

Research at AIMS

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Director, Research - AIMS Global Network

13 Nov 2017

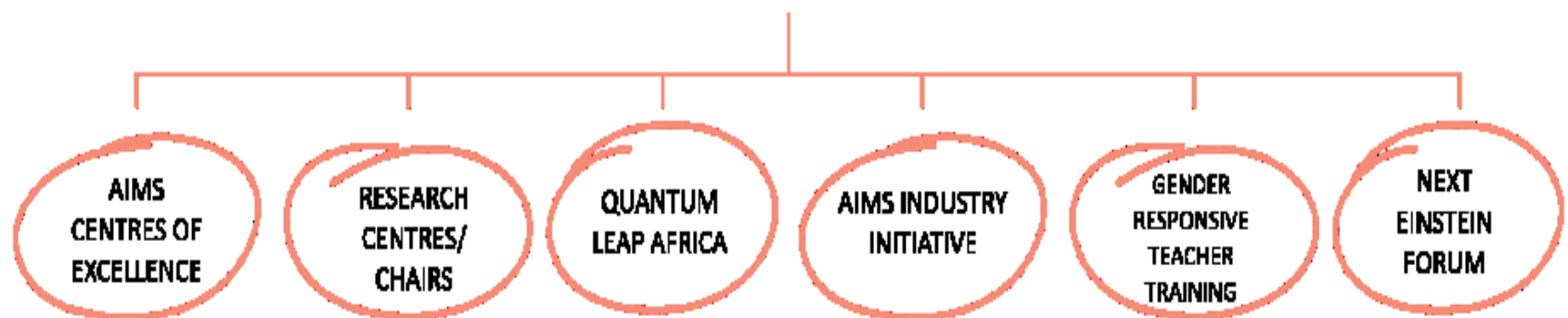
Socio-Economic Transformation of Africa

Innovative scientific training (Human Capital Development)

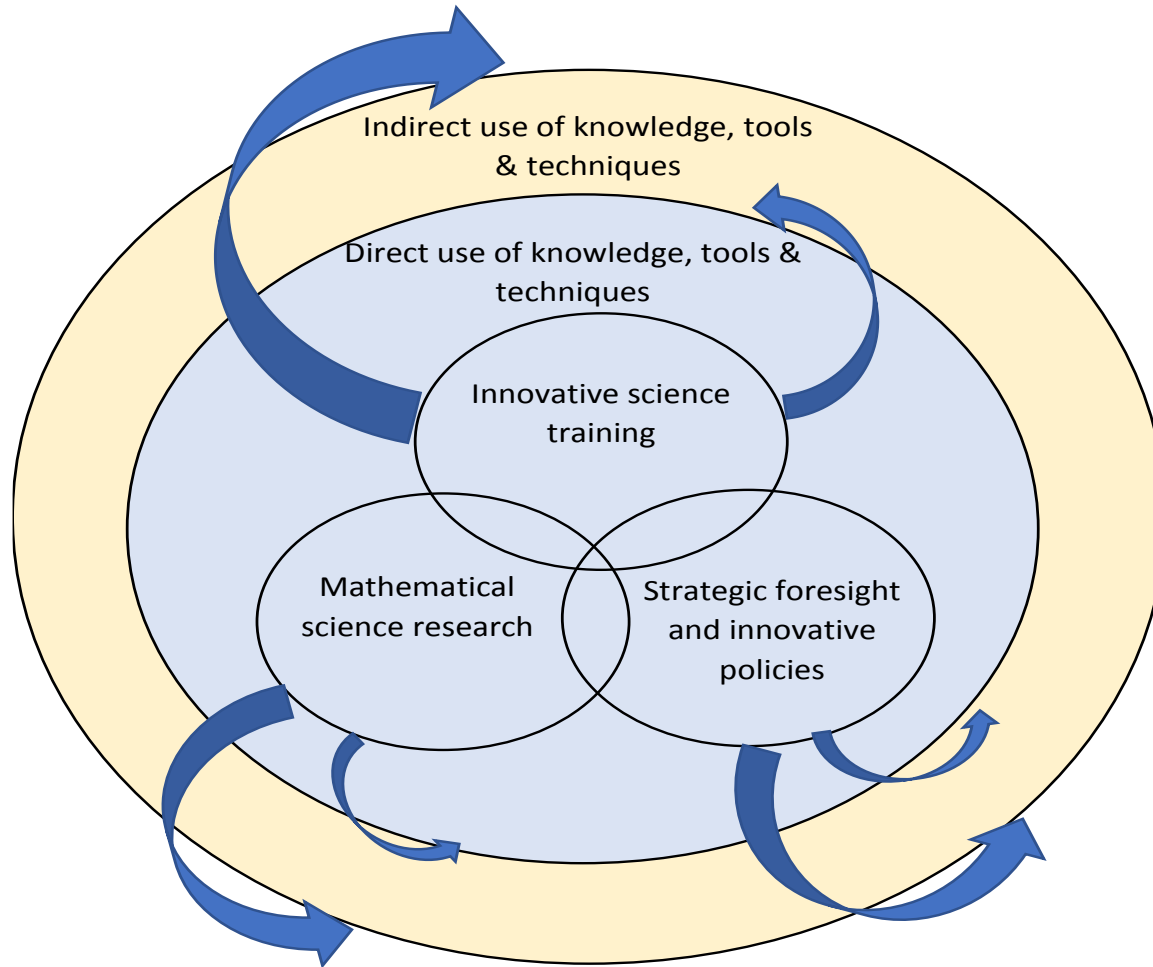
Technical advances and breakthrough discoveries



