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Dialogue

Dialogue on standards: directions and difficulties of standardization discipline construction

标准对话：标准化学科建设的方向与难点

Exclusive Interview

A fond farewell

Kathie Morgan
Past President, ASTM International

深情的告别

ASTM International前总裁 凯西·摩根

CSP
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For more information

The national standard GB/T 44130.1—2024, *Charging and battery swap service information exchange for electric vehicles—Part 1: General rules*, has taken effect since Sept. 1, 2024.

It is applicable to the information exchange among charging and battery swap platforms, and between these platforms and other systems and devices.

Every end is

a new beginning

It is never easy for anyone to say goodbye. However, life is a journey, in which we have to bid farewell to the people and things that we love and cherish.

Kathie Morgan, President of ASTM International, will step away from a career that has been far more than a job for her at the end of September. We are grateful that she shared her 40-year story with ASTM, the significant shifts in ASTM's evolution, and many innovative milestones during her presidency.

"One of the cornerstones of ASTM's contribution to society has been our standards development process fueled by 30,000+ members from over 150 countries and our online platform, Compass, that not only provides access to the most up-to-date standards but also offers tools that boost productivity and streamline workflows," wrote Kathie Morgan in the article.

To help readers have a deep understanding of ASTM International, its businesses, standards development system and database, we also interviewed Hu Yanan, the Operation Manager of the ASTM International China Office. You may find out why this century-old organization still exudes strong vitality today.

The DIALOGUE column presents the seminar held by China Standardization Press to probe into the directions and difficulties of standardization discipline construction in China. Six experts from academia, research institutions, and standardization committees were invited to share their insights into issues such as the status of standardization discipline, development trend, policy support, standardization knowledge system, and difficulties of offering standardization courses.

In the RESEARCH & EXPLORATION column, three academic papers focus on the analysis of the standardization of community security fund management, TCM standardization in Sichuan province, and ISO 13205:2024 respectively.

Just as T. S. Eliot said, "What we call the beginning is often the end. And to make an end is to make a beginning." May the Sept./Oct. issue inspire you to some extent.

THE EDITORIAL COMMITTEE
OF CHINA STANDARDIZATION PRESS

中国标准化杂志社
China Standardization Press

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Institute for Standardization of Nuclear Industry

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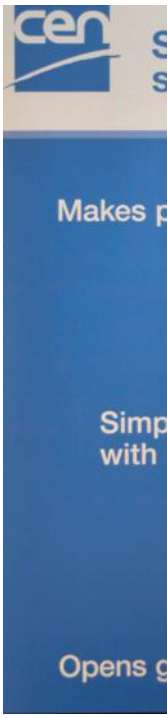
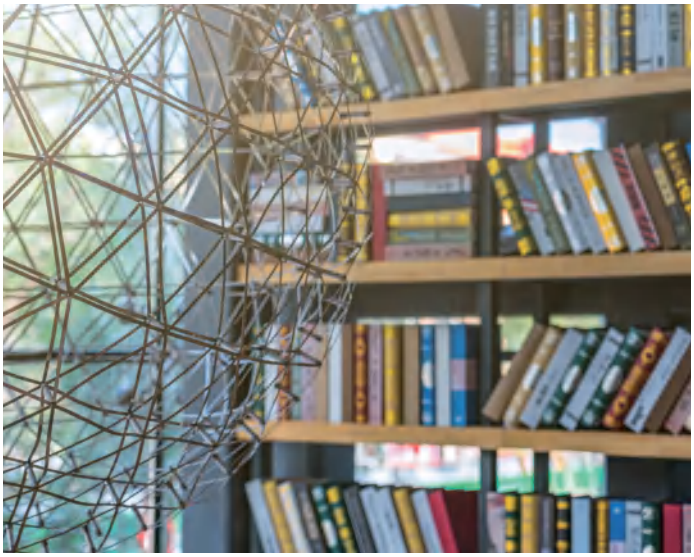
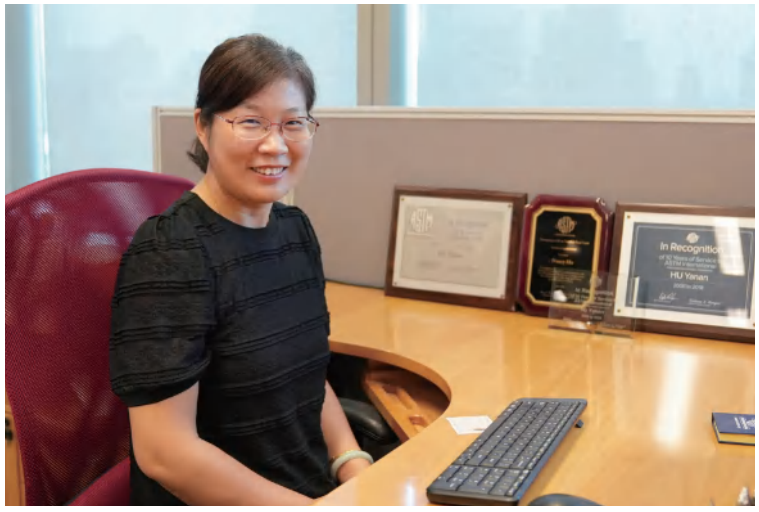






HEADLINE

Action plan on establishing standards and metrology system for dual carbon goals released

Recently, the National Development and Reform Commission, the State Administration for Market Regulation (SAMR), and the Ministry of Ecology and Environment jointly issued the *Action Plan on Further Strengthening the Construction of Standards and Metrology System for Carbon Peak and Neutrality (2024-2025)*.

According to the Plan, by the end of 2024, 70 national standards for carbon accounting, carbon footprints, carbon reduction, energy efficiency and energy consumption, as well as carbon capture, utilization and storage will be issued, basically realizing the full coverage of carbon accounting standards for enterprises in key industries. By 2025, a standards system of carbon accounting and evaluation for enterprises, projects, and products will be in place; technical indicators for energy consumption and efficiency of key industries and products will meet world-leading benchmarks; 100 standardization pilot projects of carbon emission management will be set up in enterprises and industrial parks.

Also, the Plan delineates 16 major tasks, including accelerating the development of standards for carbon accounting in enterprises, strengthening standards development for carbon footprints and carbon labeling of products, increasing the supply of carbon reduction standards for projects, promoting the research on standards for carbon reduction and removal technologies, demanding higher standards for energy consumption in the industrial sector, accelerating the upgrading of standards of product energy efficiency, strengthening the standards development of recycling of key products and equipment, expanding the supply of standards for the evaluation of green products, and other 8 tasks on metrology in this field.

Enterprises are encouraged to establish the standardized management system of carbon emissions, to facilitate the accurate calculation of carbon emissions. Also, efforts will be made to guide enterprises to apply advanced technologies to realize carbon reduction.

CCF holds standard technology conference in Suzhou

The China Computer Federation (CCF) gathered more than 210 experts and scholars from universities, research institutes, and enterprises nationwide for the 2024 CCF Standard Technology Conference on August 10-11 in Suzhou, Jiangsu province.

To promote the development and implementation of standards in the field of computing, the conference serves as an innovative and interactive platform led by standards. Academicians and experts were invited to give keynote speeches, with roundtable discussion and themed sessions held for in-depth exchanges on frontier computing technology and its standardization.

The conference was addressed by Tang Weiqing, Secretary-General of CCF, Sun Ninghui, President of CCF and Academician of Chinese Academy of Engineering, and Gu Haidong, Member of the Standing Committee and Executive Deputy Mayor of Suzhou.

CCF has worked on association standards for nearly 3 years. It has established the standards system, work process, and the expert base, and initiated the research and development of many association standards. The conference is a chance to further promote CCF's standardization work, said Tang Weiqing.

In the intelligent era, standardization work is of great importance, and China can play a bigger role in certain aspects, according to Sun Ninghui. He hoped that the conference can promote the cooperation between CCF and experts at home and abroad to develop high-quality computer standards.

Moreover, the standardization committee of CCF signed a Memorandum of Understanding with the Guangdong-Hong Kong-Macao Greater Bay Area Standard Innovation Alliance, and signed an agreement on strategic cooperation with the National Technical Standard Innovation Base (Intelligent Computing).

China's first research institute for AI standardization set up

The World Robot Conference 2024 was held on August 21-25 in Beijing, which was themed "Co-fostering new quality productive forces for a shared intelligent future".

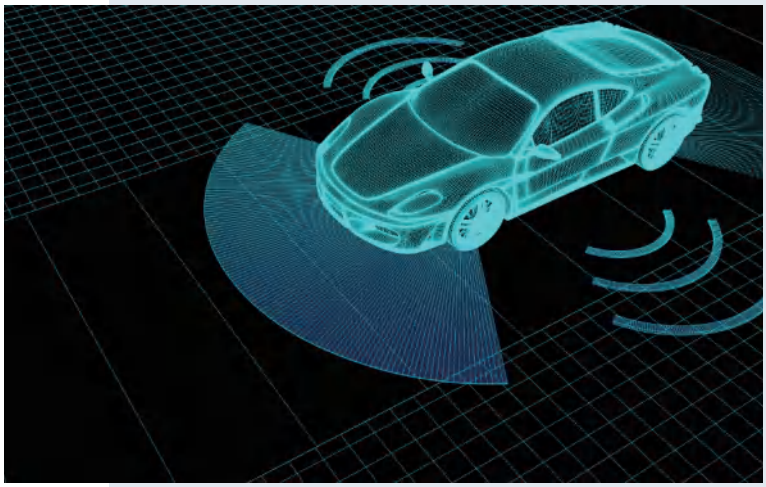
On the Session on AI Empowering Future Organizations and Talent Development, the Beijing Institute of AI Standardization was officially established in Beijing Economic-technological Development Area (Beijing E-town), which is China's first research institute in this field.

As a basic and strategic technology leading a new round of scientific and technological revolution as well as industrial transformation, AI is an important engine to drive the development of new quality productive forces. Promoting the AI standardization is of great significance for facilitating technological progress, empowering enterprise development, leading industrial upgrading, and improving global competition.

The Institute will conduct all-round research on the standardization in the fields of cutting-edge key technologies of AI, application scenarios in industries, as well as risk control and governance. Efforts will be put into basic supporting and key technologies, potential social governance risks and other issues caused by the development of AI, and construction of benchmarking application scenarios. Particularly, it will give full play to the role of Beijing Embodied Intelligent Robot Innovation Center, to address the common problems of various innovation subjects, and promote the standards development for embodied intelligent industry.

The inauguration ceremony was attended by Gao Niandong, Deputy Director-General of Capital Standardization Committee and Party Secretary and Director-General of Beijing Administration for Market Regulation, Yang Jianjun, Party Secretary and Vice President of China Electronics Standardization Institute, Su Jun, Director-General of Think Tank Research Center and Intelligent Social Governance Research Institute of Tsinghua University, Zhang Qiang, Secretary of the Working Committee of Beijing E-town.

Three national standards on automobiles released



The safety of intelligent connected automobiles is not only consumers' concern, but also the fundamental guarantee for the sustainable and healthy development of the industry.

To implement the *National Standardization Development Outline* and *National Guideline on Construction of Standards System for Internet of Vehicles (Intelligent Connected Vehicles)*, the Ministry of Industry and Information Technology (MIIT) has initiated the work on standards development focusing on management demands of intelligent connected automobile industry, as well as demands of industrial development reality and technological upgrading.

On August 23, SAMR (SAC) released three mandatory national standards whose development was organized by MIIT: GB 44495-2024, *Technical requirements for vehicle cybersecurity*, GB 44496-2024, *General technical requirements for software update of vehicles*, and GB 44497-2024, *Intelligent and connected vehicle—Data storage system for automated driving*, which are the first batch of standards in this field, and will come into effect on January 1, 2026.

The standards fully harmonize with international regulations, such as the UN Regulation No. 155—*Cyber security and cyber security management system*, and UN Regulation No. 156—*Software update and software update management system*.

GB 44495-2024 stipulates the requirements for automobile information security management system, as well as technical requirements and test methods for external connection security, communication security, software upgrade security, data security and other aspects.

GB 44496-2024 focuses on the upgrading of vehicle software, and specifies relevant technical requirements and test methods, which will help regulate the software upgrade of automobile enterprises, protect the rights and interests of consumers, and implement the regulatory policies on supervision of software upgrade.

GB 44497-2024 provides technical support for accident liability identification and cause analysis, which is conducive to the progress of automated driving technology.

The three standards summarize China's innovation achievements and experience of intelligent connected vehicle technology, which help improve the safety of intelligent connected vehicles and facilitate the healthy and sustainable development of the industry.

HIGHLIGHTS |

Chinese expert honored ISO Excellence Award

Recently, the ISO Excellence Award was conferred on Chinese expert Li Xiaobin for the first time in the field of screw threads. It marks that China's efforts on international standardization of screw threads are recognized by the international community.

Because of the simple structure, reliable performance, convenience in disassembling and manufacturing, screw threads are widely used in national pillar industries including aerospace and spacecraft, as well as daily facilities such as automobiles, water pipes, and gas. The ISO/TC 1, *Screw threads*, was established in the same year as ISO.

As the first technical committee of ISO, ISO/TC 1 has been providing standards solutions for the development of the global machinery industry, playing a foundational role in promoting the international industrialization process. Undertaking the secretariat of ISO/TC 1 since 2004, China has participated in the development and revision of more than 20 international standards with leading efforts. These international standards are widely used by more than 30 countries such as Germany, the United Kingdom, and France, making important contributions to the development of international standardization of screw threads.

