Technology vision special three-way discussion

Fumito Ogata
Vice President, Representative Director, and Executive Officer; Senior General Manager of Railway Operations Headquarters

Kazuhiko Toyama
Representative Director and CEO Industrial Growth Platform, Inc.

Eiji Tsubone
Executive Officer, General Manager of Railway System Planning Department, Railway Operations Headquarters

The challenge of evolving in the railway/ transportation field in an era of innovation

In March 2018, JR-West Group drew up a Technology Vision, and we are now tackling the challenge of realizing our ideal form in 20 years' time. Kazuhiko Toyama, Representative Director and CEO of Industrial Growth Platform, Inc., exchanged views with Fumito Ogata, Vice President, Representative Director of JR-West (Senior General Manager of Railway Operations Headquarters) and Eiji Tsubone, General Manager of Railway System Planning Department, about the innovation required to create new value, as well as the corporate culture and attitude demanded of each individual employee in order to realize that innovation.

The huge potential for innovation in the railway/ transportation field

Tsubone In terms of the background to drawing up our Technology Vision, we were aware of three issues. First, Japan's declining population. In other words, how should we tackle an inevitable drop in transportation revenue, and a reduction in workers? Second, the increased sophistication of services. Ten years ago, no-one thought that safety measures, such as in the case of platform doors, would become such a talking point. This is the necessity of continually developing and providing services that meet the expectations of society. And third, reform of the corporate culture. This is about reforming the corporate culture of being excessively cautious in everything. We have drawn up our Technology Vision as a policy for overcoming these external and internal issues.

Ogata A railway is an extremely complex system, so it's very difficult to suddenly change various things. So we drew up the ideal form of what we wanted to become in 20 years' time–in other words, our dreams for the future–and our task is to innovate by backcasting[1] from that.

Toyama Innovation is not just about technology. It also points to transformation in a social and industrial context, and it's originally a social concept. In that sense, true innovation is arguably when a company like JR-West, which is responsible for social infrastructure in the form of railways, transforms itself to resolve social issues.

A sense of urgency in relation to sudden changes in technology and society

Ogata JR-West Group has delivered a strong performance, including record high revenues and profits in fiscal 2019. At the same time, we feel a strong sense of urgency about whether we can withstand the dramatic changes that society will see in the coming years.

Our policy is to innovate in the three ideals set out in our Technology Vision (see P28), but the railway business has a culture rooted in a conservative approach to operations, which is not readily compatible with innovation. It is conservative not just at the site of train operation, but also in terms of technology development and planning, and this poses an issue.

Toyama Innovation essentially gives rise to quantum change, but in the phase prior to that kind of "disruptive innovation,"[2] from a management perspective I think it's correct to bolster operational activity and enhance competitive strength through steady improvements and refinements. The problem is how to respond to that kind of disruptive innovation. For example, I think the sudden development of motorization (the spread of automobiles) represented a kind of disruptive innovation for the railways.

Ogata I completely agree. Looking back, the privatization of the national railways was also one way of responding to that disruptive innovation. Do you think that this kind of disruptive innovation will occur again in the future?

Toyama Nowadays, there is much talk of a "digital transformation"[3] in various fields, and business model reform using robots and AI is progressing at a rapid pace. It seems highly likely that disruptive innovation could occur in a number of industrial fields, including JR-West's business sector. As a result of that process, not only could rankings within the sector change, but even the sector itself could vanish without a trace. However, the major change brought about by disruptive innovation will not necessarily wipe out all of the existing influential forces. Instead, there will actually be a lot of companies that win through and survive. I believe organizational capability will be a key element in that.

Ability to adapt to change —the need for an "ambidextrous" organizational capability

Toyama It's difficult to accurately predict quantum change resulting from disruptive innovation and draw up countermeasures, and even if you try, there's a high chance of failure. So what's important is how JR-West as a whole improves its organizational capability to respond effectively to such change, and whether the organization can proactively evaluate whether it is doing its best. An organizational culture that fears failure and doesn't take risks, or condemns failure, is unlikely to be able to respond to quantum change.

Ogata As a railway company that is responsible for people's lives, I think it's necessary to place safety at the core of our business and further pursue the goal of "never failing," while simultaneously fostering a culture that grows by learning from failure and setbacks.

