



# SATN

SOUTH AFRICAN TECHNOLOGY NETWORK

TECHNOLOGY FOCUSED UNIVERSITIES

# ANNUAL REPORT

## 2020



<b>CPUT :</b>	Cape Peninsula University of Technology	<b>SASCE :</b>	South African Society for Cooperative Education
<b>CUT :</b>	Central University of Technology	<b>SATN :</b>	South African Technology Network
<b>DEA :</b>	Department of Environmental Affairs	<b>SAQA :</b>	South African Qualifications Authority
<b>DHET :</b>	Department of Higher Education and Training	<b>SETA :</b>	Sector Education and Training Authority
<b>DPSA :</b>	Department of Public Service and Administration	<b>THEA:</b>	Technological Higher Education Association
<b>DUT :</b>	Durban University of Technology	<b>THENSA :</b>	Technological Higher Education Network South Africa
<b>EU:</b>	European Union	<b>TIA :</b>	Technology Innovation Agency
<b>E-WASA :</b>	E-Waste Association of South Africa	<b>TUT :</b>	Tshwane University of Technology
<b>EWSETA :</b>	Energy and Water Sector Education and Training Authority	<b>UIF:</b>	Unemployment Insurance Fund
<b>NRF:</b>	National Research Foundation	<b>UMP :</b>	University of Mpumalanga
<b>HERE:</b>	Higher Education Reform Experts	<b>UNIVEN:</b>	University of Venda
<b>HERESA:</b>	Higher Education Reform Experts South Africa	<b>UNIZULU:</b>	University of Zululand
<b>MUT :</b>	Mangosuthu University of Technology	<b>USAf:</b>	Universities South Africa
<b>NQF :</b>	National Qualifications Framework	<b>VUT :</b>	Vaal University of Technology
<b>NUST:</b>	Namibia University of Science and Technology	<b>WACE :</b>	World Association for Cooperative Education
<b>PI :</b>	Performance Indicator	<b>WIL :</b>	Work Integrated Learning
<b>QCTO :</b>	Quality Council for Trades and Occupation	<b>WSG:</b>	World of Work Strategy Group
<b>RIEC :</b>	Research, Innovation and Enterprise Committee	<b>WSU :</b>	Walter Sisulu University
<b>RISG:</b>	Research and Innovation Strategy Group		

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## CHAIRPERSON'S MESSAGE

### **Prof LR van Staden**

Vice-Chancellor and Principal:  
Tshwane University of Technology (TUT)





Chairperson:  
South African Technology Network (SATN)





Into 2020, my second year as the Chairperson of the SATN Board, I am extremely proud of the resilience our sector has displayed during the toughest challenge that humankind has endured with the onslaught of the COVID19 Pandemic. The year will be remembered on how it impacted on every aspect of human life worldwide. It is without a doubt that the challenges faced by our universities in managing the pandemic has affected how we continue with our core purpose of teaching and learning, and the contingency plans we have implemented to ensure the safety of our students, staff & broader communities.

With the support, of the Vice Chancellors, the CEO, and staff the SATN has been proactive in delivering to its member organisations it's updated and integrated vision and strategic objectives and ensuring that we continue to achieve a transformative experience for our staff and students and to focus more clearly on areas that will maximise our delivery of technology and innovative education and research.

Working closely together, the SATN represents a formidable positive force for its members, students, staff, communities, and strategic partners. Over the past year the Board has improved its operations to help deliver on its mission and vision. As you read into the Annual Report, I wish to emphasise the following:

During 2020, the Board cemented its decision to rebrand the organisation name to Technological Higher Education Network South Africa (THENSA) and acknowledging the fact that we have a growing membership and new strategic partners. Through careful, selective pursuit of partnerships and networks, the SATN has formed formidable partnerships which has led to many special projects such as:

-  The Capacity Development Programmes with DHET.
-  Partnership with THEA, Irish Institute of Technology and the Irish embassy on skills Training for emerging Entrepreneurs and the development of an online programme, joint research on identified areas of collaboration (clusters) including the COVID19 Pandemic, the
-  African Space Science Connection, Tourism Education, Research & Training A Post COVID19 Initiative .
-  The establishment of 6 research clusters and a Consortium of Science and Technology parks and business units with goals that will promote SATN member institutions.

-  The UIF Skills Programme with the Department of Labour.
-  The EU funded Network of Higher Education Reform Experts (HERESA) in partnership with 6 EU partners targeting teaching and learning strategy and reform in universities in South Africa.
-  Partnerships with industry.
-  Partnerships in Africa and beyond.

While we grapple with the many uncertainties, we will continue with our core focus to sustain and improve our leading reputation for innovative research and embrace the technological changes that will contribute to skilled and resilient graduates. We have made great strides in our contribution to understanding and combating COVID-19 with government and other key strategic partners. Throughout the COVID19 crisis, our universities have gone beyond the extra mile to create the best possible environment for blended learning (where possible).

The transition to teaching and learning online has happened at an incredibly fast pace. However, the rapid transition to online education and assessment continues to be a huge challenge for our universities. As the SATN, we will continue with our strategic vision to support the long-term sustainability of our institutions and ensure that we can continue to provide technological, innovative quality teaching, learning and research for all students. Students achieving their full potential in their career success will be reflected in our teaching, research, and creative activities.

The challenges of COVID19 are not over as we will most likely experience a multitude of waves of infection over the years and which will be compounded by the continuing uncertainty. As the leadership at universities, we must continue to apply our collective ingenuity and determination to address the myriad of challenges and provide continued support for technological education and research activities.

Our priority will remain to address the impact of COVID19 pandemic as our sector continues to experience greater pressures on all aspects of functioning. There will be a range of concerted measures to redirect resources to areas requiring urgent support as we navigate the effects of the COVID19 crisis as best as we can. Our focus on digital technologies, innovative and creative industries, creating new learning and employment opportunities through leveraging our partnerships and various projects will lead us into 2021.

We recommit the SATN in supporting our President Cyril Ramaphosa: *"As a country we will be joining efforts to help the world recover better by ending the pandemic as a priority, addressing food security and hunger, getting all our children back to school, addressing climate change and protecting the most marginalized. We must ensure that no one is left behind."*



## **CEO MESSAGE**

**Dr Anshu Padayachee**

Chief Executive Officer

2020 has been a year of great challenges and at the same time remarkable achievements. It has been a year of great sorrow as many of the staff and students at our institutions succumbed to the COVID19 virus.

I would like to extend our deepest condolences to their respective families. I also take this opportunity in expressing my enormous gratitude to the leadership of our member institutions, SATN Secretariat staff, our teams of researchers and task teams, our donors, and our strategic partners whose resilience and forbearance have allowed SATN not only to adapt to challenging times but also to contribute to national efforts to combat COVID19.

