A satellite map of the African continent, showing the landmass in shades of brown and green against the surrounding blue oceans. The map is centered on the continent, with the Atlantic Ocean to the west and the Indian Ocean to the east.

E-HEALTH FOR SUB-SAHARAN AFRICA

Great Demand, Great Opportunities

Alexander Horsch

Professor, Dr rer nat, Dr med habil, TU Munich, Germany

Professor, Telemedicine & eHealth, University of Tromsø, Norway

ARTES Applications Workshop

Palazzo Salviati, Rome, Italy, 2013-04-19

My Background



University researcher and educator

- Doctoral degrees in computer science and medical informatics
- Professor for medical informatics & telemedicine at universities in Munich (TUM), Germany, and Tromsø (UiT), Norway
- > 25 years experience from eHealth R&D projects in hospital and region, and in operative IT service (medical computing center)
- Research fields: eLearning, telemedicine, computer-aided diagnosis, biosensors, cancer, chronic diseases, healthy ageing, global health

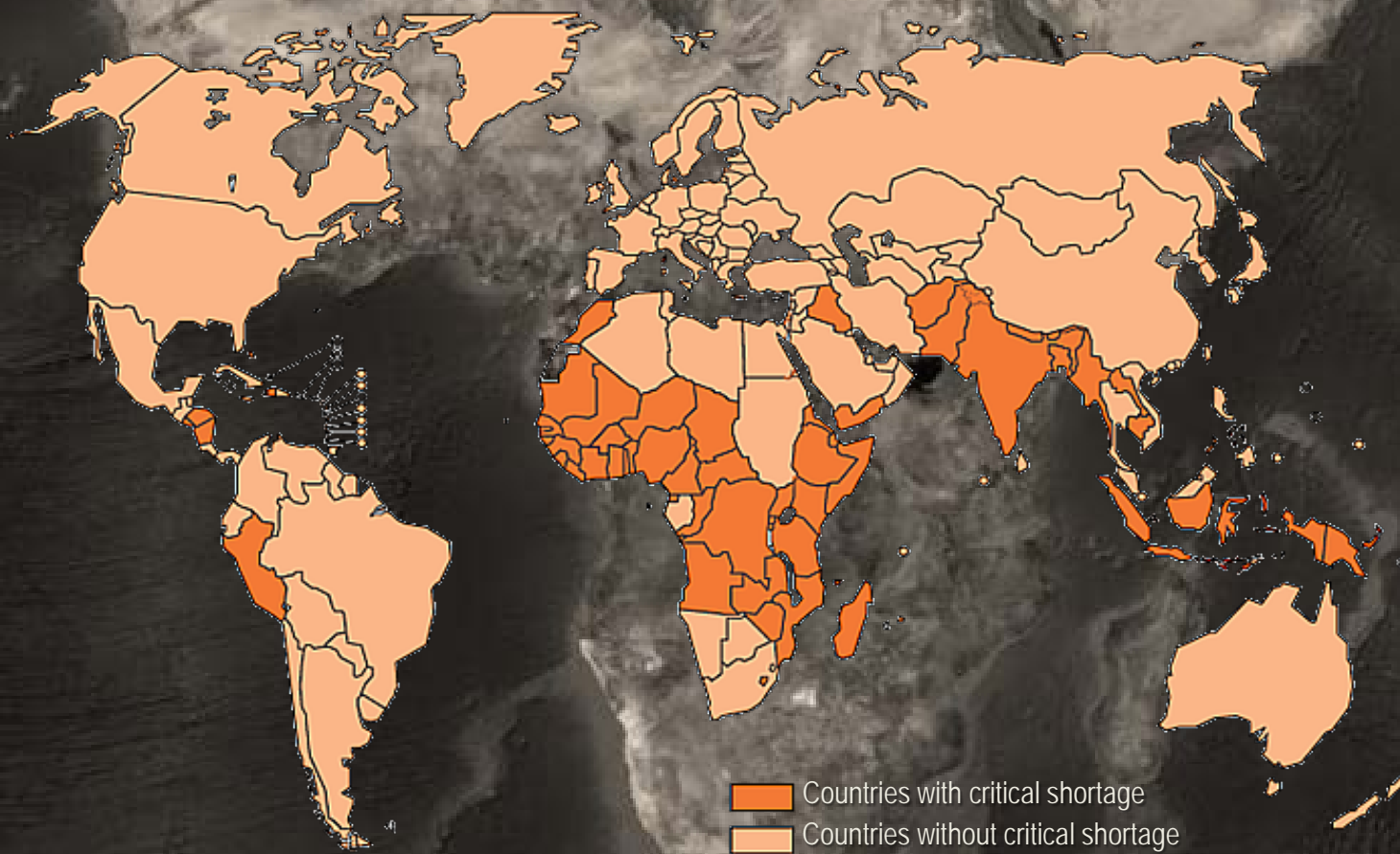
Consultant supporting actions of WHO, ESA, EC, UN as eHealth expert

