

EU – AU SCIENCE FOR DEVELOPMENT ASTRONOMY – A CASE STUDY

George Miley, Leiden University (Irish – Dutch)

INVOLVED WITH INITIATION OF :

LOFAR (1997)

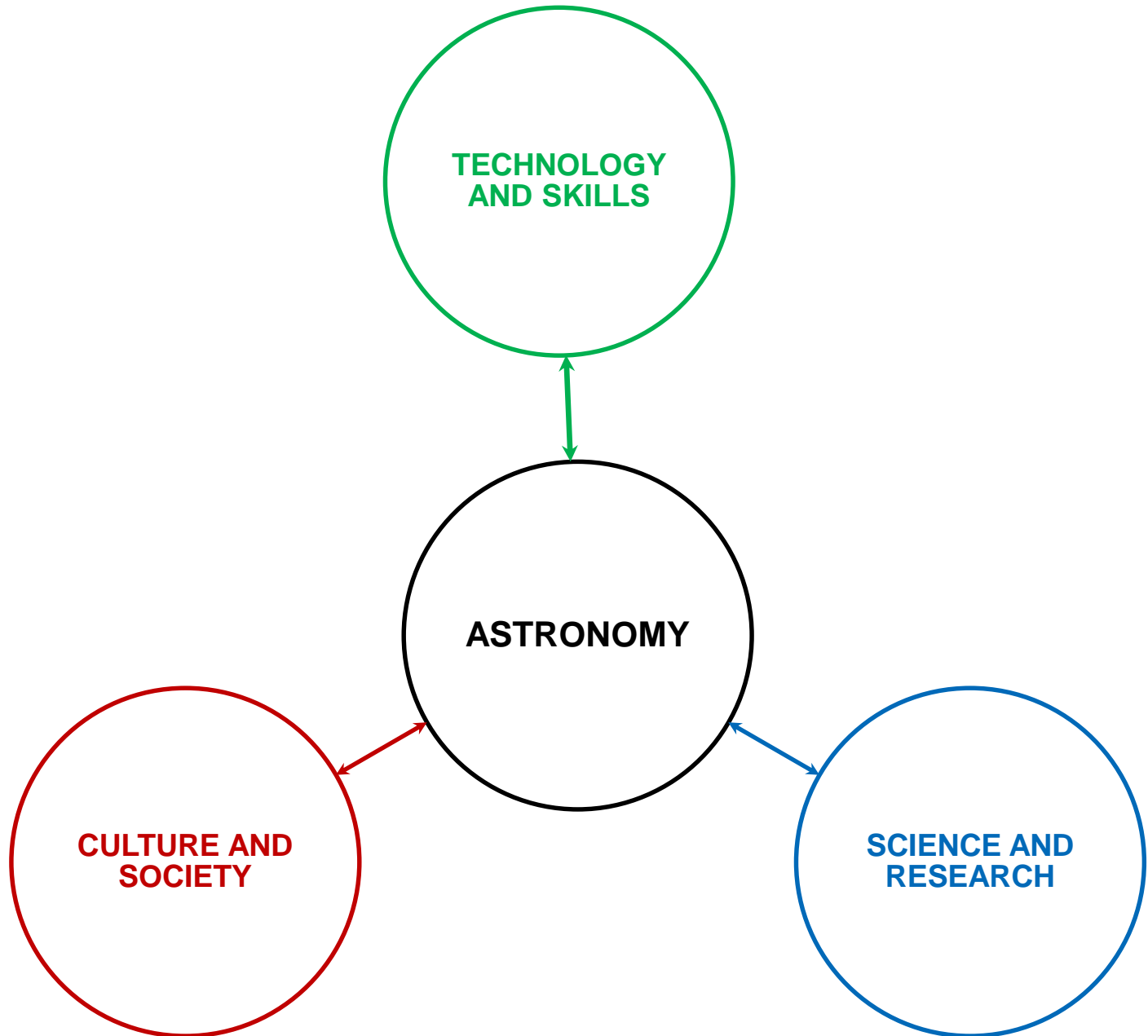
IAU Astronomy for Development Programme (2006-2015)

