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Creating New Value for Industry with a Prosperous Talent Ecosystem

William Xu, Director of the Board and President of the Institute of Strategic Research, Huawei

Building a Vibrant Talent Ecosystem to Empower Industries

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Creating New Value for Industry with a Prosperous Talent Ecosystem

By *William Xu, Director of the Board and President of the Institute of Strategic Research, Huawei*



The digital economy has captured the imagination of people from around the world. The effect of digital spillover is expected to drive the digital economy to grow 2.5 times as fast as Gross Domestic Product (GDP). And so, governments around the world have focused heavily on Information and Communications Technology (ICT) development and the digital economy in recent years. More than 170 countries have released digital strategies, and more than 50 countries have Artificial Intelligence (AI) strategies. These strategies stimulate ICT investment, as ICT is seen as the key to sustainable development and economic prosperity. New digital technologies, such as cloud computing and big data, have played an important role in global efforts to combat the pandemic, by supporting monitoring, medical treatment, and material assurance. They have also served as an engine driving industry growth and broader economic recovery. According to McKinsey, the pandemic has accelerated global digitalization by seven years, and digitalization in Asia-Pacific by ten years.

Rapid Digitalization Increases Demand for ICT Talent

ICT empowers multiple industries, which in turn rapidly increases global demand for ICT talent. However, there is not enough ICT talent available. According to Gartner's

2021–2023 Emerging Technology Roadmap for Large Enterprises, IT executives believe that talent shortage is a significant barrier to 64% of emerging technologies. In Gartner's 2020 report, the figure was only 4%. The Talent Exchange Center of China's Ministry of Industry and Information Technology also found in their AI Industry Talent Development Report (2019–2020) that the ratio of talent supply to talent demand is lower than 0.4 for all AI technical positions.

Similarly, the China Employment Training Technical Instruction Center's 2020 Report on the Online Learning Platform for New Professions revealed that over the next five years, there will be nearly 10 million jobs in new professions that the country simply will not be able to fill. The European Union (EU), on the other hand, believes that people with digital skills and digital professionals will lay a foundation for the EU's digital development. Therefore, it plans to equip 65% of its total population with digital skills by 2025, 8% higher than that in 2018. This would increase the number of IT experts in the EU to 500,000, and data professionals to 10.9 million from 5.7 million in 2018.

Colleges and universities are the cradle of talent training, but business also has a role to play in providing the additional support to efficiently train talent. Collaboration between academia and industry will help drive the conversation from theory to

Colleges and universities are the cradle of talent training, but business also has a role to play in providing the additional support to efficiently train talent. Collaboration between academia and industry will help drive the conversation from theory to practice.

practice. Take AI as an example: Over the past 10 years, AI technology has been transformed from an idea in a lab to real-world industry applications, significantly contributing to economic and social development. After we released our full-stack, all-scenario AI portfolio, Huawei also launched the Ascend OpenMind Project and Ascend Talent Intern Project, where we've teamed up with more than 500 partners to promote industrial AI applications. The OpenMind and Talent Intern projects not only help enrich the Ascend ecosystem but also accelerate talent training in China. In addition, Huawei's Ascend community shares AI learning resources with global developers. By the end of October 2021, more than 530,000 developers had learned to use new AI technologies through the platform.

Industry-Academia Collaboration Helps Build a Prosperous Talent Training Ecosystem

Talent training cannot rely on just a few companies; multiple parties have to work together to ensure ongoing talent supply. Huawei is working directly with universities on large-scale ICT latent training programs. Digital technologies are complicated, and training ICT talent is challenging because of a lack of teachers and teaching materials, as well as the long training cycles. While universities can provide theory training and teaching resources, Huawei is more than happy to provide use scenarios and opportunities for application practices. This collaboration model helps ensure talent is trained quickly and appropriately to support wide-scale digital transformation.

Huawei has worked with universities to develop more than 1800 Huawei ICT Academies. These organizations train more than 3000 teachers annually and have created teaching materials regarding big data, Internet of Things (IoT), and

general ICT. In February 2020, Huawei announced the Huawei ICT Academy 2.0 program, which will provide an additional US\$50 million in funding for collaboration with universities. This funding will go toward online courses, training, research, and certification. By working with global universities, Huawei hopes to train 2 million new ICT specialists over the next five years, in order to promote robust development of the ICT industry.

We know ICT talent development is not easy; it is something that will require long-term commitment. The world needs a strong ecosystem for talent training, and it's not just individual companies that need ICT talent. Talent will be crucial to national and regional development of the real economy. So we are working on building a platform that links talent demand and supply. As well as providing talent certification and leadership training, we are helping introduce talent to appropriate companies through a mutual-selection model. This helps both individuals and companies. By the end of December 2021, 550,000 people around the world had been certified through Huawei's programs, with more than 17,000 of them receiving a Huawei Certified ICT Expert (HCIE) certification. Huawei ICT Competition has also attracted more than 150,000 global participants per year. This competition encourages university students to learn about ICT, while also helping companies identify talent and contributing to regional digital economies.

We are entering into an intelligent world, and digital technologies are here to benefit everyone. I believe that digital talent will shape the digital future. Huawei will continue building this ICT talent ecosystem, working with governments, industry organizations, and universities to develop best practices. We will continue to promote a talent ecosystem to help train people around the world and create new value for industry. ▲



Digital Transformation Is Shaping the Skillsets Enterprises Need, According to LinkedIn

Source: Trends Report from LinkedIn

To cope with challenges in digital transformation and industrial upgrading, enterprises need to understand how job positions, and the skills they require, will evolve. Ultimately, they need to predict future skill trends, provide their employees with the training they need, and expand the range of skills that they have access to.

Enterprises are digitally transforming and industries are upgrading around the world. The emergence of the disruptive technologies involved in this shift has driven the development of 'rising skills' — skills that have rapidly grown in importance and will soon become widespread — and it has also highlighted that soft skills are irreplaceable. Soft skills — such as creativity, problem-solving, and critical thinking — are important for innovation, and they are hard

to acquire quickly. Only people who are highly adaptable and flexible — those who have both soft skills and rising skills — can meet the ever-changing job requirements that digitalization brings.

Enterprises Face a Shortage of Core Talent

Almost every business director, manager, and recruiter

faces a shortage of core talent. In China, for example, despite the impact of the COVID-19 pandemic, recruitment demand continued to grow in 2020 — up 26% from 2019. According to LinkedIn China's The Future of Recruiting 2021 Report, from the perspective of future recruiting plans and budgets, there is huge demand for recruitment from Chinese enterprises, and the focus is on recruiting talent for key positions.

The main reasons for talent shortage in key positions are the rapid changes in skill requirements, and some of these skills are hard to acquire, even through repeated practice. Globally, an average of 42% of skills regarded as core skills in 2018 will be replaced by new ones by 2022, according to the World Economic Forum and LinkedIn's study on future work trends.

For enterprises, the changes in needs for skills means they must assess their talent and skills reserves. So how can enterprises keep their skills assets up to date? An agile talent pool to tap talent with both core skills and motivation for continuous learning will be key for enterprises seeking to address talent shortages and maintain their competitiveness.

The Top 10 Rising Skills that the Digital World Needs

The Future of Skills Report identifies the top 10 rising skills needed in the digital world, with cloud computing, compliance, and human-centered design standing out.

1. Compliance: continuously evaluates, monitors, and reports on the enterprise's

compliance with regulatory requirements and optimizes the oversight procedures.

2. Cloud computing: provides or uses Internet-based virtualized computing, storage resources, solutions, or services.

3. Data science: manages and calculates data in statistical and machine learning methods, and uses data to analyze and forecast disciplines or business development trends.

4. Language skills: fluency in other languages can be useful in areas such as foreign affairs, international trade, and multinational corporation governance.

5. Risk management: helps enterprises measure and evaluate risks, measures the benefits and costs of reducing risks, and formulates response strategies.

6. Interactive design: analyzes the system usability, appearance design, and user emotion to create connections among people, products, and services.

7. Artificial Intelligence: studies and develops theories, methods, technologies, and application systems to perform human-like tasks.

8. Blockchain: develops and applies computer technologies such as distributed data storage, peer-to-peer transmission, consensus mechanism, and encryption algorithms.

9. Digital marketing: uses digital communication channels to promote or market products and services to consumers and enterprises.

10. Full-stack development: owns design and development skills to develop and manage core frontends and backends in software development.



Globally, an average of 42% of skills regarded as core skills in 2018 will be replaced by new ones by 2022, according to the World Economic Forum and LinkedIn's study on future work trends. >>



In the future, a combination of online and offline recruitment will be the norm, so HRs need to optimize technologies to create a more convenient online recruitment process. >>

Digital Technologies Are Driving Business Evolution

Enterprises can use data about skills to make business decisions, because understanding rising skills helps enterprises grasp the key points of the talent market and helps them understand future trends in their industry. Before offering new products or services, enterprises have certain expectations about the skills they need and will make plans for recruiting people with rising skills. Through rising skills, people can gain insights into the causes of anomalies, the evolution of positions, and how industries are responding to changes. Enterprises are making decisions and taking action based on information indicated by these rising skills to ensure they remain competitive in the marketplace.

Retail giants, such as Amazon and Walmart, are already implementing business automation, including the automation of their supply chain inventory management. With automation, these two retail giants can invest heavily in training warehouse management staff in new skills so that they can shine in other positions.

Amazon is offering digital skills training for warehouse staff to help them thrive in new and emerging areas of its business. Enterprises' investments in rising skills indicate their expectations for future business growth.

Meanwhile, the OCBC RoboInvest platform — launched by Oversea-Chinese Banking Corporation (OCBC), one of the largest banks in Singapore — allows investors to maximize returns without having to examine every

detail of an investment project, because it prepares the best possible investment portfolio for them.

Job Positions Are Evolving

Enterprises can use this data about skills to help them define the prospects of their job positions. The emergence of these rising skills represents a shift in skill requirements for traditional jobs and raises the demands that will be involved in related job roles that are emerging. Based on data analysis, LinkedIn summarizes trending skills in the future, revealing how positions will evolve in the next five years. It forecasts that the number of positions requiring more soft skills will continue growing. For example, to reduce customer loss, Software-as-a-Service (SaaS) enterprises have created a new role — "customer success managers," who are responsible for using soft skills to provide customers with personalized products based on their needs and achieve the best business results.

Enterprises may not be aware of the potential of their existing employees. In fact, training talent with rising skills enables them to adapt to the future with ease and helps enterprises evolve and remain agile in the face of changes. Enterprises can train talent they already based, based on their understandings of position evolution.

Human Resources departments are starting to use new technologies to build shared service centers and personalized learning platforms to analyze talent and develop talent strategies, helping enterprises acquire the talent they want. In the future, a

Even as the demand for technical skills continues to grow, the value of soft skills, such as analytical thinking, active learning, and creativity will remain the same, or become even greater, according to the World Economic Forum.

combination of online and offline recruitment will be used, so HRs need to optimize technologies to create a more convenient online recruitment process.

Meanwhile, the role of data analysts is transforming. More and more, people in this field have developed rising skills, such as machine learning, data visualization, and statistical analysis. While their work priorities haven't changed, the way they work is changing.

Soft Skills Still Stand Out

With the rise of Artificial Intelligence (AI) and automation, the value of soft skills is growing. These new technologies are also rapidly changing the talent and skill market, which drives the demand for hard skills — such as programming, Research and Development (R&D) cloud computing, and AI — as well as increases the demand for soft skills. In fact, 89% of executives have said it has been difficult to find people with the soft skills that they are looking for.

Even as the demand for technical skills continues to grow, the value of soft skills, such as analytical thinking, active learning, and creativity, will remain the same, or become even greater, according to the World Economic Forum. Information overload can frequently occur in this highly connected digital world, but soft skills — such as creativity, adaptability, collaboration, and time management — will enable people to sort information they have and make the correct decisions.

LinkedIn's survey of employees and professionals in Learning and Development (L&D) in the Asia-Pacific

region found that respondents rated soft skills as valuable, particularly for career development. While robots and automation may replace regular manual labor, 44% of those surveyed believed that advanced thinking was crucial in a technology-led world and people needed soft skills to adapt to robots in the workplace. Among them, 43% of employees said soft skills would help them adapt to their jobs quickly and further improve themselves.

The top five trending soft skills in China are: leadership and personnel management, strategic planning, analysis and research skills, communication, and industry expertise.

L&D programs should prioritize skills required by local employees and develop personalized plans. Soft skills, ranging from understanding data, effective communication, to project management, are the most useful tools for enterprises to succeed in a digital world. No matter how technical a position is, soft skills are the key to selecting top talent.

Turning Data Insights into Action

Both business leaders and HR departments need to focus on current skills trends and take action accordingly. For CEOs, for example, it's important to ensure talent issues are always a priority. Indeed, CEOs and business leaders must use data to fundamentally implement their talent strategies.

CEOs should make use of market insights and keep talent issues on the agenda of corporate executives. When making decisions, most executives will refer to competitiveness analysis and financial statement data from sales and marketing departments. However, talent market data, such



Creating a culture of learning and skill enhancement means that talent will find new ways to use new technologies. This process should start from the top down, with the chief executives, because they are the ones who are ultimately tasked with leading the enterprise to success.
 >>

as rising skills data, will enable enterprises to value talent more in their decision-making, producing better business outcomes, and it will also allow enterprises to compare their workforce with that of competitors and even that of the whole industry.

CEOs should also shape the enterprise's future by creating, nurturing, and sustaining a culture of learning. In the fierce market competition, talent retention is critical to the success of an enterprise. According to LinkedIn, across the Asia-Pacific region, almost three out of every ten employees resigned because of a lack of L&D opportunities.

Enterprises should invest in new skill training to retain their employees and invest in L&D resources to enable companies to anticipate, plan for, and respond to unexpected situations before demand for certain skills emerges. But L&D isn't an overhaul of skills, nor does it have to be a mandatory and time-consuming program. In fact, for talent and enterprises, courses that are shorter, more targeted, and pragmatic, and can teach employees the skills they need are the most valuable ones.

The commitment to L&D is also attractive to those who are among the first to acquire rising skills. Creating a culture of learning and skill enhancement means that talent will find new ways to use new technologies. This process should start from the top down, with the chief executives, because they are the ones who are ultimately tasked with leading the enterprise to success.

In this context, HR departments effectively become strategic partners, and they should improve their data analysis skills accordingly. Human resource departments should

position themselves as strategic partners and guide their enterprise's strategic planning with the help of data. Recruiting and finding talent should be the key point in business planning and strategy-making of human resources. Meanwhile, collaboration between human resources and business directors is crucial: They can work together to develop a human resource plan that reflects the talent needs of the enterprise now and in the future.

In the short term, the return on investing in technology is more visible than that of investing in existing talent, so it's more convincing only when data is used to demonstrate the value of new skills training and skill enhancement.

HRs should build a workforce that is resilient to changes; they should also view existing talent in their enterprises as another talent market and pay attention to which employees can learn rising skills, what their current position will look like five years later, and whether they have the ability to learn the skills they need.

Employees need to feel that taking time to improve their skills is worthwhile, and enterprises need to motivate their employees to learn. This all takes time: Data analysts don't become data scientists overnight, but they can develop the skills they need if they're given time and guidance.

Clearly, continuous learning has become a pillar for human resource planning. But it can't be achieved overnight — only by building a culture of continuous learning can enterprises make themselves more adaptable to the changing nature of the digital world. ▲



Fostering Sustainable Development in Africa Through ICT Collaborations

By Firmin Edouard Matoko, Assistant Director-General for Priority Africa and External Relations of UNESCO

The African Union is working toward its goal of transforming its economic fortunes by 2063. The use of Information and Communications Technology (ICT) will be integral to achieving that objective, and it will be enabled by partnerships with leading enterprises.

Sustainable Development Goals Challenges in the Era of Digitization

In September 2015, 193 world leaders committed on 17 Sustainable Development Goals (SDGs) to end extreme poverty, tackle inequality and injustice, and protect the planet

by 2030. Education (SDG 4), as the most transformative goal of all, has set to ensure 12 years of quality education for all children and lifelong learning opportunities for all by 2030. More ambitious than any that has preceded it, SDG 4 also calls for more innovative and wide-reaching approaches. ICT thus emerged to be an indispensable tool that carries



While the world has been enjoying the benefits of the advancement of technologies, the technological progress has yet to become a shared common good for all humanity. >>

enormous power to be able to meet the scope of the SDG 4 vision.

In the increasingly digitalized world, we can no longer conceive education without technology and innovation — this is particularly true in what we have witnessed during the COVID-19 pandemic. Before the global pandemic, the proportion of children and youth out of primary and secondary school had declined from 26% in 2000 to 17% in 2018. However, the global pandemic threatens to jeopardize these hard-won gains in the global education sector, especially for the most vulnerable and marginalized and those in the low-income countries. By April 2020, closures of schools and other educational institutions have affected over 1.57 billion learners, constituting 90% of the world's total enrolled student population. School closures were necessary measures to curtail the health emergency, but they have precipitated a global learning crisis. Responses from around the globe converged toward the establishment of tech-enabled platforms and modalities, all aiming to ensure that learning does not stop.

Today, as the world is recovering from the unprecedented crisis, important lessons have been drawn locally and internationally, on how to integrate ICT and innovation in education. Better and more coherent strategies are required in this respect in order to regain the momentum and achieve SDG 4 in the next 10 years.

Digital Divides Call for Digital Inclusion

A public health emergency at its onset,

the pandemic has snowballed into a global crisis that tests the prospects of the young generation, especially for those who are already socially and economically disadvantaged. The global pandemic has exposed the global digital divide. It is even more pronounced in the domain of education and affects disproportionately certain parts of the world. For example, in sub-Saharan Africa, at the height of school closures, 89% of learners did not have access to household computers and 82% lacked Internet access. While cellphones can enable learners' access to information, connect with one another, about 56 million learners live in locations not served by mobile networks, among whom half are in sub-Saharan Africa. The lack of digital skills of teachers and parents is also hindering governments' responses in ensuring the continuity of learning. Across sub-Saharan Africa, only 64% of primary and 50% of secondary teachers have received only minimum training, and this frequently does not include ICT skills.

Most of the world has been enjoying the benefits of the advancement of technologies, but technological progress has yet to become a shared common good for all humanity. The digital divide spans across all segments of our societies, between the youth and the elderly, between men and women, and between city-dwellers and rural populations. For instance, today, still some 327 million fewer women than men have a smartphone and can access the mobile Internet. Women are also under-represented, among others, in sciences, the ICT industry, and in start-up companies. The gender gap in technologies has therefore called for policymakers and development

UNESCO is committed to making digital technology a tool for progress in all its fields of competence. Thanks to its partnerships with industry leaders such as Huawei, the organization is working toward linking educational institutions with private partners.

— Firmin Edouard Matoko, the Assistant Director-General for Priority Africa and External Relations of UNESCO



partners, such as UNESCO, to place gender-responsive actions and girls' and women's engagement in Science, Technology, Engineering, and Mathematics (STEM) a priority.

Young ICT Talent for the Success of Industry 4.0

Even before the arrival of the 'new normal,' our lives were scripted around connectivity — interacting with our loved ones remotely, accessing distance education, culture, and information, and subsequently equipping people with digital skills to carry out these tasks, especially teachers, workers, and the youth. At a time when society has to respond to the rapid changes in everyday life and the labor market in the face of 'the fourth industrial revolution,' we must build the most innovative and efficient talent development system to live up to this challenge, that of quality and access.

To keep our talent ecosystem abreast with the socio-economic transformation, all stakeholders should join hands in delivering a holistic approach to build the technical and scientific capacity and construct a favorable environment for youth and innovation. UNESCO, within its mandate, has been building the continuum of skills as well as the policy structures throughout the entire education system. From showcasing microsciences kits at schools to drafting policy advice for its member states, the wide range of activities bring together diverse partners under the shared vision to create a critical mass of scientists, engineers, and researchers for the country's transformation.

Industry-Academy Cooperation for Talent Development

In the knowledge-intensive societies, academy-industry linkages prove to be vital to the industrial, economic, and social transformation driven by science and technology. The academic institutions can benefit from the cooperation to cultivate more employable graduates; meanwhile, for the private sectors, partnering with academic institutions is a great way to learn about the needs and opportunities of certain markets. For policymakers, it is increasingly important to support education institutions as strategic actors in national and regional economic development, given their potential to upgrade knowledge of the labor force and to contribute to the process of technology transfer.

With a wide mandate, covering education, science, culture, and communication and information, UNESCO is committed to making digital technology a tool for progress in all its fields of competence. Thanks to its partnerships with industry leaders such as Huawei, the organization is working toward linking educational institutions with private partners. In March 2020, UNESCO launched the Global Education Coalition to respond to the education crisis during the COVID-19 pandemic, which gathered more than 140 members from the UN family, civil society, academia, and the private sector. Through this platform for exchange and collaboration, the linkage between academia and industries have been strengthened significantly, the legacy of which will be carried on and replicated in a



Partners like Huawei and UNESCO are united by a shared mission: To foster the digital skills of African youth, technology innovation, and entrepreneurship, through the implementation of various programs across the continent.

>>

wider range of education activities, such as in Technical and Vocational Education and Training (TVET) and Science, Technology Engineering, and Mathematics (STEM) education, in the years to come.

The Youth's Digital Skills Development as a Driving Force for Africa's Transformation

With more than 60% of its population under the age of 25, sub-Saharan Africa is the world's youngest region. By 2030, the continent's working-age population is set to increase to over 600 million. The world must match today's skills with tomorrow's needs — this is especially urgent for the young generation in Africa who will lead its transformation and tackle challenges of this century, such as climate change, peace and security, and inclusive development.

Technologies have already become part of people's lives in Africa, whether it's people using the M-Pesa mobile money service to buy food on local markets or the booming start-up scenes that have attracted billions of dollars of investments. From Nigeria to Kenya, and Rwanda to Ghana, technology innovation has been tapping into various sectors: energy, agriculture, finance, healthcare, entertainment, transportation, and so on. ICT will continue to be employed to solve long-standing African socio-economic issues, and the youth will lead this technological revolution.

Despite the rapid improvement in its connectivity, the significant gaps between different countries and regions remind us of the uphill journey lying ahead of us. The African continent is a bearer of enormous

potential, but also of multifaceted challenges such as instabilities, civil strife, and uncontrolled development. It has thus brought policymakers and businesses to ask themselves this important question: In this increasingly globalized and digitalized world, how do we navigate through the complexities to pave a path for this growing youth population?

In 2015, the 55 member states of the African Union adopted the Agenda 2063: The Africa We Want, a blueprint and master plan for transforming Africa into the global powerhouse of the future in half of a century. The continent is thus poised to empower the youth and bridge the digital divide to drive its transformation agenda by creating innovative solutions. As articulated in Agenda 2063, one of its aims is to change global contexts such as increased globalization and the ICT revolution.

Meanwhile, partners like Huawei and UNESCO are united under the shared mission of fostering the digital skills of African youth, technology innovation, and entrepreneurship, through the implementation of various programs across the continent. It is more critical now than ever to engage private partners to develop the digital talent ecosystem to prepare for the transformation that the continent has foreseen for itself. As we embark on a new decade of action for global common good, each one of us has a key role to play in the global actions to make digital technology truly inclusive and beneficial for all. ▲

(Based on the keynote speech on Huawei ICT Competition by Firmin Edouard Matoko, the Assistant Director-General for Priority Africa and External Relations of UNESCO)



How the Pandemic Has Accelerated the Digital Transformation of Higher Education

By Li Ming, Director of International Center for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI), Chair Professor of Research Center for Higher Education of Southern University of Science and Technology

The COVID-19 pandemic has brought unprecedented challenges to education worldwide. It has also accelerated the digital transformation of higher education, and it has meant online and hybrid learning have become incredibly valuable in reshaping higher education. To meet the urgent need for education-related Information and Communications Technology (ICT) applications in developing countries, global technology companies such as Huawei are sharing resources.

The COVID-19 pandemic brings unprecedented challenges to education worldwide. According to UNESCO, COVID-19 caused educational interruptions of some kind to nearly 1.6 billion students globally at its worst point to date. And, according to the World Bank, 220 million students

worldwide were affected by the closure of their universities in 2020. Meanwhile, according to an International Labour Organization (ILO) study, 90% of vocational and technical centers had to close and suspend their vocational skills assessments and certifications.



