Harnessing the power of Innovation to build Smart Bangladesh

TECH INSIGHTS

INNOVATION KEY FOR A SMARTER FUTURE

Smart Bangladesh
The Next Transformative Leap

-Zunaid Ahmed Palak

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Smart Bangladesh: The Next Transformative Leap

Zunaid Ahmed Palak

People place their trust in leaders who inspire them with a vision of a promising future. Garry Wills, a renowned US professor who has conducted extensive research on leadership, aptly stated that, "Leaders have a vision, followers respond to it." If we analysis the political history of Bangladesh, we find that Prime Minister Sheikh Hasina, following the footprint of Father of the Nation Bangabandhu Sheikh Mujibur Rahman, embodies visionary leadership. She has articulated a compelling vision for a Digital Bangladesh, captivating the aspirations of the nation. This vision served as a profound source of inspiration for the populace, especially the youngsters, igniting their trust in her leadership. Her exceptional expertise, unwavering efficiency, and the magical charisma with which she guided the people towards the goal of achieving the vision of Digital Bangladesh in just a single era. Through her leadership, she set a glorious example of how dedication and visionary thinking can transform a nation's landscape in a short span of time. It is also undeniable that Mr. Sajeeb Wazed Joy, honourable Prime Minister's ICT Affairs Adviser, played an indispensable role in achieving the remarkable success in building Digital Bangladesh through his insightful instructions, invaluable guidance, and meticulous supervision.

After successful implementation of Digital Bangladesh honourable Prime Minister has unveiled another visionary initiative- Smart Bangladesh, with the aim of creating an innovative, intelligent, and knowledge-based society. It goes without saying that the achievements and capabilities demonstrated in building Digital Bangladesh has served as a powerful source of inspiration for the announcement of this ambitious Smart Bangladesh.

Before I describe about the Smart Bangladesh 2041 vision, I would like to briefly mention how Digital Bangladesh has become a shining example of

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success by efficiently delivering services to its citizen. It has already been demonstrated that Digital Bangladesh is a tremendous boon for the nation. ICT has seamlessly integrated into the daily lives of its citizen. While numerous countries, both developed and developing, witnessed a slowdown in activities related to livelihood due to Covid-19 pandemic since early 2020, Bangladesh managed to sustain its crucial operations through the effective utilization of ICT. Just think about the situation of fourteen years ago. In a remote village, a resident had to make frequent trips to the town to access both public and private services, enduring long queues and contending the looming presence of brokers or middlemen. The villagers with relatives abroad also made arduous trips to the town to connect with their loved ones via telephone. It appeared to be luxury, attempting to bridge the gap with more technologically advanced countries, during a time when most people had yet to embrace mobile phones or grasp the concept of the internet. It was during this period the journey towards the realization of Digital Bangladesh commenced, driven by the pressing need to bridge these divides and bring the benefits of technology to every corner of the nation. Father of

the Nation, Bangabandhu Sheikh Mujibur Rahman, who dreamt of building a prosperous Sonar Bangla (Golden Bengal), continues to inspire us on this transformative journey.

The far-sighted leader Prime Minister Sheikh Hasina who is known as prudent decision-making unveiled the Smart Bangladesh 2041 vision on December 12, 2022, coinciding with the same day she announced Digital Bangladesh vision back in 2008. While addressing a press conference at Ganabhban on May 15, 2023, she explicitly conveyed to the media that the concept of Smart Bangladesh would be embedded as a political commitment in the Awami League's election manifesto. Furthermore, she outlined that Smart Bangladesh would be constructed upon four fundamental pillars- Smart Citizen, Smart Economy, Smart Government, and Smart Society. The announcement of building Smart Bangladesh made by prime minister has ignited similar level of enthusiasm among the people as was seen during the announcement of Digital Bangladesh.

Following the unveiling of the Smart Bangladesh vision, the government, under leadership of and oversight of Mr. Sajeeb Wazed Joy, promptly initiated the process of crafting a comprehensive masterplan. Concurrently, they began executing various programmes aligned with the four core pillars of Smart Bangladesh. Question may arise regarding the significance of Smart Bangladesh. In a nutshell, Smart Bangladesh aims to enhance the efficiency of activities across all sectors, including economy, agriculture, healthcare, education, and transportation through utilization of cutting-edge technologies. The citizen will be equipped with digital literacy skills to adeptly utilize digital devices and access services with greater efficiency. As you are aware, the journey towards realizing Digital Bangladesh commenced 14 years back with a bottom-up approach. Consequently, even rural residents have been getting services through the Union Digital Centers (UDCs) and embracing technological devices. In the context of Smart Bangladesh, the government is strategizing to digitize all government services, aiming to achieve a 100 percent service accessibility rate.

The dream of Smart Bangladesh will be realized based on four core pillars- `Smart Citizen,' `Smart Economy, Smart Government' and `Smart Society'. Smart Bangladesh is about being inclusive, about the people, the citizens of Bangladesh. It is also about bridging the digital divide by innovating and scaling sustainable digital solutions that all citizens, regardless of their socio-economic background, all businesses, regardless of their size, can benefit from. The implementation plan is being designed under short-, mid- and long-term timeframe. What we want to achieve by implementing the four pillars?

In case of smart citizen every citizen would be smart and skilled in Smart Bangladesh. He would be empowered with intelligence, innovation, creativity, and a forward-thinking mindset. Citizen's access to public services would be provided using universal ID. In smart economy the main characteristic of Smart Economy is to build a knowledge-based economy where productivity is increased through innovation. This approach aims to raise per capita income to $12500 and reduce poverty rate to zero. The economy would be characterized by cashless, circular, research and innovation-oriented, and knowledge-based. The goal is to develop 50 unicorn startups (each worth $1 billion) by 2041. Frontier technologies, such as Artificial Intelligence (AI), robotics, big data, and drones, would be employed in sectors like agriculture, health, and education, with the objective of ensuring that ICT contributes 20% to the GDP. In smart government: In the realm of Smart Government, the focus is on a citizen-centric approach, emphasizing transparency and accountability. Paperless communication and services, data-driven decision-making, and seamless interoperability of services of government agencies are the pillar of this transformation. Through these changes, government processes become more efficient and accessible to the public, ensuring a better governance experience. Smart Society: The synergy of Smart citizen, smart economy and smart government paves the way for a smart society. This society thrives on combinedly inclusivity, sustainability, equity and justice. It embodies tolerance and cultural enrichment, ensuring the safety and well-being of its citizens.

Digital Bangladesh has created a strong foundation to move forward towards Smart Bangladesh. In the enriched Smart Bangladesh vision, Bangladesh is not only Smart in term of technology bust also smart in the empowerment and well-being of its citizens, fostering brighter future. The government has already taken various programmes in line with its Smart Bangladesh, which would be the next major step towards realizing Bangabandhu's dream of Sonar Bangla (Golden Bengal) by 2041.

(The writer, Zunaid Ahmed Palak, is the state minister for Posts, Telecommunications and Information Technology)

Harnessing the power of Innovation to build Smart Bangladesh

Md. Shamsul Arefin

Research and innovation are intricately intertwined. They play a pivotal role, not solely in the development of a robust digital economy but also in contributing significantly to the overall economic landscape. Indeed, innovation serves as an opportunity for progress, and its trajectory is steered by the foundation laid through meticulous research efforts. This dynamic synergy not only fosters advancements in technology and business but also propels the broader economic spectrum towards unprecedented growth and prosperity.

So, the role of research and innovations in fostering the development of digital economy cannot be overstated. Delving into the context of south-east Asia, one observes a compelling narrative where nations such as Singapore, Hong Kong, South Korea and Taiwan have strategically traversed the path of relentless research and innovation to boost their digital economies to a new height. The continuous pursuit of technology solutions through research and innovation not only facilitated their digital economic growth but also catapulted them into the league of tiger economies. These success stories underscore the imperative for nations worldwide to prioritize and invest in research and innovation as integral components for sustained economic advancement in the digital age.

We know that many universities are grappling with a funding crisis, hindering their ability to actively engage in cutting-edge research and innovation endeavors. To address this financial challenge, there is a proposal for the establishment of a Corporate Research Responsibility (CRR) Fund. CRR fund will receive contributions from both the government and the private sector. The combined amount of the two will create a fund that will be used for academic research.

