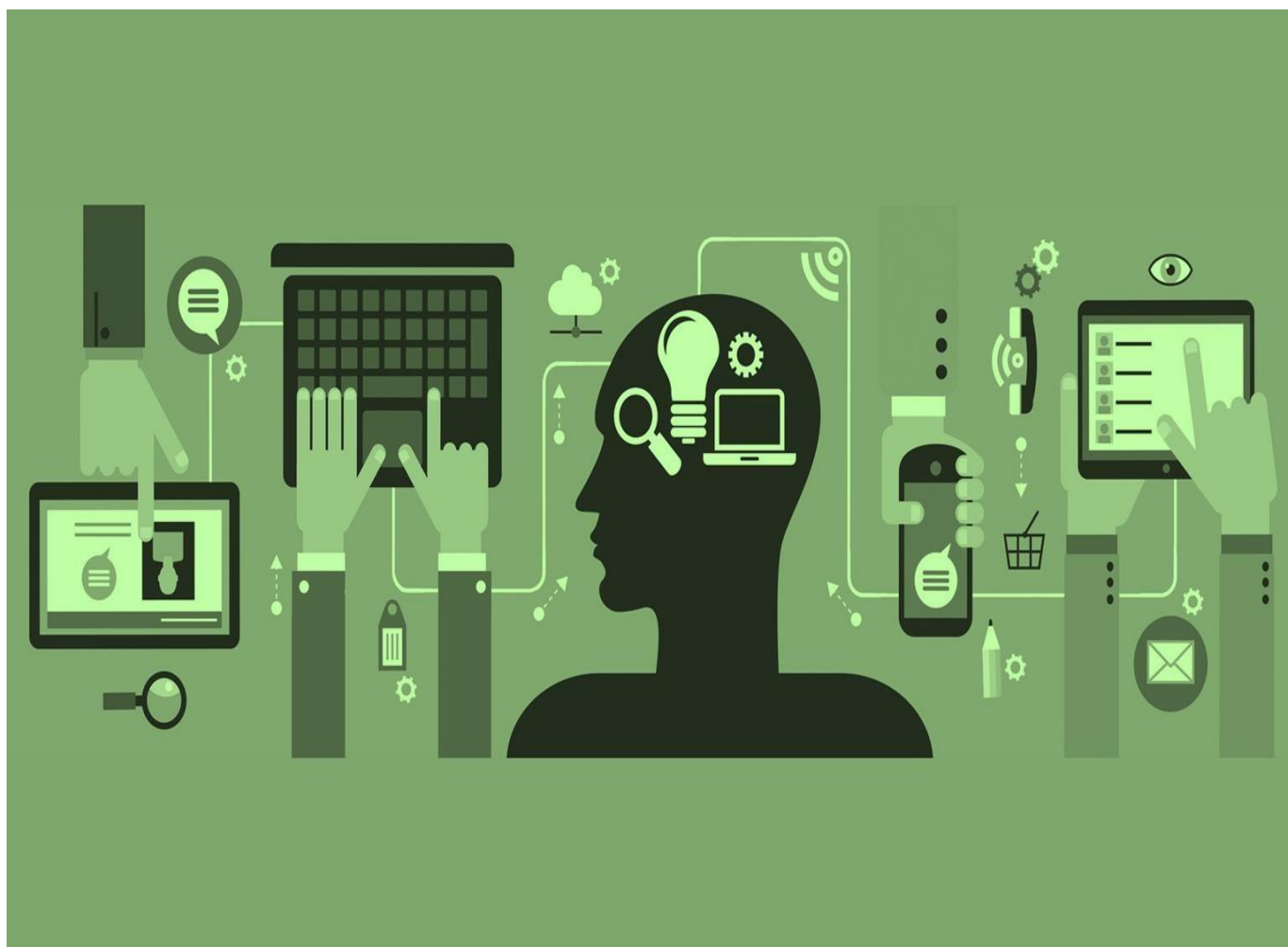




National Information Technology
Development Agency

National Digital Literacy Framework (NDLF), May 2022



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1 Introduction

1.1 Context and Scope

The Digital Economy Initiative for Africa (DE4A)² aims to ensure that every individual, business, and government in Africa will be digitally enabled by 2030 in support of the African Union's Digital Transformation Strategy in Africa³. The Federal Government of Nigeria through the Nigeria Digital Economy Policy and Strategy (NDEPS) document has set a corresponding target of achieving 95 per cent digital literacy by 2030⁴.

However, there is currently no national framework that can serve as a guide for stakeholders on what constitutes the competence areas and specific competencies of literacy and skills required for a digital Nigeria. Thus, the National Information Technology Development Agency (NITDA), the apex IT agency responsible for developmental regulation of the sector in Nigeria, has taken up responsibility to lead the development of a national digital literacy framework.

This document outlines the proposed framework. It aims to set a digital literacy and skills agenda for Nigeria by providing a clear and consistent definition of digital literacy, its competence areas and specific competencies for the purpose of:

- i. Offering policy makers a means to frame digital literacy policies, monitor and support their implementation;
- ii. Building digital literacy curricula, modules and programs to afford proper planning, coordination and standardization of digital literacy training and skills development in Nigeria;

²<https://www.worldbank.org/en/programs/all-africa-digital-transformation>

³<https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>

⁴<https://www.ncc.gov.ng/docman-main/industry-statistics/policies-reports/883-national-digital-economy-policy-and-strategy/file>

- iii. Enabling assessment and certification, data collection, analyses and measurement of the number and/or percentage of digitally literate Nigerians and their level of digital skills;

1.2 Review of Existing Frameworks

A number of internationally recognized digital literacy frameworks were reviewed including: the International Computer Driving License (ICDL); IC3 Digital Literacy; Microsoft Digital Literacy; the European Commission's Digital Competence Framework for Citizens (DigComp); and the United Nations Educational, Scientific and Cultural Organization (UNESCO) Digital Literacy Global Framework.

The review found that most of the digital literacy curricula, assessment tools and certification exams derived from the existing frameworks are PC-centric, while everyday use scenarios requiring digital literacy competence, particularly those in developing countries, majorly use mobile devices. For example, statistics show that the PC to Mobile market share in Nigeria was 15.76% to 83.55% as at November 2021⁵. In terms of unique subscribers, a 2017 study by Pew Research⁶ found that 80% of adults in Nigeria owned some type of mobile phone.

