DOCOMO Open House 2020 Q&A Session

Question 1	
Q	The number of partners recorded an increase from a year ago. Do you foresee the possibility of an earlier-than-expected revenue generation or improved prospects for B-to-B businesses compared to before?
A	We are studying various solutions in collaboration with our partners using the existing framework. We plan to start offering some of these solutions in one way or another from Day 1 of 5G service launch. We will first keep an eye on how these solutions will take off.
Q	Do you see better prospects for 5G's profit contribution compared to before?
A	While we cannot provide any detailed estimates, we believe we will be able to offer solutions that will garner solid usage, by contributing to regional societies and solving our partners' pain points. We introduced some of our exhibitions in our tour today. More than half of the total 270 exhibits were developed jointly with our business partners. Over the last 12 months, we moved forward with the development activities in cooperation with our partners under the DOCOMO 5G Open Partner program and organizing the 5G Business Camp in various places across Japan. We introduced to you the actual cases of co-creation and collaboration with various municipalities. Through these initiatives, we were able to bolster our confidence for launching new businesses together with the new 5G services.

Question 2	
Q	Regarding your 5G Open Partner Program, you mentioned that the number of participating organizations grew to over 3,200 as of Dec. 31, 2019. Can you give us a breakdown of solution partners and field partners? Please also give us a breakdown of the 260 trials that you mentioned in today's presentation. For the field partners, in particular, what are the secrets to successfully bringing the project to the stage of practical implementation?
A	As for the breakdown of partners participating in DOCOMO 5G Open Partner Program, the field partners significantly outweighs the solution partners. The 260 trials have been conducted as part of our co-creation activities with the solution partners, reflecting the challenges and needs of the field partners. We believe this is one of the strong points of the 5G Open Partner Program.
Q	I have a perception that the hurdle of becoming a solution partner is high because a solution has to be developed in the first place and whether the solution can acquire customers is not known in advance, and that the trials targeting service partners have a higher probability of achieving commercialization. Is this true? Also, can you share with us the number and scale of projects for service partners that have clear visibility for practical implementation?
A	First of all, the 260 trials have been carried out with solution partners and field partners working in unison, meaning that these trials have not been conducted separating the two types of partners. Currently, we are in a phase to further improve the accuracy of the various pre-commercial services that were commenced on and after Sept. 20, 2019 to deliver them as a commercial business.

Question 3	
Q	You explained the total number of partners exceeded 3,200. Among them, how many are companies that received investments from DOCOMO Ventures at the stage of PoC? I believe some projects are aborted before reaching commercialization. In such case, do you provide financial assistance to your partners? Please elaborate if you have established any criteria for investment.
A	Basically, most of the companies have joined as partners to create new businesses in an open manner, and we do not enter partnership on the premise of investment. The degree of understanding and proficiency of 5G technology varies among the partners participating in the program. One of the major strengths of the 5G Open Partner Program, which is now joined by 3,200 organizations, is the broad representation from various industries. It is usually rare for companies to develop mutual understanding across different sectors, but we have successfully created various forms of collaboration through the

	activities undertaken in the last two years under this program. DOCOMO intends to function as a bridge between different sectors to generate new businesses. Although we do not rule out the possibility of these undertakings finally leading to investments, we would like to reserve any further comments concerning the current status. We are committed to continuing our endeavors for new business development.
Q	I found some projects promoted by the investees of DOCOMO Ventures in the exhibits in the Business Creation zone. How many of them are likely to advance from PoC to the phase of commercialization?
A	We exhibited close to 60 projects in the Business Creation zone alone, but we do not expect the rate of commercialization of these projects will reach as high as 30-40%. To put it the other way around, the initiatives that have advanced to the stage of commercialization after overcoming a major challenge offers great potential for growth. We, therefore, will continue to tackle many challenges together with our partners so we can create more business opportunities.