For a nation aspiring to cultivate a flourishing digital or smart economy, a thoughtful emphasis on research and innovation is not just advisable but imperative. In this endeavor, a harmonious integration becomes indispensable, necessitating a proactive collaboration between the two spheres. It is crucial to recognize that aligning educational institutions with the dynamic demand of the industry is vital, warranting the formulation of curricula that resonate with contemporary technological needs.

Educational institutions, positioned as hubs for intellectual exploration and discovery, emerge as the ideal crucibles for fostering research and innovation. Thus, it becomes evident that a well-coordinated effort across the quadrants of innovation, research, industry and academia is the linchpin for achieving success in the digital frontier. This integrated approach serves as the cornerstone for a nation's holistic development in the digital realm, catalyzing progress through the synergy of diverse sectors.

The government under the able and far-sighted leadership of Hon'ble Prime Minister Sheikh Hasina is committed to build Smart Bangladesh aimed at transforming the Bangladesh into a sustainable, innovative and developed nation by 2041. Research and

innovation would be the driving force in implementing the Smart Bangladesh Vision. The strategic implementation of an innovative ecosystem is already underway, with digital labs being established in all educational institutions. Under the expansive umbrella of the Enhancing Digital Government and Economy Project, the government is going to set up 10 Research and Innovation Centers (RICs) at 10 universities.

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I have already instructed the EDGE Project to work-out on this. The Agency to Innovate (a2i) is concurrently driving efforts to instill a culture of research and momentum, underscoring the government's commitment to nurturing a vibrant intellectual environment. These initiatives will not only open doors for research and innovation but will also create an environment conducive to the development of groundbreaking ideas and solutions.

I would like to highlight another crucial aspect, namely the development of a robust pool of researchers. A synergistic collaboration among the government, academia, and industry is imperative for effective talent development. This multifaceted approach aims to cultivate a diverse group of researchers, innovators, and skilled professionals capable of navigating and contributing to cutting-edge technologies such as Artificial Intelligence (AI).

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(The writer is Secretary, ICT Division)

Youthful Brilliance Ignites the Path to a Smarter Nation

Ranajit Kumar

Bangladesh has astutely recognized that the nation's youthful demographic constitutes the linchpin for realizing the ambitious goals set in its Smart Bangladesh Vision 2041. The goals are transforming Bangladesh into a sustainable, innovative, intelligent and developed nation by 2041.

Honourable Prime Minister Sheikh Hasina, the visionary architect behind the Smart Bangladesh Vision 2041, has aptly emphasized that the nation's young generation will be the driving force in building Smart Bangladesh. "Our young generation will be the most skilled manpower in each field in building Smart Bangladesh," she said while inaugurating the first-ever two-day Bangladesh Startup Summit-2023 in Dhaka's Hotel InterContinental as the chief guest on 29 July 2023.

Acknowledging the paramount importance of harnessing the creativity and vigor of the youth, the Prime Minister's assertion underscores the strategic imperative of empowering and engaging the younger demographic to actively contribute to shaping the future trajectory of the country.

Fortuitously, Bangladesh is presently experiencing the advantageous yield of a demographic dividend, as a substantial one-fourth of the nation's total population lies in the dynamic 15-29 age bracket. The latest census report from the Bangladesh Bureau of Statistics (BBS) published in 2022, indicates that the country's current youth population stands at a significant 45.9 million.

Bangladesh boasts a young population, with an estimated 64% below the age of 35. This demographic dividend not only signifies a numerical advantage but also represents a distinctive opportunity to leverage the energy, creativity, and dynamism of young individuals for national development. Their inherent tech-savvy nature, coupled with a hunger for knowledge and a desire to contribute, positions them as invaluable assets in the endeavor to build a smart nation.

The realization of Smart Bangladesh's objectives is

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promisingly attainable, given our potential to harness the talents of our younger generation. By equipping them with digital skills and fostering an environment that encourages the exploration of their latent talents we can pave the way for unprecedented advancements and propel the nation towards a future characterized by innovation, technological skill, and sustainable growth.

During the 13 years of the Digital Bangladesh drive which stressed creating a skilled workforce, 20 lakh IT professionals were readied by 2021 as per plan. The government has targeted to take this number to 30 lakhs by 2025. The Bangladesh Computer Council (BCC) alone has created over 4,11,828 through providing training on various trades during one and half decades. Of them 75,000 are women.

Bangladesh is also well-placed in terms of online workforce. According to the Oxford Internet Institute (OII), Bangladesh is ranked second in the world in online workforce. It estimates the strength of online workforce worldwide at six lakhs, a figure similar to the statistics of the World Bank.

We are currently placing strong emphasis on advancing our training initiatives to address the challenges and leverage the immense opportunities created with the emergence Fourth Industrial Revolution (4IR). In response to this transformative era, the Enhancing Digital Government and Economy (EDGE) Project of BCC has taken proactive measures by establishing the Smart Leadership Academy (SLA). This academy serves as a dedicated platform for providing continuous training on cutting-edge technologies. Since its inception, SLA has been steadfastly conducting training sessions, ensuring that individuals are equipped with necessary skills and knowledge to navigate the dynamic landscape of 4IR.

I believe that the forward-thinking youth cohort holds the potential to play a pivotal role in this transformative Bangladesh into a sustainable, innovative, intelligent and developed nation, as charted in its Smart Bangladesh Vision2041.

(The writer is Executive Director of BCC)

EDGE's Skill Development Initiatives to Boost Digital Economy

Md. Shakhawat Hossain

Recognizing the imperative of enhancing skills to face the challenges and leverage the vast opportunities presented by the Fourth Industrial Revolution, the government's Enhancing Digital Government and Economy (EDGE) Project has embarked on a range of initiatives. These initiatives aim to equip individuals with the necessary training, especially on frontier technologies like Artificial Intelligence (AI), robotics, microchips design, augmented reality, virtual reality, blockchain to cultivate a proficient workforce. These tailored skill development programs are meticulously designed to meet the needs of various segments of a Smart Economy, ensuring that trainees of these programs possess essential technilogical and technology managerial skills to excel in an increasingly digital world. Each program under EDGE is strategically developed to contribute to the nation's overarching goal of transforming into a 'Smart Bangladesh' showcasing collective growth of a robust digital economy through skill development and capacity building.

A skilled workforce is pivotal for running an efficient government. EDGE has launched a training program aimed at developing a digitally literate and proficient governance system. The program is strategically focused on upskilling 10,000 government officials, including members of parliament (MPs), managers of critical information infrastructure (CII), journalists, and academicians. Currently, 640 government officials, CII personnel, and MPs have already reaped the benefits of this program, setting the stage for a more agile and digitally capable smart governance system.

In the private sector, as visionaries and decision-makers, CXOs and middle managers play a vital role in shaping the strategies and cultures of their organizations. EDGE's targeted programs for these business leaders are designed to foster a leadership cohort in the private sector capable of steering businesses through the challenges and opportunities of the digital age. A total of 507 mid-level IT-ITeS professionals have been certified under the Middle Managers program or ACMP 4.0 in collaboration with the Institute of Business Administration (IBA) at Dhaka University. The aims of the CXO and Middle Manager programs are to upskill 600 CXOs and 800 middle managers, thereby paving the way for a more dynamic and robust IT sector in Bangladesh. The gap between the practical, employment-oriented skills of IT graduates and the actual requirements of the workplace is addressed by the Hire and Train Program for Fresh Graduates. Graduates grapple with securing jobs or face uncertainty about their future steps, while industries struggle to fill vacant positions. With an objective to train and create employment for 20,000 recent graduates, the Hire and Train program bridges the gap between academic knowledge and market needs by incorporating partnership between public, academic, and private sectors. This on-the-job training initiative reduces the training burdens on companies while ensuring that at least 80% of the participants will secure permanent employment with the companies. Presently, the initiative has successfully trained and permanently employed about 4,000 graduates into the workforce, making a pronounced impact on curbing unemployment and propelling the digital economy's expansion.

