ITEM 11: INTELLECTUAL PROPERTY AND INNOVATION: EDUCATION AND DIFFUSION

EXTRACTED FROM DOCUMENT IP/C/M/81/ADD.1
11. Switzerland

154. Many years ago when I started working at the Swiss Federal Institute of Intellectual Property, which is the Swiss Intellectual Property (IP) Office, I recall that I met with many puzzled looks when telling friends and relatives about my workplace. Some of my interlocutors seemed embarrassed, changing the topic and preferring to talk about the weather instead. Others, again, were more inquisitive, trying to find out what this IP Institute really was and what I was actually doing there.

155. To understand the punch line here, one needs to know that in German, "intellectual property" translates as "geistiges Eigentum". "Geistiges" in German has a double meaning. It can mean "intellectual", but it can also be used with the connotation of "spiritual". So there I was working for the "Institute of Spiritual Property". I remember an uncle of mine asking, "So you are working with the real estate division of the Catholic Church now?" You can imagine at that moment I was in dire need of spiritual, if not divine support.

156. Intellectual property is hardly a topic for small talk nor is it a subject of conversation for people at the bus stop when going to work (such as talking about the latest football match or a recent political scandal ...). My uncle can be forgiven for his lack of knowledge about IP at that time, since he was a man of wisdom and had a wealth of knowledge in other fields. However, a general lack of awareness and understanding of IP in the public at large, or worse, a disregard for its role in the innovative and creative industries, might well be harmful for an economy in the long term.

157. This is especially true if potential innovators and talented creators are ignorant about IP and how to make these rights work for their benefit. At the very least, the country and its economy run the risk of failing to exploit the existing potential for innovation and creativity.

158. In the view of Switzerland, there is a public interest in the knowledge about IPRs, their functioning and also the need for balance between the interests of right holders and users, i.e. the social contract embodied in IP. Only if the IP system is widely understood and accepted, will it be able to support the optimal promotion of innovation and creation and thus contribute to economic growth and development. Accordingly, governments have a role to play in IP education and diffusion.

159. My delegation is pleased to co-sponsor this topic under the agenda item: Intellectual property and innovation, jointly with Australia, the European Union, and the United States, with the support of the co-sponsors, Hong Kong, China; Japan; Peru; the Russian Federation; Singapore; and Chinese Taipei.

160. In Switzerland, we believe that information relating to IP, along with its teaching and understanding, should not be confined to universities and engineering schools. Such knowledge should be made accessible to the broader population as well, and inspire already the young. In its communication, IP/C/W/612, Switzerland provides examples – without being exhaustive, of course, of how it addresses the task of IP education and diffusion. We are eager to learn from other WTO Member delegations' experience in this field. My colleague will now present a short summary of what is contained in this communication.

161. Referring to its written submission, Switzerland wishes to keep its intervention brief. With a few examples, we will share some of our experience of how to make knowledge of IPRs part of our education and how diffusion of IP awareness can contribute to inspire inventiveness and creativity. Switzerland considers an adequate IP system to be an important part of a regulatory framework, which supports innovative processes and facilitates economic growth.

162. In a world facing formidable changes, the capacity to innovate plays a fundamental role. In order to remain competitive in today's globalized world, any country, and in particular countries with very limited national resources, need to invest in brainpower.
163. This is the case for Switzerland. Particular attention has therefore been given to nurturing a culture of innovation in the Swiss economy and its educational system and achieving a sound IP protection system, which allows innovators to obtain a return on their labour and financial investment. However, if innovators are not aware of their rights, they are less incentivized to innovate, thus preventing a country from fully exploiting its capacity to innovate. Accordingly, IP education and diffusion are key for a functioning IP system.

164. In Switzerland, IP education is tailored to age groups. For instance, pupils between 6 and 16 are more likely to have contact with copyright and trademark issues. Therefore, it appears to be more sensible to incorporate this kind of knowledge into primary and secondary levels of education and awareness raising campaigns.

165. At Swiss primary schools, the Swiss Government has set up a nationwide programme to promote media competence among pupils. The programme deals with the proper handling of digital data, with guidelines to promote the fair handling of copyright by youngsters.

166. A second example is the Young Enterprise Swiss Programme (YES), which supports practice-oriented business training programmes for secondary school level students. The aim of this programme is to interlink the economy with schools and to foster innovation and entrepreneurship in Switzerland, starting from a young age.

167. College and university students as aspiring young entrepreneurs and innovators are more likely to be interested in the use and application of more comprehensive IP strategies. Looking at higher level education, IP-based courses are offered at all Swiss universities, either at Bachelor or Master level.

168. Another example of educating young business persons is Start-Up Campus, a training programme of the Commission on Innovation and Technology, a Swiss government body. Start-Up Campus is aimed at professionals emerging from the Swiss dual education system. Part of the training programme is the module "IP Protection", which provides IP knowledge and helps companies to prepare an appropriate IP strategy. This is of particular importance for start-ups, since early mistakes about the management or non-management of IP may pose an existential threat to otherwise auspicious young enterprises at a later stage of their development.

169. The promotion of STEM fields in the educational system has an important link to innovation and by the same token to IP education and diffusion. STEM stands for Science, Technology, Engineering and Mathematics, whereas, in Switzerland and the German-speaking countries of Germany and Austria, the term MINT is used instead of STEM. MINT stands for mathematics, Computer Science, Natural Science and Technology. A large proportion of innovators have an academic or professional background in STEM. Therefore Switzerland places a particular focus on initiatives that foster a sufficient supply of young academics emerging from STEM fields.

170. It goes without saying that every WTO Member sets its priorities according to its particular situation and development goals. Switzerland is convinced, however, that every WTO Member can benefit from implementing an appropriate and workable IP system. An essential part of any national innovation strategy should be to establish a knowledge base of how to protect innovations and creations, notably by means of IPRs.

171. Switzerland hopes that the examples presented provide Members with useful insights into some of the projects and programmes put in place in Switzerland to teach and diffuse IP and innovation know-how at different levels of education.

172. We look forward to learning from others in the TRIPS Council how they have addressed this task at their national level.

11.2 Japan

173. My delegation is pleased to have co-sponsored this TRIPS Council's agenda item on IP and innovation. In creating the foundations for innovation and new technological developments, Japan fully recognizes the importance of educating young people and providing them with information on
IP. Japan wishes to take this opportunity to share its experience on how we have been providing education and information on IP.¹

174. One initiative my delegation believes worth sharing with other Members is the "Children's Visit Day" organized by the Japan Patent Office. Every year, the Japan Patent Office invites elementary and junior high school students to visit its establishment, in order to provide them with an opportunity to learn about IP. The theme of the event in 2015 was "Summer holiday homework mission! Let's learn about inventions, designs and brands that are Japanese assets!!". The two-day event attracted 1,172 visitors to the Japan Patent Office, including 709 children.

175. During the event, the Japan Patent Office held a science show, enabling children to experience first-hand inventions and scientific technologies. There were also several exhibitions. For example, an exhibition called "Let's learn about the relationship between toys and trademarks" enabled children to familiarize themselves with toys and their respective trademarks, while playing with these toys. In addition, a exhibition called "Which one is real?" displayed both genuine and counterfeit toys.

176. The Japan Patent Office and the National Centre for Industrial Property Information and Training (INPIT) support vocational schools and technical colleges, working to develop the intellectual creativity of students. They offer students hands-on experience in developing and manufacturing products, enabling them to shape their ideas into IP and actually fill out patent application forms. These activities are designed to enhance students' creativity in planning and proposing new ideas. Specifically, they are designed to develop students' ability to (1) implement their plans and proposals based on social rules; and (2) make effective use of the ideas and ingenious devices in real life situations. This initiative was launched in 2000.

177. Finally, my delegation would like to mention the awards received for inventions created by students. The Japan Patent Office holds Patent and Design Contests to recognize outstanding inventions and designs created by students from high schools, technical colleges, and universities throughout the country. These contests are designed to raise the awareness in school students of the importance of IP and to promote their understanding of the IP system. For particularly outstanding inventions and designs, the Japan Patent Office provides an opportunity for students to actually obtain intellectual property rights, that is, school students who created award-winning inventions and designs receive support from the organizers concerning the patent-application process, from filing applications to obtaining rights for patents and designs. Until now, over 120 patents and 150 designs have been registered as a result of these patent contests.

178. Another activity designed to improve children's creativity is the Concours of School Children's Inventions organized since 1941 by the Japan Institute of Invention and Innovation (JIII). The results of the competition are displayed in an exhibition and the creators of outstanding works are presented with the WIPO Award as shown in this slide.

179. In summary, Japan attaches great importance to educating and providing information on IP, as a means for developing new technologies. Japan continues to develop new initiatives in the hope that they will contribute to further promoting innovation and economic growth. We would welcome other Members' insightful comments on this issue.