Strategic Foresight & Innovative Policy Design



Pathways to transformation





How it all started...

AIMS Founder Neil Turok's
Ted Prize Talk
(https://www.ted.com/talks/neil_turok_makes_his_terpri ze_wish) launched the Next
Einstein Initiative

AIMS Senegal opens

- AIMS Cameroon opens
- DFID, Robert Bosch Stiftung join as AIMS partners

- MasterCard Foundation partners with AIMS
- AIMS endorsed by the African Union Commission

- 15 Centers of Excellence
- STEM Secretariat for Africa
- 1,000 graduates annually
- 200+ partner network
- 500+ world class lectures
- 300+ distinguished researchers

2008

2011

2013

2015

2023

MILSTONES

★
2003

The first AIMS Center of Excellence opens in South Africa

2010

- AIMS establishes a global secretariat to support its expansion
- Google and Canada's International Development Research Centre join as AIMS partners
- NEPAD endorses AIMS' approach

2012

- Aims Ghana opens
- AIMS postgraduate course accredited as a master's degree programme

2014

- AIMS Tanzania opens

2016

- Inaugural Next Einstein Forum
- AIMS Rwanda opens



Our global network



Centres

1. South Africa (2003)
2. Senegal (2011)
3. Ghana (2012)
4. Cameroon (2013)
5. Tanzania (2014)
6. Rwanda (2016)

Chapters:

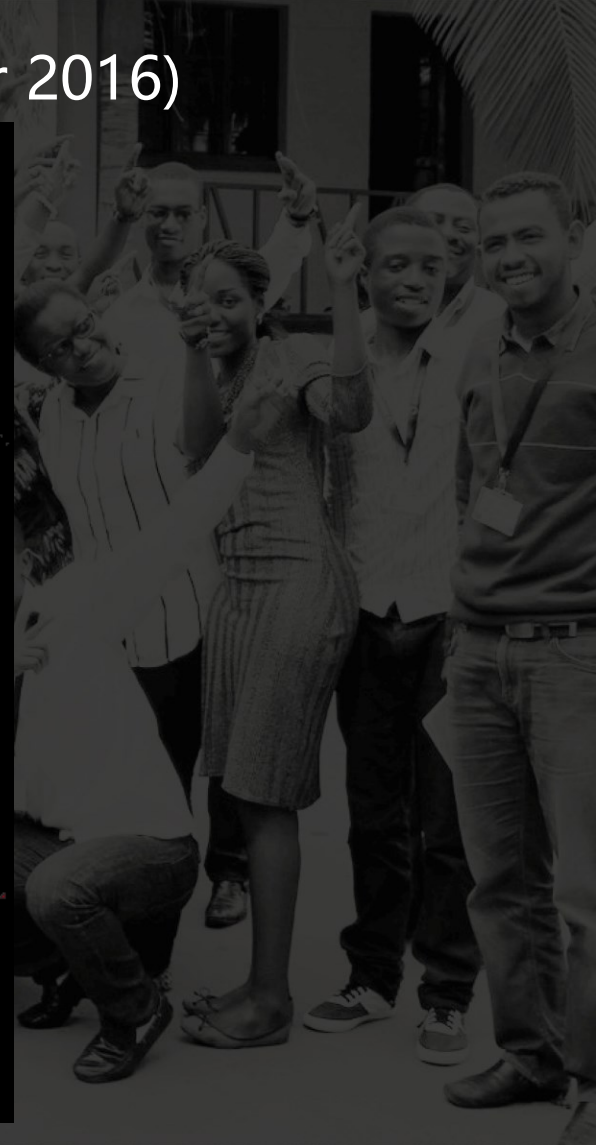
- UK
- Canada
- Germany

Secretariat:

- Kigali



Nationality of AIMS Alumni (as at December 2016)

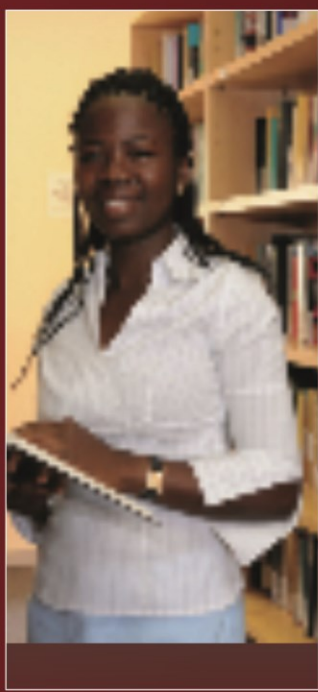
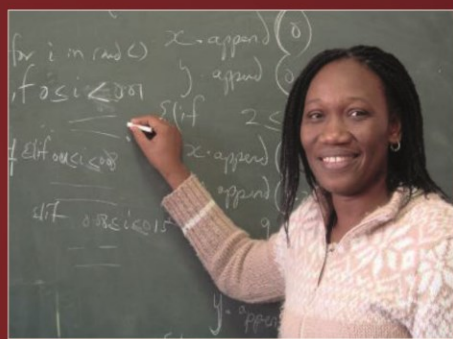


x^{k+1}
 $f(x)$



AIMS and Gender Equality

- Over the last 10 years, 30% of AIMS students were women
- Goal is to move from 30% to 50% in the next 5-10 years



AIMS Research

Cosmology & astrophysics

AA: Dark matter, Square Kilometer Array (SKA)



Ecology, statistics,
AA: Biodiversity, climate change & adaptation

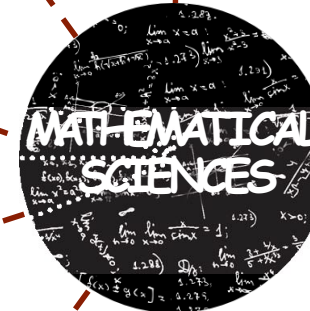
CLIMATE & ENVIRONMENT

classical & quantum computing science, data science

AA: almost everything



INFORMATION SCIENCE



MATHEMATICAL SCIENCES

BUSINESS

Financial mathematics

AA: stock pricing, agricultural insurance



HEALTH

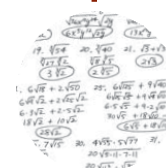
Mathematical & physical bioscience

AA: disease dynamics (malaria, cancer), precision health, ageing



PURE/APPLIED MATH

Geometry, algebra, analysis
AA: everything



AA: application areas



104 researchers



AIMS Research Chairs

Romeel Davé

South African Research Chair in Cosmology with Multi-Wavelength Data (AIMS South Africa); 2013 -



Gisele Mophou

German Research Chair with specialisation in control theory & calculus of variations (AIMS Cameroon), 2017 - 2021