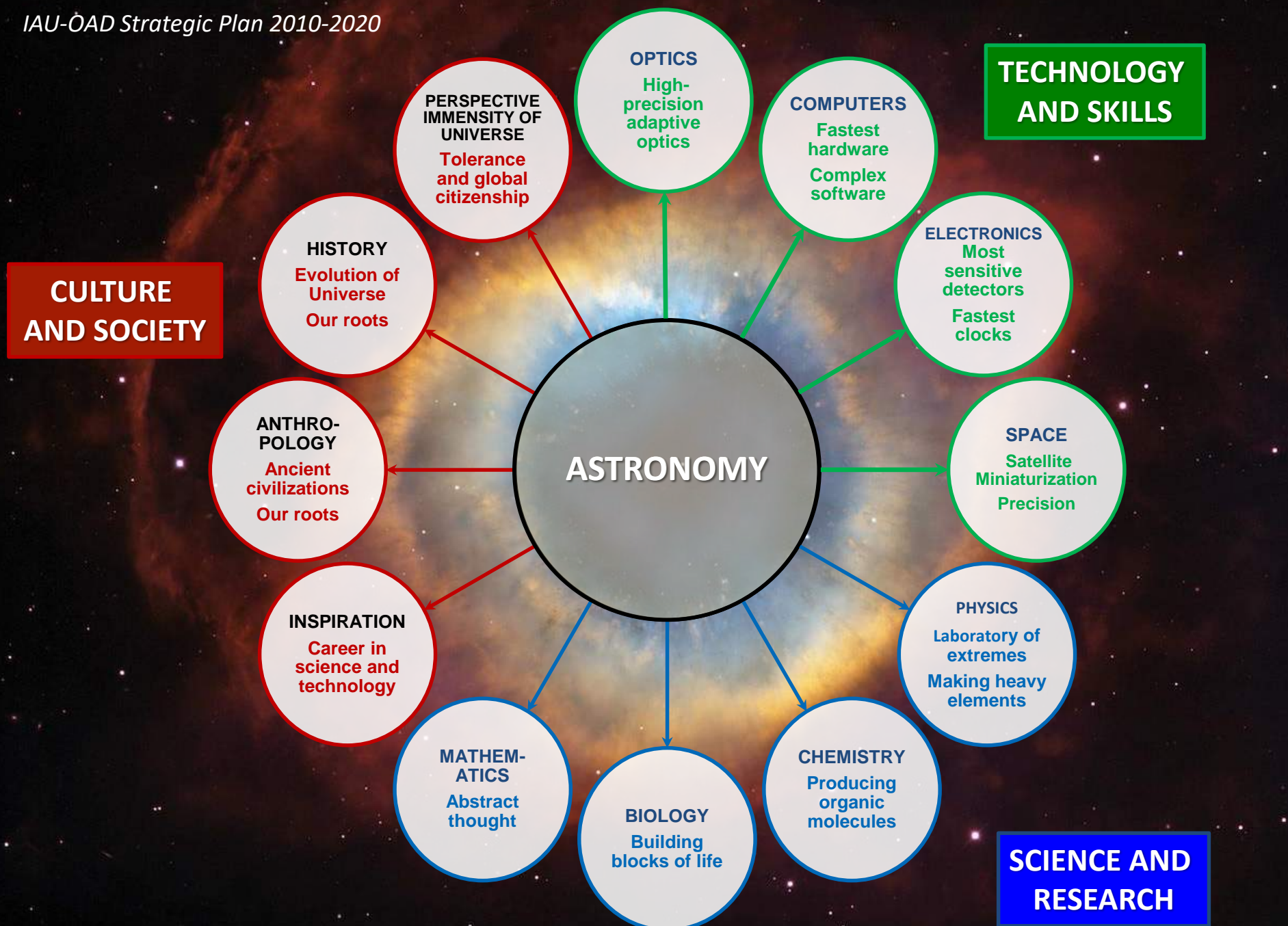
- **STRUCTURE OF TALK**
 - **RATIONALE OF ASTRONOMY FOR DEVELOPMENT**
 - **IAU ASTRONOMY FOR DEVELOPMENT PROGRAMME**
 - **2 EXISTING EC-FUNDED EU-AU ASTRONOMY EDUCATION PROGRAMMES**
 - **CONCLUSIONS AND MESSAGE**