Complementing the Hire and Train initiative is the Digital Skills Training for Students Program, another strategic effort geared towards reconciling the discrepancy between academic curricula and industry needs. The program is aiming to train 80,000 3rd and 4th year university students and thus create a vast pool of talent ready to invigorate the economy's digital sectors and drive innovation. With agreements in place with 30 universities, active training for 1,350 students, and an additional cohort of 3,000 slated to begin by March 2024, the program is on the path to achieving its goals.

In the context of Bangladesh's vision of becoming a 'Smart Bangladesh', it is crucial to cultivate a workforce skilled in digital technologies across all layers— from government entities to every tier of the IT-ITeS sector hierarchy. These training initiatives are not just an investment in human capital; they are a strategic move to position Bangladesh as a leading digital economy in the global arena. By harnessing the potential of its human resources through comprehensive training, EDGE aims to enhance the country's workforce, boost economy, and ensure sustainable development.

(The writer is project director of EDGE Project)

Innovation Key for a Smarter Future

Mohammad Enamul Kabir

Bangladesh embarks on the path to realizing its vision of Smart Bangladesh at a time when Fourth Industrial Revolution (4IR) sweeps in with unparalleled velocity. The rapid advancement of the 4IR is fundamentally reshaping the very fabric of our surroundings. Against this backdrop, the government has formulated a draft Smart Bangladesh 2041 Masterplan, thoughtfully considering the multifaceted challenges and unprecedented opportunities presented by the Fourth Industrial Revolution.

Meanwhile, the government has embarked on a series of strategic initiatives, meticulously aligned with its visionary Smart Bangladesh agenda, thus further leveraging the successes achieved through the Digital Bangladesh initiatives. One notable initiative entails the establishment of the Research and Innovation Center (RIC), a hub for collaborative research and innovation within universities, under the Centre for Fourth Industrial Revolution (C4IR). The RICs are university-based platforms connecting academia, industry, and government to tackle national challenges through groundbreaking research and innovation.

Launching in ten public universities

Launching in ten public universities, these RICs will empower our brightest minds to solve critical national problems through market-oriented research and innovation, leading to product development and commercialization. The World Bank-financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under ICT Division will equip the universities with cutting-edge facilities and finance research projects while actively promoting strong industry-academia collaboration through initiatives like joint research ventures, technology transfer, and other development programs.

While university researchers and innovators have the autonomy to choose research projects relevant to the country, the EDGE project provides guidance by identifying some priority areas with indicative problems for the RICs to consider. The selected areas and indicative problems are as follows:

a. Food: New food, identification and traceability, food adulteration, conservation of food items, alternative food products, storage and transportation;

b. Health and Sports: Production of Vitamins, diagnostic image processing, tackling mosquito menace, problems in pregnancy, usage of big-data in healthcare

c. Agriculture, Fisheries and Livestock: Vertical farming, Aeroponics, use of IoT in cultivation, supply of water and water quality, reduction of losses in the harvest, use of frontier technologies in agriculture, fish counting in the ponds or rivers, frontier technologies in fish farming, fish disease detection, face recognition of livestock, automation of cattle firms, improving reproduction of livestock

d. Water: Water preservation, restoration of water reservoirs, monitoring water quality, improvement of water supply, water treatment;

e. Environment: Trapping carbon from nature, tracking carbon, recycling batteries, tracking emissions from factories, treatment of effluent, air pollution control, controlling sound pollution, e-waste management;

f. Energy: Use of frontier technologies for enhancing battery performance, life, swapping, etc., safe disposal of batteries, bio-fuel, energy storage technique;
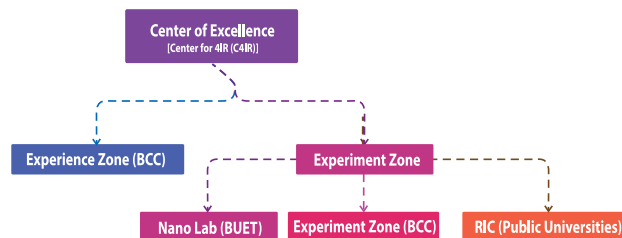
g. Manufacturing/RMG/Real Estate/Telecom: Automation of existing factories using frontier technologies, improving TFP in production system, supply chain transparency and traceability, disaster risk management, frontier technology in improving real estate, improving urban living, radiation control in telecommunication, impact of radiation on nature, network planning in cities of Bangladesh;

h. Education: Frontier technology in student engagement, interactive learning, addressing education issues of persons with disabilities;

i. Transportation: Hyperloop, solar powered vehicles, controlling country's traffic problem, reduction of road accidents, improvement in water transport system, frontier technology in transport management;

j. Cyber Security: Detection of attacks in the country's network, safe transaction in mobile banking, fraud detection in e-commerce, tracing and recovery of fake transaction, development and deployment of sensors for cybersecurity;

k. Culture: Large Language Model for Bangla, Bangla plagiarism detection, improving Bangla vocabulary in daily use, systems development for seamless use of Bangla in digital technologies.

The government welcomes innovative thinking! The identified priority areas and potential problem sets are meant to be indicative, not exhaustive. RIC researchers are encouraged to propose additional research topics that align with the mission of RIC.

The C4IR as a Catalyst for Research and Innovation

The government has established the C4IR as a dynamic platform to cultivate and nurture research and innovation. Positioned as a multifaceted hub, the C4IR engages with a wide array of stakeholders, fostering collaboration to generate impactful solutions. With a primary emphasis on directly addressing the needs of citizens, it strives to enhance their lives through innovative initiatives. Furthermore, the C4IR supports both the government entities and industries, offering tailored solutions to meet their automation needs and drive sustainable development. Notably, industry serves as the key platform for commercializing the innovations developed within the Center's components, creating economic value for all. Through dedicated research and innovation, academia bridges the gap by generating solutions to citizen-centric challenges. The Center addresses intellectual property and patent filing of industry- driven innovations through RICs, with support from the Digital Economy Hub. Fostering international collaboration, the Center engages with the World Economic Forum (WEF) and its affiliated centers
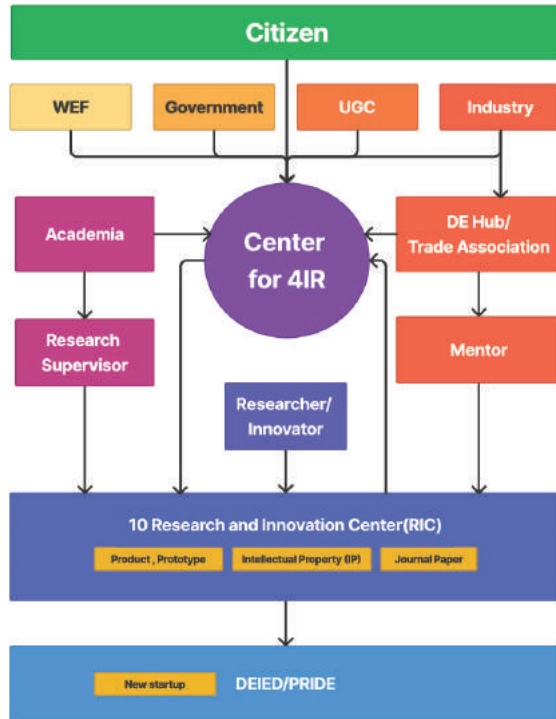
globally. Figure 1 visually depicts these stakeholder relationships.

The C4IR is planned for phased development, initially hosted by the Bangladesh Computer Council (BCC) and ultimately evolving into a full-fledged institution. This dual approach ensures operational continuity while BCC benefits from the center's research and innovation focus, propelling it towards being a direct contributor to the nation's innovation economy.

During the project period, a joint team of EDGE project officials and BCC personnel will collaboratively manage the center. This partnership fosters knowledge transfer and empowers BCC to independently oversee operations beyond the project's lifespan.

Furthermore, the BCC is committed to establishing a dedicated team of its officers to carry forward the center's activities upon project completion. Additionally, a robust governing body will be formed, chaired by the BCC Executive Director. This board will encompass representatives from government, academia, and industry, with its comprehensive structure and operational details finalized in due course.

The areas in which the C4IR is designed to contribute include the following:

Technology Adoption and Integration: Facilitates the adoption and integration of 4IR technologies, such as artificial intelligence,

blockchain, and the Internet of Things (IoT), across various sectors in Bangladesh.

