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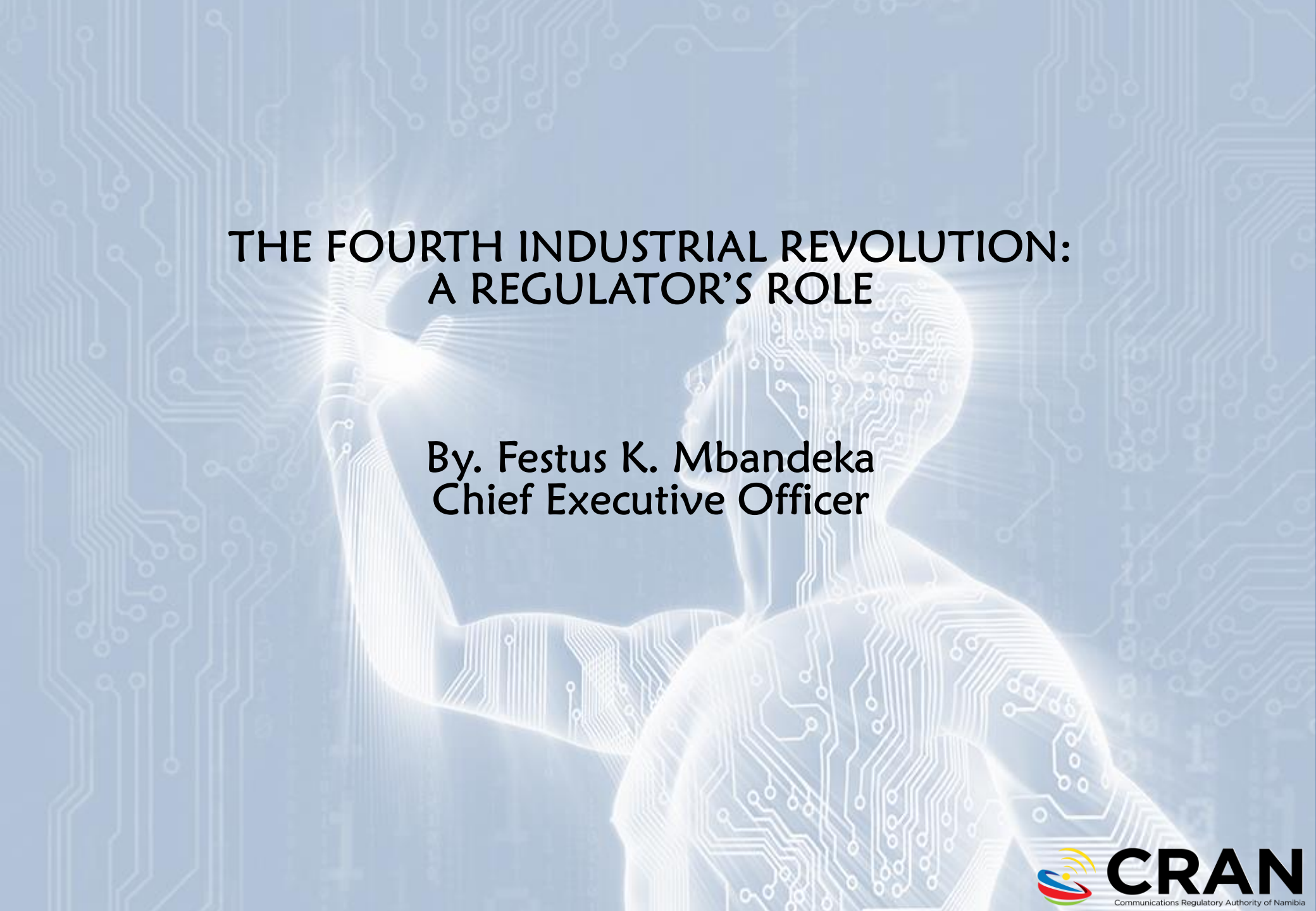

