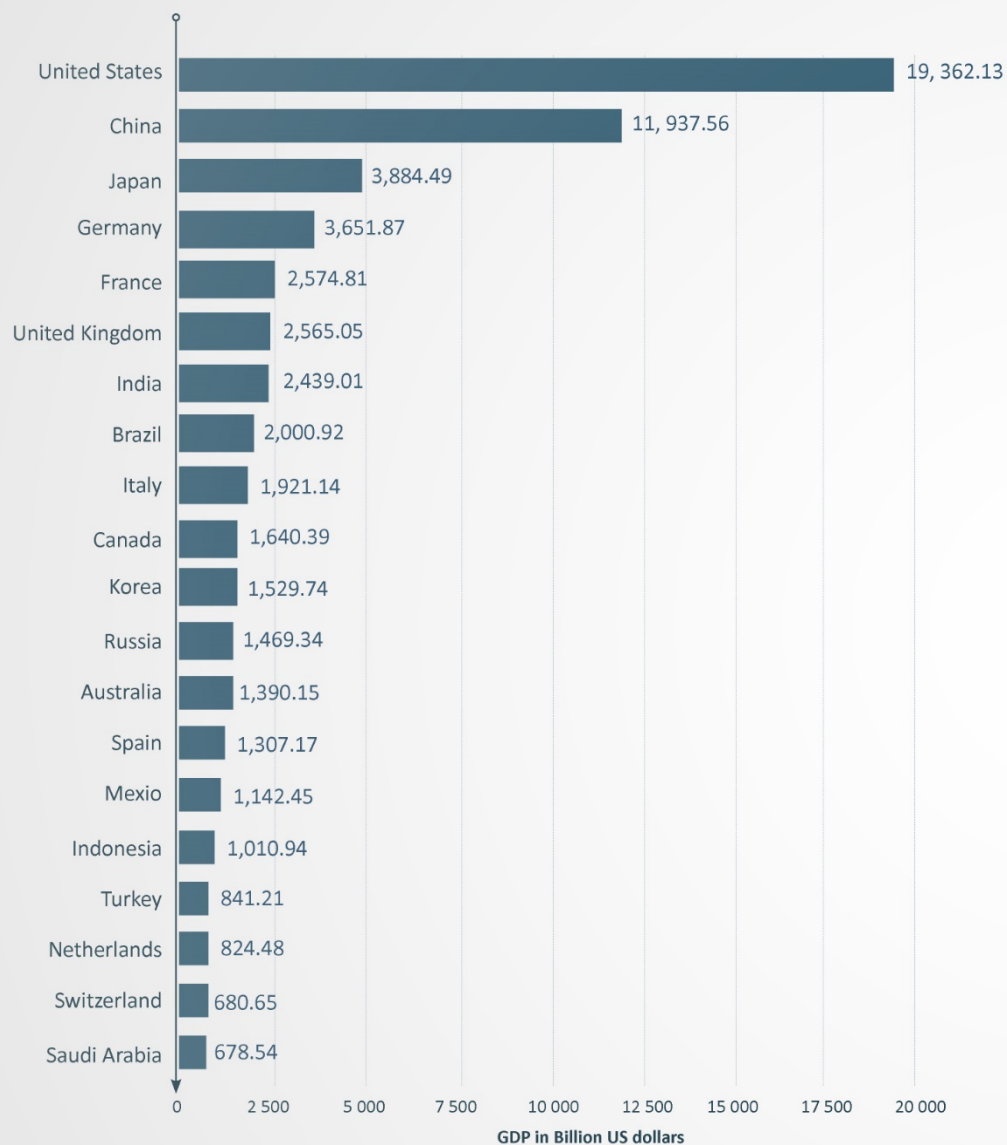


# THE GLOBAL KNOWLEDGE-BASED ECONOMY IMPACT OF R&D ON ECONOMIC DEVELOPMENT

**Youssef Travaly**

Vice-President Next Einstein Forum & Chief Scientific Officer, AIMS Global Network



USA:

**19 Trillion\$**

~ 0.5 Trillion \$ in R&D (2.5%)



China:

**12 Trillion\$**

~ 0,24 Trillion \$ in R&D (2%)



Africa:

**2 Trillion\$**

~ 0,02 Trillion \$ in R&D ( 1%)

