

4TH INDUSTRIAL REVOLUTION



PARLIAMENT
OF THE REPUBLIC OF SOUTH AFRICA

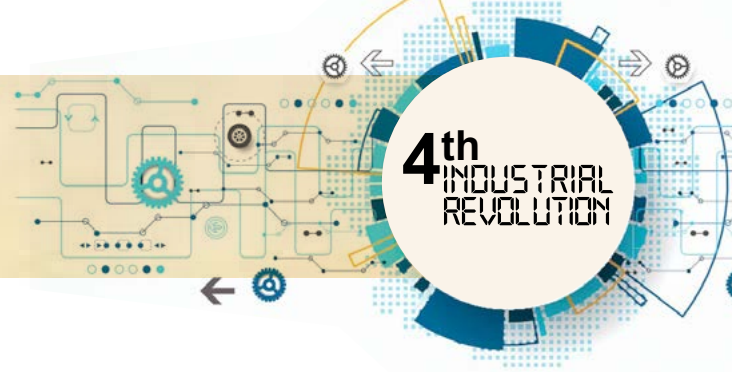
ROUNDTABLE DISCUSSION OPPORTUNITIES AND THREATS **R E P O R T**



ROUNDTABLE DISCUSSION
FOURTH INDUSTRIAL REVOLUTION (4th IR):
OPPORTUNITIES AND THREATS

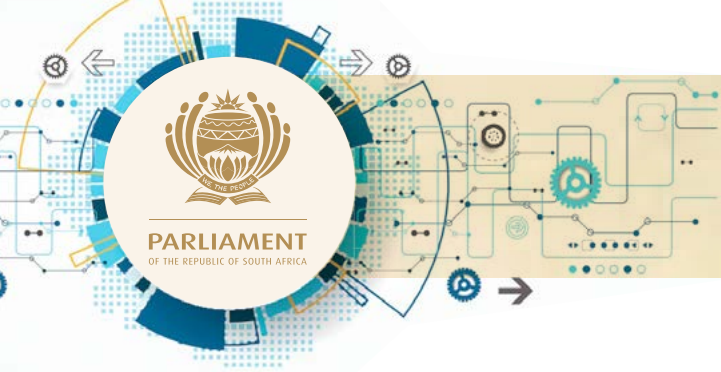
31 MAY 2018

REPORT



CONTENTS

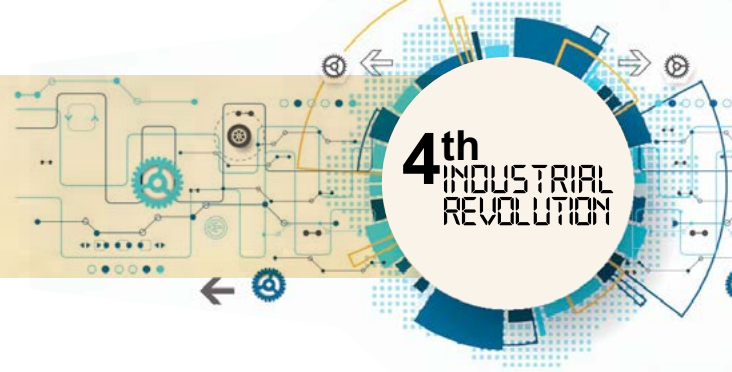
LIST OF ACRONYMS	5
1. BACKGROUND	7
2. DISCUSSION	10
2.1 Welcome and Introduction.....	10
2.2 Keynote Address.....	11
2.3 Department of Higher Education and Training (DHET)	13
2.4 Department of Trade and Industry (DTI)	16
2.5 Department of Economic Development (DED)	19
2.6 Department of Public Service and Administration (DPSA).....	21
2.7 Department of Science and Technology (DST).....	21
2.8 Council for Scientific and Industrial Research (CSIR).....	23
3. SCOPE OF THE FOURTH INDUSTRIAL REVOLUTION	23
4. THE ROLE OF PARLIAMENT	25
5. LEGISLATIVE CONSIDERATIONS	25
6. KEY FINDINGS AND RECOMMENDATIONS	27
7. KEY FINDINGS AND RECOMMENDATIONS PERTAINING TO THE ROLE OF PARLIAMENT IN THE 4th IR	28
8. CONCLUSION	31



Mr Christian Juhl, Member of the Folketing, Danish Parliament

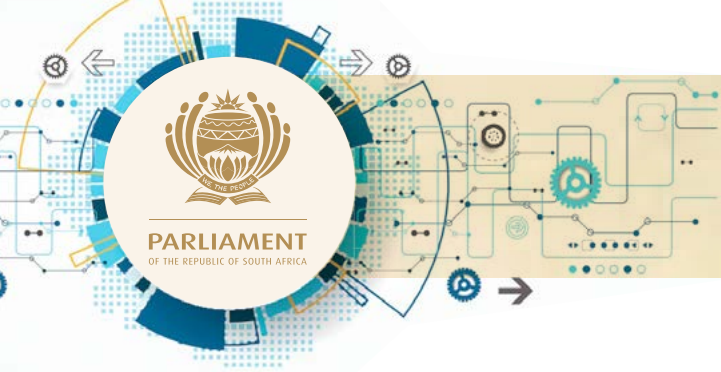
“ He reflected on the beginning of his own political journey which was largely influenced by South African politics during apartheid. He participated in anti-apartheid activities in Denmark. ”





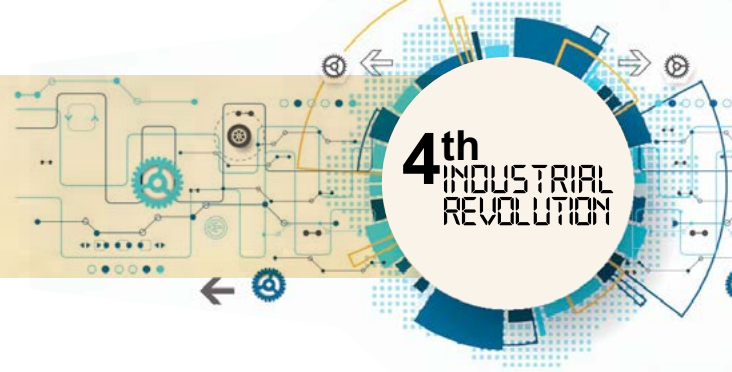
LIST OF ACRONYMS

- 1st IR** : First Industrial Revolution
- 2nd IR** : Second Industrial Revolution
- 3rd IR** : Third Industrial Revolution
- 4th IR** : Fourth Industrial Revolution
- AI** : Artificial Intelligence
- BRICS** : Brazil, Russia, India, China, South Africa
- CSIR** : Council for Scientific and Industrial Research
- DED** : Department of Economic Development
- DHET** : Department of Higher Education and Training
- DPSA** : Department of Public Service and Administration
- DST** : Department of Science and Technology
- DTI** : Department of Trade and Industry
- DTPS** : Department of Telecommunications and Postal Services
- EO** : Earth Observation
- EU** : European Union
- GDP** : Gross Domestic Product
- HSRC** : Human Sciences Research Council
- ICT** : Information and Communications Technology
- IP** : Intellectual Property
- IT** : Information Technology
- NA** : National Assembly
- NCOP** : National Council of Provinces
- NSFAS** : National Student Financial Aid Scheme
- OEM** : Original Equipment Manufacturer
- R&D** : Research and Development
- RDI** : Research, Development and Innovation
- SMME** : Small, Medium- and Micro-sized Enterprises
- TIA** : Technology Innovation Agency
- USA** : United States of America



Left: Deputy Speaker Lechesa Tsenoli and on the right, House Chairperson Cedric Frolick with staff members of the Danish Parliament.





1. BACKGROUND

In October 2017, a South African Parliament multi-party delegation led by the Deputy Speaker Honourable Lechesa Tsenoli embarked on a study tour to the Denmark Parliament (Folketing), the Danish Board of Technology and the Department of Science and Technology (DST) was undertaken. Denmark boasts of having one of the best Information and Communications Technology (ICT) infrastructure in the world.

