



**Makerere University**

[www.mak.ac.ug](http://www.mak.ac.ug)

THE MAKERERE UNIVERSITY ICT SUPPORT FUNCTION

PREPARED BY

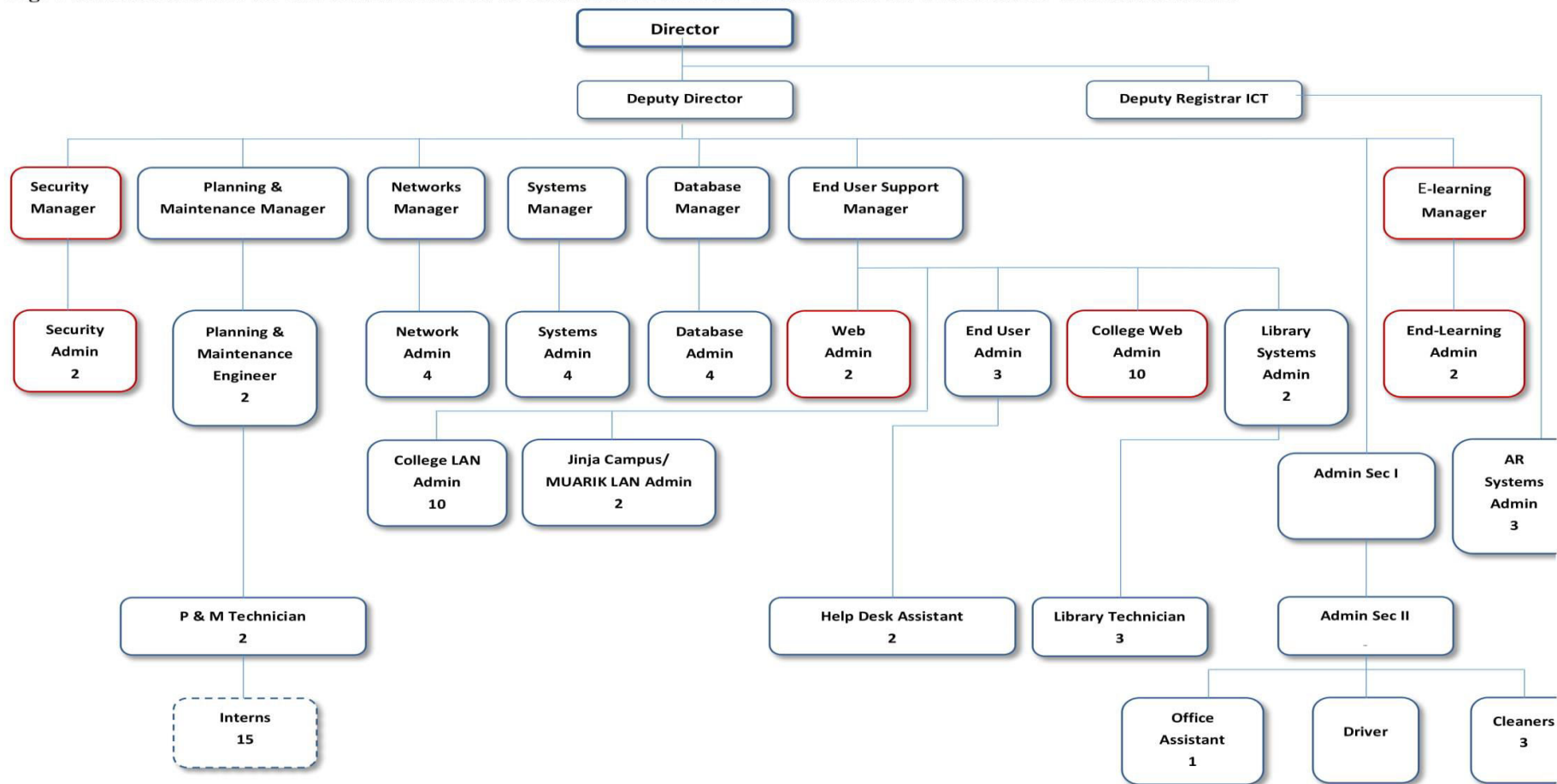
Samuel Paul Mugabi

Director -DICTS



# University ICT structure

Fig: 1 DIRECTORATE OF INFORMATION AND COMMUNICATION TECHNOLOGY PROPOSED ORGANOGRAM



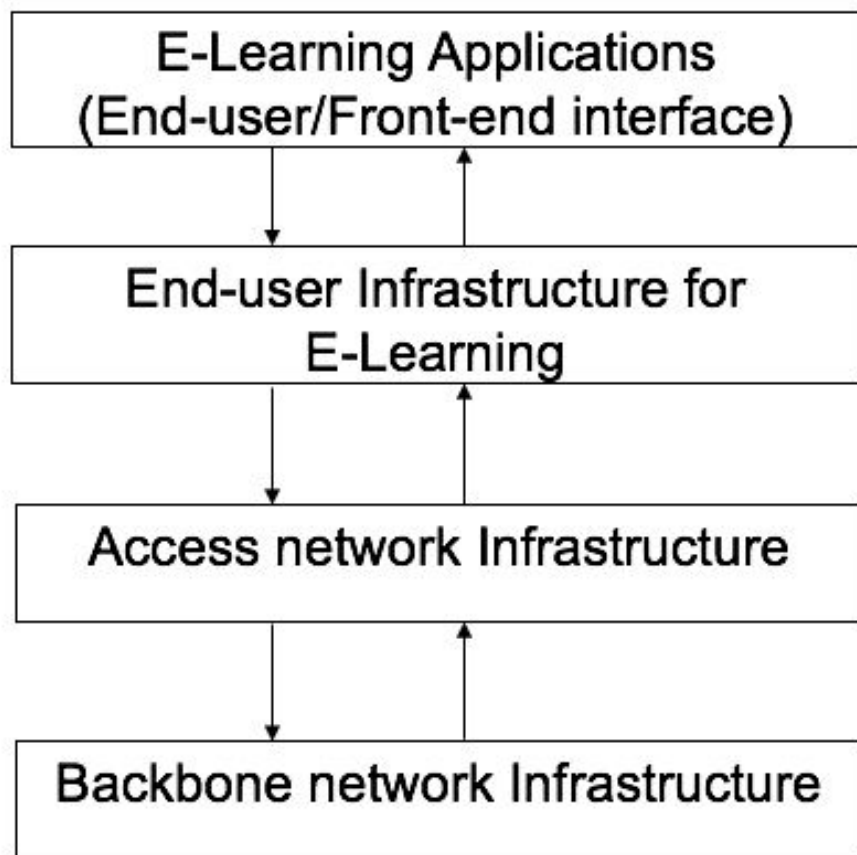


# ICT Policy and Strategic Direction

- The operations of the Directorate for ICT Support are guided by the Makerere University ICT Policy and the Makerere University ICT Strategic Plan 2020-2030
- Support for E-Learning is one of the core objectives of the Makerere University ICT Strategic Plan 2020-2030
- The policy and strategic plan can be accessed by visiting the University policies website.



# Four-tier Framework of ICT Infrastructure for E-Learning



MUELE/E-Learning Application, Big Blue Button, Google Docs, Zoom, Microsoft TEAMS, E-Library services, email services etc.



Smart boards, mobile smart devices, computers, projectors etc.



Access switches, wireless access-points, Local Area Networks in units



Core Routers/ gateway, firewall, Server and databases including that for the Learning Management System, core switches plus core-fiber network



# Backbone Network Infrastructure

❑ Makerere University, boasts of a well established core ICT infrastructure with optical fibre reaching every single college and administrative unit within the University. We currently have **approximately 32 kilometres** of running optical fibres thus making us one of the largest core university networks on the continent.

