THE BROOKINGS INSTITUTION

WEBINAR

OPPORTUNITIES AND CHALLENGES OF CRITICAL TECHNOLOGY STANDARDS IN THE ASIA PACIFIC

Washington, D.C.

Thursday, December 1, 2022

OPENING REMARKS and MODERATOR:

JOSHUA P. MELTZER
Senior Fellow, Global Economy and Development

PANELISTS:

ZALEHA ABU BAKAR
General Manager, Malaysian Technical Standards Forum Bhd

JASON MATUSOW
General Manager, Corporate Standards Group, Microsoft

MAO NEANG
Director General of Information and Communication Technology, Ministry of Post and Telecommunications of Cambodia

* * * * *

Joshua Meltzer [00:00:18] Welcome to the Brookings event on opportunities and challenges of Critical Technology Standards in the Asia-Pacific. I'm glad that all of you are able to join us. It's evening here on the east coast of the US. It's morning, I'm sure, where a lot of you are. So good morning and good evening to those who are on a similar time zone. We've got a great lineup of panelists to discuss this important set of issues. And I'm going to get to the panelists shortly, but I'm going to kick off this event with a brief introduction. And this is in part an opportunity to relaunch the critical technology standards metric we've had online for a few months now, as well as the accompanying report, which provides a lot of the kind of data and insights that I think will set the table for the discussion that will follow. I'm just going to share my screen quickly. My, my screen share is disabled, if someone can give me a hand with that, that would be appreciated. Great. So.

The development and use of critical technologies such as artificial intelligence, quantum computing and cloud computing are increasingly a focus of government policy, R&D, budgets and investments. And this trend reflects the critical role of technology in relation to economic growth, jobs and national security. Standards shape global markets and affect which technologies become market leaders. Standards also shape the values that technologies embody. For instance, standards as to what is trustworthy and reliable AI will guide AI development globally. This project developed a critical technology standards metric that assesses the capacity of countries in the Asia Pacific region to engage in the development and use of critical technology standards and allows for cross-country comparison of critical technology standard capacity.

The CTSM, as I'll refer to it, is based on data which we collected from a questionnaire, 55 questions in total, which was sent to government officials, industry and civil society in a selection of countries as well as our own research and analysis. The countries, the focus of the CTM, SM, are Australia, Cambodia, Indonesia, Malaysia, Philippines, Singapore and Vietnam. Let me first start with a couple of definitional issues, particularly what is critical technology. While the CTSM, it is focused on critical technologies, but there's actually no globally agreed definition of what they are. For many countries, what makes technologies critical is implications of that technology for the country's national security and economic prosperity. We've also focused on the, the, the sort of the digital critical technologies and this is the definition that we have used in the report. So we define critical technology broadly to include the key elements common to the countries in the CTSM to how they define critic technology, which includes an open-ended list of what could count.

So we see critical technologies are technologies that are important for country's economic growth and national security. Examples of critical technologies include artificial intelligence, quantum computing, Internet of Things and blockchain. Critical technologies are increasingly present across a range of sectors, including manufacturing services and agriculture. They're also crucial to national security on a variety of fronts. Critical technology standards will impact the development and use of critical technology, including access to markets, how to manage technology risks and benefits of what values critical technology embodies with implications for societies and forms of governance. Indeed, critical technology standards can underpin interoperability among technologies, allow for scale, efficiency and increase access to technology. With small businesses in particular, critical technology standards can help them engage with national trade as common standards mitigate the costs of retooling technology to access new markets.

Just to give you a couple of examples, WiFi is a radio technology built on a series of technology standards. USB is a standard that allows for common connection cables and charging and exchanging data in a wide range of devices. And IP B4 is a standard that defines IP addresses for the internet. One of the elements we do focus on in this work is standards development organizations and defining feature of the standards development organizations or SDOs, is that they are multi-stakeholder, industry led governance of civil society and participate alongside the private sector. And this setup reflects the view that standards development is technical and expert-driven and requires industry experience with the development and use of these technologies.

Now, international standards developed by these global SDO standards development organizations are also based on consensus and are voluntary in that it remains up to governments and business whether to use them. But despite being voluntary, many of the critical technology standards that they produce can have significant effects within countries and for trade. For example, previous standards in the ISO in the IEC have a history of being adopted by companies globally, becoming the de facto standards for market access. In addition, governments often reference these standards in domestic laws or regulations, thereby sort of making them in effect, binding. And international standards are also often benchmarks and contracts and a basis for industry self-regulation. And finally, the WTO also reinforces the centrality of standards developed by consensus based, voluntary standards organizations. Excuse me.

Now this PowerPoint shows a critical technology metric with scores for each country and for each country. If you haven't already visited it, we've got this is actually on a dedicated website that we're hosting at Brookings, if you type in critical technology standards metric Brookings, you'll find it. This is in fact, an interactive table. So you can actually, with your cursor, hover over each of them and you'll get a lot more information as to the data that underlines each one. But you can see each category. There's three categories e-governance, participation and capacity. And each of them comprise 3 to 4 subcategories. And each subcategory itself is based on data derived from the questionnaire and our own research. All of the data, all of the research and all the methodology is available on the website and on the report. So you can go there to see more about that. Now the scores here correspond to levels of development here on this key here advanced, mature, developing, underdeveloped.

As the CTSM shows, the level of CTS capacity in the region or among these seven countries is largely developing with some areas of maturity across many of the countries. But advance capacity around CTS is scarce and confined mainly to Australia and Singapore. At the other end there is little evidence of undeveloped CTS capacity overall. Where it exists, it is mainly confined to specific areas, a lot of it in Cambodia. And this outcome is consistent with the overall view of a region that is aware of the importance of critical technology standards for their economies and for societies. With respect to specific countries, the aggregate scores show that Australia has the most mature level of critical technology standard capacity, followed by Singapore, after which there is a larger gap to Malaysia, the Philippines, which are tied then Indonesia, Vietnam and finally Cambodia, all of which are developing levels of critical technology standard capacity. And no country registers as having an overall advanced level.

Beneath these aggregate scores are significant variations in terms of governance, participation, and capacity. So let me just run through each of these a little bit more detail. The governance category in the CTSM, the critical technology standards metric, comprises three subcategories measuring legislation and policy as they relate to critical technology standards, levels of coordination among government, industry and civil society, and government engagement with industry and with civil society. And when it comes to having legislation or policy on critical technology standards, many countries have something on the books or are developing these strategies. For

instance, Singapore, Australia, the Philippines, and Malaysia already have relatively mature laws, regulations and institutions governing, governing critical technology standards.

Coordination among stakeholders is another key area of focus in determining levels of CTS, critical technology standard, governance. This reflects the importance of engagement and coordination among stakeholders when developing standards. And the CTSM assesses coordination among government, industry and civil society, the capacity for intra-stakeholder coordination, as well as the level of government engagement with industry and civil society on standards. As the CTSM shows, intra stakeholder coordination is generally a weak point. There's a cohort of governments, namely Philippines, Singapore, Malaysia and Indonesia, that have developing levels of intra-stakeholder coordination, while Vietnam and Cambodia's levels are underdeveloped, underdeveloped. In contrast to this intra-stakeholder coordination, government engagement with industry and civil society on critical technology standards performs better. On this metric, Indonesia, Philippines, Singapore have similar capacity and levels of effectiveness, while Vietnam, Malaysia and Cambodia were at the lower end due to the limited engagement offered by government with civil society in particular. In Australia, government engagement with civil society registers as mature, with standards Australia playing a key coordinating role.

