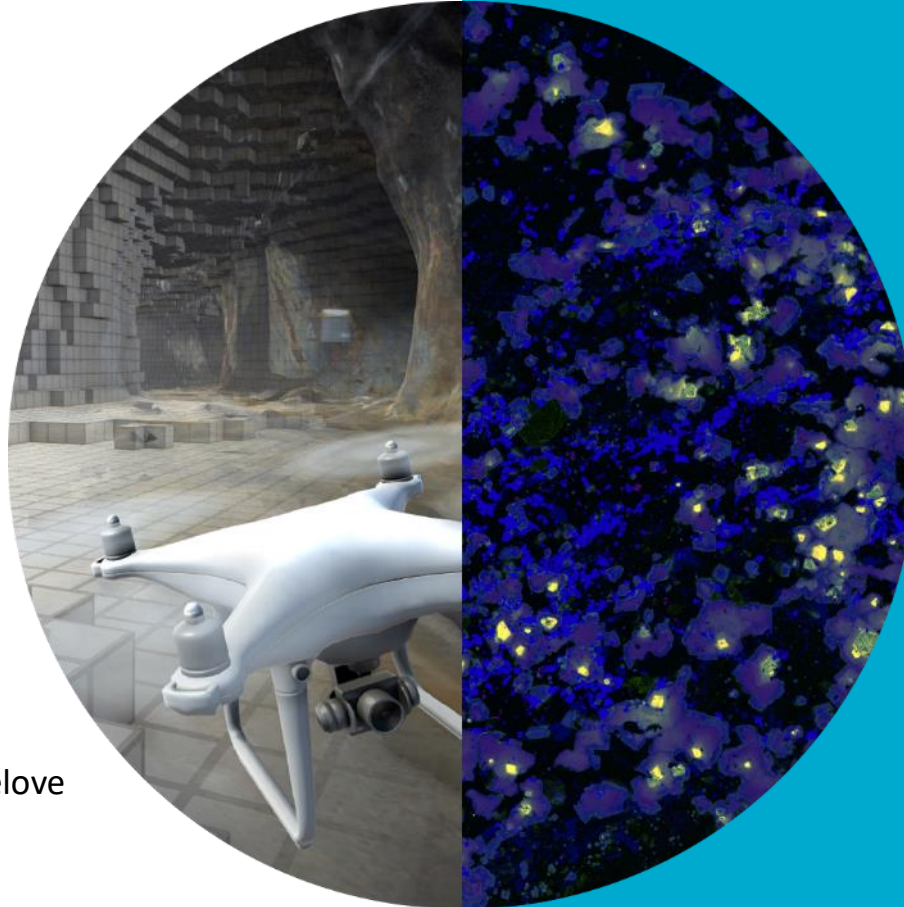




# Terria Digital Twin Early Adopter Program (EAP) with Industry Participants

Amber Standley & Marie Truelove  
Digital Twin Symposium  
9<sup>th</sup> February 2024



# Introductions



Amber Standley  
Senior User Experience Researcher  
and Designer, Terria Program



Dr Marie Truelove  
Senior Product Manager, Terria  
Program, and  
Head of Product Management

# Who we are

## Australia's national science agency



One of the world's largest multidisciplinary science and technology organisations



