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The SKA Science Data Processor (SDP): final design and getting ready for the construction phase

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The Square Kilometre Array (SKA) project is an international effort to build the world's largest radio telescope, led by the SKA Organisation based at the Jodrell Bank Observatory near Manchester, UK. The SKA will conduct transformational science to improve our understanding of the Universe and the laws of fundamental physics, monitoring the sky in unprecedented detail and mapping it hundreds of times faster than any current facility. On 12 March 2019, members of 7 countries signed the international treaty that marks the beginning of the establishment of the SKA Observatory as the intergovernmental organisation responsible of the delivery and operations of this new radio telescope. Currently almost all the elements of the SKA have completed its design work and the project is now moving towards the construction phase.

The Science Data Processor (SDP) element finished its engineering design work at the end of March 2019 completing almost 5 years of designing the computing software and hardware systems responsible of processing the vast amount of data coming from the telescopes (~ 5 Tb/s). It is estimated that the SDP will produce and distribute approx. 1 PB of science-ready products per day to astronomers across the globe. This sheer amount of processing capability will be made possible by dedicated High Performance Computing (HPC) platforms deployed in Australia and South Africa for a combined peak processing power of approx. 250 PFLOPS. This design effort was completed by the SDP consortium, a collaboration of astrophysicists, engineers and computer scientists working in 11 countries worldwide and led by the University of Cambridge.

This paper will present a status of the SKA project, a summary of the SDP design work and what lies ahead towards the construction phase.

Consider for promotion

Yes

Primary authors: Mr GUZMAN, Juan Carlos (CSIRO); Dr ORD, Stephen (CSIRO Astronomy and Space Science)

Presenter: Dr ORD, Stephen (CSIRO Astronomy and Space Science)

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