

Enhancing transnational access to African and European research infrastructures for the African and European research communities



A P Botha

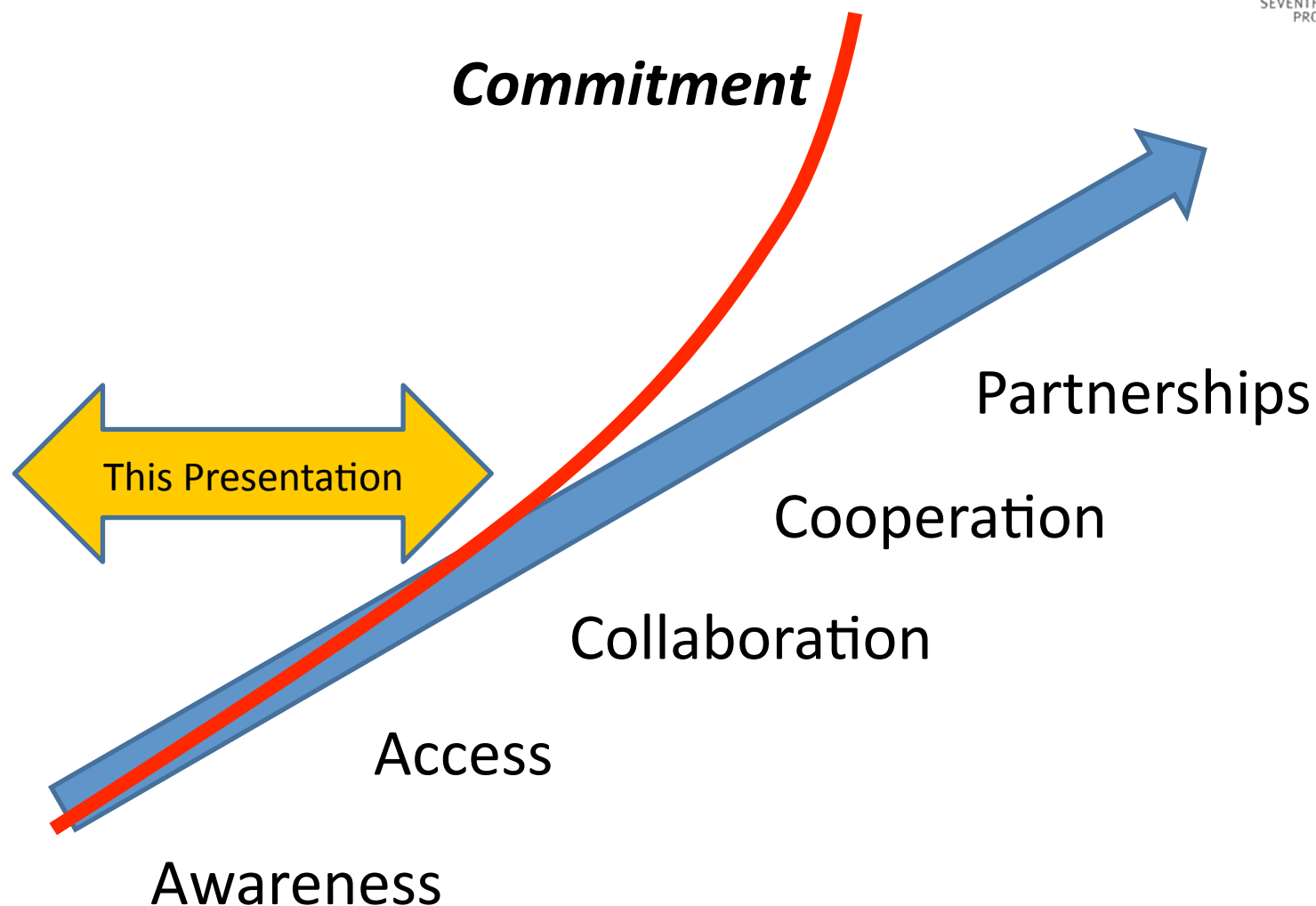
TechnoScene (Pty) Ltd, South Africa

**7 March 2013
Brussels, Belgium**



Promoting
African European Research
Infrastructure Partnerships

Spectrum of Involvement



Access



$\text{Access} = f(\text{need, context, awareness, RI type, promotion, partnership})$

Need



- Impact on global challenges
- Local economic competitiveness
- Science beyond borders – geographic advantage and data
- State-of- the-art RI
- Community
- Sharing large and expensive RI – economic decisions

