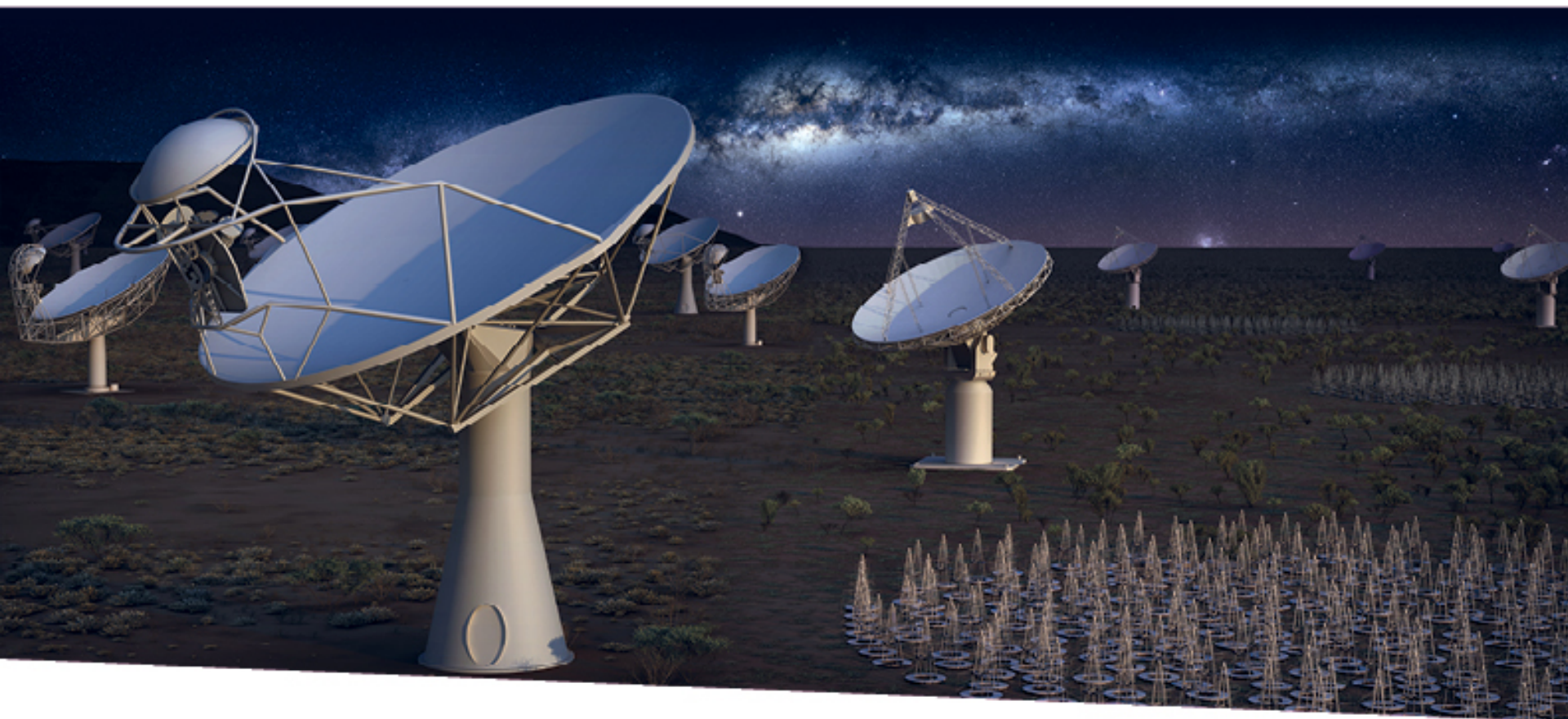


# SKA: Policy environment – present and future



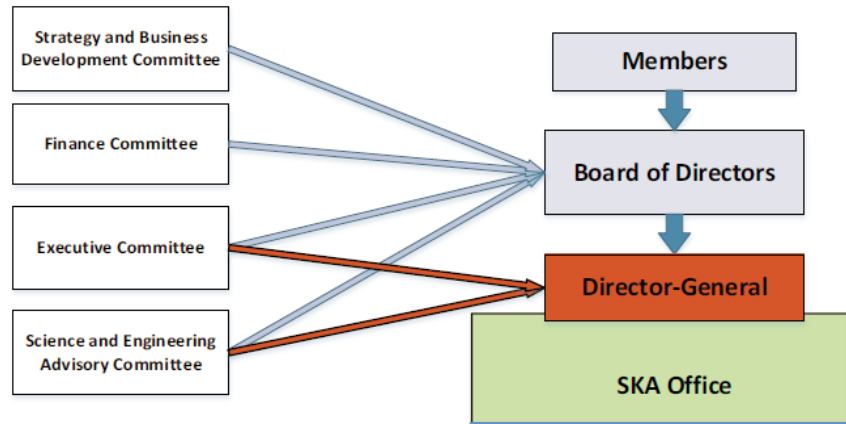
**SQUARE KILOMETRE ARRAY**

Exploring the Universe with the world's largest radio telescope

**Simon Berry SKA Organisation**

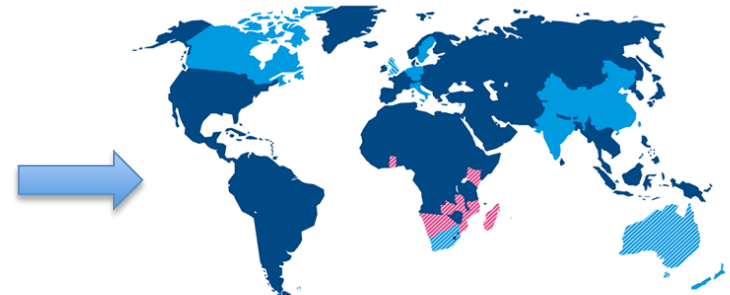
18<sup>th</sup> May 2016

# Current SKA Organisation structure



SKA Office supported by:

- a joining fee (€1M) and
- cash 'subscription'

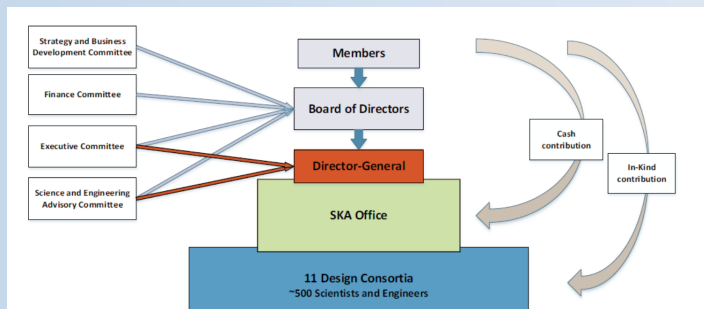


Global design effort organised in consortia. Supported by:

- Local funding (total ~€170M)







