

# MEETING THE BIG SCIENCE NEEDS OF THE SKA: WHAT NREN'S CAN DO AND THE INTERNET CAN NOT

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eResearch Australasia 2017

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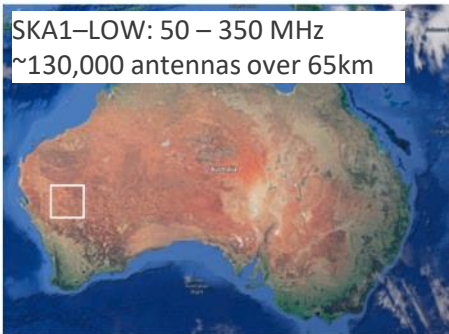
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# THE SQUARE KILOMETRE ARRAY RADIO TELESCOPE

SKA1-MID: 350 MHz – 24 GHz  
~200 15m dishes over 150km

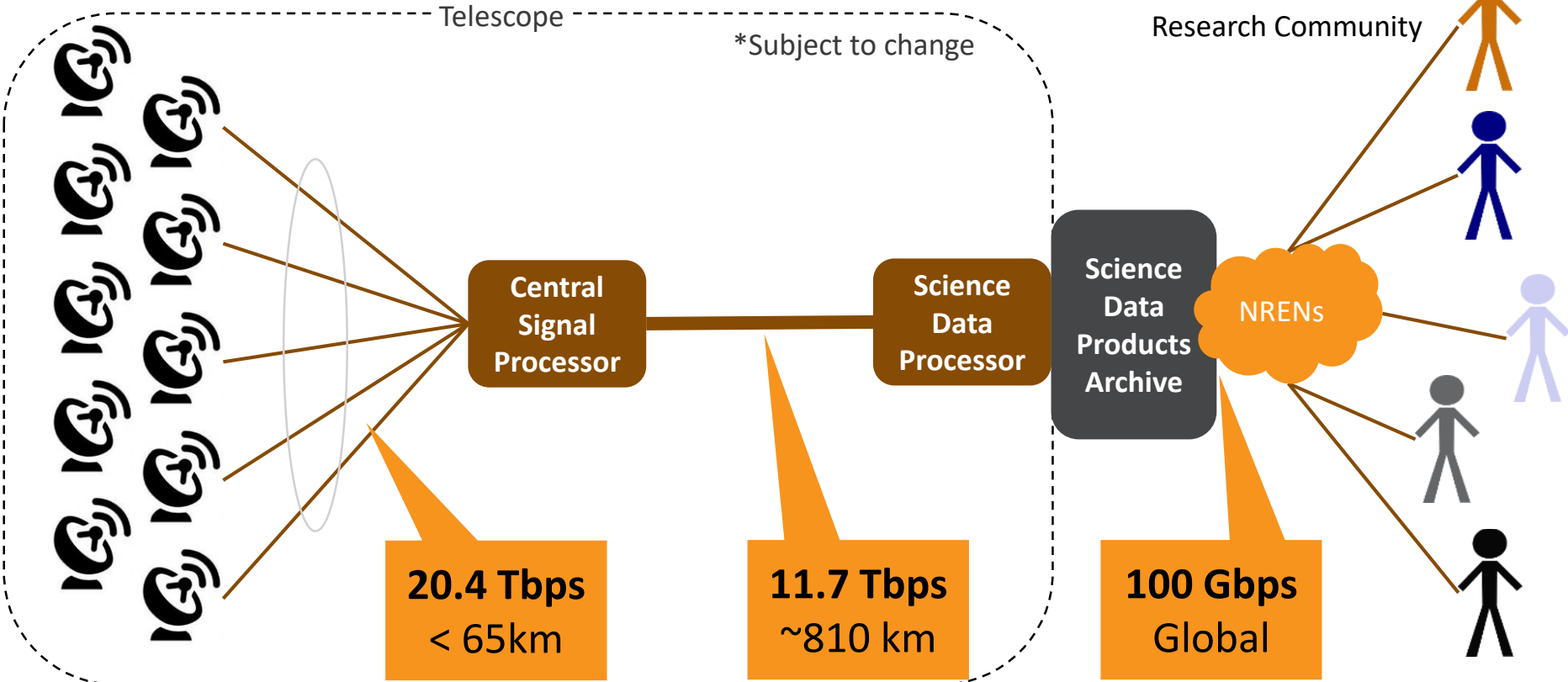


SKA1-LOW: 50 – 350 MHz  
~130,000 antennas over 65km



Shaun Amy, CSIRO, <https://www.glif.is/meetings/2017/plenary/amy-ska.pdf>  
<http://skatelescope.org>