The South African delegation had an opportunity to learn from the Danish deployment of ICT in government and in the Parliament of Denmark. Among lessons learnt were, inter alia:

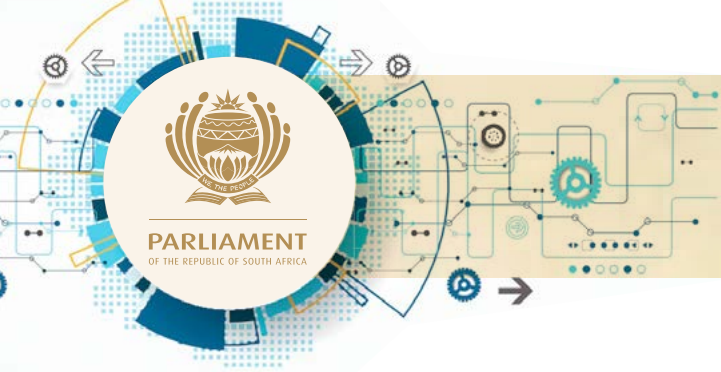
- The enhancement of the capacity of Members of Parliament using ICT policy and governance to conduct oversight, law-making and public participation.
- Usage of 'Round Table' discussions as a platform aimed at involving the public, private sector, ICT industry and state institutions;
- Using ICT platform to find ways to build and sustain citizen engagement; and
- To unearth opportunities that will benefit the public in the spirit of embracing the unavoidable 4th IR.

In an effort to give impetus and expression to the lessons learned from the Denmark Study Tour, the Speaker of the National Assembly, Honourable Baleka Mbete endorsed a proposal that the Deputy Speaker of the National Assembly (NA), in collaboration with the Deputy Chairperson of the National Council of Provinces (NCOP), Honourable Raseriti Tau and the House Chairperson of Committees, Oversight and ICT, House Chairperson Cedric Frolick would champion an initiative to commence strategic discussions with leading agencies and institutions, around South Africa's state of readiness for an impending Fourth Industrial Revolution for the remaining period of the 5th Parliament.

Parliament hence proceeded to host a roundtable discussion on the 4th IR on 31 May 2018. The roundtable discussion was initiated and aimed at affirming the centrality of Parliament in ensuring that all South Africans benefit from the fast-growing role of technological innovations and convergence in South Africa. The roundtable discussion was hosted under the theme: "Fourth Industrial Revolution – Opportunities and Threats".

This inaugural roundtable discussion was positioned as a launching pad to a series of high-level engagements of leading agencies and institutions, with the strategic intention of gearing South Africa towards optimising the benefits of the 4th IR, while mitigating the inherent risks and challenges before us.

Various key stakeholders including four Ministers of the socio-economic development cluster, academics from the University of Johannesburg and research and development (R&D) agencies such as the Council for Scientific and Industrial Research (CSIR) attended the roundtable discussion. In line with its mission and mandate of ensuring an enabling legislative and policy framework, executive oversight and citizen participation, Parliament has taken up the challenge of keeping the 4th IR on the national agenda and tracking progress across all sectors.



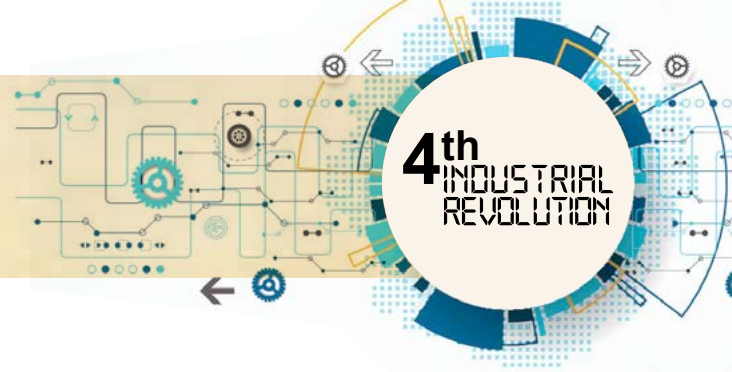
South Africa, as one of the leading nations on the African Continent, plans to optimise its strengths, leapfrog to technology convergence and enhance its manufacturing capacity, while mobilising every segment of society nationally, regionally, continentally and globally to spearhead human development.

The main purpose of the roundtable discussion was for Parliament to set the tone for further engagements focussing on the most crucial choices confronting South Africa on how the 4th IR will influence the development trajectory. The envisaged outcomes of this campaign include:

- Raising the level of awareness and catalyse increased energy into a coherent policy response;
- Committing to greater investments in R&D, including responsible targeted R&D to solve priority public challenges;
- Improving coordination and integration across sectors and spheres of government;
- Highlighting the benefits or opportunities and threats presented by the 4th IR; and
- Improving Parliamentary oversight, evidence-based law-making, public involvement, cooperative government and intergovernmental relations and sectoral engagements.



The South African Parliament Delegation at the Folketing accompanied by the South African Ambassador to Denmark H.E Ambassador N.M. Mandela

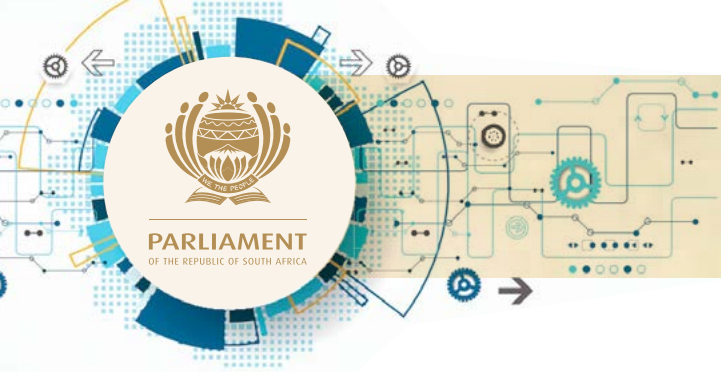


“

Denmark Tech Ambassador, Casper Klyng who has filled a new role referred to as “TechPlomacy” (Tech + digital diplomacy=TechPlomacy), hence becoming the first Techplomat.

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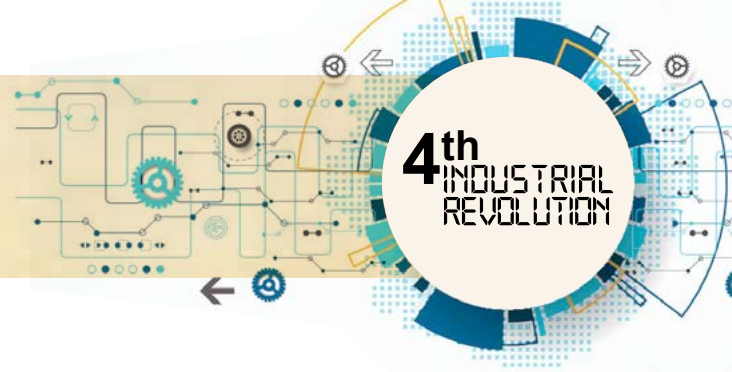


*The Deputy Speaker of the NA,
Honourable Lechesa Tsenoli,*

2. DISCUSSION

2.1 Welcome and Introduction

The Deputy Speaker of the NA, Honourable Lechesa Tsenoli, introduced the discussion with a short background and located the discussions on the 4th IR within context of the work of Parliament. The Speaker of the NA, Honourable Baleka Mbete, officially welcomed participants and unpacked the key tenets of the 1st, 2nd and 3rd industrial revolutions to contextualize the 4th IR campaign. The Speaker and Deputy Speaker acknowledged that South Africa, as a whole, is barely on the brink of this discussion but highlighted the varying levels of readiness in the different sectors, including government departments. The need for a national blueprint in the absence of national policy and legislation was a key message in the introductory remarks.



2.2 Keynote Address

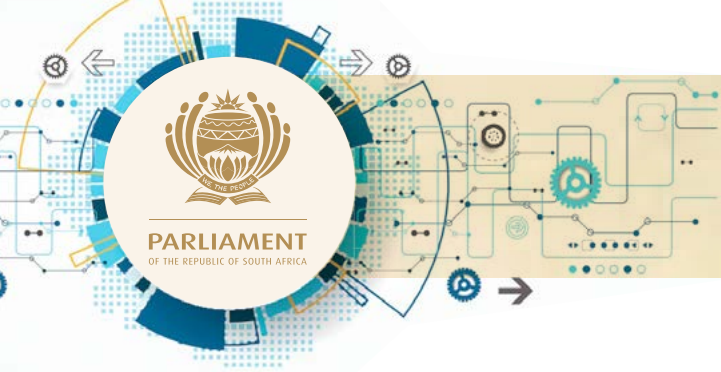
The Vice Chancellor of the University of Johannesburg, Professor Tshilidzi Marwala, delivered the keynote address in which he gave a broad overview of the technologies innovated by his team of researchers, focussing on artificial intelligence (AI). Professor Marwala sketched the historical context of the 4th IR, as a cumulatively progressive phenomenon, which started 70 years ago. He indicated that one of the major aspects of the 4th IR is AI. Other cutting-edge innovations include block chain, biotechnology, robotics, nanotechnology, etc.