Policy Development and Advocacy: The center will engage in the formulation of policies that foster a conducive environment for the responsible and inclusive development of 4IR technologies. This involves advocating for regulatory frameworks that balance innovation with ethical considerations.

Skills Development and Capacity Building: The C4IR will contribute to enhancing the skill sets of professionals and students by offering training programs and workshops focused on 4IR technologies. This will help bridge the existing skill gaps and prepare the workforce for the demands of the future.

Industry-Academia Collaboration: Facilitating strong ties between industry and academia, the C4IR encourages collaborative research projects, intellectual property creation, and economic value creation through research and innovation. This collaboration aims to ensure that academic research aligns with the practical needs of industries and societies.

Innovation Ecosystem Development: The C4IR will play a crucial role in fostering a vibrant innovation ecosystem by supporting startups, entrepreneurs, and small enterprises working on cutting-edge technologies. This includes providing access to funding, mentorship, and infrastructure. Through active involvement in these domains, the Center for 4IR will play a pivotal role as a catalyst for transformative change, propelling Bangladesh forward in the Fourth Industrial Revolution and making significant contributions to its economic and societal advancement.

(The author, an IT Specialist, previously held the position of Director (Training and Development) at the Bangladesh Computer Council. Currently serving as a Project Specialist (Center for Fourth Industrial Revolution) within EDGE Project)

Govt to set up Research and Innovation Centers in 10 public universities

The government is going to set up state-of-the-art Research and Innovation Centers (RICs) in ten universities to empower the brightest minds to solve critical national problems through research and innovations with a distinct focus on market-oriented products.

This university-based RICs will serve as a dynamic hub fostering collaborative research and innovation that would connect academia, industry and government to effectively address national challenges through groundbreaking initiatives.

An agreement was signed in this regard on Tuesday (6 February 2024) at the EDGE project office at Mirpur Youth Tower between the World Bank financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under ICT Division and 10 universities.

EDGE Project Director Shakhawat Hossain, along with Vice-Chancellor of Bangabandhu Sheikh Mujibur Rahman Aviation and Aerospace University (BSMRAAU) Air Vice Marshal A K M Manirul Bahar, Vice-Chancellor of Khulna University Mahmood Hossain, Vice-Chancellor of Bangabandhu Sheikh Mujibur Rahman Science and Technology University Professor Dr A Q M Mahbub and Vice-Chancellor of Rangamati Science & Technology University Professor Dr Shelina Akhter and representatives from Bangladesh Agricultural University (BAU), Bangladesh University of Professionals (BUP), Jahangirnagar University, Patuakhali Science & Technology University (PSTU), Rajshahi University of Engineering & Technology, and Sher-e-Bangla Agricultural University separately signed the agreement on behalf of their respective organizations and universities.

The function was addressed among others by ICT Secretary Md Shamsul Arefin, Executive Director of BCC Ranajit Kumar, four vice chancellors, EDGE Project Director Shakhawat Hossain.

Faruq Ahmed Jewel, Co-Team Leader of EDGE Project (component-3) presented a keynote paper citing objectives and goals for establishing RICs in the universities.

ICT Secretary Md Shamsul Arefin said many universities are grappling with a funding crisis, hindering their ability to actively engage in

Vice-Chancellors and representatives of universities spoken at a function organized to sign a Memorandum of Understanding (MoU) between the Enhancing Digital Government and Economy (EDGE) Project and 10 public Universities on February 6, 2024, at EDGE Project Office, Mirpur, Youth Tower. ICT Secretary Md. Shamsul Arefin and Executive Director of Bangladesh Computer Council (BCC) Ranajit Kumar, were present.

cutting-edge research and innovation endeavors.

"We are encouraging for establishment of a Corporate Research Responsibility Fund (CRRF) to mitigate the fund crisis for conducting research and innovation," he said adding the industry, academia and government could play a pivotal role to create CRRF.

The ICT Secretary said the establishment of RICs in the ten universities is an effort to encourage collaborative research and innovation that connects academia, industry and government to effectively address national challenges through groundbreaking initiatives.

"We want to build state-of-the-art research and innovation ecosystem in the universities to empower brightest minds to solve critical national problems," he said.

EDGE event coverd by Hong Kong based bnnbreaking.com
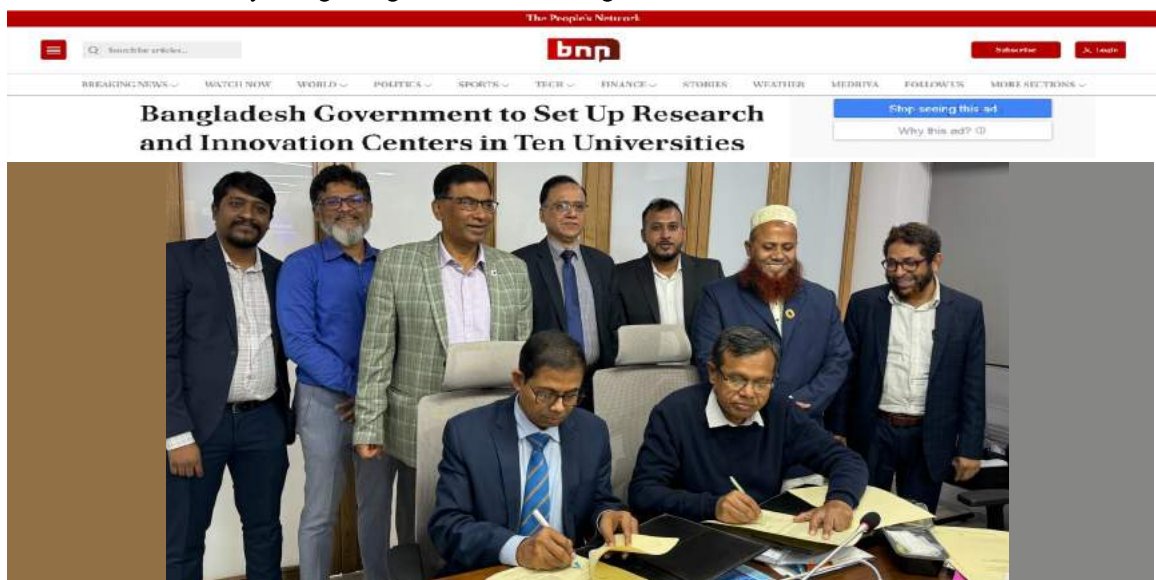
ICT Secretary Md. Shamsul Arefin and Executive Director of Bangladesh Computer Council (BCC) Ranajit Kumar witnessing the Memorandum of Understanding (MoU) signing ceremony between the World Bank -financed Enhancing Digital Government and Economy (EDGE) Project of the Bangladesh Computer Council (BCC) under ICT Division and 10 Universities on February 6, 2024, at the EDGE Project Office, Mirpur Youth Tower

How Secure is Our Cyberspace?

Ajit Kumar Sarkar

Why send a bullet where you can send a byte? So goes the proverb in the cyber world. The proverb sums up the growing threats of cyber attacks at a time when the world is on the verge of the fourth industrial revolution. No country is out of the looming threat to its cyber assets even as the entire world goes gaga over digital transformation. The cyber world is expanding and so are cybercrimes. Cyber attacks do not use conventional weapons but that has not stopped experts from terming computer bug and malware as "logics bomb" or non-nuclear weapon or digital continental ballistic missile.

Like any other developing country, Bangladesh, which has opted for information technology revolution in almost all aspects of national life, is also extremely concerned over cyber crimes and security. Quite naturally so because Bangladesh can never forget how hackers stole 81 million USD from Bangladesh Bank in 2016.

The statistics given out by the Computer Incident Response Team (CIRT) of Bangladesh Computer Council (BCC) brings out the nature of cyber attack and threat the country faces. There were 4,900 instances of cyber attacks on Bangladesh between 2015 and 2022 in which the CIRT had to step in for help. Most of the cyber attacks have taken place from outside the country's borders.

