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# SKADS Benchmark Scenario

## Design and Costing – 2: Notes

The major differences between the first and second design and costing documents are laid out here to help SKADS members who are familiar with the first document read the most altered sections of the newer document. Throughout the second document information has been updated where possible, in addition to the major changes listed below.

### Changes to the System Design:

The system design used in the second document closely follows the suggestion from SKA Memo 100:

- There has been a switch from 6.1m dishes to 15m dishes.
- The outer extent of the AAs is 180km from the core, instead of the 3,000km previously used.
  - The dishes still go out to 3,000km, but the data from them are not beamformed in dish stations before correlation at the core: signals from each dish are sent back separately to the central processing facility.
- The mid frequency aperture array (the AA-hi) antennas are now assumed to be 21cm in size and spacing, instead of 18cm as used previously.
- The receiver temperature for the AA-hi is taken to be 30K, giving a system temperature of about 37K at 800 MHz. Previously a system temperature of 50K was assumed.

### New sections in the document:

An analysis of the scientific merit of the telescope has been carried out, assuming the sensitivity and concentration values given in Memo 100. This is presented in section 3.

There is a little less emphasis on how much the individual components cost and more emphasis on how the total costs scale with various parameters. This is discussed in section 5 in the new document.

A description of the new design and an explanation of how the specifications have been interpreted is given in section 6.

As in memo 93, the various technical elements of the design are described in detail (here, in section 8), including a new description of the Analogue beamforming, based on the OCTA boards being developed at ASTRON.