

Evolution of a national support service for South African eResearch facilities

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ABSTRACT

Given the complex relationship between eResearch stakeholders within universities and research organisations, a “one size fits all” solution to the development of a national support service is not practical. Services contributed by Libraries, IT and research administrations are at different stages of maturity, and the South African landscape is characterised by scarce skills in areas of software and systems support. To advance national eResearch capability, a considered approach requires both costly infrastructure investment and collaborative support services.

BACKGROUND

The emergence of a new paradigm, “sometimes called eResearch”, gave rise to the examination of a national information service framework in 2005.¹ The need for joint action was identified to meet the challenges of eResearch cost-effectively in South Africa. A specialized agency was proposed to provide support services, with a governance model that should work well for all participants. Two reports commissioned by the Department of Science and Technology assisted in conceptualising strategic plans for the further development of South Africa’s research infrastructure, including the cyberinfrastructure component. The recommendation to establish of a National Integrated Cyberinfrastructure System (NICIS)² was accepted and plans for follow-up activities approved in 2013. NICIS comprises several core components of the Tier 1 infrastructure: a national Center for High Performance Computing (CHPC), the South African Research Network (SANReN), and the more recently established Data Intensive Research Initiative for South Africa (DIRISA).

Calls were issued simultaneously by NICIS in 2015 for self-organised consortia of Higher Education Institutions and qualified partners to submit proposals for the establishment of a regional Tier 2 data node; and for the establishment and hosting of the National e-Science Postgraduate Teaching and Training Platform (NEPTTP). The regional Tier 2 data node is hosted by the University of Cape Town on behalf of partner institutions, and is configured to serve the data-intensive research requirements of Astronomy and Bioinformatics communities primarily. Additional regional nodes are envisaged, and the implementation is underway of recommendations of the second report, a South African Research Infrastructure Roadmap³, to develop dedicated infrastructures in domains serving national research priorities.

¹ Page-Shipp, R,J (2005) e-Research support services, *South African Journal of Information Management* 7(4), p1. <http://hdl.handle.net/10204/2333>

² NICIS Framework Report (2014).

https://www.dst.gov.za/images/NICIS_Framework_Report_December_2013_26_May_2014.pdf

³ SARIR Roadmap (2014). <https://www.dst.gov.za/images/pdfs/SARIR%20Report%20Ver%202.pdf>

FROM INFRASTRUCTURE DEVELOPMENT TO SERVICE ORIENTATION

As research becomes more multidisciplinary, more collaborative and more global, researchers seek to leverage the investment in South African network capacity in specialist scientific equipment and domain-specific infrastructures, often generating massive data outputs for analysis in international collaboration. As the national infrastructure moves from an experimental testbed to a user-oriented environment, a challenge faced by most eResearch infrastructures is the provisioning of sustainable services, and the monitoring of user experience (UX), to improve the interaction of researchers with the infrastructure. This critical component is seldom defined explicitly in the infrastructure development, and the research community have little interest in the expansion of cost-effective services beyond their own needs, and especially beyond the duration of their funded project. Responsibility at present, falls to the host entity to realise the full potential of the national cyberinfrastructure, and the collaboration enabled with global infrastructures. A limited science system suggests a federation of distributed support services, including multiple universities and institutional partners to meet the ever-increasing need to meet both current user support and ongoing data access.

COLLABORATIVE SERVICE DEVELOPMENT IN THE HIGHER EDUCATION SECTOR

TENET is a service organisation established by the public universities of South Africa in 2002, whose main purpose it is to secure Internet and IT services tailored to the organisational requirements of the South African higher education and research communities. Together these components make up the South African National Research and Education Network (SANREN). A distinguishing feature of TENET is the strong alignment of technologies and services with evolving requirements of its members, who constitute the user community.

The TENET Board of Directors has recognised the need of its members, and particularly of previously disadvantaged institutions, to grow the existing portfolio of additional services. These currently include a videoconferencing service, using the Vidyio platform, free at the point of use to all beneficiaries; a webconferencing service, using the mconf platform; a national ORCID consortium; the eduroam service; SAFIRE (South African Federated Identity for Research and Education); and a suite of certification services.

This paper sets out the rationale for the development of an eResearch Service supported TENET to promote the optimisation of the NREN network in technology-enabled research practices. Such practices are profoundly transformative of the roles of information professionals within the higher education sector. Universities, science councils and associated support institutions are increasingly challenged to provide services such as high performance and high throughput computing; hosting and maintaining software applications; enabling secure research data storage, collection and collaboration tools; alongside research support services that respond to the emerging challenges to research publication and assessment towards the goal of Open Science. Potential collaboration with NRENs in other African countries will be addressed in the light of growing connectivity and infrastructure development.

USER SERVICE MODEL

A federation of distributed support services should not imply the “one size fits all” solution suggested by a centralised model. Users need a dynamic model that is responsive to the changing environment, ranging from technological innovation to regulatory data protection compliance requirements. Skilling and reskilling the workforce is an important element of the initial HCD programme envisaged. A second phase of the project will target enhanced capability (skills) and capacity (resources) of disciplines and research groups within institutions by embedding contracted eResearch Analysts within institutional eResearch teams to increase research impact through innovative technologies and expert advice. The uptake and effective use of eResearch technologies and services established in Phase 1 and 2 are complemented by third party vendors, sourcing systems and services through a brokerage service operated centrally by TENET.

CONCLUSIONS

The development of a national support service model is intended to improve efficiency, rather than consolidation of a limited pool of existing human resources. Due to the complex relationship between eResearch stakeholders within institutions, a “one size fits all” solution is impractical, and a phased approach is recommended, to avoid scenarios where services are developed and implemented and then subsequently “orphaned” by lack of support. The potential chaos of service development projects, established by individual service agreements with multiple universities, warrants the further attention of university executives, senior researchers and infrastructure managers. However, the user experience of researchers, and their improved interaction with the infrastructure will ultimately hold sway.

REFERENCES

Page-Shipp, R,J et al (2005) e-Research support services, *South African Journal of Information Management* 7(4), p1. <http://hdl.handle.net/10204/2333>

¹ NICIS Framework Report (2014).

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