THE FOURTH INDUSTRIAL REVOLUTION: A REGULATOR'S ROLE

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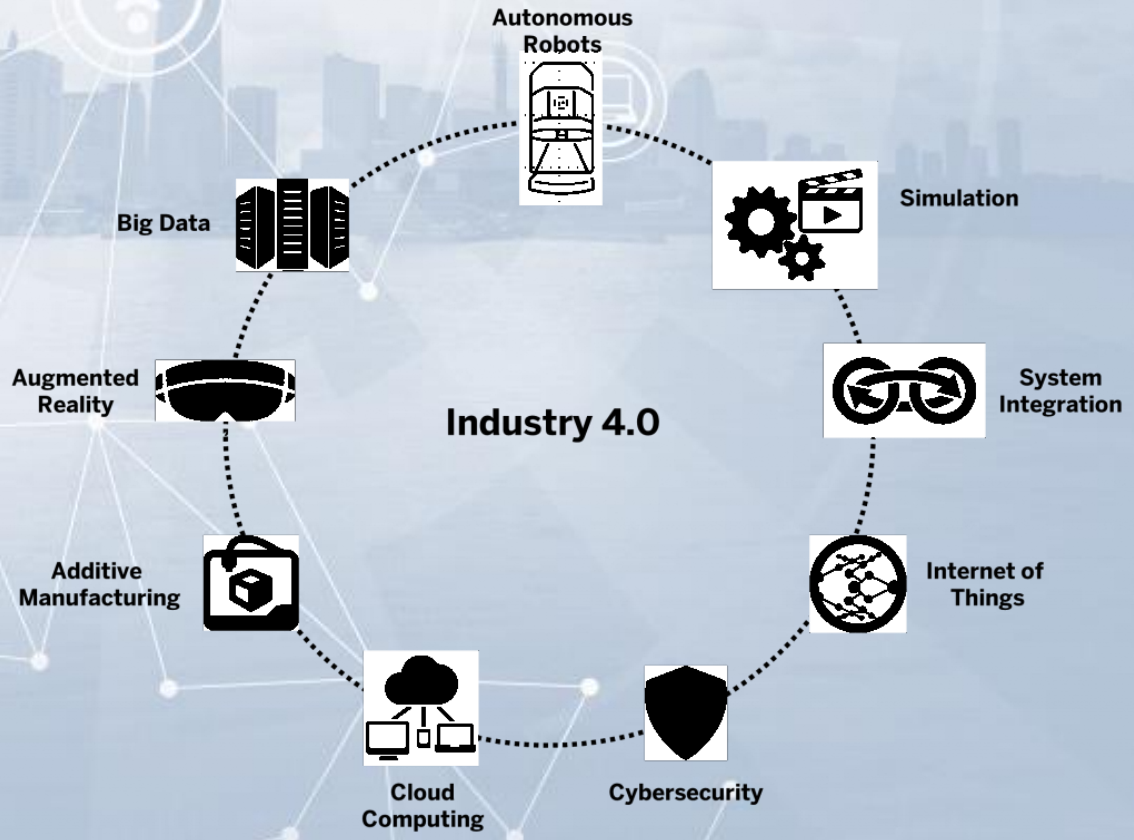
WHAT IS THE FOURTH INDUSTRIAL REVOLUTION (4IR)

- Digital Revolution;
- Characterized by a range of new technologies that are fusing the physical, digital and biological worlds;
- Marked by emerging technology breakthroughs in a number of fields.



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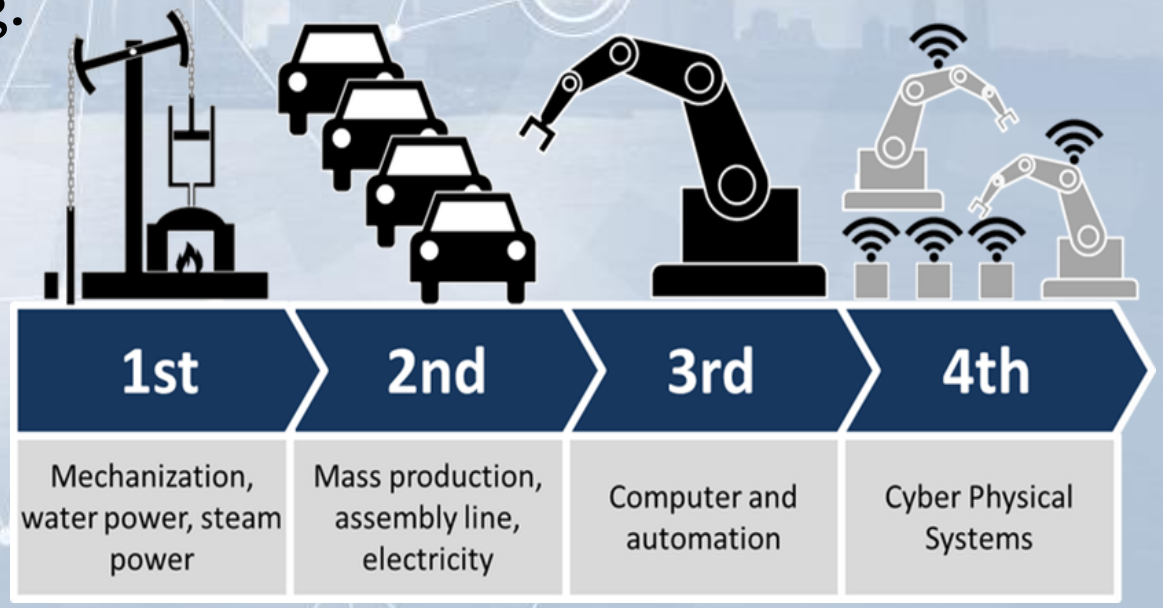
PREVIOUS INDUSTRIAL REVOLUTIONS

