

Wednesday November 29, 2017 IR Technology Seminar Q&A Record Summary

Note: This is an English Translation from the original Q&A Record summary in Japanese.

■ Questioner 1 (investor/analyst)

Q: How will the results of current initiatives take shape for the 100th anniversary? Will we see results in terms of performance in two or three years' time?

A: Today, our focus was not on this year or next year, but on Panasonic's potential for continuing growth beyond that. From next January, we plan to announce both internally and publicly the types of activities that will take place as part of the 100th anniversary. Some of the contents discussed today will be included.

■ Questioner 2 (investor/analyst)

Q: Please tell us about the KPI for Panasonic β in 1 or 3 years' time.

A: Speed, among others. Throughput from Panasonic β , for instance, prototypes from ideas, and launching of actual products and services from prototypes has completely different level of speed to what we've had before. Therefore, we consider speed as a KPI.

Q: Are there objective figures that can be understood from the outside?

A: At the current stage, we have verified that the mother factory of Mini Horizontal Panasonic is a functioning model. The next step is to decide the actual lead time to product shipment and the size of percentages for Horizontal Panasonic or cross-value products. We have proved the height of its throughput within a few months after its launch; therefore, the current stage involves planning how we can spread out officially without backtracking.

It's quite common in Japan to spend half a year doing nothing but talk in detail about how things will be in three years' time for advanced fields. Twenty or thirty years ago, the idea was to get on with actually trying to do something. So instead of starting by trying to work out detailed targets for three years' time, this organization will take the approach of trying to make tomorrow better than today, and the next day better than that, making changes that will be felt in three years' time. We're constantly conscious of delta, that is making this week better than last week.

■ Questioner 3 (press)

Q: Which of New Principle Battery does Panasonic believe is promising? What do you think the timing will be for the commercialization of All Solid State Battery and New Principle Battery?

A: Currently, at the overall level including the Divisional Company, we're focusing on improving the performance of lithium-ion batteries. The Advanced Research Division is developing materials with the aim of doubling the current capacity. We're also devoting resources to all-solid-state batteries. These changes can't be predicted simply in terms of technology. Panasonic has structured itself to adapt to changes without falling behind. The key point is that we're working on lifting the performance of lithium-ion batteries while also increasing their safety.

■ Questioner 4 (press)

Q: It appears that Panasonic has a very clearly worked out "design thinking". When did you begin implementing this?

A: We started this on a small scale several years ago, for example through human resources exchanges with the Stanford d.school in Silicon Valley. The full-scale initiative has started from this fiscal year.

■ Questioner 5 (investor/analyst)

Q: I believe that adopting agile development for appliances and related services is good, but with respect to the components for infrastructure, such as batteries and other items, the actions of some countries have been delayed due to their laws and regulations. What are your thoughts on

this? You stated that you have an office in Silicon Valley, but how do you give feedback or make use of ideas from there in other places with different needs?

A: We have drawn a clear line between safety quality and the excessive quality of Japanese companies. For safety quality, we're working to make an even more refined version of what we have built up from Society 3.0. We will control the final battery products under that level of quality. However, we will save on time spent honing quality to excess, taking an agile approach to what customers really want. In the field of automobiles, there are areas ranging from infotainment to that involves actual safety. We are sorting what to apply and what not to apply. Globally, we have design (styling) and lifestyle study teams in place in each region. The Silicon Valley staff aren't necessarily living in Silicon Valley. The idea is to use our global network while creating products suited to each region.

Q: Therefore, do you mean you will use the agile approach where possible and use different development approaches for other areas?

A: Exactly. Society 3.0 isn't going to disappear, so we're going to continue to fully maintain that approach. Society 5.0 will evolve and grow in the future. We'll apply an agile approach to such changes. However, safety quality is a separate issue even in the Society 5.0, therefore, we have no intentions of making it the same.

■ **Questioner 6 (press)**

Q: When was the Panasonic β organization formed, and what type of organization is it? At what stage are its most advanced concepts or products? Will it use existing factories to make 100 or 1000 of them?

A: Currently, it is a cross-organizational project spanning the entire corporation, primarily run by the Business Innovation Division. There's a gap between the speed of mass production of ideas and that of actual business, so the division will take steps to close that gap. In order to spread the concepts throughout the entire corporation, the β Project is a mixed team of permanent staff and other staff on a three-month rotation. The rotating staff return to their Divisional Companies or head office to disseminate the new ideas.

One advanced concept is HOMEX for living spaces. The value for living spaces affects the value for B2B customers, energy, and mobility. In the living space business, where everything including the history, customers, product cycle, and price range is different, it would take a vast amount of time to come up just with one idea by the standard method of comparing and adjusting. It takes time to develop our vision of living spaces and things that people can experience; therefore, this is something that we are focusing on.

Q: How far along is HOMEX at the moment?

A: Software-type prototypes, hardware-type prototypes with actual sensors that we believe customers will feel change the value of living spaces, and whole-house prototypes have been built. There are no commercial products at this current point in time, but there are some we are looking to commercialize. It will take time to reach mass production from there, so we will make several hundred to one thousand units for test marketing to make sure that we put out products with the right quality and pricing into the market. This is an area where Panasonic was slow in the past. The mass production speed will accelerate once we get over the difficult parts; however, the first priority is to put something out.

■ **Questioner 7 (investor/analyst)**

Q: How much are you collaborating with users and material manufacturers to develop new materials and batteries operating on new principles? Will you keep your developments to yourselves, or will you aim for standardization? Please answer including what happens after material development.

A: We aren't developing the batteries operating on new principles in collaboration with other companies, including automobile manufacturers. Many breakthroughs are required for the batteries operating on new principles. Our direction would be that the Advanced Research

Division will come up with answers first, then work with the business divisions, and then if necessary with partners.

■ Questioner 8 (press)

Q: The numbers of people involved in Panasonic β is increasing; ultimately how big will the project become? How many people are rotating through it every three months?

A: Currently there are about 30 staff members. We believe it's best to keep the number somewhere around dozens below 100. Over half of those will rotate every three months to disseminate the concept throughout the company. We intend to get staff from Arimo, the data analytics company from Silicon Valley that we acquired recently, to join the project at some point.

Q: You mentioned data-driven material searches for battery development. Will you establish a new database using AI, like the Panasonic Digital Platform announced in July? Have you created a new team for battery development?

A: The Advanced Research Division was re-formed this April, and the digital team focusing on AI was transferred to the Business Innovation Division. The Advanced Research Division is now focusing on materials research, but some AI engineers do remain. These human resources are taking on the central role in materials informatics. The database and AI used here are separate from the Panasonic Digital Platform. Engineers working with previous materials are increasing their skills in using IT-based material search tools in parallel.

With respect to batteries, progress is being made in the fields of safety and materials research; however, it's not at the stage where we can comment on it yet. We have a track record of using materials informatics, not for batteries but for thermoelectric and solar cell materials. We will continue to make progress in this area.

Q: Other companies are developing materials with materials informatics, so in what area can Panasonic demonstrate its advantages?

A: With regard to batteries, we have accumulated past research data, including failures, plus we have both materials and AI engineers, so we are able to make progress at a rapid pace inside the company.