"Africa's Opportunity to Lead in the 4th Industrial Revolution"

Keynote Address delivered by His Excellency, Julius Maada Bio, President of the Republic of Sierra Leone at the Africa Blockchain Conference on the theme "Africa 4.0: Preparing Africa for the 4th Industrial Revolution. Kampala, Uganda, 3 July 2019

Your Excellencies

Distinguished Ladies and Gentlemen

Good afternoon.

I bring you very warm greetings from Sierra Leone. We are also happy that the Cranes are in the knock-out stage of the African Nations Cup

We are here at the generous invitation of His Excellency, General Yoweri Museveni, whose progressive vision of harnessing and integrating African economies ahead of the Fourth Industrial Revolution is truly inspirational.

Some would quip that while Europe was inventing the steam engine and building circuit board factories in the 2nd and 3rd Industrial Revolutions, Africans were still hunting animals with spears and drumming and dancing around fires at night.

Yes, Africans can entertain themselves. Yes, Africans like good food especially good meat.

But that is not the whole story.

Those same European historians probably won't acknowledge that for hundreds of years, Europeans systematically depopulated Africa of its young into gulags in the new world. Africa's youth produced the raw materials that fuelled European industrialisation.

Africa's mineral and other wealth fuelled the next phase of industrialisation when the West forcefully dominated and destabilised Africa.

In spite of political independence, African nations remained victims of exploitation, recipients of technology, and recipients of the products of technology. They participated in the global economy as inferiors. Or as His Excellency President Yoweri Museveni said yesterday, "as slaves."

Africans neither participated in the market of ideas nor did they invest in the future or lead in technical sectors.

The narrative has begun to change since about the year 2000. We have had fewer than twenty years to catch up. But catch up, we will.

Africa has the unique fortune of having an abundance of natural and human resources. With 1.2 billion people and most of them young people growing up as native technologists, there is, suddenly, a unique opportunity to lead in generating and translating new ideas through technology and innovation. **Africa has a greater opportunity at adopting new technologies to achieve unimaginable leaps on the development axis**.

Artificial Intelligence, Internet of Things, Blockchain, Quantum Computing, Biotechnology, Bioinformatics, and 3D Printing are some of the technologies changing the global economy, global governance, and even global security. Coupled with rapid automation, these technologies are significantly modifying our existing traditional notions of governance and development.

The advances in science, technology, and innovation are shaping the world faster than many industries and governments can react or have reacted to.

They are introducing new possibilities, new efficiencies, and new risks. Countries are now faced with the task of preparing themselves to fully participate in this new global economy. The good news is that the Western countries aren't far along. We are all learning within the same scales.

But let us briefly consider the imperatives – why Africa should prepare itself for 4IR?

Most of Africa's development challenges have to do with weak institutions; bad or ineffective policies; failures to leverage the possibilities of trade, integration, and other forms of cooperation; corruption (including the misuse of national resources, the misuse of aid, illicit financial flows); perceived or real injustices including land and property disputes; failures in

developing human capital, and failures in public service delivery.

Think about the real value of those inefficiencies and losses in monetary terms. According to an African Union report, corruption alone costs Africa upward of $150 billion; misuse of aid upward of $20 billion; bad or ineffective policies billions of dollars; misuse of resources and illicit financial flows, billions of dollars; failure to develop human capital, hundreds of billions of dollars worth of future earnings. Added to that, corruption alone increases the cost of investment, the cost of doing business, and it can also foster civil unrest which is always inordinately expensive.

The lack of financial inclusion and inefficient revenue mobilisation within countries make it even harder to break cycles of poverty. Agriculture, small-scale manufacturing, trade, energy generation, infrastructure and city planning, healthcare, immigration, education, social welfare, banking, and even efficient governance are all possible use-cases that can benefit from these new technologies**.**

That is why I am happy to be here to think, learn, and imagine with you.

Imagine a Government Blockchain- a peer to peer network of decentralised public databases where each transaction is stored

in a chain. Whenever data on one node is altered, that change must be validated right across all nodes in the chain.

One is therefore able to audit and trace the changes in the chain thereby ensuring transparency of records through process integrity and security. As a consequence, that also speeds up transactions while reducing transaction costs. **Imagine the possibilities and the implications for the fight against corruption or transactions that are never and can never be audited because somebody destroys the paper trail.**

Clearly, there are many use cases for blockchain and other 4IR technologies in a small nation like mine where we have identified corruption, red tape, and institutional inefficiencies, among others I mentioned earlier as some of the key barriers to development.

So let me demonstrate a few more use cases.

1. **A digital identity or identifier system** will facilitate good national budgeting, resource allocation, financial inclusion, adequate catering for public services, and even help cut down on voter fraud during elections. It would also provide reliable demographic data on which policy decisions can be based.