## Design Phase

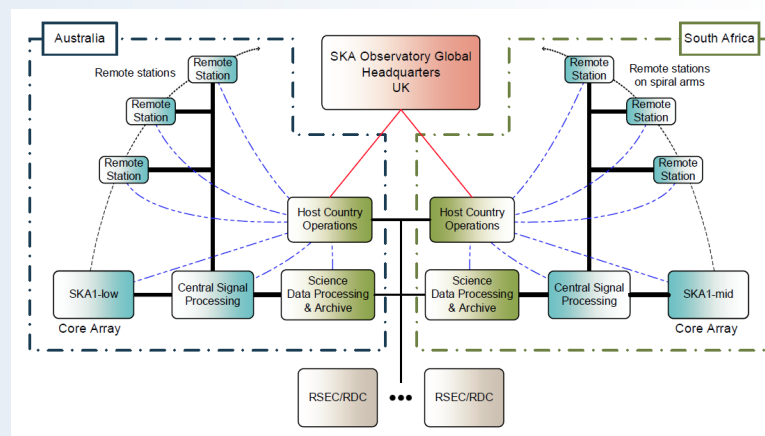


## Construction Phase

2016



**SKA Organisation Ltd**  
UK company structure



**SKA Observatory IGO**



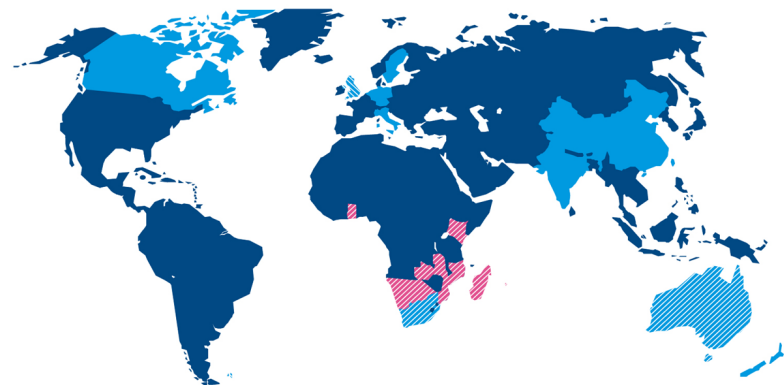


Exploring the Universe with the world's largest radio telescope



# A new organisation structure for SKA

- SKA has a uniquely global membership in astronomy:
  - Requires a suitable (and distinct) organisation
  - Strength of commitment needed by investing governments
  - IGO structure provides level of independence commensurate with scale and complexity of project
  - Independence of staff and representatives
  - Enables policies necessary for management of risk and provision of aims in project, in:
    - Financial arrangements;
    - Procurement; and
    - Intellectual property

