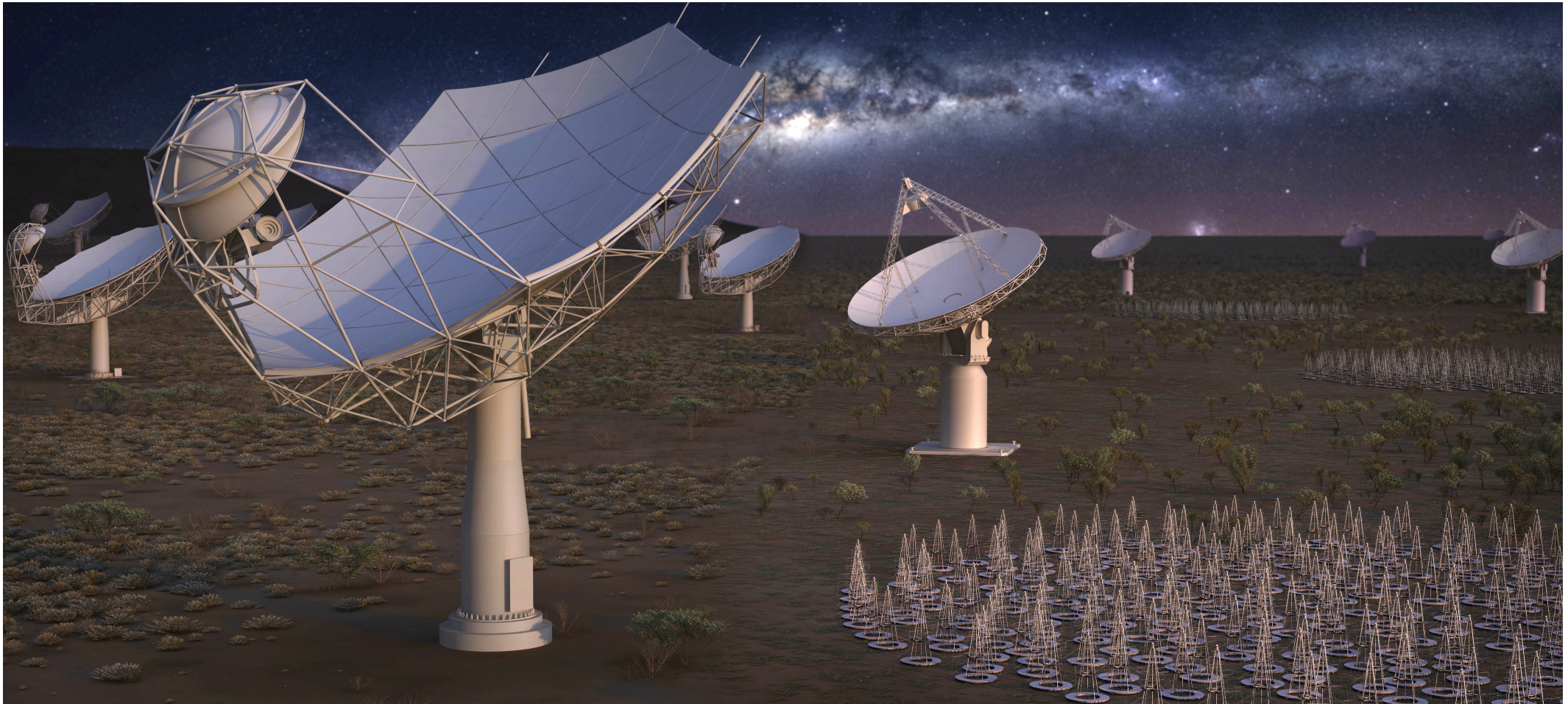


SKA Metrics

How do we measure 'success'?



SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

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Operational Concept Document

Release at Rev 2 in Dec 2016

Describes how we will operate the SKA observatory once it is in steady state operations

§4 of OCD contains a summary of the success metrics for the SKA

- operational success metrics
- scientific success metrics



Success Metrics

What are the primary objectives of the SKA Observatory?

- to deliver transformational science
- to make fundamental discoveries
- to enable scientific progress

The challenge, as with any scientific facility, is to measure this impact

- what is the gauge that demonstrates transformational science has been delivered?
- what is the metric that establishes a fundamental discovery?
- what is the indicator that shows scientific progress has been made?