It is worth noting that the existing frameworks were developed for use on a 'network-enabled device' regardless of whether it is a personal computer, table, smart phone or mobile phone. Thus, attainment of a holistic view of digital literacy cognizant of Nigeria's mobile-first approach will require minimal adaptation at the level of specific competences through their expression in the context in which the competences are taught.

⁵<https://gs.statcounter.com/platform-market-share/desktop-mobile-tablet/nigeria>

⁶<https://www.geopoll.com/blog/mobile-penetration-nigeria/>

1.3 Methodology for Development of the Framework

To ensure speedy development of a robust framework, a combination of the European Digital Competence Framework for Citizens, also known as DigComp, and elements of UNESCO's digital literacy global framework have been adopted for domestication.

Adoption of these frameworks is informed by the following principles:

- The core skill of digital literacy can be seen as a discrete skill but with critical interrelationships with other core life skills;
- The core skill of digital literacy is contextualised; each context in which individuals operate has its own core skills requirements, expectations and rules which need to be learned;
- An individual's performance at any time will be influenced by the interplay of a number of performance variables;
- The frameworks reflect contemporary use of English in Nigeria.

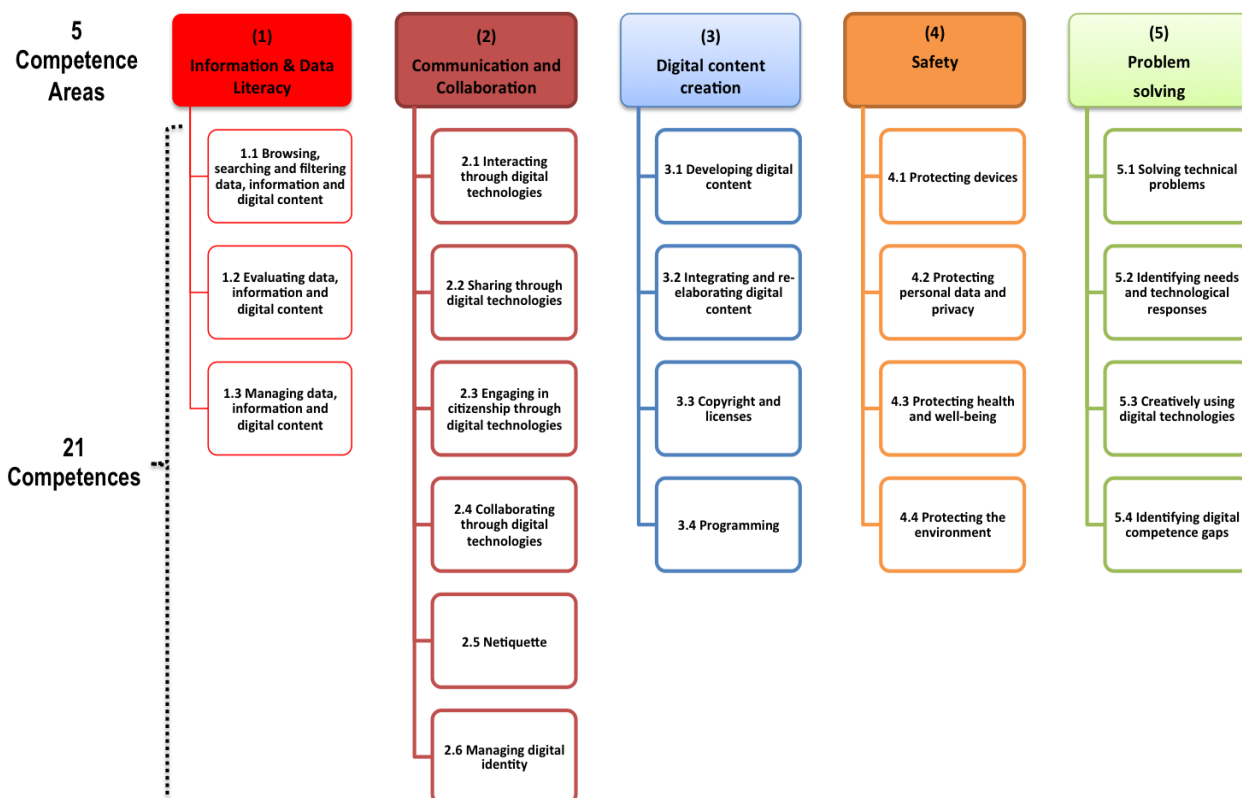


Fig. 1.3(a) DigComp Conceptual Reference Model

DigComp was first published in 2013 as a tool to improve citizens' digital competence, help policy-makers formulate policies that support digital competence building, and plan education and training initiatives to improve the digital competence of specific target groups. The conceptual reference model consists of 5 competence areas (Dimension 1), and 21 competences (Dimension 2). Additional dimensions outlined in the latest version, DigComp 2.2⁷, include Proficiency levels (Dimension 3), Examples of knowledge, skills and attitudes (Dimension 4) and Use cases (Dimension 5).

UNESCO's digital literacy global framework was developed by synthesizing of existing regional, national and sub-national frameworks to identify competences relevant for the global context, and in particular, analyzing the extent to which existing, well-developed and all-encompassing frameworks would be relevant for all countries, whether economically rich or poor, and over time.

UNESCO worked on the project to develop a methodology that can serve as the foundation for Sustainable Development Goal (SDG) thematic Indicator 4.4.2: "Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills". UNESCO's framework has looked at the key mobile functions that enable various economic sectors ⁸. The fifteen functions identified fall into two categories:

- general functions such as turning on/off and charging the device, sending and receiving text [SEP] messages, searching for goods and services, and comparing price information; and [SEP]

⁷<https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

⁸ <http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

- financial transactions such as topping up one's account through an agent.

It was observed that the digital literacy competence levels required for achieving the same function depend on the specific devices used. The range of operations available on an application designed for the smartphone is much wider, and consequently, the understanding of the competence and the proficiency level required on a smartphone can be higher. Based on the identified functions, use cases of specific competences can be applied directly to the mobile-centric and mobile-first users that are prevalent in Nigeria and Africa.

