

INFORMATION TECHNOLOGY

ANNUAL REPORT
2023



TABLE OF CONTENTS

1. Message from the Information Technology Chief Director	2
2. Executive Summary	3
3. Strategic Goals & Critical Focus Areas	5
4. IT Strategy (2023–2025) and Projects	9
5. Financial Overview	12
6. IT Infrastructure	14
7. Cybersecurity	16
8. Technology Ecosystem	17
9. Research	19
10. Service Delivery	20
11. IT Staff Development	26
12. Community Engagement	27
13. Final Thoughts	28
14. Acknowledgements	30
15. Meet our Management Team	31





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ADVANCES IN
TECHNOLOGY
PRESENT US WITH
A REALM OF
OPPORTUNITIES

MESSAGE FROM
**THE INFORMATION
TECHNOLOGY CHIEF DIRECTOR**

As I reflect on the past year leading the IT Department, I am aware that our journey has been marked by notable milestones and formidable challenges. We grappled with high vacancy levels, which necessitated innovative approaches to resource management. The ever-growing demand for projects put immense pressure on our operations, and the sporadic disruptions due to loadshedding tested our robustness and adaptability.

However, these challenges also showcased the strength and resilience of our IT team. I would like to take a moment to express my profound appreciation to each and every member of the IT department. Their unwavering commitment, adaptability, and sheer determination were the foundation upon which we overcame our challenges. Whether directly involved in project implementation or supporting our core functions, each individual played an indispensable role in achieving our objectives. Their dedication and hard work have ensured our continued success amidst trying circumstances.

I am also grateful for the guidance of the University Management Committee (UMC) and the leadership of Prof. Daryl Balia, DVC Potchefstroom Campus Operations

and Information Technology. Their strategic insights and unwavering support have been invaluable.

While challenges are inevitable, our IT team’s collective spirit and tenacity genuinely define us. As we embark on the next phase, I am confident in our collective ability to navigate the future and uphold the standard of technological excellence that NWU deserves.

I am excited and optimistic about the future of IT at NWU. The rapid advances in technology present us with a realm of opportunities to explore and integrate. These evolving dynamics motivate us to be at the forefront, constantly adapting and innovating. The future beckons, and I am confident that with our united efforts, we will continue to set benchmarks in IT excellence.

Warm regards,

BOETA PRETORIUS
Chief Director: Information Technology
20 October 2023

EXECUTIVE SUMMARY

In today's rapidly evolving higher education landscape, the Information Technology Department (IT) of the North-West University (NWU) will live their dream to be a leading partner in positioning the NWU as a unitary institution of superior academic excellence through digital transformation. IT will establish a holistic and integrated university technology platform to provide a solid foundation for a digital future by executing on our strategy 2023-2025. In this summary we only highlighted a few of the major projects and initiatives. Be assured that we are well prepared to align our technology investments with the broader strategic goals of the University.

Digital transformation

Looking ahead to the future of higher education, it becomes evident that Digital Transformation will play a pivotal role in driving progress for institutions like NWU. In the coming years, there will be an even stronger focus on utilising technology to redefine educational norms. This transformative journey in Higher Education Institutions will streamline operational processes and open up new opportunities for learning and research. The potential impact is significant, from virtual classrooms that transcend geographical barriers to AI-powered research methods that can revolutionise academic discoveries. At NWU's IT department, we are both excited and well-prepared to navigate this new era, ensuring our institution remains at the forefront of this digital revolution in higher education.

Cybersecurity and data-driven decision-making

Cybersecurity has become a top priority in the global higher education IT landscape. The IT department has recognised the importance of safeguarding intellectual and infrastructure assets. It has aligned its strategies with industry trends and focused on advancing its Data and Analytics Strategy and Operating Model (DASOM) to treat data as a strategic asset. This emphasis on data-driven decision-making demonstrates NWU's commitment to improving organisational effectiveness.

Strategic investment in technology

Gartner's report shows that executive leaders are increasingly investing in digital capabilities and information technology.

Some 84 percent of leaders intend to enhance digital investments, with 71 percent committed to increasing IT budget allocations. NWU has identified data analytics and cybersecurity as promising areas for investment expansion. To optimise resource utilisation, NWU and IT plan to implement efficient portfolio and project management methodologies. This strategic investment approach will be in line with technology investment trends in the higher education sector.

Adapting to challenges

The IT department has shown resilience in dealing with supply chain challenges. However, it recognises new obstacles, particularly in recruiting and retaining IT talent. Policy changes by vendors have also presented challenges to educational institutions. A collaborative approach is needed to address these challenges, particularly in the areas of cybersecurity and sustainability.

Digital transformation initiatives

IT sees itself as a key collaborator in driving NWU's academic distinction through digital transformation initiatives. This aligns with NWU's Annual Performance Plan (APP) and includes five fundamental components:

- a technology ecosystem,
- robust security measures,
- a flexible integration platform,
- an adaptable operating model, and
- a modular infrastructure.

These initiatives aim to create a robust technology platform for NWU's digital future.

Improved IT project visibility

IT has improved the visibility of IT projects by adopting a portfolio and project management framework. This approach ensures that stakeholders across the University are informed and engaged and that IT projects are aligned with institutional goals.

LMS success

The NWU's Learning Management System, eFundu, has seen significant growth in usage, especially during the COVID-19

pandemic. Daily logins increased from 4,100 in 2016 to 37,000 in 2020 and further to 52,000 in 2023. This demonstrates the scalability and reliability of the system in supporting educational endeavours.

Operational efficiency and risk mitigation

Several initiatives are underway to improve operational efficiency, including replacing the Student Information System (SIS) and assessing vulnerabilities in the Quali Financial System (KFS). The Human Resources and Payroll Systems are being refreshed, and a Digital Workplace (DWP) environment is being implemented for enhanced collaboration. Hyper-automation architecture is also being established to support Digital Business Services (DBS). Guardrails and Project Portfolio Demand Threshold (PPDT) mechanisms have been implemented for the Power Platform to manage its use effectively.

Enhancing IT talent pool

Recognising the increasing reliance on technology, IT is formalising and improving the talent ecosystem to meet digital objectives. This includes recruiting student interns and nurturing internal talent through a 'grow your own timber' approach. Community engagement and workforce development are central to this initiative.

Stakeholder collaboration and risk management

IT played a key role in a negotiation team with HEITSA, resulting in a Memorandum of Understanding (MoU) with Oracle. This MoU ensures that Oracle will provide prior notice and conduct a pre-audit before auditing any South African university, thereby increasing predictability and transparency.

Cloud storage challenges

The department has effectively managed the challenges associated with the cost escalation of cloud storage. Strategic engagement with vendors demonstrates a commitment to financial responsibility and reliable cloud storage solutions.

Upgrading audiovisual (AV) systems

IT has upgraded AV systems to support the hybrid Teaching and Learning strategy. GlobalViewer software and TEAMS® appliances and inverters were implemented to address loadshedding disruptions, modernise classrooms and enhance existing systems.

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Artificial Intelligence has rapidly become a dominant technological focus, with its full impact still unfolding. We aim to harness its transformative potential while vigilantly considering ethical implications strategically

Procurement strategy and operational efficiency

The department initiated a Procurement Strategy to improve operational efficiency and financial prudence. Collaboration with the Finance department and subject matter experts is central to this effort.

Digital fluency and adaptability culture

The IT department has launched an awareness campaign and training programme focused on the Integrated Modern Workplace ecosystem to promote digital fluency. Staff members are equipped with the tools and knowledge necessary to navigate and use this new environment effectively.

AI in higher education

The adoption of AI in higher education presents promising opportunities but also complex challenges related to data privacy, algorithmic bias, and equitable access. A strategic approach is crucial to navigate these complexities and ensure the ethical use of AI.