SATN never closed, instead, we found new, innovative ways of delivering all our important work digitally. Our member institutions showed tremendous dedication and flexibility this year – and we are incredibly proud of what we have achieved together. Our response to the impact of the Covid19 pandemic was a key focus. When news of Covid19 first reached SA in February 2020, we looked at how we could continue and contribute through the various projects at our member institutions.

We are especially proud of the way our member Institutions have worked to respond to the national and global challenges of the Covid19 pandemic. Our academics have researched and advised on almost every aspect of the pandemic and continue to do so. We maintained the critical research using remote and online workshops. Our universities have proved just how well placed they are to transform what we do and to work in the national and international interest at the most pressing and challenging of times.

As we look to the next year, our focus will be to launch and deliver our new brand, mission, and strategic objectives. This strategy has a central theme of a community spirit that drives us forward to deliver our world-class research, innovation, and education.





UNIVERSITY OF  
MPUMALANGA



UNIVERSITY OF  
ZULULAND



University of Venda  
*Creating Future Leaders*



VUT  
Vaal University of Technology  
*Your world to a better future*

**WSU**  
Walter Sisulu University



Central University of  
Technology, Free State



**MUT**  
MANGOSUTHU  
UNIVERSITY OF TECHNOLOGY



Cape  
Peninsula  
University  
of Technology



**DUT** DURBAN  
UNIVERSITY OF  
TECHNOLOGY



NAMIBIA  
UNIVERSITY  
OF SCIENCE AND  
TECHNOLOGY



Tshwane University  
of Technology  
*We empower people*



# 1. SATN IN 2020

As we wrapped up what has been an immensely difficult year for people around the world, and especially the education sector, we learnt from this devastating pandemic in 2020 that human ingenuity, combined with science and learning and an ethical and dedicated citizenry, we can address the most daunting of challenges.

While we are right to live in hope and with the possibilities of technology, many of the things that we have come to take for granted over the past decades, has become questioned as different nations have responded to the global health crisis in different ways. The pandemic also revealed the stark global inequalities, and this pandemic will continue to influence our personal and professional lives

Never has it been more important to encourage concerted cooperation amongst our member institutions and our partners to seek solutions to the world's most pressing issues.







## 1.1 VISION AND STRATEGIC OBJECTIVES FOR 2020

As the SATN tackled its revisioning and rebranding exercise, it responded to its vision, mission, and objectives for the period 2020.

### 1.1.1 SATN Vision:

SATN is a consortium of Technology Focussed Universities and organisations established to promote relevant, impactful, and globally competitive qualifications, research, and innovation towards a knowledge-based economy.

### 1.1.2 SATN Strategic Objectives

-  Act as an advocacy and lobbying agency for the consortium.
-  Be a catalyst for socio-economic development.
-  Promote and enable research and innovation.
-  Support active participation of graduates in the economy.
-  Mobilise mutually beneficial national and international education, business, industry networks and partnerships.
-  Promote marketing and branding of SATN as a technology focused education, training, and research institution.



## 2. GOVERNANCE

The Board of Directors of SATN comprises of eleven Vice Chancellors of Technology Focussed Universities and the CEO of the Technology Innovation Agency. As custodians of the Consortium, the Board has in place mechanisms to ensure sufficient oversight of the organisation's controls and functioning. The Board held three online meetings during the year to discuss, debate and evaluate its objectives, activities, and the rebranding of the SATN.

This annual report of the SATN reflects the dedication of our member institutions to continue to respond to the challenges of the pandemic and to their commitment to the various projects agreed upon.



**Prof LR van Staden**  
Vice-Chancellor and Principal:  
Tshwane University of Technology (TUT)  
Chairperson: South African  
Technology Network (SATN)



**Prof HJ de Jager**  
Vice-Chancellor and Principal:  
Central University of  
Technology, Free State (CUT)  
Deputy Chairperson: South  
African Technology Network (SATN)



**Prof NS Nhlapo**  
Vice-Chancellor: Cape  
Peninsula University of  
Technology (CPUT)



**Prof DP Ngidi**  
Acting Vice-Chancellor and Principal:  
2 November-31 December 2020  
Central University of  
Technology, Free State (CUT)



**Prof TZ Mthembu**  
Vice-Chancellor and Principal:  
Durban University of  
Technology (DUT)



**Prof DE Malaza**  
Vice-Chancellor and Principal:  
1st January - 30 April 2020  
Mangosuthu University of  
Technology (MUT)



**Prof M Ramogale**  
Acting Vice-Chancellor & Principal:  
1st May - 31 Dec 2020  
Mangosuthu University of  
Technology (MUT)



**Prof TV Mayekiso**  
Vice-Chancellor: University of  
Mpumalanga (UMP)



**Mr M du Toit**  
Acting Vice-Chancellor:  
1 January - 18 May 2020  
Namibia University of Science  
and Technology (NUST)



**Dr Andrew Niikondo**  
Acting Vice-Chancellor:  
1st May - 31 December 2020  
Namibia University of Science and  
Technology (NUST)



**Prof I Rensburg**  
Administrator: Vaal University  
of Technology (VUT)



**Dr BN Nthambeleni**  
Vice-Chancellor and Principal:  
University of Venda (UNIVEN)



**Prof JR Midgley**  
Vice-Chancellor & Principal:  
Walter Sisulu University (WSU)



**Prof XA Mtsoe**  
Vice-Chancellor and Principal:  
University of Zululand (UNIZUL)

### 3. STRATEGIC TASK TEAMS

Despite the uncertainty and difficulties that the member institutions experienced because of the pandemic, SATN has been proactive in providing support for research teams, project coordinators, participants, stakeholders, and facilitators for the various projects, through Skype and Zoom platforms.

The strategic task teams continued to work with dedication and a brief summary of the task team activities is provided below.

#### 3.1 Performance Indicator Task Team (PI)

The PI Task Team produces a bi-annual performance indicator profiles for the sector which provides data on critical areas for attention for the sector and individual member institutions. The PI document has been used as the guiding tool with indicators and markers as to where SATN should be focusing its core activities. The following focused priority areas for intervention were identified:

- ☞ Capacity Enhancement
- ☞ Programmes for staff to ensure we meet the targets set by the DHET and the NRF
- ☞ Increased and improved national and international research partnerships
- ☞ Curriculation of a short course in entrepreneurship education
- ☞ Reviewing of curricula for the 4IR
- ☞ Online teaching and learning strategies
- ☞ Collaborative research and development

#### 3.2 Research, Innovation and Enterprise Committee (RIEC)

In partnership with USAf's Research and Innovation Strategy Group, this group ensures a combined and collective higher education response to the research agenda and targets set for South Africa. The work of the RIEC continues with particular focus on:

- ☞ Open science and open access
- ☞ Building platforms for collaboration across the sector and internationally
- ☞ Transformation and capacity development
- ☞ Funding for postgraduate studies and research
- ☞ Research infrastructure in the current context.