- WHO Interoperability & eHealth Observatory
- ESA Telemedicine Working Group 2004
- TTF (ESA, EC, WHO, AUC, AfDB, RECs) Telemedicine Task Force 2006-2009
- eHSA Satellite-Enhanced Telemedicine & eHealth for Sub-Saharan Africa
- UNOOSA Space for Human Security 2011 & ISS Humanitarian Benefits 2012

about demand
enhancing healthcare systems
wide range of opportunities
the way forward

Health Workforce Crisis

Countries with a critical shortage of health workers (doctors, nurses and midwives)



(World Health Report 2006)

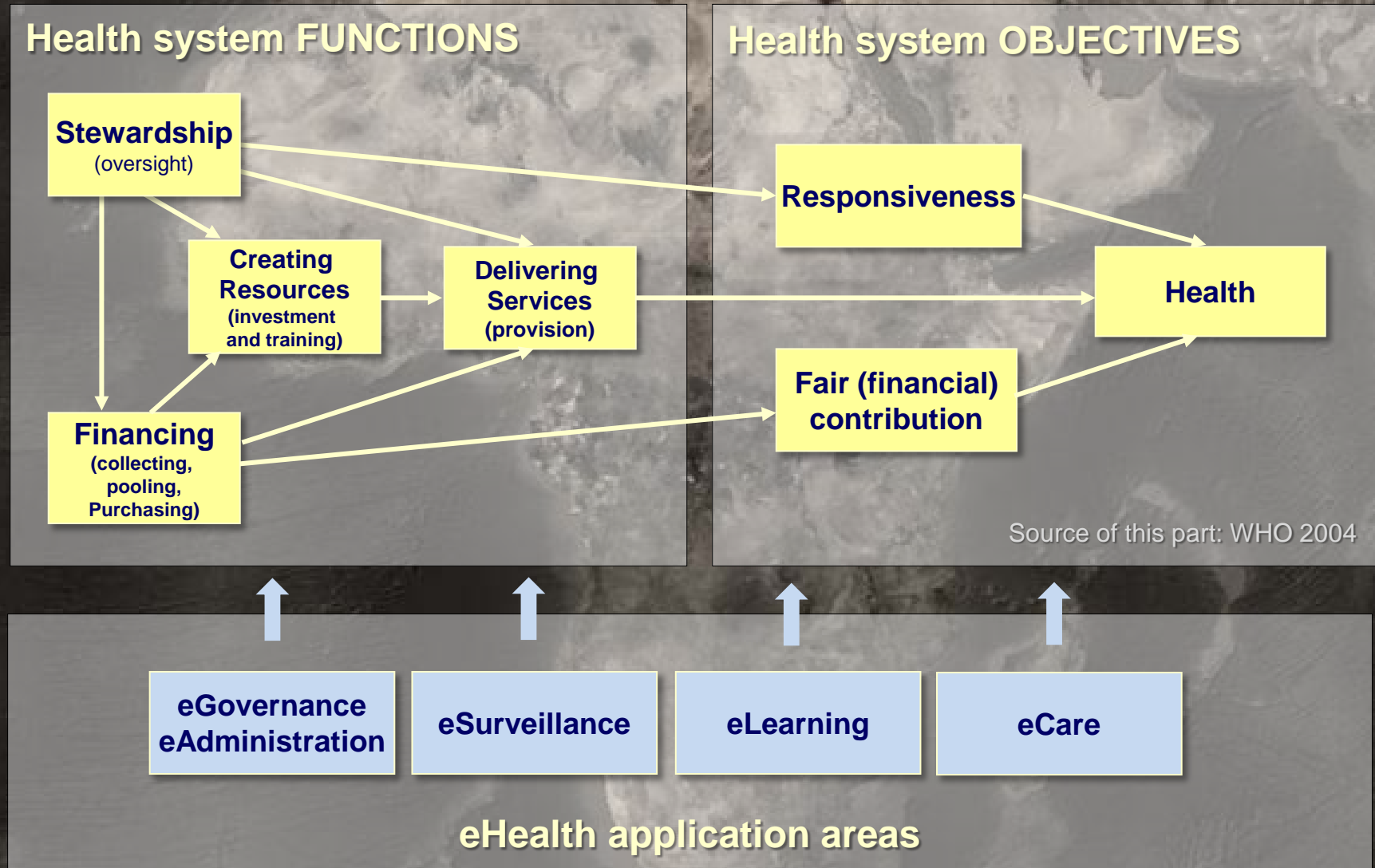
Demand for eHealth*

- Education and training on a large scale
- Access to health services, including remote areas
- Specialized care via telemedicine
- Advanced surveillance & emergency response
- Incentives for health professionals
- Supporting mobility of patients and health workers
- Health services enhancement
- Increasing healthcare system efficiency

*Use of ICT for health at the local site and at a distance (WHO 2004)

about demand
enhancing healthcare systems
wide range of opportunities
the way forward

Health Systems and eHealth



A satellite image of the Earth, centered on the African continent. The landmasses are shown in shades of brown, tan, and green, while the surrounding oceans are a deep blue. The text is overlaid on the image, centered over the African continent.

about demand
enhancing healthcare systems
wide range of opportunities
the way forward

Telemedicine Task Force (TTF)