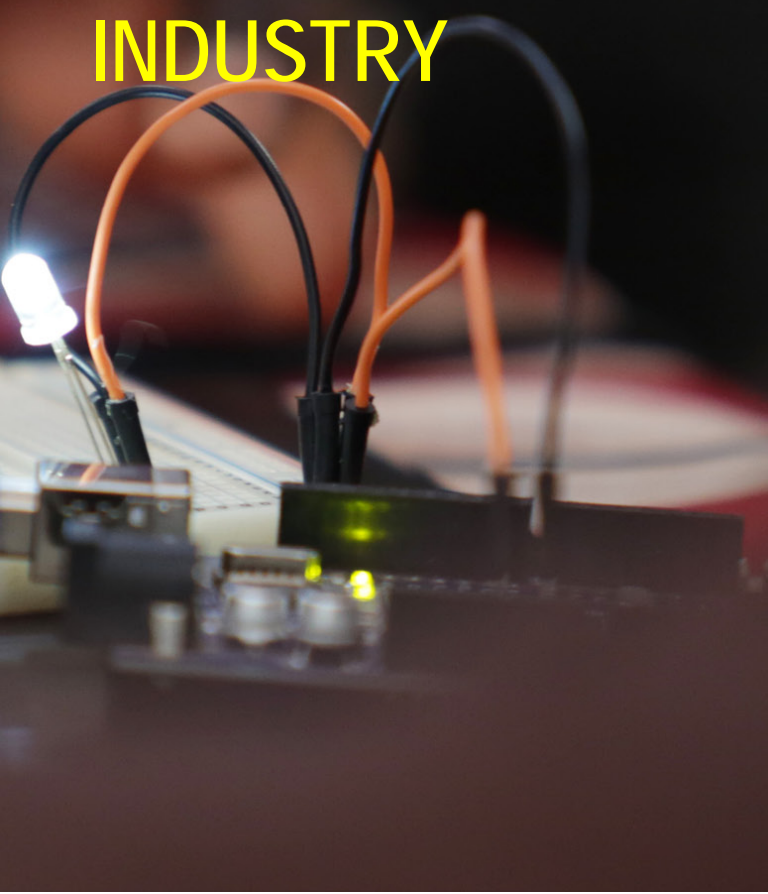
Funding gap:  $\Delta \sim$

**96%**



Knowledge,  
Technology &  
Skills Gaps!

# INNOVATIONS WITHIN THE SEMICONDUCTOR INDUSTRY





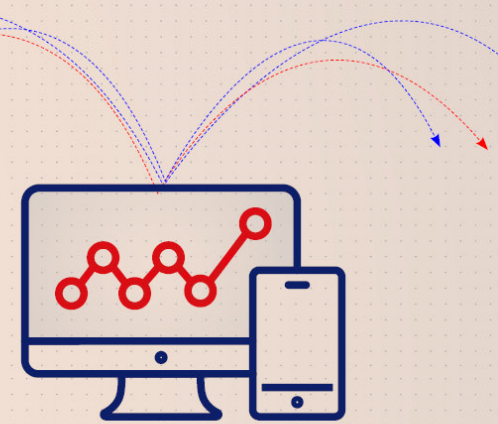
**AIMS**

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Mathematical Sciences  
NEXT EINSTEIN INITIATIVE



Emerging digital ecosystems  
could account for more than  
**\$60 trillion** in revenue  
globally by 2025.