In summary, the IT department has strategically aligned itself with global imperatives in higher education. Its cybersecurity, data analytics, talent development, and vendor licensing efforts demonstrate a commitment to excellence and innovation. The department's collaborative initiatives and investments in technology promise continued growth and alignment with the University's strategic goals.

3. STRATEGIC GOALS & CRITICAL FOCUS AREAS

At the NWU, we recognise the transformative power of Information Technology. Guided by the blueprint set out in the NWU-APP, we're putting our energy into shaping a bright digital future. We aim to harness technology as the cornerstone for the university's growth, academic excellence, and future vision through meticulous planning, strategic alignments, and unwavering dedication.

3.1 Strategic goals

The NWU adheres to 4 critical enablers as outlined in the NWU-APP (Annual Performance Plan). Enabler 2 focuses on Information Technology.

Establish a holistic and integrated university technology platform to provide a solid foundation for a digital future:

- Strengthen the foundation for the digital future by ensuring stable, scalable, hybrid, manageable and responsive **infrastructure**. Composable infrastructure makes data centre resources as readily available as cloud services and foundations for private and hybrid cloud solutions.
- Establish a long-term **integration platform** to ensure business agility through rapid deployment of standardised shared services.
- Ensure a **secure** digital environment.
- Start building the **technology ecosystem** that integrates students, partners, employees and 'things' to deliver an exceptional customer experience.
- Establish a **responsive operating model** in IT, known for agility, competent people, best practices, innovative culture and well looked after staff.

3.2 Critical focus areas

3.2.1 Infrastructure

1. Implementation of manageable and responsive infrastructure. Upgrade Wi-Fi network, campus backbone and adding infrastructure capacity.
2. Composable infrastructure is at the core of business composability and assists in being more resilient and adaptable to change by separating backend and frontend components.
3. Develop a cloud strategy.

3.2.2 Integration platform

The University will implement an integration layer to ensure seamless integration between the various applications and systems. The "Next Generation Digital Environment (NGDE) Container Platform" is a concept associated with modernising and optimising digital environments and applications using containerisation technology in an agile manner. A key strategy is using the NGDE platform to move from virtual servers (a few big things) to containers (hundreds of little things). The first phase of the implementation of the Next Generation Digital Environment (NDGE) platform is planned for early 2024.

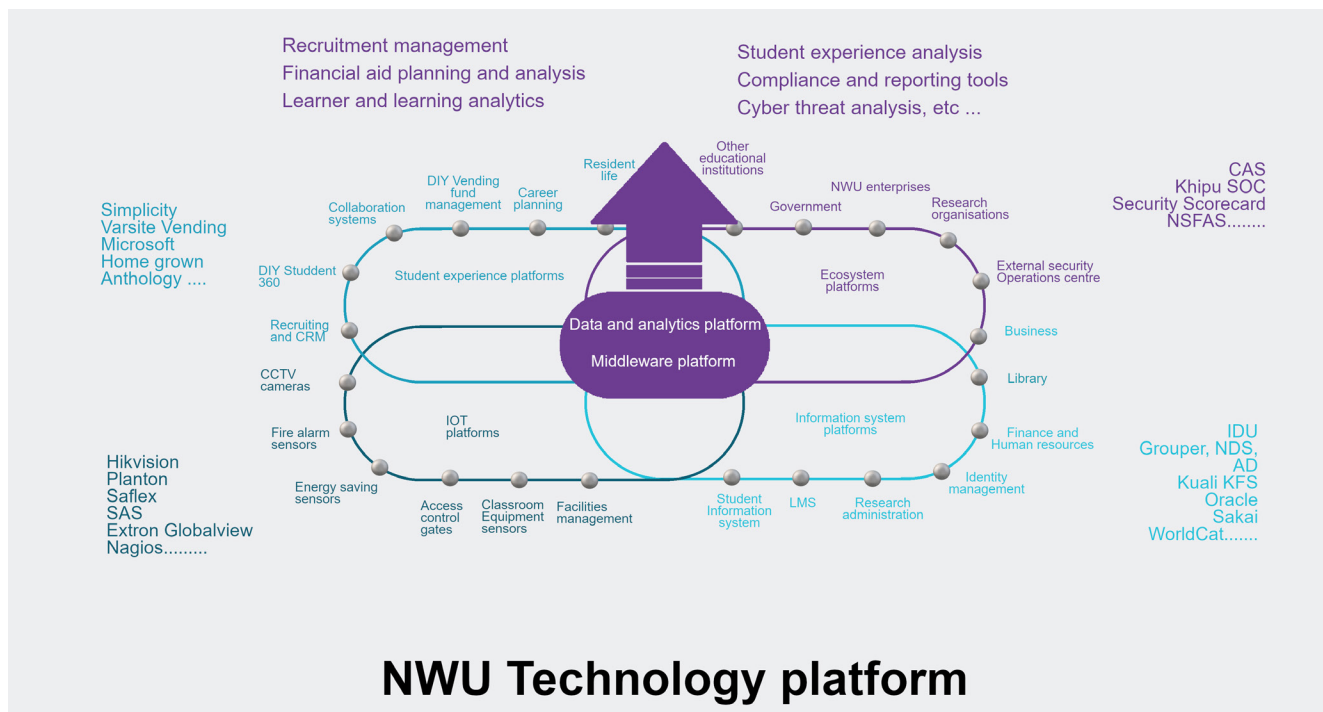
3.2.3 Security

1. Develop an NWU enterprise security architecture and address gaps by registering projects through the Enterprise Program and Project Management process.
2. Change management for patching is currently in progress and is expected to continue into 2024. The IT department is exploring the possibility of automating the patching process by leveraging the upcoming Continuous Integration and Continuous Deployment capabilities introduced by the NGDE project.
3. A hybrid security team for the Cybersecurity Programme will be formed, combining physical and virtual elements. We are expanding the use of virtual teams to integrate essential Cybersecurity Key Performance Indicators (KPIs) into a broader range of IT positions. In addition, we are reviewing all Cybersecurity (CS) and Disaster Recovery (DR) strategies and plans for updates and enhancements.
4. Take a prominent position in national collaborative initiatives, including involvement in the Security Scorecard, Security Operation Centres and Special Interest Groups.

3.2.4 Technology ecosystem

Our Technology Ecosystem, shown below, is a holistic and interconnected set of technologies, platforms, applications, services, and components that work together to support the NWU's information technology infrastructure and digital operations. It represents an organisation's dynamic and interdependent nature of technology, where different elements interact and collaborate to achieve common goals and objectives.

Our IT Technology Ecosystem is designed to create a seamless and efficient environment that meets the organisation's operational needs and strategic objectives.

