6 STRATEGY AND ROLES OF SARUA

An important element of such a regional REN would be a “hub” or “peering point(s)” to which institutions in the various countries would connect. The most likely location of such a hub would be South Africa or the UA Hub already established in London.

South Africa should be a preferred hub given that:

a) Six countries border South Africa and have existing high capacity circuits with South Africa
b) South Africa has a well developed telecom infrastructure - better developed than any of the other countries and is therefore able to provide reliable and high capacity backhaul links,
c) South Africa is the only country in the region that will have access to more than one cable (it already has access to two) allowing for restoration in case of submarine cable failure on any route and efficient routing of traffic to Europe, the US and Asia.
d) Further more, using the UA Hub in London will mean paying for regional traffic to transit all the way to London.
e) Over 40% of SARUA's member institutions are found in South Africa and South Africa also happens to have a well developed NREN which would facilitate linkage with other universities in the region.

Institutions connected by VSAT could use the London UA Hub in the short to medium term.

Once the regional telecommunications network is fully developed and once the East African coast has realized fibre, the regional REN could also have Mozambique and Angola as backup gateways to international fibre. Section 6.3.3 explores a strategy to develop the regional REN.

From a review of the status of ICTs in the SARUA member universities in Section 2, it is evident that these universities are actively pursuing the integration of ICTs in their operations and that they are faced with capacity constraints. There is no doubt that these institutions could benefit from support and assistance. This section seeks to outline how SARUA could lend such needed support and assistance and the precise nature of such assistance. The approach to strategy definition follows three steps:

a) Needs Analysis: it is important to establish whether there exists a need for SARUA to lend support in the ICT arena. Any successful strategy will need to be demand-driven. Needs are identified through an analysis of the challenges faced by member institutions, their capacity constraints and existing gaps. A needs analysis has already been conducted in section 3.
b) Design: This step explores the issues that should be taken into account in designing any strategy and roles for SARUA.
c) Development: This step examines and documents the strategies that SARUA should adopt, the roles it should play and some of the activities that it should consider undertaking.

6.0 Objectives to be achieved

As the SARUA Strategic Plan notes, “ICT forms the backbone for science and technology innovation, research and communication and the development of the knowledge society for the region” 66. If this potential is to be realized, then SARUA's member institutions must integrate ICTs into their operations.

The overriding objective for SARUA in the ICT arena should be to assist and support its member institutions to integrate ICTs into their administration, teaching, learning and research operations with a view to:

a) strengthening management and decision making processes
b) improving and strengthening teaching and learning
c) promote inter-institutional collaboration on education and research

Realization of this objective will involve tackling the three factors necessary for successful integration:

1. access to adequate infrastructure and systems,
2. capacity of users; and
3. enabling organizational structures and policies.

6.1 Key considerations for SARUA strategy

Before delving into the definition of strategies and roles, it is important to consider the readiness, capacity and limitation of SARUA as an organization and the external environment in which it will have to operate in relation to its objectives. Such a consideration will identify important issues that will affect the successful execution of any strategy. The best way to identify these issues is by undertaking a SWOT analysis—Strengths, Weaknesses, Opportunities and Threats for the specific area of ICTs.

6.1.1 Strengths

SARUA draws its strength from the fact that it has a mandate from the highest levels of its member institutions: the Vice Chancellors, Rectors, Principals and other heads of member institutions. This mandate translates into definite and tangible support for its activities. In business parlance, this unique strength is SARUA’s “competitive advantage.” Heads of university level institutions are usually endowed with good “political” connections, and therefore the support that SARUA will bring to bear is likely to be of a more political nature.

SARUA’s other major strength is that its creation has been preceded by an acknowledgement by the SADC political entity of the necessity to create such an entity as SARUA. While SARUA has been “independently established” it, nevertheless, benefits from such acknowledgment giving SARUA some measure of influence at the highest levels of the regional political entity. That is SADC. SARUA can use this influence to lead advocacy for issues dear to its members at the regional level.

Finally, SARUA should draw strength from its network of members. This network is a highly potent reservoir of talent, expertise, skills, experience and knowledge that should be leveraged for the collective good of the network. This may involve peering weak and strong (in terms of ICT resources) institutions to exchange ideas and identifying experts within the network who could be used as resources persons to assist members in need. As much as is possible, SARUA should encourage sharing/exchange of skills, knowledge and expertise within the network while leveraging external knowledge and expertise where none exists internally.