EU – AU SCIENCE FOR DEVELOPMENT ASTRONOMY – A CASE STUDY

- **Written Declaration 45/2011 of European Parliament 15 March 2012 (signed by 394 MEPs)**
 - RECOGNISING THAT *further European involvement in African radio astronomy can become a powerful driver of socioeconomic growth in Africa*
 - SUPPORTS *the development of science capacity in Africa through greater investment in research infrastructures, with particular focus on radio astronomy*
- **African Union Declaration (AU Assembly 18th ordinary session 29 -30 Jan 2012)**
 - STRESSES *the significant potential of investment in African Radio Astronomy initiatives, such as the planned African Very Long Baseline Interferometry (VLBI) Network, to rapidly enhance Africa's science and technology capacities, and therefore;*
 - PROPOSES *the inclusion of Radio Astronomy as a priority focus area for Africa's international science and technology partnerships*

WHY ASTRONOMY AS TOOL FOR DEVELOPMENT?





IAU STRATEGIC PLAN ASTRONOMY FOR DEVELOPMENT

http://www.iau.org/education/strategic_plan/

- Long-term vision
- Goals for 2010 – 2020
- Strategy
 - Integrated strategic phased approach
 - Increase regional involvement (bottom-up)
 - Build on IYA momentum and cornerstones
 - Advance UN Millennium Goals
 - Exploit new tools and opportunities
 - Create small coordinating “Office of Astronomy for Development”
- Implementation roadmap



IMPLEMENTATION OF STRATEGIC PLAN

IAU OFFICE OF ASTRONOMY FOR DEVELOPMENT



- May 2010 - SAAO Cape Town selected as host by IAU Executive Committee (EC88)



– Partners IAU-SAAO/NRF

- Strong support from SA Department of Science & Technology and Minister
- Outstanding director recruited
 - Kevin Govender