Question 4	
Q	I believe other companies are also undertaking initiatives similar to your Open Partner Program. Of your 3,200 partners, how many have entered into an exclusive partnership with you? Do you think the vast majority of them have overlapping arrangements with other companies as well?
A	We do not have knowledge about the overall landscape so we cannot comment on the status of other companies. As our program is operated literally in an open manner, it is not predicated upon exclusivity. When we look at other markets across the world, it is seldom to find similar open programs that have a scale of over 3,200 participating companies. We are aware that some global players have initiated similar activities, but our program is predominantly larger in scale. Given this difference in scale, we do not think many of our partners have overlapping participation in the programs of other companies.
Q	In relation to the previous discussion, what is the level of enthusiasm of the companies participating in the Open Partner Program? I believe the companies that are engaged in the 260 trials are quite enthusiastic, but there may be some other companies that are just only collecting information and taking a wait-and-see position. Can you give us an indication concerning the percentage of such companies?
A	While it is difficult to provide concrete numbers, the level of enthusiasm can be compared to a pyramid structure, i.e., the companies who first joined the program only out of curiosity gradually deepen their level of interest and desire, and eventually advance to practical business creation. We spent the last two years trying to encourage partners to shift to the upper layers of the pyramid at an early date. Of course, there are some partners who show a high degree of passion from the beginning, but the majority of them develop their level of interest in a bottom up pattern.
Q	Upon the start of commercial 5G service in April 2020 and at the point of approximately six months after launch, how many services, in your expectation, will be offered on a fully commercialized basis charging fees? Sports-related offerings comprised a large part of your pre-commercial offerings. This time around, which category will account for the largest proportion?
A	First, let us clarify that we announced the commercial launch will be in spring 2020 and never mentioned that it will be in April. As for the genres, as shown in today's exhibition, video services are expected to form one of the major pillars. The rich and large-capacity content, including 360-degree VR services, are becoming increasingly available. Currently, we are planning to offer "Shintaikan Live CONNECT," which will be added with 8KVR compatibility in the coming spring. These types of real video offerings are expected to become one of the cornerstones of our offerings.

Question 5	
Q	Of the 3,200 companies participating in your 5G Open Partner Program, are there any cases that are drawing attention and receiving interviews, etc., from overseas media?
A	We operate 5G Open Labs, one of which is located in Guam and is operated by DOCOMO Pacific mainly for two objectives: (i) to facilitate the engagement of overseas players, and (ii) to support Japanese companies' expansion into markets outside Japan. To share with you an example of actual cases, we

	started a photograph upload business in the spring of 2019. In this case, we collected the photographs taken by the general public in a marathon event and made them available for sale. As large-capacity communication is required for the transfer of photographs, we conducted a verification trial using 5G network. In the past, in these circumstances only the photographs shot by professional photographers were usually made available for sale, but this new scheme allowed the general audience to receive compensation and the service provider to charge commissions. The scheme itself was originated by a US-based startup firm, and we expect to see the creation of other new businesses through 5G in the future.

Question 6	
Q	With respect to Release 16, KDDI seems to have a plan for introduction within FY2021. What is your plan concerning the timeframe of its rollout? Of the 260 trials, how many of them will have to wait for the implementation of Release 16 to start offering commercial service and how many can be launched in spring 2020 without Release 16?
A	In our view, there is nothing that requires the introduction of Release 16 to offer services on a commercial basis. Release 16 does not bring about a major technical revolution as it is mainly composed of revisions to the initial specifications defined for Release 15. The vast majority of the features are already covered in Release 15.
Q	I heard the compilation of Release 16 specifications has been running behind the schedule, which originally aimed for completion around March-June, 2020. What are the major factors behind the delay, and at which timing will your network become compatible with Release 16?
A	As we mentioned earlier, the provision of services will not be affected in any way by the completion of Release 16.
Q	If so, when can you deliver the enhancements to 5G? It was described to be in the year 202X in the presentation slide explaining the roadmap for 5G rollout.
A	The enhancement of 5G and Release 16 are not explicitly interrelated. We believe your question was intended for the world we envisage beyond 5G. For that matter, we have just published a whitepaper on 6G today. While nothing has been decided for our future enhancement in this context, if we take reference from our historical upgrades, we can anticipate it to happen in a 10-year cycle.

Question 7	
Q	Regarding the effective speed, what level of speed do you anticipate to offer upon the commercial launch this spring?
A	We would like to reserve comments on concrete numbers. However, users will surely be able to enjoy faster speeds compared to the pre-commercial service commenced in autumn 2019.
Q	What was the actual rate in your pre-commercial offering?
A	While it varied by the environment, we confirmed effective speeds of over 1GBps.
Q	Do you think you can offer that level of speed to general users in your commercial service? In Korea, it seems that the effective speeds are generally not so high in places frequented by users, e.g., shopping centers and underground areas.
A	We are not fully informed of the situation in Korea and the effective speeds can vary significantly depending on the usage environment. However, as we mentioned earlier, we have succeeded in delivering good rates. Let me clarify one point that is often misunderstood. In our case, 5G is not offered as a standalone system; it is provided in tandem with our 4G network. This is what we call the non-standalone configuration. Because 5G is added on top of 4G, we can ensure faster rates than 4G.
Q	The network in Korea may be congested because there are already 5 million users. To change the topic, you announced that you will complete the deployment of 10,000 base stations by spring 2021. Can you provide us with any general indicators that will allow us to track your progress, such as number of base stations for each area or coverage rate, etc.?
A	We are now rolling out base stations at a pace faster than our initial deployment plan. We are currently investigating the proper disclosure method for our area coverage. When you look at our historical cases of new system introduction, in any generation, we never completed nationwide area coverage in about