The advent of the internet has posed a challenge to Westphalian sovereignty, which means every country has exclusive sovereignty over its territory, by integrating all the countries in what has come to be known as a global village. The internet knows no geographical or political boundary. Canadian philosopher Marshall McLuhan has described the global village as an entity where people from all parts of the world can easily connect with each other through mass media and electronic media which turns them into a single community. Prime Minister Sheikh Hasina has said the cyber world has no geographical boundaries and the capability of all countries to ensure cyber security

Prime Minister Sheikh Hasina has said the cyber world has no geographical boundaries and the capability of all countries to ensure cyber security is limited.

is limited. The internet has ensured freedom of expression and cross-border trade. But the misuse of the internet has also enhanced the security risks in a world where cyber crimes, hate campaigns, conflicts and extremist activities are on the rise.

The previous years saw several cyber attacks as hackers breached the security firewall of online activities including banking and other financial transactions in several countries. The World Economic Forum has warned of an increase in cyber attacks in future and said there is no alternative to international cooperation and emphasized uniform policies and rules to tackle cyber security risks.

Prime Minister Sheikh Hasina flagged the issue of cyber security while speaking at the third meeting of the Bangladesh Task Force at Ganabhaban on April 7, 2022. "We have to now focus more on cyber security because while technology creates opportunities it may also give rise to problems. We have to think anew about our security starting from how to secure money in banks." It was not the first time Hasina was raising the issue of cyber security. At an event relating to cyber security and international collaboration at the Permanent Mission of Bangladesh to the UN in New York on September 25, 2018, Prime Minister Sheikh Hasina and her ICT Adviser Sajeeb Wazed Joy had voiced their concerns over cyber security. Sheikh Hasina called for an effective role by the UN to secure the digital world and asked the world body to continue its task of cyber security policies. She also warned that cyber risks could pose a serious threat to international peace and security. Addressing the plenary session, Sajeeb Wazed Joy also urged the UN to come forward to save small countries like Bangladesh from cyber crimes. "Although we can identify the problems, we cannot fully solve them. Many a times, we thwarted hacking but could not foil the hackers," he said.

(The writer is Senior Journalist and Communication Specialist, EDGE Project)

Nafis wants to be a full-stack machine learning engineer

Md. Nafis Rabbi

Finding a promising career path becomes significantly easier when opportunities and essential resources are made available. Md. Nafis Rabbi, a recent graduate in Computer Science from Ahsanullah University of Science and Technology in 2022, stands out as a prime example of leveraging the opportunities facilitated by a governmental initiative.

Following his graduation, Nafis embarked on a quest for job prospects and serendipitously secured a position at Golden Harvest Limited, a distinguished IT company that exported IT services to different countries of the world.

In a pivotal move, the company facilitated his participation in a comprehensive training on data science under a Hire and Train Programme organized by the Research and Innovation Center for Science and Engineering (RISE) of BUET in collaboration with the World Bank financed Enhancing Digital Government and Economy (EDGE) Project of BCC under ICT Division.

Nafis was picked out of a hire-and-train program. He also underwent rigorous hands-on training within the company, with the careful guidance of in-house experienced programmers at Golden Harvest Infotech Limited, which played a crucial role in imparting knowledge, honing their skills, and helping them to understand the intricacies of the project.

During his thesis tenure, Nafis developed a profound interest in data science, delving deeper into the subject matter. Personally, he got interested in data analytics during my thesis when he worked on a project called "ECG Classification." In simple terms, he built a model that can predict different heart diseases by analyzing ECG signals. "In fact, this ignited my ambition to evolve into a proficient full-stack machine learning engineer," he said. He went on saying that the three months of training at RISE of BUET, Nafis has added a new dimension to fulfill my ambition.

During training, he covered many topics. He started with the basics of Python programming, learning about data types, variables, and how to make decisions in code. Then, he explored more advanced topics like working with different kinds of data structures and creating efficient code. He also dived into object-oriented programming, which helped him organize and structure his code better. He learned about reading and writing files, working with data in formats like CSV and JSON, and using the Pandas library for data manipulation.

Nafis observed that data analytics is becoming increasingly popular worldwide, and this trend is taking place in Bangladesh also. Moreover, numerous industries are depending on data to make decisions, thereby generating huge opportunities in the field of data analytics.

"The more I worked on this project, the more fascinated I became with data analytics. It made me really curious and eager to learn more about data science. Consequently, I made the decision to pursue my career in data analytics."

Bangladesh, India to jointly combat cyberattacks

Bangladesh and India will collaborate with each other to combat cyberattacks and threats alongside safeguarding their own cyberspaces and contributing to the security of the entire global cyberspace.

"Just as we have successfully eradicated militancy and terrorism through our cooperation, together we will ensure the security of our cyberspace by addressing cyberattacks and threats," State Minister for ICT Zunaid Ahmed Palak told the concluding session of the 3-day training and exercise held at the Bangladesh Computer Council auditorium on 4 October 2023.

The World Bank financed 'Enhancing Digital Government and Economy (EDGE) Project of BCC under the ICT Division and organized the training and exercise under the programme titled: Cyber-Maitree 2023.

Experts and scientists of CERT, India Ashutosh Bahuguna, Gaurav Pathak, Shashank Gupta and Abhishek Solanki provided training to the officials working in 34 Critical Information Infrastructures (CII) announced by the government of Bangladesh.

High Commissioner of India to Bangladesh Pranay Verma presents a participant with a certificate of achievement following her successful completion of the 3-day Cybersecurity Training and Exercise event, titled `Cyber-Maitree 2023.' In attendance are State Minister for ICT Zunaid Ahmed Palak, ICT Secretary Md. Shamsul Arefin, Senior Director of Computer Emergency Response Team (CERT), India S.S. Sharma and BCC Executive Director Ranajit Kumar, witnessing the moment. The World Bank financed 'Enhancing Digital Government and Economy (EDGE) Project of BCC under the ICT Division and organized the function.

The state minister emphasized that collaborative initiatives like Cyber-Maitree 2023 between the two countries underscore their unwavering dedication to cyber defense and their shared commitment to maintaining a safe and secure digital environment.

"Our self-confidence is bolstered, and the task of confronting adversaries becomes easier when we have a strong and steadfast friendly neighbouring country by our side," Palak said.

He said, "We are confident in our ability to effectively address cyber threats and combat cybercrimes, particularly with the support and collaboration of the Indian CERT."

The ICT state minister said Cyber Maitree represents the fruitful outcome of a collaborative effort between the governments of Bangladesh and India, aimed at fostering the development of cybersecurity leaders by offering training and facilitating the exchange of knowledge and experiences.

High Commissioner of India to Bangladesh Pranay Verma said the joint effort such as Cyber-Maitree 2023 is the outcome of the Bangladesh-India Memorandum of Understanding signed earlier for collaborating in different areas of ICT. Such initiatives will continue further in future to enhance capacity in dealing with cyber threats and cybercrimes, he said.

Pranay said the joint effort such as Cyber-Maitree 2023 is the outcome of Bangladesh-India Memorandum of understanding signed earlier for collaborating in different areas of ICT. Such initiative will continue further in future for enhancing capacity in dealing with cyber threats and cybercrimes, he said.

Chaired by BCC Executive Director Ranajit Kumar the function was addressed, among others by, ICT Secretary Md. Shamsul Arefin, Senior Director of Computer Emergency Response Team (CERT), India S.S. Sharma. The function was conducted by Awareness and Campaign Specialist of EDGE project Hasan Md. Benaul Islam.

Shamsul Arefin said the government has put emphasis to build capacity of government officials to address cyber-attacks and cyber threats to ensure smooth journey of Smart Bangladesh vision as announced by honourable prime minister.

Cybersecurity skills essential for safeguarding the path to Smart Bangladesh success, say speakers

Women Members of Parliament (MPs) participated in the two-day training programme on `Smart Bangladesh and Cybersecurity' organized by Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under the ICT Division, held at Youth Tower, Mirpur, on September 4-5, 2023.

Women Members of Parliament (MPs) and ICT experts emphasized the critical importance of raising awareness about cybersecurity among the populace and enhancing the skills of those involved in ICT-related tasks to facilitate smooth journey towards achieving the goals of Smart Bangladesh.