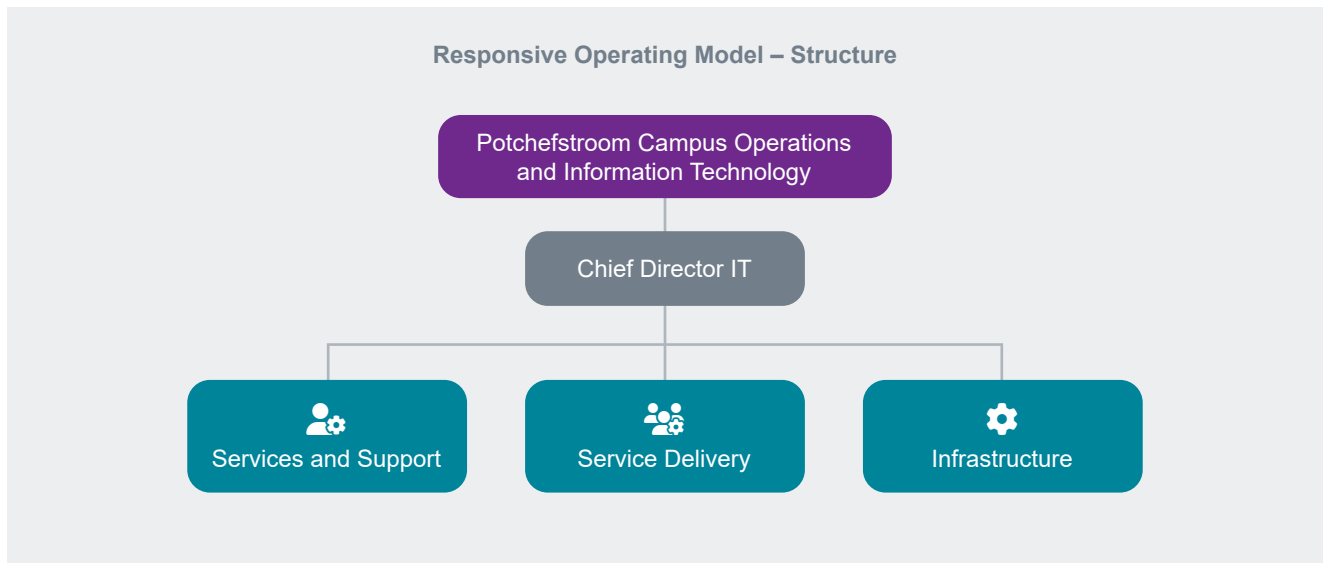


Critical focus areas in this domain:

1. Develop a data architecture that will underpin data-driven decisions
2. Business system renewals over the next few years:
 - Replace the Student Information System (SIS).
 - Renew the Financial System to address identified risks.
 - Renew HR & Payroll.
 - Implement Business Process Optimisation initiatives.
3. Promote a NGDLE (Next Generation Digital Learning Environment) by revisiting the Digital learning ecosystem, including the LMS.
4. Operationalise the Digital Workplace (DWP) environment.
5. Develop a Hyper-automation architecture to enable the Digital Business Services (DBS).
6. The utilisation of the Integration platform.
7. Intensify eResearch by optimising the higher degrees administrative processes through automation.
8. administrative processes through automation.
9. Start new projects, identified and approved through the Enterprise Programme and Project Management (EPPM) process and aligned with the six Annual Performance Plan (APP) goals.

3.2.5 Responsive IT operating model

Our Responsive IT Operating Model is designed to be agile, adaptable, and responsive to changing business needs, technological advancements, and market conditions. The operating model aims to enable IT to better align with the strategic objectives of the business and rapidly address emerging challenges and opportunities. Below is our Responsive Operating Model structure:



In order to execute a responsive IT Operating Model, IT focuses on:



This enables NWU to remain competitive, agile, and adaptable in the face of rapid technological change, and evolving customer expectations. It recognises that IT is not just a support function but a strategic driver of business success.

4. IT STRATEGY (2023-2025) AND PROJECTS

Our IT (Information Technology) strategy is a comprehensive plan that outlines our approach to managing and leveraging technology to achieve business goals and objectives. The strategy is a roadmap for using technology to support and advance our overall mission and operational functions. Our strategy helps align technology initiatives with the NWU business strategy and ensures that IT resources are utilised effectively to deliver value and competitive advantage.

4.1 Strategy focus areas

The revision of the IT strategy took place in the 1st quarter of October 2023, whereby we revisited achievements, milestones etc. and aligned current goals with future goals. Our focus areas are:

- An integrated technology ecosystem
- Security
- An agile integration platform
- A responsive operating model; and
- Composable infrastructure

Below is a graphical representation of our strategy:

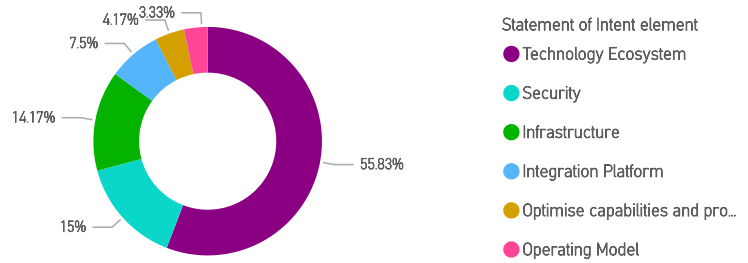


4.2 Major and strategic projects

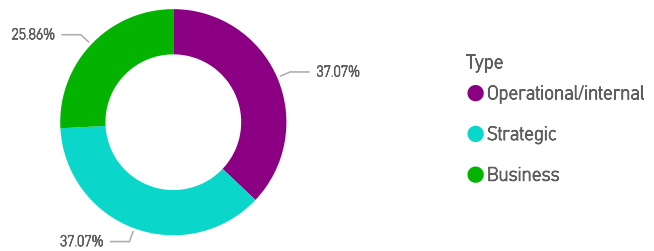
Below is a summary of 39 main strategic projects:



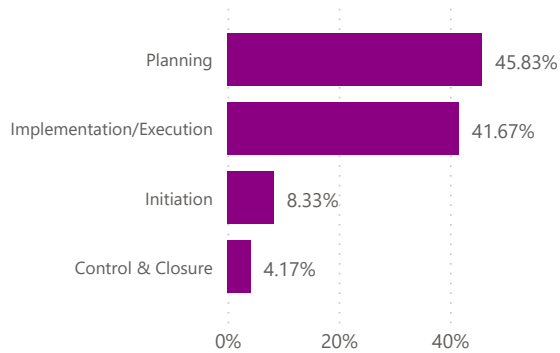
Statement of Intent elements



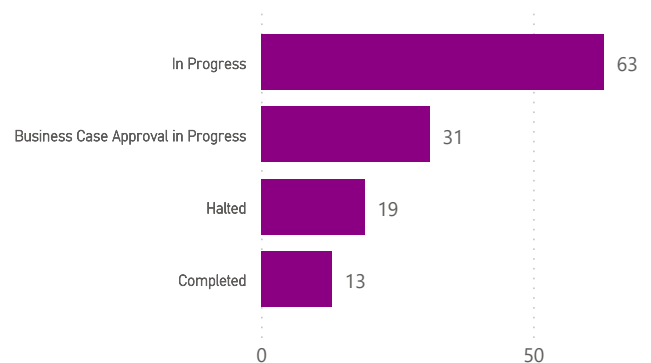
Project type



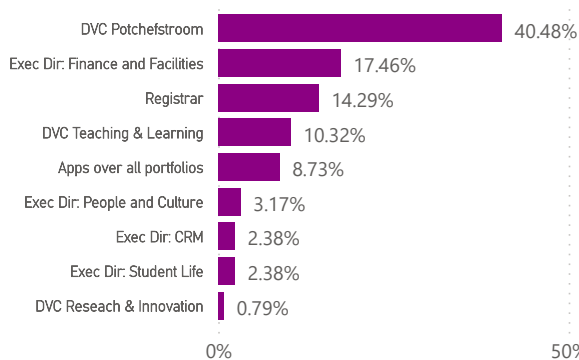
Active project phases (percentage)



Number of projects



Primary Executive Portfolio (Percentage)

