

IMPACT REPORT 2021 - 2025

# DIGITAL SKILLS FOR AN INNOVATIVE EAST AFRICAN INDUSTRY

Strengthening employment and innovation related digital skills of young people in the East African Community Partner States.



Implemented by:

**giz** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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# ACRONYMS

BMZ	The Federal Ministry for Economic Cooperation and Development
CENIT@EA	Centre of Excellence for Information and Communication Technologies in East Africa
DAAD	German Academic Exchange Service
DLR	Mannheim University of Applied Sciences and the German Aerospace Centre
dSkills@EA	Digital Skills for an Innovative East African Industry
EABC	The East African Business Council
EAC	East African Community
EASTECO	East African Science and Technology Commission
ESO	Entrepreneurial Support Organisations
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICT	Information and Communication Technologies
ICT4Business	Information and Communication Technologies for Business
IUCEA	Inter-University Council for East Africa
MSME	Micro Small and Medium sized Enterprises
MSc EMoS	Master of Science in Embedded and Mobile Systems
NM-AIST	The Nelson Mandela African Institution for Science and Technology
SME	Small and Medium sized Enterprises

## FOREWORD FROM THE EXECUTIVE SECRETARY - IUCEA

The Information and Communication Technology (ICT) sector has emerged as a critical driver of socio-economic development across the East African Community region. The rapid economic growth within the East African Community (EAC) has intensified the need for specialized technical and academic expertise, particularly in emerging technologies such as Artificial Intelligence. Recognizing this need, the Inter-University Council for East Africa (IUCEA) has played a pivotal role in fostering the development and deployment of these vital skills across the region.



Prof. Gaspard Banyankimbona

The establishment of the East African Centre of Excellence for ICT (CENIT@EA) in April 2017 marked a significant milestone in our journey toward strengthening the region's capacity in ICT. This initiative, supported by the German Government and the EAC, introduced a hands-on, demand-driven Master's degree program in Embedded and Mobile Systems (MSc EMOs). Since its inception, CENIT@EA has become a beacon of excellence, setting an example for the continent in developing industry-relevant ICT skills.

Building on the success of CENIT@EA, the Digital Skills for an Innovative East African Industry (dSkills@EA) project, launched in 2021, has further expanded our efforts to equip East African youth with the digital skills needed for the evolving job market. By enhancing the quality and sustainability of the MSc EMOs programme and introducing advanced digital skills training for various target groups, DSKILLS@EA has made substantial strides in bridging the skills gap. This includes unemployed graduates, university staff, and professionals from both the public and private sectors.

Our collaboration with key industry players through the ICT4Business dialogue platform has ensured that the skills taught are directly applicable in the workplace, thereby improving employability and fostering innovation. The involvement of companies such as SAP, IBM, and Kiira Motors has provided students with valuable exposure to real-world challenges and opportunities.

One of our primary achievements has been the successful integration of a regional network of innovation hubs, which has bolstered the digital innovation and entrepreneurship capacity of young East Africans. Through multi-stakeholder dialogues and matchmaking mechanisms with companies, we have facilitated the growth of a vibrant ecosystem that supports digital entrepreneurship and innovation across the region.

Looking beyond the project phase, we are committed to ensuring the sustainability of these achievements. To this end, we have established a regional academic consortium across the Partner States dedicated to continuously developing relevant digital curricula. Additionally, we are enhancing access to online learning systems, improving infrastructure, and building capacity at universities to elevate ICT services across the region.

IUCEA's role in this initiative goes beyond academic and technical support. We are committed to ensuring that the qualifications obtained through these programmes are recognized across the EAC, thereby promoting student and labour mobility within the region. By fostering collaborations between public and private employers, we are also contributing to the creation of a workforce that meets the needs of a rapidly digitalizing economy.

As we reflect on the progress made thus far, I am confident that the impact of these initiatives will be felt for years to come. IUCEA remains dedicated to its mission of enhancing the quality and relevance of higher education in the EAC, and we look forward to continuing our work in collaboration with our partners to drive the region's digital transformation.

## A WORD FROM THE PROJECT DIRECTOR

We are pleased to present the 2021–2025 Impact Report for the dSkills@EA project, highlighting the significant achievements of the past three years. On behalf of the German Development Cooperation, we extend our gratitude to the EAC Secretariat and all implementing partners for their invaluable contributions, which have made these impactful milestones possible.

At GIZ, we recognize digital skills as the cornerstone of regional integration. A digitally skilled workforce enhances cross-border collaboration, drives business expansion, and strengthens regional trade. With the African Continental Free Trade Area (AfCFTA) shaping the economic landscape, the need to enhance digital capabilities has never been greater.

Yet, youth unemployment remains a critical issue in the EAC. Equipping young people with digital competencies will improve their job prospects in an evolving market where employers seek professionals who can adapt to new technologies, drive innovation, and apply practical digital skills. The EAC is home to over 300 million people, more than 70% of whom are young. According to the World Bank, the digital economy already contributes over 15% to the region. Investing in digital skills is therefore not just an opportunity but an imperative.

Since launching the dSkills@EA project in 2021, we have worked to close the region's digital skills gap, strengthening employability and innovation. We have provided training from basic digital literacy to advanced ICT and data science, fostering collaboration between academia and industry to build a future-ready workforce. Our goal has been to equip individuals with the skills needed to thrive in this evolving digital economy.

One of our key initiatives, the MSc programme EMoS, has enrolled over 160 students since its inception, with 124 receiving scholarships. To date, 90% of graduates are employed. Additionally, we have trained 4,000 East Africans in digital and innovation-related skills, enhancing both employability and entrepreneurial capacity.

Beyond the numbers, the project's success is reflected in real-life impact. Rebecca from Tanzania is using her research skills to improve seed quality for food security, Thon Malek from South Sudan founded a certified ICT school, equipping young people with essential digital skills, and Keith Kwagala from Uganda developed a stroke detection application now undergoing clinical trials. Furthermore, one in five graduates from our scholarship programme now teaches at a university, scaling knowledge transfer across the EAC.

To sustain this momentum, we must continue expanding and innovating. Building on dSkills@EA's success, we are launching the EAC Regional AI Alliance to strengthen research and innovation, enhance AI training in higher education, and support the development of a regional AI strategy that serves East Africans.

Our achievements have only been possible through strong partnerships. We extend my sincere gratitude to the EAC Secretariat, IUCEA, EABC, the University of Oldenburg, DAAD, NM-AIST, GIZ colleagues, and our industry partners. This report highlights our shared success, and we look forward to continuing this transformative journey together.



David Roos

# DIGITAL SKILLS FOR AN INNOVATIVE EAST AFRICAN INDUSTRY (DSKILLS@EA)

## Background:

The East African Community (EAC) has long faced economic challenges, including low productivity and competitiveness, leading to high youth unemployment. As digital skills become increasingly essential across all sectors, the existing workforce has struggled to meet industry demands, hindering sustainable and inclusive digital transformation. Higher education institutions in the region have not fully aligned with industry needs, limiting opportunities for young professionals and innovators.

To address this gap, the German Federal Ministry for Economic Cooperation and Development (BMZ) and the EAC launched the Centre of Excellence for ICT in East Africa (CENIT@EA) in 2019. This initiative aimed to equip East African universities with the capacity to deliver industry-relevant technical skills.

Building on this foundation, the dSkills@EA project was introduced in 2021 to further enhance digital competency and innovation in the region.

## Approach

dSkills@EA project's main objective is to strengthen the employability related digital skills and innovation capabilities of young people in East Africa. The project continued supporting CENIT@EA by improving the quality and sustainability of the MSc Embedded and Mobile Systems (EMoS) programme through close collaboration with the private sector.

Beyond the MSc EMoS, the project provided short courses training in advanced digital skills for unemployed graduates, ICT professionals, and university staff. It also fostered digital innovation and entrepreneurship, equipping students with the tools to develop ideas, facilitating industry connections, and supporting a regional network of innovation hubs.

Engagement with the private sector remained central, ensuring businesses benefited from a skilled workforce while contributing to the programme's relevance and impact.