- **TTF (2006 – 2009)**
 - 11 pan-African and international organisations, including AUC, AfDB, NEPAD, ECOWAS, CEAC, OCEAC, EAC, WHO, EC and ESA.
 - Main conclusions:
 - **Telemedicine and eHealth offer great opportunities to Sub-Saharan Africa.**
 - A user/demand-driven approach is necessary to grant continuity in time of any related initiative.
 - Satellite technology is crucial to expand health services, allowing pan-African interconnectivity and complementing existing ICTs.
- **ESA was requested** to investigate the role of space technologies to expand eHealth in Africa.
- **Agreed strategy**
 - Short-term technology demonstration action (SAHEL project)
 - Long-term implementation programme (eHSA)



Cost Benefit Study 2008

IKON in Mali

Uganda Health Information Network

Training of Kenyan nurses / Réseau Afrique Francophone de Télémédecine (RAFT)

Nigeria Malaria Surveillance

Rwanda TRACnet; and Pharmaceuticals Tracking

Sub-Saharan Africa health impact	Lives Saved p.a.	One Year Value	Lifetime Value¹
eCare in the Clinic	16,800	\$680 million	\$746 million
eCare in the Village	151,800	\$259 million	\$2,576 million
eLearning	85,100	\$145 million	\$1,444 million
eSurveillance	644,100	\$1,248 million	\$55,902 million
eAdministration/ eGovernance	477,900	\$934 million	
TOTAL	1,375,700	\$3,266 million	\$60,668 million

¹Differences in Lifetime value are attributed to the differences in target populations the programmes are designed to address.