Table 1.3(a): Summary of the different functions available on mobile and smartphones

Function	On mobile phone	On smartphone
G1: turning on/off device, charging	G1	G1
G2: sending & receiving text	G2	G2
G3:login, user account & password management, locking devices	G3M	G3S
G4: searching for goods & services & comparing prices	G4M	G4S
G5: setting or changing app language		G5S
G6: sharing location data		G6S
G7: creating & setting public profile		G7S
G8: Searching, understanding & approving privacy policy statements		G8S
T1: buyer & seller interaction connected through intermediary	T1M	
T2: Topping up account through an agent	T2M	
T3: Evaluating price & service provider information. Rate service.		T3S
T4: Intra-app finance transactions		T4S
T5: Inter-app finance transactions		T5S

UNESCO's digital literacy global framework proposed among others, the addition of a 'Devices and Software Operations' competence area to what is currently covered in DigComp 2.2:

Table 1.3(b): Additional Competence Area with Two Competences Proposed by UNESCO's Digital Literacy Global Framework

Competence area	Competences
0. Devices and software operations	<u>0.1 Physical operations of digital devices</u> (To identify and use the functions and features of the hardware tools and technologies)
	<u>0.2 Software operations in digital devices</u> (To know and understand the data, information and/or digital content that are needed to operate software tools and technologies)

Starting with DigComp 2.2 and incorporating aspects of UNESCO's global framework, an updated reference model is obtained, which considers the above competences necessary to be added for the mobile-centric and mobile-first population in Nigeria and Africa.

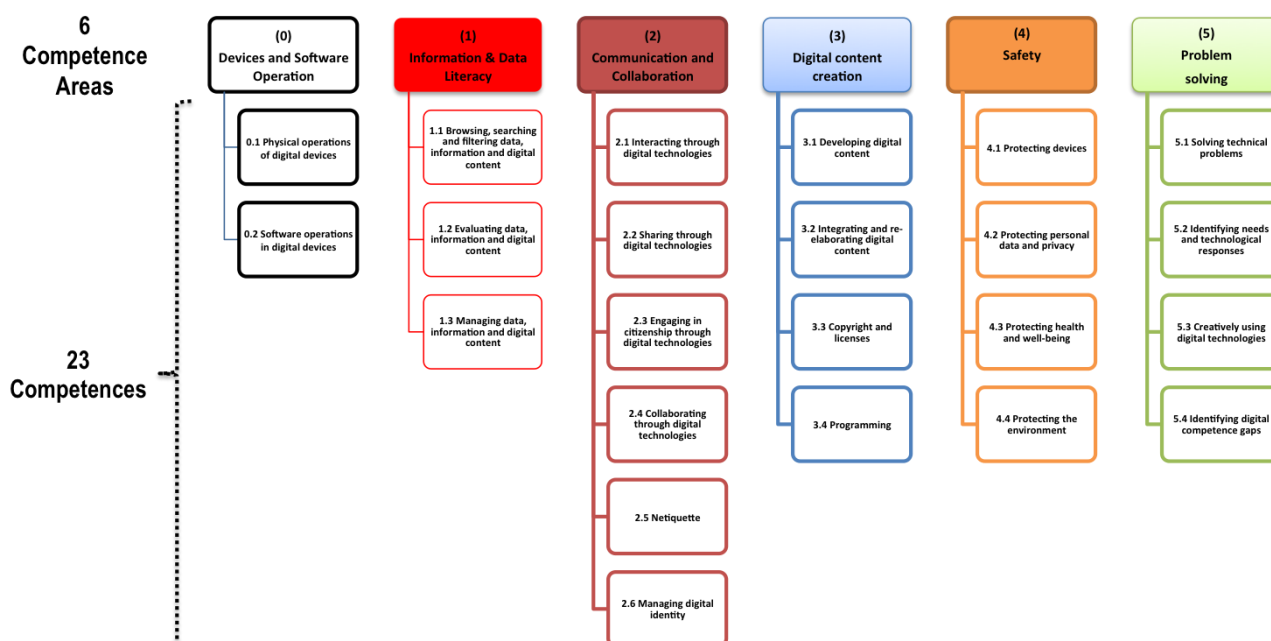


Fig. 1.3(b) Updated DigComp Conceptual Reference Model With Addition of Competence Area (0) and Competences (0.1 & 0.2)

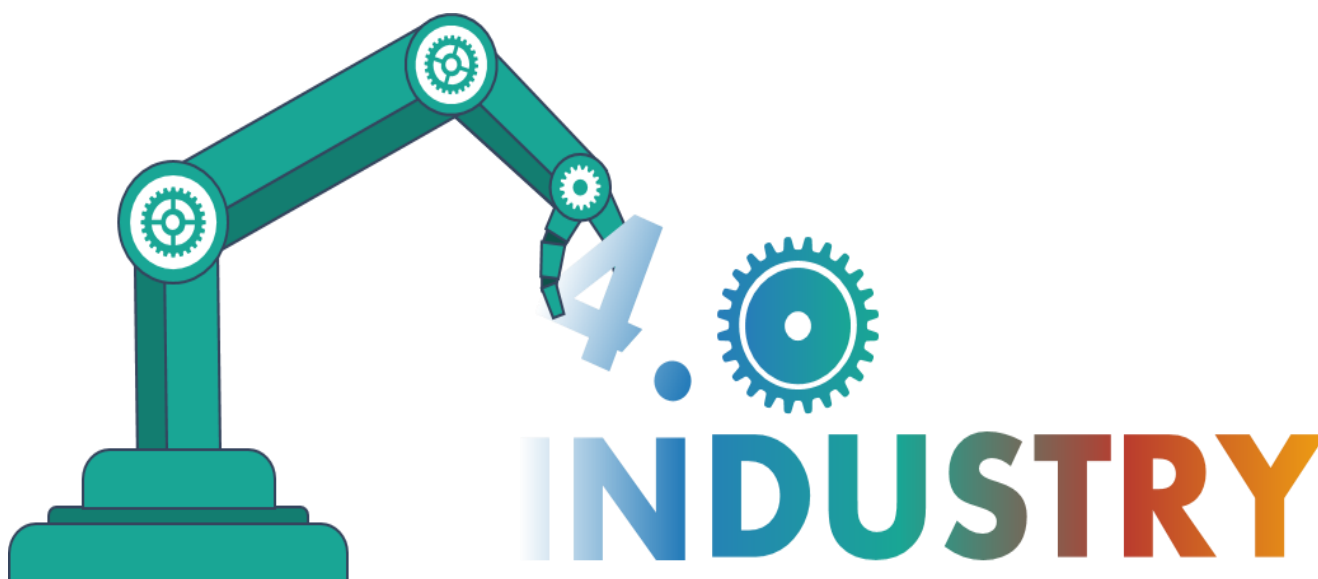
1.4 Business Case and Potential Impact

Development of a national framework aligned with global standard, as opposed to adopting all comer's framework with no defined curriculum that could result in measurable outcomes will have a positive rippling effect on the country's economy. It will:

- Create a rich and vibrant local industry of digital training service providers, content creators and publishers, marketers, assessment and certification bodies aligned with globally recognized standards;
- Create a large value chain that will facilitate youth engagement, entrepreneurship development, MSME Development, and women empowerment in line with the best global practice;
- Trigger Nigerians to achieve globally accepted certifications that will increase job opportunities and mobility across the world, and yield billions of dollars of economic value to Nigeria;
- Enhance the civil service by improving efficiency, productivity, and increasing service-delivery orientation;
- Encouraging establishment of local Original Equipment Manufacturers (OEM's) to meet increased local demand for IT tools and equipment;
- Increase demand for ICT and broadband, thus helping implementation of broadband and ICT policies;
- Accelerate the achievement of a world-leading digital economy Nigeria; a nation that creates, uses and supplies advanced digital technologies and content to improve productivity across all sectors.

2 Digital Literacy and Skills

Nigerians stand on the periphery of a technological revolution, the Fourth Industrial Revolution (4IR), that has fundamentally altered the way we live, work, and relate to one another⁹. This revolution was built on the digital or 3rd Industrial Revolution (3IR) that has expanded into disruptive technologies and trends such as the Internet of Things (IoT), Virtual Reality (VR), Artificial Intelligence (AI), robotics, autonomous driving vehicles, 3D printing, nanotechnology, biotechnology, materials science, energy storage, quantum computing and much more that will require more technical capabilities than career practices formally demanded.



In order for Nigeria to improve its digital advantage and build sustainable prosperity, it must prepare for the challenges of a 21st century dynamic work environment. Building a digitally skilled workforce will accelerate Nigeria's economic growth and development.

⁹ <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

The future of Nigeria is clearly hinged on the development of capacity of inhabitants' and how swiftly a strategy for digital literacy and skills integration can be put in place. As Nigeria aspires to become a regional hub for providing human capital resource support to Africa with the implementation of the African Continental Free Trade Area (AfCFTA), the need for technology skills is growing in every sector of the Nigerian digital economy.

2.1 Need for Digital Literacy

Given that people around the world have the same human potential, every job and career, every field of study and even social and personal lives are increasingly impacted by technology. And as nations compete in today's global world, those economies who have invested in the human capital and digital skills of their citizens are best prepared to grow. In order to level the playing field, Nigeria must move its citizens to a greater competitive position in the global economic marketplace.

Equipping Nigerians with relevant digital literacy skills to keep up with the best global practices will put the current workers, youths and other professionals in ready mode for opportunities that may open up within and beyond the shores of Nigeria. This will diversify the economy, significantly reduce unemployment and enhance labour productivity and mobility. In turn, this would improve investment and transform Nigeria into a country well known for technology, problem solving and critical thinking.

The evolution of technology has also led to the stratification of countries depending on how they adopt digital technologies. The economic and social development of digitally literate countries has outstripped those of countries that have failed to embrace digital

literacy. Unfortunately, Nigeria currently falls under the latter category. The purpose of this initiative to create a National Digital Literacy Framework, implementation strategy and measurement metrics is aimed at reversing this narrative. The skills deficits in human capital that hinder Nigeria from thriving in the global digital economy would be, once and for all overcome.

Digital Literacy is important for several interconnected reasons.

- i. Nigerians; current workforce, students, graduates and professionals need to be prepared for a successful adulthood in a world increasingly saturated with digital technologies;
- ii. Nigerians are already engaging with digital technologies and digital media and using them to find information and communicate meaning in different modes and formats and this provides significant opportunities and challenges that it is important to address;
- iii. Not all Nigerians are equally equipped with the skills knowledge and understanding that will allow them to critically engage with technology and to use it well;
- iv. Developing digital literacy can help students to access subject knowledge at a time when digital technologies are changing the way knowledge is created and communicated;
- v. Digital literacy will help schools to engage with students' lived experiences and existing knowledge as well as extending and diversifying these experiences and knowledge to make learning more relevant and purposeful;
- vi. The need to create a pool of knowledgeable and skilled manpower that will facilitate technology acquisition, assimilation, diffusion, mobility and raise productivity.

Digital Literacy is a global priority and criterion for employment with over 1.5 billion current virtual workforce vacancies across the world (IDC)¹⁰. Competence in English language is no longer the primary indicator of literacy and job readiness; it is now digital literacy. Digital Literacy is critical to immediate empowerment of our population to enable Nigerians to develop the skills necessary to achieve more, to be distinguished and advance in the digital era and to truly solve the conundrum around education, unemployment, low productivity and economic diversification.

2.2 Starting it All with Digital Literacy

Digital Literacy is a foundation element of success in today's technology-driven world regardless of educational goals, career pursuits or job function and possessing a strong grasp of digital technologies that drive much of the world is critical.

As the world and indeed Nigeria continue to grapple with a growing jobs crisis, and most Nigerians across all categories of workforce and professions lacking in the basic technological skills needed for real-world business situations despite having grown up immersed in technology; proficiency in digital literacy and its validation is no longer an option.

In the age of ubiquitous computing, digital literacy has become a critical information technology competence regarded as a survival skill, a new form of literacy, a prerequisite for creativity, innovation and entrepreneurship, without which citizens can neither participate fully in society, nor acquire the skills and knowledge necessary to meet with 21st century national and international workplace needs.

¹⁰<https://www.eweek.com/mobile/mobile-worker-population-to-reach-1.3-billion-by-2015-idc/>

Digital literacy is pervasive today, five out of every six people in the world not only own a mobile communications device—a device that can also serve as a bank, an information-access portal, an employment station, an entertainment player, and a means of self-expression, but drives commerce in all successful countries in a borderless digital world.

Digital Literacy

"is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship."

2.3 The Rise of Global Digital Competence

The entire globe is now undergoing the most momentous economic and social change in 150 years. The change initiated by the impact of literacy and—within the past 20 years—by skills in the digital world. The rise of digital literacy in emerging countries has enabled them to compete, even more successfully, across the borderless realm of digital commerce with high-income countries.

Although, literacy has long been recognized as an essential ingredient in the workplace defining a person's ability to read, write and cope with arithmetic. The advent of the millennium and the rapidity with which technology has changed society has changed the concept of "literacy" to assumed new meanings.