- **First Revolution**: Characterized by steam and water;
- **Second Revolution**: Introduction of electricity to mass produce things;
- **Third Revolution**: Characterized by the internet, communication technologies, and the digitalization of everything.



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POSSIBLE POSITIVE IMPACT OF THE 4IR

- **Education and access to information:** This can improve the lives of billions of people.
- **Communication:** The social media revolution has given everyone a voice and a way to communicate instantly across the planet creating a global village;
- **Retail:** Create access to products and services to entirely new markets which will lead to a global economy.
- **Manufacturing:** optimized supply chain operations and workers may be liberated from automatable tasks
- **Health:** Bio medical science which can lead to healthier lives and longer lifespan;
- **Agriculture:** improve production output

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POSSIBLE NEGATIVE IMPACT OF THE 4IR

- May lead to controversial advances such as designer babies, gene drives which may change the inherited traits;
- **Unemployment:** Artificial intelligence is unleashing a whole new level of productivity and augmenting our lives in many ways and may therefore lead to loss of jobs for semi-skilled workforce;
- **Security:** Artificial intelligence, robotics, bioengineering, programming tools, and other technologies can all be used to create and deploy weapons
- **Social divide:** Social media gives voice to cyber-bullying, hate speech, and spreading false stories.
- **Changes in privacy:** unwarranted intrusion into our privacy

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REGULATORS EVOLUTION

- Regulation of the ICT Sector has evolved over the years.
- The **first generation** of regulators focused on state-owned monopolies.
- The **second generation** focus was on privatization, opening up of markets and the creation of separate regulatory bodies;
- The **third generation** focus was on competition and the expansion of their mandate.
- We have moved to the **fourth generation** of regulators of which the ICT industry has shaped.
- **The ICT industry is growing exponentially and going through constant innovations causing radical changes** in both business scenarios and consumer behavior.

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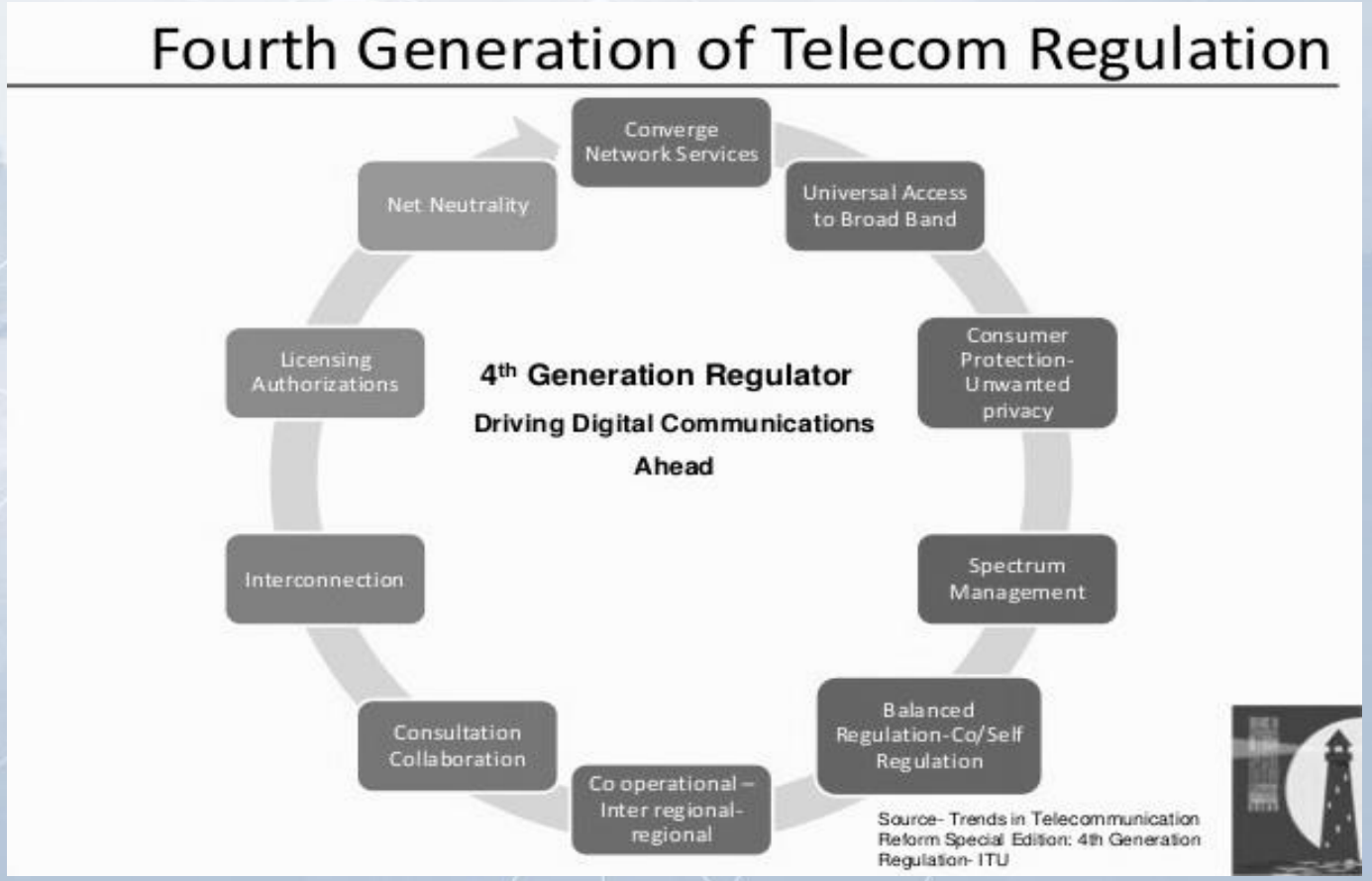
REGULATORS EVOLUTION CONT…