#### 3.3 Work Integrated Learning (WIL) Task Team

In partnership with USAf's World of Work Strategy Group, this group advised member institutions on changes and trends in the world of work and their implications on the mandate and obligations of the higher education sector. Among other functions, the group explores and considers the trends and implications on the world of work towards 2030 and beyond. It will influence world-of-work-related policies by leading on formal engagement with regulators, and with industry and other employers of graduates. The priority focus of this group will be on:

- ☞ The impact of new technologies on the labour market
- ☞ Work integrated learning and internships
- ☞ Entrepreneurship development in higher education
- ☞ 4IR and graduate destinations



## 4. SATN RELATIONSHIPS AND SPECIAL PROJECTS

SATN remained committed and proactive in providing support to its research teams, project coordinators, stakeholders, facilitators, and participants for the various projects.

SATN has continued to play a central role in creating new opportunities for its member institutions through strategic partnerships and the identification of collaborative projects that are mutually beneficial. Partnerships continue to be of fundamental importance to SATN to develop and maintain strong multifaceted partnerships with universities worldwide in promoting relevant, impactful, and globally competitive qualifications, skills, research, and innovation. In this regard, the following programmes were implemented:

### 4.1 Partnership with DHET on Capacity Development Programmes for Staff

It is without a doubt that 2020 brought about several challenges with the emergence of COVID19 pandemic. Despite this, SATN is proud to announce that all the candidates in the PhD Programme, have progressed significantly towards their degrees in the development of their chapters and data. Regular contact and communication were maintained through one-on-one support through emails, SMS's, telephone calls and Zoom Online Support System. In addition, web links, access to various YouTube presentations on aspects of academic writing and in particular writing towards the PhD were provided to the candidates. Supervisors participated in the relevant training (modules) and played a role in ensuring that time to completion was adhered to.

The following diagram provides an analysis of the candidates who participated in the programme .



PhD Cohort Demographics & Submission Dates						
Institution	Number of Candidates from Institution	Gender		Population Group (Black, White, Indian)	Estimated Submission Dates	
		Male	Female		2021 Submission*	2022 Submission
<b>Cape Peninsula University of Technology</b>	4	0	4	4 African	1	3
<b>Central University of Technology</b>	3	1	2	1 African 3 White	0	3
<b>Durban University of Technology</b>	9	4	5	8 African 1 Indian	4	5
<b>Mangosuthu Univeristy of Technology</b>	4	1	3	3 African 1 Indian	2	2
<b>Tshwane University of Technology</b>	9	1	8	8 African 1 Coloured	3	6
<b>University of Fort Hare</b>	2	0	2	2 African	2	0
<b>University of Venda</b>	3	0	3	2 African 1 Coloured	1	2
<b>University of Zululand</b>	5	1	4	5 African 1 White	4	1
<b>University of the Western Cape</b>	2	1	1	1 African 1 Coloured	0	2
<b>Vaal University of Technology</b>	1	0	1	1 African	0	1
<b>Walter Sisulu University</b>	5	1	4	5 African	3	2
<b>TOTALS</b>	<b>47</b>	<b>10</b>	<b>37</b>		<b>20</b>	<b>27</b>

The 47 candidates will be submitting their theses in the following fields of study:

<b>PhD Cohort Respective Field of Study</b>	
<b>Field of Study</b>	<b>Number of candidates</b>
<i>Economic/Management Sciences</i>	7
<i>Science</i>	8
<i>Education</i>	4
<i>Health Sciences</i>	4
<i>Environmental Sciences</i>	7
<i>Law</i>	4
<i>Mathematics</i>	1
<i>Media/Art/Communications</i>	3
<i>Psychology/Sociology</i>	5
<i>Computer Sciences/IT</i>	2
<i>Entrepreneurship</i>	2
<b>TOTAL</b>	<b>47</b>

The South African and International facilitators made significant contributions to the success of this programme and had to change their teaching strategies mid-way through the programme because of the pandemic lockdown. They invested extra time and provided one-on-one support to all the candidates.

The mobility grant provided by the DHET to candidates to meet with their respective international mentors had to be put on hold for the current year because of travel restrictions. The candidates will utilize this grant as soon as the international travel restrictions are lifted. They will continue to publish papers in consultation with their mentors.




## **4.2 PARTNERSHIP WITH THE IRISH TECHNOLOGICAL HIGHER EDUCATION ASSOCIATION (THEA) AND THE IRISH EMBASSY**

The signing of the MOU between SATN and THEA mapped the way for development of six collaborative research clusters and programmes of mutual interest, inter alia, entrepreneurship education, space science, food security, work integrated learning, promotion of staff and student exchanges, identification, application, and submission of joint funding through this partnership.

The following joint activities were undertaken by SATN and THEA:

### **4.2.1 SKILLS TRAINING FOR EMERGING ENTREPRENEURS - THE DEVELOPMENT OF AN ONLINE SAQA ALIGNED SHORT COURSE ON ENTREPRENEURSHIP**

A dedicated workshop on entrepreneurship was funded by the Irish Embassy and the following important needs of young undergraduates and graduates were identified:

-  The need for training in enterprise development for new entrepreneurs to succeed
-  The need to link with business and investors to boost the capacity and sustainability of the new business
-  The need for the development of a network of young entrepreneurs
-  The need for the establishment of incubators and mentors at universities in partnership with business and industry to ensure viability of the start-ups.

The workshops that followed focussed on developing a NQF level 5 curriculum for entrepreneurs in partnership with the Cork Institute of Technology and the Galway Mayo Institute of Technology. The COVID19 pandemic halted the implementation of any residential programme and the team focused on the development of an online SATN graduate programme. A further grant was awarded by the Irish Embassy to develop and support the online Entrepreneurship Programme for Graduates.

The team developing this online programme included the Technology Innovation Agency (TIA), Social Path (Digital Marketing Consultancy) and the Hicks Centre for Entrepreneurship Excellence in Ireland. The content is based on a five-day Entrepreneurial Programme designed by SATN and its Irish partners. The online programme will be linked to the SATN Graduate Employability App that track its graduates and link them to business and industry and vice versa. Preparation for the Pilot Testing of 50 students will be conducted in April-May 2021 followed by the assessment of the pilot for fine tuning.

The SATN recommends its member institutions to offer this online programme to their first-time entry students during orientation to encourage all young students to be job creators rather than just job seekers. The skills provided in this programme will assist the students in all aspects of their lives especially getting them started in their own businesses.



## 4.2.2 SATN-IRISH COLLOQUIUM – RESEARCH CLUSTERS

In recognition of the fact that global challenges require global cooperation, the grant received from the Irish Embassy supported the following collaborative research clusters:

- 🌀 Space Science, Innovation Hubs, and ICT
- 🌀 Biomedical Engineering, Robotics and Advanced Manufacturing
- 🌀 WIL, Industry Partnerships and Apprenticeships and Curriculum for the 4IR
- 🌀 Waste Management and the Circular Economy
- 🌀 Agriculture and Food Security
- 🌀 COVID-19 Pandemic Management

The planned face to face meetings and the symposia (which were scheduled to take place in Cork, Ireland June 2020) had to be postponed due to the lockdown regulations for travel etc, but this did not halt the discussions and finalisation of the project proposals. All research clusters have continued with active engagements and have adapted their objectives outputs accordingly. Notwithstanding the challenges, significant progress has been made on some of the research clusters such as the development of new proposals, publishing of academic articles, securing funding for research cluster activities and academic dialogue and awareness around the pandemic including articles and multiple TV and radio interviews.

