INTERNATIONAL KNOWLEDGE AND TECHNOLOGY TRANSFER LEADERSHIP SUMMIT 2023

6–7 November | Santiago, Chile

Overview

In November 2023, **AUTM** and the **World Intellectual Property Organization (WIPO)** hosted a two-day international leadership summit in Santiago, Chile, where 44 knowledge and technology transfer (K/TT) leaders from 25 countries gathered to discuss the current state of practice and future direction of the field. (Appendix A)

This was AUTM's fourth global summit, and the second held in conjunction with WIPO, intended to be a dialogue among peers and experts. The high-level meeting offered an inclusive discussion platform for key issues that influence K/TT. The evolving relationship between AUTM and WIPO is important because it enables a global, collaborative forum dealing with legal and practical matters affecting both the K/TT field and profession. Key issues for WIPO include identifying and supporting the potential needs of different K/TT networks, particularly in developing countries, as well as the process of transferring K/TT related capacities and approaches, from developed countries to developing, and the least developed.

"For us, this partnership with AUTM is something that we take very seriously, and we want this to be one of many summits that we will conduct together for the benefit of the innovation ecosystem, but very particularly to improve technology transfer worldwide," WIPO Assistant Director General Marco Aleman, PhD, told those assembled during opening remarks.

Innovation and tech transfer are changing the world," echoed AUTM CEO Stephen J. Susalka, PhD. "We're here to support knowledge and tech transfer globally."

The Summit was hosted locally by HubTec Chile, which kicked off the event with a technology innovation week in Santiago.

The Summit included a hot topics session to discuss pressing issues. Two panel discussions followed by roundtable workshops, covered the challenges facing K/TT in the next 10 years and training the next generation of K/TT professionals.

To support open unfettered conversation, it was agreed that attendees could speak without being quoted by name in this final report.

2023 AUTM-WIPO International Summit attendees.

Country Reports (Appendix B)

In advance of the meeting, each Summit participant was asked to provide an overview of their nation's K/TT landscape, answering questions about:
- External factors that will affect the K/TT profession over the next decade, and
- Approaches/skills needed to prepare the K/TT professionals of tomorrow.

Through these questions, themes emerged, providing a comprehensive overview of global perspectives on the future of the K/TT profession. Common themes across different countries included:

1. **Demographic Changes and Talent Dynamics:** The availability of skilled K/TT professionals was recognized as a key factor. Demographic shifts, skills shortages and changing workforce expectations were highlighted as challenges that may impact the quality and availability of professionals in this field.

2. **Technological Advancements**: Emphasis on rapidly evolving technologies like artificial intelligence (AI), biotechnology, nanotechnology and quantum computing.

3. **Intellectual Property and Legal Challenges:** Changes in laws and policies, especially concerning AI's impact on authorship and patents.

4. **Ethical and Social Responsibility:** The importance of considering ethical implications of technology transfer and promoting responsible practices.

5. **Government Budgets and Funding for Research:** Fluctuations in government budgets for research and development were identified as external factors affecting technology transfer activities. The availability of funding for transfer activities is crucial for the success of K/TT professionals.

6. **Global Crises and Pandemics:** Unpredictable events, such as pandemics, also were acknowledged as external factors that can significantly impact the future of the industry. The need for professionals to be adaptable and prepared for unexpected challenges was emphasized.

7. **Climate Change and Sustainability:** Growing awareness of climate change and sustainability was acknowledged as driving increased demand for technologies related to clean energy and environmental management. This trend influences the priorities and focus areas of knowledge and technology transfer.

8. **Changes in Intellectual Property Laws and Regulations:** The evolving landscape of intellectual property laws, at both the national and international levels, was emphasized in multiple reports. The emergence of new technologies requires professionals to stay updated on legal frameworks and navigate challenges related to patents, copyrights and other legal aspects.

9. **Global and Real-Time Commercialization:** The role of new platforms facilitating global and real-time commercialization of intellectual property was recognized. This requires professionals to work in international environments, understanding how cultural and legal differences affect transactions.

10. **Institutional and Policy Changes:** Various countries highlighted shifts in government policies, funding mechanisms and institutional strategies affecting the profession.

Understanding the Impacts of AI

Perhaps the largest single theme centered on common challenges in AI, reflecting the need for a balanced approach that fosters innovation while addressing ethical, legal and social concerns. Attendees discussed the potential for AI to transform K/TT office operations but acknowledged that these tools can pose a risk in the hands of bad (human) actors. Some questioned whether utilizing these emerging technologies could pose a risk, such as negatively affecting the skill sets of the K/TT professionals, because even the best AI engineering cannot replace the human element that is essential to K/TT success. There was discussion about whether a central organization, such as AUTM, can work to develop training for the K/TT community on effectively incorporating tools like AI in K/TT offices. Specific areas of concern include:

- **Ethical and Social Responsibility:** Addressing the ethical implications of AI, such as privacy concerns, bias and the potential for misuse.

- **Intellectual Property and Legal Issues:** Challenges around authorship, patenting and the legal framework surrounding AI innovations.

- **Technological Advancements and Adaptation:** Keeping pace with rapid AI advancements and integrating these technologies responsibly into various sectors.

- **Skills Development:** The need for specialized skills to develop, manage and understand AI technologies.

- **Global Cooperation and Policy Alignment:** Ensuring global collaboration and consistent policy frameworks to manage AI's impact on society.

Attendees underscored the dynamic and multidisciplinary nature of the K/TT profession, highlighting the need for adaptability, continuous learning and ethical considerations in a rapidly changing global landscape.

Approaches/Skills Needed for Tomorrow's Professionals:

1. **Technological Awareness:** Professionals are advised to stay aware of technological developments, especially in AI, biotechnology, nanotechnology and quantum computing.

2. **Legal Competency:** Understanding intellectual property laws, patent management and legal aspects related to technology transfer is crucial.

3. **Cultural Competency and International Understanding:** Given the global nature of technology transfer, professionals need to be culturally sensitive and understand international trade policies.

4. **Data Analysis Skills:** The ability to analyze data and trends for informed decision-making is deemed increasingly important in K/TT.

5. **Ethics and Social Responsibility:** Professionals are encouraged to consider ethical and social implications of technologies, promoting responsible practices.

6. **Holistic Approach to Learning:** Continuous learning, creativity and a holistic learning process are emphasized to prepare professionals for future challenges.

7. **Interdisciplinary Skills:** As technology transfer involves various areas of science and technology, professionals are urged to have comprehensive knowledge in emerging areas like AI, biotechnology and machine learning.

8. **Societal Impact Assessment:** Professionals should be capable of assessing how technology affects societies, economies and individuals to ensure responsible and ethical knowledge transfer.

Hot Topics

The Summit included time to address topics of interest, offering attendees a chance to share their perspectives on issues or current challenges. The key questions were as follows:

Invention Disclosure Drafted by AI?

Like all fields, K/TT is grappling with the use of AI, which promises huge potential gains (drafting and analyzing invention disclosures, maximizing royalties, etc.), but presents an immense learning curve. Resources related to the use of AI in the K/TT space are still being developed and deployed—perhaps not fast enough. In the meantime:

Recommendations and Key Takeaways:

- AI is here to stay. Every K/TTO should be analyzing or developing strategies for AI to support and make their work more efficient and effective.

- The EU AI Act is being drafted to focus on the regulation of AI and should be finalized in 2024.

- New York University's TTO, Technology Opportunities and Ventures, is working with success to integrate closed AI into their processes and have been speaking publicly about their methods [you can hear about it here. AUTM is considering creating principles for working with AI in K/TTOs.TTOs.

- One K/TTO is creating algorithms on intellectual property (IP) evaluation and the valuation of startups.

> "It's all possible but it's a big challenge."
>
> **-Attendee**

Standardizing Guidelines for Deal Terms. Is it a Good Idea?

More and more countries are looking at the standardization of guidelines for spinout deal terms. But how do you standardize when everyone has different standards? There are pros and cons and myriad lessons learned about which stakeholders to include in the process and how to communicate.

> "I would always argue: Go for an agreed set of terms, even if they're imperfect."
>
> **-Attendee**

Recommendations and Key Takeaways:

- There is no perfect deal term.

- Often life sciences and pharmaceutical biotech are excluded from standardized language.

- Consider enabling all parties across the ecosystem to agree on expectations about what a good deal looks like and what's feasible.

- AUTM has a database, called TransACT, which houses more than 2,000 deals that can be used to structure agreements and support negotiations.

Social Innovation, Social Impact, and the Art of Measurement

Questions surround the integration of social innovation within K/TT offices, highlighting the unique challenges and perspectives from various countries. Key points include the establishment of specialized teams, the struggle to define new ways of measuring social innovation's impact, the importance of interdisciplinary collaboration and the challenge of aligning social innovation with traditional tech transfer metrics. Discussions also touch on the role of social sciences in K/TT, the need for a broader understanding of social impact and the importance of fostering relationships with external stakeholders to track and measure impact effectively.

Recommendations and Key Takeaways:

- Create social innovation teams within K/TT offices,

- Foster interdisciplinary collaborations and developing new metrics to measure social innovation impact,

- Integrate social sciences into tech transfer and redefining social impact to include broader societal benefits,

- Build and maintain relationships with external stakeholders for effective impact tracking and aligning social innovation with traditional tech transfer metrics, and

- Implement government-led programs to support social innovation in various fields.

> "The biggest issue we have is that impact is created by people beyond the university. And this is something that we as a profession have not taken on board. We need to understand that we need to keep a relationship with them. Because then we can track impact. If we don't have that relationship, we have no idea."
>
> **-Attendee**

Communication, Trust and Making a Better World

Attendees discussed strategies for fostering a culture of innovation and commercialization within academia, engaging mentors and changing the dialogue with innovators to support a broader impact on society and industry.

Recommendations and Key Takeaways:

- Use internship programs strategically to engage departments in tech transfer activities, requiring interns to present back to their faculties, and introducing tech transfer personnel to department meetings.

- Change the language used with academics, shifting from "commercializing IP" to '"making a difference with research"' and meeting others who are keen to achieve that goal.

- Implement faculty champions and promotion and tenure initiatives to encourage faculty engagement with tech transfer offices.

- Emphasize industrial engagement and alliances to integrate research with industry needs and opportunities.

- In New Zealand, the Emerging Innovator Programme supports researchers with entrepreneurial potential through structured training and mentorship, leading to cultural shifts within institutions

Why Use Mentors?

Mentors are seen as facilitators of innovation, helping to steer academic research toward making a tangible societal impact.

Recommendations and Key Takeaways:

- Mentors are crucial in navigating departmental engagement with tech transfer activities.

- Internship programs can serve as a bridge for mentors to educate departments and advocate for tech transfer.

- Faculty champions who have worked with tech transfer offices can act as mentors to encourage colleagues.

- Matching mentors and mentees with the right personality and sector fit is essential for impactful guidance.

> " We engage academics by making them see that their research can truly make a difference, shifting the conversation from 'commercializing IP' to 'making a difference in the world' and fostering meaningful connections."
>
> **-Attendee**

How Do You Reward Faculty to Get Cooperation? Does it Help?

Attendees discussed ways to recognize and reward faculty for innovation-related activities.

Recommendations and Key Takeaways:

- Create recognition events like "Patent Palooza" to publicly celebrate faculty achievements in innovation.

- Use WIPO's best practice guide to develop comprehensive recognition programs.

- Incorporate commercial impact as a valid criterion in promotion and tenure decisions.

- Engage academics as champions for commercialization to support colleagues during promotion and tenure reviews.

- Provide education and training for faculty to understand and value commercial activities as part of academic achievements.

Not everyone agrees these efforts, if uncoordinated, are worthwhile.

"

I've been to universities where they've introduced initiatives like this – promotion based on commercialization and engagement data. And they say, 'will that get me a professorship at Cambridge, Oxford, MIT, Stanford?' Unless there are global standards, then whatever you do at your university is meaningless. Because the universities and academics don't care."

-Attendee

Panel Discussion and Breakout Session

Training the Next Generation of Knowledge/Technology Transfer Professionals

Moderator:

Alwin Wong,
ATTP Board Chair

Panelists:

- Andrew Bailey, Senior Manager Innovation, University of Cape Town
- Anji Miller, Senior Business Manager, LifeArc
- Olga Spasic, Consultant
- Fernando Venegas, President, RedGT

A session on training the next generation of tech transfer professionals was presented to identify best practices and establish a long-term view toward developing practitioners with professional values and competence across the globe. Session panelists and participants both acknowledged there is no "one size fits all" solution, but there will always be valuable takeaways to enhance regional efforts with strong international alignment.

There have been disruptive advancements in technologies and innovation systems witnessed in the first two decades of the 21st century. The Western technology transfer framework, starting with the Bayh-Dole Act in the 1980s, expanded from classical IP protection to project management, entrepreneurial leadership and ventures. Simultaneously, many emerging economies are now realizing the multifaceted nature of tech transfer and the need for orchestrated capacity building efforts. Panelists acknowledged systemic challenges in bridging conventional vocational education and the achievement of K/TT attainment, influenced by culture, policy, and the characteristics of innovation ecosystems, with introspection in our current recognition through CLP and RTTP accreditations. The challenges, however, lie in a much broader sphere, requiring both broad-based knowledge and high-level standards for expertise in science and management. Operating in this sphere requires an evolutionary workforce of K/TT professionals who can adapt to the rapidly changing backdrop of societal and economic development.