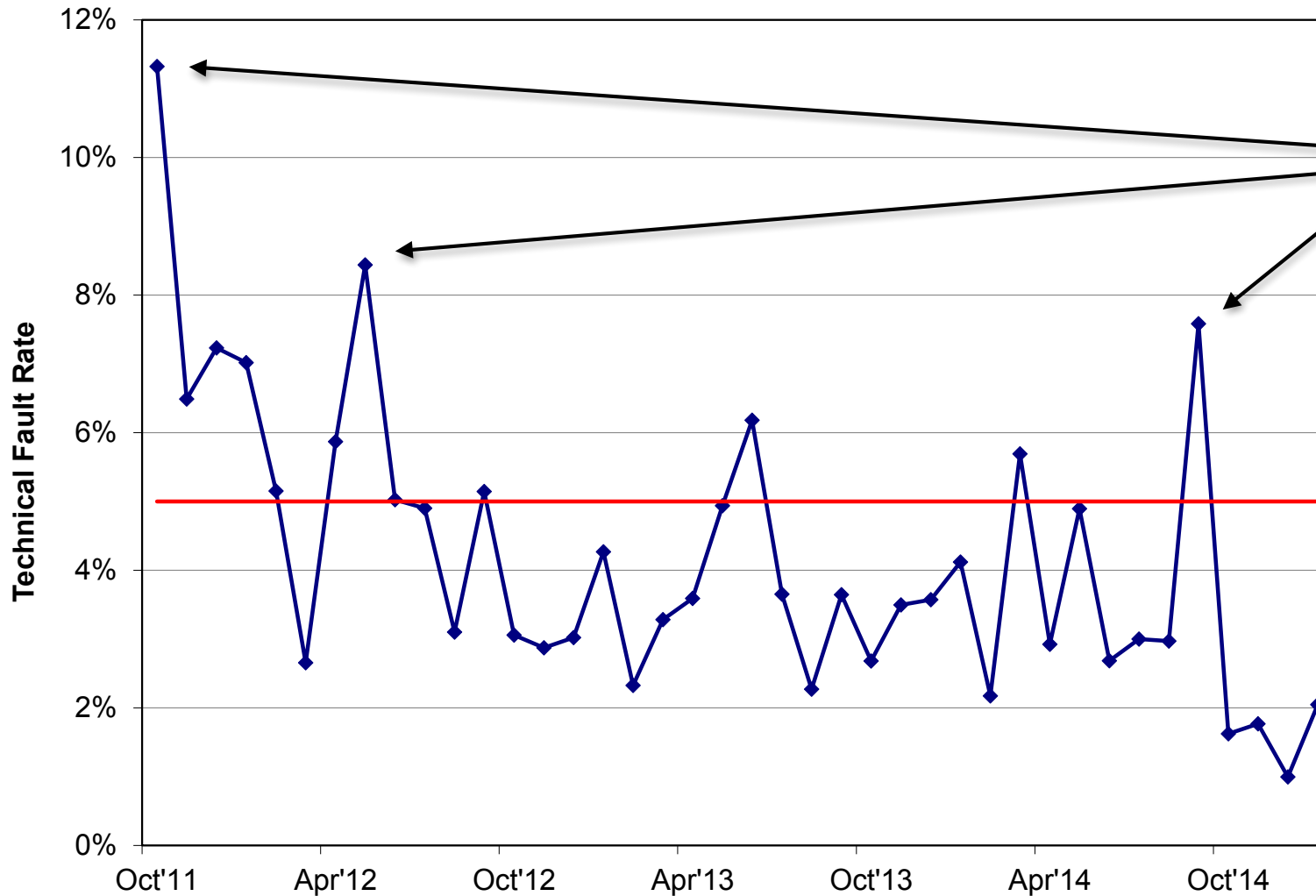
How Do You Make A Successful Observatory?

What do you want to know	How do you measure it
User Demand	Oversubscription
Scientific productivity	Publications
Scientific impact	Citations
Value for money	Cost per paper (per citation?)
Operational efficiency	Downtime relative to available time





How Do You Make A Successful Observatory?



You can plan ahead as much as possible but the reality is that significant events will have an impact:

e.g. upgrades,
commissioning,
project delivery

Operational efficiency
will be affected at
some level.



Operational Success Metrics

Operational success and scientific success are intimately linked

- a smooth and efficiently run observatory will enable more time on sky and thus increase its scientific output

Operational metrics can guide the operation and management of the observatory to drive towards continued improvement and scientific productivity

Caveat:

- a lot of the metrics used are conventional across many observatories
- but need to take care when it comes to comparisons as interpretations and utilisation of some common metrics differ
- the flexibility and complexity of the SKA will require clear definitions of metrics and statistics



Operational Success Metrics

Operational metrics:

- down time due to faults
- down time due to unavailability of computational resources
- down time due to planned maintenance
- operational availability (including of specific capabilities)
- observing efficiency
 - fraction of available time spent integrating on the sky
- project completion rate
- safety