The foundation for the workforce is now entwined with its fundamental ability to communicate effectively to embrace all forms in which knowledge or meaning can be expressed much more now than words. Digital-based expression can now be found in almost every profession and activity, improving performance, output and creating wealth. The need for digital literacy will only grow more acute as computing power increases and costs decrease.

2.4 The Increasing Need for Workforce Flexibility

The Nigerian workforce needs digital literacy to retain flexibility and mobility of career and job openings. A worker who is digitally illiterate today is a worker condemned to ever-shrinking choices of employment. The shrinking of job opportunities among the digitally illiterate is terrifying and will become more pronounced in the next ten years as industry demand increases, technology advances, older workers retire and the decline in the standard of education.

In some occupations, especially those requiring a university education, evidence suggests that shortages will persist because of the shortage in supply of qualified workers compared to projected employer demand. Increasing the supply of local graduates for these occupations and equipping them with relevant skills for international or global engagement will be important elements of the solution.

However, in many cases, ICT skill shortages are more related to workers not possessing the right combination of specific training and experience required by Nigerian employers, such as digital literacy, rather than a lack of formal qualifications. Changes in the digital economy are raising concerns that a digital literacy divide is emerging, where some groups are falling behind in their skills and have less access to new technology. This is of particular concern because future effective participation in the labour market will be closely linked to digital literacy.

In the face of today's pressure to retool and skill Nigerians from all sectors with skill needs for the 21st century world, the need to provide the foundation-stone for success in terms of digital literacy

and skills training is crucial and Nigeria can take advantage of the concepts and initiatives already in place to advance.

2.5 The Expansion of the Service Sector

A new realization is becoming top-of-mind in the U.S., Japan and some European countries. While the production of hard physical goods is important, national prosperity heavily depends on increasing productivity in the service sector, which is now responsible for 70% of Gross Domestic Product (GDP) and 76% of employment depends more heavily on digital literacy.

Even within the manufacturing sector, one of the most promising areas for growth is the addition of services. The rise of the service sector relative to agriculture and industry means that Nigerians are more exposed to the borderless digital economy.

Nigeria's service sector is a field in which Nigeria has momentum and national advantage. ICT has the potential to make Nigeria a global economic center. The Nigerian ICT sector is growing fast and is considered to have the best prospects for the economic growth of the country. The ICT sector contributed 14% to the GDP in 2019 up from 13.32% that was recorded in the preceding year¹¹. In 2020, the ICT sector contributed 17.83% to the GDP and has already contributed 17.9% to the GDP in the second quarter of 2021¹².

Productivity impacts are quickly felt. Improving productivity in the service sector takes much less effort than improving productivity in manufacturing for example. The Federal Government of Nigeria recognizes ICT as the enabler for developing other critical sectors including education, healthcare, agriculture and manufacturing.

¹¹ <https://www.icirnigeria.org/fact-check-did-ict-contribute-14-percent-to-nigerias-2020-first-quarter-gdp/>

¹² <https://www.thecable.ng/its-unprecedented-fg-says-ict-contributed-17-9-to-nigerias-gdp-in-q2-2021/amp>

The service sector is recession-resistant, with a longer lag time built in regarding economic trends. Nigeria's service economy is not as heavily dependent on only Nigerian trade as other sectors. Half of Nigerian service revenues are made selling to other countries. ICT services are digital, without borders. Global purchasers treat Nigerian service companies as equally competent with rivals, so there is no inbred disadvantage to being Nigerian. Nigeria's population, representing the "world in miniature", has major global market connectivity advantages and Nigeria has the touchstone of prosperity for the ICT sector: a well-educated workforce if developed. The 'price of admission' for this opportunity, however, is digital literacy. The 'service sector opportunity' that arises from an otherwise well-educated workforce, is diminished if the workforce does not have adequate digital literacy.

3. Need for a Digital Literacy Standard

The ongoing COVID-19 pandemic has triggered a global rush towards the digital transformation of nearly all aspects of daily life. Given the pace of these changes, digital literacy and digital skills have become a mandatory part of education and training for all people. It is critical for Nigeria to rapidly develop a standard to incorporate high-quality digital literacy and digital skills education and training programs across all age groups.

Building a reference framework to develop national-level digital literacy and skills agenda and standard for Nigeria citizens ranging from students and the workforce to seniors has multiple benefits;

- It will guide and facilitate the development of Nigeria curriculum and programs for digital literacy, digital skills, and/or digital readiness;
- With a globally shared baseline understanding of what terms like digital skills and digital literacy mean, Nigeria, nonprofits, and industry can coordinate digital skills efforts and effectively enhance the level of digital literacy and digital skills of the citizens in local communities and nationwide;
- The common set of definitions and standards will enable monitoring and reporting that can help to strategically allocate resources to identify and bridge digital skills gaps;

The standard will help to:

- Trigger globally accepted certification that can increase job opportunities and mobility across the world, which can yield billions of dollars of economic value to Nigeria in the fast-

expanding digital economy and help to overcome the economic challenges caused by COVID-19;

- Enhance the implementation of Government Policies and recommendations; e-Government Master Plan, Nigeria National Broadband Plan 2020 – 2025, National Digital Economy Policy and Strategy 2020 - 2030, National Strategy for Public Service Reform and recommendations of National Council on Communications and Digital Economy 2016 – 2020.

Achieve Implementation



Fig. 3 Examples of relevant government policies and recommendations that demand a national digital literacy standard

A digital literacy standard for Nigeria will prepare Nigerians to answer the challenge of inadequacies in digital literacy and skills acquisition. Combined with a call-to-action of appropriate measure, and with an investment of energy and adequate resources it can help create the world's most digitally skillful nation.

3.1 Challenges to Standard Setting

Perhaps one of the biggest challenges to the development of digital literacy in Nigeria is insufficient access to IT facilities, tools and equipment by citizens including students and workers at many locations across the country. To promote digital transformation, equal emphasis needs to be allocated to digital skills development as is to infrastructure development.

Amongst some emerging and developing economies specifically, whilst there is an emphasis on infrastructure development, these countries will not be able to leverage the full potential of such investments, without a comprehensive skilling programme, which educates the disadvantaged and disconnected population about the benefits of digital tools. Furthermore, without consistent and comparative measurement indicators to identify the location of the digitally illiterate sectors of the population, policy makers are disempowered to pursue digital transformation objectives.

To ensure digital training programmes are adequately managed, a standardized data collection strategy is required to measure an internationally accepted digital literacy index. This index must be defined by a framework of digital literacy responsive to the fluid needs of the digital economy.

