



CSIRO's eResearch Service Provisioning in 2019

CSIRO Scientific Computing

Justin Baker, John Zic | October 2019





Australia's National Science Agency

5500

talented staff

\$1billion+
budget

Working
with over
2800+
industry
partners

57

sites across
Australia

Top 1%
of global
research
agencies

Each year
CSIRO
contributes
\$4.5 billion+
to the economy



IMT SCIENTIFIC COMPUTING SERVICES

Providing computational expertise that enables great science

CSIRO Researchers/CSIRO Research Projects

Digital Science Consultancy

Planning & Provisioning;
Analytics;
Science domain computing and data expertise:

Bioinformatics; Astronomy;
Chemistry; Earth Sciences;
Synchrotron Science;

Concierge

Embedding Computational Science Expertise

Driven by requirements from research projects and strategic initiatives

Data Analytics and Visualisation
Research Software Engineering
Technical Solutions
Data Pipelines and Modelling

Capability Development

Digital Learning

Python; Using CSIRO HPC;
ML, AI and Data Analytics;
Software Engineering

Outreach

Conferences - C3DIS+RDA 2020
Student and Internships
Technical Leaders
Drop-in expert sessions

Scientific Software Licensing
License management

Service delivery and partnerships

Software services

Partnership advisor and liaison

Research Data

High Performance & Scalable
Compute Platforms

Partner Facilities



Scientific Computing Services - Expertise

Data analytics and visualisation	Domain specific algorithms and software
Science workflows – data and compute centric	Science data management
High performance scientific applications	Solution Design
Simulation and modelling	Specialised full stack web development
Research Software Engineering	...

