

# Support for Global Projects

- Prof. Michael A. Garrett

General & Scientific Director, ASTRON

# Global Project

## SKA: truly a Global Project...

- 10+ international partners drawn from across the globe

- Distributed facility:

100s km - SKA1

1000s km - SKA2

10000 km - SKA + AVN + Global VLBI

- Mega Science ~ 2B€ cost

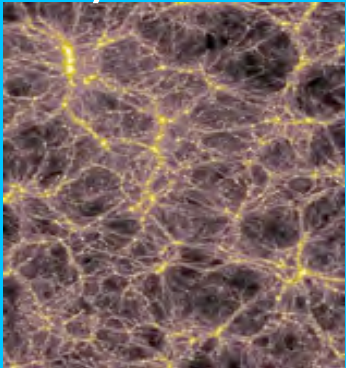




# Global Impact!

## Fundamental Science discovery machine:

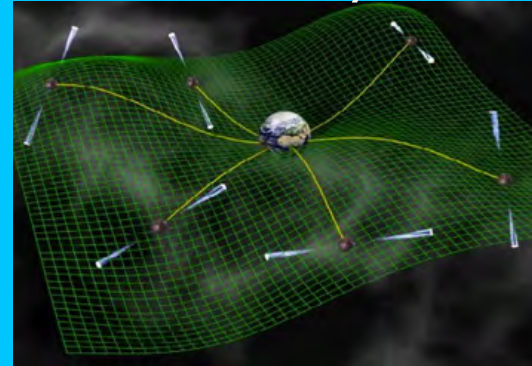
### Early Universe



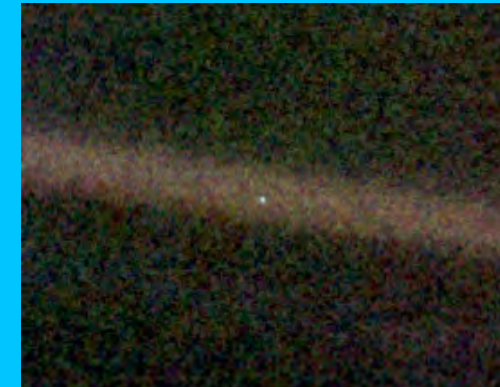
### Cosmic Magnetism



### Fundamental Physics



### SETI: Are we alone?



# Global Impact!

SKA: truly a Global Challenge...

A Global Opportunity...

SKA is much more than just another radio telescope...

SKA as an Ideas Machine:

- Ideas & Action have the potential to revolutionise how we ALL live, work & play



# SKA - window of opportunity



SKA will be built in 2 phases - SKA1

2016-2020: SKA1 construction phase (10%)

2020-2034: SKA2 construction phase

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We already know how to build SKA1!

SKA-2 is a very different proposition....

- specifically the *SKA2\_Aperture Array* to be built in Africa.