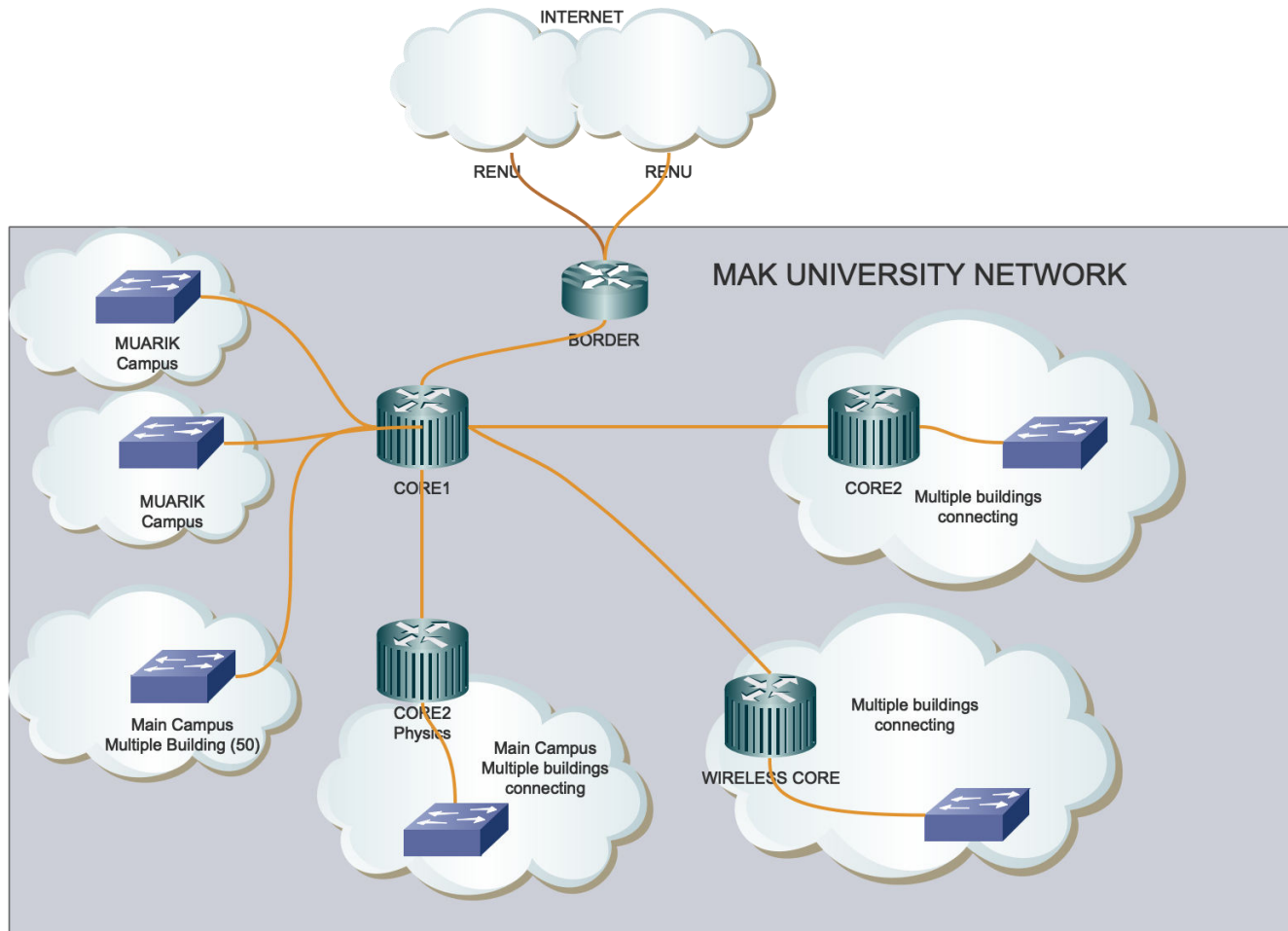
❑ All University ICT services are hosted and managed at the primary network operations centre of the University run by DICTS including the Learning Management System (MUELE).

***MUELE Production Hardware: Dell PowerEdge R720 running Ubuntu 16.04 LTS with 24GB RAM and 3TB SATA Hard drives***

❑ The satellite campuses of Jinja, Agricultural Research Institute Kabanyoro and Lira E-Learning centre are all connected to the core network at main campus and utilise the same bandwidth.



# Backbone Network Infrastructure





# Access Network Infrastructure

Makerere University Network Access Infrastructure includes;

- Local area networks:** All university administrative and teaching facilities have elaborate Local Area Networks.
- Wireless Access-points:** The current wireless coverage at Makerere University and its satellite campuses stands at **approximately 60% with 263 Access-points installed.**



# End-User Infrastructure for E-Learning

❑ **Computers:** The University has over 4,600 functional computers (including those owned by staff) and approximately **179 projectors** across all university colleges.

