



Australian Government

Department of Defence

Defence Science and Technology Group

Meet the Practitioners



Kiowa Scott-Hurley

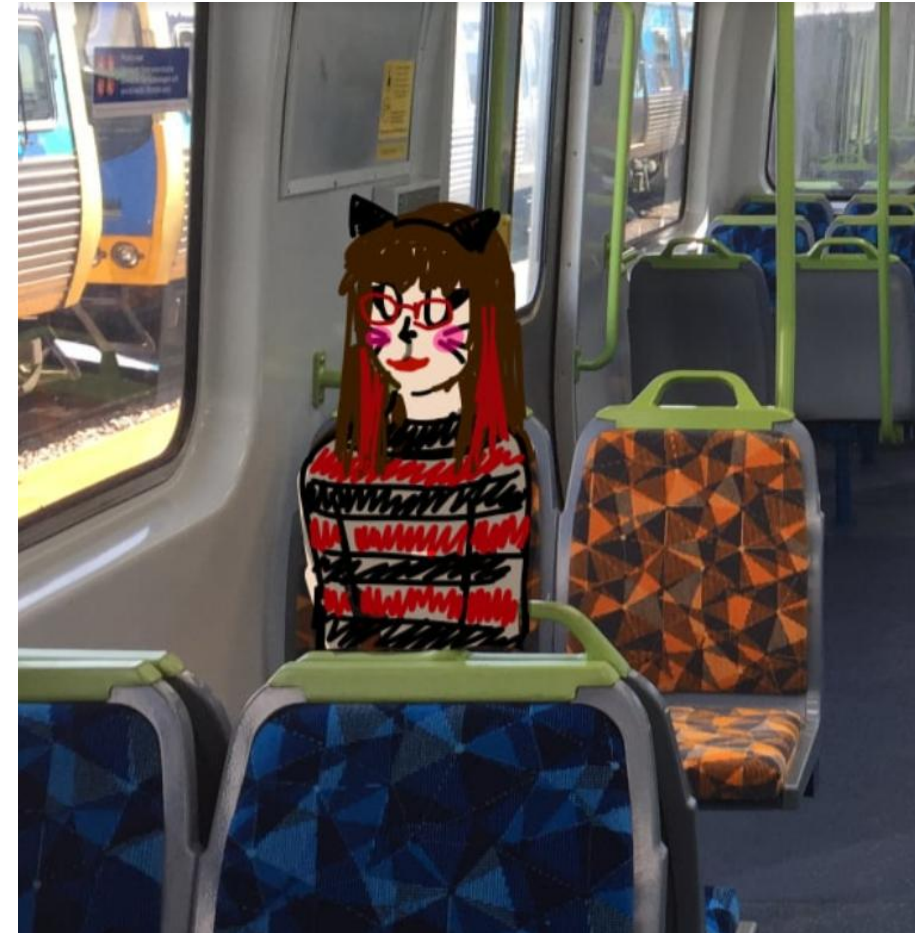
Computational AI Cyber Specialist

eResearch Australasia, October 2025



What am I going to talk to you about today?

- Who am I and why can't eResearch Australasia get rid of me?
- Hello practitioners!*
- What do I do for work when I'm not giving talks?
- *~The Frog~*
 - Infrastructure
 - Data
 - Software and Platforms
 - Training and Skills
 - Community Building
 - Cybersecurity
 - Impact



*Disclaimer: I learned how to use DaVinci Resolve to edit videos on Wednesday 15th October

AI EXPERT

KIOWA IS A PROUD DJA DJA WURRUNG WOMAN USING HER TECH EXPERTISE TO HELP DEFENCE SCIENTISTS

Almost every scientist on the planet needs to use computers, but not all scientists are computer experts. That's where Kiowa comes in. As a digital science migration engineer at DSTG, she uses her AI and supercomputing skills to help scientists solve problems.

"I love this job because I get to work with scientists from every background, which means I'm always learning something new!" she says.

Although tech might be her 9-5 these days, Kiowa wasn't always sure she'd work in STEM.