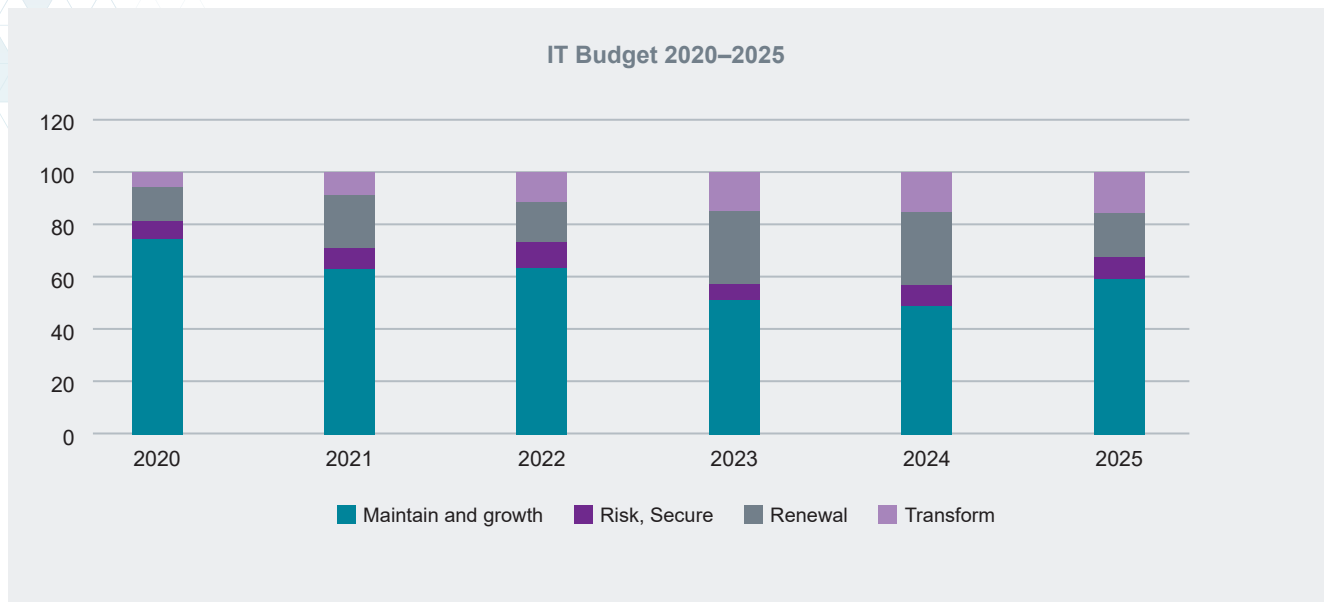


MAIN PROJECT NAME	STATEMENT OF INTENT ELEMENT
CCTV analogue to digital	Infrastructure
Stabilise WiFi (5 sub-projects)	Infrastructure
Smart Cloud (2 sub-projects)	Infrastructure
Backbone (Leaf and Spine) (2 sub-projects)	Infrastructure
DHCP Server Cluster	Infrastructure
DNS Environment Review	Infrastructure
Machine Room Positive Pressure and Filters	Infrastructure
Investigate Win 11 implementation	Infrastructure
Establish NGDE platform (6 sub-projects)	Integration Platform
Worldshare Integration	Integration Platform
Alignment of IT Services across campuses	Operating Model
Lock down Browser	Security
SOA Upgrade to address security risk	Security
Cyber Security (4 sub-projects)	Security
LMS investigation (2 sub-projects)	Technology Ecosystem
Upgrade and cleanup of eFundi	Technology Ecosystem
Review exampaper system	Technology Ecosystem
Dspace migration (Library)	Technology Ecosystem
DWP (5 sub-projects)	Technology Ecosystem
Investigate and recommend the Meeting Management system: UMC & Other Committees	Technology Ecosystem
SRCS Application	Technology Ecosystem
Safety Health Environmental (SHE) Implementation	Technology Ecosystem
Upgrade: Vaadin Upgrade	Technology Ecosystem
NSFAS Process Optimisation	Technology Ecosystem
Agenda and Minutes Management module	Technology Ecosystem
Records Management module	Technology Ecosystem
Digitization of archive	Technology Ecosystem
Performance consistency and under performance process	Technology Ecosystem
Brand Stores - Wholesale CRM Logistics Management System	Technology Ecosystem
SIS Renewal project (6 sub-projects)	Technology Ecosystem
Safety and security Optimisation	Technology Ecosystem
Oracle HR System RFI/RFP and implementation	Technology Ecosystem
Low code platform: Tender and Procurement Optimisation	Technology Ecosystem
Primary and occupational health (Clinic System)	Technology Ecosystem
Annual enhancements of T/L venue technology	Technology Ecosystem
DHET: Fire Alarms in residences	Technology Ecosystem
CentOS Operating System (EOL & EOSL)	Technology Ecosystem
GPU (Graphics Processing Unit) cluster	Technology Ecosystem
Citrix Storage expansion	Technology Ecosystem

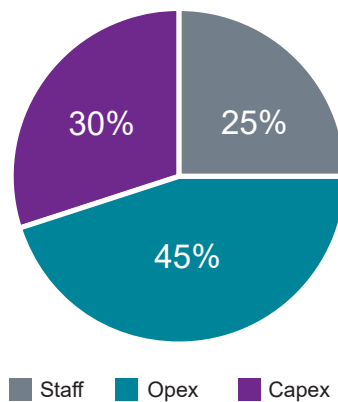
5. FINANCIAL OVERVIEW

The IT budget is a strategic tool for the systematic distribution of financial assets, specifically tailored to the information technology requirements of the NWU. This budget outline is indispensable and acts as a definitive guide, ensuring the effective management and deployment of resources for various IT undertakings, from projects to regular operations.

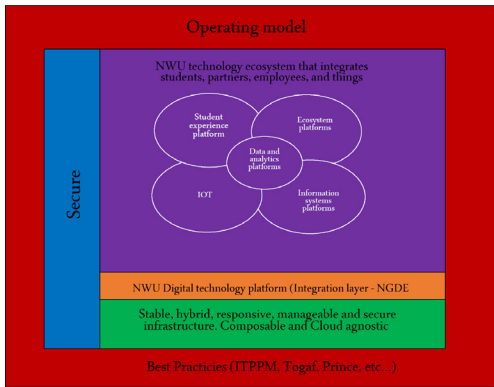
IT budget



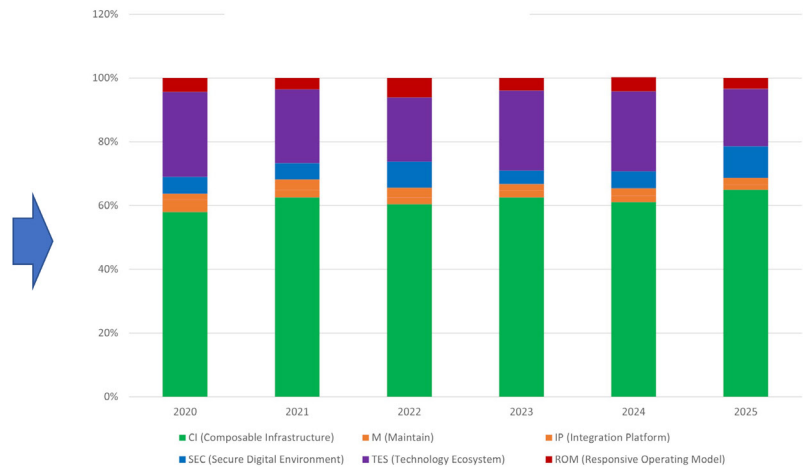
IT Budget Allocations



Alignment of IT Budget to the IT Strategy



Graphical Representation of the IT Strategy



Equity in provisioning

At the NWU, the principle of equity in provisioning is paramount. It underpins the NWU's commitment to fostering an inclusive and diverse learning and working environment. Within the IT Department, this principle takes on added significance. Given the diverse range of technological needs across faculties, campuses, and administrative units, an equitable approach ensures that each segment of the university community benefits from tailored IT solutions and resources. Such an approach addresses the unique needs of individual departments and ensures optimal use of resources, promoting efficiency and effectiveness. By embracing equity in provisioning, the IT Department demonstrates its dedication to upholding the broader values of NWU and its commitment to serving the entire community with fairness and precision.

6. IT INFRASTRUCTURE

The role of infrastructure in shaping the future of the NWU cannot be overstated. As we navigate through an era of rapid technological advancements, it becomes increasingly important for organisations to adapt, innovate, and leverage the power of infrastructure and technology to remain competitive and deliver exceptional value to our stakeholders.

Our modern customers, particularly students, are more informed and discerning than ever before. Infrastructure and technology provide the means to meet these evolving customer needs. The NWU IT infrastructure plays a central role in delivering personalised experiences, seamless services, and rapid response.