5,672+ dedicated people working across 53 sites in Australia and globally

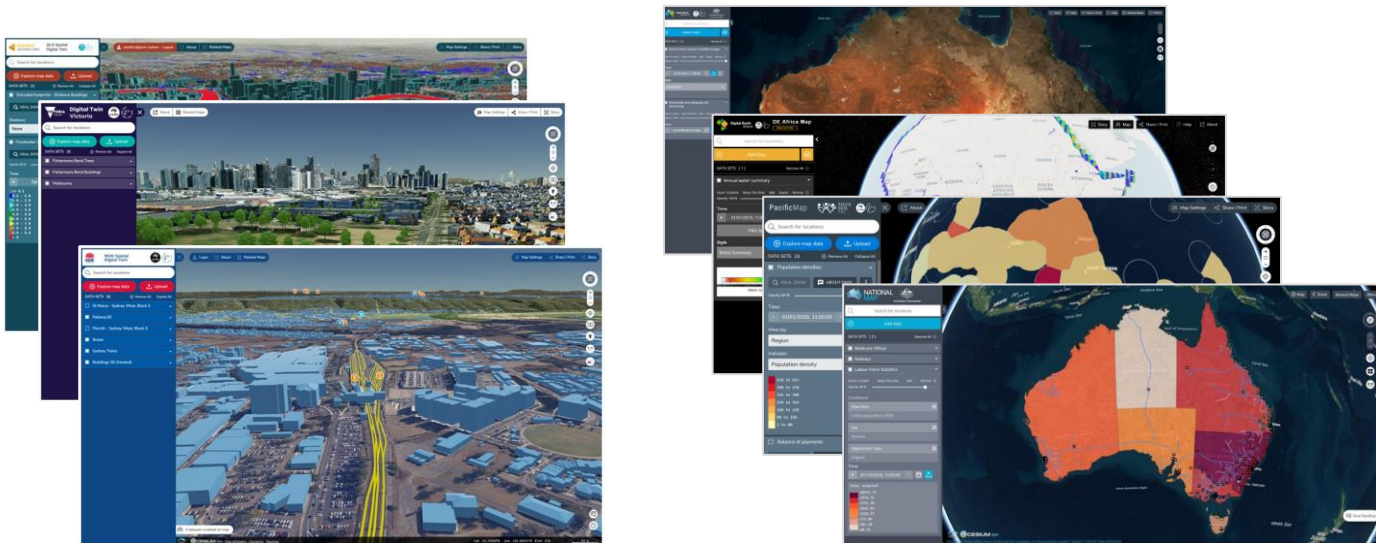


State-of-the-art national research infrastructure



We delivered \$10.2 billion of benefit to the nation in FY22

# Our experience: Spatial Digital Twins and Open Data Platforms



*First screenshot in stack from [nsw.digitaltwin.terria.io](https://nsw.digitaltwin.terria.io) and [nationalmap.gov.au](https://nationalmap.gov.au), both open platforms if you would like try for yourself*



[github.com/TerriaJS](https://github.com/TerriaJS)

# Our experience: TerriaJS open-source

**1000+** GitHub Stars, **97** Contributors, **332** Forks. Translated into **24** languages with **6** completed and **18** in progress.