Context: The European RI landscape



- European Strategy Forum on Research Infrastructures (**ESFRI**) consolidating a roadmap for RI
 - Social Science and Humanities
 - Environmental Sciences
 - Biomedical and Life Sciences
 - Energy
 - Physical Sciences and Engineering
 - Materials and Analytical Facilities
 - e-Infrastructures
- Also numerous RI in Europe **not** being a part of the **ESFRI** roadmap

Context: The African RI landscape

The AU Consolidated Plan of Action (CPA)

Africa's Science and Technology Consolidated Plan of Action										
Biodiversity, Biotechnology and Indigenous Knowledge			Energy, Water and Desertification		Material Sciences, Manufacturing, Laser and Post-Harvest Technologies			Information and Communication Technologies and Space Science and Technologies		Mathematical Sciences
Conservation and sustainable use of biodiversity			Building a sustainable energy base		Strengthening the African Laser Centre (ALC)			Information and communication technologies		Establishment of an African Mathematical Institutes Network (AMI-Net)
Safe development and application of biotechnology			Securing and sustaining water		Building engineering capacity for manufacturing			Technologies to reduce post harvest food loss		
Securing and using Africa's Indigenous Knowledge base			Combating drought and desertification (deforestation)		Building Africa's capacity for material sciences			Establishing the African Institute of Space Science (AISS)		

- **Flagship Science and Technology Programmes**
- **Very limited RI focus**

Awareness of the potential to partner



- Lack of awareness of Africa's science and technology strengths in Europe is one of the primary factors inhibiting greater African-European cooperation
- Lack of awareness among African researchers on the RI landscape in Europe leads to sub-optimum use of RI in research
- Role of the PAERIP inventory

PAERIP Inventory

<http://inventory.paerip.org/paerip/>



Research Infrastructures

Show 25 entries Search: environment				
Acronym	Title	Programme	Focus Area	Origin
AARSE	African Association of Remote Sensing of the Environment	Consolidated Plan of Action	Physical Sciences and Engineering	Pan-African
ACCC	African Consortium on Climate Change	Book of Lighthouse	Environmental Sciences	Pan-African
ACEP	African Coelacanth Ecosystem Project	Consolidated Plan of Action	Environmental Sciences	Pan-African
ACTRIS	Aerosols, Clouds, and Trace gases Research InfraStructure Network	Non-ESFRI	Environmental Sciences	European
AFREPEN/FWD	Energy, Environment and Development Network for Africa	Consolidated Plan of Action	Energy	Pan-African
AfriMAB	Africa Man and the Biosphere Programme	Book of Lighthouse	Environmental Sciences	Pan-African
AGRHYMET	Centre Regional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle	Consolidated Plan of Action	Environmental Sciences	Pan-African
ALTER-Net	A Long-Term Biodiversity, Ecosystem and Awareness Research Network	Non-ESFRI	Environmental Sciences	European
AMESD	African Monitoring of Environment for Sustainable Development	Book of Lighthouse	Environmental Sciences	Pan-African
APINA	Air Pollution Information Network Africa	Book of Lighthouse	Environmental Sciences	Pan-African
AREED	African Rural Energy Enterprise Development Programme of the United Nations Environment Programme (UNEP)	Consolidated Plan of Action	Energy	Pan-African
ARGO South Atlantic	Oceanic floats	Book of Lighthouse	Environmental Sciences	Pan-African
ASCLME	Agulhas-Somali Large Marine Ecosystem Programme	Consolidated Plan of Action	Environmental Sciences	Pan-African
AURORA BOREALIS	The new Icebreaker research vessel	ESFRI	Environmental Sciences	European
B&ES	Biodiversity and Ecosystems Services, CSIR (Council for Scientific and Industrial Research)	Consolidated Plan of Action	Environmental Sciences	Pan-African
BCLME	Benguela Current Large Marine Ecosystem Programme, run by SAIAB	Consolidated Plan of Action	Environmental Sciences	Pan-African
BIOTA Africa	Biodiversity Monitoring Transect Analysis in Africa	Consolidated Plan of Action	Environmental Sciences	Pan-African
CEEZ	Centre for Energy, Environment and Engineering, Zambia	Consolidated Plan of Action	Energy	Pan-African
COPAL	Heavy Payload Long endurance Tropospheric Aircraft	ESFRI	Environmental Sciences	European
DEA	Oceans and Coasts, Department of Environmental Affairs	Consolidated Plan of Action	Environmental Sciences	Pan-African
DMC	Drought Monitoring Centre (SADC Centre)	Consolidated Plan of Action	Environmental Sciences	Pan-African
DMC - Disaster Monitoring Constellation International Imaging	Disaster Monitoring Constellation International Imaging	Book of Lighthouse	Environmental Sciences	Pan-African
EAMNet	Europe-Africa Marine Earth Observation Network	Book of Lighthouse	Environmental Sciences	Pan-African
EISCAT_3D	Next generation European incoherent scatter radar system	ESFRI	Environmental Sciences	European
ELTOSA	Environmental Long-Term Observatories of Southern Africa	Consolidated Plan of Action	Environmental Sciences	Pan-African