## Implementing Partners:

dSkills@EA is implemented in partnership with the Inter-University Council for East Africa (IUCEA), and GIZ, alongside an East African German academic consortium led by the Nelson Mandela African Institution of Science and Technology (NM-AIST) and the University of Oldenburg (UOL). Additional partners included DAAD, regional universities, innovation hubs, industry associations, and international companies, ensuring a comprehensive approach to digital skills development.



## PROGRAMME OUTLINE

**Mobile Systems:** E- Commerce, Business Automation Processes, Mobile Application Development, Machine Learning , Data Science AI

**Embedded Systems:** Systems Engineering Advanced Applied Electronics, Internet of Things, Data Analytics

**Soft Skills:** Entrepreneurship, Project Management. Internship and applied thesis.

## PROJECT OVERVIEW

### 2019

CENIT@EA launched as a regional centre to provide technical skills that meet industry needs.



### 2021

dSkills@EA launched to build on the success of the CENIT@EA



## PROJECT OBJECTIVE

Employment and innovation-related digital skills of young people in all EAC partner states are strengthened



## PROJECT COMPONENTS

Improving the quality of MSc and study related offers at the CENIT@EA

Demand-led short-term digital skills training

Entrepreneurship and innovation support to through cooperation network.



## TARGET GROUP

Young people with ICT background, un-employed university graduates, entrepreneurs, businesses, academia and industry.



## LEAD IMPLEMENTING PARTNERS

1. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GMBH
2. The Inter-University Council of East Africa (IUCEA)



## STEERING STRUCTURE

IUCEA, GIZ, EAC Secretariat, the German Academic Exchange Programme (DAAD), The University of Oldenburg (UOL), The Nelson Mandela African Institution of Science and Technology (NM-AIST), East African Business Council (EABC), the East African Science and Technology Commission (EASTECO) and the East African Communications Organisation (EACO)





## SUSTAINABLE DEVELOPMENT GOALS ALIGNMENT

<p><b>4</b> QUALITY EDUCATION</p>		<p><b>8</b> DECENT WORK AND ECONOMIC GROWTH</p>		<p><b>17</b> PARTNERSHIPS FOR THE GOALS</p>
	<p><b>5</b> GENDER EQUALITY</p>		<p><b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	

# IMPACT IN NUMBERS



**4,000**

trained in digital and innovation related skills



**2,600**

youth and university staff (506 female) trained in entrepreneurship and innovation



**1,200**

youth, businesses, and university staff (436 female) trained in digital skills



**164**

MSc EMoS enrolment since 2019



**91**

MSc EMoS graduates to date



**124**

scholarship recipients from six EAC Partner States 37% female



**90%**

of graduates employed or self-employed



**206**

universities in 8 EAC Partner States benefitted from at least one project activity



**122**

research papers on emerging technologies published

[link.springer.com/conference/icctaemos](https://link.springer.com/conference/icctaemos)



E-Learning courses launched on Atingi a self-paced free platform.

SECTION ONE

# IMPROVING THE QUALITY AND SUSTAINABILITY OF DIGITAL SKILLS AT THE HIGHER EDUCATION





## Facts and Figures



164 students enrolled in MSc EMoS.



124 scholarships awarded 37% female recipients.



90 graduates employed or self-employed.



40+ prototypes and innovations developed with commercialization potential.



50+ public and private sector partnerships for internships and applied research.



EAC-German academic consortium established.



ICTA-EMoS - a bi-annual international conference on Embedded and Mobile Systems set up.



122 research papers published in Springer Nature.

## THE CENIT@EA : A REGIONAL HUB BUILDING THE FOUNDATIONS FOR DIGITAL TRANSFORMATION

Technological advancements are reshaping industries worldwide, driving an increasing demand for digital skills. In the EAC Partner States, this demand is rising by 10–12% annually. However, only 5–10% of university graduates possess the competencies required by the industry, creating a critical skills gap.

To address this challenge, the CENIT@EA was established in 2019 at the Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha. Its mission was to enhance digital skills training, align university education with industry needs, and support the region's digital transformation.

At its core, CENIT@EA introduced the Master in Embedded and Mobile Systems (MSc EMoS), a market-driven programme designed to equip students with practical expertise. The MSc EMoS integrates internships, applied research, guest lectures from industry experts, and training in entrepreneurship and soft skills, ensuring graduates are prepared for real-world challenges.

Beyond the MSc programme, CENIT@EA also offered short-term ICT training for unemployed graduates, professionals, and university staff, helping to build capacity across sectors and equip businesses and institutions with the digital skills needed to drive economic growth in East Africa.

Prof. Jorge Marx Gómez, coordinator of CENIT@EA at UoL highlighted that the MSc EMoS curriculum was developed with regional universities and key stakeholders to align with industry and academic needs in emerging technologies.

*“The MSc EMoS covers all aspects of digital transformation. We equip students with expertise in technology advancement - research, data science, and artificial intelligence, not just for job guarantee, but to address regional needs and contribute meaningfully to society”.*

This part of the report highlights the achievements from the CENIT@EA

### OFFERS AT CENIT@EA

Applied Master of Science in Embedded and Mobile Systems

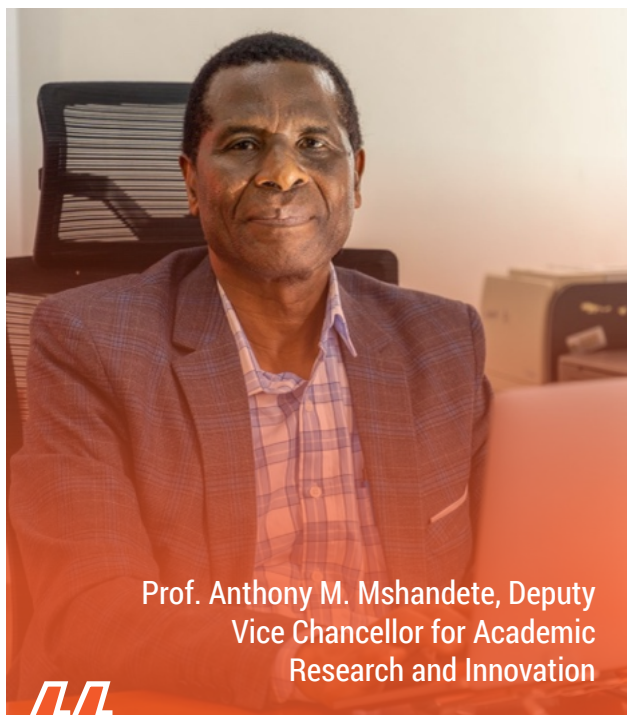
Short Courses on advanced digital skills

Regional networking and linkages between industry and CENIT@EA

## The Applied Master's in Embedded and Mobile System Curriculum

The two-year MSc Embedded and Mobile Systems graduate programme, is a product of a collaboration between the EAC and German universities. By combining applied training modules, six-month industry placements, and a focus on technology transfer, innovation, and entrepreneurship, the programme equips graduates to excel in the evolving digital landscape and in emerging technologies.

The curriculum extends beyond the technical expertise in embedded and mobile systems to include essential skills in entrepreneurship, project management and communication skills.



Prof. Anthony M. Mshandete, Deputy Vice Chancellor for Academic Research and Innovation

*We operate a five-dimensional business model focussing on research, innovation, postgraduate training, skills development, community engagement and incubation management. Through strategic partnerships, we produce skilled scholars who often secure employment even before graduation.”*

The impact of the MSc EMOs programme is evident in the success of graduates like Thon Malek Garang from South Sudan. He describes CENIT@EA as a centre of influence, emphasizing the opportunity to engage with lecturers, peers, and students from across the region. The programme's blended approach, integrating business, legal, and soft skills, has proven invaluable for alumni like Malek, who transitioned into the commercial sector.

*“I was placed in an environment where I could contribute to both academia and industry. I now run a registered computer academy offering certified programmes lasting up to three years.”*

The unique curriculum, co-developed with partners from Germany and East Africa, is tailored to industry demands. Prof. Kisangiri, the head of CENIT@EA said they are cognizant of the crucial role of Data Science, Artificial Intelligence, the Internet of Things, and other emerging technologies in the evolving digital landscape.