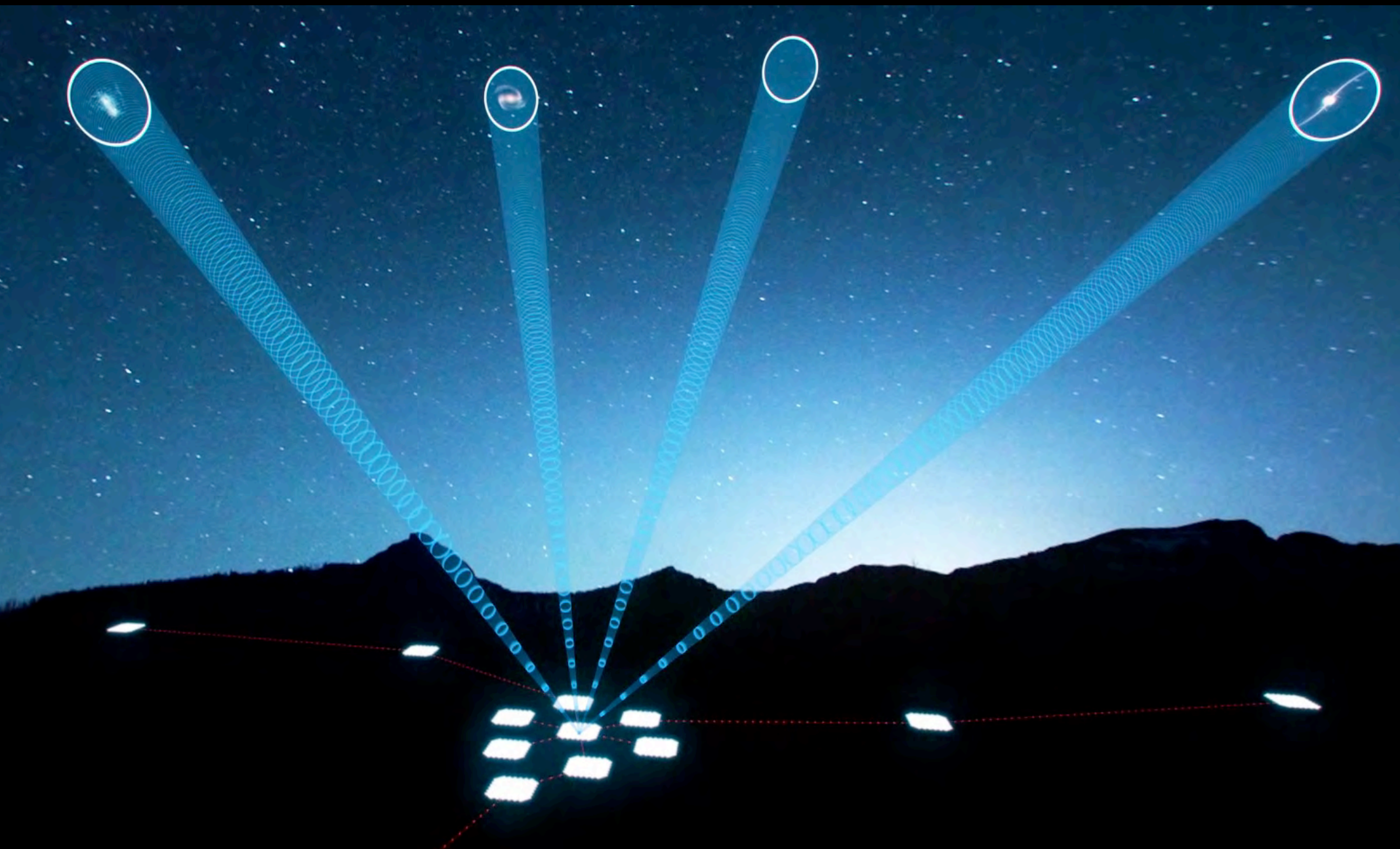


# SKA2 Aperture Array





Dense Aperture Array concept may be the only practical way of realising the full SKA-2 vision





