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# The Australian Science, Technology and Research Assessment (ASTRA) Project

## PRINCIPAL INVESTIGATORS

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## OVERVIEW AND GOALS

Understanding the keys to the productivity of the innovation process is fundamental to addressing the global challenges currently facing the world. Our focus is on the various mechanisms (and policies) which might enhance the creation *and* diffusion of knowledge. For many of the wicked challenges facing the world - such as the spectre of climate change - it is crucial that we not only create green technologies but that we increase the speed with which they are adopted by individuals, households and firms.

In the 1<sup>st</sup> stage of the ASTRA project, we conducted a Feasibility Study to evaluate the possibility (and cost) of establishing ASTRA using data from two universities: the University of Melbourne and the Australian National University. The ASTRA Feasibility Study was conducted during 2012 with a view to rolling the data infrastructure out to other Australian research institutions in subsequent years.

In the 2<sup>nd</sup> stage of the ASTRA project, we have started analyzing a range of aspects of the productivity research production process, including an investigation of the effects of 'star researchers'. By freeing up star researchers from teaching and administrative duties, schemes designed to attract and support 'star researchers' can enable them to allocate more of their scarce time to valuable research issues. Moreover, they might improve the quality of student/postdoc training, attract extra (industry) funds, and raise the productivity of their peers within the university. We observe all of those researchers who applied for one of a range of Fellowships designed for 'star researchers'. Using this unique dataset enables us to quantify the effects of being granted one of the Fellowships.

## STRUCTURE OF PROJECT

Following STAR METRICS, ASTRA is open access, automated and systematic: no scientist lifted a pen in order to contribute to the ASTRA data platform since the data already exist in several repositories. 21st century tools were used to compile (and link) these existing datasets.

The 1<sup>st</sup> stage of the ASTRA project (i.e. the Feasibility Study) examined whether data on individual researchers at the Australian National University and the University of Melbourne can be linked to other existing data on their activities such as their research output. If feasible, we can then link the researcher-output information back to researcher grants provided by Australian funding agencies such as the Australian Research Council (ARC) and the National Health & Medical Research Council (NH&MRC). Our vision is that the data infrastructure which is at the heart of ASTRA will become an important part of the toolkit required to understand our returns to investment in science and research.

The data used for the 2<sup>nd</sup> stage of the ASTRA project (i.e. specific project on 'star researchers') includes the following:

- Researchers who applied for funding through an Australian fellowship scheme (including NH&MRC Fellowships, and ARC Future Fellowships)
- Successful applications for Fellowship funding
- Research grants awarded by both national and international funding agencies
- Publications (and citations) in international academic journals
- Commercial contracts signed to develop academic research
- Patent applications (and grants)

National and international collaborative networks (as defined by the teams of investigators on successful grants and the teams named on academic publications).

#### MAIN SUCCESSES

The main achievement thus far has been convincing two of Australia's most research-intensive universities to participate in ASTRA, and to be able to demonstrate the value of the data infrastructure for understanding i) each university's research expertise; and ii) the effectiveness of specific government (and university) policies. The success outlined in the ASTRA Feasibility Study will be crucial to getting other institutions to participate.

#### MAIN CHALLENGES

The next challenge for the project will be to find additional funds and support to continue to build the data infrastructure. Despite the significant support for ASTRA – which is based on the success of the 1<sup>st</sup> phase of the project – the tight budgetary climate in Australia at present is a substantial challenge.

#### NEXT STEPS

We are currently exploring a range of different funding opportunities to roll out ASTRA to other Australian research institutions. In the meantime, we are also continuing to undertake analyses of the data collected in order to demonstrate the important policy issues that can be investigated using ASTRA data. This should enhance the value proposition associated with investment in ASTRA data infrastructure.