- 1 March 2011 OAD started operations

– Official inauguration by Minister Pandor 16 April 2011



IMPLEMENTATION OF STRATEGIC PLAN

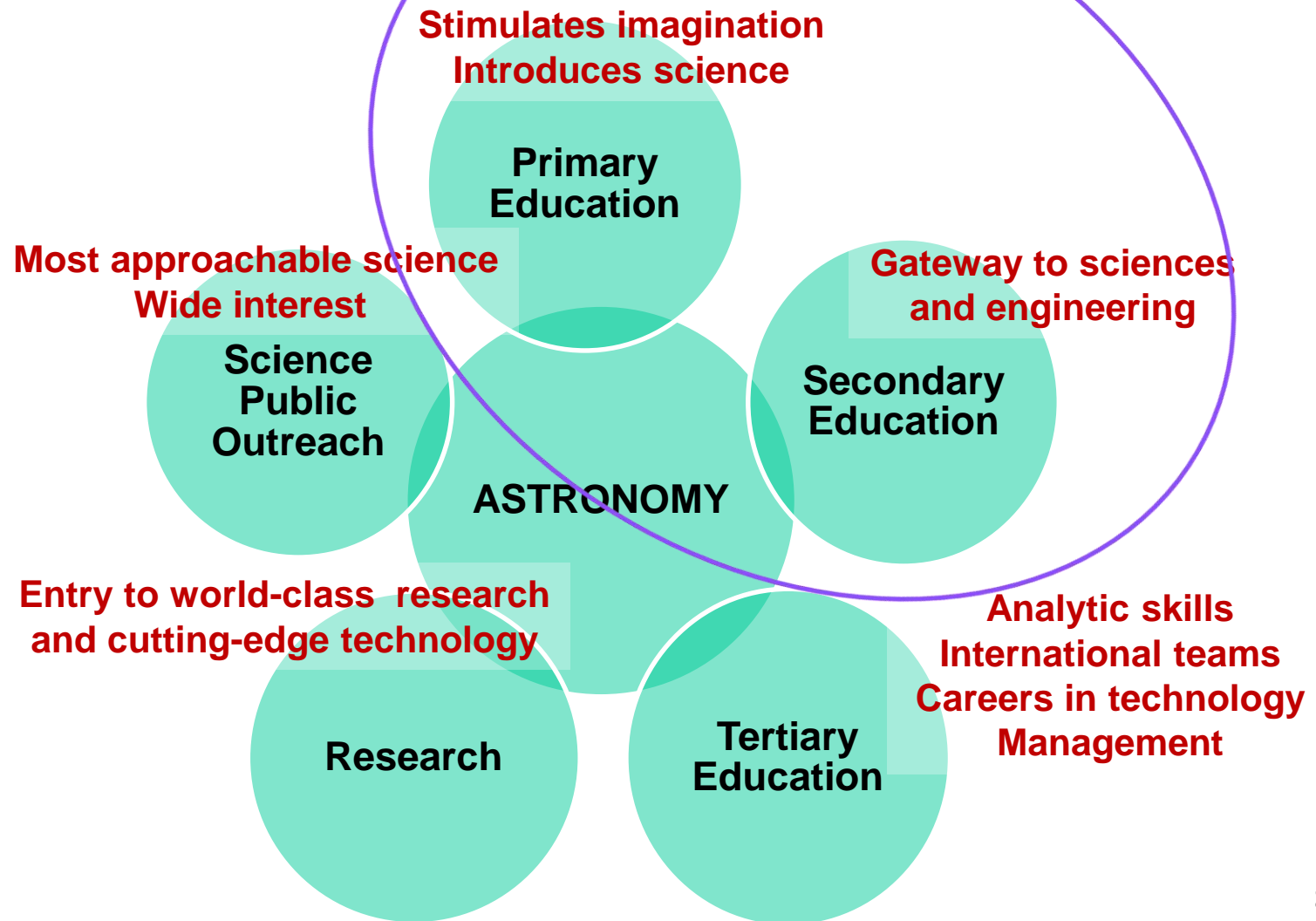
7 REGIONAL NODES + 3 LANGUAGE NODES ESTABLISHED



HIGH IMPACT ON POLICY MAKERS

PILLARS OF ASTRONOMY FOR HUMAN CAPACITY BUILDING

“from the cradle to the grave”