2. Transactions– **financial and banking, property, trade volumes, taxes, and land** -- can be recorded and verified in a transparent manner.
3. **Healthcare, social, and public service and education records** can be also accessed, recorded, tracked, and verified for people, removing third party costs to recipients as it is the case in our countries.
4. **Governance decision processes and transactions across different governments (local and national) can be fully recorded, verified, and tracked**. This assured continuity of good governance will further strengthen our governance institutions thereby lowering a number of existing governance threats.

While a public blockchain is generally decentralised, I am aware that some countries like Estonia and Finland have developed a centrally-controlled, interoperable, and integrated platforms. I recently sent a team from right across my government, the Directorate of Science Technology and Innovation, and from my office to study e-governance in Estonia. **The Estonians have incentivised digitisation to a level where there is a lot more efficiency, citizen participation in governance, and faster public service delivery through secure networks that involve government and private sector institutions**. This is the ultimate goal of any government:

service delivery and citizen engagement and blockchain holds that promise.

There are real opportunities in 3D printing for data visualisation, modelling, small-scale manufacturing, and medical uses. We just applied a new use case in Sierra Leone: 3D printing used for policy decision making. The other day, my team and I used our 3D printer to print a complex display of data representing the distribution of girls who were not in school in each chiefdom. The 3D printed model was used in conversations with several policy makers where screens or devices would have derailed the conversation.

IoT can be used to manage smarter grids, secure verification, manage water resources, collect and manage waste, collect tolls, or to manage in-freight security. Through an ongoing, decentralized, renewable grid project that we are deploying in collaboration with the UN, the Ministry of Energy is working with partners to ensure that smart meters serving as IoT sensors give us better insight into the energy demands associated with rural development.

Equally, we are using AI for informing our policies in education, identity verification, and healthcare delivery. The uses of 4IR technologies are limitless and extend from innovation in the production of new outputs that can be

deployed to development to supporting agriculture and crop production, value-addition and several other sectors of production.

But this transition to digital must be agile, well-directed, and abundantly resourced within a vision that is developed with the people who will benefit from it; within a vision centred in Africa; with a view to what makes us African and how we wish to define our place in the Fourth Industrial Revolution.

So what should African countries do to be prepared?

First, there is the overarching policy context. Over the last two decades, several countries and regional institutions in Africa have developed policies for information, communication and technology (ICT), e-governance, and digitization. These policies have been domesticated in some countries and now constitute the national digitization vision of various governments.

In Sierra Leone, the first Sierra Leone National Telecommunications Act that was developed in 2006 provided for establishing institutions for implementing the ICT transformation of Sierra Leone under the supervision of the Ministry of Information and Communications. An ICT Policy was

developed in 2009 followed by a 2017 update that included cybersecurity and e-government frameworks.

Secondly, we know that governments should craft national digitization strategies that are specific to their own development contexts. In Sierra Leone, we developed a National Innovation and Digital Strategy involving the Government of Sierra Leone as primary stakeholders in collaboration with relevant policy, technology, and research institutions in the public and private sector. This ten-year vision will be regularly updated as the technology landscape evolves and the activities described in the document are accomplished. This vision will be complemented by a clear strategic set of activities, targets, and work plans across the country. However, we need to develop and align these strategies across our regions and across the continent.

Thirdly, Africa has a young population and investing in human capital development (through education, healthcare, and food security) will help develop a strong cohort of skilled workers who will drive science, technology, and innovation. In Sierra Leone, we are actively encouraging girls into STEM disciplines and careers by offering them full scholarships. Women constitute 51% of our population and they must be given the opportunity to lead this drive.

Also, Governments must anticipate emerging technology penetration by setting up institutions that can provide leadership for driving 4IR initiatives. In Sierra Leone, I set up a Directorate of Science, Technology, and Innovation in the Office of the President headed by a young MIT-Harvard scientist and inventor. The objective is to make Sierra Leone an *innovation nation* – a nation where agile, exploratory, and research-driven start-ups and initiatives led by young people can experiment at the appropriate scale. We aim to encourage entrepreneurship by incentivising the creation and use of new opportunities.

Furthermore, Governments must also invest in infrastructure that supports 4IR. including electricity generation and ICT penetration and access to connectivity. In Sierra Leone, an initial national fiber backbone infrastructure was deployed to connect various regions of the country via an international consortium of development partners, government, and the private sector. Internet penetration and access is improving.

Additionally, Governments must study best practices and use cases in peer countries and other countries that have successfully deployed 4IR technologies and see what to adopt for their specific development contexts.

Finally, Governments must be attentive to regulatory and legal grey zones around data governance, data security, data transfer, data storage and data access. Often, this would not involve writing entirely new laws. We cannot regulate the technology but we can build safe frameworks that allow equity and security in the use and applications of technology.

We are a small nation in West Africa working hard to do big things with science, technology, and innovation. We are trying to catch up with the rest of the developed world by taking advantage of technology. I invite you all to come to Sierra Leone to seed your ideas, deploy prototypes, and scale the many wonderful ideas you will learn and develop at this very amazing conference.

Thank you,