UN Global Geospatial Information Management (GGIM)

Exchange Forum

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Capacity Building and Knowledge Transfer

Empowering African Stakeholders in Geospatial Science and Technology

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Rationale for GI Programmes in Africa

- Decision-makers and policy-makers are generally map illiterate and unable to use geospatial information or do not use geo-spatial information.
- Geospatial professionals have difficulty in convincing decision-makers and policy-makers.
- Challenge is what GI for whom, what, how: can be complicated.
Rationale for GI Programmes in Africa

- Decision-makers and policy-makers need to appreciate the use of geospatial information in decision-making process.
- Geo-spatial professionals must understand the work of decision-makers and policy-makers and be able to relate to/communicate with them.
- Hence, importance of capacity-building + tech transfer – basis of the work of Committee of Development Information, Science & Tech (CODIST) and UNECA.
African Status: Individual Capacity (1)

- Professional Skills...
  - Large spectrum of fields in Geospatial Sciences and Technologies (Survey of 2011)

<table>
<thead>
<tr>
<th>Field</th>
<th>Percentage</th>
<th>Staff Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photogrammetry</td>
<td>15%</td>
<td>151</td>
</tr>
<tr>
<td>Geodesy</td>
<td>11%</td>
<td>112</td>
</tr>
<tr>
<td>Cadastral</td>
<td>41%</td>
<td>424</td>
</tr>
<tr>
<td>GIS</td>
<td>19%</td>
<td>197</td>
</tr>
<tr>
<td>Remote Sensing</td>
<td>7%</td>
<td>70</td>
</tr>
<tr>
<td>Database</td>
<td>3%</td>
<td>35</td>
</tr>
<tr>
<td>Others (Mapping)</td>
<td>4%</td>
<td>42</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>1031</strong></td>
</tr>
</tbody>
</table>

![Bar chart showing staff numbers for different fields across African countries](chart.png)
African Status: Individual Capacity (2)

- **Training Typology**

<table>
<thead>
<tr>
<th></th>
<th>Short Training</th>
<th>Workshops</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>%</strong></td>
<td>55%</td>
<td>38%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Number</strong></td>
<td>51</td>
<td>37</td>
<td>14</td>
</tr>
</tbody>
</table>

- **Where?**

<table>
<thead>
<tr>
<th></th>
<th>Universiti e</th>
<th>Regional Centres</th>
<th>National Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awarded Degrees</td>
<td></td>
<td></td>
<td>University of Cape Town</td>
</tr>
<tr>
<td>Professionals</td>
<td></td>
<td></td>
<td>CRTS SAC</td>
</tr>
<tr>
<td>Short training</td>
<td></td>
<td></td>
<td>CRTS SAC</td>
</tr>
<tr>
<td>Hands-On training</td>
<td></td>
<td></td>
<td>SAC CRTS CSE NMA</td>
</tr>
</tbody>
</table>

- Few institutions in training areas at engineer level
- Most high level training outside of the continent
- No synergy among space-related institutions
African Status: Infrastructural Capacity

- Existence of Operational Centres of Excellence
  - AGRHYMET
  - RECTAS
  - RCMRD
  - RSAU
  - CRASTE
  - National Agencies

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Data collection, accessibility and integration</th>
<th>Monitoring and Assessment</th>
<th>Inform. Diffusion &amp; Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRHYMET</td>
<td><a href="#">Collect</a>, <a href="#">Acces</a>, <a href="#">Inte</a>, <a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Yes</a>, <a href="#">Yes/No</a>, <a href="#">No</a></td>
</tr>
<tr>
<td>RSAU</td>
<td><a href="#">Collect</a>, <a href="#">Acces</a>, <a href="#">Inte</a>, <a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Yes</a>, <a href="#">Yes/No</a>, <a href="#">No</a></td>
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<tr>
<td>CRTEAN</td>
<td><a href="#">Collect</a>, <a href="#">Acces</a>, <a href="#">Inte</a>, <a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Yes</a>, <a href="#">Yes/No</a>, <a href="#">No</a></td>
</tr>
<tr>
<td>RCMRD</td>
<td><a href="#">Collect</a>, <a href="#">Acces</a>, <a href="#">Inte</a>, <a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Asses</a>, <a href="#">Monit</a>, <a href="#">Fore</a></td>
<td><a href="#">Yes</a>, <a href="#">Yes/No</a>, <a href="#">No</a></td>
</tr>
</tbody>
</table>
African Status: Institutional Capacity

- Numerous Regional and Continental Bodies: Role of CODIST
  - All maintain geospatial activities
  - Same multiple bodies at national level
  - CODIST integrates all these
Many African countries have established national remote sensing centres and/or mapping agencies and many universities on the continent are offering remote sensing programmes.

Four African countries (Algeria, Nigeria, Egypt and South Africa) have developed/acquired EOS.

