Summary of ATA Capabilities

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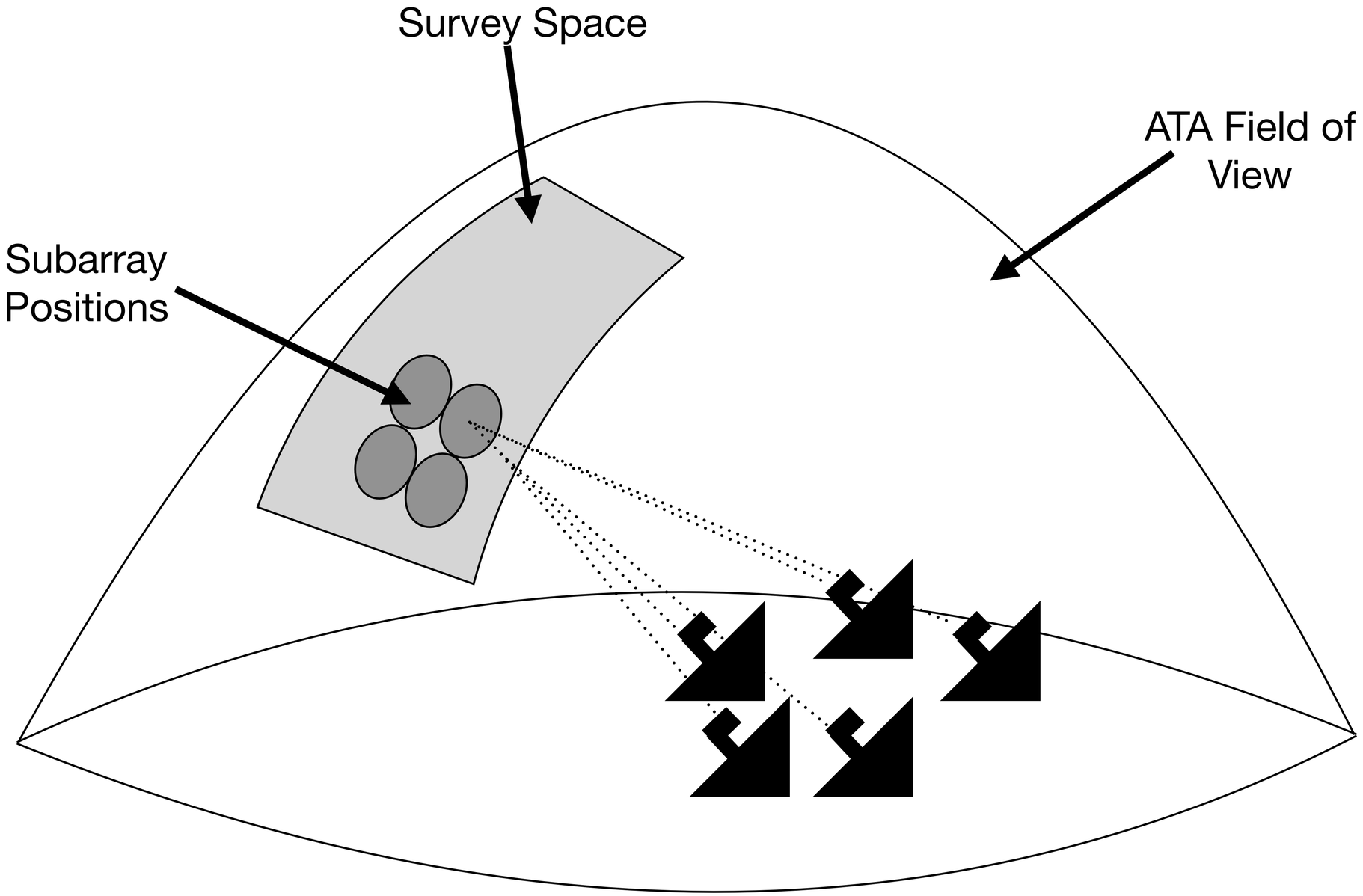
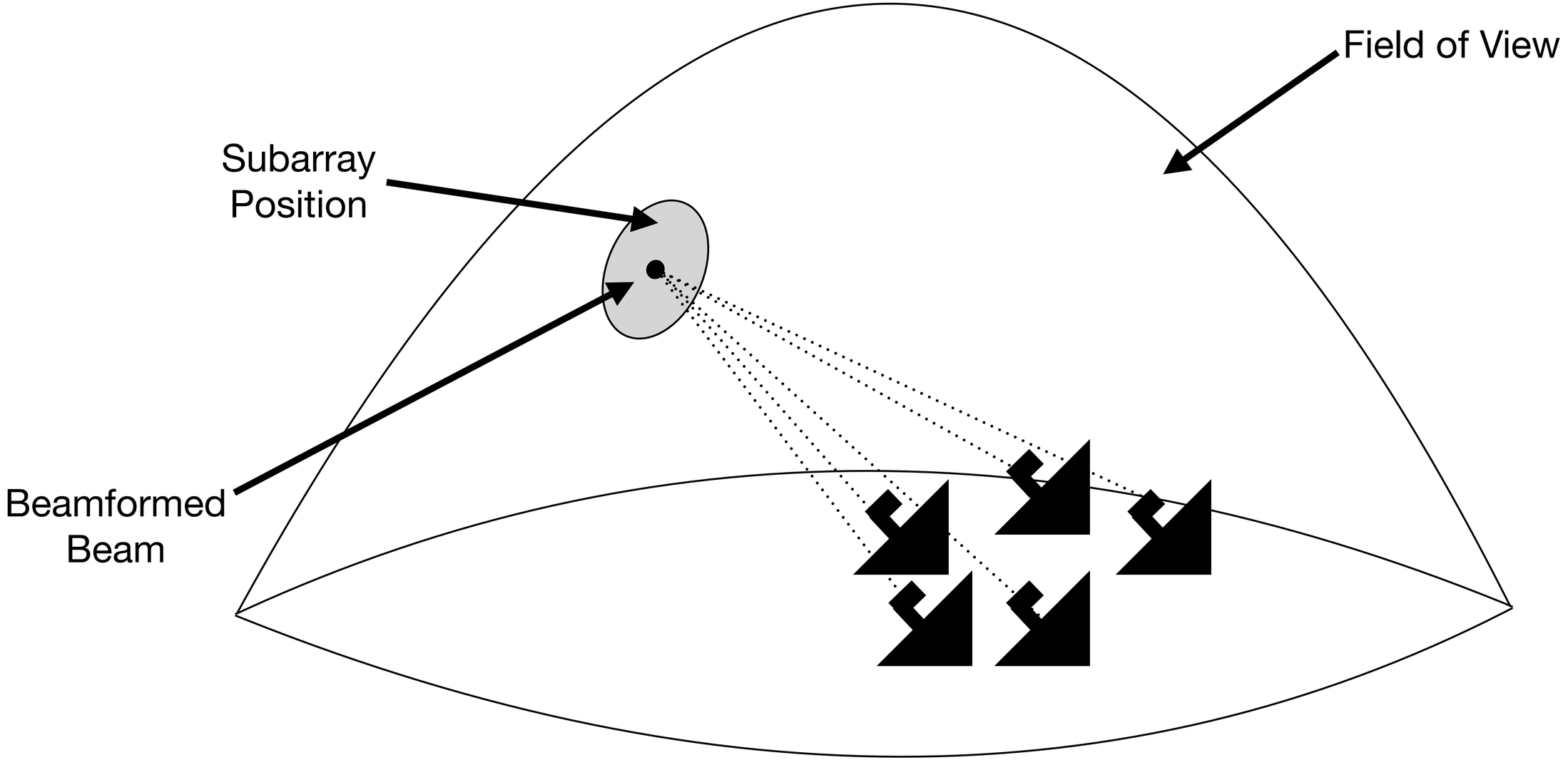
Widefield terminology examples



