments can have confidence in how their data is being used.

While the skills of data scientists are increasingly in demand, there is currently no professional framework for those working in the field. These new industry-wide standards, which will be finalised by the autumn, look to address current issues, such as data breaches, the misuse of data in modelling and bias in artificial intelligence. They can give people confidence that their data is being used ethically, stored safely and analysed robustly.

The Alliance members, who initially convened in July 2020, are the Royal Statistical Society, BCS, The Chartered Institute for IT, the Operational Research Society, the Institute of Mathematics and its Applications, the Alan Turing Institute and the National Physical Laboratory (NPL). They are supported by the Royal Academy of Engineering and the Royal Society.

# The story so far...



ADVANCED

**DATA SCIENCE**  
PROFESSIONAL



**DATA SCIENCE**  
PROFESSIONAL



# Skill areas

- Data Privacy and Stewardship
- Definition, acquisition, engineering, architecture, storage and curation
- Problem definition and communication with stakeholders
- Problem solving, analysis, statistical modelling, visualisation
- Evaluation and Reflection



# Ethics

- Data: collection, validity for use in the intended purpose, permission for usage, storage, security
- Model: development, testing (fairness, bias, error rates), usage (how could the model and results be used for an unintended purpose) and transparency
- Communication: explanation of why the science is required; the results achieved and how can misinterpretation of the result be minimised?
- Relevant laws and permissions of usage for data (including legal rights of individuals, privacy and anonymity)

# Efficacy

- Quality assurance of code and data
- Validation of model fit
- Robustness of the model and software implementation
- Ongoing monitoring of model implementation

# Alliance for Data Science Professionals

We are defining the standards needed to ensure an ethical and well-governed approach so the public, organisations and governments can have confidence in how their data is used.





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**DATA SCIENCE**  
PROFESSIONAL



# The story so far...and the next chapter!

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**DATA SCIENCE**  
PROFESSIONAL

**DATA SCIENCE**  
PROFESSIONAL

- University/training accreditation
- New members

# Opportunities...

...and challenges

- ▶ Curriculum content
- ▶ Interdisciplinary working
- ▶ Embedding ethics and efficacy throughout
- ▶ Mathematics and Statistics Support
- ▶ External engagement
- ▶ Outreach

# Thank you