Moving on to levels of participation. What counts as participation in the CTSM comprises four categories, three of which capture the extent of government, industry and civil society, participation in the development of critical technology standards. And the fourth being financing for participation in standards development organizations and for critical technology standards research. The levels of participation in standards bodies vary among the countries. Generally, industry participation and contribution to critical technology standards in standards development organizations is more regular and effective than that of government or civil society, and this likely reflects the importance of critical technology standards for industry and the role of industry in bringing expertise and experience in critical technologies to the standards development process.

For instance, in Australia and Singapore, industry participation is advanced with participation by these countries governments, these are much lower for both of them. Vietnam, though, interestingly, bucked this trend with government participating in critical technology standard development more than industry and civil society. The Philippines has a similar participation by government in the industry, in standards development organizations, and these outcomes likely reflect

a greater role for government in Vietnam and Philippines when it comes to critical technology standards development. In terms of how often industry participates in global standards development organization, there's also a range with industry representatives from some countries, such as Australia and Singapore, reporting significantly higher levels of political participation, up to monthly compared with industry participation taken from other countries. When it comes to participation in global standards development organizations by government, Singapore scored highest, followed by Australia, with the rest of the governments showing developing levels of government participation. Lower levels of participation in global standards organizations was often due to a combination of financial constraints, a focus on domestic standards development and limited knowledge of the critical technology standards being developed in global standards development organizations.

Finally, when it comes to participation by civil society, there was a range of levels. Australia, Singapore and the Philippines had quite mature levels of civil society participation, whereas Indonesia, Malaysia and Vietnam, civil society participation was developing with civil society participation in Cambodia scoring lowest. In most countries in the CTSM, participation by civil society in CTS development was also lower than that of government and industry. Civil society participation is relatively weak, in fact, and seems to be due often to limited capacity to engage in the critical technology standards being developed both in domestic but especially global standards development organization and a lack of resources which all stakeholders reported as barriers to participation. Government, industry and civil society in a number of countries also reported financing as a barrier to participation in global standards development organizations.

Moving on to capacity, the CTSM measures awareness of critical technology standards, expertise and workforce skills for implementing and enforcing critical technology standards. There was awareness of the critical technology standards being developed in SDOs across all participating countries, but with room to improve. In Australia, the level of awareness is highest to mature, followed by Singapore and Malaysia, whereas Cambodia had the lowest levels of awareness. While a number of governments do provide some information to industry and civil society as to the critical technology standards being developed in global SDOs, this was consistently reported as being too little and often too late to be helpful.

There is also a range of expertise across the countries. Overall, Australia and Singapore have mature levels of expertise, while the rest of the countries have developing levels of expertise. In terms

of the expertise of specific stakeholders, industry has more of the expertise needed to effectively engage in critical technology standards development in standards development organizations, whereas the expertise in government and civil society was relatively lower.

And finally, when it comes to having a workforce that can assess compliance with critical technology standards and have access to the training for on critical technology standards, Australia is recorded as mature with Singapore also having a capable workforce and access to training. At the other end, Vietnam and Cambodia's work, workforce capacity and training is under developed, and the rest of the countries in the CTSM, their workforce capacity and training was in the developing range. So these results I think, also highlight a general lack of capacity in these countries to enforce compliance with critical technology standards as well as the need for training.

In addition to all of these, I'm not going to run through this now in in any detail, but there's, there's country specific reports on their, on, on the data that we collected and what it means for their levels or the level that we measured. These are the spider graphs which you can see I picked up a lot of the data for the different countries on this, just running through this alphabetically. So the various metrics are where that, where they need to, that goes through that. And here's the URL if you're interested in in finding the critical technology standards metric and the report. Okay with that let me stop sharing my screen. Just bear with me for a minute while I do that.

And let me now take a moment to invite the panelists to turn on their cameras. And I'm just going to introduce the panelists, as in the in the order that I think we'll ask them to speak. Mr. Mao Neang is the director general of Information and Communication Technology at the Ministry of Post and Telecommunications of Cambodia. His main role is concerned with the management and coordination of ICT policy and strategy development, implementation and evaluation, as well as the preparation and development of digital government, ICP Regulation Standards and Guidelines. He has a bachelor's degree in Mathematics from the Royal University of Phnom Penh and a master’s in Computer Science majoring in software engineering from Ateneo de Manila University in the Philippines. He's also a Ph.D. candidate in political science and media relations, international relations at the Royal Academy of Cambodia.

Zaleha Abu Bakar is the general manager at the Malaysian Technical Standards Forum, a platform for the communications and multimedia industry to promote self-regulation by the development of technical codes. With more than 30 years’ experience in the industry, she's been

involved, involved in various key roles, including the development of plans for the National High Speed Broadband Initiative, domestic and global wholesale, product development and marketing, as well as numerous companywide processes involving initiative during her tenure at Telecom Malaysia Berhad. Zaleha holds a degree in electrical and electronic engineering from Brighton University in the UK and a master's in science majoring in communicating systems from the Swansea University College Wales. Welcome to both of you.

Jason Matusow is the general manager at the Corporate Standards Group at Microsoft. Jason is responsible for Microsoft's strategy and engagement in multi-stakeholder organizations focused on establishing accountability for the responsible use of technology. He also sees, oversees Microsoft's policy and strategy work related to standardization activities in China. In 2022, Jason became the executive sponsor for the technical relationship between Microsoft and the United States National Institute of Standards and Technology, NIST. And before joining Microsoft in 1995, he co-founded a PC networking business. He is a graduate of Boston University, and welcome, Jason. Great to see you again. What I'd like to do in this order is I'm going to invite Mao, then Zaleha, and then Jason to make some introductory remarks. And then we will, we will go to a moderated conversation. And there is then the opportunity through the hashtag to ask questions which will be sort of sent to me and so forth. Now over to you.

Mao Neang [00:18:55] Thank you very much, families and the audience, from Cambodia, it actually is morning in Cambodia, yeah. I would like to introduce some of the policy framework and also some of the factors that we use in standard development in Cambodia. Right now we have the Cambodian policy, policy framework 2021-2035, that's 15 years of policies, and this policy framework, it has the digital infrastructures and digital [inaudible] as the foundation, with three important pillars, is the digital citizen, we focus on digital literacy development, digital expertise in schools and also leadership in digital development. And the second pillar is the digital government. And the third one is the digital business, which includes the adoption of the critical technology in business and also the digital transformation.

To implement the policy framework, the Kingdom of Cambodia has created the National Council for Digital Economy and Society. There are three committee under the council. The first one is the Committee on Digital Government and the second on Committee on Digital Economy and Business and the second one Committee on Digital Security. And under this policy framework there's

another policy called Cambodia Digital Government Policy also adopted, with the vision to improve people's quality of life and trust in the people through better public service provision. And these policies [inaudible] on the development of digital government infrastructure, what we call governance and public services, human capital and digital immigration. Also the public private partnership put it all together, there's a lot of these and 83 action plan.

