# Fostering and Managing Technical Innovation: A Practice of Japanese Manufacturing Company

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By Koko Nakahara

Instructional Design, Inc. Japan

Visiting Researcher of KEIO SFC Research Institute

In this paper, I would like to introduce a practical innovation management process and structure on a "new product development program". The program has developed with Yasuhiro Hashimoto and Masao Maru (both are Visiting Researcher of KEIO SFC Research Institute), based on actual project carried out in a large-scale Japanese manufacturing company.

A successful innovation does not happen only by gathering right people for the project, but it requires the organizational understanding and supports for the innovation project. This paper will discuss what the key elements of innovation implementation and the process.
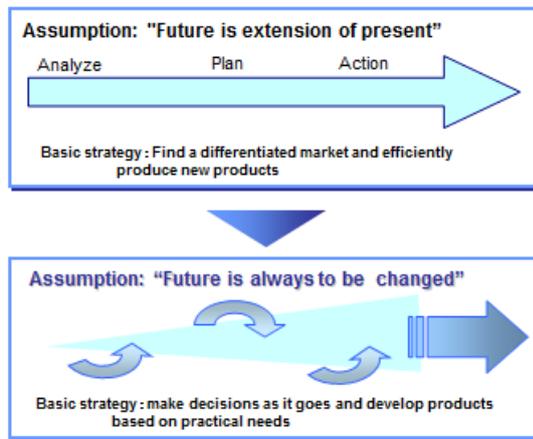
### Strategy Change from 1980s to 2000s

In 80s, customers had been seeking products with high quality, and Japanese manufacturers understood the demand, that deployed quality improvements efficiency in productivity. Consequently, those firms stormed the world and Japan has become an economic superpower. However, between 90s and 2000s the customers' needs, which used to be static and easy to predict, have become diverse.

Those products have been increasingly manufactured in East Asia and emerging countries. Their products are more functional and less expensive. As you know, they became much more competitive. Products are soon become commodities because of the speedy catch up of the technologies by those countries.

As a result, Japan has faced with a necessity to develop brand new business which is not the extension of established ones. Thus, Japanese companies were required to have new business and strategic model.

**Demand for Innovation.....**

Assumption: "Future is extension of present"

Analyze       Plan       Action

Basic strategy : Find a differentiated market and efficiently produce new products

Assumption: "Future is always to be changed"

Basic strategy : make decisions as it goes and develop products based on practical needs

  The upper model is competitive strategy model. It worked on the stable and predictable market. Those companies only needed to analyze the expected needs and enhance their existing products. At that time, the strategies made competitive differences among the companies. Their goals were operational excellences.

  The below model is, what we are facing now, unpredictable world. As we have just experienced in 2008, the world is very changeable and unpredictable, because of the widely spread interaction in a globe, rapid catch up by emerging countries, and diverse needs of global customers.   So we need to have a strategy like the lower one.

  It requires agility (to have rapid decision making ability of organization and to take speedy actions while analyzing market and observing various customer needs) of an organization.

  Japan has been good at eliminating variance/wastes and improving productivity. However this strategy works in an environment of predictable world.

  Now, the world has been changed. We really need to focus on potential needs and create novel business in rapid way.   We need to find the potential needs in observing "customers' behavior", "environment or process to find unmet needs", discovering insights, experiment those, and preparing alternatives for the future, which is changeable.

  In this changing world, there are a great number of needs even customers are not aware of. To find out those latent needs is very different from the skills of quality management. It means that we need to change our approach from "problem-cause analysis model" to "exploring and experimenting solution model"..

**Definition of Innovation**

Definition of innovation here, we discuss, is not only technical innovation, but novel idea/process-based "Realization of new business" by groundbreaking, innovative people.

**Bottom up Innovation**

In Japan, innovation used to be interpreted as technology renovation, and considered as product/project development based on new technologies. They have been focusing on their technology development in existing core business. But, now they are required to have an awareness of innovation. The innovation doesn't mean only the technology renovation. Having awareness of new innovation concept and changing behaviors of renovation will be a vital key. That awareness brings companies to be innovative.