Recent communiqués of Government have made pronouncements on addressing the digital divide but have largely focused on infrastructure development, financial inclusion or digital trade. Insufficient attention has been paid to the need for digital skills, partly due to the difficulties in defining and measuring digital literacy.

Digital Literacy, as with general literacy, provides an individual with the capability to achieve other valued outputs in life, especially in the modern digital economy. Unlike literacy, the definition of digital literacy is contested, leading to the development of different and inconsistent sets of indicators for its measurement.

A consistent, standardized definition is required for the purposes of data collection, analyses and measurement. However, to date, there have not been consensus definitions of digital literacy in Nigeria, which has led to pronounced educational and training gaps in digital literacy and skills across regions, sectors, and genders.

Digital literacy is not just about surviving, but thriving and not about having individuals work harder but ensuring they know how to work smarter, understand the rules of the game, waste less time trying to make things work, and eventually be more productive and competitive.

3.2 Policy Mandate

Coordination of all relevant stakeholders to work with a common objective of developing a national digital literacy framework and standard that will help to equip Nigerians with digital literacy and skills, and put the citizens in ready mode for opportunities that will open up within and beyond the shores of the country is critical at the moment. This effort will promote diversification of the country's economy, significantly reduce unemployment and enhance labour productivity and exportation.

The National Information Technology Development Agency (NITDA), the apex IT agency responsible for developmental regulation of the sector in Nigeria, has taken up responsibility to lead the development of a national digital literacy framework.

NITDA is established by NITDA Act 2007 and mandated by Sections 6 a, g and i to-

- i. Create a framework for the planning, research, development, standardization, application, coordination, monitoring, evaluation and regulation of Information Technology practices, activities and systems in Nigeria and all matters related thereto;
- ii. Create incentives to promote the use of information technology in all spheres of life in Nigeria, and
- iii. Introduce appropriate regulatory policies and incentives to encourage private sector investment in the information technology industry.

4. Roadmap and Call for Action

While there is no one-size fits all approach, there is a wealth of knowledge and experience available internationally from successful international frameworks and standards.

This provides a useful template from which we can outline a sound roadmap for embarking on this quest spans four phases:

- i. Articulation of Nigeria's digital literacy vision and first version of National Digital Literacy framework;
- ii. Building an implementation plan consisting of short and long term targets;
- iii. Socialization of the framework and engagement with key stakeholders;
- iv. Continuous engagement of relevant partners throughout the program launch and beyond;
- v. Establishment of supporting government policies.

4.1 Nigeria's Digital Literacy Vision and Targets

The vision

For all Nigerian citizens to have digital skills equal to or exceeding the demands of their daily transactions and occupations in a Digital Nigeria; a nation that creates, uses and supplies advanced digital technologies and content to improve productivity across all sectors of the economy.

National Targets

- i. 60% Digital Literacy for Youths and Adults in Nigeria by 2025 (NNBP 2020-2025)
- ii. 95% Digital Literacy levels across States and Local Governments by 2030 (NDEPS 2020 - 2030)

Even though, not everyone needs a high level of digital literacy, participation in a digital economy requires digital literacy across every sector such that everyone will possess a sufficient working knowledge of current digital usage to function in their daily lives using the available digital media within their disposal.

Through policies and programs and human resources skills development, Nigeria must take appropriate steps to make sure that Nigerian businesses can attract and retain the workers they need to prepare Nigeria for the economy of tomorrow. Nonetheless, achieving this feat will require a range of integrated efforts coordinated across government, industry and relevant partners.

4.2 The National Digital Literacy Framework (NDLF)

This national digital literacy framework (NDLF) is an adoption of the European Commission's Digital Competence Framework for Citizens (DigComp 2.2)¹³ with incorporation of required elements of Mobile Information Literacy (MIL), which are critical to Nigeria and Africa.

MIL is represented within the competences' dimension of NDLF with the addition to DigComp of a new Competence Area (0) called Devices and Software Operation as proposed by UNESCO¹⁴. It has the following two competences:

- Physical operations of digital devices
- Software operations of digital devices

The NDLF basic model thus consists of:

- Dimension 1 (6 Competence Areas)
- Dimension 2 (23 Competences)
- Dimension 3 (8 Proficiency Levels)