The following highlights the progress made in the various research clusters.



RESEARCH CLUSTER	RESEARCH PROJECT INSTITUTIONS	INSTITUTIONS	OUTPUTS
<b>SPACE SCIENCE, INNOVATION HUBS AND ICT</b>	<p>P1. The use of unmanned aerial vehicles in the management of catchments</p> <p>P2. An analysis of how Space 4.0 can be exploited in the context of North-South collaboration</p>	<ul style="list-style-type: none"> <li>· Cape Peninsula University of Technology</li> <li>· Cork Institute of Technology</li> <li>· Institute of Natural Resources NPC</li> <li>· Mangosuthu University of Technology</li> <li>· South African Radio Astronomy Observatory</li> <li>· Tshwane University of Technology</li> <li>· Vaal University of Technology</li> <li>· Walter Sisulu University</li> <li>· Waterford Institute of Technology</li> </ul>	<p>P1.</p> <ul style="list-style-type: none"> <li>·Joint presentation at AfAS Session at the AERAP Virtual Conference: Data and Development Partnerships for Africa-EU in Astronomy.</li> <li>·Initiated collaborative project on use of drones for catchment management.</li> <li>·Applications to aviation authorities for flights of drones have been submitted.</li> </ul> <p>P2.</p> <ul style="list-style-type: none"> <li>·Ongoing discussions between the cluster leaders are taking place towards this joint</li> <li>·Meeting held between CIT and CPUT to support the training of one of CIT's PhD students, Aidan Duggan, and to explore possible options for collaboration under the theme of "AI on cubesats".</li> </ul>
<b>BIOMEDICAL ENGINEERING, ROBOTICS AND ADVANCED MANUFACTURING</b>	<p>P1. The use of Additive Manufacturing to support COVID-Related Rapid Response</p>	<ul style="list-style-type: none"> <li>· Cape Peninsula University of Technology</li> <li>· Central University of Technology</li> <li>· Cork Institute of Technology</li> <li>· Galway-Mayo Institute of Technology</li> <li>· Mangosuthu University of Technology</li> <li>· Technological University Dublin</li> <li>· Tshwane University of Technology</li> <li>· University of Zululand</li> <li>· Walter Sisulu University</li> <li>· Waterford Institute of Technology</li> </ul>	<p>·SA and Irish partners developing project proposal on rapid prototyping response to COVID-19 manufacturing needs.</p> <p>·SA partners have received a number of excellent grants; these will be used to fund some of the collaborative work with Irish partners.</p>
<b>WIL, INDUSTRY PARTNERSHIPS AND APPRENTICESHIPS AND CURRICULUM FOR THE 4IR</b>	<p>P1. Enhancing work-integrated learning through South-North collaboration: a comparative analysis</p> <p>P2. Strand 4 Irish Research Council Project (IN PROGRESS)</p>	<ul style="list-style-type: none"> <li>· Cape Peninsula University of Technology</li> <li>· Central University of Technology</li> <li>· Cork Institute of Technology</li> <li>· Durban University of Technology</li> <li>· Galway-Mayo Institute of Technology</li> <li>· Limerick Institute of Technology</li> <li>· Mangosuthu University of Technology</li> <li>· Namibia University of Science and Technology</li> <li>· South African Qualifications Authority</li> <li>· Technological University Dublin</li> <li>· Tshwane University of Technology</li> <li>· University of Zululand</li> <li>· Vaal University of Technology</li> <li>· Walter Sisulu University</li> <li>· Waterford Institute of Technology</li> </ul>	<p>P1.</p> <ul style="list-style-type: none"> <li>·Journal article in the process of being submitted to the The International Journal of Work-Integrated Learning ("Enhancing work-integrated learning through South-North collaboration: a comparative analysis" to South African Journal of Science)</li> <li>·Presentation regarding joint research article was given by representatives of the cluster, to Science Forum South Africa in December, 2020.</li> <li>·Research grant for travel obtained, but on hold due to current travel restrictions.</li> <li>·One project proposal submitted for holding joint workshop</li> </ul> <p>P2.</p> <ul style="list-style-type: none"> <li>·Travel grant secured</li> <li>·Current grant budget relates to travel to SA for partnership development working</li> <li>·Will review the proposal and request a reallocation of funds for research hours and adapt to reflect COVID challenges workings</li> <li>·Cluster currently designing survey instrument to reflect/capture resilience WIL during pandemic</li> </ul>

RESEARCH CLUSTER	RESEARCH PROJECT INSTITUTIONS	INSTITUTIONS	OUTPUTS
<b>WASTE MANAGEMENT AND THE CIRCULAR ECONOMY</b>	<p>P1. Development of bio based plastics</p> <p>P2. Developing strategies for mitigating dairy waste water impact</p>	<ul style="list-style-type: none"> <li>· Cape Peninsula University of Technology</li> <li>· Central University of Technology</li> <li>· Durban University of Technology</li> <li>· Limerick Institute of Technology</li> <li>· Mangosuthu University of Technology</li> <li>· Tshwane University of Technology</li> <li>· University of KwaZulu-Natal</li> <li>· University of Zululand</li> <li>· Vaal University of Technology</li> <li>· Walter Sisulu University</li> </ul>	<ul style="list-style-type: none"> <li>· One project proposal submitted for holding joint workshop successfully funded</li> <li>· One project proposal submitted for embedded PhD project successfully funded by NRF</li> <li>· One project proposal submitted for project on Bioplastics from local agri-industrial residues successfully funded by DSI-CSIR</li> <li>· 4 funding grants obtained</li> <li>· South African National Research foundation (2021-2023)</li> <li>· Water Joint Programming Initiative (2018-2020)</li> <li>· SA NRF Knowledge Fields Development grant (for workshop)</li> <li>· Council for Scientific and Industrial Research Waste RDI Roadmap grant (2021-2022)</li> <li>· 2 publications in preparation</li> <li>· Science of The Total Environment</li> <li>· South African Journal of Science</li> </ul>
<b>AGRICULTURE AND FOOD SECURITY</b>	<p>P1. A review of challenges and opportunities of agriculture and food security in the 4IR: A North-South perspective</p> <p>P2. Drought Early Warning System using Geospatial Techniques</p>	<ul style="list-style-type: none"> <li>· Central University of Technology</li> <li>· Cork Institute of Technology</li> <li>· Institute of Natural Resources NPC</li> <li>· Mangosuthu University of Technology</li> <li>· Technological University Dublin</li> <li>· Tshwane University of Technology</li> <li>· University of KwaZulu-Natal</li> <li>· University of Zululand</li> <li>· Walter Sisulu University</li> <li>· Waterford Institute of Technology</li> </ul>	<p>P1.</p> <ul style="list-style-type: none"> <li>· One review article submitted to a journal and presently under review</li> </ul> <p>· It is submitted to Springer Food Security and we are still waiting on the review process</p> <p>P2.</p> <ul style="list-style-type: none"> <li>· Grant proposal under preparation</li> <li>· We also had discussion on a number of funding tools and opportunities. Unfortunately, we did not manage to progress these yet.</li> </ul>
<b>COVID19 PANDEMIC</b>	<p>P1. Priority setting for interventions in pre- and post- pandemic: A South Africa-Ireland comparison</p>	<ul style="list-style-type: none"> <li>· African Centre for the Constructive Resolution of Disputes</li> <li>· Central University of Technology</li> <li>· Institute of Natural Resources NPC</li> <li>· South African Technology Network</li> <li>· Thorntree Coaching, Facilitation and Mentoring</li> <li>· UN High Commissioner for Human Rights</li> <li>· University of KwaZulu-Natal</li> <li>· University of Pretoria</li> <li>· University of the Witwatersrand</li> </ul>	<p>P1.</p> <ul style="list-style-type: none"> <li>· One position paper produced by South African team</li> </ul> <p>· 3 × Radio interviews by South African team on local radio stations</p> <p>· 2 × Television interviews by South African team on local TV stations</p> <p>· 2 × articles published in newsletter of South African Medical Association</p>