In the digital age, driving innovation hinges on several critical elements, including High-Speed Internet Access, Scalable and Flexible Cloud Infrastructure, Data Storage, Cybersecurity, IoT (Internet of Things), Connectivity, Sustainability Considerations and more.

Investment in modern infrastructure

Over the past year, we have continued to make significant investments in our IT infrastructure to ensure its scalability, reliability, and resilience. While much of this work happens behind the scenes, it is important to acknowledge the fundamental changes that have taken place to prepare for our digital transformation journey. These efforts have also significantly strengthened our ability to deliver uninterrupted services, even during peak usage periods.

The dedicated IT team has worked tirelessly behind the scenes to create a stable, reliable, and maintainable environment. We have embraced modern trends by implementing a Smart Cloud platform and investigating Wi-Fi 6 for selected buildings, ensuring that our infrastructure remains at the forefront of technology.

Lecture rooms

Until now, the AV systems in over 450 lecture rooms and the more than 120 e-Conference meeting rooms at NWU operated in isolation, requiring physical presence for access. This placed a significant burden on the IT technical staff and was inconsistent with the centralised support model.

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Over the past year, we have continued to make significant investments in our IT infrastructure to ensure its scalability, reliability, and resilience.

Improving our lecture room facilities has been a priority. Upgrading audiovisual systems in identified rooms presented several challenges, particularly in ensuring minimal disruption to ongoing activities. Despite these challenges, we have successfully deployed remote-manageable AV controllers in selected rooms since January 2023, in line with our strategy for centralised support.

To facilitate online lectures, we introduced the MS 365 platform and equipped specific rooms with Teams Rooms (TEAMS®) appliances. This solution is operational and supported by training opportunities.

In addition, the installation of inverters in lecture spaces to ensure continued functionality during load shedding has become standard in renovated rooms.

These firsts for the NWU are actively driving digital transformation in the educational environment. We are already in the process of outlining additional expansions of these initiatives for the period 2024 to 2026.

Several rooms have undergone complete renovations including hybrid capability, while others have only been retrofitted to support hybrid teaching and learning, marking a significant step forward in our commitment to innovative education.

Other infrastructure enhancements

We have replaced e-Conference facilities in identified conference and meeting rooms to facilitate seamless communication.

We continued to maintain and upgrade access control, fire alarm systems, telemetry radio transmitters, and the CCTV environment to ensure the safety and security of our campuses.

In preparation for the future, we have begun to lay the groundwork for using the Internet of Things (IoT) to efficiently manage electronic infrastructure, classroom technology and many other innovative “things”.

In summary, our continued investment in technology represents a commitment to providing cutting-edge services to our stakeholders and ensuring that our institution remains a leader in the digital age.



◀ *The typical Teams® Rooms appliance which has become a familiar site across the NWU*

7. CYBERSECURITY

Cybersecurity has become critical to the NWU's operations in today's technology-driven world. Protecting our technology assets is essential to prevent disruptions and ensure the smooth functioning of our business. As such, cybersecurity has become a high priority for the NWU.

The NWU's Cybersecurity Programme aims to establish and coordinate various cybersecurity functions and capabilities. The programme focuses on implementing interdependent controls across the NWU, and requires the execution of multiple projects under the programme.

In 2022, the Cybersecurity Programme focused on clarifying organisational roles and responsibilities. This led to the initiation of business continuity planning and improvements to the NIST cybersecurity framework. Information governance was also refined, resulting in a better understanding of information management.

Conclusion

The NWU recognises the significance of cybersecurity and is committed to protecting our technology assets. The Cybersecurity Programme will continue to evolve and adapt to address the dynamic nature of cybersecurity threats. By implementing comprehensive controls and aligning with industry standards, we aim to ensure the security and integrity of our operations.



2023 Focuses

The Cybersecurity Program's key focus for 2023 is to enhance the protection capability and enable the cyber risk charter. These focuses will strengthen our cyber risk management efforts and demonstrate our commitment to controlling these risks. The programme will align with the NIST cybersecurity framework to ensure a comprehensive and standardised approach.

To further strengthen our measures, an external security audit was conducted. The results of this audit align with the findings of the program's initiatives.

The main focus in 2023 is to improve the NWU's Protection Capability by:

- Addressing Guest-Wifi risk
- Endpoint (device protections)
- SaaS and IaaS Cloud protection (backup and snapshot technology)
- Disaster recovery virtual test
- Implementing multi-factor authentication (MFA)

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Protecting our technology assets is essential to prevent disruptions and ensure the smooth functioning of our business.

8. TECHNOLOGY ECOSYSTEM

Northwest University's IT department continues to make significant progress in providing solutions to enhance our technological capabilities and support the academic and administrative community. We work in close partnership with business owners to deliver solutions that add value to the NWU. In 2023, the focus was on the following:

Business solutions:

- **SIS Renewal Project:**

The high-priority project of replacing the NWU Student Information Systems (SIS) has been in focus for several years. Significant progress was made in 2023, with plans to put Nexus CRM and the new Payment and Receipt Portal into production in 2024.

- **Long-Term Integration Platform:**

An integration platform has been established to ensure business agility through the rapid deployment of standardised shared services. The new Kafka environment plays a critical role in supporting the Next-Generation Digital Ecosystem (NGDE) strategy. The integration required for Nexus CRM on the Kafka Platform will be deployed to production in 2024.

- **Web Environment Upgrade:**

The web environment was successfully migrated to a newer and more secure version of Drupal.

- **QuestionPro Integration:**

A more seamless integration with QuestionPro was implemented, enhancing data collection and analysis capabilities.

- **Textbook Workflow:**

A textbook workflow was developed to streamline the management of educational materials.

- **Power Platform Integration:**

Integration of the Microsoft Center of Excellence application into the Power Platform was successfully completed.

- **New Projects:**

In 2023, the following projects were approved and initiated:

- ▶ HR & Payroll Renewal
- ▶ Smart Safety and Security Solutions
- ▶ Safety Health Environmental Compliance System

Academic solutions:

- **LMS Replacement Project:**

A long-term project to replace the Learning Management System (LMS) commenced, aiming to enhance the teaching and learning experience.

- **PDF Offline Marker:**

Significant improvements were made to the PDF offline marker, addressing lecturers' identified needs for a more efficient marking process.

- **STLES Support:**

The IT department continued to support the Student Teaching and Learning Experience Survey (STLES).

- **Citrix Virtualisation:**

The virtualisation environment, Citrix, has seen a significant increase in users, largely due to the rollout of Citrix to PC labs across the institution.

- **Data Warehouse Implementation POC:**

Significant progress was made in consolidating learner and learning data into a data warehouse, preparing for future analytics use.

- **Safe Exam Browser POC:**
A Proof of Concept (POC) was conducted for a Safe Exam Browser, enhancing the security and integrity of online examinations.
- **WorldShare Management Services (WMS):**
The new cloud-based library services system was launched.
- **Library resources:**
Library e-resources are now seamlessly integrated with the NWU single sign-on (CAS) system.

Workplace solutions:

- **Modern Workplace Implementation:**
A significant achievement in 2023 was the completion of the implementation of an integrated Modern Workplace environment (MS 365). This started with the migration to Outlook for email and continued with the deployment of various Microsoft 365 apps. The Teams telephony component is set to conclude the project in 2024.
- **Teams App Development:**
An application was developed to create Teams that adhere to NWU naming conventions.
- **Electronic Patient Solution:**
A solution for primary occupational health was developed, with implementation scheduled for early 2024, enhancing healthcare services for the NWU community.
- **Hybrid Polling POC:**
A Proof of Concept (POC) was conducted for Hybrid Polling during meetings, offering a more interactive and engaging experience for participants.
- **Online Tender and Supplier Database:**
An online and automated Tender process and Supplier database was successfully implemented.

