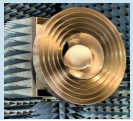
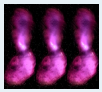
Technologies for Radio Astronomy

Development Roadmap

Mark Bowen | 27 March 2023

Technologies for Radio Astronomy Roadmap

Technology	2021	2022	2023	2024	2025	2026	2027 +
 Ultra Wide Band Feed Systems	0.7 – 5.0 GHz systems MPI PKS						
		4.0 – 30 GHz systems					
 Phased Array Feed Systems				Cooled/room temp Rocket Phased Array Systems (0.7 – 2.0 GHz) ASKAP			
	Cryogenic Rocket Phased Array Systems* (0.7 – 2.0 GHz) PKS				Cryogenic Phased Array Feeds (20GHz and above) ATCA		
			Cryogenic Rocket Phased Array Systems (4.0 – 20.0 GHz) ATCA				
 Digital Signal Processing	RFSoC Technologies (low frequency, large volume) Commercial VLBI-Low MWA SETI						
	RF System on a Chip Technologies - scalable and fully digitized systems* (high frequency, high bandwidth – low volume) PKS ATCA TID						
	COTS Technologies (FPGA; GPU; P4 switches) – beamforming and signal processing* PKS ASKAP ATCA SKA						
 Image and Data Processing	RFI mitigation, real time processing, big data analytics, archiving and end user curation All ATNF facilities						
 Underpinning Technology Development	Antennas, feeds and RF design and EM modelling, cryogenic systems, ultra-low noise amplifiers (LNA) and electronics design, precision machining and manufacture (including exotic materials), power supply systems and thermal design All ATNF facilities						
	Embedded software and computing, networking, high precision timing, fibre optic systems All ATNF facilities						

Last update: April 2022

*To accommodate the commercialisation project inside Space & Astronomy, the Technologies Program will resource dedicated training and knowledge translation across to the team recruited into Quasar.

Shaded boxes indicate technologies feeding into Quasar.

Yellow highlight indicates a change from the previous version.

CSIRO

Thank you

Space and Astronomy
Mark Bowen
Principal Engineer

+61 2 9372 4337
mark.bowen@csiro.au