The pandemic has made it difficult for the members of the clusters to interact, but considerable progress has been made on three fronts.

- ⑥ Developing concept notes for research projects
- ⑥ Developing and submitting grant applications for workshops and knowledge exchange events
- ⑥ Preparing and submitting joint research articles

While most of the articles submitted to date, of which some have already been published are review articles, plans for articles based on primary data are underway. This has meant that funds that have been allocated to joint research projects are only likely to be drawn on in the year ahead. Importantly, institutions that were previously not part of the research clusters have been brought on board, particularly in the South African context. We foresee all research clusters advancing on the goals originally set for these clusters in the year ahead. The research cluster members have also made considerable efforts to contribute funds from external sources into their projects including funding for post-graduate students.

It is envisaged that the research papers emanating from these clusters will be presented at the SATN International Conference which is planned for October 2021.

#### **4.2.3 AFRICAN SPACE SCIENCE CONNECTION**







The SATN-THEA Space Science Research Cluster was invited by the Irish Embassy to participate in the Africa-EU AERAP virtual conference which was held on the 9-10 September 2020 and entitled “A New Era for Africa-EU Science and Innovation Partnerships”. This conference brought together scientists, innovators, networks policymakers and other stakeholders. The AERAP platform has been in existence since 2012, same year South Africa and its partner countries won the right to host the SKA. AERAP has widened its scope beyond radio astronomy sciences to serve as an engagement platform for Africa-EU wider science collaboration.



#### **4.2.4 TOURISM EDUCATION, RESEARCH AND TRAINING: A POST COVID19 INITIATIVE**

SATN and its partners see the crisis in the tourism sector as a catalyst for a robust and more adaptive approach to re-evaluate teaching, learning, and training strategies. SATN and THEA are working together to establish a Tourism Education, Research and Training Cluster which will address the areas that the tourism sector needs to give urgent attention to promote socio-economic development.

The outcomes of the SATN-THEA partnership will:

-  Provide the critical mass of up skilled & reskilled staff for the new normal tourism industry.
-  Enable the review of curricula and explore new teaching methods for tourism.
-  Revitalize the economies of the countries through up-skilling and re-skilling staff from industry and academic institutions.
-  Identify new opportunities and innovations for the tourism sector.
-  Promote research to underpin and ensure evidenced-based revitalization of the industry.
-  Support international partnerships for training, research, and development.

A Virtual Inception Meeting is scheduled for early 2021 with local and International stakeholders, including the respective Ministries for Tourism.

#### **4.2.5 SCIENCE PARKS : BUSINESS UNITS PARTNERSHIPS**

The last decade has seen a growing realisation in Africa of the need to respond to developments in the global economy and in particular to take initiatives to break away from the dominant dependency on resource economies. The COVID19 pandemic has highlighted this fact and has directed us to the importance of innovation and commercialisation of research solutions for economic revitalisation, human development and job creation.

The International Association of Science and Technology Parks (IASP) (2020) maintains that an entrepreneurial spirit and a solution-oriented mindset is key in these challenging times of the coronavirus outbreak. With members in over 70 countries, IASP sees start-ups and mature companies take action and contribute to their products and ideas to deal with such crises.

Whilst South Africa's Science and Technology system has taken important strides forward, there is a tremendous gap between South Africa and those countries identified as knowledge-driven economies. The goal of this initiative for the SATN is to establish a Consortium of Science and Technology Parks of our member institutions to build regional innovation systems near our universities, promote the technological intensification of the economy, a more effective knowledge transfer and sharing and the construction of competitive advantages. The objectives of the Consortium of Science Parks and Business Units is as follows:



- ⑥ Coordinate an active network of managers of science technology research parks, innovation districts and other areas of innovation
- ⑥ Enhance new business opportunities for members and their companies
- ⑥ Increase the visibility of our members and multiply their global connections
- ⑥ Ensure member representation at international forums.
- ⑥ Assist member institutions in the development of new parks and areas of innovation
- ⑥ Become members of the international association of science and technology parks and connect with experts in science and technology parks and areas of innovation globally
- ⑥ Submit joint proposals to government and business and industry whilst responding to building third stream income for their respective institutions.

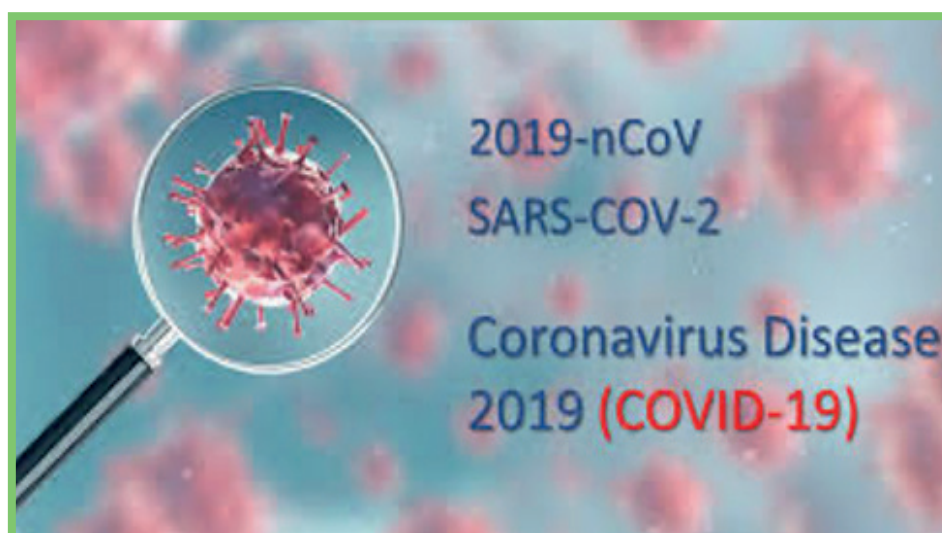
The SATN commissioned an environmental scan of activities at Science Parks Business Units of its member institutions which revealed the following operational activities and businesses.