And I would like to highlight some of the important action plans regarding the digital government development. Number one is the development of the digital government infrastructure which include the establishment of cloud based national data center, improve the digital government network infrastructure, also to strengthen and expand the Cambodia data exchange design chains and also strengthen the cybersecurity management and protection systems for the government information class actors, develop and strengthen digital identity infrastructure, and there's also some related to the governance and public services, including the formulation of data governance policy, open data policies and software promotion policy, and formulate the law on digital government law on privacy and data protection and law on cyber security and data security. And we've got the standards for the policy on the development of digital government services standards and information technology and also the critical digital technology as well and cybersecurity, smart cities, and data centers.

And some of the other main priorities include the engineering of government processes and develop carbon enterprise architecture to improve the [inaudible] collaboration platform and [inaudible] digital public services. And in Cambodia right now, we have the law on standards, which we proposed to improve the quality of products services and management, ways to raise and digitalize [inaudible] to that use and to enhance customer protection and public welfare. And we have this new standard of Cambodia with this new national standard body. And this national standard council, which assists of some members from different government ministries and institutions, and also the private sectors and civil society as well. For adopting the standard, all kinds of standard could be the national standard, and the council has establishing a different technical committee or different skill, it's like for the digital field with a committee on the digital technology is chaired by [inaudible] of Cambodia. Yeah. And regarding the report. Yeah, I agree with you, with Zaleha, it's really compared to the score we see that Cambodia is the lowest level anyways, in fact we already have right now. Thank you very much.

Joshua Meltzer [00:25:08] Thank you. Thank you. Zaleha, over to you for your remarks.

Zaleha Abu Bakar [00:25:14] All right. Thank you, Josh, and good morning, everyone, its morning here and evening on the other side of the continent. Okay. MSTFB. I think what I would like to share with all of you, with the panelists this morning is what is our scope and our role in developing standards in Malaysia. So actually, Technical Forum is a forum designated by the Multimedia Malaysian Communication and Multimedia Commission in, we were designated in establish in 2004. What most appropriate I would say this organization is formed to promote self-regulation among the industry. So what I meant by industry here is more on the communication and multimedia industry. So when I looked at the CTS, I think the CTS report is very appropriate kind of like depict the status that us in technical forum, MTSFB, is experiencing, but the areas that we are involved with in our technical code, we call it a technical code, whereby that technical code, or TC, is a voluntary code, is an industry code developed by the industry and used by the industry.

So what the forum do is we are providing the platform for all these industry, the CMI coming into the, coming to us, provide the platform, come to us, develop the technical code for it to be used by the industry. So it is a very much of an industry led kind of activity and, and it's also driven by the industry. So, and also the expertise coming from the industry. So what are the areas that we are looking at in terms of developing our technical codes? There are quite a number of areas. It also covers the critical technology standards that is being mentioned in the report. For example, we have ten working groups that we have now managing managed by MTSFB that covers the area of IOT, cybersecurity, smart city, we don't call it smart city now, we call it sustainable smart city, and network infrastructure, which is very critical, very, very, very important, especially when we experience during the PKP whereby internet access is very, very, is of priority. And also, we look at fixing wireless equipment. Yeah, we can't have the network if we do not have equipment that can operate within the network.

So we must ensure when we talk about technical codes, we must ensure first is the infrastructure provided by the operators in Malaysia are, can, can operate with each other, they can be connected to each other. Not only that, we need we are looking to broadcast technology. We are looking into more of research, more of knowledge seeking in terms of digital broadcast, where is where we are looking at next. And we are also looking at one of the subject is numbering and

addressing, when, and also future network. When we talk about future network is, I have 5G a crowdsourcing thing application, that's what we are looking at and, and green ICT.

So I think in Malaysia itself, I think the government is promoting a lot of green, what should I say, inclined to any solutions supports a green technology. So this is also one of the working group that is also is looking at what next in the future net technology of green ICT. So I think what are the opportunities. I think just to share with you that Malaysia has, has secured a seat in the ITU council in Bucharest recently. So with that position Malaysia has in ITU, so we are looking at more and shall I say aggressive participation from MTSFB itself. So at the moment we have in ITU, because we are very much active in in ITU, we have a, we are participating in about eight working, eight study group in IT to ITU. And we are also active in this region when we are talking about preparation of the next WT, World Standard Telecommunication Council and all that for 2024.

So actually when, that is the opportunities that we can see now, we want to kind of like woo or smoke out the, the expertise that we have in the country. The challenges and what, the challenges that we experience in MTSFB, yes, despite that, we have developed about 60 over technical goods over the years, but we do not have a very clear view on who are using the technical goods. That is the challenge that we have now. But recently we have done a study and we hope to find, find out what is our baseline in terms of adoption. So I think that is about all. If you give me more, I can just like go on and on. I think that's about all, Josh, about MTSFB, I can answer any question later on.

Joshua Meltzer [00:31:08] Excellent. Thank you. That is, is a fantastic introduction and we'll have plenty of opportunity to continue the conversation. So let me just turn now over to Jason.

Jason Matusow [00:31:23] Sorry. I'm just looking for the mute button. Well, welcome. Or I should say thank you, more than anything, first, to Josh for inviting me into Brookings for being part of this event. I'll make a few higher-level comments and then, related to the study, and then afterwards, I'm happy to dig into the topics with the rest of the panelists. From industries perspective, there is a close relationship between the development of critical technologies and standardization. But I would like to emphasize that the most important dynamic is that critical technology development is fundamentally all about innovations. The breakthrough and, both breakthrough innovations and incremental innovations do eventually happen, or I should say they happen within development processes, but over time can make their way into the standardization system.

But, and standardization itself has a complex relationship between innovation and marketplace adoption. But standardization tends not to be the innovations itself. Standards that are, or standards system tends to be a contribution-based system, meaning that people come to a standards body with the contributions and then the collective expertise within the standardization system will review that and refine the standards to bring about documents ultimately that are used in the marketplace. The standards are used in many ways from core metrology, measurement, health and safety, interoperability, and then ultimately management practices. And when you look at critical technologies, you'll find standards are being used across all of these different dynamics at all times.

Also, standards are fundamental to the practice and use of conformity assessment or assurance mechanisms. And I think particularly now we can see across, across the globe with the advent of new broad horizontal regulations such as privacy, cybersecurity, now people are contemplating what does responsible use of artificial intelligence mean, we're going to see an increased leaning on the nature of that relationship between standards as the underpinning of the practice of establishing strong conformity assessment mechanisms.

So how do industry participants see standardization? Well, we'll look at them in a couple of ways. One of the most important things is the harmonization of foundational concepts. As we look at the advent of a new space where people, there's a very high pace of innovation and maybe things aren't yet formalized relative to what is happening in the marketplace, there does tend to be a need and a strong benefit for folks coming together and really understanding terminology and use cases and reference architectures. That tends to be very early on in the cycle of a given critical technology. Over time, that morphs into technical standardization that might really focus on interoperability and then ultimately into responsible management practices.

