International Astronomical Union
Office of Astronomy for Development:

Division C and "Astronomy for Development"
Honolulu, 10th August 2015

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

IAU

NRF National Research Foundation | SAAO South African Astronomical Observatory

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The IAU Strategic Plan 2010-2020:

CULTURE AND SOCIETY

TECHNOLOGY AND SKILLS

SCIENCE AND RESEARCH

ASTRONOMY

- **PERSPECTIVE IMMENSITY OF UNIVERSE** — Tolerance and global citizenship
- **OPTICS** — High-precision adaptive optics
- **COMPUTERS** — Fastest hardware; Complex software
- **ELECTRONICS** — Most sensitive detectors; Fastest clocks
- **HISTORY** — Evolution of Universe; Our roots
- **ANTHRO-POLOGY** — Ancient civilizations; Our roots
- **SPACE** — Satellite Miniaturization; Precision
- **INSPIRATION** — Career in science and technology
- **PHYSICS** — Laboratory of extremes; Making heavy elements
- **MATHEM-ATICS** — Abstract thought
- **BIOLOGY** — Building blocks of life
- **CHEMISTRY** — Producing organic molecules

Astronomy for Sustainable Development!

- **Social benefits** (common humanity, scientific engagement & discourse)
- **Human capital development** (education, skills, career choices)
- **Economic growth** (technology transfer, knowledge economy)