Upgrades

In response to managing IT environment risks, several system upgrades have been completed, including the current Learning Management System (eFundi), NextCloud, and Service-Oriented Architecture (SOA) environment.

Conclusion

NWU IT remains committed to leveraging technology to support academic, business, and administrative operations, ensuring the University's growth, innovation, and security in an ever-evolving digital landscape. These achievements in 2023 demonstrate the dedication and expertise of the IT team in achieving our strategic goals.

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9. RESEARCH

IT showcased its crucial role in advancing research and innovation within our institution and beyond through its involvement in the establishment of the South African Open Science Cloud (SAOSC), the initial discussions of the research management system considerations, and its advisory role in research project POCs.

Areas where IT has contributed to the Research domain include:

High Performance Computing (HPC)

The HPC cluster was upgraded in August with brand new Super Micro blades, with another upgrade planned for 2024. In addition, new software was incorporated into the NWU HPC cluster (called Mufasa) specifically for the Faculty of Engineering. The HPC now hosts 22 different software packages, primarily serving the Faculty of Natural and Agricultural Sciences and the Faculty of Engineering.



Library

The IT department is responsible for maintaining library systems aimed at providing support to researchers, undergraduate and postgraduate students.

IT is also responsible for identifying and examining Library and Information Services (LIS) Information and Communication Technology (ICT) business needs and determining timely and effective solutions for business functions and processes. This ensures that the library's ICT systems and strategies are aligned with the institution's overall IT strategy.

Carpentries

The Carpentries project comprises the Software Carpentry, Data Carpentry, and Library Carpentry communities of instructors, trainers, maintainers, helpers, and supporters who share a mission to teach foundational computational and data science skills to researchers.

IT staff actively participate in hosting workshops and training sessions, collaborating with Carpentry members both nationally and internationally. This collaboration includes co-hosting and teaching with organisations such as the National Institute for Theoretical and Computational Sciences and instructors from Newcastle University in the UK.

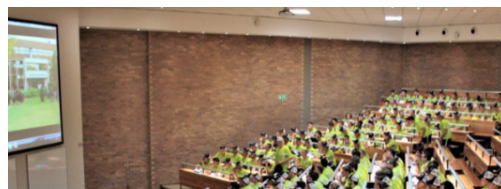
Looking ahead, we remain committed to the ongoing enhancement of our IT resources to empower our research community with the tools they need to drive research excellence.

10. SERVICE DELIVERY

10.1 Introduction

Effective and efficient service delivery has been achieved by working steadily to ensure ongoing satisfaction for both our student and staff user base. In 2023, a wide range of IT support and training was provided in a timely and professional manner. Our goal has been and continues to be to offer the best support to our users. We provide a wide range of services to staff and students: IT Service Desk, walk-in support, classroom support, infrastructure support, computer lab management, access control, fire alarm support, telephony services. After Covid, audio and video infrastructure support in lecture rooms was added to the list. This expansion has allowed us to meet the evolving needs of our student and staff user base, ensuring they have access to the necessary resources for a seamless learning and working experience. In addition, we continually strive to stay abreast of the latest technological advances in order to provide efficient and effective IT support solutions.

At the beginning of each year, we are engaged in student registration and orientation for first-year students. This includes basic IT training, Wi-Fi setup, Office 365 account activation, and assistance with registration queries. We ensure that our first-year students are well-versed in the student IT processes, even for those who register late.






The service desk offices on all campuses and the Operations division were merged into the new Service Delivery department in February 2023. This department is mainly responsible for 1st line and 2nd line support. The integration of the service desk offices and the Operations division into the Service Delivery department has streamlined operations and improved efficiency. With a focus on 1st line and 2nd line support, this department ensures prompt resolution of technical issues and provides comprehensive support to users across all campuses.



10.2 Staff and student support

10.2.1 Incident management

The requests from staff and students have already increased compared to 2022 total. The number of incidents handled, to date (October 2023) is shown in the table below:

Number of Service Desks Request		
 CAMPUS	 STAFF	 STUDENTS
Mahikeng	3467	3194
Potchefstroom	17194	10656
Vanderbijlpark	4886	249

10.2.2 Infrastructure and platform alarms

Infrastructure and platform alarms are essential for proactive IT management and refer to the monitoring and alerting on IT systems to detect and respond to issues. When an alarm is triggered, system administrators and support teams are notified to take corrective actions or investigate the issue. Monitoring and responding to infrastructure and platform alarms help NWU maintain the reliability and availability of their IT systems and services.

Number of Alarms (September 2023)	
TIME SLOTS	ALARMS
All hours	3349
Standby Evenings	4892
Standby Mornings	448
Working Hours	19879
Total	28568

10.2.3 Request contributors

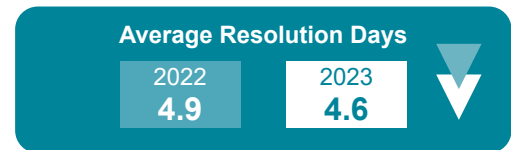
Skype for Business, introduced as a new service towards the end of 2022, has been a significant contributor to support requests for 2023. The integration of Skype for Business into the workplace has revolutionised communication and collaboration among employees. Its user-friendly interface and seamless connectivity have made it a popular choice for businesses of all sizes. As a result, the increased usage of Skype for Business has led to a surge in support requests as users navigate and explore its various features and functionalities. There have also been significantly more printer-related problems than in previous years. Hereby a list of significant request contributors:

Significant support request contributors:

- Wi-Fi
- OS Deployment
- Skype for Business
- Printers
- Microsoft Office
- Papercut
- Passwords

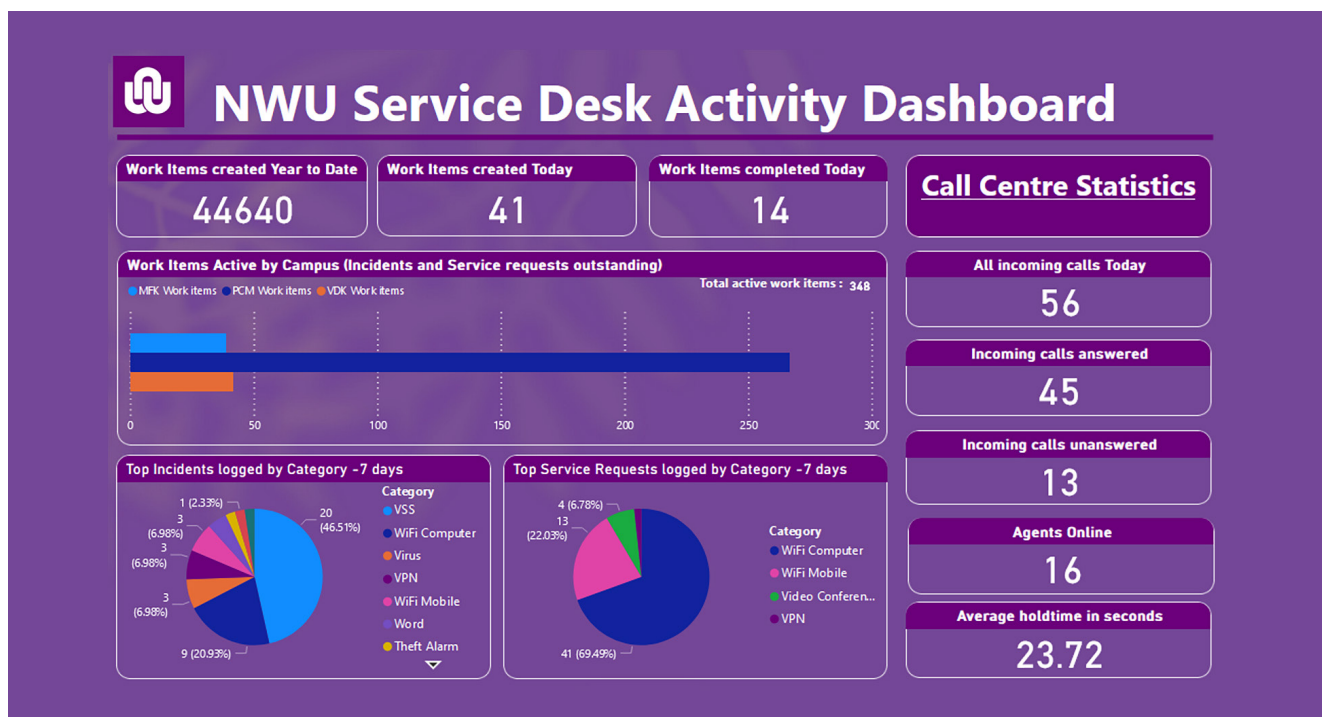
10.2.4 Time to resolve requests

There has been an improvement in the average time to resolve issues in general.