Established in 2015, the ISO Excellence Award is an important individual award to recognize technical experts who have made outstanding contributions to the development and revision of ISO standards. The award will encourage more Chinese experts to actively participate in international standardization activities.

Chinese delegation achieves fruitful results in the 19th International Standards Olympiad

The 19th International Standards Olympiad was held in South Korea on August 12-14. A total of 120 players of 40 middle and high school teams participated in the competition, who came from 11 countries including China, Peru, Russia, South Korea, Kenya, Malaysia, Japan, Saudi Arabia, Singapore, Uzbekistan, and Indonesia.

The Chinese delegation won the Silver Prize of Korean Agency for Technology and Standards (KATS), the Special Award of IEC, and the Honorable Mentions of Korea Planning & Evaluation Institute of Industrial Technology (KEIT).

The topics of the Olympiad are "Intelligent Devices—Speech Recognition Performance Requirements and Test Methods" and "Artificial Intelligence Ethical Practice Guide". The competitors needed to edit the text of an international standard and prepare the presentation within a day, which aims to assess their basic standardization competence and ability to solve practical problems with standardization knowledge.

The International Standards Olympiad is an international competition organized by the KATS and the Korean Standards Association (KSA) since 2006 to popularize standardization knowledge, raise standardization awareness, and carry out international standardization exchanges of the youth. Under the guidance of SAMR (SAC), the China Association for Standardization has gathered domestic teams to participate in the Olympiad since 2018.

This year, after investigating the standardization ability and comprehensive knowledge level, 4 out of 114 teams were selected to form the Chinese delegation to join the international competition.

ISO 2958:2024 on road vehicles revised

Safety is a permanent focus in the development of automobiles, and is also an important research direction of ISO.

Recently, the revised international standard ISO 2958:2024, *Road vehicles—Exterior protection for passenger cars*, was officially released. The revision of the standard showcased the leading efforts of China for the first time in the field of passive vehicle safety.

On the basis of perfecting test methods for exterior protection of passenger cars, the standard puts forward technical requirements for hybrid and electric vehicles' charging systems and power systems. It also proposes protection requirements of certain mechanical elements such as lighting and intelligent sensors in cases of collision at a low speed. It is applicable to various automatic driving systems with LiDAR, radar, and cameras, helping promote advancement in automotive safety technology and rapid industrial development globally.

ISO Regional Workshop on Circular Economy held in Qingdao

With the aim to improve the understanding of ISO's new series standards for circular economy, and enhance the capability of ISO members from developing countries, the 4-day ISO Regional Workshop on Circular Economy kicked off in Qingdao on August 26.

Technical experts from East Asia, Southeast Asia, and South Asia countries including Bangladesh, Bhutan, Indonesia, and Malaysia, and representatives of Chinese experts participated in the workshop for exchanges and training. Leaders and representatives from ISO, SAC, Qingdao Administration for Market Regulation, and Administration Committee of China (Shandong) Pilot Free Trade Zone Qingdao Area, attended the opening ceremony.

The event has set up an international platform for ISO members from developing countries, which is of great significance for the countries to carry out circular economy actions, accelerate the transformation towards circular economy, and strengthen the training of international standardization talents in this field.

CPSI and API renew MoU on standardization in oil and gas industry

A signing ceremony was held on August 15 in Beijing, where the Standardization Institute of the Chinese Petroleum Society (CPSI) and the American Petroleum Institute (API) renewed the Memorandum of Understanding (MoU), which marks a new stage of the standardization cooperation between the two parties in the oil and gas industry.

The MoU was first signed by the two parties in September 2022. The renewal of the MoU not only demonstrates the commitment made by the two parties to strengthen the cooperative relationship, but also embodies the beautiful expectation for a brilliant future with joint efforts.

In-depth exchanges were carried out before the signing ceremony. Du Jizhou, Chair of CPSI, and Anchal Liddar, Senior Vice President of API, introduced the development history, major achievements, and future plans of their organizations respectively. Based on the principles of mutual benefit and win-win cooperation, CPSI and API seek to further strengthen academic exchanges, sharing of standards information, and standardization cooperation, jointly explore standardization cooperation models that meet market demands, and contribute to the sustainable development of the global oil and gas industry by standardization.

Zhang Yu, Secretary-General of CPSI, Liu Xiangbin, Mao Yunping, and Hui Quan, Deputy Secretary-Generals of CPSI, Shawn Adams, Vice President of API, Gao Jie, Chief Representative of API in China, and other participants attended the signing ceremony to witness the significant moment.

A fond farewell

By Kathie Morgan, Past President, ASTM International

深情的告别

ASTM International 前总裁 凯西 · 摩根

Photo: ASTM

From the first position as staff manager in technical committee operations to the presidency of the organization, Kathie Morgan has spent four decades at the ASTM International. It must be hard for her to say goodbye.

Before retirement, she wrote this article to tell her story with the ASTM, share the joys and challenges, the significant shifts in ASTM's evolution and many innovative milestones during her tenure as ASTM President, such as the release of Compass Points in 2023, which allows users to more easily pinpoint critical components of standards in ASTM's Compass portal.

On September 30, 2024, I will step away from a career that has been far more than a job. Leaving a team that has felt like family is bittersweet, but I am deeply grateful for the time I've spent with ASTM International and the profound impact that its efforts have had on global society.

ASTM International's mission, "Helping our world work better" has always resonated with me. From the roads we travel on to the products in our homes to the planes that fly overhead—standards touch every aspect of our lives. They enhance safety, enable process enhancements, promote improved quality and performance, and empower consumer confidence. Standards play a foundational role in development and delivery of industry, infrastructure, and innovation. In recent years, the standards developed by ASTM International's 140+ committees have underpinned major developments in the way we build, the way we manufacture, and our ventures in critically emerging technologies, embodying the brand promise of ASTM: "Advancing Standards, Transforming Markets."

Reflecting on my early days at ASTM, I remember being in awe of the technical expertise within the organization. That feeling of wonder never faded. Even after years of working here, I still find myself learning about new areas covered by our standards. The diversity of subjects and the depth of expertise within our community never cease to amaze me. One of the most important hallmarks of ASTM

Kathie Morgan (L) shakes hands with Elena Santiago Cid, Director General of CEN and CENELEC (R).

is openness and the ability for any individual with an interest in our standards development work to participate in our process. ASTM benefits from the membership of over 750 technical experts from China participating in almost all the ASTM main technical committees. Sectors where China members are most engaged include metals, petroleum products, medical and surgical devices, plastics, additive manufacturing, mechanical testing, performance of buildings and textiles.

The ASTM community—many of our members, staff, and partners—were colleagues and then became dear friends. Indeed, I will always cherish how our family has been blessed by the care of so many around us. Those doing standards work understand collaboration, consensus, compromise, and how having a sense of humor can serve you well and make life fun. Perhaps that is what makes them such a special community. Regardless, it has been a joy to be in such good company for so long.

One of the unexpected joys of my career has been the opportunity to explore different cultures and geographies. Growing up in the Northeastern part of the United States, my early travel experiences were mostly confined to major north/south interstate highway. But through ASTM, I've had the privilege to visit most U.S. states and many international locations, including multiple trips to Beijing and Shanghai. The latter trips allowed me to connect with Chinese partners, the National Standardization Administration of China (SAC), the China National Institute of Standardization (CNIS) and the Shanghai Institute of Standardization (SIS), and always included informative discussions and

warm hospitality from our hosts. Wherever I traveled around the world, I was met with welcome because I represented ASTM—a brand synonymous with high-quality, market-relevant standards and the hope for a better tomorrow. I've always considered it a privilege to carry our flag. It has also been a pleasure to welcome Chinese colleagues to ASTM Headquarters including attached staff from various provincial standards bodies, a standards expert from SAC and numerous Chinese technical delegations for information exchange and learning.

One of the cornerstones of ASTM's contribution to society has been our standards development process fueled by 30,000+ members from over 150 countries and our online platform, Compass®, that not only provides access to the most up-to-date standards but also offers tools that boost productivity and streamline workflows. Compass is more than a repository; it's a tool for change management, essential for organizations navigating today's fast-paced environment. The Digital Library, another incredible resource, offers access to every book, paper, and journal article ever published by ASTM. This vast collection, spanning countless engineering disciplines, has become a crucial resource for students and professionals alike. The Digital Library is now available from the American Society of Mechanical Engineers (ASME) on the Silver Chair platform and we are eager to see deeper penetration within the academic space assisting students with real world experience.

Photo: ASTM

Kathie Morgan with her husband and son.

During my tenure, I witnessed significant shifts in ASTM's evolution. We embraced technological adaptation repeatedly, constantly enhancing our processes and tools. We also cemented our status as a truly international organization, enabling more efficient direct technical engagement around the world. Nearly 1,100 citations of ASTM standards have been made by China. We have also been partnering with organizations like the Organization for Economic Cooperation and Development, the United Nations, the World Bank, and more.

It has also been quite gratifying to see ASTM's influence extend beyond standards. ASTM has responded to marketplace needs and offered critical services like training for workforce development, proficiency testing to improve quality, reliability and reproducibility, as well as personnel and product certification through ASTM's affiliate, the Safety Equipment Institute. And, ASTM has championed critical and emerging sectors such as additive manufacturing, exo technology, robotics, and aerospace.

My time as president saw many innovative milestones, including the formation of the Additive Manufacturing Center of Excellence (AM CoE, 2018) and Exo Technology Center of Excellence (ET CoE, 2019); the announcement of a chapter in the United Arab Emirates (UAE, 2019); the acquisition of Wohlers Associates to provide market intelligence for the AM market (2021); the launch of the emerging technology program, ASTM Xcellerate (2022); the opening of an office in Singapore (2023);

Nearly **1,100** citations of ASTM standards have been made by China.

the release of Compass Points, which allows users to more easily pinpoint critical components of standards in ASTM's Compass portal (2023); the launch of our first international student chapter in the Philippines, the signing of ASTM's 125th Memorandum of Understanding (MoU) (2023) and the celebration of ASTM's 125th Anniversary (2023). Navigating the COVID-19 pandemic was perhaps the most challenging period of my presidency, but I was proud of how our organization prioritized care for our members and staff during such an uncertain and anxious time.

Despite all these significant transformations, ASTM is not wholly different from the organization that formed more than 125 years ago, let alone the one I took charge of in 2017. We are still a facilitator of expertise, a place for technical debate, and a hub for problem-solving. Our commitment to openness, balance, consensus, and due process remains as strong as ever. These fundamental values have guided us for over 125 years and will continue to do so in the future. Our founders that worked in the early days on the quality of steel ties in the railroad industry probably never envisioned that in 2023, an ASTM meeting would be called to order by a committee chair on the International Space Station! That is a testament to the power of the principles, the commitment of the ASTM membership and the elasticity of the ASTM framework to change, innovate and meet tomorrow's needs.

As I step into this new chapter called retirement, I look forward to spending more time with my family and pursuing volunteer efforts. I plan to apply for membership in the ASTM committee on consumer products (F15) so that I can continue to serve this remarkable organization from the volunteer side.

It has been an honor and a privilege to be part of such an impactful standardization community. The mission of ASTM will always be close to my heart, and I will forever cherish the memories and friendships I've made here at home and around the globe.

ASTM provides world-leading digitalized standards services

Interview with Hu Yanan, Operation Manager of the ASTM International China Office

ASTM: 标准数字化服务全球领先
专访ASTM中国运营经理 胡亚楠

By Cao Xinxin
文/曹欣欣

With a 126-year history, ASTM International still exudes strong vitality today. It is one of the most renowned standards organizations in the world, boasting a globally leading standards development system and database. It is open, transparent, fair, diverse, inclusive, and consensus-driven, but these are just some of its characteristics. ASTM always prioritizes the development of standards and the needs of industries and users.

What can we learn from this organization? Hu Yanan, Operation Manager of the ASTM International China Office, gives an in-depth introduction to ASTM and shares her personal story with it.

Photo: CSP

A family-like organization

When you step into the ASTM China Office, the most eye-catching items near Hu Yanan's desk are a few beautifully decorated plaques. Upon closer look, you'll see that these are anniversary awards presented by ASTM in recognition of its employees' contributions. Working here for 16 years since 2008, Hu Yanan has received the 5-year, 10-year, and 15-year anniversary awards and the award from ASTM technical committee C26.

When I asked her what has attracted her to work at ASTM for so many years, Hu Yanan smiled and replied that her tenure isn't that long compared with others. Many colleagues at the headquarters have been with ASTM for more than 20 years, and even over 40 years. The outgoing ASTM President, Ms. Kathie Morgan, worked at ASTM for 40 years, who started as the staff manager in ASTM technical committee operations.

"ASTM is like a big family," said Hu Yanan, adding that the work environment is very comfortable and relaxed, you can always feel the love and understanding from ASTM family members.

"Helping our world work better"

The American Society for Testing and Materials (ASTM) was founded in 1898 by chemist Dr. Charles Dudley in collaboration with the Pennsylvania Railroad Company.

"At that time, the purpose of its founding was to unify railway track standards. The cause of frequent train accidents was a lack of standardized tracks. So, ASTM brought together testing organizations, users, track manufacturers, and academic experts—all the relevant stakeholders—to collaboratively develop standards," explained Hu Yanan. This was done to ensure the safety of both tracks and passengers.