❑ **University owned computers per college**

College	Number of Computers	Projectors
1. College of Computing and Information Sciences (CoCIS)	428	30
2. College of Natural Sciences (CoNAS)	127	16
3. College of Health Sciences (CHS)	120	18
4. College of Humanities and Social Sciences (CHUSS)	83	6
5. School of Law	56	2





# End-User Infrastructure for E-Learning

## □ Computers per college

6. College of Agriculture and Environmental Sciences (CAES)	157	27
7. College of Business and Management Sciences (CoBAMS)	217	15
8. College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB)	86	03
9. College of Education and External Studies (CEES)	163	13
10. College of Engineering, Design, Art and Technology (CEDAT)	250	44
11. Main Library	194	3
12. Internet kiosks	42	2
<b>Total</b>	<b>1,923</b>	<b>179</b>



# End-User Infrastructure for E-Learning

- ❑ **Multimedia Lab** located at Central Teaching Facility

This can be used by lecturers to record audio and video lessons that can be uploaded on the Makerere Learning Management System or the University YouTube page.

- ❑ **Smart classroom** at the college of Computing and Information Sciences (CoCIS). This is to be replicated across all university colleges.



# E-Learning Applications

## ❑ Learning Management System

In 2009, Makerere became the first university in Uganda to establish an Electronic Learning Management System known as MUELE (Makerere University E-Learning Environment).

<https://muele.mak.ac.ug/>

The MUELE platform which is hosted at the central ICT support unit, is widely used for teaching and can be accessed from any location.

❑ **Collaboration platforms** such as zoom are available and widely used for virtual engagement with scholars. Since **zoom** is subscription based, another open-source/non-subscription collaboration platform (**Big Blue Button**) was setup for purposes of continuity. **Each college has been assigned 7 zoom licences which are shareable.**



# E-Learning Applications

❑ **Staff also use Microsoft TEAMS and Google collaboration** platforms which are free and the Directorate for ICT support offers the necessary support to both staff and students.



# E-Learning support Applications

- ❑ **AIMS:** The Academic Information Management System (AIMS), enables students enrol and register for courses as well as pay tuition remotely.
- ❑ **Library Systems:** The Makerere University Library Management System (Virtua) is an electronic catalogue enabler that helps scholars locate the physical resource in the Library.
- ❑ Remote users can get access to library resources through the University website. [https://mulib.mak.ac.ug/index.php?option=com\\_users&view=login](https://mulib.mak.ac.ug/index.php?option=com_users&view=login) All the journals, e-books, databases are available remotely through the website
- ❑ **The Makerere University Institutional Repository (MakIR)** enables both staff and student to remotely submit and/or access local publications (mostly Masters and Doctoral theses) <http://makir.mak.ac.ug/>



# Bandwidth/Internet service

❑ Bandwidth or internet is a prerequisite for E-Learning and Makerere University procures **2020 Mbps per month of bandwidth from the Research Education Network Uganda (RENU).**

❑ This makes Makerere University the single largest consumer of bandwidth in the country. The bandwidth resource has enabled Makerere University effectively collaborate with other universities across the world, disseminate her research output and conduct blended-learning amongst other things.



# Bandwidth/mobile data requirements for students

❑ Makerere University successfully negotiated zero-rate charges with three telecommunications companies namely;

1. MTN Uganda
2. Airtel Uganda
3. Africell Uganda

The zero-rated portals include;

1. [muele.mak.ac.ug](http://muele.mak.ac.ug)
2. [admissions.mak.ac.ug](http://admissions.mak.ac.ug)
3. [aims.mak.ac.ug](http://aims.mak.ac.ug)
4. [student.mak.ac.ug](http://student.mak.ac.ug)
5. [payments.mak.ac.ug](http://payments.mak.ac.ug)
6. [webconf.mak.ac.ug](http://webconf.mak.ac.ug)



# Security Measures

## Data Centre Security

- Physical access-control to data-centre premises.
- Fire suppression system
- Global gateway and firewall security rules
- Controlled secured access to University servers etc.

## End-User Security

- University-wide end-point security solution.
- Authentication using user login credentials
- 2 factor authentication using both SMS code and
- Continued user awareness training on generic security measures and cyber-security.





# Thank You