Key Takeaways:

Theory vs Practice: Role and Training of the Next Generation

The role of the modern K/TT professional has evolved beyond traditional IP protection to encompass entrepreneurial leadership, ventures and project management. This expansion necessitates a re-evaluation of current training and capacity building programs to ensure they adequately prepare K/TT professionals for the future.

The right training should be multifaceted, addressing these expanded roles and providing a balance of theoretical knowledge and practical experience. The training should also cater to an individual's career stage, with recognition for achievements like CLP and RTTP for seasoned professionals. For those starting their career, these certifications would be significant achievements. While there are dedicated training programs provided by peer associations, the best type of training remains one in which the practitioner deals collaboratively with their stakeholders, particularly those who would advance the

innovations into the marketplace. On-the-job training, together with startups and industry has proved invaluable in this respect. Meanwhile, it has become apparent that practitioners across the world would benefit from a common foundation of both knowledge and skills equipping them to advance in the workforce. Such training is still lacking in our conventional higher education and vocational training systems, although some countries have started aligning training programs that prepare university graduates to enter the field and training programs targeting practitioners. In this regard, Summit attendees entertained the possibility of a common diploma program developed by K/TT peers and endorsed by non-governmental organizations (NGOs) for adoption worldwide.

Addressing Skills/Training Gaps for KT/TT Practitioners

The panel recognized that skills/training gaps exist, and these may vary regionally due to differences in culture, policy and stages of development in the innovation ecosystem. The training programs should, therefore, cater to these differences with a blend of global best practices and local requirements. Further research would be needed to identify specific gaps and strategies to address them.

The discussion underscored the need for interdisciplinary skills and competencies in K/TT. As the field evolves, K/TT professionals are required to understand not only the technology they are working with but also the business, legal and policy aspects associated with its transfer. This multifaceted nature of K/TT implies the need for broader training programs that go beyond core technical knowledge to include topics like entrepreneurship, project management, negotiation, legal aspects of IP and policymaking. Identifying the right mix of these skills and competencies requires further study.

The challenges are further expanded given the phenomenal changes brought about by innovation and technological advancement, but so are the opportunities. A long-term view is needed to address the capacity building needs of the next 10 years.

Professionalization and Recognition of the Profession

Despite the critical role played by K/TT professionals, the profession remains relatively obscured to the broader world beyond the innovation and technology commercialization spheres. Summit attendees called for concerted efforts to raise awareness about the profession, its importance and its impact. The strategy involves showcasing success stories, enhancing the profession's image and recognizing the achievements of practitioners. But raising awareness also calls for further action. Only when the profession gains widespread recognition in society, coupled with a robust demand for formal education in conventional systems, supported by both public funding and industry backing, can we truly elevate its stature.

Demand for New K/TT Practitioners and Ideal Source

The demand for new K/TT practitioners varies by region and is influenced by the maturity of the tech transfer ecosystem. To attract new professionals, the panelists suggested targeting those with a passion for innovation, a solid understanding of technology and the ability to navigate the complexities of tech transfer. It is not just young people that should be drawn into the sector, but those with rich executive and managerial experience who want a mid-career change, as soft skills are becoming increasingly more important for effective tech transfer management. Studies are needed to identify what could be considered "ideal" sources of prospective K/TT practitioners.

Role of Technology and Impact on K/TT Operations

The role of modern technology and its potential impact on how K/TT practitioners operate is a pertinent issue. Participants acknowledged the role of AI-supported operations in improving efficiency but also highlighted the need for human skills like negotiation, relationship building and strategic planning. Training programs should, therefore, focus on developing these skills, alongside promoting a thorough understanding of the technology being transferred. Participants also noted the enormous potential for paradigm shifts brought about by AI and other disruptive agents and cautioned that the same work should be governed with sound policies to avoid their unethical exploitation.

Adaptation and Focus

The session underscored the vital importance of adopting a multi-faceted, tailored and future-focused approach to training the next generation of K/TT professionals. The expanding scope of K/TT, coupled with the pressing need to bridge the existing gaps in skills and competencies, demands a forward-looking perspective on training and capacity building. The rapidly evolving landscape of K/TT necessitates continuous adaptation, focusing on understanding the evolving needs of the profession, identifying skills/training gaps and tailoring programs to meet these needs. The insights and ideas generated during the session provided a compelling case for further in-depth study, ensuring that training programs evolve in tandem with the profession's needs, adequately preparing professionals for the challenges and opportunities that lie ahead. The training of future K/TT professionals will be a collaborative effort with resilience, open-mindedness, and a shared commitment to excellence.

Panel Discussion and Breakout Session

Challenges Facing K/TT in the Next 10 Years

Moderator:

Almesha Campbell, Assistant VP for Research & Economic Development, Director Technology Transfer, Jackson State University, AUTM Board Chair

Panelists:

- Varinka Farren, Executive Director, Hub APTA
- James Hutchinson, CEO, Kiwi Innovation Network
- Chalermpol Tuchinda, CEO, National Science and Technology Development Agency
- Fazilet Vardar Sukan, Director, Sabancı University Nanotechnology Research and Application Center

Knowledge/Technology Transfer is vital to economic growth and national competitiveness, providing innovation and products for societal impact. The increased attention on K/TT activities in recent years, especially in the context of COVID-19 and emerging technologies like AI, has brought several challenges and opportunities to the field. The role of K/TT offices has also expanded from patent licensing to complex technology transfer ecosystems involving university-industry collaborations, academic entrepreneurship, providing guidance on credit for innovation and entrepreneurship in the promotion and tenure process, and supporting startups. This panel explored potential challenges facing K/TT in the next 10 years, providing a global perspective, and considered the evolving role of government policy, which can significantly impact how these challenges are addressed and how the field will evolve in the coming years.

What are some of the challenges facing K/TT over the next 10 years? And how is your institution or country preparing for these challenges?

Summit participants described the changing role of the K/TT office and the strong need for people with different skill sets and backgrounds. Most countries have an increased need for entrepreneurial training, grant writing and management, as well as mentorship and coaching for startups and entrepreneurs. For example, in the USA, the passage of the CHIPS and Science Act is providing increased funding to support technology transfer, innovation and entrepreneurship. AUTM now has members that are leading research-funded programs, such as National Science Foundation (NSF) Engines, NSF Accelerating Research Translation (ART), as well as I-Corps and the National Institutes of Health (NIH) Research Evaluation and Commercialization Hub (REACH).

How ready are we as K/TT professionals to handle the changing role of the K/TT office?

While the role of the K/TT office is expanding, expectations have also changed. In New Zealand, for example, offices are expected to go beyond what are traditional roles for many K/TTOS, such as spinning out companies and building ventures. This can create bottlenecks as K/TT offices try to build up a pipeline and facilitate change. Researchers do not see the K/TT office as a gatekeeper, but as a partner that helps them create impact. There is a need for the K/TT community to be able to describe commercialization and tech transfer to researchers.

How do we ensure that industry partners understand the value of tech transfer to universities?

K/TT is more than just a task; it is innovation management. The process of conducting research, producing an invention, and then getting that technology to market for societal impact involves industry. In Thailand, for example, Alliance Innovation Management has been created to connect researchers with industry. This forum allows prospective partners to build trust, discuss how they can create value together and then take the next steps forward. Many of the countries and institutions represented by Summit attendees have annual research commercialization awards to highlight successes, and invite key stakeholders (such as industry investors, researchers, vice-chancellors/vice presidents of research, etc.) to provide a better understanding of K/TT and the critical role it plays. When industry sees institutions awarding and rewarding their researchers and inventors, the prospect of partnership increases in value. AUTM's Connect and Collaborate is one example of a program that offers opportunities for enhancing university-industry communications and partnerships.

How can we better communicate the value of K/TT?

In Turkey, K/TT is viewed holistically. AUTM was instrumental in working in 2012 with Turkey to help develop a new model for K/TT. Since that time, Turkey has begun a K/TT professional recognition system, endorsed by the state, with professional requirements and outputs aligned with those of the Registered Technology Transfer Professional (RTTP) designation.

How do we find common language to describe the value of K/TT?

We must speak more about the impacts of research, science and innovation and the role of K/TT in creating those impacts. Participants agreed it is essential to develop language to define the profession and explain the role of K/TT professionals. We must work to help researchers, government and industry understand that commercialization does not magically happen, and that K/TT is the critical bridge that leads to impact.

How can we effectively define K/TT?

Consideration was given to whether one definition would work for all stakeholders – the public, university administration, researchers, and students, among others.

- WIPO defines technology transfer as "a collaborative process that allows scientific findings, knowledge, and intellectual property to flow from creators, such as universities and research institutions, to public and private users."

- The Alliance of Technology Transfer Professionals (ATTP) defines K/TT as "a collaborative, creative endeavor that translates knowledge and research into impact in society and the economy."

- AUTM defines it as "the development of academic research that changes the world and drives innovation forward."

While these definitions work, it was agreed that a universal definition is needed, and it was suggested that AUTM and WIPO take a stewardship role in identifying this common language.

How do we advocate for a strong patenting/IP system considering the possible challenges ahead

It was agreed that an advocacy framework/model should be developed to allow every country to share information on its policies and processes.

- Perhaps running one-day events, for instance, where policymakers and key senior leaders can engage with the K/TT community. This will allow stakeholders to experience firsthand the benefits of K/TT and speak to researchers, inventors, students, and industry.

- Work to get more university administrators to become K/TT champions, giving them exposure to some of the success stories. This will also allow K/TT to be a part of the university's legislative agenda.

Participants want to see enabling IP laws, and technology transfer regulations, which will help K/TT professionals do their jobs. This means advocating more for the enabling, adjustable, balanced IP system that supports protection but also collaboration.

It was suggested that the profession should leverage some of the WIPO and AUTM resources as best practice guides as a framework to compare policies across institutions.

It was also suggested that the consequences of not supporting tech transfer policies be highlighted with policymakers and university leaders. The UK's Research Excellence Framework (REF), for example, is a database that offers metrics and success stories that can be used to make the case for the value of K/TT.

What strategies are you employing to ensure there's diversity, equity, inclusion, and access (DEIA) in all aspects of your tech transfer operations?

It was agreed that any DEIA effort must be intentional and involve those who are most affected. Office Directors may sometimes overlook the barriers and challenges because they work far from them. It may be that simple changes can help others. Beyond being the right thing to do, if everyone is given access to the tools and resources needed to support innovation, more inventions and technologies will reach the marketplace. Many Summit participants said they have started tackling DEIA issues within their K/TT offices and ecosystems. However, the context and the operating environment in which the K/TT offices work are set at the institutional level. There are three key takeaways:

- Institutions must have clear policies for intervention, alongside a set of measures that are tracked over time,

- Nothing will be achieved without a commitment from senior leadership to translate policy into action. It must involve moving beyond lip service to real action, and include a timeline with clear objectives that draw from the policy, and

- It must move beyond addressing some of the symptomatic aspects of DEIA to addressing the underlying causes.

Finding ways to eliminate barriers to participation in K/TT

With more women becoming startup managers, there is a noticeable, upward trend in inclusiveness. However, we must create more models and programs that provide a safe environment to encourage otherwise reluctant groups to participate in K/TT. Women, no matter how successful they are in research, disappear in IP commercialization, because of barriers, such as child or elder care, and a lack of confidence in completing invention disclosure forms. We can work to create favorable conditions by:

- Reevaluation our workshop schedules,

- Reconsidering the questions on our disclosure forms, and

- Working to create role models of successful women in the K/TT office space.

The role of governments and funding agencies in advancing Diversity, Equity, Inclusion and Accessibility (DEIA) initiatives

Summit attendees discussed DEIA activities, including government grants designed to promote diversity and inclusion. In Chile, for example, universities are provided grant funds to measure the impact of DEIA using all indicators. A challenge is that there are few women in Director-level positions globally. Because, in many cases, women are not leading a group or a particular research project, they will have fewer disclosures. In some countries, there has been an increase in impact funds to support social innovation, impact incubators, and support for minorities likely to contribute to innovation. Innovation happens everywhere, but commercialization happens where it is resourced. Thus, we must advocate for governments and funding agencies to support diverse researchers, people from different demographics and geographic locations, and, in particular, those that are historically under-resourced.

Using the Advocacy Route to Raise the DEIA Issue

Advocacy should be employed to raise the issue of DEIA and work toward sustainable solutions. DEIA initiatives must focus on permanent change rather than establishing initiatives that are based on a particular activity or time frame. In the UK, for example, DEIA initiatives are led by the government to encourage entrepreneurship among women and other underrepresented groups. There are things we cannot control, such as the funding decisions of a private investment group, but governments can change the culture around how investments are made.

We need to track data, develop sustainable programs and understand that diverse perspectives and voices are needed to solve complex innovation challenges across the globe. Ashby's Law, now known as the First Law of Cybernetics, was used to make the diverse perspectives arguments. The Law says, "In order to deal properly with the diversity of problems the world throws at you, you need to have a repertoire of responses which are (at least) as nuanced as the problems you face." To solve these complex problems, then, it requires access to these systems and programs that take the best ideas and move them to market to support the people who need them most. In addition, we must ensure the technologies developed are affordable and accessible to all.