Stakeholders around the world — including universities, international organizations, enterprises, and education policymakers — have worked together to launch initiatives to ensure education continuity during the pandemic, accelerating the development of online teaching and the digital transformation of colleges and universities. >>

Facing this sudden educational crisis, governments have had to quickly take measures to transition from offline to online teaching. In the process, issues such as education inequality, underdeveloped distance education, and the gap in digital infrastructure have become more apparent than ever. For example, in the early days of the COVID-19 outbreak, only 65% of low- and middle-income countries and just 25% of low-income countries had built distance education platforms.

To address this issue, stakeholders around the world — including universities, international organizations, enterprises, and education policymakers — have worked together to launch initiatives to ensure education continuity during the pandemic, accelerating the development of online teaching and the digital transformation of colleges and universities.

UNESCO-ICHEI Helps Higher Education Digitally Transform Worldwide

Guided by the principle of "achieving inclusive and quality education for all" in the UN Sustainable Development Goals and the Education 2030 Framework for Action, in December 2019, UNESCO-ICHEI and our partner universities and enterprises around the world proposed establishing the International Institute of Online Education (IIOE). It was officially launched in April 2020.

The IIOE is committed to supporting colleges and universities in developing countries to cope with the challenges

caused by suspending classes because of the pandemic. It hopes to help higher education institutions worldwide to digitally transform by building online teaching capabilities, sharing software and hardware resources, and providing customized policies.

Since April 2020, the IIOE has served more than 12,000 teachers from 135 countries in the form of webinars, online open classes, and advanced training.

The IIOE also launched teacher training programs in Internet of Things (IoT) and cloud computing in 2021 to help global partners continuously improve their capabilities in online learning, distance education quality assurance, and education development planning during the pandemic.

The reason UNESCO-ICHEI can quickly mobilize so many course resources and adapt them to universities and teachers in developing countries in the pandemic is that we have strong support from partners. More specifically, at the beginning of 2020, with the outbreak of COVID-19 pandemic worldwide, UNESCO-ICHEI quickly mobilized resources from partner universities and enterprises to complete tasks such as platform development, website cloud server deployment, course resource collection, and Operations and Maintenance (O&M) team establishment in just over two months.

After assessing the network conditions in developing countries, such as those in Asia and Africa, the deployment of HUAWEI CLOUD Content Delivery Network (CDN) services worldwide, and users' data security protection needs, UNESCO-ICHEI decided to deploy the IIOE platform on Huawei Cloud.

Meanwhile, global technology companies



Online and hybrid learning will be very significant for developing countries to seize educational opportunities, improve teaching quality, and achieve sustainable development, and they will also become part of a 'new normal' for higher education.

— Li Ming, Director of International Center for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI), Chair Professor of Research Center for Higher Education of Southern University of Science and Technology



such as Huawei are sharing certification course resources to meet the urgent need for ICT applications in developing countries, complementing existing public education resources. UNESCO-ICHEI is actively exploring cooperation opportunities with outstanding ICT enterprises to jointly support the course development of partner universities and their countries.

Digital Transformation of Higher Education in the Context of the Pandemic

The pandemic has made people fully aware of the importance of schools, teachers, and educators to society. Meanwhile, it has also shown that the education industry is not yet equipped to withstand sudden turmoil. A better recovery can only be achieved through multilateral cooperation and support from institutions such as colleges and universities, governments, enterprises, and international organizations.

Based on lessons learned about education continuity,

UNESCO-ICHEI, together with global partner universities and enterprises, released *Suggestions for Accelerating Digital Transformation of Higher Education in COVID-19 Pandemic* in December 2020, which outlines how to rebuild a more inclusive and resilient education system in the post pandemic era. The document makes four proposals for higher education institutions, international organizations, enterprises, and higher education practitioners around the world:

I. Focus on online teaching and pursue fair, quality higher education. The mission of colleges and universities for the development of online teaching shall be clarified. Course system reform should be driven by further collaborations between education institutions and enterprises. Colleges and universities should be supported in fulfilling their mission of promoting the development of the national digital economy and improving talent development.

II. Focus on capacity building of higher education practitioners and enable the digital transformation of colleges and universities.



The important role online teaching in colleges and universities in various countries has played in responding to the pandemic and ensuring courses can continue as close to normal as possible has proved that online teaching is more than just a tool to supplement traditional teaching activities. >>

Advanced training shall be organized and high-quality course resources shall be shared to improve teachers' online teaching skills. Teachers shall also be encouraged to develop high-quality, localized online courses; they will also be encouraged to collaborate on those courses and share their knowledge and resources.

III. Establish multilateral cooperation mechanisms to promote the development and sharing of public welfare resources.

Hardware and software facilities and shared educational resources shall be introduced to universities through multilateral public welfare cooperation between government, enterprises, and universities. In line with UNESCO's principles such as 'Africa First' and 'gender equality,' resources will be distributed with priority given to countries, higher education institutions, and people most in need.

IV. Formulate customized policies and guidelines to ensure the quality of online teaching.

Customized national strategic plans for developing digital talent shall be developed based on the economic development needs of each country and the employment standards of enterprises. A national quality assurance system for online teaching shall also be established, along with guidance for ICT course development and skills certification.

Working Together for More Inclusive and Sustainable Education

Colleges and universities with complete digital teaching conditions and capabilities

before the pandemic were well positioned to cope with the crisis. When the pandemic is over, those who temporarily that don't have the appropriate capabilities and conditions will also be more resilient and flexible because of the lessons they have learned.

Meanwhile, the important role online teaching in colleges and universities in various countries has played in responding to the pandemic and ensuring courses can continue as close to normal as possible has proved that online teaching is more than just a tool to supplement traditional teaching activities. We believe that, in the foreseeable future, online teaching will also be an important method in ensuring developing countries have equal access to quality higher education.

With continuous infrastructure upgrades to higher education institutions and the whole education system, related policies will be refined and teachers' skills will improve. Online and hybrid learning will be very significant for developing countries to seize educational opportunities, improve teaching quality, and achieve sustainable development, and they will also become part of a 'new normal' for higher education.

UNESCO-ICHEI and our partner universities and enterprises must seize this opportunity to mobilize resources and capabilities to build an ecosystem that supports the digital transformation of colleges and universities, improves the ICT skills of students and teachers, and enhances the quality assurance of online and hybrid learning. Our goal is to achieve mutual international recognition of online courses and degrees — to build more inclusive and sustainable education together. ▲



Huawei & Deloitte: Developing Talent for the Digital World

Summarized by Li Yan, Reporter, Training Magazine

It's essential to clearly define skills standards for digital professionals and find ways to effectively train people to solve digital talent shortage and ensure that skilled professionals can realize digital transformation.

Digital technologies will fundamentally change the way the business community competes in the future. The organizations and people with a digital mindset that can use digital technology to respond to a diverse range of changes will be the winners in the digital world. To put it another way, talent development must be a priority for enterprises that want to be competitive in the digital world.

To train talent, we must first specify the standards; we

need to state what capabilities are required for key digital professionals in an organization. Digital transformation requires organizations to develop a series of new skills, such as digital leadership, digital brand building, digital marketing, and big data analysis. Ideally, organizations should start with a "dual-track" approach: train digital leaders and build a professional talent system, to help their employees improve their digital skills as required.



Leadership development is the key to digitally transforming an organization. Organizations need to help leaders build confidence in using and mastering new digital technologies, think with "a digital mindset," and execute more agile and adaptable leadership.

>>

Agility and Adaptation: Key Capabilities of Digital Leaders

Leadership development is the key to digitally transforming an organization. Organizations need to help leaders build confidence in using and mastering new digital technologies, think with "a digital mindset," and execute more agile and adaptable leadership.

Five Critical Factors in Building Digital DNA

In more and more organizations, digital leaders are tasked with creating a detailed digital transformation plan and managing many digital transformation investments, gradually improving the digital capabilities of all employees by building a digital DNA within the organization. As a result, they must first transform themselves and continuously improve in five key areas:

A shared vision: The ability to develop a vision of an organization's future digital transformation is a key attribute for good digital leaders.

Effective communication: Leaders who can clearly deliver what digitalization can do in a simple way are essential for successful digital transformation.

Mutually beneficial collaboration: The "borderless" nature of the digital world means collaboration must cross traditional business boundaries to deliver a seamless customer experience.

Building a diverse team: Digitalization is not just about technology, so transformation can only succeed with a diverse team.

Oversee a change in mindset: Persuading employees to abandon old-fashioned thinking and their resistance to changing the status quo

and mobilizing all stakeholders to participate are the most difficult parts — but also the most critical parts — of digital transformation.

Huawei's Digital Leadership Building Model

Step 1: Huawei is clearly aware that digital leadership means leaders take the initiative to drive digital transformation. Based on its insights into leaders during the digital transformation process of the industry, Huawei proposes the following requirements for digital leaders:

Gain insight into digital development trends and create new business values:

To tap into the potential of the business domain, digital leaders need to keep an eye on future digital trends and improve their understanding of how the latest digital technologies can create business value.

Continuously pay attention to changes in customer requirements:

Digital leaders shall continuously improve the sensitivity to changes in customer requirements and user experience.

Adopt a more holistic leadership approach:

Good digital leaders can delegate and enable employees and teams with an open and inclusive approach while clarifying and guiding the enterprise's development, leading diverse teams to success.

Break down barriers between people and work together:

Collaboration is regarded as a key to successful digital transformation. The "borderless" nature of the digital world means collaboration must cross traditional business boundaries to deliver a seamless customer experience.

Activating employees' internal motivation and helping them understand values of their jobs: Digital leaders need to continuously

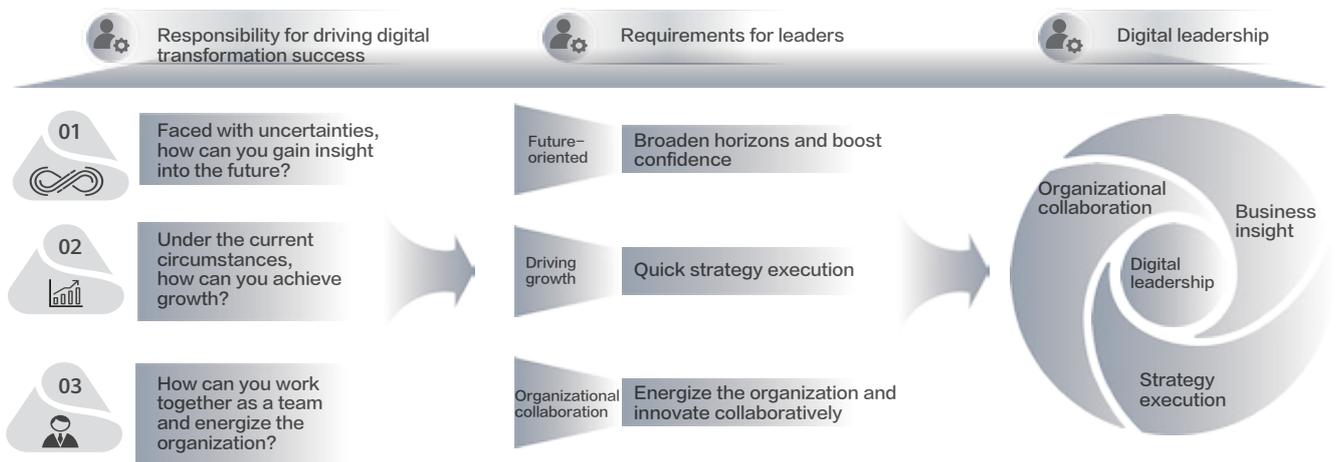


Figure 1: Huawei's digital leadership model

identify and recruit future stars who are good at digital transformation.

Step 2: By breaking down leaders' responsibilities during digital transformation, Huawei has developed a digital leadership model from three perspectives: future-oriented approaches, driving growth, and energizing the whole organization. (See Figure 1)

Business insight: How can you lead the team forward with a vision for digital transformation?

Strategy execution: How can you find quick-win breakthrough points for digital transformation strategies and quickly execute them to maintain growth?

Organizational collaboration: How can you make the organization a vibrant and positive place to work through collaboration and innovation while ensuring your digital transformation is on the right track?

In the digital transformation process, requirements for executive leadership improvement are divided into three levels: broadening horizons and changing mindsets, improving capabilities, and optimizing problem solving. Huawei's digital leadership training model (see Figure 2) is also divided into three levels: high-quality courses based on practice sharing, research programs based on key groups, and training practice solutions based on business issues. Based on the fundamental requirements of enterprises,

Huawei aims to help enterprises succeed through customized design and training.

Developing Digital Leaders

Organizations in the critical phase of digital transformation usually have a diverse workforce, while employees hope to realize their value with a more supportive environment for innovation, more independent innovation process, a more exciting innovation goal, and stronger innovation capabilities. This means there's a great need for organizations to develop digital leaders.

Selecting the Right Talent

Of course, organizations need to select the right people to be digital leaders. Based on the positioning of different types of digital leaders, customized development solutions should be developed to embed learning into regular working scenarios, ensuring that specific skill needs for different digital leaders can be met. While digital leaders don't necessarily have to master the latest digital technologies, they do need to understand the value that digitalization brings to business model transformation.

Thinking with a Digital Mindset

Organizations need to think with a digital mindset and design digital leadership acceleration solutions from three

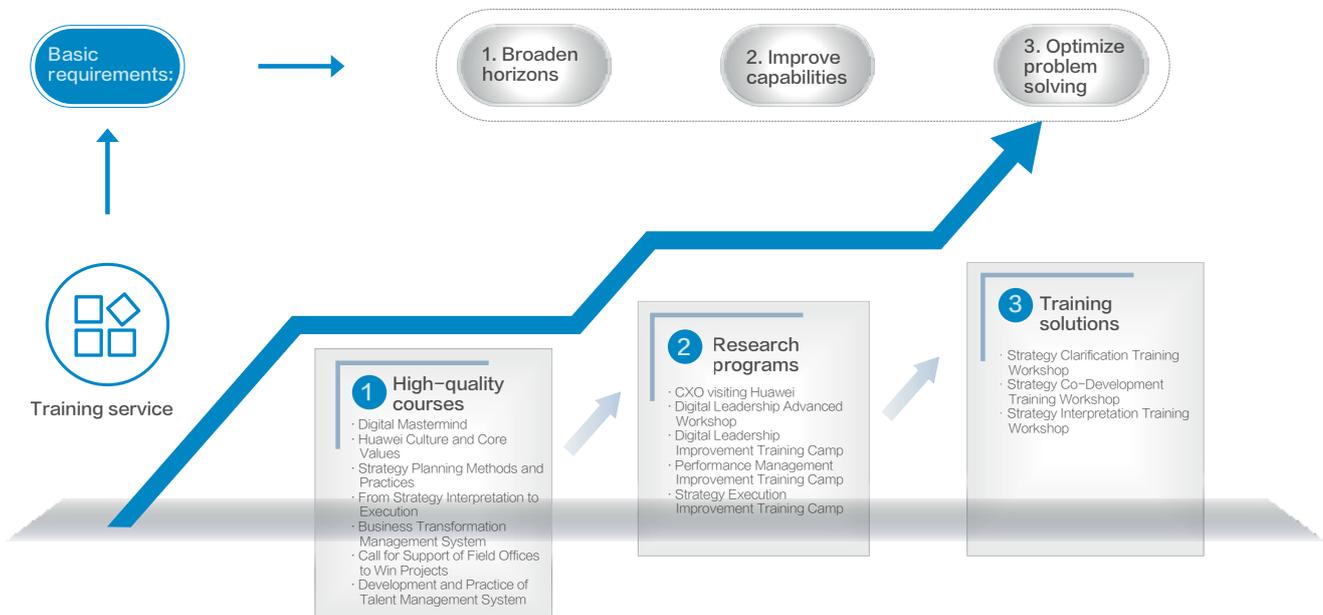


Figure 2: Huawei's digital leadership training model

aspects: confidence-building, effective execution, and energizing the whole organization.

Confidence-building: Digital leaders shall deliver digital transformation trends and improve the organization's confidence in transformation success.

Effective execution: Digital leaders shall act decisively and strive for quick wins to facilitate the implementation of transformation strategies.

Energizing the whole organization: Digital leaders shall share culture and management ideas to stimulate the vitality of the organization.

Delegation, connections, and incentives:

Organizations should focus on digital leadership development strategies and emphasize adaptable leadership guided by culture, delegation, risk-taking, knowledge sharing, matrix management, and talent

development. In this way, organizations can think digitally and accelerate their development through cross-departmental digital leadership projects, helping them effectively apply Internet thinking and digital technologies to accelerate their digital transformation with delegation, connection, and incentives. (See Figure 3)

Reconstructing the Digital Talent System with an Integrated, Four-Dimensional Plan

With the development of digital technologies, the demand for digital professionals is changing rapidly. Teams that are proficient in digital technologies are responsible for driving new digital growth. This means that organizations need to adjust the traditional talent training and development system (see Figure 4) to

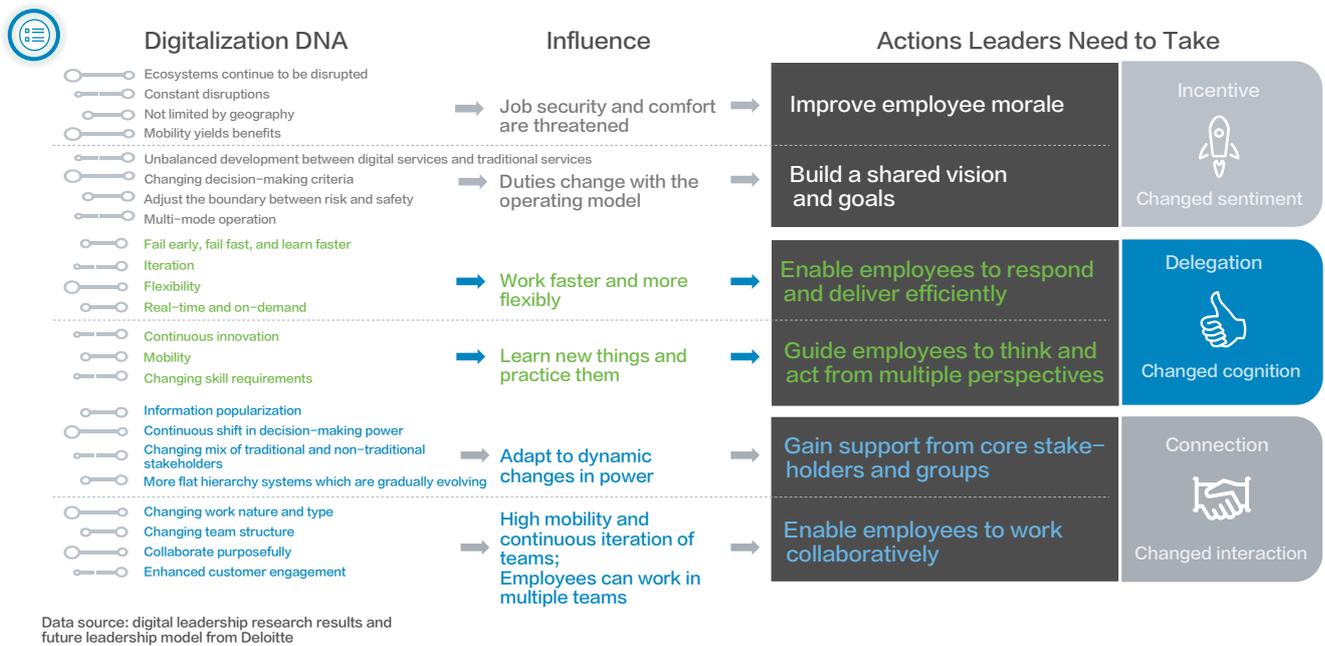


Figure 3: Delegation, connection, and incentives for digital transformation

flexibly, quickly, and efficiently upgrade the skills of their employees.

A Professional Skills System with a Top-Level Design

As well as professional knowledge and skills, establishing digital competence also requires soft skills, such as fast learning, people-oriented thinking, entrepreneurship, flexible adaptation to industry changes, and pursuit of the optimal user experience.

The professional capability model, which is important for organizations to acquire and evaluate digital talent, can provide a comprehensive reference for external talent recruitment and internal talent training. The key to digital capability development is to establish a lifecycle management system from strategy to execution on talent value based on clear and evolving capability standards. Classifying professionals and analyzing success factors of each role in business scenarios are important in establishing professional capability standards.

Develop talent sequences: Based on the overall capability framework of digital transformation, professionals should be

classified by characteristics of different professional domains (talent sequences). This classification is the starting point for digital capability design and the basis for designing career development paths for digital professionals.

Summarize key capabilities: Organizations shall analyze key success factors in different business scenarios based on the role positioning and work analysis of each role classified (talent sequences), and then summarize the key capabilities required.

Develop digital skills: Digital transformation requires employees to have new expertise, so it is important to consider the capabilities required by the latest digital technologies. For example, business analysts need business knowledge of a specific domain or industry, and they also need to master knowledge of new technologies, such as Artificial Intelligence (AI), so that organizations are able to perform business analysis based on big data.

Four-Dimensional Optimization for System Branches

In the digital transformation process, organizations need to reconstruct the professional talent development system from

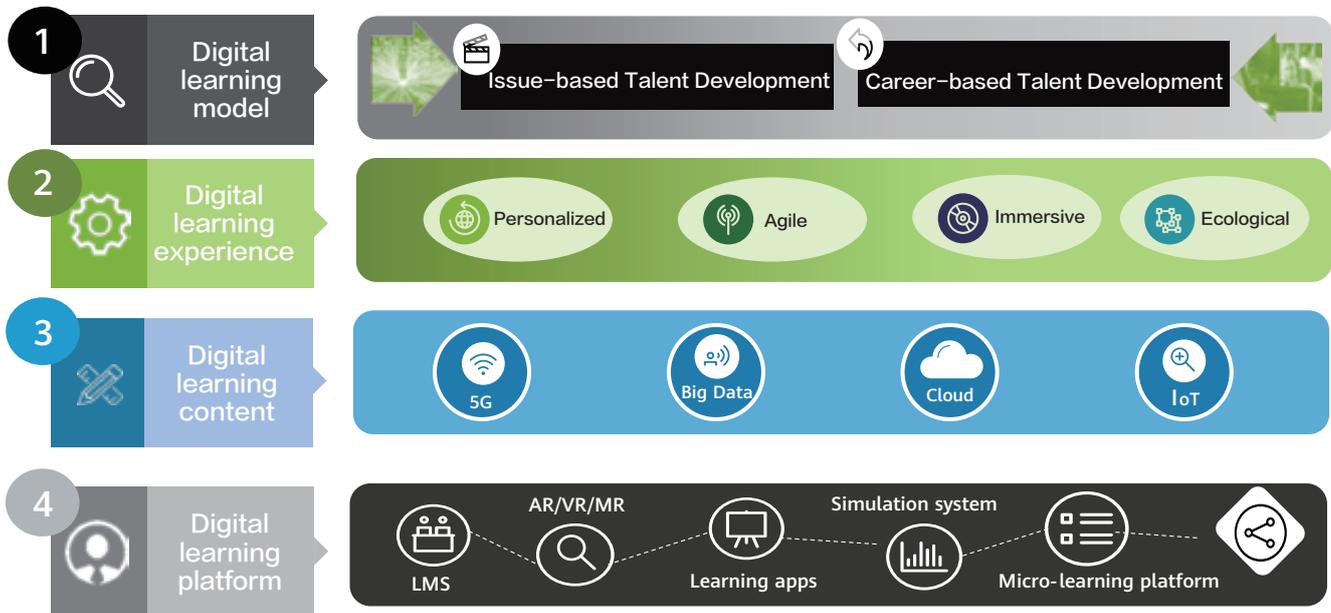


Figure 4: Four-dimensional talent development system

four aspects: learning model, experience, content, and platform to flexibly, quickly, and efficiently upgrade the digital skills of their employees.

Learning Model

Successful organizations will make employee training more efficient through the issue-based talent development model and build a career-based talent development model based on the career development system, building a more sustainable and systematic talent development system.

In this development model, these organizations will be future-oriented and identify the links between existing skills and those required in the future, raising capability requirements for employees from the top down. Meanwhile, they will also help employees develop differentiated capabilities

based on their career development paths. For their part, employees need to constantly improve their professional knowledge and skills. They can only succeed by being customer-centric, agile, and adaptable.