# SKA - window of opportunity



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# SKA2 Aperture Array

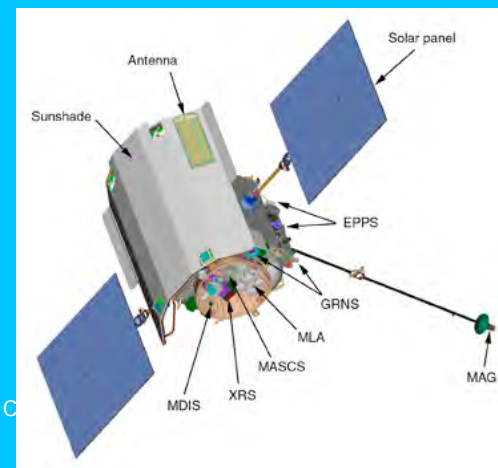
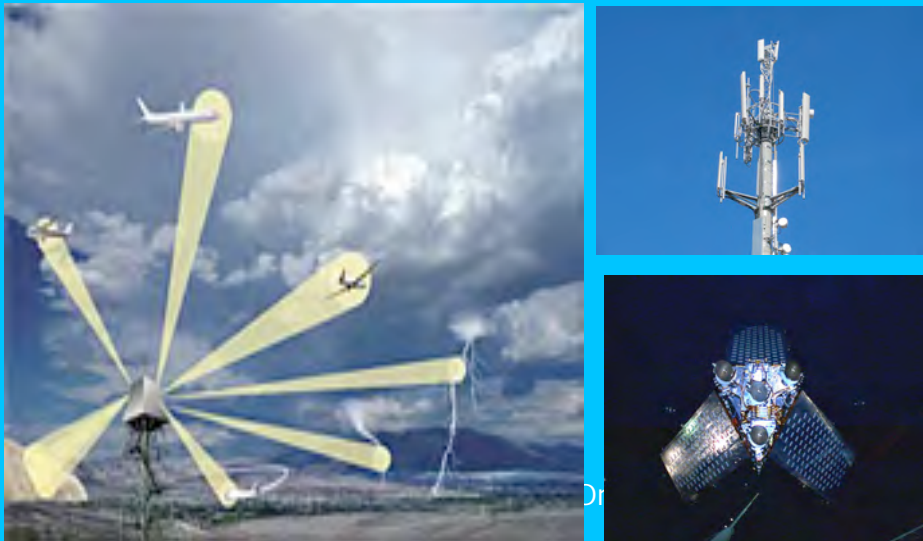
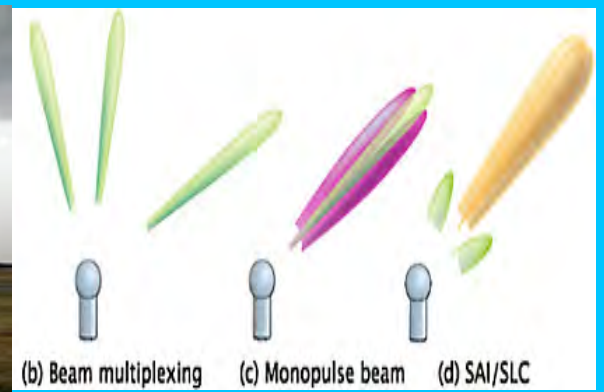
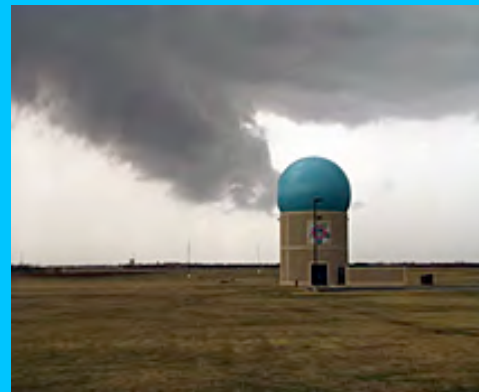
SKA2 AA - huge potential for radio astronomy...

European leadership in AA technology

Mutual European & African interest



# SKA2 Applications



### TracVision A7 - How Does It Work?

**Easy to Install:**  
The TracVision A7 needs to be installed in an afternoon in a vehicle. A single cable connects the antenna to the 12V receiver inside the vehicle.

**Satellite Connection:**  
The low-orbit TracVision A7 is capable of receiving up to 100 channels of DVB-T2\* programming, 3M Satellite Radio, and local channels broadcast by three different DIRECTV satellites.  
\*Assumes DIRECTV DVB-T2 CODEC MPEL2 sub-carrier

**Exclusive Mobile Access to Local Programming:**  
TracVision A7's integrated GPS and mobile receiver provides a unique reception of local programming when traveling in your home designated market area (DMA). Unlike any DVB-T2 local channels, automatically set up in compliance with FCC regulations.  
\*\*Subject to satellite coverage availability and accuracy. Visit www.tracvisiona7.com

**TracVision A7 Antenna:**  
The 3-watt high TracVision A7 system costs \$499.95. Includes antenna, 12V receiver, and all necessary technology to track and receive signals from DIRECTV's satellites in open roads in the continental United States, regardless of vehicle speed or motion.

**Vehicle Audio/Video System:**  
TracVision A7 is compatible with virtually all factory-installed and aftermarket video and stereo systems.  
Video and audio systems will temporarily video screen when power is restored to view of the driver.

**Remote Control:**  
The radio frequency (RF) remote control allows passengers to change channels and control the system from anywhere in the vehicle.