What other challenges are coming down the road for K/TT?

The speed with which technology is adopted could be problematic for larger economies, where forces may try to control that activity. Emerging economies may be able to adopt these new technologies at a faster rate because they do not have the same controls and infrastructure. Thus, finding the correct collaboration model for a given country will be essential in creating win-win situations.

The agility of our K/TT offices to adapt to disruptions, whether they are good or bad, will be essential. Many say K/TT made the best of COVID-19 – by protecting and commercializing new technologies – but we must be ready for the next disruption.

Countries that are not concerned about K/TT and how it impacts the economy present a different challenge. A recommendation was made that AUTM and WIPO work together to create an introductory program to educate countries on the impact of K/TT on their economy.

Some attendees shared concerns about the sustainability of the profession given that everything is growing and changing so fast. There is a need for more talent, with a range of skills, but K/TT offices will be competing with industry for this same talent. As such, we must establish a comparative advantage in the academic environment. Export Control regulations are increasing due to national security concerns, so we must look forward consider how this will affect K/TT and commercialization.

Appendix A
Summit Attendees

Marco Alemán, Assistant Director General, IP and Innovation Ecosystems Sector, World Intellectual Property Organization, Geneva (Switzerland), has been dedicated to the protection and development of intellectual property for over 30 years. He is an excellent expert and scholar who is committed to understanding the changing IP climate and has comprehensive experience in multilateral negotiations.

Alemán has extensive knowledge and experience in intellectual property, including over 20 years of professional work at expert and managerial levels at WIPO. After acting as Director of the Colombian Industrial Property Office, he started his career at WIPO in 1999 at Cooperation Programs for the Development for Latin America and the Caribbean.

Now as Assistant Director General, Alemán is responsible for helping Member States develop their IP and innovation ecosystems to drive economic growth. He is also responsible for providing support for researchers, innovators and enterprises, including subject matter experts. Other key focus areas include IP commercialization for business growth; emergence of IP as an asset class; development of advisory expertise on national IP strategies; economic analysis on the role IP plays in promoting innovation and creativity; strengthening ADR and the services provided by the Arbitration and Mediation Center; and providing technical assistance to the judiciary, as well as services related to the legal databases.

Ahu Altinkut Uncuoğlu holds a full-time faculty member position in the Bioengineering Department at the Faculty of Engineering, Marmara University, and leading project-based studies with Plant Biotechnology Research Group. She took part in the establishment of the Marmara University Innovation and Technology Transfer Office and served as the TTO Director. Prof. Uncuoglu is a member of the Executive Board of the University-Industry Cooperation Centers Platform (USIMP) and serves as a member of the Group Executive Committee at TUBITAK Entrepreneurship Support Group. She is currently the Vice Director of the University-Industry Cooperation Development Application and Research Center of Marmara University.

Alessandra Baccigotti is Knowledge Transfer Manager and Head of the University of Bologna's Knowledge Transfer Office, where she is responsible for the team dealing with intellectual property protection and valorization for the Bioeconomy and Engineering areas. With over 25 years of experience working for the institution, she held positions as EU Research Advisor and Project Manager of EU funded programmes, among others. Since 2016 Alessandra has been collaborating with several European Commission units as expert evaluator for project proposals. She is also a member of the innovation working group of The Guild of research-intensive universities. She has been a member of the ASTP Board for four years and is still collaborating with the association as an expert for EU policies and matters related to research and innovation. Alessandra holds a Master in Open Innovation and Knowledge Transfer and is RTTP certified.

Andrew Bailey is the Senior Manager: Innovation in the Research Contracts & Innovation (RC&I) Department at the University of Cape Town, where he has been for 16 years. In this position, he is responsible for the TTO functions of the Department. RC&I manages several seed and early stage "VC-type" funds that support the creation of spin-off companies.

Andrew is the Immediate Past President of the Southern African Research and Innovation Managers Association (SARIMA) and a member of AUTM (International Strategy Committee: Africa Co-Chair) and the Licensing Executives Society (LES).

Art Bos is Head of Business Development and Knowledge Transfer, Erasmus Research Services, University Rotterdam. He is also the Vice President of Impact on the ASTP Board of Directors.

Following a successful career with IXA VU/VUmc, Amsterdam, in 2021 Art commenced his new role as Head of Business Development and Knowledge Transfer, Erasmus Research Services, Rotterdam, the Netherlands.

Prior to joining IXA, Art worked as Director Knowledge Partnering for Leiden University and Leiden University Medical Center in their joint TTO, Luris. Art has a masters in Astronomy and Science Based Business from Leiden University. He now has over 10 years' experience in Technology Transfer, Business Development and Licensing. He fully enjoys supporting scientists in initiating and shaping relationships with companies and other societal partners. He is also passionate about supporting teams spinning-out technologies into new businesses. In his previous positions, Art has supported projects from both the Natural Sciences and the Social Science and Humanities.

Loreto Bresky is a lawyer from Chile's University with a Diploma in Antitrust and Capital Markets and a Compliance Diploma. She has vast experience in intellectual property-related matters, advertising law, unfair competition, free competition and licensing, and litigation before antitrust agencies. She served as head of the Intellectual Property Department of the law firm Albagli Zaliasnik (1998-2008) and at Alessandri Abogados (2008-2018), where she became a partner. She was designated as the Intellectual Property Ambassador for the International Chamber of Commerce (ICC). She was also a member of several international IP organizations, such as l'Association International pour la Protection de la Propriété Intellectuelle (AIPPI), the International Trademark Association (INTA) and the Interamerican Association of Intellectual Property (ASIPI).

She was active in the Chilean Intellectual Property Association (ACHIPI), acting as Director from 2004 until June 2019. Currently, she is also a prominent member of the Advisory Board of Fundación Chile Mujeres and Director of Fundación ProBono Chile.

On June 24, 2019, she became Director General of the National Institute of Industrial Property of Chile (INAPI), the IP Office of Chile, a position in which, due to her excellent performance, was reconfirmed for a new term of three years starting on June 25, 2022.

Almesha L. Campbell, PhD, is the 2023 AUTM Board Chair and Assistant Vice President for Research and Economic Development at Jackson State University (JSU). In this capacity, she supports the Vice President with overall responsibility for the Division of Research and Economic Development, which oversees grants and contracts, sponsored programs, research compliance, tech transfer, federal relations and the newly established Center for Innovation and Entrepreneurship. For more than 10 years, Almesha has also served as the Director for Tech Transfer at JSU. She provides strategic direction and vision for defining partnerships in commercialization and innovation initiatives between JSU and other institutions, funding agencies, and industry stakeholders. She is the PI/Co-PI for several federally-funded programs such as NSF I-Corps, NSF Engines Type 1, NSF Accelerating Research Translation (ART), and NIH REACH. She was instrumental in the development of the newly established Center for Innovation and Entrepreneurship at JSU.

Agustín Campero is an economist and did postgraduate studies in science, technology and innovation policy. He has worked for international organizations and different levels of government. He worked for the Ibero-American and Inter-American Network of Science and Technology Indicators (RICyT). He worked as head of science and technology at the Buenos Aires Faculty of the National Technological University and at the National University of General Sarmiento.He was Secretary of Science and Technology Articulation of Argentina(2015-2019). He is currently Public Affairs Officer of the company Trampoline Network, a global intellectual property marketplace. He is also President of the Alem Foundation of Argentina. As such, he participated in the elaboration of public policy proposals and creating the working teams of the coalition Juntos Por El Cambio (Together for Change). His speciality is the design and management of science, technology and innovation public policies.

Giancarlo Caratti di Lanzacco has been working at the European Commission (EC) during most of his professional career until September 2021. At that time, he kept a senior advisory role at the EC and joined Crossmedia Europe, a new company promoting dissemination of art and culture via digital and web technologies, which builds on CT Crossmedia's success worldwide in the production of digital immersive exhibition. His last assignment at the EC was Head for Intellectual Property and Technology Transfer Unit, which manages the EC's intellectual properties and promotes innovation via technology transfer. This Unit was integrated in JRC's "Competence" Directorate, where both the European Bauhaus and foresight program were initiated. In 2013, Caratti was appointed as Deputy Commissioner General for the EU participation in the World Expo Milano 2015 and Head of the relevant EU taskforce. In his previous assignments, Caratti's educational background is in mechanical engineering with a specialization in energy systems. Before joining the Commission, he worked as a researcher and teaching assistant at the Faculties of Engineering of Florence and Pisa and spent one year as visiting scholar at the Georgia Institute of Technology to carry out research on energy modeling. He also worked for two years at Techint, Italy's largest private engineering company based in Milan. Caratti has over 60 publications in international conferences, journals, etc. and has edited various technical books.

Shirley Coutinho is the past-president and member of the Board of Directors of FORTEC-Association Forum of Innovation and Technology Transfer Managers, and was the head of the Technology Transfer Office at the Catholic University of Rio de Janeiro (PUC-Rio) from 2003 to 2022. She obtained her master's degree in business administration from PUC- Rio, and before working in the field of IP and TT she held various management positions at VALE, Brazil's largest mineral and logistics company.

Kevin Cullen, PhD, was appointed as Vice President for Innovation at KAUST in 2018. Kevin is a leader in global innovation with expertise in both economic development and industrial engagement. As Vice President of KAUST Innovation, he leads the university's intellectual property portfolio, helps create and support new businesses, joint ventures and collaborations with industry partners, and continues to foster a strong culture of entrepreneurship in the Kingdom.

Dr. Cullen has over 20 years of experience in academic innovation and business development. Throughout his career he has helped elevate university-based innovation enterprises that have led to the launch of more than 250 startup companies as well as numerous products and services.

Prior to joining KAUST, Kevin spent six years as CEO of Innovations at the University of New South Wales (UNSW) in Sydney, Australia. He helped transform UNSW from a traditional commercialization unit into an innovation hub by supporting a broad range of university priorities including economic development and social impact.

Varinka Farren is an economist with an MBA from Clarion University of Pennsylvania and a Professor of Technology Transfer and Entrepreneurship at Adolfo Ibañez University, Chile. She is a Registered Technology Transfer Professional with more than 15 years of experience in the public, university and industry sectors in matters related to innovation and entrepreneurship. She has a comprehensive knowledge of innovation processes from R&D project management to effective transfer to the market. She has designed and implemented various technology transfer strategies and entrepreneurship programs to bring more than 50 technologies from different industries to the national and international markets. She has contributed to the creation of innovation units and programs and led various multidisciplinary teams, and was recognized as the First Technology Manager of Chile in 2016, an award given by Corfo and the Network of Technology Managers (Red

GT). Varinka hosts the #MadeInnChile podcast, the first program aimed at making visible the advances and challenges around technology transfer and scientific-technological ventures developed from Chile to the world. Currently she is Executive Director of Hub APTA, Co-founder and president of the association of directors of science-based companies Woman Board Up, member of the board of directors at Lanek, a science-based startup, and the AI Public Policy Board designated by the Government (Senate) of Chile.

Anouk Fortin, PhD, is the head of the Technology Transfer Office at the Ottawa Hospital Research Institute (OHRI), where she has supported research and innovation since 2005. Dr. Fortin obtained her PhD in biochemistry from McGill University and went on to work in several biotechnology companies before joining the OHRI Technology Transfer Office. She holds an RTTP designation and is an active member of the provincial, national and international technology transfer communities.

Marcela Figa is President of RedOTT México, Monterrey, Mexico. Marcela has held key positions, serving as the Head of the Department of Biosafety and Food Safety in the University Food Program and as the Coordinator of Technology Transfer within the Coordination of Innovation and Development at UNAM. Throughout her career, she has actively fostered connections, facilitated technology transfer and spearheaded research and technological development projects, collaborating with the Mexican food industry as well as national and international pharmaceutical and chemical sectors. At present, Marcela is the Liaison Secretary at the Institute of Chemistry, UNAM, and holds the role of President at RedOTT México.

Leidy Guarin is President of Red Nacional De Transferencia Tecnológica (JOINN), Bogotá, Colombia. She has taken the lead on projects involving technological surveillance, market valuation, Information and Communications Technology (ICT) projects, information management and knowledge management within agro-industrial innovation organizations and systems.

David Gulley, PhD, is Executive Director and founder of the Technology Transfer Office (TTO) of the Puerto Rico Science, Technology, and Research Trust, a private, non-profit organization established in 2004 to improve Puerto Rico's innovation ecosystem. The TTO is a regional office serving the island's public and private universities since 2017. The TTO manages technology transfer and commercialization for six universities, which includes 13 campuses and four medical schools. From 1989-2012 he served the University of Illinois System as Associate Vice President, Technology and Economic Development, and Assistant Vice Chancellor for Research at the Chicago campus. He has been a member of LES for more than 20 years and served as chair of the Certified Licensing Professionals, Inc. He has been a member of AUTM for more than 25 years, serving on the AUTM board as VP for Professional Development and as AUTM's founding member of the Alliance for Technology Transfer Professionals (ATTP), also serving for 10 years on the RTTP Peer Review Committee. He currently serves on AUTM's International Strategy Committee as chair, engaging nine regional subcommittees across the globe. He led AUTM's partnership with CORFO from 2010-2014 to deliver professional development programs for Chilean tech transfer staff and to establish and reinforce Chile's technology transfer offices.

