

A woman with curly hair, wearing a white t-shirt and dark pants, stands in a museum-like setting. She is looking towards a large, ornate traditional Chinese robe displayed on a mannequin. The robe features intricate patterns, including a red and gold dragon design and a blue and gold tiger design. The background is dark with some red lighting and a sign that says "GTV".

# ACMI Public API

## LinuxConfAU 2022

Simon Loffler — Fri, 14 Jan





api.acmi.net.au



```
{
  "message": "Welcome to the ACMI Public API.",
  - "api" : [
    "/search/",
    "/works/",
    "/works/<work_id>/",
  ],
  "acknowledgement": "ACMI acknowledges the Traditional Owners, the Wurundjeri and Boon Wurrung people of the Kulin Nation, on whose land we meet, share and work. We pay our respects to Elders past and present and extend our respect to Aboriginal and Torres Strait Islander people from all nations of this land. Aboriginal and Torres Strait Islander people should be aware that this website may contain images, voices or names of deceased persons in photographs, film, audio recordings or text.",
}
```

# ACMI Public API

## Why did we build it?

- **Open data** - we receive public funding, so data we **make** should be public too
- **Regular updates** - our last data release was 5 years ago
- **Accessibility** - we need an API to build accessible museum labels
- **Data links** - to match our collection data with other institutions
- **Experimentation** - to build applications that extend and transform our data