In 2001, ASTM was officially renamed ASTM International, with the mission of "Helping our world work better." Now, it has become one of the largest international standards organizations in the world.

According to Hu Yanan, ASTM's standards now cover over 100 industries, including textiles, toys, amusement rides, drones, building materials, plastics, rubber, steel, general aviation, medical devices, consumer products, and additive manufacturing, involving every aspect of industrial production and daily life. Currently, there are more than 12,900 active ASTM standards used in over 140 countries and regions worldwide.

For ASTM, "Helping our world work better" is not just a slogan but a commitment that is actively upheld. By the development and use of ASTM standards, product quality is enhanced, user safety is ensured, consumer confidence is boosted, and market access and global trade are facilitated. Indeed, our world is becoming a better place through the use of standards.

The strength of membership

ASTM's ability to develop globally recognized standards relies on the strength of its membership, said Hu Yanan. "There are two types of people in ASTM: employees like me, and technical experts who develop standards—our members. ASTM has more than 30,000 members from over 150 countries. They develop standards, and we provide the platform and process services for standards development."

According to the data from the 2023 Annual Report of ASTM, there are currently 12,903 active standards. In 2023 alone, ASTM developed 152 new standards and revised 1,661 standards, and had 35,908 members, 148 technical committees, and 2,179 technical subcommittees.

Hu Yanan pointed out that ASTM has no specific qualifications for membership—anyone who is interested in participating in ASTM standards development can register as a member. Students can register as members for free.

"ASTM is a non-profit organization. Our primary income comes from the sale of standards, and this revenue is reinvested into the standards development process. We do not charge any fees for members to attend the meetings of technical committees—they only need to cover their travel expenses. Submitting a standard proposal is also free. For test method standards, ASTM will conduct the ILS which called Interlaboratory Study to help submitter identify volunteer laboratories, distribute samples and generate research reports."

"To be honest, following this path is quite challenging. First, we don't offer certification; second, we never rely on the membership fee as it is very small which can be ignored; third, we rely solely on the sale of standards to sustain our operations, so we have a strong incentive to develop and maintain a high-quality standards database."

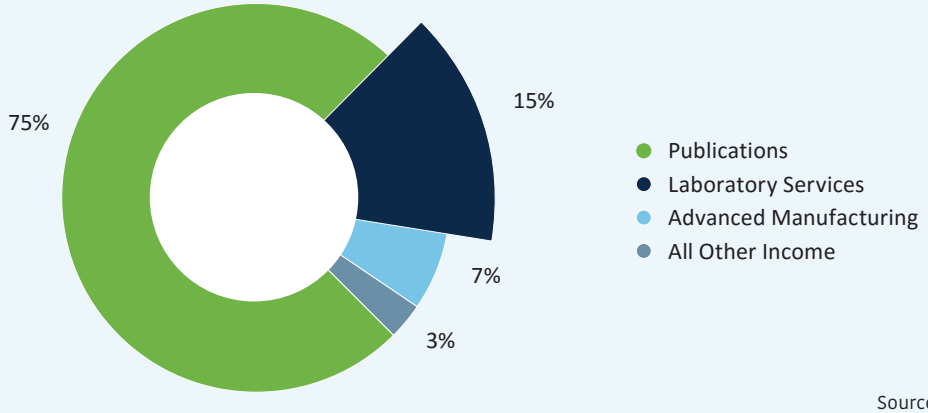
According to the 2023 Annual Report of ASTM and data from the 2024 ASTM International Annual Business Meeting, the total operating revenues for 2023 were approximately $113.8 million, an increase of $7 million compared to the previous year. 75% of the revenue came from the sale of standards and other publications, 15% from laboratory services, 3% from additive manufacturing, and the remaining 7% from other sources.

A robust and efficient online drafting system

In contrast to ASTM's large number of members and standards, the organization has fewer than 200 employees at its U.S. headquarters and six global representative offices.

How such a small number of employees could effectively serve over 30,000 members worldwide

2023 REVENUE SOURCES



Source: ASTM

and organize the development and revision of standards? She responded that this is made possible by ASTM's robust and efficient online standards development system. The entire process of drafting and revising standards—from submitting proposals, conducting process voting, gathering feedback, to approving standards—can all be completed on this platform. This system has been in use for many years. During the pandemic, many organizations faced disruptions in their operations, but ASTM's standards work continued seamlessly as usual.

Additionally, members do not need to be familiar with the format of standards to participate in drafting them. "On the system, we have document templates for several types of standards, which means the framework is already in place. The standards developers only need to fill in the content, they don't have to handle the format themselves. We have dedicated secretaries responsible for editing the format, so experts can solely focus on the technical content." This greatly saves the experts' time and eliminates the need for the training on standard format.

ASTM always prioritizes standards development and members, Hu Yanan emphasized this repeatedly. "Our top priority is standards development. If we want to carry out other businesses, any discussions or meetings about those are always secondary to standards development."

Neutrality and fairness

How does ASTM balance the interests of various stakeholders in the standards development process to ensure that standards meet the needs of industries and users? "ASTM does not accept any corporate sponsorship, which ensures its strong neutrality," said Hu Yanan. "Additionally, ASTM standards do not bear the names of individuals."

Furthermore, the organization ensures fairness and impartiality and minimizes risks throughout the process. "What if a large company with significant resources has 100 members in a technical committee, while a small company only has one member—how to handle this problem? ASTM has mechanisms in place to avoid unfair risks in such situations. If the members from the large company are developing a standard and the single member from the small company raises a well-founded objection, and neither side can persuade the other. In this case, it goes to an official vote. The official vote is not based on the number of individual members but on the number of companies. Even if the large company has 100 members, it only gets one official vote, and the small company with one member also gets one official vote. The number of members doesn't matter."

Another critical aspect is balancing the voices of manufacturers and users in the standards development process. "A technical committee will certainly include both manufacturers and users. We have another rule that the number of official voters from manufacturers cannot exceed the number of official voters from users and other general stakeholders. There is a proportional requirement. This ensures that the official votes of manufacturers, users, and other general stakeholders are balanced," Hu Yanan explained. "ASTM is a very fair and impartial platform. It's not about whether you're from a big company or a small company—your voice will not be ignored."

How does ASTM ensure that standards are actively adopted rather than being shelved after they are developed? Hu Yanan mentioned that ASTM has a rule: if no revisions are proposed for a standard within five years, that standard will be reviewed and if no one uses it, it will be withdrawn.

If someone later proposes to adopt it, the standard can be reactivated, which ensures that standards remain current and relevant.

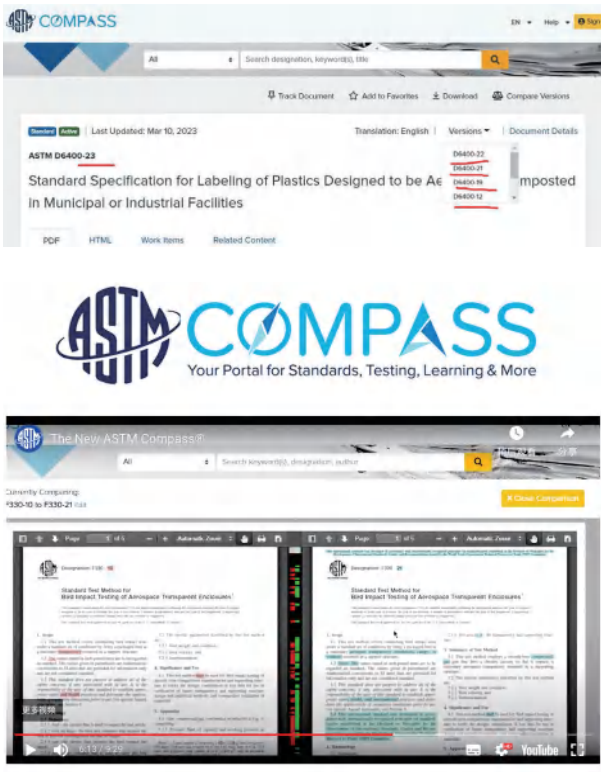


Photo: ASTM

A revolution in standards usage: the Compass standards database

"ASTM's largest annual investments are in maintaining our website and online standards development system, as well as in the development and maintenance of the Compass standards database," explained Hu Yanan. ASTM began developing the Compass standards database many years ago and launched it in 2018, with ongoing improvement of its functions every year.

The Compass standards database has digitized over 12,900 active ASTM standards, more than 70,000 historical versions, and other publications, including over 1,500 monographs, 50,000 technical reports, and articles.

In addition to ASTM standards, the database also integrates digitized standards from many third-party organizations, including the American Association of State Highway and Transportation Officials (AASHTO), the American Association of Textile Chemists and Colorists (AATCC), the American Petroleum Institute (API), the American Water Works Association (AWWA), and the Certified General Accountants Association of Canada (CGA). Users can also subscribe standards database from these organizations through the Compass platform.

Hu Yanan describes the Compass as a revolution in the usage of standards. Why? Because it has realized nearly every possible function that can be achieved through the digitization of standards, significantly enhancing user convenience. These functions include searching for specific content within standards, pinpointing exact phrases, adding notes and annotations to standards and sharing them with colleagues, comparing different versions of the same standard online, downloading PDF versions, and viewing HTML versions.

"Moreover, its standards comparison is not limited to consecutive versions but any two versions. For instance, if a standard has eight versions, you can choose any two to compare. You can view the differences online or automatically generate a PDF comparison version. In this version, deletions and additions are highlighted in red or green, and you can download the comparison version for use."

"We've also developed numerous videos that record the experimental procedures, embedding them directly into the standard. Users can watch these videos to learn how to perform the procedures, completely moving away from the traditional methods of using standards."

Users can choose to purchase one or several categories of standards or select specific standards

to purchase. Purchasing the standards database service is actually much cheaper than buying individual printed standards, Hu Yanan noted. “The average price of a single standard is around 70 USD (approximately 500 RMB). But in the database, if a hospital wants to purchase standards related to medical devices, there are over 400 standards available, including current standards and all their historical versions, for about 10,000 RMB. This brings the cost per standard down to around 20 or 30 RMB. Moreover, within the one-year subscription period, any updates to these standards are included at no additional cost.”

Additionally, the Compass standards database interface is available in 14 languages, including English, Chinese, French, Russian, Spanish, and Arabic, making it convenient for users around the world to access and use its services.

According to ASTM’s data in 2023, the Compass now has over 150,000 users, with more than 4,100 laboratories participating in its proficiency testing programs. ASTM standards have been cited over 8,700 times by more than 75 countries.

However, due to different ways of using standards in different areas, some users are used to the hard copy or PDF document of standards. Many users are not yet aware of the convenience of a standards database, or other advantages it offers, such as saving labor costs and improving work efficiency. As a result, the use of standards database is still in the initial stage.

The encouraging news, however, is that “over the past three years, the users increased annually,” Hu Yanan said. She believes that there is still a lot of room for growth and improvement, and she is confident for a better future.

Photo: ASTM

Dialogue on standards:
directions and difficulties of standardization discipline construction

标准对话: 标准化学科建设的方向与难点

To probe into the directions and difficulties of standardization discipline construction in China, China Standardization Press organized a pertinent dialogue on July 10. During the event, Yu Xinli, President of China Association for Standardization, was invited as the moderator. Several standardization experts including Song Mingshun, Mai Lyubo, Qiang Yi, Cao Lili, and Huang Manxue from the China Standardization Expert Committee and renowned universities and research institutes in the country were invited as guests to give their insightful views.

Yu Xinli

President of China Association for Standardization (CAS)

中国标准化协会理事长 于欣丽

Discipline construction of standardization is always a fundamental but disputable work at home and abroad. So far, there is no widely recognized framework for relevant knowledge systems. Many people think of standardization as a tool rather than a science, which has posed great impact on the development of research, theories, and education in this field.

In China, the research on standardization discipline started in the 1970s. Qian Xuesen, a distinguished Chinese scientist, came up with the idea of establishing the standard science guided by the systems engineering theory in early 1979. Through summarizing practical experience and learning from foreign theoretical achievements, standardizers began to explore the methods and principles of standardization, and gradually made it an emerging discipline with many years' efforts.

In October 2021, the *National Standardization Development Outline* was released by the Central Committee of the Communist Party of China and the State Council. It proposed "strengthening the building of standardization talent team", which includes incorporating standardization into the curriculum of higher, vocational and continuing education and carrying out the pilot program of integrating professional education with standardization education.

Later, in November 2023, the *Special Action Plan on Standardization Talent Cultivation (2023-2025)* was issued by five ministries and commissions including SAC and the Ministry of Education (MOE). The document requires strengthening higher education, promoting technical and vocational education, advancing the integrated development of vocational and continuing education, enhancing the cultivation of teaching staff, and accelerating the building of textbook system in the professional education on standardization.

The discipline construction of standardization major in China has gone through a long journey. The research direction of standardization in majors for master's degree was established in the 1960s; standardization courses were provided for college degree, bachelor's degree, double degree, second bachelor's degree, and master's degree in engineering based on majors such as business administration, quality management, and quality certification in the 1980s and 1990s; the standardization cultivation direction was set up for the first time in majors for bachelor's degree and the standardization engineering was established for the first time as a major for second bachelor's degree after the year 2000.

The scattered mode of talent cultivation has transformed towards a professional and systematical pattern. With increasing demands for standardization talents, it is an irresistible trend to add the standardization discipline to the catalogue of disciplines in the national educational system for talent cultivation.