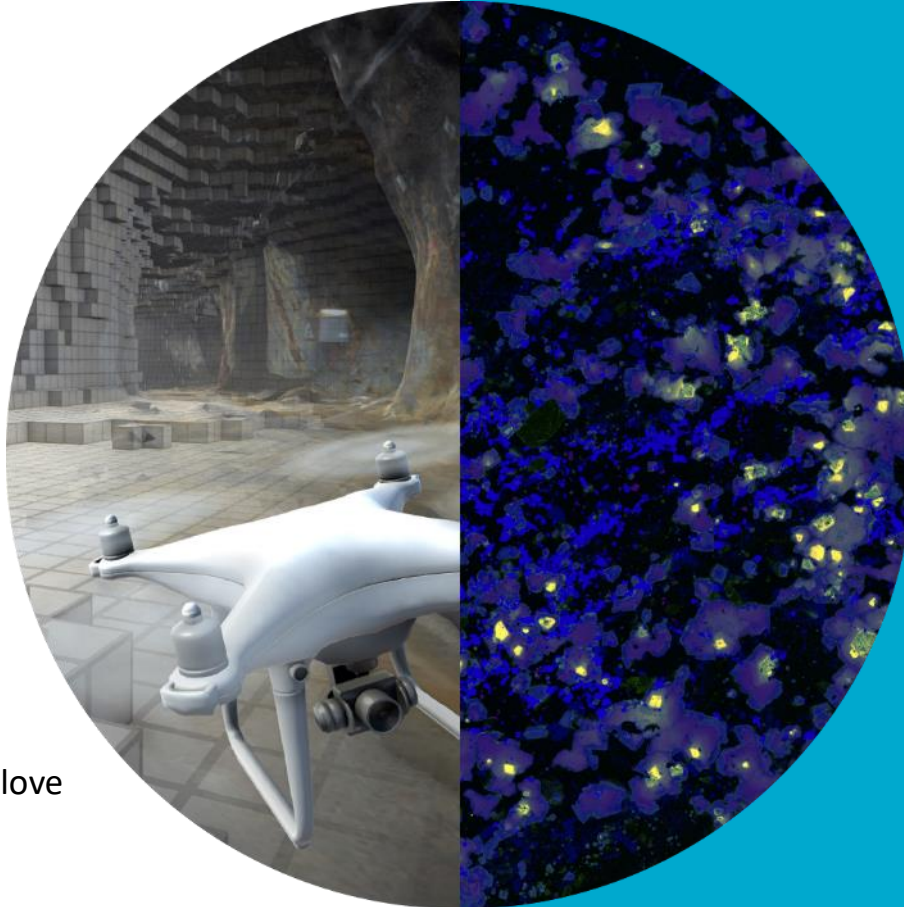


*Some of the organisations we know have used TerriaJS. Reach out and let us know if your experience with TerriaJS.*



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# Why a Digital Twin EAP?

- Goal to work directly with multiple new organisations on their real-life digital twin projects, to deeply understand challenges and opportunities to create value for them
- Terria EAP a program designed to achieve this goal

# Program Design







# Industry participants

- 6 companies including:
  - 1 energy network operator
  - 5 consultancies
- 20-500+ employees
- Services offered include:
  - GIS
  - Project management
  - Quantity surveying
  - Spatial analytics
  - Structural/civil engineering design
  - Surveying



## Digital twin projects

- Energy
- Infrastructure
- Horticulture
- Commercial property development
- Quantity surveying.

## Developing a best practice approach for CSIRO

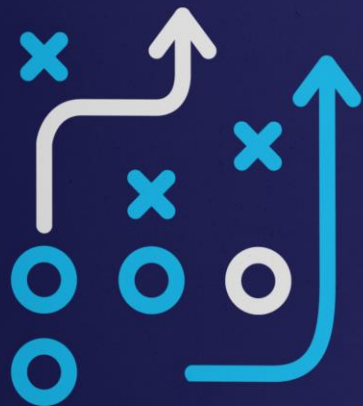
- How might we share our EAP program insights to help other product teams swiftly engage new markets with streamlined planning, resources, processes, and reporting for maximum value exchange?

# Developing a best practice approach for CSIRO

## *Hypothesis:*

- An Industry EAP Playbook for product teams will help Product teams streamline actions, time, and resources, ensuring successful execution and swift engagement with new industries and markets.

# Early Adopter Program PLAYBOOK



PREPARATION

## 01: Check if you are ready

- Check if you are ready - EAP self evaluation tool Recommended ▼
- Conduct a target market analysis Must Do ▼
- Define your EAP goals and success metrics Must Do ▲

[Investor-focused success metrics cheat sheet](#)

[Guide for effective EAP goal setting and measuring](#)



[Terria EAP goal setting case study](#)

## 02: Understand the process

## 03: Plan resources and activities

## 04: Connect with key stakeholders

## 05: Get buy-in and funding

## 06: Do your CSIRO due diligence

## 07: Prepare your Expression of Interest campaign

## 08: Prepare your team

## 09: Prepare your participant engagements

EOI

## 10: Launch your expression of interest (Eoi)

## 11: Shortlist and interview Eoi candidates

## 12: Make offers and onboard

## 13: Connect customer with team

EAP

## 14: Setup customer use-cases

## 15: Launch use-cases into the wild

## 16: Post launch insights gathering

## 17: Convert participants into continuing partners!



# Data Challenges and Opportunities Observed

# Data sharing is hard to do

- Under-estimated the challenges they might face sharing data to set-up their project, and their impact to timelines
  - Needed to change project subject to progress
- Data sovereignty was only considered when we enquired
- Although technical teams, some had limited solutions already in place for sharing data outside their organisations (eg cloud infrastructure, data services)



# Bringing in rich context from external sources – Pre-development stages

- Limited utilisation of data from external sources
- What data is already available about the site? What are the gaps we need to fill?
- Themes include existing rights, use, infrastructure, physical description, climate risk
- State & Territory and Australian Government data sources



Locations of EAP projects extended to states beyond their home office.

