Understanding China's Engagement in Technical Standards Bodies

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China is seeking dominance over the shape of emerging technologies by taking up leadership positions across multiple international organizations that influence norms and standards. China's positioning and astute use of process within digital technical standards bodies initially caught democratic countries napping. An effective response from the West will require coordination and cooperation between two groups that have not always seen eye to eye: governments and some participants in the industry-led standards bodies such as the Internet Engineering Task Force (IETF). Despite the G7 governments' continuing support for industry-led, multistakeholder standards processes, some in the IETF remain distrustful of governments and are uncomfortable with their new-found A-lister status in geopolitical declarations.
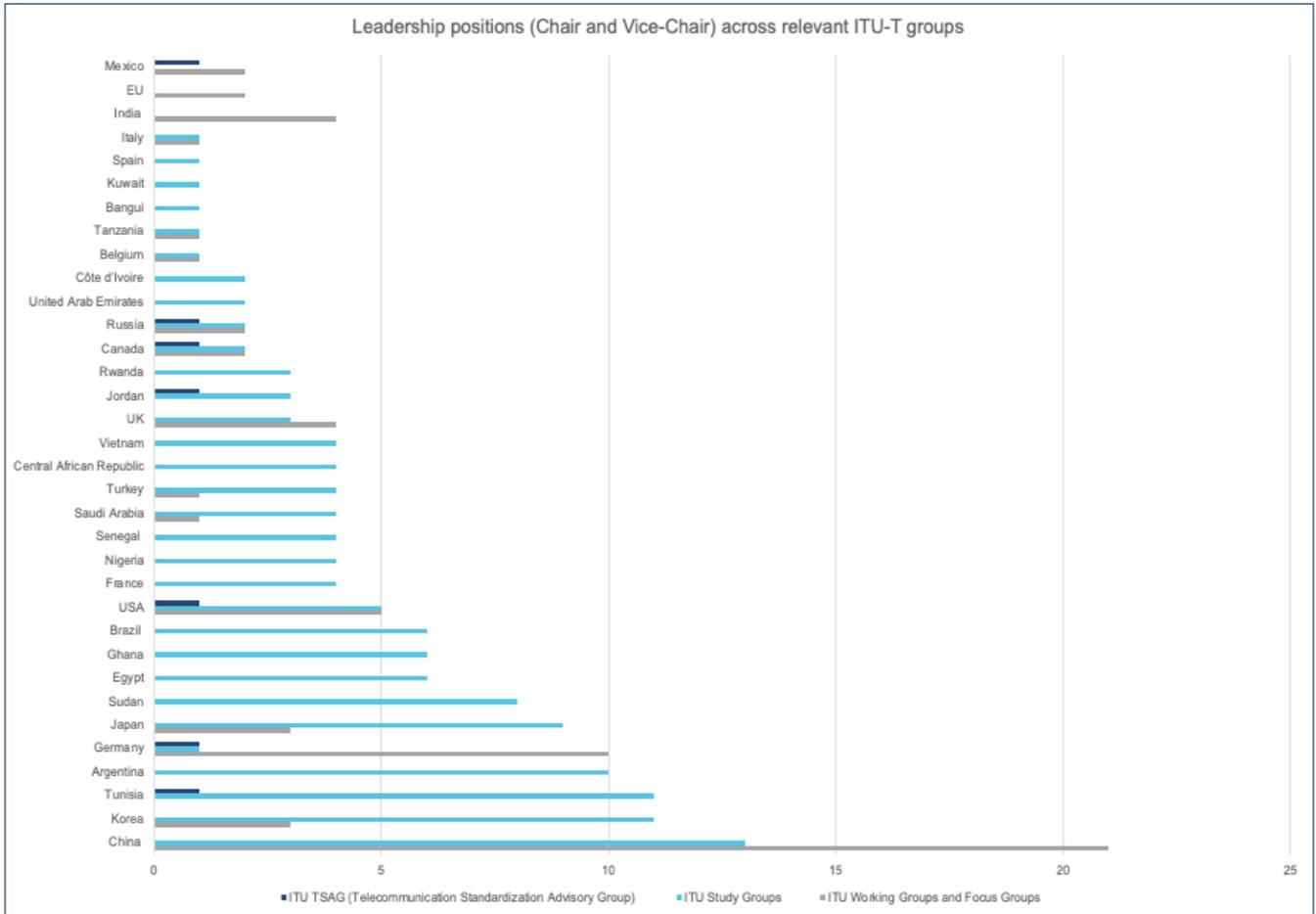
The recent declaration by the G7's technology ministers provides high visibility to digital technical standards — previously a somewhat neglected policy backwater, populated by closed communities of engineers and technical experts. As highlighted in the G7 technology ministers' declaration on 28 April 2021[1], and endorsed in the G7 leaders' communiqué in June 2021, emerging technologies have a wide societal impact, and it is essential that technology standards support democratic values and principles. Far from projecting a government-led approach, the G7 agreement clearly stressed the need for industry-led, inclusive, multi-stakeholder approaches for the development of technical standards. The declarations' emphasis on inclusion and capacity building in standards bodies is not just support for the status quo. It could also be interpreted as a call for existing engineering orientated bodies to widen participation and be more welcoming to civil society participants and women. It is arguably because standards have to date been developed by a single stakeholder group — male, Western engineers — that the societal and geopolitical impacts of technological standards have not always been adequately acknowledged.

