Modelling Analytics and Insights from Data (MAID)

Alexander Hanks, EY
The singularity might be science fiction - but data science is a reality!

The ever accelerating progress of technology has led to speculation of a singularity - a hypothetical event in which artificial intelligence would be capable of recursive self improvement.

- 1763: Least squares – precursor to linear regression
- 1791 - 1813: Faculty of Actuaries founded
- 1856: Linear Regression first used
- 1877: Monte Carlo simulation method
- 1943 - 1946: First computer developed
- 1949: Microsoft Excel released
- 1975 - 1984: IBM Deep Blue beats humans at chess
- 1985: Google AlphaGo beats humans at Go
- 2016: Invention of World Wide Web
- 2040: The Singularity? AI beats humans.

IBM Watson beats humans at Jeopardy
Agenda

1. The data science universe
2. The Modelling Analytics and Insights from Data Working Party (MAID)
3. The big questions for the profession
4. Member survey
The data science universe
The ‘data science universe’

- Computer science and Big Data
- Bringing together and manipulation of many data sources in vast quantities
- Initial data analysis - data visualisation & data mining
- Mathematics and in-depth modelling, statistical analyses, predictive analyses
- Decision support, optimisation and Operations Research
- Possible automation and feedback loops – including AI or robotics
Harvard Business Review has called Data Scientist the Sexiest Job of the 21st Century.

- New techniques being deployed
- New players in the actuarial space
- Opportunities & threats
- Data scientists – skillsets
- Employers – demand
- Social implications

A search on LinkedIn yielded the following number of job titles:

- **Quantitative Analyst**
- **Actuary**
- **Data Scientist**
The Modelling Analytics and Insights from Data (MAID) Working Party
MAID is a cross practice working party

- Established in January 2016 with nearly 40 members.
- Aimed at informing the IFoA position and response to new opportunities in data science.
- Steering Committee Members: Michael Tripp (Chair), Alberto Chierici, Ben Canagaretta, Alicja Nocon, Alexander Hanks, Alex Panlilio, Matthew Wilson
- It has organised itself around 4 work streams:

| WS1 | • Research |
| WS2 | • New approaches to current actuarial work |
| WS3 | • Possible ideas and solutions in new opportunities from actuarial work |
| WS4 | • Implications for professional affairs |
**Workstreams**

**WS1: 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

**WS2: New approaches to current actuarial work**
- Consider how a variety of data science techniques could be applied in a current actuarial context
- Techniques considered will include (but not limited to) Supervised learning, Unsupervised learning, Reinforcement learning, Decision aid, Bayesian and Deep learning

**WS3: New opportunities for actuarial work**
- Opportunities such as Machine-learning, real-time optimisation, customer engagement, data mining, and predicative analytics
- New opportunities within the existing practice areas of Life, General Insurance, Pensions and Investments
- New areas within the digital economy

**WS4: Implications for professional affairs**
- Exams, CPD, conference agenda
- Public Interest issues, and wider regulatory considerations
- Policy implications and Standards
- Interaction with members on a truly cross practice basis and feedback on IFoA direction
- Possible partnerships, collaboration, and lobbying
## Progress to date

<table>
<thead>
<tr>
<th>Month</th>
<th>Description</th>
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<tbody>
<tr>
<td>January</td>
<td>MAID launched with nearly 40 volunteers</td>
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<tr>
<td>February</td>
<td>Steering committee organised across four workstreams</td>
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<tr>
<td>March</td>
<td>‘Data Science Universe’ event held at Staple Inn</td>
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<td>April</td>
<td>Literature review gets underway</td>
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<td>May</td>
<td>Investigations of new techniques and areas of opportunity</td>
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<td>June</td>
<td>Opinion based essays produced on implications for the profession</td>
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<td>July</td>
<td>Common themes paper produced for IFoA management board</td>
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<td>Aug</td>
<td>Member survey goes live</td>
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<td>2016+</td>
<td>Next steps..</td>
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*26 September 2016*
The big questions for the profession
How quickly will things happen and what are the threats and opportunities?

How should the IFoA respond?

1. Do nothing with whatever consequences that might then ensue
2. Take appropriate action to try to preserve the status and standing of actuaries in their current industries
3. Go for a growth strategy
Implications for the profession

• Role of actuary
  – “What is an actuary?”, “what is an actuary famous for?” and “how should actuaries position themselves?"

• Education
  – What changes will be needed to exams and CPD as data science becomes a core skill for financial and risk management?

• Regulation
  – Increased competition from non-regulated “professionals” into all areas apart from reserved roles?

• Cooperation
  – Greater cooperation needed with other bodies / professions / academics / data scientists / practice areas?

• PR
  – What is an appropriate PR plan given the dangers to professional reputation of exaggeration, over-promising and under-deliverability?
Member survey
Please take part in the members survey.

- Visit: bitly.com/maid2016
- Only 5 minutes of your time
- Help to inform future work at the IFoA
- Survey open until 14 October 2016
Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.