11.3 Peru

180. It is also an honour for Peru to present this agenda item on intellectual property and innovation Peru endorses the proposal by Australia; Hong Kong, China; Japan; the Russian Federation, Switzerland; and the United States. I am going to refer to two specific experiences from Peru on the issue that are, to a certain extent, connected to the activities that we see here in Geneva.

181. The first is the national competition on journalism and promoting IP. This is an initiative that is being organized partly by the National Institute for the Defence of Competition and the Protection of Intellectual Property (INDECOPI). It stems from the Presidency of the Council's Ministers aimed at organizing competition in order to promote IP as a tool for economic

¹ Referring to room document RD/IP/9.
development and for professionals within the field of journalism, so that they can become more specialized and become leaders. The competition has been organized in conjunction with the American Chamber of Commerce of Peru and it encompasses four categories: reports that are published on printed material; radio reports; television reports and not-for-profit radio reports. The aim is to seek to develop the community. The journalists that are interested in taking part must first of all attend two or three training courses on the issue of IP that are given by professionals from INDECOPI in Lima and other regions. The journalists that are part of this category are given the opportunity to travel to Geneva to WIPO, all costs paid, to take part in an internship on the issue of competition. They also visit UNCTAD, WTO and the Peruvian Mission in Geneva. Such an experience allows for the diffusion of knowledge about IP amongst young people, because 60% of the Peruvian population is under the age of 42. Thus it is wonderful for journalists to be able to come to Geneva, and even for those who do not go there, they are in contact with those who have been, and so this is an opportunity for knowledge to be disseminated.

182. The second is the national invention competition. From my experience, to date the level of participation has been low in Latin America in this field. In Peru, there is a national competition to stimulate and promote creativity aimed at developing products, technologies and inventions that can be protected through the patent system. There have been 14 rounds of this competition and we have received 2,000 applications for inventions from nearly all the regions of Peru. More than 1,000 prototypes have been exhibited. The winners of this competition are exempted from payment for the process of patent application before INDECOPI. The idea is to have some representatives from the academic world, and some from the private sector and INDECOPI promotes and makes it profitable for these individuals to come to Geneva and take part in the internship in Geneva. To a certain extent this experience connects the State with the academic world and helps to develop initiatives alongside private sector stakeholders and to see the potential of how innovation and IP can be promoted in Peru.

183. So I just wanted to share these examples with you because I believe that they are state efforts to try to promote and disseminate knowledge about IP. As I said, the journalists that took part in the national journalism competition received training on various aspects of IP, and they, in turn, have become contact points for knowledge in that area in Peru. The competition provides an incentive and is an economic opportunity once again represented by innovation.

11.4 European Union

184. I am pleased to intervene once again on this important item relating to intellectual property. I would like to reiterate how much the EU values this discussion in the TRIPS Council and how we have had very constructive sessions in the past and we look forward to this session as well. I would like to thank colleagues who made the previous interventions and those who will follow and who have co-sponsored this agenda item.

185. Let me briefly introduce the EU perspective on both education and diffusion of IP. Innovation education is crucial for development. Private investors and multinational enterprises will only invest if the economic climate is reliable, and if there is an educated skilled labour force able to operate the new technologies.

186. Adoption of a new technology might require a different economic environment than continued use of an existing technology. New technologies may require a more highly skilled labour force. If the labour force is lacking the right skills or education to learn them, the economy may be unable to adopt a new technology.

187. Thus investment in education and professional training is a necessary step for both developed and developing countries to benefit from technological change.

188. Intellectual property education embodies the skills and competences that young people can be expected to acquire in the classroom that enable them to become familiar with intellectual property, understand its potential to generate income and economic growth and lead them to respect IPRs, whether their own or those of others.
Education study by the Office for Harmonization in the Internal Market

189. A study by the Office for Harmonization in the Internal Market, our trademark office in Alicante, on IP education in school curricula in EU member States provides some useful suggestions. The objective of the research "Intellectual Property and Education in Europe" was to analyse how IPRs, notably trademarks, designs, patents and copyright, and IP-related issues such as ownership, authorship, originality, licensing, confidentiality, trade secrets and branding are being taught in primary and both general and vocational secondary schools in the 28 EU member States.

190. The study's main information sources were the official educational curricula, guidelines and recommendations, analysed and cross-checked by national researchers and completed by contributions from the Ministries of Education based on questionnaires.

191. The results of the study show that in the EU and non-EU countries and regions analysed at the primary and secondary education levels, no specific stand-alone IP subject or comprehensive IP education programme exists in the current official curricula. Nevertheless, IP and IP-related themes are integrated into one or several subjects as a cross-curricular subject for all education levels. In both the EU and non-EU countries and regions analysed, copyright constitutes the most commonly referenced IPR within the official school curricula.

Good practices integrate IP education worth encouraging

192. The study suggests that the best approach to IP education is to ensure that IP skills and competences are, in the terms used by the study, "transverse competences", i.e. competences that can be used across different subjects in a curriculum.

193. Beside its analysis of the curricula, the report reveals many examples of good practice in IP education carried out in schools. These can be: Intellectual property education within the curricula; and extra-curricular IP education, invariably in private-public collaborations between stakeholders and ministries of education or culture.

Intellectual property education within the curricula

194. The study showed that good practices within the existing school curricula in the countries covered are almost always carried out by or in cooperation with public authorities, including ministries of education and other ministries, schools and public libraries. The majority of good practices identified within the curricula concentrate on IP aspects such as copyright, but some are also related to the topics of innovation, inventions and entrepreneurship. Other exemplary projects within the school curricula exist in ICT, data management and online behaviour.

Extra-curricular best practices

195. Many extra-curricular good practices are carried out by private stakeholders, who come mainly from the creative industries, and work with artists, writers and creative professionals, and their associated professional organizations and networks.

196. The 'Think Kit', for instance, by the UK IP Office, is a very full set of free resources with projects for pupils aged between 14 and 16, though suitable for other ages with some further 'support', covering design, technology, science, music, art, to name a few. The support materials for teachers include summaries of copyright, design rights, and patents case studies.

197. Another UK initiative, "Creating Movie Magic", led by Into Film, supports the teaching of IP in design and technology for pupils aged between 11 and 14. It empowers teachers, film club leaders and youth group workers to explain the importance of copyright to young people, encourage respect for the film-making process, open up a debate about the value of IP, and involve them in activities which encourage their own creative talents. The IP Tutor free e-learning tool helps students and lecturers to understand IPRs, i.e. trademarks, patents, copyright and designs, and uses case studies to show why IP is important.
198. IP Tutor provides four tailored learning pathways, each adapted to suit the needs of different areas of study: creative; science, technology, engineering, maths (STEM); law, business and accounting; and humanities, including creative writing. 


199. The resource library of the Spanish Ministry of Education, Culture and Sport offers secondary school teachers the "Learning from the past to create the future: artistic creations and copyright" material to complement literature and art programmes, especially when students are asked to create original works in these areas.

200. This material was created by WIPO and translated into Spanish by the Ministry as a concrete action within the government’s integrated plan for reducing and eliminating activities that infringe IP.

201. In Germany also, several projects and initiatives are linked to patents. The European Patent Office patent teaching kit can be used in economics lessons and the Teacher Portal "Economics and School" provides knowledge about innovation and patents. Another school website provides information about genetic engineering and patents.

202. There are also several offers for children regarding patents. The Children’s Patent Office, run by the Patent Information Centre of Darmstadt, is an image database of child inventions that serve as a museum and archive. The Kid’s Network website offers a large collection of inventions "From Pippi to Blue Jeans" with countless examples of inventions that children encounter in their daily lives. The public TV programme "Nine and a half" also often features young inventors.

Diffusion

203. A project’s impact comes through the dissemination and exploitation of its results. It is essential to strategically consider and negotiate these central issues at an early stage. How shall results be made accessible to a broader public? What is the commercialization potential of a project’s results? Which exploitation channels seem the most appropriate, and hence what are the most suitable forms of IP protection?

204. One new feature of the very extensive financing programme called "Horizon 2020", a multi-annual programme in this area of research, concerns the granting of access rights to a project’s results, not only to the European Union, but also in specific cases to member States. Access rights for the European Union's institutions and bodies will be granted on a royalty-free basis, limited however to non-commercial and non-competitive use, since their purpose relates merely to the development, implementation and monitoring of EU policies and programmes.

205. At the end of a project, questions concerning further dissemination and exploitation of results become even more pivotal. That is the time to reap the benefits of the results by using them in further research or in commercial activities. It is also then the time to showcase and present results and the different communication and exploitation measures. Proper dissemination of the results of a project will allow researchers to profit from marketing and commercialization of the intellectual assets acquired during the project.

206. In order to create visibility for achievements and to ensure knowledge spill over and access to a broader public, researchers use a broad variety of different dissemination channels. These include: scientific and non-scientific publications; conferences; networking events and business fairs; project websites; communication material (such as posters, leaflets); social media; and open access.