"I love making art, writing poetry and I also loved studying philosophy at university," she says. "When I realised that being creative and communicative was a really important part of STEM, I felt like it was the right place for me."

She studied maths at uni and says this made it easier for her to understand computers and scientific problems. And as for working in Defence? She chose it so she could learn from

the many clever people who work there: "There is a lot of support to grow and learn in Defence, whether that's trying out a new job, going back to university or just having a chat with someone interesting."

Kiowa says she's only ever met one other Aboriginal woman working in tech - and changing that situation is important to all her Defence co-workers.

"Being diverse means I'm extra-interested in listening closely to different perspectives and ensuring everyone is included, which means we can learn more from the people we work with and create solutions which work for as many different people as possible," she says.

Kiowa believes there's a job for everyone in Defence and recommends soaking up as much knowledge as possible: "Don't be afraid to attend a career day and ask lots of questions about the careers that might interest you."

by Louisa Meers

THERE IS A LOT OF SUPPORT TO GROW AND LEARN IN DEFENCE



**KIOWA
DIGITAL SCIENCE
MIGRATION ENGINEER
(AI), DSTG**



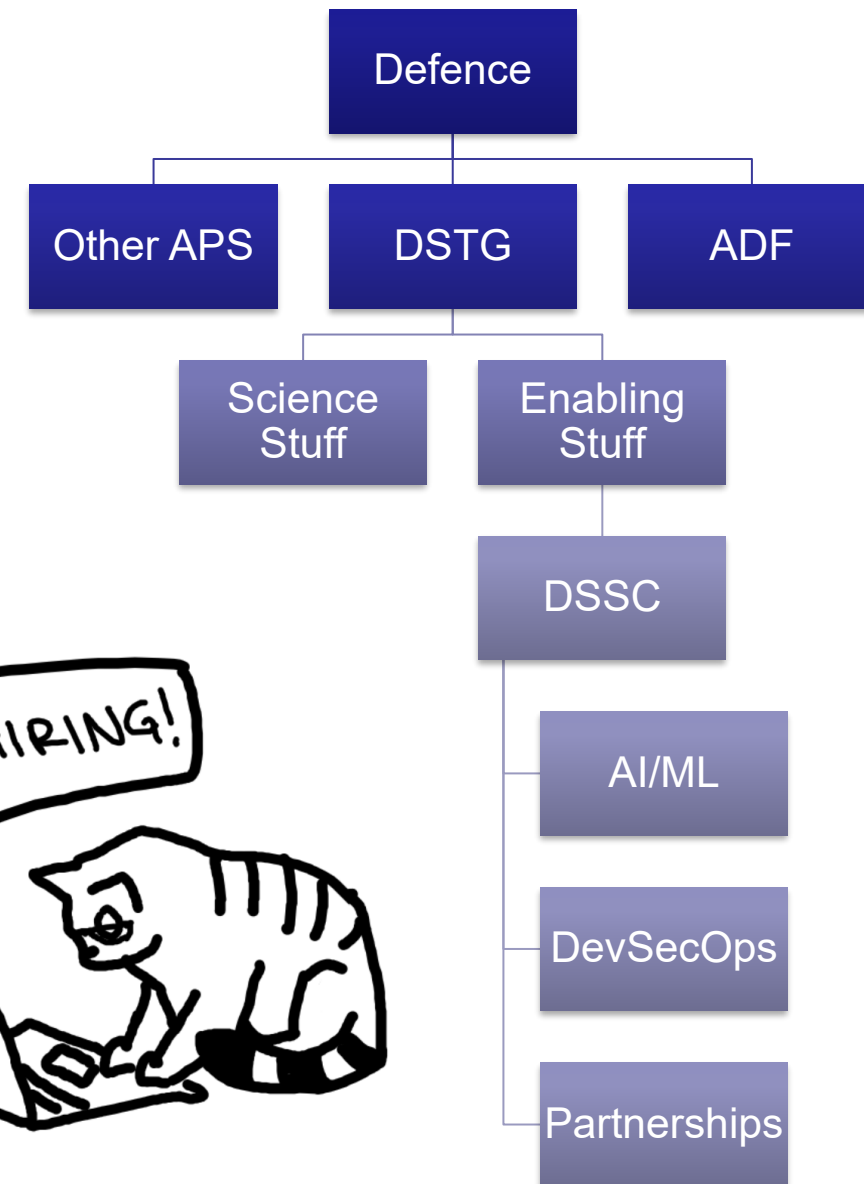
**MISSION
DRIVEN**



OFFICIAL

...DSTG? Is that the same thing as DSTO?

