





UCT eResearch Infrastructure: Network, Storage & Collaboration

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Enterprise Infrastructure Services
Information Communication Technology
Services (ICTS)*

Agenda

- **Network Infrastructure –**
UCT, National, International
- **Research Data Storage**
- **Research Collaboration Tools**

Research data lifecycle



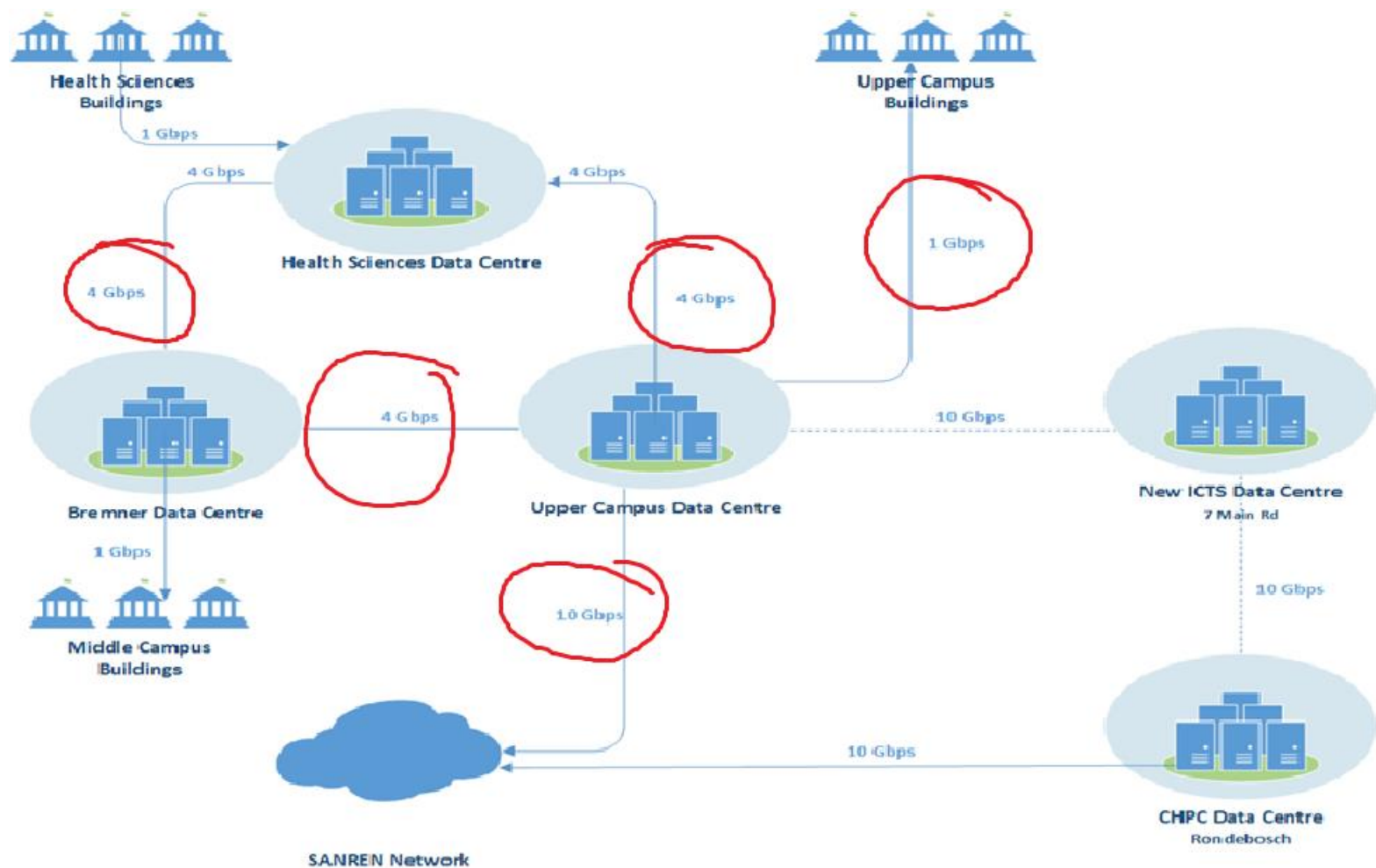
Gathering Data



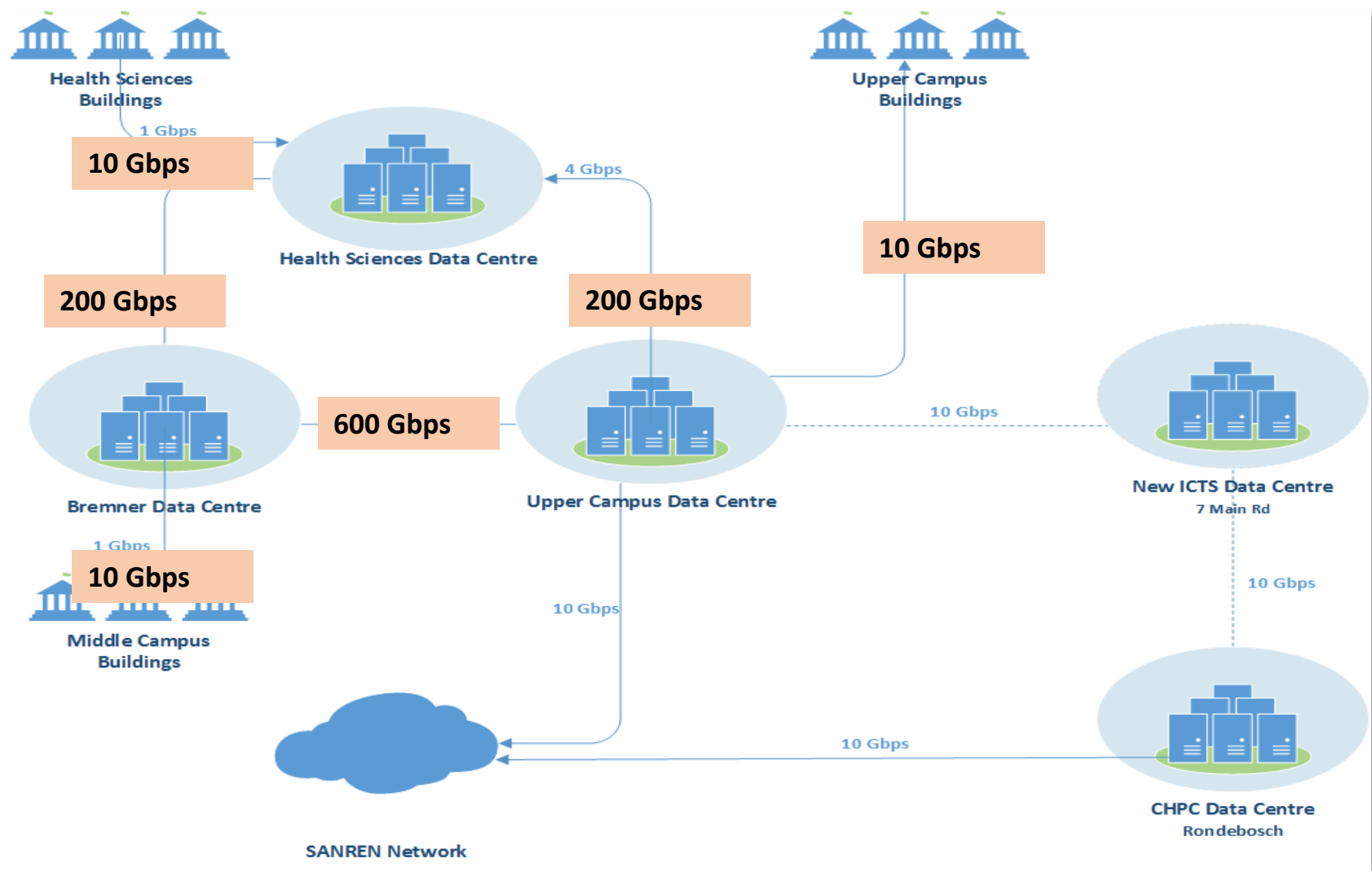
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UCT Core Network & Data Centres < 2018