James Hutchinson leads the KiwiNet Innovation Network (KiwiNet) which is the combined power of New Zealand's Universities, Crown Research Institutes and other research organizations who receive public funding. KiwiNet leads NZ's collaborative model of research commercialization to transform scientific discoveries from publicly funded research into new disruptive products and services to create impact for New Zealand. He holds a PhD in Chemistry from the University of Cambridge and is passionate about the important role that science and the scientific community must play in growing the economy into new high-tech and knowledge-based sectors, informing public policy and in changing our world for the better. He has experience in supporting research & innovation in the UK and internationally with a focus on the life sciences and global societal challenges. He is a Junior Policy Fellow of the Centre for Science and Policy (CsaP) at the University of Cambridge.

Urša Jerše has been Assistant Secretary General for Knowledge Transfer at the University of Ljubljana since April 2018. Prior to that (2009 – 2017), she worked at a public research institute in Slovenia, where she encountered the transfer of knowledge from public research institutions to the business sector and gained extensive experience. She holds a bachelor's degree in law and specializes in procedures for acquiring and protecting employment-related inventions, R&D contract negotiation and concluding license contracts.

Andrew Maas is the Associate Vice President for Research overseeing the office of Innovation and Technology Commercialization at Louisiana State University, and he has over 10 years of experience in technology licensing and commercialization.

Andy's activities have taken him from an engineering startup (where he built a company from two to 14 employees) to academic roles in both university and research foundation settings. Andy manages an office of 30 full-time and 4-5 part-time employees that are responsible for all technology commercialization, small business support, incubation, acceleration and SBIR/ STTR activities of the LSU flagship campus in Baton Rouge, Louisiana.

Andy has been involved in several AUTM Committees and is the incoming 2024 Chair of the AUTM Board of Directors.

Ian McClure is the Associate Vice President for Research (AVPR), Innovation and Economic Impact for UK Innovate at the University of Kentucky (UK), where he leads efforts to translate UK discoveries for the public good, seek equitable returns on UK intellectual property (IP), enhance UK's investments in innovation, catalyze a culture and capacity for entrepreneurship and expand industry and other collaborative research partnerships.

Ian's portfolio includes oversight of the UK Office of Technology Commercialization (UK OTC), UK Innovation Connect for industry partnerships, UK Innovation Economic Development and UK's Innovation and Entrepreneurship Training. As UK OTC's previous executive director, he oversaw a team of 25+ staff managing the university's IP, licensing and startup portfolios. Ian is the past Chair of the Board of Directors for AUTM and a member of Advisory Board of the Kentucky Science and Technology Corporation, Launch Blue Accelerator, the Oak Ridge Innovation Institute, and Level Set Capital. In 2022, Ian was appointed by Department of Commerce Secretary Gina Raimondo to the National Advisory Council on Innovation and Entrepreneurship (NACIE) and in 2023, Ian was appointed as an Expert for the National Science Foundation (NSF) Technology, Innovation and Partnerships (TIP) directorate. As an innovator, Ian is a principal investigator or co-investigator on five federal grants focused on tech-based economic development (NIH, NSF, & EDA).

Ignacio Merino is Executive Director, HUBTEC. Ignacio is an Electrical Engineer with over 20 years of experience in innovation, entrepreneurship, investments and technological development. He has co-founded and led various startups with operations in Chile, Latin America, Australia, and New Zealand. He is responsible for multidisciplinary teams, the development and launch of new products and services, and leadership in the design and implementation of Development, Marketing, and Commercial Strategies for various technologies in mobile telecommunications services, software/IT, energy and the food/nutrition industry, among others. He also has extensive experience in investments and venture capital in the technology industry. In 2018, he began working at HUBTEC, a technology and knowledge transfer center and a non-profit corporation that was born as a public policy with public-private collaboration, aiming to generate positive impacts and business opportunities based on the capabilities and technologies of universities and R+D centers in Chile and Latin America. Since 2020, he has served as its Executive Director, with a regional impact focus.

Anji Miller is a technology transfer professional with more than 19 years of experience in the sector. She leads LifeArc's support for academic-led gene therapy innovation, with responsibility as the overall LifeArc lead for the Innovation Hubs for Gene Therapies, the LifeArc Gene Therapy Innovation Fund and advancing the hubs' gene therapy skills agenda. She has management responsibility for specific projects within LifeArc's Philanthropic Fund. A seasoned tech transfer professional, Anji leads both the AUTM and LifeArc Fellowship programs and is a Board Director of AUTM, ASTP, CLP and member of the BioIndustry Association Cell & Gene Therapy Advisory Committee. An EDI in STEM advocate, she directs all technology transfer skills activity and translational STEM outreach programs. She is an active participant in LifeArc's policy engagement.

Helena Montiel is the President of the Spanish association for knowledge exchange professionals Redtransfer. She is a member of the National Associations Advisory Committee (NAAC) of the Association of European Science and Technology Transfer Professionals (ASTP) and a member of the board of the global Alliance of Technology Transfer Professionals (ATTP). She has been a previous member of the Board of the Catalan Network of Science Parks (XPCAT) and a member of the Board of the Spanish Association of University Technology Transfer Offices (redOTRI).

She has had several Director-level roles at the University of Girona, as Technical Director of the Science and Technology Park and Director of the Research and Technology Transfer Office. Helena holds a PhD in Chemical Engineering from Polytechnic University of Catalonia. She has been a professor and researcher at the University of Girona.

Helena's professional life has concentrated on university and industry collaboration as a driver of business competitiveness and regional development.

Vlatka Petrović serves as the Head of the Technology Transfer Office at the University of Zagreb. She manages a team of innovation and technology transfer support professionals and has worked in research commercialization since 2008, engaging with research groups from all disciplines. She is actively engaged in building innovation capacity, strengthening technology transfer activities and coordinating initiatives that strengthen the innovation and entrepreneurial ecosystem. She comes from a life sciences background, holding a PhD in molecular genetics.

Orakanoke Phanraksa, PhD, is a policy specialist in the field of intellectual property laws at Technology Licensing Office, at the National Science and Technology Development Agency (NSTDA), Thailand. She has been playing a key role to form a policy framework to promote and strengthen technology licensing offices and IP professionals in the academic and research institutions in Thailand. This year, she has served on the national committee to develop the national accreditation system for IP professions in Thailand. At the regional level, Dr. Phanraksa was one of the five regional IP Policy experts selected by WIPO to develop the IP Policy Model for Universities and Research institutions in the Association of Southeast Asian Nations (ASEAN).

Liliana Rabal specializes in spearheading technological linkage initiatives that bridge the gap between science and technology institutions, companies, and government entities. She excels in managing technological development and fostering innovation within companies, value chains and clusters. Liliana takes charge of the design, formulation and administration of research, development and innovation (R&D&I) projects, often funded by public resources. Her current role positions her as the President of RedGtec Argentina. She is also Administrative and Legal Responsible figure at FONARSEC, an R&D&I Agency overseeing public-private collaborative projects focused on Electrolyte for Lithium Batteries and Electrolyzers for Green Hydrogen generation. Her expertise lies in Technology and Innovation Management, making her a key contributor to the technological landscape.

Javier Ramírez is a specialized professional in the field of innovation and technology. With professional training in law, he also possesses an MBA and a master's degree in intellectual property.

JR has experience in the complete dynamic of institutional leadership on innovation—from intellectual asset management and R&D project financing to intellectual property strategy protection, technology transfer contracts, deep tech startup early management and investment, etc.

Among other responsibilities, he founded and was the first director of the Innovation office for the University of Chile (the largest Chilean public university) and Andres Bello University (the largest private one). He also collaborated in the installation of UC Davis Life Sciences Innovation Center in Chile, as Chief Business Development Officer. Mr. Ramírez is currently serving as the Executive Director of Know Hub Chile, where one of his strategic goals is the systematic collaboration between the defense and the science, technology and entrepreneurship ecosystem.

Marli Elizabeth Ritter dos Santos, PhD in Administration Sciences at the National Autonomous University of Mexico, with experience in innovation management and technology transfer offices at universities, having worked at Federal University of Rio Grande do Sul (UFRGS) and Pontifical Catholic University of Rio Grande do Sul (PUCRS) in Brazil. Founder and first president of FORTEC, she is currently a member of its Advisory Board. She is a Consultant for the World Intellectual Property Organization (WIPO), working in several countries. She is the only Brazilian professional internationally accredited as a Registered Technology Transfer Professional (RTTP).

Senior Director, IP for Innovators Department (IPID), IP and Innovation Ecosystems Sector, World Intellectual Property Organization, Geneva (Switzerland)

Alejandro Roca Campaña, Senior Director, IP for Innovators Department (IPID), IP and Innovation Ecosystems Sector, World Intellectual Property Organization, Geneva (Switzerland)

Alejandro has 30 years of professional experience with WIPO. His main responsibility involves advising and coordinating the programs related to capacity building for the development of institutional innovation ecosystems of universities, knowledge transfer organizations (including Technology and Innovation Support Centers – TISCs) and other research and development institutions to effectively use IP assets and to manage them from creation to the commercialization of products and services based on research outcomes. He is also responsible for the implementation of activities and projects to provide resources, tools and platforms to enable active local innovation support and for the coordination of national, regional and international networking to share experiences and best practices as effectively as possible.

Guillermo Roura Pérez graduated as a Pharmaceutical Chemist Biologist (ULSA) and with a Master's Degree in Chemical Sciences from the Faculty of Chemistry of the National Autonomous University of Mexico (UNAM), and a Specialty in Health Law from the Graduate Program of the Faculty of Law also from UNAM. He has worked in the Industrial Property field for the last 14 years, six of them in private firms and the last eight years at UNAM.

Currently, he is part of the team of the Liaison Secretariat of the Institute of Chemistry of UNAM and Membership Director of the Board of Directors 2023-2024 of the Technology Transfer Offices Network (RED OTT) in Mexico. He is also part of the working group of the Pacific Alliance Transfer Network (Transferencia AP) which brings together experts from Mexico, Chile, Colombia and Peru, and part of the Advisory and Liaison Council of the Faculty of Chemical Sciences of La Salle University (Mexico).

Thomas Schmidt is Head of Technology Transfer at the University of Southern Denmark (SDU) which serves as the technology transfer office for SDU and the research hospitals of Southern Denmark Region. He has worked in technology transfer since 2006 and as head of technology transfer since 2013. He became a Registered Technology Transfer Professional in 2011. Thomas has advised technology transfer offices in Eastern Europe and Scandinavia, volunteered for AUTM, ASTP and the Swedish Network for Innovation and Technology Transfer Support (SNITTS) and been on the board of the Danish Network for Technology Transfer for far too long. Currently, Thomas serves as the Chair for the Peer Review Panel under ATTP.

Christian Schmitz Vaccaro is Senior Professor of the Universidad Católica de la Santísima Concepción (UCSC, Chile). He is a lawyer (Bachelor of Law, Universidad de Concepción) and earned a master's in business administration (MBA), Pontificia Universidad Católica de Chile, with exchange studies at HEC School of Management, Paris; and specialization studies in intellectual property (IP).

Since 2001, academic of the Law School of UCSC and former Vice-Chancellor of this university (2016 – 2021). A Professor of the Diploma in Industrial and Intellectual Property of the Pontificia Universidad Católica de Chile, he also has taught IP courses in several other national and foreign universities.

Mr. Vaccaro is the author of more than 30 scientific papers about IP rights in Chile and other countries, as well as three books on the subject. He is a consultant for the World Intellectual Property Organization (WIPO) and a legal advisor on IP. He is a member of International Association for the Advancement of Teaching and Research in Intellectual Property (ATRIP), Chilean Association of Intellectual Property (ACHIPI), and board member of Licensing Executives Society Chile (LES Chile) and Technology Managers Network (Red GT), as well as part of the Civil Society Council of the National Institute of Industrial Property (INAPI).

Olga Spasic is a highly accomplished professional with over 20 years of experience in the area of technology transfer projects and programs of the World Intellectual Property Organization (WIPO). She served as the WIPO Head of the Technology Transfer Section, providing crucial assistance and support to WIPO Member States and their innovation stakeholders in the establishment of institutional innovation ecosystems.In her capacity, Olga Spasic worked on designing and implementing interconnected public and private structural elements such as policies, organizations, funds and human capital within academic institutions. These innovation ecosystems aimed to foster technology transfer and collaboration between different entities, enabling the effective and efficient exchange of innovative knowledge and technologies.

As a leader, Olga Spasic spearheaded various long-term impact projects and capacity building programs for academic institutions. These programs focused on creating and nurturing technology transfer policies, structures and human resources to enhance innovation and knowledge dissemination. Her leadership skills and commitment to advancing the field of technology transfer resulted in number of notable projects, some of which include: Pilot Project on Establishment of Technology Transfer Offices (TTOs) in the Arab Region, creation of TTO Network of Baltic States to foster collaboration, knowledge sharing, and technology transfer within the region, and numerous projects on development of Institutional IP Policies in Universities and Research Institutions in WIPO Member States (e.g., Egypt, Jordan).

Stephen J. Susalka, PhD is the Chief Executive Officer of AUTM, a 3,000+ member non-profit association, focused on supporting and enhancing technology transfer globally, and oversees a cooperative agreement with the Federal Laboratory Consortium for Technology Transfer to support federal technology transfer for more than 300 federal labs across the US.