# DATA PATH – SKA1-LOW (AUSTRALIA)\*



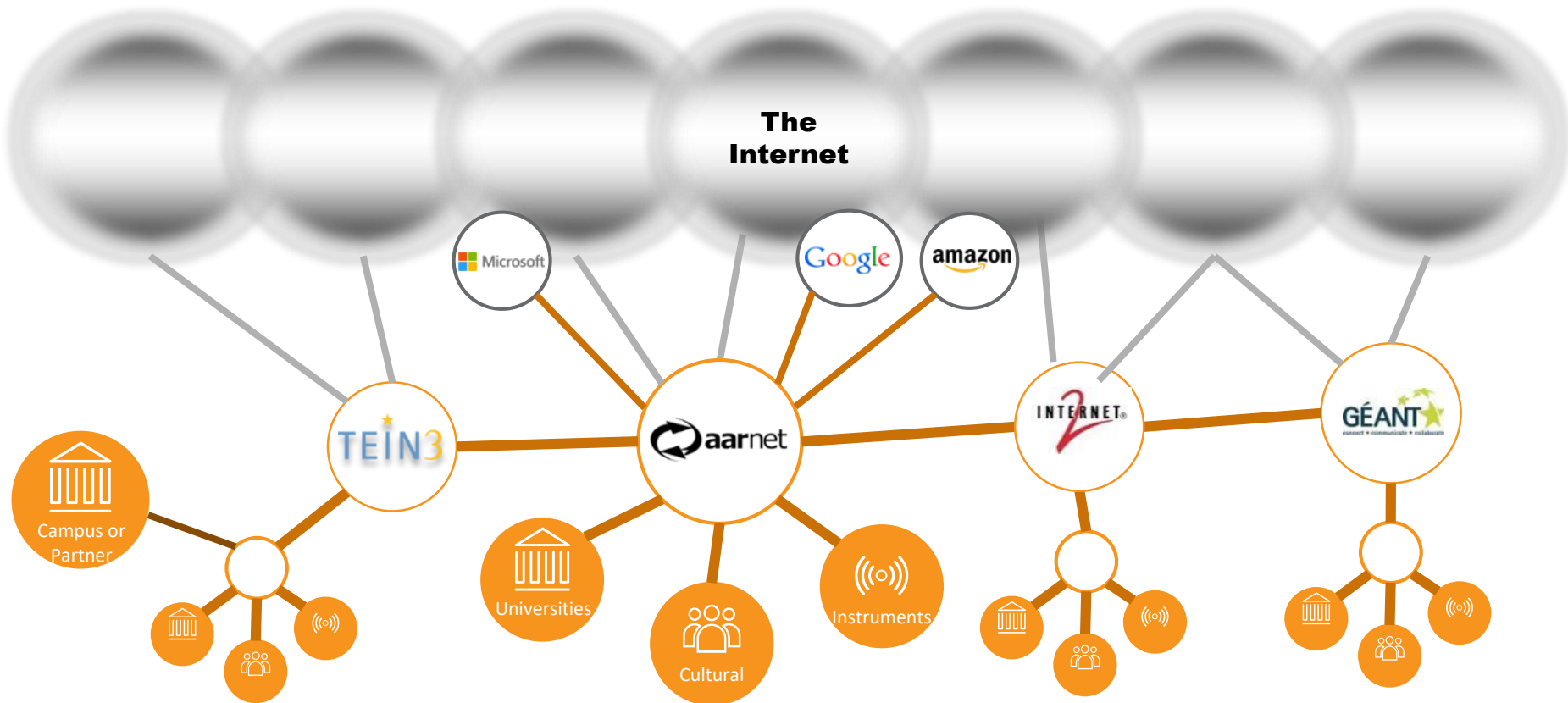
# Future SKA Archive

(per year)



Acknowledgement: Michael Wise & Anna Scaife

# THE INTERNET





# TAKING IT TO THE LIMIT – TESTING THE PERFORMANCE OF R&E NETWORKING



Mian Usman, GEANT, <https://blog.geant.org/2017/05/15/taking-it-to-the-limit-testing-the-performance-of-re-networking>

# RESULTS

File Size (TB)	Data Rate (Gbps)	Time Take (Hours)	Time Taken (Days)
NREN – 100	9.27	34.0	1.4
ISP A – 100	1.72	183.2	7.6
ISP B – 100	0.11	2684.3	119.3

Sustained high capacity intercontinental transfer proven (400MB TCP buffer)

NREN performance greatly exceeds commercial Internet

ISPs blocked flow (possible DoS?)

0% vs 2-4% packet loss

Data Transfer Node (DTN) to DTN memory only

Multi-10G disk to disk achievable today

Mian Usman, GEANT, <https://blog.geant.org/2017/05/15/taking-it-to-the-limit-testing-the-performance-of-re-networking>

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THANK YOU

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