6.1.2 Weaknesses

SARUA’s weaknesses stem from the fact that it is a relatively small new organization with a small skilled staff and finite resources in a world where its members have many capacity constraints and ICT resources are meagre. This suggests that SARUA carefully concentrates its finite financial and human resources on activities that maximize its abilities while leveraging its strengths.

Another weakness is that SARUA is not an ICT-focused organization and therefore is not likely to have the technical skills in-house to directly address ICT challenges. This suggests that SARUA should not get directly involved with any activities involving implementation of ICT infrastructure and systems or operations. Rather, it should restrict its self to activities that draw directly upon its strengths: value-adding activities involving providing strategic advice, facilitation, convention, coordination and advocacy. This view is supported by the results of the survey with respondents mainly supporting roles related to the value adding activities as shown in Table 26. Implementation should be left to its member institutions and other national and regional entities.

Lastly, SARUA being a relatively new institution, moreover one, whose major focus is not on ICTs, might have some credibility issues in the area of ICTs with some of its members. These issues should be resolved over time, as SARUA begins to execute its strategies and as members begin to see tangible results from SARUA’s intervention. This necessitates identification and delivery of some “early wins” to build its members’ confidence in its ability to deliver real value.

6.1.3 Opportunities

All of SARUA’s members are actively embracing ICTs and are involved in a whole range of institutional, national and regional initiatives to integrate and leverage ICTs in and for their operations. This means that SARUA can focus its activities and resources on activities that improve efficiency and effectiveness of the use of ICTs rather than on the more basic promotion of ICTs per se as might have been the case a few years ago. These member institutions, despite their best efforts, are also faced with some constraints. This means that the environment is ripe for supportive and assistive interventions.

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6.1.4 Threats

It should be realized that many member institutions are actively trying to tackle the challenges they face through institutional, national and regional initiatives. This situation could lead to some of SARUA’s actions being seen as duplication or potentially competitive. SARUA should therefore adopt a strategy that identifies existing and emerging efforts and aims to promote, advance and accelerate these efforts where appropriate.

Another threat stems from the fact that SARUA could be perceived as a South African driven organization through no fault of its own. For one, its membership is almost 40% South African and it is based in South Africa. The South African members of SARUA also happen to be the most advanced in terms of access to ICT resources and connectivity, and therefore any strategies and activities it embarks on could be perceived as South African driven with a potential to alienate the other members. These perceptions can be avoided or minimized by ensuring maximum transparency in its activities, inclusiveness in its strategies, and by being seen to engage all its members objectively.

Finally, SARUA’s members face many constraints at the institutional (campus), national (NRENs) and regional levels and it is tempting for SARUA to try and address the constraints at all levels. This could lead to the failure of SARUA’s strategy and damage to its credibility through over-extension of its resources. Any successful strategy must involve focus. Universities care, first and foremost, about what is happening in their own institutions. Further, if ICTs are to play a transformational role in higher education and to fulfill their potential as a “backbone for science and technology innovation, research and communication, and the development of the knowledge economy”77 then a bottom-up approach rather than a top-down approach must be emphasized. If the potential of ICTs can be demonstrated and realized at the institutional level, then university heads will be more inclined to participate in and invest in building national and international ICT education and research infrastructure. This therefore calls for SARUA to focus its support at the institutional level.

6.1.5 Strategy Foundations

A successful strategy should leverage an organization’s strengths, seek to maximize and exploit opportunities, overcome weaknesses and minimize threats. From the strategic analysis above, it is clear that any successful strategy for SARUA should:

- Involve mobilization and leveraging political support to promote the development and advancement of ICTs at the institutional and regional level.
- Focus on value-adding activities involving providing strategic advice, facilitation, convention, coordination and advocacy; avoid taking on implementation activities.
- Identify and execute some “early wins”.
- Avoid any activities that appear to be competing with or duplicating existing member initiatives.
- Leverage the knowledge and expertise of members in its network.