In 2011, the first standardization engineering major for bachelor's degree in China was set up in China Jiliang University. Subsequently, the major was applied and approved in many colleges and universities including Guangdong Opening University, Guangdong Polytechnic College, Qingdao University, University of Jinan, and Nantong Institute of Technology. So far, a total of 14 colleges and universities across the nation have provided the standardization major for bachelor's degree.

The research project for disciplinary development is a brand project for basic discipline construction initiated by China Association for Science and Technology in 2006 to organize nationwide associations to carry out research. CAS has undertaken the research and compilation of the *Report on Disciplinary Development of Standardization* in the periods of 2009-2010, 2011-2012 as well as 2016-2017.

The research aims to establish the standardization discipline and promote its development in China. It strives to explore the cultural characteristics and deep connotation of standardization discipline, facilitate the internal impetus of the disciplinary development, and drive the intersection, integration, and penetration of standardization with other disciplines, cultivating new growth drivers of the standardization discipline.

In this dialogue, Song Mingshun will talk about the status and trend of standardization discipline at home and abroad, Mai Lyubo and Qiang Yi will share their thoughts on the progresses of standardization discipline and textbook system from the perspective of academic research, Cao Lili will give suggestions based on her management and research experience, and Huang Manxue will share the plans, difficulties and suggestions on standardization discipline at the practical level.

Song Mingshun

Former President of China Jiliang University, Chair of ISO/TC 321 on transaction assurance in e-commerce, and Member of China Standardization Expert Committee

中国计量大学原校长、ISO/TC 321主席、
中国标准化专家委员会委员 宋明顺

The status of standardization discipline

The division of disciplines and majors in China is quite different from that in European and American countries. In China, discipline is used to describe scientific research and cultivation of high-end talents with master's degree or above, and major mainly refers to the cultivation of talents with bachelor's degree or below. While in European and American countries, the setting of disciplines is much more flexible, which largely depends on the research interests of universities and their faculties.

Scientific research is the important basis for discipline classification. If we want to apply for the project supported by the National Natural Science Foundation of China, we generally need to abide by the research directions set by the catalogue of disciplines. The concept of discipline is not much valued in the western world. While in China, the standardization discipline is widely recognized but still debatable. In a narrow sense, sufficient theoretical foundation has not yet been submitted to the Office of the State Council Academic Degrees Committee to prove that standardization should be included as a discipline.

The latest catalogue of disciplines was released in 2022 and implemented in 2023, which included 180 first-level disciplines in 14 fields. Unfortunately, standardization and related areas such as quality, conformity assessment, certification, and accreditation were not in these first-level disciplines. This means that postgraduates majoring in these fields cannot receive relevant degree nor be recognized by the country. It has brought obstacles to the cultivation of high-end talents.

However, significant progresses have been made in the setting of majors. For the bachelor's degree or below, standardization and quality management has been included in the official catalogue of majors, which has greatly supported its subsequent upgrading to a discipline. Besides, two standardization-related majors including quality management as well as standardization and certification were set up for the exam for self-taught students in 2024. In June, the general textbooks on quality and standards for primary and secondary schools were jointly released by MOE and SAMR to be promoted nationwide.

An optimistic trend of development

Since standardization is widely recognized, the most important thing is whether it can be added to the catalogue of disciplines. If so, the standardization system will be completed. Therefore, great efforts should be put into the scientific research and talent cultivation.

At the discipline level or master's degree level, the catalogue of disciplines released in 2011 allowed the setting of second-level disciplines. There was a favorable condition that a university with strong expertise in talent cultivation and research in a certain field can create a special clause in the catalogue of disciplines by means of filing. For example, China Jiliang University was approved in 2012 to offer the major of quality science and standardization engineering, which was equal to a second-level discipline. Since then, the university has been cultivating postgraduate students in the standardization field.

At present, the standardization discipline construction has stepped into the fast lane. More importantly, a great number of teachers in many universities authorized to confer doctor's degrees can cultivate doctoral students on standardization within their own disciplines. For instance, Tsinghua University, Tianjin University, Qingdao University, Hunan University, and Zhejiang University all have some foundation of cultivating doctoral students in the standardization field, and also have relatively mature foundation of cultivating postgraduate students.

This serves as the important basis for standardization to be included in the catalogue of disciplines. Only with certain foundation and advantages of talent cultivation can the standardization discipline be officially recognized.

Thoughts on standardization discipline development

Firstly, the government has provided great support for the interdisciplinary development. In 2023, in the interdisciplinary fields, eight first-level disciplines were added, including two conferring academic master and doctor's degrees. If standardization is going to be a discipline, it must be interdisciplinary. Standardization exists in every industry, and it coexists with the basic knowledge of other disciplines, which can become a cross discipline. We can strive to add the

first-level discipline on standardization.

Secondly, standardization must have its own independent knowledge system to become a first-level discipline. That's what we should work for. Standardization is not fully recognized, because its knowledge system lacks in width and depth. We should focus on summarizing the common knowledge in the fields such as metrology, standards, quality, certification and accreditation, as well as inspection and testing. At present, many universities generally have limited knowledge system for standardization construction, with undiverse curriculum setting, which cannot meet the demands of curriculum learning for a degree.

At last, although the cycle of changing the catalogue of disciplines is as long as a decade, there is still a chance to make breakthroughs within the period. Only by good fundamental work and quality improvement of talent cultivation can we strive to get the support to add the discipline as well as master and doctor's degrees in the standardization field. It needs concerted efforts for the promotion of standardization discipline.

The importance of standardization discipline and the urgency of talent cultivation are not only widely recognized at the international level, but also highly valued by the national government and supported in many national documents. In the face of such opportunities, we should work together for a better standardization discipline.

Mai Lyubo

Chief Scientist of China North Industries Group Co., Ltd.

兵器集团首席科学家 麦绿波

I share my views on standardization discipline construction in four aspects.

Firstly, the necessity and urgency of standardization as a scientific discipline. From the perspective of practical needs for standardization, standardization-related departments have relatively high requirements on enrollment, which prefer at least postgraduates from universities under the Project 985 and even doctoral students. That is because students need to have solid professional basic knowledge to be competent for the job.

Nevertheless, after enrollment, they are still hard to meet the practical needs, and will take a long period to become competent and achieve valuable results in the projects they undertake. This shows that the knowledge of standardization discipline is difficult to master. Standardization work requires not only broad knowledge and deep understanding, but also good thinking logicality and written expression ability, thus posing high requirements for employees.

The scientificity of standardization knowledge is the foremost for standardization to become a major or discipline in the higher education. Scientific knowledge can attract students, give teachers confidence, and bring the discipline with the academic status. The scientific knowledge has three elements: objectiveness, necessity and verifiability. If we want to include the standardization discipline in the national higher education system, we need to explore and demonstrate the three elements.

In reality, standardization poses high requirements for talents. It needs interdisciplinary talents with profound professional technical background, which is hard to realize at present. Thus, standardization organizations in technological fields basically recruit technology-based professionals.

I think, the ideal condition is that students study professional technologies in the undergraduate

phase, and focus on the learning of scientific theories and methods of standardization in the postgraduate phase. Such students will both have the professional technical background and master the methodologies of standardization, who will become talents specialized in standardization with great potential. The talents with doctor's degree are needed for the theoretical research at a higher level.

From the perspective of professional technologies, good product designers should proficiently apply theories and methods of standardization. The higher education on standardization is not merely about cultivating standardization talents. More importantly, it is to make standardization into the common knowledge that students in various majors would like to learn and master. So, the high-quality development of the society and the disciplinary development of standardization both need a large number of talents receiving higher education on standardization.

Secondly, the scientificity of standardization. In the standardization area, there are four general acknowledged conditions to judge if it is a scientific discipline: 1) if there is a batch of experts and scientists within the discipline; 2) if there is a series of academic monographs; 3) if there are a number of professional research institutes in the area; 4) and if relevant knowledge is widely applied in practice with actual benefits.

To be specific, there are many standardization experts at home and abroad, in particular interdisciplinary experts on both professional technologies and standardization. There are many monographs in the standardization field, including a number of scientific theories of standardization.

There are a lot of standardization research institutes in China, showing the high demands for standardization knowledge in the society. The application of standardization is greatly needed, since each industry requires standards and standardization.

At present, much effort is put in standards development, but there is still a lot to do in the standardization field. Some high-end complex systems need standardization. Only by standardization can we realize the generalization, systematization, modularization, interconnectivity, and interoperability of systems, which are indispensable conditions for standardization to become a discipline.

The scientificity of standardization discipline relies on its scientific knowledge system, which includes basic theories and scientific methods as the essential elements of standardization. Another element for the scientificity is the application of maths in the knowledge. If a certain amount of standardization knowledge can be expressed and described by maths, the scientificity will have more solid proofs.

The key to standardization discipline is its scientificity. Without scientificity, it will be difficult for standardization to be recognized. Though standardization has the conditions to become a science, we need to publicize and promote the scientific contents of standardization, which is still a long way to go.

Thirdly, the scientific knowledge system of standardization. A complete scientific knowledge system must be established if standardization is going to be a scientific discipline. The system includes fundamental theories and scientific methods. The fundamental theories consist of the concepts, properties, functions, forms, axioms, laws, and principles of standardization. The scientific methods are effective methods proved in practice, which are widely applied in many fields and become a part of rigid requirements for large-scale complex system building. These applications belong to advanced standardization forms.

The advanced standardization forms needed in economic and social development are the methods and achievements based on scientific theories, which are trustworthy and effective methods with those scientific elements. The fundamental theories and scientific methods of standardization and standards have established systematic and comprehensive scientific knowledge system of standardization.

Fourthly, the application of standardization. The application of standardization is an important aspect of putting in place the standardization knowledge, serving the national economic and social development, and showing the value and effect of standardization. At present, standards development is the process of integrating standards knowledge and professional technical knowledge.

In the standards development process, the principal part is the professional technical knowledge. And the standardization part is mainly the knowledge related to drafting formats and development procedures. Including the expertise and knowledge of standards drafting formats in higher education

may be unacceptable, because it is only a kind of technique. The higher education needs the element of scientific laws, which derive from relevant knowledge. Standards development requires to upgrade standards drafting expertise towards standards research and development capability, using scientific methods and theories, which determines whether standardization can become a part of the higher education.

The application of standardization can reflect its scientificity, which plays a guiding and leading role. The applications such as the generalization, systematization, and modularization design of a certain system reflect the scientificity and academic value of standardization. Such knowledge and rules are peculiar to standardization. Therefore, a discipline needs to have its own features to become a scientific discipline.

Those disciplines without peculiar knowled ge are interdisciplinary, which is reflected more in the standards development process. The establishment of many big systems and the development of high-end complex systems both need the support of standardization or its applications. Therefore, standardology should be established as a discipline in the first place, because it lays the foundation of other disciplines.

To sum up, to establish standardization as a discipline in the higher education, we need to focus on its scientificity, carry forward the scientific knowledge system that has taken shape, and demonstrate the progresses and effects of standardization application, thus promoting and supporting the standardization discipline construction to go further with these efforts.

Qiang Yi

Member of China Standardization Expert Committee

中国标准化专家委员会委员 强毅

Policy support of standardization talents

The *National Standardization Development Outline* provokes thoughts on higher, vocational and continuing education and the integration of professional and standardization education. Besides, the *Standardization Law of China* emphasizes the wide popularity of standardization ideas, knowledge and methods, as well as the vigorous cultivation and development of standardization culture, which require further intensive research of all parties.

At the beginning, standardization developed with the industrial development, and at present it develops with the digital development. It evolves from traditional standardization into digital standardization. Standardization discipline reflects science and summarizes technologies, and will innovate theories and form a major. Though each country has different standardization culture, they have reached a consensus on exchanges and trade on international standardization platforms.

Standardization covers all areas such as agriculture, industry, services, and social undertakings, which needs uniform technical requirements, and has the fundamental, comprehensive, integrated, time-sensitive, and guiding attributes. Besides, standardization also needs the attribute of application. A discipline is useless if it cannot resolve problems nor meet the country's needs. At present, standardization is closely related to the high-quality development of China, and the guiding role of standards in assuring quality is of great practical significance especially nowadays.

In August 2023, released by the Ministry of Industry and Information Technology, the *Implementation Plan of New Industry Standardization Pilot Project (2023-2025)* came up with eight strategic emerging industries and nine future-oriented industries. Standardization layout has closely

integrated electronics, machinery, industry and trade, showcasing the main direction of new quality productive forces. So, the application of standardization involves the professionalism, technologies, knowledge, expertise and accomplishment of standardization. It is an interdisciplinary and knowledge system-based application system, showing the characteristic of standardization. Standardization combines theories and practices closely together.

A solid foundation of standardization development should be strengthened in a practical way. The focuses of standardization culture must build on science, technology and experience, form top-level methods and principles, and refining them. The application effect of standardization can be evaluated by interconnectivity and interoperability as well as generalization, serialization and modularization, which can be calculated through formulas.

The building of standards system can support the extensive application of standards. At present, China shares its experience in building a standards system to global partners, which includes standards, methods, platforms, tools, systems, and modes. The message of the World Standards Day 2023 presented by ISO, IEC, and ITU stressed building a scientific standards system that supports the sustainable development goals of the UN. The government management model, enterprise management model, and social governance model in China are very scientific, advanced and useful, which are the crystallization of standards. Standards can be commonly and repeatedly used, embody scientificity and public welfare, and finally realize the best order.