*“With support from both the private and public sectors, we have ensured the course aligns with industry needs,”* noted Prof. Kisangiri.

### PROGRAMME OUTLINE

**Mobile Systems:** E- Commerce, Business Automation Processes, Mobile Application Development, Machine Learning , Data Science AI

**Embedded Systems:** Systems Engineering Advanced Applied Electronics, Internet of Things, Data Analytics

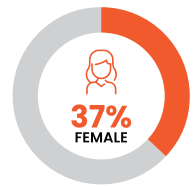
**Soft Skills:** Entrepreneurship, Project Management. Internship and applied thesis.



## Enrolment and Scholarships awarded

Since 2019, over 160 students from the six EAC Partner States have enrolled in the two-year MSc EMoS programme through a competitive selection process. Of these, 124 students, were awarded full scholarships: 112 by the German government, 10 by the DAAD and two by ABAT and CEWE, private sector partners in Germany. These scholarships have played a crucial role in attracting a diverse student body, enabling talented individuals who might otherwise lack access to higher education.

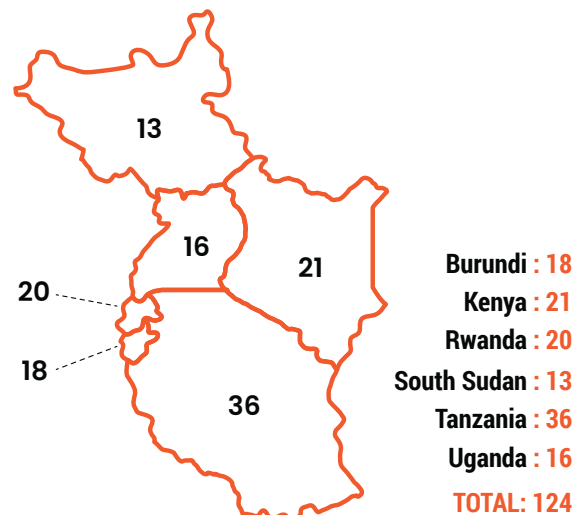
Intentional recruitment strategies have further promoted inclusivity, with 37% of scholarship recipients being female, an important milestone in addressing gender disparities in STEM across the region.



*One of the unique features of the programme is its regional outlook. Students from across the EAC come together on campus in Arusha to study, and exchange ideas, and lay a foundation for skills mobility in the region.”*

Simon Hochstein – Former Project Director  
dSkills@EA

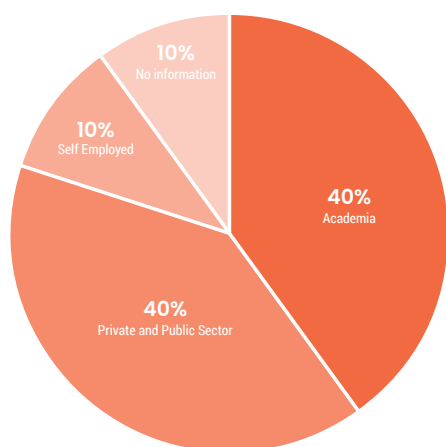
## Scholarships Distribution by Country:



## Employability of MSc EMoS graduates

Employment opportunities were a key benefit highlighted by the scholars. Ritha Umuhoza from Rwanda, formerly an IT engineer at the Central Bank of Rwanda, secured a government position specializing in digital payments after completing the programme. “During my interview, 80% of the questions I was asked had been covered in the EMoS course material,” while Frank Samson from Tanzania who was retained by Aurelia Lab Heidenheim in Germany after his six-month internship continues to work on projects focusing on augmented reality and accessibility, which he said he will apply when he returns home.

A recent survey carried out to track the graduates indicated that that 90% of the graduates are employed or in self-employment in key sectors such as health, automotive industries, agriculture, and academia. Beyond individual achievements, around 40% of graduates contribute to academia in the region, fostering further knowledge transfer and indirect impact in the region.



## Industry Collaboration

CENIT@EA has established strategic partnerships with private sector players in the EAC through Memorandums of Understanding (MoUs) for applied learning and exchanges. These industries include IBM, Siemens, SAP, Kiira Motors, Coca-Cola Kwanza, and A to Z. Additionally, the center collaborates with over 50 institutions and companies across the EAC, providing students with internship opportunities, guest lectures, outreach programmes, and participation in joint workshops like summer school.

On July 14, 2020, Kiira Motors Corporation (KMC) and CENIT@EA signed an MoU to advance Digital Mobility Solutions Research and Innovation in the EAC. The partnership, focused on enhancing mobility safety, security, and operational efficiency, exemplifies CENIT@EA's industry collaboration approach.



*Kiira Motors and CENIT@EA share a strong partnership, integrating theory with hands-on industry experience. We have provided paid internships to six students, including Ivan Koojo, now retained as Senior Product Support Engineer”*

## CENIT@EA innovation and prototypes

The center has become a hub for ICT innovations, with students and faculty developing groundbreaking technological solutions. These innovations address local and regional challenges, highlighting the practical impact of the MSc EMoS curriculum focus on real-world applications of ICT. The center has over 40 prototypes, all with potentials for commercialization.

Dr Judith Leo, the Industry Liaison Coordinator highlighted that many prototypes developed by the students have the potential for scaling up and implementation within East African communities.



Dr. Judith Leo, Industry Liaison  
Coordinator CENIT@EA

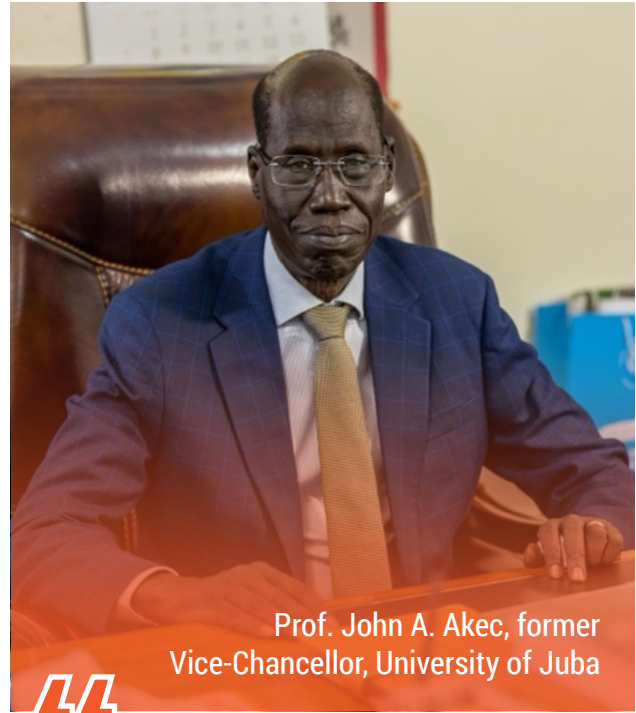


*We have seen numerous successes. Indeed, our engagement with industry professionals has transformed our understanding of innovation transfer and industrial linkages, offering insights beyond the academic realm.”*

For example, in 2021, Hillary Kalumba, a CENIT@EA student, interned at the Infectious Disease Institute (IDI), where he successfully developed an AI assisted mobile application. His innovation enhanced the capacity of an existing software used in Uganda’s national Covid -19 response.

### Academic Consortium

CENIT@EA has established a consortium of eight EAC and three German universities to ensure the centre’s sustainability. Led by Carl von Ossietzky University of Oldenburg and the Nelson Mandela African Institution of Science and Technology (NM-AIST), the consortium includes the University of Dar es Salaam (Tanzania), Kabale University (Uganda), UTAB University (Rwanda), the University of Burundi (Burundi), the University of Kinshasa (DR Congo), the University of South Sudan (South Sudan), Moi University (Kenya), Hochschule Mannheim, and the German Aerospace Centre (DLR). The consortium aims to enhance teaching and learning in emerging technologies, foster knowledge exchange and joint research, and advocate for relevant policies.