OAD Structure

IAU President, Gen Sec, Div C

EDOC

OAD Steering Committee

OAD

Regional Coordination

Astronomy for Universities and Research

Astronomy for Children and Schools

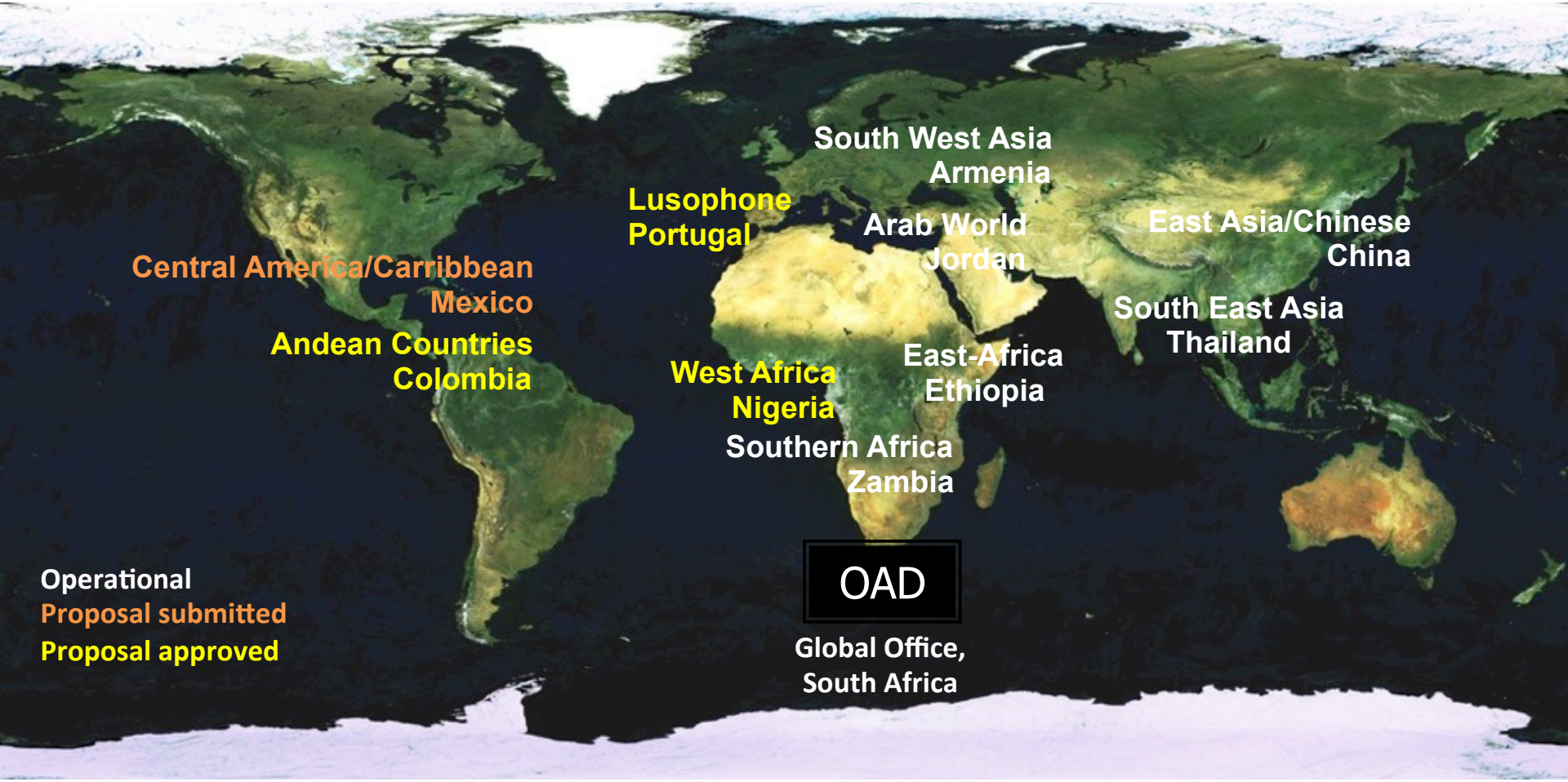
Astronomy for the Public

"Astronomy for a better world!"

Towards the Strategic Plan vision…

- **Three Task Forces** established and operational – new members
- **Three calls for proposals** have resulted in **68** funded projects:
  - **18 projects** in 2013 (191 applications)
  - **23 projects** in 2014 (230 applications)
  - **27 projects** in 2015 (131 applications)
- **Six regional offices** established, **Three more** imminent
- **Eight MOUs** signed with partner organisations
- **OAD Funding Framework** approved by Steering Committee
- **Two successful funding proposals** (Newton Fund & EU Horizon 2020)
- **>550 volunteers** on database
- **5 Interns, 4 Fellows** have passed through the OAD, more imminent
- **Impact Cycle** being developed
- **Several international workshops** (e.g. Stakeholders in Cape Town, Meetings at GA, Task force workshop, Regions Workshop,…)

OAD Regional Offices



OAD Volunteers

- IAU members, amateurs, professionals, teachers, students, public
- Over 550 worldwide (on this map they are grouped by location)

OAD Partners

- Royal Astronomical Society
- Netherlands Organisation for Scientific Research
- International Centre for Theoretical Physics
- Inter-University Centre for Astronomy and Astrophysics
- University of Central Lancashire
- Haus der Astronomie
- Fiat Physica
- Associated Universities Inc. / Leiden University

Successful funding proposals

- UK Newton Fund (Radio Astronomy HCD)
- EU Horizon 2020 (EU Space Awarenes)

Unsuccessful applications to:

- Qatar Foundation
- Africa-Caribbean-Pacific Fund
- RAS@200

2nd Element: Impact

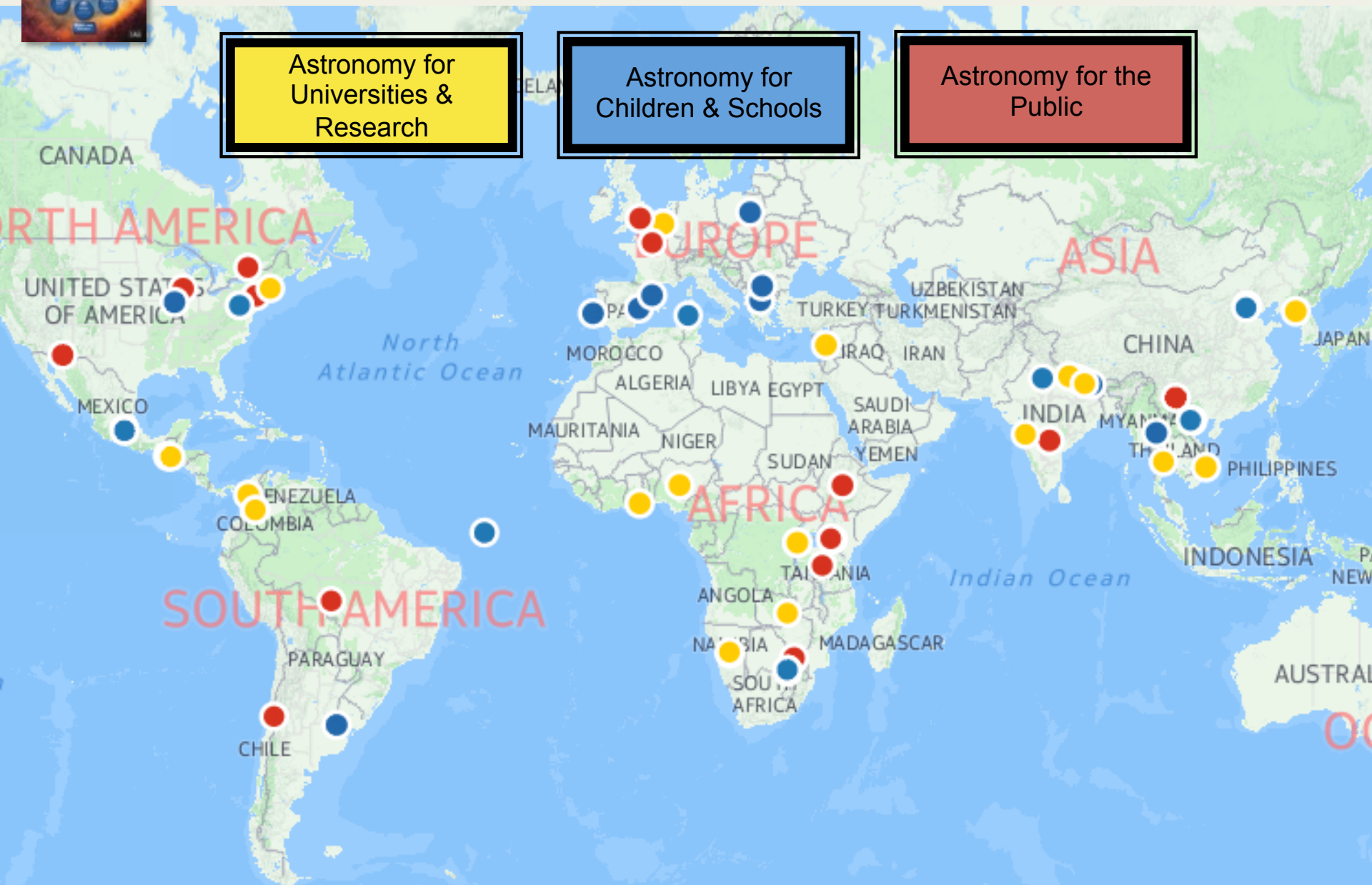
Summary of Funds Leveraged (1st three years)

Source	OAD's first 3 years	Commitments beyond first 3 years (based on agreements)
Regional offices	269 320	1 625 445
OAD Partners	130 530	117 000
Collaborative Projects (only the amount for OAD's roles)	0	75 300
Total	**399 850**	**1 817 745**

Grand Total (first 3 years + commitments) = € 2,217,595

Note: Total contributions expected from IAU (50k€+100k€ p.a.) and NRF (1.5MZAR p.a.) over the full 5 year duration of the agreement = ~ € 1,320,000

Overview of funded projects (68)



TF1 example

Astronomy for Universities and Research

Starlight in the university: "Astrolab"

Project leader: Prof. Jean-Pierre de Greve

- Astrolab allows students to do remote observations on their normal study time
- Astrolab has already been implemented at the Vrije Universiteit Brussel for 5 years
- Tutors manual, student manual for projects available
- Implementation carried out in 2 partner universities, Anambra State University in Nigeria, and the Copperbelt University in Zambia

TF1 Special Project: AstroVARSITY

	Introductory Level	Intermediate Level	Advanced level
Astronomy courses			
Small university telescopes			
Robotic Telescopes			
Data Archives			
Astronomy Computing			

TF2 example

Astronomy for Children and Schools

Network for Astronomy School Education

Project leader: Prof. Rosa Ros

Purpose: To act before the university in the curricula of children and teenagers:

- NASE specific to *Secondary* and *Primary* schools teachers
- Organising a Local Organising Committee (LOC NASE group of 6-8)
- Courses organised for teachers in Kenya in 2013 and 2014 in Ghana & Nigeria

TF2 Special Project: astroEDU

International
Astronomical
Union

ASTROEDU

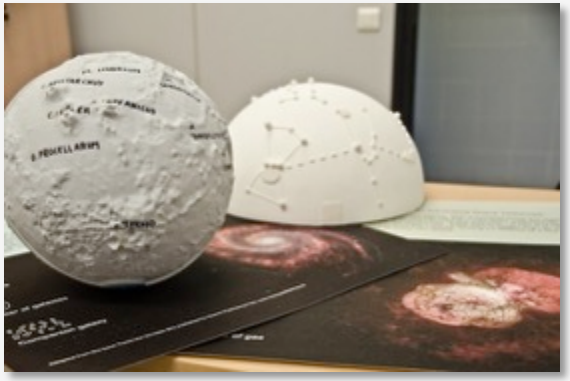
open-access platform for
peer-reviewed astronomy
education activities