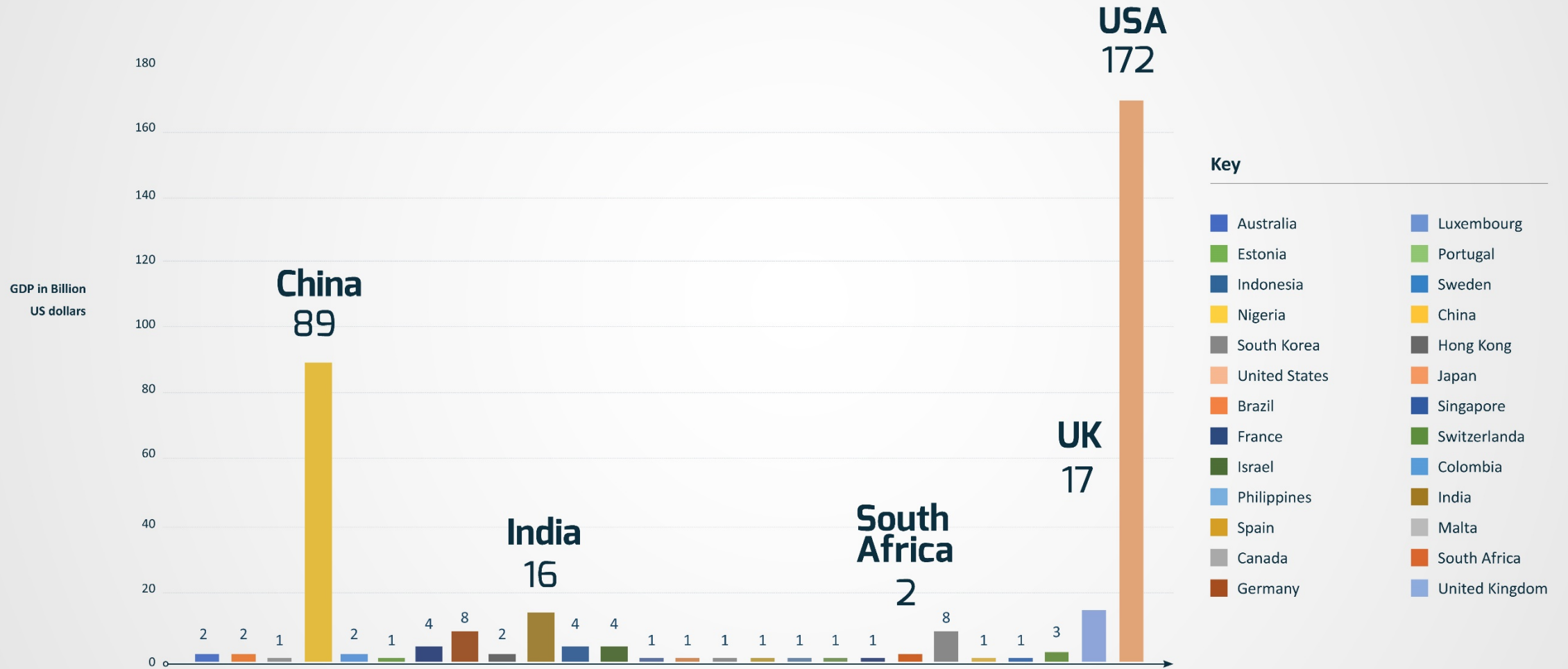
(world Economic Forum)



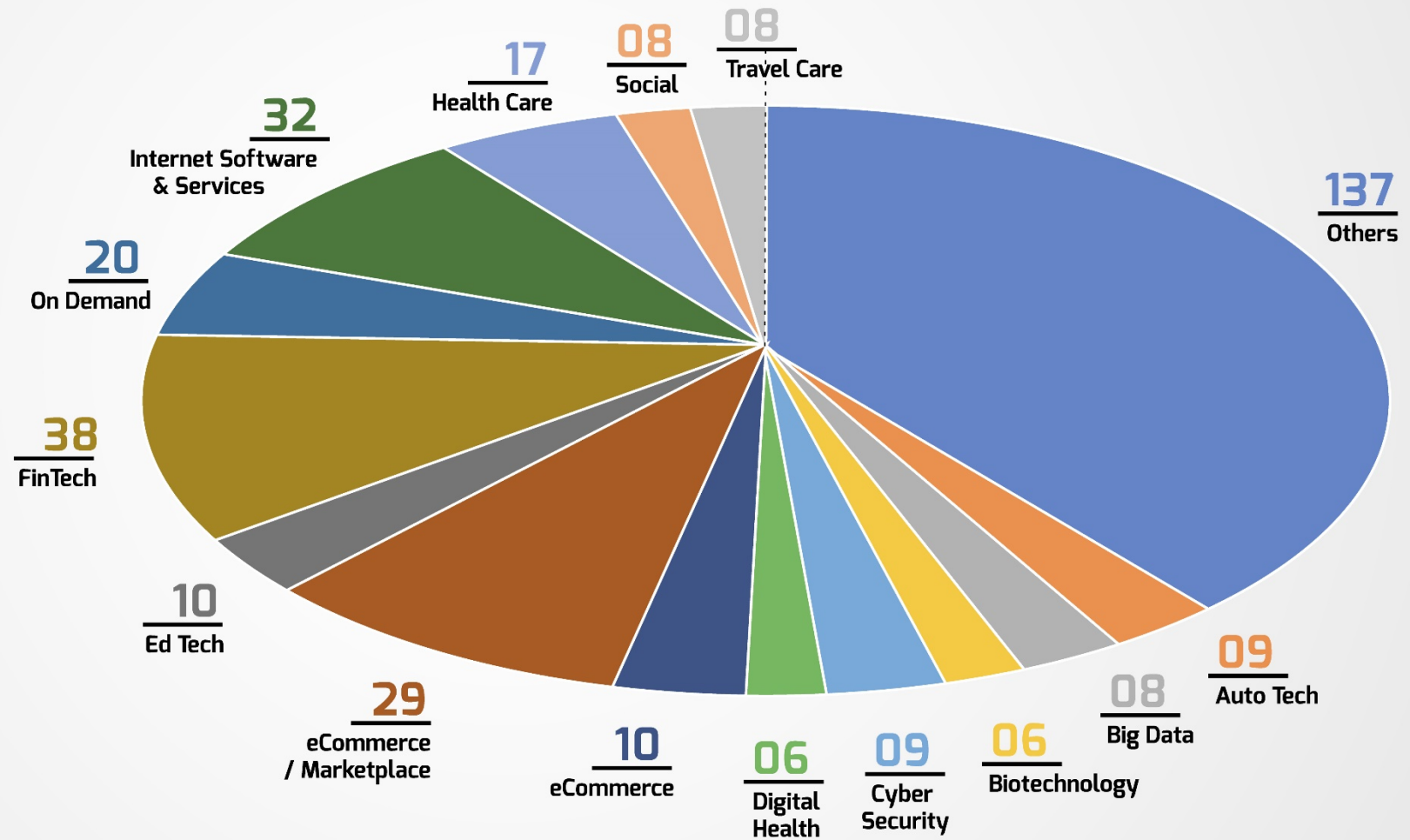
**HOW WILL  
AFRICA  
LEVERAGE  
THE DIGITAL  
ECONOMY**



