

## Developing a full stack data-as-a-service on the Nectar ARDC Research Cloud

Mat Bettinson, Digital Observatory, QUT

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# NewsTalk

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1.3k more today

NEWS TALK

HOME

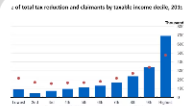
SEARCH

CATEGORIES

ENTITIES

ADMIN

Bumblebee



Drop the talk about 'mum and dad' landlords. It lets property investors off the hook

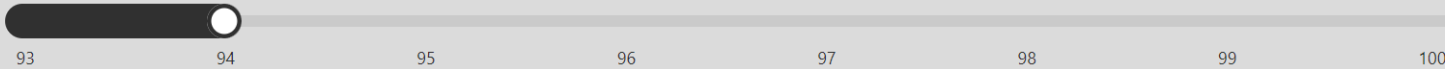
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Why freezing rents could make more people homeless

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The housing crisis is pushing more Australian renters into poverty. We need urgent change | Brian Howe

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Rent freezes and rent caps will only worsen, not solve Australia's rental crisis

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We are in a housing crisis, but is freezing rent the answer?

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A quarter of Australia's property investments held by 1% of taxpayers, data reveals

The Guardian

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6/4/2023



# Context: low resource development

- The Digital Observatory
- NewsTalk ~2-man months of work



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# Tool patterns (why web?)

- One pattern is opensource command-line tools

```
# search videos matching "aukus"
youte search "aukus" --from 2023-04-01 --to 2023-04-15 --outfile aukus_videos.json --tidy-to aukus_videos.csv

# retrieve comments on a video with id AY3TcuA_jJY
youte comments AY3TcuA_jJY --by-video-id --outfile comments.json

# retrieve most popular videos in Australia
youte chart "au" --outfile top_au_videos.json

# retrieve videos related to video AY3TcuA_jJY
youte related-to AY3TcuA_jJY --outfile related_videos.json
```

# Tool patterns (why web?)

- Web == Highest level of researcher useability
- Infrastructure, data == a data bank
- Data bank plus web tool == one stop data shop



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# So we're building a web app? Now what

- Many stack choices
- Adopt modern state-of-the-art (SOTA) in commercial practice
- Containerise – assume we are moving host

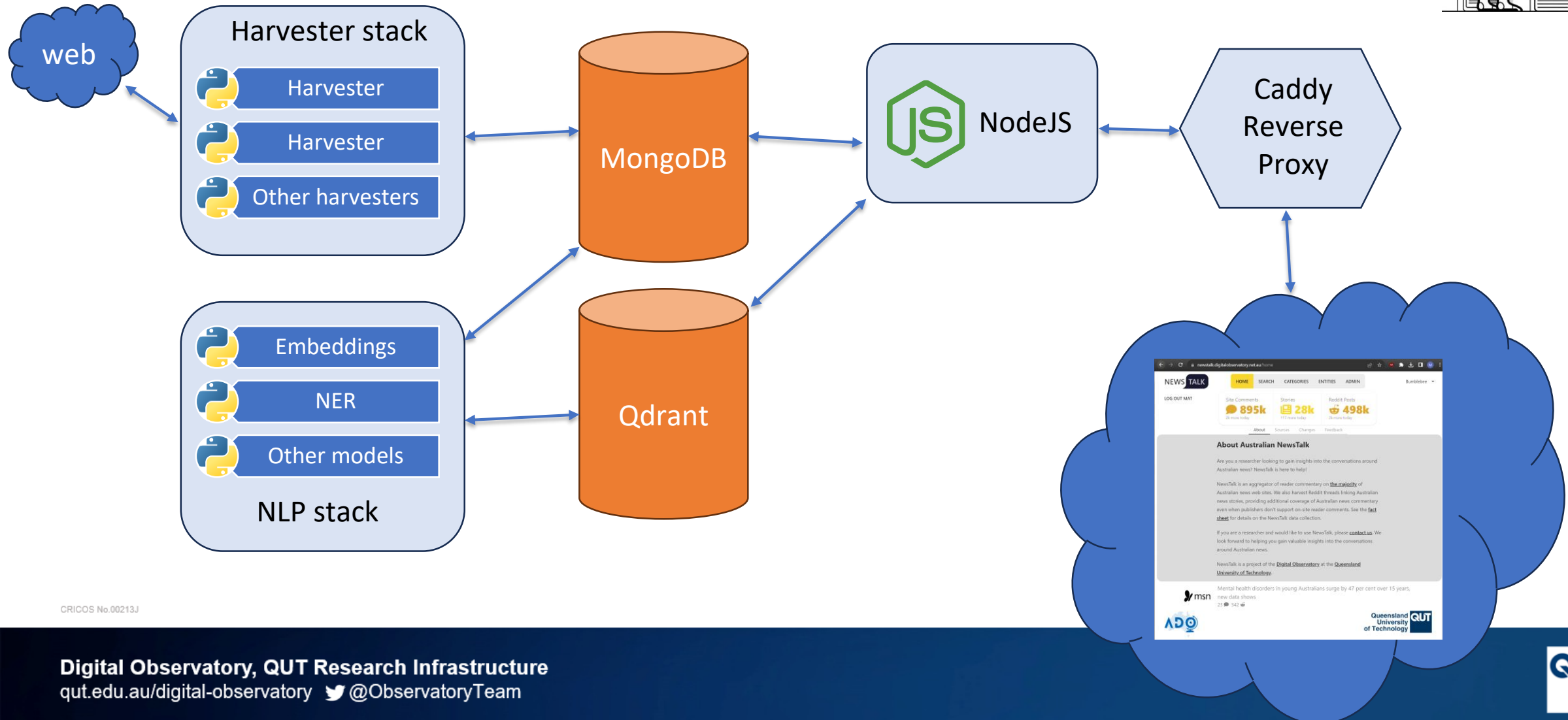
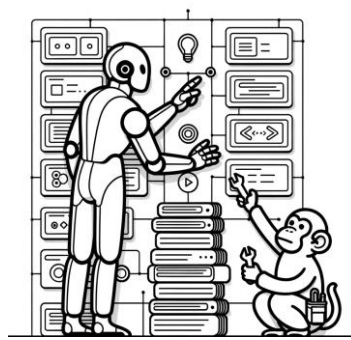