TF2 example

Astronomy for Children and Schools

Astronomical kit for the visually impaired (kits to Asia, Africa, South America & Galileo Mobile project)

Project leader: Dr. Amelia Ortiz-Gil



Kits consist of:

- A planetarium show with original soundtrack in various languages and a half-sphere with constellations engraved
- Booklet of activities
- Tactile 3D Moon with a booklet of Moon activities
- Set of the FETTU braille sheets with an activity guide, and (e) a book on tactile astronomy.

TF3 example

Astronomy for the public

Dark Skies Outreach to Sub-Saharan Africa, USA/Africa

Country	Coordinator
Algeria	Jamal Mimouni
Ethiopia	Solomon Tessema
Gabon	Patrice Okouma
Ghana	Jacob & Jane Ashong
Kenya	Paul Baki
Namibia	Rob Johnstone
Nigeria	Bonaventure Okere
Rwanda	Pheneas Nkundabakura
Senegal	Maram Kaire
South Africa	Sivuyile Manxoyi
Tanzania	Noorali Jiwaji
Zambia	Prospery Simpemba

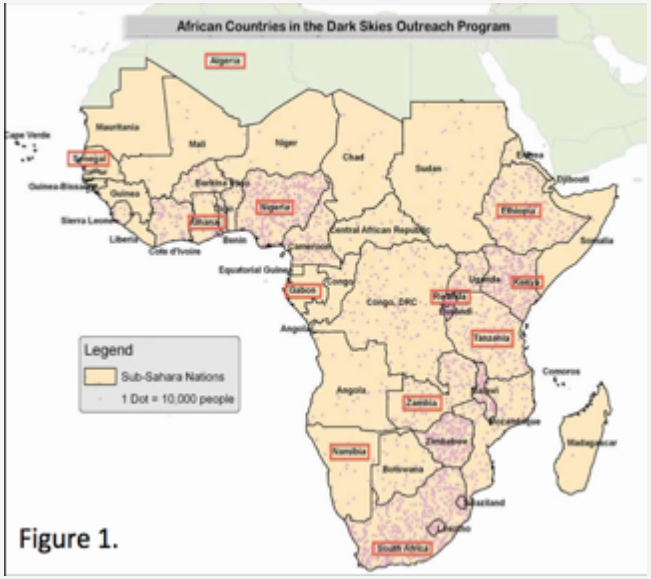


Figure 1.

Figure 3.