UCT Core Network & Data Centres – Network Renewal Project > 2019





South African Research Network - 2011

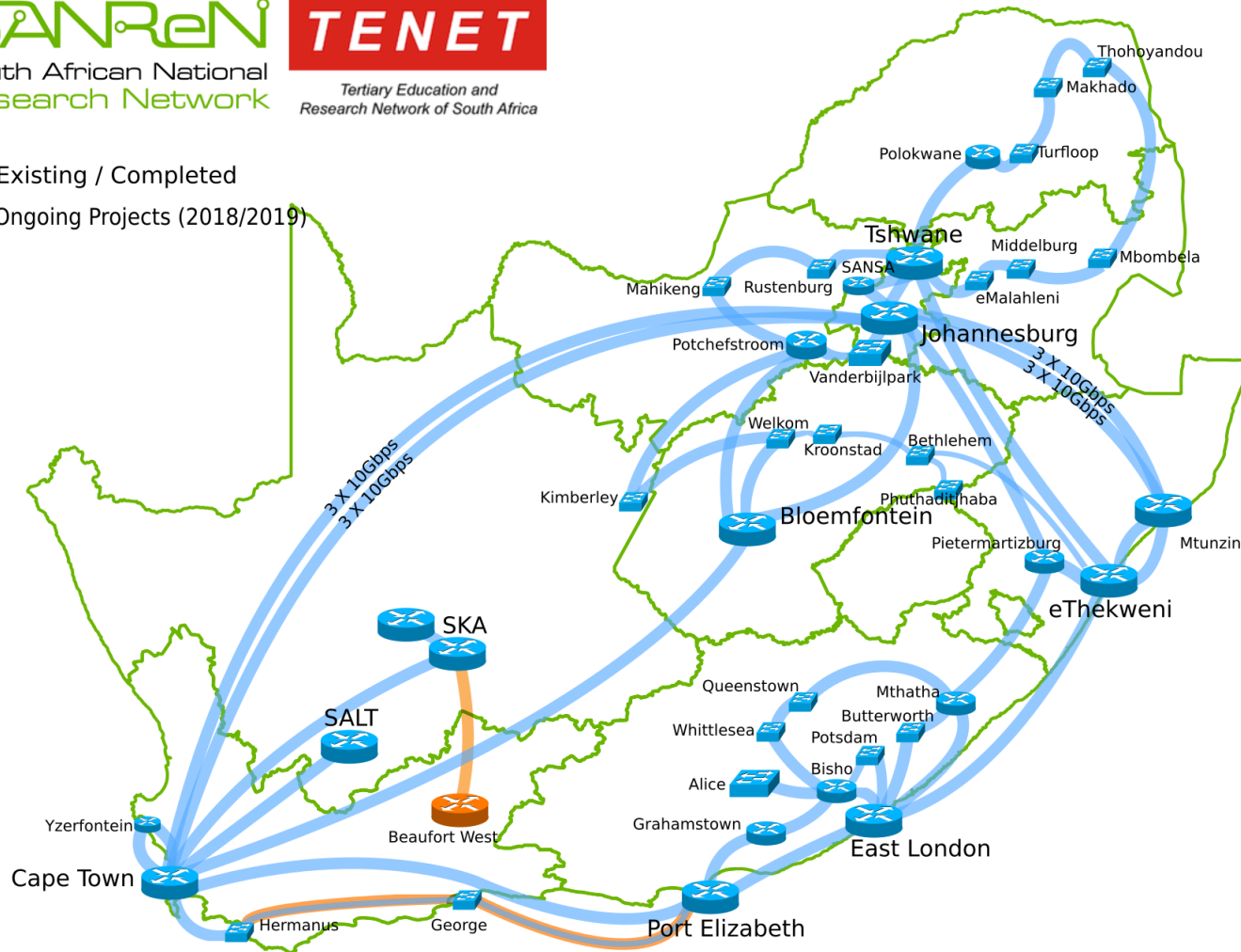


South African Research Network - 2019

SANReN
South African National
Research Network

TENET
Tertiary Education and
Research Network of South Africa

-  Existing / Completed
-  Ongoing Projects (2018/2019)



SANReN Network - 2019-03-25




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SANREN International Connectivity


SANREN
South African National
Research Network


TENET
Tertiary Education and
Research Network of South Africa

 Existing / Completed

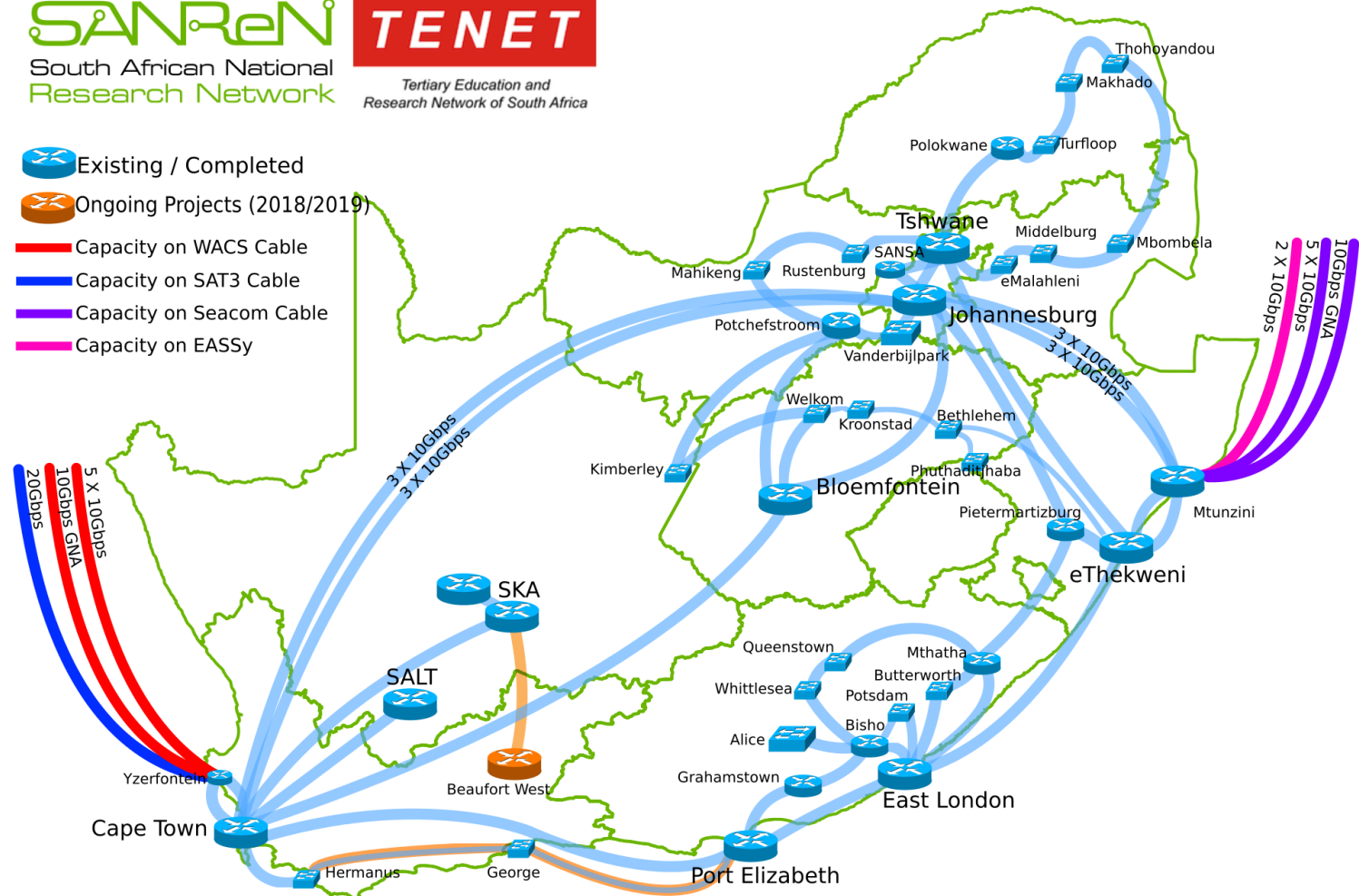
 Ongoing Projects (2018/2019)

 Capacity on WACS Cable

 Capacity on SAT3 Cable

 Capacity on Seacom Cable

 Capacity on EASSy



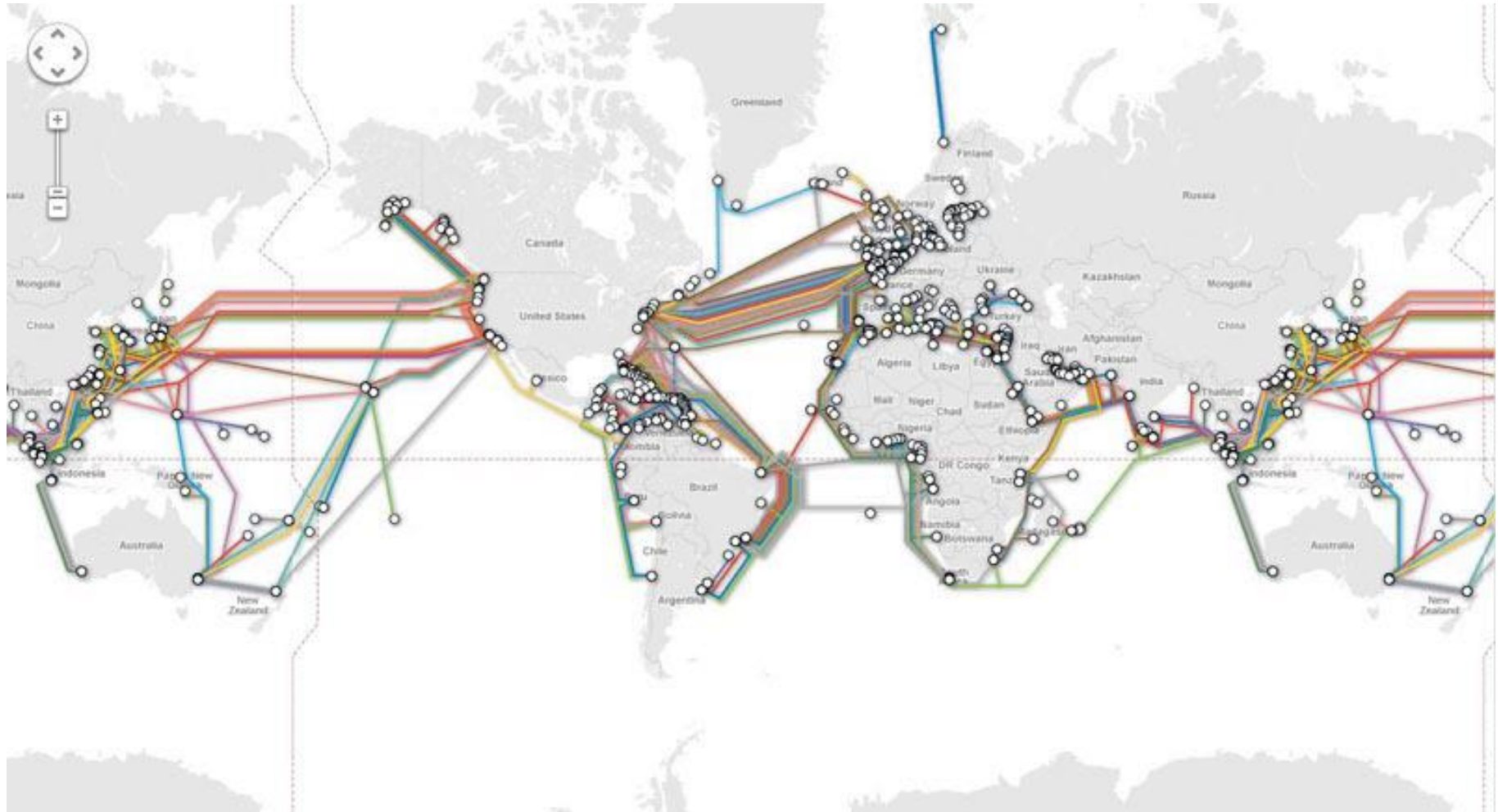
SANREN Network - 2019-03-25



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Dataset Transfers - Inter-continental Connectivity



UCT Research Data Storage



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What storage options are available to UCT researchers?