10.2.5 Monitoring of service desk activity

Below is a snapshot of the combined service desk activity on all 3 campuses (24 October 11:00), updated in real time.



10.2.6 User feedback and satisfaction

User feedback on incident management in the walk-in and Call Centres is overwhelmingly positive. Staff and students appreciate the efficient and prompt resolution of their issues in both the walk-in and Call Centres. The well-trained staff and streamlined processes ensure that incidents are handled professionally and that customers are satisfied with the overall experience. A general survey is being planned for later this year. The survey aims to gather more specific customer feedback on their experience of incident management in both the walk-in and Call Centres. This will help identify any areas for improvement and ensure that customer satisfaction remains a top priority for the company.



Feedback examples:

- Very friendly and helpful
- Knew his stuff!!! Very friendly and patient!! Thank you
- An IT lifesaver!
- He went out of his way to assist me!
- Thank you for not quitting on me.

10.2.7 QContact for student finances

The adoption of QContact for the Student Financial Support Services across all three campuses of NWU represents a significant leap forward in customer service optimisation. QContact streamlines communication processes, allowing students to easily access support and receive timely assistance. This implementation increases efficiency and ensures a seamless experience for students seeking financial support services at NWU. Launched in November 2022, QContact serves as an omni-channel contact centre, accommodating a variety of communication platforms, including social media, telephone, and email.

The implementation of QContact is a practical example of leveraging technology to streamline operations and improve client interactions. Plans include the ongoing development of the knowledge base and the potential integration of additional communication channels as the system matures.

10.3 Training

During the year, our IT department made great strides in equipping our staff with the

knowledge and skills necessary to excel in the ever-evolving technology landscape. We have reinforced our commitment to fostering a technologically educated workforce through a well-structured and comprehensive training programme. Substantial investments were made in upskilling our staff, focusing on the core areas of cybersecurity and the newly established modern workplace tools, such as Outlook, Teams and OneDrive.

As we move forward, we remain committed to this ongoing investment in the professional development of NWU staff.



10.4 Printing

We have seen a significant increase in printing demand compared to 2022. Printing in the virtualised environment (Citrix) is an issue that still needs to be resolved. A workaround solution has been implemented in PC Labs.

10.5 Infrastructure support

Infrastructure support is a fundamental cornerstone of our university's operational efficiency and seamless technology integration. IT has worked tirelessly to ensure that our institution's infrastructure remains robust, reliable, and capable of supporting the evolving needs of our academic and administrative functions.

IT has supported the University's network, Wi-Fi, CCTV, Access controllers and the fire detection system, assuring minimal disruption in the face of technological challenges. This commitment to infrastructure support has reduced downtime, increased network stability, and improved data security.

10.6 New audiovisual equipment in lecture and meeting rooms




During the Covid-19 pandemic our Information Technology (IT) department embarked on a journey to upgrade and modernise designated lecture rooms to facilitate Hybrid Teaching and Learning. The expansion of these lecture rooms has continued annually, aligning with a parallel trend of equipping meeting rooms to enable online collaboration and communication. IT now supports and maintains all the advanced technology solutions in these rooms.

Furthermore, IT produces training materials and conducts sessions to upskill our staff to ensure that they are able to make the most of these new technologies.

10.7 Lab management

10.7.1 Lab utilisation for 2023 (January to October)



The utilisation of Labs for the various campuses from January to October are depicted below:

 CAMPUS	 NUMBER OF PC LABS	 NUMBER OF LOGINS
Mahikeng	31	36246
Potchefstroom	14	392809
Vanderbijlpark	12	154389

10.7.2 Citrix labs

The demand for remote access and virtual desktops skyrocketed. The Citrix lab rollouts started in July 2022 on Potchefstroom Campus. Due to resource constraints of the Citrix cluster, the rollout to other campuses was slowed down until these could be addressed. The rollout should continue in 2024. The table reflected the number of Citrix Labs rollouts as on the 17th of October 2023.

From 24 September to 23 October 2023 Citrix has seen an average of 503 sessions per day with 13611 unique users during that time.

 CAMPUS	 NUMBER OF CITRIX LABS
Mahikeng	10
Vanderbijlpark	1
Potchefstroom	10

10.8 Out and about on the campuses

10.8.1 Open days

IT's involvement in open days is vital for creating a seamless and technology-enabled experience for both face-to-face and virtual attendees, with the aim of increasing the effectiveness of these important recruitment events. Below is an example of our teams and involvement:



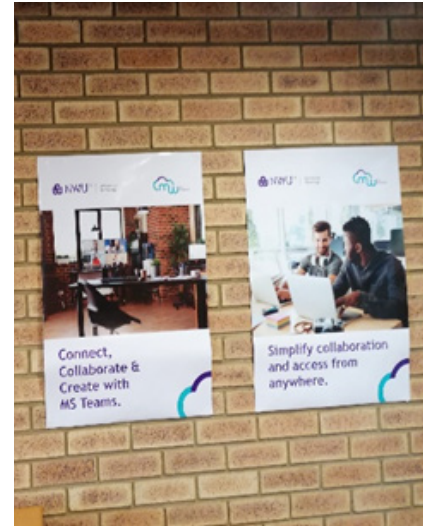
10.8.2 Sport days

Our Team provides supporting services to sport events.



10.8.3 DWP awareness campaign

The Workplace Awareness Campaign was launched on Mandela Day, 18 July 2023, and will run until the end of 2023. On this day (18 July 2023) and for the rest of that week, our IT staff and students' helpers put up posters and banners, handed out leaflets and had staff and students scan their T-shirts to access the awareness website.



10.8.4 Inaugural unified communications and audiovisual special interest group (uc-av-sig) meeting

On 13 and 14 April 2023, the UC-AV-SIG was hosted by the North-West University to discuss the latest trends, best practices, and success stories. For the first time, the two special interest groups held a combined event with different streams to maintain their unique identities. The event aimed to foster collaboration and knowledge sharing between attendees from different academic institutions and industry professionals. The different streams allowed attendees to delve deeper into specific topics of interest, while still benefiting from the overall networking opportunities offered by the combined event.

The event was a resounding success, attracting over 60 delegates from 19 universities working in the fields of unified communications and audiovisual.



11. IT STAFF DEVELOPMENT

11.1 New way of work

In the past year, there has been a notable shift in the way the IT department operates. The conventional office setting has been replaced by a dynamic and adaptable model with a strong emphasis on remote collaboration, cloud-based solutions, and a focus on digital transformation. This new way of working, which emerged out of necessity during the Covid-19 pandemic, is now widely embraced as a strategic advantage in divisions where a physical presence on campus is not always required. Our adaptability, combined with the strategic implementation of technology, will remain pivotal to our success in this new era of work.

The IT department adheres to the People and Culture recommendation of a 60%-40% balance between remote and office work but is flexible in adjusting this rule where necessary for different divisions and positions.