¹³<https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

¹⁴<http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

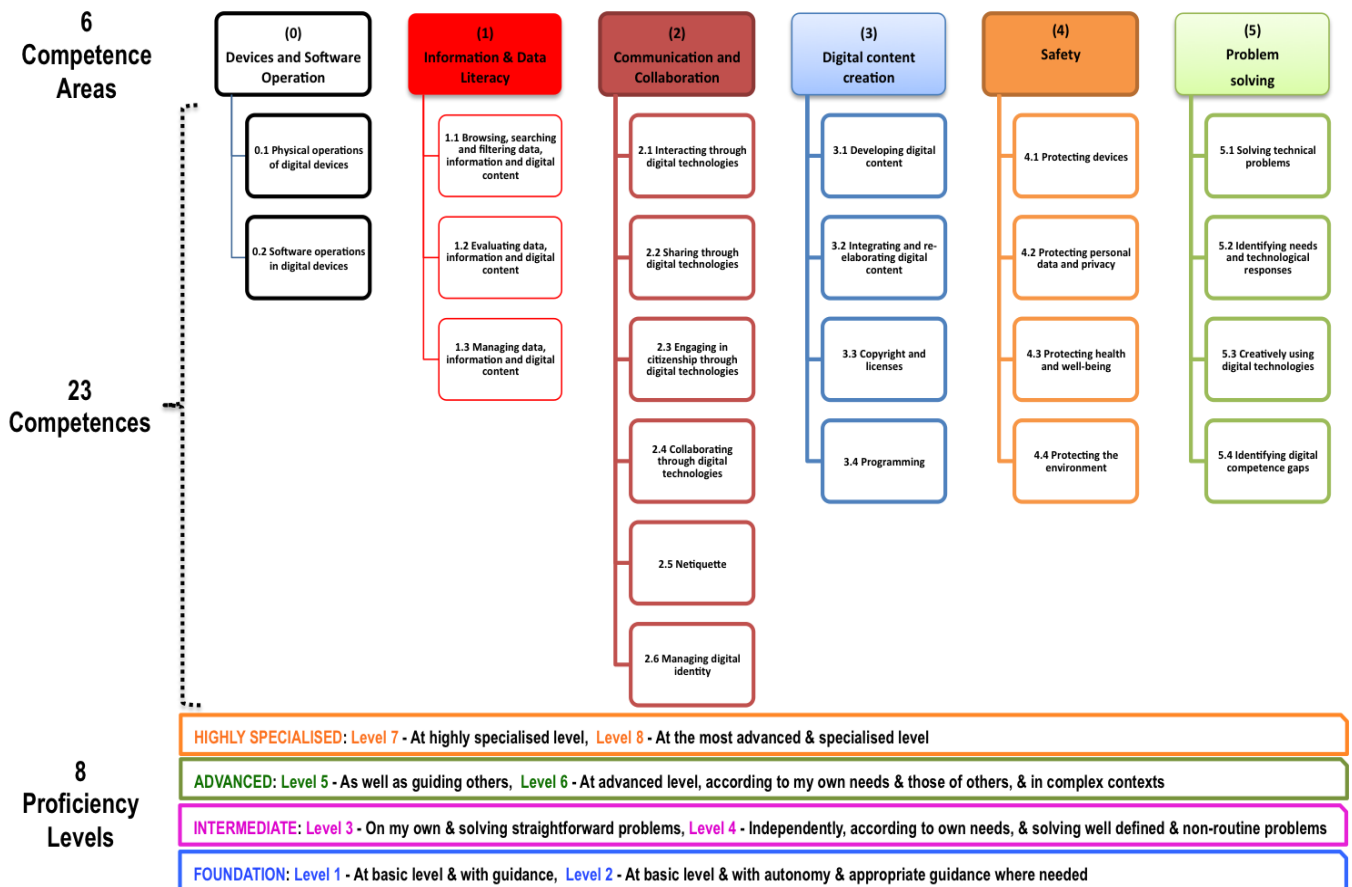


Fig. 4.2 National Digital Literacy Framework Basic Model

NDLF adopts the definition of proficiency levels from DigComp (i.e. descriptions of specific skills to be gained for each of the competencies). Dimension 4 (Examples Of Knowledge, Skills And Attitudes) and Dimension 5 (Use Cases) are also adopted from DigComp for the purpose of both learning and employment uses. For the additional Devices and Software Operation Competence Area (0) that was introduced and added to the DigComp conceptual reference model, the definitions and functions listed in Table 1.3(a) and Table 1.3(b) will be used to develop Dimensions 3, 4 and 5.

4.3 Key Stakeholders

Coordination of all relevant stakeholders to work with a common objective of developing and implementing a national digital literacy framework and standard that will help to equip Nigerians with digital literacy and skills, and put the citizens in ready mode for opportunities that will open up within and beyond the shores of the country is critical at the moment. A list of key stakeholders to be continuously consulted for this work is attached as an appendix at the end of the document.

4.4 Short Term Implementation Plan

In the short-term, the following plan can be followed:

- i. Domestication of the adopted Framework/Standard for Digital Literacy, by articulating, at the level of individual competences 0 – 5 how these would be expressed for Mobile Information Literacy.
- ii. Conduct of baseline assessment to establish proficiency level of Nigerians in digital literacy.
- iii. Agreement on a national digital literacy framework through adaptation and domestication of an existing framework.
- iv. Reviewing of education curriculum at all levels to integrate digital literacy into relevant modules and programs so as to address national and global skills need.
- v. Accreditation and registration of digital literacy training and certification service providers who meet set criteria.
- vi. Adoption and domestication of an internationally recognized digital literacy certification standard for purpose of baseline assessment and validation of developed/adapted framework.

4.5 Long Term Implementation Plan

Sponsoring of an Executive Bill (Digital Literacy Act) that shall provide for creation of

- i. Digital Literacy Institute (DLI) – An institute with the main objective of advancing digital literacy training, assessment and certification to equip every Nigerian with appropriate digital skills to cope with the digital era.
- ii. Digital Literacy Council (DLC) – A council composed of experts from Government, Industry and Academia with the main objective of taking up necessary actions required to attain objectives of the DLI in a well-planned manner and to manage and supervise all activities of the Institute.
- iii. Digital Literacy Management Office (DLMO) – An office setup at the Presidency to provide Governance.

The Digital Literacy Institute (DLI) will have a Fund of its own called the Digital Literacy Fund (DLF). The following income shall be the part of the Fund:

- Appropriation from the National Assembly;
- Grants received from local, international or foreign associations, organizations or bodies;
- Income from registration of members and issuance of certificates of qualifications;
- Income received in respect of fees charged for services;
- Income earned from movable and immovable property of the Institute;
- Interest received on investments.

5. Recommendations

The following recommendations are hereby made for further necessary action:

1. NITDA should officially communicate to the EU and UNESCO on the adoption of the European Commission's DigComp Framework and UNESCO's digital literacy global framework to seek for synergy in implementation of the national framework.
2. The relevant policy makers should create policies that:
 - i. Establish digital literacy as a core subject in primary, secondary, and tertiary schools, in the same category as English Language and Mathematics, and for the purpose of qualifying examinations, especially in NECO and JAMB.
 - ii. Make digital literacy a criterion for graduation at tertiary level and for admission at post graduate level in the Nigerian education system;
 - iii. Mandate having a recognized digital literacy certification for employment and promotion of all public service workforce in all job roles and cadres;
 - iv. Mandate career specific digital skill certification as additional criterion for employment and promotion of workers in the affected sectors.
3. Nigeria urgently requires an indicator for measuring the uptake of digital literacy across all sectors of country economy to ensure that policies are targeted to the areas of most need. To ensure this becomes a reality, the following recommendations are made:
 - i. Develop or adopt a global standard digital literacy index for baseline assessment and validation of developed framework;

- ii. Create a digital skills portfolio to guide digital skills acquisition standard;
- iii. Develop a multi-dimensional national digital literacy index that aligns the demand and supply of digital skills required by all role players.

6. Conclusion

In line with the total commitment of all the UN member states as well as development partners to achieve Agenda 2030, especially as Nigeria embarks on a decade of action (2020-2030); efforts need to be geared towards improving the human capital of all Nigerians, especially in areas of digital literacy and skills. This will empower millions of Nigerians to be well positioned in assuming new roles in job reset shifts of the 4th Industrial Revolution and as global skills shortage hits an all-time high of 54%.

Digital Literacy is the most audacious enabler of lifting 100 million Nigerians out of poverty as targeted by Federal Government. Digitalization, transition towards greener economy and demographic changes will continue to increased digital skills gap.