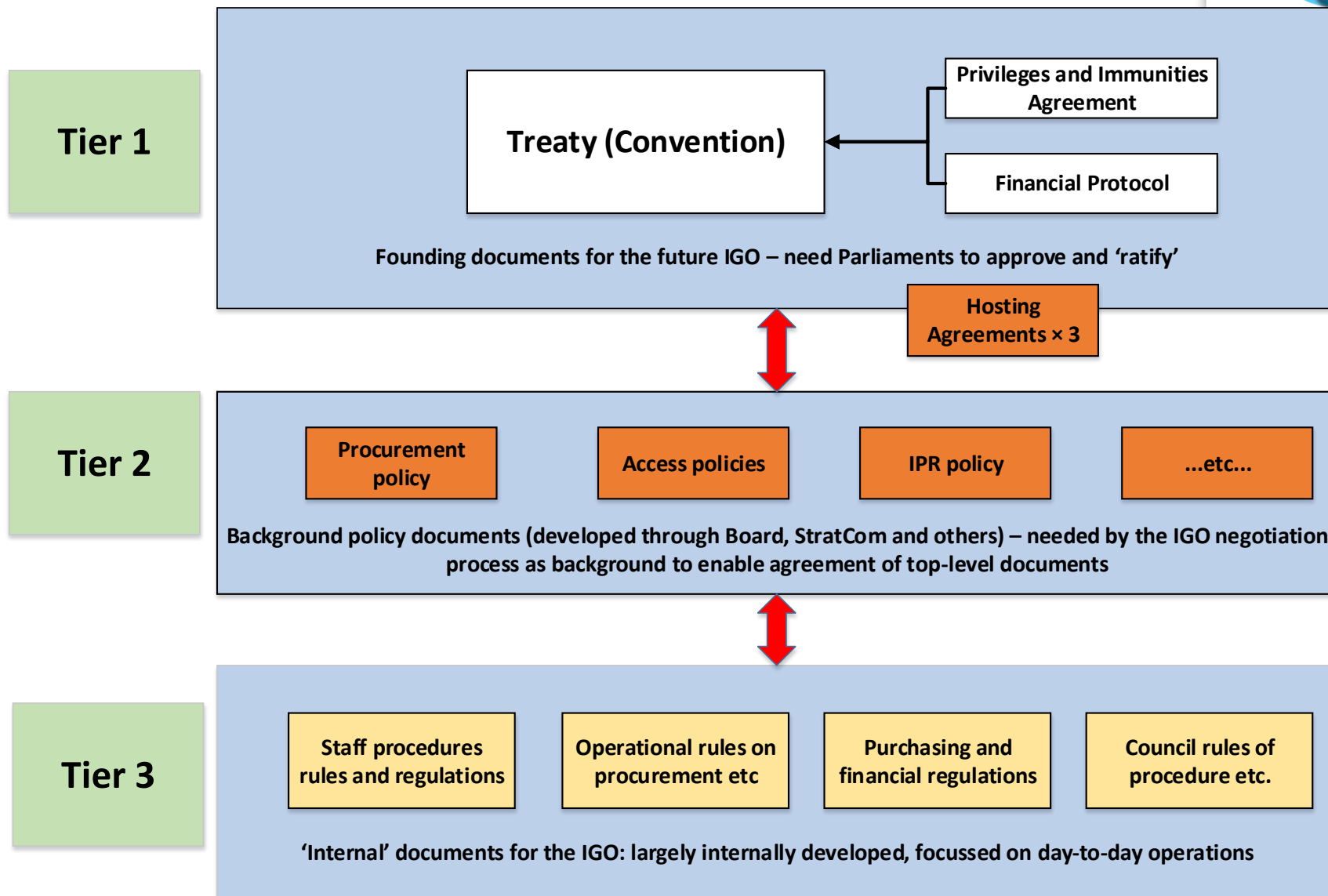


# IGO negotiation process

- Three negotiation meetings so far: Rome
  - Presidency – Italian Ministry of Foreign Affairs
  - Nine negotiating parties from current SKAO
  - One ‘observer’ party – Canada
  - No formal status for others: Spain formalizing relationship to be observer?
  
- Recent meetings:
  - Kick off October 2015
  - January & April 2016
  - At least one more plenary...
  - September 2016 final?
  - ‘Signing’ some time after?







# Convention negotiation



- Overall purpose of SKA Observatory
  - Covers entire duration of SKA
  - But financial arrangements not open-ended
- Membership:
  - Who can join or work with the future Observatory organisation
  - Members and Associate members: what they represent?
- Decision-making in project – weighted voting etc
- Managing the phased nature of SKA in the Convention and membership
- Describing the project and what the convention relates to – Technical Annex
- Joining and withdrawal rules, winding up process



For-Official-Use-Only

Annex B

## CONVENTION ESTABLISHING THE SQUARE KILOMETRE ARRAY OBSERVATORY

The Parties to this Convention,

*DESIRING* to deliver one of the most visionary and ambitious science projects of the 21<sup>st</sup> century involving significant international cooperation;

*COMMITTED* to testing the limits of engineering and scientific endeavour and to exploring fundamental questions in astronomy and physics,

*NOTING* that the Square Kilometre Array will be a next generation radio telescope facility that has a discovery potential far greater than any previous instrument,

*RECOGNISING* that the scale and ambition of the Square Kilometre Array demands a global effort with long-term investment,

*EMBRACING* the potential for scientific discovery to contribute to advances in technology and innovation and to deliver a broader benefit for industry and society,

*DEDICATED* to realizing the full ambition of the Square Kilometre Array Project

*ACKNOWLEDGING* the preparatory work done by the Square Kilometre Array Organisation in the establishment of the Square Kilometre Array Observatory;

*HAVE AGREED* as follows:

### Article 1 Definitions

1 “Headquarters Country” means the State in which the Square Kilometre Array Observatory, hereinafter referred to as ‘SKAO’, global headquarters are located.