In a lot of ways, in the second part of the standardization, it tends to be much more about what is being done, but not necessarily how. And what I mean by that is good standardization practices tend to define outcomes and requirements, but encourage multiple implementations, competition in the marketplace to, to bloom, but in doing so, you definitely want to have the clarity of what is expected based upon those standards. So another key factor, and I think this is called out really well in the study, is that industry writ large deeply believes in standardization as a critical part of market, marketplace competition, which means we want a rich and dynamic standardization landscape. We also want strong technical contributions that are going to come from a plurality of

stakeholders, government, civil society, academia, industry participants of all sizes, and even motivated individuals who may be representing their own particular perspective. So behind all of this in order to protect all of the stakeholders in that process, fundamental to the success of all standardization is strong governance practices.

And it's simply, it's hard to overstate, I should say, the importance of the standardization system being open, voluntary and based upon due process. This is how we get a balance of equities between the stakeholders, no matter if they're playing the role of contributor or technical participant or even an implementer outside of that standards body. Past four years of technology, standardization has really shown the importance of the symbiotic relationship between government policy frameworks and industry participation that endorse and support the public private partnership needed for open collaboration, the Standards Bodies.

The final thing that I'll observe and really appreciate the, the inclusion of this in the Critical Technology Standardization study, is that there are other methods of collaboration and harmonization that have now expanded beyond what traditionally has been in standardization. And really what I'm speaking about here is open-source software. Open source is similar to but different from standardization in that it's all about the implementation of a technology rather than generating the specification of that technology. This was included in the study, and I would just like to emphasize that, particularly when we're looking at the emerging critical technologies as highlighted in the study, open source is now continuing to be a leading method of technical interoperability but is not yet proven to be a strong mechanism for establishing responsible management practices and means to support the underlying needs for conformity assessment or assurance. So to close, I'll just simply say I really endorse the quality of the, of the Brookings study and the work that was done to take a look at this topic. And I look forward to the rest of the panel session. Thank you.

Joshua Meltzer [00:37:36] Thanks, Jason. That's great. I think that gives us gives us plenty, plenty to, to work with. I want to start with a pretty high level, you know, general question and invite the panelists to sort of take this whichever way they want. One of the, you know, motivating forces behind doing this work was, on the one hand, appreciating the importance of critical technologies and critical technology standards in that space for a range of, you know, outcomes, economic outcomes, social outcomes, governance outcomes, and, and try to kind of baseline and get a sense of the capacity, you know, in a range of countries across a range of metrics so that we have a way to

improve the understanding of what's going on, provide an opportunity to compare a little across countries and to sort of possibly, the next idea, what do we do to build capacity?

So maybe in that context, I might just ask, you know, maybe start with Mao, and just work through the panelists in the order that they presented just to sort of, you know, identify from where they see what they think are the key challenges for, you know, engaging in the development of critical technology standards that maybe critical technology standards domestically, it may be participating in some of the international bodies. But I think it's a pretty open-ended question. So happy for you to sort of answer that whichever way you think is, is reasonable. Mao

Mao Neang [00:39:12] Yeah. Thank you for the question. Yeah, actually, one of the main obstacle for Cambodia is the capacity we have that I also mentioned in the study, we have quite a lot of people, educated in the field of digital technologies, but we you know, the knowledge in the critical technologies is very low. And in some of the field, you know, like in the critical technology for example cyber security, we don't have a degree on that actually we just provide computer science, information technology or management information system. So some of the core technology, maybe we have studied on the basic concept we request the government to recruit 125 people in the field of critical technology. But we did not have the people who have really the degree, or the main expertise in these things. So we choose, for some people, right now the government try to give scholarship for all those things every year.

And we also, PTC, Post and Telecommunications of Cambodia, we just created the Cambodia Academy of the Digital Technologies, in according to 2000 official education, and also research and innovation with critical technology. So what we are planning to do, encourage in the education system to introduce the courses related to mostly critical technology and also give scholarship and also prepare the work that would offer, the people, they've graduated, they have the work and get a good job, something like this. And yeah, regarding the standards that we are developing right now, mostly we adopted from the ISO/IEC in the field of digital technology, we don't make it our own from scratch, just adopt the international standard. We follow the guidelines from Asean or WTO that we should have some economic standard and have some, you know, harmonization of the standards.

And for the finance actually we have some little finance like in PTC we have the fund we call building and research and development, the fund is very small with 7 million a year. So I think we

need more support and we need some more business to create the money department to be continue. Thank you very much.

Joshua Meltzer [00:42:14] Thank you. That's great. That's very helpful. Zeleha.

Zaleha Abu Bakar [00:42:19] All right. Capacity building has always been, like, hovering above my head when, when we are looking at developing the technical standards, the technical codes for the Malaysian environment. I think in Malaysia itself, when you talk about capacity, I think what we need to do in MTSFB is looking at which point this, the stages the stages, at which stage are you in in developing the technical code? Because at the moment we have expertise coming from the industry to the participation and also manufacturers and also Institute of Higher Learning, because Institute of Higher Learning is also a very good, what shall I say, an opportunity for us to kind of engage with them, to collaborate with them, and especially to reduce the gap between what the industry is looking at and what is the future, what force is, is coming into the market.

So I think when we talk about the capacity in MTSFB because, a lot of it is depending upon the participation from the industry. But internal capacity, yes, we do have to have that because especially in the perspective of managing a forum as a secretariat, in managing the forum, identifying which technology are we going to be looking to, which, which we are going to focus into? Are we being proactive or are we a little bit behind? But Alhamdulillah, with God's blessing, we have done quite a good progress in our, in 5G, 5G implementation in Malaysia, whereby we developed the technical code prior to the implementation of 5G in Indonesia itself. So we are quite confident that those technical codes that we have developed are being used by the industry.

So when you talk about another perspective of expertise or capacity, because the, the topic on the critical technology itself, the, the topic, the subject that we're looking at is quite a lot, a lot. And it is also an emerging technology, and it is also a necessity to the to the to the what should I say, to the committee. So I think more, that is the reason when I mentioned earlier on, the opportunity since we are in a member of the council, Malaysia is a member of the Council of ITU. It is very, very, it is a good advantage that we take that opportunity to participate to participate more in the discussion at the international level. So I think in MTSFB itself, I'm proud to say that that in 2021, 2020 to 2021 during the PKP, we have contributed about 17 papers to ITU. And we have some I think two of our members are holding quite a key position, a repertoire in ITU itself. So what, we would like to do that more.

So how do we do that is we need to woo it. We need to have a good outreach to the committee so that we can, like I mentioned just now, smoke all the, smoke out all the expertise in the country, because I believe I believe with quite a number of, the initiative done by other agencies, we do have because, you know, you've got certification like tech, being a technologies. So this is how do we bring them together in producing, bring them together in MTSFB and especially focusing on the communication and multimedia industry.

And not only that, in terms of locally, we are also looking at capacity building through our collaboration with, with other standards body, for example, TDSI in India. And we have also our body, our collaboration with Korea and Japan. That is that is progressing and IEEE as well. So this is again as part of MTSFB initiative to, for improving our outreach in order for us to woo more expertise to come and discuss the development of technical code. All right. To you, Josh.