At least two (2) African countries - Egypt and South Africa - have active programmes in Astronomy.
Capacity Challenges in Africa

- **Individuals**
  - Acceptable mass of Professionals and technicians exists.
  - But, extreme mobility of Geospatial technology professionals.

- **Infrastructures**
  - Data exist. But…
  - Develop and transfer appropriate products & services at various levels

- **Institutional**
  - Few institutions in training areas at engineer level
  - Most of the High Level training is outside of the continent
  - No synergy among space-related agencies (= duplication)

- **Funding**
  - Very limited funding is allocated to capacity building
  - Lack of facilities and infrastructures
Where We Are and Where We Want to be

- We know the main gaps, bottle-necks and challenges and what deserves priority/attention
- We know key elements about capacity development to enhance policy decisions
- We know type of quick wins we need to implement & stimulate the usage of geospatial S&T
- But, not much progress. We are not moving as fast as we should

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Madrid</td>
<td>Transfer of Space S&amp;T in Africa. Methodology and requirements for projects success</td>
</tr>
<tr>
<td>1995</td>
<td>Nairobi</td>
<td>Needs and Prospect of Remote Sensing capacity in Developing Countries</td>
</tr>
<tr>
<td>2001</td>
<td>ECA</td>
<td>Future orientation of Geoinformation Activities in Africa</td>
</tr>
<tr>
<td>2005</td>
<td>AUC</td>
<td>Africa’s Science and Technology Consolidate Plan of Action</td>
</tr>
<tr>
<td>2011</td>
<td>GGIM</td>
<td>Africa Capacity vision, needs &amp; prospect</td>
</tr>
</tbody>
</table>
ECA Approach to Capacity Building

- ECA coordinates its capacity building activities with our Regional Centres of Excellence (RECTAS and RCMRD). Making it possible:
  - To train a critical mass (almost) of professionals and technicians
  - To sustain a large spectrum of training fields in Geospatial Sciences and Technologies
    - But, recognition and retention of geospatial technology professionals getting difficult
    - High Level Training in empowering African youth in all aspects of geospatial technology culture needed across the
**ECA Approach to Capacity Building**

- **Development of Education, Internship and Fellowship programmes.**
  - Staffing several interns and fellows from all over Africa, in research studies on the core occupational fields of Geospatial Information Technology (GIT) to investigate many challenging issues.
  - Organising several seminars to continuously raise awareness and share knowledge on the importance of using geospatial technology for resource management.
  - Provision of ICT4D Scholarship Grants for young Geoscientists esp. web/IT/mobile +Geo skills.
ECA Approach to Capacity Building

- Champion sound research and transfer of technology programmes, to foster development of innovation, products and services + earth observations applications
  - Derive mandate from our African Member States through Committee on Development Information, Science and Technology (CODIST) – implement resolutions
  - Support specialized regional centres (RECTAS and RCMRD) for training programs in geoinformation technologies for resource technicians, managers and scientists
  - Developing new tools, services, products (e.g. Geonyms)
ECA Approach to Capacity Building: Providing Regional Focus

- Ensure that GGIM adequately reflects African issues and shape its direction and dimension to reflect Africa interest.
  - Preparation of a review paper on the needs, prospects and vision for an overall Geoinformation Governance in Africa.
  - In consultation with the member States

- Establish of a continental plan of action towards an active participation of African government officials and other stakeholders in the GGIM initiative.
  - Organisation of an African Preparatory Meeting to develop a common vision and coordinate the contribution for the Africa region
Business Focus: Developing Enabling Environment

- Multi-level Infrastructure and Networking
  - Strengthen the functions and operational infrastructures of existing regional Centres

- Indigenous geospatial Capabilities
  - Dedicated continent-wide space imaging information system owned & operated by Africa
    - Such as the Geo.AfricaSat-1 initiative
  - Core African scientists and engineers involved in design, planning, development and operation of geospatial systems.
Avenues of Success...

A phased approach:

- **Array 1**: We are taking advantage of existing capacity development opportunities
  - Support from Developed Countries are important with programmes such as GMES-Africa, Galileo, Geonetcast, Servir-Africa, etc...
  - Evolutionary prototyping: Translating knowledge into concrete products that meet user’s community immediate and emergent priorities and needs.

- **Array 2**: We are building a long-term Vision
  - Pan-African capabilities (both hard and soft segments)
  - African Holistic Strategy on geospatial information capacity development
  - Building effective partnerships
Conclusion: Way Forward...

- There are well known opportunities to use geospatial science technology to meet African development agenda as well as the emerging global challenges.

- Sound technology transfer strategies + better policy implementation.

- We need a positive approach in leveraging the potential and opportunities of Geoinformation in solving Africa’s problems:

  ✓ **Change conceptualisation**
    - From mapping as a standalone activity
    - To mapping as information generation

  ✓ **Organize data so that information (maps) can be produced as and when needed**
    - Just in time maps on demand

  ✓ **Empower users to do as much as possible by themselves**
Thank You!

http://www.uneca.org/istd/