Host University	Science Park	Business Units	IP Office
<b>Central University of Technology</b>	Innovation Center to be established 2021	1. Central University of Technology Innovation Services (Pty) Ltd 2. Product Development Technology Station 3. Centre for Rapid Prototyping and Manufacturing (Additive Manufacturing)	Innovation and Technology Transfer
<b>Vaal University of Technology</b>	Southern Gauteng Science and Technology Park	1. ICB 2. Co-Lab 3. Fablab 4. Dihlare 5. TTI 6. eKasilab 7. TTO 8. Sebokeng Technology Station 9. eWaste 10. Idea 2 Product Lab	TTO
<b>Cape Peninsula University of Technology</b>		1. Aonyx Holdings	Technology Transfer and Industry Linkages
<b>Durban University of Technology</b>	N/A	1. Entrepreneurial Desk and Center: 2. Midlands 3. Durban. 4. Center for Social Entrepreneurship (CSE): 5. Durban	Technology Transfer and Innovation (TTI) Directorate.
<b>Mangosuthu University</b>		Technology Station in Chemicals	Research and Innovations Directorate
<b>University of Venda</b>		1. UIGC , PTY, LTD	
<b>Tshwane University of Technology</b>		1. N/A	IP Office

The results of this environmental scan were presented at the RAPDASA International Conference held on 5 November 2020 and the idea of the consortium was given full support.

#### 4.2.6 COVID19 STUDY

As the world emerges from the COVID19 pandemic and restrictions are tentatively eased, Governments such as our own have to start preparing for the post-COVID19 phase. Out of this crisis emerges opportunities for reinvention and strategic rethinking for accelerating operational transformation, developing new business models and skills, and overall reengineering of systems that either failed or worked for us. In this regard, the SATN commissioned a position paper on Priority setting for interventions in pre and post pandemic management the case of COVID19.



This paper was authored by several leading scientists including the CEO of SATN, Dr Anshu Padayachee, Prof William Gumede University of Witwatersrand, Dr Sershen Naidoo Executive Director of the Institute of Natural Resources (INR), Prof Urmila Bob University of KwaZulu-Natal, Vasu Gounden Executive Director of the African Centre for the Constructive Resolution of Disputes (ACCORD), Prof Deon de Beer Central University of Technology, Prof Tinyiko Maluleke University of Pretoria, Prof Ryk Lues Central University of Technology, Dr Ahmed Wadee Thorn tree Coaching, Facilitation and Mentoring, Prof Ames Dhali Founder and past Director of Steve Biko Centre for Bioethics, University of Witwatersrand, Dr Ntokozo Nzimande University of KwaZulu-Natal, Prof Lucia Anelich Central University of Technology, Judge Navi Pillay Past UN High Commissioner for Human Rights.

This paper achieved national and international recognition and the Irish partners will be conducting the second phase of this paper which will investigate a north-south comparison of priority setting for pandemic management. The media coverage of this position paper has inspired several off-shoot studies which will be pursued by SATN and THEA. This Position Paper provides a useful lens for analysing some of the urgent strategic priorities that need to be considered in developing this plan.

## 4.3 PARTNERSHIP WITH THE DEPARTMENT OF LABOUR AND THE UIF

### 4.3.1 UNEMPLOYMENT INSURANCE FUND (UIF) SKILLS PROGRAMME

The SATN in partnership with Milzet Holdings were awarded a grant by the UIF to reskill and upskill unemployed persons in the following fields of study, real estate; beauty and nail technology; hairdressing; and environmental practice as well as to train a cohort of emerging entrepreneurs to create new jobs and new SMMEs in response to the country's unemployment crisis.

During the First Phase of the Training, 826 learners were enrolled for theoretical training. Despite the lockdown challenges, 710 learners completed their theoretical training, and 448 learners were placed with host employers. SATN launched a positive Media Campaign on 5 August 2020 to reach out to potential host employers to participate in the programme and the response was very positive.

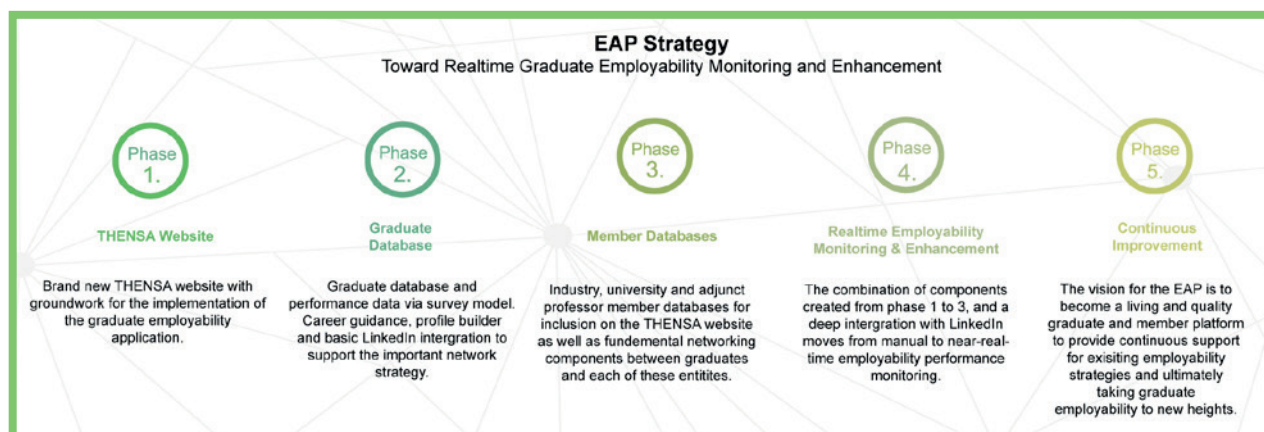
The Second Phase of the Training is scheduled to commence in February 2021. In light of the COVID pandemic a blended learning programme will be delivered in accordance with the Covid19 Regulations as set out by Government. Learners will be provided with tablets for the remote training. SATN has employed Placement Officers to ensure that learners are placed with employers after completion of their training.

## 4.4 SATN GRADUATE EMPLOYABILITY APP – PARTNERSHIP WITH TIA

The SATN in partnership with Technology Innovation Agency (TIA) has developed a Graduate Employability Application which tool will:

- 🌀 Track graduate's employment status
- 🌀 Provide a platform for students and employers to engage in communication to help achieve employment and candidate hiring goals
- 🌀 Generate and collect key data such as present and historical graduate employment rates, required skills set for students needed in the workplace, employer's reputation metrics and alumni outcomes for the sector.