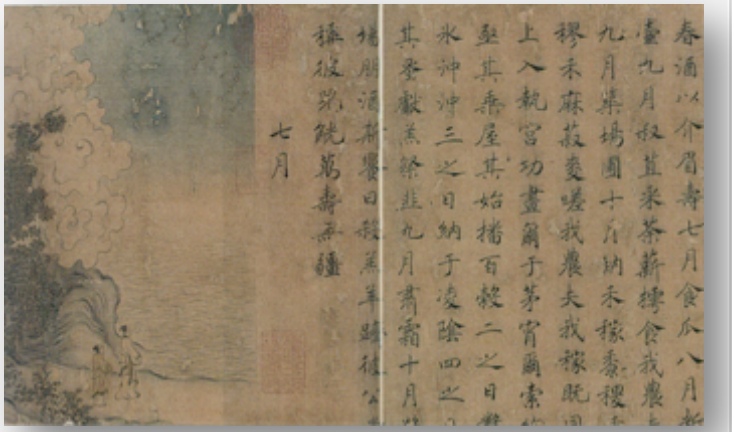
TF3 example

Astronomy for the public

Chinese Ancient Poetry Astrophotography, China

Project leader: Ms. Bing Li

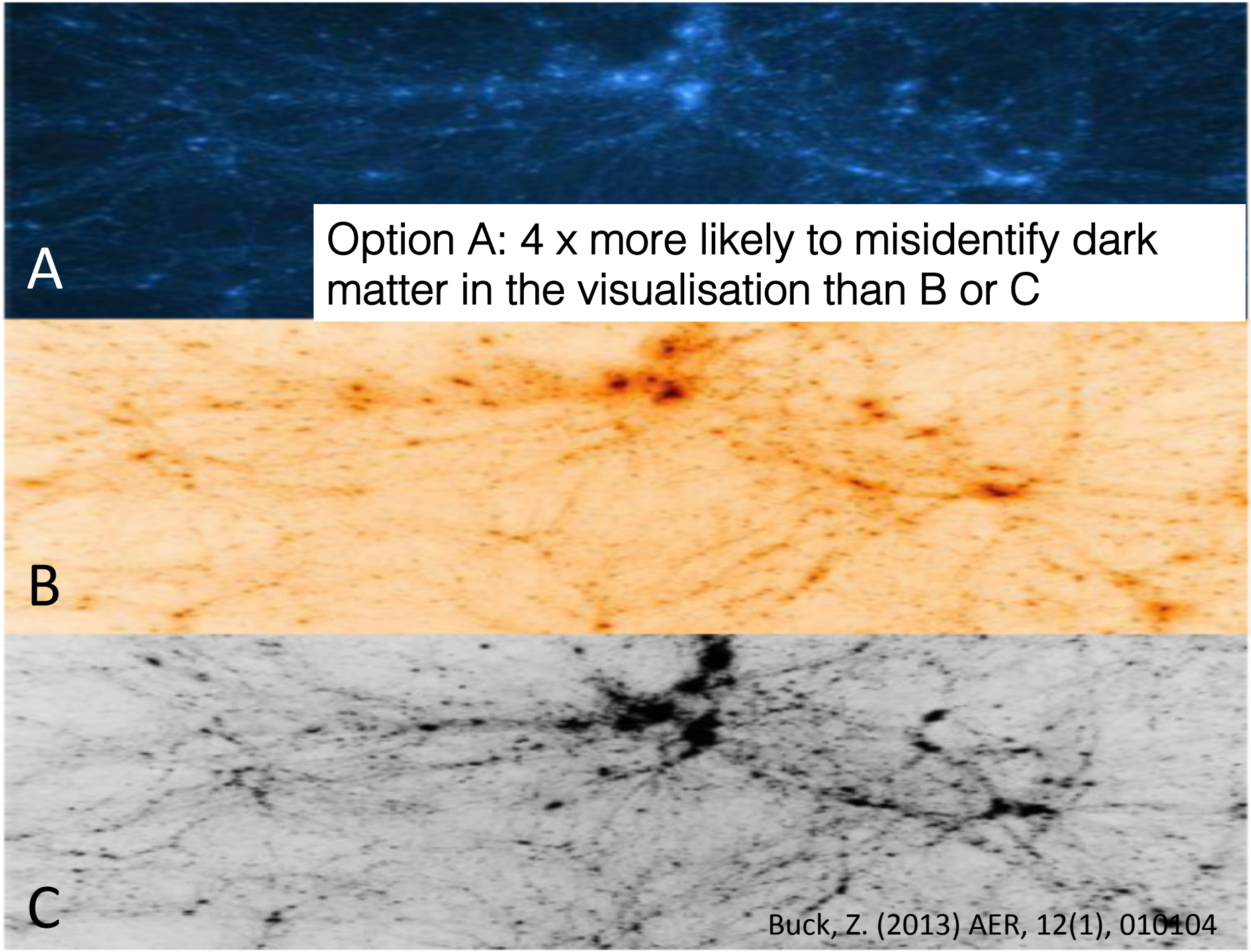
Our ancestors were closer to the night sky than we are. Celestial objects are mentioned in many Chinese ancient poems or stories and saw the same sky 1200 years ago.



- Gathers literature teachers, astronomers & photographers to produce 40 pictures inspired from Chinese poetry
- Posted on the Beijing Planetarium website & exhibition hall
- Example to unite and inspire more people to provide different culture astronomical poems and astrophotography from all over the world

Do projects work?

- Exposure ≠ engagement with Astronomy
- Humans are complex and embedded in complex social systems
- OAD needs to
  - Identify best practices, allocate resources efficiently
  - Manage risks of unintended consequences


A
Option A: 4 x more likely to misidentify dark matter in the visualisation than B or C
B
C
Buck, Z. (2013) AER, 12(1), 010104

Top student commits suicide over failed exams

December 23 2003 at 08:50am

By Yogas Nair

A brilliant final year actuarial science student ended his life by hanging himself after learning on the Internet that he had failed two examination subjects.

University of Witwatersrand student, Evar Mohan, 21, of Gust Manor Place, Trenance Manor, had apparently gone to a Phoenix Internet cafe to obtain his results on Friday.

According to his devastated mother Roma, 50, her son returned home about midday on Friday and was "upset" at his results.