As for standardization application, it is essential to focus on the elements for standardization development. Standardization application must be closely related to agriculture, industry, services and social undertakings, including the transformation of production mode, application of product promotion, increase in productivity, collaboration of enterprises, adjustment of product structure, and international trade. These are the development elements of concern by the government, society, enterprises, and consumers, which are realized by standardization means.

The national quality infrastructure (NQI) integrates technical elements, the accuracy of which together with the complexity of inspection and testing as well as the consistency of certification and accreditation are reflected through the guiding role of standards, to achieve the technical progress of industries and sustainable development of enterprises.

In the technical elements, knowledge system involves the training, cultivation and education of staff in enterprises and organizations. In 2021, GB/Z 40954.1-2021, *Competence of standards professionals—Part 1: In companies,* was issued, which puts forward the competence required for standards professionals in companies and relevant organizations in the three dimensions including knowledge, technique, and accomplishment.

Process of discipline construction

Firstly, the digitalization of standards. According to the Outline, standardization work should be transformed in a digital, networked, and intelligent way. For instance, with the UN's advocation of sustainable development, China has transformed the automobile manufacturing, and become the

world's largest exporter of new energy vehicles. The vehicles at present realize interconnectivity and interoperability, showing the digitalization of standards, an inevitable development trend. The change of standards form not only involves the change of standards development, but also poses great impact on the implementation pattern of standards and the excavation and utilization of their value.

At present, ISO and IEC have developed the SMART (a standard that is machine applicable, readable, and transferable) program, CEN has developed an online standards development platform known as Online Collaborative Authoring, BSI developed its BSI Flex, and the U.S. also started the application of SMART in six fields including unmanned aerial vehicle (UAV) and 5G.

Secondly, standardization and sustainable development. The standardization discipline must implement the idea of sustainable development, and in particular standardization can play a vital role in sustainable development. The message of the World Standards Day 2022 pointed out to "work together to accelerate the 2023 Agenda, with standards for the SDGs", and the strategies of ISO and CEN/CENELEC also stressed the relevant content. The 17 SDGs are supported by standardization.

At present, advocated by State-owned Assets Supervision and Administration Commission of the State Council, the environmental, social, and governance (ESG) framework serves as the specific approach for sustainable development, which needs the support of standards.

Thirdly, the function of standardization has changed from supporting industrial development to leading industrial modes. In the traditional industrial mode, products are manufactured first, then standards are developed, and finally mass production is realized to form an industry. Now, in the emerging industrial mode, standards are developed first, which is followed by the establishment of standards framework and the development of products. The constant optimization of standards will promote the quality improvement of products.

Therefore, the fundamental and leading role of standards is exerted to establish a mechanism for synchronously advancing technological innovation and standards development. As for the "new quality productive forces", "new" represents new manufacturing, services, and business forms, and "quality" refers to the guiding role of standards and quality assurance. Besides, high standards and high quality are emphasized.

Fourthly, the prominent role of industrial alliances and industrial chains. Through developing unified standards, mostly association standards, an industrial standardization alliance takes shape among manufacturers producing similar products, to motivate the market vitality.

Another standardization alliance is composed of enterprises in the upstream and downstream of the industrial chain. They develop procurement and supply standards, manifesting the value of the industrial chain through standards. They ensure advanced technologies and reasonable economy, and keep standards commonly and repeatedly used to achieve the best order as well as joint benefits.

Fifthly, the coordinated development of standards and other quality infrastructure elements. Metrology is the foundation, standards are the basis, and conformity assessment is the measure. Metrology addresses the accuracy of measurement, standards address the unity, inspection and testing addresses the conformity, and certification and accreditation address the compliance.

As for the automobile manufacturing, to ensure the quality of each automobile, standards are needed to propose uniform requirements for performance design, metrology is needed to provide the accurate error control of each indicator, and inspection, testing, and verification are needed to determine whether the product meets the original design requirements, finally ensuring the high quality of the product.

Based on the above, the following suggestions are given: 1) strengthening the top-level design in standardization discipline construction, and realizing uniform planning, step-by-step implementation, and in-depth research; 2) focusing on the research on the culture and system construction of standardization with a professional talent team; 3) exerting the role of industries and leading enterprises in the application and publicity of standardization; 4) carrying out textbook compilation and teaching activities on standardization discipline in the higher, vocational, and continuing education.

So far, positive progresses have been made in the vocational and higher education of standardization. The implementation plan for standardization vocational education reform was initiated in 2019, and standards development and review was included as a pilot program in the "1+X" national certification system at the end of 2020. In January 2023, the major of standardization technology was included in the catalogue of majors for bachelor's degree in the vocational education by the MOE. In January 2024, standardization technology was approved as a discipline conferring the bachelor's degrees in standardization technical management and laws by the ministry.

编译/ 靳吉丽

(Edited and translated by Jin Jili based on the speeches)

Cao Lili

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Features of standardization knowledge system

The most vital problem of discipline construction is to build the standardization knowledge system, the features of which are as follows.

Firstly, the sources of knowledge are increasingly expanding. There is a lot of research on standards and standardization knowledge in the disciplines related to engineering technology and economic management, which greatly expands the development of knowledge, and gradually enlarges the framework of standardization and standardization knowledge.

Secondly, the position and role of knowledge in industrial fields are also evolving. With the emergence of innovation and implementation methods of standardization, standards and standardization knowledge is extensively applied in the primary and secondary industries, and fully promoted in the modern service industry. Its position in various industries has been gradually located at the front end of the industrial chain, becoming a decisive element in industrial development.

Thirdly, the influence of knowledge is becoming increasingly important. Standards and standardization knowledge provides important technical solutions for leveraging strategic advantages, maintaining market order, building innovation platforms, protecting environment, and ensuring safety. Also, such knowledge is about the common technologies for interchangeability and interface compatibility, and plays an important role in the process of global resource cooperation and allocation. Standards and standardization knowledge has become an important part of international economic competition and national strategies.

Fourthly, the research is strengthening. With the increasingly detailed division of labor, social activities related to standards have become a career. The research on standards and relevant activities transforms from individual behaviors to association behaviors. There are many experts and scholars from various countries, industries, and disciplines engaging in relevant research, which has greatly enriched the policy and knowledge system, and brought new ideas and perspectives.

Fifthly, the systematization of knowledge structure is taking shape. The standardization system should adapt to the technical level and scale of production. In the process of developing systematical standards, the basic law of the generation, development, and function of standards is progressively established.

Understanding of current standardization discipline construction

From a macro perspective, through a mixture of hard and soft power, the discipline construction fosters comprehensive strengths in talent training, scientific research, and social services. From the micro perspective, it includes 7 aspects: the level, goal, and characteristics of the development direction of the discipline; discipline leaders and innovation teams; multi-level talent training; scientific research and technological development; experimental equipment, books, and other teaching and research conditions; academic environment; fund input and management of the discipline.

On this basis, the building of standardization discipline has been formed, with specific knowledge areas and independent research objects. According to the national standard GB/T 13745-2009, *Classification and code of disciplines*, the science of standards has three research directions, standards principles and methods, standards fundamentals, as well as standards engineering and application.

Although the standardization knowledge system has been preliminarily established, it still needs constant supplement, given the new trends and features for further research. The knowledge at different levels is relatively scattered, and the connection among relevant principles, methods, and concepts needs to be improved. With the fundamental structure of standardology established, its intersections with management, engineering, economics, agronomy, law, and other disciplines need to be explored and clarified. Consensus should be reached on relevant methodological system, including basic rules, practical operations, management techniques, and mathematical methods. Also, the mechanism of the application of standardization methods is not clear, and the methods for some new scenarios, for example the governance of standard essential patents, are still in the early stage of exploration.

Though the specific research objects and the general framework of knowledge system are determined, there is still a lot of research needed in the field of standardology, from the perspectives of both theory and practice.

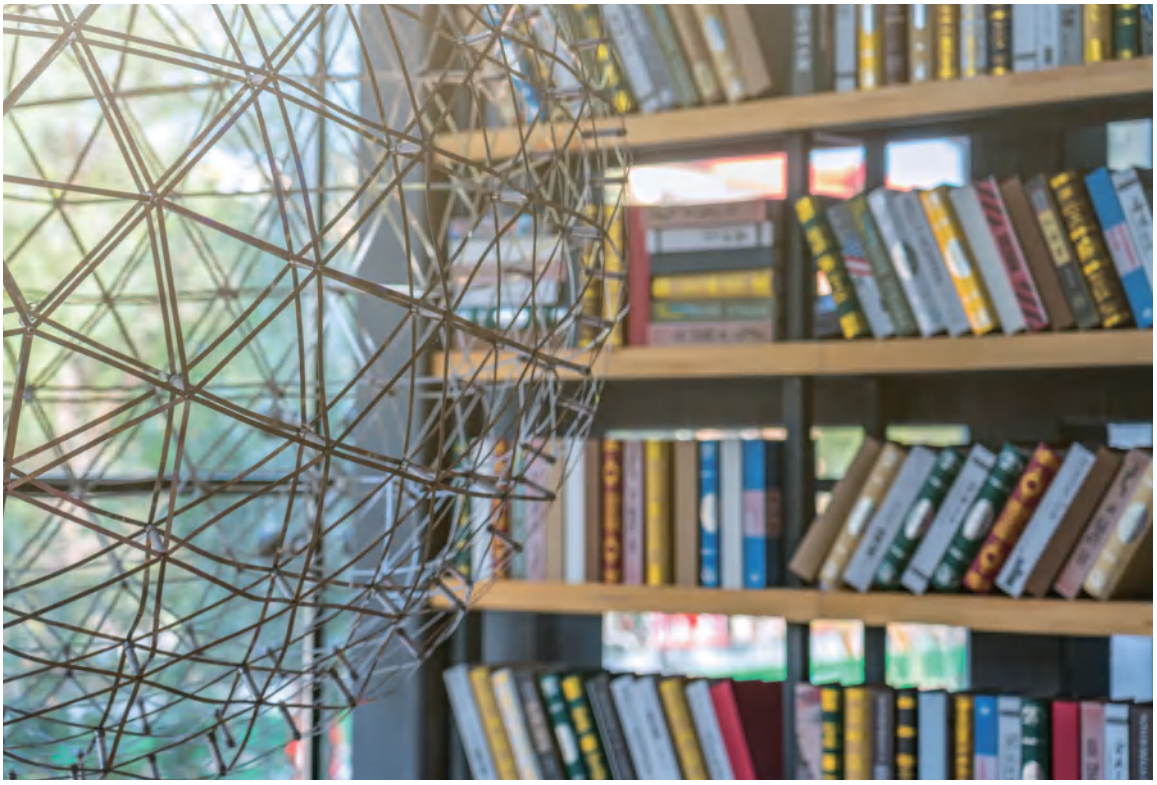
Development and exploration of building standardization discipline

The revolution of standardization system is closely related to the changes of productivity and productive relations. Therefore, its discipline construction must respond to the needs of social and economic development.

As standardization becomes more important, it is associated with many issues including technology, industry, market, and competition between countries, and the world will pay more attention to standardization activities. Standards digitization, ESG, sustainable development, and standards intelligence proposed by former ISO President Zhang Xiaogang at the Second China Standardization Conference in May, reflect the deep integration of standards with technological and social development. Further efforts are required in the exploration of new methods and specific theories and tools of standardization.

For future development, the Sub-institute of Standardization Theory and Strategy, CNIS, has put forward reflections from four dimensions.

1) Governance. We should consider how to promote the building of knowledge system and



theoretical research in the discipline construction as soon as possible, and provide theoretical support for the increasingly fierce global standardization governance system.

2) Technologies. The development of new technologies poses many challenges to the construction of standardization discipline. For example, in some traditional fields with rich data of standards, is it possible for generative artificial intelligence to make the selection of indicators and application of standards more intelligent? As for future-oriented technologies, how can we develop standards to lead the benign development of technologies? These questions are worth studying and thinking about.

3) Application. Standards play a basic and leading role in the application, which needs to be guided by methodologies and tools. The objects of standardization discipline construction are standards. The increasing number of standards requires more scientific and accurate judgment to determine the appropriate increase.

4) Talents. It is necessary to consider how to impart the systematic standardization knowledge system to talents at different levels and attract their continuous attention. At present, management departments, research institutions, and colleges and universities are working on this issue. How to promote the process more effectively and dynamically will affect the development speed and quality of standardization discipline construction.

The sub-institute has always followed the development trends of global standardization, so as to find out the development trends of standardization discipline construction. At the theoretical level, it has combined the emerging technologies and development of new trends for new understanding, and better responded to current demands, which is the main research direction of the sub-institute.

At the method level, it has summarized methodologies with the combination of governance issues, frontier issues, and competition issues. A system of "strategy + principle + method" and relevant tools are expected to be established based on multi-party cooperation.

At the level of knowledge system promotion and talent training, the sub-institute has provided basic authoritative knowledge for standardization education, and laid out the clear and accurate plan for talent team construction.

Besides, the sub-institute has also supported the SAMR to implement the relevant requirements of the *National Standardization Development Outline* on improving the level of standardization technical support and strengthening the construction of standardization talent team. On the one hand, the research on standardization theories and application has been strengthened. On the other hand, research results has been achieved to serve the construction of multi-layer practitioner training system, the professional evaluation of standardization talents, and the establishment and improvement of incentive mechanism, so as to contribute to the standardization discipline construction.

