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Astronomy Data and Computing Services: Changing the way research software is developed and maintained

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Addressing the requirements for transparent, cost effective and high-impact research in this era of big data and cross-disciplinary research will require significant community changes to how research software is created, managed and maintained. In this talk I will introduce Astronomy Data And Computing Services (ADACS): a highly successful initiative of the Australian astronomy community established to address the need for coordinated national investment in software systems and training. Established by Astronomy Australia Limited (AAL) via funding from the federal National Collaborative Research Infrastructure Strategy (NCRIS), ADACS has operated since 2017 under the mandate of optimising the return from Australia's investment in astronomy computing infrastructure. In practice however, it is working to shift the culture and practices around the creation and maintenance of research software; towards a more modern, professional and sustainable model built upon maximising the expertise of cross-functional teams. I will describe how ADACS harnesses economies of both scope and scale to solve problems for researchers that otherwise could not have been solved; accelerating old science and enabling new science. I will also show how transferrable this model is to cross-disciplinary engagement - drawing from examples with commercial partners in satellite communications, mining, and medicine as well as other research domains including marine sciences and social network analysis - pointing the way to a model by which Australia could begin to address the challenges of effective research software management in the modern age.

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