Learning Experience

Many organizations integrate learning resources and apply digital technologies to deliver the best learning experience for trainees while aligning with business departments. In the future, digital learning will be more personalized, agile, ecological, and immersive, and it will be committed to creating the ultimate learning experience, with a product-based mindset. (See Figure 5)

Enterprises, society, government, and schools will form a complete talent development ecosystem. By applying cross-industry thinking, as well as thinking from

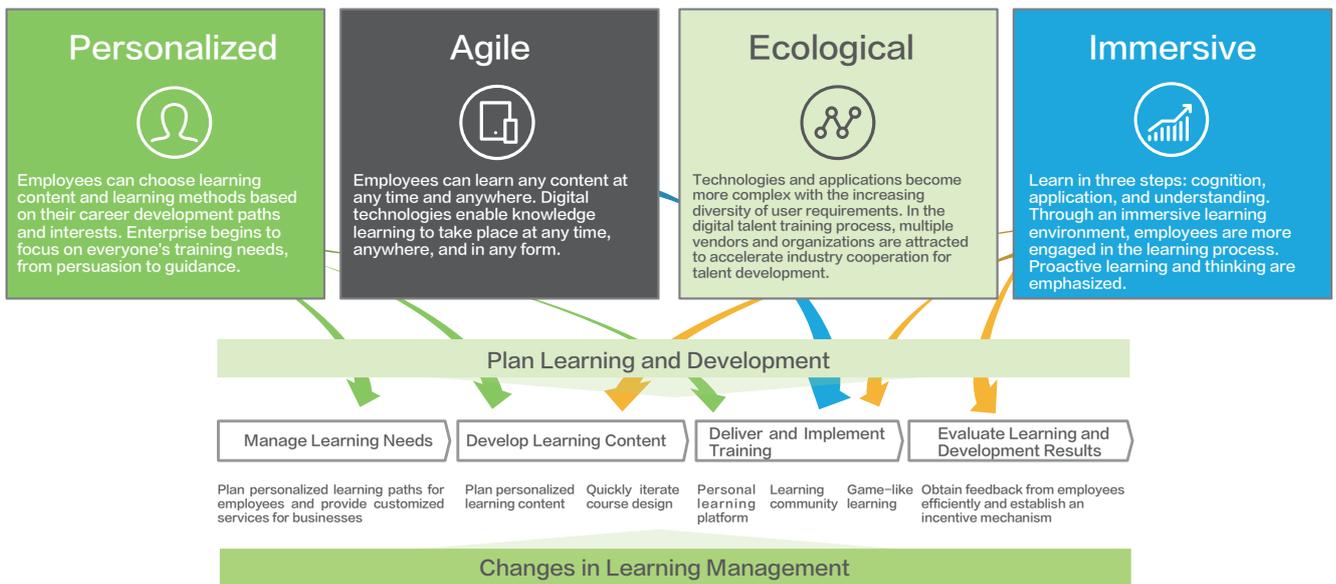


Figure 5: Changes in learning management

the perspective of Internet applications, they will work together to develop personnel that is more innovative and technical skills that are applicable to diverse disciplines.

Learning Content

After the standards for digital professionals are defined, organizations need to design a systematic learning map and course system based on the capability model to streamline the relationship between Competencies & Qualifications, employee proficiency assessment (gap analysis), and the course system. Organizations can adopt hybrid learning, which uses a variety of tools to teach the skills that employees need in digital transformation.

When designing learning maps and learning courses, as well as digital expertise, organizations need to focus on developing cross-industry capabilities to train talent capable of applying digital technologies in vertical markets. For example, when designing training courses for FinTech talent, organizations should consider both financial business knowledge such as risk control and customer service marketing and technology knowledge such as big data, and cloud computing to train professionals who understand both finance and technology.

Learning Platform

As learning at any time and lifelong learning become mainstream concepts, knowledge customization services will become prevalent. Meanwhile, more and more people have become accustomed to using the Internet to obtain learning resources for self-study, so the digital learning platform should focus on employees' learning needs and use diversified technical means to improve their learning efficiency.

The learning platform should be employee-centric and provide flexible and diverse learning resources and content to help employees easily find the content they need based on internal and external resources. The platform should also be able to adapt to changing business and employee requirements while ensuring that there is a logical order to what employees learn. At the technical level, the platform can also introduce the latest multimedia, virtual reality, and social media technologies to make learning more fun, provide easy access to different channels, and make more intelligent course recommendations. ▲

(This article is compiled based on the Top-Level Design of Talent Development for Digital Transformation in China, jointly released by Huawei and Deloitte China.)

Building a Vibrant Talent Ecosystem to Empower Industries

By Ma Yue, CEO of Huawei's Smart Road BU

Talent has been the most important factor in production throughout history. In the digital world that we find ourselves in today, there's a need to bridge the gap between talent supply and demand, so Huawei has been building talent alliances, developing talent standards, improving skills, and promoting the value of talent. Ultimately, Huawei strives to build educational, industry and public talent ecosystems to improve the digital skills of societies, as well develop technologies and industries.

New Information and Communications Technology (ICT), such as 5G and cloud, Artificial Intelligence (AI), is helping to build a world in which everything is sensed, connected, and intelligent. In the past two years, intelligent and digital technologies have played a vital role in the fight against COVID-19. Globally, most governments agree that digitalization is essential, with more than 170 countries worldwide implementing national digital strategies.

According to research by the renowned management consulting firm McKinsey & Company, the COVID-19 pandemic has accelerated the digitalization process by seven years around the world and 10 years in the Asia-Pacific Region. With industries around the world going digital, ICT has become a key driver in executing national strategies. ICT can drive the rapid development of the digital economy, which is growing at a rate 2.5 times that of national Gross Domestic



Building a vibrant talent ecosystem: Content (ICT knowledge + certification + digital transformation experience) + platform (Huawei Talent/learning tools)

Figure 1: Huawei's talent alliance





We strive to build educational, industry, and public talent ecosystems in order to improve the digital skills across society, as well as develop technologies and industries.

— Ma Yue, CEO of Huawei's Smart Road BU



Product (GDP).

As they apply more digital technologies, the biggest challenge industries face as they develop is a lack of ICT talent. The application of emerging technologies is reshaping the industry value chain and the competitive landscape. Accelerating digital transformation is the only way for enterprises to survive, and to thrive, while digital talent is the key to digital transformation. Meanwhile, there is a structural gap between ICT talent supply and industry demand. The problem is especially prominent in emerging domains such as Huawei's Kunpeng, HarmonyOS, and Euler ecosystems, which urgently need millions of ICT professionals.

In addition, talent training needs to keep pace with fast-developing digital technologies, which means it's necessary to constantly update teaching materials, courses, and experimental conditions. Traditional college education isn't sufficient to fill the talent gap in industry verticals that are going through accelerating digital transformation.

Based on the technologies, knowledge, experience, and best practices it has accumulated in the ICT industry, Huawei has

been building talent alliances, developing talent standards, improving skills, and promoting the value of talent. We strive to build educational, industry, and public talent ecosystems in order to improve the digital skills across society, as well as develop technologies and industries (see Figure 1).

Building Alliances and Ecosystems for Talent Training

To quickly develop ICT talent for new domains, alliances, and ecosystems should be established. Huawei shares technologies and experience and exchanges capabilities with our partners and customers. We collaborate with universities, international education organizations, governments, industry associations, as well as our partners and customers, working together to build an enablement platform for sustainable talent development.

Colleges and universities are the source of talent development and supply. The cooperation between universities and enterprises ensures the continuous inflow of advanced

technologies and industrial practices into universities. In 2013, Huawei launched the Huawei ICT Academy project — a university-enterprise collaboration program. The project shares the latest technologies, course systems, and engineering practices to help universities build a stronger faculty. It aims to share knowledge on cutting-edge technologies in colleges and universities around the world and help them develop ICT talent by creating online learning and experiment platforms, carrying out innovation training camps, and holding teacher workshops. To date, Huawei has set up Huawei ICT Academies in more than 1800 colleges and universities around the world, while a total of 150,000 college students have passed Huawei certifications.

In response to UNESCO's call to suspend classes without stopping learning, Huawei formulated its 'Learn ON' action plan to ensure the continuity and quality of learning during the pandemic. Huawei also participated in a coordinated industry-university talent development program launched by China's Ministry of Education. By November 2021, Huawei had invested in 480 projects related to the program.

Huawei also works with ministries of labor and human resource departments in various countries, providing ICT training for their citizens and promoting local employment. Huawei was one of the first group of social training and assessment organizations that was registered at the Shenzhen Human Resources Bureau. Candidates who pass Huawei certification exams can receive corresponding Huawei certificates as well as vocational skill certificates, and can get subsidies to improve their vocational skills.

Outside China, Huawei certifications have become nationally recognized enterprise certifications in Colombia, and Huawei expects to help Colombia to train 50,000 ICT professionals and experts in the next three years.

Huawei has also engaged in joint ICT talent development programs with governments around the world. For example, in 2019, Huawei and the Egyptian government launched a flagship talent capability development program — the ICT Talent Bank (ITB), to provide technical training for Egyptian students. Huawei also held talent selection conferences to promote ICT talent employment and support digital transformation in related industries. By May 2021, Huawei had set up 69 ICT academies worldwide, training 400 teachers and more than 10,000 students, among whom 4000 had passed Huawei certifications.

To support lifelong learning, Huawei works with its Authorized Learning Partners (HALPs) to provide training and certification services to the public, with the aim of training more people to become ICT professionals. By September 2021, Huawei had 110 HALPs worldwide.

Developing Talent Standards to Improve the Quantity and Quality of ICT Specialists

Based on the collaborative 'cloud-pipe-device' ICT architecture, Huawei has launched leading ICT talent development systems and certification standards — Huawei Career Certification and Huawei Professional Certification. Huawei Career Certification helps



Huawei will work with ecosystem partners to build an open, sustainable, and mutually beneficial ICT talent ecosystem, with a target of training more than 1 million ICT professionals and experts by 2024. >>

Across the globe, Huawei certification is gaining recognition year by year, with the total number of Huawei certified individuals exceeding 540,000 by September 2021.

to improve trainees' skills and increase their job opportunities (see Figure 2). Huawei Professional Certification is designed to improve the technical strengths, sales skills, and project management capabilities of partners based on their job positions.

Across the globe, Huawei certification is gaining recognition year by year, with the total number of Huawei certified individuals exceeding 540,000 by September 2021.

Huawei has incorporated certification training for on-the-job engineers into the courses of colleges and universities, building a talent development model that can be implemented in those education institutions. This model aims to bridge the gap between vocational education and enterprise development as well as the gap between curriculums and the knowledge and skills that enterprises need, so that enterprises can easily

recruit high-quality graduates who are ready to solve real-world problems. This model also allows enterprises to slash the time spent on and the costs of new employee training.

Shenzhen Polytechnic, founded in 1993, is one of China's flagship vocational colleges, having been among the first of these institutions to open in the country. It has partnered with Huawei for over a decade. After establishing a Huawei ICT Academy, the two parties have explored a new model of college-enterprise collaboration that complements each other's strengths for coordinated development, which improves industry-education integration. One of the outcomes of this partnership is the program of the Development and Practice of Integrating Certificate Acquisition in College Courses for ICT Talent, which won the National Teaching Achievement Special Award in 2018.

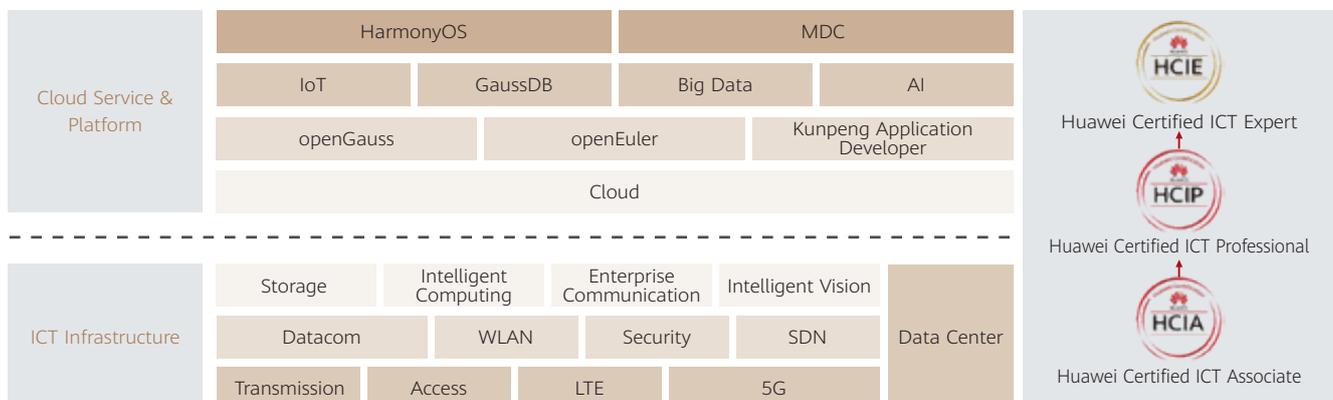


Figure 2: Huawei's certification architecture

Huawei also cooperates with educational authorities to participate in the reform of teaching systems. In China, Huawei participated in the pilot project of '1 + X' certificates for vocational education, which encourages students to gain multiple vocational certificates while pursuing an academic qualification. Four Huawei certification systems, including network system construction and Operations and Maintenance (O&M), and intelligent computing platform application development, were approved to be part of this pilot project. The '1 + X' textbook, jointly compiled by Huawei experts and university teachers, has been included in the list of national textbooks for vocational education during the 13th Five-Year Plan Period by China's Ministry of Education. Since its release just over a year ago, more than 100,000 copies of the textbook have been issued.

Improving Skills to Help Enterprises Go Digital

Talent is fundamental to enterprise

development, so Huawei has been collaborating with enterprises to develop digital talent, to help them go digital and intelligent, and to succeed in the digital world.

Huawei has accumulated vast experience during its own digital transformation and incorporated that experience into its talent development solution. Huawei's talent development solution focuses on technical enablement, business enablement, and management enablement (see Figure 3). Technical enablement is focused on network operations, O&M, and emerging technologies to develop ICT talent. Business enablement is focused on applying ICT in industries and developing 'π-type' business talent — those who are familiar with both ICT and industry knowledge. Management enablement is for mid- and high-level business managers, providing guidance on how to tackle the challenges of digital transformation from the perspectives of business insight, strategic execution, and organizational collaboration.

Huawei has also made significant achievements in developing ICT talent for

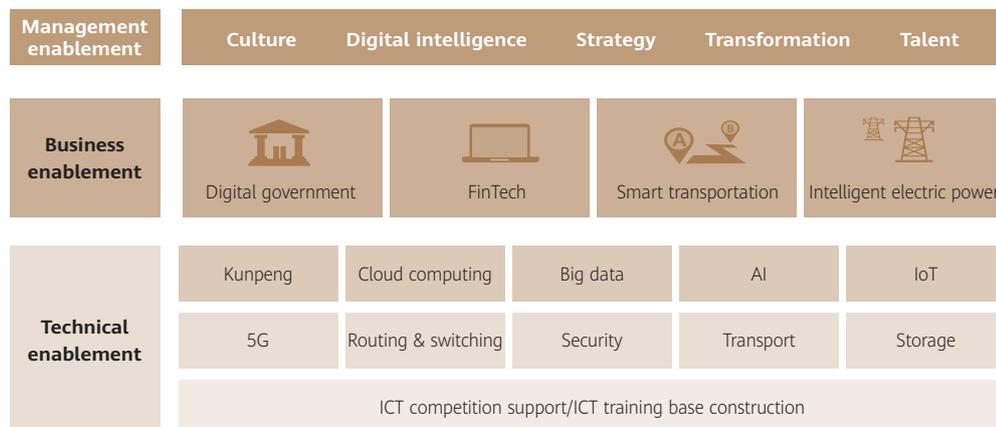


Figure 3: Huawei's digital talent development services

A good environment is crucial for talent growth, so Huawei strives to promote the value of talent and create a favorable atmosphere for talent growth by releasing talent white papers, as well as holding events such as Huawei ICT Competitions, talent selection conferences, Huawei Certified ICT Expert (HCIE) Nights, and summits.

industry verticals. In the financial service industry, Huawei assisted the Credit Card Center of China CITIC Bank in enabling its key staff. The enablement helped the bank staff build a closed-loop mindset that consists of setting goals, identifying knowledge and skills gaps, devising key measures, and ensuring effective execution through practical exercise, assisting the bank in executing digital transformation strategies. Huawei has also worked with the Longgang District Government of Shenzhen, Wuhan Metro Group, FAW-Volkswagen, and Everbright Bank, helping them improve the digital skills and digital management capabilities of their employees. In the first three quarters of 2021, Huawei provided digital talent development services to many industry customers, training 140,000 employees.

Creating a Favorable Environment for ICT Talent Growth

A good environment is crucial for talent growth, so Huawei strives to promote the value of talent and create a favorable atmosphere for talent growth by releasing talent white papers, as well as holding events such as Huawei ICT Competitions, talent selection conferences, Huawei Certified ICT Expert (HCIE) Nights, and summits.

To help countries formulate talent development policies and enterprises assess their talent needs, Huawei regularly releases white papers on talent to provide insight into ICT

developments, analyze talent needs, offer talent development paths, and share best practices for talent development. With its partners, Huawei has released talent ecosystem white papers in China and Morocco, and will also release white papers in Kenya, South Africa, and Spain, as well as in several other European countries.

Huawei ICT Competitions aim to provide an international platform for college teachers and students, helping them increase their ICT knowledge, improve their practical skills and innovation capabilities, and showcase their talent and creativity. Since the first one in 2015, each edition of the Huawei ICT Competition has attracted more and more participants from around the world. In fact, in 2020 alone, more than 150,000 students from 2000 colleges and universities in 82 countries and regions signed up for the competition.

Huawei prioritizes talent ecosystem building and enables talent development for various industries, holding multiple online and offline talent selection conferences to build a bridge between talent supply and demand by bringing together students from Huawei ICT Academies, ecosystem partners, and industries. Moving forward, Huawei will work with ecosystem partners to build an open, sustainable, and mutually beneficial ICT talent ecosystem, with a target of training more than 1 million ICT professionals and experts by 2024. These efforts will help us to achieve our aim of improving the digital skills throughout societies and support sustainable social and economic development. ▲

The logo consists of three concentric teal circles. The text 'TECH 4 ALL' is centered within the innermost circle. The number '4' is white with a red triangle pointing upwards from its bottom-left corner.

TECH
4 ALL



Driving Equity & Quality in Education



Make learning more accessible and effective and provide training in digital skills so that everyone can fulfill their potential.

Building a Fully Connected, Intelligent World





Empowering Innovators and Entrepreneurs at Tsinghua University's iCenter

By Li Shuangshou, Director, the iCenter at Tsinghua University

Innovation drives development. That has been evident throughout human history, but how is innovation achieved? A critical component is training people how to tap into their talent and creativity. Located in Beijing, China, Tsinghua University's iCenter aims to do just that. Working toward that goal, the iCenter — a national entrepreneurship and innovation base — has formed a training system that integrates three or main components or "spheres," and it has worked with Huawei to launch an "AloT" innovation training camp.

Innovation-driven development has become a priority for countries seeking to develop unique competitive advantages. Technological and social development is transforming scientific and technological innovation — enabling a shift from innovation being unattainable for anyone except elite

groups in societies that prevailed in the industrial age to innovation being more open, more accessible, and more collaborative in the information age.

As China seeks to make progress in this field, it is focusing on the notion that people are the most important factor

in scientific and technological innovation. To put it simply: In order to lead the technological innovation worldwide, China must identify and train talented individuals through innovation activities and retain those individuals by providing a favorable business environment for them to thrive in.

With that theory in mind, the Chinese government has in recent years set up many regional and national demonstration bases for innovation and entrepreneurship, as well as bases in universities and scientific research institutes — these bases can help to convert a pool of skilled individuals and technological strengths into industry and economic advantages. They do so by reforming educational and scientific systems, improving intellectual property rights and technological innovation incentive systems, and tapping into human and technological resources.

Establishing a Three-sphere Integrated System

Dedicated to educating innovators and entrepreneurs, the iCenter is a national-level interdisciplinary training base. The 'i' in its name refers to industry, interdisciplinary, innovation, and international. It is Tsinghua University's largest engineering practice and innovation education platform, integrating the university's resources to support entrepreneurship and innovation.

iCenter adopts a three-sphere integrated system — consisting of value shaping, skills development, and knowledge sharing — to combine new ideas, innovation practices, and entrepreneurship and support the whole process of individual development. iCenter

designs courses, competitions, practices, and international exchanges to form a training system suitable for both undergraduate and postgraduate students. It also develops an evaluation system that enables students, teachers, teams, and organizations to supervise, evaluate, and give feedback on each link.

Through continuous iteration and improvement, iCenter has formed a complete training system for entrepreneurship and innovation education in colleges and universities, which provides opportunities to enhance the quality of the education they can provide, enabling students to improve their innovation skills.

Applying the OBE Model to Innovation and Entrepreneurship Training

The Outcomes-based Education (OBE) model — adopted in the US and Australia in the late 20th century and since applied in education systems in countries around the world — orients each aspect of an educational system around goals (or outcomes). By the end of the educational course, each student should have achieved the goal.

Based on the OBE concept, the three-sphere system is divided into four modules: basic requirements, training system, evaluation standards, and demonstration application. The research on basic requirements is the starting point and supports the design of training system. Then, the results of the design need to be tested in practice through demonstration application, which is evaluated by a set of standards.



Through continuous iteration and improvement, iCenter has formed a complete training system for entrepreneurship and innovation education in colleges and universities. >>



Tsinghua University's main building

Finally, the evaluation result is used to improve the training system.

iCenter has analyzed the concepts and mechanisms involved in building an innovative education platform from multiple perspectives, and provides favorable conditions for incubators, technical training, product development, processing, and management consulting. It has built an open innovation practice platform that includes courses, projects, and activities. Its one-stop service model covers the entire innovation process, from formulating ideas and putting them into practice to launching an entrepreneurial project.

The iCenter's AIoT Artificial Intelligence (AI) + Internet of Things (IoT) innovation

training camp, held in partnership with Huawei, recruits interested students to develop innovative products through project-based learning and group work. As soon as information about the camp was publicized, students enthusiastically signed up.

The camp's training system entails studying specialist knowledge and then creating products or projects through group work, which is then evaluated by specific evaluation standards.

The camp gathered students from different majors and grades to stimulate each other's creativity and share knowledge, broadening their horizons and establishing a foundation for a more complete and advanced knowledge system. ▲



Shanghai Jiao Tong University and Huawei Have Built a New Talent Development Model

By Chu Pengzhi, Assistant Director, the Student Innovation Center at Shanghai Jiao Tong University

Shanghai Jiao Tong University and Huawei have worked together to develop a training model that has reformed the university's course content and teaching methods, supported and encouraged its students to pursue entrepreneurship, and set an example for mutually beneficial collaboration between universities and enterprises.

It's been almost five years since Shanghai Jiao Tong University and Huawei began collaborating on projects that link enterprises and education institutions. In 2017, Shanghai Jiao Tong University (SJTU) and Huawei signed an agreement to establish the Huawei ICT Academy Innovation Talent

Center. The two parties devised a "Course-Competition-Innovation" training model that has enabled many students to learn more about digital technologies; it entails integrating Huawei technologies into the university's courses, holding Information and Communications Technology (ICT)



STJU and Huawei devised a "Course-Competition-Innovation" training model that has enabled many students to learn more about digital technologies; it entails integrating Huawei technologies into the university's courses, holding ICT competitions, and facilitating students' innovation and entrepreneurship. >>

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To develop the innovation and entrepreneurship demonstration center and train more students in innovative techniques and ways of thinking, SJTU rebuilt the Engineering Training Center (which was essentially a facility for students to practice their engineering skills) in 2016 and turned it into a Student Innovation Center, which offered additional functions such as the business start-up guide.

While operating the Student Innovation Center, the university found several problems with the existing talent development model: The training objectives lacked foresight and were not customized according to different needs, there was a disconnect between what was being taught and what the industry needed, and the center lacked advanced technical platforms to support teaching activities. To solve these problems, the university and the industry must collaborate.

As a leading global provider of Information and Communications Technology (ICT) infrastructure and smart devices, Huawei is training ICT talent for colleges and universities through collaborative projects. Driven by shared goals and complementing each other's respective strengths, SJTU and Huawei are working together to train students.

Integrating Huawei Technologies into College Courses

In recent years, emerging digital technologies — such as cloud computing and big data — are becoming increasingly

influential. In this context, how can we support students to learn these cutting-edge technologies and achieve their innovation and entrepreneurship aspirations?