PricewaterhouseCoopers



eHSA – Satellite-enhanced Telemedicine and eHealth for Sub-Saharan Africa

THEMATIC
AREAS

eCare

eLearning

eSurveillance

eGovernance/
eAdministration

HORI-
ZONTAL
STUDIES

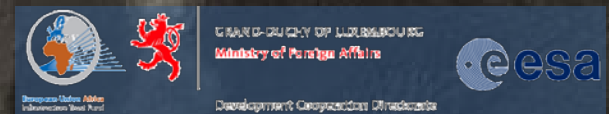
Governance

Regulatory Aspects

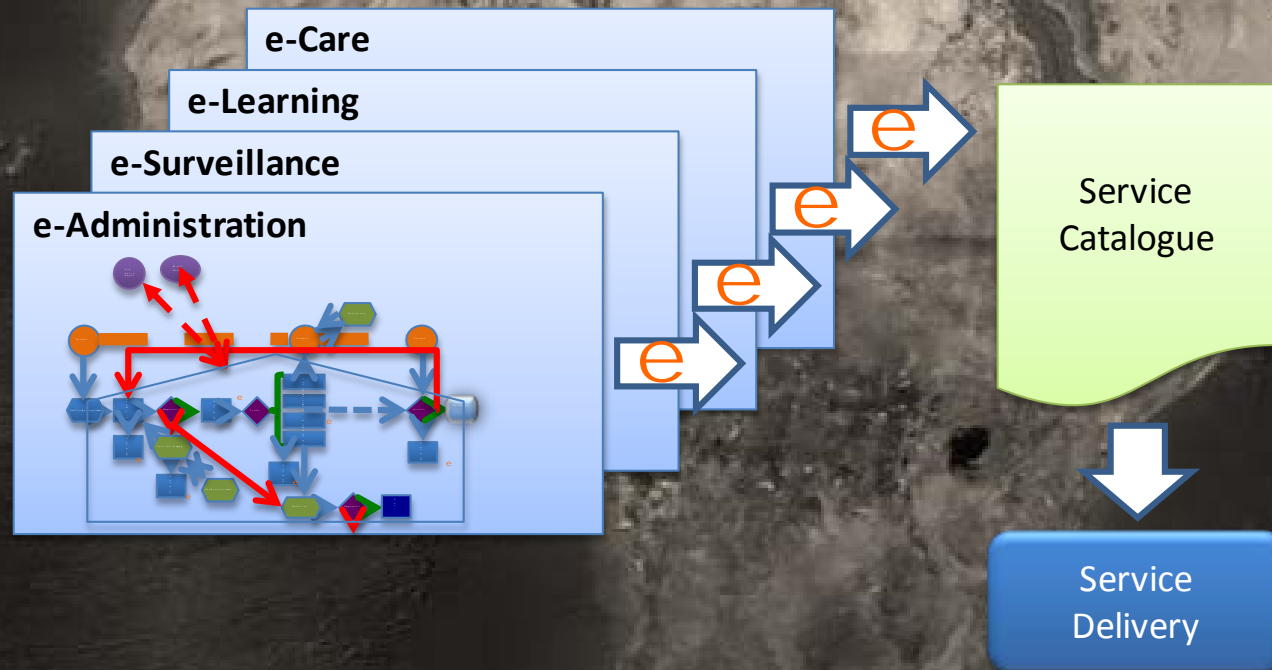
Interoperability: System of Systems

Sustainability, Liability, Business

- **The Objective**
Implementation of sustainable eHealth services on a scalable infrastructure for the benefit of Sub-Saharan population.
- **The two Phases**
 1. Horizontal studies (max. 2 years)
 2. Thematic areas related projects (4 - 6 years)