In fact, 'standards' and 'China' are becoming ever-linked in the minds of Western policy makers who were unsettled after a set of proposals, known as New IP, was introduced by Chinese representatives at the United Nations International Telecommunications Agency (ITU). These proposals, if adopted, would amount to a new and non-interoperable set of protocols for the Internet's regulatory architecture. Whether or not New IP is ever adopted by the ITU or another forum, the episode served as a wake-up call on the strategic importance of technical standards. At the same time, observers have noted that China is pursuing a patient, concerted strategy in which standards are seen as a vehicle to advance both domestic goals and international ambitions regarding trade, technology, and geopolitics. To fulfil that strategy effectively, China has been steadily filling leadership positions in key institutions across the UN system and other international standards development organizations. Standards insiders also report, on condition of anonymity, that Chinese representatives are astutely using process for strategic advantage — whether by 'flooding' resource-constrained working groups with scores of written submissions shortly before meeting dates, or by repeatedly re-submitting requests for new work items even after they have been rejected by their peers. Whether or not the New IP proposals will eventually be rejected or perhaps re-emerge with different names in different fora, the case of New IP has brought standards into the public eye and acted as a reminder to many liberal democracies of the importance of technical standards and their inherent power to lay the groundwork for global internet technologies.

The technical standards and technical deployment of New IP are unclear at present, although there have been reports of testbeds involving more than 40 universities in China.[2] The New IP proposals were laden with overarching goals, but technical specifics were lacking. At the same time, New IP, if adopted, would imply a new form of internet governance by replacing the current multi-stakeholder processes with a state-led, multilateral approach. Yet, according to Hoffmann et al., despite claims by its advocates that New IP would decentralise the internet, the technology has the potential to enable centralised control and command of the internet through fine-grained micromanagement and surveillance.[3] A state-owned internet structure with an encrypted core would allow the controller of that infrastructure, in this case the Chinese government, enhanced capability to fully surveil and monitor users. As Carolina Caeiro, Kate Jones and Emily Taylor note in a forthcoming book chapter, under New IP, the network itself becomes the instrument of surveillance, raising concerns over the security and human rights of end-users.[4]

In essence, through the power of technical standards, China's New IP would take China's national approach to cyber sovereignty into the international internet governance structures. The episode demonstrates China's strategic use of technical standards bodies to pursue its national technological goals and priorities. The case of New IP highlights how critical technological standards are in creating and upholding a fair and equitable internet for all users. It is certainly the case that today's internet is imperfect, there

Leadership positions (Chair and Vice-Chair) across relevant ITU-T groups

ITU TSAG (Telecommunication Standardization Advisory Group) ■ ITU Study Groups ■ ITU Working Groups and Focus Groups

have been human rights abuses, scandals regarding the use of data by corporations and some governments. Whatever the concerns — and many are valid — New IP is not the answer. As new challenges present themselves, we can expect the internet to constantly develop and adapt. The internet requires constant evolution, not a revolution and certainly not a revolution led by China. The proposals known as New IP if adopted, would replace the internet's lightweight, open, interoperable standards with an architecture built for surveillance, and pose even greater human rights and surveillance risks.

Moreover, the Chinese government has been explicit about its desire to have a greater influence in standards in public documents about their technological strategy. China has published strategies which highlight the importance it attaches to technical standards that support domestic and international trade, development, and other geopolitical objectives. In 2020, China's Five-Year Plan reflected the nation's public desire to pursue greater leadership positions[5] in strategically important technological standards bodies: "积极参与数字领域国际规则和标准制定" which translates as their intention to, "Actively participate in the formulation of international rules and standards in the digital field"[6]. Additionally, while academic institutions globally seek to attract investments, China has steadily increased its partnerships with international universities and competitive research funding.[7] This funding results in the Chinese government

potentially having more involvement and control in the development of international academic research. Again, this involvement raises questions regarding how the Chinese government's values are being subtly embedded into research and academia more widely. A recent report showed China invests more in experimental development research compared to the U.S.[8] The Chinese government has not been shy about its intention to establish a strong foothold in standard-setting bodies, with data presented later in the article supporting the conclusion that China has experienced measurable success in pursuing this strategy.