Showing 1 to 25 of 62 entries (filtered from 227 total entries)

European Example

Focus Areas		Social Science and Humanities
Project	CLARIN	
<i>Description</i>	The Common Language Resources and Technology Infrastructure	
<i>Programme</i>	ESFRI	
<i>Programme Origin</i>	European	
<i>Facilities and Equipment Type</i>	Virtual Language Laboratory and Observatory	
<i>Status</i>	Implementation envisaged to commence before the end of 2012	
<i>Access Type</i>	Distributed RI	
<i>Organisation</i>	University of Utrecht	
<i>Country</i>	The Netherlands	
<i>Web site address</i>	http://www.clarin.eu/external/	
<i>Contact Person</i>	Dr Steven Krauwer	
<i>email address</i>	s.krauwer@uu.nl	
<i>Project Description</i>	<p>The CLARIN project is a large-scale pan-European collaborative effort to create, coordinate and make language resources and technology available and readily useable for the whole European Humanities (and Social Sciences) community. CLARIN will be built on and contribute to a number of key technologies coming from the major initiatives advancing the eScience paradigm, such as: Data Grid technology to connect the repositories as being implemented in the DAM-LR pilot project and web services the various centres provide; Digital Library to create Live Archives; Semantic Web technology to overcome the structural and semantic encoding problems and advanced multi-lingual language processing technology that supports cultural and linguistic integration.</p>	
<i>Link with Project</i>	HLT Existing collaboration; NLTF Potential collaboration; CText Existing collaboration	



African Example

Focus Areas	Social Science and Humanities
Project	CTexT
Description	Centre for Text Technology
Programme	Consolidated Plan of Action
Programme Cluster	Information and Communication Technologies and Space Science and Technologies
Cluster subset	Information and communication technologies
Programme Origin	Pan-African
Facilities and Equipment Type	Language and speech technology and hardware, language and speech collections
Status	Implementation envisaged to commence before the end of 2012
Access Type	Distributed RI
Organisation	North West University, Potchefstroom
Country	South Africa
Web site address	http://www.nwu.ac.za/ctext/
Contact Person	Prof Justus Roux
email address	justus.roux@nwu.ac.za

Project Description



Worldwide, people are increasingly gaining access to electronic devices in a growing variety of languages. For developments like these, language technology data and resources (such as electronic texts and word lists) are needed. The more data there is, the smarter the tool or machine will be, facilitating human-machine interaction through a particular language. For this reason, the Department of Arts and Culture (DAC) in South Africa has established the National Centre for HLT (Human Language Technology) to develop reusable text and speech resources, and the Resource Management Agency (RMA) to manage and distribute these from one central point. The Centre for Text Technology (CTexT®) at the North-West University has been appointed to set up the RMA over the next three years from 2012. Researchers and developers will soon be able to obtain (and provide) data more easily, saving a great deal of valuable time.

Link with Project

CLARIN|Existing collaboration; DASISH|Potential collaboration; TST-Centrale|Existing collaboration



Identifying Potential and Existing Collaboration

Potential collaboration 
Existing collaboration 

		Pan-African																	
	Biological and Medical Sciences	AIBST	ALNAP	ANDI	ARC	CIRMF	CUBIC	ESBB	FABI	IHVN	IIDMM	INDEPTH	Industrial BioTech	MRC	NAPRECA	NEPAD/ABI	NHLS	NIKMAS	NZG
European	ANAEE																		
	BBMRI																		
	EATRIS																		
	ECRIN																		
	ELIXIR																		
	EMBRC																		
	ERINHA																		
	EU-OPENSREEN																		
	EUROBIOIMAGING																		
	INFRAFRONTIER																		
	INSTRUCT																		
	ISBE																		
	MIRRI																		
	BioMedBridges																		
	EMBL																		
	EPPN																		
	EVA																		
	WeNMR																		

Access depends on the RI Type



1. Centrally located RI
2. Distributed RI
3. Static and mobile observation sites
4. Networks
 - Data & sample repositories
 - For the purpose of periodic multi-country surveys

Generic Access Schemes (Both Europe and Africa)

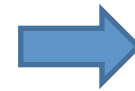


Types

Contribution to *international efforts* to address the global grand challenges such as climate change, atmospheric pollution, energy supply, healthcare, water resources, etc.