编译/ 方洛凡

(Edited and translated by Fang Luofan based on the speech)

Huang Manxue

Executive Dean of Quality and Standards Academy,
Shenzhen Technology University

深圳技术大学质量和标准学院执行院长 黄曼雪

The establishment of SZTU

In 2015, Shenzhen municipal government decided to establish an application-oriented technology university that is dedicated to cultivating high-quality talents such as engineers and designers. Based on fully learning from the experience of first-class technology universities of developed countries like Germany and Switzerland, Shenzhen Technology University (SZTU) was officially established in 2018 after nearly three years' preparation, with the approval of the Ministry of Education (MOE). One year later, the Quality and Standards Academy was set up with the great support of Shenzhen Administration for Market Regulation, People's Government of Pingshan District, and SZTU, to promote the education on quality management and standardization.

To explore a brand new mode of talent cultivation, the Quality and Standards Academy organized a seminar to invite experts from various sectors and the education field to discuss how to train standardization talents. As the comprehensive curriculum system has not been formed yet, the Academy decided to promote the quality and standards knowledge by providing public elective standardization courses for all majors.

Difficulties of offering standardization courses

In 2019, the Academy started to offer public elective standardization courses for about 100 freshmen and sophomores in all majors. Later in 2023, the Academy provided public and major elective courses for more than 60 classes of over 20 majors, covering over 2,000 students.

However, the Academy faced many difficulties in promoting and implementing these courses. In the beginning, the Academy tried many times to recommend the standardization courses integrating with majors to other schools. The common reply was, "we know little about the standardization courses, and we don't need them now". It was the real situation. Standardization workers may think that standards are important, but few in the academia agree with it.

To address the problem, the Academy figured out three elements that can make standardization courses useful and valuable for other majors. First, the courses must worth credits. Early in 2006, Shenzhen Administration for Market Regulation sent standardization experts to teach courses in several universities. But the courses could not be recorded in the teaching archives without credit. So the Academy emphasized that the standardization courses must be included in the credit system to make sure their sustainability and traceability.

Second, we should let local teachers to teach these courses. At the beginning, the Academy planned to invite experts off campus to teach the courses, but it cost too much as the courses were offered every week. So we must cultivate local teachers to be capable of teaching these courses.

Third, keeping relevance. The theories, tools and methods of standardization courses should be closely relevant to major courses and also easy to be understood. Besides, the consistency of course name can help reduce misunderstanding and questioning, thus improving its recognition among students.

To sum up, the Academy has gone through twists and turns in the whole process. It gradually explored the promotion path of standardization courses from one public elective course to specialized elective courses.

The Academy also tried to figure out the logic framework and education system of standardization courses. It classified them into fundamental and advanced courses. The former includes the basic knowledge of standards, quality, conformity assessment, market regulation, metrology, etc., which can be learned by undergraduates majoring in liberal arts; the latter focuses on detailed contents such as standardized tools and methods, which is applicable to science undergraduates.

In addition, standardization courses should be closely related to the key major courses certified by MOE. Now, a course is only worth two credits. How to make them closely related to major courses is the challenge faced by us.

Make courses high-quality and varied

Another difficulty is how to make the courses rich and varied, and attract students' enrollment. The Academy adopted the process evaluation advocated by MOE, which focused more on the process and students' enrollment. All the standardization courses in the Academy are composed of 1 dean's lecture, 3 visits to enterprises, 4 team competitions and 10 theoretical classes. Through on-site visits and interactive activities, students can gain learning experience, and have a better understanding of

the practical application of quality and standards knowledge from the perspective of a company's standards directors.

In addition, we can't make light of the course's reputation, even though it is elective for all students. If it had bad reputation in the first semester, no student would like to select it in the next semester. So we must pay great attention to its quality and sustainability, try our best to improve its quality and students' satisfaction, to let them want to enroll on quality and standardization courses. Now, the Academy has provided more than 10 quality and standardization courses, all of which are taught in this mode.

After the exploration for more than two years, with the great support of National Standardization Administration of China (SAC), the Academy has held the secretariat of the working group on standardization education (SAC/SWG 27). Now, the Academy is working with several secretariats to develop teaching materials. For example, we cooperated with the National Center for Nanoscience and Technology to develop the nanomaterial standardization course, and worked with Shanghai University of Traditional Chinese Medicine (the secretariat of ISO/TC 249) to develop teaching material on TCM standardization.

So far, quality and standards courses have been accepted by 25 majors as major elective courses. In 2023, 49 classes in 26 majors took standardization courses; in 2024, the number was 44 classes in 26 majors. It is estimated that more than 2,500 students in SZTU took quality and standards courses every year.

By now, the Academy has developed 46 teaching materials of standardization courses, and tried to publish them in the form of a national standard to better promote them and help more teachers understand the course content and teach the course more easily. In the future, the Academy will make the courses better meet the students' needs, and continue to study the relevance and contribution of the standardization subject to find the direction and strategy of developing future courses.

The mode in the current stage is applicable to undergraduates, but not to postgraduate students. Because undergraduates must complete 160-210 credits in 8 semesters of 4 years, and each course is worth 1-2 credits, they can choose to take various courses. However, postgraduates only need to complete 30-40 credits, and spend more time on academic research rather than taking courses. So if they think the standardization course is not beneficial to their research and study, they will not enroll on it. The setting of the standardization curriculum should be different for undergraduates and postgraduates. How to provide attractive and useful standardization curriculum is a problem to be solved urgently.

Difficulties of standardization education in China

I think that the difficulties of standardization education in China are as follows:

First of all, how to design standardization courses. There are two ways to design these courses:

one focuses on teaching standardization theories and methods; the other on the standardization practices in one specific field. As standards cover almost every industry such as textiles, rubber and construction, it is very complicated to combine standards knowledge with each major. How to design tailored courses for undergraduates or postgraduates in different majors, and how to teach them, all of these are problems.

Besides, we should further evaluate and verify the scientificity of the 6 basic standardization courses designed by the Academy at the early stage, so that we can develop better courses for students of all ages and in all majors.

Second, how to compile a good textbook with clear logical structure. Some experts advocated compiling specialized textbook, but they failed to meet education demands since the whole writing and publication process may take several years. If we use other teaching mode, what kind of combination will it be? Can teachers and student be accustomed to it?

Although the national standard on the teaching guide of quality and standards basic courses has been released, we need to conduct further research and develop supporting textbooks and teaching materials. SZTU has the intention to cooperate with 8 domestic universities to assess the effects of the existing textbooks and teaching methods in the next one to two years.

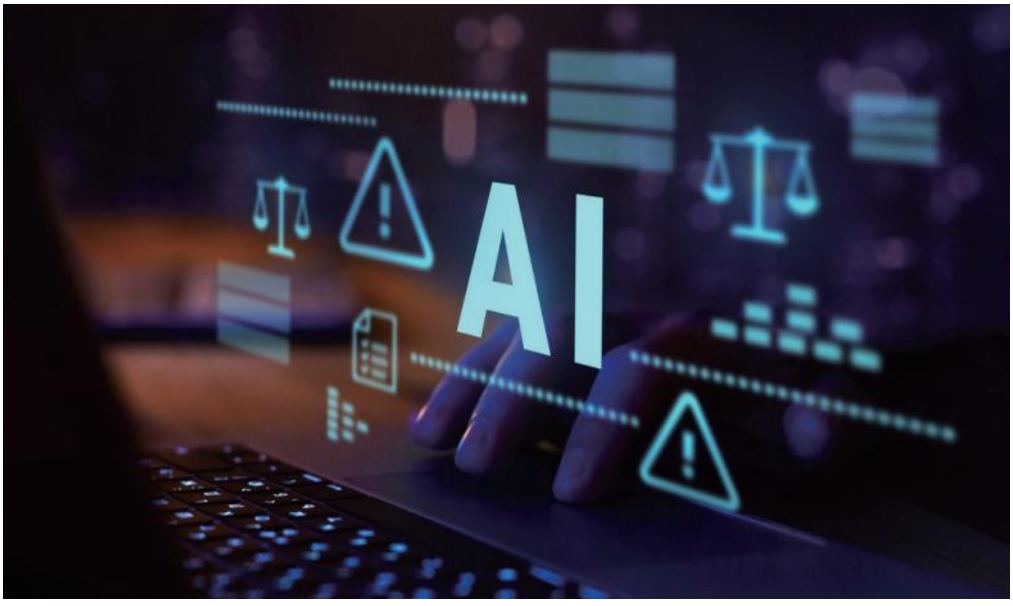
Third, the qualification of teachers. Most of college teachers are not experts from the quality and standards field, and has no experience in participating in standards development. As a result, the teaching result failed to meet the expectation. Besides, there is a lack of incentive mechanism to encourage teachers to participate in standards development or the work of technical committees, which has weakened their enthusiasm for engaging in standardization work.

It is the real situation of our Academy. We still have a long way to go. But I am hopeful about the future standardization course construction, and the cultivation of more professional qualified teachers.

编译/ 曹欣欣

(Edited and translated by Cao Xinxin based on the speech)

New UN initiative to reduce disaster risk with AI



A new United Nations initiative aims to ensure that advanced digital technologies in fields such as artificial intelligence (AI) boost resilience to natural hazards and reduce disaster risks.

The *Global Initiative on Resilience to Natural Hazards through AI Solutions* is led by the International Telecommunication Union (ITU), the UN Environment Programme (UNEP), the UN Framework Convention on Climate Change (UNFCCC), the Universal Postal Union (UPU), and the World Meteorological Organization (WMO).

The initiative will explore AI use cases, provide expert guidance, and support research, innovation, and standards development amid increasing climate volatility and disaster risks worldwide.

It also aims to create an AI readiness framework to assess and improve national capacities for using AI in disaster management.

"Technical standards are key to ensuring AI is used safely, responsibly and equitably in disaster management—a field where decisions must be made quickly and carefully," said ITU Secretary-General Doreen Bogdan-Martin.

The new initiative will consider seismic, hydrometeorological and other natural hazards, as well as compound or cascading events that can result in disasters.

It builds on the work of a focus group launched by ITU, WMO, and UNEP in 2021. That focus group analyzed promising applications of AI for disaster management, curated 27 use cases, and laid the groundwork for new international standards. Its studies explored AI-enabled advances in data collection and handling, the modelling of natural hazards and disasters, and emergency communications.

The resulting standardization roadmap outlines relevant existing standards, along with areas of demand to be met by new standards.

(Source: ITU)

Case studies for gender responsive standards

A growing number of experts in IEC Technical Committees are becoming aware that standards must be gender responsive to meet the needs of everyone, not only one part of the population.

But the question of how to go about it often arises. Several tools exist to help experts navigate the issue. A recently updated guidance document published by the IEC and ISO joint strategic group on gender responsive standards (GRS) can be found here. It aims to provide standards developers and all technical committee (TC, SC, PC, SyC) and working group (WG) participants with important considerations and questions to aid them in ensuring the standards they are developing are gender responsive. In addition, an online learning module is available to all experts.

Lastly, since August of this year, several case studies have been collected and are published in a booklet which can be found here. They are meant to help ISO and IEC experts see how gender aspects can concretely be included in standards.

Another concrete demonstration of how gender impacts standard development can be found in this webinar. Participants presented several IEC standards, for instance TC 61 standards which are developed for household and commercial appliances. Other ones were TC 106 standards which notably look at the specific absorption rate (SAR) of electro-magnetic waves by different groups of people, including women.

In coming months, an official IEC and ISO guide for GRS will be published, along the lines of other guides, such as the one published by the advisory committee on safety (ACOS).

(Source: IEC)

High-level workshop on green electricity systems

October 7, Brussels, Belgium & online

How can we make our electricity systems greener and more efficient? What role do standards play in ensuring the sustainability and efficiency of these systems from end to end? Join industry leaders and experts to explore these critical questions at the upcoming workshop of CEN-CENELEC, "Green Electricity Systems: End-to-End Solutions Leveraging Standards for Efficiency".

The workshop will bring together government representatives, officials from national standardization bodies, experts from the electricity sector, and various stakeholder communities, including SMEs, large companies, consumers, environmental NGOs, trade unions, and academia. Participants will share their insights and expertise on improving efficiency in green electricity systems through standardization.

For more information on the event website: **https://www.cencenelec.eu/news-and-events/events/2024/2024-10-07-hlf-ws-9/**

Mainstreaming Adaptation to Climate Change in Standards—Training on using Tailored Guidance for Standardization Technical Committees

October 7, online

This is the first out of two identical briefing sessions that aim at supporting CEN and CENELEC TCs on including adaptation to climate change in their standards. This training will equip TCs and their WGs on how to use the *Tailored Guidance for Standardization Technical Committees* to identify climate issues in their standards and to address these in line with the EU Mission on Adaptation to Climate Change.

The training is organized in view of the tangible and progressive climate changes and the associated political calls for action; it is becoming increasingly important to create climate-resilience through standards. The *Union's Annual Work Programme for European Standardization 2024* calls on the European standardization system to revise infrastructure and non-infrastructure standards whose content is vulnerable to climate impacts with the aim of improving their climate resilience.

For more information on the event website: **https://www.cencenelec.eu/news-and-events/events/2024/2024-10-07-climate-change-in-standards/**

ETSI Security Conference 2024

October 14-17, Sophia Antipolis, France

ETSI's annual flagship event on cybersecurity, the ETSI Security Conference, will provide an exceptional opportunity for the security community to come together to exchange with experts, network with peers, and share facts and opinions around the most relevant subjects of cybersecurity standardization. The intensive 4-day programme will gather speakers from government agencies, other standards bodies, academia and various industry sectors.