UCT ResearchData

Cloud Storage Options



Your UCT Network drives

F: (Personal)

G: (Shared)

Acquiring Data



Research Data



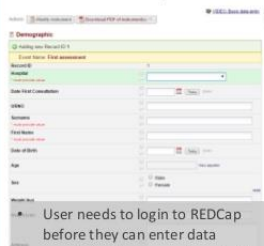
REDCap
Research Electronic Data Capture

Direct data entry vs Online Surveys

Direct data entry

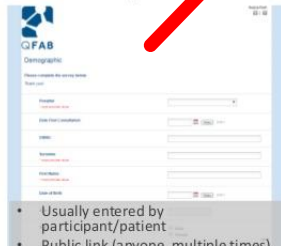
vs

Online surveys



User needs to login to REDCap before they can enter data

- usually group people
- Can enter data



Usually entered by participant/patient
Public link allows multiple times)

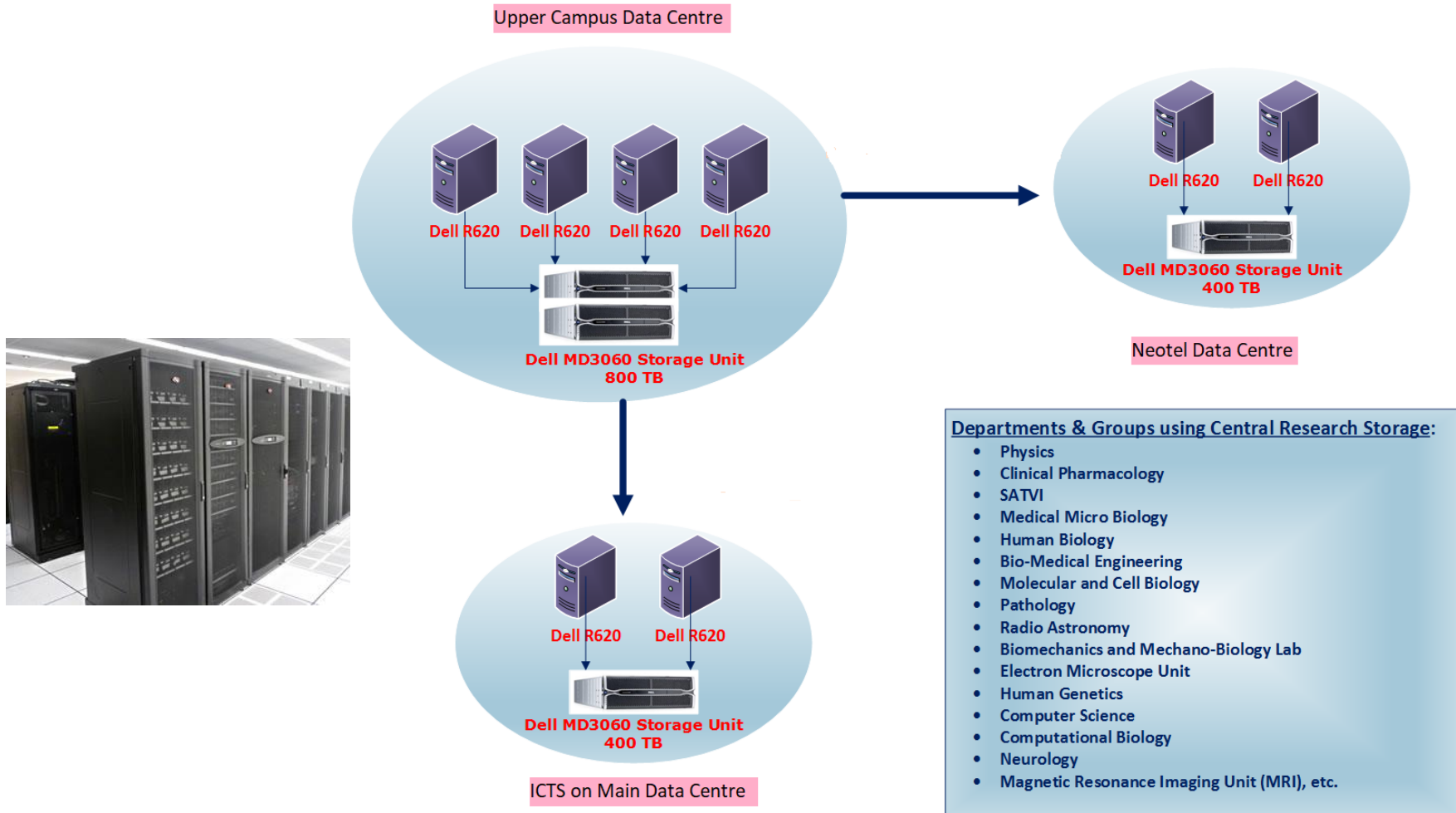
- by date and/or condition

SurveyMonkey

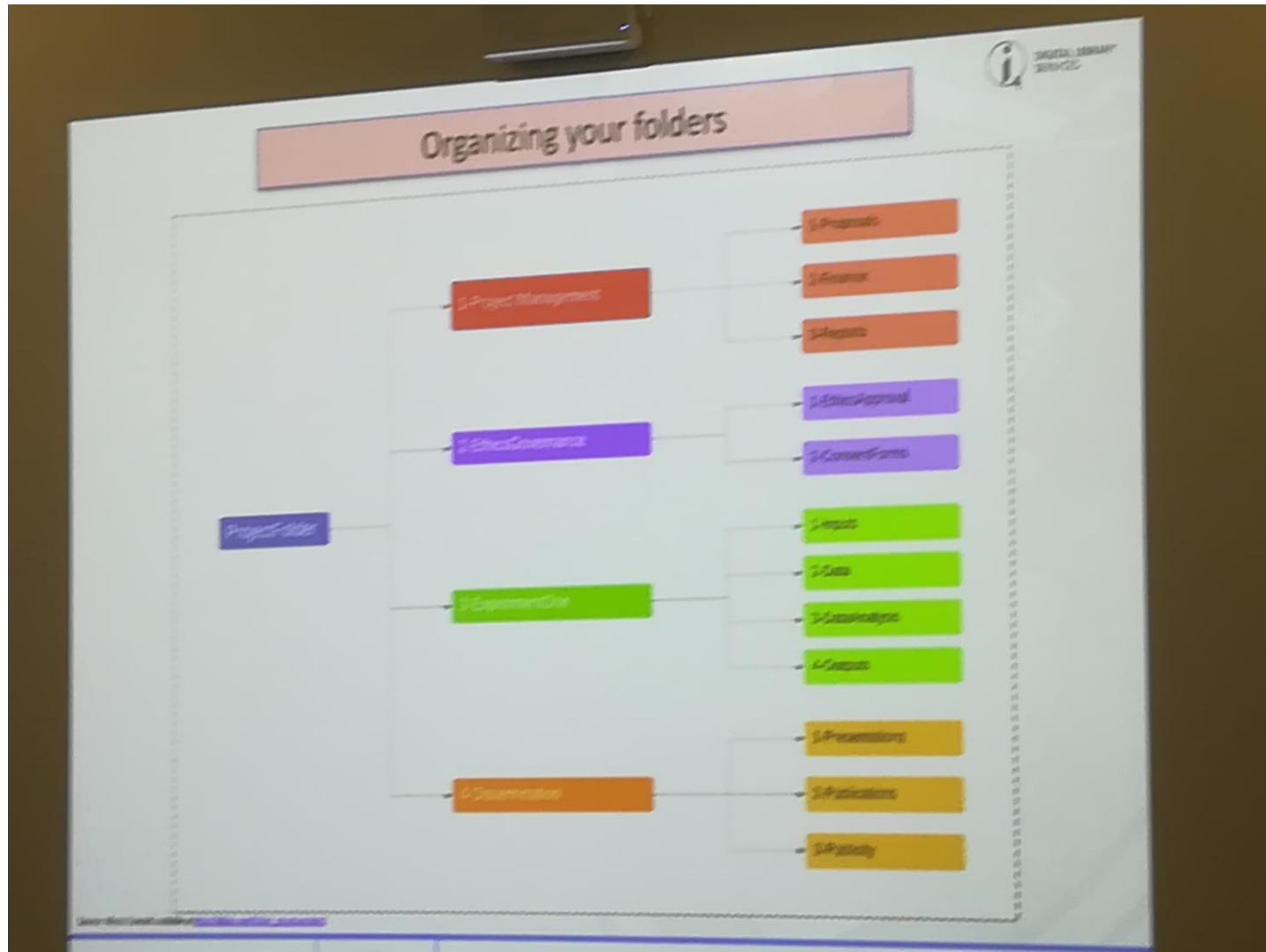
- Research data are stored in a secure, biometric controlled data centre on Upper Campus (UCDC).
- The data centre has redundant power feeds from separate distribution boards, supported by redundant UPS power.
- Secure access to the data centres is via biometric control and only to designated ICTS Engineers.
- The data is replicated once a week for disaster recovery purposes to our storage array in a secure data centre in an off-site location.