Mouhamed Fall

German Research Chair with specialisation in partial differential equations and differential geometry (AIMS Senegal); 2013 - 2021



Bubacarr Bah,

German Research Chair with specialisation in data science (AIMS South Africa); 2015 - 2019



Cang Hui,

South African Research Chair with specialisation in mathematical and theoretical physical biosciences (AIMS South Africa); 2014 -



Olivier Pamen

German Research Chair with specialisation in stochastic differential equations and financial mathematics (AIMS Ghana), 2015 - 2019



Marc Sedjro,

German Research Chair with specialisation in partial differential equations and calculus of variations (AIMS Tanzania); 2018 - 2022



Yabebal Fantaye,

ARETÉ Junior Research Chair with specialisation in applied cosmology and applied statistics (AIMS South Africa); 2016 - 2021





Global Affairs
Canada



AIMS African Institute for
Mathematical Sciences
NEXT EINSTEIN INITIATIVE



IDRC | **CRDI**

International Development Research Centre
Centre de recherches pour le développement international



Federal Ministry
of Education
and Research

DFID Department for
International
Development

Robert Bosch **Stiftung**



**National
Research
Foundation**

AIMS Research Central Admin

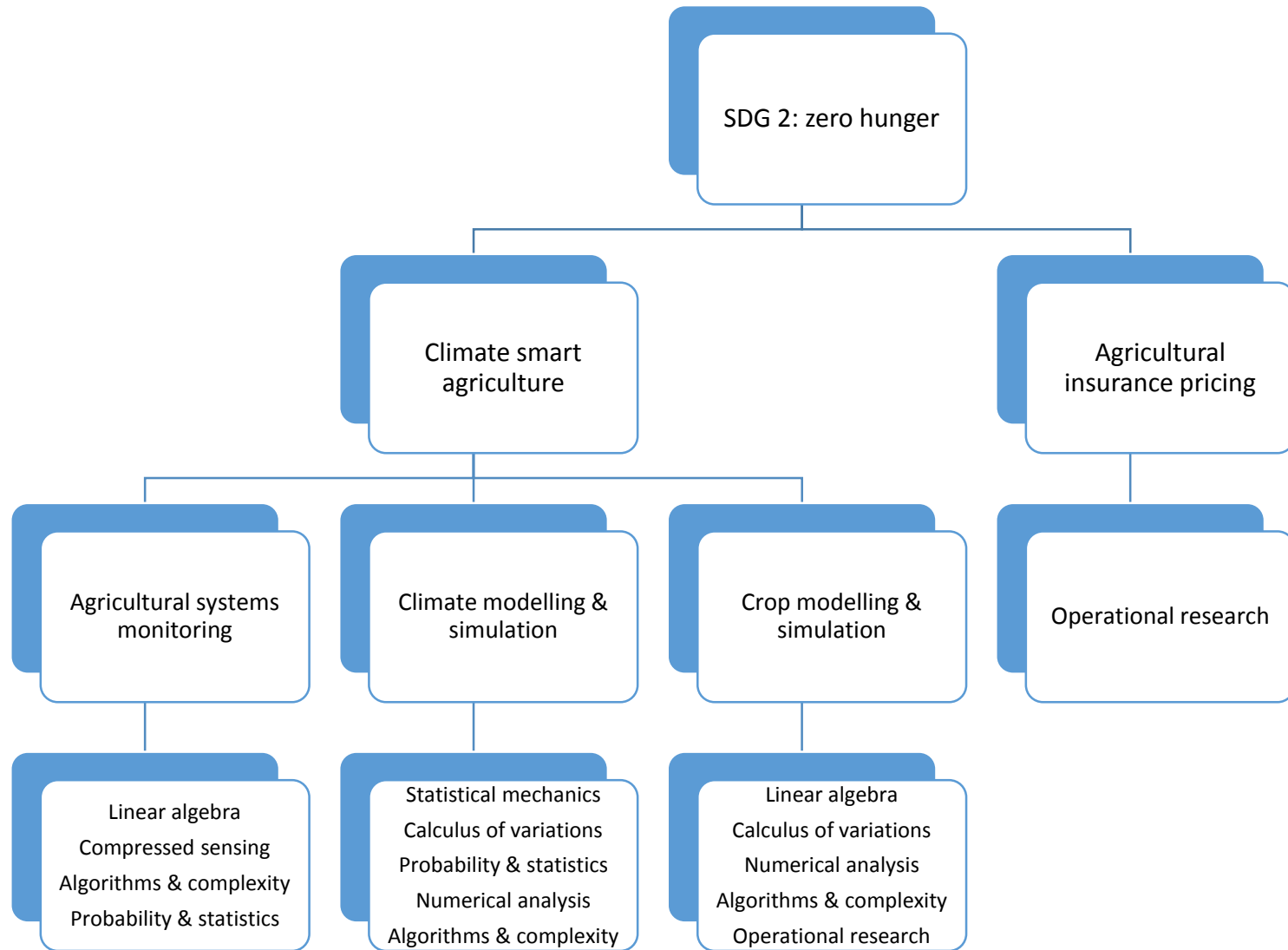
Agenda-setting
& resource
mobilization

Management &
oversight

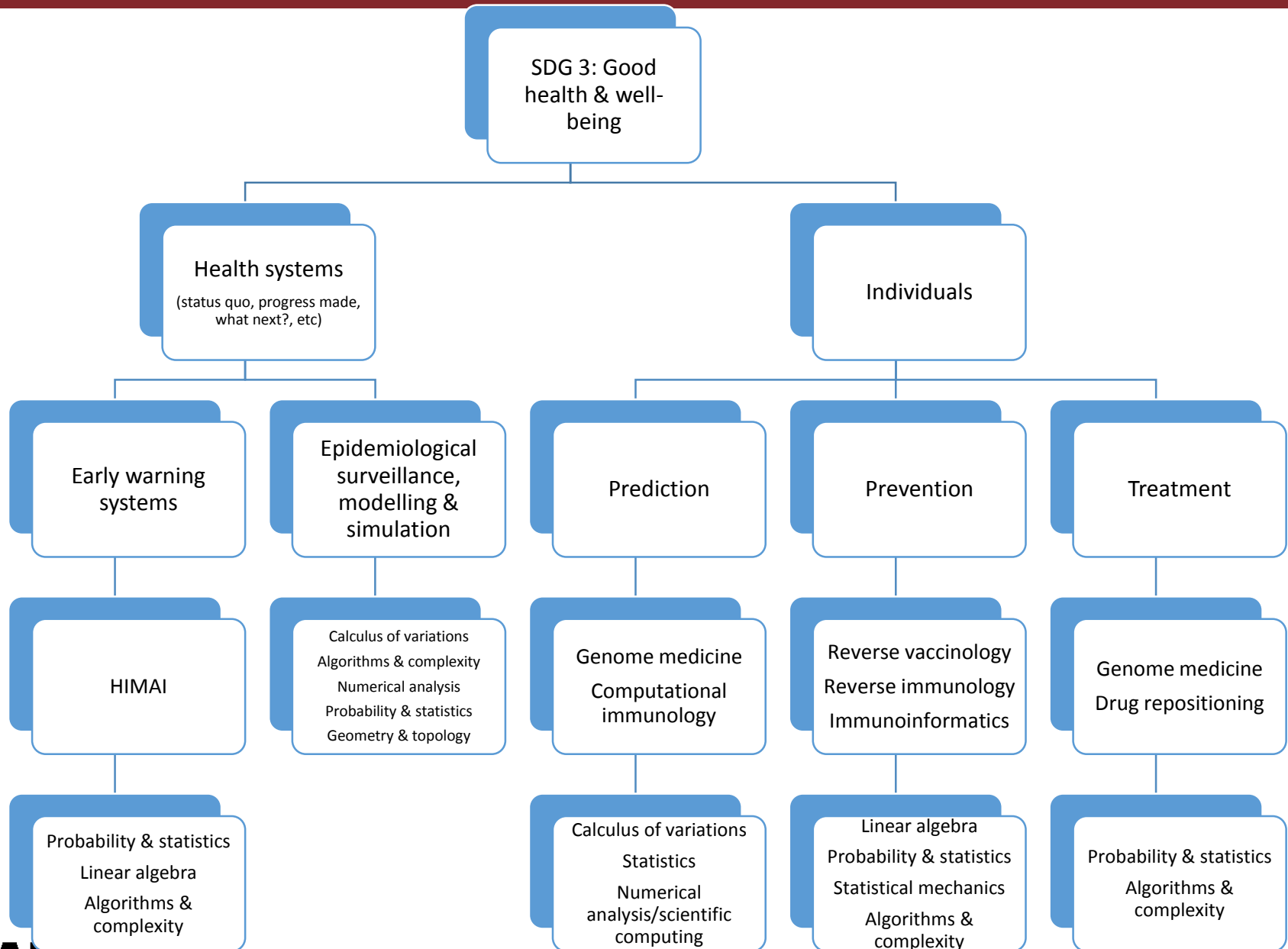
Reporting

Outreach

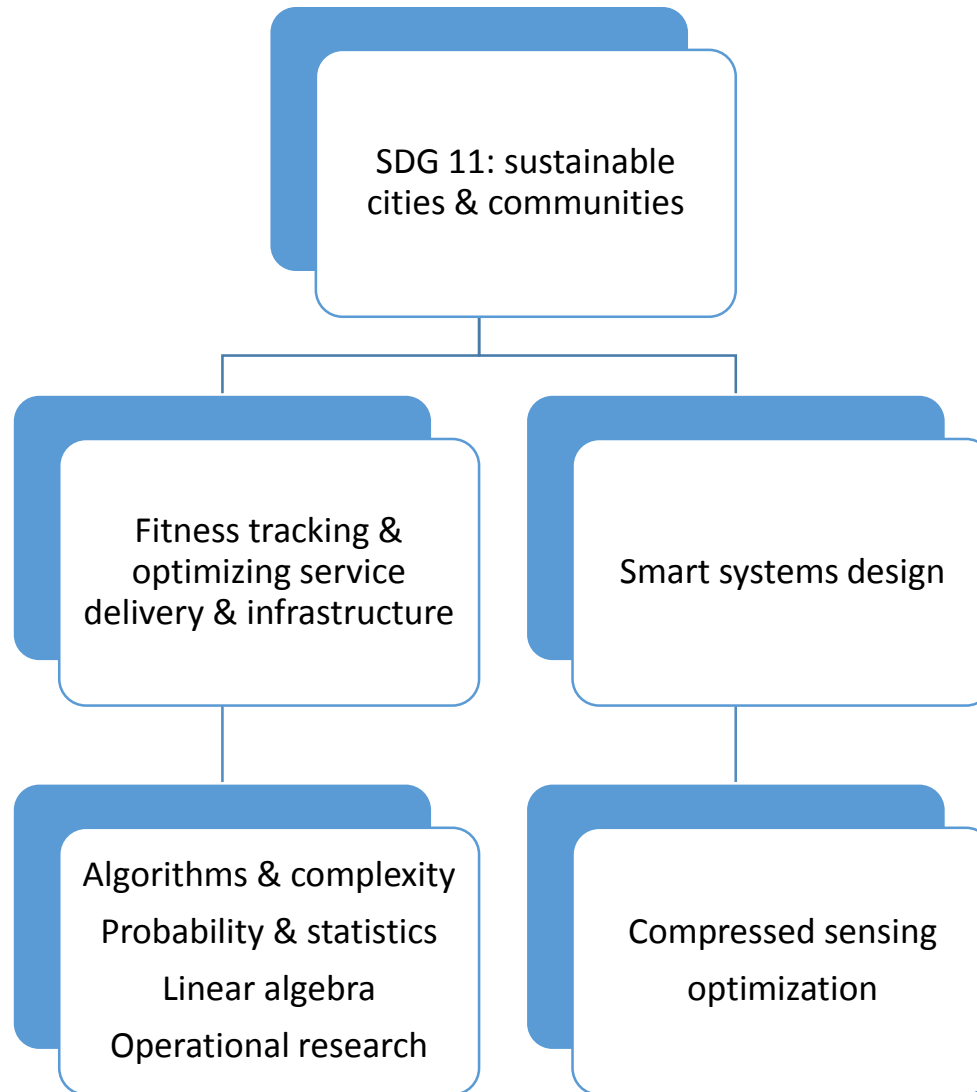