6.2 Roles of SARUA

From the strategic analysis above, the following roles could be defined for SARUA:

1) Advocate
SARUA should leverage its political capital to sensitize and advocate to the heads of its member institutions to invest human and financial resources in developing and advancing their institutional and regional ICT infrastructure. SARUA should also launch an advocacy campaign aimed at national government and regional political and regulatory structures. SARUA should be at the forefront of championing its members’ interests in the ICT arena.

2) Convener
SARUA should mobilize its members and provide a forum for them to share experiences, jointly tackle challenges and coordinate activities.

3) Coordinator
SARUA should seek to identify opportunities where member institutions might be duplicating initiatives or where they would most benefit from collaboration and seek to assist its members to align their plans, activities and initiatives. A coordination role will also require that SARUA constantly interacts with its members and keeps abreast of developments at the institutional and regional levels. Coordination will also involve supporting member universities to develop strategic plans.
4) Facilitator
SARUA should be involved in supporting member institutions develop ICT policies, strategic plans and work plans. SARUA could also identify and leverage external resources and expertise for its members benefit in this regard.

5) Advisor
SARUA should provide strategic advice on ICT issues especially to the senior management of its member institutions.

These roles are also reflected in the survey responses on the proposed roles for SARUA. Table 26 summarizes the responses to a number of roles that were put to member institutions. 75% of the respondents indicated that they would like SARUA to provide strategic advice. Two thirds of the respondents also indicated that SARUA should promote ICTs and its members’ related interests at the national and regional levels. Interestingly, while three quarters of the respondents would like to see SARUA involved in creating RENs, only 42% think that SARUA should actually run and manage the regional REN. This probably is an indication that the majority of SARUA’s members do not expect the Association to get involved in physical implementation and operations.

<table>
<thead>
<tr>
<th>Proposed role</th>
<th>Provide strategic advice</th>
<th>Bandwidth consolidator</th>
<th>Organize training (capacity building)</th>
<th>Assist in creating RENs</th>
<th>Manage and run regional REN</th>
<th>Advocacy at national and regional levels</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of respondents supporting the role</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>%age of respondents supporting the role</td>
<td>75%</td>
<td>58%</td>
<td>67%</td>
<td>75%</td>
<td>42%</td>
<td>67%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table 26- Institutions responses to proposed roles for SARUA

It is also instructive to present the “other” roles that survey respondents proposed for SARUA:

- Mentoring
- Assist in identifying cheap and affordable bandwidth providers
- Securing dedicated state funding for ICT initiatives
- Organizing ICT training for senior managers
- e-learning capacity building
- Play a role in collaboration with TENET, the HESA formed a Section 21 company that acts as agent for HE and research institutions to ensure that the landing of the SEACOM cable is allowed by government. Collaborate with the Merake Institute in the creation of the government SANREN (research network of SA and the NREN developed by TENET that connects to the European GEANT network) rather than aspiring to create yet another NREN, duplicating resources
- Setting up a Committee of ALL Directors of Computer Centres from ALL our Universities so as to share experiences. This Team should be carrying out visitations to each of the universities in SARUA to talk to administrators and so on.

A careful review of these proposed roles also shows that they are in line with the roles identified from the strategic analysis above.
6.3 Work Streams

From the strategic analysis above and the identified roles for SARUA, a number of “work streams” or activities and strategies to realize these activities have been proposed. It is important to note that the strategies and activities proposed are of a more general nature rather than precise and prescriptive. This is deliberate as it is believed that the precise nature of the activities should be determined in consultation with member institutions in order to build support and buy-in for any activities to be undertaken.

6.3.1 Improve the campus infrastructure of member institutions

As discussed in section 3, there are many capacity constraints and gaps in the campus infrastructure of member institutions. SARUA should encourage and support member institutions to develop and upgrade their campus infrastructure. The targets should be to have every member institution:

a) Deploy a multi-Gigabit fibre-based backbone network covering the entire campus
b) Ensure that all buildings used for administration, teaching and research are full networked with robust, high capacity Local Area Networks (LANs)
c) Ensure that students and staff have adequate access to computing resources
d) Ensure that management information systems are deployed to strengthen administrative and management functions

Short Term Strategy

• Work with member institutions to develop a shared vision for a “university of the future” or a “smart campus”. Such a shared vision is important in ensuring understanding of the role of ICTs, provides critical input in the development of the institutions’ ICT strategic plans and leads to alignment of members’ plans. Most importantly, the visioning exercise will expose members to the potential of ICTs in transforming their institutions, which will eventually translate to support for national and regional initiatives and increased investment in the critical campus infrastructure.