Key points

- **First Industrial Revolution (1st IR):** Spearheaded in England. Professor Marwala stated that statistically it should have happened in India or China due to their population density. However, it happened in England because the science, namely, Newton's Laws of Motion, Thermodynamics and Gravitation, constituted the technological base for the development of the steam engine that drove the 1st IR. Africa was a spectator in the 1st IR, not a participant. We cannot afford to be spectators in the 4th IR.
- **Second Industrial Revolution (2nd IR):** Driven by the United States of America (USA), with ideas emanating from England. The electric motor was created and formed the basis for the appliances and modes of transport that characterise daily life currently. The 2nd IR largely impacted and improved modes of transportation for goods and related services. The advent of the electric motor led to mass production.
- **Third Industrial Revolution (3rd IR) (Electronics technologies):** Initiated and advanced in the USA. The discovery of semiconductors, that conduct electricity under certain conditions were used to develop



Vice Chancellor of the University of Johannesburg, Professor Tshilidzi Marwala



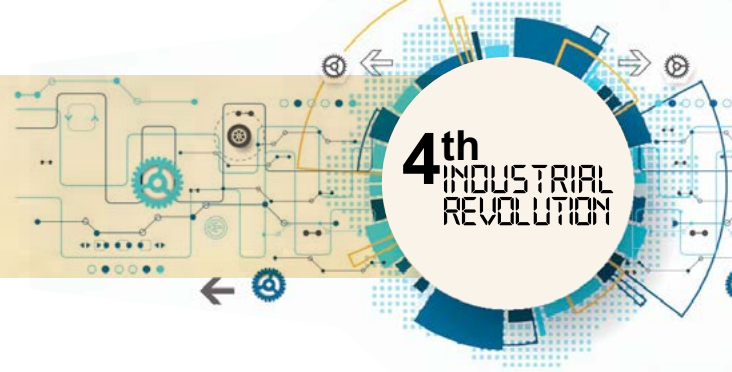
transistors. The combination of many transistors on a single chip (integrated circuits) constitute a computer. This represented the advent of the digital revolution. Again, Africa was a spectator, and even now, South Africa still does not have a single local semiconductor company. This must change.

- **Fourth Industrial Revolution (4th IR) (Digital technologies):** Builds on the digital revolution and is driven by AI. Along this digital trajectory, everything around us will be “intelligently” automated. The various forms of AI can extensively contribute towards the improvement of quality of life, but must be underpinned and guided by a strong regulatory regime to ensure a balanced and responsible use of these technologies.

Prof Marwala stated that automation is here to stay. He outlined the skills necessary for the 4th IR, emphasizing that multidisciplinary will be a key factor. Ethics will also be key in the use and application of technology. What type of ethics should be applied? This means that we should not just import technology; we should understand the base programming that informs how the technology learns and processes information and then makes decisions. In addition, what legislative framework should be considered and adopted that would make the 4th IR more inclusive and transparent? For example, do we import Apple products that do not recognise African faces and languages?

Developing the appropriate legislative regime to govern the developmental trajectory of the 4th IR in South Africa is an important consideration. South Africa hence has to begin processing the form and shape of the legislative regime required to underpin and govern the use of AI technologies in the country. This should include meticulous consideration of ethics to prevent ethical violations in the use, production and make up of AI technologies.





2.3 Department of Higher Education and Training (DHET)

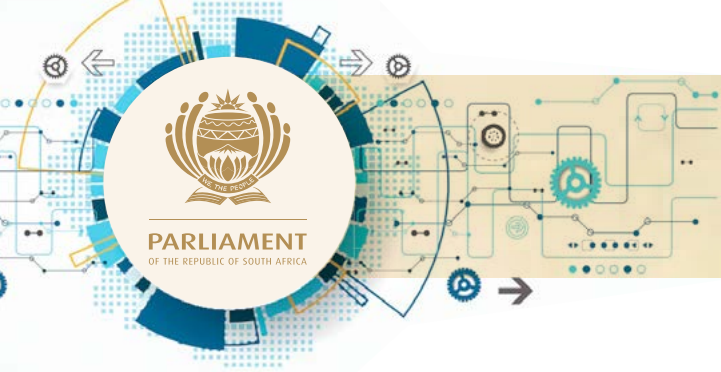
The Minister for Higher Education and Training, Ms. Naledi Pandor, congratulated the Speaker, Deputy Speaker and Deputy Chairperson of the National Council of Provinces (NCOP) for convening a roundtable discussion on such an important subject. Minister Pandor proposed to Prof. Marwala that a similar roundtable discussion might have to be scheduled within the higher education sector to further dissect this complex and relevant matter.

Minister Pandor reflected on her budget speech presented in the NCOP, where she referred to the use of AI technologies and the debate that occurs when reflecting on the 4th IR and the job losses that may ensue as a result.

In her budget speech, the Minister recognised that:

“We’re in the age of the pervasive influence of emerging technologies and artificial intelligence and need responsive skills and development research focus and investment to benefit fully.”

The inclusion of the gendered aspects in the discussions on the 4th IR were highlighted. Minister Pandor indicated that women are better placed to benefit from the use of AI technologies. Women are in jobs that require the human touch, such as nursing and teaching. Furthermore, women are better educated than men, affording them a comparative advantage in a labour market that is being transformed by new technologies. Automation may not equalise gender and pay disparities, but women should take greater advantage of the opportunities offered by the 4th IR.



The Minister argued that this 4th industrial wave is not only about technology. One of the challenges encountered in discussions on the 4th IR is that humanity is being defined as workers or people who must always work. We do not talk about family, leisure, or other aspects of society that are being eroded and invisible as a part of how we are made up. Attention must not only be given to the engineering and physical science domain in relation to these technologies but also to the human and social science aspect including how these interface. Ethics is therefore of paramount importance. For example, we talk about using nanotechnology in medical diagnoses and treatments but talk very little about the ethics of using nanotechnology.

The World Economic Forum provided a platform to discuss the emergence of a range of technologies as they unfold during the 4th IR. Within this ambit, the South African government has had one or two roundtables to unpack this subject. Furthermore, there are companies in South Africa that are already using or contributing towards the development of 4th IR technologies. However, government has yet to develop a comprehensive national plan to guide and underpin how the 4th IR must unfold in South Africa to take advantage of the many advantages found in these technologies.

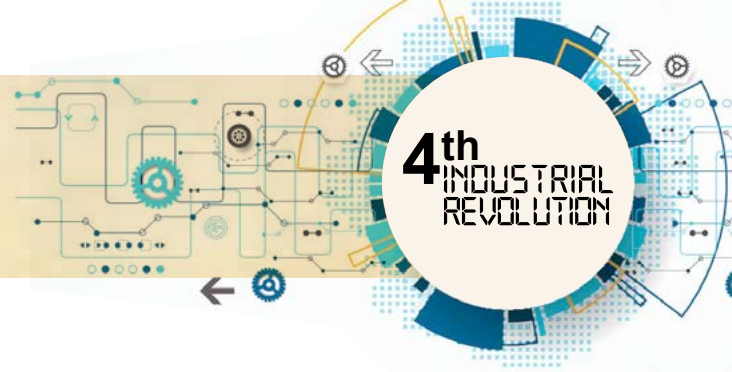
In his 2018 State of the Nation Address, the President, Mr. Cyril Ramaphosa, committed to establishing an intergovernmental task team to help shape and develop national strategy on 4th IR.

South Africa does have areas of research and development competitive advantage. For example, research-intensive universities, innovative mining companies, the financial services sector, and manufacturing. South Africa is currently chairing BRICS and there are many ideas on how to take advantage of the 4th IR that have been put forward. One idea put to the BRICS Committee is the establishment of a 4th IR Research Centre in South Africa.

Furthermore, we must work on developing a co-ordinated ecosystem of entrepreneurship, which will work across all education sectors and that will draw together multiple initiatives and stakeholders. Minister Pandor referenced Prof Marwala's articles on the 4th IR and how he emphasises enterprise as crucial to responding to 4th IR. Higher Education and Training has been concentrating on entrepreneurship and has started an Entrepreneurship Development Programme. This Programme is focussed on developing students as entrepreneurs who possess flexible skills that can assist to create work, as well as the development of academics who understand what it means to create an enterprise and are able to engage with entrepreneurship development through their research, teaching, and programme and curriculum design.