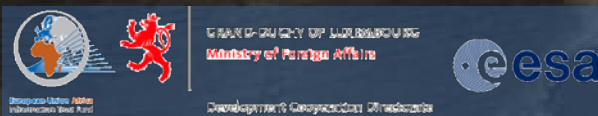
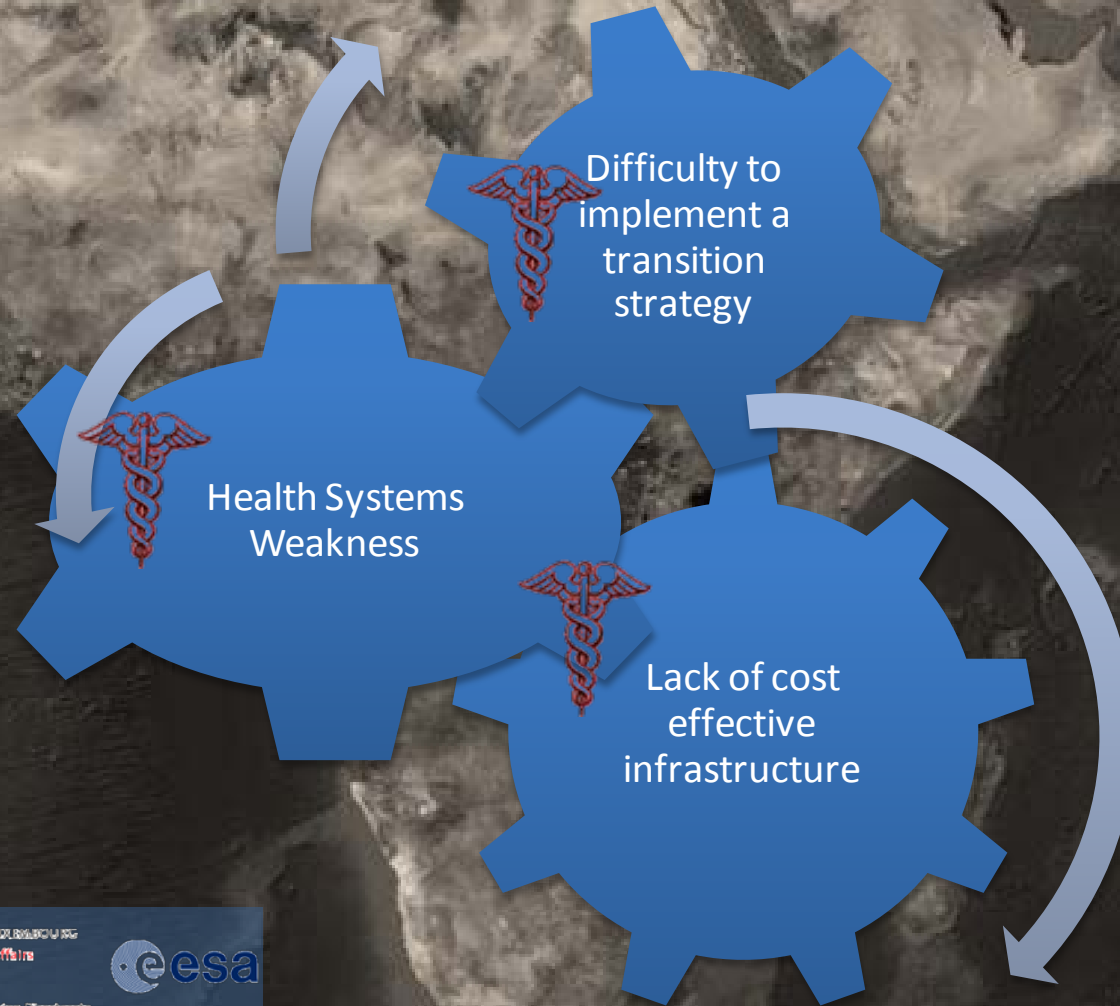


eHealth and Beyond



- Infrastructure and related services
- Internet connectivity (with satcom including remote areas)
- Other business, e.g. money transfer, education, entertainment