Joshua Meltzer [00:47:12] Thank you Zaleha, that's very comprehensive and actually there's a few questions we can get into. But Jason, let me turn it over to you. I'm, you're not representative, you're not coming from a government perspective. But you know whether you, any challenges you want to kind of touch on from the industry side or that you may, you know, want to reflect on in terms of what some of the panelists have said. But I'll leave it open.

Jason Matusow [00:47:31] Sure. And we also have participated in quite a bit of capacity building support, various standards organizations have done, we've done work with them and participate with various fora around the world on this. So I think it's a great question. I will, I really like Zaleha's point about the role that the secretariats play. I think one of the biggest things for industry is that they're looking for the secretariats to be organized and really meaningfully help them come to the table and have their time, which is very precious, to be well spent. And so I think in the places where you see the effort that's put into the secretariat function and to understand, help your participants as they come to the table to learn the process and the rules and to understand where the documents are that they need to be able to see and to participate. I think that is a big, a big step. And I just think her point was, was just spot on for that. I will say that obviously finding the technical expertise is, is a first point. And I believe that, that that point has been made already as well.

I think one of the biggest challenges is simply the scale of the system. And if you take any one of these topics, take cybersecurity and just what's happening at ISO/IEC, the Combined Joint Technical Group, I think there are 300 active projects in that one committee. And as you expand out

across these other critical technologies that you've highlighted, it's just the scale in the AI space. There are now hundreds of different projects, not just the ISO/IEC, but also in IEEE and elsewhere. And so the trick is also in finding the place where the most meaningful work for your experts is being done and being able to say, okay, I can't work on everything, but I am going to focus in on the places where that, we think we have something to add or it's going to have the most meaning for us.

I think that the other thing that, you know, it's an unfortunate reality, but it is true. I think language is a barrier that needs to be overcome and understood. The standards meetings tend to happen in English, and that is a, a thing where there might be people with incredibly strong technical expertise from industry in a given country who then resist coming or spending that time because they are concerned that they're not going to have the English fluency that they need to be successful. And I think that's something that's often overlooked, but it is an important part, especially since the written materials are so much so in English as well.

The last thing that I will say that, it's on a more positive note, is to say that learning the process can be challenging, but we have seen time and again and certainly people who work for me do this and I've seen this across most standards organizations, are very strong believers in mentorship, and that as somebody is coming new to not be intimidated by the newness of the process and in the system, but to look for those mentors and to reach out and say, how do I do something? And again, to the point that was just raised a moment ago, that process of going through writing a contribution, even if your contribution is not accepted. That process of getting going, what does it mean to put a contribution in the right form and in the right way, bring it into the meeting and to stand and defend your, your contribution and whatnot?

That is something I've seen country after country or participants over time resist that, taking that step because they think, well, it might be politically unfavorable if they don't, don't have it accepted or something of the sort. And I look at it very differently. I think that the system is strengthened even by contributions that are not accepted, because frequently those will have an influence on the ultimate outcome of those contributions that are being worked on. So I think that those are some of the challenges that I would, what I would see within the system.

Joshua Meltzer [00:51:18] Thanks, Jason. Just on, on the mentorship part. From what I'm hearing, I mean, you, you build that internally at Microsoft. Is there any other formal, sort of an ad hoc

thing that you may come across mentors in organizations and standards bodies, or is there anything more formal?

Jason Matusow [00:51:40] I think it's a, it's a mixture. I think that you have in places like ISO and IEC, there are more formalized mentorship mechanisms that are established, I think, in ITU they do the same. There's also informal systems. And for anybody who's entering a standards organization, if they see the people who are active and reach out to them, say, I'm trying to learn, what do you think, they will find that everybody is, the reason they're in the room is because it's about collaboration. You don't go to a standards body with no intent to collaborate. Otherwise, it's not really much of a process. That said, one of the things that you should always understand about all standardization is that it is a system of self-interest. That's in fact what drives it forward. Everybody at the table is trying to accomplish whatever their objective is, but that doesn't mean that they're not there to collaborate and compromise and to find a path forward. And that dynamic plays out time and again.

As you say, we have, we have built both formal and informal mechanisms, even within our own company. We have people all the time who say, I want to join the standards body, but I don't know what it means and kind of scary to them. And we assign them a mentor and help them be more successful. But even externally, there are people that we, when people in my staff are sitting in leadership roles, they spend quite a bit of time, often in mentorship capacity. I think it's a, it's part of the system. But I'll defer to the other panelists to see what they've built up as well.

Joshua Meltzer [00:53:10] Yeah, if Mao or Zaleha want to come in on this, on this mentorship piece.

Zaleha Abu Bakar [00:53:14] Yeah. I think when you talk about mentorship here in in our organization, we are just talking about its more of like you see now when you talk about technical development its like I kind of agree with Jason. Like, you know, it's not easy to get them to participate in the, in the discussion. They were asked what is the in for me? You know, that kind of question. So I think what we are looking at and in years after years, we are seeing always the same person coming in into the discussion. And what we have started actually in this year is looking at a succession plan whereby we again, because we have, we now have more participation from the industry.

So we are identifying those that that have the capacity and also kind of exposure in terms of again, you know, I'm so with you, Jason about language, you know, because English is not our

mother tongue that, you know, everybody can read you know because in English everybody understand about the, the technicality, But then again, this is again a language I totally agree with you, whereby sometimes this is also a challenge for the secretary to do those editorial kind of work. So I think when you talk about mentoring, we have not kind of embarked on that yet. Probably, probably Jason can help us in one of these days.

Joshua Meltzer [00:55:03] Yeah. That's the, the language point is, it's sort of an obvious one, but, but a really important one. And, and it it's these barriers and the challenges are actually like subtle in a way. Mao, any, any comments but don't feel you have to come in on this point. But I want to give you that opportunity. You're just muted.

Mao Neang [00:55:28] Thank you. I agree that the language is one of the areas that could be better. Yeah. And Cambodia here, the young people, young people they speak English more than the older one, from my age up mostly, we stopping learning English at a very old age, and there's less practice even we know some, you know, in the, in the field, in the digital field but to express it in English itself is some difficulties, and for the standard development in Cambodia, it's a beginning state, especially in terms of the critical technology. So as I mentioned a while ago, we just prepared the academy for the development of the digital technology and also for the research and innovation. And regarding the mentorship, we have discussed a lot also a lot with this but not yet in place in the sector, so we hope that in the future we have to go for that. Thank you.

Joshua Meltzer [00:56:38] Great. Thanks. Let me just, I just want to take this opportunity to remind the audience, if you do have a question for the panelists, you can email us at events at Brookings dot edu, that's events at Brookings dot edu and we'll try to get some of those questions to the panelists. I just want to there's a couple of things that have surfaced here with, I think, pursuing one, one is, you know, I think this comes up this came up actually a lot in the work that we didn't report. And, you know, Jason, I think highlighted it, which is just the scope and the amount of work going on in the various standard setting bodies. And I think the challenge is a lot of, you know, stakeholders, foreign governments, certainly in just following the process and knowing where to engage. And I think this sort of seems to play out, both in terms of participation in the standards development bodies, but also in terms of knowing where to look when doing domestic standards work as well.