Beyond standards being key for promoting values, standards are also powerful component of geopolitical and economic advancement. China's engagement in technical standards bodies has been smart and strategic. Had the New IP standards proposals been approved, they would have been protected under World Trade Organisation rules that make it unlawful to ban technology equipment built to standards approved at the ITU. The ITU is a natural choice for the Chinese government to express its national strategy given the complexity of the ITU's processes and the limited participation of private-sector engineers and experts from liberal democracies, when compared with industry-led processes such as IETF. Moreover, the ITU is ideologically a good match for China as the ITU is a government-led multilateral body which gives the Chinese government a clear role and voice in this setting.

Commentators have noted China's active participation and increasing representation within standards bodies, but few have acknowledged that China was able to gain this presence and influence at standards bodies because there was room for them to do so.[9] Western countries' engagement at standards bodies declined in part because of the 2008 financial crash which prompted more companies to save money by making cut-backs on spending deemed inessential, such as financing company participation at standards bodies. On the other hand, China's representatives have been stepping up their involvement in standards as a result of China's Standards Law 2018, which encouraged China's international participation in SDOs.[10]

Chinese influence is particularly striking in two bodies: the ITU and 3GPP — the latter of which is responsible for setting mobile telecommunications standards such as 3G, 4G and 5G technologies.

As of April 2021, Chinese national heads the ITU and China's delegations have the largest number of leadership positions at the ITU — at 21 leadership positions, see figure. Of the 66 Chair and Vice-Chair positions at the ITU, China holds over 30% while the United Kingdom and the U.S. hold 6.1% and 7.6% respectively. The bureau responsible for setting worldwide telecommunication standards (ITU-T) has 11 working groups, of which China holds a Chair or Vice-Chair position in 10. Chinese nationals also hold a total of 25 positions at Chair or Vice-Chair at key ITU-T study groups and 87 rapporteurs.[11]

Leadership positions at the multilateral, top-down ITU-T are a reasonable barometer to judge China's relative influence, because under ITU rules, the leaders have clear and well-documented roles informing the content, processes, and approval of technical standards. These leadership roles "coordinate the activities of their working group, serve as the first stage of appeal of a working group's decision and determine whether consensus has been achieved."[12]

The relevant ITU study groups are working on standards for emerging technologies that will have wide societal and human rights impacts. For example, China has two or more vice chair positions in key study groups such as Study Groups 13, 17 and 20 that are working on future networks, security and the internet of things (IoT), artificial intelligence and smart cities and communities.[13]

In addition to the ITU, Chinese nationals hold a significant number of leadership positions within 3GPP, the body responsible for mobile standards. In keeping with 3GPP's industry-led nature, Chinese participation is seen through companies including Huawei, China Mobile, China Unicom, Alibaba and ZTE, which are "playing a larger role in both multilateral and multistakeholder SDOs acting as negotiators". As of April 2021, there are 15 Working Groups at the 3GPP, with representatives from Chinese technology companies holding Chair or Vice Chair positions in 13 of those Working Groups.[14]

Beyond ITU and 3GPP, China's participation across other standards bodies is somewhat uneven, but this is changing.

The author Matt Sheehan, in his analysis of autonomous vehicle standards, points out that there is a major variation between standards bodies in the types of Chinese organisations participating[15]. Sheehan finds that at bodies which are traditionally more industry-led, such as ETSI, the International Organization for Standardization (ISO) and the Internet Engineering Task Force (IETF), China's influence is noticeably less compared with its representation at the ITU. Others with long-term experience in standards bodies told the authors that there has been a noticeable uptick in participation at ETSI by Chinese companies over the past 10 years, who now stand for a large number of chair and vice chair positions. These observers interpret the strategy as an example of Chinese actors 'playing the long game of working through the ranks to get a Chair position, but often standing and finding that others have not put themselves forward, and therefore the Chinese candidate simply get a position by virtue of others not bothering.'[16]

If the ITU is where governments go to make standards, the IETF epitomises bottom-up industry-led standards development. IETF prides itself on being a meritocracy, where respect is earned among the primarily private-sector representatives through good ideas rather than through the status afforded by leadership roles. Technical bodies such as IETF also work across geopolitical and ideological divides; operating on the notion that the merit of the technology should remain the primary consideration and determinant in adopting new standards. Working Groups are the primary mechanism for development of IETF specifications and its adopted standards are called 'Requests for Comments', a nod to the IETF's tradition of non-compulsion and open, peer review. When examining the current representation of nationalities in leadership positions in the seven active IETF Working Groups, Chinese nationals are not overrepresented compared to other countries and by nationality the participation is overwhelmingly by individuals from North America and Europe.[17] Within the IETF environment influence comes either through being known for your technical prowess, or through sheer number of contributions and weight of numbers — so that your people can be across multiple working groups. In the latter path, China is pushing hard.