She said: "Evar was a brilliant student and this was his first academic failure.

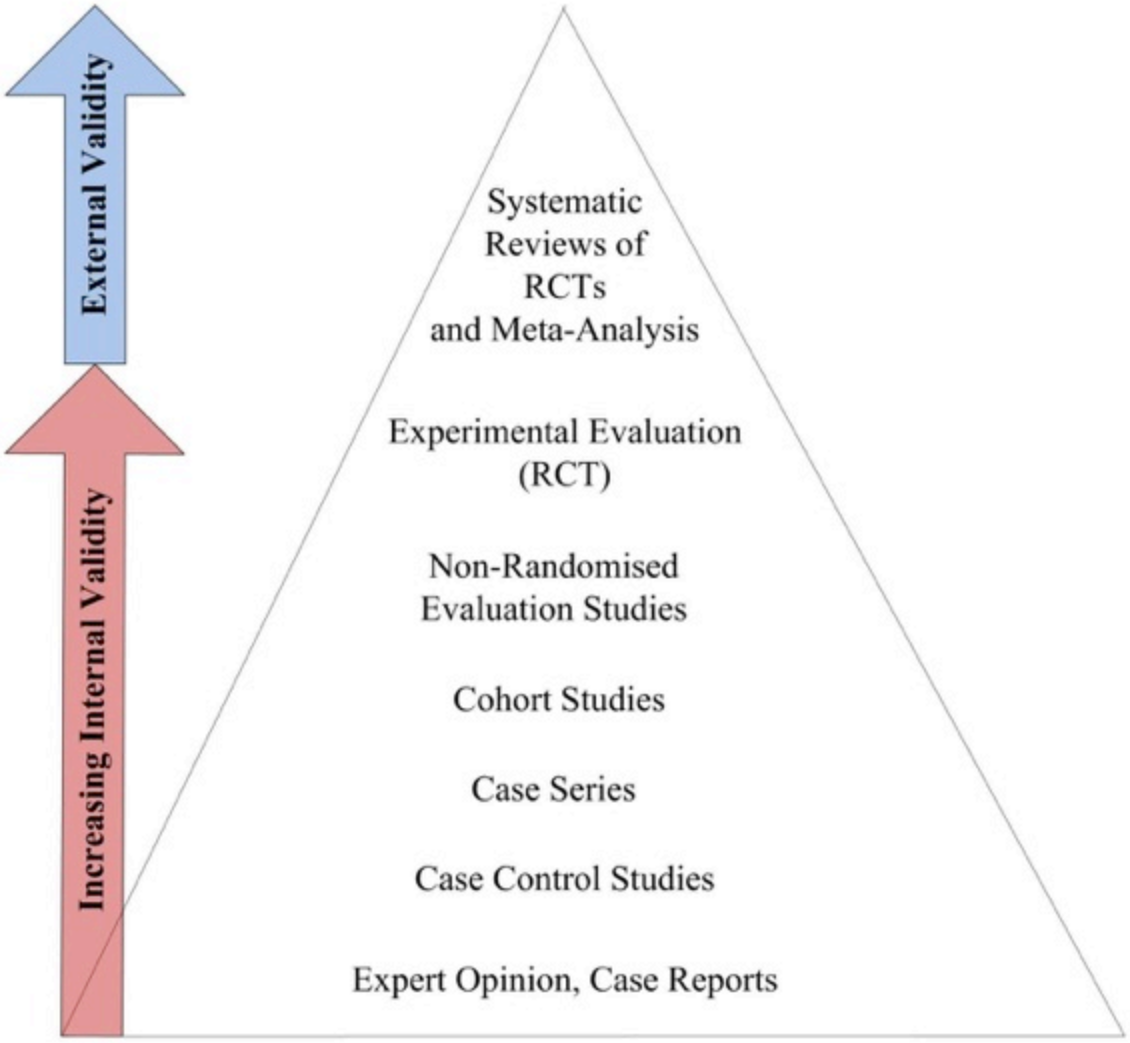
"When he told me he had failed two subjects (stats and actuarial science three) I comforted him and told him not to worry."

Evar passed his matric examination in 1998 with six distinctions. The former Trenance Manor Secondary pupil achieved a 92 percent pass in maths and physical science and was presented with a merit award from the university. He also secured a partial bursary from the university to study actuarial science.