- “DSTG is the Australian government's lead agency responsible for applying science and technology to safeguard Australia and its national interests.”
- AKA, we do S&T for Defence.
- "We strengthen Defence's AI capability by experimenting, building, and deploying AI services and systems; sharing expertise, best practice, and repeatable patterns; and partnering closely with targeted use-cases to apply AI to real Defence challenges"



*diagram is a HUGE simplification

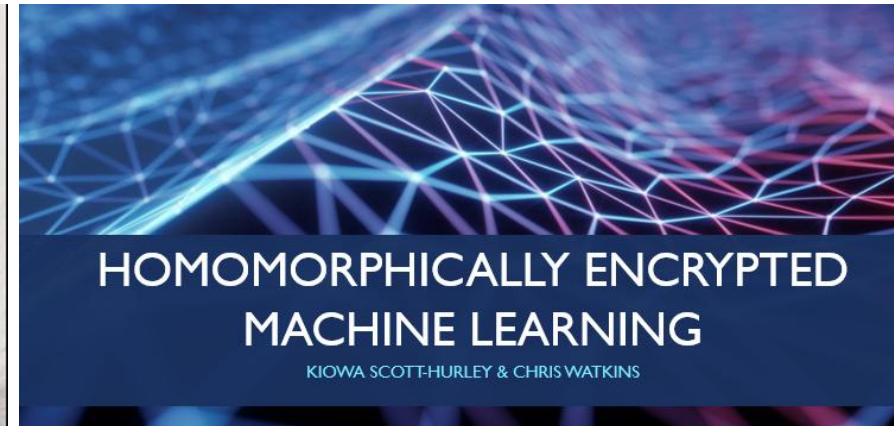
Impossible Infrastructure
Inquiries: Accommodating
challenging researcher
requests

Kiowa Scott-Hurley

How to be an ally for diversity & inclusion in eResearch



Jana Makar¹, Aditi Subramanya², Adam Huttner-Koros⁴, Kerri Wait³, Marco de la Pierre², Kiowa Scott-Hurley⁵



High Performance Computing and Machine Learning – The Challenges of Supporting the Emerging ML Community with HPC Infrastructure

Miss Kiowa Scott-Hurley¹, Dr Chris Hines¹



A woman with long, straight black hair is shown from the chest up, looking directly at the camera. She is wearing a light-colored, possibly white, top. The background is a plain, light-colored wall. The lighting is soft and even.

So hi I'm Angel

Tiddalik



Y **You** 05:51 pm
What is eResearch Australasia all about?

Tiddalik 05:51 pm

eResearch Australasia is an annual conference that brings together a community of experts, practitioners, and researchers from various disciplines to discuss and showcase the latest developments, innovations, and challenges in eResearch. eResearch involves the use of advanced information and communication technologies to enable and enhance research collaboration, data management, analysis, and visualization across different scientific domains.

The conference provides a platform for participants to share their experiences, insights, and best practices in areas such as high-performance computing, dataintensive sciences, research data management, cloud computing, artificial intelligence, machine learning, and virtual research environments. The event features keynote presentations, workshops, tutorials, panel discussions, and Birds of a Feather (BoF) sessions, as well as a comprehensive exhibition showcasing the latest tools, services, and infrastructure solutions for eResearch.

The eResearch Australasia conference is organized by the Australasian eResearch Organizations (AeRO) in collaboration with various universities, research institutions, and government agencies across Australia and New

Tiddalik

- In September 2023, one of my colleagues started experimenting with LLMs and building toy apps
- Our boss said “Looks good – but can you put some real data in it?”
- As we developed these tools, we started running regular demos, and realised we should set up a more permanent experimental prototype – and Tiddalik was born!
- It’s an on-premise large language model chatbot – very general purpose.
- (Yes, I drew the frog logo)
- As people started to understand the art of the possible, they begin asking us – can I put in my real data and solve my real problems?
- Speed of development
- Oversight of range of eRes challenges on this journey...





