

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

MINUTES OF GENERAL MEETING

Date: 25 October 2021
Time: 09:00–10:30
Venue: Zoom meeting

**1. WELCOME, AND PURPOSE OF THE GENERAL MEETING
(Mr Dawie Botha, proSET chairperson)**

The chairperson welcomed everyone to the General Meeting, which had been called to update members of proSET (Professionals in Science, Engineering and Technology) regarding the activities undertaken on their behalf and to elect new members to the committee.

**2. REPORT ON proSET SEMINAR IN 2020 (INTERNET OF THINGS AND 5G
CONNECTIVITY ROLL-OUT)
(Mr Johan Maartens, proSET committee member)**

The purpose of the discussion forum had been to disseminate information about new technologies – the Internet of Things (IoT) and 5G (the fifth generation of cellular networks) – and their potential, and to present an informed response to the controversies and debates around these kinds of technologies, the roll-out of 5G and beyond. Previous NSTF discussion forums on related topics had addressed the Fourth Industrial Revolution (4IR) and advanced manufacturing and automation, and showcased presenters who had shared their knowledge and insights. It was important to debunk misconceptions about 5G and related infrastructure that were to some extent controversial, and which some believed to be detrimental to people's wellbeing. While China was already rolling out 6G, South Africa lagged behind in terms of accessibility to efficient internet connectivity, which would be crucial to national progress.

The discussion forum had been well attended, and the speakers from the technology community, Dr Fesseha Mekuria (CSIR) and Mr Sean Laval (SqwidNET) had provided valuable inputs on this important subject.

3. proSET PROJECTS

Mr Botha noted that the projects presented to the General Meeting were chosen by the committee based on the criteria of being of interest to a range of disciplines, and of benefit to proSET members as well as the general public.

a. STEMulator (Mr Richard Gundersen, proSET committee member)

Mr Gundersen presented and demonstrated the STEMulator, the purpose of which was to generate excitement about science, technology, engineering and mathematics (STEM) and to encourage an interest among learners to follow a STEM career.

The STEMulator was an interactive digital landscape offering learners the facility to dive more deeply into selected objects. Each page included animation and listed the professions related to particular areas. Clicking on a profession would open a window with information on the requirements and details of the chosen area. Universities offering courses in that field were also included. Each layer gave learners a view of hidden aspects that they might never have imagined.

The STEMulator landscape included the built environment (buildings, structures and machines), living organisms (humans, animals and plants) and complex systems (such as the natural cycle of water).

The design team had established a relationship with the South African National Biodiversity Institute (SANBI) and was now designing a new tile for the landscape, which would be called the 'science avenue' and would include a herbarium, a zoo, and a museum for fossils and samples.

The STEMulator landscape could be packaged on a memory stick and was therefore suitable for distribution to rural schools. It was a live product that was continually being expanded; for example, a school was currently being added to the landscape. One of the planned projects was the inclusion of all the experiments required for the school science curriculum, which would be particularly beneficial to schools without adequate laboratory facilities.

On some pages, links to appropriate YouTube material had been added. An online school that had reviewed the STEMulator had suggested building in a feature to determine where learners spent the most time browsing, which could assist with career guidance.

The house included in the STEMulator landscape was an area of experimentation, depicting the electrical wiring, sewage system, water pipes and solar panels. A list of appliances was also included, and the pages supporting the kettle had been developed to illustrate how it worked. The STEMulator development team was willing to accommodate proSET member organisations on pages relevant to their focus area.

Mr Botha added that the STEMulator was live on the internet, and schools should be encouraged to make use of this unique tool. The committee believed that the investment was worthwhile, and invited members to provide feedback and consider where contributions could be made.

The STEMulator team would draw up a short list of questions for circulation to members to invite suggestions for further development, including questions regarding possible career areas. Members with media contacts were invited to share these with the committee in order to publicise the STEMulator.

Members requiring a demonstration of the STEMulator could contact Mr Gundersen at Richard@stemulator.org or Ms Jonga at sjonga@nstf.org.za.

Discussion

Mr John Burchell noted that automation and control was a sub-discipline of the engineering profession and should not be listed as a separate occupation. The South African Council for Automation and Control (SACAC) would be interested in contributing to this STEM-related tool and would communicate with the proSET committee.