And so I guess my, my question in part is any reflections you might have on, on that in your work, and if you have any great ideas about what might be done, whether it's by the standards bodies, by governments, by industry to sort of make that information more accessible, more relevant in a real time way. So let me, let me I'll just sort of keep going around. Mao, if you want to comment on that and we can go from there.

Mao Neang [00:58:20] For Cambodia, mostly in the technology field, for the standard development mostly we follow the ITBT [phonetic], we work with them, we consult with them with the practice on the critical standards. And, you know, part of the telecom or ICT we talked about there's a privacy wall. And then we require to have some [inaudible] then for checking. But up until now we don't have our own standards, we use the international standards, and we consult with the vendors, also the manufacturers, and also reporting, checking of the products. So it's that below [inaudible] and we know the report of that for that.

And then another one, we, also being a member, not a full member but also associated with ISO/IEC, that we also learn from them for a particular standard. So developing a lot of these and action plans and standard development is really important for us, we have mentioned in our policies that there are certain standards that we are going to develop, but not yet go to the detailed action plan strategies on this, and this one is more important and as you mentioned a while ago, that incorporation, especially in the regional, for us Asean and also ITU and ISO or other international organization or industry, that's also very important to us. Thank you.

Joshua Meltzer [01:00:06] Thank you. Zaleha, over to you.

Zaleha Abu Bakar [01:00:10] Right, in here, in Malaysia itself, in relation to technical forum, in relation to MTSFB, when we develop our technical standards, we've got the weightage actually here. Why? Because when we completed our technical code, we will be submitting to our regulatory, to communication, Communication and Multimedia Commission, whereby they will endorse and get it registered. So I think that is good, good, we have a good working relationship between MTSFB and the MCMC, we call it the commission and I think this is more of, no doubt, no doubt, there are some what shall I say? It is a self-regulation. I think we have been, there is there are indicators that we have been quite successful in terms of self-regulation, supporting self-regulation. But I think that's about all, Josh, that I can comment now.

Joshua Meltzer [01:01:18] Okay. No, that's great. Jason.

Jason Matusow [01:01:23] I think it's a, the issue of scale is a fundamental problem for anybody who's, who's involved in standardization, just simply especially you look across these, these massive topics. I think that one of the essential pieces is to keep an open mind as to what a standard is in this environment. I know that this is a hot topic within the political discussion about how people look at the role of international standards and the designation of what is or is not an international standard. And if we really want to get nit-picky, we can start talking about the tuna dolphin case and a whole bunch of other things, but that's really not the point. What I was getting at is that I think in any in any situation where you're trying to get your arms around a space, it does require some expert panel to do a scan of the activities in a space and start to say, okay, here are the projects that we see , either by looking at who are the experts in that room who are doing that work, not the name of the organization, who is doing the work to me is always far more important because you end up then starting to really understand what is the direction and which standards matter more or not are going to be a function of market dynamics that will play out over time.

So there may be a project that has a very interesting name or title, and it's being done in an international body. But it could be that all of the true industry experts in a given space are working in a smaller body on a particular project. I would venture a guess from the industry perspective. I'd probably look at that and say that other project is more likely to produce something that will have effect over time. And very often those projects move from smaller standardization processes up into the international system. It might be over a many year period, but those things do bubble up and have a way of of becoming part of the overall system. But I think that that, keeping that open mind is important. I'll also come back to the theme that I spoke of before that in many cases now, particularly in the emerging critical technologies, the most influential projects are happening in open-source software and not in standards bodies at all.

So even if you did the scan of the standards bodies, you may not know what is the most influential piece of work that's happening, for example, around large A.I. models or interoperability of A.I. models that, you're not going to find standards bodies, but you would find very highly publicized, they're public, they're fully available, it's not that they are exclusive, but they are just not happening in standardization. And it's that ability for your expert community to sit and do that evaluation and do it in a neutral and sort of disinterested way as to the name of the organization that it's in, but much more

so about what is the impact of that project. And that might be a way to tackle what is, I think, a very difficult problem.

Joshua Meltzer [01:04:23] That's great. And actually that's a good segue, I think in into the question I was going to sort of follow up, which is specifically about open source. Jason, do you do you want to I think maybe for the benefit of our audience, just articulate a little bit more like how the open-source process works, who hosts, who participates, and how those outcomes sort of are transferred or absorbed by, by the industry and others.

Jason Matusow [01:04:54] Sure. And so very, very short a very quick little view of it is that open-source software development is collaborative development by software developers who are acting, relatively speaking, in independent fashion. So they might be paid by their employer to participate, but the projects themselves are not owned by a company per se, they are done in a public forum and under licensing that allows anybody to participate and to see the work and potentially even to modify that work or take it as their own and go do something else with it. But it is software, it is the implementation of technology, whereas standardization is a discussion about a specification, about paper, it's a stack of paper that people then can read and go build later if they want.

But ultimately that's the real difference. They each serve a really important role, and different types of role in how we get to harmonized concepts and capabilities. And, and I think that in this context, as we speak about the role of governments in thinking about critical technologies, strangely, there's no mechanism in most governments today to identify, recognize open-source software as playing the same role that standards do for public policy and, and particularly regulatory controls over, over industry. Yet at the same time, almost all of industry is now making use of open-source software as a fundamental underpinning of what they do. So we I think we as globally, societally, we still have some steps now in front of us to update our policy frameworks to say, okay, what was it from an industrial policy as well as, how the right way to say this, but from the standpoint of responsible behaviors within our society, regulatory policy, what is it that we are I guess would be legal frameworks even, we are expecting from standardization. You want a level playing field, you want pro-competitive behaviors, you want the opportunity to protect health and safety.

There's a reason, for example, at every intersection you have lights that are red, yellow and green because if they were all different colors, nobody would know what's going on. So as a society, we think that certain harmonization is important and so important that we mandate, make it

mandatory, and then other things that we keep as voluntary, but in doing so, we can protect markets, keep open competition and so on. And I don't think today we have the same policy framework for open source that we do for standardization, and that's something that I think is still in front of us. I hope that's helpful.

Joshua Meltzer [01:07:48] No that is, and maybe what I'll do is turn it over to the other panelists to get any reactions or observations they might have about the open-source part of the standard making process. Mao, let me turn to you if you've got any else.

Mao Neang [01:08:05] Yeah, thank you. Yeah, actually, we understand that standards are the principal guidelines for the development of products, services, and harmonization, we agree with Jason that it is very important that in our region, it's and I mentioned already that in Asean or in international practice, and for which we have an organization of standards to improve the quality of products and services and also to reduce the technical barriers to training. And also economics is also important, as least we have to have some specification or some way that the producer or service provider could raise their production services.

And for the open source in our you know, in especially in the political government system, we mostly use the open-source system mostly because of the budget we don't have much except to, you know, buy the high-cost commercial software. So we use the open-source, and this open path is very important for us to learn, the source code is open, we can learn also different process, and then we have some freedom to customize or to add some functions. Yeah. And for us, we will continue to focus more on the open source as well, and then with support from the commercial companies. So we agree with this, and we will continue to be more concerned and more [inaudible] with open source.