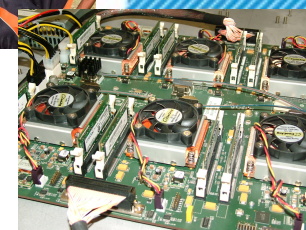
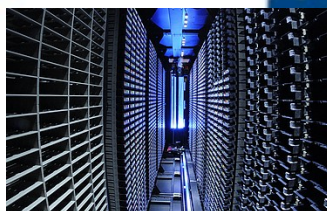
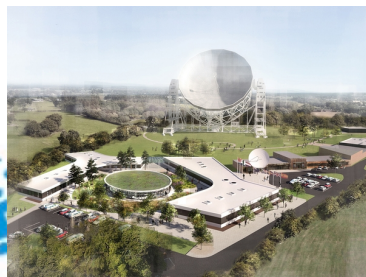
2 “Host Countries” means a State that hosts SKAO observing antenna arrays.

3 “SKA Organisation” means the SKA Kilometre Array Organisation, a company incorporated in the United Kingdom with company number 07881918 as at 14 December 2011;



# Working groups to support negotiations

- Much work to be undertaken between plenary sessions in working groups:
- Working group memberships taken from the plenary groups – active now
- Financial Protocol working group (Lead: Tiplady, RSA)
  - **Goal:** develop core Treaty financial documents, funding schedule negotiation process, high level procedures
- Privileges and Immunities working group (Lead: Baker, UK)
  - **Goal:** understand P&I requirements for project and present as draft for negotiation
- Procurement and IPR working group (Lead: Jing, CN)
  - **Goal:** develop Board/StratCom work into a sufficiently detailed description of process to support core IGO negotiation → policy document
- Operations and access working group (Lead: Pearce, AUS)
  - **Goal:** develop Board/StratCom work into a sufficiently detailed description of process to support core IGO negotiation → policy documents at end
- All starting from existing work, principles and and draft documents at some level





# Case for Investment in SKA



- Compelling and transformational science case, developing in phases through project
- Access to observatory reflects investment in project for Members
- Work ongoing to develop regional data/science structures to encourage cooperation, develop national and regional capabilities
- Procurement and IPR policies being designed to:
  - Guarantee a 'fair work return' for involvement
  - Maximise potential for national industry involvement but maintaining ability for institute involvement where appropriate
  - Encourage innovation throughout project through ability to exploit IP freely outside project
- Possibly unique opportunities for human capital development: inspiration/training

# Financial arrangements for joining

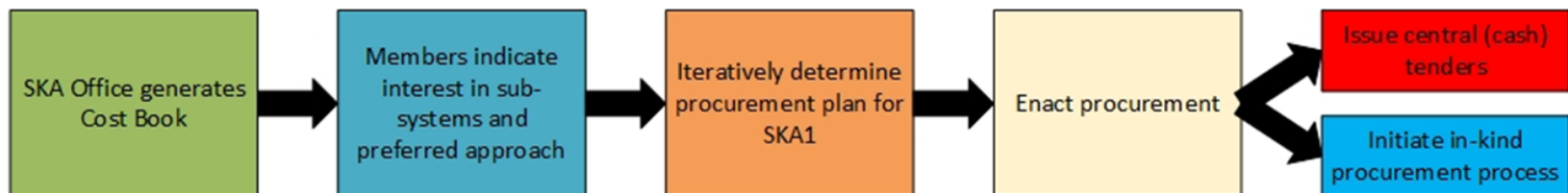
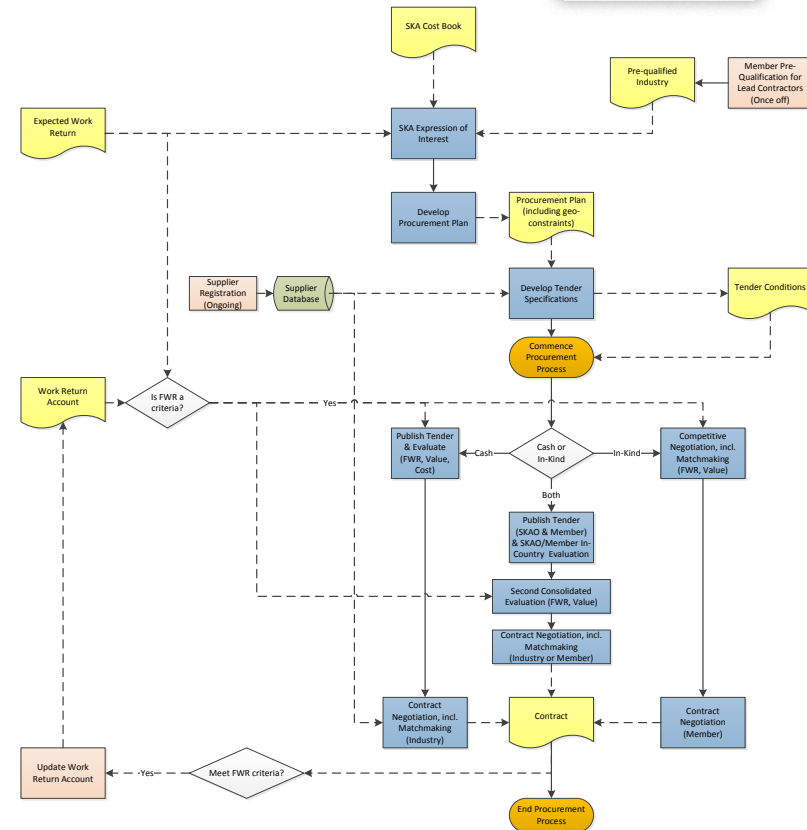
- Being negotiated in the Convention Financial Protocol
- No formula-based funding model: negotiated process
- In this founding period (until convention is signed): negotiation taking place between the governments
  - Process starts with a measure of ‘science capacity’ for a country – based on number of professional astronomers
  - ‘Science capacity’ sets starting point for negotiation
  - For CH, starting point for discussion might be 3-5% share in project
- Joining at later time: the Observatory Council would negotiate with a new country on terms – starting point again likely to be science capacity