Total of 42 staff in 4 Teams



eResearch Collaboration Projects

Delivering Scientific Computing expertise into CSIRO research

Research
Software
Engineering



Data Analytics
and
Visualisation



Technical
Solutions

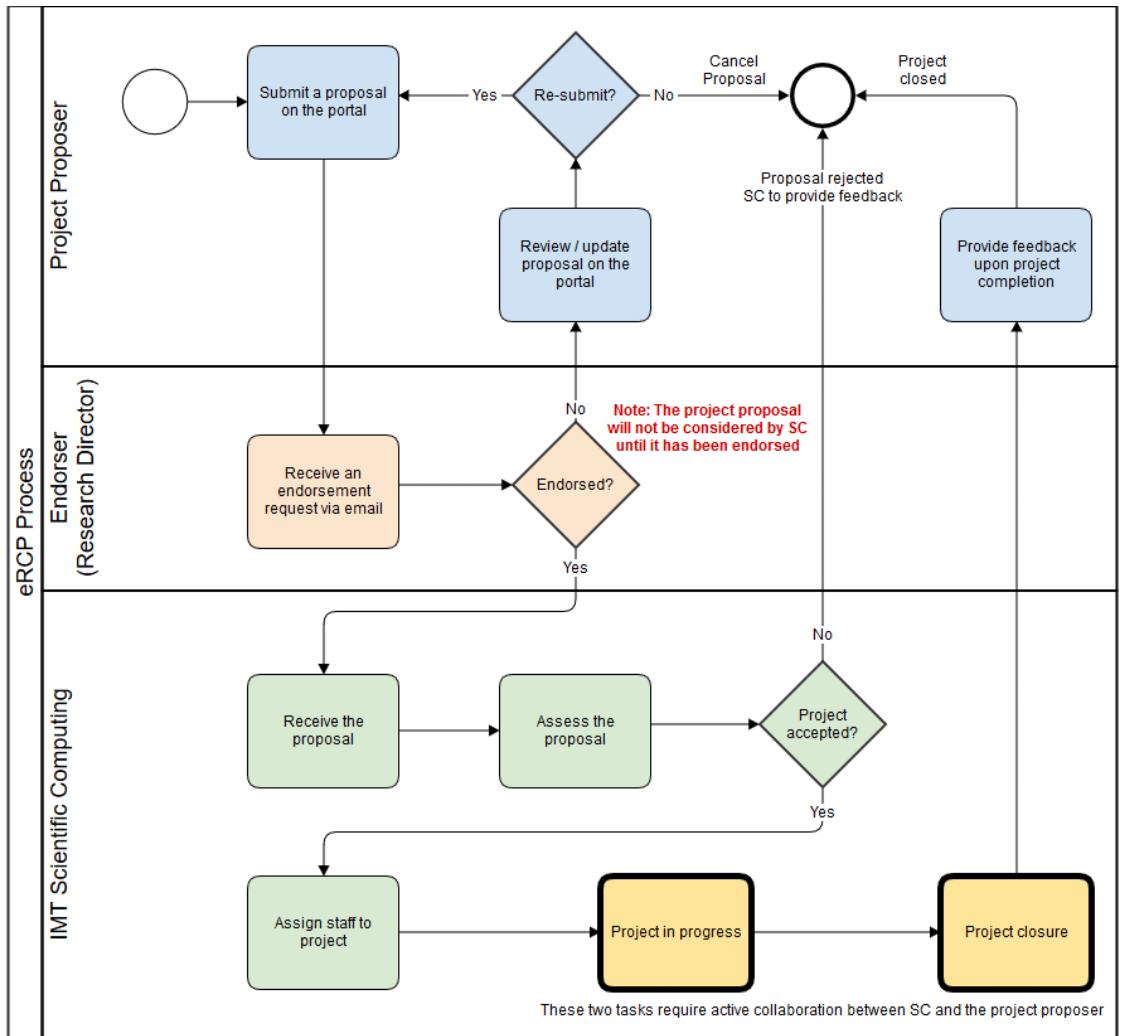


Data Pipelines
and Modelling



- Competitive process – RFP
- Researchers submit ~ 60-80 projects proposals per annum
- ~ 40 projects accepted this cycle

- Projects
 - run for a 6 month cycle
 - 0.2FTE allocated per project and can be applied in various ways