Joshua Meltzer [01:09:47] Thanks. Zaleha.

Zaleha Abu Bakar [01:09:50] I honestly, I can't comment much on the open-source kind of adoption in the Malaysian environment at the moment because it's beyond the scope of MTSFB. But what I can comment here is on the technical codes that we are developing and how to harmonize it between the other standards body that we have in Malaysia. For example, yeah, we have the Malaysian standard organization in Malaysia itself, but they cover quite a number of topics.

So how do we kind of align ourselves with the other standard bodies and not only standard bodies, it's also the government agencies with the plans and with the implementation plans that they

have. So I think when you talk about open source is more of the solution. And I'm so sorry that I can't comment on that at the moment. Yeah.

Joshua Meltzer [01:10:50] That's fine. That's great. We might, we might come back to that because I think the interaction between open source and policy is an important one and what role it plays in and doesn't play. I mean, in management standards and so forth. But I'm actually going to channel a couple of questions submitted from the audience. Now, one of the things I want to, I want to maybe get at is particularly in the critical technology space, I, we discussed this somewhere in the report, I mentioned it briefly in my introductory remarks, it is sort of the, the, the, the, the, I guess you'd call it the, the, the, the policy implications of critical technology standards, whether it's in the national security space in in in terms of geo-strategic developments and so forth, and how that kind of increasing policy attention, I think, from other parts of government into what's happening in the development of critical technology standards, how you're seeing that actually playing out on the ground, in the ground, in the sense in the in the actual standards making process. And any comments you might have on, on sort of that intersection and how new it is and what it may mean for the standards development process, I think might also be interesting. So there's a lot there, so take that whichever way you choose, maybe why don't I start with Jason this time.

Jason Matusow [01:12:25] Sure. Great question. And I think we could speak for the next 3 hours on that alone. I think that I guess where I would go with this is to think about when thinking about the policy implications of how critical technologies are going. I think it's best to use an example, think about the policy implications. Let's, Josh, you and I have spoken many times about artificial intelligence. Take the example of a refrigerator and a refrigerator that has a screen on it and that screen is representing, there are many sensors in the in the refrigerator that are looking at the food you purchase and whether or not the food is, is not only past its due date, but is it healthy and etc. But on that screen, there might be five or six different applications. And some of them might have to do with your health, the quality of the food you're eating. You might be able to even diagnose medical conditions based on different things in your diet, whoever else knows. Where did those applications come from? Well they might come from many different companies and not whoever made the refrigerator.

So let's take a look at AI as a critical technology where regulation is likely to come for responsible behaviors. Most of the regulations around the world that are being proposed or being

discussed, think papers, focus on product safety concerns and using fairly traditional government policy mechanisms to establish product safety. If you test that refrigerator for product safety, is it really taking into account responsible artificial intelligence behaviors and the management practices of the many companies that might be behind those services that are running on that system? And really, what you start to get at are the standards that are going to be underneath it, are they going to be capable of recognizing the importance of management practices, digital services considerations, the differentiation of things such as the learning data sets and the bias that might be in data as opposed to the predictability of the outcomes or the explainability of how that system is working. Never mind the fact that a digital service might be updated every Tuesday and is constantly changing. So whatever the original and the traditional product safety regime, the, the company producing a refrigerator tests once before production and then they release the product to the market and it always has the stamp on it that says it's safe and that's really not going to be consistent with an experience that you might be having relative to artificial intelligence.

So what I would come back to then, to your question is what is the role of standardization here? And it might be an important dynamic to say the standards that are done have to be modernized and think about, contemplate the complexity of the system for both technical and management practices, but likewise the government policies behind that critical technology that are looking to use standards as the basis for conformity assessment and assurance mechanisms within the marketplace for consumer protection or liability, or whatever else it might be, also have to be updated. And so it's going to be a combined set of activities. And when you start cracking the door open on quantum computing, national cybersecurity considerations, privacy implementations, non-personal data and the exchange of, of, of, of industrial data for machine learning purposes, there are legitimate societal needs for these rules, but these rules right now, I think, are out of date and the standards themselves are going to have to get addressed. I'll stop there.

Joshua Meltzer [01:16:03] Thanks. There's a lot there and I might, maybe I'll follow up in the second round. Let me let me turn this over to last, I'll go in the reverse order. Zaleha, do you want to have any observations, comments.

Zaleha Abu Bakar [01:16:18] Always the second one, either way you go.

Joshua Meltzer [01:16:21] Yeah indeed, you don't escape that, you're in the middle.

Zaleha Abu Bakar [01:16:24] Okay. I think I'm going to talk into, into perspective in talking about adoption of standards. One is about the governance, for example, in Malaysia itself, right, we have our state authority which have their own rulings and all that. For example, looking at technical standards on infrastructure. All right. We, we will, we have, we have developed and it has been registered, accepted by the commission in terms of what is the minimum required requirement for infrastructure building. But then again, the compliance, we can go more on the compliance because it is talking about self-regulation, because each state in Malaysia itself, it has its own ruling, it has its own district office.

So again, this is again, how do you, the compliance to the standards. Yeah, we have, you know, sometimes we have all the expertise coming on board, agreeing on board, what will be the minimum requirement for us to adopt in in in in rolling out our infrastructure. But the challenges and what I would say, not a roadblock, its more of it would take time it would take time to overcome those governance, those governing in different states, in Malaysia itself. When you talk about compliance, yeah. Yes, we have about 60 over technical codes that we have registered by, they has been registered by the commission. We do have a compliance terms and condition. Well, I mean, the industry is already talking about what is a compliance by because this is, again, to ensure that whether the technical code that we have had on ground is enough, is surface enough to kind of help the industry in managing or in operating their network.

So I think this is again, some thoughts are going around in between MTSFB and the commission. But, but we are strongly supporting towards self-regulation. So I think this is talking about what, when you talk about governance. Yes, we do have other government agencies looking into the areas of critical technology as well. But what we need to do more in MTSFB is to engage and to look at who our key stakeholders that we have to manage now in order to ensure that there is no overlapping and and no confusion. I think that's about all I can comment on.

Joshua Meltzer [01:19:14] No, that's great. That's, that's there's a lot there. Thank you. Mao.

Mao Neang [01:19:20] Well, yeah, actually, as I mentioned, we have some policies to point out the important standards that we are going to develop, but up until now, we don't have the detailed strategy and action plan [inaudible] what we want to do. And also to have a business model that could generate some you know, benefits from the using of standards also from the development of the critical technology that could fund not only the standards development, but also the other critical

technology development as well. And we, right now, we're trying our best to attract the expertise in the firm of the critical technology, as well as the capacity building education for the people to get enough knowledge on that. So these are our main things and also encourage the engagement in cooperation with all the stakeholders nationally and internationally. Thank you.

Joshua Meltzer [01:20:28] Thank you. Thank you. Let me let me just turn back to this question of the speed at which some of this technology is is developing and the role of standards in that space. And I you know, Jason, you mentioned that the point about the software being, being updated, the AI systems learning and changing, and how do you I guess, you know, it's a structural question to some extent, how to standards keep pace, what, what type of standards do we need that can be flexible and forward looking, given the types of technology that we are talking about today and maybe what, and there may also be part of like how do standards coming out of, you know, the JVC one respond and what is the role of open source in that space as well? But maybe we'll mix up the order and I'll ask Zaleha maybe to respond initially and then we will work out who's next after that.