- The storage allocation can be easily be extended as required.
- The data are stored on Dell MD3060 storage arrays hosted in the highly secured Upper Campus Data Centre.
- A copy of the data is replicated to UCT storage array in the Neotel data centre in Cape Town.
- Secure access to your data is provided via your UCT credentials and you have access to your data from anywhere in the world.

UCT Research data storage

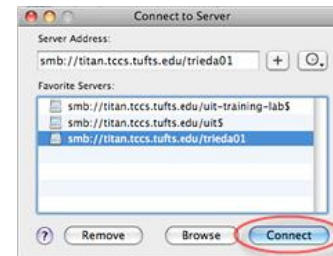
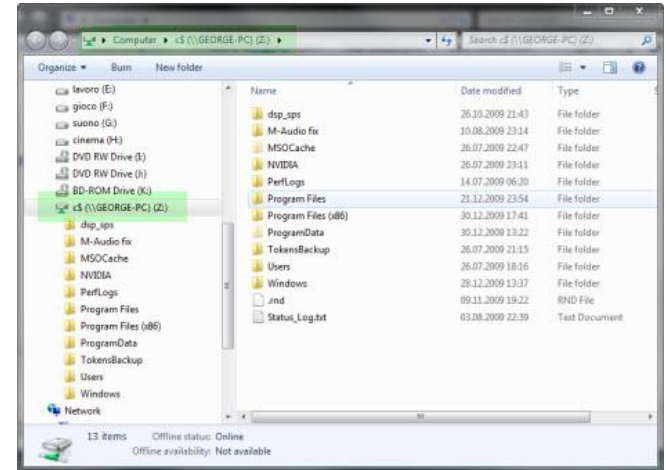


Research data storage:



Accessing your Research data storage

- A **mapped network drive** on your Windows, Linux or Apple computer
- **Web browser** using NextCloud to access all your external storage, eg. Research Data, Drop Box, One Drive, Google Drive, etc.
- Storage available in increments of 1 TB
- Data accessible from anywhere in the world

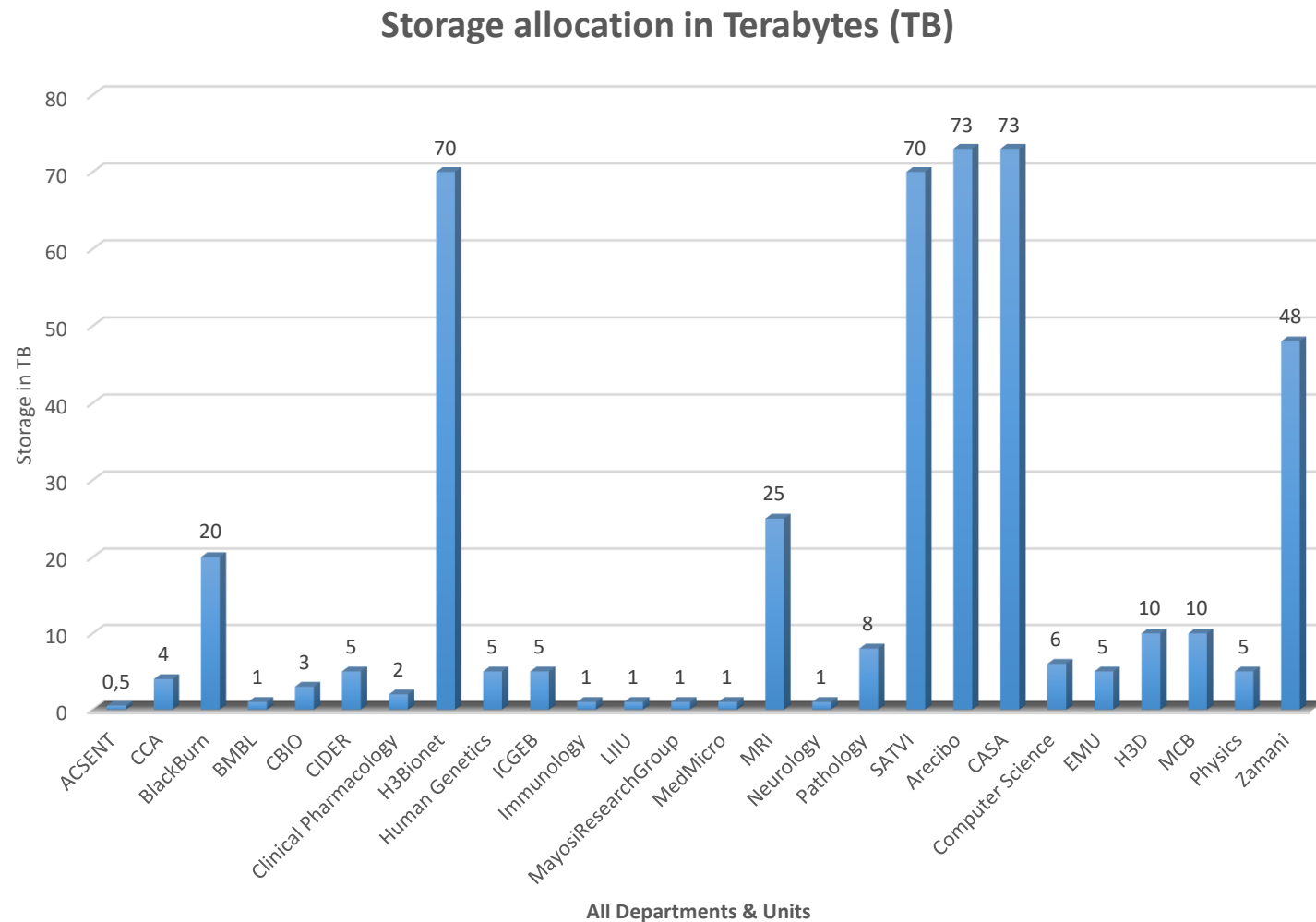



Nextcloud


Cyberduck

Gathering Data

Research data storage allocation:



- Secure access via UCT credentials
- Accessible from anywhere in the world
- Highly available and fully redundant
- Huge volumes available (from 1TB to several 100TBs)
- Data accessible via multiple devices
- Data can be shared between individuals and groups of users
- Data can be transferred via multiple software tools
- Data can be accessed via standard file tools as well as a web browser
- Accessible on Windows, Linux or Apple Mac computers

- The normal cost for **1TB of storage** is **R240 per month**, which totals up to **R 2880 per year**.
- The discounted price of **R180 per TB per month** is available for purchases of **3 years** and more.
-
- **Example:**
- If you purchase **1 TB of storage for 3 years upfront** it will be **R180 per month** = $1 \times R180 \times 12 \text{ months} \times 3 \text{ years} = R 6480$.
-
- If you purchase **3 TB of storage for 3 years upfront** it will be **R180 per month** = $3 \times R180 \times 12 \text{ months} \times 3 \text{ years} = R 19440$.
-

Research Collaboration



Ashley Rustin
Senior Technical Specialist



www.eresearch.uct.ac.za

Collaboration Platforms & Tools

➤ Research Collaboration Tools:

☐ Communication tools:

- Visualisation Facilities
- Web & Video Conferencing
- Blogging & Wiki's
- Micro Blogging
- Mailing Lists