Most Viewed | Most Commented

- Panty thief rapist guilty on 30 counts
- I have not refused to go to Parly - Z ...
- Sunette Bridges faces hate speech case

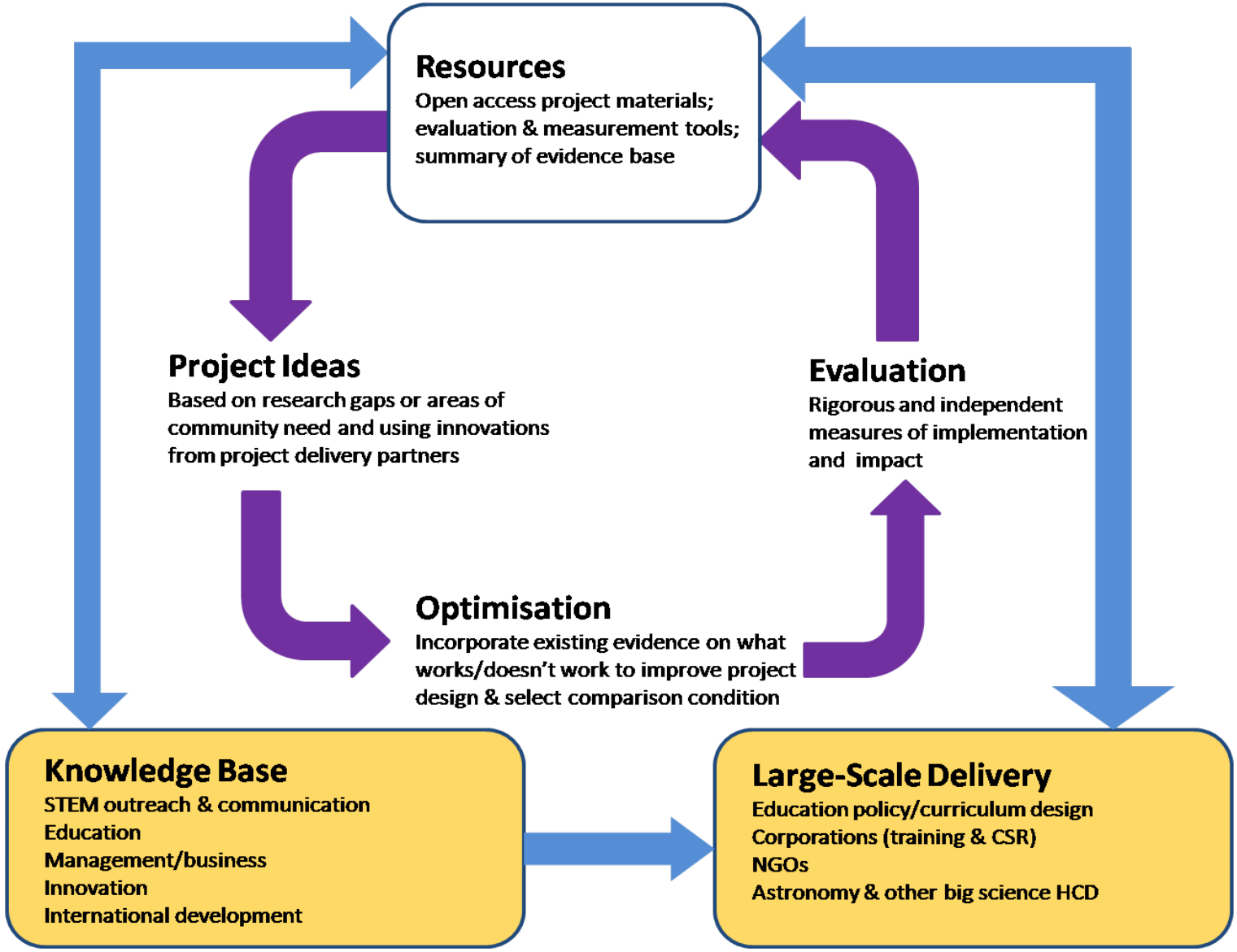
Not All Evidence is Created Equal



Optimising project design

- **Problem:** define clearly, check data where possible
- **Population:** who is targeted, why and how selected?
- **Intervention:** consider cost ceiling (maximum possible
- returns); what evidence can be used?
- **Comparison:** do you know exactly what they would be doing instead? why is intervention an improvement? Where else could money go?
- **Outcomes:** what will be observed in short-, medium- and long-term? how will data be collected?