If South Africa is going to make advances in the 4th IR, then the Universities and Science Councils are going to have to take a leading role. Parliament can assist government with the regulatory framework for the 4th IR. However, if South Africa's researchers are not really active and stimulating the ideas then whatever we attempt to do will fail. Hence, it is critical that Higher Education must be fully active. Investment in the Entrepreneurship Programme is not only important to students and academics but similarly for universities and start-up companies. Currently, very few South African universities are creating start-up companies. This is a problem in terms of innovation that must be addressed. South Africa must consider these aspects if it is to be at the forefront of those who promote change.

South Africa should also consider smart manufacturing and advanced materials. There are intelligent manufacturing companies and networks in South Africa, which include smart networking of supply chain and supply chain management. South Africa must identify best practice in these areas where we have major manufacturers who



have developed intelligent manufacturing in their overseas operations, such as in the automotive industry and big food processors. We should incentivise and pressure them to bring some of their research and development in these areas to South Africa. The Department of Science and Technology is doing a lot of crucial work in developing key smart technology domains, providing a fertile basis for South Africa to engage in the 4th IR.

Another aspect we should attend to is to extend our Earth Observation (EO) work and our use of drones. The combination of EO with networked drones to support agricultural planning and support can be used to enhance land use, optimise fertiliser and agrochemical use and to plan water resource use. These are already in use on teaching farms of the University of Stellenbosch.

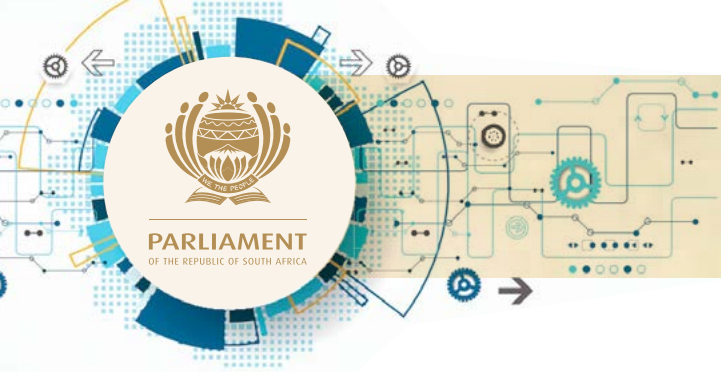
The last area, which needs more attention, and in which SA is quite strong, is that of the financial services industry in particular banking. For example, the DHET is struggling with National Student Financial Aid Scheme (NSFAS) that does not have the technology to process its payments.

Minister Pandor concluded by stating that we are in a process where we have to upskill millions of South African's, where we have to create millions of new SMMEs, we have to bring into the mainstream economy the so-called informal sector that is a huge contributor to South Africa's Gross Domestic Product (GDP) but wholly unserved by our smart technology. To address these challenges, we have knowledge institutions that can assist South Africa with its goals and objectives.



“ We’re in the age of the pervasive influence of emerging technologies and artificial intelligence and need responsive skills and development research focus and investment to benefit fully. ”
-Minister Naledi Pandor

Professor Tshilidzi Marwala, Speaker Hon. Baleka Mbete and Minister Naledi Pandor



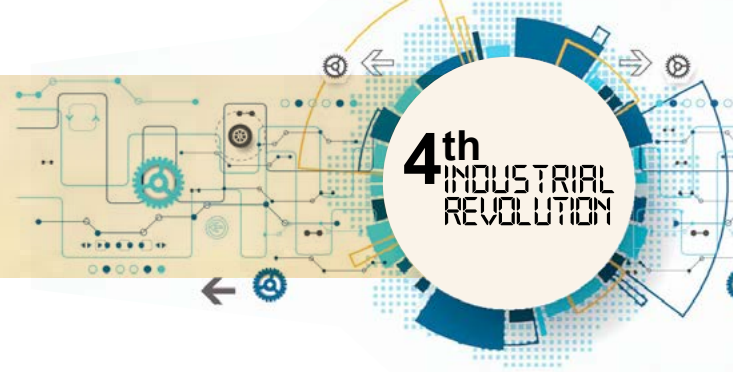
Minister for Trade and Industry, Mr. Rob Davies

2.4 Department of Trade and Industry (DTI)

The Minister for Trade and Industry, Mr. Rob Davies, indicated that the effects and impact of the 4th IR is one of the most critical questions facing South Africa and the world today. The Minister emphasised that his remarks were not an official DTI position, but that he raised a number of pertinent questions to stimulate thought and discussion.

One of the key questions raised at the World Economic Forum in Davos was the world's preparedness for the 4th IR. In addition, the regulatory framework that is supposed to guide this process is a critical aspect most pertinent to parliamentarians from a law-making and oversight perspective.

It is predicted that about 25% of manufacturing could be robotized in the next few years. To address this possible challenge, South Africa should start focusing on sectors that have the greatest potential of creating jobs such as agriculture and agro-processing, which is a sector where Africa is well poised to make great advances. Furthermore, those parts of manufacturing that can retain human labour must be identified and accordingly protected. The robotized component of the 4th IR could create conditions for a more caring society, where the nation can focus on aspects of human life that include cohesion instead of the long working hours currently demanded in labour intensive jobs. At a social and organisational level, in the 1st and 2nd IRs, the factory was the focal point of the value chain and all parts of the value chain were organised around the factory. In the 4th IR, the digital platform becomes the centre of the value chain. Disruptive change will occur across all sectors. For example, South Africa will face big change in the retail sector with electronic commerce, where technology will govern retail activity.



Political choice should ensure that there is an inclusive choice around the use of these technologies, which would improve the living conditions of humanity, while allowing South Africans the benefits of using these technologies in the various spheres and sectors of our society. Furthermore, better co-ordination and collaboration across critical sectors to ensure a cohesive approach, endorsed by all stakeholders, would be imperative.

The 4th IR is upon us and its impacts will gather pace. It has many benefits and challenges where the promise of an overall increase in productivity is viewed as a major benefit. The technologies will have the potential to solve a number of developmental challenges that can open up and lower barriers to entry for SMMEs, since instead of having huge imbedded capital systems, digital systems will enable and allow new entrants into value chains much more easily. For example, e-government that allows banks access to the data at the Department of Home Affairs, helps individuals to register their companies more easily.

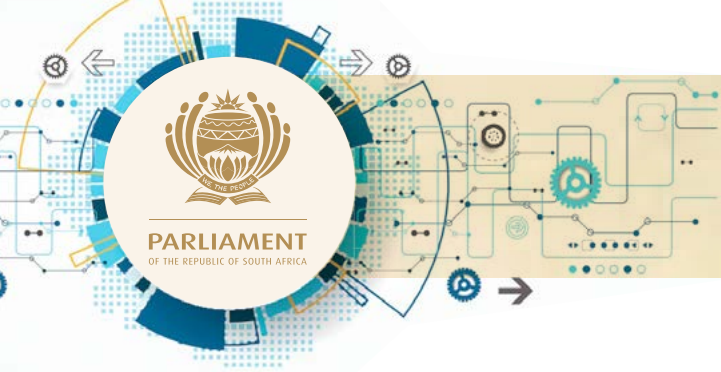
Minister Davies stated that we live in “a winner takes all or most markets” world where those that innovate and take products to the market, reap huge rewards and those that are second best, get nothing. We live in a world of monopolisation where approximately 63% of digital companies are registered in the USA. They are free to exercise monopoly business practices (engineer obsolescence into products to create market for new products, make operating system incompatible to create a brand market, etc.).

Barriers for workers have risen since automation now does many of the production line tasks (for example, quality control). Workers in these factories no longer wear overalls, but white coats and operate digital devices. South Africa can manage and excel at this; however, the implications must be considered. These workers, as a minimum, need a diploma in digital technology or engineering. Therefore, the barriers to entry for an industrial job are rising. South Africa has a serious skills deficit in relation to what has been identified as the skills needed for the 4th IR. Another factor is reshoring, where technology will allow production to take place closer to the intended marketplace. Hence, those who have made gains using cheap labour are reconsidering their production lines. To mitigate against these losses or impacts, South Africa has to industrialise while addressing a huge technological backlog.