Prof. John A. Akec, former  
Vice-Chancellor, University of Juba



*As a consortium member, we have enrolled more staff in the master’s programme and short-term digital skills training after witnessing the impact. One of our staff who attended the training is now the lead expert and he established the university’s innovation centre”*

### International Conference on Technological Advancement in Embedded and Mobile Systems (ICTA-EMOS).

The bi-annual conference initiated by the academic consortium was launched in 2022 in response to the growing demand by the academia, students, researchers, industry and policy makers for a global platform to present novel research findings and innovative solutions to challenges in embedded and mobile systems applications.

The conference, first held in 2022 in Tanzania and in 2024 in Rwanda, has to date published over 110 scientific articles into a book “Advances, Trends, and Applications in Embedded and Mobile Systems by Springer Nature here [link.springer.com/conference/ictaemos](https://link.springer.com/conference/ictaemos).

## Skillsmatch – Linking top talent from academia to organisations.

The East African online skills matchmaking platform was designed to connect digital professionals with job opportunities. Using an AI-driven algorithm, the platform matches job seekers' digital skills with organizations' needs, ensuring the best talent is placed in the most suitable roles. The platform is under development. We invite you to become part of the Skillsmatch community and register using the following link: [www.skillsmatch-iucea.org](http://www.skillsmatch-iucea.org)

## CASE STUDIES



### Ms. Tusekile Mwasmbili - Tanzania

I participated in an exchange programme at Dresden University in Germany. My journey at CENIT@EA was rich with learning experiences - from creating apps like Kibubu Digital for smart savings to developing the Ugali Cooker for automated meal preparation and even learning German. I am currently an Assistant Lecturer at the Catholic University of Mbeya



### Edson Mwambe – Tanzania

I applied my skills to develop an SMS-based system for monitoring water quality in Zanzibar. This project, developed in collaboration with UNICEF, is now in use and helps reduce the risk of cholera outbreaks by monitoring chlorine and pH levels in water reservoirs.



### Japheth Mumo Kimeu, an EMOs student from Kenya

At CENIT@EA, we tackle real societal challenges. My thesis, "Deep Learning-Based Mobile Application for Pneumonia Medical Imaging Analysis: A Case Study of West-Meru Hospital," I developed a mobile app to assist doctors in diagnosing pneumonia using deep learning. The app improved diagnosis by 50% and was recognized as the best research at the Artificial Intelligence Advancement International Conference (AAIAC). [Mandela institute invents digital x-ray image analytic mobile app - Daily News](https://www.mandela-institute.org/mandela-institute-invents-digital-x-ray-image-analytic-mobile-app); <https://youtu.be/LUA-jpWCBW0>.



### Ivan Koojo – Uganda

The EMoS program was spot on. It was relevant, practical, and designed for Africa's future. With top-tier professors from Germany and East Africa, many with real industry experience, the learning went beyond theory.

Today, I'm proud to be part of the team behind Kayoola EVS, Africa's first electric bus, built in Uganda. This is the direct impact of investing in East Africa's human capital. Thank you to GIZ, the German people, EAC secretariat and all the sponsors for believing in us. Your investment is shaping the future of mobility in Africa. The funding was not wasted, we are in the field, applying what we learned.



### Thon Malek – South Sudan

MSc EMoS programme was blended with business perspective and soft skills. After the programme, I was retained by the Upper Nile University. With the knowledge, I now ran my digital skills academy with an enrolment of 30 diploma students.



### SPOTLIGHT

### Ms. Josiane Irakiza – Rwanda

Before joining MSc EMoS, I worked as the ICT Manager at Kirehe District Hospital under Rwanda's Ministry of Health. As the sole ICT personnel, I managed technology solutions to support healthcare services. I aspired to deepen my expertise in AI and its real-world applications.

I pursued this ambition through an internship with the Alliance of Bioversity International and CIAT, contributing to the ARTEMIS Project, initiative leveraging imaging technology for food security. My research focused on using AI for spectral imaging to detect foliar diseases in beans before symptoms appear. Under the guidance of the lecturers, we developed a system to identify disease-resistant bean genotypes and map optimal growing regions in Tanzania.

The programme accelerated my professional and personal growth. I gained global exposure through exchange visits and specialized training sessions, expanding my expertise and professional network. The impact of my research opened doors to opportunities, including attending the Commonwealth Study Conference in Canada, the TechWomen Programme and the African Women in Tech and AI Program in Morocco.

SECTION TWO

# INNOVATION AND ENTREPRENEURSHIP SUPPORT



## Digital Innovations for Business Resilience in the EAC





## Facts and Figures



**2,000 (300 women)** attended the innovation and entrepreneurship support initiatives.



**400** young innovators (**144 female**) trained in innovation management, prototyping, human-centered design



**170** university staff (**62 female**) trained in incubation leadership, Intellectual property, and innovation commercialization.



**112** universities benefited from staff capacity-building initiatives.



University - industry collaboration strategy launched



**60** digital solutions piloted, with scalable business plans developed



**09** Regional cooperation network with ecosystem players and academia established.



Supported the development of the EAC science and Technology



**09** Entrepreneurship offers to young innovators



Regional Innovation and Intellectual Property (IIT) Strategy developed.

## UNLOCKING OPPORTUNITIES FOR EMPLOYMENT THROUGH INNOVATION AND ENTREPRENEURSHIP SUPPORT

Digital innovation and entrepreneurship are key drivers of economic transformation, job creation, enhancing skills development, and expanding market access. According to the World Bank, the digital economy could generate up to 1.5 million new jobs in East Africa by 2025, highlighting the urgency of equipping young people with the necessary skills and opportunities to thrive in a technology-driven economy. Academic institutions play a crucial role in this transition, serving as hubs for research, training, and access to digital resources that empower aspiring entrepreneurs.

Since 2021, the dSkills@EA project, in partnership with the Inter-University Council of East Africa (IUCEA), the East African Science and Technology Commission (EASTECO), and other partners in the innovation ecosystem, has been pivotal in fostering innovation and entrepreneurship among young people and higher education institutions in East Africa. We highlight the interventions under this section.

### Digital Innovations for Business Resilience and the Innovators Sprint Up Programme

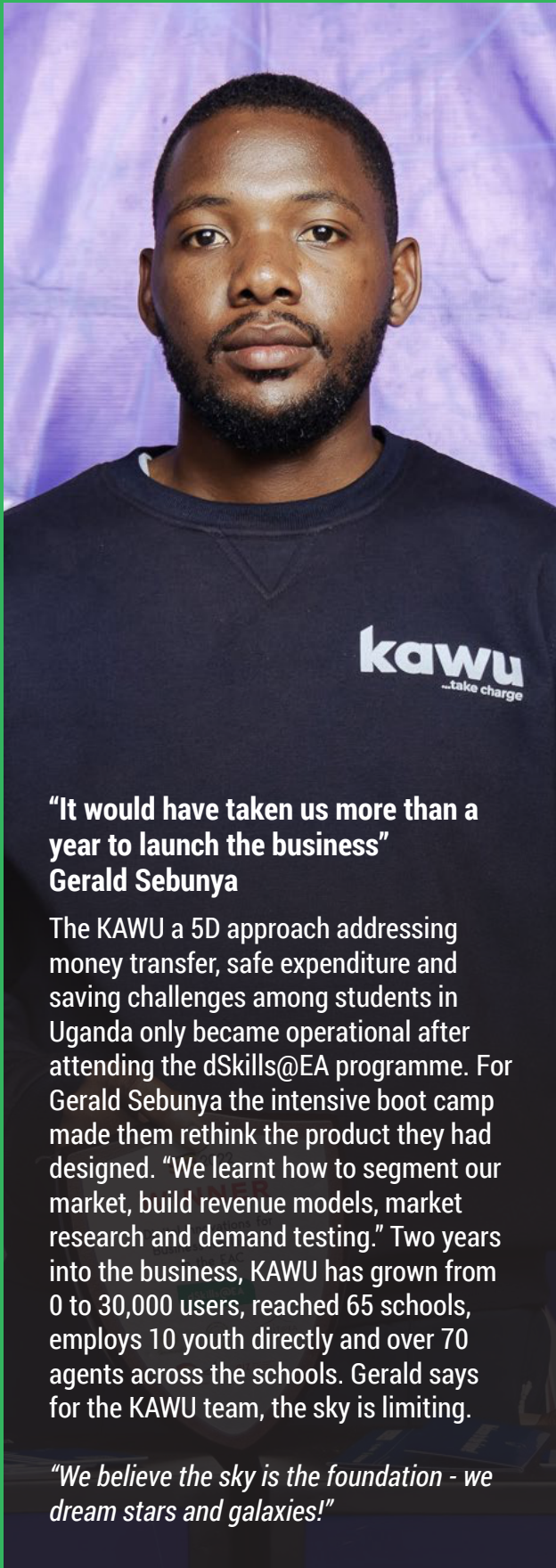
The Digital Innovations and Innovator's Sprint Up programmes empowered young innovators,

entrepreneurs, and university students across the EAC Partner States. They provided training in digital entrepreneurship, mentorship, and access to the innovation ecosystem, equipping participants with the skills to build sustainable businesses, scale ventures, and secure investment.