In Monash eResearch we actually offer a lot of services. So we do have like storage, we do have a HPC service,

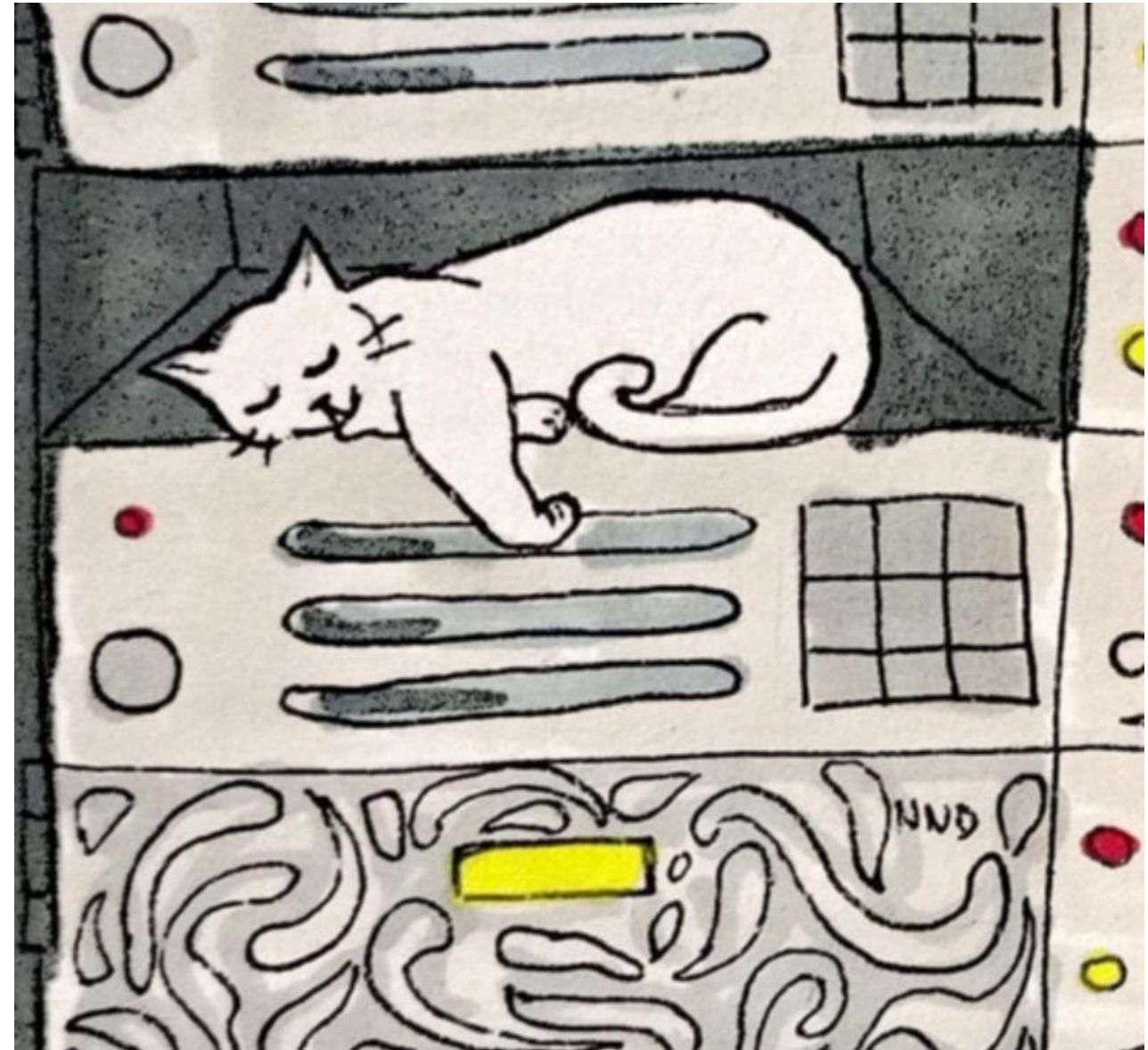
MUM SAID IT'S MY TURN ON THE GPU!



