

VISIONS

Insights into Innovation™

A Toyota Secret Revealed: The Oobeya Room p. 9

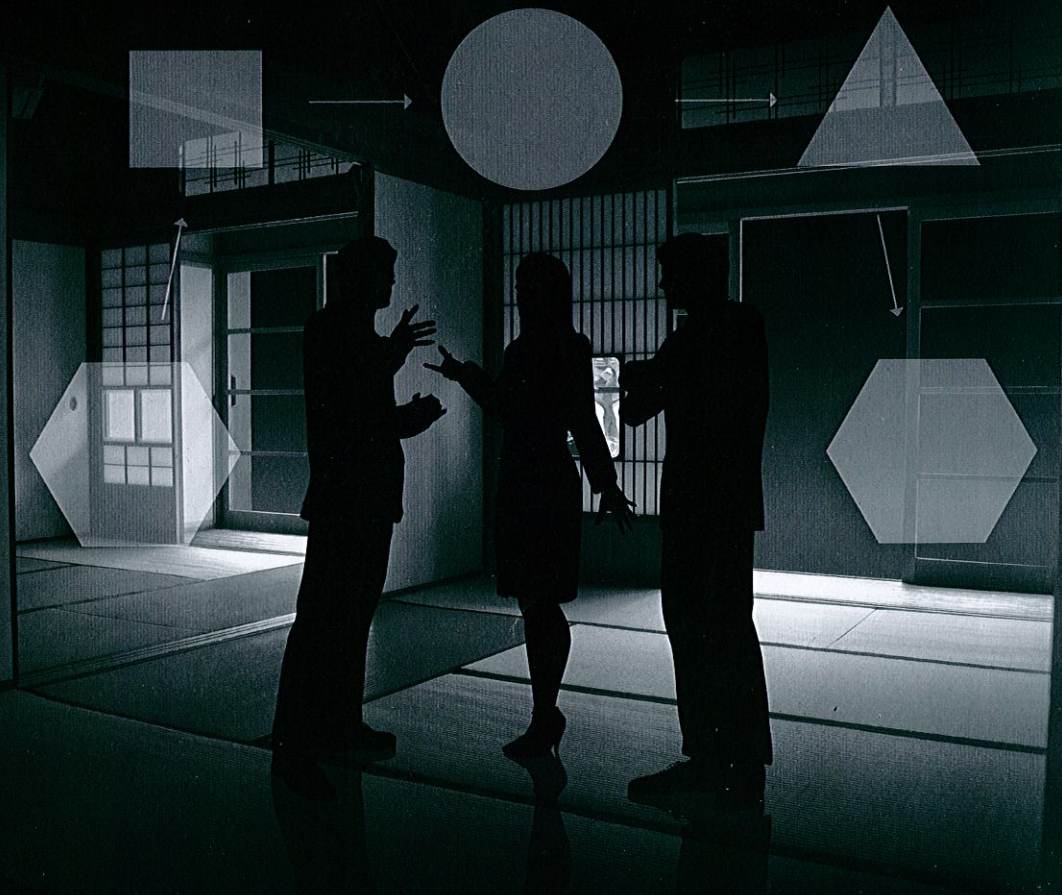
**Elkay
Manufacturing** p. 16

**Knowledge-based
Process** p. 18

Visualization p. 22

Co-Dev Report p. 35

Book Briefs p. 40



SPECIAL REPORT: Technology and Innovation in China p. 28



Toshi Horikiri



Don Kieffer



Takashi Tanaka



Craig Flynn

A Toyota secret revealed: The Oobeya room — How Toyota uses this concept to speed up product development

Toshi Horikiri, CEO, Toyota Engineering Co, Japan, (horikiri@pop02.odn.ne.jp), Don Kieffer, Founder, Improvement Strategies (donkieffer@gmail.com), Takashi Tanaka, Principal Consultant, QV System (takashi@qv-system.com), Craig Flynn, CEO, QVC System, Inc. (craig@qv-system.com)

Toyota remains on top of the world of car manufacturers today, despite the hit its earnings have taken due to the worldwide recession. The company passed GM last year to become the largest automobile manufacturer in the world, and its manufacturing and product development methods are admired and imitated everywhere. In this article, the authors describe one of Toyota's secrets of success: The Oobeya room. One of our authors, Takashi Tanaka, developed this technique with Toyota.