As an international leader in technology commercialization, Dr. Susalka uses his experience in intellectual property protection, licensing and company formation to empower, promote and connect AUTM members as they advance the next generation of ground-breaking innovations into the products and services of tomorrow. A regular speaker on technology transfer issues, Dr. Susalka has frequently presented on Capitol Hill and internationally on topics ranging from startup formation to the evolution of the profession. He has worked with senior leaders from around the world on strategies to enhance the commercialization of early-stage inventions and has provided testimony to the Canadian House of Commons Standing Committee on Industry, Science, and Technology on promoting best practices for intellectual property and technology transfer.

Ana Torkomian is vice president of FORTEC, the Brazilian association that brings together innovation and technology transfer managers. She is also a board member of ALTEC, the Ibero-Latin American association for technology and innovation management. An industrial engineer with a master's, doctorate and post-doctorate in Technology and Innovation Management, she is a full professor at the Federal University of São Carlos, where she directed its TTO, UFSCar's Innovation Agency, for eight years.

Chalermpol Tuchinda is the CEO of Nastda Holding Company Limited, an investment firm wholly owned by the National Science and Technology Development Agency under the Ministry of Higher Education, Science, Research, and Innovation (MHESI). He also serves as Chairman of the Board of Directors and is on the Board of Directors for a few technology companies. He also holds leadership positions in various local and international organizations, including AUTM ASEAN committee chair, ICC Thailand committee member, Thailand Science Research and Innovation (TRSI) Research Utilization subcommittee, Alliance of Innovation Managers steering committee, Technology Entrepreneur Development Fund Subcommittee Chair, and Licensing Executives Society Thailand Advisor and former president. He co-founded and exited three companies. He has experience in business incubation operations, accelerating innovation-driven businesses and research technology commercialization. He is practicing the Venture Builder model aiming to be a key investment vehicle to accelerate research technology commercialization and to build technopreneurs.

Prof. Fazilet Vardar is a Chemical Engineer with a PhD in Biochemical Engineering from University College London. She has dual experience as an academic and as K/TT professional. She is currently the vice president of University-Industry Collaboration Centers

Platform of Turkey, representing Turkey on ATTP Board and Council, AUTM International Strategy Committee West Asia- MENA Chapter, and ASTP-NAAC. She was the Director of Ege University TTO for 18 years and Coordinator of IRC-EGE and Enterprise Europe Network EBIC-Ege projects between 2004-2017. She holds RTTP and EuKTS Grandfather Certificates.

As an academic, she has over 200 publications and three patents, and she received the 1989 Turkish Scientific and Technological Council Incentive award in Bioengineering. She was the founding head of the Ege University Bioengineering Department until 2017 and has been involved in over 75 projects throughout the years. With her long experience in academic research, valorization of research outputs as well as research management, she is also currently one of the EU Research Management Road Map Ambassadors for Turkey.

Fernando Venegas is president of the Association of Technology Managers of Chile (RedGT), founder of Grupo Zenit and Business Development Manager of Photio, where he has supported technology transfer and entrepreneurship processes since 2008. Mr. Venegas obtained a bachelor's degree in law, Master in Intellectual Property and MBA, and he has worked in different places in the Chilean innovation ecosystem (technology transfer offices, Technology Transfer HUB, law firms and startups).

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Vijay Vijayaraghavan is a technology management professional with four decades of global engagement in innovation advancement for public research organizations and the corporate world. Vijay founded Sathguru Management Consultants, a global technology transfer organization with a presence in 12 countries. He has been academically affiliated with Cornell University, teaching two courses in IP and technology management and cross-border innovation applications. Vijay has led technology transfer transactions for numerous global research bodies, providing footprints for their technologies in emerging markets. Vijay holds Board positions in international organizations engaged in innovation investment.

Loreen Walker is an Attorney-at-Law in Jamaica. She holds an LLM in International Intellectual Property Law from the University of London in England. She established the Jamaica Intellectual Property Office in 2002 and was its head until 2005. She joined the Legal Office of The University of the West Indies (UWI) in 2008, where she worked in IP and Technology Transfer (among other areas). She recently retired from The UWI and continues her work in IP and Technology Transfer.

Alwin Wong, PhD, RTTP, is the Chair of the Alliance of Technology Transfer Professionals (ATTP), and the sub-committee chair of AUTM's International Strategy Committee for the East Asia region. He has been an active advocate for the advancement of technology transfer policy frameworks, academic-industry engagement and professional capacity building in tech transfer communities across the world. Dr Wong worked full time at the Hong Kong Polytechnic University as a director for technology transfer and entrepreneurship until his retirement in 2020. His long-term service as the secretary-general of the International Strategic Technology Alliance (ISTA) helped advance the value of good technology transfer management for university-industry collaboration and technology commercialization for its members.

Greta Zekeine is Head of Intellectual Property Management, National Innovation and Entrepreneurship Centre (TTO), Kaunas University of Technology, Lithuania.

Greta brings over 20 years of experience in intellectual property management and technology transfer. Currently serving as the Head of the Intellectual Property Management Unit at Kaunas University of Technology's (KTU's) National Innovation and Entrepreneurship Centre, she is also a lecturer for the university's undergraduate Intellectual Property module. Greta holds a WIPO certificate, earned in 2018 through the Capacity Building Program for IP commercialization experts, and serves as a representative for the TTO Lithuanian and TTO Baltic Networks established in 2020. Before joining KTU, Greta worked with the Lithuanian Copyright Protection Association and major publishing houses, Šviesa and Alma Littera, managing intellectual property rights.

Appendix B
Country Reports

ARGENTINA

External factors that will affect the K/TT profession over the next 10 years.

- Technological developments such as artificial intelligence, biotechnology, nanotechnology and quantum computing.

- Changes related to intellectual property laws and regulations, including the impacts of protectionist policies and international politics.

- New platforms that facilitate global and real-time commercialization of intellectual property. Professionals in this area must be prepared to work in international environments and understand the cultural and legal differences that may affect transactions.

- Fluctuations in government budgets for research and development, particularly funding for K/TT activities.

- Climate change and sustainability: Growing awareness of climate change and sustainability is leading to increased demand for technologies and knowledge related to clean energy and environmental management.

- Regulation and ethics: Ethical and regulatory issues related to technology, such as data privacy, cyber security and ethics in artificial intelligence.

- Demographic changes and human talent: The availability of skilled K/TT professionals.

- Global crises and pandemics: Unpredictable events, such as pandemics, can have a significant impact on the future of the industry.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

- Awareness of technological developments in your field and related areas. For example: artificial intelligence, biotechnology, nanotechnology, quantum computing.

- Understanding of intellectual property laws and the ability to manage patents, copyrights and other legal aspects related to technology transfer.

- Familiarity with cultural differences, regulations and international trade policies of the main economic blocs and major technology developing countries.

- Ability to evaluate technology and market developments. Analyze the technical and commercial viability of a technology and distinguish opportunities in different markets.

- Ethics and social responsibility: As new technologies emerge; it is essential to consider the ethical and social implications. Practitioners should be aware of these issues and work to promote responsible practices in technology transfer.

- Data analysis skills: The ability to analyze data and trends to make informed decisions is increasingly important in technology transfer.

BRAZIL

External factors that will affect the K/TT profession over the next 10 years.

New knowledge and technology based on AI and its protection represent a big challenge for managers and legislators in the near future, in particular concerning authors' rights, patent legislation and treaties. ChatGPT and similar technologies based on AI are posing exceedingly tough questions about authors' rights, mostly related to different fields of the arts (music, paintings, literature, etc.), and there is a lack of legislation, treaties, or best practices to answer these questions; this must be addressed in the next 10 years.

The world has been increasingly facing adverse situations, requiring faster responses from the science and technology fields, which K/TT professionals will need to be able to navigate knowledgeably. The COVID-19 pandemic, for example, demonstrated a global vulnerability that countries would not have been prepared to face if not for the knowledge generated in scientific and technological institutions, which facilitated the development of vaccines in record time. In the global scenario, political disputes and polarization have proven to be powerful enemies, and bloody wars in Eastern Europe and the Middle East have demonstrated that advanced technologies give nations military power but also have the potential for inhuman impacts in affected populations. These issues must be given special attention by S&T professionals in the search for solutions.

Another issue that will increasingly deserve the attention of S&T professionals is the environmental sustainability of our planet (sustainable production, clean energies, water, etc.). Urgent measures need to be taken now to ensure the long-term future of humanity. In this context, the introduction of technologies based on artificial intelligence, which adds complexity and autonomy to products and services, requires a deep reflection on the ethical limits of AI's application and its effects that can dramatically affect human life. All of this increases the extent of knowledge required, not only for researchers but also for K/TT professionals, to deal with these topics within the scope of the institutions in which they work.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

Knowledge/Technology Transfer managers and professionals will need continuous learning processes to prepare for current and future challenges posed by the fast expansion of new knowledge and technology. Their education should address ethics, creativity, open mindedness, and the courage to sustainably develop and improve innovation and minimize inequalities by promoting social innovation and advocating for legal and legislative regional reforms. In this complex and dynamic scenario, technology transfer professionals also will be required to have more comprehensive knowledge of S&T and more direct involvement in the development of new technologies. Artificial intelligence, machine learning and advanced biotechnology are areas that will certainly continue to develop at an unprecedented pace, impacting the way we protect and transfer knowledge and the legal mechanism for protecting that knowledge is protected—not only patent and software protection, but also copyright.

One of the main challenges we face concerns stimulating the development of social technologies, which will help create a path to making the benefits of S&T innovations more inclusive.

Therefore, a proactive stance and an open-mindedness toward continuous learning—beyond staying permanently updated on advances in the scientific and technological world—are fundamental requirements for K/TT professionals to face the challenges that lie ahead.

CANADA

External factors that will affect the K/TT profession over the next 10 years.

Rapid advancements in technologies like AI: The rapid evolution and adoption of AI is impacting, and will continue to impact the technology transfer field. Some of the known risks and challenges associated with AI include matters related to inventorship and ownership of intellectual property, data privacy and security, biases, and lack of transparency, as well as

the need for the legal, ethical, and regulatory frameworks to evolve and catch up with technology. AI can also positively impact the tech transfer field by accelerating innovation (automation, predictive analytics etc.) and powering tools and resources supporting many of our activities (contract drafting, technology/IP valuation and management; prior art, freedom to operate and market analysis, etc.). However, to make the most of AI and mitigate some of the associated risks, institutions should invest in developing AI governance frameworks and robust cybersecurity, ensure sufficient resources allocation and find/train a knowledgeable workforce.

Government policies and regulations: Changes in intellectual property laws, data protection regulations and policies related to research funding can significantly influence the strategies and processes involved in knowledge and technology transfer. For example, Canada has recently developed national security guidelines for research partnerships, which requires that a risk assessment be conducted on research partners to access federal grant funding. This has impacted universities and led to changes related to the choice of tech transfer partners and sources of research funding being pursued. Provincial governments in Canada have implemented various innovation initiatives to foster entrepreneurship, economic growth, competitiveness and technological advancements within their respective regions. These initiatives can include funding programs, supporting partnerships between academic and industry and the creation of IP agencies that support and provide education and resources related to IP protection and commercialization. All these initiatives are subject to change based on political context and priorities.

Cultural and societal changes: Shifts in values, a growing emphasis on ethical considerations and environment sustainability, a commitment to equity and diversity and a focus on indigenization have and will continue to have a transformative impact on tech transfer processes and strategies. Institutions must adapt their strategies to align with changing values, sustainability goals, equity considerations and the rights of Indigenous Peoples. Successful technology transfer in this evolving landscape requires an integrated approach that embraces ethical, environmental, and social responsibility. Changes in societal values will influence consumer preferences, the types of technologies prioritized for transfer, how such transfers are affected, and the terms and conditions associated with such transfers.

Workforce and talent dynamics: Demographic shifts, skills shortages and changing workforce expectations (such as remote work) could impact the availability and quality of professionals engaged in knowledge and technology transfer. Technology transfer requires a skilled and adaptable workforce. The demand for such a workforce can be competitive, not only between technology transfer organizations but with the market at large. Organizations must offer competitive compensation and attractive work conditions to recruit and retain skilled professionals – but academic, public, and non-profit institutions may have little flexibility in what they can offer. This limitation, combined with an aging workforce, will lead to challenges in succession planning.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The skills demanded of K/TTK/TT professionals are undergoing a profound transformation in response to the ever-evolving landscape of innovation, research, and industry. To not only stay relevant but excel in their roles, both current and future K/TT professionals should proactively acquire and develop a diverse set of emerging skills.

First and foremost, digital and AI literacy are becoming indispensable as technology continues to advance at an astonishing pace. Understanding the intricacies of digital tools, artificial intelligence and data analytics is essential for harnessing the full potential of innovative technologies. Additionally, as cybersecurity threats loom large in the digital age, K/TT professionals must also gain expertise in safeguarding intellectual property and sensitive data.

Moreover, the growing emphasis on sustainability, the environment and equity, diversity and inclusion awareness are reshaping the priorities of K/TT professionals. They should be equipped with knowledge and skills to assess the environmental impact of technologies and promote sustainable and equitable practices throughout the innovation transfer process.