What do you wish researchers knew
about managing infrastructure?

Infrastructure

- LLMs eat GPUs for breakfast, lunch, and dinner – even for inferencing.
- How can we share the compute given the interactive use?
- Benchmarking
- Monoliths and orchestrators
- Reflections from the Australian Research Container Orchestration Symposium



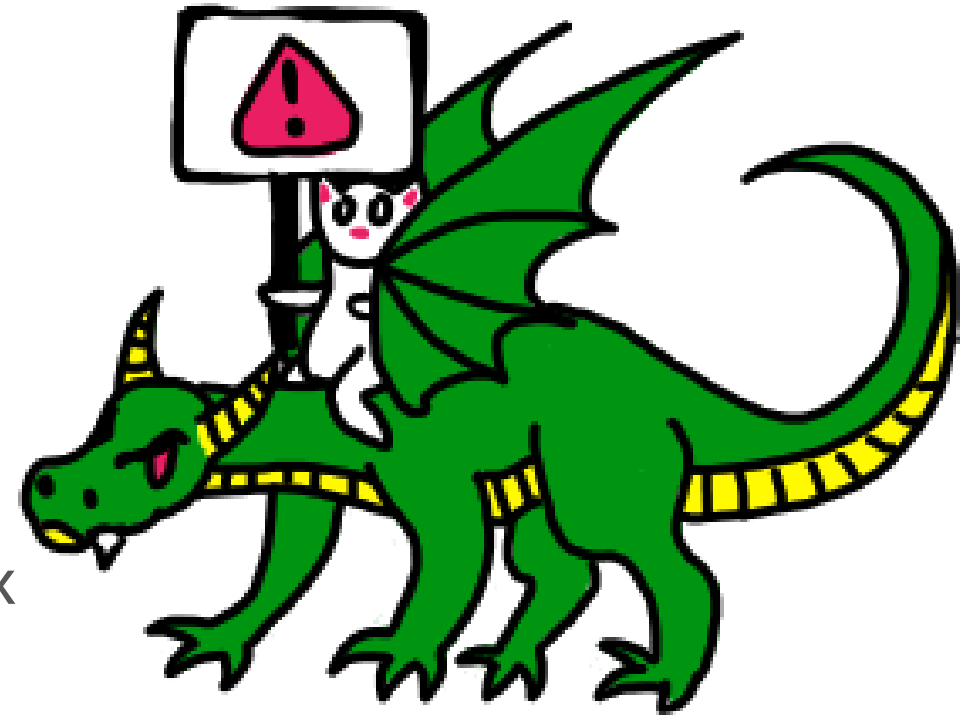
Data

- AI isn't *that* hard really – it's the data that gets you!
- Defence data is gnarly
 - It's diverse – we're a huge organisation!
 - It's highly governed – security frameworks, the Archives Act...
 - It's captured everywhere – from desks to submarines
 - It's impacted by deployment cycles
 - It's special – unique formats and TLAs
 - **\$SYNTHETIC_DATA_COMPLAINING**
 - It's classified



Data

- Then we have all of the normal challenges that everyone who works with research data is familiar with...
- Like, if you thought the data was hard to make machine readable, you should see the metadata!
- And did I mention relevance?
- When we do work out how to handle complex data and accidentally become to foremost experts in the organisation on knowledge graphs... how do we share what we learn and make it more reusable?