207. In addition, the patent system is the most prolific and up-to-date source of information on applied technology. Patents contain detailed technical information which often cannot be found anywhere else: up to 80% of current technical knowledge can only be found in patent documents. Moreover, this information is rapidly available, as most patent applications are published 18 months after the first filing, irrespective of their country of origin.
208. Patents help find solutions to technical problems. Even if a patent is still in force, the information it contains can be freely consulted, and used for experimental purposes (under certain conditions). Given that the majority of all patents – around 85% – are no longer in force, a vast number of inventions are available for free. One can use patents to gather business intelligence. Patent information not only reveals the state of the art in a certain technology areas, but also enables monitoring the innovation strategies of competitors and other players at a very early stage.

209. In this area of dissemination, we could go on at length. There is an enormous amount to say on the sometimes less well known or less well identified aspects or the benefits of a patent, which is how it contributes to sharing information and to dissemination by making it available to the widest possible range of stakeholders.

11.5 United States of America

Introduction

210. The United States very much welcomes this opportunity to take up the relationship of education and diffusion with IPRs and innovation here in the TRIPS Council today. This is an issue of pivotal importance with direct and deep linkages to the mandate of this body. We would also like to thank Australia, the European Union, Hong Kong, China, Japan, Peru, Russia, Singapore, Switzerland and Chinese Taipei for co-sponsoring this agenda item today.

211. Education is an innovation and creativity accelerator, and its relationship to IP and innovation becomes manifest in many ways. In both theory and practice, education is a broad concept that includes public and private providers, at all levels from primary to post-graduate, whether inside or outside the classroom, and beyond, including education in the workplace, such as on-the-job training and employee capacity building.

212. At the outset, it is also important to stress that the vast benefits of education for innovation and creativity are not limited to supply-side considerations. Education is vital to the generation of ideas, as well as for the diffusion of innovation and creativity.

213. In other words, education is also critical to innovation on the demand side, for the consumers who benefit, and the downstream innovators, who adapt existing technologies to new ends. Education that is focussed on the skills underlying innovation and creativity is paramount not only for producing the big idea, but also for its absorption. Education must therefore be considered as integral to each phase of the innovation lifecycle, including at the inception as well as the uptake phase. Including IP in education curricula is an essential part of any innovation strategy to ensure that our innovators of today and tomorrow understand not only how to protect their hard work, but to use IP to grow resources for future R&D, attract investment, structure collaboration and partnerships, and create jobs, among other critical objectives.

214. Intellectual property can play a pivotal role in unlocking the potential of our greatest resource – our citizens, including as workers, as consumers, as educators, as employers, as well as scientists, engineers, actors and authors, among many other innovators and creators. With education as its conduit, IP can play an empowering role for our populations in realizing the potential and enjoying the benefits of innovation.

215. In addition to incentivizing economic growth and technological advancement, IP offers significant promise with respect to human development. As the Preamble of the TRIPS Agreement confirms, national systems for the protection of IPRs include underlying public policy objectives, such as with respect to development and technology. Education and diffusion policies, including IP, play a fundamental role in advancing such objectives.

Education

216. In our intervention, we will address four topics. First, we will address the inextricable interconnectedness of education and innovation. Second, we will turn to US policies and initiatives in education that promote innovation. Third, our intervention will address IP education. And finally, we will conclude our intervention on the topic of diffusion. As a threshold matter, supporting
widespread high-quality education in science, technology, engineering and mathematics or STEM is essential in an increasingly knowledge-intensive economy. Such support includes increasing the number of STEM teachers, attracting students to STEM and graduating students with a strong STEM education.

217. There is a huge volume of literature and government policies that confirm the criticality of such support. The OECD, for example, has researched this issue extensively, and has concluded succinctly that "education policies play a central role in innovation". For the OECD, "increasing students' access to STEM remains a primary component of policy measures to strengthen education for innovation". And this is vital at all levels. From primary and secondary education to university and graduate and post-graduate education, STEM plays a critical role at all stages of our respective national educational trajectories. For example, the US Department of Commerce has enumerated 66 possible university-level STEM degrees.

218. STEM education is not only a key part of the innovation ecosystem, it can also provide profound incentives for attracting our best and brightest into STEM jobs. In short, STEM careers are growing and often provide relatively higher salaries than many other professions. And while the exact list of STEM careers can be debated, such careers can be grouped into several baskets, including: computer and mathematics; engineering and surveying; physical and life sciences; and STEM managerial occupations, such as in computer and information systems, engineering, and natural sciences.

219. According to a brief from the US Department of Commerce entitled "STEM: Good Jobs Now and for the Future", STEM occupations grew over the past ten years three times faster than non-STEM jobs. Looking ahead, STEM Jobs will grow at 17% from 2008 to 2018, while other areas of employment are growing by 9.8%. In many STEM fields, average salaries are often higher – by as much as 26% – than non-STEM fields.

220. The US Department of Labour also projects that from 2010 to 2020, STEM jobs will increase, including by 22% for computer system analysts, by 32% for system software developers, by 36% for medical scientists, and by 62% for biomedical engineers.

221. Before turning to US initiatives, it is important to note that education policies for innovation are not limited to STEM and include interdisciplinary learning, such as interactive approaches that are hands-on and promote entrepreneurship, creativity, lateral thinking and problem solving.

222. In the United States, education policy is central to innovation policy. In the President's 2015 "Strategy for American Innovation", STEM education features prominently among the strategic initiatives for innovation. For example, the Strategy calls for "investing in the building blocks of innovation" and cites "boosting access to high-quality STEM education" as a top priority. The Strategy also calls for "engaging more students in STEM learning and entrepreneurship". Critically, among the initiatives identified under the objective of "catalysing breakthroughs for national priorities", the Strategy also advances the goal of "delivering a revolution in education technology".

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2 See OECD, Science, Technology and Industry Outlook, 2014, page 236. See also Toner, Phillip, "Workforce Skills and Innovation, An Overview of Major Themes in the Literature", OECD Education Working Papers, No. 55, page 3 ("Second, achieving high academic standards within a country for the largest proportion of school students ... creates a workforce with greater potential to engage productively with innovation").


7 See OECD; Science, Technology and Industry Outlook; 2014; page 2.


223. In detailing these priorities, the President’s Strategy lays out a series of core objectives, including to make progress on ambitious national goals, such as to prepare 100,000 excellent STEM teachers and one million more STEM college graduates over a decade, and to broaden participation and success in STEM fields for women and underrepresented minorities.10

**STEM Initiatives, including public-private partnerships**

224. There are numerous Federal and other initiatives in the United States that are advancing the Strategy’s objectives regarding STEM education, and we will name only a small fraction today. At the Federal level, for example, the Department of Education's "Race to the Top" programme offers incentives to spur innovation in state STEM education policies.11 Likewise, the President launched the *Educate to Innovate* campaign in 2009 to mobilize a broad coalition of citizens, educators, companies, foundations, and non-profit organizations to improve STEM education.12

225. STEM teachers across the country also are receiving resources, support, training, and development from the Department of Education through programmes like "Investing in Innovation (i3)", the "Teacher Incentive Fund", the "Math and Science Partnerships programme", "Teachers for a Competitive Tomorrow", and the "Teacher Quality Partnerships initiative".13

226. The National Science Foundation’s "Graduate STEM Fellows in K-12 Education" programme exemplifies such Federal efforts.14 This programme provides funding for graduate students in NSF-supported STEM disciplines to bring their leading research practice and findings into primary, secondary and tertiary learning settings.

227. Beyond the Federal Government, a multitude of collaborative initiatives have emerged in the United States around the national STEM priority. "Change the Equation", which consists of a coalition of CEOs, has committed to expanding high-quality STEM programmes for more than one million students.15

228. Individual companies have also risen to the task, having invested extensively in a multitude of initiatives, such as Texas Instruments and its "College Readiness Programme", which works with pre-collegiate students to enhance science and math proficiency and to expand access to traditionally under-represented students.16

229. In another initiative, the Carnegie Science Centre partnered with Chevron and other companies and foundations to create the Chevron Centre for STEM Education and Career Development to assist both students and teachers pursue:

- inquiry-based science and math education;
- integrated, multidisciplinary learning;
- project-based group learning; and
- career awareness, to expose students to an array of STEM-related jobs through interaction with STEM professionals.17

**Intellectual property education**

230. Turning specifically to IP, IP education is a vital aspect of a national innovation education strategy. Intellectual property is critical to translating ideas into outcomes, and while our scientists may create start-ups, our engineers may be our entrepreneurs, without a strong understanding of IP, the potential of innovation may never be realized.