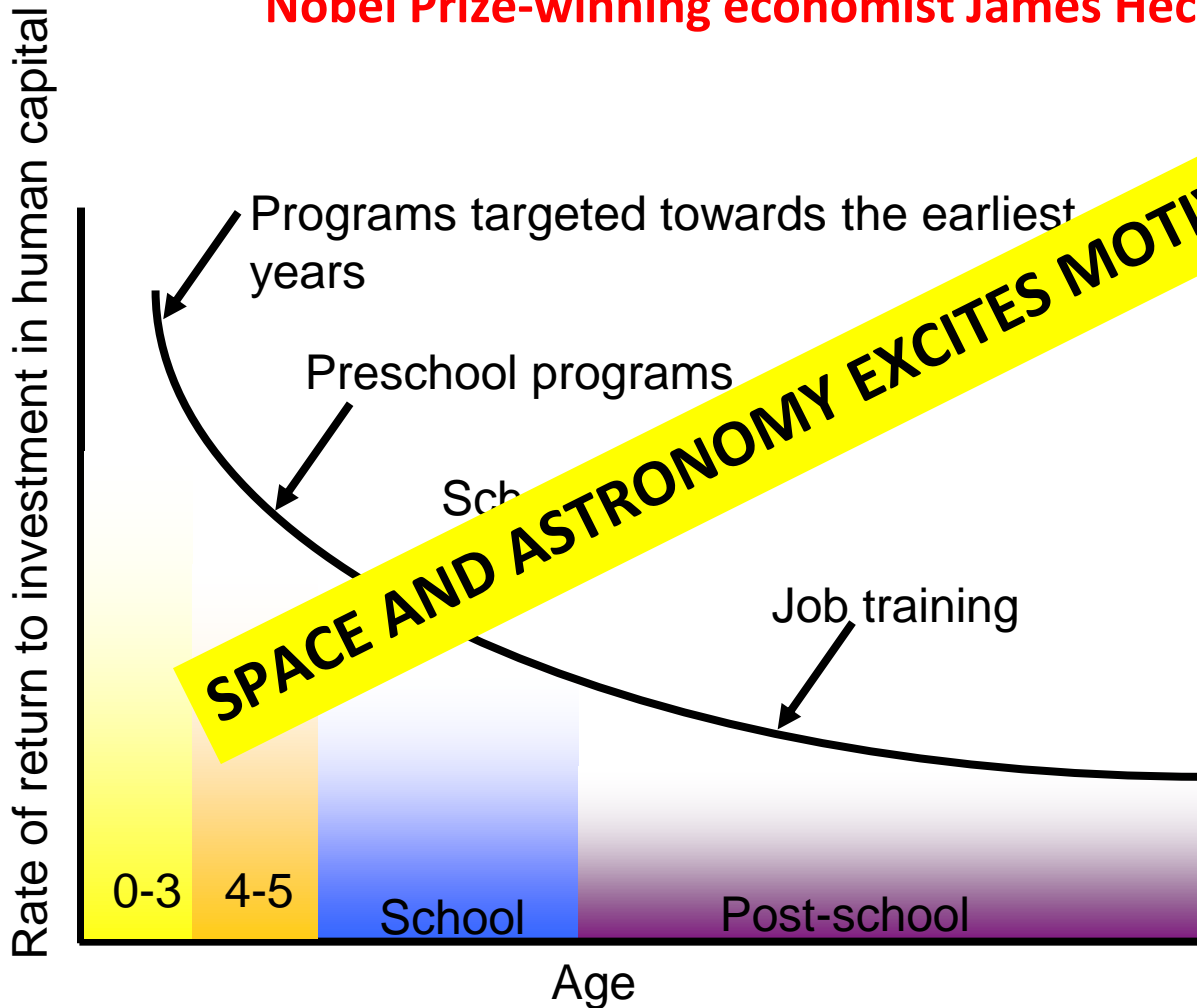


SPACE EDUCATION FOR YOUNG DISADVANTAGED CHILDREN

ECONOMIC RATIONALE

Rates of Return for Human Capital Investment at Different Ages

Nobel Prize-winning economist James Heckman (2007)

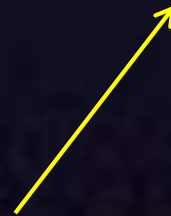


SPACE AND ASTRONOMY EXCITES MOTIVATES CHILDREN

**MOTIVATION
BEGETS
MOTIVATION**

MUCH MORE THAN JUST ECONOMIC EFFECTIVENESS AWARENESS OF UNIVERSE GIVES PERSPECTIVE FOSTERS SENSE OF WORLD CITIZENSHIP

"Fanatic ethnic, religious or national identifications are difficult to support when we see our planet as a fragile, blue crescent fading to become an inconspicuous point of light against the bastion and citadel of the stars. "
CARL SAGAN



EARTH FROM SATURN (CASSINI)

ASTRONOMY FOR DEVELOPMENT AND UN SUSTAINABLE DEVELOPMENT GOALS

- **Goal 4.**
 - **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.**
- **Goal 5.**
 - **Achieve gender equality and empower all women and girls.**
- **Goal 8.**
 - **Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**
- **Goal 9.**
 - **Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.**
- **Goal 10.**
 - **Reduce inequality within and among countries.**
- **Goal 16.**
 - **Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.**
- **Goal 17.**
 - **Strengthen the means of implementation and revitalize the global partnership for sustainable development.**

EU - AU DG GROWTH SPACE EDUCATION PROJECTS

- **UNIQUE CHARACTERISTICS OF BOTH PROGRAMMES**
 - Inspiration paramount
 - Link cutting-edge researchers with children + teenagers
 - Teacher training
 - Development and dissemination of educational resources
 - Wide network for exchange of expertise – global scope
 - Special attention to disadvantaged communities and gender balance
- **FP7 EU UNIVERSE AWARENESS (EU-UNAWA) 2011 – 2014**
 - Main targets disadvantaged children aged 4 to 10 and their teachers
 - Introduce young children to excitement of science
 - Perspective of astronomy to stimulate tolerance and global citizenship
 - 5 EU member states + S Africa → global distribution
- **H2020 EU SPACE AWARENESS (EUSPACE-AWE) 2015 - 2018**
 - Main targets – young children, teenagers aged 4 to 18 and their teachers
 - Attract young people into space science and technology careers
 - Stimulate global citizenship
 - 23 countries. Pan-African and global distribution by IAU OAD