We have partnered with Huawei to develop a series of innovation training courses focused on cutting-edge technologies — such as Internet of Things (IoT), Artificial Intelligence (AI), and HarmonyOS, including learning LiteOS + Narrowband Internet of Things (NB-IoT) with ease, IoT engineering practice, open class for Huawei Certified ICT Associate-AI (HCIA-AI), big data courses for the top five universities in East China, a training camp based on simulation of Huawei autonomous driving, Huawei Cloud ModelArts, cybersecurity practice, and HarmonyOS innovation training camp. We have delivered each of these courses more than 30 times, training more than 2000 students.

For example, the HCIA-AI open class held in 2018 attracted more than 400 students from a diverse range of departments and majors, including mechanical engineering, electronic information, naval architecture, material science and engineering, and economics management; many teachers were also very enthusiastic about the course. Learning knowledge that extends beyond the scope of the subjects they have chosen as their majors, broadens students' horizons, and helps them build a more complete knowledge system, which gives them the building blocks for more innovative thinking.

Unlike traditional theoretical teaching, these new courses focus on real-scenario application development based on project programming, improving students' practical capabilities and enabling them to



Shanghai Jiao Tong University students celebrate winning the first prize in the Innovation Track of the 4th Huawei ICT Competition Global Final

independently develop their own projects for evaluation, oral defense, examinations, and competitions. As well as helping students master new technologies, this model of learning and practicing also inspires their creativity.

Through cooperating with Huawei and reforming our teaching models, we have trained many students. Our achievements have been recognized by the university and won several national awards. For example, the innovative education model featuring resource-sharing, cross-subject teaching, university-enterprise cooperation, and promoting learning and innovation developed by the Student Innovation Center was presented with the Grand Prize of the SJTU Teaching Achievement Award in 2019. The Algorithms and Practices of Deep Learning course won the Grand Prize in the Second National Blending Learning Design and Innovation Competition.

Improving Students' Innovation Skills Through Contests

Science and technology competitions are an effective way

to help students improve their practical skills. We encourage students to apply the knowledge they learned in class to practice, and design products and solutions based on market demand for various competitions. This approach can inspire students to become passionate about innovation and help them to improve their skills.

Since 2018, SJTU has participated in the Innovation Competition of Huawei ICT Competition for four consecutive years, and its team won first place in the Innovation Track of both the 4th and the 5th Huawei ICT Competition Global Finals. In the 5th Huawei ICT Competition, graduate students from the School of Mechanical Engineering developed an intelligent driving platform centered on device-cloud synergy. This impressive platform used algorithms such as image augmentation, GMapping, and Adaptive Monte Carlo Localization (AMCL) to fulfill functions such as traffic light recognition, car speed limit and speed limit cancellation, cross walk recognition and pedestrian avoidance, lane line and intersection driving, and automatic parking.

In the National IoT Design Competition of 2018, the team



We have achieved meaningful results. For example, four graduate students from the School of Mechanical Engineering and the School of Electronic Information and Electronic Engineering used cloud and AI technologies to develop a Huawei Cloud-based virtual live broadcast service platform. >>

from SJTU won first prize for its intelligent library seat reservation system and for its NB-IoT-based Automated External Defibrillator (AED) intelligent management system. The former also won the Special Innovation Award from Huawei.

Focusing on Innovation and Entrepreneurship to Train Talent

Learning digital technologies and participating in various competitions are new ways for students to develop their skills, while innovation and entrepreneurship can accelerate the development of life-changing technologies. In response to the national initiative of College Students' Innovation and Entrepreneurship Training Program that China's Ministry of Education launched, the Student Innovation Center has enabled our students to achieve even more. We have guided students' innovation in research programs and projects and encouraged students to apply what they have learned to working in the industry and even to start their own businesses.

Crucially, we have achieved meaningful results. For example, four graduate students from the School of Mechanical Engineering and the School of Electronic Information and Electronic Engineering used cloud and AI technologies to develop a Huawei Cloud-based virtual live broadcast service platform. The advanced AI vision algorithm makes virtual live broadcasts much easier, enabling e-commerce companies to better integrate virtual reality into live broadcasts, allowing real audiences to interact with virtual

anchors, and making the live broadcasts more entertaining. In 2019, the team submitted the product to the 4th Huawei ICT Competition, winning first prize in the Innovation Track. Based on this technology, they set up a company named VOKA, which has already gained funding and investment, and they are currently optimizing the product before rolling it out to the market. This is a prime example of applying knowledge learned from the course to contribute to social progress.

Our goal is to train innovation-oriented talent in the university and inspire more young people to learn and innovate technologies. Since 2019, the Student Innovation Center and Huawei have jointly held two editions of the Automated Driving Cup, an AI technology-featuring competition for outstanding middle school students across the country. The event aims to link basic education with higher education to help train AI specialists.

The cooperation between the university and Huawei has reformed course content, supported students' entrepreneurship, and set an example of mutually beneficial cooperation between universities and enterprises. This model has been widely recognized by universities and enterprises nationwide, and has been successfully replicated in Harbin Institute of Technology and Tianjin University.

We will deepen our partnership with Huawei to train more innovative ICT specialists by focusing on cutting-edge technologies such as AI and HarmonyOS, contributing to China's ambitious plan to become a global ICT powerhouse. ▲



ITB Prepares Students for the Indonesian ICT Industry with Huawei Competitions

By Rifqy Hakimi, Associate Professor, ITB

The Indonesian Information and Communications Technology (ICT) job market needs increased experience with the latest technologies. To meet that need, Huawei has been working with one of the nation's leading universities to provide training and competitions that focus on fields such as cloud computing and routing and switching.

Institut Teknologi Bandung (ITB) is a state university in Bandung, Indonesia. Established in 1920, it's the nation's oldest technology-oriented university. Known as

one of top universities in Indonesia, ITB ranked 313th in the 2021 QS World University Rankings, 62nd in the QS Asian University Rankings, and top five in the National



ITB has been a Huawei partner for about 10 years, maintaining enthusiasm for learning about Huawei's technologies throughout that period. With seven certified instructors, in 2020 alone, the university trained more than 200 students on Huawei's technologies and courses. >>

Higher Education ranking. ITB is one of the most selective schools in the science and engineering field in the nationwide state university entrance tests.

In Indonesia, university graduates often don't have the skillset required to work in ICT companies, so practical training and certification is needed for students to improve their skills to meet the industry's needs. However, it's not always particularly easy to persuade students to take training and try to gain certification. Although ITB's students are generally enthusiastic, there are several methods that are useful to encourage students to study. For example, events such as job fairs and ICT competitions can persuade students to learn and try to gain certifications.

ITB has been a Huawei partner for about 10 years, maintaining enthusiasm for learning about Huawei's technologies throughout that period. With seven certified instructors, in 2020 alone, the university trained more than 200 students on Huawei's technologies and courses such as Routing and Switching and cloud computing, attaining a high pass rate compared with other universities. There are highly dedicated instructors, support from administrative staff who are ready to manage all Huawei ICT Academy activities, support from leaders, as well as cooperative and enthusiastic students.

During the COVID-19 pandemic, ITB implemented another type of learning delivery — online training. This online training is usually a short course that is spread across eight days, with about four

hours of training per day. These learning methods ensured the learning delivery was always running despite an unprecedented situation.

Huawei also initiated a special program during the pandemic — LearnOn. Huawei provides all the tools needed for online learning with the Talent Online learning management system. Huawei provides Massive Open Online Courses (MOOCs) and the iLearningX platform (which includes webinars and exams) for teachers and students to learn online.

ITB has several ways to teach students about Huawei's technologies. The first way is partially integrated into the university curriculum. This method uses the Huawei hands-on lab guide in the laboratory practice course. The second way is fast-track training, which is usually delivered in a five-day period at the end of a semester. The third way is blended learning, in which the training is combined in-class and self study using the MOOC provided in Huawei Learning platform. The schedule is usually flexible and is dependent on the availability of the students and the instructor.

As well as being very active in developing talent, ITB has earned several achievements in Huawei events. In 2018 and 2019, ITB won National ICT Competition and became the winner of both Grand Prizes (for both the Cloud Track and the Network Track) at the Global Final of the ICT Competition, which was held in Shenzhen, China, in 2020. From August 25 to September 7, 2019, students from ITB were selected to join the Seeds

ITB's rector, Professor Reini Wirahadikusumah Ph.D, encouraged ITB's students to maintain their enthusiasm, to work hard, and to never stop studying. "It's not the end; it's just the beginning. The achievement will be an excellent start to prepare for the challenges of tomorrow, because the future of this country is in your hands," she said.

For The Future program, which was held in Beijing and Shenzhen.

In December 2018, ITB first joined the National Level Huawei ICT Competition and won in the Network Track. After that, the ITB team represented Indonesia in the Southern Pacific Regional Final. The Regional Final took place in April 2019 in Malaysia. ITB's team finished in third place in the Network Track, behind Telkom University (Indonesia) in first place and University of Malaya (Malaysia) in second place. Even though the result wasn't completely satisfactory, the team had a rewarding experience and gained useful knowledge from the competition.

In November 2019, ITB competed in both the Network Track and the Cloud Track of the National Huawei ICT Competition 2019–2020, finishing in first place and ensuring its team would represent Indonesia in the Asia-Pacific Regional Final for the second consecutive year.

2020 was a challenging year, but ITB received the Excellent Global Talent Ecosystem Partners Award that September. That year, ITB was recognized as one of Huawei ICT Academy program's top university partners worldwide, winning both the Excellent Huawei ICT Academy (National) and Global Excellent Academy awards.

Then, as the winner of the ICT Competition Regional Final, the ITB team competed in the Global Final, which was held online from November 6–14, 2020, and involved 109 teams from 39 countries. The ITB team

had just under three weeks to prepare, but won two Grand Prize titles in the Global Final — one for the Network Track and one for the Cloud Track.

However, success doesn't come overnight: It takes persistence, patience, and commitment. It's also very important to support students and lecturers to develop their skills.

ITB's rector, Professor Reini Wirahadikusumah Ph.D, encouraged ITB's students to maintain their enthusiasm, to work hard, and to never stop studying. "It's not the end; it's just the beginning. The achievement will be an excellent start to prepare for the challenges of tomorrow, because the future of this country is in your hands," she said.

Professor Wirahadikusumah also acknowledged the importance of the programs that Huawei provides.

"Thank you to Huawei for providing a forum for students to learn more closely about ICT that is applied in the industrial world today, through several excellent programs, one of them is the Huawei ICT Competition," she said.

Professor Wirahadikusumah said that she hoped that the longstanding cooperation and collaboration between ITB and Huawei will continue and that its scope will be broadened. She said this collaboration was critical to prepare people with the competence they need to work in the Indonesian ICT industry.

In the future, we hope that ITB will maintain and strengthen its cooperation with Huawei and continue to cultivate ICT skills. ▲



Tech Education: Building an ICT Industry Talent Base with HCIE

By Lin Kangping, General Manager, Tech Education

The digital transformation of traditional industries has increased the demand for ICT talent, but demand is greater than supply. To fill that talent gap, Tech Education has teamed up with Huawei to promote the development and evolution of an ICT talent ecosystem, and has now trained more than 4000 Huawei Certified ICT Experts (HCIEs), who are now working in a range of industries.

In 2021, 9.09 million students graduated college in China. With this unprecedented number of graduates, many faced the prospect of unemployment in what was one of the hardest years in history in which to find a job.

Meanwhile, as digital transformation accelerates across industry verticals, there's an increasing demand for digital

talent, but demand outweighs supply.

In the past two years, traditional industries have been hit the hardest by the COVID-19 pandemic, while the digital economy has been growing quickly. And with the increasing demand for digital talent in the job market, more and more young people are interested in taking digital skills training.



Tech Education (Tech) specializes in training ICT talent. In the past few years, Tech has seized the opportunities brought by the digital transformation of traditional industries as well as Huawei's strengths to evolve from a training institution into an ICT education enabler. Tech began working with Huawei in 2012. Since then, the company has transformed its talent development system, refined its services, and improved the intelligence of its cloud platform. By 2020, Tech had trained more than 4000 HCIEs and more than 250,000 ICT professionals. It has collaborated with more than 1000 universities and colleges to develop talent, and provided talent development, assessment, and certification services for more than 5000 ICT companies.

Talent Is the Foundation of Digital Transformation

With the global digital economy developing rapidly, the pace of digital and intelligent transformation in various industries is accelerating, so people who have industry backgrounds, are familiar with digital technologies, and are proficient at using them are becoming increasingly valuable.

In its 2020 Report on the Development of Online Learning Platforms for New Occupations, the China Employment Training Technical Guidance Center of the Ministry of Human Resources and Social Security of China predicted a surge in demand for talent in new occupations for the following five years: nearly 1.5 million cloud computing engineers and technicians

and nearly 5 million Artificial Intelligence (AI) professionals. Meanwhile, the need for industrial robot system operators and Operations and Maintenance (O&M) personnel is forecast to reach 1.25 million, and demand for digital managers could exceed 2 million. Clearly, this outlook suggests that high-end ICT talent could be in short supply in the near future.

In the ICT field, HCIE is a well-respected certification. Technical experts who pass the certification are adept at logical thinking and have outstanding judgment skills, as well as a deep understanding of network technologies. They are able to perform planning, design, and engineering practices in different scenarios, and they can conduct quick and accurate fault locating, diagnosis, and network O&M. Crucially, HCIEs also have extensive project experience and specialist knowledge, and they are well suited to the talent needs of the ICT industry because of their comprehensive range of knowledge.

When Huawei launched HCIE, Tech identified an opportunity to begin working with Huawei on talent development by providing training to people who intended to take HCIE tests.

A Three-Pronged Approach to HCIE Development

While collaborating with Huawei, Tech continued to grow, and its business scope expanded from individual training and certification to schools, enterprises, and governments. Tech has been driving HCIE talent development, focusing on four areas: teaching materials, teachers, processes, and



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Tech Education trainees

platforms.

Teaching materials are pivotal to talent development, and Tech has helped Huawei produce and publish a series of ICT certification textbooks, covering fields such as datacom, cloud computing, and storage. These books have been listed as key textbooks for China's 13th Five-Year Plan period and are also official Huawei ICT Academy learning materials; many editions of HCNA Network Technology Experiment Guide have been published, while HCIE Routing and Switching Learning Guide is now an important reference book for industry experts. As well as these resources, Tech has also developed a series of courses to train ICT talent.

To provide quality teaching, it's essential to have a large pool of skilled teachers, and more than 100 of Tech's full-time trainers have passed Huawei's instructor certification assessment. Most of the trainers have extensive experience in enterprise project operations, meaning that they can adeptly apply scenario-based technologies and they are skilled in managing the progress of projects and error checking. As digital technologies evolve rapidly, Huawei regularly updates its certification courses, so the skills of trainers need to be improved accordingly. To this end,

Tech has adopted a three-pronged approach: continuously improve the technical awareness of internal teams by recruiting external experts, regularly conduct internal practice and exercise through internal technical debates, and apply a tiered salary structure to incentivize internal trainer teams to improve their skills and knowledge.

Professional teaching teams are the 'engine' of talent development, while professional iterative processes make talent development more efficient. Tech assesses new trainees with an assessment that's known internally as the 'Dark Horse Test,' to gauge their professional qualities and analyze their knowledge gaps, then teaches them accordingly. In HCIE talent development, from written exams, experiments to interviews, as well as teaching the fundamentals of a variety of courses, Tech also offers training resources, small classes, and scenario-based teaching methods to comprehensively improve trainees' technical skills, project implementation competencies, and communication skills.

Driven by technological development, online teaching has become more widely used, and its use has shot up because of the school closures during the COVID-19 pandemic. In this context, Tech will upgrade the Huawei Cloud-based Software as a Service (SaaS) training cloud to the integrated cloud for

industry and education. This cloud platform will be able to support features such as synchronous display of teaching materials, recommending Frequently Asked Questions (FAQs) and knowledge to students, online Q&A, remote desktop sharing, and clipboard data synchronization. More comprehensive solutions can be provided to cater to customer needs and support ICT talent development. For example, during the 2018 Huawei ICT Competition, Tech opened its Huawei-Tech Innovation Practice Cloud to contestants so that they could experience online lab operations on the platform to improve their hands-on skills.

Tech has also cooperated with many colleges and universities in China to research and put into practice reforming teaching content and curriculum systems, teacher training, constructing training bases, piloting a new kind of certificate system (known as '1 + X' certificate system), and creating the Kunpeng Industrial College (a learning program that covers topics such as Huawei Cloud and big data for Huawei's Kunpeng ecosystem). Our goal is to develop the seamless integration of college education and industrial application as we help colleges develop a new educational model that's focused on integrated production, education, research, and application.

From Talent Development to Talent Services

As well as training talent and building talent development platforms, Tech has also stepped up its efforts to provide a wider range

of talent services, which was a breakthrough for the company's development.

Tech has been thinking about how to align talent skills with industry needs for maximum benefits for a long time, and in 2021 it started to focus its efforts on talent services.

China produces many top graduates every year, and supporting them to find employment is a key focus of Tech's work. To help college graduates find suitable jobs or even to start a business, Tech has started to offer a wide range of training services. To this end, Tech aims to become an important Authorized Service Partner (ASP).

As part of our talent service program, we are helping Huawei hold talent selection events. In June 2021, the Huawei ICT Talent Alliance Job Fair, which Tech sponsored, was held in Kunming, in southwest China's Yunnan Province, attracting more than 20 leading companies and more than 300 college graduates.

Tech will continue to share its training competencies and train more professionals to meet industry needs. We will also deliver high-quality services to support industry-education integration and enable regional and national development. We will develop in-depth collaboration between universities and industries. The Tech Research Institute has started to get involved in smart agriculture, smart water conservancy, and smart transportation projects. We will help develop more digital talent to enable traditional industries to go digital. By providing comprehensive talent services, we help to develop an ICT talent ecosystem and we expect to see many more of our trainees working to support that ecosystem. ▲



Our goal is to develop the seamless integration of college education and industrial application as we help colleges develop a new educational model that's focused on integrated production, education, research, and application. >>



Building a Prosperous Datacom Talent Ecosystem for Intelligent Cloud-Networks

By Kevin Hu, President, Huawei's Data Communication Product Line

Intelligent cloud-networks are key for the rapid digital transformation that's sweeping across industries. As such, Huawei has launched its intelligent cloud-network solution along with developing a data communications (datacom) talent training system — Huawei Datacom Certification. The latter follows a comprehensive set of datacom talent development standards focused on advanced technologies, universal capabilities, and best practices. Its aim is to develop datacom talent ready to tackle intelligent cloud-networks.

Digitalization is happening faster and faster as digital technologies like cloud computing, big data, and Artificial Intelligence (AI) mature. With cloud computing delivered

as an online public service, accessing high computing power and AI has never been easier. We strongly believe that to prosper, enterprises must embrace cloudification.

The global research giant IDC forecast that 80% of global enterprises would speed up their cloud migration by the end of 2021. Most companies are slated to opt for multi-cloud access that involves public, private, and hybrid clouds. In this context, intelligent cloud-networks will enable access to computing power and intelligence for a wide variety of industries, boosting their productivity and driving the digital economy. Huawei has launched its own intelligent cloud-network solution along with formulating datacom talent development standards, hoping to help companies go digital by developing new types of talent.

Intelligent Cloud-Network — Faster Enterprise Cloudification

In its Global Industry Vision (GIV) 2025 report, Huawei predicts that by 2025, there will be 100 billion smart devices connected worldwide, and ubiquitous ultra-high speed networks will have been built to connect every corner of the world. Cloudification will be a key part of this digital transformation. To help companies migrate to cloud, future enterprise networks must be capable of carrying and agilely deploying services, proactively detecting service changes, and anticipating network risks.

Through these advanced networks, every person, home, and organization will access intelligence and computing power on the cloud, developing businesses and the economy. Intelligent cloud-networks are the foundation for this to become reality.

The intelligent cloud-network should have several key features.

1) Network digitalization: The system should be able to digitally sense the network status, abstract and model the entire network status in the digital world, and centrally distribute status information to the cloud. This will allow it to centrally manage the cloud and visualize network-wide status.

2) Network intelligence: After networks are digitalized, new technologies such as AI and big data can be used to integrate intelligence into the cloud-network. This will allow for intelligent, balanced scheduling of network and cloud resources as well as intelligent network Operations and Maintenance (O&M). This will also significantly improve network troubleshooting efficiency along with enhancing network security protection through intelligent security defense.

3) Network as a Service (NaaS): One-click subscription to network services improves network response efficiency to match cloud agility. It enables open programming for networks to flexibly interconnect with cloud services and meet different service requirements. Plus, it integrates cloud-network security and provides more secure cloud-network services.

Teaming Up with Partners to Enable Industry Verticals

Huawei has built an end-to-end intelligent cloud-network solution to help enterprises deploy and use the cloud. The solution consists of four scenarios: cloud campus network (CloudCampus 3.0), cloud WAN (CloudWAN 3.0), hyper-converged data center network (CloudFabric 3.0), and



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Driven by both service requirements and technological innovation, Huawei's intelligent cloud-network solution enables profound network architecture transformation and achieves high synergy between the cloud and network.
— Kevin Hu, President, Huawei's Data Communication Product Line



network security (HiSec 3.0).

Driven by both service requirements and technological innovation, Huawei's intelligent cloud-network solution enables profound network architecture transformation and achieves synergy between the cloud and network. In addition, Huawei works with customers and partners to dive deeper into specific industry contexts and develop vertical industries.

For example, in healthcare, Huawei works with Neusoft HIFLY to develop a clinical medical Internet of Things (IoT) solution based on the medical cloud-network. The solution enables wireless and intelligent clinical devices to provide efficient, high-quality clinical data in real time. It also promotes the development of clinical medical intelligence.

Another example is in the manufacturing field. We work with Beijing WellinTech to develop the 'intelligent manufacturing-industrial IoT solution' based on advanced

industrial networks. This solution draws on WellinTech's 25 years of experience in industrial automation and capitalizes on the data capabilities of more than 5000 industrial devices and protocols. It syncs different systems and standards in industrial interconnection and interoperability, achieving one-stop, factory-wide, digital management and control.

Huawei's intelligent cloud-network solution has opened more than 1000 Application Programming Interfaces (APIs) to meet the customized development requirements of different industries, serving more than 12,000 customers in over 140 countries. This includes industries like education, government, transportation, finance, and energy.

Certification Standards Build Up Datacom Talent

With the widespread application of

As we anticipate a rise in demand for new types of datacom talent, Huawei has launched its Huawei Datacom Certification — a comprehensive set of datacom talent development standards focused on advanced technologies, closed-loop capabilities, and best practices.

intelligent cloud-networks, technical experts in the datacom industry are facing new challenges. They need to shift from command line-based network lifecycle management to intelligent cloud-based network lifecycle management. This means probing deeper into campus networks, DC networks, WANs, and network security scenarios to update their knowledge and skills. They should also be able to manage the entirety of solutions, from planning and construction to maintenance and optimization.

As we anticipate a rise in demand for new types of datacom talent, we have launched Huawei Datacom Certification — a comprehensive set of datacom talent development standards focused on advanced technologies, closed-loop capabilities, and best practices. Huawei has strong datacom capabilities, extensive project and talent development experience, and a deep understanding of what enterprises need for digital transformation. As such, we rolled out the certification globally in 2020.

Huawei Datacom Certification is an upgrade of our routing and switching certification system, and draws on theory and practice about Huawei's datacom network solutions as well as latest technologies in general. While preparing for Huawei Datacom Certification exams,

learners master both technical basics and learn about real-life applications. Passing the certification indicates their expertise in the design, deployment, operation, maintenance, and optimization of the entire lifecycle of networks.

As part of our talent development efforts, Huawei aims to prepare 50,000 datacom experts over the next three years. For this, Huawei has launched the '1 + 4 talent development plan' for Huawei Certified ICT Experts (HCIE) in the datacom field. 1 refers to the HCIE elite team. 4 refers to four training and workshop plans centered on network planning and design training, industry network solution enablement, new technology/product/solution salons, and project practice (Eagle School). The 1 + 4 plan will help HCIEs to continuously hone their technical skills.