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10 *A Strategy for American Innovation*, National Economic Council and Office of Science and Technology Policy, October 2015, page 27.
11 See [https://www.whitehouse.gov/issues/education/k-12/race-to-the-top](https://www.whitehouse.gov/issues/education/k-12/race-to-the-top).
12 See [https://www.whitehouse.gov/issues/education/k-12/educate-innovate](https://www.whitehouse.gov/issues/education/k-12/educate-innovate).
17 See [http://www.carnegiesciencecenter.org/stemcenter/](http://www.carnegiesciencecenter.org/stemcenter/).
231. At a threshold level, and as has been detailed by the European Union today, IP systems, including patent registrations systems, provide a vast educational resource, making vast amounts of knowledge available, often at a click of a button, for students and educators as well as innovators and creators. Beyond the significant investment in its IP registration systems, the United States has realized the priority of IP education through numerous educational initiatives.

232. For example, the USPTO's Office of Education and Outreach engages in considerable STEM and IP outreach programmes. We will mention only a few today.

233. Under the "Science of Innovation" project, for instance, USPTO and the National Science Foundation collaborate with NBC Learn to provide shelf-ready resources for teachers to promote STEM education that assists students and teachers in making the connection between research and development and the creation of IP, including better understanding how STEM knowledge is connected to IP development, and how IP protection helps inventors share their work, as well as capitalize on it.18

USPTO's annual "National Summer Teacher Institute on Innovation, STEM and Intellectual Property" (NSTI) combines experiential training tools, practices, and project-based learning models to support elementary, middle, and high school teachers in incorporating concepts of making, inventing, and innovating into classroom instruction.19

234. The USPTO also works with the Foundation for Inspiration and Recognition of Science and Technology on initiatives focussed on upper elementary and middle school students, which engage them in computer science and programming. The goal of these initiatives is to assist students to create IP and to give them the means to understand how to protect it and in some cases commercialize it.20

On-the-job training and employee capacity building

235. Turning from STEM and IP education, we will touch briefly on the importance of on-the-job training. Enabling our innovators does not stop in our schools and universities, and continues on into employment.

236. Maintaining an innovative economy requires a skilled technical workforce, which requires not only education in STEM and IP in the classroom, but also practical on-the-job training. This gives our scientists and engineers the opportunity to continue their education, enhance their skills and stay up-to-date with the latest developments and discoveries.

237. The OECD has articulated the importance of training as part of the continuum of education for innovation, explaining:

This complementarity of education, training and innovation suggests a virtuous circle whereby a workforce with a higher initial level of education stimulates employers to further develop their productive capacity through training and both of these improve the capacity of the workforce to deal with technical change ... A vicious circle is evident whereby low initial educational attainment constrains further acquisition of knowledge and capacity to engage in innovation.21

238. Such workforce capacity also promotes collaboration and diffusion by integrating advances in academia with "real world" challenges. For example, the Workforce Innovation and Opportunity Act, which entered into force in the United States in 2014 allows the public workforce system to train more systematically youth and adults, who are out of work to start their own businesses.22

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20 See http://www.firstinspires.org/.
239. Other US Federal innovation-oriented training programmes include the National Science Foundation’s Innovation Corps (I-Corps), which “provides entrepreneurship training for federally-funded scientists and engineers, pairing them with business mentors for an intensive curriculum focussed on discovering a demand-driven path from their laboratory work to a marketable product.”

**Diffusion**

240. Finally, education provides an essential conduit for diffusion. University classrooms and laboratories often serve as international collaboration centres, massing the respective contributions of innovators from around the world.

241. Idea-sharing is indeed the essence of education. And our respective university laboratories and research centres engage in the daily incremental application of innovations from one context to the pressing questions in other fields of technology and from other regions. Promoting education also promotes diffusion.

242. As one commentator suggests, “accelerating diffusion of innovation ... is the dynamic driving today’s world and tomorrow’s” concluding that “one could make the argument that customers – especially the so-called early adopters – are the true innovators in the development process.”

243. While this may represent something of a unique articulation of theories of innovation diffusion and absorptive capacity, it fully captures the importance of diffusion in our innovation policies. Put another way, diffusion and absorption are inherently part of the innovative process, not only in terms of spreading innovation, but also as innovation itself through adaptation. Diffusion therefore can catalyse future innovation, including in different sectors, in different countries to deliver new contributions with respect to economic and social demands previously distinct from the original innovation.

244. Not surprisingly, education, including in STEM and IP, play an integral role in such diffusion. As OECD researchers have explained, "improved technology is diffused ... through education, training and experience." This is consistent with the theory of innovation diffusion, including by one of its key proponents, Everett Rogers. In his seminal work, entitled “Diffusion of Innovation”, Rogers enumerates five elements of diffusion, which include adopters. Adopters are further grouped into five categories, with early adopters defined by their advanced education.

245. Absorptive capacity theory draws similar conclusions regarding the fundamental importance of education to the dissemination of knowledge. According to one study on innovation systems – which enumerates the 20 components of absorptive capacity – primary, secondary, tertiary and university education are each identified as critical. Not surprisingly, IPR regimes are also listed among the 20 critical components of absorptive capacity.

**Conclusion**

246. To conclude, at its core, today’s agenda item on education and diffusion is about realizing human potential. We have looked closely at how education, in STEM and IP, is vital to innovation, both in terms of its generation, as well as its diffusion.

247. While education in STEM and IP facilitates the innovation that drives technological change, education also provides one of the best ways to diffuse the benefits of innovation, to absorb such...
change and to catalyse future innovation. Education is, therefore, integral to perpetuating the virtuous cycle of innovation and its diffusion.

11.6 Chinese Taipei

248. Chinese Taipei is pleased to join the United States and other Members in sponsoring this agenda item: "Intellectual property and innovation: education and diffusion". We also very much appreciate the contributions from the European Union, Japan, Switzerland and the United States on this subject.

249. Education is, of course, central to innovation, and plays an important role in national innovation strategies. The addition of intellectual property rights (IPRs) to the curriculum is an essential part of such strategies. This ensures that innovators understand not only how to protect their work, but also how to use IPRs to help cultivate new resources for the development of high-quality industries.

250. We are currently striving to turn ourselves into an island of advanced sciences and technologies. In line with this objective, and in order to cultivate more IPR and STEM professionals, the Ministry of Economic Affairs, the Ministry of Education, and the Ministry of Science and Technology are now funding many research and executive projects.

251. STEM education is essentially aimed at strengthening the quality of our manpower and our overall competitiveness. The curriculum combines scientific inquiry, technology implementation and engineering design with mathematical analysis. It also cultivates students' abilities to explore and solve problems, become team players and prepare themselves for creative thinking. In short, it enables students to adapt to the never-ending changes in science and technology.

252. Our 12-year Compulsory Education curriculum is multidisciplinary and "hands-on", and is designed to equip high-school graduates with all the necessary tools for their subsequent education or employment. This is precisely in line with the purpose of STEM education. Several STEM education curricula are currently in experimental stages of development. A couple, which are unique and have proven potential, have already been developed.

253. We have been funding research into the development of STEM education for a few years now. According to our findings, in a variety of subjects, the principles of STEM education have already been incorporated into the curricula of primary schools, high schools, vocational schools, and universities. Specific areas include 3D printing, educational robotics, mechanical and civil engineering construction, industrial design and electronics, as well as science and technology.

254. STEM education has definitely had a positive impact on innovation in our domestic industries, particularly in the nurturing of creative talent well-versed in various fields of technology, and in the promotion and development of high-quality industries. Manpower is central to innovation, therefore creative talents must be encouraged if we are to achieve greater technological development and product innovation. To this end, we have actively encouraged development in the Internet of Things (IoT), and green, cultural and creative industries. We shall certainly continue to cultivate multidisciplinary talents in the future towards the betterment of our high-tech industries.

255. Although we have already implemented numerous policies aimed at developing STEM education, there is still room for us to improve and upgrade our systems. So we are very much looking forward to hearing from other delegations about their current policies in this regard, and to learning from their experiences and successes.

11.7 Singapore

Overview: the importance of intellectual property for Singapore's economy

256. Strong IP regimes have been proven to spur growth, create new jobs, and foster socio-economic development. In Singapore, industries with a strong IP focus account for almost half of Singapore's GDP, and generate 43% of all jobs in our economy. Jobs in industries with a strong IP focus are also of good quality, and pay an average premium of 29% more compared to
jobs of a similar level in other industries. On a broader scale, such industries make up 47% of international trade.

257. Recognizing the growing importance of IP as a driver of business growth in this knowledge-based and innovation-driven globalized economy, we have launched a five-year programme costing S$19 billion to support research, innovation and enterprise activities. This will supplement our existing IP Hub Master Plan, which was launched in April 2013 with a view to developing our IP services sector, and create high-value job opportunities for Singaporeans.

258. But it is not enough to simply build the ship; it still needs a trained crew to sail. Intellectual property education and awareness is an essential prerequisite for reaping the maximum benefits from a strong IP ecosystem and the opportunities it offers. We have therefore implemented a number of initiatives that target all ages, from school children to professionals, with the aim of empowering our workforce with specialized IP skill sets.