Project Submission Portal

sc.it.csiro.au

Scientific Computing User Portal
eResearch Collaboration Project Proposals

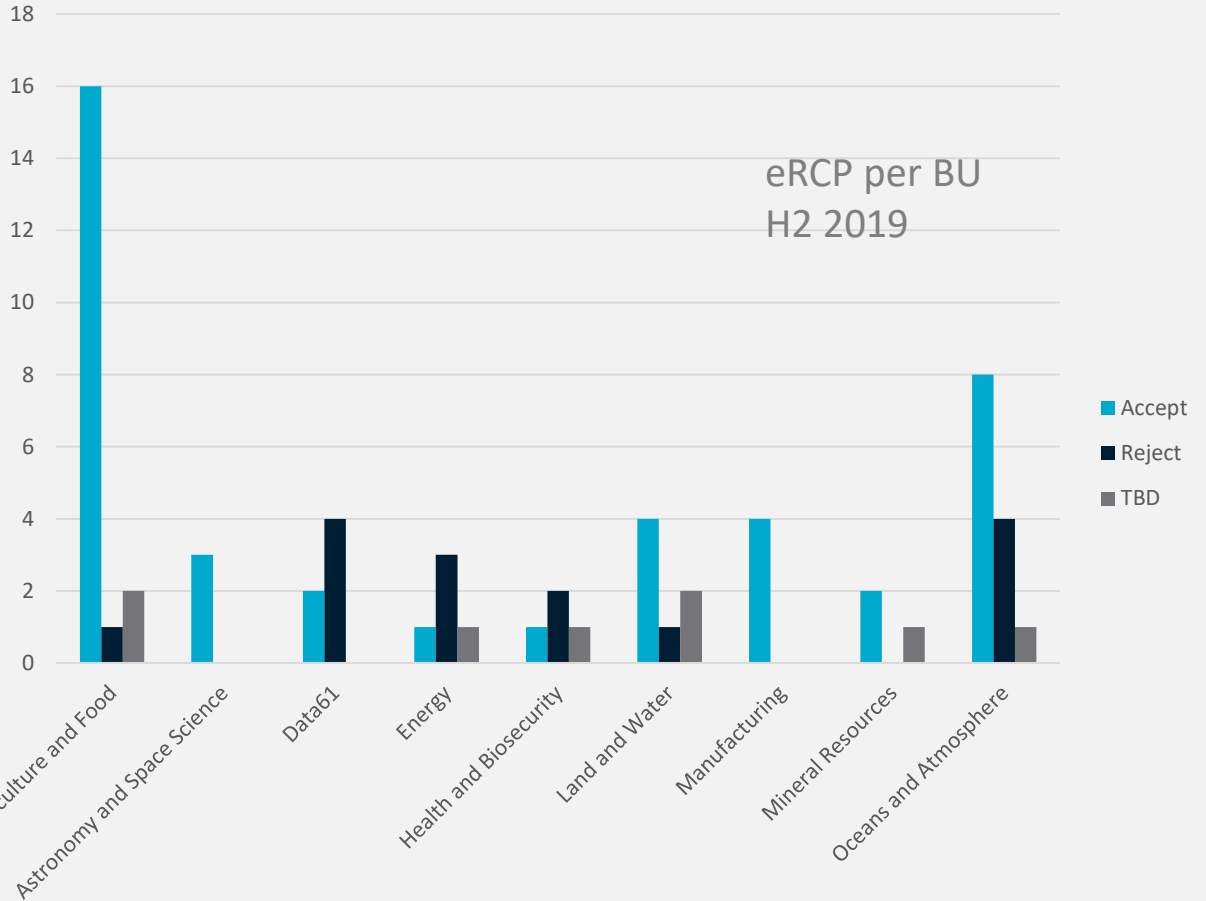
Bowen eRCP Proposals Support Admin John

eRCP Proposals

Previous **1** 2 Next

Show Proposals Pending Submission

Activity / Project Title	Proposer	Jira #	Round	Status
Mquest - improving a visual quality control tool for ocean temperature data	Cowley, Rebecca (O&A, Hobart)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL
Tools for defining chemical crystallisation space	Newman, Janet (Manufacturing, Parkville)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL
AI for image analysis	Newman, Janet (Manufacturing, Parkville)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL
Facilitating access to Sentinel 1/2 satellite data	Poulsen, Brett (Energy, Pullenvale)	ERRFP-652	2018 July - Dec	Application Received VIEW PROPOSAL
Real Time Soft Matter Modeling for Autonomous Design	Hockings, Nick (Data61, Pullenvale)	ERRFP-651	2018 July - Dec	Application Received VIEW PROPOSAL
Development of image analysis algorithms for automated tag reading	Wang, Dadong (Data61, Marsfield)	ERRFP-650	2018 July - Dec	Application Received VIEW PROPOSAL
Biomass Quality Database	Roberts, Daniel (Energy, Pullenvale)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL
Immersive Marine Sensor Data Analytics	Engelke, Ulrich (Data61, Sandy Bay)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL
Processing electronic health records using deep learning	Karimi, Sarvnaz (Data61, Marsfield)		2018 July - Dec	Awaiting Endorser VIEW PROPOSAL