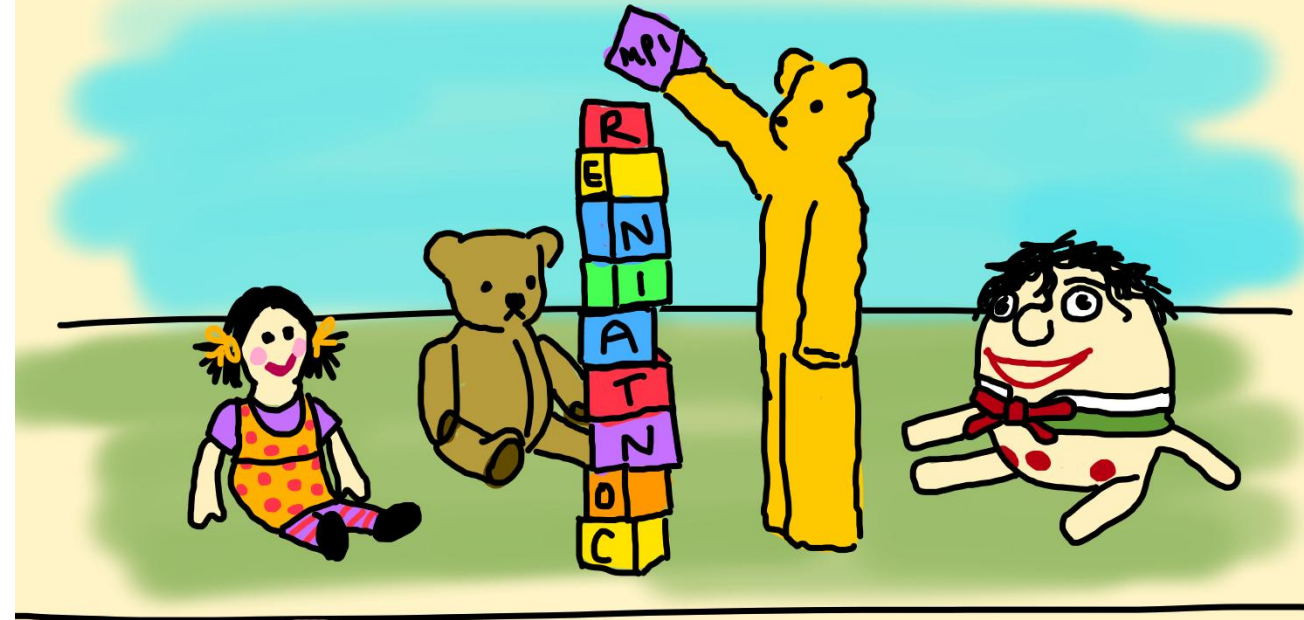


Why is it so important to have data
specialists in the eResearch
landscape?

Software

- We have all the normal problems at Defence around developing and deploying sustainable maintainable code that can be shared and reused
- How do we resource software dev? Do people even realise software requires resourcing?

BIG TED ADDS MPI to the container stack..





I think one of the challenges in infrastructure is helping your researchers to right size their requests,

Cybersecurity

- THE INTERNET IS A SCARY PLACE
- DevSecOps
- The cybersecurity assessment process - over 1000 controls in the Information Security Manual (ISM)!
- Meeting various policy frameworks
- Developing cybersecurity best practices when the tech keeps changing
- Developing cybersecurity best practices when the frameworks keep changing





There is a, y'know, non-zero risk that we're using models that are no longer maintained, and

A Crash Course in Using Large Language Models

Just because you can, it doesn't mean you should...

Alex Matison and Kiowa Scott-Hurley

This charming image was produced using code from Google's Gemini LLM when prompted with:

"Draw a frog using matplotlib".

matplotlib is a Python library for drawing graphs.