It's time to transfer their focus from growing existing business to developing new business.
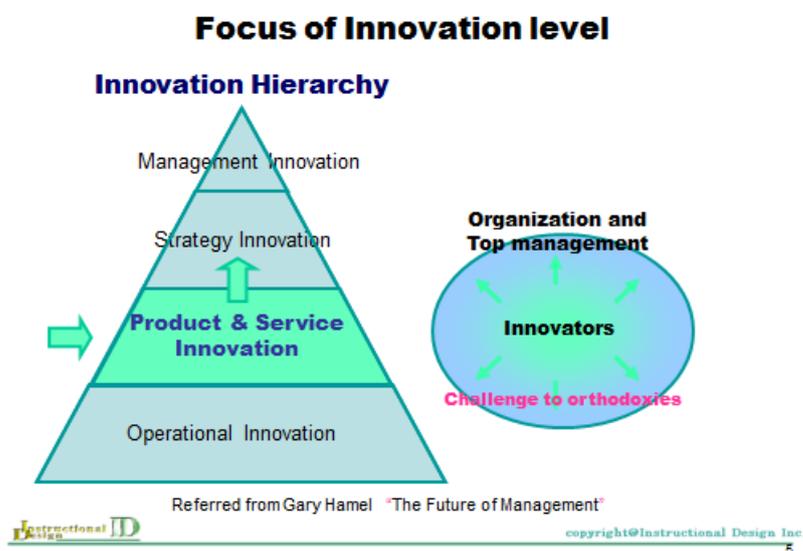


This paper is going to discuss on a process of innovation.

The "process" here means developing new products and services underlined with organizational innovation. A word of "products" is including services.

In the past, quality improvement activities influenced the management evolution in Japan. Likewise, it would be considered that innovation movements in products development evolve _management innovation_ in Japanese organization.

In this changing world, as it has discussed in previous page, we need to have new view

to make innovation to be happened. It is a good starting point to challenge orthodoxies of our own, having new concept of products matching with diverse customer needs.

The reason of why an innovation activity started from product development is that:

In Japan, it is relatively easy to start an innovative activity at workplace. Because, historically, (in large scale companies), typical management of Japanese is not top down. The decision making has been delegated to the front line management at workplace.

In such management style of Japanese companies, we believe the organizational innovation would happen through an innovative frontline which would influence to managements. That'll make organizational innovation.

This is a case from an innovation movement in a typical Japanese manufacturing company;

At first, some employees organized small innovation project group. Then the group appealed their products and services publicly by their sole decision. As the result, through the public recognition, the company's managements delegated the innovation movement to the group and allocated certain resources to them. It is a sample of the innovative expansion had been creating through the front line. Continuous deployment and extension of these activities will gradually change managerial DNA and culture of a company.

**Find and foster innovative talent in organization**
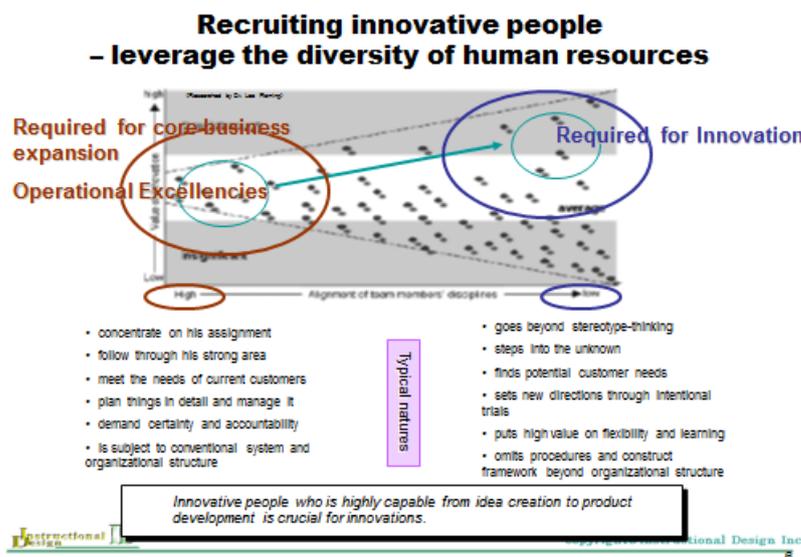


This is researched by Dr. Lee Fleming. Each footprint represents result of innovation project. The vertical axe represents market value accomplished with the innovation project. The horizontal axe shows level of discipline.

Under highly disciplined organization, innovation projects are only on average. In fact, you can hardly expect break through. In the lower disciplined organization, we can find projects

comparatively higher value of innovation. It shows that we need to have diverse of people who may not seem to be obedient to conventional value.