The IP Competency Framework (IPCF): multidisciplinary pathways for IP professionals

259. The first initiative is targeted at professionals who already have a good technical background in IP and are knowledgeable about the IP ecosystem in Singapore and beyond.

260. The IP Competency Framework (IPCF) was developed to map out structured, multidisciplinary pathways for IP professionals. Developed by the industry for the industry, it focusses on imparting specialized skill sets to professionals, such as IP strategists, IP lawyers, patent attorneys, IP technology consultants, IP management consultants and IP valuers.

261. To ensure the quality of service standards and to protect the users of IP services (in other words, the public), the Intellectual Property Office of Singapore (IPOS) works closely with industry bodies to certify professionals who have demonstrated a prescribed level of skills, experience and know-how in their areas of specialization. For example, IPOS works with Singapore's Institution of Engineers to jointly certify IP Technology Consultants, and with the Singapore Business Advisors and Consultants Council to certify IP Management Consultants. These certifications ensure that IP professionals remain in touch with the latest industry developments and have the requisite skills, while gaining recognition for their knowledge and experience.

The Intellectual Property Academy in Singapore – a touchpoint for professional IP education and training

262. The second initiative, the Intellectual Property Academy of Singapore, is an accredited training provider that enables individuals to chart their career paths in the IP industry. It also serves as the capacity-building arm of our Intellectual Property office and offers a broad range of graduate and certification programmes, executive programmes and overseas programmes. The Intellectual Property Academy also collaborates with renowned institutions to promote and enhance IP knowledge and capability. Some key partners include the World Intellectual Property Organization, the Franklin Pierce Centre for Intellectual Property, the Centre of Intellectual Property Studies of the University of Strasbourg, the Sino-Singapore Guangzhou Knowledge City, the International Intellectual Property Commercialization Council, Renmin University of China, Jinan University, and our local Singapore Institute of Technology. Notably, the annual WIPO Summer School in Singapore has brought together students and young professionals from all over the world for an active discussion and exchange of ideas. The Intellectual Property Academy also conducts a range of high-level IP conferences and roundtable discussions, such as the biennial Global Forum on Intellectual Property, enabling the exchange of ideas on the latest trends and key issues in the IP arena.

School outreach: raising intellectual property awareness among the creators and consumers of tomorrow

263. The third initiative is focussed on engaging the next generation - schoolchildren. IPOS collaborates with the Ministry of Education in Singapore to infuse the topic of IP into the school curriculum. Students are exposed to basic IP and copyright concepts, including IP as manifested in various forms and formats.
264. Given the high rate of social media use among our youth and Singapore's high Internet penetration rate, IPOS also carries out social media campaigns on Facebook and Twitter that appeal to a younger audience through the "Honour Intellectual Property" or "HIP" Alliance. The HIP Alliance's materials, which include articles and comics, are designed to subtly communicate key outreach messages, such as consuming media through legitimate channels and standing up against piracy, and entreating the target audience to spread awareness amongst their peers.

Conclusion

265. With economic growth increasingly driven by innovation and knowledge creation, the protection and exploitation of IP has never been more relevant and important for future growth. In building an ideas-driven and innovation-driven society, we will all need to make IP knowledge and skills easily accessible for our future generation who will be tomorrow's inventors, designers, composers, and consumers.

266. We hope that our presentation today has been useful, and we look forward to further discussion at the TRIPS Council on how Members, particularly developing countries, can build up their human resources in the IP field.

11.8 Hong Kong, China

267. Hong Kong, China is pleased to co-sponsor this discussion item together with Australia, the European Union, Japan, Peru, the Russian Federation, Singapore, Switzerland, Chinese Taipei and the United States, under the "IP and Innovation" series of the Council. We are delighted to have the opportunity to share our experience on education on IPRs with the Membership.

268. Hong Kong, China fully understands the importance of a robust IPR protection regime for investors and creators. In addition to a robust legal framework, effective enforcement actions, strong cross-boundary cooperation and close engagement with stakeholders, we also have in place a comprehensive public education strategy to nurture a culture that appreciates, respects and exploits IPRs, especially the younger generation.

IPR education at schools

269. Our Government is committed to promoting awareness of IPRs of individuals and respect for the rights of others. The Education Bureau (EDB) strives to provide students with ample learning opportunities to develop an understanding of the concepts and values in relation to IPRs in our holistic school curriculum. The issue of IPRs is a cross-disciplinary issue and has been covered in our school curriculum in many subjects such as General Studies at primary level, Life and Society at junior secondary level, Liberal Studies at senior secondary level, and moral and civic education.

270. For primary school students, the focus is more on developing awareness on obtaining and using information ethically, as well as nurturing positive values such as integrity and responsibility. When they reach a more senior level, students are asked to relate acts of possible infringement of copyright in software and Internet piracy, and to familiarize themselves with some of the legal consequences related to the infringement of copyright in Hong Kong, China through Life Events Exemplars under moral and civic education.

271. Various education resources such as educational television programmes on IPRs and a dedicated Cyber Ethics website for Students and Youth have been developed for schools to help nurture students' understanding of IPRs and the positive values of such rights. Professional Development Programmes have also been designed for teachers to enrich and enhance their understanding of IPRs in curriculum development, as well as learning and teaching such as seminars on IPRs and music.

Education on intellectual property rights outside the school curriculum

272. Outside the formal school curriculum, the Intellectual Property Department organizes a number of IPR education programmes to cater for students at different stages of their development.
273. For primary and secondary schools, well-trained IP tutors are sent to schools to introduce students to the idea and concept of IPRs under our school visits programme. We have also launched the Interactive Drama Programme which aims to promote awareness of the adverse effects of internet infringement and respect for creativity, originality and IPRs among students in an interesting and interactive way. Theatre company performers interact with students during the performance and students can gain a more lively experience of why IPRs should be respected. To encourage students to familiarize themselves with the concept of copyright and the need to respect other people's labour and skills behind it, we also jointly organize various competitions and a prize presentation ceremony for the Copyright Education Campaign every year.

274. For tertiary students, speakers are invited from such sectors as graphic design, the music industry, the movie industry, IP bodies, to encourage creativity and to share first-hand views and experience in their working environment and strategies of IP protection. Competitions are also jointly organized such as a start-up challenge, design and printing competition with industry organizations for students.

275. Our law enforcement agency for IPR infringement, the Hong Kong Customs, also works with the IPR industry to cultivate a sense of respect for IPRs among the younger generation. The Hong Kong Customs has launched the Youth Ambassador against Internet Piracy Scheme in collaboration with the industry and the Intellectual Property Department. This programme comprises different educational activities such as exchange programmes between Hong Kong, China and Mainland China or overseas countries, local visits, film shows, creation contests and award presentation ceremonies. These activities give young people a more interactive experience in learning about IPR protection and the fight against infringement.

276. We are glad to have heard experiences from several Members under this agenda item. Hong Kong, China looks forward to more interventions today.

11.9 Russian Federation

277. Intellectual property education and diffusion is reasonably viewed in many countries as one of the key aspects of the national innovation strategy. It must be taken into account, however, that this sphere of IP contains many aspects pertaining to many different professional fields. This aspect may be conventionally divided into several issues: legal protection, commercialization, and management of IPRs. Thus, IP education may take many forms and the target audience must be primarily taken into account in this process.

278. Currently, the process of modernization of the educational system is ongoing in the Russian Federation with due consideration of the demands for professionals with knowledge in the sphere of IP and innovation processes. Apart from the above, the development of IP education can be explained by the increasing contention that many Russian universities pay for the training of professionals in this sphere of legal protection and commercialisation and management of IPRs. This is because higher education allows the highest skilled specialization to take place which ensures a more efficient presentation of IP-related material to various target audiences.

279. I want to present an overview of the established system of higher education in the sphere of IP in the Russian Federation. The issues of legal protection and IP enforcement are normally started within the framework of programmes of law studies. Since the training of lawyers in bachelor and masters degrees necessarily implies the learning of a wide range of legal disciplines, most higher education institutions confine themselves to IP courses in the form of extra-curricular sessions or seminars. This allows students demonstrating an interest in IP laws to receive a background in IP systems. For example, based on its faculty of law, Moscow State University organizes an inter-departmental course on juridical support of commercialization of IPRs, which incorporates a series of lectures and practical sessions. Kutafin Moscow State Law University creates an operating IPR faculty. This department was established as a result of the preparation between the university and the Intellectual Property Court of the Russian Federation. The Russian State University of Justice also realizes its education in the sphere of IPR protection, in particular, within the Master's Programme of court protection of IP. This programme was designed for judges and lawyers. A number of leading higher education institutions in technical areas offer education in juridical studies with a focus on the sphere of IP. In particular, the National Research Nuclear University (MEPHhI) offers a special learning course in legal support of innovation economy and the Bauman Moscow State Technical University offers a major in IP management.
280. Intellectual property education may be of no less importance for scientists, representatives of technical professions and managers of innovative companies than for lawyers. Specialists in the area of innovation should be aware of the economic value of IPRs, able to manage such assets and keep afloat to implement their commercial potential. A number of federal universities offer programmes on IP management within the innovation studies course. The Federal University of Siberia, the National Research Technical University of Kazan, Saint Petersburg State Polytechnique University and many others.