Huawei will use its 'ecosystem+' strategy to enable industries. We will work with partners from around the world to build a talent ecosystem on datacom networks. We will streamline talent development through our 'knowledge-skill-productivity' strategy. The talent ecosystem will enable service innovation and help build the foundation for industrial digital transformation. ▲



Developing a Global ICT Workforce Fit for the Future Through Certification and Collaboration

By Dr. Gary Gates, Senior Vice President, Global Business, Pearson VUE

In the current digital era — in which Information and Communications Technology (ICT) pervades every area of our personal and professional lives — the key to maintaining the rapid pace of digital transformation will be a long-term focus on developing skills that support business growth and innovation.

As organizations across a range of vertical sectors have developed ICT infrastructures and embraced new technologies, we have seen improved delivery of public services, including education, health, public safety, and transportation. Recognition of how digital skills have become critical tools in national as well as global development has

led to necessary investment in growing the right talent and providing new opportunities for professionals working in a range of ICT roles.

Many organizations were already prioritizing digital transformation before COVID-19 impacted the pace of industries all over the world. While some sped up efforts already under way, others implemented digital capabilities for the first time to adapt and be better equipped for the 'new normal.' Even before the pandemic, research indicated that in the next decade there will be new ICT roles that have not yet surfaced. These roles are set to become some of the most sought after and depended upon.

A 2018 report by the McKinsey Global Institute, titled 'Skill shift: Automation and the future of the workforce,' identified that "the fastest rise [will be] in the need for advanced IT and programming skills, which could grow as much as 90% between 2016 and 2030." To effectively apply advancements in technology and to develop more efficient business solutions, organizations will need to evaluate their existing business processes, to consider the talent they already have and the talent they need.

Unlocking the Potential of IT and ICT Skills Through Certification

The validation of skills through certification is increasingly relevant in our skills-driven economy, particularly in the ever-changing ICT industry. But what is certification? And why is it so important in the current digital era? Certification is about providing validation for skills and knowledge. In this

industry, professionals' credentials are coming under greater scrutiny than ever before. With new types of cyber-attacks emerging every day and threatening business continuity, there is an increasing emphasis on security and data privacy. With this constantly evolving dynamic, certifications are essential for obtaining certain roles in Information Technology (IT) security and for advancing in other specialist areas. As the sector has evolved with greater virtualization and advanced cloud computing technologies, new IT certifications have been launched by leading companies in this space, boosting the credentials of professionals while simultaneously addressing real business challenges.

As the backbone of nearly every industry, ICT requires agile assessments to keep professionals certified on the latest advances in their fields. Employees of leading technology companies are increasingly required to upgrade and update their skills based on the project they're working on or the role they wish to progress into next.

Through innovative computer-based testing, Pearson VUE delivers high-stakes exams that empower professions to certify and license individuals who safeguard and advance their organizations and communities across the globe.

Over the last 25 years, Pearson VUE has worked with many leading players in the information technology and ICT space, delivering exams that validate the skills required for the ICT workforce of the future — skills that support sustainable digital transformation.

From online practice tests to proctored



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— Dr. Gary Gates, Senior Vice President of Global Business, Pearson VUE



exams that require the industry's most secure testing environments, we deliver more than 16 million exams across 180 countries every year.

Pearson VUE sees first-hand how advancements in technology are shaping the range of certifications pursued by professionals and the pace in which new exam programs are being rolled out by the world's most-respected IT brands.

Computer-based exams present a wealth of opportunities for the ICT industry while providing candidates with flexibility and convenience around verifying their skills. With such a wide array of certifications available to help professionals advance their careers, they can ensure their skills and knowledge remain relevant to both their personal and professional growth and to the requirements of employers. And with the growth of 'the contingent workforce' — professionals who work with companies on an on-demand basis, such as freelancers, independent contractors and consultants — the need to demonstrate skills through credentials in order to stand out in the market is paramount.

According to our most recent bi-annual 'Value of IT Certification' report (which revealed detailed insights from 29,000 candidates around the world), although the global pandemic widely disrupted employers' budgets for staff training, IT professionals remained committed to upgrading skills to enhance their employability and pay. In fact, in 2020 IT certification grew 16% over the previous year.

Those surveyed experienced a range of professional benefits from completing their certification: 73% upskilled to keep pace with changing technologies and 84% agreed their new credentials gave them greater determination to succeed professionally. Meanwhile, 61% earned a promotion after pursuing a certification, and of those reporting a salary or wage increase, 55% were rewarded within three months of earning their credential. Within six months, that figure jumped to 77%.

As well as attaining a certification, these professionals reported earning greater professional credibility — 76% identified increased respect from peers as a benefit, the

same figure (76%) reported increased job satisfaction, and 91% felt their certification increased their confidence in their skills and abilities.

With the continued emphasis on talent development backed by our own research, we are certain of the increased relevance and efficiency of certification in cultivating future talent. Individuals who embrace certifications will drive forward their own careers and help shape the future course of their organization or even their industry.

Growing Global ICT Talent

As part of its 'Platform + Ecosystem' strategy, Huawei works with many different technology partners all over the world. The company has developed customer-centric and innovative technology solutions that support digital transformation and has made steady progress in nurturing up-and-coming talent.

Since 2018, Pearson VUE has been Huawei's exclusive global testing service provider, delivering its certification exams through a network of 5000 test centers around the world.

Following revenue growth of more than 15% in 2017, Huawei required a more accessible way for its engineers and technical experts to pursue certifications.

By offering professionals the convenience of computer-based testing at significant scale, Huawei is able to meet the requirements and changing demands of the ICT industry. Its investment in a global certification program has delivered on its key objective: developing and growing ICT talent on a global scale.

User experience has also significantly improved as a result of its testing partnership with Pearson VUE; professionals don't have to travel to another city (or perhaps even another country) to take their exam. Candidates benefit from a consistent testing experience wherever they are, and by being able to certify a large cohort of professionals, quickly and seamlessly, Huawei has the capabilities it requires to build a healthy ICT talent pipeline for the future.

Pearson VUE continues to help Huawei to align its ICT certifications with international standards, so that its emerging talent can gain recognition in the global ICT industry after obtaining their certifications. For example, Huawei's global certification program has been mapped against the Pearson BTEC Higher Nationals (equivalent to the first two years of a UK undergraduate degree). By the end of 2020, Huawei had certified over 400,000 professionals — talented ICT specialists ready to respond to the increasingly complex challenges facing businesses today.

The sector's recognition of Huawei's high standards and commitment to encouraging and empowering employees to pursue certification is very encouraging. With the impact of the ongoing pandemic, the need for upgrading technical skills will continue to be a priority for many types of organization. We look forward to expanding our partnership based on our mutual understanding of the significance of lifelong learning, supporting Huawei's global workforce, which is always looking for ways to improve and to stand out in one of the fastest-growing and most exciting industry sectors. ▲



Since 2018, Pearson VUE has been Huawei's exclusive global testing service provider, delivering its certification exams through a network of 5000 test centers around the world. >>



Universities and Enterprises Collaborate to Produce AI Textbooks

By Zhang Long, Director of the Engineering Division, Han Fei, Director of the Computer Division of the Engineering Division of Higher Education Press

With countries around the world focusing on Artificial Intelligence (AI) technology, training specialists in the field is now a priority. In China, the compilation of teaching materials between universities and enterprises can help establish an elite AI talent training system.

In 1956, the field of AI science was founded at Dartmouth College. Since 2015, computing has been used to support deep learning technologies. And, in recent years, machine-based image recognition accuracy has even exceeded that of the human eye for the first time.

With a technological and industrial revolution underway, AI is at the forefront of industrial development and has become an engine for the digital economy's development. Enterprises are strengthening their competitiveness by building a labor force that includes intelligent robots, driving the digital



In the past five years, the demand for AI applications has increased by an annual average of more than 70%. With this rapid growth in applications, industries urgently need AI specialists. >>

economy's rapid growth. According to the GIV 2025 Upholding the Industry Blueprint of an Intelligent World released by Huawei in 2019, 97% of large companies will adopt AI technologies and 14% of households will have "robot housekeepers" by 2025.

Countries around the world are planning the development of AI technology, treating AI technology as a strategic development driver. In July 2017, China issued the Next Generation Artificial Intelligence Development Plan, aiming to seize major strategic opportunities to boost AI development in China.

In the past five years, the demand for AI applications has increased by an annual average of more than 70%. With this rapid growth in applications, industries urgently need AI specialists. In China's AI industry, there's a talent gap of 300,000 people, and the supply-demand imbalance in some technology fields and positions is particularly prominent, according to the Talent Exchange Center of the Ministry of Industry and Information Technology of China's Artificial Intelligence Industry Talent Development Report (2019–2020).

Training AI Specialists

In the scientific computing field, the famous Matlab software was created in the higher education teaching process, then was gradually developed into the basic software in the scientific computing industry worldwide, and finally achieved commercialization. In the Internet field, the Google search engine and Facebook were also created in universities. Seizing the opportunity of AI's rapid development and

establishing an advanced AI talent training system in colleges and universities will shape the future of China's AI industry, determining whether the nation can lead AI development worldwide.

To provide optimal AI training, in April 2018, the Ministry of Education, set out three development goals for 2020, 2025, and 2030 in its Action Plan for Artificial Intelligence Innovation in Colleges and Universities (Action Plan): to optimize the scientific and technological innovation system of AI technologies in colleges and universities, to improve the AI skills training system in colleges and universities, and to advance the application of AI scientific and technological achievements of colleges and universities.

The Action Plan encourages colleges and universities to plan AI-related majors as well as corresponding secondary or interdisciplinary courses based on regional and national industrial development needs to support the innovation of science and education integration and collaboration between universities and enterprises. The Action Plan also states that China's universities will become the driving force in building AI innovation centers by 2030, leading AI development around the world.

To date, China has approved AI undergraduate major programs at 345 colleges and universities, and three of those universities — Zhejiang University, Wuhan University, and Huazhong University of Science and Technology — have been approved to set up interdisciplinary AI courses. Meanwhile, a tiered training system that covers undergraduate and graduate students is also

In the foreword to the textbook series, Professor Pan Yunhe, a Chinese Academy of Engineering academician, wrote that he hoped to "compile first-class teaching materials; build open online courses; and form a teaching system links cutting-edge technologies and different disciplines."

being developed.

Teaching Materials Are the Cornerstone of Training

In March 2018, the National Strategic Advisory Committee for Next Generation Artificial Intelligence and Higher Education Press selected the editorial board for the Next Generation Artificial Intelligence Textbooks Series.

The textbook series covers basic theories of AI, algorithm models, technical systems, hardware chips, ethics and security, and the intersection of "Intelligence+" disciplines, which can link cutting-edge technologies and integrate technologies from different fields. In terms of teaching, online and shared course model will be adopted to promote the sharing of high-quality teaching materials.

Developed by the Higher Education Press during the 13th Five-Year and 14th Five-Year Plan period, the textbook series integrates the AI teaching resources of leading domestic scholars, the latest AI technologies of top domestic IT enterprises, and the high-quality teaching services of Higher Education Press. While covering the basic knowledge, it also teaches the latest application cases and rapid upgrade of AI technologies.

In the foreword to the textbook series, Professor Pan Yunhe, a Chinese Academy of Engineering academician, wrote that he hoped to "compile first-class teaching materials; build open online courses; and form a teaching system links cutting-edge technologies and different disciplines."

Universities and Enterprises Collaborate to Compile AI Textbooks

The editorial board believes that university-enterprise collaboration is the best approach to use those teaching materials to train AI specialists with an understanding of theory and practical skills that will meet the developing needs of industries. Colleges and universities provide basic theories and teaching resources, while enterprises have application scenarios and technical practices. Making use of their respective advantages to compile teaching materials together will help to build a talent training system that integrates both theoretical teaching and practical production scenarios. So, in 2019, the editorial board started collaborating with Huawei to develop AI teaching materials.

Based on the framework established for the textbook

series, the two parties worked together to plan a series of AI practice teaching materials based on Huawei Cloud and Ascend. All of the textbooks are jointly developed by respected university professors, Huawei senior technical experts, and the Higher Education Press. The series capitalizes on the respective strengths of academia, the ICT industry, and the textbook publishing community, developing a series of AI teaching materials that are oriented to future technology evolution and industry development, and are attached to corresponding high-quality Massive Open Online Courses (MOOCs). By the end of 2020, all nine books in the series were completed and ready to be published.

The textbook series has the following features:

An elite compilation team: The compilation team includes AI teachers in colleges and universities who have solid theoretical foundation and experience in teaching as well as Huawei AI experts who are familiar with AI practices and understand enterprises' talent requirements. Most of the chief editors are deans (or hold similar positions) at the first 35 universities that have been approved to set up AI major courses, with each bringing years of experience in teaching and researching AI technologies.

A supportive practice platform: The textbooks focus on training students' application and innovation capabilities. ModelArts, a one-stop AI development and management platform provided by Huawei, can transform the latest real cases in the industry into experimental projects for teaching.

A well-constructed teaching material system: With the integrated design of textbooks, courseware, MOOC courses, digital courses, and exercises and experiments, the textbooks construct a complete AI knowledge system from basic theory, core technology to industry application, which meets the demand for educational informatization and drives the reform of teaching modes.

This textbook series is suitable for teaching AI majors in all universities and for the AI innovation and entrepreneurship courses in domestic key universities, empowering the teaching reform and curriculum system development of AI majors in colleges and universities.

To build a better AI ecosystem and enable the co-development and sharing of high-quality resources, the editorial board has built and released a next-generation AI science and education platform — WISDOM OCEAN — with several leading technology companies, including Huawei. The platform will enable collaboration between colleges and universities and enterprises, drive the technological innovation of combining AI with other digital technologies (sometimes known as "AI + X") through joint development of training resources, and streamline the entire process — from AI theoretical knowledge, industry solutions, to intelligent product production — building a complete AI ecosystem.

China is forming an AI talent ecosystem that unites government bodies, enterprises, and colleges and universities. We are confident that our textbook series will be valuable in that ecosystem, helping to train AI specialists across China. ▲



The series capitalizes on the respective strengths of academia, the ICT industry, and the textbook publishing community, developing a series of AI teaching materials that are oriented to future technology evolution and industry development. >>



BAU and Huawei Collaborate to Address Jordan's Digital Skills Needs

By Dr. Saad Abo Qudais, Vice President, Al-Balqa Applied University (BAU)

Jordan's development is reliant on human resources, and it has faced great talent development challenges for over a decade. The country's digital economy is growing, so its digital transformation needs are escalating. With talent development in the digital field now a priority, the Jordanian government has launched a series of initiatives, and its projects with Huawei are among the most important.

A landlocked Middle Eastern country with limited natural resources, Jordan's economy relies on human resources, so the importance of talent development is self-evident. With a population of about 10.83 million, 50% of the nation's potential labor force works overseas, resulting in a severe 'brain drain.'

Economic Development Demands Digital Expertise

In recent years, Jordan has also faced two other major challenges: firstly, its overall unemployment rate has risen year by year, with youth unemployment reaching 40%

from 2007 to 2017. The other increasingly pressing issue is that the nation urgently needs to digitally transform, given that its digital economy is rapidly developing. In the context of these two challenges, developing expertise in the digital field has become a priority.

To address these issues, the Jordanian government has launched reforms to develop digital expertise, and it has set several goals to achieve by 2025: become a global innovation center, with the support of global IT partners; have a pool of world-class specialists who use technology for scientific and industrial innovation; ensure Gross Domestic Product (GDP) grows by 3% to 4% annually through the development of the nation's digital economy; and add 130,000 to 150,000 new jobs.

To meet these targets, in 2015, the Crown Prince of Jordan set up the Crown Prince Foundation, which aims to help young Jordanians improve their vocational skills and ensure they are equipped to work in scientific and technology innovation as well as startup businesses.

Another important factor in meeting these goals will be Jordan's higher education institutions, with the nation's 10 public universities, 19 private universities, and 51 vocational colleges all playing a crucial role.

The fifth-ranked university in Jordan, Al-Balqa Applied University (BAU) is a government-established comprehensive university. As one of Jordan's top universities, it has a responsibility to develop ICT talent and support digitalization in the country.

From Testing to Teaching

Aiming to fulfill that responsibility, BAU entered some of its students into the Huawei ICT Competition of 2017, when the first edition in Jordan was held. BAU's students were very enthusiastic and capable, with one group even ranking in the National Final's top three.

Then, in 2018, BAU participated in the competition again, and its team made it to the Global Final. During the Global Final, I was invited to attend the lecturer seminar in Shenzhen. I shared my teaching experiences with teachers from other countries and visited the Huawei ICT Academy in Shenzhen, helping BAU to gain a deeper understanding of Huawei's ideas about its talent ecosystem as well as how it intends to provide training courses and certifications for other enterprises.

At the beginning of the 2019 autumn

Student and Faculty Points of View

Prof. Abdullah Sorour Zoubi, President of BAU: BAU's faculty and students have greatly benefited from collaborating with Huawei since 2017, when the first ICT competition was held. As an applied university, BAU has always believed in cooperating with industry-leading enterprises to acquire the latest knowledge and apply it to teaching. The establishment of a Huawei ICT Academy, with collaborative course development, was an important milestone for BAU.

A student from BAU's School of Internet Technology: The courses explain Huawei's advanced ideas, devices, technologies, and standards. Most importantly, they also include many hands-on experiments and industry use cases — which have improved our practical capabilities, broadened our horizons, and enabled us to understand the industry's needs as well as the actual scenarios that the technologies are applied in.

"The courses explain Huawei's advanced ideas, devices, technologies, and standards," a BAU student said. "Most importantly, the courses also include many hands-on experiments and industry use cases, which have improved our practical capabilities, broadened our horizons, and enabled us to understand the industry's needs and the actual scenarios the technologies are applied in."

semester, BAU began building a Huawei ICT Academy within its Salt City campus and developing courses for it. As well as providing BAU with lab equipment for its courses and training for teachers in the academy, Huawei also worked with BAU to devise courses to help the university apply the latest industry application knowledge to theoretical teaching and daily teaching activities of relevant majors. The idea was to ensure that BAU students could learn and be qualified for the industry as quickly as possible.

During the course development process, BAU explained to Huawei the needs of its computing-related majors: BSc Computer Graphics and Animation, BSc Computer Information Systems, BSc Computer Science, BSc Cyber Security, BSc Software Engineering, BSc Web Engineering, and MSc Computer Science. Huawei then consulted with teachers of its datacom, Artificial Intelligence (AI), and cloud courses. Eventually, both parties agreed on a series of courses.

BAU made two of the courses compulsory for all majors, and planned to make AI and cloud computing compulsory for multiple majors. In the process of this collaboration, BAU's Huawei ICT Academy became the first in the world to work with Huawei on course development as well as the first to make any Huawei courses compulsory and to include the scores for Huawei's courses in its university credits system.

"The courses explain Huawei's advanced ideas, devices, technologies, and standards," a BAU student said. "Most

importantly, the courses also include many hands-on experiments and industry use cases, which have improved our practical capabilities, broadened our horizons, and enabled us to understand the industry's needs and the actual scenarios the technologies are applied in."

BAU's students are able to follow the original major programs while having the added benefit of following Huawei's courses, which are more vocational — geared toward meeting the industry's needs. And by March 2020, Huawei had integrated datacom, AI, and cloud into six BAU majors, and trained 170 ICT specialists in those fields for BAU.

To date, Huawei has also trained teachers at BAU, with 45 of them completing Huawei Certified ICT Associate (HCIA) courses in Datacom, Cloud Computing, and AI.

Moving Forward with College-Enterprise Cooperation

With Huawei's continuous innovation and its investment into the talent ecosystem and the ICT industry, BAU is more confident than ever about collaborating with Huawei on training. Because of that confidence, BAU will expand both the breadth and depth of its cooperation with Huawei. The aim is to continue improving teaching quality through developing courses and labs as well as training teachers to produce more ICT professionals — shouldering BAU's responsibility to boost Jordan's digital transformation efforts. ▲



Shenzhen Polytechnic and Huawei: Integrating Industry Practice and Education

By Ma Xiaoming, Vice President, Shenzhen Polytechnic

Vocational education is thriving, supported by collaboration between universities and enterprises. This trend is embodied by the work Shenzhen Polytechnic and Huawei are doing together: based on a shared vision, we're collaborating to explore new ways to train Information and Communications Technology (ICT) specialists.

"In recent years, the ICT industry has developed rapidly, and related technologies have been quickly updated. Huawei's trainers share their experience with us to help us keep pace with the times and learn about the cutting-edge technologies in the industry," Xu Jianbo, a Shenzhen Polytechnic 2015 graduate, told CCTV News in April 2021.

Perhaps Xu Jianbo didn't expect that the introduction of

Huawei certifications at his school would be so valuable in his job hunting. He probably didn't believe that one day he would work at a Huawei Authorized Learning Partner (HALP) company and support the development of his alma mater with the knowledge and practical experience he learned. He likely didn't anticipate that one day he'd feature on a national news program about how vocational education is

Since 2006, we have worked closely with Huawei to incorporate its engineer certification into our ICT curricula and training system, so that students can master cutting-edge technologies and improve their practical skills.

thriving.

Xu Jianbo is just one of the tens of millions of vocational college students nationwide, and one of many from our university. Since 2006, we have worked with Huawei to develop a training model that focuses on teaching the skills that enterprises need. Working together, we have built majors, designed courses, developed platforms, and trained students and teachers. By 2020, more than 3000 Shenzhen Polytechnic students had passed Huawei certifications. And after graduation, many of them entered the ICT industry and undertook major informatization projects, such as constructing government networks and bank data centers, making important contributions to the development of diverse industries.

Aiming to Meet Industry Requirements

As one of the first colleges in China to independently organize higher vocational and technical education, Shenzhen Polytechnic is known as a pioneer of higher vocational education in China. Aiming to train innovative and skilled individuals to meet the demands of the digital world, we prioritize on-the-job skill training to improve the students' practical skills.

Since the establishment of Shenzhen Polytechnic, every student is required to take a certification related to their majors to demonstrate their professional skills. In 2006, numerous communication technology major graduates expressed that many enterprises were dismissive of their certificates. This made us realize that the content of relevant vocational appraisal certificates wasn't up to date with the

ways industries were developing. Clearly, we urgently needed to close the gap between vocational talent training and the skills that enterprises actually required.

We began to analyze problems and seek solutions. After a period of investigation and discussion, we identified two root causes: first, the course structure of higher vocational colleges at that time was mainly guided by the undergraduate education system without the integration of industry practices and education; second, teachers' practical capabilities should be further improved. With these insights in mind, we concluded that universities and enterprises working together was the only way to improve teaching quality.

The latest technical standards of the industry and talent demand are guidelines for vocational education, but for a long time this information has been in the hands of enterprises, especially the leading enterprises in the industry, such as Huawei.

Since 2006, we have worked closely with Huawei to incorporate its engineer certification into our ICT curricula and training system, so that students can master cutting-edge technologies and improve their practical skills. In 2018, this training model became the first one in Guangdong Province to win the National Teaching Achievement Award Special Prize.

Developing Huawei's 1 + X Certificate Standards

The two sides have become more closely connected, and we're looking forward to setting new benchmarks.

In 2019, the continuous development of digital technologies was breaking down boundaries between

different careers, and industries desperately needed cross-domain technical talent. We had to break the traditional major boundaries and offer our students more options.

In 2019, the State Council issued the National Implementation Plan for Vocational Education Reform (20 articles), which required vocational colleges and application-based universities to pilot the education diploma + professional certificates system (known as 1 + X certificates).

Huawei responded positively to this plan and invited our university to work together on the 1 + X project, so we started collaborating, capitalizing on our respective strengths. Huawei has advanced technologies, understands what skills the ICT ecosystem needs, and understands job responsibilities, while Shenzhen Polytechnic has extensive theoretical and pedagogical resources and can provide advice on naming the standards, the skills that the standard requires, and the targeted colleges and universities from a pedagogical perspective. Based on these strengths, the collaboration is thriving.

In 2020, Huawei established an evaluation organization for vocational education and training. Meanwhile, its Professional Skill Level Standards for Network System Construction and Operations and Maintenance (O&M) and the Professional Skill Level Standards for Intelligent Computing Platform Application Development were approved to be included in the 1 + X certificates system. Huawei 1 + X focuses on technology fields that are mature, widely used, and have a huge demand for talent, such as connectivity and computing. As well as providing complete learning

materials, such as textbooks, PowerPoint, lab manuals, and online courses, Huawei 1 + X also offers written exams and lab exams to assess students' theoretical knowledge and practical skills. To improve the influence and applicability of certificates, Huawei 1 + X certificates can, in some circumstances, be considered equivalent to Huawei HCIA certificates.

