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Contribution by Mexico

to the CSTD 2019-2020 priority theme on "Exploring space technologies for sustainable development and the benefits of international research collaboration in this context

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Perspectives and experiences from the Government of Mexico regarding technological change and its use for an inclusive and sustainable development

The Current global affairs and new challenges that the Government of Mexico faces, must lead to processes of reflection, in which we use exponential technologies as tools to strength innovation and help to protect our citizens abroad. It could also help us improve our consulate services worldwide making them more efficient and precise. At the same time, it is also of vital importance that we consider rapid technological change an ally in fulfilling our diplomatic duties, especially in the international system. A solid example of this is seen in social media platforms such as: Twitter, Facebook, Instagram, amongst others, here instant communication networks can help establish new ways of communication this could be between Ministries, Embassies and, other Government offices creating digital diplomacy. In a first stage we could focus on the use of these applications for direct and informal contact between our officials. It could also grant spokespersons initial response points in emergency situations, allowing the flow of information to reach the masses swiftly. For this it's only natural we allow technologies to lead an evolution in our catalogue of actions to better serve our citizens and face new obstacles.

In the framework of Mexico's new political and social landscape, it has become crucial to reconsider the government duties. New public policies must become centered on the human element. In the Government of Mexico we theorize and recognize the importance of how the democratization of technology can lead us to create new alternatives for approaching and connecting with the public function, additionally it could serve to increase the potential to innovate and lead a new Digital Diplomacy 2.0. This new concept makes evident the mainstreaming of technological advances and its impact on tall sectors. With a firm emphasis on this, we have begun to analyze a plethora of issues which thus range from philosophy to sociology, the economy and multiple interdisciplinary studies over science-technology-society. We have also taken part in the world stage with international organizations like the United Nations. All of this with the objective to fuel the understanding of this new rapid technological evolution, its links to democracy, and its uses and ethical implications.

Mexico's experience in technological democratization: approaching our connationals through artificial intelligence (AI) tools

From the Ministry of Foreign Affairs –responsible for conducting our country's foreign policy– we have developed a project (still in its pilot stage) that will speed up and help increase services that the Ministry offers. Under the coordination of the Minister´s Office, the main goal of the project is to reinforce our connationals trust through the use of new technologies. Through the creation of a *chatbot* based on Artificial Intelligence (AI), we seeks to streamline information services to the public but especially to mexicans abroad living in vulnerable conditions. This bot is expected to be in action by the end of 2019, and to be integrated in 2020 to a broader system inside the ministries *Dirección General de Tecnologías de Información e Innovación* (DGTIIN), having subsequent periodic evaluations. With this initiative, it will be sought that one of the avant-garde technologies in this case AI –along with machine learning, data management (big data) and *blockchain*–, is used to allow approaching and linking the Foreign Ministry with fellow mexicans inside and outside the country.

A framework agreement is currently under negotiation with the *Universidad Nacional Autónoma de México* (UNAM), one of the highest houses of study in Mexico. Its engineers and data scientists, will provide technical support guaranteeing a certain level of excellence, this project will be the first of its kind to be used by any of our government agencies. We seek for this project to incite the democratization of technologies worldwide.

This innovative project will also be worked with our agencies, *El Instituto de los Mexicanos en el Exterior* (IME), *El Instituto Matías Romero* (IMR) and the *Agencia Mexicana de Cooperación Internacional para el Desarrollo* (AMEXCID), always under the guidance of the *Dirección General de Tecnologías de Información e Innovación* and the Ministers Office.

Timeline: we seek to accomplish specific goals that cover gradually from informational function to data collection and participatory functions, within a period of 2 years (late 2021).

Among the particular goals of this project, the followings stand out:

1) Development and implementation of a first *chatbot* that provides information on general inquiries made by connationals.
2) Development and implementation of a second *chatbot* aimed at supporting passport and consular registration procedures for Mexicans abroad. This with the purpose of expedite the responses that are currently answered by the "Mexitel" telephone system or through the official website. Term: installation in the first semester of 2020 at the Ministry of Foreign Affairs portal and on the IME´s page based on the integration of the various diversity databases.
3) Development and implementation of a third *chatbot* for the protection of Mexicans abroad, with the existing regulations –consular guide, health window, financial inclusion, etc. –. For the websites of the 51 consulates and Embassy in the United States. To have an app made for cell phones of Mexican consular officials and diplomats in the various Mexican representations abroad.

4) Development and implementation of a fourth *chatbot to* reinforce cultural diplomacy, tourism diplomacy, economic promotion and the exercise of vote of nationals abroad, on websites of our embassies and consulates in general.

This aligns with the goals of the *Plan Nacional de Desarrollo 2019-2024*, that involve three general axis: justice and rule of law, welfare, and economic development; and three transversal axis: gender equality, non-discrimination and inclusion; fight against corruption and improvement of public management; territory and sustainable development. Likewise, the fulfillment of these goals will be evaluated through a series of strategic and management indicators, which will allow adjustments and improvements, as well as, ensuring accountability and monitoring the impact of the strategy.

In a transversal way, to divulge this technological innovative tool between Mexican officials and diplomatic bodies, two main lines of action have been proposed to be carried out in collaboration with the IMR: 1) The implementation of a course for the capacitation of mexican diplomats on this tool and then; 2) Publish various dissemination articles in the *Revista Mexicana de Política Exterior* and in another academic and journal medias. Both lines look forward to be implemented within the framework of the role of digital diplomacy 2.0 and the impact of a rapid technological change at the Ministry of Foreign Affairs of Mexico.