For some time, there have been signs that Chinese participants are stepping up their engagement in the industry-led IETF. For example, Huawei has sent more representatives to the IETF meeting in November 2020 than any other long-serving participants at the IETF.[18] At the IETF's meeting in March 2021, Huawei and its subsidiary Futurewei together registered 72 attendees, while Cisco registered 62, Google 32 and Apple just 10[19]. While participants from US and European countries continue to far outweigh the numbers from China, but Chinese engagement at IETF is unquestionably increasing — with China Telecom, China Mobile, and ZTE each sending several representatives.

In the above analysis, consistent with China's expressed intent to be active in technical standards in their Five-Year Plan, China appears to be adopting a 'horses for courses'

approach, reflecting the nature of the various organisations: prioritising leadership roles in ITU and 3GPP; and stepping up participation in bottom-up processes such as ETSI and IETF (while also running for leadership roles when they become available[20])

In a recent study by Baron and Kanevskaia[21], which examined the background of Chinese leaders at standards bodies, they too observed an overall increase in Chinese representation and participation at standard-setting organizations. Baron and Kanevskaia study goes further and indicates that Chinese leadership positions were more likely to be appointed when they were affiliates of Huawei. The authors attribute this phenomenon in part to Huawei's recruitment of experienced standards participants, indicating an understanding that 'Individuals are appointed to leadership positions because of their experience and individual qualifications, not because of their affiliation'. At the same time, the authors warn of the need to prevent 'groups of aligned interests to acquire outsized influence' within standards organisations. [22]

When looking at leadership positions alone, the data can then only show a part of the picture. It is important to highlight the role played by written contributions — the engine that drives standards development organisations. Therefore, the numbers of participants and written contributions are relevant measures of how individuals can exert influence within standards bodies. Long-serving ITU participants speaking to the authors on condition of anonymity described China's increasingly aggressive approach. These participants described China's tactics of bombarding working groups with numerous submissions which despite their reservations or concerns, due to the sheer volume of submissions, result in some submissions invariably passing through.

Our analysis of the data and relevant literature relating to China's leadership positions in technical standards bodies reveals a complex picture. The case of New IP has rightly prompted many liberal democratic stakeholders to reassess their own involvement in technical standards to curb China's growing influence.

The UK's Integrated Review and the recent G7 declarations show that democratic states are increasingly concerned about the influence of authoritarian states and actors in creating digital technical standards for emerging technologies with wide societal impact. But for democracies nations, the path ahead is not straightforward. It would be counter-productive if democratic states further politicise standards-setting or adopt a top down approach — as some in the IETF seem to fear.

But reading the detail of these recent declarations, the commitment of leading democracies to retaining an industry-led, multistakeholder approach on standards is clear. Western democracies have recognised the risks to democratic values arising from the adoption of technical standards and the need to now re-engage to uphold key democratic values in emerging technologies that have wide societal impact. Rather than causing further politicisation of standards, improved relations between these groups could foster a more collaborative and diverse environment in standard-setting bodies which, in turn, would strengthen the standards work and improve the internet environment.

Policymakers, civil society organisations and human rights experts will have a critical role to play as an early warning system to alert for wider societal impact in the standardisation of emerging technologies and as advocates for the adoption of rights-respecting digital standards according to widely accepted policy principles. Although a strong defensive posture is essential, Western democracies appear to reassert a positive, multi-stakeholder model, and the benefits of open, interoperable standards whilst also protecting core democratic liberal values.

Going forward, it will be necessary for the industry-led standards bodies, such as IETF, to be more welcoming to a diversity of new voices, including government actors. Ensuring a diverse and balanced participation of all relevant stakeholders in the creation of technical standards is essential to ensure a fair and open digital future for all. As this study has shown, Chinese representation through key leadership roles in technical standards risks creating imbalances, and at worst could result in the adoption of standards that turn the network into an instrument of surveillance -as in New IP. Only by fostering increased engagement by industry experts, leveraging the policy-analysis of human rights organisations (and government officials) can standards bodies foster a truly industry-led, inclusive multi-stakeholder approach. More collaborative technical standards ecosystems will help to ensure a fairer internet and the successful creation of technology in supporting open societies and tackling global challenges.

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20   See https://www.centr.org/news/blog/ietf109-new-chair.html. Commenting on the IETF Chair election, the author states 'It is unfortunate that the most plausible candidate from the standpoint of diversity, is sponsored by Chinese vendor Huawei, who is currently locked in a trade war with the US.'

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22   *Ibid.* Baron and Kanevskaia.