



Institute
and Faculty
of Actuaries

MAID Working Party Update

Stelio Passaris, FIS



23 October 2017

Agenda

Introduction to Data Science

Introduction to MAID

Update from Workstreams

2016 Output

2017 Output

Questions



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Introduction to data science and MAID

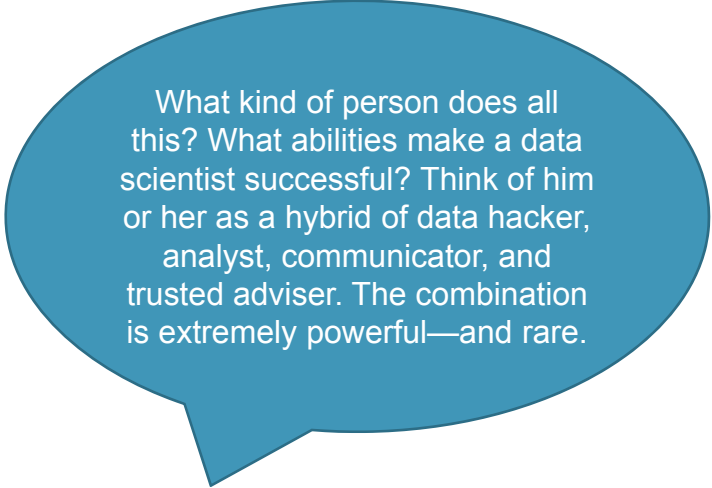
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Introduction to Data Science

- A definition: the use of scientific methods to derive insights from data
 - Applied statistics: data collection → data modelling / analysis → decision making
- “Big data: The next frontier for innovation, competition, and productivity” (McKinsey, [May 2011](#))
 - “By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.”
- “Data Scientist: The Sexiest Job of the 21st Century” (Harvard Business Review, [Oct 2012](#))
 - “More than anything, what data scientists do is make discoveries while swimming in data.”
- 2013: IEEE Task Force on Data Science and Advanced Analytics – <http://dsaa.co/>
- 2015: European Association for Data Science – <https://euads.org/>

23 October 2017

4



What kind of person does all this? What abilities make a data scientist successful? Think of him or her as a hybrid of data hacker, analyst, communicator, and trusted adviser. The combination is extremely powerful—and rare.

Introduction to MAID

- Cross-practice working party
- Established in Jan 2016
 - Chaired by Michael Tripp (GI Board chair)
- Aimed at informing the IFoA position and response to new opportunities in data science
- Organised into four workstreams with a steering committee
 - Workstream 1: research
 - Workstream 2: new approaches to current actuarial work
 - Workstream 3: new opportunities for actuarial work
 - Workstream 4: implications for professional affairs
- IFoA website: Practice areas > Cross Practice Work > Research Working Parties > Modelling, Analytics and Insights from Data
 - <https://www.actuaries.org.uk/practice-areas/general-insurance/research-working-parties/modelling-analytics-and-insights-data>



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Updates from working party workstreams

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Workstream 1: research

- Awareness of data science and 'Big Data' research
- Promote new research
- Identify current and future key trends in the area
- Conduct literature review of existing resources and platforms
- Review international practices
- Identify relevant conferences and events

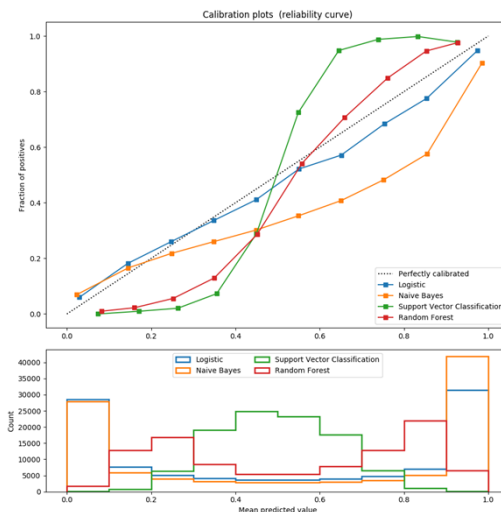


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8

Workstream 2: new approaches

- New approaches to current actuarial work
- Consider how a variety of data science techniques could be applied in a current actuarial context
- Techniques considered include (but are not limited to)
 - Supervised learning
 - Unsupervised learning
 - Reinforcement learning
 - Decision aid
 - Bayesian learning
 - Deep learning
- Prepared a sessional paper for presentation at the Data Science Summit



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9

Workstream 3: new opportunities

- Focussed on the opportunity to develop actuarial science into new areas
- Brainstormed and researched areas of new technology
 - Machine learning
 - Advances in disease diagnosis
 - Augmented reality / Virtual Reality / Wearables
 - Genetic database
 - Autonomous agents
 - Telematics
- Currently interviewing employers of data scientists to assess suitability of actuaries for these roles
 - Professional discipline: how important is oversight/membership of a professional body?
 - Mathematical skills
 - Numerical computing skills
 - Other skills: skills that an experienced actuary would not be generally expected to have
 - Domain knowledge: how important is knowledge of the industry (as opposed to more generic knowledge)
 - Salary cost (typical UK value, including average bonus)
 - Communication skills
 - Application of judgement

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10

Workstream 4: professional affairs

- To consider the implications for the profession of advances in data science, and to help the IFoA develop a data science strategy
- Drafted four short opinion-based essays covering five areas of interest
 - Discussed essays and wrote paper for IFoA management board meeting
- What others professional bodies are doing
 - IAA: established Big Data Working Group, with co-ordination across member bodies
 - Actuaries Institute (Australia): Data Analytics Working Group, akin to MAID
 - Institut des Actuaire (France): new Data Science qualification
 - CAS Institute (US): launching predictive analytics/ data science credential
 - SoA (US): developing predictive analytics certificate
- Construction of a data science organisation relationship map



23 October 2017

11



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Outcomes of the working party

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2016 Output

- Data Science Universe Event ([May](#))
- IFoA Member Survey on the Data Science Universe (*Oct–Nov; results [Feb 2017](#)*)
 - Increase awareness amongst actuaries of data science methods and techniques, and the opportunities they may present
 - Ensure that pre- and post-qualification learning equips future and current actuaries with the tools and techniques required
 - Support advancement through research, encourage adoption by practitioners, demonstrate thought leadership outside the profession
 - Collaborate with other professionals and disciplines to share knowledge and skills and to advance techniques and methods
 - As part of the IFoA's public interest role, ensure that the regulatory and ethical implications are understood and relevant action taken

23 October 2017

13

Data Science Digest

- Provides the IFoA membership with updates on the latest data science developments and MAID working party updates
- [Issue 1](#) published in April 2017
- [Issue 2](#) published in September 2017



23 October 2017

14

Data Science Summit

- Held on 12-13 Sep 2017
- The Future of Data Science – McKinsey
- Data Protection – Imperial College
- Education and Business development
- Professionalism in Data Science – Royal Statistical Society
- Break-out sessions on what initiatives other global actuarial bodies are undertaking
- Live stream of [Autumn Lecture](#): Data Science and its Potential for Actuaries and Policy Making

Strategic Vision for the Profession

- Nov/Dec 2017: presentation to Management Board
- Jan 2018: presentation to Council



Questions



Comments

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