NATIONAL SCIENCE AND TECHNOLOGY FORUM (NSTF)
PROFESSIONALS IN SCIENCE, ENGINEERING AND TECHNOLOGY (pro*SET*)

MINUTES OF GENERAL MEETING

Date: **22 September 2023**
Time: **10:00–11:40**
Venue: **Zoom meeting**

1. WELCOME, APOLOGIES AND PURPOSE OF THE GENERAL MEETING (Mr Dawie Botha, pro*SET* Co-Chairperson)

The Chairperson welcomed everyone to the General Meeting. The purpose of the meeting was to keep members informed about the progress of pro*SET* (Professionals in Science, Engineering and Technology) with activities undertaken by the committee on behalf of members. He thanked the NSTF staff for keeping the website updated to keep members informed. Apologies were noted. The meeting was attended by 42 participants. Thirty organisations were represented, which represented 68% of the membership.

The agenda was adopted.

2. INTRODUCING THE pro*SET* COMMITTEE AND CO-CHAIR (see Appendix A) (Ms Jansie Niehaus, NSTF Executive Director, head of the pro*SET* Secretariat)

Ms Niehaus introduced the committee, listed in Appendix A. She thanked the committee members for serving.

She reported that Prof Syamala Krishnannair had resigned during 2023, but it was not deemed necessary to call for nominations to fill his portfolio on the committee since there were enough members.

3. Approval of and matters arising from the minutes of the 2022 General Meeting (Prof Bertus Smith, pro*SET* Co-Chairperson)

The minutes were taken as read. There were no matters arising from the minutes.

Page 1, point 3: Mr Tony Parry indicated that his correct title was Mr.

The minutes were adopted as an accurate reflection of the meeting with the amendment proposed.
Proposed by: Prof Bertus Smith
Seconded by: Mr Pat Moncur, Prof David Lokhat, Mr Tony Parry

4. pro*SET* FINANCIAL MATTERS (Ms Jansie Niehaus, NSTF Executive Director, as head of the pro*SET* Secretariat)

Ms Jansie Niehaus presented the pro*SET* financial report for the financial year beginning April 2023 to date. The following points were presented:

- pro*SET* did not have an income stream, but derived most of its income from the shares portfolio and from sponsorships to the STEMulator project. The total income amounted to R210 792.
- The Fuchs Foundation sponsored the creation of the STEMulator virtual school with an amount of R140 000, and a second instalment would be received later in the year.
- South32 donated R50 000 to the STEMulator to create a mining tile.
- Expenditure for the year to date amounted to R216 881 for the following items:
  - Administration fee R9 855
  - Financial management fee R9 371
  - Discussion Forum R25 000

- Travelling costs R2 667
- STEMulator Research Assistant salary R76 928
- Committee projects: awards and prizes R20 000
- Committee projects: STEMulator R69 459
- Shares portfolio fees R3 601

- The operational deficit for the year to date had been R11 795.
- The current balance in the pro*SET* Investec investment fund was approximatelyR2.7 million.
- The total current bank balances were R2.783 million.
- The executive committee had taken a decision that the Investec shares portfolio would be sold and the funds invested in a fixed deposit account earning consistent interest.
- The categories of expenditure over ten years indicated that the biggest expense had been the STEMulator project, amounting toR1 455 million and making up 32% of the total expenses. Funds and grants to member projects were the second largest expense at R1 084 million (24% of total expense).
- Operational expenses, which included the salary of the administrator, amounted to 16% of the expenditure.
- The expenses for the discussion forums and the research awards amounted to 9% each.
- The NSTF administration fee made up 8% of total expenses.
- The STEMulator project had generated substantial income through partnerships and donations, and was becoming largely self-sustaining.
- The total income of R493 695 to date was ring-fenced for the use of STEMulator projects.
- STEMulator relied on donations, which were invited via the NSTF website.

Discussion:
Mr Dawie Botha explained that the funds that the NSTF received from AS&TS several years ago had been invested in shares. However, the shares had not earned dividends to the extent anticipated. It had been decided that higher interest would be earned if the funds were invested in a fixed deposit account. This would enable the committee to plan income more accurately for budgeting purposes.

Mr Craig Smith asked whether the shares were held in a managed portfolio. Ms Niehaus responded that it was an Investec portfolio. The committee and NSTF Exco were regularly briefed and updated on the state of the portfolio. The portfolio had shown growth, but it was uncertain whether this could be sustained in the current risk environment; therefore the decision was made to sell the shares.