South Africa’s preparedness for the 4th IR is categorised as nascent (not well prepared). Hence, Government has identified preparedness for the 4th IR as a priority as it will impact skills development, innovation capability, identifying areas where we have expertise, etc.

Currently, there are three competing paradigms for regulation of the 4th IR. The first being the USA model with 63% registered digital companies. The USA is the dominant player and the first mover in many of these processes. The USA model on regulation is deregulation, which seeks to limit government involvement. This deregulation model, also termed the Digital 2 Dozen, comprises a list of regulations the USA do not want. For example, there should be a permanent moratorium on any customs duties on e-commerce, free data flows with very limited restrictions on private data, no distinction between digital and other products, etc. The USA model is being pushed aggressively to be the global norm governing e-commerce. If this is the norm, South Africa will be opening itself up to e-commerce platforms or forms of trade that will likely be another avenue for a series of USA imports and services.

The second regulatory model is termed the Great Firewall of China and is used to justify security regulations, mainly to prevent subversion. China developed and set up its own e-commerce platforms.



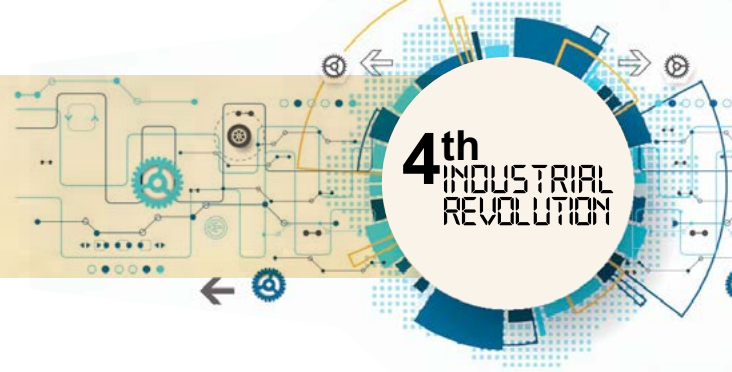
The third regulatory model is the European Union (EU) model. This model is articulated well in the EU and does not support the USA model due to their concerns around data breaches.

South Africa has not identified the type of regulation it wants but said “NO” to the Digital 2 Dozen. South Africa wants regulation that will allow it to take advantage of emerging new technologies but also impose some requirements or obligations. We do not know what these requirements and obligations should be so we must consider these urgently.

The Minister emphasised that the issues are, how does South Africa respond, adapt and regulate these activities so that they assist our value chains, assist us to create more and better quality employment, and allow technologies to be a benefit? The global view is that if the benefits of the 4th IR outweigh the negatives hence we must act.

Minister Davies noted that there is an inter-ministerial committee on the 4th IR that is chaired by the Minister of Telecommunications and Postal Services. We; however, do not have a strongly co-ordinated, clear direction on these issues. There are efforts across government but they do not have the coherence of a national strategy. Achieving co-ordination/integration on the 4th IR is critical because all sectors will be affected. The more co-ordinated South Africa is and the quicker it decides its approach, the better we will position the country for the 4th IR.





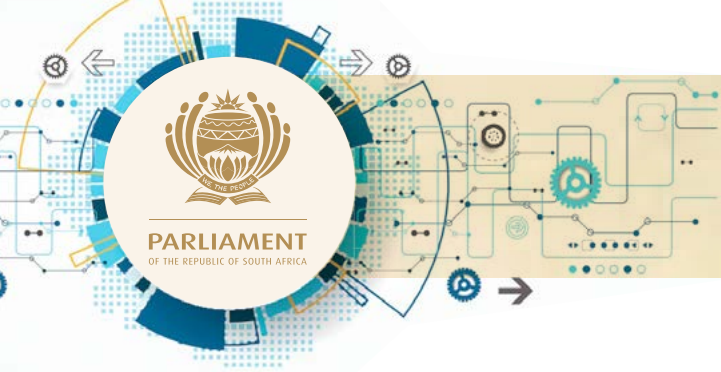
“The 4th IR is here! Minister R. Patel, presenting to the roundtable via Skype.”

2.5 Department of Economic Development (DED)

The Minister for Economic Development, Mr. Ebrahim Patel, highlighted the effects of the advances and influences of the 4th IR on the economic transformation development trajectory of South Africa. Efforts must be made to ensure that South Africa benefits from the opportunities presented.

The Minister elucidated these in a 14-point plan of ideas and concepts that should be considered as the inclusive package of ideas in planning South Africa’s state of readiness for the 4th IR. The Minister indicated that the 14 key actions and associated initiatives could be considered as a 1st draft country roadmap for the 4th IR.

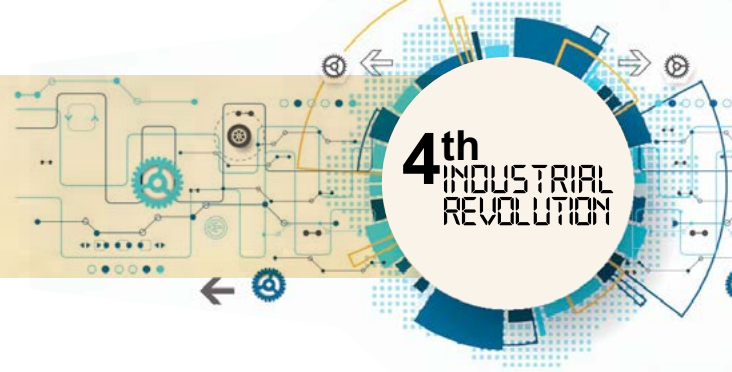
- The following 14 key actions were identified:
- The mapping and monitoring capability of the Fourth Industrial Revolution in SA;
- The need to monitor the impact and opportunities for industry;
- E-government - delivery of services, cooperative governance, democracy, participation and accountability;
- The range of private and public services, such as health and education;
- Issues of spatial dimensions - urban planning and its impact on transport systems;
- Infrastructure requirements for ICT and energy;
- Skills - coding, new careers, how to learn with new technologies;
- Investment - increasing R&D funding, science and technology capability, industrial funding for commercialisation;
- Jobs - social policy, wages, participation in the economy;
- SMMEs and entrepreneurship - large and small businesses;
- Smart regulation - information ethics, big data, perhaps a conference on competition in the digital age, financial innovation;
- African strategy;
- Global partnerships – engaging global players, harnessing domestic capital;
- Communication – inclusion.



Hon. O. De Beer

Hon. L. Dlamini

4th PARLIAMENTARY SESSION
"OPPOSITIONS AND TRENDS"
Mr. M Ngcobo



**Hon. R. Tau, Deputy
Chairperson of the NCOP**

2.6 Department of Public Service and Administration (DPSA)

The Department of Public Service has put in place a team of ICT experts comprising the ICT heads of all government departments, to ensure that due consideration is given to the developments that must be effected so that government moves in concert with the current wave of the 4th IR.

2.7 Department of Science and Technology (DST)

The Department of Science and Technology indicated that today's meeting focussed mainly on the technical aspects of the 4th IR but there is also the Japanese model, i.e. Society 5.0. The DST sees the biggest gap being in the socio-economic impacts of the 4th IR. To address this, the DST contracted the Human Sciences Research Council (HSRC) to develop a map of South Africa's capabilities on the 4th IR and also to assist with developing its Research, Development and Innovation (RDI) Action Plan on the 4th IR, which will help with RDI co-ordination.

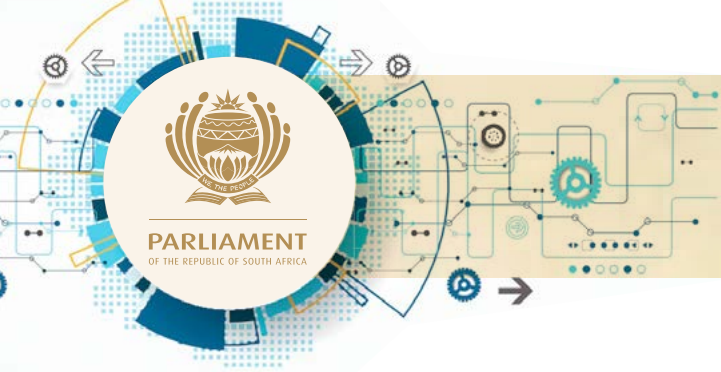
The DST mentioned the following 4th IR initiatives:

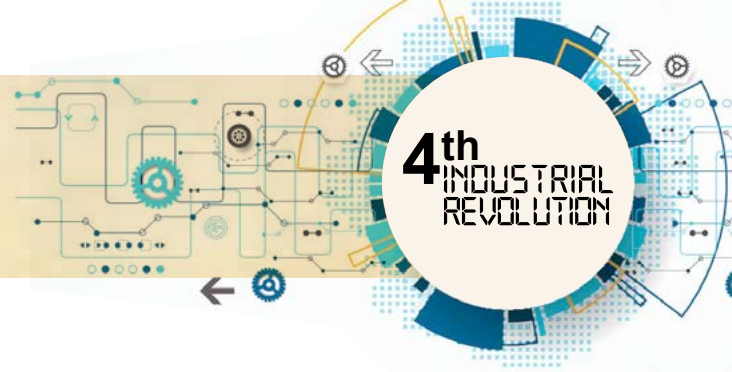
With regard to SMMEs and market barriers to entry, currently there are funded instruments to address ICT infrastructure, to develop skills in application development and to develop new entrepreneurs.