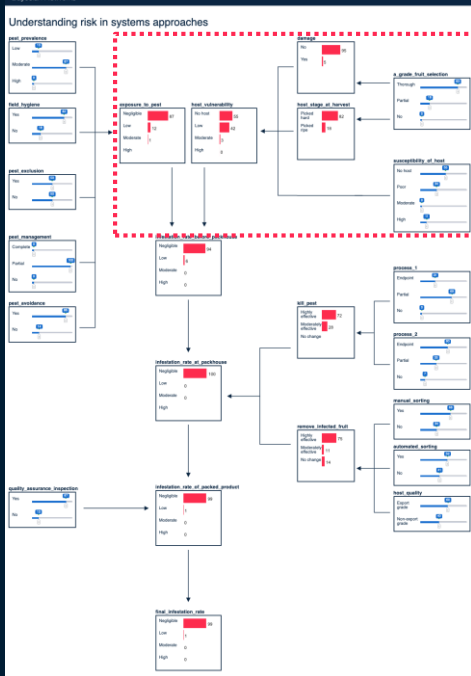




Example Project 2

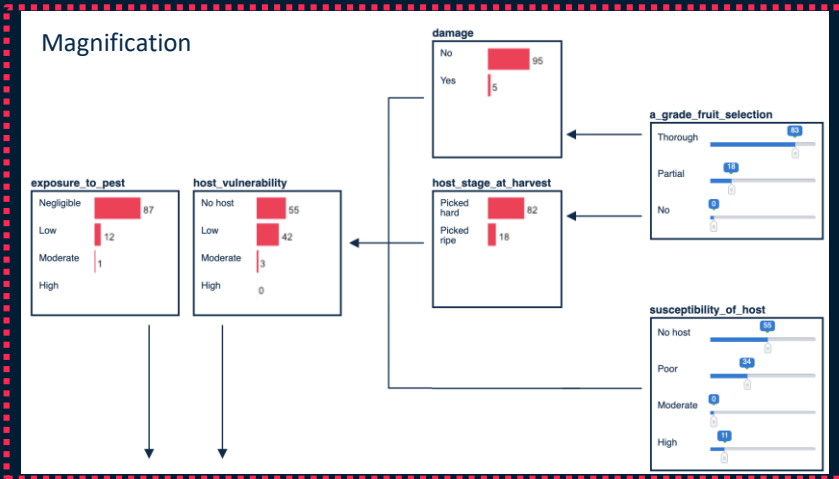
Bayesian Network for understanding systems risk

Expert Networks



Shiny dashboard enables clients to interact with expert knowledge-driven Bayesian network – allows model parameter selection and and scenario analysis without the need to interact with the underlying model.

Data Analytics and Visualisation team: Louise Ord (IM&T, South Eveleigh)
Modelling team: Justine Murray (H&B, Dutton Park) and Bill Venables (Data61, Dutton Park)



Challenges

Resourcing:

- Allocation complexity:
Staff/skills ↔ projects
- Science priorities, mix of BUs

Variable recognition of contributions to project outcomes

Occasional project failures

Skills shortage



eResearch Collaboration Projects - Future Plans

Ongoing process improvement

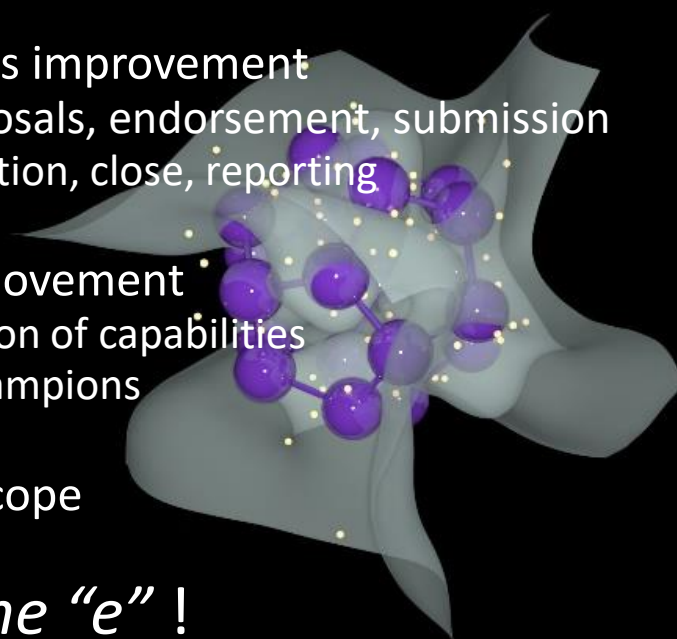
- project proposals, endorsement, submission
- project execution, close, reporting

Engaging RSE movement

- Communication of capabilities
- Capability champions

More flexible scope

Dropping the “e” !





Thank you

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Analytics and
Visualisation

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eRCP Case Studies

<https://bit.ly/2ISBQ81>