Global competitiveness of the country, not only in various fields of science, but also on technological development and commercialisation



Principles of access

Policies of open access and sharing of information on a global scale and are often linked to global networks with similar objectives

Policies of limited access: Emphasise, although not exclusively, participation of and direct benefit to AU or EU member states

Centrally located RI

ESS, ESRF, EXFEL, FAIR, JHR, Spiral2 and ILL 20/20

Access:

- Free of charge to affiliated member countries
- Fixed term access agreements for other countries
- Travelling & accommodation borne by users
- Proposal based and peer review process



Distributed RI

ELI, ECRIN, INFRAFRONTIER and INSTRUCT

Access:

- Annual membership fees
- Proposal based
- Partnerships through capacity building programme

Static & Mobile Observation Sites

EURO-ARGO, IAGOS

Access:

- Open access policy to sharing of data
- International partnerships
- Driver: integration into the international system

Networks

BBMR, ISBER, GBIF, ESBB, GBRCN, WFCC

Access:

- Hub-and-node model
- Formal MoUs
- Data sharing agreements

Centrally located RI

SALT, MeerKAT, HESS

Access:

- Consortia of international partners
– access in relation to investment
- Free of charge based on proposals and peer review
- Users cover own cost

Distributed RI

VLBI Africa, SKA

Access:

- Data part of global networks
- Collaborative arrangements
- Use based on detailed proposals
- Users cover own cost

Static and Mobile observation sites

AfricaArray, INDEPTH, AEGEOS

Access:

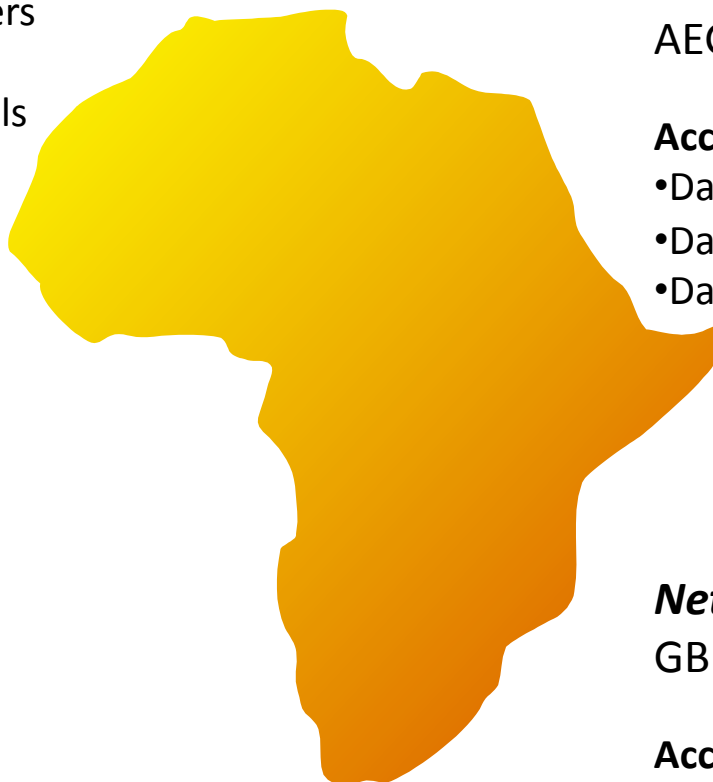
- Data sharing policies
- Data use agreements
- Data access/sharing protocols

Networks

GBIF

Access:

- Data access agreements



Promoting Access to RIs

- Better **knowledge** of what is available in Africa and Europe
- **Dissemination** of access opportunities and procedures
- Assigning country **contact points** for the RI
- **Collaboration** with research groups in relevant science areas
- Joining RI as **associate partner**
- Countries joining networks as **associate members**
- Proposals subject to independent **peer review**
- **Open access** mechanisms based on **scientific merit**
- Country membership **subscriptions**
- **Financial support** from national funding agencies or other sources
- **Co-funding** of joint projects
- **Payment** of user fees
- **Broadband** networks
- Knowing how industrial partners can **profit** from using the RI
- **Coherent** national and European/African **policies** on joint planning, establishment, running and financing of S&T infrastructures and research sites

PAERIP Policy Recommendations on Access



- Promote cooperation between the regions in RI by raising mutual **awareness** of the other's research infrastructure capacities and needs (RI Inventory)
- Ensure availability to African and European researchers of world-class research infrastructures to enable and support their bi-regional cooperation, by **establishing reciprocal access** (to facilities) and Research infrastructure networking (between facilities) **programmes**
- Develop **guidelines** by a mandated expert group for the bi-regional integration and opening up, which is to say **reciprocal access** to, of existing African and European research infrastructure based on best practices in current cooperation, for example compiled by PAERIP



*Thank you for your
attention*

Questions/Comments?