5. REPORT ON NSTF STRATEGY
(Ms Jansie Niehaus, NSTF Executive Director, as head of the pro*SET* Secretariat)

During 2022, the NSTF undertook an exercise to revisit its strategy. A series of session was conducted with the Exco and staff.

- The revised strategy for 2022–2027 was available on the NSTF website.
- The mission had been reformulated as: *A transformed country where SET and innovation contribute to an optimal quality of life for all, where STEM and innovation education and training are effective, and SET professionals are representative of the population*.
- The updated strategic objectives were more clearly aligned with the functions of the NSTF:
  1. *To promote dialogue among SET and innovation stakeholders across the public and private sectors, including engagement around SET-related policies, and providing an information hub for SET and innovation.*
  2. *To promote and celebrate excellence in SET and innovation, SET capacity building and STEM education, and SET and innovation activities that can have a positive impact on society and contribute to sustainable development.*
  3. *To implement and support SET-related projects that are multi-disciplinary and cross-cutting, where appropriate, especially outreach to the youth*.

pro*SET* contributed to these objectives through:
1. Hosting discussion forums; promoting dialogue between stakeholders, especially the private sector; and engaging in policy-making.
2. Highlighting excellence in SET through profiling of members on the website; and through the NSTF awards for emerging researchers. SAYAS had taken over the sponsorship of the awards for emerging researchers, and the pro*SET* awards were henceforth targeted at senior researchers.
3. SET-related projects including outreach to youth and the STEMulator project.

6. pro*SET* MEMBERSHIP
(Ms Jansie Niehaus, NSTF Executive Director, head of the pro*SET* Secretariat)

Ms Niehaus reported that pro*SET* currently had 47 member organisations. The increase in membership was due to a renewed interest. The following new members were welcomed to the organisation:
- Operations Research Society of Southern Africa (ORSSA)
- Physiology Society of Southern Africa (PSSA)
- South African Society for Agricultural Extension (SASAE)
- South African Society for Animal Science (SASAS).

The Geostatistical Association of South Africa (GASA) had terminated its membership since the General Meeting in 2022.

7. REPORT ON pro*SET* DISCUSSION FORUM: PITFALLS OF ARTIFICIAL INTELLIGENCE (18–19 May 2023)
(Ms Jansie Niehaus, NSTF Executive Director, head of the pro*SET* Secretariat)

Ms Niehaus reported on the discussion forum that had been held on 18 and 19 May 2023. The topic was *Pitfalls of Artificial intelligence (AI)*.
- All presentations, discussion documents and media releases from the discussion forum (and previous events) were posted on the NSTF website. There had been a follow-up discussion under the heading: *Artificial Intelligence: feared or favoured?*
- The discussion forum had been well-attended, with over 100 participants.

In September 2023 pro*SET* participated by invitation at the UN Science Summit in New York in a discussion forum on the same topic. The speakers at the forum included Prof Fulufhelo Nelwamondo (National Research Foundation), Prof Deshen Moodley, (University of Cape Town), Prof Sioux McKenna (Rhodes University) and Prof Anish Kurien (Tshwane University of Technology).

8. REPORTS ON pro*SET* PROJECTS

a. STEMulator (Mr Richard Gundersen, pro*SET* committee member)

The report was presented by Ms Kgaugelo Pule in the absence of Mr Gundersen.
- The STEMulator was an interactive, digital landscape for learners to interact with selected topics. Each page included animations that linked to theoretical content on a topic, illustrations and diagrams, and the professions related to particular areas.
- Progress had been made on the content for the school tile, in collaboration with Ms Sue Johnston. The school tile included subjects such as Mathematics, Physical Science, Natural Sciences and Life Sciences. The theoretical content was the framework for building the tile, and diagrams and videos would also be included.
- Progress on the mining tile had been boosted by a donation of R50 000 from South32. Work had been done on the 3D modelling. However, it had proved challenging to obtain content from the mining sector, and several persons had been contacted for information, with little response. A different strategy would be followed to find content, including sourcing information from the Internet.
- Development of the transport tile was supported by a donation from KBK, which enabled the completion of some of the components. However, content for the ship still needed to be developed.

