Implications of the 4ᵗʰ Industrial Revolution for SET, industry, society, and education

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Biographies of Speakers

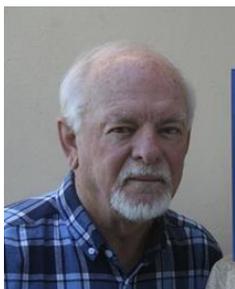| **Mr Garth Williams**	Garth Williams currently works at the Technology Innovation Agency where he is responsible for conceiving, developing and implementing TIA's Intelligence function. The Intelligence capacity is new for TIA, and once established will serve to enhance strategic decision making. He previously worked at the Department of Science and Technology where he was responsible for advanced manufacturing technology policy and strategy. Garth has also worked at Mintek, a public research organisation specialising in minerals processing and extractive metallurgy, firstly as a precious metals researcher and then within an HR environment where he oversaw the company's human resource development programmes, amongst others. After graduating from the University of Cape Town he worked as a metallurgist within a manufacturing environment at GKN Sinter Metals Cape Town, and then at Nampak Group R&D.Garth has an MSc in Materials Engineering from the University of Cape Town and an MSc in Science and Technology Policy (with distinction) from the University of Sussex, UK.
Dr Tshiamo Motshegwa	Dr Tshiamo Motshegwa is based at the Department of Computer Science, Faculty of Science at the University of Botswana. He leads High Performance Computing and Data Science Research cluster. He has been Chair of the SADC Technical Experts Working Group developing the SADC Regional Cyber-infrastructure Framework and High-Performance Computing Ecosystems. He serves on the Botswana Government's Ministry of Tertiary Education Science and Technology task team for the Botswana Space Science strategy overarching developments and opportunities in space sciences and technologies. He is also a member of the Botswana Square Kilometer Array (SKA) & African Very Long Base Interferometer Network (AVN) Projects technical Committee. He serves on the Botswana Open Data Open Science (ODOS) committee. He is in the International Programme Delivery Committee for the International Data Week Conference IDW, Scientific Data Conference -SCIDATACon and the International Conference on internet Cybersecurity and Information Systems (ICICIS) He participates in the SADC Intellectual Property Rights initiative and has led in Southern African Innovation Support Programme (SAIS) projects around developing innovation ecosystems and Botswana Technology Transfer Office (TTO) at the Botswana Innovation Hub Science park. He engages and leads efforts in creating University-Industry-Government Co-creation innovation platforms. Dr Motshegwa received a BEng(Hons) Computer Systems Engineering and Ph.D. in Computer Science both from City, University Of London - School of Mathematics, Computer Science & Engineering . He has had fellowships at British Energy Plc and at British Telecom's Adastral Park Research & Innovation Labs, BTexact Technologies in Ipswich, UK at the Intelligent Business Systems Group. He has worked European Union-funded project in EU FP6/FP7 Framework

Prof Elmarie Biermann	The Director and co-founder of the Cyber Security Institute in South Africa, Prof. Elmarie Biermann established her first company in 2006. She holds a Ph.D. in Computer Security from the University of South Africa and boasts experience in security consulting, training, research as well as the development of security content in both industry and academia. She authored many academic, technical and industry papers, and chapters in books, and regularly holds talks at seminars and conferences that cater for both national and international audiences. She holds adjunct professorships from both the University of Stellenbosch and the French South African Institute of Technology (F'SATI) at the Cape Peninsula University of Technology (CPUT). Prof. Biermann is passionate about and actively involved in the development and growing of cyber-security expertise and skills in the South African and African market. She is mentoring several PhD students at various Universities and developed dedicated training and internship programs to develop practical security skills and competencies.
Prof Babu Sena Paul	Prof. Babu Sena Paul received his B.Tech and M.Tech degree in Radio physics and Electronics from the University of Calcutta, India. He was with Philips India Ltd from 1999-2000. He received his Ph.D. degree from the Department of Electronics and Communication Engineering, Indian Institute of Technology. He has attended and published over sixty research papers in international and national conferences, symposiums and peer reviewed journals. He has successfully supervised several postgraduate students and post-doctoral research fellows. He joined the University of Johannesburg in 2010. He has served as the Head of the Department at the Department of Electrical Engineering, University of Johannesburg from 2015 to March 2018. He is the currently serving as the Director to the Institute for Intelligent Systems, University of Johannesburg.
Mr Simon Ratcliffe	Simon Ratcliffe grew-up on a small-holding outside the small town of Krugersdorp, South Africa, where the clarity and vastness of the Southern skies inspired him to become an astronomer. He graduated with a BSc Honours from Rhodes University and has a background in astrophysics and computer science. Simon has been dubbed by the South African media as the "barefoot astronomer" for his habit of working without shoes. He is Technical Lead: Scientific Computing at the South African Radio Astronomy Observatory (SARAO) in Cape Town, Western Cape. Simon oversees the architecture and technical direction of science processing for South Africa's 64-receptor MeerKAT Radio Telescope situated on the SKA site 90km outside Carnarvon, Northern Cape. Within the context of the international SKA effort, he is involved in the development of the science data processor (SDP), and leads the local monitoring and control component of this effort.
Ms Taonga Chilalika	Taonga Chilalika is Senior Research and Development (R&D) Advocacy Associate for PATH in South Africa. In this position, she works to advocate for enabling policy environments for health R&D in South Africa. Her experience comprises monitoring and evaluation of development projects and the use of business intelligence solutions for social development programme improvements. Taonga is a research professional with 7 years of experience spanning international development, and private and the public sectors. She holds a post graduate diploma in Public and Development Management from the Wits School of Governance.