☐ Team Collaboration

☐ Project Management

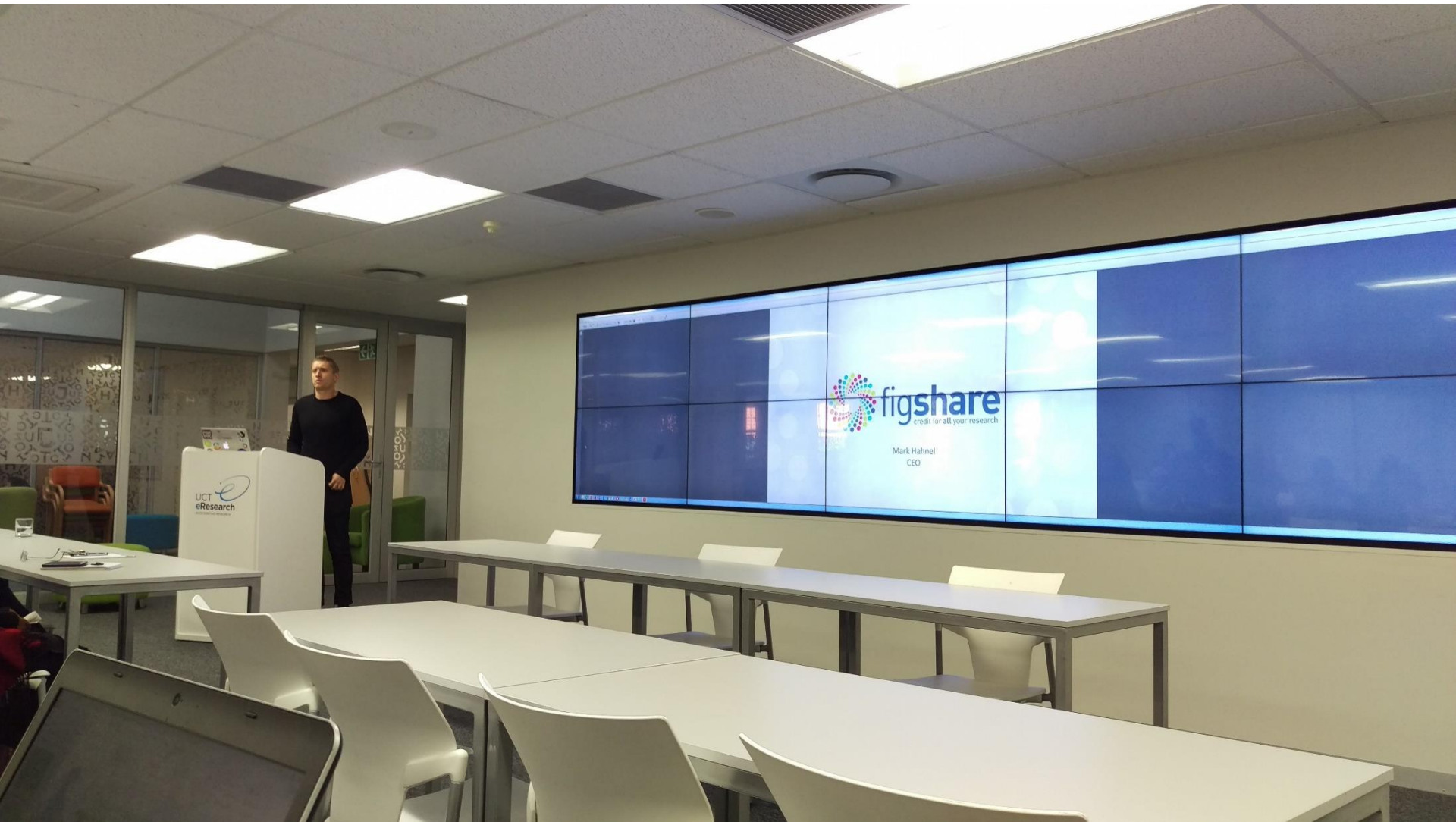
➤ Databases

➤ Data Transfers

➤ File Sharing



eResearch Visualisation Wall



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Research Collaboration

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❑ Local (UCT) Platforms:

- Skype
- Adobe Connect
- Polycom

The logo for Skype for Business, featuring a blue square with a white 'S' icon and the text 'Skype for Business' in white.

❑ National Platforms:

- Vidyo – Managed by Tenet
- MConf Web Conferencing – Managed by SANREN



❑ International Platforms:

- Google Hangouts



❑ Blogging & Wiki's

- Microsoft Teams
- Blogs@UCT - www.blogs.uct.ac.za.
- Office365 – www.portal.office.com
- Google Apps

❑ Micro Blogging:

- Yammer -- <https://www.yammer.com/uct.ac.za/>
- Facebook

❑ Mailing lists:

- ICTS Mailing List System

❑ Team Collaboration:

- Microsoft OneNote
- Microsoft Teams (UCT site license)
- Vula – <https://vula.uct.ac.za>
- Trello -- www.trello.com
- Slack -- www.slack.org
- RedMine -- <http://www.redmine.org/projects/redmine/wiki>
- Atlassian Confluence (commercial)



❑ Project Management:

- Microsoft Project
- Monday.com
- RedMine
- Trello






- UCT is licensed for most of the applications in the
Microsoft Office365 and Google G Suite

- Open Source - **RedMine**



**REDMINE AGILE PLUGIN DEMO**

Search:

Redmine Agile plugin demo

Overview Activity Roadmap Issues New issue Gantt **Agile** Wiki Contacts Settings

Agile board

New (5)	In Progress (4)	Closed (5)
<div>User story #586 Cumulative flow chart</div> <div>User story #589 Velocity chart</div> <div>User story #580 Add big avatars</div> <div>User story #583 Print Tasks</div> <div>User story #579 Assign Task to Area</div>	<div>User story #588 Backlog and sprint Wozniak Stephen</div> <div>Task #584 Setup CI server Pong Steven</div> <div>User story #587 Sortable board cards Stone Elizabeth</div>	<div>User story #581 Relist</div> <div>User story #578 Edit Project with many lines. How will it look like on the board Kutcher Ashton</div> <div>User story #585 Issues burndown chart Wozniak Stephen</div>

Members

Smith Paul

Pong Steven

Kutcher Ashton

Stone Elizabeth

Wozniak Stephen

Issues

[View all issues](#)

[Summary](#)

[Gantt](#)

[Agile board](#)

Agile charts

[Issues burndown](#)

[Created/Closed](#)

[Velocity](#)

[Lead time](#)

- Open Source - Trello

A screenshot of a Trello board titled 'CXO Items' with a sub-header 'BITSAA'. The board is organized into three columns: 'To Do', 'Doing', and 'Done'.
To Do Column:

- Comms and Marketing Org Structure (May 9)
- BITSAA Taxes (1 comment)
- CXO Call followups & meeting minutes
- Goodies for Leaders (0/4)
- Org Chart + Contact Infos / Addresses
- Tracking Sheet for Teams' Representation (Sunday Calls)
- Set up All-hands Call (1/3)

Doing Column:

- BLP (3/4)
- Goals/Agenda for all teams and next year (Jul 3)
- Goals Discussions (Jul 9, 10/12)
- Comms Transitions
- 30 U 30 Awards (3/4)
- Trello Post on how to use on Blog & Post on Leaders group (Jul 2)

Done Column:

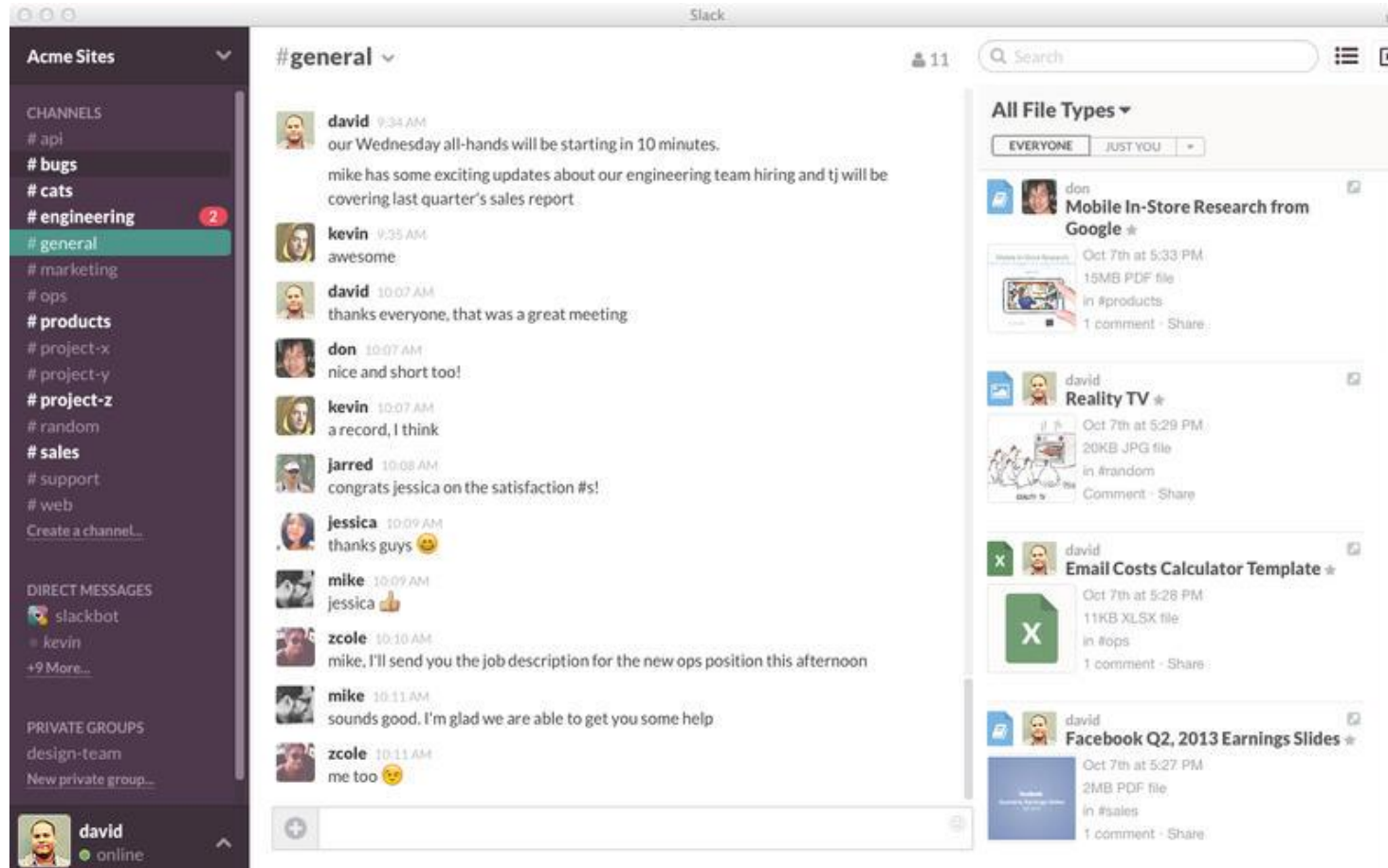
- Certificate Roll out (3 votes, 6 comments)
- CQN (May 8, 1/4)
- Operations JD (1 comment)
- FR JD (5 comments, 3/3)
- Comms, Marketing, PR and Sandpaper JDs (1 vote, 2 comments, 1 icon)
- BLP Teaser (1 comment, 2/2)
- Outreach / Ch-R JD
- Agenda Calendar