	one year after the launch. We therefore expect the speed of 5G area construction will be similar to the pace of deployment for 4G. However, again, 5G system will not be deployed in a standalone arrangement and the services will be offered by using 4G assets as well. Accordingly, unlike the experience from 2G to 3G migration, which did not offer seamless continuity, customers will be able to use the services without feeling any awkwardness. In addition, we adopted a different approach to 5G area construction compared to previous new system rollouts, as we will address not only the congested areas in the urban centers but also other areas that offer business opportunities including suburban locations required by our enterprise partners. Because we would like to reflect the element of business coverage rather than simply calculating the population coverage, we may adopt a method of disclosure different from the conventional measures.
Q	In the initial phase, I believe you will prioritize the rollout in the 23 wards of Tokyo and government-designated cities. What percentage do such large cities account for of the planned 10,000 stations to be deployed in the first phase?
A	The prefectural capitals are assumed to be given higher priority, but it is difficult to give you a clear indication of the proportion of such cities to the 10,000 stations. As we mentioned earlier, we will actively deploy 5G in areas where there are business opportunities, and 10,000 stations represent the total sum including such requirements.
Q	When do you plan to announce the next deployment target after 10,000 stations? KDDI (au) has already unveiled their rollout plan through FY2023.
A	We would like to reserve our comments for now.

Question 8	
Q	From the perspective of revenue contribution, what kind of business opportunities can you expect in the mass market as a result of the transition to 5G? For example, the migration from 1G to 2G resulted in subscriber growth, 2G to 3G brought about an expansion of content and services, and 3G to 4G proliferated the use of video, SNS and gaming apps, making positive contributions to your revenues. The fact that you conduct as many as 260 trials could also be interpreted that you could not narrow down your key targets. Among these trials, what kind of services do you think will create a large market and lead to expansion of data ARPU and revenue per user?
A	Your view on the historical development is correct. In the transition to 5G, we believe B-to-B-to-X will play an important role. The generations up to 4G were networks for consumers, but the age of 5G is expected to bring about incremental opportunities from businesses. In anticipation of such opportunities, we commenced our DOCOMO 5G Open Partner Program two years ago. Under this program, we are cultivating new markets together with our partners, which now counts over 3,200. The existing markets will also continue to develop, but we can no longer expect a huge expansion now that the mobile penetration rate has reached over 100%. The new B-to-B-to-X businesses are thus very important. Having said that, however, we must also reinforce the consumer market and enhance and enrich the content of offerings.
Q	We are keenly watching your operating profit, which I believe will reach over 1 trillion yen eventually. If you envisage your operating profit in ten years from now, what do you think would be the breakdown of profit between consumers and other sources?
A	The consumer market accounts for the bulk of our profit today, but we do not expect our profit from consumers will double or triple in the future. We will of course continue our endeavors toward expansion but we cannot anticipate a huge growth. Another major driver for growth is the B-to-B-to-X market and whether we can achieve upsides here will be determined by our efforts from now onwards. What we have to consider as we enter this new age is that, while we are currently observing a major expansion of the cyber domain driven by GAFA, there will be a shift to cyber-physical in the future. We project a transition from the cyber space to the physical world, i.e., businesses that will return to the physical world are expected to be created. This is the opportunity that we intend to expand. The term cyber-physical has been used for some time now, but this has not yet developed into practical business. If we can materialize this concept, it is expected to produce huge opportunities and we are now trying to shift the focus of our R&D activities into this direction. In fact, many of the exhibits today were also

	approached from this perspective. We plan to develop these sprouts to propel our next phase of growth.