This year's event will address the following issues: AI; impacts of regulation on zero trust and consumer devices; societal impact of technology; fraud, security, and standards convergence; 5G to 6G; privacy and considerations of employing encryption technologies; transport, public safety and critical communications; consumer verticals.

For more information on the event website: **https://www.etsi.org/events/2323-etsi-security-conference-2024**

IEC General Meeting

October 21-25, Edinburgh, the U.K.

2024 marks the 200th birth anniversary of Lord Kelvin, the founding president of the IEC. It is quite fitting that the IEC General Meeting this year will be in Scotland where Kelvin lived and worked for the majority of his life. Global leaders and experts will gather during this annual meeting. In the historic city of Edinburgh, we will decide together how we can best shape the IEC to collectively address the pressing global challenges of our time.

The focus this year is our commitment to facilitating the transition to a digital and all-electric society. In such a society, various sectors like energy, industrial production, healthcare, and mobility would be electrified and digitized to enable economically vibrant living conditions for everyone.

Based on worldwide access to affordable, renewable and sustainable energy, a digitally connected society could harness technologies like artificial intelligence to help the energy infrastructures decarbonize efficiently.

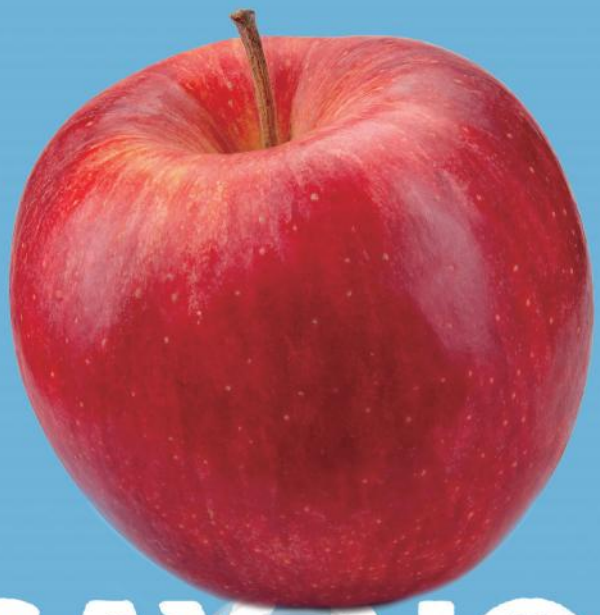
For more information on the event website: **https://gm2024.iec.ch/**

GB 23350-2021,

Requirements of restricting excessive package—Foods and cosmetics

The mandatory national standard of China

has been implemented since August 15, 2023.



SAY NO TO OVERPACKAGING!

Designed by China Standardization Press

The national standard GB/T 26174-2023, *Kitchen towel*, replaces the 2010 version, and has been put into effect since Sept. 1, 2024.

Analysis of standardization of community security fund management—Taking practice of community security fund management in Wuhou district of Chengdu as an example

社区保障资金管理标准化探析
——以成都市武侯区开展社区保障资金管理标准化实践为例

By Li Xiaowen, Wen Jiahua, Wen Mengchuan, Ren Yan
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Abstract: The Chengdu community security funds refer to the special security funds for urban and rural community development and governance in Chengdu. At present, there are some problems in the use of community security funds, such as low participation of residents, and low efficiency of fund use. Taking the exploration of standardization of community security fund management in Wuhou district, Chengdu city, as an example, this paper suggests further strengthening the use and management of community security funds by means of standardization, ensuring the democratic, open, and transparent use of funds, and effectively enhancing the supporting role of community security funds in community governance.
Keywords: community security funds, management, standardization

1. Development of community security funds in Chengdu

1.1 Evolution of community security funds in Chengdu

The community security funds in Chengdu have been through several stages of development, with a profound practical foundation and historical origin. In November 2008, Chengdu took the lead in bringing village-level public service funds into the fiscal budget. In 2009, Chengdu made a fixed investment in villages, and in 2010, fixed subsidies were given to community autonomous organizations. From 2013 to 2016, Chengdu issued relevant policies annually to improve the management process of fund use. In 2018, Chengdu merged the special funds for urban community public services and social management, as well as the special funds for village-level public services and social management, and established the special security funds for urban and rural community development and governance in Chengdu. Thus, the funds have been carried out with unified and centralized management by the specific government department.

1.2 Operation mechanism of community security funds in Chengdu

The Chengdu community security funds strictly implement the "five-step work method"[1], which means that under the leadership of community-level Party organizations, community residents participate in the collection, determination, implementation, evaluation, and supervision of projects. The general process is the proposal of community-level Party organizations, democratic resolution of the Council, organization and implementation of neighborhood committees, democratic appraisal of Party organizations, and democratic supervision of the whole process. In order to promote the implementation of the "five-step work method", Chengdu has issued relevant documents to clarify the use scope of community security funds in terms of priority projects and prohibited projects in urban communities, priority projects and prohibited projects in rural communities, and other expenditures. Meanwhile, relevant policy documents of supervision guidance and standardized management of community security funds have also been formulated.

1.3 Implementation effect of community security funds in Chengdu

Through the implementation of the "five-step work method" to regulate the use of community security funds, it has achieved very fruitful results. The standardized use of community security funds has improved the resolution rate, the implementation rate of livelihood projects, and the residents' satisfaction rate, ensured the residents' participation in the whole process of democratic consultation, and ensured that the funds are resident-centered. It has played a huge role in boosting the whole process of democratic consultation at the grassroots level, promoting the concept of co-construction and co-governance, and has become a powerful starting point for grassroots governance to consolidate the public support.

2. Standardization practice of community security fund management in Wuhou district of Chengdu

2.1 Formulate a guide to the interpretation of community security funds and provide on-site guidance

Based on the investigation of practical cases in Chengdu, it is found that community security funds might not work well because of the incomplete understanding of relevant policy documents as well as inconsistent adoption methods. In view of the above problems, the relevant departments of Wuhou district have carried out standardization exploration in the field of community security funds. For example, the guidelines for the use of community security funds have been developed, and the training has been carried out to standardize the management of community security funds.

2.2 Take the community security funds as the key link of the national standardization pilot

In 2022, Wuhou district was approved as the first pilot to carry out the standardization project of community fiduciary governance in China, which aims to guide practice by standards and standardize the management and service of community fiduciary governance. Fiduciary governance is to build a new governance pattern with fiduciary relations, and to form a governance community with clear responsibilities through the establishment of fiduciary relations[2]. Fiduciary relationship is a governance relationship based on fiduciary duty, and trust is a typical legalized fiduciary covenant[3].

The community security funds have the natural attribute of trust. As a dual trustee, the community bears trust of two parties. One of the party is the government, so it is necessary to follow the democratic principle of discussion and decision by all parties in accordance with the management measures; the other party is the residents, thus the whole process of fund use and accounts should be checked to protect the residents' rights to participate, know and supervise. Therefore, community security funds have been included in one of the important areas and key links of implementing standardization concepts and methods to the national standardization pilot of community fiduciary governance. Taking this as an opportunity, the relevant departments of Wuhou district have innovatively developed a series of standards in the field of community security funds, effectively enhancing the supporting role of community security funds in community governance, and striving to establish the national first-class system of community security funds.

2.3 Develop a series of standards for community security funds

According to the "five-step work method" of community security funds and the construction of the pilot system framework, the relevant departments of Wuhou district have developed a series of standards for projects of community security fund management, covering resolution, evaluation, review, and information disclosure of projects. The standards sort out and quantify the process, operation details, and specific practice of the community security funds, which are interlinked and promoted layer by layer, showing the characteristics of the whole process, full coverage, and full process participation. These standards provide references for the specific implementation of the community in Wuhou district, reduce misunderstandings of documents, ensure the standardized and efficient use of the funds, and continuously

improve the performance of fund use.

2.4 Implementing the series standards of community security funds and achieving results

Also, methods have been implemented, including consolidating the responsibilities of the relevant departments of the government, promoting the participation of multiple parties, and building the whole-process supervision, coaching and accompanying mechanism for the management and use of community security funds. Therefore, we could not only enrich the subjects and forms of grassroots participation in democratic consultation, as well as show the diversity and inclusiveness of grassroots democratic consultation, but also standardize the procedures of grassroots democratic consultation, and guide the real needs and concerns of the people, showing multi-field, multi-dimension, and all-round grassroots democratic consultation.

Moreover, in the process of project implementation, the people's needs are listened to and the problems they point out are solved. In this case, development can be achieved on the basis of consensus building, which helps to change residents' awareness of democratic consultation, improve residents' ability to consult and discuss, and expand the channels for residents to participate in public affairs consultation.

3. Suggestions

In the next step, Wuhou district will improve the mechanism of standards implementation and standards supervision, as well as collect and summarize the cases of standards implementation of community security funds. It should further deeply analyze its standardization practice, to promote the replicable experience, establish the mechanism of standardization work, develop standards for municipal community security funds, and continuously standardize the management of community security funds.

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Analysis of standardization development of TCM in Sichuan

四川中医药标准化工作进展分析

By Li Gen
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(Sichuan Institute of Standardization)

Abstract: Sichuan province is home to rich traditional Chinese medicine (TCM) resources. Recent years have seen unremitting efforts of TCM standardization in the province. By analyzing the measures and existing problems, this paper provides recommendations to boost TCM development through standardization.
Keywords: Sichuan, TCM, standardization

1. Introduction of TCM in Sichuan

The traditional Chinese medicine (TCM) in Sichuan province in Southwest China has a history of more than 2,000 years. With complex terrain and diverse climate, Sichuan is endowed with abundant TCM materials, ranking the first in China in terms of TCM material reserves, common TCM material species as well as TCM materials obtaining the China Good Agricultural Practices (ChinaGAP) certification. In 2023, the comprehensive output value of TCM in Sichuan surpassed 120 billion yuan[1], with TCM products exported to dozens of countries.

2. Measures of TCM standardization

2.1 Building standardized bases for the TCM industry

By far, the planting area of Chinese medicinal materials in Sichuan reaches more than 5,600 square kilometers[2]. Several well-known local TCM enterprises have established customized medicinal material bases in production areas and carried out standardized cultivation of TCM materials. Sichuan established a special fund for the development of TCM industry and each provincial-level modern agricultural park for TCM will be rewarded with 10 million yuan[3]. As of the end of 2021, 24 demonstration zones of standardized planting for medicinal herbs were built, 16 species of TCM materials and 24 bases obtained ChinaGAP certification. At present, there are 2 national-level and 9 provincial-level agricultural parks themed Chinese medicinal materials in the province[4].

2.2 Establishment of a technical committee for TCM standardization

In July 2018, Sichuan Provincial Administration of TCM together with Sichuan Provincial Administration for Market Regulation, set up a technical committee for TCM standardization, which is the first of its kind in China. After its establishment, it has actively promoted the construction of TCM standardization and provided systematic and technical support by carrying out the development and revision of local standards for seeds and seedlings, production technology, quality and safety, storage and transportation,

etc. In December 2019, it established China's first technical subcommittee on TCM equipment, with members from mechanical, aviation, acoustic and optoelectronic fields, aiming to provide multidisciplinary support for the standardization of TCM equipment.

2.3 Building a standards system for the entire industrial chain of TCM

In January 2019, the General Office of the People's Government of Sichuan Province released an implementation plan to improve the management norms and quality standards of the industrial chain of Sichuan medicinal materials, which provides the operational guidance for the process management of TCM. Up to now, Sichuan has organized a series of standards development and revision, and established a framework for the standards system of Sichuan-produced medicinal materials.

As of September 2023, 29 provincial standards for TCM have been published, involving quality tracing, certification of medicinal herbs, grading of seeds and seedlings as well as traditional and mechanic production of medicinal materials. These local standards, adopted by agricultural technology companies, pharmaceutical enterprises, and crop promotion stations, have achieved positive results in guiding the industrial development of authentic medicinal materials and play a leading role in the high-quality development of the industry.

2.4 Strengthening international cooperation on TCM standardization

In April 2022, the People's Government of Sichuan Province issued a plan to establish the national demonstration areas for comprehensive reform of TCM, specifying that the province will take lead in developing and revising international standards and participate in the research on standards for foreign plant and herbal pharmacopoeia. In October 2021 and June 2022, ISO/TC 249 approved two standard proposals from Sichuan on curcumae longae rhizoma and crocus sativus stigma respectively. In March 2024, ISO published ISO 8071:2024, *Traditional Chinese medicine—Ligusticum chuanxiong rhizome*, which marks a milestone of the province's endeavor in TCM international standardization. The revised *European Pharmacopoeia Supplement 11.5* that took effect in July 2024 also saw the participation of engineers from Sichuan Agricultural University, Sichuan Academy of Chinese Medicine Sciences, Sichuan Institute for Drug Control, and other organizations.

3. Existing problems

3.1 The TCM standards system needs further improvement. Big data, cloud computing, artificial intelligence, and other technologies are accelerating the upgrading of the TCM industry. Some of the standards, which involve technical regulations for traditional planting and manufacturing, are unable to meet the needs of the market. There is also a shortage of relevant standards for TCM health services, elderly TCM health care, TCM mental health, and TCM rehabilitation techniques.

3.2 Personnel training and education still lag behind. The international standardization of TCM calls for talented people with expertise in TCM, theoretical and practical experience in standardization as well as proficiency in foreign languages[5].