As a comprehensive capacity-building initiative, the programme covered design thinking, business modelling, entrepreneurship, and cross-border collaboration. Over 2,000 participants benefited, with 400 (including 144 women) receiving intensive innovation management training through bootcamps, fostering a new wave of tech-driven entrepreneurship in the region.



## CASE STUDIES



**“It would have taken us more than a year to launch the business”  
Gerald Sebunya**

The KAWU a 5D approach addressing money transfer, safe expenditure and saving challenges among students in Uganda only became operational after attending the dSkills@EA programme. For Gerald Sebunya the intensive boot camp made them rethink the product they had designed. “We learnt how to segment our market, build revenue models, market research and demand testing.” Two years into the business, KAWU has grown from 0 to 30,000 users, reached 65 schools, employs 10 youth directly and over 70 agents across the schools. Gerald says for the KAWU team, the sky is limiting.

*“We believe the sky is the foundation - we dream stars and galaxies!”*



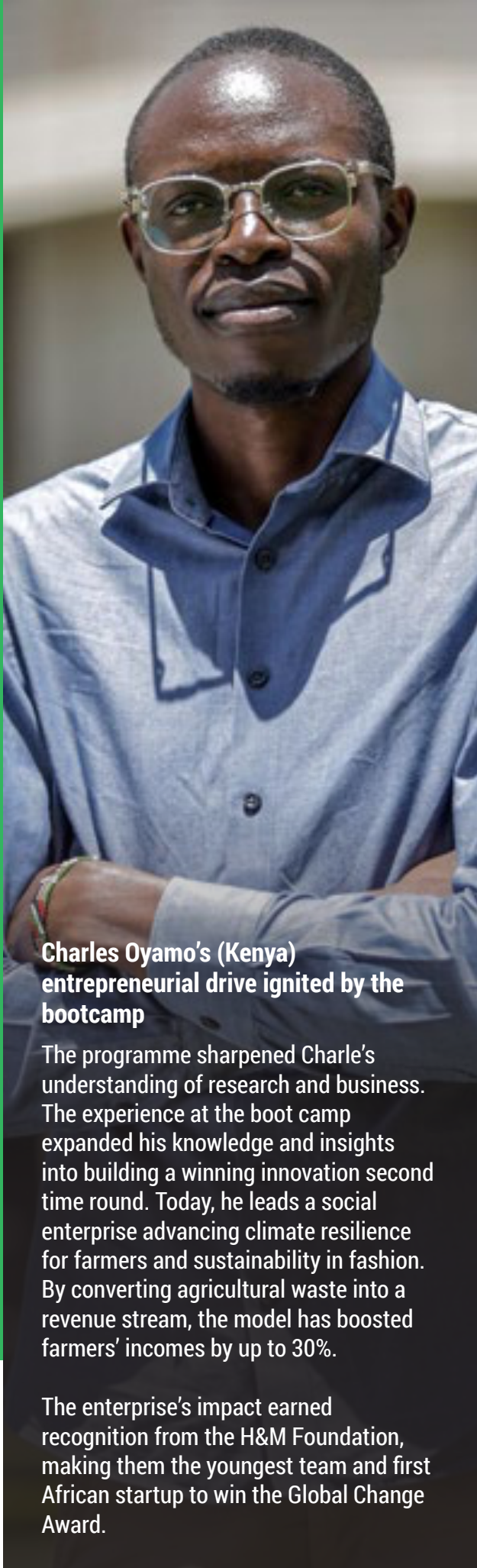
**Agri chain – Bridging Farmers & Buyers Without the Internet – Justine Bahari Tanzania**

Agri chain connects farmers directly to buyers via SMS and web platforms, eliminating the need for internet access. Justine credits mentorship from entrepreneurs during the dSkills@EA for shaping their journey. After winning a \$1,000 award, the team partnered with a Neurotech AI company to develop a chatbot, improving user experience and reducing costs. To date, Agri chain has facilitated the sale of over one hundred tons of grain.



**AFYATOON improving delivery of medical information - Tanzania**

Glory Charles Mlagwa and Edwin Ngula are the two medics behind Afyatoon, a company founded to transform how medical information are delivered in the community. Glory highlighted that technological advancements have streamlined their workflow. This underscores the importance of involving youth in innovation discussions and community initiatives. Afyatoon uses visual art technology (animation) to tell compelling medical stories. The team was among those who participated in the boot camp



**Charles Oyamo's (Kenya) entrepreneurial drive ignited by the bootcamp**

The programme sharpened Charle's understanding of research and business. The experience at the boot camp expanded his knowledge and insights into building a winning innovation second time round. Today, he leads a social enterprise advancing climate resilience for farmers and sustainability in fashion. By converting agricultural waste into a revenue stream, the model has boosted farmers' incomes by up to 30%.

The enterprise's impact earned recognition from the H&M Foundation, making them the youngest team and first African startup to win the Global Change Award.



**Scaling agribusiness through Innovation –DRC**

Cishugi Solange Elvira, an agronomist and founder of Berakah Business, set out to reduce post-harvest losses by processing spices, vegetables, and fruits into value-added products like powders and therapeutic infusions. Before joining the innovators programme, her business struggled with market access, visibility, and investor connections.

Through the programme, she gained crucial business and financial management skills, expanded her network, and engaged with industry leaders at the Kenya Innovation Week. This transformed her business, boosting revenue, improving operations, and unlocking new markets in East Africa.

*"This programme was a game-changer. It gave me the tools, knowledge, and confidence to scale my business and seize regional opportunities. And this is just the beginning!"*



SPOTLIGHT 

### **dSkills@EA Fuels Keith Kwagala's Mission to Combat Stroke**

Keith, a Ugandan Biomedical Engineer, vowed to his late grandmother, Sarah, that he would find a lasting solution to stroke so no one in his family, or humanity would endure the same suffering. He honoured this promise by developing **Primitivus**, a portable medical device that **detects early stroke warning signs and monitors cardiovascular health.**

His innovation only gained traction when he signed up for dSkills@EA innovation programme in 2022. Keith credits the programme with reshaping their approach of pitching their product, enhancing their understanding of social impact and commercialisation potential. Through intensive training and participation in the boot camp, the team developed a proof-of-concept device, later submitted to the Institute of Electrical and Electronics Engineers (IEEE) for validation.

This opened doors for further financial support to refine the prototype from Mbarara University of Science and Technology. Primitivus has won multiple accolades, including the Global Awards for Innovation and the African Youth Innovators Award 2023, and the World Summit Awards 2024. This exposure has attracted government's attention to the product positioning the prototype for commercialisation.

*"The innovation has undergone multiple certifications and is in the final stage of clinical trials. Soon, the dream will become reality," says Richard.*

## Incubation Leadership and Innovation Management Programme for Universities

The Incubation Leadership and Innovation Management Programme was designed to equip university staff with skills in digital transformation, entrepreneurship, and research commercialisation.

By bridging the digital skills gap, the programme strengthened higher education institutions' role in regional innovation ecosystems, startup support, and knowledge transfer between academia and industry. The programme also facilitated peer-to-peer learning, enabling participants to exchange best practices and insights.