Question 9	
Q	What is the biggest challenge faced by the companies participating in DOCOMO 5G Open Partner Program? I guess it would be issues relating to cost, business model or technology, but can you share with us how things have evolved in the last two years after the commencement of the program?
A	We realized from the experience over the last two years that many of our partners face social challenges. For example, in the area of medical care, how to operate business amid shortage of medical doctors especially in rural areas is a common problem. In the area of broadcasting, we started discussion initially based on a very simple assumption to replace the existing broadcast with 5G. However, it turned out that the camera cabling used by the broadcasters was a difficult challenge, so we provided wireless connections between cameras to eliminate the need of wiring. With this wireless solution, we solved the problem of a golf course, which had to attach many cables to cameras for a once-in-a-year broadcast of a golf tournament and then remove the whole setup after three days. We also received a request for providing wireless connectivity inside studios. We steadily created new businesses solving these issues in the last two years.
Q	What will likely be the challenge in two years from now? Will it be cost?
A	Cost is always a challenge, but for the future, the development of use cases is expected to become more of a challenge.
Q	Do you foresee that local 5G could become a competitor for your business in the years ahead? Please give us a comment also from the perspective of competition in the acquisition of project orders.
A	We do not perceive local 5G as a risk but as an opportunity. As you may be aware, the Ministry of Internal Affairs and Communications (MIC) explained in summer 2019 the details pertaining to the issuance of local 5G license, in which it was made clear that multicast license will not be issued to public-cast carriers for the near term. This may be the reason why some of you perceive this as a risk, but we, as carriers, have accumulated know-how of network construction and maintenance even if we are not directly granted the spectrum license. Therefore, there is a good possibility for us to cooperate with the entities who received the license. Furthermore, customers requesting services like local 5G may choose to build the services on their own, but it is also possible to provide local 5G-like services on a network that uses the spectrum allocated to carriers. The MIC also made a comment on this point in summer last year. Therefore, while this may be slightly different from local 5G per se, we believe the world of local 5G business opens up great opportunities to carriers in the context of providing local 5G-like services using carriers' networks.

Question 10	
Q	One of the major highlights of today's exhibitions was IOWN. NTT also had a large exhibition of IOWN at the show in Las Vegas. How does DOCOMO plan to engage with IOWN going forward, and what is the new world that you intend to develop with IOWN?
A	IOWN sets forth the major directions of the NTT Group for 2030. IOWN comprises three key elements. The element that is attracting the most attention is the all-optical technology that remarkably reduces power consumption. The second component is what is known as digital twin, a concept similar to "cyber-physical" that I mentioned earlier which aims to realize a better world through the convergence of cyber and digital. And the third is the cognitive foundation that aims to control network and services end-to-end in B-to-B-to-X environments. We are in alignment with NTT for the pursuit of these concepts. While we have no intension of owning the optical network ourselves, the adoption of optical technology not only in the network but also in devices is expected to lead to lower power consumption. While this is still under study, if this becomes reality, we can expect improvements in the battery life of smartphones and other devices. As for digital twin, DOCOMO also aspires to realize a similar concept to control not only the cyber space but also the physical world. We would like to coordinate our activities with NTT and pursue a similar dream on the wireless side.
Q	Currently, NTT and NTT Electronics are taking the lead in this initiative. Can you explain in what way DOCOMO is involved in its research and development? Are DOCOMO employees participating in the

	initiatives undertaken by NTT? Please explain the way of your collaboration with NTT.
A	It varies by each field. In the areas of devices, for example, DOCOMO is not involved and the development is conducted at NTT. Having said that, however, the collaboration between DOCOMO and NTT is possible. In fact, collaboration is progressing in AI-related techniques that are employed in many of the exhibits you saw today. For instance, the natural dialogue is a technique developed and owned by NTT. Our collaboration is more like an interchange of our respective technologies rather than just an exchange of ideas.

Question 11	
Q	I heard the 3.7GHz band cannot be used in Tokyo Big Sight. When and how do you plan to solve the interference issue?
A	The 3.7GHz band can cause interference with the satellite systems. Accordingly, 5G radio wave cannot be emitted in areas where it could cause interference to satellite base stations. Going forward, we would like to cooperate among the four mobile carriers including Rakuten to come up with proper countermeasures, including the relocation of satellite base stations.
Q	Does that imply this issue cannot expect an immediate resolution, so your target deployment of 10,000 base stations will primarily use the 4.2GHz band?
A	We received the allocation of multiple frequency bands, e.g., 3.7GHz, 4.2GHz and 28GHz. We will use the most appropriate band for each location.
Q	I also cover the gaming companies. In my conversations with them, I often hear requests for an early implementation of the low-latency mode especially for cloud-based games. When do you plan to implement this?
A	In addition to the radio side, the implementation of low latency is also significantly affected by the network structure. In our DOCOMO Open Innovation Cloud, we have already implemented Mobile Edge Computing (MEC) to deliver low latency.
Q	In 5G systems, the latency improvement effect is realized more by the installation of servers close to the network rather than shortening the radio interface. Is this the approach you employed?
A	The end-to-end latency is greater than the latency in each section of the network. Total design is therefore essential and edge computing is quite effective for improved latency.