# Developing picture on procurement



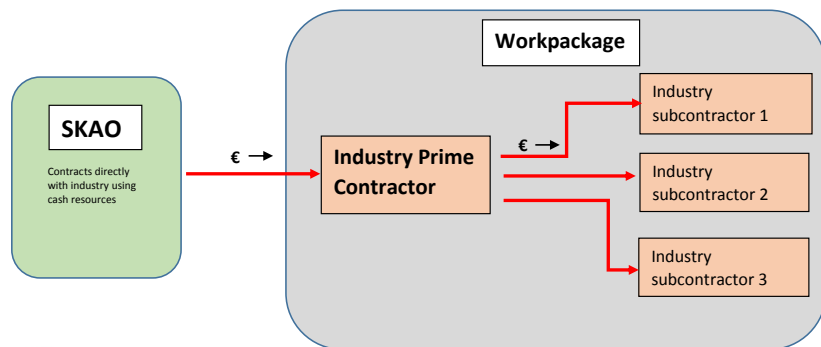
- Policy assigns responsibility for specification setting and who has responsibility for procurement:
  - Starting from Cost Book
  - Development of 'Procurement plans' for phases
  - Possible approaches for pre-qualification
- Introduces the principle that eventual procurement can take various forms:
  - Competition important, but also....
  - Directed/restricted advertisement of opportunities
  - Importance of strategic relationships where appropriate
  - Together, tools to permit 'fair work return'



# Procurement and contracting structures

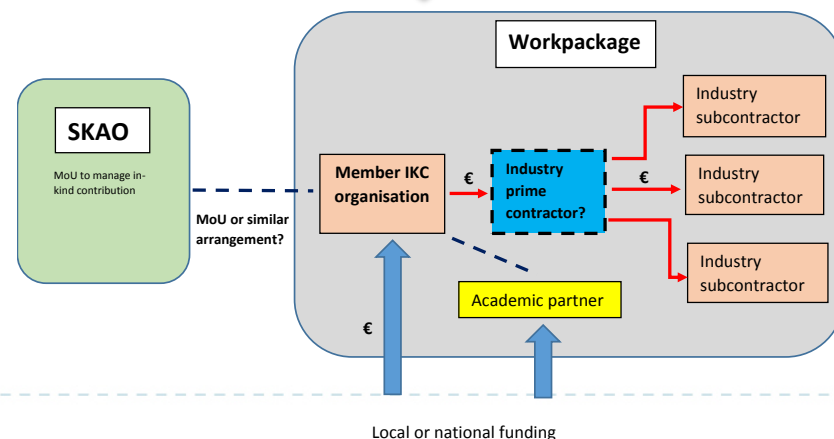
## Central procurement by SKA Observatory