Employing Toyota methods in manufacturing has led to substantial gains in quality and productivity in the last 20 years, but there is still much to be discovered and learned about their Product Development. Because of the physical nature of manufacturing, the tools and methods are more easily understood than in product development. Many efforts to bring Toyota methods to product development focus on the application of manufacturing-centric tools and can be awkward. For example, engineers are usually not happy about, and don't understand the rationale for taping squares on their desk to identify the location of a stapler. More effective tools designed specifically for product development, like limit curves, are more helpful. "Oobeya" (Pronounced: oh BAY a) is the Japanese word for "big project room" and represents one of the many tools in Toyota's product development system. It is a concept that is particularly helpful for product development in Western companies as it helps to build collaboration across teams and optimize the project from a team perspective.

“Oobeya is a powerful tool because most businesses lose huge amounts of time on the front end of development projects from lack of clarity and coordination.”

In the early 1990s, Toyota CEO, Okuda Hiroshi, challenged the company to become a global leader. Mr. Okuda was the first person to become CEO of Toyota who was not a Toyota family member. He came from a sales background and was the person who pushed to deliver the Prius to market faster than the competition. In product development this push meant dramatically improving lead time and increasing the flow of new products to the market. Many changes took place during that time including some flattening of the organization, moving to a more participative culture, and initiating more simultaneous efforts across all the functions involved in product development. Oobeya, led by Takashi Tanaka, was one of the results of those efforts and today is in widespread use on almost every automobile development project inside Toyota.

Why Oobeya? Why now?

Our experience in both Europe and the United States is that Oobeya is a powerful tool because most businesses lose huge amounts of time on the front end of development projects from lack of clarity and coordination. Used properly, Oobeya is a powerful tool on both fronts. But just as many see Lean Manufacturing only as a collection of tools, and mistake "Lean" for the Total Toyota Production System (T-TPS), many people are mistaking Oobeya for the Toyota Development System (TDS). Oobeya is only a small part of the total picture inside Toyota. Employing it without some additional adjustments for using it outside the Toyota company environment, where many supporting systems exist, can reduce its impact and make its use of post-it notes seem silly. Inside Toyota, Oobeya is only one of five elements under the heading of "Pull Development," and Pull Development is only one of six categories of elements in the basic outline of the Toyota Development System.

Toyota Motor Corporation

In 2006 Toyota held the title of the most profitable automaker (\$11 billion) in the world, and two years later, in 2008, it displaced GM to become the world's largest automaker. Toyota's Camry and the Corolla are among the best-selling cars in the U.S. and the company also owns and operates the Lexus and Scion brands. The company employs approximately 316,000 people worldwide and it includes 522 subsidiaries. On May 8, 2009 Toyota joined other automobile makers battered by the credit crisis by announcing a record annual net loss of \$4.4 billion.

—Excerpted from Wikipedia, May 25, 2009

When used properly, Oobeya is an excellent way for western companies to see how to improve their product development because of its project-wide impact.

“When used properly, Oobeya is an excellent way for Western companies to see how to improve their product development because of its project-wide impact.”

Exhibit 1 shows a conceptual view of the entire Toyota System. You can see that what is called “lean” in the West is actually only a small part of the whole. With that context, let’s look at what Oobeya is, how it works, and what is important to watch for as Western companies introduce this technique into a very different environment than exists inside Toyota.