Toyama Yes. "New challenges" and "day-to-day operations" have a kind of interdependence. The capital needed to take on challenges is secured through safe day-to-day operation of the trains. However, the difficulty here is that "operational business" and "the challenge to innovate" are like "water and oil" from a cultural, conceptual and behavioral perspective – they don't mix. Many Japanese corporations—not just JR-West—struggle to build and maintain an "ambidextrous" organization that blends these two elements.

The importance of diversity, and open innovation

Ogata So this means that an organization needs to constantly have "ambidextrous" elements in its organizational capability. Is the overall diversity of the organization also an important factor in that?

Toyama Yes, it is. As "diversity" and "fluidity" are important elements in responding to disruptive innovation, the organizational body needs to accommodate human resources that are quite different from the norm.

Tsubone I think that increasing our sensitivity to the seeds of technological innovation and social trends is an important issue. JR-West has had a culture of being inward and preferring not to deal with people we don't know well, but recently we launched an open innovation office and we've been seeking to build external relationships. Also, in the data science field, we launched a Data Solutions Group, and are engaged in collaboration with various partners.

Ogata As decision-making takes time when it's done at Head Office, in December 2016 we formed the group company JR West INNOVATIONS Co., Ltd., and gave it the discretionary power to take on challenges without the fear of failure. This company is now collaborating with external parties, and we hope this will bring significant benefits in the future.

Kazuhiko Toyama Profile

After starting his career with Boston Consulting Group, Mr. Toyama later became the CEO of Corporate Directions, Inc. (CDI), and in 2003, he was appointed as COO of the Industrial Revitalization Corporation of Japan (IRCJ). He has extensive experience of corporate revitalization.
In 2007, he founded Industrial Growth Platform, Inc. (IGPI), becoming CEO. He is an outside director of Panasonic Corporation and Tokyo Electric Power Company Holdings, Inc.

Toyama I think that's very good. Having that kind of space is important. Looking at it from the perspective of the collaboration partner, it's extremely important for the other party to take decisions quickly. When carrying out co-development, everything comes to a halt if you have to consult the other party on each occasion, which is intolerable. Your group company is rather like the Dejima trading post at Nagasaki during the Edo period. They can see and make use of what JR-West has, and make decisions quickly. I believe that all large Japanese companies need to have that kind of Dejima-like space. The open innovation style of trying things out also leads to being chosen as a partner that the other side wants to work with. They might think, "JR-West looks conservative at first, but they're actually pretty open-minded and get things done quickly, and allow us to do all sorts of things," and this reputation then spreads, which is a significant benefit.

Ogata It's also a strength that we have fields where we provide tangible, real-world services, don't you think?

Toyama Corporate infrastructure such as a railway offers the most exciting challenges to third parties who have innovative technologies. They are also attracted by the things JR-West can provide that they don't themselves have. Particularly people with experience of the virtual world should feel highly attracted to what JR-West has cultivated and can provide, in its real-world and "serious" sector. In the future, real-world competition will involve multiple capabilities, rather than being unifaceted, and I think this represents a great opportunity for JR-West, given your active involvement in open innovation.

Nurturing a challenge-oriented culture

Tsubone With our Technology Vision, we have taken the approach of backcasting from our ideal vision of the future in order to develop the technology aspects of our railway/transportation services, and in some respects it's a process of trial and error.

Toyama That's because even if you aim to develop along the current trajectory, you might still be forced to change track, due to some tumultuous external event. In the mobility field, which is a vast field, you certainly can't predict who will plan and devise what in future, even with a 20-year timeframe.

Ogata In other words, in this era in which it's often hard to grasp the overall picture, I feel it's also important for us to keep abreast of developments in various external fields, not just in terms of technology. And also to continue setting ourselves challenges through a process of trial and error, even if we can't see the overall picture.

Tsubone In connection with that, we've adopted a stage-gate process[4], and we are starting to build the ability to respond to changes in society, such as by increasing the number of challenging projects with repeated validation tests.

Ogata In fact, when starting these initiatives, we told our staff that it was fine to fail in this kind of location or space, and that seems to have been a really big shock for them.

Toyama They needed a Copernican change of mindset. But that kind of change is very important. Novel things are created when people with different backgrounds and values come together and undergo an intellectual struggle. Also, in operations it's necessary to evaluate that there has not been any failure, and with innovation, it's important to differentiate the evaluation criteria and skillfully assess what could have been done better. Rather than something simply being a "failure," a key point is to gain something positive from a setback; for example, that the test failed but the damage was smaller than before, or that the organization learned something valuable from the failure. This is where the courage and abilities of the evaluating party are tested.