- Funded through cash tender activity
- Competitive processes but tailored to enable 'fair work return' to Members
- Desire to ensure broadest possible industry sector involvement
- Detailed processes being discussed at present



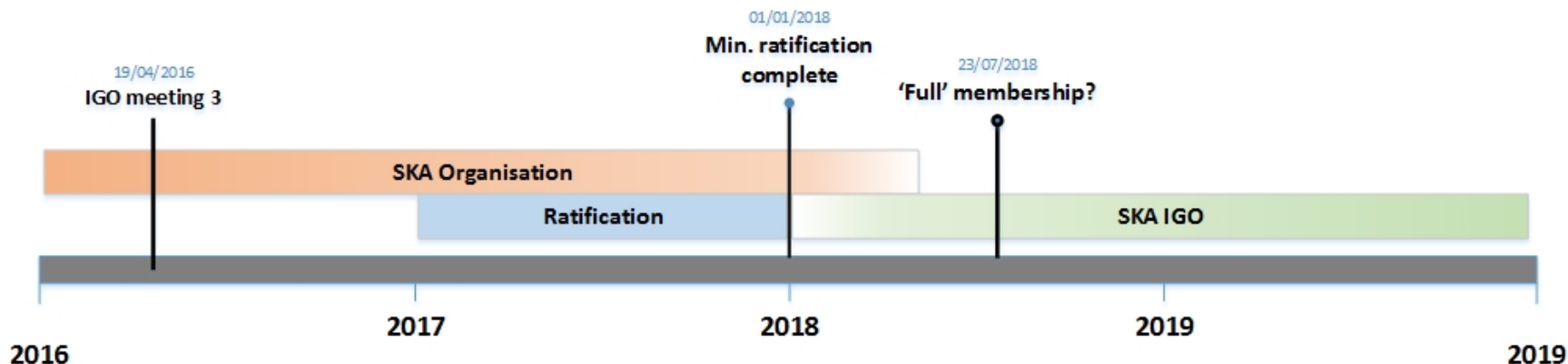
## In-Kind procurement through Member

- Locally-funded activities
- Activities carry a value to the project, cost borne by the contributor
- SKAO determines detailed specifications and manages with close supervision
- Potential for international consortia working together