The SATN is in the final stages of the Graduate Employability App, with internal testing and revisions. It is envisaged that the App will be ready for testing and implementation in the first half of 2021. The Graduate Employability App will also host the online entrepreneurship programme and link graduates to other databases such as LinkedIn etc.



## 4.5 PARTNERSHIP WITH THE EUROPEAN UNION - HIGHER EDUCATION REFORM EXPERTS (HERE) PROJECT

Inspired by the EU-funded network of 'Higher Education Reform Experts' (HERE) ([supportthere.org](http://supportthere.org)) in European "neighbourhood countries", the SATN its member institutions and the CHE, in cooperation with European partners was awarded a grant to launch and sustain a similar network at the national level in SA.

The general objective of this programme is to support the governance, strategic planning and management of HEI in South Africa, so as to shape institutional and also national higher education strategies for teaching and learning, in response to changing labour market and societal needs.

The HERE South Africa (HERESA) Project has both a structural nature (aimed at policy impact at the national level in SA) and an institutional nature, targeting teaching and learning strategy change in SA university members. HERESA network will guide institutional policy change related to CBL, WIL and entrepreneurship education, while at the same time maintaining a constant dialogue with the relevant policy regulators. Institutional capacity building will be reinforced and supported by EU partners, who will provide tailored technical assistance. The HERE Project is thus designed to set up a community of practice.

A preparatory meeting for all SA partners was held in December 2020 and a similar meeting will be held for the EU members in February 2021, followed by an official Kick-Off Meeting of the Project in 2021. Below are the South African and European HERESA partners:

### Higher Education Reform Experts - SA (HERESA) Partners

Institution/Organisation	Country
Technological Higher Education Network South Africa	South Africa
Cape Peninsula University of Technology	South Africa
Central University of Technology	South Africa
Durban University of Technology	South Africa
Tshwane University of Technology	South Africa
University of Venda	South Africa
Walter Sisulu University	South Africa
Council for Higher Education	South Africa

### Higher Education Reform Experts - SA (HERESA) Partners cont.

Institution/Organisation	Country
OBREAL GlobalObs	Spain
Cork Institute of Technology	Ireland
Politecnico de Torino	Italy
UBFC (Burgundy and Franche-Comte)	France
Tampere University	Finland
Kungliga Tekniska Hogskolan	Sweden

## 4.6 UNIVERSITY INDUSTRY PARTNERSHIP

SATN continues to engage with business and industry role players to explore formal partnerships for the mutual benefit to business and member institutions.

Some of focus areas are:

-  Business Industry interest in participating in University Adjunct academic programmes
-  Business Industry participation in joint and sponsored research
-  Business Industry participation in SATN Work Integrated Learning programme
-  Engagements on experiences, challenges and recommendations on curriculum and practical training of students.

### 4.6.1 PARTNERSHIP WITH IBM

An agreement was signed between SATN and IBM that provides the SATN member institutions to access the IBM Digital Nation Platform. IBM has provided SATN member institutions with a custom URL which authorises users to have access to free online courses. The IBM Digital – Nation Africa is an online learning and innovation platform that aims to provide youth with digital skills.

IBM Digital- Nation Africa is a catalyst and an agile learning system that enables innovation and skills development on the emerging technologies and we look forward to a long and fruitful partnership with IBM. These online courses provides both students and staff which will support them with valuable digital skills and knowledge.

## 4.7 PARTNERSHIP IN AFRICA AND BEYOND

SATN's international collaborations have resulted in strategic engagements with role players inter alia, on the African Continent, Europe, Australasia, and the US.

SATN continues its engagement with new partners to create opportunities for joint research, teaching and learning and staff student exchanges.




The existing partnerships are:

-  Commonwealth Association of Polytechnique's Africa (CAPA)
-  Technological Higher Education Association of Ireland (THEA),
-  National University of Singapore,
-  Rutgers University US,
-  University of Bangkok (Thailand),
-  4TU (Netherlands) ATN (Australia) NITTTR (India), DST (India), SET Squared (UK),
-  Hypergrowth Buzz (UK) Western Digital (Thailand), KAIST (KOREA), Commonwealth Association of Polytechnics of Africa and South African Co-operative Education Association. (CAPA).



## 4.8 SOCIAL RESPONSIBILITY PROGRAMME

As part of its social responsibility programme SATN in partnership with Durban University of Technology established the Moving from Disability to Possibility project. The DUT- SATN Team after discussions with the Open-Air School for the Disabled identified the specific urgent needs of the school and learners to ensure that they are not further challenged by a lack of facilities, information, and opportunities for study at Universities. SATN-DUT team therefore set the following objectives for this specific project:

-  To provide career guidance and vocational training for learners so that they make achievable career choices and select Higher Education Institutions that will provide access and support for the respective learners.
-  To acquire from sponsors the necessary assistive devices for learners to succeed in their studies and future career paths through partnerships with Business and Industry and Universities of Technology who are designing and developing such devices.
-  To provide courses in entrepreneurship for the learners in partnership with Durban Institute of Technology (DUT) tailored for learners with disabilities.

This project will focus on learners with visual impairment at universities. The Durban Institute of Technology and the Disability Unit at University of KwaZulu-Natal have also agreed to partners with this team and agreed to provide training on the technologies that students with visual impairment will require to be successful at Universities.

## 5. SATN INTERNATIONAL CONFERENCE 2020: 'UNIVERSITY, INDUSTRY, BUSINESS AND SOCIETY TOWARDS SUSTAINABLE RESEARCH, INNOVATION AND SKILLS SOLUTIONS FOR 4IR'

Due the COVID19 pandemic and regulations which has caused many events in the country and around the world to be cancelled, the SATN's International Conference scheduled for October 2020 was postponed to October 13-15 2021. However, the safety of hosting the conference will be monitored and a timeous decision will be taken and communicated to all stakeholders on the status of the conference.

## 6. BRANDING AND MARKETING THE SECTOR

SATN has played a key role in marketing and advocating on behalf of its member institutions, through collaborative initiatives, training workshops, funding opportunities, coordinating data collection and information dissemination thereby adding value for the sector in higher education.

SATN staff and their partners participated in the "Women for Change" Virtual Race in support of Abuse against Women and Children.



## 7. CONCLUSION

As we close the year 2020 and journey onto the next phase as THENSA, we remain steadfast in our commitment to realise our vision, mission, and objectives.

The SATN is in the final process of being registered as the TECHNOLOGICAL HIGHER EDUCATION NETWORK SOUTH AFRICA (THENSA). The new THENSA website has been finalised and will be ready for launch on 1 January 2021 and stakeholders, both local and international will be kept informed of activities through the website and the social media platforms (Facebook, Instagram, LinkedIn, and Twitter).