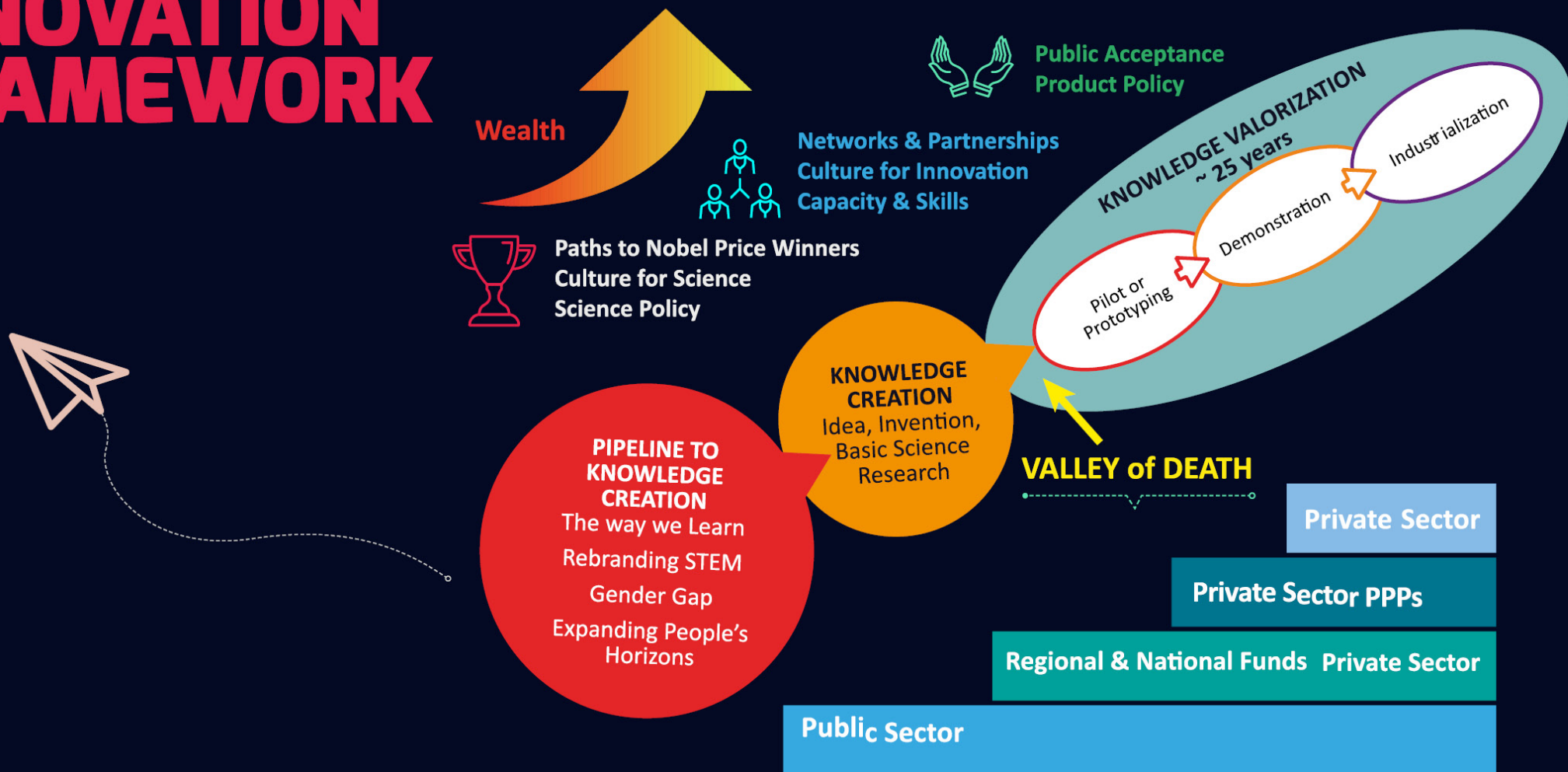
# OUT OF 346 UNICORNS ONLY 3 ON THE CONTINENT