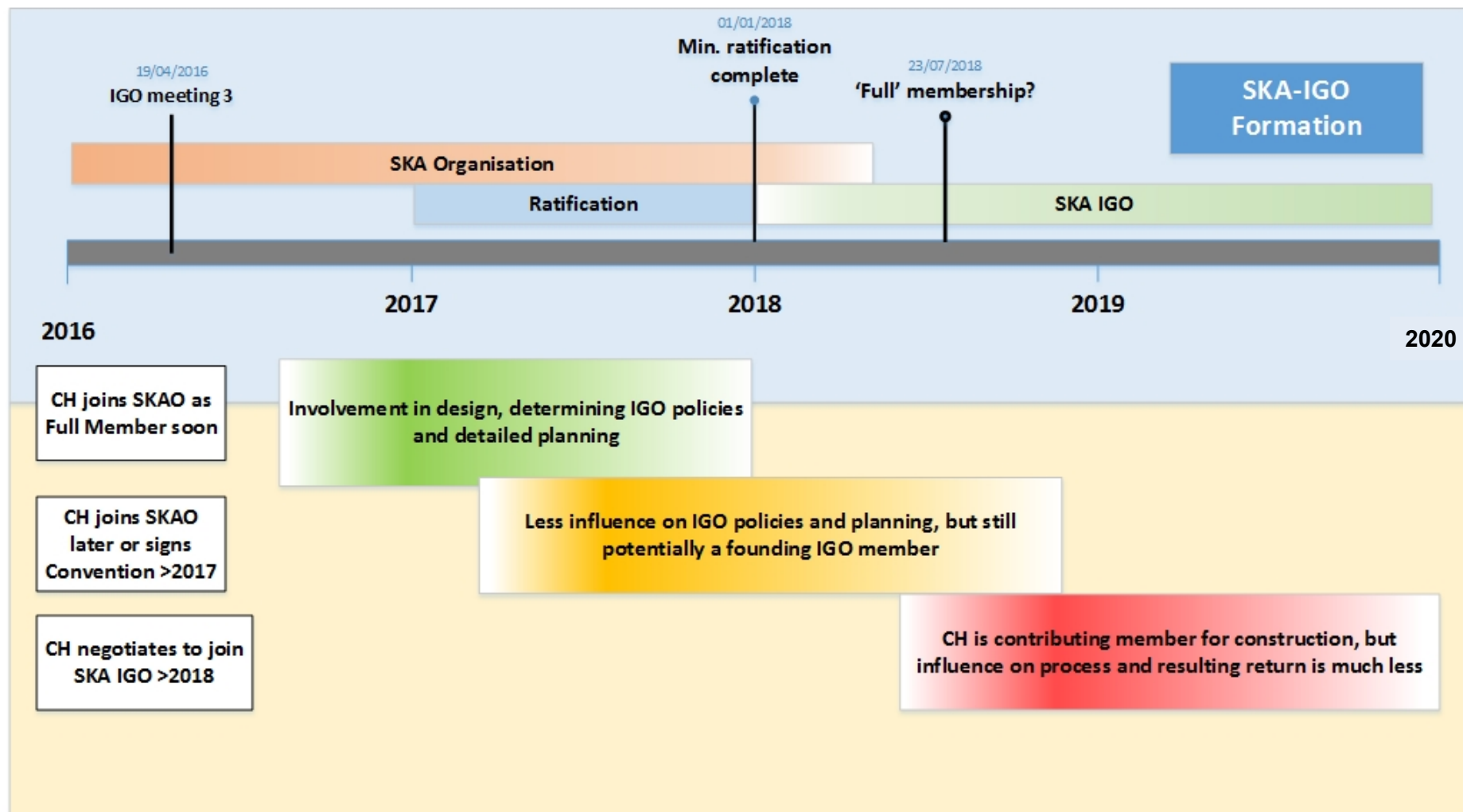


# Negotiation timeline



- Significant preparatory work – now to September
- Assume IGO4 in September
  - Signing convention and other documents Q4 2016
  - Relies on range of inputs, including financial negotiations
  - Link with project costing information etc....
- Ratification process starts early 2017
- IGO legally active when 5<sup>th</sup> ratification is complete
  - After that point: Organisation becomes operational and Council approves SKA1

# Timing options for joining SKA Observatory





# Organisation membership summary

- Current organisation – to 2017-2018:
  - Members (paying membership fee to Organisation: CH - €500k/yr)
    - Organisations of national scale
  - Associate members ('intending to move to becoming members')
- Future organisation (IGO) – 2018 onwards:
  - Members (States) contributing to construction and operations → **full access/industry access rights**
  - Associate Members (**access/industry etc terms to be agreed....**)
  - Collaborating bodies (**.....much less clear.....**)

# Summary



- IGO negotiation process now underway – successful series of meetings: starting point for a new organisation
  - Definitions of membership and participation now and in the future very important
- Much effort going on to develop picture from current design phase activities towards construction-phase WBS and cost book
- Context for procurement (and Switzerland):
  - Opportunities now within current ‘in-kind’ environment of design phase
  - Opportunities in the future through the new organisation: construction phase
  - Note establishment of industry contact group – open for participation by CH
- Key policies being finalised:
  - ‘Membership’ of the future Organisation likely to be important to ensure access to opportunities
  - Range of participation models likely – cash/in-kind etc