A Large Astronomical Facility: The Cherenkov Telescope Array (CTA)
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WHAT IS CTA?

- CTA, the Cherenkov Telescope Array, is the next generation ground-based observatory for gamma-ray astronomy at very high energies.
- Up to 120 telescopes on two sites in the Northern and Southern hemispheres (La Palma, Spain; Paranal, Chile).
- It is designed, prototyped and built in a large international collaboration.
  - Central organization: CTAO gGmbH, to become CTAO ERIC
  - Large world-wide CTA Consortium (>200 institutes in 31 countries)
  - Many sub-consortia for various In-Kind Contributions
- CTA is in pre-construction phase with advanced prototypes.
THE CTA CONSORTIUM

31 countries
92 parties
203 institutes
1451 members
THE CTA OBSERVATORY

- Central entity to coordinate, manage, build and operate the Cherenkov Telescope Array, with
  - Two array sites, in Spain and Chile
  - Headquarter in Bologna (Italy)
  - Science Data Management Centre in Berlin-Zeuthen (Germany)

- Current (interim) legal form is a “gemeinnützige GmbH” under German law, with seat in Heidelberg

- Final legal form will be an ERIC
  - Phase 1 application in March 2019
  - Seat of ERIC will be Bologna (Italy)
Telescope Prototypes, 3 diameters
FIRST TELESCOPE ON LA PALMA

Inauguration on 10 Oct 2018
CTA-SOUTH SITE (CHILE)
CTA COST ESTIMATE

- CTA will be built with a large fraction of In-Kind Contributions (IKCs)
  - Foresee 75% of IKCs, from many international sub-consortia
  - Central coordination, system tasks and site infrastructure by CTAO

- A CTA cost estimate has been done in 2015
  - Resulting in 400M EUR

- A Cost Book update has been initiated by CTAO in 2018
  - Required by CTAO Shareholders, for ERIC application, project planning and “meet the reality”

- Cost Book update would greatly benefit from an agreed costing methodology
CTA COST ESTIMATE – CHALLENGES

- Each contributor used its own costing methodology in 2015
  - Aiming at providing common costing instructions to the teams

- CTA Construction Work Breakdown Structure (WBS) was completed in July 2018
  - Also used as basis of Cost Book update

- CTA system design being worked out
  - Technical definitions to be finalized
  - Technical simplification & harmonization ongoing

- CTAO Administration and Project Office being (re-)built
  - Head of Finance starting in Jan 2019
  - Building up CTAO Systems Engineering group
CONCLUSION

- CTA is in a transition phase, with many challenges
- CTA costing update required
- Common costing methodology needed within CTA