281. In Skolkovo newly created technological hubs called innovation centres have been established in order to support innovation activities with a proper education, including the Skolkovo Institute of Science and Technology in which IP issues are those of key learning subjects.

282. In the Russian Federation, a unique higher education institution specializing in IP, also exists. As an institution, the Russian State Academy of Intellectual Property (RGAIS) is subordinate to the Federal Service of Intellectual Property of the Russian Federation. RGAIS activities encompass many levels of training of IP professionals. The focus of the main work is to provide high-level education under a bachelor or master degree. RGAIS also offers advanced training for seminars, short courses, and distance learning. At an advanced level of education, post-graduate courses for scientific and academic professionals in the sphere of IP are offered as well, including a doctoral degree. Apart from that, RGAIS ensures professional training for lawyers, as well as delivering courses for patent attorneys' candidates.

283. Taking into account the need for qualified specialists in the sphere of protection, commercialization and management of IP, the higher education institutions of the Russian Federation carry out a number of additional activities in this field of IP education and diffusion such as, for example, the establishment of standards in the area of IP. Training of professionals in this field of innovation and IP must be in compliance with the requirements of the market. Thus, the Federal State Educational Standards and the Federal State Professional Standards in this field of IP are being counter-developed. Federal State Educational Standards constitute a list of mandatory requirements applied to the implementation of training programmes, including at the level of higher education by the duly certified educational institutions. Professional standards contain the characteristics of the qualification needed by an employee in order to carry out a certain professional activity.

11.10 Australia

284. Australia is pleased to co-sponsor this TRIPS Council agenda item on the role of education and diffusion, particularly in the area of education in science, technology, engineering and mathematics in stimulating global innovation and creativity. Education in these areas is a building-block for sustainable economic and social development by all Members.

285. We welcome this opportunity to share initiatives Australia is implementing to harness skills for the future, and we encourage other Members to share their national experiences on this important topic. Australia will use its intervention to focus on the role of education and diffusion in the areas of science, technology, engineering and mathematics (known collectively as STEM) in promoting innovation and in a creative economy. A full-length version of Australia's statement is available at the door and will be provided to the Secretariat.

286. This Agenda recognizes that STEM are critical to a resilient, adaptable knowledge-based economy.

• This Agenda highlights our strengths - strong economic fundamentals, a stable investment climate and our high quality research organizations.

• It also identifies obstacles we need to overcome. These include falling maths and science skills among our students, and the lowest level of industry-research collaboration in the OECD.

287. In offering a snapshot of our national experience on this topic, Australia highlights some of the initiatives we are implementing under our National Innovation and Science Agenda grouped around four themes
a. primary and secondary education in STEM;
b. promoting STEM careers and retaining STEM talent;
c. commercializing STEM discoveries; and
d. improving Australia’s international innovation and science collaboration.

Primary and secondary education in STEM

288. Australia recognizes that leading countries with high levels of competitiveness and technology entrepreneurship start early. They create lifelong STEM-literacy.

289. This is an area where Australia recognizes we can do better: We need inspired learning and curricula that value STEM, skilled STEM educators and a community that recognizes the public benefits of a STEM education. This is why we are investing in educational initiatives that build on global best practice.

290. One example is “Primary Connections: Linking Science with Literacy”, a programme developed by the Australian Academy of Science and supported by the Federal Department of Education and Training. This programme engages students through hands-on classroom activities to apply their problem-solving skills to the world around them.

291. Another example is the first national girls-only Curious Minds STEM extension mentoring programme held in December 2015 at the Australian National University. Children from diverse backgrounds spent four days learning more about science, informatics and mathematics and being mentored by inspiring women in science.

292. The Government is also seeking to drive digital literacy in Australian schools. A new annual "Cracking the Code" competition will encourage young Australians to practise their coding and related skills in logic and critical thinking.

Promoting STEM careers and retaining STEM talent

293. Australia also recognizes students must have clearer pathways from the classroom to a rewarding career: We want to see Australian STEM research contribute to the global flow of new ideas and their smart application, both in newly emerging sectors such as nanotechnology and in more traditional sectors such as agriculture and mining.

294. We intend to meet the growing demand for courses for budding entrepreneurs, so they build the market connections that are vital to start-up success. And we recognize that strong STEM educational outcomes help Australia to remain an international education partner of choice.

295. One challenge we shared with Members during our 2015 dialogue on the role of women in driving innovation was the significant under-representation of Australian women in high level research positions.

296. Under the National Science and Innovation Agenda, the Government is redoubling its efforts to meet this challenge. In September 2015, the Australian Academy of Science and the Australian Academy of Technology and Engineering launched a pilot of an effective UK scheme to increase the number of female researchers in senior STEM roles.

Commercializing STEM discoveries

297. A talented pool of STEM educators and professionals is important to boosting innovative and creative output. Australia has a strong track-record in this area. Success stories of Australia’s well-established Cooperative Research Centre Programme include the Cochlear Hybrid system (which has restored hearing to over 140,000 hearing impaired adults and children worldwide), and the development of a world-first genetic diagnostic test which led to Australia eradicating equine influenza.
But having talented people is not enough. This was highlighted in a 2015 report commissioned by Australia's Chief Scientist, called Boosting High-Impact Entrepreneurship in Australia. This report highlighted that while Australia performed well in the world's top 1% of cited research papers on STEM, we are punching below our weight in commercializing STEM discoveries.

Australia's National Innovation and Science Agenda seeks to put Australia on the path to a more innovative and entrepreneurial economy, where technological breakthroughs occur and are diffused. A number of initiatives are underway in this area. This is where a modern and flexible intellectual property framework that embraces a range of capabilities from open access regimes to smart and agile use of patent and technology transfer strategies is an important element.

Linking to the world

Finally, Australia's Global Innovation Strategy aims to improve Australia's international innovation and science collaboration, leveraging off our STEM capabilities and our successful record of partnership.

The Square Kilometre Array, a next-generation radio telescope to be located in Australia and South Africa, is a prominent example of science institutions and technology companies collaborating from around the world. At a more modest level, the pilot project Connecting Australia-European Science and Innovation Excellence has delivered 58 new small and medium-sized enterprise and research partnerships and already yielded four patents.

In closing, Australia's STEM focus is on building competitiveness, supporting high quality education and training, maximizing research potential and strengthening international engagement. The role of education and diffusion in STEM is essential for innovation. We welcome the contribution of other Members to this discussion.

11.11 Costa Rica

Costa Rica attaches great importance to education and now has a literacy rate of 97.4%. This has played a key part in our development. Today, we are facing the challenge of increasing technological literacy in support of entrepreneurship and innovation.

Costa Rica is aware of the importance of IPRs in fostering innovation. It has therefore made considerable efforts to design a public policy that assigns a fundamental role to education and diffusion in raising awareness of the significance of IPRs for business people, entrepreneurs, inventors, scientists, and society at large.

Costa Rica's National Science, Technology and Innovation Plan 2015-2021 is based on eight core pillars. One of these pillars is to strengthen the strategic use of intellectual property in research, business development and creative initiatives. It aims to make people aware of the importance of intellectual property and its use in order to increase competitiveness in the production sector, as well as to promote the country's social, economic and cultural development.

The enactment of the Law on Support for Small and Medium-Sized Enterprises reflects the implementation of this national strategy. The Law stipulates that SMEs will receive the necessary support to enhance their management capacity and competitiveness under innovation, technological development and intellectual property protection projects.

Other examples of public policy to foster IPR education are the plans for the Copyright Register and the Industrial Property Register, in order to raise awareness of the importance of protecting creative works. Both bodies have a statutory obligation to promote education in the intellectual property sphere.

They have accordingly developed strategic plans that include activities such as responding to inquiries from the public by various means, providing training for secondary school and university students, organizing dissemination tours in various parts of the country, and participating in fairs for SMEs, so as to increase knowledge of the different ways in which intellectual property rights in, for example, works, inventions, trademarks and industrial designs can be protected.
309. The Copyright Registry estimates that the number of applications for registration of works and contracts has risen as a result of the training it has provided. The Industrial Property Registry likewise reports that its Technology and Innovation Centre recorded a significant increase in activity and requests for services in 2015.

310. Costa Rica has worked to develop a comprehensive public policy to foster innovation. In that context, experience in respect of IPR education and diffusion has proved very positive. The work has only just begun, but we hope that it will produce further results in the medium and longer terms, through its impact on businesses and respect for intellectual property among the younger generations.

11.12 Canada

311. Canada is pleased to take part in this discussion on the topic of "Education and diffusion" as it relates to IP and innovation, and to sharing our national experiences on the issue. We also look forward to hearing about other Members' experiences in this regard.