# ACMI Public API

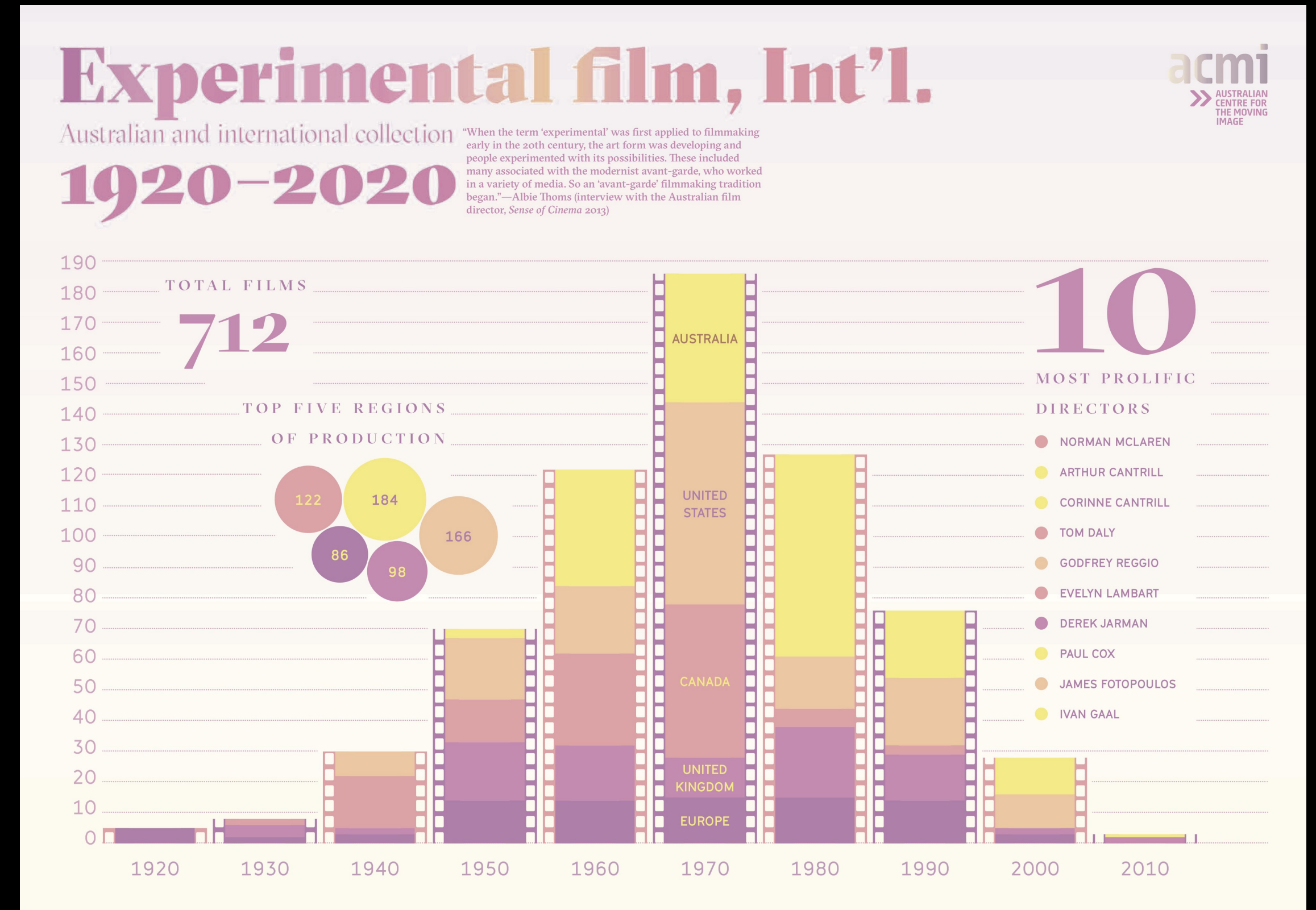
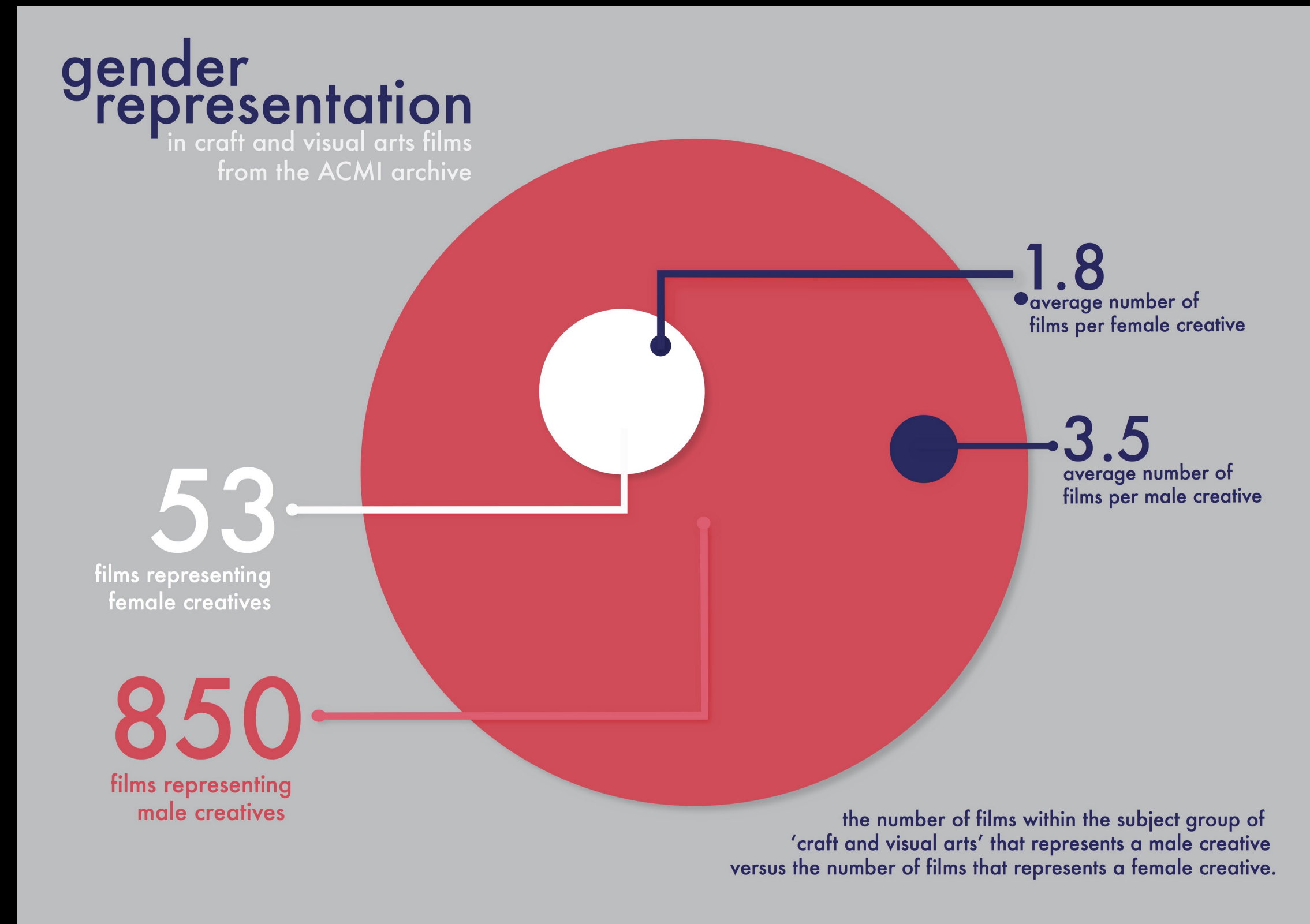
## Who did we build it for?