Leadership is an important part of becoming "ambidextrous"

Tsubone I agree, but also there are some troublesome aspects to realizing an ambidextrous organization. Incorporating innovations that utilize new technology in actual "safe operations" needs to be done carefully by the operations department. This requires close cooperation between the departments responsible for the innovation and operation, and this is quite difficult to achieve both in terms of the attitude of the staff and the manpower aspects. How can that be overcome?

Toyama I can't give a clear-cut answer to that. The operational, "real-world" work is essentially performed on a "line" basis, but the development and deployment of new technology takes the form of a "project." Matters need to be progressed in tandem. If the stress of that is not removed, then all you can do is brace yourself for the process.

Ogata Newly developed technology is transplanted or transferred, while maintaining existing operations, so in some cases you have to change the actual way of working.

Toyama It would be easy if railway operations could be stopped for six months, but tests have to be conducted while the trains are still running, and then the new technology has to be implemented in real-world operations, so you need to be prepared for the possible stress of that process. What's important is for the leader to deal skillfully with the clashes and friction that tend to occur. It's important for the leader to determine the winner on each occasion, or in other words to accept the risk.

The strength underpinned by operations

Ogata The ideal situation is for the innovation and operations teams to cooperate with each other and work as a single unit. Operation also entails improvement and refinement, so I think it's also important to develop the operational strengths.

Toyama That's right. Even in an era of disruptive innovation, a real-world company is not immediately defeated when it's hit with something new. Because competition in the real world is another matter altogether. A business focused on cyberspace is akin to "aerial combat," and the outcome is settled through disruptive innovation in the virtual world. But the mobility field is akin to a real-world "land battle." In other words, there are systems and equipment for getting around, and people who use them, and it's a world in which a real exchange of value takes place. In the cyber world, even if some kind of disruptive innovation occurs, it doesn't necessarily filter down easily to the ground-based operational world. In the real world, the elements involved are extremely complex compared with cyberspace, including the human element. The world of railways even involves people's lives. It's not a world in which things can be suddenly changed because of some invention in the virtual world. So it's a major strength of JR-West that it has robust operations.

Development from the customer's standpoint, with a sense of humility, is key

Toyama At the same time, if you're not attentive enough, you could be beaten by existing competitors that have taken advantage of quantum change. To avoid that, you need to take the change on board yourself. Looking back over history, operations and technologies that are now seen as "basic" were of great importance and value. And so the users paid you for them. But by merely continuing to do the same thing, their value diminishes with time. In a changing competitive environment, it's important for JR-West to pursue "good technology" that creates new value, as well as innovation, and to use this to enhance its own corporate value.

Ogata In the private sector, companies create some form of new value, provide this to their customers, and then receive money as consideration for that. You resolve any problems that your customers experience. You provide them with what you think they want. That's the basis for everything, right?

Toyama That's right. You must always keep in mind what it is the user is prepared to pay money for in order to resolve a problem. In a private company, that money funds the salaries of your staff, and so each individual needs to be keenly aware of this fact at all times. Regardless of whether the activity is improvement or refinement, or disruptive innovation. Competition between companies will become increasingly fierce in the future. As well as competition with your sector peers, there may be new entrants from other sectors who completely overturn the conventional competitive structure. There's no doubt that the core value, the basis for the railway business is safety and security. But users actually pay for the value you're able to add above that base, or choose JR-West on that basis. Ultimately, each and every employee must keep this in mind at all times.

Ogata Please tell me what your expectations are for JR-West Group in the coming years.

Toyama JR-West is an infrastructure company that provides society with services in the form of railways and transportation, and at the same time operates railways with the responsibility for its passengers' lives. Based on these strengths, I hope you will continue to innovate and find solutions for social issues. Please do keep up the good work!

1 Backcasting: A conceptual method of starting with defining a desirable future and then working backward to the present to identify what should be done now

2 Disruptive innovation: Technological innovation that disrupts the existing business order and dramatically alters the industry structure

3 Digital transformation: The use of data and digital technology by companies in response to the drastically changing business environment, in order to reform products, services and business models in line with the needs of customers and society, while also transforming business itself as well as the organization, processes, and corporate culture so as to ensure superiority in the competitive arena

4 Stage-gate process: A method by which the processes from research through to development are divided into stages, separated by gates. At each gate, the R&D themes are refined while carrying out validation tests and the like.