- In terms of outreach, 150 USBs with the STEMulator uploaded were distributed to teachers at the Sasol X Science Expo, and also at an educators workshop.
- In order to expose the STEMulator to an international audience, a video had been submitted to a competition of the International Academy for Engineering and Technology Sciences. The outcome was awaited.
- The STEMulator had been showcased at the launch of the National Science Week in August, as well as at Sasol X, where an audience of about 20 000 learners and educators had been reached. The STEMulator was also presented at the Bridge Building Competition in Midrand in August and was positively received. An upcoming event to showcase STEMulator was the Eskom Expo for Young Scientists.
- A collaboration had been initiated with Consulting Engineers South Africa, an NSTF member, and their animations and videos had been made available to use on the STEMulator to strengthen the content.
- The new intern, Karabo Ramodike, was introduced. He had already made an important contribution to the project.

Discussion

- Prof Marissa Rollnick asked whether there had been an intention to develop worksheets and additional materials such as teachers guides to use alongside the STEMulator. A worksheet linked to the curriculum could be used for class activities. Such material could also be disseminated to the subject advisors in the Education Departments.
- Ms Pule responded that Mr Dereck Fish had made available a lot of material such as videos and activities for use in the school tile. Currently the tile was still being developed and was not active on the front end.
- Ms Niehaus added that the Fuchs Foundation was supporting the development of the school tile. The structure of the classrooms had already been designed. In each classroom, the curriculum for the respective grades would be presented in the form of a book on the bookshelf.
- Activities related to the topics were incorporated in the curriculum, and links to other topics on the STEMulator were embedded. Furthermore, there were clickable objects in the classroom that provided content, or had links to related items on the STEMulator.
- Prof Marissa suggested a free resource that was available from PhET (https://phet.colorado.edu/), which included simulations and allowed learners to explore the topics.
- Ms Niehaus demonstrated the new content of the school tile using the mock-up link. The content was arranged in phases according to the grades (Junior, Intermediate, Senior, FET).
- Ms Sue George asked whether there would be a communication to announce that new tiles were active or to request members to contribute content. Ms Pule responded that messages had been circulating to members in this regard, but if there was need for more information, the team could work on this. She asked members to assist in getting the messages out by distributing them to their respective networks, and to appeal for contribution of content. There was an urgent need for content for the mining tile.
- Prof Dawie Botha commented that the STEMulator was something to be proud, and he thanked everyone involved for their hard work. Once the results of the competition had been announced, the video submission would be released in the public domain. He encouraged members to offer ideas how to use the STEMulator in other environments, such as a training tool (e.g. for local councillors and elected officials). Another option was to use the STEMulator as a tool to orientate new graduates before registering with their professional organisations.
- Mr Vishnu Naidoo commented that in the mathematical sector, a mathematics laboratory was being promoted internationally and was playing a significant role in overcoming prejudice towards mathematics. He explained that SACMEQ (the Southern and Eastern Africa Consortium for Monitoring Educational Quality), a consortium of 15 African countries, had agreed on eight levels of mathematics in teaching. The last two levels entailed concrete and abstract problem-solving, and it was at these levels that activity-based learning was embedded. Prof Naidoo suggested that pro*SET* should investigate this as a potential concept to consider including in the STEMulator. Ms Niehaus responded that it had been challenging to develop material for the mathematical topic in the classroom, but there were many areas and subject tiles which could be linked to mathematics

and where mathematic problem-solving could be applied. She encouraged members to contribute material on mathematics.

b. pro*SET* member booklet (Prof Bertus Smith handed the chair to Mr Dawie Botha for the remainder of the meeting)

The pro*SET* member booklet was presented. An electronic version was available for download at https://nstf.org.za/wp-content/uploads/2022/05/e_proSET-booklet.pdf.

- Hard copies had been printed to be made available in the workplaces or institutions of members, but there had been challenges in distributing the hard copies by post.
- The booklet would be updated annuallly as membership increased and where contact details and information changed. He urged members to look at the listings of their organisations and inform him of any changes that needed to be made.
- Ms Niehaus commented that the booklet had been revised and was currently with the graphic designers for final layout. The new version would be available on the website, and a link would be sent to members.
- Mr Botha enquired whether there was any copyright on the booklet that would prevent members from printing it out. To promote pro*SET*, it would be beneficial to take hard copies to meetings and events. Ms Niehaus confirmed that there was no copyright.

9. MEMBER PROJECTS
(Mr Tony Parry, alternate for Prof Smith on the NSTF Exco)

Mr Parry gave a report on member projects.