312. The Government of Canada strongly supports innovators, which are key to success in the knowledge-based economy. As some Members may be aware, Canada's Department of Innovation, Science and Economic Development (formerly Industry Canada), recently embarked on the development of an Innovation Agenda, to help Canadian businesses grow, innovate and export. Canada's Innovation Agenda includes expanding effective support for incubators, accelerators, the emerging national network for business innovation and cluster support, and the Industrial Research Assistance Programme (IRAP).

313. As part of this agenda, the Government of Canada recently announced several investments in research at Canadian universities, through the Canada Research Chairs Programme. The programme is a federally funded initiative that includes over 1,700 researchers at more than 70 post-secondary institutions across the country.

314. The Canadian Intellectual Property Office (CIPO) also plays a key role in supporting Canada's Innovation Agenda, through the implementation of new and improved IP business services for Canadian small and medium-sized enterprises (SMEs), innovators, and students – our future entrepreneurs. Over the last ten years, CIPO has created a range of products and services for both SMEs and students, in order to demonstrate the benefits of IP in innovation and how to exploit it in the commercialization of research.

315. For instance, CIPO has developed the IP Case Studies project as a set of teaching tools to demonstrate the strategic value of IP to college and university students. The IP Case Studies aim to give students a baseline knowledge of IP, foster classroom discussion on the use of IP in the inventive process, and explain how IP can be a competitive advantage in business. The case studies are designed to reflect realistic career situations for students, especially those studying engineering, science, business, and industrial design. Since its launch in 2009, CIPO has successfully delivered sessions at more than 70 post-secondary institutions across Canada. CIPO also provides the case studies online, and makes trained Discussion Leaders available to support the delivery of materials at Canadian educational institutions.

316. CIPO also provides an IP Bank of Speakers, to deliver IP presentations to public and private organizations across Canada, including to educational institutions. The IP Bank of Speakers, which is a collaborative effort between CIPO and the Intellectual Property Institute of Canada, offers presentations on IP generally, as well as more specialized presentations on trademarks and patents.

317. For 2016-2017, CIPO continues to establish itself as the centre of expertise on Canadian IP business development and customer service, by designing, developing, testing, and introducing new IP services, products, and tools aimed at improving awareness and the effective utilization of IP among SMEs, innovators, and students. For instance, given the need for IP innovation among businesses and students, CIPO is currently defining its approach to online training courses at different stages of the business lifecycle. Given the surging popularity of Massive Open Online Courses (MOOCs), CIPO is also examining the possibilities of similar courses for IP training.
318. CIPO will also be negotiating strategic partnerships with research and post-secondary institutions to develop a network of partners engaged in the delivery of business services for CIPO, directed to SMEs and innovators. This includes Intermediary Training to assist SMEs in commercializing their research.

319. In conclusion, Canada would like to highlight the importance of IP-related education and outreach initiatives for educational institutions and students, as they set out to commercialize their ideas. As we look towards our students, researchers, and emerging entrepreneurs as the sources of future innovation, such initiatives will help facilitate the diffusion of ideas from our classrooms and laboratories to the global economy.

11.13 India

320. My delegation would like to thank the delegations of Australia; European Union; Switzerland; United States; Japan; Singapore; Peru; the Russian Federation; Chinese Taipei and Hong Kong, China for sponsoring the agenda item on "Intellectual property and innovation: education and diffusion". I would also specially thank the delegation of Switzerland for their communication contained in document IP/C/W/612 dated 23 February 2016 on this agenda item.

321. Let me just recall our intervention when the agenda item on IP and innovation was first introduced in the TRIPS Council. Our statement is still relevant when we discuss education and diffusion under the broad theme of IP and innovation. In that meeting, India pointed out that the word "innovation" appeared just once in the TRIPS Agreement, in Article 7, which states that IPRs "should contribute to the promotion of technological innovation and to the transfer and dissemination of technology", not for the sake of innovation itself, but "to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations". Thus, the TRIPS Agreement makes it very clear that the purpose of the IP system is not solely to protect the commercial interests of the IP holder, but constitutes one of the many tools available to the society to achieve technological development, and social and economic welfare and innovation.

322. Petra Moser, faculty at Stanford University, in the United States, in her paper entitled "Patents and Innovation: Evidence from Economic History" published in the Journal of Economic Perspectives—Winter 2013, after historical comparison of countries with strong and weak patent regimes, concluded:

"Overall, the weight of the existing historical evidence suggests that patent policies, which grant strong intellectual property rights to early generations of inventors, may discourage innovation. On the contrary, policies that encourage the diffusion of ideas and modify patent laws to facilitate entry and encourage competition may be an effective mechanism to encourage innovation."

323. Innovation should not be viewed within the narrow prism of IP monopolies, but be framed within a holistic, knowledge ecosystem that includes open innovation, open knowledge approaches and delinkage of R&D costs from product prices. According to the trilateral study by the WTO, WHO and WIPO, "Promoting Access to Medical Technologies and Innovation: Intersections between Public Health, Intellectual Property and Trade" (2013) (page 126):

"Patent law is not a stand-alone innovation system. It is only one element of the innovation process, and one which can be deployed differently in diverse innovation scenarios. Patent law has little bearing on many other factors that lead to the successful development of technologies, e.g. the nature and extent of demand, commercial advantages gained by marketing and ancillary services and support, commercial and technical viability of production processes, and compliance with regulatory requirements, including through effective management of clinical trials data."

324. The trilateral study also highlights that innovation in medical technologies for neglected diseases suffers from market failure as conventional IP-based incentives do not correspond to the nature of demand for treatments of these diseases. To overcome the market failure of the IP system for neglected diseases, the trilateral study mentions open innovation structures such as the
Open Source Drug Discovery (OSDD) model of India's Council of Scientific and Industrial Research (CSIR), and collaborative research such as WIPO Re:Search Sharing Innovation in the Fight against Neglected Tropical Diseases. The study also talks about the concept of delinking the price of the final product from the costs of R&D by "push" mechanisms such as grant funding and tax credits for investment in R&D and by "pull" mechanisms that offer rewards for the final outcome of R&D of certain products such as milestone or end prizes.

325. The WHO at the 68th World Health Assembly (WHA) adopted the "Global Action Plan on Antimicrobial Resistance". The Action Plan, _inter alia_, states that most pharmaceutical companies have stopped research and development of new antibiotics and calls it a "serious market failure" and a "particular cause of concern".

326. In the context of innovation and access to medicines, it is also pertinent to mention the appointment of the United Nations Secretary General's (UNSG) High-Level Panel on Access to Medicines ("the High-Level Panel") in November 2015. The High-Level Panel comprises 16 eminent individuals associated with the promotion of innovation and access to medicines, in line with the ambitions of UN Member States, as articulated in the 2030 Development Agenda, and in support of attaining Sustainable Development Goal 3 to ensure healthy lives and promote the well-being of all. The overall scope of the High-Level Panel is to "review and assess proposals and recommend solutions for remedying the policy incoherence between the justifiable rights of inventors, international human rights law, trade rules and public health in the context of health technologies". The High-Level Panel is expected to present its final report to the Secretary-General in June 2016.

327. Turning to education and diffusion of IP and innovation, India declared the 2011-2020 decade as the Decade of Innovation. The spirit of innovation must permeate all sectors of the economy from universities, business and government to people at all levels. The future prosperity of India in the new knowledge economy will increasingly depend on its ability to generate new ideas, processes and solutions, and the process of innovation will convert knowledge into social good and economic wealth.

328. In India, many Government institutions at centre and state level, industry organizations, and non-governmental organizations are involved in creating awareness of IP. Owing to lack of time, I will restrict myself to a few important programmes:

329. Innovation in Science Pursuit for Inspired Research (INSPIRE) is an innovative programme developed by the Department of Science and Technology to attract talent to the excitement and study of science at an early age, and to help the country build the required critical resource pool for strengthening and expanding the S&T system and R&D base.

330. The Ministry of Human Resource Development, Government of India, is implementing a scheme of Intellectual Property Education, Research and Public Outreach (IPERPO) with the objectives, _inter alia_, of encouraging the study of IPRs in universities and other institutions of higher learning and developing and encouraging study in specialized courses on IPRs; creating awareness about IPRs; and organizing activities such as seminars and workshops for IPR awareness. Under the scheme thus far, 20 IPR Chairs have been established in various universities and institutes, considering their potential for development and growth of IPR education, research and training.

331. The Rajiv Gandhi National Institute of Intellectual Property Management was established by the Ministry of Commerce and Industry in 1980. The Institute is engaged in conducting training and awareness programmes about IPRs and caters to the needs of training of examiners of patents, designs, trademarks and geographical indications, IP professionals, and IP managers. It also imparts basic education to user communities, government officials and stakeholders involved in the creation, commercialization and management of IPRs, and facilitates research on IP-related issues, including the preparation of study reports and policy analysis of relevance to the Government.