**Essential elements for Innovations**
　・**People with innovative talent:** People with inquisitive mind who could overcome conventional practices in the organization
　　　・understand and make sharp observation on markets and customers
　　　・can visualize concepts
　　　・can produce with trained skill
・**Learning-oriented process:** Processes that enable to learn quickly for further refinement while products and services are produced.
・**Organizational direction that values new ideas and activities:** Management policy that encourages various ideas and flexible plans for sales and revenues, that puts high value in speed of learning.
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**Innovation team and product development cycle**



**Collaboration of the innovation team – fundamentals and product development cycle**
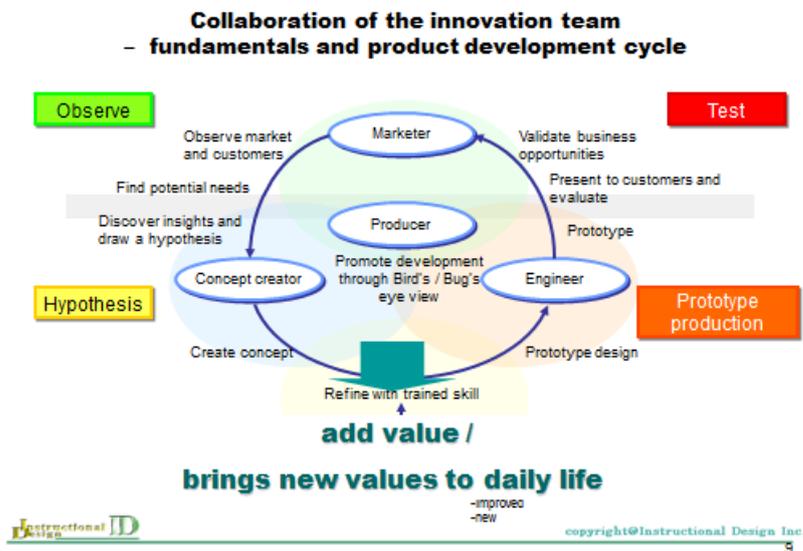
This is a team member component and the process of innovation project. It describes the roles and activities of the members. A team of edgy talented members can stimulate each other. It brings rapid and radical innovation because they can expand their capabilities by stretching their

thinking beyond the conventional. The members can develop diverse and fresh perspectives.

Under up-front support, what kind talent or characteristics we need for the implementation of developing novel products?

Key modules of the project are:

1. to understands latent needs of customers,
2. visualize products as solution for customers' needs,
3. Experiment with products and services for validation and sophisticate those.

Talents we need are:

Marketer: understands future trend and unnoticed revolutionary potent,

Concept maker: visualize concrete image of products leveraging their core competencies,

Engineer: who can make prototypes and sophisticate the products referring customers' feedbacks,

Producer: facilitate and leverage the member talent, be a bridge of management and project team. Communicate with management for budgeting.

Researcher: a person can be an on- and off member of the project. Like, at the stage of prototyping, if the team needs special technical knowledge or skills, they may need to have the specialty.  They need to have holistic point of view not only drilling down a certain products or technologies.

   The new value happens in the context of customer usage of a product.  So that innovation members are required having wider consideration on the products including the environment of them.   A product can add value when it brings new values to daily life.


**Quality through quantities**

# Quality through quantities

**Breakthrough Ideas**

Generating numbers of ideas

**Business opportunities**

Informal communications with diverse and numbers of people

**High potential products**

Rapid prototyping

Active communication **and interaction with diverse of potential customers** creates ideas
→ Enhance imaginative faculty, communications, and capability of product realization
→ Leading creative organization

10

It is not impossible to create innovative new products with only one cycle of innovation project process. It cannot be happened from the first challenge. We have to accept the arithmetic of innovation. Even though the team members are innovative, they need to generate hundreds of new ideas to realize a breakthrough. They need to communicate with diverse people to stretch your thinking beyond the conventional. They need to prototype rapidly, repeatedly and visualize the unvoiced needs of customers.
It happens through putting ideas out, beating their brains out.
Prototyping based on those accumulated insights, leads products to be unique and valuable.

**Developing Innovation Project**

1. Identify the characters who have strength in the roles of "Concept Maker", "Engineer", "Marketer", "Researcher" , "Producer" and "Innovation project leader" by assessment questions.

    [Example of Questions]

    ・　Do you think what matters in a new product is to hold surprises than is good price or function?