Cultural and ethical competency is increasingly vital in a globalized world where collaboration crosses borders and cultures. Professionals should be culturally sensitive and ethically aware to navigate diverse perspectives and ensure equitable knowledge exchange.

Proficiency in innovation ecosystem mapping and collaboration is crucial, as innovation often thrives within complex networks of organizations, startups and research institutions. K/TT professionals should be adept at identifying these networks and fostering collaborations that drive innovation.

Assessing the societal impact of technology is another emerging skill that will be in high demand. Professionals should be able to evaluate how technology affects communities, economies, and individuals to ensure responsible and ethical knowledge transfer.

Lastly, economic development and policy fluency are critical skills for advocating for supportive policies that facilitate knowledge and technology transfer. Professionals should be able to engage with policymakers and influence the regulatory environment to foster innovation and economic growth.

Preparing K/TT professionals for the challenges and opportunities of the future requires a proactive approach that integrates education, training, and practical experience. Courses, workshops, tutorials and webinars focused on these emerging skills within and outside of the context of technology transfer should continue to be developed and offered. We strongly believe in and support peer-to-peer learning. Professional associations, networking events and conferences, peer-support groups and platforms, mentorship and exchange programs all boost engagement and performance, while providing exposure to different

perspectives and experiences. Participation in initiatives, collaborative projects and programs that involve cross-functional teams, are interdisciplinary, have international or cross-cultural components or involve different actors in the innovation ecosystem (government, industry, incubators, accelerators, VC (venture capitalists), etc.) should also be encouraged to gain exposure to different perspectives, develop networks and engage with diverse stakeholders.

CROATIA

External factors that will affect the K/TT profession over the next 10 years.

Locally, the technology transfer profession is still in the very early stages, unfortunately exacerbated by the high turnover of technology professionals, leading in some cases to the loss of institutional memory of previous initiatives. A significant local factor will be the development of national policy and connected financial instruments, especially if financing for such professional positions is successfully linked to a national PRO/HEI program. Such an approach would introduce technology transfer-oriented indicators in the mainstream PRO/HEI negotiations with national government stakeholders, which has not been the case before.

The profession will also be affected by the global geopolitical factors affecting both innovation and trade, including fragmentation and the rising crises. In addition, there is a growing trend for topic/mission-oriented policies leading to more directional research, innovation and commercialization – especially in areas linked to green transition and the need for greater sustainability and resilience in most complex societal systems.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The technology transfer profession in countries with small numbers of professionals has previously lent itself to a balance of generalist and specialist approaches, with varying degrees of success. There will be an increased need in the future for the PRO/HEI-based professionals to profile themselves in relation to the type of external client/stakeholder served while also broadening their range of skills to address situational needs, going into the direction of an account manager approach. This would entail an even stronger combination of strong soft skills and client orientation, coupled with project management skills needed to bring in specialist expertise (which may not be internal to a TTO or its organization, nor, in the long term, human). In interactions with both researchers and external stakeholders, various aspects of relationship management will become even more important, as technology transfer professionals will need to address increased interaction complexity and demands on the attention and time of all involved individuals.

EUROPEAN COMMISSION

External factors that will affect the K/TT profession over the next 10 years.

We are noticing that in the 2020's, after several decades of general world stability, 'history is on the move again.' This started with the COVID-19 outbreak in 2020, then the Russian invasion of Ukraine, the abrupt expansion of China, and more lately with the rebellions in most sub-Saharan African countries increasing migratory pressure—not to mention the increase in extreme weather events such as floods, hurricanes melting glaciers and forest fires, signaling unprecedented rapid changes in our climate. Europe's external strategy is faltering since it was strongly leaning on exports of goods to China, energy import from Russia and securing military defense from the USA. We Europeans must start rethinking our future from scratch. This of course also impacts technology transfer, which must become faster, more flexible, and thematically focused on critical aspects at the country, continental or global scale to accelerate technological development and find solutions.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The increasing tech development speed is, of course, impacting tech transfer skills. While in the previous century, it was common thinking that tech transfer would happen by itself, by simply moving around people and competencies, today most governments and research organizations understand the need to have "skilled intermediaries" operating between the lab and the market to reconcile the magical world of science with the harsh world of business. When I told the chairperson of a large organization with thousands of researchers that I was taking the position of head of tech transfer, the comment was "we call them half engineers." Apart from a few cases, such as Thomas Alva Edison, a researcher is not a manager and wishes to remain that way. We need T-shaped profiles in which a scientist knows a bit about business and a business person knows a bit about science. The speed of change and the increased number of patent submissions, particularly in the digital world, is putting increased pressure on the inter partes review (IPR) framework. It is therefore important to establish the profession of tech transfer with globally acknowledged criteria for evaluating candidates and labels that are recognized by all major associations worldwide and periodically reviewed.

HONG KONG

External factors that will affect the K/TT profession over the next 10 years.

Opportunities

- Governments giving more emphasis—and, therefore, more resources—to improving national innovation systems to fuel economic growth and socioeconomic impact. Such development would require added dimensions and skill sets for tech transfer professionals.

- Stakeholders in the triple helix model of innovation have been paying more attention to the value of intellectual properties as assets, enabling tools to business strategies, with a stronger demand for technology management [and transfer] professionals to help realize that value potential through their strategic deployment.

- The Grand Challenges, some manifested through environmental, social and governance (ESG), have led to increased opportunities for tech transfer activities to thrive in related verticals.

Threats

- Sanctions arising from geopolitics and regional human conflicts would reduce the flow of technologies across nations with conflicting interests and ideologies at the international level.

- Industrial espionage, IP theft and even technological sabotage have become more prominent as different national camps confront each other.

- Populism and controversial immigration policies would hamper the flow of technologies and innovations across borders in search of new markets.

- The world could very well see polarization in technology and innovation capacity build up in different countries like the dichotomy seen in Gini indices (a measure of income inequality) between developed and emerging economies.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The tech transfer landscape has certainly expanded in the past years and will continue to do so given the technological innovations around the world. The linear value-added process of tech transfer has become multi-dimensional, requiring various kinds of talents, skill sets and expertise. Its practice could be analogous to the healthcare industry, in which education needs and opportunities span across vocational, professional and managerial competencies in closely linked but very specialized verticals.

Formal education systems would only provide baseline training in foundation skill sets, through academic curricula, whereas the ecosystem and the professional community could offer post-academic learning through on-the-job training, professional certification, and venues for life-long learning through conferences and specialized training. All of this will require time and money. To enable a career learning continuum for tech transfer practitioners, the sector should identify measurable outputs with demonstrated values for government and industries, respectively through metrics, impacts and financial returns.

Compared to the complex demands of talents and experience of tech transfer practitioners to address the increasingly sophisticated space, current opportunities for structural learning and professional recognition from peer organizations (such as CLP and RTTP) are limited. Gap analysis of the talent requirements for innovation systems, relative to the current person-power output from educational systems, is the first step to finding 'hot spots' for skills and expertise in demand. Peer organizations can

advocate for specialization in formal tech transfer academic education programs. For continuous learning beyond an academic curriculum, topical training and work attachment remain the two most accessible models, but cost effectiveness and local relevance should be carefully evaluated by providers across the world.

INDIA

External factors that will affect the K/TT profession over the next 10 years.

- The emergence of early-stage enterprises with significant capacity in high-throughput research and IP creation, and these enterprises' rapid translation of that IP, will increase the perceived value of academic IP.

- The emergence of new economies in Asia, South America and the Mediterranean will create new hubs for technology generation and acceleration of IP assets for regional and global deployment.

- The practical lifespan of IP assets will shrink, with rapid innovations in some segments (such as life sciences, digital technologies and communications) shortening the useful deployment period for these assets.

- Public and private enterprises will co-create innovations, with public research focusing on developing platform technologies and private enterprises focused on translating them to products and solutions.

- Increasing trade restrictions will lead to embargos on IP assets to be deployed in some regions, limiting the potential for global deployment of path-breaking IP assets.

- Technology transfer professionals will have a far wider role in enterprise-level engagement, beyond triggering licensing opportunities. Deeper engagement in technology translation and market-end value realization will drive the future of the profession.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

- Knowledge of global trade dynamics, as IP will be transnational within complex intra-regional trade conflicts and networks.

- Skills for nurturing enterprises incubated in the academic ecosystem should be combined with skills for creating value in order to maximize the impact of academic innovations that are transferred to these enterprises.

- Ability to build a global network of enterprises that can support impact creation far wider than limited regional deployment of such innovations.

- Addressing globally impacting problems by pooling innovations from multiple global organizations and designing technology delivery models with wide reaching impact.

- Harnessing dispute resolution skills to navigate complex global trade conflicts and corporate races for market leadership.

- Ability to communicate the impact of innovation to ensure continued investments in innovation generation.

ITALY

External factors that will affect the K/TT profession over the next 10 years.

At the EU level, in the past couple of years the European Commission has been strengthening its policy for knowledge valorization, which is being implemented through new "guiding principles for knowledge valorization" and codes of practice, such as the code of practice on the management of intellectual assets for knowledge valorization. This will affect the K/TT profession for several reasons.

On one hand, it is positive to see K/TT intermediaries acknowledged as relevant channels for knowledge valorization and mentioned in several documents that propose to promote capacity building for KT intermediaries, such as KTOs and KT professionals. This could create a more favorable environment for our profession and give us more visibility and relevance in the innovation ecosystem and internally (within our institutions). On the other hand, EU policies state quite clearly that we need to go beyond a "traditional" technology transfer approach (based on patents/licensing etc.) toward a broader concept of intellectual asset management, where assets are not only IPRs but also other "forms" of knowledge generated from research activities. This poses some challenges because K/TT professionals have by now learned how to deal with IPRs, whereas knowledge that is not codified in an IP title is more difficult to manage. (By the way, the proposed approach means we should also better learn how to create value from results generated by non-technological research, particularly innovations in the social sciences, arts and humanities.

At the national (Italian) level, over the years the research assessment system has changed the way so-called third mission activities are assessed. In particular, the methodology has changed, passing from quantitative metrics to assessment of case studies (as in the UK Research Excellence Framework [REF]). Also, technology transfer activities (IP valorization and entrepreneurship) are now just two of many other areas that will be evaluated, including public engagement, lifelong learning, cultural heritage, open science etc. In other words, knowledge and technology transfer seems to be increasingly "diluted" in the wider landscape of third mission/social impact activities acknowledged by the national government.

From an organizational perspective, it is not clear whether K/TTOs should continue to focus on IP commercialization while other functions/services are added to deal with social impact-related activities, or if our offices should change our strategy a bit and become more concerned with societal impact in addition to generating revenues from research commercialization.

Finally, there is a lot of talk about Open Science and Open Innovation, but there is also a lot of confusion about what exactly they are and how to deal with IPRs in such contexts.

In my view, K/TT professionals of tomorrow should prepare to "defend" their profession in a context that has changed and seems to put more value on societal rather than economic value.

JAMAICA

External factors that will affect the K/TT profession over the next 10 years.

The big external factor that will affect the profession over the next 10 years (and beyond) is technology. New technology will affect not only how the profession is practiced but also the types of inventions that will be created and the new knowledge that will be developed. This will create a lot of uncertainty, not only in the profession but also in the world. Countries without a good knowledge/technology transfer base will be further left behind. The profession may, for example, be called upon to help to bridge the K/TT gap through education, not just for its members but also for officials in countries with a poor K/TT base. With the advent of generative AI, the practice of the profession will definitely change, as AI will be able to carry out some of the functions of professionals—for example, evaluating invention disclosures, drafting patent claims, contracts and other documents and creating models. On the other hand, professionals will have access to a lot more information to help them do their jobs—for example, finding collaborators.

The use of new knowledge/technologies to improve the K/TT process will, in turn, result in more new inventions. Professionals will need to be constantly learning to be able to keep up.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

These professionals must be more technologically savvy. They must learn to interact with computers and computer programs in ways that are like interactions with people. They must also be prepared for ongoing learning as the pace of new knowledge/technology creation intensifies. All of this will not be comfortable in the beginning.

HONG KONG

External factors that will affect the K/TT profession over the next 10 years.

The most important external factors that will affect the knowledge / technology transfer profession in the next 10 years comprise the influence of new technologies, social movements and strategic areas in response to global health, financial and climate shifts. Personally, I believe the most crucial factors are the following:

- Artificial intelligence, machine learning,

- Digitalization of services,

- Knowledge of subjects different from technology transfer: sustainability, social innovation, health regulations, entrepreneurship,

- Cost of certification,

- The strategic areas that each country establishes,

- Lack of funds or government support for innovation activities, from both public and private sector,

- Crossroads between technological and social innovation,

- The impact of current social and humanistic issues: gender equity, gender equality, sustainability, climate change, and

- International financial changes and/or movements.

It is of the utmost importance that knowledge / technology transfer professionals pay attention to these factors, which will impact not only our professional activity but also the future skills we will need to better perform our work. In this sense, the approaches needed to prepare the K/TT professionals of tomorrow are the following.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

There are some relevant skills needed by all professionals, such as management and negotiation skills as well as knowledge of social and humanistic issues, that should influence in addition to developing these skills, two approaches will positively impact our activities. On the one hand, we should be prepared to engage in local and international calls for financing R+D+I activities, which are related to K/TT success. On the other hand, collaboration between TTOs and networks on both training and joint projects will be of the utmost importance.