NEXT.JS



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# NewsTalk architecture simplified

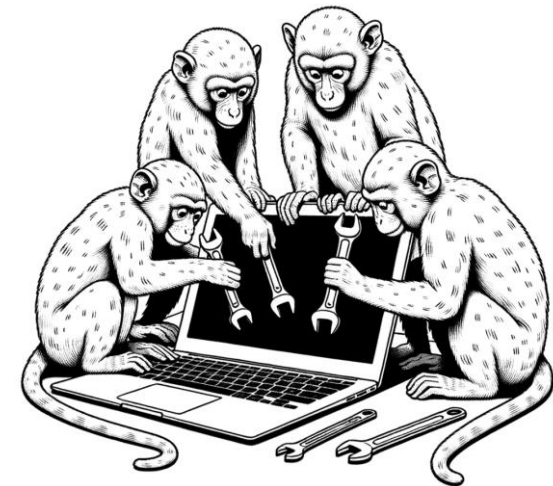


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# Supporting expert users

- One-stop data shop vs DIY methods
- (REST) API vs Python/R packages
- API supports advanced operations like semantic search, and vector-similarity queries
- API endpoints are implemented in the same SSR framework node.js backend

Abstract image not intended to represent actual living digital humanities researchers...



# Let's talk about Nectar

- Free for any research project
- Apply for Service Units available for life of grant
- Hosting VMs, databases, volumes



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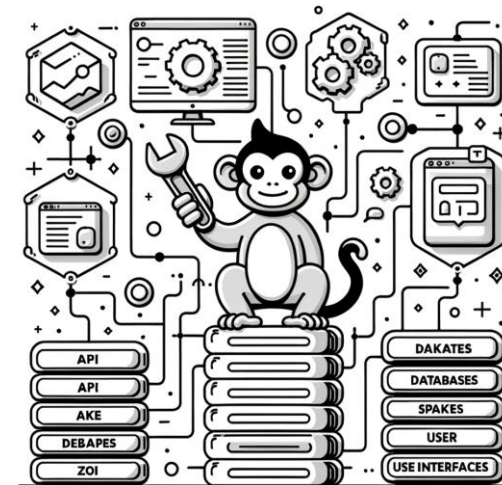
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# How to do it (we don't have time for this)