Targeted terminology examples



Organizational Framework for ATA Observing Capabilities

- Two classes of capabilities: **Widefield** and **Targeted**
- Each class has multiple modes (e.g., call them W1, W2 and so on for Widefield)
- Each mode is on some current “version”, which tells us how many antennas/ beams/etc. we’re capable of using right now (e.g., W1v1)
- Going from an incoherent sum of 20 antennas to 25 antennas, but otherwise the same mode, would be a version update to that mode
- Adding a new mode is also possible, as time goes on (e.g., a raster scanning survey mode under “Widefield”)

Summary of Current Capabilities

- **Widefield**
  - **W1:** Use multiple subarrays, each made of multiple antennas incoherently summed, to tile a survey space within the field of view
    - **v1:** 5 antennas/subarray, 4 subarrays
- **Targeted**
  - **T1:** Use multiple antennas, incoherently sum all of them into a single subarray centered on a target-of-interest
    - **v1:** 20 antennas
  - **T2:** Use multiple antennas, beamform them at bore-sight onto a target of interest
    - **v1:** 20 antennas

Short-Term Upcoming Capabilities

- **Targeted**
  - **T3:** Use multiple antennas, beamform them into a single beam, *not at boresight*, onto a target-of-interest
  - **T4**: Use multiple antennas, beamform them into a multiple beams across the subarray position, onto multiple targets-of-interest

Long-Term Upcoming Capabilities

- **Widefield**
  - **W2:** Use multiple subarrays, each made of multiple antennas incoherently summed, to raster-scan a survey space within the field of view
- **Targeted**
  - **T5:** Use multiple antennas, beamform them into multiple beams within the subarray position, then change the beam locations mid-observation

Matching Science Projects to Current Capabilities

- Want to pick projects that are:

A. novel

B. allow us to test the instrument’s current capabilities

C. move us towards developing the instrument’s new capabilities

D. relatively short, for quick “prototyping” cycles

Matching Science Projects to Current Capabilities

	Novelty	Tests mode to fullest?	Future capability development	Time to complete
W1v1				
RFI Survey	HCRO needs a high-frequency resolution RFI survey	Yes	Will inform future observing campaigns	Short
Tile the Galactic Center	Unique at high frequencies?	Yes	?	Medium
T1v1				
Anti-Solar Point Campaign	Untested technique, gives an ETZ survey for free	Yes	?	Looong, and benefits from more antennas - wait until longer cycles?
T2v1				
FRB Repeater Observations	ATA can do unique measurements of repeaters, esp. at high frequencies	Yes	Can be used to test T3	Short