Key themes will include:

- Certification,

- Project management frameworks,

- Negotiation skills,

- Knowledge about social and humanistic aspects such as: gender equity, gender equality, sustainability, climate change (knowledge about social innovation),

- Search, preparation, and participation in local and international calls for entrepreneurship and R+D+i financing, local and international, and

- Collaboration between networks, both public and private; or collaboration with other TTOs and technology transfer professionals.

NETHERLANDS

External factors that will affect the K/TT profession over the next 10 years.

- Role of K/TTOs evolving from reactive responding to researcher requests to a more proactive role helping to facilitate and shape opportunities based on the expertise of the research centers.

- Expansion of responsibility of K/TTO from focus on handling research staff and institutional relationships to embracing wider roles for students and other local entrepreneurs.

- Increasing policy-maker awareness of K/TT's importance in current economic, societal and political challenges.

    - Democratization of K/TT with the definition embracing a wider range of roles

    - Relocation of K/TT into a wider context of acknowledging a much wider range of stakeholders, including civil society, with an effect that these will focus on effective utilization and commercial impact of knowledge/technology instead of expanding the traditional range of K/TT activities.

- Sustainable development goals (SDGs) becoming embedded in academic/national cultures, increasing K/TT's focus on sustainability solutions. Key performance indicators (KPIs) and metrics are increasingly being requested.

    - Yet still no common view on what/how/why to measure the impact of research and K/TT outputs (and associated measurement of K/TTO impact)

    - Different demands from KPIs depend on whether information is being sought internally (to enhance operational monitoring) or externally (assessment by funders/hierarchy).

- Increased external focus on the need for professional recognition and career development.

- Geopolitics start to impact on K/TTOs, such as restrictions on access to sharing certain knowledge / dual use concerns/export controls etc.

- "Inhibition of globalization"- trends toward localization of focus for partnering/societal/economic impact.

- Recognition that combining Social Sciences, Humanities and Arts and STEM strengths need to become standard approaches in research as well as K/TT activities.

- Finding a balance between achieving continued impact by maintaining ability to handle formal IPR issues and operating in an environment of Open Innovation and Open Science.

- Potential changes in approaches with/from industry, as many of these factors

- also impact industry. This will lead to changes to the established relationships between academia and industry.

- Role of AI (also including the possibility that AI tools will make newcomers feel enabled to enter the K/TT space without the other skills and knowledge needed to deliver K/TT activities, as established KT professionals).

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

- Increased focus on the need to understand what soft skills are needed and offered as training.

- Professional skills also need to be enhanced: We need to think about added functions (e.g., transdisciplinary projects) or ways of doing business (multi-stakeholder relationships)?

- What technical skills are likely to be needed? AI/technology…

- Storytelling/sharing successes need to be promoted skills.

- Consideration can also be given to the document entitled "Definition of Knowledge Transfer" as one of the outputs of a previous global summit, subsequently endorsed by ATTP and available as a reference point for skills development. Defining KE-TT Profession 2020.pdf (astp4kt.eu)

- Outputs from the YUFE project looking at Career Development of K/TT professionals pulls together a project deliverable by 10 institutions, looking at enhancing the next generation of RTTP recognition. Who we are | YUFE | Young Universities for the Future of Europe

- Recognition and career pathways for those involved as professionals in Research & Innovation management is also a key topic being addressed across Europe. For example, the European Commission under ERA (European Research Area) Action 17, identifying a need to enhance the innovation landscape by addressing career development challenges in R&I, has funded two current projects - RM ROADMAP Project Home and CARDEA | University College Cork (ucc.ie)

- Potential consideration of the role of ISO56002:2019 on Innovation Management as a driver at institutional level, which may need to be considered when reviewing skills of K/TT professionals (e.g. recognized with RTTP). ISO 56002:2019 - Innovation management — Innovation management system — Guidance

NEW ZEALAND

External factors that will affect the K/TT profession over the next 10 years.

- The rising influence of artificial intelligence tools to do everything from determining the best term sheet for an opportunity to fast-tracking the ideation of commercialization pathways to formulating new commercialization opportunities from scratch.

- The orientation of innovation ecosystems toward solving big global challenges in a way that draws in both public and private investment for the betterment of humanity.

- The increasing focus on impact, shifting K/TTO business models toward maximizing societal benefit and away from institutional revenue models, along with better alignment with investor expectations.

- Rising researcher entrepreneurship and understanding of commercialization as an impact pathway, resulting in more willing participants in the tech transfer process.

- The increasing prominence of indigenous knowledge systems and guardianship over indigenous knowledge of the ways in which tech transfer and commercialization are progressed, particularly IP frameworks and relationships with indigenous stakeholders.

- The growing role of startup/venturing ecosystems in emerging nations (and those with low corporate absorptive R&D capacity) as mechanisms for economic development and growth.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

- Understanding and embracing of new artificial intelligence tools to fast-track and scale the work typically undertaken within the profession.

- More sophisticated approaches to deep-tech venturing, beyond the typical spin-out/startup models, oriented toward solving global challenges

- Understanding and embracing principles of indigenous knowledge and guardianship as applied to tech transfer, commercialization and IP frameworks.

- At a higher level – more visible and structured career and professional development pathways to enable new and existing professionals to enter, flow through and exit the profession. This will help ensure we have a free-flowing and vibrant pool of talent.

PUERTO RICO

External factors that will affect the K/TT profession over the next 10 years.

New national policies that create funding mechanisms to reinvigorate regional ecosystems transitioning from traditional industries to research and technology industries that incorporate themes of "clean, green, sustainable, and advanced life sciences."

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

Knowledge/experience in:

- Regional economic development strategies based on science and technology.

- Translational research approaches to promote commercialization.

- Managing multiple collaborations/partnerships across the "value chain" from discovery to market

SLOVENIA

External factors that will affect the K/TT profession over the next 10 years.

One of the most significant factors that will shape the future of K/TT is climate change. Climate change affects us globally, and the challenges we face require joint efforts. This means strong collaboration between private and public sectors, academia, industry and citizens, not just locally but globally. More than ever, we will need smart and green solutions coming from academia to be transferred into society. The role and impact of K/TTOs will become more visible and valued.

We will need to implement human-centered solutions that demand a holistic and interdisciplinary approach. Technology solutions will need to be supported by social sciences, humanities and arts, which automatically expands the participation and engagement of various actors and stakeholders such as citizens, communities, NGOs and social entrepreneurs. This will affect K/TT in that projects will involve more stakeholders from different backgrounds, nationalities and scientific fields. It will be challenging to manage the interpersonal relationships among the stakeholders.

The management of IPR will become more challenging and complex as well. One reason is the multidisciplinary nature of the projects. Another reason is the rise of open science and open innovation, which will challenge the traditional models of knowledge and technology transfer that rely on intellectual property rights, patents and licenses. This may change the role and impact of K/TT professionals from being intermediaries or brokers to being enablers or catalysts of open science and open innovation ecosystems. The paradigm might shift from revenue-driven projects to impact-driven projects. This may affect the way K/TTOs are financed and which skills knowledge and technology transfer officers need.

Global crises and uncertainties are important factors that can negatively affect Knowledge Transfer and Technology Transfer Offices (K/TTOs). This is especially true for K/TTOs that are not yet well-established, as their added value has not yet been fully recognized by academia or society. As a result, they may receive less funding for research and development (R&D) or have less investment of venture capital. To overcome these challenges, K/TTOs will need to be more flexible, resourceful and adaptable to global challenges.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

In terms of preparing the K/TT professionals of tomorrow, digitalization and artificial intelligence are two key areas that require new skills and mindsets. There are already many tools, platforms and channels available that can enhance and speed up the K/TT process. However, using these tools is not rocket science. Managing interpersonal relationships will remain the core challenge and power of the K/TTOs. Soft skills such as teamwork, problem-solving, communication, proactivity, resilience, conscientiousness, creativity, curiosity and trustworthiness will still be the skills of tomorrow.

As innovation and entrepreneurship become more important for addressing global challenges and creating value for society, we need to find new ways to foster a culture of innovation and entrepreneurship within our institutions and ecosystems. We need to encourage and support researchers to engage in K/TT activities such as patenting, licensing, spin-off creation, consulting or collaboration. We will need to provide them with adequate incentives, resources, training, mentoring and recognition— which, at least in our region (Central and Eastern Europe), has not been done sufficiently. As we demand more skills from K/TTOs, we should also find ways to incentivize K/TTO officers to commit to their work and be results-driven.

And most importantly, we should always be open and willing to learn from others. Sharing our experiences and best practices with our peers from other institutions and countries can help us adopt new ideas or methods that can improve our work. We should never stop learning and improving ourselves as professionals.

SOUTH AFRICA

External factors that will affect the K/TT profession over the next 10 years.

AI is already impacting the profession and will continue to affect the profession over the next 10 years. It will bring a mix of things:

- Advances in terms of (rate) technology development and capabilities (e.g., developing software code, intelligent design of molecules, advanced data analysis for a wide range of applications from healthcare to finance, markets, etc.).

- K/TT professionals will need to embrace and harness tools that will assist market analysis, patentability assessment, claim drafting, market research and lead generation, developing technology fliers / getting a sense of very technical research papers.

- We will need to also deal with issues relating to AI inventorship, ownership of IP created by AI, copyright (ownership, infringement of existing copyright materials used for training) and ethics / liability considerations in bringing AI-enabled technologies to market (e.g., who is liable should a self-driving car kill a pedestrian?). Legislation is likely to develop rapidly around this, and one is already seeing developments; extending the legislation across the globe and achieving a level of uniformity in terms of approach will be challenges that many of us may be involved in, but also where we will need to keep up with our own knowledge of the changing legislation, clauses in contracts, etc.

- Within the Southern African Development Community (SADC) region, the next decade will see increased attention and funding associated with research, research offices and the establishment of an increasing number of technology transfer offices. It is interesting that, similar to South Africa (2010), Malawi (~2020) passed legislation requiring public HEIs to have TTO offices, and in 2021-2022 the Science & Technology Fund was launched to finance research, science, technology and innovation. Botswana is also progressing towards a National Research Fund.

- The hope is that the network of emerging TTOs within the region will grow and strengthen significantly in the next 10 years. A considerable foundation for this has been laid through an exchange and capacity building project initiated by WIPO in collaboration with the Japan Patent Office and SARIMA.

- Several significant funders, such as the Bill & Melinda Gates Foundation, are building the capacity of universities in Africa to administer large grants and to position themselves as capable recipients of funding. Translation is the natural extension of these efforts, and hopefully similar projects will focus on developing K/TT skills.

- In South Africa we will see the outcome of the first University Technology Fund, which will start existing from investments. A first in Africa, the fund is a very early-stage VC fund that partners with universities to jointly invest in spin-off companies. Hopefully the fund will have demonstrated that university technologies are an investable asset class within the country. The decade will also see the establishment of a second UTF fund, with an increased number of universities participating.

- SHAPE innovation will become more mainstream. Institutions will better understand what to support, how to support initiatives and develop K/TT skills in the space, as well as define their impact objectives.

- There will be a changing basket and introduction of new metrics to gauge and demonstrate impact at technology, departmental, institutional, and regional levels, possibly aided by AI!

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

Professionals in the K/TT space already need to master a range of inter-disciplinary skills to be successful, and this need is only going to increase in complexity. A number of (older)

people in the South African K/TT space have worked in industry, especially in new product development. The industry paradigm or 'eye' is very important, and I often wonder if this experience is problematically lacking in new entrants to the profession who come into a TTO immediately after graduation.

But, even for professionals with industry experience, understanding the "route to market" in a particular sector is key for guiding inventors and fresh entrepreneurs through the requirements of different technology readiness levels, how to develop appropriate funding proposals, etc. to make products market-ready. At UCT we developed two guides that are as much for researchers/entrepreneurs as they are for K/TT staff, detailing important considerations when taking a pharmaceutical product or a medical device to market. I hope that more similar guides can be developed by the K/TT community for other products and technology sectors, along with intensive training courses. Most practitioners will encounter a new technology type/sector they are not familiar with, and will need a mechanism to rapidly upskill.

Industry sabbaticals (ideally in business development or new product development) could be another very useful upskilling process for K/TT professionals. Another approach that SARIMA has used effectively is to fund Expert-in-Residence programs. A couple of universities used this program to appoint an industry consultant with medical device regulatory expertise to work with the K/TTO and university researchers for a few months. The office's portfolio of medical device IP was reviewed to get a perspective for each device in terms of trials that would be necessary, its class, etc. and to estimate the likely costs of bringing the product to market. The K/TTO gained experience across all devices in the portfolio, and the inventors gained insight into how to take a device to market and the challenges involved.Webinars, another mechanism for upskilling, can be presented to the broader community, using a particular institution's technologies as exemplars of different routes to market.

A different approach to the Expert-in-Residence concept could involve a skilled K/TT professional working with a very inexperienced and new K/TT office for a month or two, to assist with researcher engagement, getting support from senior management, and practical techniques for assessing new inventions / technologies.