Mr Gundersen would contact Mr John Burchell (SACAC) regarding additional input to the STEMulator, and would follow up on a similar request from the Geological Society posted in the chat forum.

b. proSET member booklet (Mr Dawie Botha)

Mr Botha introduced the proSET member booklet, entitled *SET Professional Who's Who*, which had been compiled as a first step to the listing of relevant information. The organisations represented in the booklet were classified according to sector, such as education, energy or mining. It was planned to print a limited edition hard copy of the booklet for distribution to proSET members. Members would be encouraged to share the booklet with their contacts, which would assist in spreading awareness of proSET and marketing its role.

The booklet would also be published on the internet, and members were requested to check the information provided, especially with respect to contact information, and submit any changes or corrections to the NSTF office. It would be very important for organisations to maintain the content and keep it up to date.

Discussion

Prof Sanushka Naidoo commended proSET for taking this initiative, and suggested that some form of visual representation of the various organisations would encourage even more interest.

Mr Botha responded that the inclusion of visual content might be difficult for the first edition, but could be considered for later editions. Ideas for improving subsequent editions of the booklet and making it more useful would be welcome.

Mr Botha thanked everyone who had worked on the booklet.

4. CALL FOR NOMINATIONS OF REPRESENTATIVES FOR THE proSET COMMITTEE

The proSET committee was a small group that met about five times a year. The need to enlarge the committee and introduce new thinking and ideas had been identified. There were vacancies on the committee for representatives for Science and for STEM Education.

The size of the committee was not limited, so all nominations would be considered. The current membership of the committee was skewed towards engineering and science, and there was a need to introduce representation and a direct link to STEM education. It was also important for the committee to reflect a focus on technology. Prospective committee members would need to have a passion for the diverse world that proSET aimed to serve.

The following nominations were received on the meeting chat forum:

- Ms Sarah van Aardt, South African Council for Natural Scientific Professions (SACNASP)
- Prof K Nephawe, Tshwane University of Technology (TUT), and Chairperson of SACNASP
- Prof Kenny Uren, University of the North-West, and Society for Automation, Instrumentation, Mechatronics and Control (SAIMC)
- Dr C Oosthuizen, TUT and SAIMC
- Prof Elizabeth Mavhunga, Wits Education Campus, and Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
- Prof TG Barnard, University of Johannesburg, and Water Institute of South Africa (WISA)
- Mr Tony Parry, Institute of Information Technology Professionals South Africa (IITPSA).

Any further nominations for committee members should be sent to the NSTF office, which would follow up on all nominations received.

5. CALL FOR PROPOSALS FOR MEMBER PROJECTS – 7TH CALL

The seventh call for proposals for member projects had been on the agenda for some time and had been distributed with the invitation to the General Meeting. It would be sent out again, and the deadline for submissions would be just before the next proSET meeting on 19 November 2021.

6. SUGGESTIONS FOR proSET DISCUSSION FORUMS IN 2022

The NSTF holds between four and six online discussion forums each year and would be considering topics for 2022 at the NSTF Annual General Meeting on 19 November 2021. Ms Niehaus invited proSET member organisations to suggest topics in their particular field of interest.

Some of the topics were rather technical, but there was a need to make these debates more accessible to the general public. The 5G debate was a good example of a topical discussion, as was loadshedding, which had been the topic of a discussion forum in 2021.

7. NSTF PROJECTS

**a. 2021/2022 NSTF-South32 Awards – call for nominations
(Ms Jansie Niehaus, Executive Director, NSTF)**

A very successful simultaneous gala dinner had been held in Cape Town and Johannesburg to present the NSTF-South32 Awards. The event was available for viewing on YouTube at <http://www.nstf.org.za/awards/gala-dinner/>. The awards were made to top scientists and engineers to celebrate excellence in these fields in South Africa. Nominations for the 2022 awards would open on 1 November 2021, and nominations for qualifying candidates would be considered in the 15 categories provided.

b. Theme for 2022

The theme for 2022 would be 'Basic sciences for sustainable development'. This would be the first time that basic science was featured in the awards. A discussion forum would be organised on the topic. A special award would be made to reflect this theme, and submissions could adopt a perspective from either basic science or sustainable development. Nominations for the award would close in December 2021.

**8. GENERAL AND CLOSURE OF GENERAL MEETING
(Mr Dawie Botha, proSET chairperson)**

The chairperson thanked Ms Niehaus and NSTF staff, the participants in the meeting, and Mr Richard Gundersen for his presentation.

Ms Niehaus thanked everyone for their participation in the General Meeting.