National Map supported initial data searches for projects

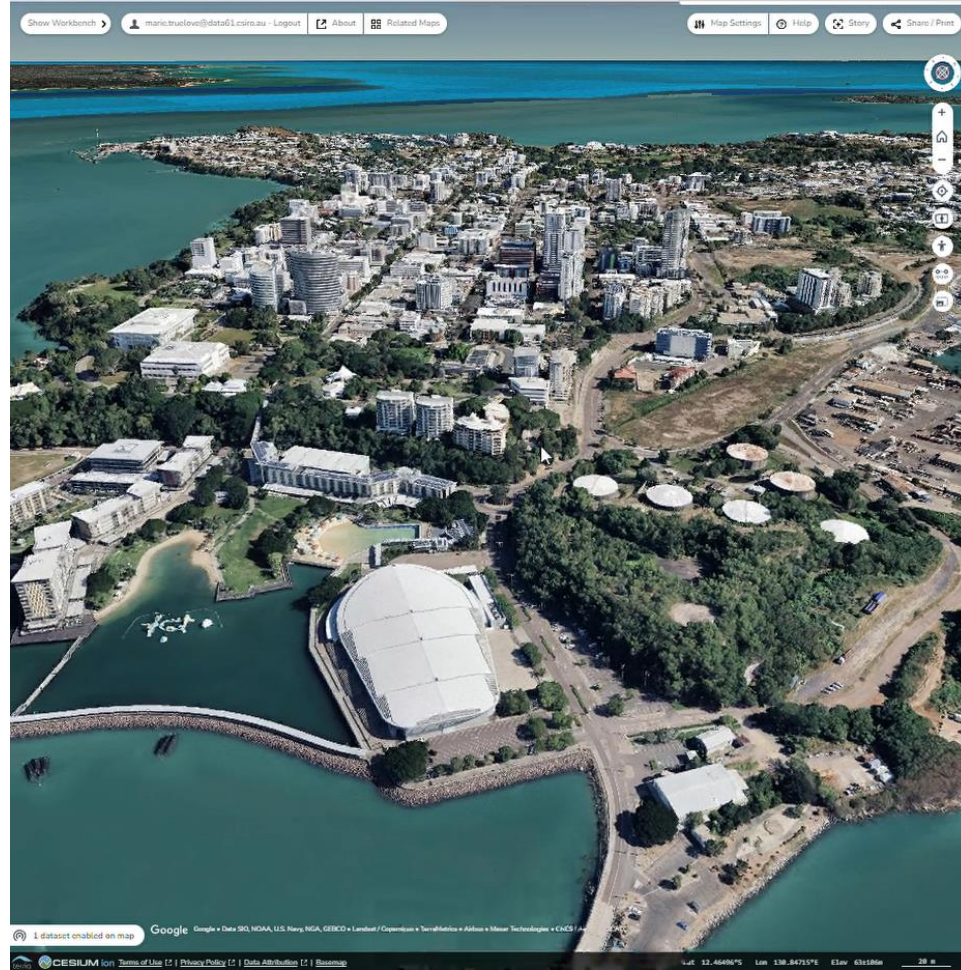




# Bringing in rich context from external sources – Design stage

- Rich 3D context in project location sought after to be able to analyse projects in context of existing environment
- 3D Imagery most sought after even in the most remote locations, 3D buildings next
- Significant interest in new Google Photorealistic 3DTiles

Google Photorealistic 3DTiles were requested in a few projects, video here is of Darwin