3.3 A number of Chinese medicinal herb growers in rural areas with little theoretical knowledge of planting may produce non-standard medicinal herbs. Lack of professional agricultural skills and scientific management cannot guarantee the quality of medicinal herbs[6].

4. Recommendations

4.1 Further participation in standards development and revision

TCM standards development and revision should be based on market demands, focusing on the prevention, treatment of common diseases as well as the application of the latest technology and management.

A diversified mechanism with investment mainly from the government and social capital as a supplement can be established, so as to promote the standardization of TCM.

TCM manufacturers can improve their enterprise standards by joining in the Special Action on Standards Comparison and Compliance, which was launched by China's ten ministries and commissions. Industrial associations, universities and other social bodies that participate in the research and development of international standards can promote the transformation of domestic TCM standards into international ones.

4.2 Establishing an evaluation system for the application of TCM standards

Standards evaluation is regarded as a way to find out problems in the implementation process, which provides the scientific basis for the development and revision of standards. Therefore, a dynamic monitoring mechanism that can track and evaluate the application of TCM standards is of great necessity. With such a mechanism, local market regulators can continue improving TCM applicability and effectiveness[7]. This move is not only beneficial to building a high-quality standards system for the entire chain of the TCM industry, but also can promote the progress and innovation of TCM science and technology.

4.3 Cultivating standardization experts

Universities and colleges can be encouraged to offer TCM-related courses or training classes to those from hospitals, enterprises, research institutions, and other organizations. The standardization technical committee of TCM can play a role in promoting TCM standards, offering work opportunities to young engineers.

In addition, domestic and international collaboration in TCM is also needed, so as to exchange work experiences as well as share academic achievements. Local regulators can further strengthen top-level design, to attract individuals or teams at home and abroad to participate in TCM standardization with incentive policies.

4.4 Building standardized TCM planting bases

Standardized planting bases can be constructed according to the advantages of medicinal materials in different production areas. Agricultural experts can be organized to provide Chinese medicinal herb growers with systematic and professional guidance. TCM industrial clusters can be established, with an aggregation of investment, financing, talents and expertise. TCM enterprises can lead the construction of planting bases and standardize farming, sowing, fertilization, weeding as well as harvesting processes. With advanced management and specialized network marketing, such bases will help increase farmers' income and promote local rural vitalization.

5. Conclusion

Standardization is an important component for the development of the TCM industry. As a systematic project, it calls for the participation of the government, manufacturers, technical committees, research institutions and other social organizations. We should give full play to the technical support and leading role of standardization in the development of TCM, and leverage it in disease prevention and treatment, contributing to the health of human beings.

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Development and interpretation of ISO 13205:2024, *Marine technology—Seawater desalination—Vocabulary*

ISO 13205:2024《海洋技术 海水淡化 术语》的研制和解读

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文/胥建美 王敏 谢春刚 孙靖
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Abstract: Vocabulary is the most basic subject of standardization. Despite that individual terms related to seawater desalination have been mentioned in some standards and technical documents of ISO, WHO, and ASTM, the inconsistent expression might still induce ambiguity in communications among the participators in this area. Moreover, terms in these documents are not comprehensive. Consequently, ISO 13205:2024 is developed to eliminate the misunderstanding in both the academic and commercial communications. This paper expounds on the specific progress of the research in three aspects: background, drafting of ISO 13205:2024, and interpretation of ISO 13205:2024. The significance of the standard is also discussed.
Keywords: seawater desalination, vocabulary, ISO, standards

1. Background

Desalination is a crucial technological method to address the issue of water scarcity in coastal areas. The standardized development will not only benefit the technological promotion of seawater desalination, but also enhance international cooperation, which is an essential approach to promote the sustainable development of the seawater desalination industry. In 2015, ISO established the WG 3 on seawater desalination under ISO/TC 8/SC 13, *Marine technology*. However, the WG 3 has just published two ISO standards so far. The standards system for seawater desalination needs to be established urgently. Vocabulary standards are the basis of all standards, and the uniformity and accuracy of

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vocabulary is of great importance for scientific research, academic exchange, and economic and trade activities related to desalination technology. Though individual terms related to seawater desalination have been mentioned in some standards and technical documents of ISO, WHO, ASTM, and CEN, the inconsistent expression might induce ambiguity in communications among the participators in this area, for example, terms concerning membrane desalination, "pass" and "stage". Also, terms in these documents are not comprehensive. Therefore, establishing a standardized set of terms and definitions is highly important for the development of scientific and engineering publications in the technical area, including the development of standards.

2. Development and interpretation of ISO 13205:2024

ISO 13205:2024 was proposed and developed by ISO/TC 8/SC 13/WG 3, and officially published in June 2024. Organized by China, the development of ISO 13205:2024 gathered 43 experts from desalination research institutions and relevant companies in 8 countries, including China, the United States, Saudi Arabia, Russia, and Japan. The framework of this standard refers to the Chinese sectoral standard HY/T 203.2-2016, *Terms of seawater utilization—Part 2: Seawater desalination technology*, and is entirely based on the desalination process flow, including basic definitions, water intake, pre-treatment, membrane desalination, distillation desalination, and post-treatment. Additionally, membrane cleaning and chemical addition, as indispensable parts of the desalination process, are categorized as auxiliary terms. The framework consists of 7 major modules and over 80 terms covering specific process flows, key equipment, and main technical parameters. The flow process of seawater desalination is given in Figure 1.

This standard involves 87 terms which can be divided into 4 technology fields, including technical processes, parameters, devices, and basic terms. As shown in Figure 2, the vocabulary of technical processes has 36 terms, accounting for the largest proportion, followed by devices with 21 terms and basic terms section with 19 ones. Besides, the parameters, an essential technology field, contain 11 terms.

One of the highlights of this standard is to distinguish every detail of the desalination process to avoid communication and academic disputes. For example, in order to describe water quality before and after various desalination

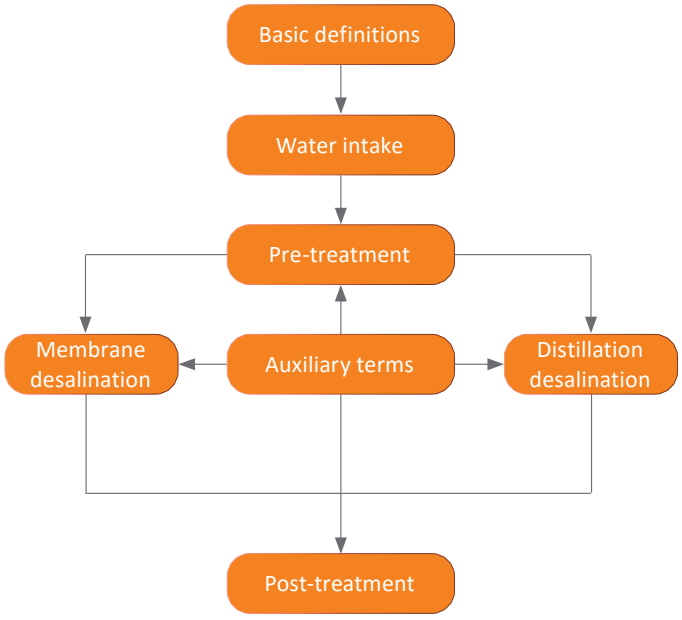

Figure 1: Flow diagram of seawater desalination vocabulary

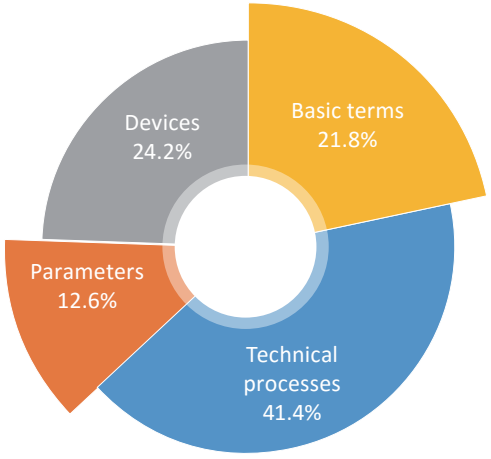

Figure 2: Terms distribution diagram based on technology fields

processes, the source water, feed water, desalinated water, product water, and brine are defined in detail. Terms such as primary steam, secondary steam, motive steam, and non-condensable gases, which are easily confusing but crucial to distinguish in distillation desalination processes, are precisely defined in this standard as well. Specially, as different words are usually used to express the same meaning in literature and books, such as "source water" and "raw water"[1-3], "biocide" and "disinfectant"[4-6], which are all defined as one term in this standard. The words with multiple meanings, which are also defined by a domain identifier to specify the subject area of each term, for example "stage", which refers to different meanings in membrane and distillation desalination processes. The precise definition of these terms can help to form unified concepts and understandings in the seawater desalination industry, facilitate academic exchanges and research, improve communication efficiency, and promote technological development.

3. Significance

The standard is scientific and comprehensive, and can provide guidance for unified terminology in seawater desalination. It facilitates communication in management, industry and academia, promotes multi-field cooperation in more countries and regions, and will effectively promote the smooth development of seawater desalination technology and industry. The objective of this standard is to consolidate unified descriptions of seawater desalination activities, for the benefit of all users and stakeholders. In the future, China will continue to take part in the development and revision of ISO international standards, to share China's achievements and experiences in seawater desalination development.

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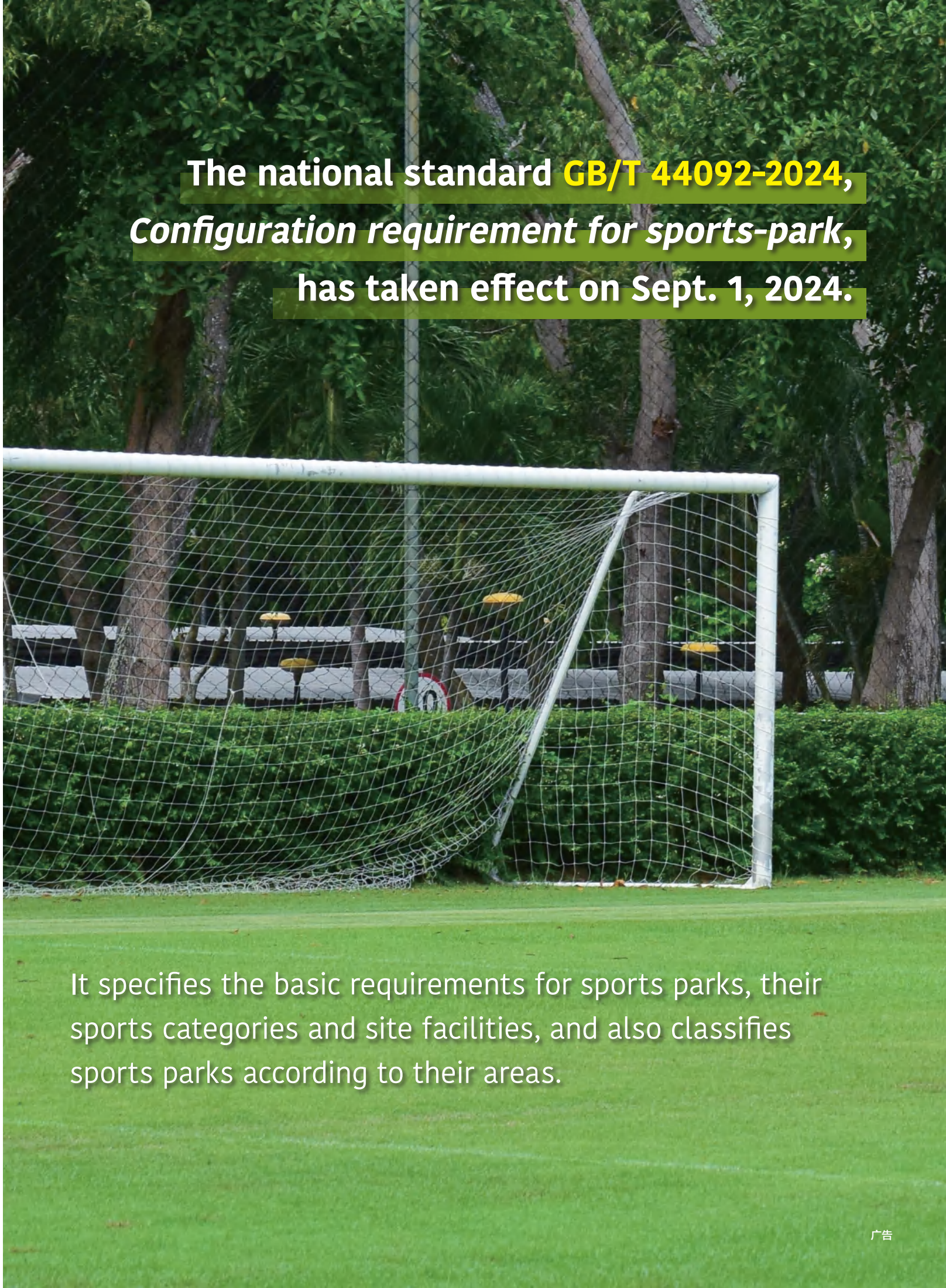

The national standard GB/T 44092-2024, *Configuration requirement for sports-park*, has taken effect on Sept. 1, 2024.

It specifies the basic requirements for sports parks, their sports categories and site facilities, and also classifies sports parks according to their areas.

World Standards Day

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