We have worked together to develop six teaching materials, train 1 + X trainers, and incorporate 1 + X into Shenzhen Polytechnic's training program.

In June 2020, six supporting teaching materials of Huawei's 1 + X certificate system were published, including Professional Skill Level Standards for Network System Construction and O&M and Professional Skill Level Standards for Intelligent Computing Platform Application Development. These teaching materials were very practicable, strongly supporting teachers' teaching.

To improve students' practical skills and ensure that the Huawei Network System Construction and O&M certification courses run smoothly, we have built a Huawei



Huawei's 1 + X textbook series

Shenzhen Polytechnic has incorporated the Huawei 1 + X certificates into the training programs of majors such as communication technology, computer network technology, information security and management, software technology, and Enterprise Intelligence technology services, to ensure that students master cutting-edge technologies.

Internet Protocol (IP) Technology Training Lab that can meet the requirements of junior, intermediate, and high-level certificates. There are 10 sets of equipment in the training room. Each set of equipment includes four routers, nine switches, two wireless access points, and one wireless controller, supporting scenario-based teaching.

Drawing on previous experience, Shenzhen Polytechnic has incorporated the Huawei 1 + X certificates into the training programs of majors such as communication technology, computer network technology, information security and management, software technology, and Enterprise Intelligence technology services, to ensure that students master cutting-edge technologies.

In October 2020, guided by Huawei, Shenzhen Polytechnic organized the first set of Huawei 1 + X Network System Construction and O&M certificate exams in China. Sixty students from majors that were piloted in the 1 + X system participated in the exams, with a pass rate of 87%. The practicality of Huawei's 1 + X also attracted many Shenzhen Polytechnic students from majors that weren't piloted in the system, so we held a second exam on December 19, 2020.

"Huawei's 1 + X covers 39 new occupations announced by the Ministry of Human Resources and Social Security and involves important underlying technologies of enterprises," said Lu Xin, president of the China Technical and Vocational Education and Training Association and former vice minister of the Ministry of Education.

"It demonstrates the significance of cutting-edge digital technology, accelerates the development of education and

science and technology, supports the transformation and upgrading of the industry, and also plays a great role in leading the 1 + X pilot."

Looking at a Bright Future for Vocational Education

At Shenzhen Polytechnic, many students like Xu Jianbo have benefited from the cooperation, which has enabled them to become IT experts. Some of those students have been employed by Fortune 500 companies. For example, Gu Jianxing, a 2019 graduate, was hired as a hardware engineer in Huawei's network energy department, with a salary far higher than the industry average.

The Outline of the 14th Five-Year Plan (2021–2025) for National Economic and Social Development and Vision 2035 states that during the 14th Five-Year Plan period enhancing the adaptability of vocational and technical education will be prioritized, including capitalizing on the strengths of vocational education, continuously improving the quality of education, and further integrating vocational and general education.

At Shenzhen Polytechnic, we will support that vision by keeping up with technological trends and developments in industries to adjust our courses based on Huawei's products, training more students to be prepared for the industry. We will also share new vocational certification education standards and models in China to promote the development of vocational education in countries along the Belt and Road Initiative. ▲



Huawei Talent



Empowering **ICT** Talent
Embracing Intelligent World



Huawei Talent
Website





The ICT Competition Global Award: A Highlight that Encourages ABU to Work on Education Innovation

By Professor Muhammed Mu'azu (PhD), Head of Computer Engineering Department, Ahmadu Bello University

A limited education level and an insufficient talent pool have restricted Nigeria's digital development for a long time. Aiming to alter those fortunes and provide impetus for digital skills development, Huawei collaborates with the nation's higher education institutions. The objective here is to improve the education level in order to develop local ICT talent, integrate education and production, and provide competitive opportunities for outstanding students to showcase their technical skills on an international stage.

There is consensus among countries worldwide — developed and developing — that education is integral to economic progress, one of the most important means in bridging the gap between countries. Clearly, education can play a pivotal role in national development, and this is particularly true in Africa.

Around the world, digital transformation is completely changing the ways in which people are working and even how they are living their lives. To support Nigeria's digital development, colleges and universities are striving to improve ICT education, narrow the gap between academia and industry, and integrate digital skills into teaching, to

bridge the digital divide, and enhance skills and experiences.

Higher Education in Nigeria Faces Many Challenges

As Africa's most populous country, Nigeria is rich in natural resources and is a major oil exporter. As early as 2006, it was named as one of the 11 countries with the most promising prospects in the world by Goldman Sachs Bank. In 2021, Nigeria's domestic production reached an all-time high and its economy ranked 25th in the world, making it Africa's largest economy.

Meanwhile, Nigeria's telecommunications market is one of the fastest-growing in the world. Emerging telecom operators — such as MTN, 9Mobile, Airtel, and Globacom — all have operations in Nigeria. There are about 150 million cellphone users in Nigeria and about 100 million Internet users, ranking first in Africa.

Though the economy is rapidly developing, there is a disparity between the number of students who attend college and the number of graduates who are able to meet the needs of the labor market. As of 2016, there were 143 universities in Nigeria, but many of them had outdated teaching facilities and an insufficient number of teachers, and the national illiteracy rate was as high as 40%.

Undoubtedly, economic development needs expertise to serve as a strong foundation, especially in the ICT sector, which relies heavily on human resources. For a long time, insufficient funds, a lack of facilities, and a dearth of pathways into the industry for students have been the pain

points in Nigeria's ICT talent development. Meanwhile, insufficient investment into education by local governments has led to infrastructure limitations and a serious shortage of important facilities (such as campus networks, computers, laboratories, and libraries), ultimately resulting in a poor teaching environment for teachers and students. Also, the loss of quality teachers and skilled professionals has created a huge gap between academic and industry standards, with many college graduates finding that the professional knowledge they received in their schools is outdated, resulting in a waste of resources, a drain of talent, and widespread unemployment.

Connecting ICT Education to the Industry

To address those concerns, government departments, education authorities, and the industry community have reached a consensus: The cooperation between industry and academia in Nigeria is critical, the gap between industry standards and graduates' professional skills has to be bridged, and talent must be channeled for the digital development of the country.

Management at Ahmadu Bello University Zaria (ABU), a federal government university, started exploring industry resources and ways to introduce the strengths of outstanding ICT enterprises to our curriculum a few years ago. We realized that the university lecturers should keep pace with the times, maintain regular contact with people working in the industry, understand the trends and needs of industry, and identify what updated



The cooperation between industry and academia in Nigeria is critical, the gap between industry standards and graduates' professional skills has to be bridged, and talent must be channeled for the digital development of the country. >>

Becoming a Huawei ICT Academy ensures a favorable teaching environment, including a website that teachers can use to open classes and labs equipped with real devices to practice using the experiment. These offerings and solutions gave a new dimension to our ICT education, enabling the teachers to improve course content and training methods.

knowledge and skills they can bring to their students, in order to help them to smoothly transition into the workforce and apply their expertise.

The start of the partnership with Huawei in August 2018 came at a very opportune time. The university management staff were delighted when they were approached by Huawei, a world-leading ICT infrastructure and smart device provider, with comprehensive advantages and advanced training experience in fields such as 5G, cloud, big data, and Internet of Things (IoT). Our management also welcomed Huawei's corporate social responsibility program — Huawei ICT Academy, which provides teachers and students with the latest international knowledge and online courses, industry standard certifications, and evaluation services for learners. Becoming a Huawei ICT Academy ensures a favorable teaching environment, including a website that teachers can use to open classes and labs equipped with real devices to practice using the experiment. These offerings and solutions gave a new dimension to our ICT education, enabling the teachers to improve course content and training methods.

Meanwhile, the social activities and group events that Huawei organizes annually — such as the student club, the instructor seminar, the ICT Skills Competition, and the job fair — provide valuable chances for students to meet with academic experts and ICT professionals, and share experiences and exchange ideas. As talent trainers and exporters, we are also glad to see that Nigerian enterprises are able to familiarize themselves with a talent pool through these activities, while students are getting access to more employment opportunities.

During the years of cooperation with Huawei, we have established a very open strategic partnership to raise digital skills, and to build a sustainable and mutually beneficial ICT talent ecosystem. We're glad that more than 40 teachers and staff have benefited from this cooperation, training over 1000 students in innovative and applied technical skills for the society and the ICT industry chain. Without doubt, we aim to build on this progress and achieve even more.

The ICT Competition Highlight Inspires Us to Innovate in ICT Education

In this collaboration between education and industry, Engr. Bashir H. Sani is one of the beneficiaries. As a Chief Systems and Network Engineer of ABU's Institute of ICT, a department responsible for providing reliable and secure Intranet and Internet services, as well as developing software applications for the university community. Engr. Sani was among the first group to attend the free Huawei Train-the-Trainer (TTT) instructor training program in August 2018, after the contract was signed with Huawei.

Before the TTT courses, our university ICT faculty mainly focused its teaching on traditional Internet Protocol (IP). During the days of training at the Huawei Nigeria offices in Lagos, Engr. Sani was exposed to cutting-edge technologies. We are glad that he represented us, exploring the latest technologies in the industry through the TTT program. We are also happy to see his continuous growth and improvement as he has worked with other teachers at

Nigerian universities and Huawei experts he met during the learning activity. Each time Engr. Sani returns from the TTT training, we invite him to introduce some ICT breakthroughs from Huawei to other teachers, and he's doing a good job as a pioneer. With Engr. Sani's help, some of our teachers started to bridge the gap by opening classes on new technologies, and they've been holding boot camp training sessions for lab practice. Most importantly, with Huawei course kits and expert assistance, we are able to integrate Huawei technologies into courses (network & security, cloud, and AI) in the university's computer engineering department postgraduate and undergraduate programs.

Universities in Nigeria are gradually yet effectively bridging the gap between academia and the ICT industry. More of our teachers and staff have attended the Huawei TTT sessions and earned professional Huawei certificates, and they are now able to identify and train some outstanding students to attend the Huawei ICT Skills competitions. For us, the Global Final is an international competitive arena for both our students and our faculty. We believe that with proper teaching methods, which strengthen students' application abilities and inspire them to be innovative, Nigerian students can showcase their abilities and even earn recognition in an international competition. Engr. Sani and the Nigeria ICT competition team's other tutors (Dr. Bashir Sadiq, Engr. Abdulfatai Adekale, and Saidu Safiyanu) have been very effective at introducing the latest technologies to our students.

All these efforts proved worthwhile when we achieved an extraordinary and

remarkable feat: In the fourth Huawei ICT Competition 2018–2019, the Nigerian team won the first prize in the Regional Final in South Africa and the third place in the Global Final. A year later, at the fifth Huawei ICT Competition 2019–2020, three Nigerian teams entered the Global Final and won the Grand Prize in the Practice Competition in both the Network Track and the Cloud Track.

We are very proud of this achievement, and we are touched by the dedication of students and teachers who attained it. Nasir Sa'idu Adhama, a representative for Nigerian president Muhammadu Buhari, congratulated our students for getting so far in the Global ICT Competition, thanked Huawei for supporting our students, and expressed hope that Huawei continues to partner with the institutions in the country to develop our ICT capabilities. Meanwhile, Minister of Communications and Digital Economy Abimbola Alale, Deputy Executive Secretary of the National University Commission (NUC) Chris Maiyaki, as well as other academics and industries peers also expressed joy at these exciting achievements.

The praise we received from the government officials, our peers in education, and the public gave us educators the greatest affirmation. Those moments, which belong to every participant, also gave us, the faculty, the motivation to continue to practice and innovate in ICT education.

As our engagement with Huawei and the ICT talent ecosystem deepens, I believe more and more ICT talent will be discovered and developed, helping Nigeria to lead the continent in constructing communications networks and digital transformation. ▲



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IFPB and Huawei: Developing Cloud Expertise

By Michel Dias, Electrical Engineering Professor and Innovation Center Infrastructure Manager, IFPB

Cloud computing has become integral to the Information and Communications Technology (ICT) industry, but despite high demand there's a dearth of experience and expertise in the field. This is the challenge that IFPB and Huawei are addressing by providing training and offering certifications on the latest digital technologies.

Background: The Cloud Computing Shift

Up until recent years, when we thought about offering a service on the Internet, we needed to build a data center and rent a communications link from a carrier — an approach that was extremely expensive to deploy as well as to use to maintain these services.

But the paradigm shifted: Several companies started

offering the required infrastructure as a service at affordable costs, multiplying the number of services that could be provided in the cloud. Now, relatively few companies have their own data center, with the number of applications that use cloud computing growing exponentially. When we add technologies like 5G, big data, Internet of Things (IoT), and edge computing, we see a whole new ecosystem — one that's full of possibilities. In this context, cloud computing

has become a crucial part of any enterprise's digital transformation strategy.

Challenge: Training Qualified Professionals

The number of experienced and skilled professionals with the experience and expertise needed to work in this scenario didn't grow as quickly. As a result, we now lack people who have the technical understanding required to work with cloud computing and the technologies related to the field. New roles, like cloud computing architect and cloud engineer, have emerged, and even established roles like software engineering and software architect now require cloud knowledge. Because of these developments, our colleges and universities that offer ICT graduate and undergraduate courses face new challenges as they strive to prepare their students for the labor market.

Cloud computing requires that we teach content besides deploying services or using the most important cloud platforms. It's necessary to help our students understand how to see the whole scenario — that we are developing service solutions and we need to map all the requisites and costs associated, and we are living in a smart, connected, and sensing world.

Connecting with an Innovation Ecosystem

Another priority is establishing partnerships with the cloud computing industry. In our experience, this kind of agreement helps the teachers get up to date with the most

recent advances in the market and exposes the students to a professional environment before they finish their courses. There are many ways to do this: innovation projects, technical training, internships, competitions, and integrating Huawei courses into our curriculum are good examples at our institution. But it's most important to be connected to your partner's innovation ecosystem.

To achieve such synergy at the IFPB creates great opportunities, but is also a monumental challenge. We have 22 campuses, an innovation pole (also known as an innovation cluster), nearly 24,382 students at high school, technical, undergraduate, and graduate levels, 1478 professors, and 1076 employees for technical and administrative support. Several maker spaces and dedicated innovation labs — like Spacefab, Lampiao, and Assert — make the environment more attractive. We have many stakeholders at different levels that want to collaborate, but we needed a partner to develop our ecosystem and bring new growth opportunities.

We were looking for new partnerships to help us boost our innovation programs and upgrade our students' competitiveness in the



New roles, like cloud computing architect and cloud engineer, have emerged, and even established roles like software engineering and software architect now require cloud knowledge. >>

Faculty Point of View

It's essential to have a partnership with one of the leading companies in the ICT market worldwide. It allows us to transfer parts of the technologies developed within the Huawei research centers to our students through innovation projects and the ICT Academy. Meanwhile, participating in Huawei's talent ecosystem increases the competitiveness of our students in the face of new opportunities in the job market.



Michel Dias at Huawei's Global Training Center in Hangzhou

job market. Huawei approached us with its talent ecosystem proposal and a vast portfolio of opportunities in many areas of strategic interest to the IFPB and ICT market. It seemed a perfect match for what we needed.

Working with Huawei to Develop Skills

Our partnership began in 2017, when our teachers went to Huawei Hangzhou Training Center in China for Cloud Computing training. I had worked with other cloud computing products in the past, and our first conclusion was that the Huawei products were promising. Later, we provided Huawei ICT Academy program at IFPB. This was the start of the integration of Huawei's innovation ecosystem into our institution.

After that, we started to prepare students for Huawei certification in different fields like routing & switching and

5G, and we have since trained more than 500 participants. We now offer the Huawei technical content as a special course in the Electrical Engineering undergraduate course at our João Pessoa Campus. In future, we intend to integrate the Huawei content into our computer science and telecommunications undergraduate, graduate, and technical courses at more of our campuses. We will also increase the number of areas covered, adding content about digital transformation and Industry 4.0, and we will encourage students to participate in the Innovation Track in the ICT Competition and prepare them to do so.

Clearly, our partnership with Huawei is an important one that brings many benefits to the IFPB. As our Innovation Pole Director, Erick Melo, said: "It is essential to have a partnership with one of the leading companies in the ICT market worldwide. It allows us to transfer parts of the technologies developed within the Huawei research centers

to our students through innovation projects and the ICT Academy. Participating in Huawei's talent ecosystem also increases the competitiveness of our students in the face of new opportunities in the job market."

Preparing and Developing Champions

Huawei then presented the Huawei ICT Competition 2018–2019 to us. We scheduled a presentation about the competition with our students, and it was a great success. The students were excited, and many of them signed up. We launched the students' challenge and began focusing on how to get the students better prepared. To our surprise, we were the national champions in the Cloud Computing Track. The next phase — the Regional Final — would be held in Mexico City.

In the Regional Final, we finished in third place and failed to qualify for the Global Final in China. Our students were sad, but we explained to them that building a championship team requires hard work, resilience, discipline, teamwork, and patience. On the road to success, so many sacrifices are made and there are so many setbacks, so it's not surprising we are sometimes tempted to give up, especially when we're tired. But the way we look at these experiences makes a big difference. We had two choices: give up, which is the most comfortable way; or not let ourselves be overwhelmed and continue to pursue our dreams. This is the attitude that makes the difference. Together, we decided not to give up, to keep studying, and to try again the next year.

If we were working with mature and experienced professionals, this would seem

challenging but feasible. But if we were working with young students in a worldwide competition, during a pandemic? This situation was the scenario of Huawei ICT Competition 2019–2020. It was a significant challenge, but we succeeded.

Winning the Grand Prize in Cloud Track in the ICT Competition Global Final

Wesley Santos and Edson Luis, who participated in the 2018–2019 competition, competed once again, as well as Mariana Barros, a younger and motivated student. We planned and started our participation, studying technical content and reflecting on working as a team. After three phases (national, regional and the global final), 1200 questions answered, several exam simulations, and a lot of hard work, we won the Grand Prize.

All of IFPB's academic community celebrated this prize, and we now use it as inspiration to motivate the students to believe that they can achieve any goal they desire if they work hard and stay focused. As a professor and tutor of the team, it was remarkable to see how our students grew in maturity and outdid themselves. I have learned a lot from them.

With our Assert lab and our Innovation Pole now known for their skills in cloud computing and training and developing people, largely through Huawei training and competition, we're focusing on several innovation projects, and we're working with Huawei to prepare people for 5G and its revolution. ▲



In future, we intend to integrate the Huawei content in our computer science and telecommunications undergraduate, graduate, and technical courses at more of our campuses. We will also increase the number of areas covered, adding content about digital transformation and industry 4.0. >>



STI Collaborates with Huawei to Develop ICT Talent in the Philippines

By Beronika Peña, ICT & Engineering Courseware Development Head, STI College

T rue to its word of creating "New Value Together," Huawei has recognized the significant contributions and exemplary performance of its industry and academic partners, conferring the ICT Talent Partner of the Year 2020 award to STI College, which has many students who have passed the certifications that Huawei ICT Academy offers.

During the COVID-19 pandemic, STI College joined Huawei's Learn ON online learning program, which tackles trends such as virtualization and its features as well as network and storage basics for cloud computing, ensuring training quality and continuity. Since 2020, STI College has produced 543 Huawei-certified students.

Bridging the Digital Divide

When you think of the Philippines, what's the first thing that comes to your mind? Archipelagos? Tourist resorts? Or the nation's vast number of overseas workers? Whatever you think of, it's probably not intelligent digital technologies. This is largely because the development of the ICT industry in the Philippines has long been hindered by the widening wealth gap and poor infrastructure. With the global digitalization process accelerating, the Philippines sees a development opportunity.

In recent years, the Philippines has made the digital economy the focus of its economic development and has sought to gain a competitive edge internationally by prioritizing innovative digital technologies. As digital transformation takes hold, becoming more widespread and more influential, the demand for digital talent is rapidly increasing in various industries. Essentially, a lack of available expertise in the nation's job market has restricted the development of its digital economy.

To enhance the digital skills of its citizens, bridge the growing digital divide, and help to improve the employment prospects of the young generation in the Philippines, STI has taken the initiative to assume the social responsibility of a large education and training institution to promote innovative education in the IT field. With Huawei, we help students prepare for digital transformation while in school, improve their skills, and acquire the latest digital technologies to help students to develop and have a good career in the IT industry.

Developing ICT Talent

STI College is an IT-based educational institution with many schools in the Philippines. It is one of the frontrunners in innovative education, nurturing students to prepare them for the job market and for life outside of it. However, until fairly recently, many students who had graduated from STI spent a long time looking for an appropriate job vacancy. Based on its understanding of demand in the ICT industry, STI noticed that this was because these students lacked the up-to-date technical knowledge that suited the ICT industry's job market needs.

To resolve this issue, STI partnered with Huawei to strengthen its Enrollment-to-Employment (E2E) system, which provides students with applicable education, job market skills, job preparedness, and job placement assistance.

The first step is developing the learning systems, which ensures that the curriculum content is up-to-date and job market-oriented. To complement this, STI implements an academic delivery system to guarantee that its highly qualified faculty and state-of-the-art facilities its campuses are in sync with the standardized courseware and curriculum. STI also integrates in-demand ICT into its courseware materials to prepare students for their ideal careers.

The second step, student certification, ensures that — through rigid assessment, evaluation, and certificate programs — students are prepared for employment. Before the students leave the security of their four-walled classrooms, they are given the opportunity to undergo on-the-job training



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Through its partnership with Huawei ICT Academy, STI College has produced 564 students certified in five technology domains: cloud computing, big data, Artificial Intelligence (AI), routing and switching, and storage. Huawei ensures that its courses match the needs of the ICT industry in general and its partner enterprises in particular, to guarantee employment for students.

with some of STI's partner companies.

Connecting Students with Future Employers

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Each certification is valid for three years, and the students' names appear on Huawei's online database as Huawei Certified ICT Associates. This improves students'

competitiveness in the job market as well as the school's employment rate.

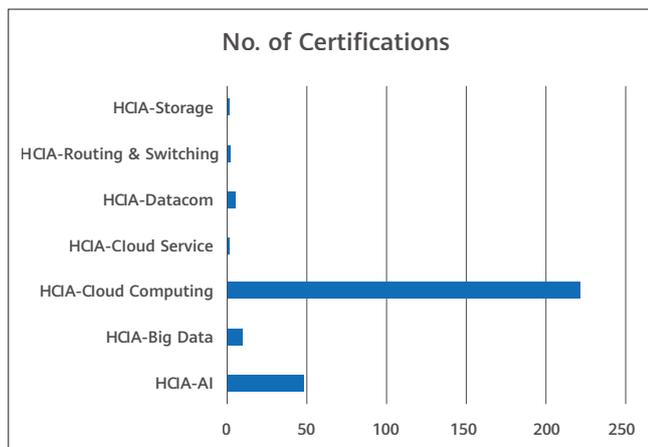
Our students are very fortunate to be a part of the Huawei ICT Academy. Through this program and certification, our graduates have landed jobs at top corporations in the Philippines, enabling real-life change through ICT education.

Edward Aquino, who graduated in 2019, is a prime example. "The institution helped me reach my potential, and I can definitely say that what I learned from them is world-class," he said. "It made me more competitive."

"Looking back, I remember how our teachers encouraged us to be resourceful and seek out more knowledge beyond the classroom. They always reminded us not to depend on them to 'spoon-feed' all information and pointers, but to find them elsewhere, whether from books, seminars, or simply through experiences. The school didn't just teach us to give the right answers to questions, but also how to get the right answers," said Michaela Mendiola, a 2018 graduate.

Janice Lagundi, a 2018 graduate, said, "Even when being placed in the managerial role, the core lessons you learned at school will help you stay organized, set goals, and meet deadlines. At STI, we were given deadlines and tasks to complete, and that gave me a glimpse of what to anticipate in the future. I also acquired good communication skills, which I use now to interact with people from other countries. Without the core knowledge from STI, I don't think I would have been able to handle my tasks and projects."

Tedjay Seguiza, who graduated in 2020 and is now a



Certifications obtained by STI College students



STI College students with their Huawei certifications

Cloud Tech Assistant Engineer, said, "Huawei helped us prepare for the certification through the ICT Academy portal's Massive Open Online Courses (MOOCs) and mock exams, and even gave us free exam vouchers. All the material from our trainers for my four certifications (routing and switching, Big Data, AI, and cloud computing) was all at our fingertips — easily accessible. Having such a platform that showcases the ICT industry can encourage us to enter the field and strive for a better future."