With regard to additive manufacturing, the DST investment at the CSIR and AEROSUD has resulted in the world's biggest and fastest 3D printer of a specific type. This printer will be available to market in the next 2 years and it is hoped that it will open up new market opportunities for South Africa. A lot of the work within the additive manufacturing programme concentrates on diffusing the technologies down to SMMEs and developing skills at that level.

There is an ICT research and development plan that is an enabler around e-government, e-health, service delivery and manufacturing. There are also specific initiatives around nanotechnology, bio-economy and the circular economy.

Importantly, DST will be launching the Converging Technologies Platform in 2018. This platform will try to integrate all of these areas of technology development to meet industry needs in mining, manufacturing or water resources. These will be seen as 4th IR pilot projects.





2.8 Council for Scientific and Industrial Research (CSIR)

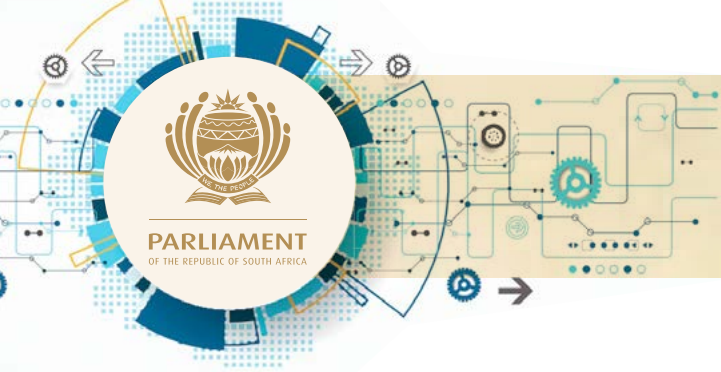
Dr. Daniel Visser from the CSIR provided an overview of the concept paper that was developed by the CSIR for Parliament's 4th IR roundtable discussion, further indicating that the ideas and concepts presented by the various speakers were also extensively explored in the CSIR position paper. Dr. Visser's presentation summarized inputs made by other participants and proposed a way forward for sustaining dialogue in a structured and meaningful way. He indicated that Parliament should play a central role in oversight and ensure that this revolution benefits all South Africans.

3. SCOPE OF THE FOURTH INDUSTRIAL REVOLUTION

The current revolution was coined in 2010. Dr. Visser reiterated that the 4th IR is not a technology revolution. The technologies have been there since the 1st IR. The 4th IR is about convergence. This considers how the different technologies interact. It includes the convergence, interactivity and complementarity of big data fields, analytics and AI.

South Africa has to play a key role in ensuring that it dictates the terms for the use of technologies in a manner that is in line with the country's developmental agenda. It is predicted that by 2025 digital technologies would be pervasive across society. Skills and new jobs have to be critically assessed to ensure that ordinary South Africans derive maximum benefit.

The adoption of inclusive growth is critical; hence, the focus on radical economic transformation must take into consideration the three developmental priorities during the 4th IR. In line with this, a supportive and conducive policy environment must be developed. Policy and legislation will be critical in ensuring adherence to the broader overarching development



agenda of the country, espoused in the National Development Plan. Public-private partnerships will be critical in sustaining coherent transformation.

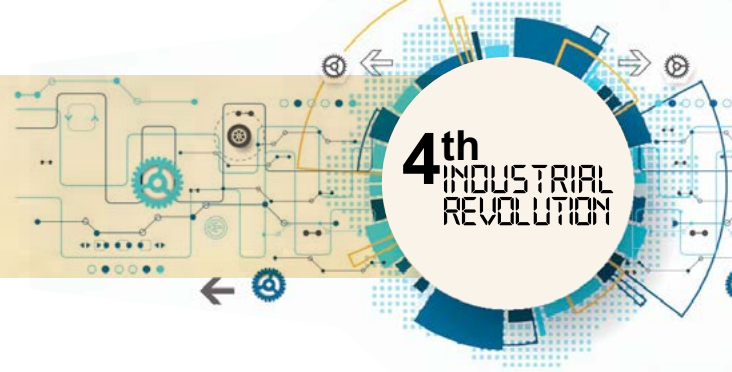
Proposed Plan and Way Forward

The 4th IR should be broken down into 4 critical priority areas:

- Society 4.0
- Industry 4.0
- Business 4.0
- Skills 4.0

All of the discussions came back to one common conclusion - partnerships, working together, synergy. These key aspects should guide the national conversation around the most critical sectors to ensure a structured plan is developed and implemented, in line with the country's developmental agenda. The appropriate parliamentary structures should be identified with due cognizance to these critical sectors.





4. THE ROLE OF PARLIAMENT

Parliament has a significant role to play in the 4th IR. Parliament should improve oversight and evidence-based law-making. There are various initiatives that must be prioritized and that can gain traction in the state's response plans to the 4th IR. Key amongst these is South Africa's response to the questions raised at the World Economic Forum in Davos, around the world's preparedness for the 4th IR. In addition, the regulatory framework to guide this process is a critical aspect most pertinent to parliamentarians from a law-making and oversight perspective.

The appropriate parliamentary structures should be identified to ensure coordination and synergy, particularly across and within the four critical sectors (society, industry, business and skills).

Parliament should ensure that broader civil society, such as organised labour, NGOs, the media, etc. is well informed to engage knowledgeably and meaningfully on the complex and rapidly evolving issues pertaining to the 4th IR. It is particularly in this domain that Parliament, in its public participation, oversight and legislative functions can make a major contribution.

The 4th IR will require a host of partnerships within and between the various role-players. This includes developing effective inter- and intra-institutional partnerships between research institutes, industry, academia, civil society, business and government. This will create a competitive ecosystem for South Africa to be well poised to derive maximum benefit from the 4th IR and ultimately the development of the society at large.

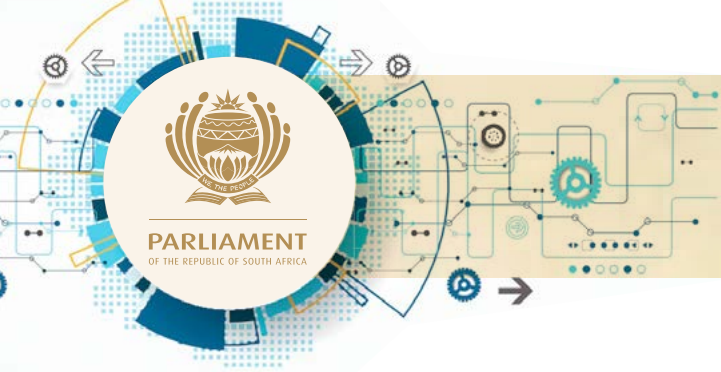
5. LEGISLATIVE CONSIDERATIONS

The discussions elicited various responses relating to the regulation of the 4th IR. The 4th IR emphasises the disruption of change across sectors. There is radical pace of change, especially on digital platforms. There is an overall increase in productivity, e.g. global capitalism. Skills development and capacity building therefore becomes pivotal to facilitate the transition to the 4th IR. There is a drop in demand for human labour and the introduction of new technologies also impacts on employment and working hours.

South Africa faces serious challenges with the 4th IR in that it is ranked 49th on the World Economic Forum's global assessment of production readiness. Priority should be given to the following when legislating:

- Skills development
- Education
- Innovation
- Identify areas of excellence to suit our environment

Minister Davies elucidated the various globally recognised 4th IR regulatory models. These include the USA model, China model and the European Union (EU) model. The USA model focuses on deregulation and looks at E-commerce platforms. The China model of regulation focuses on security justification and the EU model of regulation focuses on abuse of large data and payment of taxes, e.g. Use Facebook profile to tailor-make messages.