# Bringing in rich context from external sources – Development stage

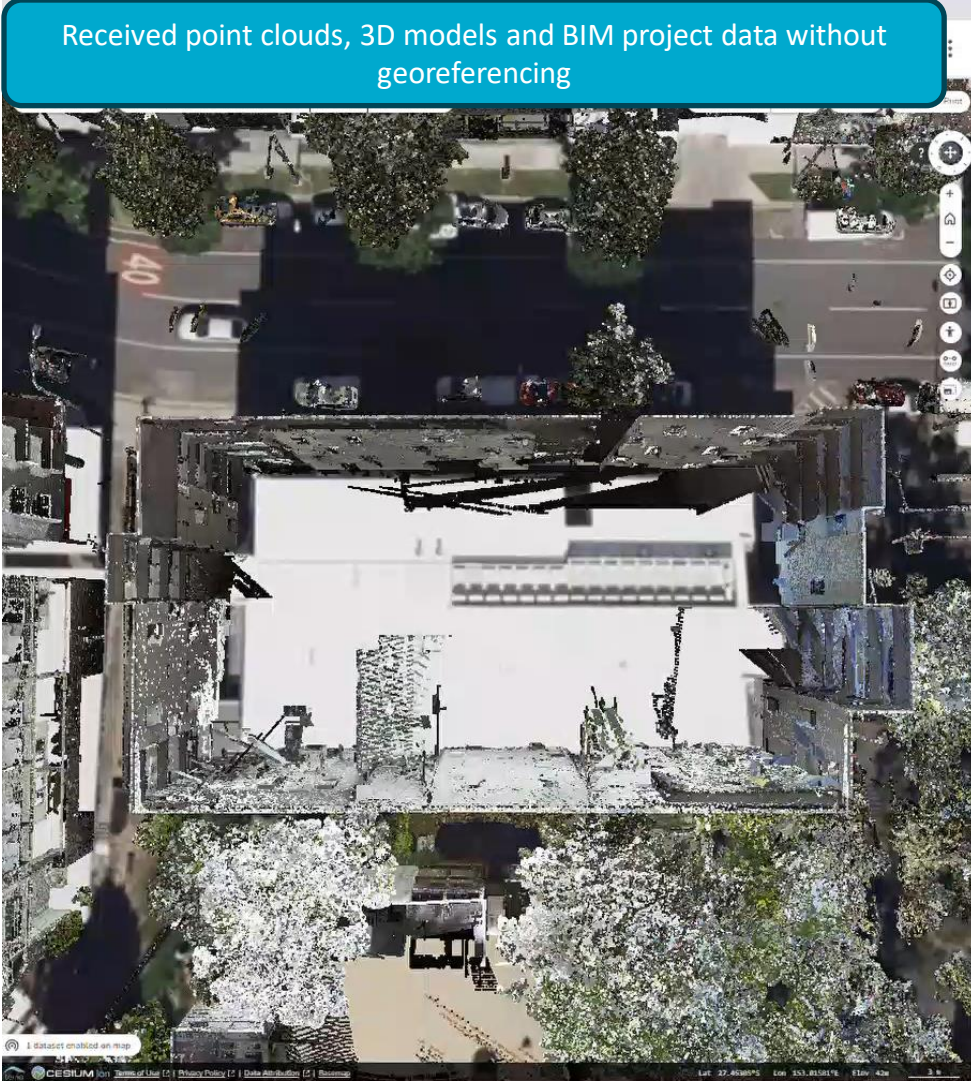
- Anything that will help identify risk to development timelines
- Themes include
  - Weather forecasts
  - Other development activity in the vicinity
- Emphasis on data that available from local government and live/predictive forward looking

City of Melbourne open data contributed to one participant's project, but other projects less options available from local government

The screenshot displays a web interface for the City of Melbourne's open data portal. At the top, a blue banner states: "City of Melbourne open data contributed to one participant's project, but other projects less options available from local government". Below this, the page shows a grid of dataset cards. Each card includes a title, a brief description, the publisher (City of Melbourne), and a list of available data formats (e.g., Table, Map, Analyze, Export, API). Some cards also feature tags for accessibility, license, and other attributes. The datasets shown include:

- Melbourne Testbed Devices Reference List**: Dataset containing list and location of all devices used for the Melbourne 5G and IoT testbed.
- Pedestrian Counting System - Past Hour (counts per minute)**: The sensor\_id column can be used to merge the data with the Sensor Locations dataset which details the location, status and directional readings of sensors.
- Micro climate**: Temperature and humidity measurement in different locations on Argyle Square.
- Argyle Square weather stations (historical data)**: Historical data collected by weather stations (ATMOS 41) installed in Argyle Square.
- On-street Parking Bays Sensors**: Upcoming Changes: Please note that our parking system is being improved and this dataset may be disrupted.
- On-street Parking Bays**: Upcoming Changes: Please note that our parking system is being improved and this dataset may be disrupted.
- Argyle Square Air Quality**: Air quality measures in Argyle Square.
- Trees, with species and dimensions (Urban Forest)**: The City of Melbourne maintains more than 70,000 trees.