The concept of Oobeya

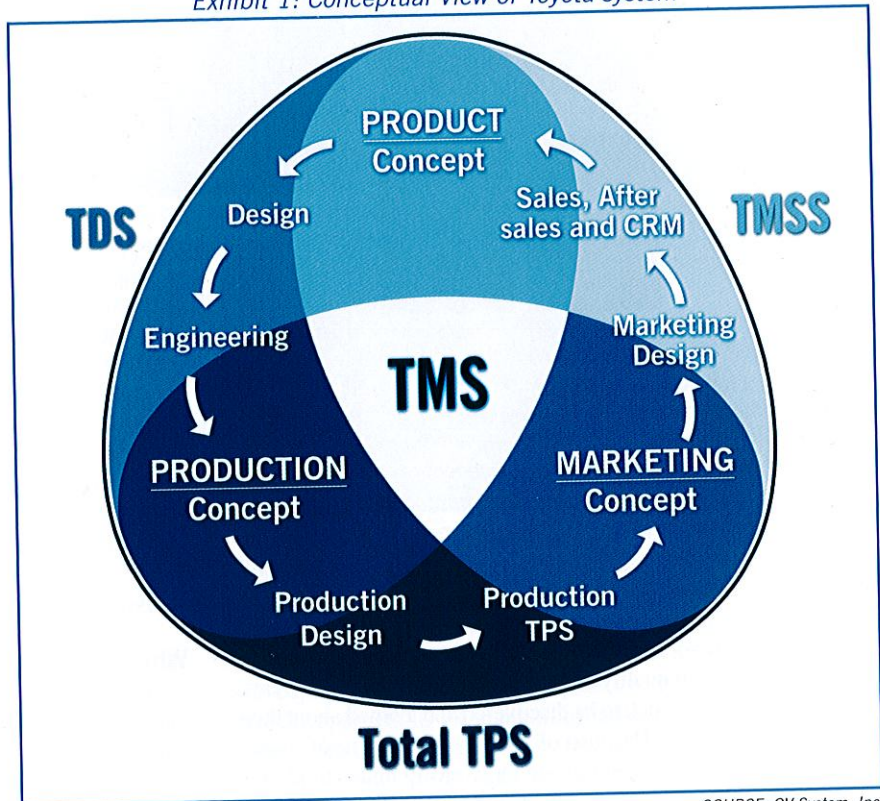
With Oobeya, just as in manufacturing, productivity is first gained by identifying and removing the wasteful activities. You have to first be able to see the value-added work before you can use pull techniques to accomplish the work more quickly. The use of Oobeya can quickly highlight the real value added work and create pull with a clean customer demand signal. Scope, accountability and schedule issues become painfully clear very quickly. Fixing these issues speeds the important work of decision-making and problem solving. Good problem solving leads to better methods and the project team becomes more effective (do the right thing) and then more efficient (do the thing right).

Exhibit 2 shows the content of a typical product development Oobeya. Essentially, Oobeya is a big room set up for one project, which is accessible to the entire team. Notice the left-to-right flow from the Objectives Board around the room to the Issues Board. This follows a flow from more general to more specific information. It is similar to a war room that is typically set up during a crisis but has specific layout and far more invested in precisely what happens in the room.

Think about how we organize ourselves during a crisis — think of Apollo 13. The mission is clear to everyone. There is a sense of urgency. Titles are not important, but leadership and decision making are clear. As soon as someone falls behind, everyone pitches in to help. Time discipline is strictly enforced. Creative use of existing tools and expertise is emphasized. Needless bureaucracy is eliminated. Best data available are used, even if only rough estimates. Scope creep is not possible without jeopardizing the project. There is a real consequence to the “customer” for being late.

The Oobeya room, along with the specific roles, responsibilities and behaviors can bring these Apollo 13 elements to a product development team as the team learns the skills.

Exhibit 1: Conceptual View of Toyota system



SOURCE: QV System, Inc.

Oobeya board layout and purpose

Product development is not a subset of engineering; it is an organization-wide endeavor in which engineering plays a critical role. Including all the organization’s functions in Oobeya fosters collaboration and concurrency. Planning, marketing, sales, design engineering, production engineering, production and other related functions work in the project room together, simultaneously. The structured action in the Oobeya makes their meetings short and productive. Meetings don’t end in postponed issues, confusion about decisions, and frustration. “Face mail,” not email is the dominant form of communication. Here’s how it works:

“‘Face mail,’ not email, is the dominant form of communication.”