Right Sidebar:

- Members:** Four member avatars, 'Add Members...' button.
- Board:** 'Options' dropdown, 'Add List' button, 'Search and Filter Cards' button.
- Activity:** 'View all...' link, two activity entries:
 - Vijay Sharma added Trello Post on how to use on Blog & Post on Leaders group to Doing and joined. (an hour ago)
 - Rohit Koul Goals Discussions
 - completed Communications / Marketing
 - completed Fundraising
 - completed Human Resources
 - completed BITS2BSchool

Collaboration & Project Management - Slack

- Open Source - **Slack**

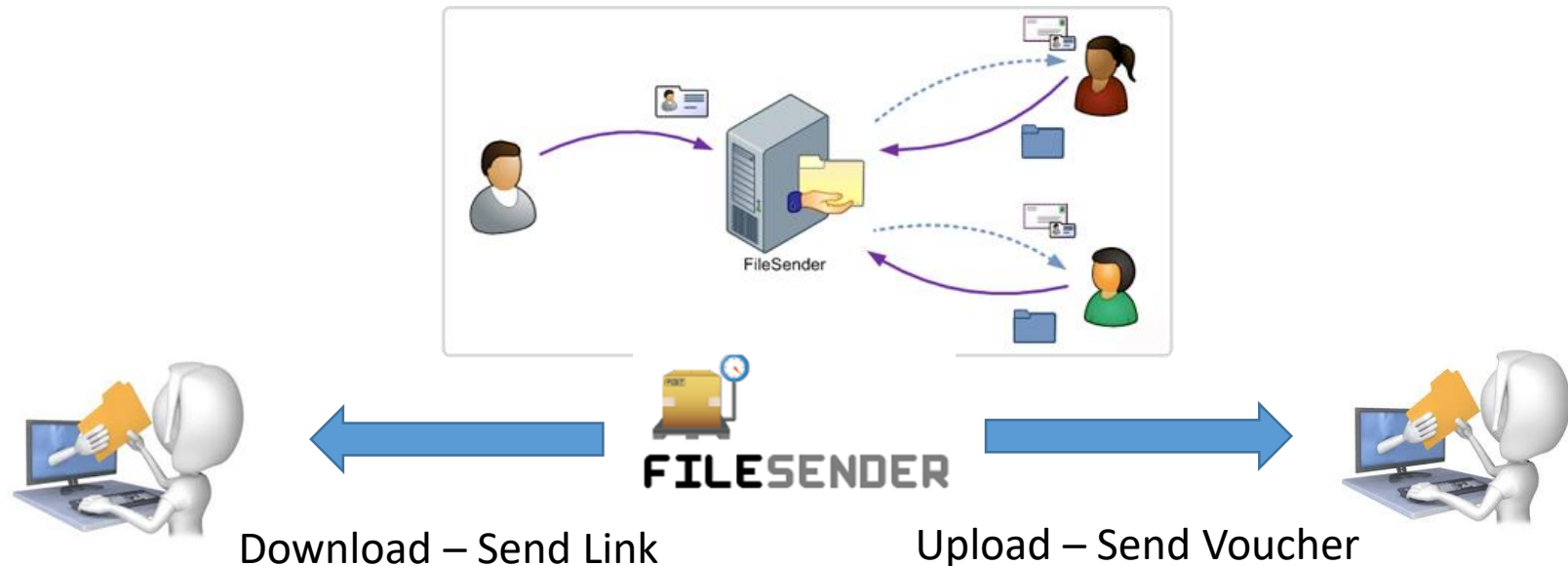


Data Transfer Tools



Data Transfers

File Size	Tool to use
< 20MB file	→ Can Use Email
> 20Mb < 128GB	→ Use FileSender
Bigger than 128GB	→ Use Globus or (GridFTP Tool)
Bigger than 10TB	→ Use the SANREN Data Transfer Nodes (DTN)





- Globus Online - <https://www.globus.org/>
- FileSender - <https://filesend.uct.ac.za>
- Aspera - <http://asperasoft.com/>





- For moving big data sets from across the world
- 3 Data Transfer Nodes (DTNs):
 - Cape Town
 - Johannesburg
 - Pretoria

Please email engage@sanren.ac.za

globus
a uchiicago non-profit service

I Want To... ▾ Pricing ▾ Resources ▾ Support ▾ About ▾ Log In

box NEW Premium Storage Connector

Globus for Box is now generally available

[READ THE PRESS RELEASE](#) [GET PRODUCT DETAILS](#)

Research data management simplified.

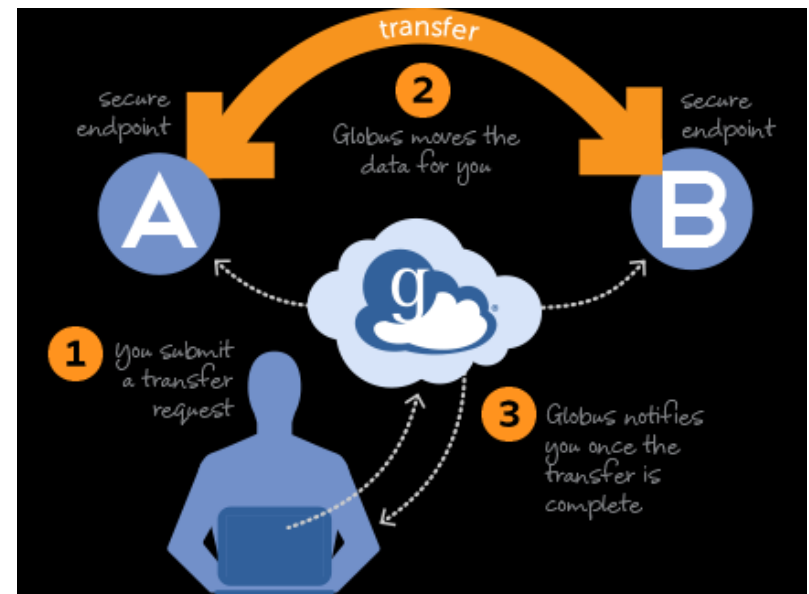
TRANSFER SHARE BUILD

Get unified access to your research data, across all systems, using any existing identity.

Laptop? HPC cluster? Cloud storage? Tape archive? Access them all using just a web browser.

Data stored at a different institution? At a supercomputing facility? All you need is your campus login.

- GridFTP Made Easy
- Software-as-a-service (SAAS)
- Free Option
- Developed at University of Chicago and Argonne National Laboratory



Transfer Files | [Activity](#) | [Endpoints](#) | [Bookmarks](#) | [Console](#)

Transfer Files

RECENT ACTIVITY ○ 0 ▾ 0 ⬡ 0

Endpoint

Path

Go

Endpoint

Path

Go

Start by selecting an endpoint.

Start by selecting an endpoint.

Label This Transfer

This will be displayed in your transfer activity.

Transfer Settings

☐ sync - only transfer new or changed files ?

☐ delete files on destination that do not exist on source ?

☐ preserve source file modification times ?

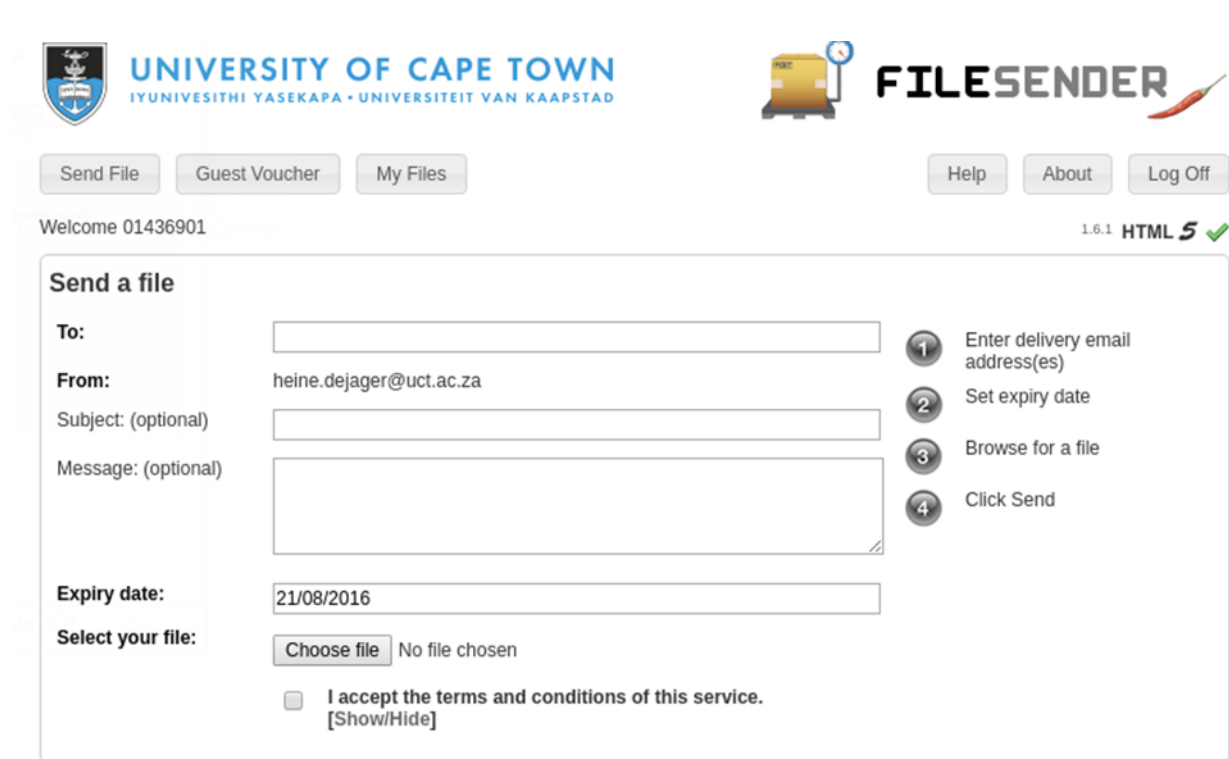
☒ verify file integrity after transfer ?