- pro*SET* issues an annual call to members to submit fundable projects and activities, which would be selected for NSTF financial support. Due to financial constraints, there had been no call in 2022.
- Since 2014, 33 projects had been funded. There was growing interest and the number of applications was increasing.
- It was planned that a call would be sent out in 2024 for funding in 2025, but this had to be confirmed by the committee.
- Mr Botha called on members to submit suggestions to improve the system.

10. SUGGESTIONS FOR pro*SET* DISCUSSION FORUM IN 2024
(Mr Dawie Botha presented on behalf of Prof Khathutshelo Nephawe)

- pro*SET* organises one discussion forum per year.
- Due to restricted funds, the budget for the forum had been reduced by not producing proceedings. However, by hosting the forum on online platforms, costs were considerably reduced.
- All transcripts, videos and documents were available online for open access.
- Mr Botha commented that the online platform was proving to be very successful and invited suggestion for the discussion forum in 2024.
- Ms Niehaus responded that the NSTF had decided that the theme for 2024 would be the Fourth Industrial Revolution, and a special award would be made in this field at the South32 Awards. It was suggested that pro*SET* might also consider selecting this theme for the Discussion Forum.

11. NSTF PROJECTS

a. 2023/2024 NSTF-South32 Awards – call for nominations
(Ms Jansie Niehaus, Executive Director, NSTF)

The call for nominations for the 2024 awards would open in November 2023. Nominations could be made in 15 categories, with an emphasis on research, as well as innovation, communication, curation of research data and other soft skills. Members were encouraged to consider possible nominations in these categories.

b. Theme for 2024

- The theme for 2024 would be linked to the Fourth Industrial Revolution (4IR), but the title was not yet finalised.
- In October, the science council representatives would host a discussion forum on the contribution of research and innovation to sustainable socio-economic growth. More details would be made available in the NSTF news.
- The AI discussion forum would remain on the agenda in 2024, as well as a discussion on STEM education.
- The NSTF AGM would be held on 10 November, and all members were invited to participate.
- Mr Botha commented that the wording for the theme could be changed from 4IR to 4weR, with a changed emphasis on the impact on society and humanity.

12. GENERAL AND CLOSURE OF GENERAL MEETING
(Mr Dawie Botha, pro*SET* chairperson)

The chairperson thanked all members for their participation and support and encouraged them to communicate with the committee for input and suggestions.

The meeting closed at 11:40.

APPENDIX A: pro*SET* COMMITTEE MEMBERS

Mr David (Dawie) Botha, South African Academy of Engineering (SAAE) – representing **Engineering** – Co- Chairperson of the Committee, represents pro*SET* on the NSTF Executive Committee (Exco); and Director: STEMulator NPC

Prof Bertus Smith, Geological Society of South Africa (GSSA) – representing **Science** – Co-Chairperson of the Committee, and represents pro*SET* on the NSTF Exco

Mr Johan Maartens, Society for Automation, Instrumentation, Mechatronics and Control (SAIMC) – representing **Engineering**, alternate to Mr Dawie Botha on the NSTF Exco

Prof Tobias Barnard, Water Institute of Southern Africa (WISA) – representing **Science**

Prof Khathutshelo Nephawe, South African Council for Natural Scientific Professions (SACNASP) – representing **Science**

Prof Bertus Smith, Geological Society of South Africa (GSSA) – representing **Science**

Mr Tony Parry, Institute of Information Technology Professionals of South Africa (IITPSA) – representing **Technology,** alternate to Prof Smith on the NSTF Exco

Prof Elizabeth Mavhunga, Southern African Association for Research of Mathematics, Science, Technology and Education (SAARMSTE) – representing **Education**

Mr Richard Gundersen, representing **Engineering** – Director and Project Leader: STEMulator NPC

Dr Christiaan Oosthuizen, Society for Automation, Instrumentation, Measurement and Control (SAIMC), representing **Engineering**

Dr Gerda Botha, South African Association for Food Science & Technology (SAAFoST) – Alternate representative for STEMulator; and Director: STEMulator NPC