RELEVANT UPCOMING EVENTS

- **EU Space Awareness workshops at AU in Addis Ababa – 7 October 2017**
(organised with IAU OAD partner and East African ROAD)
 - **Policy makers workshop**
 - **Opening address by Ethiopian Minister of Science and Technology**
 - **Teachers workshop**
- **Visiting Honorary Professorship in "Astronomy for Development"**
Leiden University – 26 February 2018
 - **Minister Naledi Pandor**
South African Minister of Science and Technology



STIMULATING PRIDE AND SELF-CONFIDENCE THE "WORLD CUP" EFFECT

e.g. Mercury, Durban, 6 Feb 2013

Africa is on the rise for all to see

The continent now has a projected average growth of above 5 percent, which compares well with the US's projected 2.1 percent

By Nomusa Dube



AT THE recent World Economic Forum in Davos, Switzerland, Presidents Jacob Zuma and Goodluck Jonathan (Nigeria) took issue with the suggestion that Africa was riskier for business than other parts of the world. It's a mark of how far Africa has come that the elder statesmen were able to take on their detractors with conviction. It's a far cry from the days of the Economist's "Hopeless Continent" headline.

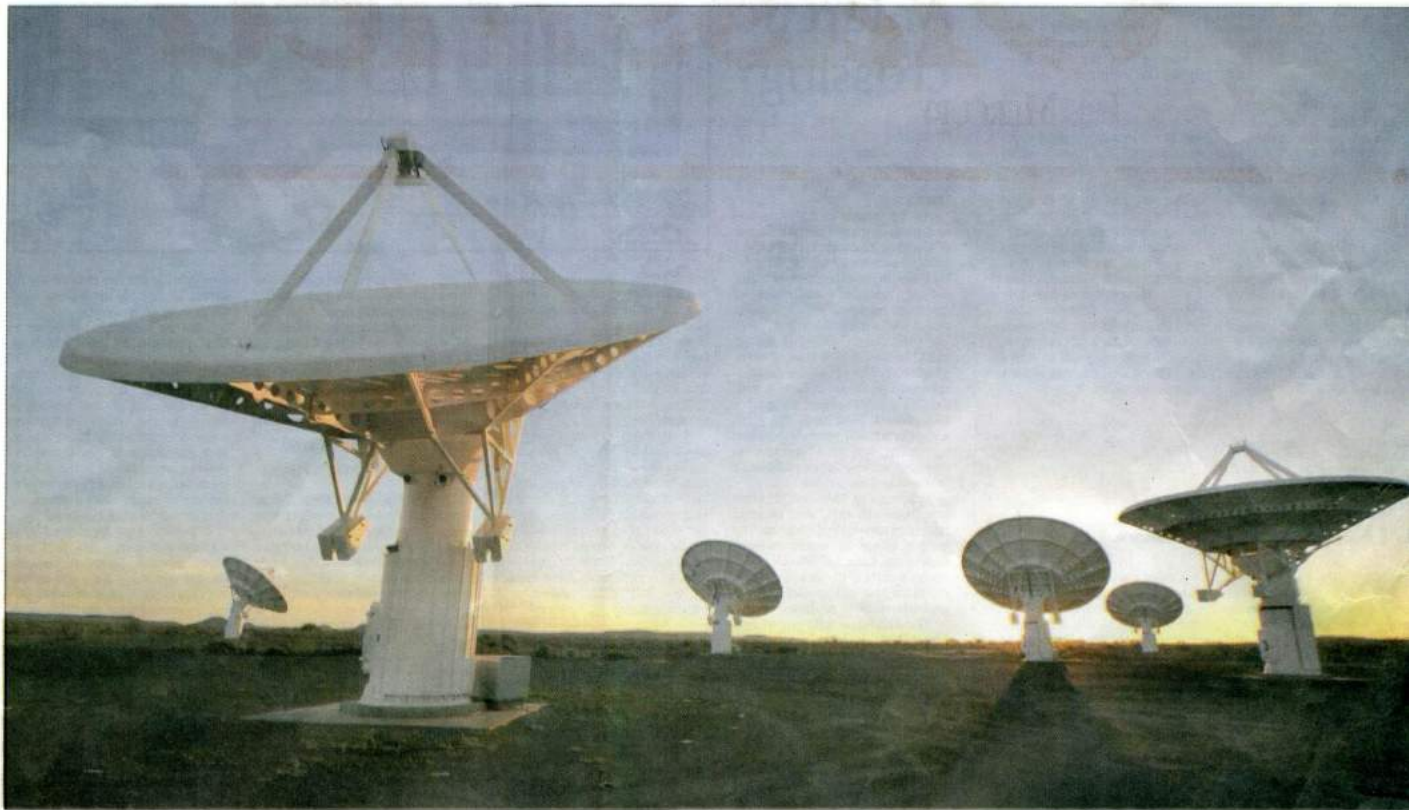
Indeed, Africa has transformed and continues to transform positively. According to the African Development Bank, economic growth on the continent with the world's youngest population is likely to average 5.25 percent this year, after averaging above 5 percent in the past decade. Contrast that with the US's projected 2.1 percent and Europe's deepening recession and it becomes clear that opportunity and better returns are clearly in Africa.