### The programme focused on four key areas



#### Innovation Management

Developing frameworks to streamline innovation processes.



#### Intellectual Property (IP) Rights

especially strategies for protecting & managing academic innovations.



#### Research Commercialisation

and translating research into marketable products and services.



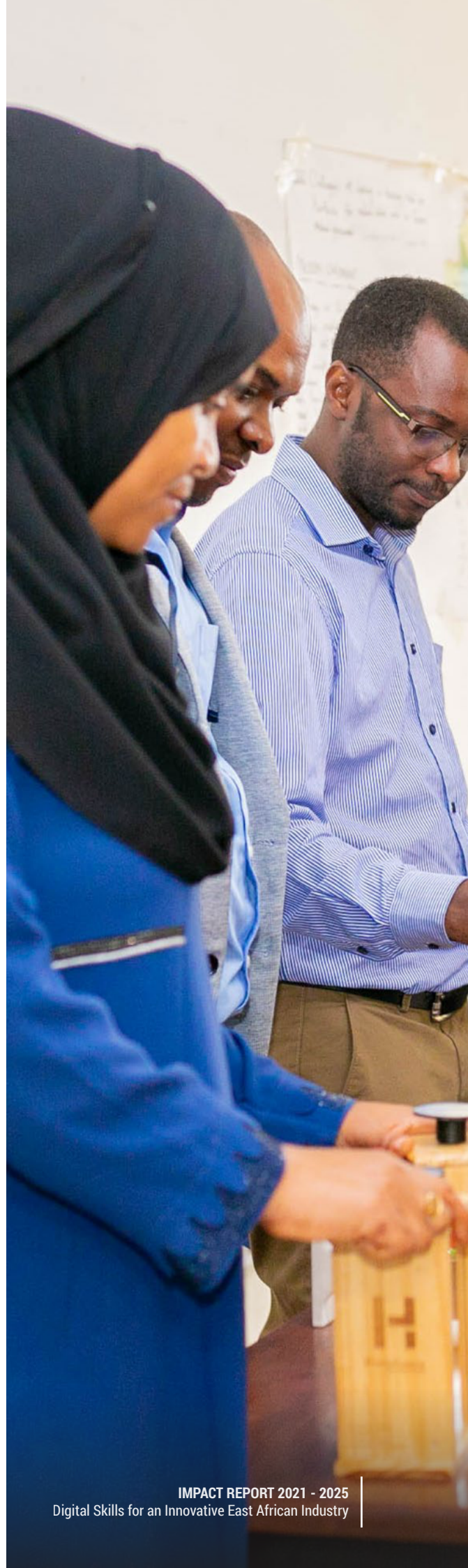
#### Entrepreneurial Ecosystem

Development by creating supportive environments for startups and university incubation.



*We aspire to create the best incubation centre of excellence. Now, I truly understand what a centre of excellence looks like. I can't find the perfect words to describe my experience, it's simply been the best,"*

Rachel Nangobi, from Gulu University, Uganda





Following the benchmarking visits, participants expressed interest in partnering with host institutions to enhance student incubation experiences through field attachments. For instance, Africa Zeal University (South Sudan) arranged for three students annually to intern at Hagana Agro-Processing Company, similarly, Busitema University and Kampala International University are finalizing MoUs with the Ugandan Industrial Research Institute for student placements and facility access. While Racheal Nangobi from Gulu University, Uganda, shared her aspiration to create the best incubation centre at her university. Now, I truly understand what a centre of excellence looks like. *"I can't find the perfect words to describe my experience, its simply been the best,"* Racheal highlighted.

The project has strengthened the capacity of over 150 staff representatives from 112+ universities in technology transfer, intellectual property, incubation management, and academia-industry knowledge exchange.

### Regional Network for the innovation eco-system

The success of the dSkills@EA project lies in engaging trusted partners who share our vision of enhancing youth employment prospects. Collaborations with Hindsight Ventures, Endeavor,

Close the Gap, and The Baobab Network have equipped young innovators with the skills and opportunities needed for investment readiness.

Partnerships with UNDP Accelerator Labs in South Sudan, Rwanda, and Tanzania has provided funding and access to University Pods for business ideation, complementing UN initiatives to support innovation. Additionally, we established a Regional Innovation Network to strengthen the ecosystem by sharing best practices, expanding market access, and fostering co-creation to address common challenges.

Engagements with leading innovation hubs, including Koneta (South Sudan), Aclis (Burundi), E4Impact, ASSEK, AFRI Labs, the Kenya National Innovation Agency, Westerwelle Startup Haus, and Norrsken House Kigali, along with platforms such as the Young African Leaders Initiative, IBM East Africa Research Centre, and Jasiri, have enhanced design thinking, leadership, and digital innovation capabilities, accelerating collaboration between academia and entrepreneurial support organisations (ESOs), investment readiness and business growth.

In collaboration with EASTECO, we supported the development of the Innovation and Technology Transfer (ITT) strategy for the EAC.



SECTION THREE

# DEMAND-LED DIGITAL SKILLS TRAINING





## Training in Numbers



**400+ (45% female)** university staff trained to improve e-learning and efficiencies.



**20,000** cumulative hours of learning in-person or online in 2024



**234 (45% female)** unemployed graduates trained in data analytics, visualization and android applications.



Covered all 8 EAC Partner States, including Somalia



**600+ (200 female)** business employees from priority sector trained in e-commerce, data analytics and data/cyber security.



Courses migrated to free GIZ Atingi platform for self-paced learning



**206** universities from 8 Partner States benefitted from the digital skills trainings.

## CLOSING THE DIGITAL SKILLS GAP TO IMPROVE COMPETITIVENESS

The dSkills@EA project has, since 2021, developed and implemented demand-driven short-term digital skills training programmes targeting unemployed graduates, university staff, and business employees. These trainings, designed and guided by industry and curated by project partners including IUCEA, regional experts, private sector associations, and EAC universities aimed to improve quality of e-learning at universities, enhance employability and equip businesses with the skills needed to leverage digitalization for competitiveness and innovation.

digital university policy ecosystem, automating academic processes, integrating ERP systems, and strengthening digital library infrastructure. This initiative has benefitted over 400 university staff, from 122 institutions across the region enhancing classroom delivery.

### Digital Skills for Universities' Transformation towards Quality Education

The "Digital Skills for Universities' Transformation towards Quality Education" training aimed to enhance the digital competencies of university staff across East African Community (EAC) partner states. This initiative equipped educators to deliver high-quality, market-driven education that fosters employability and innovation, setting new standards for digital-age learning.

For academic staff, the modules covered online course design using the Moodle Learning Management System (LMS), multimedia development, and interactive online learning. The technical and administrative staff received training in managing online tools, developing a



At St. John's University in Tanzania, Moodle adoption helped lecturers like **Margaret Benedicta** manage online lectures and assignments, boosting student engagement. *"This training streamlined student enrollment, making it possible to reach students across universities,"* said Margaret. Similarly, **Jovianne Birindwa** from Catholic University of Bukavu in DRC highlighted how multimedia tools helped him develop and facilitate online courses.

For Dr Jesse Tshina Kapanza from the University of Kinshasa, the training was a game changer. *"Many of us lecturers do not have the skills to deliver e-learning effectively. This training will improve my online course facilitation as well as my capacity to use of multimedia to deliver e-learning"*

Dr. Lucy Simani from KCA University, Kenya, emphasised the long-term impact of the programme: *"As educators, it is important to have the necessary teaching skills and to prepare for students' future needs. After this course, we plan to hold virtual sessions with our colleagues so they can implement this knowledge in their own classrooms."*

## Tackling the youth employment through digital skills

Youth unemployment remains a pressing challenge in East Africa, exacerbated by a rapidly growing youth population and limited opportunities in the formal job market. Besides, a significant gap exists between the academic qualifications of many graduates and the practical skills required by today's industries, leaving them ill-equipped for the rapidly evolving digital economy.