Ms Jansie Niehaus, Executive Director, *ex officio*

APPENDIX C: PARTICIPANTS IN GENERAL MEETING

Name of organisation	**Name of attendee**
Black Women in Science - BWIS	Ms Nomfundo Khabela
Black Science, Technology and Engineering Professionals - BSTEP	Mr Mpho Madisha
Chamber of Engineering Technology - COET	Mr Pat Moncur
Consulting Engineers South Africa - CESA	Mr Wallace Mayne
Foundation for English, Mathematics, Science Sports and Innovation of South Africa - FEMSSISA	Mr Vishnu Naidoo
Geological Society of South Africa - GSSA	Dr Craig Smith
International Association of Impact Assessment South Africa - IAIASA	Ms Sue George
Operations Research Society of Southern Africa - ORSSA	Mr David Clark
South African Association for Food Science and Technology – SAAFoST	Ms Ingrid Woodrow
Southern African Association for Research of Maths, Science and Technology & Education - SAARMSTE	Prof Marissa Rollnick
South African Association for Theoretical and Applied Mechanics - SAAM	Dr Janhendrik Kruger
South African Chemical Institute - SACI	Prof Hellen Drummond
South African Genetics Society - SAGS	Prof Clint Rhode
Southern African Institute for Industrial Engineering - SAIIE	Mr Prince Nkosana
Southern African Institute for Industrial Engineering - SAIIE	Dr Teresa Hattingh
South African Institute of Agricultural Engineers - SAIAE	Mr Senzo Masikane
South African Geophysical Association - SAGA	Mr Reece van Buren
South African Institution of Chemical Engineers - SAIChE	Prof David Lokhat
South African Institute of Electrical Engineers - SAIEE	Ms Tshego Cornelius
Southern African Institute of Mining and Metallurgy - SAIMM	Mr Kondwani Banda
South African Institute of Physics - SAIP	Dr Brian Masara
South African Mathematics Foundation - SAMF	Mr Patrick Rasehwete
South African Society for Animal Science - SASAS	Dr Trevor Dugmore
South African Society of Biochemical & Molecular Biology - SASBMB	Prof Francois H van der Westhuizen
South African Sugarcane Research Institute - SASRI	Dr Derek Watt
Zoological Society of Southern Africa - ZSSA	Prof Aliza le Roux
NSTF staff, pro*SET* committee and services providers	
Co-Chairperson of the pro*SET* Committee	Prof Bertus Smith
Co-Chairperson of the pro*SET* Committee	Mr Dawie Botha
Institute of Information Technology Professionals South Africa - IITPSA	Mr Tony Parry
NSTF	Ms Jansie Niehaus
NSTF	Ms Wilna Eksteen
NSTF	Mr Matome Mphela
NSTF	Ms Mankwe Mojapelo
NSTF	Ms Lebogang Mohlala
NSTF	Ms Kelebogile Galeboe
NSTF	Ms Seipati Moleleki

Name of organisation	Name of attendee
Society for Automation, Instrumentation, Measurement and Control - SAIMC	Dr Christiaan Oosthuizen
South African Association for Food Science & Technology (SAAFoST)	Dr Gerda Botha
STEMulator	Ms Kgaugelo Pule
STEMulator	Mr Karabo Ramodike
Water Institute of Southern Africa - WISA	Prof Tobias Barnard
Write Connection	Mrs Beate Holscher

Apologies	
Entomological Society of Southern Africa - ESSA	Prof Chris Weldon
Institute of Municipal Engineering of South Africa - IMESA	Prof Kobus du Plessis
Institute of Municipal Engineering of South Africa - IMESA	Mr Sibusiso Mjwara
Society for Automation, Instrumentation, Measurement and Control - SAIMC NPC	Mr Johan Marteens
South African Sugarcane Research Institute - SASRI	Dr Terry Stanger
Grassland Society of South Africa - GSSA	Ms Minette van Lingen
Grassland Society of South Africa - GSSA	Mrs Charné Viljoen
South African Association for Theoretical and Applied Mechanics - SAAM	Dr Daniel Nicolas Wilke
South African Council for Automation and Control - SACAC	Mr John Burchell
South African Institute of Agricultural Engineers	Mr Thabo Mavundza
South African National Biodiversity Institute - SANBI	Dr Theresa Sethusa
South African Society for Agricultural Extension - SASAE	Mr Mark Anthony
South African Council for Natural Scientific Professions - SACNASP	Prof Khathutshelo Nephawe
Southern African Association for Research of Mathematics, Science, Technology and Education - SAARMSTE	Prof Elizabeth Mavhunga
Director and Project Leader: STEMulator NPC	Mr Richard Gundersen
South African Society for Agricultural Extension - SASAE	Mr Gavilin Darries