Prof Fisseha Mekuria 	Prof Fisseha Mekuria,PhD, is a Chief Research Scientist, at the CSIR Meraka ICT Institute, South Africa. He leads the 5G ICT standards and Digital inclusion research at the CSIR. He is the proponent of a 4th leg for the 5G standards aimed at the 4th IR technologies for technology innovation in emerging economies. He has a PhD from Linköping University, in Sweden, and has worked for 10 years as senior research Engineer at Ericsson Mobile Communications R&D lab in Sweden, where he developed over 15 US/EPO patents. He has been working with the mobile and internet service industry in developing countries: Setting up next generation network labs in Africa, Development of mobile applications programming courses, Network resource sharing for affordable broadband connectivity, and development of telecom regulatory frameworks and capacity building for telecom regulators in Africa. He is the recipient of the prestigious Google research award in mobile computing. He is at present leading the disruptive technology research in dynamic spectrum sharing and affordable network technologies. The project made headlines as the only emerging economy technology patent contribution for smart spectrum sharing and unlicensed spectrum networks. Successfully completed an international qualification process and standardization of white space spectrum databases in competition with global technology companies, led by the UK Ofcom regulator. He recently delivered a keynote at the MWC-2018, and led a discussion panel on the 5th generation ICT technologies as enablers for the 4th Industrial revolution. Dr Mekuria is also involved in postgraduate skills development in future wireless communications, dynamic spectrum & signal processing, with a number of African universities through his engagement as Adj. Professor at the University of Johannesburg, Faculty of Electrical and Electronics Engineering Science, South Africa.
Prof Mike Bruton 	Mike Bruton is a retired scientist who is now active as an informal science educator, author and imagineer. He achieved a B+ rating with the NRF during his research career as an aquatic ecologist and ichthyologist despite a heavy administrative load as Director of the then-JLB Smith Institute of Ichthyology (now the South African Institute for Aquatic Biodiversity). He established the Two Oceans Environmental Education Trust at the Two Oceans Aquarium in Cape Town as well as the MTN ScienCentre (now the Cape Town Science Centre). He has also been instrumental in the establishment of interactive science centres in Umhlanga, Johannesburg and Uitenhage in South Africa and in Bahrain and Saudi Arabia in the Middle East. He developed an interest in the importance of innovation in science while he was the director of the Smith Institute and carried this interest over into his involvement in science centres. In 2004 he designed a travelling exhibition, 'Great South African Inventions', which was seen by over 100,000 people throughout South Africa and is still travelling in its third iteration. Based on his research for this exhibition, he wrote a book of the same name which was published by Cambridge University Press in 2010, revised in 2013. Over the next few years he further developed his network of contacts with South African inventors and, in November 2017, published 'What a Great Idea! Awesome South African Inventions' through Jacana Media. This comprehensive book covers over 700 inventions by more than 300 South African inventors. He runs a consultancy company, Mike Bruton Imagineering, based in Cape Town.

Mr Parthy Chetty	Parthy graduated with a teaching degree from the University of Durban Westville, now KwaZulu Natal (UKZN). After graduating, he taught at a high school in Chatsworth, Durban, teaching Physical Science, Mathematics and Computer Studies up to Grade 12. While teaching he furthered his studies in the computer studies (ICT) field at UKZN.
	He was then promoted, at a very young age, to a subject advisor in Gauteng in the Technology learning area, supporting teachers in Computer Studies and Technology. Two years later he was again promoted to the Ministry of Education in Pretoria working in a specialised unit promoting ICT innovation in education. Here he was tasked to develop policies in ICT education, support the provinces and write speeches for the Minister and answer parliamentary questions.
	After serving the formal education sector for 12 years he joined Intel Corporation, one of the largest IT companies in the world, and started their very first ICT integration programmes for teacher development. After much success in SA Parthy expanded Intel programmes into Nigeria and Kenya, which are now well established in the regions. During his time at Intel Parthy worked closely with Global Public Policy from a corporate perspective. Here he learnt about the dynamics of balancing government policy with leading edge technology innovation for social and economic development. In SA, he worked very closely on policy matters and government initiatives with the Department of Education, Department of Science & Technology and Department of Communications.
	After 10 years at Intel reaching the position of head of corporate affairs, Parthy left the private sector to join the NGO sector. He was appointed Executive Director of Eskom Expo for Young Scientists in May 2013 and set up structures in all the provinces to expand scientific research in the school system, across the country. This is a national initiative working very closely with the Department of Basic Education and Department of Science & Technology.