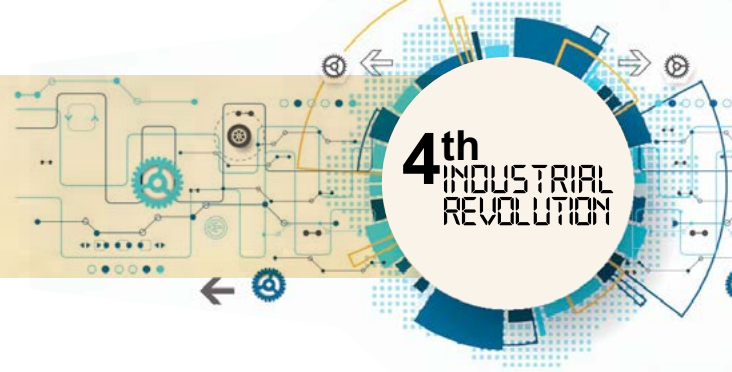


As it stands, the African or Developmental Model is not finalised. This implies that there is a gap when it comes to 4th IR regulation on the African Continent. South Africa should therefore take advantage of current technologies and take the lead in regulating the 4th IR.

“ Parliament should ensure that broader civil society, such as organised labour, NGOs, the media, etc. is well informed to engage knowledgeably and meaningfully on the complex and rapidly evolving issues pertaining to the 4th IR. ”

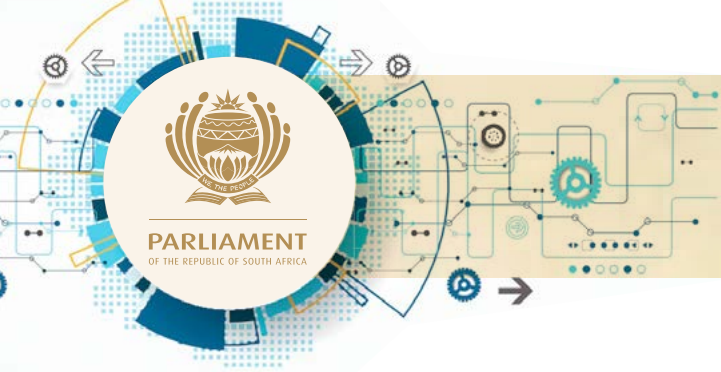


Deputy Speaker - Hon. Tsenoli and Speaker - Hon. Mbete

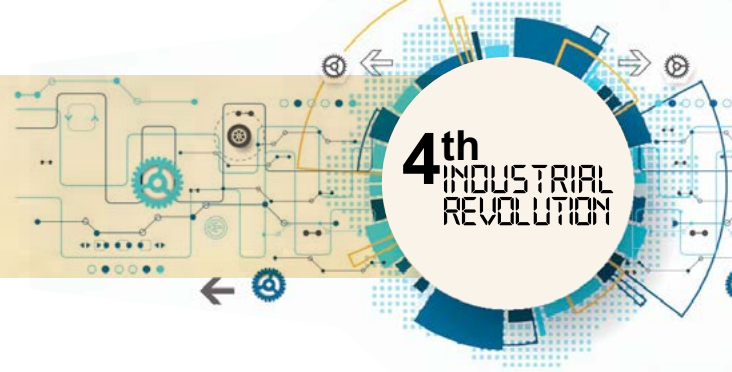


6. KEY FINDINGS AND RECOMMENDATIONS

NO	FINDING	RECOMMENDATION
1	<p>There are departments that have initiatives on the 4th IR.</p> <p>Department of Science and Technology (DST) Department of Trade and Industry (DTI) Department of Higher Education and Training (DHET) Department of Economic Development (DED) Department of Labour Department of Basic Education (DBE) Industrial Development Corporation (IDC) Technology Innovation Agency (TIA)</p>	<p>Adopt an integrated approach and develop a National Strategy on the 4th IR</p>
2	<p>An Inter-ministerial task team has been initiated</p>	<p>Consolidate the Inter-ministerial task team</p> <p>Presidential Advisory Council as a focused approach towards the development, production, uptake and usage of cutting-edge technologies throughout the economy, taking into account the possible negative consequences on employment and job creation.</p> <p>The proposed Advisory Council shall commission high level research, international and regional benchmarking, and engage stakeholders within and outside government in meetings and other fora with a view to obtain and consider the views of a cross section of societal role players in the development of the Fourth Industrial Revolution National Action Plan.</p>
3	<p>Lack of co-ordination and integration across spheres and sectors</p>	<p>A National Blueprint is recommended to regulate the 4th IR</p> <p>Public-private partnership model required to create an innovative and competitive manufacturing ecosystem</p> <p>Parliament to initiate a consultative process on the 4th IR</p>

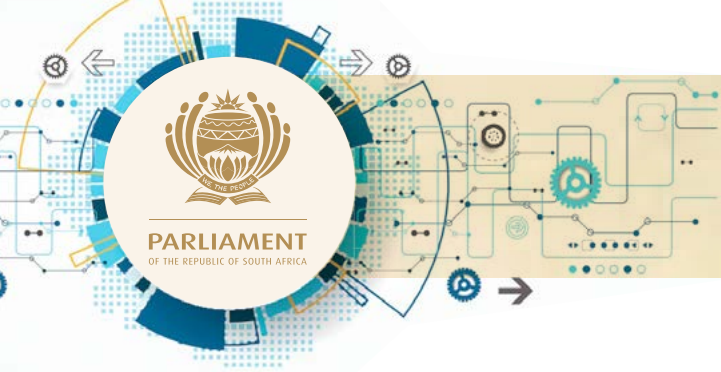


Speaker of the National Assembly - Hon. Baleka Mbete

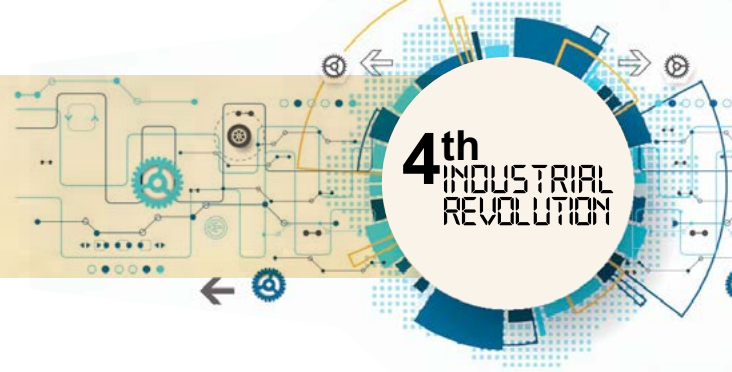


7. KEY FINDINGS AND RECOMMENDATIONS PERTAINING TO THE ROLE OF PARLIAMENT IN THE 4th IR

NO	FINDING	RECOMMENDATION
1	Parliament has a key strategic role to play in the 4 th IR	All Members and the parliamentary administration must be fully au fait with the impact of the 4 th IR on the core constitutional functions of Parliament i.e. law-making, oversight, public participation intergovernmental relations, and international relations.
2	Parliament through its law-making functions must ensure that an appropriate legal framework is established for the 4 th IR	Parliament must prioritise the development of a legislative framework to address the gains and challenges of the 4 th IR
		Parliament should drive a countrywide process to ensure the appropriate integration across the provinces and local government.
3	Parliament should ensure evidence based oversight over 4 th IR initiatives of the Executive	The appropriate parliamentary structures should be identified to ensure coordination and synergy, particularly across and within the four critical sectors (society, industry, business and skills)
4	Parliament is ideally placed through its public participation function to increase awareness, education and discussion on the 4 th IR amongst all sectors of society	Parliament should ensure that broader civil society, such as organised labour, NGOs, the media, etc. is well-informed to engage knowledgeably and meaningfully 4IR matters
5	Parliament itself should harness the benefits of the 4 th IR	The parliamentary administration should adapt its strategy, systems and processes to incorporate 4 th IR in its support functions.