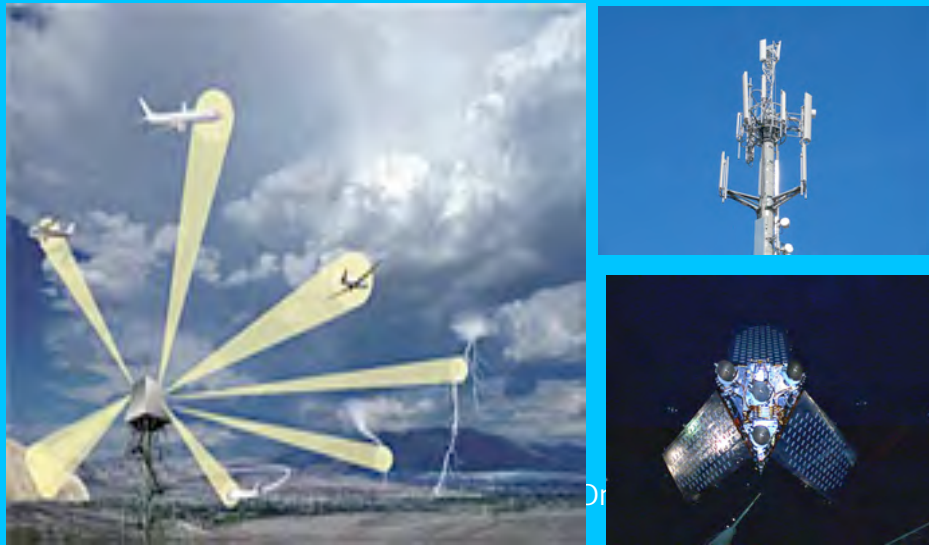
**12V Receiver for DIRECTV Service:**  
Designed in collaboration with DIRECTV, the compact TracVision 12V receiver connects to the antenna, in-vehicle video screen, and the vehicle's stereo system, and may be installed out of sight. It's optimized for in-vehicle use with road, point-to-point, instant dialing, and a GPS interface for local channel support.



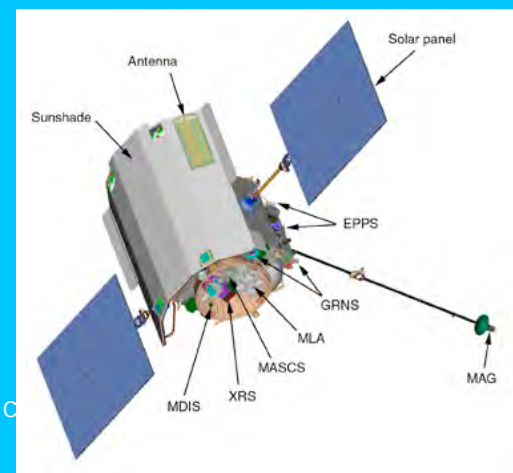
# SKA2 Applications



Challenge facing Astronomy is how to reduce manufacturing and operating costs while maintaining performance and reliability.



(b) Beam multiplexing (c) Monopulse beam (d) SAI/SLC



### TracVision A7 - How Does It Work?

**Easy to Install:**  
The TracVision A7 mounts to virtually any aftermarket in-vehicle antenna that tracks or steers to the road ahead. A single cable connects the antenna to the 12V receiver inside the vehicle.

**Satellite Connections:**  
The low-profile TracVision A7 is capable of receiving up to 100 channels of DAB+ (Digital Audio Broadcasting) radio signals, and has all channels broadcast by three different DIRECTV satellites.

**Exclusive Mobile Access to Local Programming:**  
TracVision A7's integrated GPS and mobile receiver provides instant reception of local programming when traveling in your home designated market area (DMA). Unlike any DAB, local channels automatically turn off in compliance with FCC regulations.

**TracVision A7 Antenna:**  
The 3-inch high TracVision A7 system card, MPX's patented, multi-lobed array antenna technology to track and receive signals from DIRECTV's satellites in open roads in the continental United States, regardless of vehicle speed or road.

**Vehicle Audio/Video Systems:**  
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SKA2 AA in R&D phase... **(CHALLENGE, IDEAS, OPPORTUNITY, CHANGE!)**

*- relevant & outstanding topic for AERAP support!*



Thank you  
for listening...