- **Researchers** - to study representation, demographics in our data
- **Technologists** - for hackathons, to build visualisations
- **Internal use** - for accessibility, ML experiments, intra-team development...
- ...without taking down the private museum API
- **You** - we'd love to hear what you do with it [@ACMILabs](#)



# ACMI Public API

## Who did we build it for?

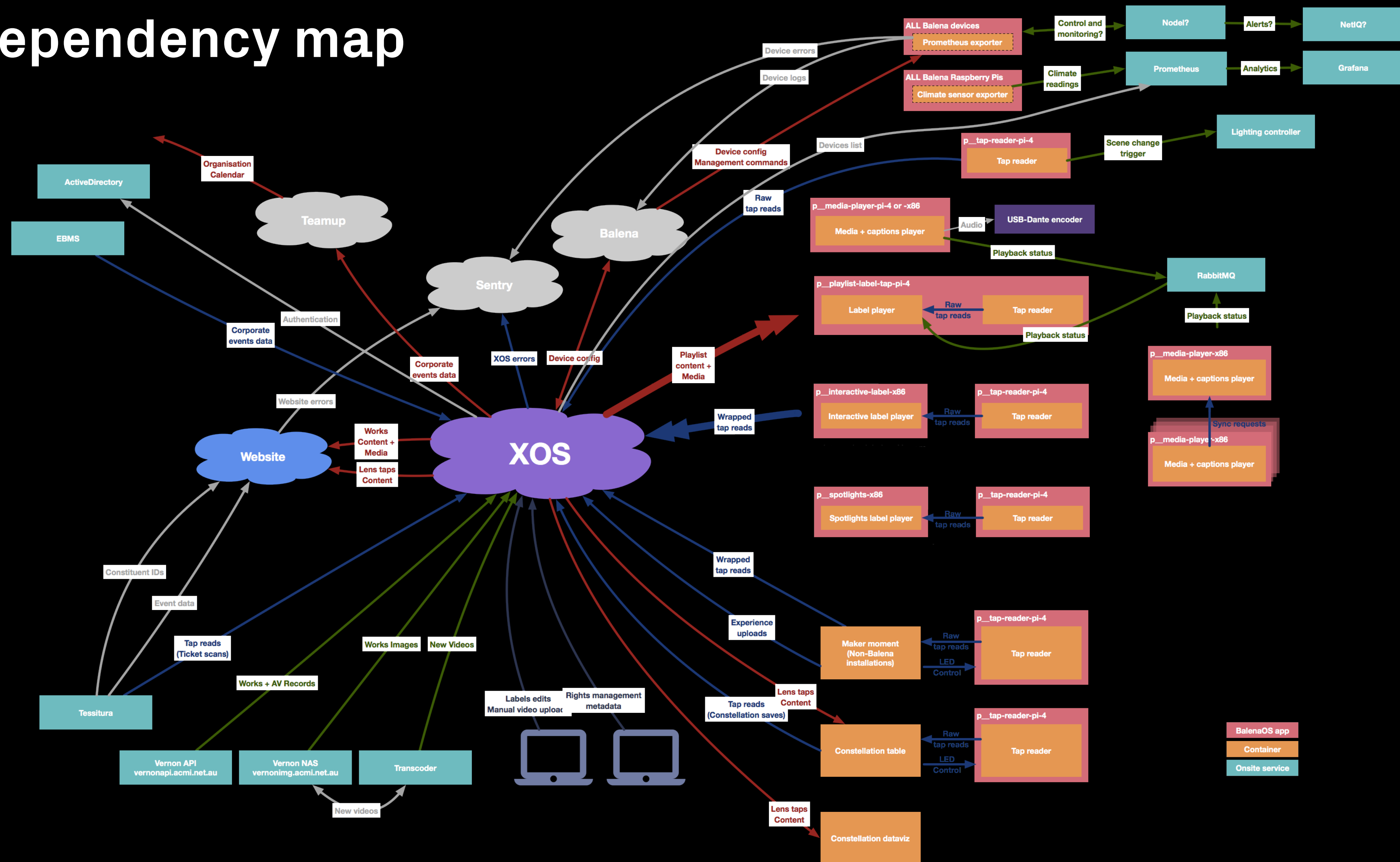


RMIT student data visualisations in 2016 — [labs.acmi.net.au](https://labs.acmi.net.au)



# ACMI Public API

## XOS dependency map





# ACMI Public API

## How did we build it?

- **Private APIs first** - XOS private APIs power our website and Story of the Moving Image experience
- **Code and metadata** - JSON/TSV metadata archive, API code all in one repo
- **Alpine Linux/Docker** - small, secure, fast, repeatable builds, for development and production
- **Flask** - Python framework with minimal dependencies
- **Elasticsearch** - Elastic Cloud in production, development Docker image



