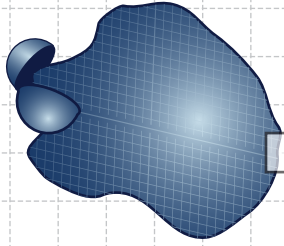




PowerStar Launch and Deploy

- One launch vehicle
- A 1km system can fit into several existing vehicles
- Once deployed the Solar Microwave Fabric unfurls and inflates to form a sphere

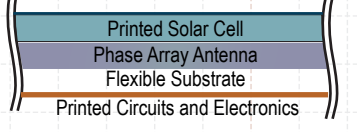


What is it?

Solar Microwave Fabric

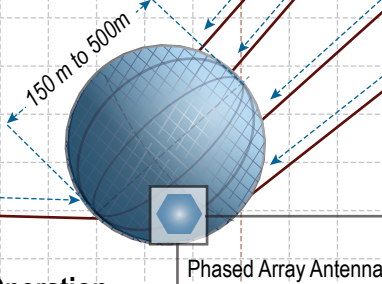
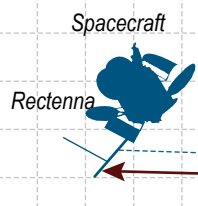
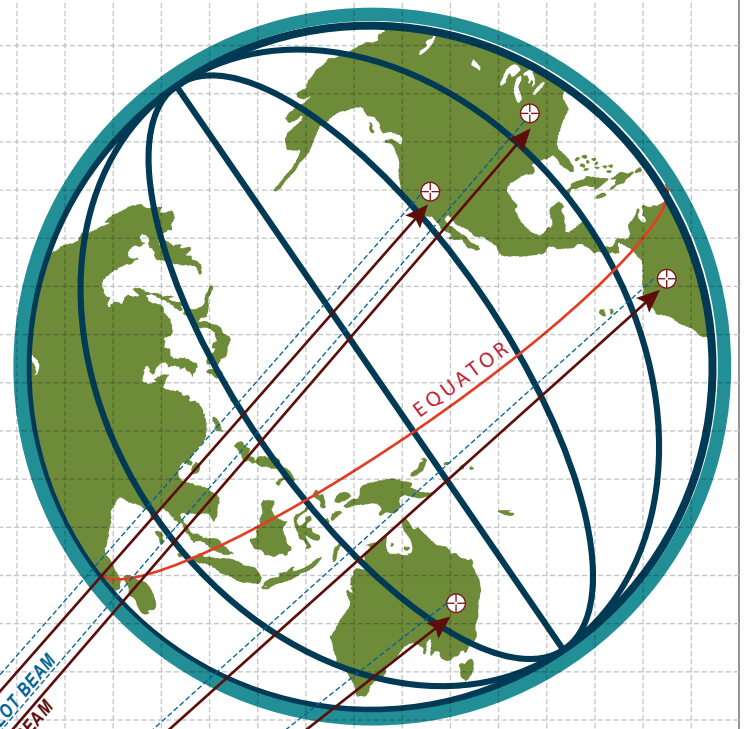
- The simplest possible structure
- No moving parts (except electrons and photons)
- No on-orbit construction
- Inherent stability and robustness

Solar Microwave Fabric Detail



How does it work?
PowerStar Operational

- Each antenna transmits only if the beacon(s) radiation is received
- Each transmitting antenna draws power from solar cells in it's immediate vicinity and through the thickness of the "skin" from the receivers on the inner surface of the skin
- Orbits with one side facing the Earth at all times
- Antennas can simultaneously transmit to other satellites in it's area
- Power distribution to each antenna is local - there is no need for a complex power management system
- Strictly local architecture means robustness against partial damage
- Half of the PowerStar sphere always faces the sun with no controls or actuator.

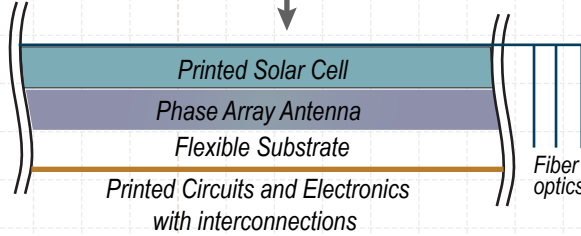


- Random Tessellation to prevent integrating lobes
- Printed Microwave Transmitter element
- Printed Solar Array Elements

PowerStar Coordination and Operation

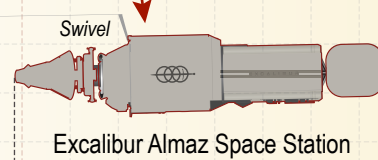
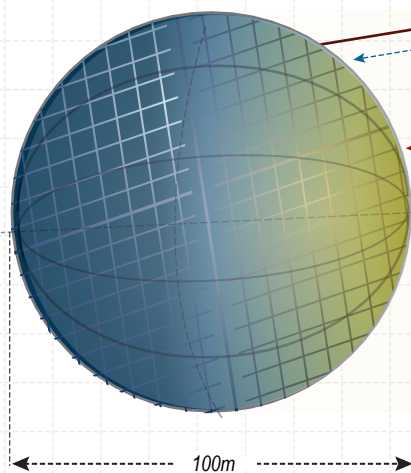
In each patch antenna:

- The exterior of the sphere is printed with solar cell and microwave transmitters
- Local microprocessor records beacon radiation waveform
- Amplifies waveform and emits it back in reverse time
- Power optimally matches desired power distribution on the ground
- No moving parts!



PowerStar EA Space Station Configuration

- EA Station in Polar orbit around the Earth so the PowerStar always accesses the sun.
- Can operate as a Phased Array Radar, Space Power Source, and/or a Communications System



- Between solar cells are fiber-optics to directly collect sunlight
- Delivers light and heat directly into the Space Station by "light pipes"