APPENDIX A: ACTIONS FROM GENERAL MEETING

ITEM 3a	<p>The STEMulator team would draw up a short list of questions for circulation to members to invite suggestions for further development, including questions regarding possible career areas.</p> <p>Members with media contacts were invited to share these with the committee in order to publicise the STEMulator.</p> <p>Mr Gundersen would contact Mr John Burchell (SACAC) regarding additional input to the STEMulator, and would follow up on a similar request from the Geological Society posted in the chat forum.</p>
ITEM 3b	<p>The <i>SET Professional Who's Who</i> booklet would be published on the internet, and members were requested to check the information provided, especially with respect to contact information, and submit any changes or corrections to the NSTF office.</p>
ITEM 4	<p>Any further nominations for committee members should be sent to the NSTF office, which would follow up on all nominations received.</p>
ITEM 5	<p>The seventh call for proposals for member projects would be sent out again, and the deadline for submissions would be just before the next proSET meeting on 19 November.</p>
ITEM 6	<p>Suggestions for discussion forum topics for 2022 must be sent to the NSTF office as soon as possible.</p>

APPENDIX B: PARTICIPANTS IN GENERAL MEETING

Name of organisation	Name of attendee
Association of Science Technology Engineering Mathematics and Innovation (ASTEMI)	Mr Johannes de Vries
Engineering Council of South Africa (ECSA)	Mr Ada Mukanya Dienga
Engineering Council of South Africa (ECSA)	Ms Millicent Kabwe
Geo-Information Society of South Africa (GISSA)	Ms Marlanie Moodley
Geo-Information Society of South Africa (GISSA)	Mrs Janusha Singh
Geological Society of South Africa (GSSA)	Prof Gillian Drennan
Geological Society of South Africa (GSSA)	Dr Craig Smith
Grassland Society of Southern Africa (GSSA)	Dr Florence Nherera-Chokuda
Institute of Information Technology Professionals South Africa (IITPSA)	Mr Tony Parry
Institution of Municipal Engineering of SA (IMESA)	Mr Christo Swart
International Association of Impact Assessment South Africa (IAIASA)	Ms Sue George
South African Academy of Engineering (SAAE)	Dr Christine Render
Southern African Association for Research in Mathematics, Science and Technology Education	Prof Elizabeth Mavhunga
South African Association for Theoretical and Applied Mechanics (SAAM)	Dr Nico Wilke
South African Chemical Institute (SACI)	Prof Hellen Drummond
South African Council for Natural Scientific Professions (SACNASP)	Mrs Sarah van Aardt
South African Genetics Society (SAGS)	Prof Sanushka Naidoo
Southern African Institute for Industrial Engineering (SAIIE)	Mr Jacques Faure
South African Institute of Agricultural Engineers (SAIAE)	Mrs Chikondi Gurira
South African Council for Automation and Control (SACAC)	Mr John Burchell
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)	Prof Mbuyu Sumbwanyambe
South African Institute of Electrical Engineers (SAIEE)	Mr Pascal Motsoasele
Society for Automation, Instrumentation, Measurement and Control (SAIMC)	Mr Johan Maartens
Southern African Institute of Mining and Metallurgy (SAIMM)	Ms Sam Moolla
Southern African Institute of Mining and Metallurgy (SAIMM)	Prof Selo Ndlovu
South African Institute of Physics (SAIP)	Mr Brian Masara
South African Institution of Civil Engineering (SAICE)	Mr Vishaal Lutchman
South African Mathematics Foundation (SAMF)	Mrs Ellie Olivier
South African National Biodiversity Institute (SANBI)	Dr Theresa <i>SE</i> Thusa
South African Sugarcane Research Institute (SASRI)	Dr Peter Twedde
Water Institute of Southern Africa (WISA)	Dr TG Barnard
Zoological Society of Southern Africa (ZSSA)	Prof Aliza le Roux
NSTF staff, proSET committee and services providers	
National Science and Technology Forum (NSTF)	Ms Jansie Niehaus
NSTF	Ms Wilna Eksteen

Name of organisation	Name of attendee
NSTF	Miss Lebogang Tebeila
NSTF	Miss Siyabonga Jonga
NSTF	Miss Nonsikelelo Nkwanyana
NSTF	Miss Seipati Moleleki
proSET committee chairperson	Mr David Botha
STEMulator representative	Mr Richard Gundersen
STEMulator alternate representative	Dr Gerda Botha
Consultant	Mrs Ina Roos