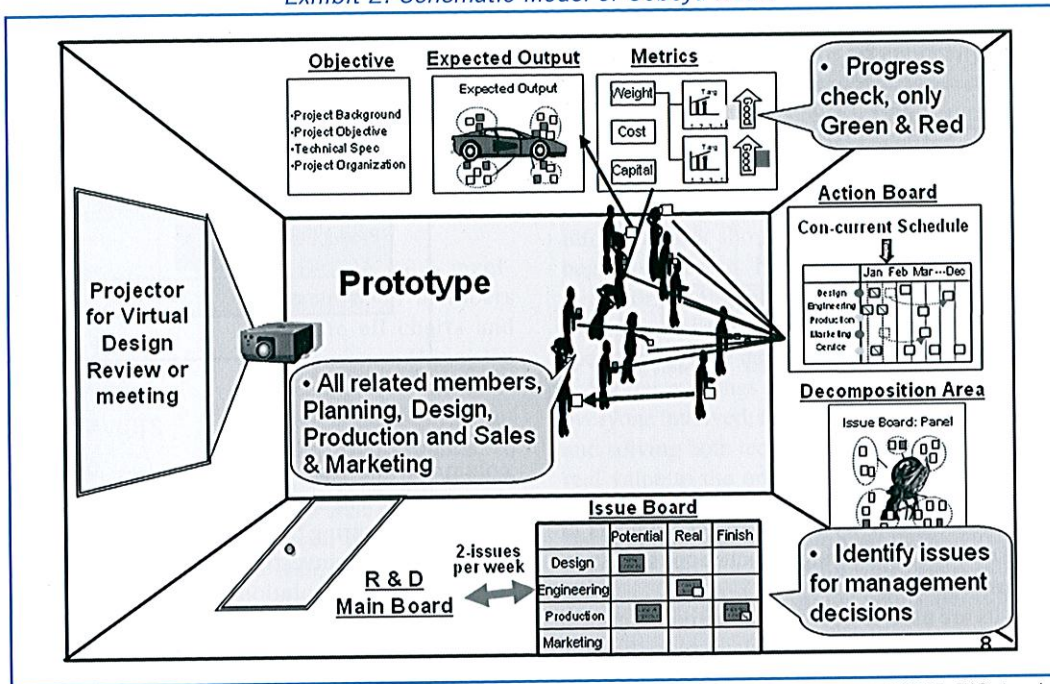
Prototype model at center

At the center is a prototype model, mock-up, drawing, or some other visual representation of the output the team is responsible for. Visualization is a powerful way to communicate and it begins with the product itself. Having it in the room grounds discussions and aids quick problem identification among team members responsible for different sections.

Project objectives

Project Objectives appear in the top left of the first wall. As with the prototype itself, this should be done graphically and as concisely as possible. The project scope is linked to the larger product plan and, if possible, directly to the corporate strategy. If this board does not effectively communicate both the voice of the customer

Exhibit 2: Schematic Model of Oobeya Room



SOURCE: QV System, Inc.

“ It is the job of the team leader... to protect the scope of the project during the entire development cycle.”

and to protect the scope of the project during the entire development cycle, including protecting it from internal team scope creep. Team members are more motivated when there are clear and credible targets. Everyone wants to work for the customer; sometimes not so much for their boss. Clear targets trigger this type of broader motivation and help the boss become a more relevant leader.

The red squares denote post-it notes that indicate urgent issues, which are unresolved at the start of meeting. During the meeting, they must be resolved or moved to the Issue board for longer-term follow-up.

Metrics board

Next, the metrics board shows project status. This board contains the specific, quantified metrics by which the project is measured. Usually these exist as Quality (including function), Cost, and Timing metrics. Green or red squares show status as ahead or behind target. Yellow and other colors are not used for status. With a true customer orientation, you are either on target (green) or not (red). Yellow and other less clear indicators tend to focus on effort and issues outside a person’s control, neither of which the customer cares about. More colors also tend to take the conversation off track into a subjective discussion instead of focusing on how to recover and also make the boards harder to read. The core conversation needed in the meeting is status-to-target

and the voice of the organization, there will be many internal and external problems regardless of the efforts of the team.

It is the job of the team leader to make sure this is done well

and, if behind, the issues and countermeasures needed to get back on target. After a time, the focus on the customer and the data tends to naturally turn the conversation from the “5 whos” to the “5 whats.”

DIVE RIGHT IN

LOOKING FOR A MORE POWERFUL CUSTOMER IMMERSION PROCESS?

Turn to Innovare for a deep dive into your customer's world:

- Voice of the Customer
- Ethnography
- Team Immersion Events
- Process Facilitation
- Training

Uncover customer needs throughout your value chain.

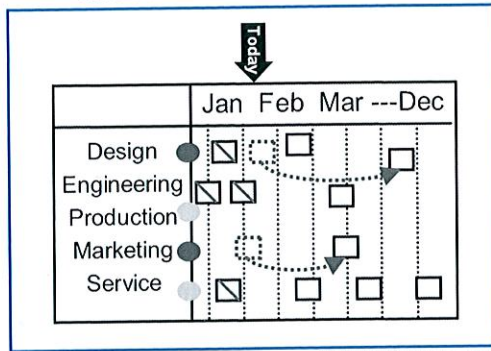
INNOVARE®

Grounded in Research, Driving for Innovation

www.innovare-inc.com 617-479-3818
ideas@innovare-inc.com

©2007 Innovare, Inc. All rights reserved.

Exhibit 3: Concurrent Schedule



SOURCE: QV System, Inc.

Exhibit 4: Issue Board

	Potential	Real	Finish
Design	New concept		
Engineering		Drawing delay 3/5	
Production	Line A Improve		Supplier selection
Marketing			

SOURCE: QV System, Inc.