Appendix

The key stakeholders to be consulted for this work include:

1. Federal Government MDAs;

MDA	Relevant Mandates, Functions and Objectives
Federal Ministry of Communications and Digital Economy (FMCDE)	To foster a knowledge-based economy and information society in Nigeria; To facilitate ICT as a key tool in the transformation agenda for Nigeria in the areas of job creation, economic growth and transparency of governance;
Federal Ministry of Education (FME)	Formulate and co-ordinate a national policy on education; Prescribe and maintain uniform standard of education throughout the Country; Develop curricula and syllabuses at the National Level;
Office of the Head of Civil Service of the Federation (OHCSF)	Responsible for the leadership, management and capacity development of the Federal Civil Service, which is the engine of governance and the administrative machinery for implementing the federal government's policies and programmes.
Bureau for Public Service Reforms (BPSR)	To initiate, coordinate and ensure full implementation of public service reforms in Nigeria; To drive change that will position Nigeria's public service as an institution of excellence; To facilitate the building of Nigeria's public service into a highly functional, professional, customer-focused and result-oriented institution
National Bureau of Statistics (NBS)	To generate, on a continuous and sustainable basis, socio-economic statistics on all facets of development in Nigeria.
National Communications Commission (NCC)	To promote implementation of the national communications or telecommunications policy as may from time to time be amended; To establish a regulatory framework for the Nigerian communications industry and for this purpose to create an effective, impartial and independent regulatory authority;

Computer Professionals Registration Council of Nigeria (CPN)	Building-up local Information Technology (IT) capacity as well as the regulation of IT practice in Nigeria;
National Universities Commission (NUC)	Granting approval for all academic programmes run in Nigerian universities; Ensure quality assurance of all academic programmes offered in Nigerian universities;
Joint Admissions and Matriculation Board (JAMB)	To conduct matriculation examination for entry into all universities, polytechnics and colleges of education (by whatever name called) in Nigeria;
National Examination Council (NECO)	National examination body that conducts the Basic Education Certificate Examination (BECE) and the West African Senior School Certificate Examination (WASSCE);
West Africa Examination Council (WAEC)	Regional examination body that conducts the Basic Education Certificate Examination (BECE) and the West African Senior School Certificate Examination (WASSCE);
Tertiary Education Trust Fund (TETFUND)	An intervention agency set up to provide supplementary support to all levels of public tertiary institutions with the main objective of using funding alongside project management for the rehabilitation, restoration and consolidation of Tertiary Education in Nigeria.
National Commission for Colleges of Education (NCCE)	Production of well-motivated teachers of world-class quality with high personal and professional discipline, integrity and competence for the expanding basic education sector.
Teachers Registration Council of Nigeria (TRCN)	Determining what standards of knowledge and skills are to be attained by persons seeking to become registered as teachers and raising those standards from time to time as circumstances may permit;
National Teachers Institute (NTI)	To provide courses of instruction leading to the upgrade, professional development and certification of Nigerian teachers using the distant learning system of education delivery.
National Board for	To expand facilities for education aimed at

Technical Education (NBTE)	equalizing individual access to education throughout the country; To reform the content of general education to make it more responsive to the socio-economic needs of the country; To make an impact in the areas of technological education so as to meet the growing needs of the economy; To consolidate and develop the nation's system of higher education in response to the economy's manpower needs;
Nigerian Educational Research and Development Council (NERDC)	Curriculum development and implementation at basic and secondary education levels in Nigeria
Universal Basic Education Commission (UBEC)	A reform programme aimed at providing greater access to, and ensuring quality of basic education throughout Nigeria.
Federal Ministry of Labor and Employment (FMLE)	Skills Development, upgrading, certification, placement and empowerment of artisans, tradesmen and applicants in various areas of national needs
Public Service Institute of Nigeria (PSIN)	Responsible for modernizing public sector governances with the aim of building public servants that are productive, incorruptible and citizen-centered
Nigeria Labour Congress (NLC)	To work for the industrialization and prosperity of the Nigerian nation and ensure protection of jobs, full employment and a humane working environment;
National Directorate of Employment	To design and implement programmes to combat mass unemployment; To obtain and maintain a Data Bank on employment and vacancies in the country with a view to acting as a clearing house to link job seekers with vacancies in collaboration with other government agencies;
Industrial Training Fund (ITF)	To set and regulate standards and offer direct training intervention in industrial and commercial skills training and development
Center for Management Development (CMD)	Regulation of standards, development of managerial manpower for the country and a broad range of skills to enhance the quality of management and leadership for the attainment of national economic goals

2. State Governments; States' Relevant MDAs, The Nigeria Governors Forum (NGF) and Regional Governors Forums.

3. Associations and Committees;

Association/Committee	Relevant Mandates, Functions and Objectives
Broadband Implementation Steering Committee (BISC)	Effective monitoring for implementation of the National Broadband Plan (NBP), 2020-2025.
Nigeria Computer Society (NCS)	To advise members, governments, other competent authorities and the general public, on national and international policy matters affecting the computing, information & systems technology industry.
Academia in Information Technology Profession (AITP)	Promoting personal and professional growth through educational, developmental, and social activities of IT; Serve as the collective voice and power of all IT academia in interactions with the Federal and State governments
Association of Licensed Telecoms Operators of Nigeria (ALTON)	To promote and support legislation that would enhance the quality of telecommunications practice and services in Nigeria and protect the collective interests of all telecommunications operators.
Association of Vice Chancellors of Nigerian Universities (AVCNU)	To be a veritable platform for Nigerian Universities for the attainment of academic excellence through cooperation and exchange of ideas.

4. Private Sector;

- i. Dangote Foundation
- ii. BUA Foundation
- iii. Belema Aid Foundation
- iv. MTN Foundation
- v. TY Danjuma Foundation

5. International Development Partners;

- i. European Commission
- ii. UNESCO
- iii. UNICEF
- iv. ECOWAS
- v. African Union (AU)
- vi. The World Bank Group
- vii. International Labour Organization (ILO)
- viii. African Development Bank (AfDB)
- ix. The German Agency for International Cooperation (GIZ)

6. International Collaborators;

- i. Global Digital Literacy Council (GDLC)
- ii. Microsoft
- iii. Certiport
- iv. Global System for Mobiles Association (GSMA)
- v. Cisco
- vi. Oracle
- vii. Pearson
- viii. Coursera
- ix. Huawei
- x. The European e-Skills Association, and Others