During the two-day training programme on `Smart Bangladesh and Cybersecurity' organized by World Bank financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under ICT Division, it was noted that many cyber attacks occur due primarily to a lack of public awareness and insufficient skills among ICT workforces. The programme, held at the Smart Leadership Academy (SLA) at Mirpur Youth Tower on September 4-5, 2023, aimed to provide women Members of Parliament (MPs) with an understanding of the government's plans for implementing Smart Bangladesh initiatives and protect cybersecurity.

Members of Parliament including Afroza Haq, Tamanna Nusrat Bubli, Advocate Zakia Tabassum Zui, Lutfunnesa Khan, ICT Secretary Md Shamsul Arefin, Executive Director of BCC, EDGE Project Nahid Sultana Mallik spoken at the first day inaugural session.

Afroza Haq expressed concern about the proliferation of hateful content generated by notorious individuals using artificial intelligent (AI), specifically targets women and disseminating toxicity, which has adversely impacted the lives of women. Tragically, this has even led to cases where women have resorted to suicide as a result, she added.

Afroza emphasized the urgent need to make AI law and launch a comprehensive awareness campaign on cybersecurity to protect women as well as educate the public about the growing cyber attacks and crimes. "The implementation of Smart Bangladesh will be hampered if we fail to mitigate cyber threats," she said.

Calling upon the relevant authorities to take action against the unregistered online media Tamanna said these media are spreading venom in the society by publishing false and fabricated news. Sometimes news was published to assassinate character, she added.

Shamsul Arefin stated that the government has initiated several programmes, including enhancement of government employees' skills and a robust awareness campaign on cybersecurity. He added that these initiatives have been undertaken with the goal of enabling s smooth and uninterrupted transformational journey toward a Smart Bangladesh.

Govt to provide digital skills training to university students

ICT Secretary Md Shamsul Arefin addressed a workshop organized by the World Bank-financed Enhancing Digital Government and Economy (EDGE) Project of the Bangladesh Computer Council (BCC), under the ICT Division, at EDGE conference room at Mirpur Youth Tower on 18 January 2024. Earlier, a memorandum of understanding (MoU) was signed between the EDGE Project and 28 public universities to provideg training of graduates in three phases: foundational level, intermediate level and advanced level.

In a bid to create employment, the government is set to provide training on digital skills to 80,000 students and graduates over the next two years through public universities. The training will be provided under a programme titled: "Digital Skills Training for Students".

A memorandum of understanding (MoU) was signed in this regard between the World Bank-financed Enhancing Digital Government and Economy (EDGE) Project of the Bangladesh Computer Council (BCC), under the ICT Division, and 28 public universities on 18 January 2024 at EDGE conference room at Mirpur Youth Tower. EDGE Project Director Md Shakhawat Hossain and teachers and representatives from 28 universities, including Bangladesh University of Engineering and Technology (BUET), Chittagong University of Engineering and Technology (CUET), Bangabandhu Sheikh Mujibur Rahman Science and Technology University (BSMRSTU) separately signed the MoU. More public universities will be included in phases to provide digital skills training for students.

The MoU was followed by a workshop that was addressed, among others, by ICT Secretary Md Shamsul Arefin, Md Shakhawat Hossain, Director of BCC Md Abu Sayed, Policy Adviser of EDGE Project Abdul Bari and Team Leader of Smart Leadership Academy Dr. Md. Mahfuzul Islam Shamim, head of Computer Science and Engineering (CSE) Department of BUET Professor Mahmauda Naznin, Professor of CSE department of Dhaka University Rabiul Islam and Professor of Chittagong University Sanaullah Chowdhury.

According to MoU, 80,000 students will get training in three phases. Of them 50,000 will get training on fundamental issues at foundational level, 20,000 on more complex issues in the intermediate level and 10,000 on frontier technologies such as artificial intelligence (AI), robotics, blockchain in the advanced level.

Emphasizing the importance of conducting research and training to advance the ICT sector, ICT secretary Shamsul Arefin said many universities are facing a funding crisis. To address this issue, a Corporate Research Responsibility Fund (CRRF) could be formed, and the government's EDGE project can take the initiative in this regard, he added.

Shamsul Arefin stated that the government is implementing the Digital Skills for Students Training Programme through universities, with the aim of strengthening ties between government, industry and academia. This partnership will facilitate collaboration between the industry and academia, he said.

The ICT secretary underscored the need for involving youths in training and research and said that failure to do so would result in lagging behind, especially at a time when cutting-edge technologies like Artificial Intelligence (AI) are generating research materials without human involvement.

State Minister for Posts, Telecommunications, and Information Technology, Zunaid Ahmed Palak presenting a memento to World Bank Country Director for Bangladesh and Bhutan, Abdoulaye Seck , on February 13, 2024, following discussions with the World Bank (WB) mission held at the WB's Agargaon resident office. The discussion centered on strategizing ways to amplify the World Bank's engagement in advancing the development of a Smart Bangladesh.

Special Secretary of the Ministry of Industry and Commerce of India, Sumita Dawra, addressing a workshop titled `Smart Bangladesh: A Vision for Efficient, Transparent and Accountable Service Delivery' held at the BCC auditorium on November 15, 2023. The event, orchestrated by the Enhancing Digital Government and Economy (EDGE) Project, served as a platform for insightful discussions and strategic collaborations. Alogside Dawra, esteemed dignitaries including State Minister for ICT, Zunaid Ahmed Palak, ICT Secretary, Md Shamsul Arefin, Executive Director of BCC, Ranajit Kumar spoken at the function.

In a momentous event held on August 30, 2023, State Minister for ICT Zunaid Ahmed Palak witnessed the signing ceremony and exchange of two separate memorandum of understanding (MoUs). These MoUs, signed between the World Bank-financed Enhancing Digital Government Economy (EDGE) Project of BCC and both Bangladesh Association of Software and Information Services (BASIS) and Bangladesh Association of Contact Center and Outsourcing (BACCO), respectively, mark a significant step toward fostering a thriving digital ecosystem. The signing took place at the auditorium of the Bangladesh Computer Council (BCC).

Senior officials, including ICT Secretary Md. Shamshul Arefin, Executive Director of BCC Ranajit Kumar, attended a workshop organised by the Enhancing Digital Government and Economy (EDGE) Project at La Vince Hotel on September 20, 2023. The workshop was strategically designed to engage stakeholders and gather valuable recommendations essential for shapping the proposed ICT Policy 2023.

A partial view of the workshop organised at La Vince Hotel on September 27, 2023, aimed to incorporate actionable insights and recommendations into the proposed National ICT Policy 2023 from a diverse array of stakeholders spanning government, industry, and academia. This initiative seeks to align with the imperatives of the fourth industrial revolution and the Smart Bangladesh Vision 2041.

Workshop

The proposed National ICT Policy 2023 integrates actionable insights

The proposed National ICT policy 2023 has been meticulously crafted, integrating actionable insights and recommendations from a diverse array of stakeholders spanning government, industry, and academia to align with the imperatives of the fourth industrial revolution and Smart Bangladesh Vision 2041.

Officials have said before finalizing draft ICT Policy 2023, the World Bank financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) organized a series of workshops beginning on September 20, 2023. These workshops were strategically designed to engage stakeholders and gather valuable recommendations essential for shaping the policy, they said.

"We are seeking recommendations from the representatives of stakeholders, aligning them with the nine overreaching objectives and 73 strategic themes of the proposed National ICT Policy 2023 and Smart Bangladesh Vision 2041," said Executive Director of BCC Ranajit Kumar while he was addressing the inaugural session of the workshop held at La Vince hotel.

He urged stakeholders to provide recommendations that are achievable, emphasizing the context of honorable Prime Minister Sheikh Hasina's announcement of the Smart Bangladesh Vision 2041, which aims to build an intelligent, innovative, and developed nation.

`No policy is permanent; it is subject to change according to the needs of the time and existing reality,' stated Ranajit Kumar. He added that the government, has initiated amendments to the National ICT Policy 2018 to adapt to the challenges posed by the fourth industrial revolution and to ensure a seamless journey towards realizing the vision of Smart Bangladesh.

The function was addressed, among others by, former BCC Director Md. Enamul Kabir, Policy Development Specialist of EDGE Project Syed Amdadul Huq.