Working Together for a Brighter Future

Establishing a career in today's competitive industries has become challenging for most job seekers. Employers, too, are increasingly having difficulty finding the right person for the job. Too often, there's a huge gap between the skills required by the industry

and what a graduate has to offer.

Given these challenges, Huawei ICT Academy and STI College have committed to equipping Filipino students with the knowledge and skills needed to prepare them for a career in the ICT industry. STI College has expanded its courses to cover multiple domains in the ICT industry, with the collaboration with Huawei ICT Academy to provide a medium to connect STI worldwide and create a globally-connected community that can share knowledge and ideas, helping STI students to broaden their goals and aspirations.

With that in mind, STI College will continue collaborating with Huawei on the future-oriented ICT talent ecosystem to jointly create value for industries and build more intelligent societies. In the long term, the partnership aims to bridge the gap in talent supply and demand to ensure the sustainable development of the ICT industry in the Philippines. ▲



China Bohai Bank: Developing a Talent Pool to Digitally Transform

By Deng Xiaoxia, Bohai Bank Training Center

The finance sector is profoundly changing: its service, management, and business models are transforming. The widespread application of Information and Communication Technology (ICT) in the finance sector is driving this transformation. To develop the digital talent needed to adapt to these changes, China Bohai Bank has sent many mid- and high-level managers to Huawei for rotational training.

Bohai Bank was the only national joint-stock bank referenced in From Eco-Platform to Remote Banking: Retail Finance Development Report 2021, jointly released in August 2021 by independent new finance knowledge service platform ZeroOne Finance and the China Retail Finance

think tank. This recognition is a testament to our substantial digital transformation achievements and the unique smart property management initiative that we have created. These achievements were all enabled by our efforts in recent years to develop digital talent and continuously innovate.

Digital Transformation — a Must for Banks

In the digital world, everything will be intelligently connected: more than 100 billion Internet of Things (IoT) devices will create new business scenarios, transforming banking from 'people-centric' to 'thing-centric,' with manual operations being replaced by IoT terminal operations. This bottom-up model, which multiple parties will participate in, will open up the vast potential of the finance industry. Facing both the opportunities and challenges that these changes will bring, the financial services industry must digitally transform to tackle new scenarios and business forms. As one of the youngest joint-stock banks in China, Bohai Bank has long known that digital transformation is a necessity, a key driver for commercial banks to execute their overall strategic transformations. The bank has launched a three-step digital transformation initiative in which services will become increasingly intelligent, transitioning from online to digital to smart services at different stages.

2021 is the first year of Bohai Bank's fourth 'Five-Year Plan Period' — a period, in which we will accelerate our Financial Technology (FinTech) transformation by using technologies such as Artificial Intelligence (AI), and big data. We will also gradually build seven new infrastructure systems: FinTech, innovative Research and Development (R&D), operating system, incentives and constraints, compliance management, risk control, and training and education. Through digital enablement, we will reshape and transform our

models of operation, service, channels, and management.

As digital transformation accelerates across industries, how can we eliminate the obstacles that are preventing us from tapping into the potential of data, talent, and mechanisms? We must improve our ability to embrace changes to drive transformation internally.

When it comes to the digital transformation of banks, we believe that senior management should shoulder 80% of the responsibilities, while mid-level management should take the remaining 20%. In other words, digital transformation requires a strong management team, so our first step was to improve the digital mindset of our managers, as we sought to achieve top-down transformation.

Partnering with Huawei to Develop Digital Talent

To develop a management team with a digital mindset, we turned to Huawei. As a world-leading ICT infrastructure and smart device provider, Huawei has been very active in digitally transforming finance in recent years, serving more than 2000 financial clients in more than 60 countries and regions, including 48 of the world's top 100 banks. For us, Huawei has been a reliable ICT partner in various high-end storage, Kunpeng server, and videoconferencing framework projects. With more than three decades of practical experience, Huawei is a world leader in ICT talent development, so Bohai Bank decided to send mid- and senior-level managers to Huawei for training.



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To meet the needs of financial services in the future, Bohai Bank has established a dedicated data academy, which focuses on training junior, intermediate, and senior data analysts and data scientists, aiming to enable all the departments within the bank to communicate fluently in a 'digital language.'

We believe digital transformation requires all employees to participate in the process. The key to the success of digital transformation is consensus on the benefits, objectives, and methods among leaders across different departments. With this approach in mind, we sent more than 400 mid- and senior-level managers to participate in Huawei's rotational training from November 2020 to May 2021.

Huawei set up a dedicated team of more than 10 experts and provided customized courses with a select few projects and trainers. The courses covered Huawei's corporate culture and core values, strategic plans and interpretation, business transformation and management system building, digital transformation, process-based organizational building, talent development, and performance management. These training sessions helped Bohai Bank managers reach a consensus on digital transformation and improved our digital leadership.

During the training, Huawei declassified its own operation and management mechanisms, granting us access that provided us with valuable references on enterprise management and innovation. Huawei's special capability methodology enablement improved our strategy execution skills. Huawei also shared its Goals, Roles, Processes, Interpersonal relationships (GRPI) model, which can guide managers in building high-performing teams. Our managers also learned how to formulate future-oriented digital transformation objectives and framework, and how to devise proper business operation models, giving our managers broader visions for FinTech and digital transformation.

As well as conventional teaching methods, Huawei also provided experience-based teaching and workshops. For example, we visited Huawei's Songshan Lake base as well Shenzhen Museum, which includes a lot of information about Huawei's history and development, to experience the company's corporate culture and management philosophy, which helped us better understand the essence of the digital economy. We also understood the digital economy and realized the value of reform. In workshops, Huawei developed bonus point contests, the Objective, Reflective, Interpretive and Decisional (ORID) course review, and a 'World Coffee Workshop' to explore the best digital implementation solution for Bohai Bank from the perspectives of industry perception, enterprise practice, and best industry practices.

Rebirth Through Innovation

Agility is critical for financial institutions in the process of reshaping and digitally transforming themselves. How can financial institutions achieve technological, business, and organizational agility through digital transformation? How can they quickly perceive and respond to changes?

By participating in Huawei's rotational training and benchmarking with Huawei's strategies, we learned many successful digital transformation practices and established future-oriented digital capabilities. We also learned about Huawei's strategic planning and execution capability, which enhanced our sense of mission and allowed us to implement



Bohai bank employees attend Huawei rotational training

flattened management by integrating market insight, strategic goals, key tasks, and individual employee performance assessment. We applied Huawei's talent management model to identify pain points and inefficient aspects of our own talent management. Then we restructured it, aiming to inspire individuals to make the most of their potential.

We learned from Huawei's organizational environment construction and structural adjustment to make our own organizational structure more agile.

We also applied lessons from Huawei's corporate culture building to build a culture that can adapt to and support transformation and innovation.

Huawei's rotational training broadened the horizons of Bohai Bank's management

and improved their digital management capabilities in terms of research, analysis, planning, and design. Huawei's training also helped Bohai Bank to quickly and agilely iterate and perform technology-based risk control, helping the bank to improve its level of service.

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Bohai Bank will continue to develop more digital talent, and by integrating business with talent and technology, we will focus on establishing our enterprise as an agile and self-evolving bank. ▲



Cloud-Network Coordination in Financial Data Centers Demands Training in a Diverse Range of Skills

By Zhu Bo, O&M Center of Information Technology Department, Head Office of China Everbright Bank

China's financial industry is digitally transforming. Technology enablement and innovation are leading to the creation and iteration of many new products and services. The industry is integral to national economies and people's livelihoods, so it must ensure the technologies it applies during digital transformation are secure and reliable.

China has prioritized construction of infrastructure and key information infrastructure domestically for its financial sector in recent years, and government departments, such as the Ministry of Industry and Information Technology, the People's Bank of China, China Securities Regulatory Commission, and China Banking and Insurance Regulatory Commission, have implemented several policies to support this objective. In this context, China's leading Information and Communications

Technology (ICT) enterprises — such as Huawei — have grown rapidly and supported the domestic production of financial industry technologies.

China Everbright Bank, a national joint-stock commercial bank, first tried Huawei's network datacom products as early as 2015. By the end of 2020, we had applied Huawei-developed devices in most of our non-core production networks, newly built big data networks, and Software-

Defined Networks (SDNs). China Everbright Bank is also the first joint-stock bank in China to introduce domestic products into our data warehouse system. We also launched Huawei Cloud GaussDB (data warehouse service) in our bank, and it's now an important support platform for our data warehouse system.

In the critical stage of upgrading network products, network engineers — as our technology development pioneers — need to improve their technical skills. Huawei's Huawei Certified ICT Expert (HCIE) certification and training system will undoubtedly help us train new talent for data center development and Operations and Maintenance (O&M) with IT infrastructure that's made in China.

HCIE Helps Network Specialists Improve O&M Skills for New Architecture

From conversations with Huawei's experts, we learned that the HCIE certification is the highest level of Huawei professional certification, covering fields such as routing and switching and data centers, and is dedicated to training technical experts for medium- and large-sized data centers of enterprises.

Several years ago, the core switches and firewalls in our data center were all from foreign brands, and our technical personnel were more familiar with the networking mode, command line style, and troubleshooting concepts of these brands. Since 2015, more and more nodes on our bank network have used Huawei CloudEngine (CE) series switches and

NetEngine (NE) series routers.

Banks have very high standards when it comes to data center networks, and network faults must be analyzed and handled as quickly as possible, so O&M teams need to determine how to quickly improve engineers' proficiency in using Huawei products. To better understand Huawei's new products and technologies for better planning and O&M, our O&M center encourages network engineers to prepare for HCIE certification.

The change is obvious: At the beginning, by learning HCIE-Routing & Switching, network engineers in the O&M center changed their minds about Huawei HCIE. They had originally thought that the certification merely had a different device command line format from others in the industry, but they learned that Huawei prioritized research investment in the datacom field and had a deep understanding of many common network protocols. Huawei has also proposed many self-owned standards, such as redefining administrative distances in the Open Shortest Path First (OSPF) protocol. In the training process, our network engineers have learned that Huawei's strategy isn't to simply substitute products with similar ones; instead, it proposes a new data center network solution that features all of the latest developments in networking, which is reflected by the application of Virtual Extensible Local Area Network (VxLAN) and Ethernet Virtual Private Network (EVPN) technologies.

Huawei mainly promotes the overlay-based SDN, which uses the Spine-Leaf architecture, instead of the 752 architecture that is widely used in the industry, which controls the scope



In the training process, our network engineers have learned that Huawei's strategy isn't to simply substitute products with similar ones; instead, it proposes a new data center network solution that features all of the latest developments in networking. >>

As a cornerstone of finance institutions' growth, the financial cloud data center helps them improve system user experience, develop their computing capabilities, restructure data values, and reduce operating costs, so it's become the preferred technology platform of many enterprises in the industry.

of the Layer 2 broadcast domain and works with the cloud platform to provide network resources flexibly.

"I can directly apply the next-generation network architecture and O&M ideas learned in HCIE to real network construction projects. Learning HCIE also strengthens my understanding of network routing and switching technologies, which helps me continuously improve my technical capabilities and broaden my horizons. It allows me to see the future evolution direction of the network and think in a more forward-looking way," a network engineer at the O&M center said.

In the future, banks' data center resources will be delivered by a combination of private cloud and hybrid cloud. Meanwhile, traditional service networks are also applying SDNs. This means that the future bank technology system will be stable and sensitive, which can meet the consistency requirements of typical financial services and provide deployment modes such as microservices, Active-Active (AA), and Development & Operations (DevOps) for Internet finance. So in the future, whether banks choose to adopt OpenStack, Kubernetes (K8s), or cloud-native technologies to build cloud platforms, SDNs will always be needed. As the correlation between computing, storage, and network

resources strengthens, traditional delivery modes of different product technologies, such as servers, networks, and storage, will be overturned. Take the K8s as an example: The network running on the K8s must be capable of configuring Container Network Interfaces (CNIs), and producing containerized applications requires the interworking support of SDN software products. In this case, network engineers need to control hardware switches, master various network resources simulated by software products, and have some coding skills.

After passing the HCIE-Routing & Switching certification, our next goal for our staff is to work toward gaining a HCIE-Data Center qualification, so that their knowledge is up-to-date, preparing them to meet the challenges of our industry. Some banks select staff from their system and network teams to set up cloud technology teams to build and maintain the private cloud platform. In this way, they can work with cloud specialists to achieve automatic resource delivery. However, learning the HCIE-Data Center course can broaden our engineers' expertise, help them better understand the running of the cloud network and the whole operation process from application to basic architecture building on the cloud, facilitating cross-department collaboration.



Financial Cloud Data Centers Drive Change

As a cornerstone of finance institutions' growth, the financial cloud data center helps them improve system user experience, develop their computing capabilities, restructure data values, and reduce operating costs, so it's become the preferred technology platform of many enterprises in the industry.

In the traditional financial data center architecture, computing, storage, and network resources are separated from each other, and their asset management, device rollout, operations, service changes, and O&M are performed by different business departments. Meanwhile, different computing, storage, and network resource pools are also built by different vendors. This IT architecture has worked for many years in the financial industry and in many enterprises. This means the cloud data center development of banks and other financial

institutions in the future will face a series of challenges, and technology departments will need more cloud-network coordination specialists.

Meanwhile, the emergence of the cloud also redefines the rules for training specialists. As a key component of the cloud computing architecture, the cloud platform realizes unified management of computing, storage, and network resources — meaning the traditional separated architecture will move toward convergence from the technical level, greatly changing the function of technology departments in finance institutions. For example, technology departments typically focus on planning service architectures and hardware resources based on service requirements. But after cloud computing is applied, they need to design the architecture of services on the cloud and plan resources such as cloud networks, cloud storage, and cloud computing. In this context, technology departments need to train employees to



With technologies continuously evolving, Huawei says that it will continue to upgrade knowledge related to the data center certification to ensure that trainees can stay up to date and meet the requirements of financial institutions for skill and capability improvement. >>

develop more diversified skillsets.

Commercialization of the Financial Cloud Requires Talent with Diversified Skills

As the financial cloud develops and financial services are launched in the production scenarios, the commercialization of the financial cloud begins. Cloud computing has advantages — such as unified resource management, agile service deployment, Auto Scaling (AS), and on-demand self-service — but it also makes the system more complex, which is demonstrated by technology convergence. Take the network as an example: In a traditional data center, the network boundary is between servers and access switches, while the cloud network boundary extends to virtual switches inside servers. So how can we maintain and operate a network with virtual network topology inside its servers? And who is responsible for the O&M?

A more complex system also raises the requirements for the technical skills of FinTech professionals. The network, computing, and storage of the cloud cannot be separated anymore, so once a problem occurs, it's difficult to independently define and solve. For the financial cloud data center, there's an urgent need to build a team of specialists that understands convergent technologies.

Huawei Helps Train Talent

In more complex O&M scenarios, brought by cloud-network coordination in financial

data centers, network engineers need to master traditional routing and switching protocols, data center SDNs as well as digital technologies — such as virtualization, cloud computing, and storage arrays — and distributed storage to respond to challenges brought by that complexity.

To meet the skills needs for the financial institutions for data centers, Huawei created a HCIE-Data Center Facility Design course that helps trainees learn data center's planning, consulting, and service processes, such as using evaluation models, preparing the site selection and feasibility study report, and planning and designing the power supply and distribution system, cooling system, and Data Center Infrastructure Management (DCIM) system, helping them gradually become experts in the data center infrastructure field to meet financial institutions' needs for customized data center development.

With technologies continuously evolving, Huawei says that it will continue to upgrade knowledge related to the data center certification to ensure that trainees can stay up to date and meet the requirements of financial institutions for skill and capability improvement.

China Everbright Bank will continue working with Huawei to train more technical specialists with diversified skillsets. While operating the financial cloud data center and ensuring service security, continuity, and stability, we will protect our network security and data security and help to develop a unified, collaborative, shared, and agile finance industry supported by an intelligent ecosystem. ▲



K Labs and Huawei: Developing ICT Expertise in Europe

By Lorenzo Passarini, Director, K Labs

Industries worldwide are digitally transforming to make their operations more efficient and more productive. Naturally, if this going to succeed, a large pool of ICT specialists is essential. Aiming to meet that demand, K Labs — a digital academy headquartered in Italy — works with Huawei to develop ICT expertise, ultimately creating value for those digitally transforming industries.

In the digital age that we find ourselves in, ICT has been integrated into all sectors of economies and societies. As a powerful engine for development, it has profoundly changed the ways we work, think, and live. Because of ICT's impact and importance, territories and regions now treat digital transformation as a priority.

On February 19, 2020, the European Union (EU) released Communication: Shaping Europe's Digital Future, and proposed the concept, strategy, and modus operandi of

digital transformation. It's a blueprint to empower the EU to become more open, democratic, and sustainable — driven by digital technologies — and a digital transformation pioneer.

Then, in March 2021, the EU published 2030 Digital Compass: the European Way for the Digital Decade, specifying its vision, targets, and approaches to digital transformation over the next decade.

In light of these programs, one thing is clear: Digital

transformation has become an important strategic development goal for the EU.

Opportunities and Challenges

The EU faces great challenges, though: a lack of digital technology experts, a digital skills shortage across sectors, and potential economic losses resulting from the talent shortage in big data, cloud computing, and other important ICT fields.

According to the Chinese Social Sciences Today (CSST), up to 46% of large companies in the EU lacked ICT experts by 2019; and from 2012 through 2019, the ICT talent gap among EU companies increased at an annual rate of 2%.

This huge ICT talent gap directly restricts ICT industry development. To address this issue, many EU technology companies recruited graduates majoring in telecommunications, electronics, and computer science from non-EU countries. Unfortunately, because of an imbalance between theory and practice in courses, many of these graduates lacked practical skills, so they failed to quickly fit into enterprises, let alone create value for them.

K Labs was established to rapidly improve the skills of ICT practitioners: its mission

is to develop ICT expertise to support digital transformation. Now, it can play a key role in helping the EU achieve its goal of becoming a global leader in digital transformation.

Working with Huawei to Develop ICT Expertise

Founded in 2006, K Labs specializes in ICT technical training, particularly focusing on telecom, networks, and security. In its early stages, K Labs lacked competent trainers, lab equipment, and the most advanced technical knowledge in the industry. To scale up, K Labs increased its investment in software and hardware, and sought external partners.

Huawei was one of K Labs's choices as an external partner. After several rounds of communication, K Labs and Huawei started cooperating. As a leading global provider of ICT infrastructure and smart devices, Huawei's businesses cover 23 ICT fields, including cloud, big data, the Internet of Things (IoT), and data communications (datacom). In the initial cooperation phase, Huawei helped K Labs train its trainers on industry-leading ICT knowledge and teaching skills. Huawei also provided K Labs with lab equipment for training purposes and technical support. As more and more people were trained and became certified, Huawei provided free exam vouchers as incentives for K Labs trainees and trainers.

From personal experience, Huawei provided support as we needed. Huawei has got a dedicated team for training and certification that works at central and local

Customer Testimonial

Huawei has got a dedicated team for training and certification that works at central and local levels. When I visited Huawei's headquarters in China, I was impressed by how Huawei takes care of the training partner feedback to continuously improve the quality of the training and certifications. It is something that I have never seen from other vendors.



"Getting a Huawei certification does not mean just passing an exam. Huawei encourages the candidates to attend training before to take an exam. This gives great added value to Huawei certifications, because the certified engineers have really experienced installing, configuring, and managing Huawei equipment."

— Lorenzo Passarini, Director, K Labs



levels. When I visited Huawei's headquarters in China, I was impressed by how Huawei takes care of the training partner feedback to continuously improve the quality of the training and certifications. It is something that I have never seen from other vendors. Regarding the quality, I can say that getting a Huawei certification does not mean just passing an exam. Huawei encourages the candidates to attend training before to take an exam. This gives great added value to Huawei certifications, because the certified engineers have really experienced installing, configuring, and managing Huawei equipment. Compared to other vendors, Huawei better supports K Labs because it provides free certification vouchers for trainers and students, organizes 'Train the Trainer' sessions, and supports K Labs with training labs and technical support teams.

Huawei has been focusing on providing support for partners, continuously improving partner capabilities, and building a robust ICT ecosystem with partners. K Labs has been working with Huawei for 15 years, since 2006. During that period, K Labs has grown into the world's leading ICT training institution, and is widely trusted by world-class companies, particularly those in the ICT field. To date, K Labs has trained more than 5000 students on Huawei's

technologies and solutions in Western Europe, ensuring they are well-equipped for jobs in the industry and empowering them to propel digital transformation.

Continued Efforts Pay Off

K Labs is now the most important Huawei Authorized Learning Partner (HALP) in Western Europe, providing training on the entire Huawei training portfolio — including routing and switching, storage, cloud, data center, WLAN transmission, access, LTE, and 5G, to help engineers pass Huawei Certified ICT Associate (HCIA), Huawei Certified ICT Professional (HCIP), and Huawei Certified ICT Expert (HCIE) certification exams.

One of the certified engineers, Peter, joined one of the top 500 telecom companies worldwide.

Peter was a Computer and Automation Engineering student at Università Politecnica delle Marche, the first Huawei ICT Academy in Italy. Peter didn't know anything about Huawei's courses until his professor recommended its routing and switching training program. Through the training, Peter acquired skills and knowledge and learned how valuable Huawei's courses could be.



"Thanks to K Labs, I have learned a lot about routing and switching, security, and storage. It really impressed me that Huawei provided a lot of free courses and learning materials that I needed," said Peter, who took K Labs's training courses. >>

Peter's professor told him that passing the Huawei certification exam could greatly broaden his future career development path. After learning more details, Peter decided to take the certification exam, to enhance his soft skills as well as his technical expertise.

After preparing diligently and conscientiously, Peter passed the exam with an excellent score and obtained the HCIA certificate in September 2019. In November, he became an after-sales engineer at one of Huawei's local partner companies. To reach the self-improvement targets at his job, Peter participated in the K Labs HCIP training course. Under the instructions of K Labs trainers and with his specialized knowledge, he passed more certification exams at different levels.

Peter's career development steadily improved. Recognizing the value of Huawei certifications, he decided to work toward the highest-level Huawei certifications: HCIE.

He knew both the preparation and the exams themselves would be difficult, so he contacted K Labs for certification training, including training on the HCIE written exam and lab exam. He found both the preparation and the HCIE exams difficult.

"Thanks to K Labs, I have learned a lot about routing and switching, security, and storage. It really impressed me that Huawei provided a lot of free courses and learning materials that I needed," Peter said.

"K Labs and Huawei's instructors also gave me a lot of instructions for the lab exam. They helped me practice repeatedly, until I could successfully do the experiment on my own. All these have greatly helped improve my ICT knowledge and skills."

Peter's hard work paid off: He passed

the exam, scoring an impressive 93 out of 100. When he received the HCIE certificate, Peter couldn't hide his excitement: "Huawei certifications offer me unlimited possibilities," he said, "and my future career horizons broaden." The company Peter worked for was later upgraded to a five-star CSP, and he received additional training incentives.

Peter's experience is typical of the trainees from the ICT talent ecosystem built by K Labs and Huawei. Over the last 15 years of collaboration, and based on years of technical and teaching experience, K Labs has developed thousands of ICT professionals — becoming an industry leader in high-end ICT talent development and has extensive influence in the European market.

Working Together for a Brighter Future

During the COVID-19 pandemic, K Labs joined Huawei's Learn ON program — an online course that tackles trends such as virtualization and its features as well as network and storage basics for cloud computing — ensuring training quality and continuity. In 2020, K Labs helped dozens of engineers and students pass Huawei certification exams through online training.

Looking a little further ahead, we envisage fields such as IoT and big data will need more ICT expertise. With that in mind, K Labs will continue collaborating with Huawei on the future-oriented ICT talent ecosystem, to jointly create value for industries and build more intelligent societies. ▲



Shenzhen Xunfang: Collaborating with Huawei to Provide the ICT Sector with the Talent It Needs

By Liu Guofeng, President, Shenzhen Xunfang Technology

Millions of college graduates enter China's job market every July. Because of the fierce competition this influx of new graduates brings, many young people nationwide face the prospect of unemployment. Meanwhile, the Information and Communications Technology (ICT) sector is in urgent need of new talent, particularly with the rapid development of digital technologies. The industry, however, is knowledge-intensive and highly dependent on specialist skills. So how can we meet the ICT sector's demand for talent and help college graduates find appropriate jobs? This is a challenge that Shenzhen Xunfang Technology Co.,Ltd (Shenzhen Xunfang), an authorized Huawei training partner, seeks to address.