- Apply for service unit allocation, get 'manager' status
- Add an SSH key to Nectar, create a data volume
- Spin up a compute instance (a VM) with a bare Linux and attach the volume
- Web stuff: register a domain somewhere, point it to the IP of the VM, map ssh and web ports (22, 80, 443) in Networks / Security Groups
- Make a git monorepo including a Docker container stack for all your dependencies like databases, mapping Docker data to the volume mount point
- Set up a web server to terminate SSL (recommend Caddy), have it serve the 'build' folder of your repository, set reverse proxy to your node server
- Use something to start your app automatically, such as the node pm2 package
- Add dev ops (git actions etc) to ssh to your and pull changes and restart etc

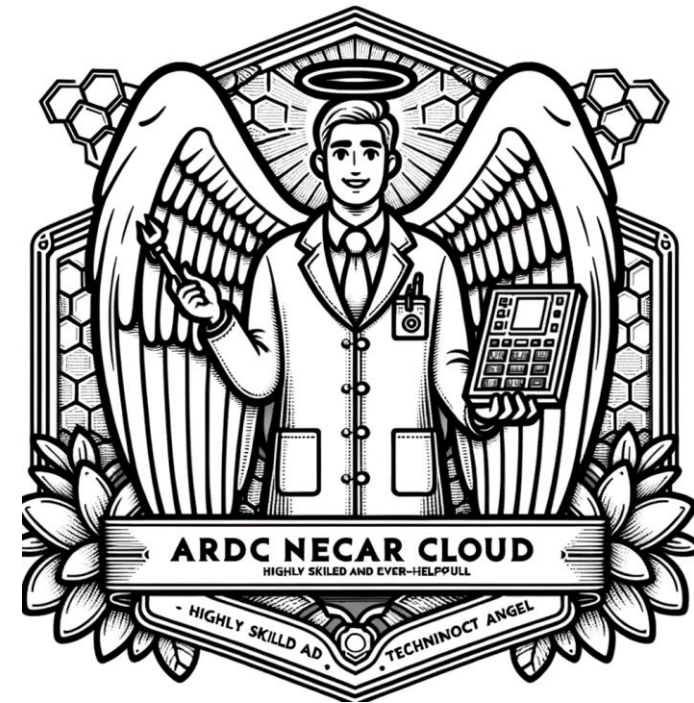


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# But what's it like really?

- Honestly? Painful compared to Google/AWS etc
- Buggy, under documented, you need to learn the foibles\*
- **But** it has *excellent* human support!

Is Nectar a good home for *persistent* (sustainable) research tools and software infrastructure?



\* Because that's what OpenStack is like

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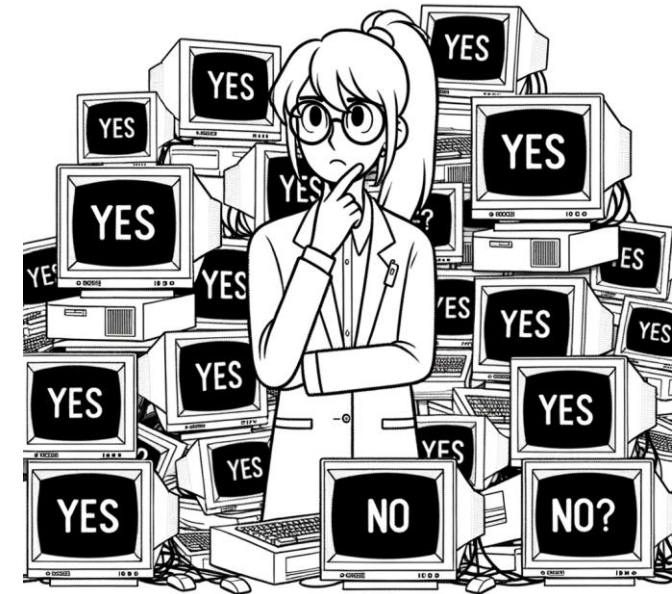
# Is Nectar *for* research infrastructure?