Math sciences for dev't: priority #1



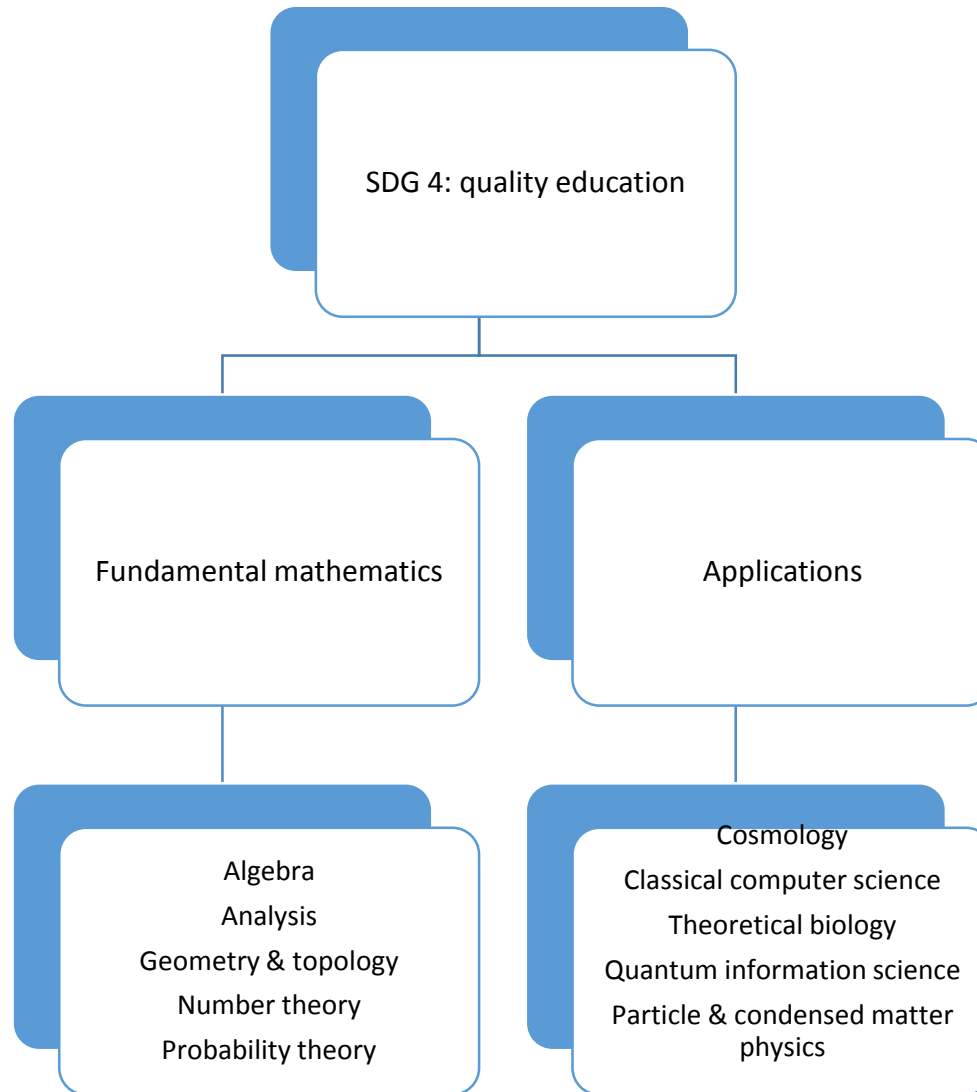
Math sciences for dev't: priority #2



Math sciences for dev't: priority #3



Math sciences for dev't: priority #4



Challenges

- Funding (especially from government & private sector)
 - Research
 - Infrastructure
 - Research management
- Access to published research
- Research uptake
- Access to experienced collaborators
- Access to complementary research networks
- Mobility
 - Isolation