67 representatives from government, industry and acadmia took part in the workshops and gave their recommendations about the action plan. Associate professor of Dhaka University IIT Department Dr. Ahmedul Kabir, Deputy Secretary of Planning Ministry Farida Sultana, Vice President of BACCO Tanvir Ibrahim, CSO of Bangladesh Rice Research Institute (BRRI) Dr. Mohammad Ismail Hossain were among them attended the workshop.

Earlier, Enamul Kabir briefed the participants about proposed National ICT Policy 2023 and Smart Bangladesh Vision 2041 and sought recommendations from them about action plans through a power point presentation. Awareness and Campaign Specialist Hasan Md. Benaul Islam presented a power point on Leadership at the function.

ICT Policy to paves ways for Smart Bangladesh

Syed Amdadul Huq

"Bangladesh 'wildly adopting' technology", the flagship remark of legendary global IT icon Bill Gates has endorsed the commendable success of Bangladesh integrating ICT for national development. Former US President Barac Obama also admired Bangladesh for impressive ICT growth and advised African countries to follow Bangladesh as a 'model' for successful digitization. Following the successful implementation of Digital Bangladesh programme, the honourable Prime Minister Sheikh Hasina has unveiled another visionary plan to transform the nation into Smart Bangladesh by 2041. This ambitious plan is being implemented based on four fundamental pillars - Smart Citizen, Smart Economy, Smart Government and Smart Society. The announcement of this forward-thinking programme comes at a crucial juncture, with the Fourth Industrial Revolution (4IR) rapidly approaching. In light of this transformative vision, the amendment of the ICT Policy 2018 has become imperative. This revision is essential to ensure seamless transition to a Smart Bangladesh and effectively address the challenges posed by the impending 4IR. The updated policy will play a pivotal role in aligning the nation's technological infrastructure with the demands of the 4IR era, fostering innovation, and positioning Bangladesh as a leading player in the global digital landscape.

In the visionary words of Klaus Schwab, the renowned economist and founder of the World Economic Forum, we now stand at the threshold of the Fourth Industrial Revolution (4IR). This impending revolution promises a seismic shift in the industry dynamics by seamlessly amalgamating groundbreaking technologies such as artificial intelligence (AI), gene editing, and advanced robotics. What sets this revolution apart is its capacity to blur the once-distinct boundaries between the physical, digital and biological realms. As we embark on this transformative journey, the integration of this technologies holds the promise of heightened automation, enhanced communication, and unparalleled self-monitoring capabilities. The synergy of AI, gene editing and advanced robotics is set to propel us into an era where innovation knows no bounds, revolutionizing the very fabric of the industry

and heralding a new dawn for the interconnected world. The government of Bangladesh has embarked on a journey towards implementing Smart Bangladesh by 2041, leveraging the potentials of 4IR. Substantial efforts have already been initiated to revise the policies, including the National ICT Policy 2018, in line with the objectives of this transformative endeavor.

The National ICT Policy serves as a comprehensive guide, steering the nation towards the realization of Digital Bangladesh as was enshrined in the Vision 2021. The inception of the Digital Bangladesh journey in 2009 was anchored in the principles outlined in the National ICT Policy, a strategic move by Bangladesh's policymakers. Their foresight recognized the dynamic nature of technology, characterized by continuous and rapid changes.

The remarkable success achieved in the establishment of Digital Bangladesh, a testament to the dynamic leadership of honourable Prime Minister Sheikh Hasina and the insightful guidance of her ICT Affairs Adviser, Mr. Sajeeb Wazed Joy, has served as a catalyst for the government's pursuit of an even more ambitious endeavor- the Smart Bangladesh 2041 programme. Unveiled by Prime Minister Sheikh Hasina on December 22, 2022, this visionary initiative aims to propel Bangladesh into a sustainable, innovative and developed nation by 2041. The foundation was Smart Bangladesh rests upon four robust pillars, strategically designed to usher in comprehensive progress: Smart Citizen, Smart Economy, Smart Government, and Smart Society. Underpinning these pillars is a commitment to harnessing cutting-edge technologies, fostering innovation, and ensuring sustainability, with the ultimate goal of positioning Bangladesh as a global leader in the digital era.

In the era of the 4IR, a smart Bangladesh must align itself with the advanced and frontier technologies. Recognizing this imperative, the government has been spurred to enhance its commitment by undertaking a comprehensive update of the National ICT Policy. The recently revised and updated National ICT Policy 2023 is a result of meticulous process that involved the engagement of an expert committee.

Sirajul elucidates Semiconductor Sector's Dazzling Future

The Government's support in creating skilled human resources in the semiconductor field inspired him to establish a company, SILICONOVA, which secured a contract from an Austrian company.

Md Sirajul Alam Khan, Director and CTO of THiNK Ltd with a rich background in the Hardware and semiconductor industry, sees a promising future for this sector in Bangladesh. He is particularly enthusiastic about the potential of Bangladesh's burgeoning pool of young talents, who with proper hands-on training, can significantly bolster the growth and success of the semiconductor industry in the country.

Md Sirajul Alam Khan
Director and CTO of THiNK Ltd

Sirajul Alam Khan, boasts an illustrious career and has cultivated expertise in the field of semiconductor industry, having gained valuable experience during his tenure at Motorola, Ericsson Bangladesh, Vietnam, Iran, Bahrain and Ericson China in Beijing, Wicresoft, a sister concern of Microsoft located in Shanghai. While it is evident that a shortage of skilled manpower remains a significant hurdle to the growth of the semiconductor industry in Bangladesh, the government has taken proactive steps to address the issue. They have introduced initiatives such as training programme and supportive policies aimed at nurturing and developing the industry.

I took initiative to founding a new Silicon company for Semiconductor Design. "When my Silicon Design Start-up company, was in dire need of skilled manpower of microchip design, I learned about Hire and Train (HAT) programme under the Enhancing Digital Government and Economy (EDGE) Project of BCC to be launched at Research and Innovation Center for Science and Engineering (RISE) of BUET to create manpower in the semiconductor field," Sirajul said.

He said this initiative would benefit of Silicon Design Start-up company by equipping its 16 engineers under THiNK Ltd with the necessary knowledge in various areas of semiconductor design, including Designing RTL, RTL Synthesis, Physical Design (GUI-based), Physical Design (CLI-based), and this would ultimately contribute to the company's growth and success in the days to come.

"Accordingly, we sent a team of 16 engineers to undergo a three-month training programme, which was initiated by the EDGE project in collaboration with RISE of BUET. I am happy to inform you that they successfully completed training," Sirajul added.

He went on saying that following the development of skills among these 16 engineers, their confidence has significantly increased, making them competitive to secure business from international companies involved in the semiconductor manufacturing industry.

Furthermore, Sirajul said that my initiative of founding Semiconductor Design Startup formally established as the company named `SILICONOVA LIMITED'. After two months of intense effort, the company successfully secured a contract with an Austrian company on September 7, 2023. According to the terms of the contract, we are obligated to establish a branch office in in Germany by 2024, which will oversee all operations. Additionally, the Austrian company anticipates a need for 100 engineers by 2024, with the possibility of increased demand in the future.

Describing vast marketing and business development experience Sirajul noted that there is a substantial demand for microchips, microprocessors, and memory design. He suggested that Bangladesh should prioritize the growth of this sector by creating facilities and providing supports to foster its development.

With the provision of the necessary facilities, policy support, and incentives, it is possible to curb the brain drain phenomenon, as young talents will be attracted to and engaged in this sector, Sirajul said.

He urged the government to provide incentives to buy simulation tool required for evaluation, comparison and optimization of alternative designs, plans and policies as the price of per tool is over Taka 50,000 per token per month. One token can use by single engineer at a time. Each design area need 3 to 6 tools token for each engineer to complete the cycle.

"I don't see it as just a job; rather it's an opportunity to contribute to the journey towards developing semiconductor industry"

Tanvir Hoque Rizve, a bright and aspiring graduate from Ahsanullah University of Science and Technology in Electrical & Electronic Engineering (EEE) in 2023, initially found himself at a crossroads in career path. However, his educational prowess, bolstered by specialized training in the crucial areas such as VLSI design tools, digital design principles, and some other key areas, has laid a robust foundation for his journey into the semiconductor industry.