☐ encrypt transfer ?

Get Globus Connect Personal
Turn your computer into an endpoint.

<https://filesend.uct.ac.za>

- Send files to external collaborators
- Send guest vouchers
- Not suitable for multiple files unless zipped



The screenshot shows the FileSender web interface. At the top, there is the University of Cape Town logo and name in English and Afrikaans, followed by the FileSender logo. Navigation buttons include 'Send File', 'Guest Voucher', 'My Files', 'Help', 'About', and 'Log Off'. A welcome message 'Welcome 01436901' is displayed. The main section is titled 'Send a file' and contains a form with the following fields: 'To:' (empty), 'From:' (heine.dejager@uct.ac.za), 'Subject: (optional)' (empty), and 'Message: (optional)' (empty). To the right of the form is a numbered list: 1. Enter delivery email address(es), 2. Set expiry date, 3. Browse for a file, 4. Click Send. Below the message field is an 'Expiry date:' field with the value '21/08/2016'. Under 'Select your file:', there is a 'Choose file' button and the text 'No file chosen'. At the bottom, there is a checkbox for 'I accept the terms and conditions of this service.' with a '[Show/Hide]' link.

Use Cases



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Research data lifecycle



Gathering Data



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Case Study: - EMU & SBRU

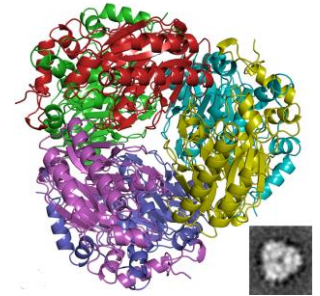
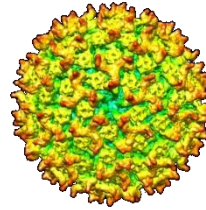
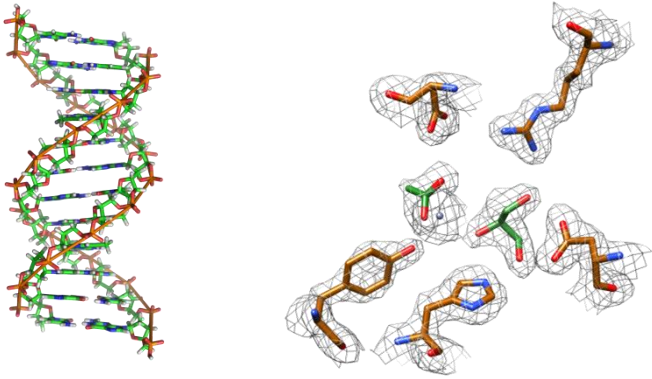
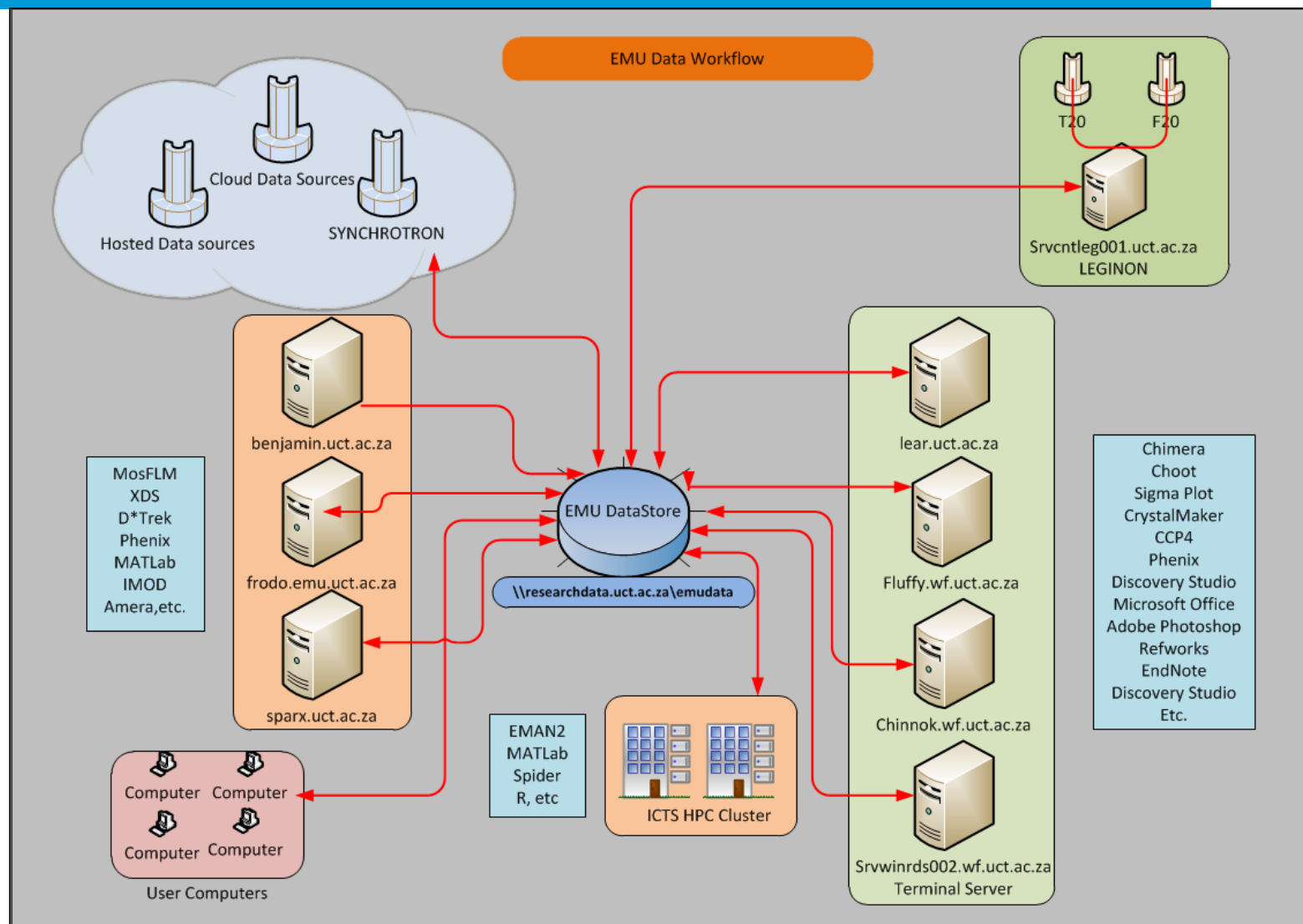


Image acquisition

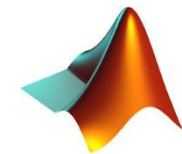


Electron Microscope Unit:

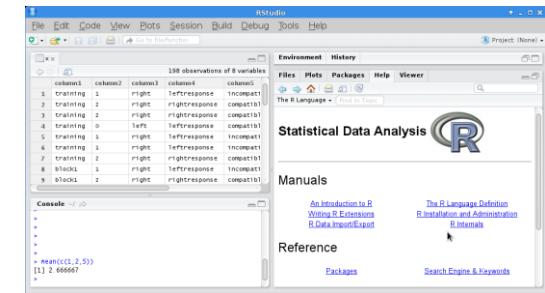
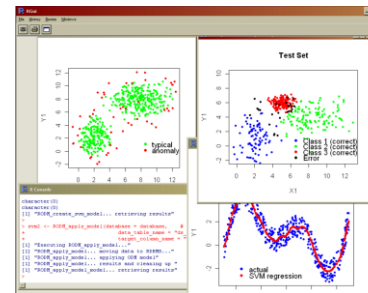




