SKA Control System in 2025

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SKA Observatory
One observatory, two telescopes, three continents

- Radio-astronomy observatory under construction.
- SKA Low Frequency Telescope, Western Australia (50 - 350 MHz).
- SKA Mid Frequency Telescope, South Africa (350 MHz – 15 GHz).
- SKA HQ @ Jodrell Bank, UK

Status

- Integrating and testing the first stage : working telescopes with a small number of receptors, able to process a fraction of bandwidth.
- Requires virtually all control system functionality, but at a smaller scale.

WHAT WORKED WELL

- Tango framework
- Hierarchical, layered, control system
- Standardized state machines - SKA Control Model
- Base class
- Scaled Agile Framework (SAFe)

WHAT TOOK US TIME

- Getting the foundation in place (ska-tango-base)
- Getting the CI/CD integration environment right

LESSON LERNED

At the beginning of the project focus on setting the foundation.

WHAT WE NEED TO IMPROVE

- Handling and reporting failures
- Robustness

WHAT TANGO IS MISSING

- Web-based user interfaces
- Documentation and examples

CHALLENGES

- Impact of containerization: using Tango with Kubernetes + firewalls + VPNs
- Impact of Authorisation, Authentication and Auditing (AAA)
- Scaling to the full size of the telescope arrays.

Thank you!

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We recognise and acknowledge the Indigenous peoples and cultures that have traditionally lived on the lands on which our facilities are located.

SKAO

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