- A **fourth generation** regulator need to swiftly adapt to the rapidly and consistently changing environment.
- This requires both regional and international cooperation as the 4IR has made the globe a village.



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ITU ROLE

- ITU Global Symposium for Regulators (GSR-18) – focus on regulation of the digital economy (discussed IOT, AI, Development of 5G Cybersecurity)
- Regulators and policymakers met to share best practices and challenges and discuss on ways to improve policies.
- Best Practices identified and endorsed at GSR-18 will guide policy-makers and regulators in:
  - fostering the potential of emerging technologies for digital transformation;
  - promoting business and investment models to support digital transformation; and
  - considering policy and regulatory approaches for continued innovation and progress
  - **The ITU is working with SADC and CRASA to host a Regional Seminar for Africa on 5G in the year 2019.**

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The World Economic Forum
- the Center for the Fourth Industrial Revolution

The Centre for the Fourth Industrial Revolution is a new space for global cooperation, dedicated to developing policy principles and frameworks that accelerate the application of science and technology in the global public interest.

It serves as a platform to discuss the ethics, values and regulation of Fourth Industrial Revolution technologies such as the internet of things, artificial intelligence and machine learning. Specific projects engage multiple stakeholders, including regulators, to develop policy frameworks that can be applied across industries and national borders.

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Center for the Fourth Industrial Revolution Projects & Cross-cutting areas

Center Projects*
Artificial Intelligence and Machine Learning
Internet of Things (IoT)
Blockchain – Distributed Ledger Technology
Autonomous Vehicles
Civilian use of Drones
Digital Trade and International Data Flows
A new Vision for the Ocean
Precision Medicine
Accelerating Innovation in Production for Small and Medium Enterprises

Cross-Cutting Focus Areas:

Ethics and Values

•

Jobs and Skills

•

Agile Governance and National Digital Policymaking

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ATU & SADC

ATU

- Established a Committee on FIR to develop a draft strategy and framework on FIR

SADC & CRASA

- SADC has adopted an Industrialisation Strategy and Roadmap 2015-2063 aimed at developing and transforming the industrial sector of the region including development of regional and global value chains and clusters;
- Developing a Roadmap and Institutional Mechanism for implementation and monitoring of a SADC Framework for Fourth Industrial Revolution (FIR) for Ministers Approval.
- In readiness for 4IR SADC is working on massification of ICT skills and cyber security and data protection frameworks. Protection of vulnerable groups such as women & children is high on agenda.
- SADC is promoting partnerships among role players comprising users, workers, civic society, industry and academia with governments leading;
- SADC is also pursuing Open Access infrastructure and other critical enablers of 4IR