Deputy Speaker Honourable Lechesa Tsenoli



8. CONCLUSION

A message from the Deputy Speaker Honourable Lechesa Tsenoli:

People are not ordinarily engaged in this debate on the 4th IR. The information to enable them to do so is not readily available in simple understandable language. The awareness to realize the impact that the 4th IR is likely to have, must be widely increased so that action by all role players will hopefully be galvanised. In particular, the possibility to influence the direction of research that relates to the 4th IR must be enhanced – and this must be influenced by the people of South Africa.

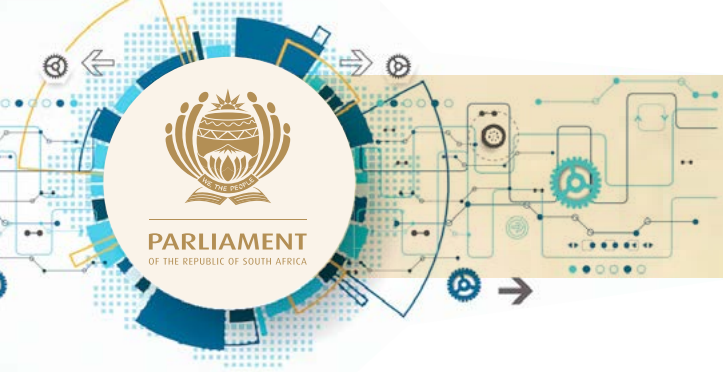
The 4th IR will have an impact on all sectors of society. South Africa and the rest of the African continent have an opportunity to embrace it and contribute towards its development. It is likely that some of the biggest challenges can become unique opportunities. The opportunities of current and future technologies should be leveraged and the potential threats mitigated by ensuring a cohesive and comprehensive national response involving the citizenry and prioritising the key areas of focus in developing policies, laws and programmes of action.

To stimulate this, the Government will have to be principally involved with Parliament playing its oversight role. We trust that Parliament would be able to persuade the Executive to invest its resources into those areas and sectors that have the biggest impact on the majority of people whilst respecting the creativity and innovation of engineers and scientists. We do not want to stifle their imagination but there are public issues and concerns that require solutions. Public resources must be used to do that.

So, role-players must be invited to go into those areas that would improve the quality of work. An example where the 4th IR could make a difference is increasing the speed with which we can learn, so that those of us who would possibly be left behind can avoid this. Technology must now be able to emulate adult education methodologies and these must be so designed so that it lifts us - with speed - to accelerate our learning possibilities. If we do not act with this intention, we face the risk of the elite and the wealthy having access to the benefits of the 4th IR with the rest of the people being left behind

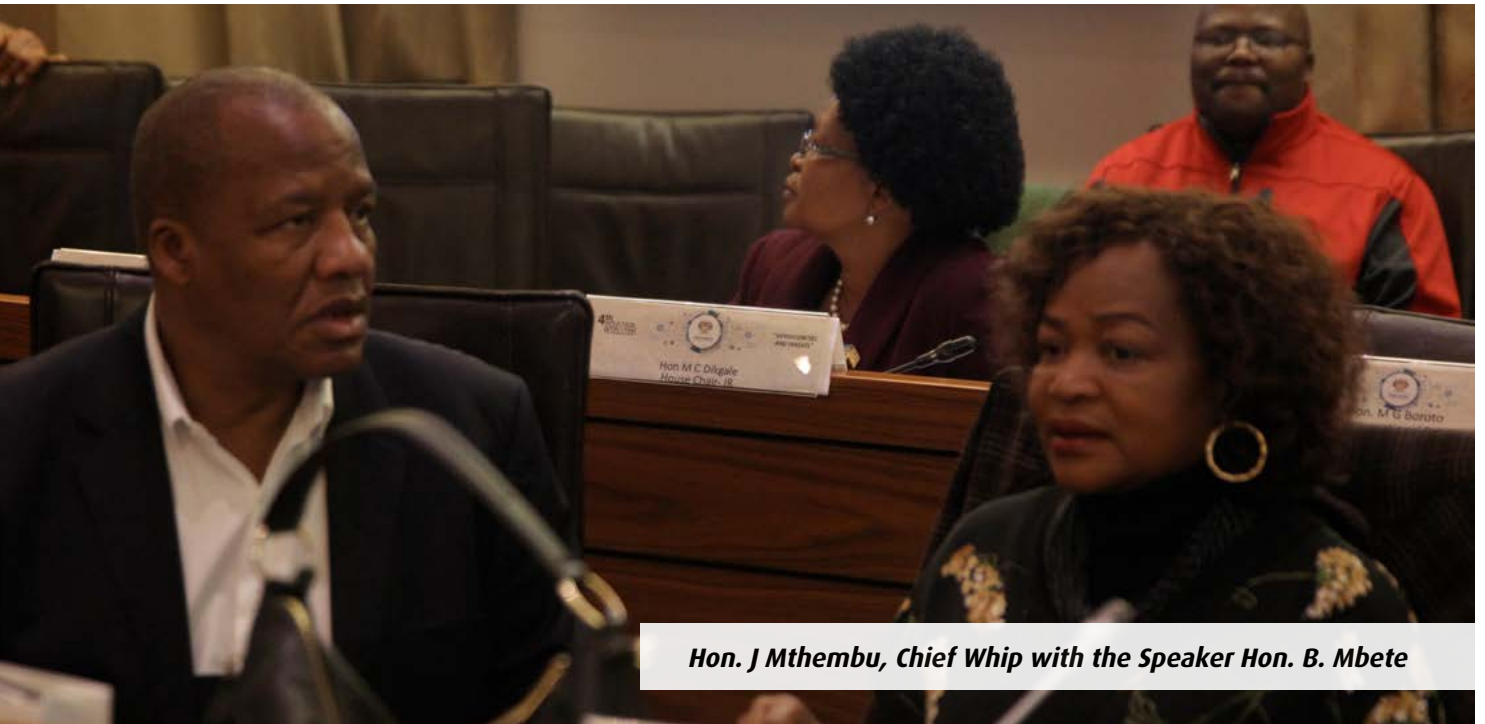
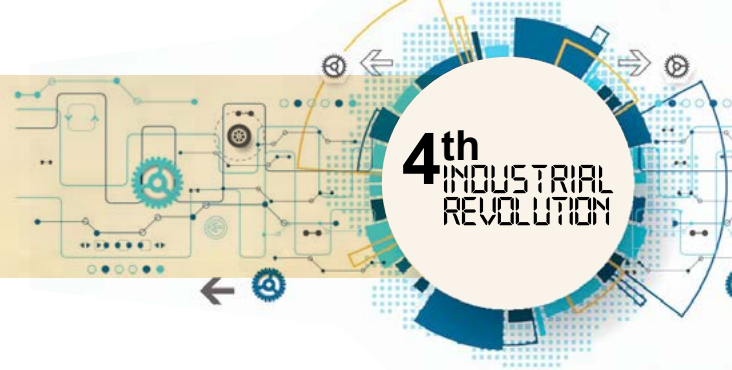
It cannot be that a public institution such as ours whose mandate is to represent the people does not take action to close that gap. Utilizing the benefits of the 4th IR would be a major way of contributing toward closing the equality gap.

Parliament must maintain its vision of an activist and responsible People's Parliament devoted to improving the quality of life for all citizens. As the highest public political institution in the country, our contribution to truly representing the people will be to contribute to taking action to close the inequality gap.



Parliament 4th IR Task Team with the CSIR





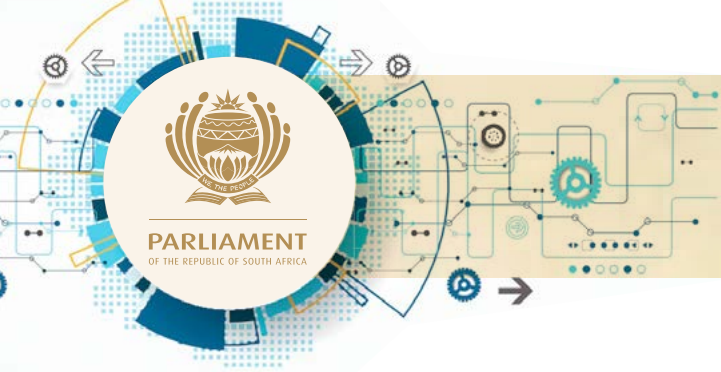
Hon. J Mthembu, Chief Whip with the Speaker Hon. B. Mbete



HE. N.M. Mandela, Ambassador to Denmark with Paul Davids, 4th IR Project Anchor



Members of the 4th IR Task Team



4th INDUSTRIAL REVOLUTION