11.2 Training and professional development

Empowering our IT staff through training and professional development is a top priority, as it is critically important to enhance and update the skills of our workforce to keep in pace with technological advances. A wide range of resources are available to our IT team, from specialised certifications to customised workshops and online learning platforms. These opportunities not only cultivate expertise in emerging technologies such as artificial intelligence, cloud computing, and cybersecurity but also provide specialised training in the technologies we are implementing. There have also been opportunities for personal development.

Our IT team has embraced these opportunities to excel in delivering IT services. Here are some examples of the training undertaken by IT staff:

11.2.1 Technical, standards and training specific to planned implementations

- Project Management
- Electronic Engineering
- ITIL
- COBIT
- CompTIA Network +
- SAFLEC
- MS 365 specific training: Power BI, Power platform applications, Word, and Excel
- Kafka and NGDE components such as Domain driven design, Docker and Tanzu
- Various Udemy courses

11.2.2 Professional and personal development

- HEITSA ALI (Annual Leadership Institute)
- Design Thinking and Innovation for Engineering Professionals
- Legal Liability in Occupational Health & Safety
- Wellness webinars

11.2.3 Webinars and special interest groups

- HEITSA webinars
- Gartner sessions
- Special interest groups, which are starting to resume after the Covid-19 pandemic.

12. COMMUNITY ENGAGEMENT

The IT department is instrumental in enabling, enhancing, and securing the technology infrastructure and tools required for effective community engagement. We work in close collaboration with the NWU's Community Engagement department to engage in Community Outreach efforts.

Some examples of these initiatives include:

- We placed final-year IT students as interns to give them the opportunity to gain practical work experience.
- We offered laptops at a competitive price to underprivileged students who do not currently own one.
- We donated 14 computers to the Emfuleni Shelter for Boys to assist school pupils who cannot afford computers.



13. FINAL THOUGHTS

In these concluding words of the IT annual report, we reflect upon the strategies, approaches, and principles that have shaped our journey into the future. Over the past few years, we've witnessed significant changes, and one certainty stands out: the pace of change is accelerating. As technology continues to advance and industries evolve, our ability to adapt and remain open-minded is pivotal. Embracing innovation and a commitment to continuous learning will be key as we navigate the rapid changing landscape. The adoption of new technologies in our daily lives will redefine how we interact, communicate, plan, write, read, and so much more.

An example of our fast-changing world is the incredible growth of OpenAI's ChatGPT, which garnered a remarkable 1 million users just five days after its launch in November 2022. To put this into perspective, it took Instagram approximately 2.5 months to reach 1 million downloads, while Netflix had to wait around 3.5 years to achieve the same user base.

In retrospect, we've undergone fundamental shifts in our technology approach that have now become tangible realities. These transformations involved pivoting from traditional hardware solutions towards embracing cloud-based technologies and software-as-a-service models. These transitions have empowered us with greater scalability, flexibility, and cost-efficiency in our operations. We've also evolved from:

- Build to buy
- Customise to standardise
- 'Everything under our own roof' to cloud-smart

- The old office to the digital workplace
- 'IT as a cost center' to 'Digital Transformation (Dx) enabler'

While many new approaches and strategies have been initiated, their full impact will manifest over time:

- Shifting from being a Digital Transformation (Dx) enabler to a strategic differentiator.
- Transitioning from a focus on running and growing the business to implementing dual-mode IT and innovative approaches.
- Moving from "IT owns everything" to a democratised technology era.
- Progressing from rudimentary Project and Portfolio Management (PPM) practices to full Enterprise Project and Portfolio Management (EPPM).
- The optimisation or replacement of all major systems within the next five years.
- Evolving from fragmented Cyber Security to a coordinated Cyber Security approach.
- Transitioning from fragmented data architecture to an extensive data analytics strategy and operating model.

To effectively navigate our course for the future, our dual-mode approach emphasises the equilibrium between stable, predictable operations (Mode 1) and agile, innovative responses (Mode 2) within a dynamic business environment. This model equips our IT organisation to address operational needs through Mode 1, while simultaneously embracing new opportunities and tackling challenges through Mode 2.

Dual-mode approach



As we conclude this annual report, we are committed to embracing the ever-accelerating pace of technological change and evolving to meet the challenges of the future, recognising the ever-increasing significance. Digitalisation have been integrated into our strategic vision, underscoring its paramount importance.

The NWU investments in Information Technology provides us with the vital tools necessary to not only withstand the

evolving business landscape but to thrive within it. Embracing digitalisation is our key to unlocking enhanced efficiency, streamlined processes, and enriched communication. It is the foundation for our future success, as we navigate the dynamic road ahead.

Our journey thus far has been marked by transformation, and we stand ready to embrace what the future holds with agility and innovation as our guiding principles.

14. ACKNOWLEDGEMENTS

First and foremost, we thank God for the wisdom, strength, and guidance bestowed upon us throughout the year. These blessings have been integral in fulfilling our responsibilities and achieving the milestones outlined in this Annual Report.

We extend our deepest gratitude to the executive management of North-West University (NWU) for their unwavering support and valuable insights, their commitment and strategic guidance, and to our colleagues across various faculties and departments for their invaluable cooperation and engagement. Your collaborative efforts have been instrumental in the successful implementation of key IT projects that contribute to NWU's broader vision. In particular, we acknowledge the Deputy Vice-Chancellor of the Potchefstroom Campus and Information Technology, Prof Daryl Balia, whose leadership and strategic vision have been instrumental in steering this department towards its objectives.

We pay tribute to Aldine Oosthuizen, a previous Director on the Vanderbijlpark Campus, who has sadly passed away. Her contributions to the University have been immense, and her legacy will continue to inspire us. We extend our deepest condolences to her family, friends and colleagues.

Our sincere thanks go to our dedicated IT team. Your collective efforts have been pivotal in achieving the successes detailed in this report. We are grateful for your tireless work and expertise in delivering innovative solutions and ensuring the smooth running of our University's technology infrastructure. Your commitment to excellence and your ability to adapt to an ever-changing technological landscape have

been instrumental in our achievements. We look forward to continuing our collaboration and achieving even greater milestones together.

We also thank our external partners and vendors for providing technology solutions that have streamlined our operations.

To the students and faculty who are the ultimate users of our services, we thank you. Your feedback is invaluable and continues to drive our commitment to excellence and continuous improvement.

Finally, we acknowledge the contributions of those involved in the data collection and analysis for this report. Your work forms the basis for informed decision-making and has been indispensable to our operations.

As we look forward to the challenges and opportunities ahead, we remain committed to fostering an IT ecosystem that aligns with NWU's educational and administrative objectives. We recognise the importance of technology in enhancing teaching and learning experiences for our students and streamlining administrative processes. By leveraging our IT resources effectively, we aim to create an environment that supports innovation and empowers our faculty, staff, and students. As we navigate the ever-evolving digital landscape, we will continue to seek feedback from all stakeholders to ensure that our IT services and solutions meet the diverse needs of the NWU community. Your input and involvement is critical to shaping the future of our IT ecosystem and driving our commitment to excellence.

MEET OUR MANAGEMENT TEAM



BOETA PRETORIUS

Chief Director Information
Technology



ANDISWA MSI

Director, Academic
and Office Solutions



DANIE STOOP

Director, Electronic
Services



MARI PRINSLOO

Director, Business System
Development and Support



WILHELM VAN BELKUM

Director, Operations
and Infrastructure



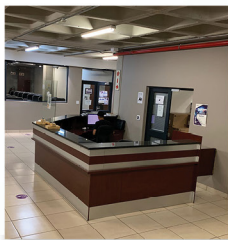
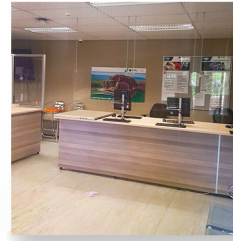
**DASSIE JANSE VAN
VUUREN**

Director, Business
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JIM MAMPHOKE

Director, Service
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