• From the vision of a smart campus, SARUA can encourage members to design and develop modular models for deploying campus infrastructure, along with supporting organizational and management structures and policies that will enable the vision to be realized. Such a modular model will ensure that members can deploy the critical modules first and add on other modules as financial and human resources become available.

SARUA should organize a “visioning” workshop that brings together the heads of its member institutions and the heads of the ICT departments in the member institutions to develop a shared vision and a modular model for deployment. SARUA can also organize for networking and other ICT experts to provide technical design input to the workshop.

Medium term strategy

• Develop a classification framework for measuring levels of development of campus infrastructure and enable design targeted assistance according to the level of ICT development. It is important to note that not all universities are at the same level of ICT development. Some institutions are more developed than others, and therefore a “one size fits all” approach can not be applied in this case. Once the classification is undertaken, SARUA can identify targeted support that has a higher chance of adding value to its members’ activities than trying to treat all members the same. SARUA could also motivate for more developed institutions to support their less developed peers through “twinning” mechanisms, such as exchange visits among the IT staff and secondments of ICT staff. These activities can also be undertaken in the short term.

At the conclusion of the visioning and modelling exercise, SARUA could commission a mapping exercise that maps existing infrastructure at all its member institutions against the “smart campus” requirements. From this exercise, identify the gaps at each institution and develop a classification framework for institutions that reflect the level of development of ICTs in relation to the ideal smart campus model.

• Lobby major donors for funds and technical assistance to improve the campus infrastructure of member institutions.
6.3.2 ICT organizational structures, management and policies

As noted in section 2.1.1, a few universities have not established centralized ICT units or have not enacted some of the most important ICT policies. Also, a major challenge that SARUA member institutions face is the lack of skilled staff to manage, support and maintain ICT infrastructure. SARUA could play an important role in supporting institutions to develop their ICT management capabilities and to develop appropriate policies and strategies for management and procurement.

Short term strategy

- Develop ICT “guides” or “handbooks” which members can use for reference in the development and improvement of their own management structures and policies. Such guides should draw on good practices identified from among member institutions and from other institutions around the world. Some of the guides could cover topics such as:
  - Appropriate organizational structures and staffing levels and skills;
  - Development of ICT standards and sample ICT standards templates
  - Development of appropriate policies, strategic and action plans
  - Bandwidth management
  - Development of appropriate support and maintenance structures and plans

Identify ICT experts within the member institutions and commission these experts to develop the necessary guides and handbooks. Once these are developed, they should be posted on the SARUA website for each access and dissemination.

- Develop training programmes for management and technical staff. It is not enough to provide appropriate documentation; the capacity of management and technical staff must also be built to ensure that they contribute positively to the development and improvement of infrastructure and systems. This training could be carried out in collaboration with expert organizations such as Africa Network Operators Group (AfNOG). SARUA could identify individual experts within its member institutions who could be used as resource people for such capacity building programmes.

Through potential technical partners such as TENET and INASP, SARUA should undertake a Training Needs Assessment (TNA) for all member institutions’ ICT staff and organize and facilitate training workshops targeting identified needs.

- Consider setting up an ICT Security Advisory Group composed of skilled members of staff at member universities to provide advice and technical assistance to members on matters of campus network and information security. Through technical partners SARUA might consider assisting some member institutions to set up and run “security incidence and response centres” to keep track of security related issues and advise member institutions on courses of action.

Long term strategy

- Support the establishment of an ICT procurement consortium. As has been noted in section 2.1.3, many universities lack ICT standards and very few undertake centralized procurement. This means that these universities are unable to reap the benefits of standardization and volume purchasing to lower acquisition and operational costs. SARUA could coordinate and facilitate its members to jointly develop ICT standards and to form ICT equipment and services purchasing consortia just as they are doing for bandwidth in order to leverage collective purchasing and bargaining power to negotiate for volume discounts.