The employment prospects for college graduates in China have been increasingly bleak in recent years. In 2021, 9.09 million students graduated from colleges in China, and many overseas students returned to the country for work because of the COVID-19 pandemic. Because of the intense competition for job vacancies this caused, many graduates faced the prospect of unemployment in what was one of the hardest years in history to find a job. However, although there are millions of graduates, there is still a structural gap between

talent demand and talent supply: Many enterprises are unable to find talent with the ICT knowledge and skills that suits their needs, with a talent shortage obstructing industries as they try to go digital.

To address the problem, we must focus on developing skills and ensuring that the skills being taught are suited to demand across industries. As an authorized Huawei training partner, we're collaborating with them to build a healthy talent ecosystem. We have helped Huawei hold ICT talent selection



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events, in an effort to provide enterprises with the talent that they need.

Developing Urgently Needed Talent

In 2019, China's ICT industry had about 10 million fewer specialists than it needed. And, as all industries digitally transform at an accelerating rate, the demand for digital talent is increasing. Meanwhile, facing serious challenges in terms of talent, organizational structure, and business skills, the ICT sector and industry verticals urgently need the support of sustainable industry ecosystems, and talent is key to building these ecosystems.

As well as regular training courses for the Huawei Certified ICT Associate (HCIA), Huawei Certified ICT Professional (HCIP), and Huawei Certified ICT Expert (HCIE), Xunfang intends to popularize vocational training courses in colleges and universities to address the structural gap between talent supply and demand.

By collaborating with Huawei's Talent Development Department and regional business departments, Xunfang has persuaded many universities to adopt the Huawei ICT Academy and Huawei certification systems and courses. With programs that help colleges and universities establish effective teaching systems, provide skills training, and help students gain certification, Xunfang helps universities to train professionals and experts who are able to immediately meet the needs of enterprises, and to have a role in setting industry standards.

Xunfang informs the students and faculties of colleges and universities of the industry's talent needs, aiming to encourage vocational training. In 2018, Xunfang and

Huawei's Rep Office in Guangdong jointly launched the HCIE Elite Engineer Training Program, which is dedicated to training high-end ICT talent. In 2019, Xunfang and Huawei held over 100 ICT Talent Ecosystem Promotion programs to share insights into the latest digital technologies, knowledge, and skills to tens for thousands of students. In 2020, thousands of college students across China earned Huawei's vocational certifications after Xunfang and Huawei launched promotional activities on Huawei's Kunpeng ecosystem (a comprehensive ecosystem, covering servers, processors, and more) new infrastructure technologies, and vocational certifications among colleges and universities.

Building a Sustainable Talent Ecosystem by Providing Employment Opportunities

Employment is the ultimate goal of talent development, so Xunfang has spent a long time exploring ways to help college graduates find suitable jobs. In 2015, Huawei's talent selection conferences attracted Xunfang's attention; they're an important platform for building industry ecosystems and help build a bridge between the Huawei ICT Academy and partners. The talent selection conferences also help bridge the gap between ICT talent supply and industry demand.

Xunfang's HR and business departments now participate in Huawei's talent selection events to recruit talent. Huawei's talent selection conferences focus on the ICT field, and the students who take part have HCIA, HCIP, or HCIE certification in technical fields

Over the past five years, Xunfang has interviewed more than 300 people each year, and recruited more than 100 students every year for internships and employment, allowing the company to build a talent pool of Authorized Service Partners (ASPs), technical engineers, and managers, and enabling it to grow by over 40% for several consecutive years.

— such as network, storage, security, and cloud computing — or have strong technical skills, so they can quickly adapt to, and fulfill, work requirements.

Over the past five years, Xunfang has interviewed more than 300 people each year, and recruited more than 100 students every year for internships and employment, allowing the company to build a talent pool of Authorized Service Partners (ASP), technical engineers, and managers, and enabling it to grow by over 40% for several consecutive years.

More importantly, as an authorized training partner of Huawei, since 2017 Xunfang has gradually changed its role from a participant and beneficiary of the talent selection conference to an organizer of the event.

Since 2018, Smart Cloud School, a Xunfang program, has assisted Huawei in holding nearly 10 Huawei Talent Alliance & Talent Selection Conferences in cities such as Guangzhou, Shenzhen, Chengdu, Xi'an, Tianjin, and Changsha, as well as in Gansu provinces. More than 300 ICT companies provided tens of thousands of jobs at the conferences, attracting more than 7000 students from more than 150 universities, with more than 3000 students finding suitable jobs at the conferences.

In November 2020, Xunfang helped organize the Huawei Talent Alliance & Talent Selection Conference in Shenzhen. The event attracted 68 companies, offering more than 1000 ICT jobs. More than 200 students from 10 universities participated in the recruitment, and those who had passed Huawei certifications were favored by employers.

Huawei's Talent Alliance & Talent Selection Conferences helped connect local students with Huawei's partners and ICT

enterprises, strengthen relationships between universities and employers, and provide strong talent support for the digital transformation of industry verticals.

A New Journey with Huawei

Talent is vital to support the development of enterprises and industries. As well as developing high-quality ICT talent, Xunfang is also collaborating with industry-leading companies to tackle the structural gap between talent supply and demand.

Over the past 10 years of its partnership with Huawei, Xunfang has witnessed the continuous growth of Huawei's talent ecosystem, which we are a participant, a beneficiary, as well as an organizer of. As a multi-ecosystem Huawei partner, we have a profound understanding of the company's business, having won the Huawei Gold Supplier award nine times and been named as Huawei's Outstanding Authorized Training Partner for two consecutive years.

Using that understanding, we have been working together with Huawei, exploring ways to develop talent; help more people to find jobs; and coordinate educational development, talent supply, and industry demand and innovation requirements.

As a national high-tech company with a 2500-strong staff and 33 branches in major provinces and cities throughout China, Xunfang will step up its efforts to train young professionals and help more people to find suitable jobs. We will work to solve talent development problems to produce talent that's well suited to the needs of businesses and industries. ▲



An Unforgettable Journey Through Huawei's Certification Program

By *University of Alicante, Spain*

As the first HCIE lecturer in Huawei's first ICT Academy in Western Europe, the University of Alicante, this is Pedro Juan Roig's Huawei certification journey, a memorable and valuable experience in his life. Professor Roig shares his experience of this exciting and unforgettable journey with all ICT Academy instructors, hoping to encourage them to travel down the same path and reach this prestigious, globally recognized level.

It brings Professor Roig a sense of value and honor to have attained Huawei Certified ICT Expert (HCIE) status, the ICT industry's highest level of certification. With this certification, he became the first HCIE lecturer at the University of Alicante in Spain, which in 2014 became the first Huawei ICT

Academy in Western Europe, receiving authorization to train its students on Huawei technologies.

The ICT Academy provides a vast amount of resources for both theory and practice to support everyone's studies, helping them to reach the goal of attaining

Huawei certifications. Meanwhile, the training, practice, and preparation for the exam provide a deep understanding of network technologies, planning, design, and engineering practices based on lab scenarios, and continuously improve the practical capabilities of their participants to meet the talent needs of digital transformation.

How the Certification Journey Began with HCIA

Huawei's professional certifications are classified into three levels: Huawei Certified ICT Associate (HCIA), Huawei Certified ICT Professional (HCIP), and Huawei Certified ICT Expert (HCIE), which correspond to the engineer, senior engineer, and expert levels. Naturally, as one progresses through the certification levels, the exams become increasingly difficult.

Within the ICT sector, these are globally recognized professional certifications. And Huawei had certified more than 400,000 people worldwide by the end of 2020, of whom more than 14,000 had attained HCIE certifications. Prof. Roig is just one of those 14,000 people, having started this challenging and rewarding career journey in 2014.

Back in 2014, Prof. Roig didn't consider HCIE the target of his studying. Initially, he and his colleagues at the University of Alicante were only studying to pass an exam that was necessary to qualify as an ICT Academy instructor. Once he started this journey, however, he was unable to stop until he reached his biggest goal — Huawei's

highest certification level.

At the foundation level, the Huawei HCIA certification involves learning theoretical and then putting it into practice, with the depth increasing as one progresses through the HCIP and HICE levels. Although Prof. Roig had already been teaching networking-related courses at the university, to prepare for the HCIA exam, he read through the academy textbooks, attended its training courses, and discussed various lab scenarios with other lecturers from the ICT Academy. From starting to prepare for the exam to passing the certification, it took nearly four months.

During the process, Prof. Roig developed a keen interest in Huawei's Routing and Switching (R&S), the basis of its networking technology. He began to enjoy exploring Huawei's unique value in the communications technology field. In particular, he was impressed by its approach of offering a wide range of networking and security products, all based in the same operating system, which means students don't need to learn new commands when

Partner Point of View



When I first started the program, getting HCIE R&S certification seemed a long way off, but persevering was definitely worth it. It may seem too far away to achieve when you start, but it's better to treat the process as a long run rather than a sprint. In this way, you can strengthen all your technical skills in theory and in practice. Ultimately, if you're on the journey with some colleagues, things may be easier, and it's a great opportunity to build a stronger team.

— Pedro Juan Roig

There's no shortcut to the HCIE certification: you need determination, in-depth knowledge, and a systematic learning plan to have a chance to succeed. Attitude is also very important, along with the experience gained at HCIA and HCIP levels — all this adds up to a successful outcome.

dealing with new technologies.

Climbing to Higher Peaks

Once you've attained Huawei's HCIA certification, it's valid for three years, then you can choose to either continue to obtain the same level of certification or challenge yourself to improve your skills and try to achieve a higher level of certification.

Almost without hesitation, Prof. Roig and his colleagues chose to climb the higher mountain, and HCIP certification became their goal. Prof. Roig and his colleagues discussed this challenge; they decided to work together as a team and encouraged each other to achieve this goal. Finally, after nine months of sustained study and practice, they each earned a HCIP certificate, appreciating the depth of knowledge and skills required to reach this level. They felt that they had a much deeper understanding of this area of technology, especially with the in-depth practical element required.

After attaining a professional certification, it seemed a natural progression to continue the challenge at the highest certification level — HCIE. Following the enjoyable and challenging experience of completing the HCIA and HCIP levels, and having gained confidence in Huawei technologies and working together as a team, gave Prof. Roig and his colleagues more belief that they could achieve their goals.

It took Prof. Roig and his colleagues about 15 months to prepare for the expert-level HCIE Certification exam, which includes both a written test and a lab exam.

The first part was the written test, which Prof. Roig was already familiar with from his experience at HCAI and HCIP levels, and this valuable experience greatly benefitted him at the expert level. The second part involved the lab test, which required remotely connecting to the lab at Huawei's headquarters and completing the configuration of network-related technologies within the allocated exam time of eight hours.

Prof. Roig was the first and only instructor at the University of Alicante to pass the expert level certification, becoming the first HCIE lecturer for the Huawei ICT Academy Program in Western Europe. Prof. Roig is extremely proud of this achievement, and he is delighted to share his experience to help more instructors pass their Huawei certifications and improve their skills and career progression opportunities.

Lessons Learned Along the Way

Looking back at this certification journey, Prof. Roig believes that the best way to achieve it is to combine theory with practice. The former can be studied in training guides, which are required to understand the topics, and the latter can be studied in lab guides, which are necessary to put



A teaching building at the University of Alicante's ICT Academy

these topics into practice.

There's no shortcut to the HCIE certification: you need determination, in-depth knowledge, and a systematic learning plan to have a chance to succeed. Attitude is also very important, along with the experience gained at HCIA and HCIP levels — all this adds up to a successful outcome.

In Prof. Roig's opinion, HCIE courses are well designed and very practical. In the future, he believes that whichever mainstream ICT applications are popular, Huawei will provide the technologies to support them, which explains why its communications equipment and network equipment market share is increasing year on year. For the international market, Prof. Roig is very optimistic about the development prospects of Huawei's certified talent.

Prof. Roig is using his own experience to share his message with everyone: As well as improving his knowledge and skills, passing Huawei certification also improved his career

progression. Prof. Roig believes that with the increase of digital transformation in various countries, the current talent pool can't meet market demand, so new talent is needed. The ICT industry is knowledge-intensive and is highly reliant on talent, which is essentially the 'infrastructure' of enterprise transformation.

Now, as a teacher at the ICT Academy, Prof. Roig always shares his successful experience with students without reservation. Prof. Roig tell others that, though it may take a lot preparation and seem overwhelming in the beginning, he thinks the best way is to move forward step by step. Even if you just take small steps as you learn each day, they will add up to great strides forward in the long term. Set a learning goal for yourself every day: If you are able to make your studies simple and interesting, naturally, you will immerse yourself in them, and finally you can get the ideal results. ▲



Achieving My Ambitions with Huawei ICT Academy Programs

By Emanuel Lucas Chaula, an ICT professional and Huawei ICT Academy instructor in Tanzania

Emanuel Lucas Chaula is an ICT industry professional from Tanzania and a part-time instructor at a Huawei ICT Academy. In 2018, while he was a college student, he entered the Huawei ICT Competition, winning first place in the Tanzania National Competition. Having also won first prize in the Southern Africa region, Chaula later entered the Global Final and received an 'Outstanding Performance' award.

I've been fascinated by the latest technologies for as long as I can remember. Ever since that fascination began, I've dreamed of applying them to improve the lives of people in my country.

In Tanzania, the Information and Communications Technology (ICT) industry isn't particularly advanced and there was always a scarcity of opportunities to explore the latest knowledge, and because of this situation many people here have a very limited understanding of ICT. Undeterred by

these factors, I worked toward achieving my dream: I applied to the best university in Tanzania — the University of Dar es Salaam (UDSM) — to study computer science.

I was delighted when I was admitted to the university, but studying computer science there wasn't easy, with limited teaching resources, a dearth of suitable learning facilities, and a lack of high quality devices. And because there aren't many technical ICT vacancies for graduates with little practical experience in Tanzania, it's hard for young people to



Many graduates have to give up their career dreams and work jobs that aren't related to their majors to make a living. If I hadn't participated in the Huawei ICT Competition, I'd probably have been one of them. >>

find satisfactory — or even suitable — jobs after they graduate. Many graduates have to give up their career dreams and work jobs that aren't related to their majors to make a living. If I hadn't participated in the Huawei ICT Competition, I'd probably have been one of them.

Working Toward My Dream: Participating in the Huawei ICT Competition

I vividly remember how curious and excited my classmates and I were back in 2018, when our teacher told us that Huawei was going to hold an ICT competition at our university. We immediately went online to search for more information, and we learned that it's a global ICT skills competition for college and university students. Without hesitation, my classmates and I signed up for a roadshow event that would give more details about Huawei and the competition.

When the day of that event arrived, I learned that Huawei isn't just a smartphone manufacturer: It's a leading global provider of ICT infrastructure and smart devices, while its ICT competition is an event that's centered on exchanging knowledge and ideas as well as competing and is designed to help young people worldwide to develop their ICT skills. The competition's participants gain insight into the ICT industry, learn about emerging theoretical knowledge, and Huawei provides them with opportunities to gain practical experience in using new technologies. The competition had already held three editions, but this was the first edition in Tanzania, and by that year it was estimated about 100,000

students around the world had enrolled.

"100,000 students? This is an incredible opportunity for us, but we don't have any competitive advantages," I thought. The roadshow teacher then explained that Huawei would organize a series of training activities during the competition, and we soon learned that there are many certification courses/resources on the Huawei Talent website: Routing & Switching, Storage, Security, Wireless Local Area Network (WLAN), Cloud, Big Data, Internet of Things (IoT), and Artificial Intelligence (AI).

My classmates and I believed that if we obtained Huawei certification, we'd greatly improve our professional competitiveness. What's more, we knew that those who achieved outstanding results in the competition could earn an internship at Huawei and those who reached the Global Final could even fly to China to compete with other students from all over the world. My friends and I couldn't contain our excitement about these prospects, so we started preparing, determined to enter the Global Final.

In the few months that followed, I enthusiastically explored the wealth of extracurricular learning courses on Huawei's learning website. I was also grateful to Huawei's trainers for providing my university with simulators and lab devices free of charge. As a college student majoring in computer science in a developing country, I was deeply appreciative of how these resources improved our ability to apply our knowledge in practical situations, which eventually helped me finish in first place in Tanzania's National Final.

At the award ceremony, Kassim Majaliwa, the Prime Minister of Tanzania, personally presented me with my award. That moment

Whenever I've looked at the bigger picture and thought about the status of the digital field in my country, I have always focused on two questions: How can we change Tanzania's status in the ICT field? And how can I apply my strengths to help my fellow Tanzanians to improve their skills?

was unforgettable: Prime Minister Majaliwa encouraged all of us to study hard, strive to become leaders in the domestic ICT industry, and use our knowledge to help our country change and develop. Since that day, I have always kept these words in mind.

My team later entered the Southern Africa Regional Final, winning first prize and qualifying to represent the Southern Africa region in the Global Final. In April 2019, after a flight that lasted more than 10 hours, we finally arrived in China, determined to do our best in the Global Final. Finally, after an intense eight-hour contest, with 49 teams comprised of participants from 61 countries, our team received an 'Outstanding Performance' award. That was greatly encouraging to us; it proved opportunities to demonstrate digital skills on a global platform were now more accessible and that young people in Tanzania now had a pathway to learn more about ICT.

Achieving Ambitions and Enabling Others

Learning Huawei technologies has greatly helped me in my career. Huawei provides multiple technical certifications across the entire industry, and each certification has three levels for its certificates: Huawei Certified ICT Associate (HCIA) for junior associates, Huawei Certified ICT Professional (HCIP) for senior professionals, and Huawei Certified ICT Expert (HCIE) for experts. So I kept studying after the competition and earned several Huawei certificates, including HCIA-Storage, HCIA-Security, and HCIP-Routing and Switching (R&S).

When I graduated, Huawei recommended me a job opportunity as a junior engineer. In this role, I was lucky enough to participate in several large-scale local ICT projects, which enabled me to apply my skills in practical situations and broadened my horizons.

Whenever I've looked at the bigger picture and thought about the status of the digital field in my country, I have always focused on two questions: How can we change Tanzania's status in the ICT field? And how can I apply my strengths to help my fellow Tanzanians to improve their skills?

When I told my Huawei supervisor I'd been thinking about these questions, he suggested I join 'Train the Trainer,' a free program provided by Huawei to teach the teachers about Huawei's technologies and solutions. He reasoned that then I could provide technical training and experience sharing for college students in my spare time. With some encouragement from my colleagues, I took the instructor training course and got a license to train others. So I became a part-time instructor at some ICT Academies in Tanzania, hoping to help more students to acquire knowledge about cutting-edge technologies and gain Huawei certifications.

A combination of industry practice and academic knowledge gives me the perspective I need to deliver training to the best of my abilities. Once again, much like when I signed up for the competition, many students gained access to a wealth of industry resources and a real experimentation environment through Huawei's platform.

During the COVID-19 pandemic, we have also provided continuous remote training and an online simulation

environment to encourage students to maintain their enthusiasm to learn in the lead up to the competition. Gratifyingly, all of these efforts paid off. In the 2019–2020 competition, our students also achieved impressive results: first place in Southern Africa and second prize in the Global Final, achievements that exceeded my expectations. As I reflected on these successes, I realized that I wasn't just fulfilling my own dream; I was also helping others to fulfill their dreams.

How Huawei ICT Academies Can Support Africa's Digital Aspirations

After five editions, the Huawei ICT Competition has established itself as the largest and most influential ICT skills competition in Africa. Based on my experiences in the competition, I believe it's critical for teachers and students alike to embrace, and keep learning new technologies. Crucially, Huawei ICT Academy provides the foundation needed for continuous growth and development.

Three years ago, the first Huawei ICT Academy was established in Tanzania. Today, we have established partnerships with 18 universities nationwide, and we provide high-quality courses and skills training for nearly 4000 students. Over the past three years, I have witnessed how Huawei has helped to improve knowledge about ICT skills in Tanzanian academia, bridged the gap between theoretical learning and practice, had a profound impact on innovation and application of new technologies, and boosted Tanzania's future digital industry



In October 2020, as a mentor, Chaula led a new team, which won first prize in the Southern Africa Regional Final.

development.

These efforts have also been recognized by Joyce Ndalichako, Tanzania's Minister of Education and Technology. "Students are the future of national development. The Huawei ICT Competition provides a new platform for students in Tanzania," Ndalichako said. "On behalf of the Tanzanian government, I would like to thank Huawei for its dedication and efforts in building the local talent ecosystem."

Having been a student, a Huawei engineer, an ICT Academy instructor, and an industry professional, I encourage young people to join me at the Huawei ICT Academy and participate in the technology initiatives and programs to help more people achieve their career dreams. I sincerely hope that more students and professionals from Tanzania and elsewhere in Africa will thrive in the ICT field, working together to support the entire continent's digital capabilities and boost its economic prosperity. ▲

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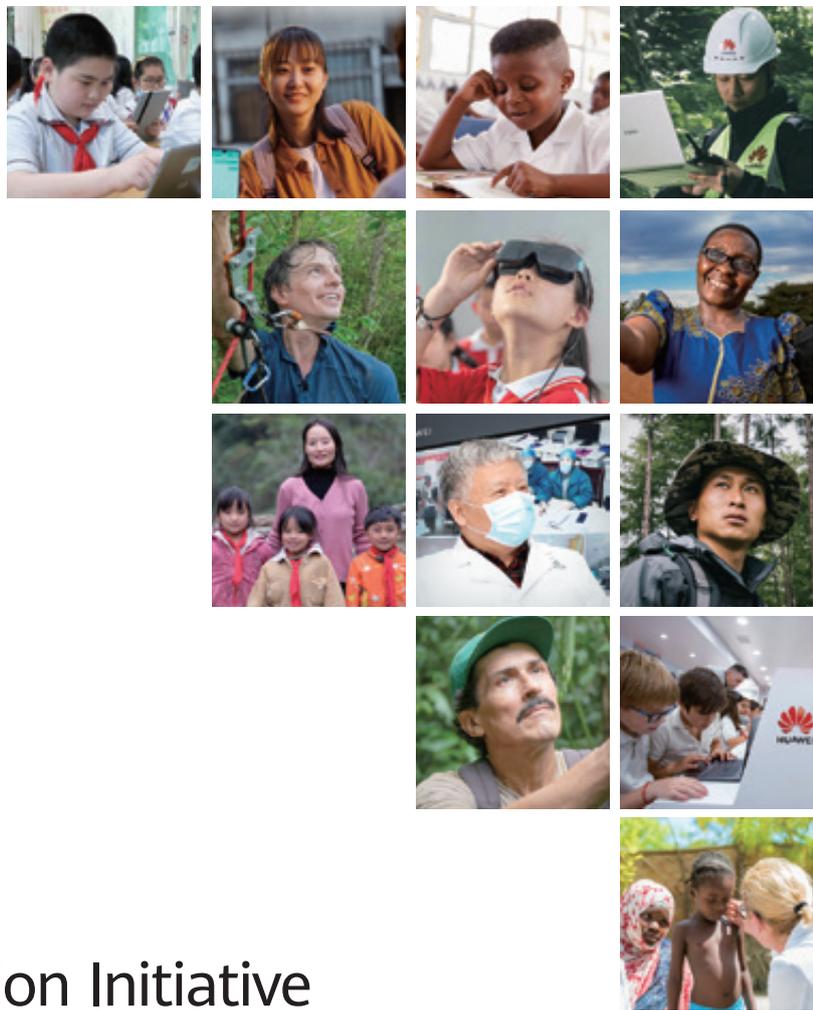
Huawei integrates industry and new ICT technologies,
together with clients & partners accelerating digital transformation

Building a Fully Connected, Intelligent World



The logo consists of three concentric circles in shades of teal. The text 'TECH 4 ALL' is centered within the innermost circle. 'TECH' is in white, '4' is in red, and 'ALL' is in white.

TECH
4 ALL



TECH4ALL

Huawei's Digital Inclusion Initiative

Huawei believes that no one should be left behind in the digital world, so we developed TECH4ALL – our long-term, digital inclusion initiative based on Huawei's ICT infrastructure and smart device products and services. TECH4ALL uses technology, applications, and skills to empower people and organizations worldwide, and works with them to address challenges in environment, education, health, and development.



Building a Fully Connected, Intelligent World

