# Commercially reinventing radio astronomy infrastructure

## **Precedents and potential**





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## What **else** can we do with expensive items of infrastructure?

The key questions to ask to identify a service or capability to monetize are:

- What is someone willing to pay for?
- What attributes can we exploit, while minimizing the impact of any limitations?

There is a third question that needs to be (honestly) considered:

 Can our organization ethically/logistically/practically support the proposed activity?

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## I mentioned precedents...





#### (I know it's not a radio telescope ©)

#### Anglo-Australian 3.9m Telescope

#### Ex-Orroral Valley 10m dish, Univ. Canberra

#### Molonglo Observatory Mills-Cross Radio Telescope



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### Good:

- Large size (high gain)
- Excellent surface accuracy (frequency agnostic)

Attributes & Limitations

- Exquisite pointing
- Wideband receivers

#### Less-good:

- Highly shaped surface (efficient, but poor for multi-beam or wide FoV)
- Low slew rate

#### What can you do with this?

- Giant wok
- Static billboard / artwork display
- Flower bed (!!)
- And something even more left field:











## Space Situational Awareness



Often cited, but with managed expectations there may be some niches to fill.

Defence is a fickle source of SDA funding in Australia for complex reasons of evolving politics, strategy, capability and need.



### Interest in *civil SSA* is growing to support new regulation of launches





Request for Information: Space Situational Awareness (SSA) Capabilities for Launch and Return Support in Australia

- Cislunar SSA, and
- Satellite troubleshooting

...might also be relevant applications

## Space Control



Contentious, but an area Defence definitely has an eye on!

The "kill chain" concept:

- Find: Identify a target
- Fix: Specify the target location/coordinates
- Track: The target
- Target: Select an appropriate weapon
- Engage: Apply the weapon to the target
- Assess: Evaluate the effect of the engagement

- Space Domain Awareness

Space Control



High-gain, wideband antennas are perfect EW delivery systems

- Jamming/denial-of-service
- Destruction of electronics on-orbit is ...difficult

(10 kV/m at 400 km, requires MOPRA and a 10TW pulse!)



## **Questions?**

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