6.3.3 Creation of a regional REN

It is tempting to think of a regional REN as a distinct entity or organization. It is also tempting to consider SARUA establishing and managing the regional REN. However, this temptation should be overcome when one realizes that there already exists a plan to create a Southern Africa regional REN by the UbuntuNet Alliance (UA) known as the “Southern Cluster”. With UA already established and with its plans to create a regional REN, creating an additional entity would lead to duplication of efforts with the accompanying wasting of time and resources. Another factor to consider is that three
SARUA member country NRENs are founding members of UA (South Africa, Mozambique and Malawi) while at least three more are actively interacting with UA (Zimbabwe, Zambia, DRC). It is therefore prudent and opportune for SARUA to establish a strategic relationship and support UA in achieving the Southern Cluster rather than try to establish a competing structure.

6.3.3.1 Relationship between UbuntuNet Alliance and SARUA

The very nature of the two organizations (SARUA and UA) makes a strategic relationship possible and beneficial to all. UA is more of a technical organization focused on implementation – on building the necessary fibre infrastructure to connect its member institutions – but currently lacks the necessary political support to negotiate the complex campus-politic and national regulatory environments in order to access some of the existing fibre resources. SARUA on the other hand is more of a facilitative organization with the potential to marshal plenty of “political” support at the institutional and regional level but lacks the technical capacity to carry out any ICT implementation activities. The two organizations could, therefore, complement each other perfectly. In fact, SARUA and UA already have an important historical relationship: UA was born out of SARUA’s study of the feasibility of using fibre for research and education in the East and Southern Africa regions. By collaborating, the two institutions would increase their collective strengths while negating their relative weaknesses. SARUA should also seek to engage with the Partnership for Higher Education in Africa (PHEA) VSAT Bandwidth consortium either through UA or directly in order to make available cheaper VSAT bandwidth to its members that rely on VSAT for access to the Internet. This collaboration with the Bandwidth Consortium should eventually be folded into the larger UA partnership especially as UA and PHEA VSAT Bandwidth Consortium are discussing a potential merger.

**Execution Strategy**

In order to cement a collaborative relationship, SARUA should enter into a formal strategic partnership with UbuntuNet Alliance through a Memorandum of Understanding (MoU) or similar mechanism. Under such a strategic partnership, UA should develop and present to SARUA a concrete plan to develop the Southern Cluster, with an objective and feasible network design, realistic timelines and a detailed financial plan.

SARUA on its part should mobilize its members, especially the Vice Chancellors, to review and support UA’s plan, the individual national plans to develop NRENs, and to launch an advocacy campaign in support of the Southern Cluster and UA’s plans, targeting:

- The national and regional infrastructure providers (such as SAPP and Motraco)
- National and regional regulatory authorities
- Donors who provide funding for connectivity infrastructure in the region such as the World Bank and Swedish International Development Agency (SIDA) and who could influence the telecommunication companies they support to provide infrastructure for NRENs and the Southern Cluster.
- Political entities like NEPAD, SADC, African Union (AU) and the European Union (EU)

6.3.4 Promote institutional collaboration leveraging ICTs

As discussed in section 3, there is a dearth of advanced and collaborative research in the region. As SARUA aims to promote regional collaborative research, leveraging the creation of a regional REN would be a major support to enable such collaboration and high-level research and knowledge exchange.

**Short term strategy**

- **Research:** SARUA should undertake a detailed assessment of current and planned research activities in all member institutions in order to better understand the research and networking needs of its member institutions.
- **Knowledge Exchange:** SARUA should strive to promote and facilitate knowledge exchange among its member institutions. Activities under such an initiative would include:
• Building and maintaining an up-to-date database of Heads of ICT of member institutions
• Developing forums and mailing lists for heads of ICTs to exchange experiences and knowledge
• Host and facilitate an annual or bi-annual meeting of Heads of ICTs to share experiences and resources
• Publish a quarterly newsletter on developments in ICT4E in the member institutions, the region and internationally.

Medium term strategy
SARUA should lobby the SADC Secretariat and member governments to invest in advanced science and technology infrastructure for research. Where necessary SARUA should also negotiate with countries which have existing or planned advanced research facilities to encourage them to make them available to member institutions at low cost. An example of such existing or planned facilities that could be shared by all the regional institutions is the planned Centre for High Performance Computing (CHPC) in South Africa.