

● Introduction [1 min]

- Dr Brian Ballsun-Stanton
 - Currently Solutions Architect (Digital Humanities) for FOA
 - Technical Director of FAIMS Project since 2012
 - 6 **competitive** external grants
- Techie, Philosopher
 - 23 projects across the faculty since 2017
 - Projects with Philosophy, Security Studies, Ancient History
- I can direct the adoption of infrastructure, tools and techniques towards
 - increase research quality
 - Engagement
 - Impact
- Focus on automation and **ethics** with an eye towards **reproducible** research

● Table of Contents [4 min]

- Discuss what I mean by eResearch and Data Science
 - All research is **technologically enabled**
 - Different ideas of technology, data
- Discuss how my **recent** research supports engagement and impact
 - Increased engagement: MQ on Google arts and culture with ML partnership with Google
 - Increased impact: Ethical automation of social media data collection and analysis
- Discuss Transformation of research practices
 - Strategic plan has multiple results and measures which are influenced by eResearch
 - I can provide: Advocacy, advice, capability-building, compliance
- Raise strategic issues
 - We get what we reward
 - Figuring out how to create a feedback loop

- **Part 1: Technologically enabled Research and Data Science**

- **Technology, Data, Systems [7 min]**

- Technology:
 - Object, practice, knowledge, organisation
 - Example:
 - Hammer is used as tool plus technique for use,
 - without both, object lacks its most useful affordances
- Data
 - Objective measure
 - Subjective observation
 - Encoded human communication
- Systems
 - Purpose of a System is what it does
 - Design infrastructure processes with that as fundamental feedback loop
- Different ideas of what technology is and what data is change nature of job
 - Not just about walls of blinking lights
 - not a purpose in itself

- **Ethical Considerations [8 min]**

- Good Data
 - Replication crisis
 - FAIR Data publishing
- Reducing future harm
 - NHMRC Compliance
 - Move to safe-by-default
 - Encryption, backups
 - don't rely on stressed researchers to remember all rules

- **Optimising for Human Attention [9 min]**

- Let us figure out the what
 - Computers to do over and over again
 - Professional, consistent, fast
- FAIR and Reproducible research
 - Avoid being the next Reinhart-Rogoff excel scandal
 - Use testable code as the basis for scholarship

- **Optimising for novel capabilities [11 min]**

- Humans + Computer extend capabilities of each other
 - "Weak superintelligence" Vinge
 - Machine Learning, compute/storage intensive tasks
- Technology can make new avenues of research possible, but most will fail.
 - Coherent and consistent infrastructure
 - Choose where to spend attention
- Solving the allocation problem is hard
 - Harder still when we don't value time or attention
 - We increase what we reward

● **Part 2: Illustrative Examples**

● **Impact with Social Media for the NSW Government [14 min]**

- Used APIs to get 1.3 million social media posts over three platforms.
- Python and Natural Language processing to automate:
 - Collect
 - Process
 - Descriptive statistics and visualisations
 - Qual + Quant used to inform
- Impact through policy recommendations backed by thorough and reproducible data
 - Report being presented to commonwealth committee yesterday.
 - Presented to Commonwealth committee this week, state committees in July.

● **Engagement with Google arts and culture [16 min]**

- Relationship between us, Google, and Ubisoft as part of the creation of the Fabricius Workbench
 - ML Tool to assist egyptologists in digitising and identifying hieroglyphs
 - I built the collaboration between partners, advised and tested the technical side of the tool.
- Making new capabilities.
 - ML + Ancient Egypt.
 - New platform with world-reach for MQ Research engagement
 - My grad student is currently performing critical assessment of tool for her thesis
- Google Arts and Culture sharing world's cultural heritage
 - Highlight research of cultural significance
 - New way to communicate
 - 15,820 views in a month is a great start to world-wide engagement.

● Part 3: MQ's Strategic Transformation

● Advocacy and Advice [18 min]

- '... infrastructure with a focus on providing institution-level facilities'
 - Having something is easiest part
 - Driving cultural change harder
- 'Adoption of new technology and ways of working.'
 - Being a good advocate of systems which solve problems is critical
 - Everyone on the Security Studies team is now interested in using Overleaf and citation management systems
 - Digital transformation: actually getting researchers to stop emailing documents around
 - Transforming how researchers work on day to day basis and by being embedded in the research, resulted in significantly impactful study -- the reason we were able to map the online environment for the government
 - Impact at state and federal level through strategic advocacy
 - Domino effect, build on fundamental basics
 - Demonstrate new systems worth the risk

● Capability-building and Compliance [20 min]

- 'Improved upon the results of ERA and EI 2018'
 - Avoid data breaches and scandals
 - Increase publication routes with
 - GA&C
 - Well typeset preprints on osf
 - Good static-site blog platforms
- 'Staff engagement and retention, specifically in career development'
 - Start with carpentries,
 - continue support and community building
 - Small wins build confidence
 - Community of many small wins makes scaffold for new career skills
 - Guide researchers to ask the right questions to learn new tools
 - Risk as function of time and scope
 - Demonstrated utility is persuasive

- **Issues for consideration [21 min]**

- Time, risk, and commitments
 - Reactive - catch-up
 - researcher/staff time not valued
- Reward loops
 - What, specifically, do we reward?
 - When/how do we get feedback on failure?