Exchanges that bring less-experienced K/TT professionals to well-established offices are also useful. The WIPO-JPO-SARIMA On the Job training program has worked very well, bringing 12 candidates from SADC countries to be hosted in pairs at an established K/TTO in South Africa. Pairs were selected from different institutions in the same country so that over the 8-week period they could bond and work together to establish a network in their home country for sharing skills, practices and other learnings. This creates a "skilled" hub in the country, with a network that can continue to benefit from the host institution's expertise, advice and guidance. The pair of trainee institutions can also benefit from sharing ideas about how lessons learned from the residency can be implemented at their institutions and elsewhere in their home country.

Another area where development is needed involves the creation of investible opportunities for early-stage VC. Creating a pipeline of attractive and sufficiently mature

technologies takes knowledge and experience to ensure that they are sufficiently de-risked and the business cases articulated. To build this, one could consider workshops where a K/TT professional would receive feedback and assessment on one of their own opportunities, as well as detailed case studies, with examples of pitches and applications that have been successful. It can be difficult for new K/TTOs to gain insight into the full application and deal structure negotiated, so they would benefit from more experienced K/TTOs being willing to share the information with others.

SPAIN

External factors that will affect the K/TT profession over the next 10 years.

There are several elements that RedTransfer considers relevant in an analysis of human resources in knowledge and technology transfer professionals of the future.

- **New and more specialized professional profiles:** In recent years, different elements have been incorporated in the K/TT process, which will mean the generalist profile of the K/TT professional is going to give way to increasingly specialized profiles. In addition to the profiles of large sectors such as IPR, entrepreneurship and project management, expert profiles will appear that are focused on open science, data management or management of ethical issues related to the transfer of knowledge.

- **Professional recognition:** Career goals will be an external factor that will condition the development of K/TT professionals. As they do not have a conventionally defined profession, those dedicated to K/TT must be recognized in other ways. Otherwise, they cannot be retained. This career progression should be closely linked to remuneration and should incorporate both the assumption of more and bigger responsibilities (vertical career path) and the recognition of experience, efficiency and effectiveness (horizontal career path).

- **Remuneration and different ways of working:** Remuneration is a basic issue in any work activity and is influenced not only by production or productivity, but also by the institutional context in which it is carried out. Universities, hospitals, research centers and companies must be competitive when it comes to salaries. On the other hand, many professionals will adapt to new ways of working, such as those that emerged during the COVID-19 pandemic. Classic offices with employees working there every day will give way to remote forms of connection.

- **New tools:** The existence of large databases or the emergence of artificial intelligence will undoubtedly affect the K/TT process. This will mean that K/TT professionals will have to adapt their jobs and skills to manage these tools and get the most out of them.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

As in any professional activity, knowledge transfer requires knowledge and skills. RedTransfer understands that there is no university training specifically appropriate for work in this profession, although for some specialized profiles certain training could be appropriate.

Doctoral training provides an understanding of research processes that can be helpful for the knowledge transfer functions carried out by academic entities.

It is also key to understand the innovation system in which knowledge transfer occurs, with its legislation, institutions, agents and relationship mechanisms. All these subjects can be taught in structured courses, in-person or remotely, and can help facilitate mobility between the different knowledge transfer profiles. Likewise, transversal knowledge such as the use of computer tools and databases or quality management can be incorporated.

Innovation is a competitiveness factor that is much more complex and less studied than others. A lot of knowledge is acquired through experience and, therefore, having addressed cases in the K/TT activity and exchanging practices are very relevant indicators of professional success. RedTransfer suggests that the CVs of K/TT professionals incorporate these types of cases and experiences, and these should also be valued in hiring processes.

Various roles are involved in knowledge transfer, so interpersonal relationships and attitudes also are essential for success. Active listening, oral or written communication, negotiation, meeting management, building trust, team building: All of these are social skills that contribute enormously to the effectiveness of K/TT.

Finally, professional relationships between equals should be a mechanism for exchange of and access to new knowledge. Events, forums and social networks should be key in the development of professionals' skills.

THAILAND

External factors that will affect the K/TT profession over the next 10 years.

- **Global technological advancement:** The need to keep up with emerging technologies and adopt them quickly is increasing, which may be challenging for K/TT professionals from low- and middle-income countries

- **Government policies and incentives:** K/TT professionals will need the ability to adapt when relevant policies are adjusted in response to geopolitical changes of direction and shifts in the focus of international trade/investment.

- **Economic stability:** A favorable business environment, stable economic growth, and investment-friendly policies will attract more resources and expertise for the K/TT arena.

- **Professional skill development:** The availability of a skilled workforce with expertise in emerging technologies is crucial for K/TT success. Retaining experienced K/TT personnel is another challenge for many universities and public research institutes.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

Artificial intelligence (AI) is playing a critical role and will impact many professions, including K/TT, in the future.

Although AI may not be able to replace every professional skill, like those that require a human's ability to sense or touch, humans will need to adapt to the idea that many specific skills can be performed or assisted by AI. While technology transfer professionals in low-middle countries are busy catching up with traditional training, it is important that they are aware that certain skills may be replaced or otherwise affected by AI.Future Summits might include discussions of these AI trends, ranging from ensuring the accuracy of patent search by AI to how IP management and commercialization are affected by AI.

TURKEY

External factors that will affect the K/TT profession over the next 10 years.

- **Policies and regulations:** Changes in policies and regulations related to IP, data protection and multi-stakeholder collaborations can affect the K/TT profession.

- **Economic fluctuations and changes:** can significantly affect the K/TT profession. Economic downturns may reduce funding for R&D and innovation, slowing down knowledge transfer activities. In contrast to this, economic growth and globalization can create new opportunities for knowledge exchange between countries and organizations.

- **Technological transformation and advancements:** Awareness of technologies prioritized due to rapid technological transformation and pandemic effect is critical. Professionals in this field need to continually update their skills and adapt to new technologies to effectively manage the transfer of knowledge in a changing technological landscape.

- **Education with online learning and training platforms:** Changes in these domains may influence the skill sets required for professionals in this field. Continuous education and professional development will be crucial to stay updated with the latest approaches in K/TT.

- **Demographic, social and environmental factors:** The aging workforce and retirement of professionals can impact the knowledge transfer profession. An increasingly diverse and multicultural workforce may create new challenges and opportunities for cross-cultural knowledge transfer. Changing societal and environmental concerns can influence the K/TT profession.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

- **Collaboration skills:** Collaboration and networking skills are also important for building partnerships and fostering knowledge exchange.

- **Project management (Waterfall-Hybrid-Agile):** K/TT professionals often work on multiple projects simultaneously, requiring excellent organizational and time-management skills.

- **Technical expertise:** K/TT professionals should have a strong background in the relevant technology sector to understand and effectively transfer complex knowledge and technologies.

- **Recognition of market trends and commercialization:** Understanding the value and potential applications of technology is crucial for K/TT professionals. This involves recognizing market trends, identifying commercialization opportunities and assessing the feasibility and viability of transferring knowledge or technology.

- **IP portfolio management:** Being knowledgeable about IP laws and regulations, including patents, trademarks, copyrights and trade secrets. K/TT professionals should be able to navigate the complexities of IP protection, licensing and commercialization.

- **Legal and ethical considerations and cultural adaptability:** Professionals need to be aware of legal and ethical frameworks. They should adapt their approaches to different cultural contexts and work effectively in diverse teams.

- **Entrepreneurial mindset and staying updated:** This involves being proactive, embracing uncertainty and thinking creatively to facilitate successful K/TT and commercialization. Professionals should be committed to continuous learning, engage in professional development opportunities and stay updated with the latest trends and advancements.

In the next decade, strategies, processes, and impact of K/TT will be deeply affected by several external factors:

- New models for collaborative ecosystems such as open innovation, open-source initiatives, and public-private partnerships, as well as changing policies and funding initiatives, will reshape organizations. Professionals will need to facilitate and manage these partnerships effectively to maximize impact.

- Developed economies will face further new threats such as procurement issues and aging populations, while emerging economies and markets will experience new opportunities together with unique challenges, these will need to be reconciled and managed skillfully to create win-win impacts in K/TT operations.

- Globalization and international collaborations will emphasize differing needs, forcing professionals to navigate diverse cultures, legal frameworks, international regulations and business practices to facilitate effective K/TT across borders.

- Changing preferences and expectations of end-users, market dynamics,socioeconomic and environmental demands and trends within various industries will define the needs of the key K/TT players.

- Understanding how new and disruptive technologies can be applied, transferred and commercialized effectively will be imperative for their successful integration.

- Demographic changes, wars and immigration will emphasize the importance of cultural and ethical considerations and inclusivity.

Preparing K/TTK professionals for the challenges and opportunities of tomorrow will require a combination of traditional and emerging skills:

- Developing excellent written and verbal communication skills, including digital literacy (such as proficiency in data analysis, collaboration tools, and knowledge management systems) to convey complex technical information to non-experts; as well as negotiating skills to navigate complex agreements, resolve conflicts and secure favorable terms for all parties involved.

- Skills for networking and building strong relationships to establish strong widespread contacts in academia, industry, government and other relevant sectors will enable K/TT professionals to leverage collective expertise and resources to identify opportunities and facilitate successful transfers.

- An interdisciplinary knowledge covering a broad understanding of various disciplines (including science, technology, business, law, and ethics), coupled with knowledge of intellectual property laws, data privacy regulations and other legal and regulatory aspects of K/TT, will enable professionals to bridge gaps between different sectors and facilitate effective transfers.

- Skills in project management to efficiently plan, execute and monitor K/TT projects, coordinating resource allocation and timeline management and ensuring ethical operations.

- Expertise in identifying and assessing risks associated with K/TT activities and developing mitigation strategies, crisis management and contingency plans will help navigate unexpected challenges like legal disputes or public relations issues and will foster resilience planning skills.

- Adopting a user-centric focus prioritizing the needs and experiences of end-users to ensure successful adoption and implementation.

- Developing an entrepreneurial mindset to explore opportunities, such as technology commercialization or spin-off ventures, to maximize the impact of K/TT efforts.

- Acquiring cross-cultural competencies to bridge cultural differences and foster effective relationships will encourage a global perspective and awareness of international business practices and norms.

- Being adaptable and open to change, taking a proactive approach to self-development and commitment to lifelong learning, and staying up-to-date with the latest trends, emerging technologies, industry developments and regulatory changes.

UNITED KINGDOM

External factors that will affect the K/TT profession over the next 10 years.

- Greater recognition of K/TT activity (third mission) alongside other institutional activity (research and education)

- New technologies and the changes they (e.g., AI) will dictate

- Globalization of technologies and means of working

- Increased awareness of innovation in the context of political, economic and societal strategies

- Increased professionalization of the sector and roles

- Desired consensus on K/TT metrics and performance

- Greater public-private partnership activity

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The K/TT sector is changing and has changed substantially over the last decade, and this has been in response to both functional needs, as this third mission integrates into the educational entities, and widespread best practice. The changes are more visible in certain geographical locations, but they are undeniably present. Consequently, the new K/TT professional has a broader knowledge of the sector practice and needs to seamlessly integrate and align with institutional functions and partners feeding into the development path of any given innovation. Alongside the fundamental K/TT skills recognized by the sector, the additional skills used and needed by the competent modern K/TT professional include:

- Understanding of funding and early-stage investment

- Coordination and management of cross-sector partners (project and program management) – this is a skill widely used by EU funding models and Gates-supported projects, but relatively new to other geographical regions

- Higher level of awareness and use of soft skills

- Wider knowledge of cultural and regional differences

- The delivery of K/TT best practice with a complete DEI lens

There is a need for current training to reflect some of the above and consider the changes associated with newer technologies, (i.e., AI, advanced therapies and cross- discipline technologies) and previously less well understood innovations such as the humanities and arts, exploitation of know-how (consultancy) and demands for commercialization.

UNITED STATES

External factors that will affect the K/TT profession over the next 10 years.

- The evolution of AI as a tool for both student experience/teaching and research.

- This is coming hard and fast – K/TT will need to adapt quickly, as will data security, IP law and policies.

- The convergence of national security, innovation policy and university R&D. We are seeing this convergence as national security conversations are more prominently including innovation as a national security pillar, and universities are being looked to as major engines of global innovation competitiveness. Here, local and national governments are asking more of their universities in terms of research that is "use-inspired," "industry driven", and economically impactful.

- Government funding of K/TT, in the U.S. and globally. Because of the above convergence external factor, government funding of K/TT will become paramount and will quickly resource the K/TT practice, but also will put it closer to government control and oversight, which can be good and bad.

Approaches/skills needed to prepare the K/TT professionals of tomorrow.

The top skills needed to prepare for K/TT, which are not currently taught prevalently in curriculum agendas for degree granting institutions, include:

- **Training/Coaching skills:** More and more emphasis is being placed on training/coaching teams through entrepreneurship accelerators and similar translational research cohort-based programs.

- **Project Management:** The Project Management (PM) Professional certification is not prevalent enough in the K/TT profession but will become increasingly important as K/TT is asked to do more things like build industry consortia, pursue multi-party grants for government funding and lead coalitions around regional IP management plans. Every K/TT office should seek or have a PM within the office in the next 3-5 years.

- **Sales rather than marketing:** Sales is a professional skill that can be taught and certified and needs to be a heightened skill sought by K/TT offices.

- **Intellectual property understanding,** including the law, policy and economic theory related to IP strategies.