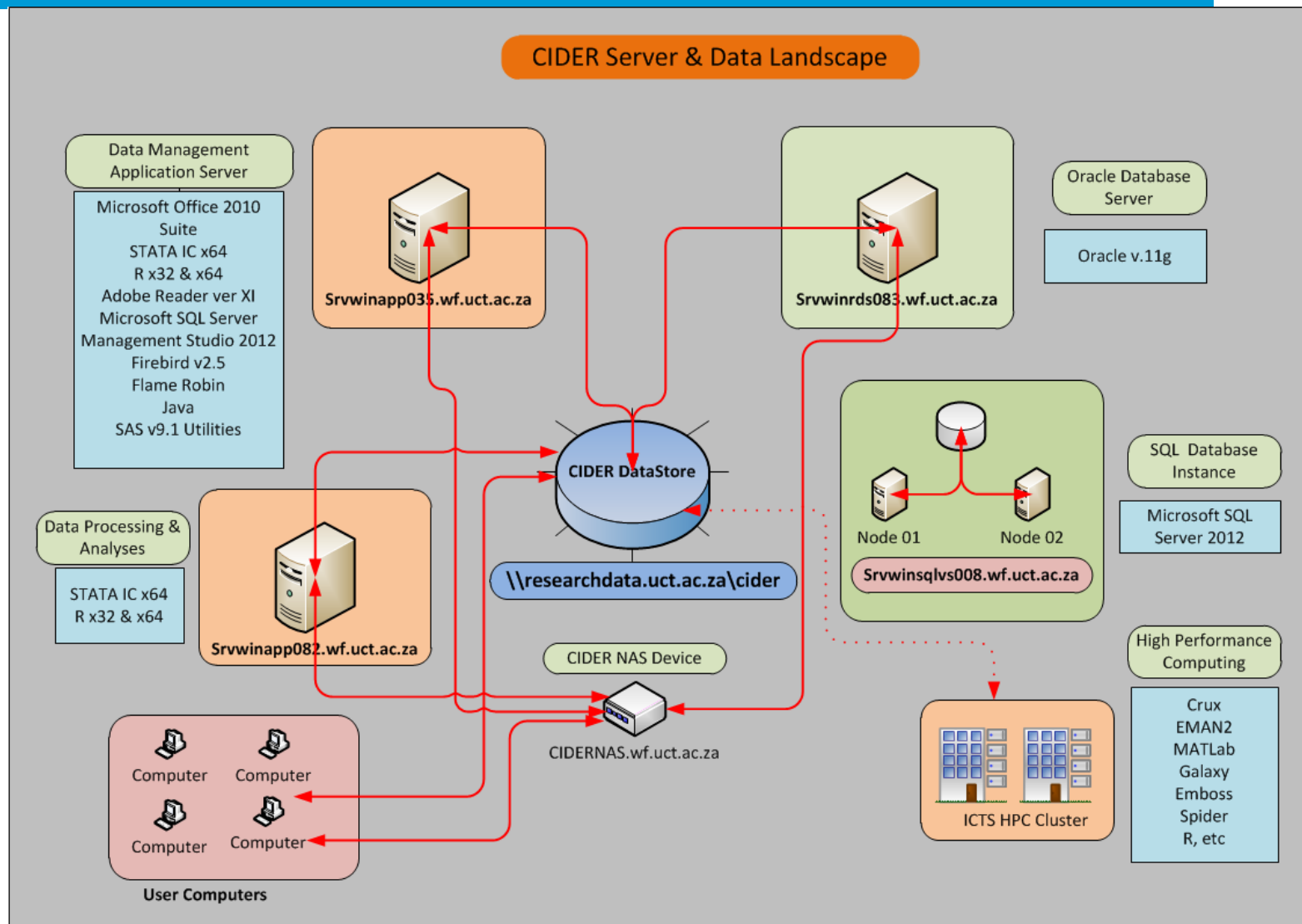
Prof Andrew Boule

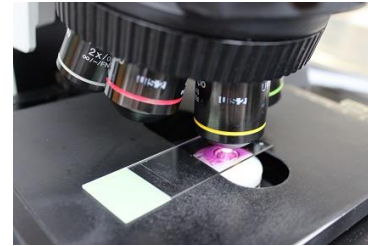


- eResearch provide assisted with setting multiple databases and processing and data analysis servers.
- Also provisioned **research data storage** and **collaboration**



Case Study - CIDER



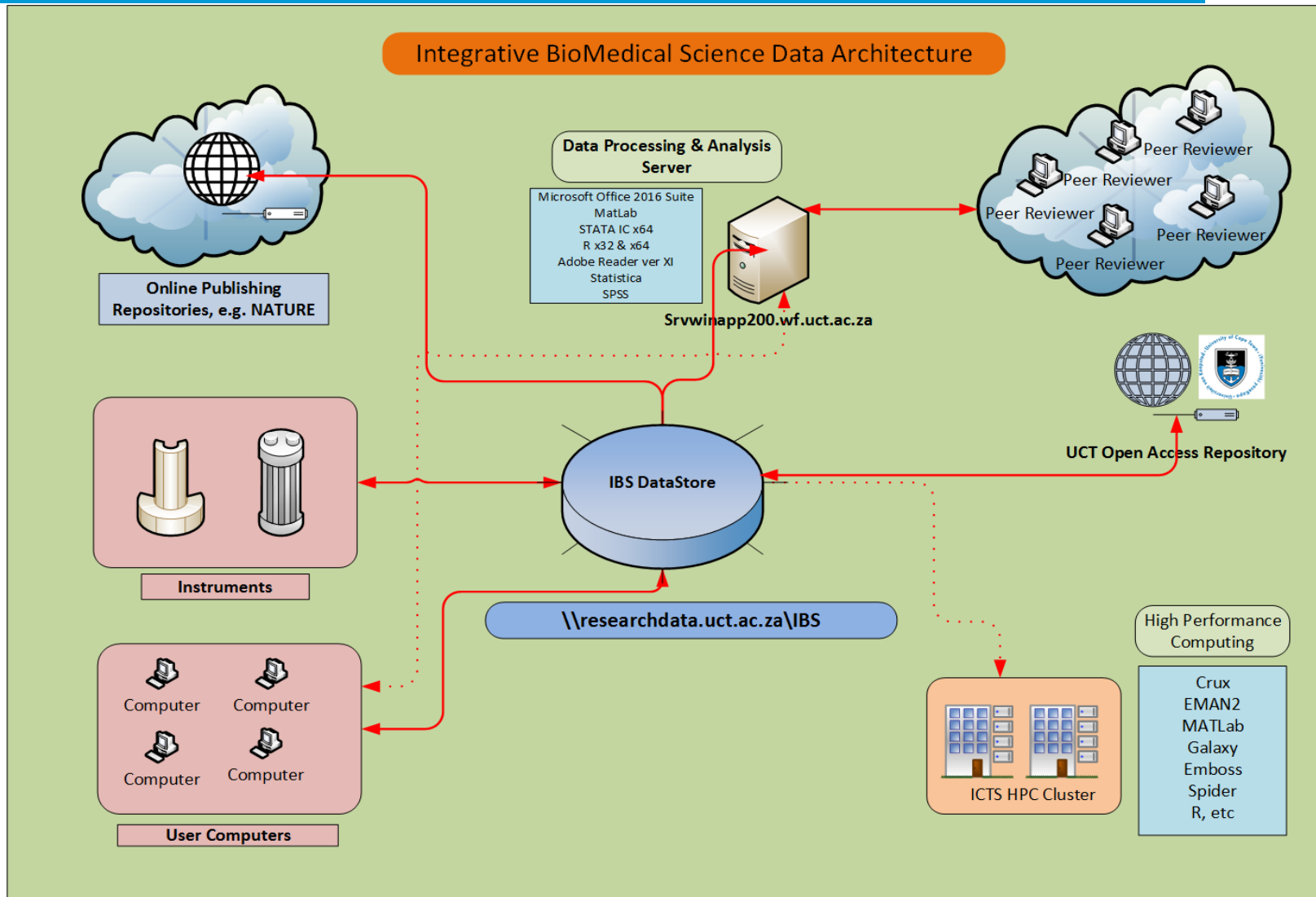


Prof Jane Yeats

- **Olympus VS120** Virtual Slide Microscope **digitizing** specimens.
- eResearch provide advice on sizing & specifying server hardware and storage. Installed and configured server software - **storage, remote data analysis and collaboration**



Case Study – Integrative Bio-Medical Science



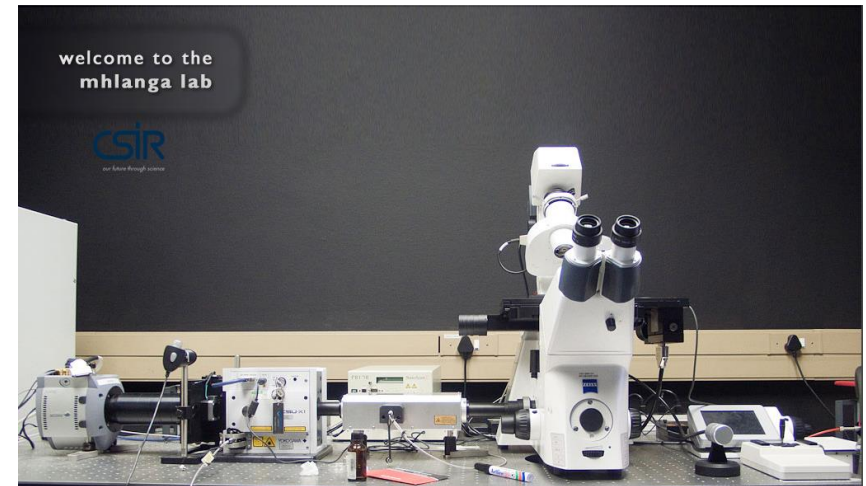
Case Study – Integrative Bio-Medical Science



- **Dr Mhlanga** is building a super-resolution microscopy
- eResearch provide advice on sizing & specifying server hardware and storage.
- Installed and configured a server for remote access and processing, allowing international peer reviewers to **access, process** and **verify data** used for a paper submitted to Nature.



Dr Musa Mhlanga



References:

eResearch Website – www.eresearch.uct.ac.za

UCT Office365 – <https://www.portal.office.com>

Mconf - <https://www.sanren.ac.za/new-mconf-web-conferencing-service/>

Vidyo - <https://www.sanren.ac.za/new-mconf-web-conferencing-service/>

Globus – www.Globus.org

SANREN – www.sanren.ac.za

TENET – www.tene.ac.za



End