- We could apply for Nectar allocation because of the ARDC platform project: The Australian Digital Observatory
- But that's over now
- We will have to move NewsTalk to Google Cloud Compute (not a big deal)



# Deciding when to use Nectar

- **Yes** example:
  - a) Interest Groups project: R Studio Server platform for an ARC discovery
  - b) This is (almost) a one-click deploy on Nectar (preconfigured images)
  - c) *Temporary* for the life of a research project
- **No** example:
  - a) Youte+: web-based Youtube data harvester/analyser
  - b) Requires GPU compute & heavy scaling anticipated
  - c) Intended to be a *persistent* tool



# Thanks for listening!

More about the Digital Observatory:

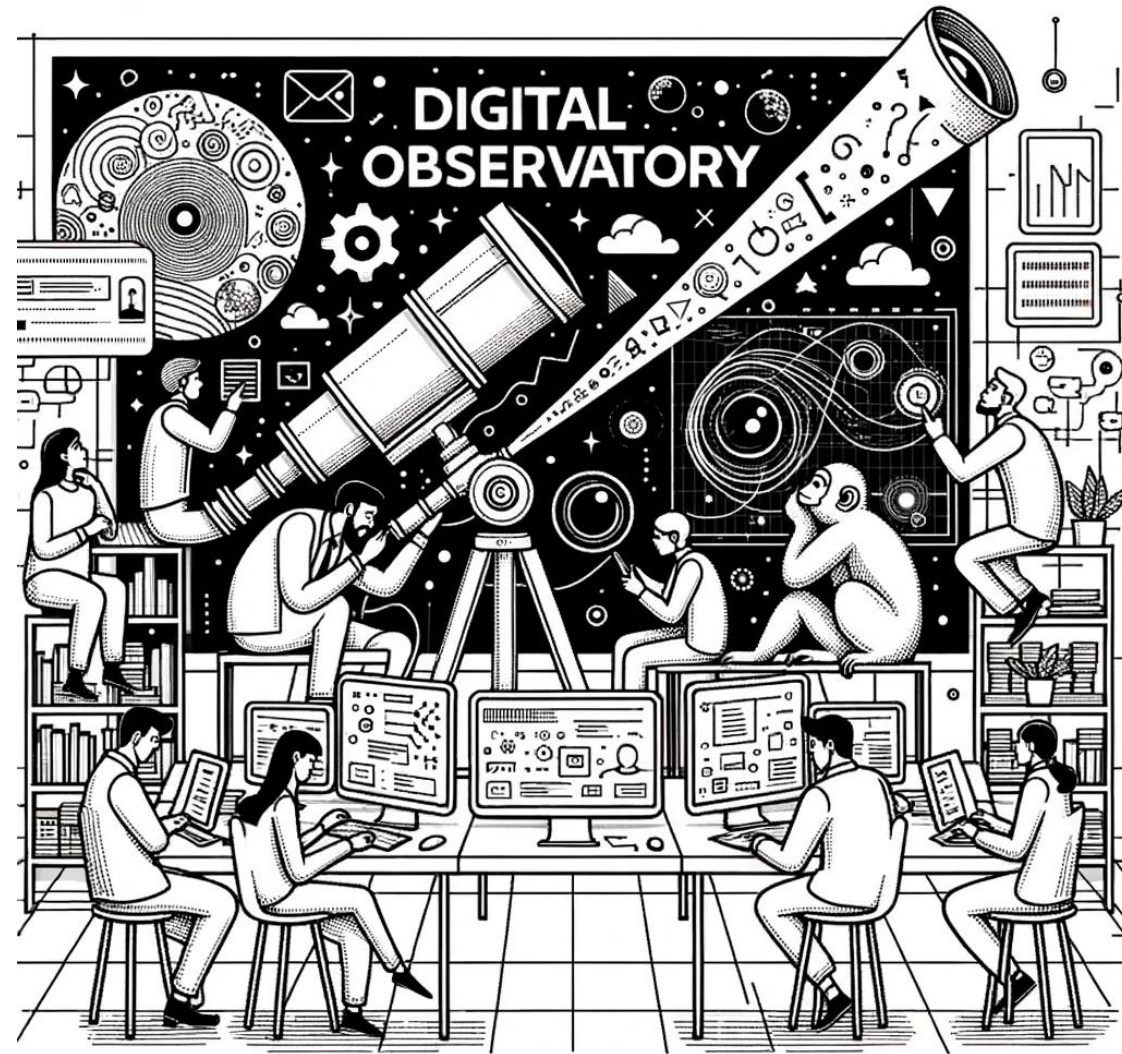
<https://www.digitalobservatory.net.au/>

And NewsTalk itself:

<https://newstalk.digitalobservatory.net.au/>

ARDC Nectar Research Cloud support:

[support@ehelp.edu.au](mailto:support@ehelp.edu.au)



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