The dSkills@EA programme complemented its master's degree offering with targeted initiatives to equip unemployed graduates with critical digital competencies, enhancing their competitiveness in the job market.

In 2021, 150 unemployed graduates participated in an intensive 20-day Digital Skills Accelerator Programme. This initiative included a practical Android development boot camp, equipping participants with the foundational skills to design





and develop dynamic, robust Android mobile applications. Post-program surveys revealed a significant improvement in employment outcomes, with many participants securing gainful employment due to their enhanced skill sets.

Building on this success, a 10-day training series focused on data analytics, visualization, and narrative generation, essential capabilities for thriving in a data-driven economy were initiated. 84 graduates, 50% of whom were young women, graduated with certificates from the course. Over 200 (94 female) young people have undergone this intensive training to improve their competitiveness.

Modi Moses, a graduate from South Sudan who attended this training, was ecstatic about the 10-day course. *"I'm confident I am now able to do data analytics specifically the ability to visualize, present it in graphical ways, after this training. I see this as an opportunity to finding my way to employment and income"*.

Judy Wanja, a beneficiary from Kenya, said the course had sharpened her skills in data analysis and will give her a competitive edge in the job market. Emmanuel Ekweyo, Deputy Director, I-Lab, Strathmore university, summed up the need for these trainings. *"There is a demand in the market, but the skills are not there. This training will address that demand and will also obviously address the issue of unemployment because it creates huge opportunities for the partners"*.

## **Building SME digital skills capacity to drive business growth**

The post-COVID-19 business landscape has underscored the critical importance of engaging customers online. Companies that successfully adapted have significantly expanded their markets and enhanced their competitiveness.

The primary objective of these trainings aimed to strengthen the capacities of Micro, Small, and Medium Enterprises (MSMEs) in adopting digital tools to drive business growth and resilience. The sessions equipped businesses with skills to leverage current trends in digital marketing, e-commerce, and predictive analytics

The training also addressed key challenges in market expansion, data security, and operational efficiency. Participants were drawn from EAC priority sectors such as agriculture, health, energy, tourism, and logistics.

Feedback from participants have consistently highlighted the relevance of the project interventions with participants expressing high level of satisfaction with the quality of training and the practical skills.

The last part of the training included mentorship and cross learning from the EAC bloc opening opportunities, B2B business platform and possible partnerships for participants, underscoring borderless trade, which is one of the key priorities for the EAC integration.



*Our company saw a gap – we needed to create an online presence to take our business beyond the Tanzanian market.”*

Solomon Zakayo CEO of Business Consulting Firm, Tanzania



*This knowledge I have received today, I’m going to transfer this to my marketing team in the office. Immediate next step is to develop our e-commerce website from the tools we have learned here.”*

Neserian Ole Siama, business owner in Tanzania



*This digital skills training is going to impact my business by allowing me to make tailored designs and to make product visible, thereby expanding my market.”*

Esther Mataka Founder, SISIYI Coffee Ltd., Uganda





## Building ICT infrastructure at universities

In collaboration with IUCEA, UbuntuNet Alliance, and RENU, conducted a study to assess ICT service needs in universities across the region. Based on the findings, 18 universities and three National Research and Education Networks (NRENs) were selected for a pilot phase. To support implementation, IUCEA procured ICT equipment and partnered with RENU for configuration and technical support. This initiative aims to enhance access to online learning systems and improve service delivery in East African universities.



*In partnership with UbuntuNet Alliance, university staff and ICT commissions were trained in incident response skills under the AfricaConnect3 project, aiming to establish a regional CSIRT for threat intelligence sharing and cybersecurity capacity-building.”*

Ben Ruhinda, dSkills@EA Project Office, IUCEA

SECTION FOUR

# INTEGRATING GENDER INTO OUR WORK

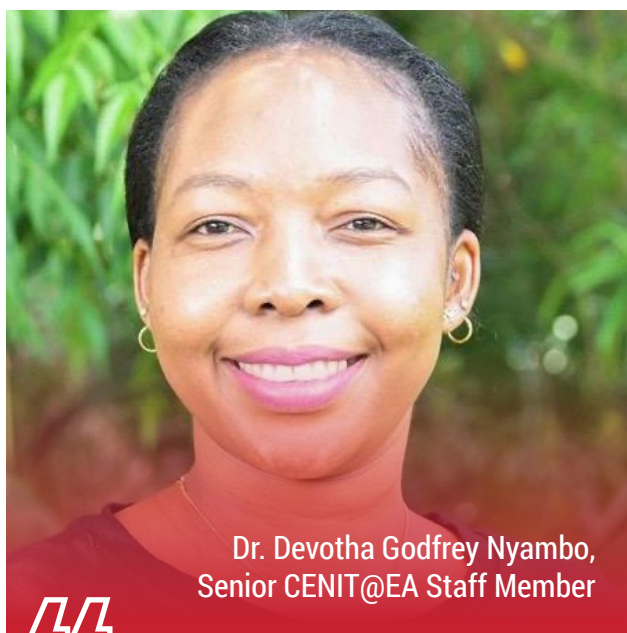


The dSkills@EA project aligns with the East African Community's goals for gender equality and sustainable development, emphasizing gender mainstreaming and accountability. A key priority has been closing the gender gap in enrolment for the master's programme in Embedded and Mobile Systems (EMoS) while ensuring women benefit from short-term digital skills and entrepreneurship training.

The project's outreach and communication strategy were designed to explicitly target women, using tailored messaging to boost female participation. The CENIT@EA consortium established criteria to allocate at least 30% of scholarships to women when candidates were equally qualified. To inspire more young women to pursue STEM fields, CENIT@EA launched the Embedded and Mobile Systems Club in Tanzanian schools.

These efforts have yielded significant progress. Of the 160 students enrolled in the Master's programme, 37% are women, a notable increase from 24% in the first cohort. Moreover, 436 women participated in digital skills training, while 506 engaged in innovation support programs. The project's collaboration with organizations such as East African Women in Business has further ensured women's involvement across all interventions. Beyond gender inclusion, dSkills@EA also prioritizes youth employability, implementing measures to improve access to training for participants from hard-to-reach areas across EAC Partner States.

## VOICES OF IMPACT



*"I am committed to bringing more girls along with me. Through CENIT@EA, we've empowered student clubs like the Embedded and Mobile Systems Club to inspire female students in higher education and secondary schools to pursue STEM fields."*



*"I was one of only six women in my cohort. ICT is the future, and women cannot afford to be left out. I encourage more women to seize this opportunity and become change agents. Since graduating with an MSc in EMoS, I now lead Starthub Africa in Tanzania, supporting young people in scaling up their innovations."*



Desire Asimwe,  
CENIT@EA Alumni (Uganda)



*This scholarship and the master’s programme have been invaluable. Beyond advancing my education, they have unlocked incredible opportunities. Recently, I was honoured to be selected as one of 80 women from 28 African countries to participate in the African Women in Tech and AI program, culminating in a transformative summer camp in Morocco.”*



Happyness Alexandra,  
CENIT@EA Alumni (Tanzania)



*To women entering what is still a male-dominated field, do not shy away. Follow your passion in ICT, or better yet, in Embedded and Mobile Systems.”*