On the left side of the screenshot, there is a sidebar with filters and a download catalog. The filters section includes a search bar and a list of categories like View, Modified, Publisher, Keywords, and Themes. The download catalog section lists available file formats: XLSX, CSV, RDF/XML (DCAT), and RSS feed.



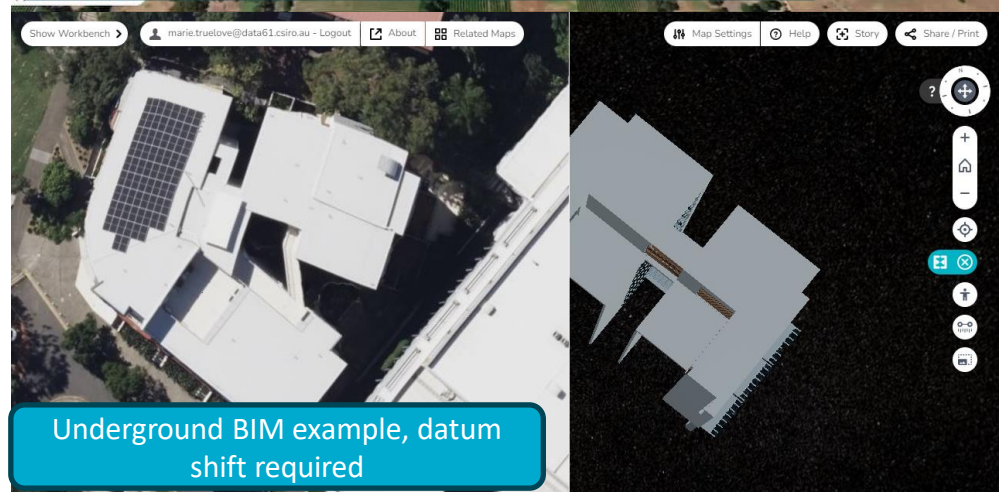
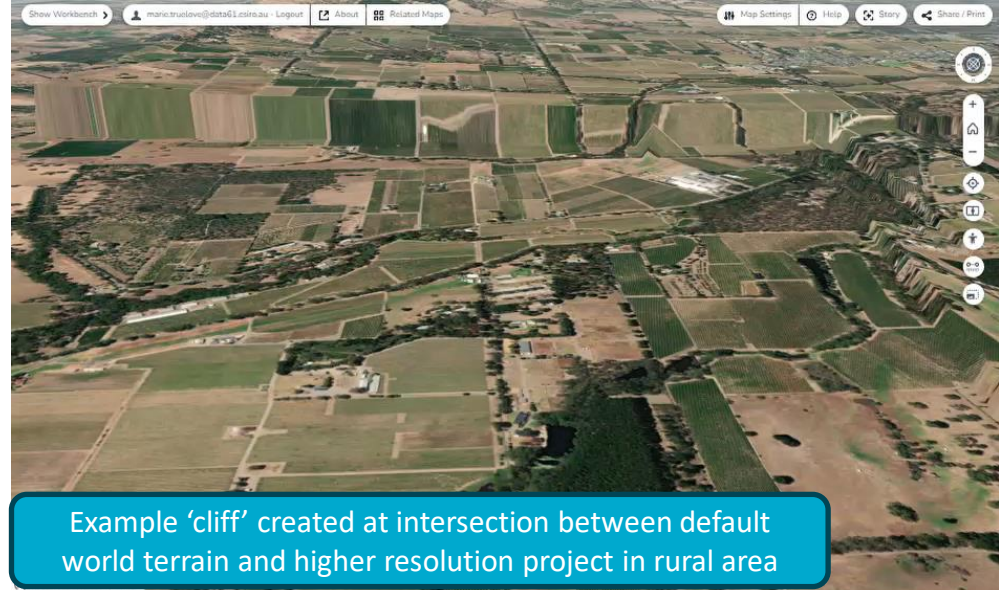
## Models in their own project worlds

- In general project data was not georeferenced, manual positioning required for many 3D datasets
- Projects have been isolated islands, but motivation seen in all projects to test value of being connected
- Utilised foundational datasets as aids eg 2D & 3D imagery