332. The Government of India launched a Scheme for Start-ups Intellectual Property Protection (SIPP) in January 2016. The scheme will be implemented by the Controller General of Patents,
Trade Marks and Design and its objective is to promote awareness and adoption of IP among start-ups.

11.14 Bangladesh

333. The delegation of Bangladesh would like to thank the delegations of Australia; the European Union; Hong Kong, China; Japan; Peru; Chinese Taipei; the Russian Federation; Singapore; Switzerland; and the United States for presenting this item. I would also like to especially thank the delegation of Switzerland for their communication contained in IP/C/W/612 which contains very useful and encouraging information regarding the Swiss education system. We would also like to thank the delegation of Japan for their very interesting presentation on their IP programme in schools and the delegation of Australia for their document on national innovation and science agenda under STEM education.

334. This is a very important issue and we consider that IP is an important catalyst which could contribute immensely towards socioeconomic growth and development and well-being. Unfortunately, not all countries benefit from their IP regimes in the same way. We believe that our goal should be to achieve more balance in our IP system, protecting the rights of innovators as well as the needs of the public and the society, that is an equitable balance between the rights and responsibility. I would like to quote from paragraph 3.1 from the Swiss document:

"There is no single or best way to raise awareness or put an IP education and training system in place. Much depends on a country's particular circumstances, stage of development, economic priorities, know-how and other factors."

335. In the same vein, we would also say there is no one-fit-all solution. We consider that based on the experience in the developing countries and LDCs, the education system should promote and encourage innovation first, so that a child is initially aware of the need to imagine and then work on his dream or creativity. The commercial aspect of IP comes later.

336. One downside of the present patent system is to be primarily driven by commercial benefit and thus innovation in the less commercially rewarding fields suffers since innovators are not interested to invest their time and energy in the invention which produces less commercial returns. Their diligence and uncommon requirements in developing countries and LDCs perennially suffer from this dilemma. We are hopeful that education will promote and emphasize the general idea of innovation, and not the commercial interest as exposed by the existing IP system and only then the true benefit of innovation and IP would be realized through education.

11.15 Korea, Republic of

337. First of all, on behalf of the Republic of Korea, I would like to say that it is an honour to be given this opportunity to present our views and suggestions on this agenda item "Intellectual property and innovation: education and diffusion" in hopes of further strengthening the global IP system.

338. Korea has long recognized the crucial roles that IP and entrepreneurship play in economic growth and the creation of decent jobs. Hence, the Korean Government has pursued various policies to promote an IP eco-system in which IP and entrepreneurship can contribute to the creation, utilization and diffusion IPRs.

339. In this regard, the Korea Intellectual Property Office (KIPO) has established 196 IP schools across the country to provide education on invention tailored to students of different levels. In 2014, 230,284 students undertook IP courses in IP schools, a 14.4% increase compared with 2010. Since 2009, KIPO has provided a two-year education programme for some 150 talented participants per year to help build problem-solving skills and entrepreneurship, as well as knowledge of IP fundamentals. In addition, KIPO provides life-long education programmes with 251 online programmes. As of 2014, more than 3.1 million people have accessed these online education programmes.

340. KIPO has also shared experiences with our partners in collaboration with World Intellectual Property Organization (WIPO) and other international IP education institutions by organizing
educational programmes to nurture IP leaders. In 2014, KIPO organized 11 courses to 144 participants from various countries. KIPO has also developed IP PANORAMA, an effective teaching aid on IP laws and regulations, which is now available in 24 different languages.

341. Korea is committed to further developing IP trading courses to help our development partners, which will also contribute to the implementation of the Sustainable Development Goals, in particular Goal 9, to foster innovation.

11.16 Nigeria

342. We are taking the floor not to share our experiences on this issue, but instead to thank the co-sponsors of this agenda item. We have had interest in experiences and examples of what WTO Members are doing in incorporating IP into the curriculum of schools, to interlink schools with enterprises, the relationship between toys and trademarks and to collaboration with universities.

343. This issue is pertinent at this juncture because when one looks at the discussion at the last General Council meeting, it covers such issues as business, incorporating SMEs into the global products chain, and duty-free quote-free market access to name a few, all involving innovation. We therefore believe that this item will encourage discussion on those issues and help in assisting developing countries and LDCs to develop their creative capacity. We therefore wish to agree that experience sharing on this issue is particularly pertinent.

11.17 Brazil

344. At the outset, allow me to thank the proponents of this agenda item "Intellectual property and innovation: education and dissemination". Our delegation welcomes this debate in the TRIPS Council.

345. We understand that Article 7 of the TRIPS Agreement provides us with the necessary background for our discussion. Article 7 states that:

"The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."

346. The TRIPS Agreement clearly defines the IP system as a system of balance of rights and obligations that at the same time should contribute to the production of knowledge and its dissemination.

347. With respect to the production of knowledge and innovation, it is important to state once again that the protection of IP is only one element that leads to a favourable environment for innovation. There are ever more important elements, such as the quality of education, adequate infrastructure, collaborative research systems with a dynamic flow of ideas and access to knowledge.

348. In fact, a system of IP that grants broad rights can be an obstacle to the development of innovation. In past sessions of this Council, my delegation has already elaborated on the harmful effects of low quality patents for innovators. Patents that are not clearly defined create legal uncertainty that can work as a deterrent to innovation. In this session, we would like to make reference to an aspect more connected to the topic "education and dissemination of knowledge."

349. With respect to access and dissemination of knowledge, an unbalanced IP system can become a barrier and hinder access to education and intellectual products for those that need them the most. This hard fact became clear during the negotiations that led to the successful celebration of the WIPO Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled (Marrakesh VIP Treaty). In fact, Article 30.3 of the United Nations Convention on the Rights of Persons with Disabilities reads:
“States Parties shall take all appropriate steps, in accordance with international law, to ensure that laws protecting intellectual property rights do not constitute an unreasonable or discriminatory barrier to access by persons with disabilities to cultural materials.”

350. Currently, less than 5% of published works are available in an accessible format. In developing countries, there are estimates that only 1% of printed books are available in accessible formats. In the light of this alarming situation, the shortage of works in accessible formats became known as the "book famine".

351. International cooperation could be a tool to allow for the diffusion of knowledge in accessible forms for the benefit of some 314 million people who are blind or otherwise print disabled worldwide, according to the World Health Organization.

352. Nonetheless, since there was no international exception or limitation to intellectual property rights, lawful crossborder cooperation required international licenses from every rightholder - an almost impossible task for institutions with scarce resources.

353. Limitations and exceptions allow national conversion of books into accessible formats within each country. This system, however, is not extended to the international context, in which the absence of limitations and exceptions to copyright effectively prevents the free movement of works in accessible formats such as Braille or Daisy.

354. The Marrakesh VIP Treaty, signed in June 2013, was the result of a great diplomatic effort in the Standing Committee of Copyright and Related Rights. It originated from the proposal submitted by Brazil, Ecuador and Paraguay in May 2009. During the whole negotiation process, our delegation was working in close coordination with delegations of developing and developed countries, towards the adoption of an effective agreement that could promote, in practice, increased production and distribution of books in accessible formats for the beneficiaries of the treaty.

355. The Marrakesh VIP treaty creates two exceptions:

   a. The first exception is national: the free production and distribution of works in accessible formats in the territory of the Contracting Parties.

   b. The second exception is international: it creates unhindered cross-border exchange of such formats. The latter will contribute to significantly expand access to knowledge to blinds and other persons with print disabilities, especially in developing countries - home of 90% of all blinds or otherwise print disabled.

356. In November 2015, Brazil ratified the Marrakesh VIP treaty and we would like to encourage other Members to join us in our efforts towards the full implementation of this important international instrument.

357. In the WIPO-SCCR, discussions on exceptions and limitations are still taking place, aiming at an IP system more conducive to the dissemination of knowledge. Beyond the Marrakesh VIP Treaty, discussions on limitation and exceptions for libraries and archives, for educational and research institutions, and for persons with other disabilities also have the potential to transform the IP system in a more efficient tool to foster education, development, crossborder cooperation and dissemination of knowledge.

11.18 China

358. China would like to convey its thanks to the previous speakers for sharing their respective practices and experiences on education and diffusion with regard to IP and innovation. These practices are quite informative and inspiring.

359. As for IP and innovation, China considers that Article 7 of the TRIPS Agreement should be the most relevant mandate for the discussion and the development dimension should also be considered in the related work.
China attaches great importance to IP and innovation, and has undertaken various plans and programmes in this regard. The most recent is the national pilot demonstration working programme on IP education for primary schools and middle schools, which is jointly initiated by the Ministry of Education and the State Intellectual Property Office. In the programme, detailed targets and concrete measures are undertaken to promote educational work on IP in primary and middle schools. Through these plans and programmes, we wish to help pupils and middle school students increase their awareness of IP protection and cultivate the spirit of innovation.