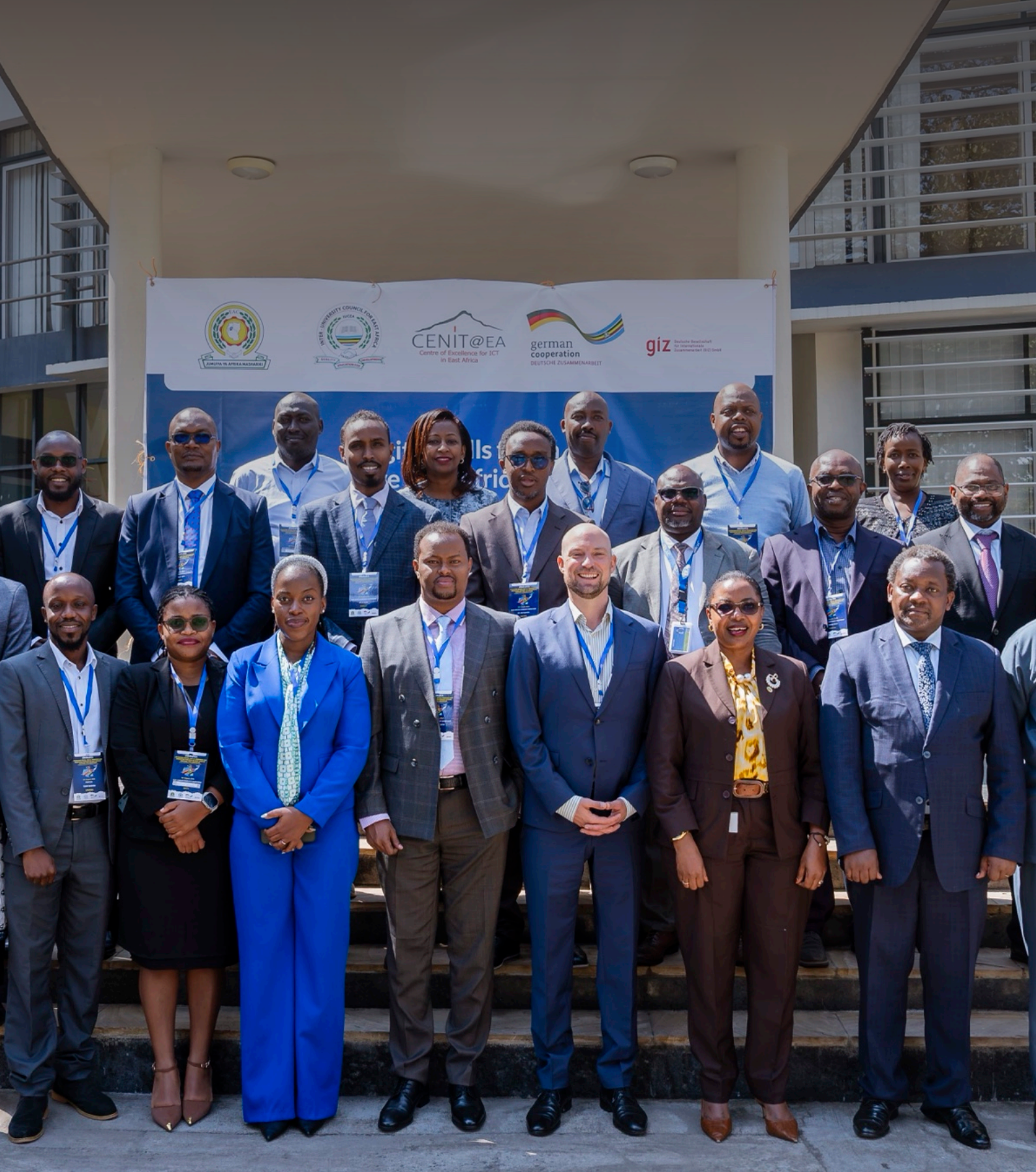
Ange Josiane Uwayisenga  
CENIT@EA Alumni (Rwanda)



*Gender should never limit career choices. Women should feel empowered to pursue digital programs. The CENIT@EA scholarship and EMoS training have opened up a world of opportunities for me.”*

## SECTION FIVE

# PARTNERSHIP AND STAKEHOLDER ENGAGEMENT



Stakeholder engagement and strategic partnerships have been pivotal in shaping the direction and discussions on digital skills development in the EAC. Through collaborative efforts of various stakeholders, including academic institutions, government bodies, the private sector, and international development partners, the dSkills@EA project has laid a strong foundation for discussions on sustainable digital transformation in the region.

While lead implementing agencies is IUCEA and GIZ, this has been in collaboration with DAAD, University of Oldenburg, NM-AIST, EABC, EATECO, the regional and German academic consortium and the education department in EAC.

### **Convening platforms to influence emerging technologies:**

The project has supported regional events such as the, Science, Technology, and Innovation (STI) Conference, the Academia Public-Private Partnerships Forum (APPF), the Ubuntu Net Alliance, the African Technology Innovation Hubs Initiative (AfriLabs) annual conferences, the EABC annual summits for important dialogue on digital transformation. These engagements have set the space as platforms for private sector and academia engagements and a market place for investors.

Through engagements with policymakers, regulators, and government agencies, the dSkills@EA project influences the design and implementation of policies, frameworks, and regulations that will shape the adoption of emerging technologies across the EAC. The collaboration is crucial for developing training programmes from the academia that is aligned with market needs.



SECTION SIX

# SUSTAINABILITY AND LEARNING



Ensuring the sustainability and impact of programmes requires continuous learning from interventions. Feedback from participants during the impact assessment has provided valuable insights, shaping the sustainability of project initiatives beyond **closure in 2025** and informing future digital skills initiatives in the region.

## Capacity Building for CENIT@EA Staff

CENIT@EA has prioritised capacity building to enhance staff expertise, programme quality, and long-term continuity. Throughout the project, staff at NM-AIST and consortium members participated in long- and short-term courses designed to strengthen their skills. Training programmes such as Teach the Trainers, Innovation Management, International Staff Exchanges, and Resource Mobilisation equipped them with the knowledge to sustain and expand the centre's impact.

## Sustainability of CENIT@EA

CENIT@EA has developed a comprehensive sustainability strategy to ensure its long-term viability. The establishment of a Didactic Centre and a Research and Lifelong Learning Unit at NM-AIST will extend its influence beyond the project's official timeline, continuing to produce a highly skilled workforce. Strengthening partnerships with German private sector companies like CEWE and Abat, along with securing DAAD scholarships, will diversify funding sources and reduce reliance on BMZ funding.

## Commercialisation of Innovations

Bridging the gap between industry and academia remains a challenge, particularly due to weak intellectual property (IP) frameworks and limited investment capacity at universities. To address this, dSkills@EA has invested in innovation management training for universities, but greater collaboration is needed. Governments, the private sector, and academia must come together to create an ecosystem that fosters research commercialisation and technology transfer, boosting the EAC economy.

The dSkills@EA project provided a platform for academia and businesses to engage, but to maximise impact, policymakers must scale up and institutionalise these efforts.

## Expanding Access to Digital Skills Training

With over 10,000 applications for short-term digital skills and entrepreneurship training, demand far exceeded capacity. Only 10% of applicants benefited, due to the prohibitive costs of in-person training across the region. To address this, the project has transitioned the courses to Atingi, a self-paced online learning platform, ensuring continued access to training.

However, this alone is not enough. Accelerating policy advocacy efforts is crucial to integrate and harmonise digital skills education into national policies across EAC partner states. Long-term investment in digital literacy and entrepreneurship will be key to sustaining economic growth and innovation in the region.



## SECTION SEVEN

# FUTURE OUTLOOK



We have learned from the last five years that one intervention cannot drive large-scale digital transformation. The **dSkills@EA** experience highlights that replication and scaling depend on factors beyond a single project's control.

Looking ahead, the (EAC), IUCEA, and EASTECO, in collaboration with public and private sector stakeholders and with funding from the German Government, successfully co-created the East African Digital Skills, AI Research, and Innovation Alliance project. Endorsed by EAC Education Ministers at the 19th Sectoral Council meeting in 2024, this initiative will convene member states, academia, industry, and civil society to address gaps in higher education, gender equity, and the policy gaps in practice-oriented curricula and industry-linkages.

Launching in April 2024, the project builds on the success of dSkills@EA and will advance AI education and research in East Africa by fostering practical skills, industry-driven learning, and regional policy development to drive sustainable innovation and economic growth.

The project will strengthen regional AI research and innovation, enhance AI skilling in higher education and support the development of an EAC AI strategy for a harmonised, ethical, and gender responsive policies.

## IMPLEMENTING PARTNERS



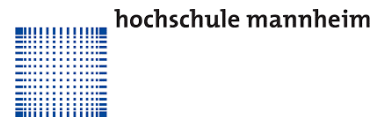
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## STEERING COMMITTEE MEMBERS



## EAC UNIVERSITY CONSORTIUM



UNIVERSITE DU BURUNDI  
Le grenier du savoir

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