Scientific Success Metrics

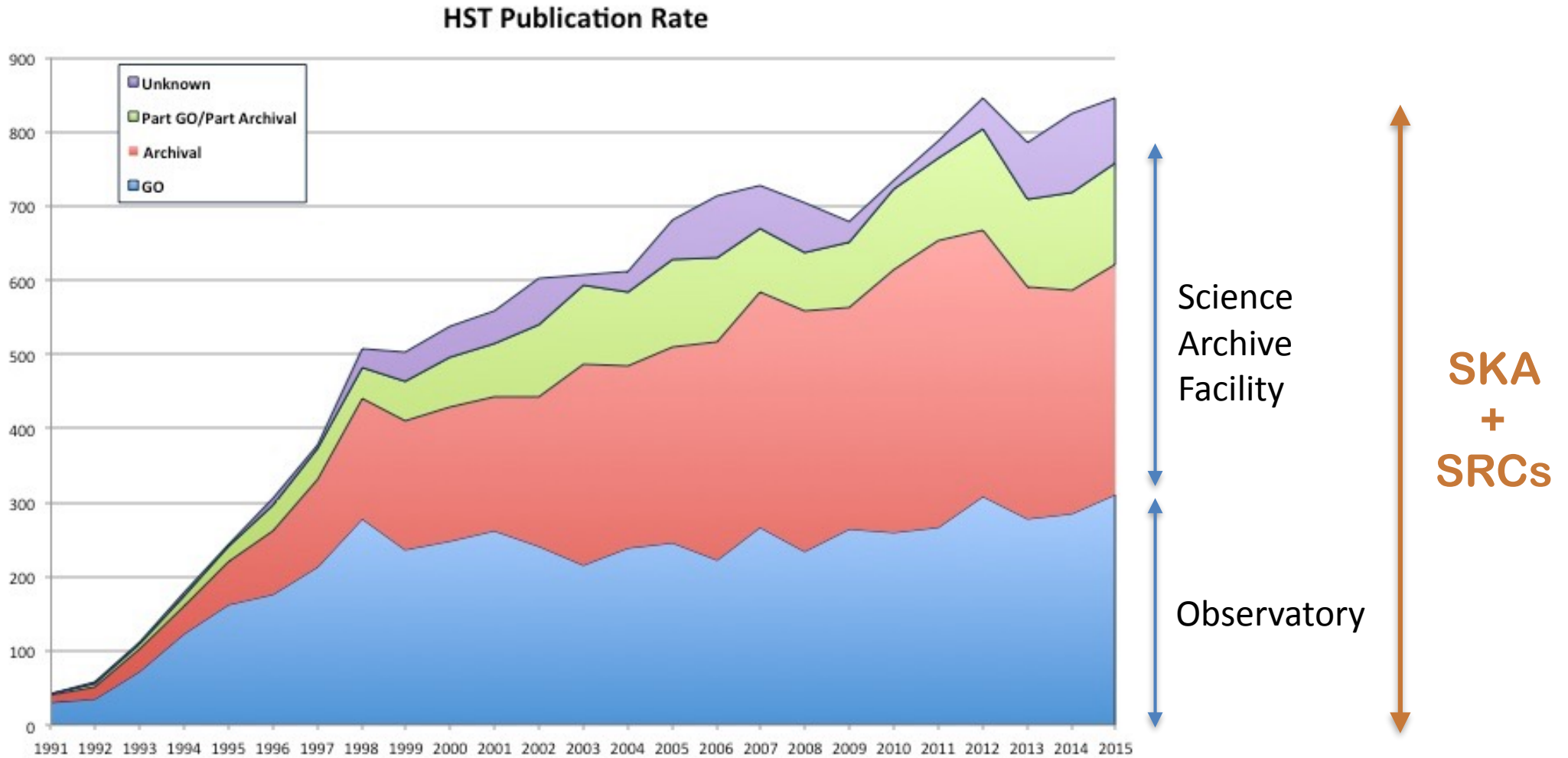
The following list of metrics will be monitored once the SKA Observatory is operational

- oversubscription rate
- publication rate
- citations to publications
- number of publications per unit cost

These metrics can be decomposed to smaller granularity if needed (e.g. publication rate for LOW and MID telescopes)



Scientific Success Metrics





Scientific Success Metrics

Need metrics to gauge success of the SRC model :

- engagement with SRCs
 - CPU hours per advanced data product
- use of standard tools
- development of new bespoke tools
- use of open/public data products
- how often is a data product used to generate advanced products

Need metrics that gauge success from the user's perspective:

- interoperability
- performance
- UI/UX satisfaction
- reproducibility
-?





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