Cross-disciplinary data infrastructures for research in South Africa: A case of DIRISA

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Significant investments have been made by the South African government in efforts to support the e-research environments across multiple disciplines in the South African research landscape. This has given birth to the National Integrated Cyberinfrastructure Systems (NICIS) which currently supports communication networks, high performance computing (HPC), data storage and research data management services across the research landscape of South Africa.

The Data Intensive Research Initiative of South Africa (DIRISA) is tasked with dealing with the increased proliferation of data that is being generated from new technologies and scientific instruments. Large amounts of research data is created daily which introduces new challenges for DIRISA and requires increased efforts towards solving these challenges. This presentation discusses the primary objectives of DIRISA which are - providing a national research data infrastructure, providing coordination and advocacy, developing human capital skills, providing research data management services and providing thought leadership in local and international efforts.

DIRISA is critical for researchers that are engaged in data intensive research and international research collaboration as it is able to bridge the gaps of infrastructure limitations at various public institutions by providing dedicated access to data and high capacity data storage. The comprehensive suite of research data management services offered by DIRISA ensures that South African researchers derive value from their research data. DIRISA offers research data management services that span the entire research data lifecycle such as: single sign-on authentication and authorization mechanisms, tools for crafting data management plans, metadata catalogue and management, digital object identifier (DOI) issuance, and tools for data depositing, data sharing and long-term archival. As underscored by DIRISA's objectives, community training assumes paramount importance, enabling researchers to effectively harness the technologies and tools provided by the initiative. This presentation also deliberates on DIRISA's diverse human capital development and training endeavors that not only cover the researchers but also reach down to high school level students.

An impact assessment of how DIRISA services have contributed to the advancement of research in the country along with the challenges and gaps that currently exist at DIRISA are discussed. This presentation provides a framework that can be used by other African and developing countries towards creating cross-disciplinary data infrastructures through an analysis and evaluation of DIRISA by focusing on infrastructure, research data management services, policies and human capital development. DIRISA aims to provide a platform for supporting researchers through the provision of data infrastructure for South Africa and the lessons from DIRISA can have applicability for the African context. Finally, the future directions for addressing emerging challenges in data management and infrastructure development are discussed to provide a glimpse into how data infrastructure can adapt to the changing research data management landscape.

Topic

Needs and solutions in scientific computing: National and scientific perspectives

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