Experiences of the Mexican Government in the exploration of space technologies for Sustainable Development Goals (SDGs)

Within the policies of rapid technological change, space exploration becomes a transcendental mechanism searching goals that benefit humanity. It's important to emphasize that globally, the space environment and its development faces great challenges These challenges lead to the examination of proactive solutions to problems that the world faces. In this way, Mexico has generated new ideas and opportunities that constitute into the construction of space technologies that promotes the achievement of the SDG´s.

With the technological advances brought by the fourth industrial revolution, space technologies must be protected under a democratization of technologies. This democratization needs to be supported by the construction of opportunities, helping the most vulnerable communities. Mexico, with the support of the *Agencia Espacial Mexicana* (AEM), aims to build new capabilities in space topics to aid new generations of Mexicans (AEM, 2019).Under the aforementioned, the AEM has participated in the following forums, sessions and, topics belonging to the international agenda:

1) The plenary session of the 73rd Regular Session of the United Nations General Assembly, at the *UNISPACE +50* on the Exploration and Peaceful Uses of Outer Space: The Space as an engine of the Sustainable Development Goals.

2) In the other hand, Mexico has been an active member in the creation of resolutions at the *United Nations Committee on the Peaceful Uses of Outer Space* (COPUOS). We participated in the project presentation of the Assembly Decision of COPUOS for the addition of new member's –Cyprus, Ethiopia, Finland, Mauritius and Paraguay were the new member States of the committee.

3) Moreover, Mexico participated in the forum: *The way forward after UNISPACE +50 and on Space 2030*" at Bonn, Germany. Where a presentation was made within the framework of the

IV panel, entitled: "*Useful initiatives for taking international cooperation beyond the skies after UNISPACE+50 envisioning the space 2030 agenda*" (AEM, p. 38, 2018).

In addition, some of the projects in which Mexico is working on the subject of Space technologies are the following:

1) After the impacts of climate change, the risks tend to increase more. Sectors such as agriculture, the livestock industry and fisheries, seem to be constantly affected because of climate change. In this case, space technologies can help to combat these vulnerabilities, creating new technologies that allows the spread of information. One of the projects implemented by Mexico is the cooperation between the AEM, the *Sistema de Información Agroalimentaria y Pesquera* (SIAP) and the *Agencia Espacial Europea*, with the purpose of generating new technological tools through space infrastructure, such as: satellites of communication, monitoration of the Earth and geolocation, in order to boost the development of fisheries and promote a sustainable aquaculture (AEM, 2019).

2) Another project in order to maintain a sustainable space technology is the *CanSat* technology for climate change, whose mission is to measure atmospheric conditions such as concentrations of ozone, carbon dioxide, carbon monoxide, methane, among other gases, radiation, temperature, humidity and pressure. The *CanSat*s made up of an Arduino Pro Mini and 2 433 mhz radio frequency antennas will send and receive data to a computer at ground station from the *CanSat*.

3) The creation of a geospatial platform for the economic evaluation of biomass. Aims to be a geospatial web platform, where there are statistical evaluations of the theoretical and technical potential of biomass resources in countries such as: Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama and the Dominican Republic. The project within the Space technologies theme, promotes a sustainable development based on the SDGs of the 2030 Agenda. The geospatial platform for the economic evaluation of biomass makes use of the goal 3 "Good Health and Well-being" and; goal 7 "Affordable and Clean Energy" (SDSN Mexico Sustainable Development Network MX 2030, 2019).

For Mexico, the mentioned projects has as goal show that space technologies can be used in a beneficial way to achieve a sustainable development. In consequence, it is important to generate new public policies that promote the human connection between Mexicans.Therefore, the AEM proposes to promote the concept of: *space as a social good*, so the new technologies could be executed in an effective way protecting the most vulnerable. The space technologies must ensure social good and an international responsibility to achieve the 2030 Objectives for Sustainable Development.

Conclusions

The convergence of social opportunities of rapid technological change with the priorities of the new Government of Mexico, has been a key factor for the Ministry of Foreign Affairs to propose artificial intelligence as an excellent mechanism to achieve a better relationship with Mexicans abroad, in the country and within the diplomatic sector. Also, this experience with artificial intelligence pursuits that the Ministry of Foreign Affairs strengthen the leadership of Mexico regarding the processes of Digital Diplomacy 2.0 in the main international forums, specially, in United Nations. In the other hand, since

current regulations of Mexican public administration do not consider technological innovation, this experience has revealed several normative, social and financial challenges. Therefore, a parallel process of strategic thinking about these aspects is necessary so that, in the future, technological innovations in the Government turns more prompter and expedite.

Also, the rapid technological change has impacted in Mexican policy related with space technology and exploration as tools for achieving several Sustainable Development Goals. These advancements are under the sight of the Government of Mexico as well, in order to frame them within the context of democratization of technologies. In addition, the Mexican Space Agency has demonstrated a strong interest and cooperation at relevant international forums, presenting relevant projects about applications of space technologies for the improvement of agriculture, the measurement of pollutants, and the mitigation of climate change effects.

Finally, this perspectives and experiences in the Government of Mexico, have contributed to face the impacts of rapid technological change, routing this phenomenon in procurement of the Sustainable Development Goals through the design of public policies which sites the citizen at the center.

Acknowledgment

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