

Astronomy and the Square Kilometre Array

Leveraging geographical
advantage with
enhanced capabilities



Skills needs in the
astronomy sector and the
SKA



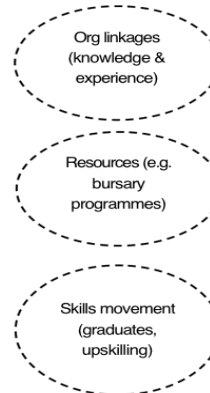
Network alignment

CAPABILITY BUILDING PROCESSES IN THE ASTRONOMY SECTORAL SYSTEM OF INNOVATION

SKILLS DEMAND

- SKA organisation:**
- SKA (international organisation)
 - SKA (South African project office)
 - KAT-7
 - MeerKAT
 - African VLBI network
 - Science projects and partnerships
- Firms in the SKA value chain:**
- IBM, Intel, Neotel, Aurecon, etc.
 - In-depth case study firms:
 - Stratosat Datacom
 - EMSS Antennas
 - Tellumat
- National Science Facilities:**
- SAAO
 - SALT
 - HMO
 - HartRAO
 - Smaller astronomy facilities
- Science Councils:**
- CSR

MECHANISMS/STRATEGIES



SKILLS SUPPLY

- SKA organisation:**
- SKA (South African project office)
 - Human Capital Development Programme
- South Africa HEI:**
- UCT
 - UWC
 - US
 - CPUT
 - Rhodes
 - Wits
 - UFS
 - NWU
 - UNISA
 - UKZN
- International HEI:**
- Draws on global pool of skills from multiple sources and countries, e.g.:
 - Oxford
 - Berkeley
 - ASTRON
 - Rutgers
- FETs:**
- Kimberley

E.g. SALT partners = Nicolaus Copernicus Astronomical Centre, the Polish Academy of Sciences, the Hobby-Eberly Telescope, Rutgers, the State University of New Jersey, Groningen, the University of Wisconsin-Madison, Canterbury (New Zealand), the University of North Carolina, Dartmouth College, Carnegie Mellon University, the University of Keele, the University of Lancashire, the University of Nottingham, the University of Southampton.

Sector interms (International)

- IAU
- OAD
- AERAP
- NRAO
- EU Space Agency

Sector interms (SA)

- SAAO
- SANSA
- NASSP
- DST
 - Astronomy Desk
- NRF
 - Deputy DEO: Astronomy (= NRF sub-agency)

Interpreting &
implementing
policy

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implementing
policy

DST 10 Year Plan

Astronomy Geographic Advantage Act (2007)

Policy

DST Astronomy Desk

Tacit political support

KEY

Interaction

Policy incentives/stipulations

interms = Intermediaries

Sub-system

dynamic interactive capabilities

Skills supply

Skills supply through *network mechanisms*, not *market mechanisms*

Interactive capabilities:

- Niche competences
- Institutions
- Departments and faculties
- Academics

FET



Challenges:

- Sourcing international skills
- FET limitations
- Slow rate of undergrad curriculum change



Successes achieved through:

- Funding
- Risks
- Policy
- Interactive capabilities in the SKA
- Skills planning
- Interactive capabilities in the higher education system

Question: *can this success be replicated in other knowledge-intensive sectors?*