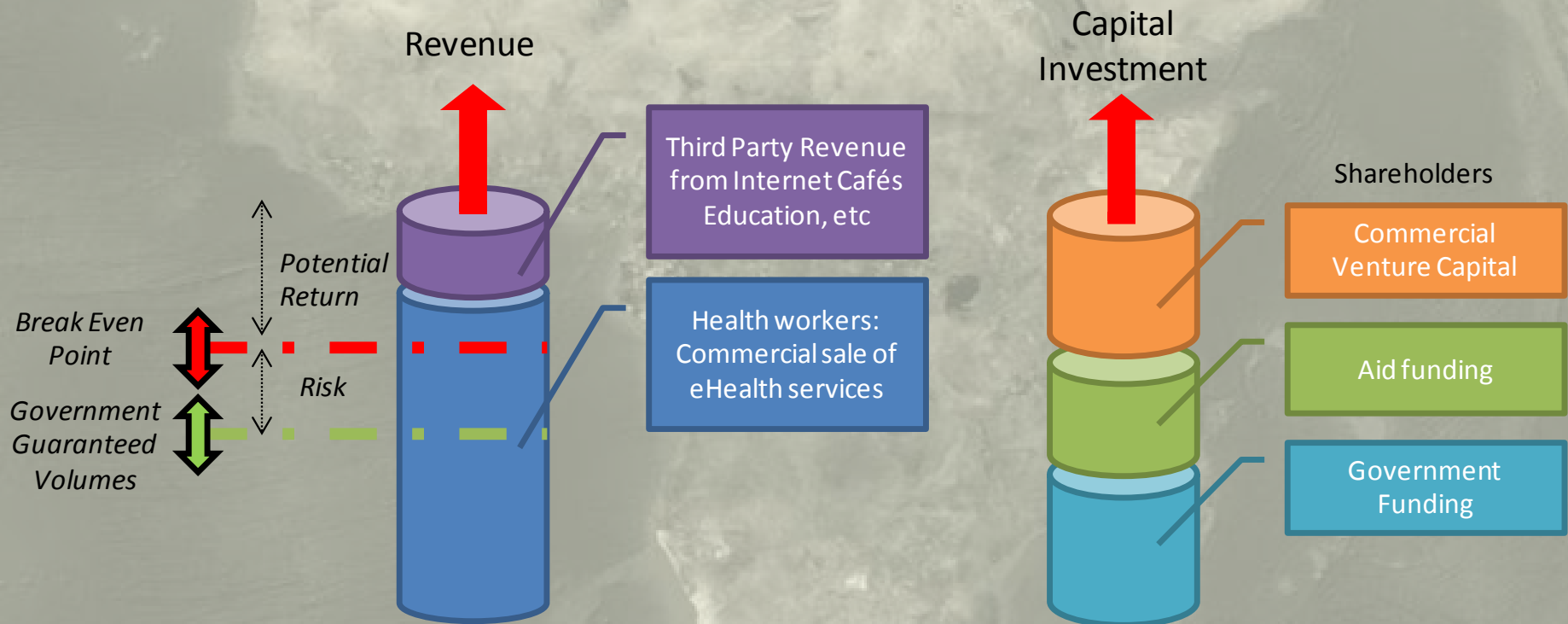
Barriers to Implementers



Revenue & Capital



Possible revenue streams and capital investment contributions from shareholders



Transition Model (Example)



Pricing sample	Year 1	Year 2	Year 3	Year 4
Fragile countries health systems	25%	50%	75%	100%
Stable countries health systems	50%	75%	100%	
Advanced countries health systems	75%	100%		

- Financial capacity and liability grow with use of the eHealth platform.
- Stakeholder board rules criteria for country status, introducing self-regulation mechanism within a regional community of eHealth stakeholders.
- Transition to a full ownership of the cost suggested as appropriate African Ownership strategy.
- Underlining self-regulation mechanism based on a Code of Governance that rules the eHealth community and defines how to apply for membership.

A satellite image of the Earth, centered on the African continent. The landmasses are shown in shades of brown, tan, and green, while the surrounding oceans are a deep blue. The text is overlaid on the image, centered over the African continent.

about demand
enhancing healthcare systems
wide range of opportunities
the way forward

The eHSA Program intends to...

- ... create opportunities for industries
- ... support sustainable eHealth services for Africa
- ... by following a stepwise approach
 - creating the basic assets (horizontal studies)
 - defining opportunities for health and other sectors
 - facilitating the first opportunities (partnerships, funds, advocacy)

Vision or Goal?

**HEALTH FOR ALL IN A
KNOWLEDGE SOCIETY**

**space bridges national
and regional borders**

**new business opportunities for
health and beyond**

**health services accessible and
affordable for everyone**

**satcom includes all
remote populations**

**global surveillance
and response**

**sufficient number of
health professionals**

A satellite image of the African continent and surrounding oceans, including the Atlantic, Indian, and Mediterranean Seas. The text is overlaid on the map.

Consider the Opportunities!!

Alexander Horsch
alexander.horsch@tum.de
alexander.horsch@uit.no