Zaleha Abu Bakar [01:21:26] Yeah, I think we in MTSFB at the moment is look especially when you talk about technology, advancement, technology, how fast they move, I think one of the working groups that we have like what we call the security trust and privacy, everybody is talking about cybersecurity. Like Jason mentioned just now is so huge a topic when you talk about cybersecurity security. But what we are focusing on is on the network perspective. So I think this is again, not many locally, not many expertise that we have that can look into that despite ok, is a more of a supply demand kind of approach whereby when more people are accessing the Internet, the security requirements, you know, you're talking about scam and all that, the security, security requirement is very, very much needed. That is why one of the initiatives that MTSFB has is to kind of collaborate with the National Security Agency in Malaysia itself and to actively participate in the ITU Discussion Study Group as well. Okay. That is on the cybersecurity.

Another perspective, I think this is just very, like, I would say like very fresh from the oven that we are looking at we want to do this proactively is talking about digital broadcast. Now you talk about digital broadcast. What how does it different from the streaming? So this is so what kind of technical code that we are looking at, when we are looking at digital broadcast. So that is why when we are developing our technical code, we always have, we have whenever we, we want to start a new project on a technical code, we always have a knowledge sharing session, so that we are very sure what do

we want to do. We do not want to be like, you know, we are the only one interested. But we have to look at into the, what does the committee, what is the government policy? How do we align with the government policy in this particular subject?

So I guess that's always a challenge running a forum in in in Malaysia, especially on technical forum, because it relates a lot to the technical regulation in the communication and multimedia. And so I think this is, two, I see this as two area, and then also we need to get more on the green. Okay. How do you what do you mean by green ICT. If you are looking at fuel cell kind of being what more? So these are the things that, how, how do we keep up with the technology? How do, that is the reason the outreach of MTSFB to the to the society, the communication and multimedia industry society is very, very important so that we can create that community to help us to advance in terms of technology, in terms of development, technical development, technical standards development.

Joshua Meltzer [01:24:47] Yeah. Great. No, thank you, community. Jason, let me turn to you.

Jason Matusow [01:24:54] Okay. Another big question. I think a big part of it, if, if I was going to be putting a roof on a house and I had to hammer in lots of nails, I would not want to grab a screwdriver and try and hit all the nails with the screwdriver. I would want to find a really good hammer. And I think one of the biggest things to think about in the pacing is about the right tools for the right job. People often speak of standards as being slow. They're not slow. They're faster than laws. Right. So it's a different way to think about things is to recognize that you have hard laws, you have soft laws in terms of the role that standardization can play. And then you have pure technology movement where you might have technical specifications, but you also may have, as we have talked about, something like open-source software. Each of these may be moving at very different velocities, but that doesn't make them inappropriate for the action that they're supposed to play at a given time. I think that the other thing to look at is the technical maturity and then the market maturity of a given critical technology.

What I mean by that is if you're having a conversation about cybersecurity, yes, it's moving very fast. But you're talking about an incredibly mature space where people have been putting in place methodologies, practices and technologies for 30 or 40 years. The same conversation is not true about quantum technology. Quantum technology was identified across your study as critical interest to everybody. But this is nascent technology that's just barely moving. Standardizing too much, too fast creates a absolute negative drag on innovation. But yet some standardization on things

like languages or different practices may be helpful, but it's probably too early. But relative to the laws that will govern it, those standards will be moving faster.

And then I guess the last thing I would really bring up is this concept of sequencing. My team spends a lot of time thinking about the sequencing of standards or where are we in given space and time, and are we starting a project now that is going to land in 2 to 3 years when it needs to, given the sequencing of things that are happening? And for your, you know, for the for the audience, I don't know if you've ever heard of scenario planning or scenario-based planning. It's a methodology for trying to do, being thoughtful about, about looking at the future and actions you're going to take. Within Microsoft, within my team, we make use of scenario planning at times to really be thoughtful about that sequencing conversation. Again, it's not the perfect answer, but it's an answer for a really hard problem relative to the speed at which things work.

Joshua Meltzer [01:27:36] Yeah, no, thank you, Jason. That's actually that gives us a lot. Mao, let me turn to you and before and let me just because we're coming to time, after Mao, I'm just going to ask panelists if they want to make any, any, any final comments and then we'll close. Mao.

Mao Neang [01:27:53] Thank you. Yes. Well, for us, we concentrate on developing all policy around [inaudible] and then support the standards development and also how these standards can be applied for the government and also industry to create products that that is competitive and profitable in the market. So this is just our [inaudible], thank you.

Joshua Meltzer [01:28:25] And Mao, do you have any, any final any final comments? You don't have to, but I just want to give you the opportunity.

Mao Neang [01:28:34] Yeah. Actually, I already mentioned on the report you have made. Yeah, I think that reflects the reality, even though that Cambodia has the lowest score and then we'll see in the same opportunity and weaknesses in there. Yeah, actually, we understand our own status. And then we do our effort to improve the development. Thank you.

Joshua Meltzer [01:29:05] Thank you. Appreciate that. Zaleha.

Zaleha Abu Bakar [01:29:09] Okay. Malaysia and MTSFB, I think what we need now is to continue to continue exploring and also developing technical standards for Malaysia. And we wish to, we wish to close the gap between the supply and demand in terms of technology, in terms of the knowledge and the technology. And we will continue having more key stakeholders coming on board with us. And with regard to the CTS report, it is a very good report. I think it is, it is reflective of, very

much reflective on the way, what how we are experiencing it in MTSFB. And it will be a material that I will use for advocacy purposes.

Joshua Meltzer [01:30:03] Thank you. Great. Thanks a lot, Jason.

Jason Matusow [01:30:06] I would just reiterate my thanks for being part of this stimulating conversation. The report, I think, is very well done. I would, if I had one last thought, I would just remind everybody that standards aren't made for the sake of standards. They are made to accomplish things within marketplaces and to create outcomes that are useful. So I think within this, as we think about these critical technologies and how they are used, standards has a role to play among many factors that will contribute to how we use those critical technologies responsibly. So thank you.

Joshua Meltzer [01:30:40] No, thank you. That's a great note to close on. And I want to firstly express my, my, my gratitude and thanks to the panelists for, for their time and for engaging, I think, in what was a really fulsome and stimulating debate. My experience generally with the standards space, I've been coming at it now for a bit and Jason has been a really important source of guidance, information and mentoring almost is a well-worn, well-worn and really, you know, not particularly innovative analogy is that it's onion like in the sense that you the more you talk about it, that you realize you're just scratching the surface, there's a lot of complexity there. It's a fascinating and fast moving and increasingly important, economically, politically insightful space. I feel like we could have continued this conversation much longer, which is, I think, a really good note to end on. So I want to thank the panelists. I want to thank all the online participants for your, for following the conversation, for your questions. And, you know, please have a look at the report if it is of interest. And good morning, goodnight and hope to see you later. Bye.