To quote Obiageli Ezekwesili, a former vice-president for the Africa region of the World Bank: "The Africa train has left the station. You are either on it or you risk becoming irrelevant." I hope you are on it or you are quickly moving to get on board the moving train.

Let me share with you why. The stats around Africa's turnaround are worth repeating wherever we find the opportunity.

No doubt you have heard that more than six of the 10 fastest growing economies in the world are African – that's an IMF statistic, but perhaps less known is that 27 of the continent's 30 largest economies have been expanding since 2000 – yes, just as the Economist came up with its now infamous headline.

So what has changed, you might ask. Well, a lot. For one, we all know about the commodities boom, and Africa produces plenty of these – prominent among them oil, platinum, gold, iron ore, etc. And there



From technology to tourism, all indications are that Africa is finally coming into its own and is an ideal place for business investment, argues Nomusa Dube, MEC for Local Government in KwaZulu-Natal.

Africa now has 33 countries with at least two successive elections.

That has meant less conflict, political instability and poor governance that has so blighted Africa's progress since it freed itself from the shackles of colonialism.

connectivity; however, new services in data and the internet will see increasing demand as broadband data connectivity improves. Many analysts say the industry should maintain its 61 percent growth of the past decade in the years ahead.

\$10 billion worth of food each year, according to the bank.

A lot has been said about Africa's burgeoning consumer market. With the world's youngest population among its billion people, the transition from rural-based economies to

lion people currently have no access to reliable and affordable power), to roads, railways and water and sanitation.

Intra-African trade remains low by global standards at about 10 percent – contrast that with more than

government plans to spend \$462 billion upgrading key infrastructure such as roads, railways, power and ports. We certainly hope that that will unlock the full potential of our \$400 billion economy.