The three-month training was organized by Research and Innovation Center for Science and Engineering (RISE) of Bangladesh University of Engineering and Technology (BUET) with the support and cooperation of Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) of ICT Division.

Tanvir Hoque Rizve

The comprehensive training encompassed a spectrum of topics ranging from VLSI Design Tools, Digital Design Principles, VLSI Design Flow, Hardware Description Languages (HDLs), Physical Design and Layout, Design for Testability (DFT), Automatic Test Pattern Generation (ATPG), culminating in hands-on Project Work.

The training opened doors to diverse array of subjects, Tanvir said, adding, "I am sincerely grateful for the multifaceted learning opportunities it provided. One such area that has genuinely intrigued me is physical design. The critical role of effective physical design in the chip manufacturing process is unmistakable. The complexity and the scope for innovation within this domain have held an irresistible allure for me."

"I am grateful to the newly emerged company 'Think Ltd' which arranged training for me at RISE," Tanvir said and went on saying that he initially joined as a physical design engineer and later moved to SILICONOVA Ltd, a dynamic and full-fledged semiconductor company. "I don't see it as just a job; rather it's an opportunity to actively contribute to the nation's journey towards developing semiconductor industry," he said, adding, "The wealth of knowledge I acquired from the training has empowered me to tackle my responsibilities with a strong and well-rounded foundation."

For ambitious and educated young talents aiming to enhance their career prospects, Tanvir said participation in training programmes holds significant importance. In today's competitive job market, continuous learning and skill development are indispensable, he observed.

He said ultimately, engaging in these training programmes stands as a strategic step toward a flourishing career for fresh graduates, nurturing both their professional trajectory and personal growth.

Tanvir's focus on innovation and problem-solving aligns well with the demands of microprocessor design. Staying abreast of industry trends and continuous learning is crucial in a field as dynamic as VLSI design. "It's a field that not only requires technical skills but also a continuous thirst for learning and adaptation to new tends," said Tanvir who hailed from capital's 1476/A Khilgaon Dream Sky.

The advancements are rapid, and professionals need to evolve alongside the technology to make substantial contributions and remain valuable in the job market, he observed.

Tanvir's vision to contribute to Bangladesh's technological growth resonates with the country's aspiration for technological self-sufficiency. The semiconductor industry indeed plays a pivotal role in a nation's technological advancement.

> *Tanvir's vision to contribute to Bangladesh's technological growth resonates with the country's aspiration for technological self-sufficiency. The semiconductor industry indeed plays a pivotal role in a nation's technological advancement.*

Skill Development initiatives under Smart Leadership Academy (SLA)
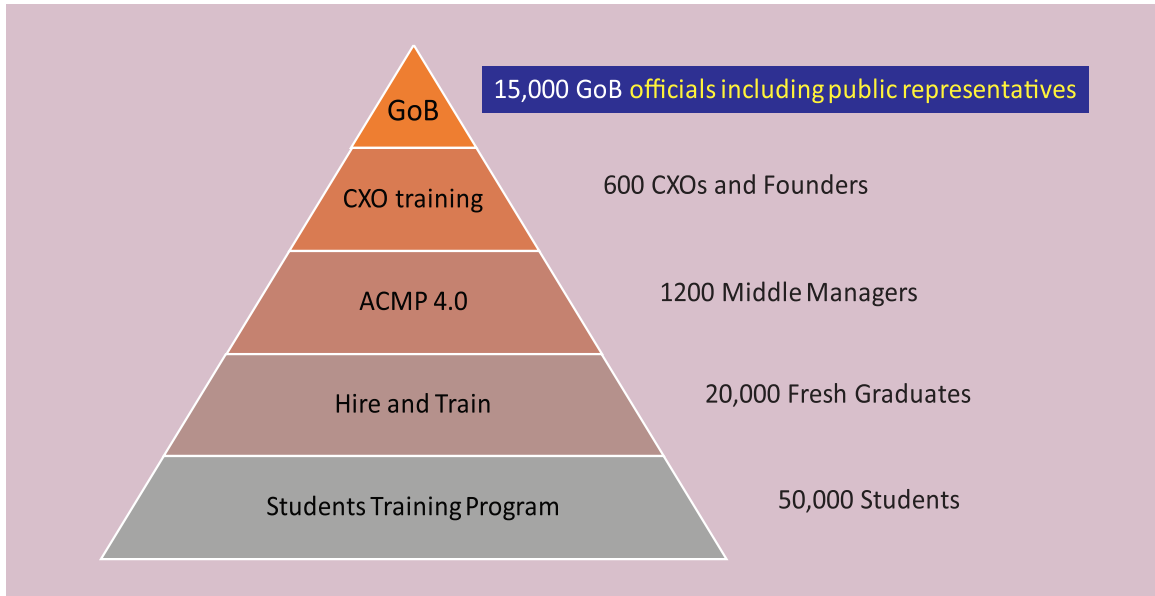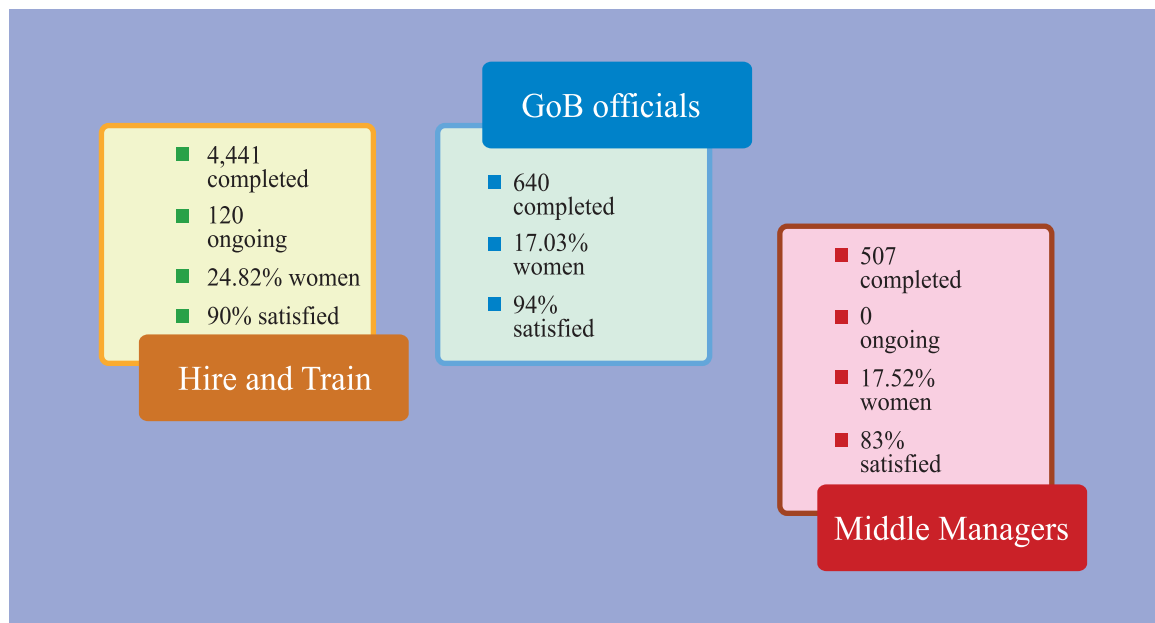
Figure 1: Targets

GoB

15,000 GoB officials including public representatives

CXO training

600 CXOs and Founders

ACMP 4.0

1200 Middle Managers

Hire and Train

20,000 Fresh Graduates

Students Training Program

50,000 Students

Figure 2: Progress

Hire and Train
- 4,441 completed
- 120 ongoing
- 24.82% women
- 90% satisfied

GoB officials
- 640 completed
- 17.03% women
- 94% satisfied

Middle Managers
- 507 completed
- 0 ongoing
- 17.52% women
- 83% satisfied

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আইসিটি টাওয়ার (লেভেল-০২), ই-১৪/এক্স আগারগাঁও, ঢাকা-১২০৭, বাংলাদেশ | ইয়ুথ টাওয়ার (লেভেল-৩,৪ ও ৫), ৮২২/২ রোকেয়া সরণি, ঢাকা-১২১৬, বাংলাদেশ