# UNICORNS PER SECTOR



# SCIENCE LED INNOVATION FRAMEWORK



# SCIENCE-LED INNOVATION FRAMEWORK

	Pipeline to knowledge creation	Ideas, Invention	Pilot, Prototyping	Demonstration	Industrialization
<b>Regulatory</b>	Education & Research Policy	Education & Research Policy	Product Policy	Product Policy	Product Policy
<b>Funding</b>		< 1Mio\$ / project	< 25Mio\$ / project	< 150Mio	> 500Mio\$ ...
<b>Partnership</b>	Governments, National Bodies Regional bodies Int'l bodies, NGOs	Governments National Bodies	Private Sector, Governments National Bodies	Private Sector, PPPs Pan-African bodies Int'l bodies	Private Sector PPPs Pan-African bodies, Int'l bodies
<b>Human Capital Development (SKILLS)</b>	Teachers ...	Scientists Researchers PhDs, Lab technicians ...	Scientists Researchers Research Engineers Developers Lab technicians ...	Industrial Engineers, Process Engineers Test Engineers Line Operators Lab technicians QC and QA Experts Commercials Release Managers Policy Makers	Industrial Engineers Process Engineers Line Operators Lab technicians QC and QA Experts Commercials Managers

**Note:** \*Can vary based on value chain





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# WHAT IS NEEDED?

A pan-african roadmap for the digital economy

The roadmap must define industry needs  
in various value chains & push industry  
lead work integrated learning



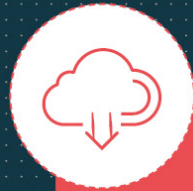
# HOW WOULD A DIGITAL STRATEGY LOOK LIKE?

## Five Pillars of the Digital Economy Framework



### Basic Infrastructure

- Roads, Ports, Airports
- Electricity, Water



### Digital Infrastructure

- GSM Network, Fiber optics
- Internet coverage
- Data Storage Capacity
- Digital public service delivery



### Enabling Environment

- Regulatory Policy
- Investment
- Public Acceptance
- Financial Instruments



### Enabling Technologies

#### SHORT TERM

- Cyber security
- Cloud Computing
- Big Data Analytics
- AI

#### MEDIUM TERM

- Block chain
- IOT
- 3D Printing

#### LONG TERM

- Biotechnology
- Robotics
- Energy Storage



### Human Capital Development

- **Upstream:** Teachers, Vocational Training.
- **Knowledge Creation:** Masters, PhDs, Reserchers, Entrepreneurs
- **Knowledge commercialization:** Engineers, Skilled professionals



THE NEED FOR  
BREAKTHROUGH  
& **DISRUPTIVE**  
TECHNOLOGIES



### Business

Opportunity to expand beyond core business  
Enhance competitiveness  
Emergence of new business segments



### Market

Strengthening existing market  
Expansion with more inclusive products and services



### Jobs

Strengthening existing job markets  
Creation of new jobs



### Macroeconomic


Economic growth (GDP)  
Increased R&D investments



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