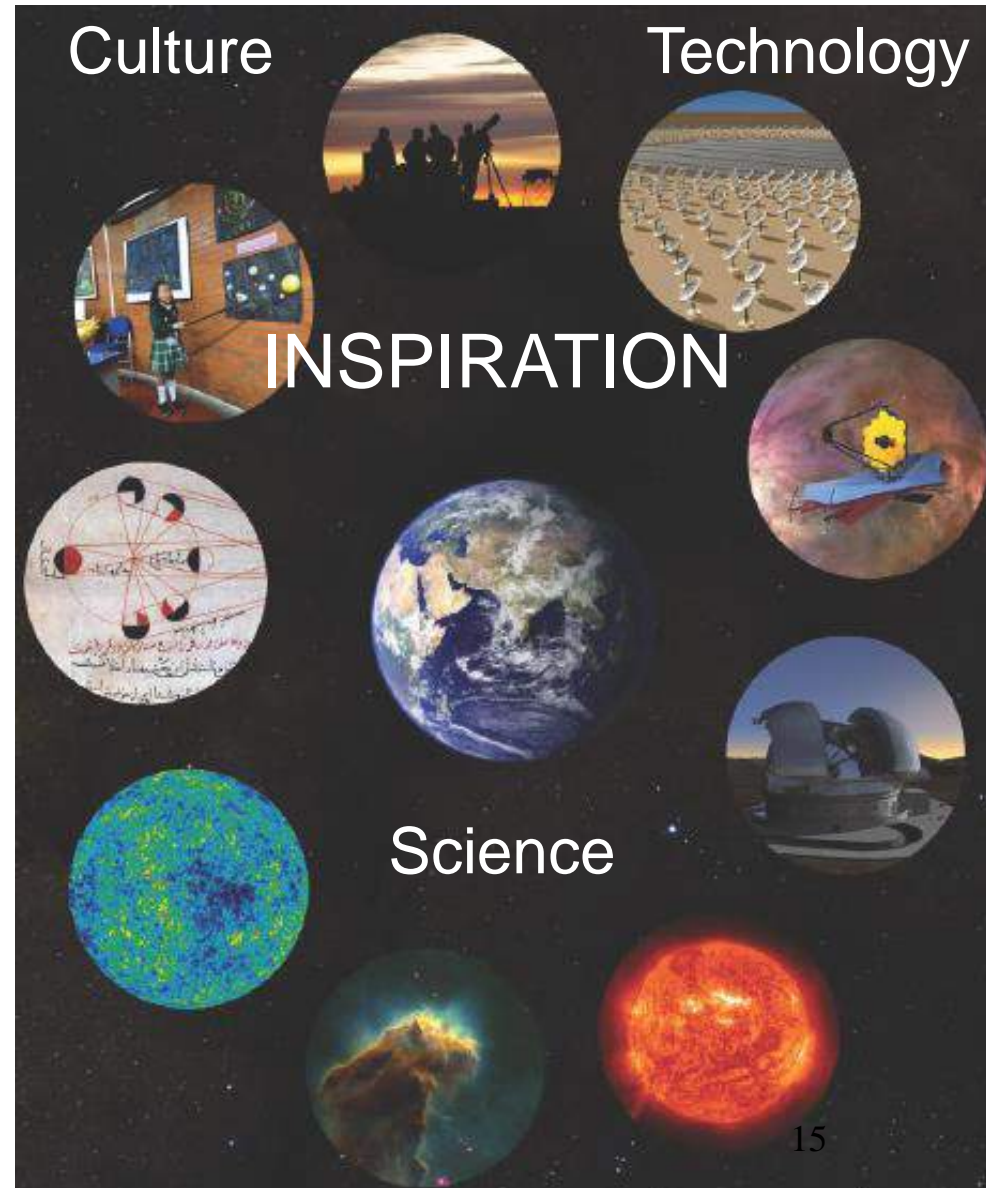
We remain home to the largest

resources. Don't forget agriculture, forestry and fishing, agriculture, resource-intensive manufacturing sectors and of course tourism. Durban's beaches are well known around the world.

So what? These numbers are not

ASTRONOMY FOR DEVELOPMENT - CONCLUSIONS

- Case study of how curiosity driven science can be used for stimulating sustainable development
- Inspirational gateway to science and technology
- Can stimulates indigenous and international industry
- Some lessons
 - **Partnership - not dependency**
 - e.g. Learn from outreach to African townships
 - **Mutually beneficial**



MESSAGE

- **Science (research + education) partnerships are important tools for international development**
 - **Transcend EC directorates**
 - **Research and Innovation**
 - **Education and Culture**
 - **EuropeAid Development and Cooperation**
 - **GROW (Space)**
 - Internal Market Industry, Entrepreneurship and SMEs
 - **Communications Networks, Content and Technology**
- **Requires dedicated inter-directorate strategic planning and development of relevant Calls**