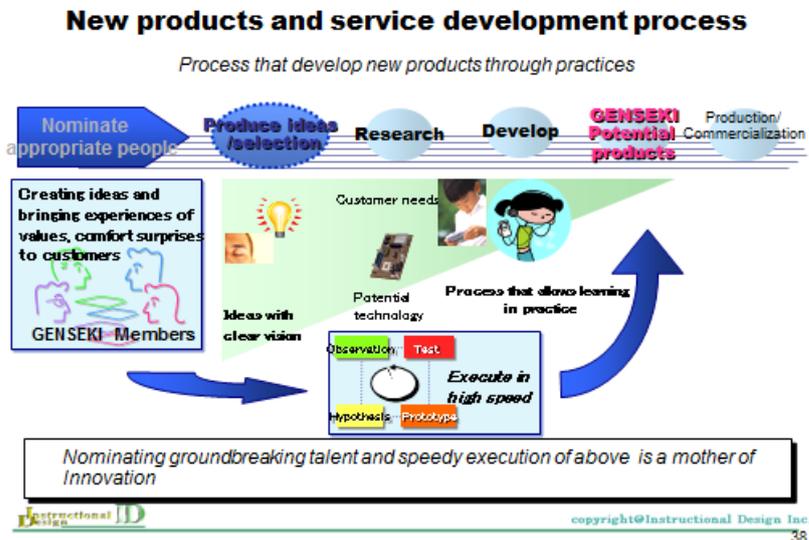    ・　Do people often say "You have different opinions or views from others."?

2. Interviews for innovation team members

    Analyze the characteristics for a good combination of members in a team. Balance the characters and roles in a team.

3. Build 2-3 teams to let them compete on product (or service) innovation

    = pooling GENSEKI (innovative people who can lead high potential innovative

products)



**New products and service development process**

*Process that develop new products through practices*

Nominate appropriate people → Produce ideas /selection → Research → Develop → GENSEKI Potential products → Production/ Commercialization

Creating ideas and bringing experiences of values, comfort surprises to customers

GENSEKI Members

Ideas with clear vision

Customer needs

Potential technology

Process that allow learning in practice

Observation — Test
Execute in high speed
Hypothesis — Prototype

*Nominating groundbreaking talent and speedy execution of above is a mother of Innovation*

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38

We call the <u>potential innovative people</u>, "GENSKI". GENSEKI is a Japanese word. It means gemstone. When we polish a gemstone, we will have a nice jewel.

The people here are the gemstones for the future innovation. It is a reason we named the assessment tool "GENSEKI". And the GENSKI people would make GENSEKI products.    By the assessment, we can know what kind of innovative talent the members have.    As the result of assessment, we staff teams with diverse talent.

After staffing the team, members start the learning process of observation, drawing hypothesis, prototyping, validating by experiment. The steps are;

Step 1:

　　Develop assumptions of potential customer needs. Set a product (or service) concept based on the customer needs.

Step 2:

　　Examine the assumptions of potential customer needs and the concept (Observation, research…)

Step 3:

　　 Define and state the identified "customer" and the needs for the product (or service) development

Step 4:

　　 Establish the product (or service) development concept for the customer needs

Step 5:

Generating ideas of products (or service) based on the concept

Step 6:

Select a product (or service) idea matching to the concept

Step 7:

Prototype the product (or service)

Step 8:

Evaluate the product (or service) by the potential customer → back to Step 3 or 4 and implement the steps until the product (or service) have a good evaluation of the customer

**Foster innovation as well as keeping operational excellence**



The innovative activity would be better to start in a small scale.

The innovation project discussed in this paper is defined as a seed, gemstone "GENSEKI" of organization to expand innovative activities.

To promote innovation with keeping operational excellence, an organization is required dual management;   one is for promoting existing business and the other is developing new business. Core business and innovation project have different nature of the activities. Balancing the different natures, it is a challenge for most organizations. One is working for everyday money, and the other is for the future.

To evaluate the people in different value creation, the organization need to develop different scales measure the performance of the people. Especially for the innovation project members who are working for the future value.

**Summary**

- Recruit GENSEKI (= high potential innovative talent) in your organization. Sometime, they are people being evaluated less by conventional business standard.
- Build competitive innovation teams to attain rapid product development
- Define a specific assessment criterion to the innovation teams apart from the conventional business members of the organization. Not bring a for-profit agenda in the early stage of GENSEKI (= high potential innovative products and service) creation process.
- Ensure the customer oriented perspective over the every innovation process; observation, hypothesis, test, and examination of the products or services.
- Manage and facilitate the speedy process of the new product and service development.
- Support and facilitate discretionary and diverse communication between the team and the organization as well as in the team.

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