CRASA

- Aim to continuously feed into development and harmonization of enabling policy in the SADC region;
- Develop model guidelines and harmonize ICT regulatory frameworks in SADC;
- The model guidelines assist regulators like CRAN to develop national regulatory framework that assist in the regulation of emerging technologies.
- CRASA with SADC Secretariat will host a seminar on the role of Women Leadership in the 4IR and to use the Seminar to launch a Regional Programme related to this matter.
- CRASA undertaking a gap analysis of the national and cross border broadband infrastructure and services to ensure that the gaps are closed and that the agreed targets are achieved by 2020.
- CRASA shall aggregate all infrastructure initiatives in a collaborative way and creating database that will enable crasa to track progress
- CRASA to be part of the Think tank for the 4th Industrial Revolution comprising all the critical stakeholders

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Regulatory Concerns

- 4IR will affect all disciplines, economies, industries and governments.
- In Namibia, regulators are faced with regulatory challenges as a result of the 4IR:
  - Banking – BON (Crypto currencies)
  - Tourism – NTB (Airbnb)
  - Communications – CRAN (OTT)
  - Transport – Transport Commission (Lefa,Uber)

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CRAN'S ROLE

- **Data Protection and Privacy**
  - Online access has over the years presented dangers such as:
    - financial scams,
    - cyber-bullying,
    - grooming,
    - Profiling;
    - being blitzed with spam; and
    - inappropriate content.
  - SADC Computer Crime and Cyber Law Model Law
  - Namibia Cyber Crime Bill
- **Universal Service**
  - Deploying telecommunications is costly and involves higher commercial risk if the licensing obligations require that such infrastructure is extended to areas that are not commercially viable.

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CRAN'S ROLE CONT.

- **Universal Service cont.**
  - Establishment of Universal service fund, incentive used to bridge the service and coverage gap
  - Communications Act 8 of 2009 (establish the Universal Service Fund);
  - CRAN Regulations Prescribing the Provision of Universal Services by Telecommunications Service Licensees.
- **Spectrum Management**
  - Spectrum Assignment Strategy
  - Significantly growing wireless data demand for higher speed services to allow streaming of video etc. will result in operator demand for additional spectrum.
  - Such increased spectrum demand is a direct response to consumers demanding better quality and higher speed wireless broadband services.

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CRAN'S ROLE CONT.

- Spectrum Management cont.
  - The ITU coordinates the shared global use of the radio spectrum;
  - CRAN is mandated by the Communications ACT to regulate the use and allocation of spectrum;
  - Analogue Television switch off;
  - Spectrum Assignment Strategy;
- Quality of Service
  - In the ITU's Definitions of Terms Related to Quality of Service [ITU-T Rec. E.800 (09/2008)] Quality of Service (QoS) is defined as the "totality of characteristics of a telecommunications service that bear on its ability to satisfy stated and implied needs of the user of the service."
  - The ITU has, in various QoS and QoE standards, articulated the criteria of seven parameters to measure performance of service and applications against agreed expectation:
    - Accuracy (e.g. low packet corruption; correct accounting and billing)
    - Availability (e.g. network coverage for mobile telephone);
    - Flexibility (e.g. to switch between service providers; multiple bill payment systems)
    - • Reliability (e.g. low packet loss)
    - • Simplicity (e.g. user-friendly services such as clear billing statement)
    - • Security (e.g. personal data security)
    - • Speed (e.g. fast connection; prompt resolution of subscriber complains)

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CRAN'S ROLE CONT.

- **Quality of Service cont.**
  - Regulations Prescribing Quality of Service (set minimum QoS standards)
  - Demand for data-heavy traffic has increased
  - Need to measure QoS and QoE as experienced by end user (e.g online data activities like video streaming, online learning which is sensitive to transmission speed and jitter.);
- **ICT Infrastructure Development and Investment**
  - With the development of the digital ecosystem there is a need for ensuring access to digital infrastructures, particularly fixed and mobile access networks.
  - Deploying and extending nationwide broadband infrastructure remains a key target.
  - CRAN Regulations Prescribing Infrastructure Sharing.

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Way forward

The Regulator should ensure:

- An adaptive/appropriate regulatory framework that supports the elements of 4IR;
- Infrastructure sharing;
- Quality of Service and experience;
- Spectrum management for the deployment of high-speed connectivity;
- Implementation of relevant data protection laws and cybersecurity interventions;
- Consumer protection and education; and
- Coordination of the outcome of convergence with other sector regulators.
- **THE BIG QUESTION IS ARE WE READY FOR THE 4IR???**

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