## 8. SATN SECRETARIAT



**Dr Anshu Padayachee**  
Chief Executive Officer



**Mrs Christelle Venter**  
Office Manager

### Project Staff



**Kogie Pretorius**  
Project Coordinator



**Colleen Titus**  
PA to CEO



**Buntu Nondumo**  
Media Liaison officer



**Dr. Ahmed Wadee**  
Project Coordinator



**Dr. Suren Govender**  
Project Coordinator



**Nadira Kercival**  
Project Assistant



**Ntombi Nopukuze**  
Receptionist



**Dr. Sershen Naidoo**  
Project Coordinator



**Khanya Mtshali**  
Press and Media Relations



**Moti H. Motshwane**  
Project Coordinator



## 9. SATN FINANCIAL STATEMENTS

### South African Technology Network Trust

(Registration number: IT913/08)

Annual Financial Statements for the year ended 31 December 2020

### Statement of Financial Position as at 31 December 2020

Figures in Rand	Note(s)	2020	2019
<b>Assets</b>			
<b>Non-Current Assets</b>			
Property, plant and equipment	2	112,147	200,794
Intangible assets	3	6,810	14,592
		<b>118,957</b>	<b>215,386</b>
<b>Current Assets</b>			
Trade and other receivables	4	40,902,125	29,928,520
Cash and cash equivalents	5	54,205,383	13,405,358
		<b>95,107,508</b>	<b>43,333,878</b>
<b>Total Assets</b>		<b>95,226,465</b>	<b>43,549,264</b>
<b>Equity and Liabilities</b>			
<b>Equity</b>			
Accumulated surplus		8,144,552	6,716,553
<b>Liabilities</b>			
<b>Non-Current Liabilities</b>			
Finance lease liabilities	6	29,635	84,401
<b>Current Liabilities</b>			
Trade and other payables	7	86,998,302	36,697,029
Finance lease liabilities	6	53,976	51,281
		<b>87,052,278</b>	<b>36,748,310</b>
<b>Total Liabilities</b>		<b>87,081,913</b>	<b>36,832,711</b>
<b>Total Equity and Liabilities</b>		<b>95,226,465</b>	<b>43,549,264</b>

# South African Technology Network Trust

(Registration number: IT913/08)

Annual Financial Statements for the year ended 31 December 2020

## Statement of Comprehensive Income

Figures in Rand	Note(s)	2020	2019
Revenue	8	8,961,331	10,633,596
Other income		-	553,297
Operating expenses		(8,146,695)	(10,450,846)
<b>Operating surplus</b>	9	<b>814,636</b>	<b>736,047</b>
Investment revenue	10	625,843	539,221
Finance costs	11	(33,480)	(50,330)
<b>Surplus for the year</b>		<b>1,406,999</b>	<b>1,224,938</b>
Other comprehensive income		-	-
<b>Total comprehensive income for the year</b>		<b>1,406,999</b>	<b>1,224,938</b>



# South African Technology Network Trust

(Registration number: IT913/08)

Annual Financial Statements for the year ended 31 December 2020

## Statement of Changes in Equity

Figures in Rand	Accumulated surplus	Total equity
<b>Balance at 01 January 2019</b>	<b>5,491,615</b>	<b>5,491,615</b>
Surplus for the year	1,224,938	1,224,938
Other comprehensive income	-	-
<b>Total comprehensive income for the year</b>	<b>1,224,938</b>	<b>1,224,938</b>
<b>Balance at 01 January 2020</b>	<b>6,716,553</b>	<b>6,716,553</b>
Surplus for the year	1,406,999	1,406,999
Other comprehensive income	-	-
<b>Total comprehensive income for the year</b>	<b>1,406,999</b>	<b>1,406,999</b>
Prior year reversal of expense	21,000	21,000
<b>Total changes</b>	<b>21,000</b>	<b>21,000</b>
<b>Balance at 31 December 2020</b>	<b>8,144,552</b>	<b>8,144,552</b>
Note(s)		

# South African Technology Network Trust

(Registration number: IT913/08)

Annual Financial Statements for the year ended 31 December 2020

## Statement of Cash Flows

Figures in Rand	Note(s)	2020	2019
<b>Cash flows from operating activities</b>			
Cash generated from operations	13	40,241,203	9,854,196
Interest income		625,843	539,221
Finance costs		33,480	50,319
<b>Net cash from operating activities</b>		<b>40,900,526</b>	<b>10,443,736</b>
<b>Cash flows from investing activities</b>			
Purchase of property, plant and equipment	2	(2,471)	(119,208)
Purchase of other intangible assets	3	-	(15,565)
<b>Net cash from investing activities</b>		<b>(2,471)</b>	<b>(134,773)</b>
<b>Cash flows from financing activities</b>			
Finance lease payments		(119,030)	(137,614)
Non-cash item - Reversal of prior year expense		21,000	-
<b>Net cash from financing activities</b>		<b>(98,030)</b>	<b>(137,614)</b>
<b>Total cash movement for the year</b>		<b>40,800,025</b>	<b>10,171,349</b>
Cash at the beginning of the year		13,405,358	3,234,009
<b>Total cash at end of the year</b>	5	<b>54,205,383</b>	<b>13,405,358</b>

# South African Technology Network Trust

(Registration number: IT913/08)

Annual Financial Statements for the year ended 31 December 2020

## Detailed Income Statement

Figures in Rand	Note(s)	2020	2019
<b>Revenue</b>			
Income Received		8,961,331	9,237,220
Grants Received		-	1,396,376
	8	<b>8,961,331</b>	<b>10,633,596</b>
<b>Other income</b>			
Administration and management fees received		-	436,522
Other income		-	13,999
Profit and loss on exchange differences		-	102,776
		<b>-</b>	<b>553,297</b>
<b>Operating expenses</b>			
Administrative expenses		(1,546,951)	(1,021,025)
Bad debts		(377,006)	(111,539)
Bank charges		(12,597)	(22,192)
Conference expenses		(289,461)	-
Depreciation, amortisation and impairments		(98,902)	(113,368)
Employee costs		(1,972,643)	(2,091,998)
Impairment of debtor - movement in provision		230,000	(230,000)
ITEC expenses		(28,550)	(45,473)
Legal expenses		-	(23,400)
Penalties and interest		(4,629)	2,712
Project expenses		(3,649,602)	(6,183,503)
Project - UIF expenses		-	(57,660)
Subsistence and travelling expenses		(161,132)	(553,400)
Loss on exchange differences		(235,222)	-
		<b>(8,146,695)</b>	<b>(10,450,846)</b>
<b>Operating surplus</b>	9	<b>814,636</b>	<b>736,047</b>
Investment income	10	625,843	539,221
Finance costs	11	(33,480)	(50,330)
		<b>592,363</b>	<b>488,891</b>
<b>Surplus for the year</b>		<b>1,406,999</b>	<b>1,224,938</b>

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