**We are running a specific training program for researchers
in the Humanities, Arts and Social Sciences**

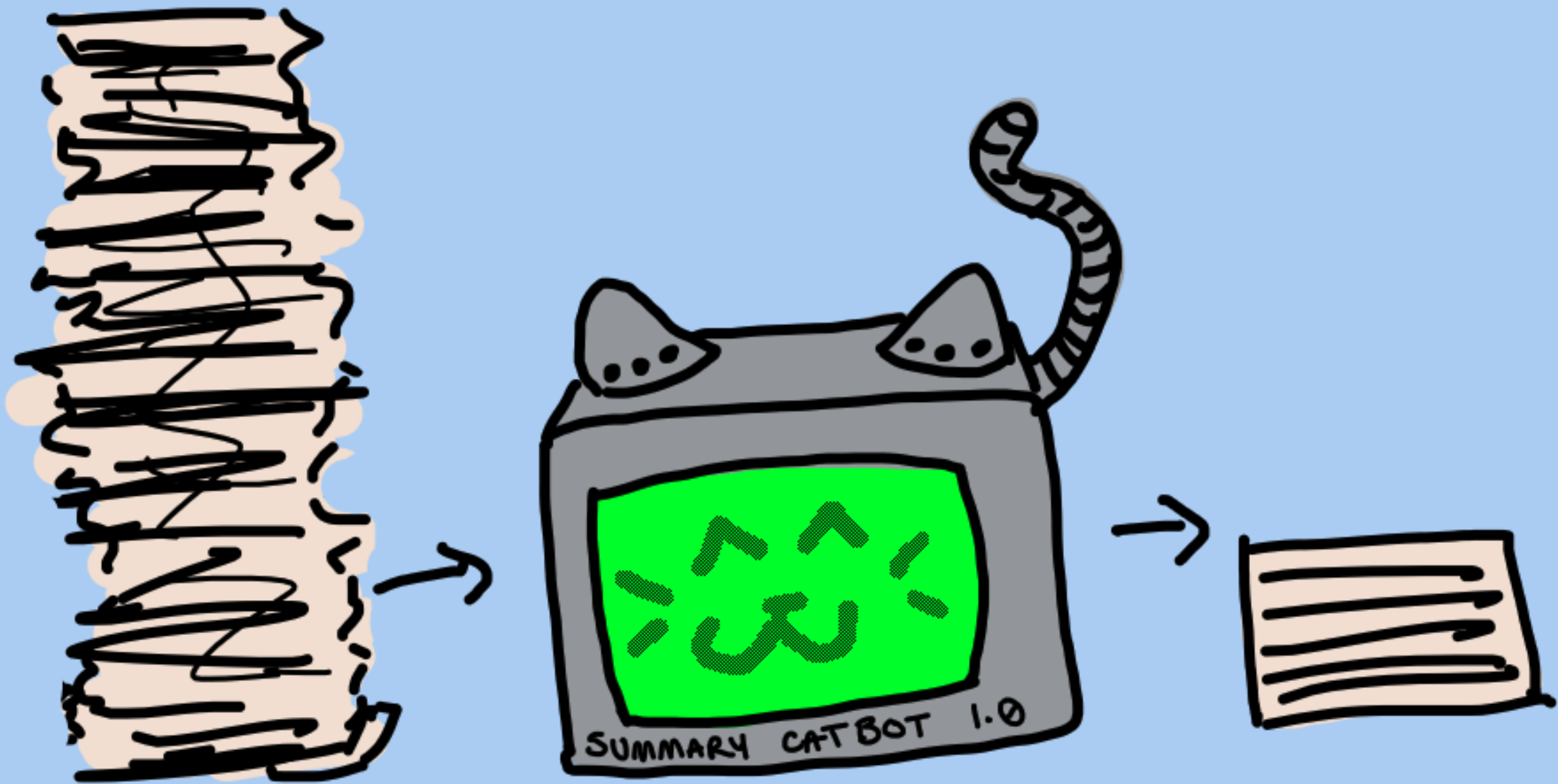
What's your background?

Community Building

- MS Teams community of 1700 people – lots of active discussion!
- Diversity of members in the community
 - Software devs, finance experts, ADF training, AI hobbyists, people who heard about ChatGPT on the news once...
- Range of content
 - Technical papers, use-case questions, memes, news, policy discussion...



What questions are you asking as part of the Research Software Engineering Aus/NZ steering committee?



Where do you see the impact of your
work?

Thank you!

- Special thank you to Sarah Walters, Edward Yang, Maria del Mar Quiroga, Peter Marendy, and Angel Dibijo for their time and insights <3
- Also special thanks to eResearch for letting me preach to a choir for 40 minutes <3



- ... have I left enough time for questions? If not, you can trap me at morning tea for discussion – or better yet, find some of the interviewees!