# Where's the ground?

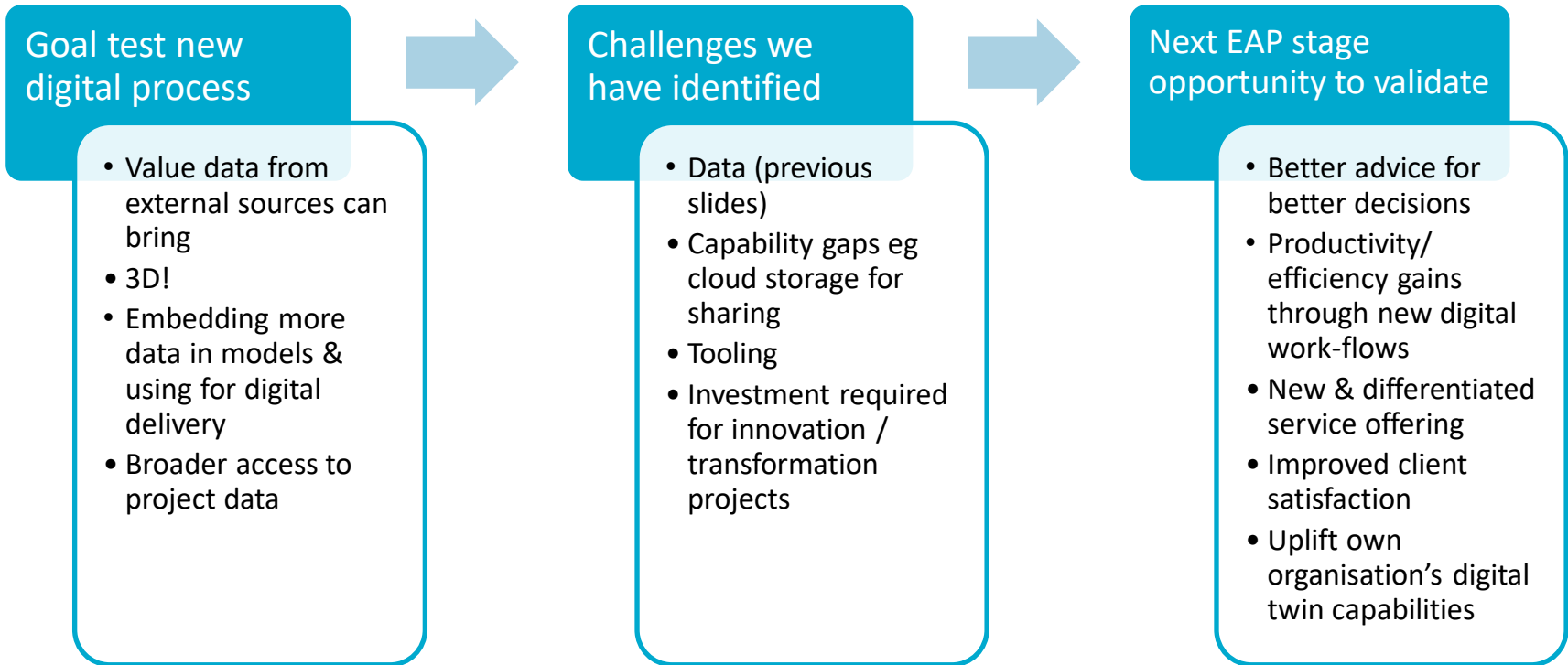
- All projects required higher resolution Digital Elevation Models (DEMs)
- Multiple purposes in project - analytics and visualisation - need to align
- Some capture their own project specific DEMs, others using data from other sources (eg ELVIS)
- Datums always a discussion





# Digital Transformation Opportunities Emerging

# Digital Transformation





# Key takeaways

# Key takeaways

1. Data challenges are not sector dependent, but shared
2. Testing digital transformation opportunity for new value creation:
  - Increased utilisation of data from external sources
  - New/ enhanced digital workflows
  - 3D !
3. Our EAP approach informing a playbook supporting CSIRO engagement with industry
4. And our EAP is still in progress, we hope to share more details soon!
5. Giving early consideration to an EAP V2, let us know if you're interested





# Acknowledgements

To all our EAP participants



Thank you, and we'd  
welcome feedback!

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