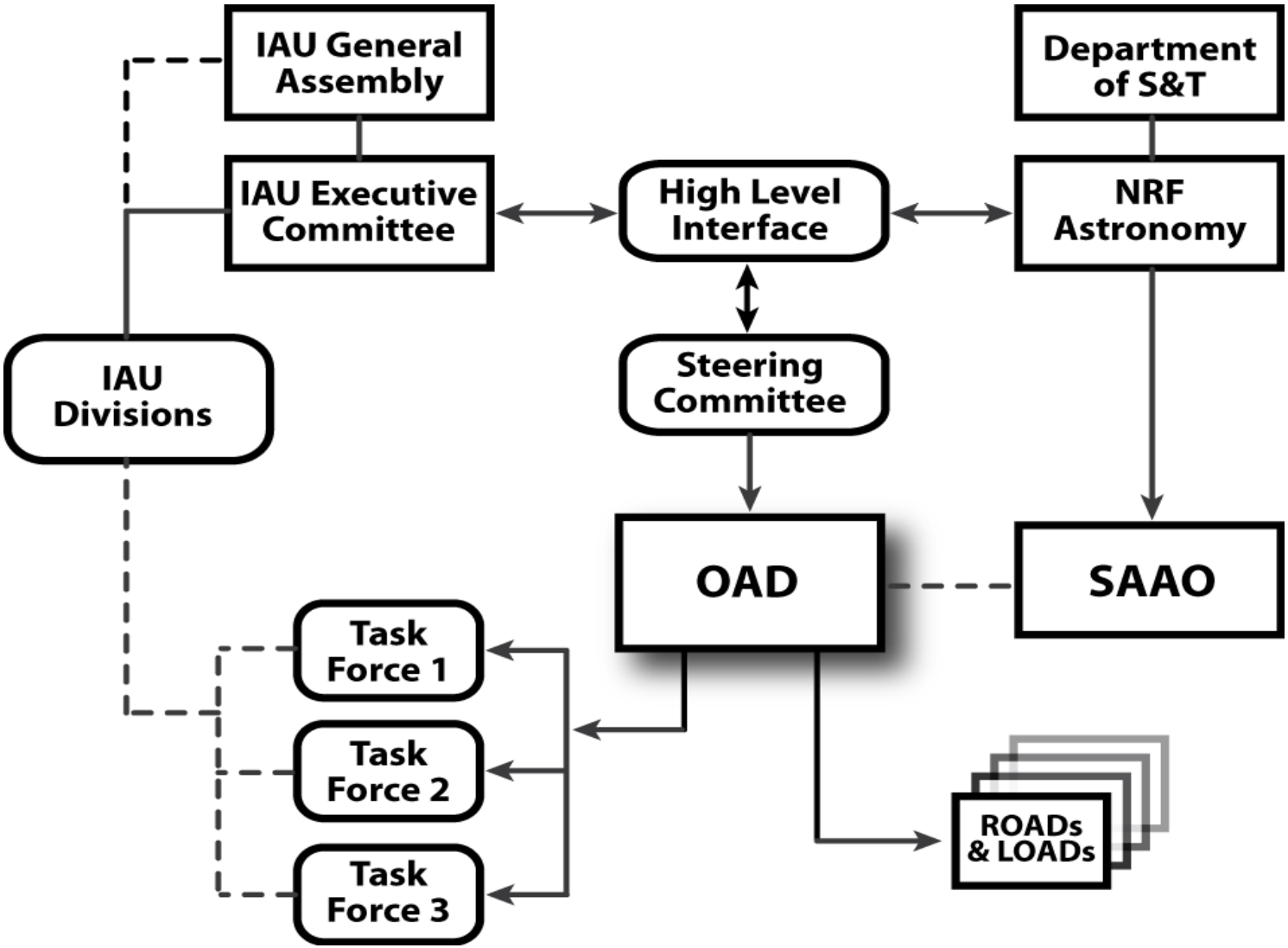
OAD Impact Cycle: Positive Feedback Loop



Future: OAD Review 2015

1. Continuation till 2021
2. GA resolution – OAD/SP beyond 2020
3. Increase in funding and staff (fundraiser + astronomer)
4. Simpler oversight structures
5. Consolidation
6. Annual high level meetings
7. Simpler visa processes

Future: Structure



OAD and Division C

- Populate Resources part of Impact Cycle
- Funding for Div C project ideas
- Volunteer opportunities for members
- Expand reach of Division activities
- Assist with special projects of Division
- Educate community on importance of evidence
- Division liaison with OAD
- *… <open for ideas>*

Astronomy for a Better World!

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