# ACMI Public API

## How did we build it?

- **Infrastructure** - Terraformed Azure servers with horizontal autoscaling and two replicas
- **Cron on Staging** - nightly cron job runs the API update (JSON/TSV) and auto-deploys via Kubernetes. Updates can be toggled via an environment variable
- **Production** - weekly manual releases via Github after data validation. Gunicorn server in production
- **Development** - Flask development server and Elasticsearch instance via Docker Compose (demo)





Terminal

Shell

Edit

View

Window

Help



Wed 22 Dec 11:52 am



sloffler — sloffler@FVFWX073HV2G — ~ — -zsh — 143x40

Last login: Wed Dec 22 11:47:11 on ttys012

→ ~ █



scripts



NFC-hacking.pdf



# ACMI Public API

## What were the results?

- **Speed** - ~250ms response for indexes and objects
  - 3 requests per second: p(95): 260ms and med: 158ms
  - 18 requests per second: p(95): 3280ms and med: 624ms
- **Cost** - ~AUD\$100/month hosted in Azure on Standard\_D2\_v2 nodes
- **Time** - ~4 months (first commit 5th July, 11th November launch)
- **Dependencies** - Docker images and Python dependencies update nightly
- **Documentation** - [acmi.net.au/api](https://acmi.net.au/api)



# ACMI Public API

## What were the results?

- **Blog post** - including a bit more history, and prototypes: [labs.acmi.net.au](https://labs.acmi.net.au)
- **ACMI prototypes** - two Jupyter Notebooks:
  - [Machine dreaming](#) - generates images from works metadata
  - [Wikidata biographies](#) - matches ACMI creators to Wikidata entities
- **Public use** - since the API release:
  - [Wikidata works](#) - Paul matched ACMI works to Wikidata entities
  - [Accession Number API](#) - Aaron matched ACMI accession numbers to website URLs
  - [Wikimedia Australia](#) - Wikidata fellowship related project link



# ACMI Public API

## Machine dreaming

### Metadata - The Matrix

['The Matrix', 'The Question that drives us all -',  
'What is the Matrix? "Do you believe', 'in fate?"  
"No, I dont like to', 'know that I am not in  
control', 'of my life" "You feel that something',  
'is wrong but you dont know what', 'it is.']



ACMI API x VQGAN+CLIP — [github.com/acmilabs](https://github.com/acmilabs)



# ACMI Public API

## Machine dreaming

### Metadata - Mad Max

['Mad Max', 'George Miller's Mad Max revolutionised movies when', 'it tore through cinemas in 1979. Bursting', 'with stunning practical effects, explosive set pieces', 'and iconic costumes, the original Mad Max', 'trilogy (1979-85) cemented its place in pop', 'culture before roaring back to life 30', 'years later.']



ACMI API x VQGAN+CLIP — [github.com/acmilabs](https://github.com/acmilabs)



# ACMI Public API

## Machine dreaming

### Metadata - The Hobbit

['The Hobbit', '"The Hobbit" computer game for BBC Model', 'B."The Hobbit" is a single-player text adventure', 'game, originally released for the games platform', 'ZX Spectrum 48K. It was subsequently released', 'for other platforms including BBC. (See Documentation', 'window for full list of game releases).']



ACMI API x VQGAN+CLIP — [github.com/acmilabs](https://github.com/acmilabs)



# ACMI Public API

## Machine dreaming

### Metadata - Night cries a rural tragedy

['Night cries a rural tragedy', 'In the red glow of the outback', 'an Aboriginal woman nurses her ill white', 'mother. As we watch the old woman', 'dying her daughter confronts the finality of', 'death; the bitterness of memory.']



# ACMI Public API

## Challenges

- **Licensing** - we couldn't license all of our images/videos as Creative Commons Zero due to Copyright laws, Indigenous IP, moral rights
- **Expectations** - museum data isn't very useful on its own, so we need to automate linking it to other collections e.g. Wikidata
- **Data creation is slow** - digitising a film takes at least 4x the runtime in labour. We also have records from the 1940s, some of which have problematic content which takes time to review
- **Update time** - updating 45,000 records take ~4 hours, so we run the updater overnight
- **Git** - nightly git diffs on 45,000 files sometimes fails on our pods with limited resources



# ACMI Public API

Thank you!

- API - [api.acmi.net.au](https://api.acmi.net.au)
- Blog - [labs.acmi.net.au](https://labs.acmi.net.au)
- Website - [www.acmi.net.au](https://www.acmi.net.au)
- GitHub - [github.com/acmilabs](https://github.com/acmilabs)
- Twitter - [@ACMILabs](https://twitter.com/ACMILabs)
- Slides - [sighmon.com/acmi](https://sighmon.com/acmi)

Simon Loffler — [@sighmon](https://twitter.com/sighmon) — [simon.loffler@acmi.net.au](mailto:simon.loffler@acmi.net.au)