Concurrent schedule board

On the next wall, the Concurrent Schedule Board (Exhibit 3), or activity board, shows the activity of all project members or teams: Marketing, Design, Engineering, Production, Logistics, Sales, and sometimes suppliers.

Here yellow post-its are used to describe the activities critical in meeting the target. The team member populates his or her row in order to communicate the story-line of the basic activities that will meet the goal. In this way, all the team members can show the leader and their colleagues their plans in a simple format. It is in this way that their thinking becomes transparent. It allows both the team leader and the peer group to understand and make an assessment of how well the activities will meet the target and offer suggestions.

If done correctly, there is good dialogue between the leader and the member and also among the team members to ensure that the post-its represent the best *collective* way to meet the target. How many post-its per line? Fifteen is a good starting place. If fewer it may be hard to understand the plan; if more, there is likely too much detail, and it will be hard to see the main elements of the plan and places where people can collaborate.

When an activity is completed, a diagonal red line is made across the tag. Where milestones may be in trouble, red squares are posted and solutions are discussed in the meeting. Delays are shown by outlining the previous location and moving the tag to the new date. This allows everyone to understand the implication of any changes and quickly adjust the entire plan.

Decomposition board

The decomposition board shows sub-projects or areas needing attention. Different decomposition boards will be used throughout the stages of the project—some dominated by style issues, some by cost, quality or performance.

Issue board

The Issue Board (Exhibit 4) displays critical problems. Issues are posted in the potential column by team members using red post-its. Replies are added with smaller yellow post-its.

After reviewing the main board, the team leader moves to the issue board and reviews each new issue with the team, clarifying the problem and assigning accountability. It is then the responsibility of the team member assigned to provide the replies and solutions. Moving the post-it from the Potential

column to the Real column requires investigation to verify the problem and true cause. Do you recall “go to genba” in lean manufacturing? The same applies here. The team member must actually go investigate to understand the problem clearly. The design of the solution is brought back to the group before implementation begins. Once this happens the tag is moved to Finish.

If the issue cannot be resolved by the group and requires involvement of the next level in the organization, the problem may be escalated. Only a limited number of issues, usually two per week, can be moved up to the next management level. Our suggestion is to get the agreement from the next management level ahead of time so that when they receive issues from the team, they will resolve them quickly. This is one of the many places that Oobeya exposes some dysfunction in organizations. If problem-solving and decision-making do not flow up and down the organization easily, then the team will quickly abandon this tool and revert back to a more familiar way, usually one that is much slower and more frustrating.

This is just a basic view. In practice, the boards change form and content depending on the nature of the project and the stage. At every stage the layout is kept simple and the teams use Plan-Do-Check-Act cycles to organize activities, stay on schedule and make adjustments as needed.

Roles of leaders and team members

More important than the structure of the room are the roles of the people involved. Many behaviors and supporting practices that are normal in Toyota are usually not in place in western companies. Consequently, most of the issues with implementation revolve around how the roles listed below are actually put into practice.

The role of the leader includes:

- Set clear targets and ensure alignment up and down the organization.
- Assess the team members' plans as shown on the schedule, offer suggestions.
- Negotiate with team when desired goals are not seen as possible.
- Negotiate with management when desired goals are verified to be not possible.
- Maintain time and content discipline of the meetings.

The role of the team members includes:

- Provide solutions to reach the targets.
- Provide ahead/behind status.
- Propose countermeasures to obstacles.
- Understand the activities of all the other team members and find collaboration points.
- Resolve issues assigned.

“What is different is that the Oobeya process... integrates these behaviors and others into a very compact timeframe and in a structured way.”

Before each meeting, project members update all charts and action items. During the meeting, team members have a short time, usually three minutes, to give the full report from their area. After the main board is reviewed, the team leader reviews all the new and existing issues on the issue board.

Total time for the meeting is usually under one hour. As the team's skill grows, the meetings become compact and efficient. It is almost impossible for most people to finish their report in three minutes when they first use this technique. Only when they learn how to structure their report-outs properly can they do so in the allotted time.

Oobeya integrates behavior for success

None of these elements regarding the displays of information or the behaviors are new or exceptionally exciting. What is different is that the Oobeya process, when run skillfully, integrates these behaviors and more in a very compact timeframe and in a structured way. Having an experienced coach to get through the initial learning curve quickly is extremely helpful. The payoff for the team is that in a shorter amount of time, much more important information is shown. Issue detection and problem resolution begin to speed up. The meeting value increases. No one is doing e-mail or reading reports because the discussions are concise and important. The room enables collaborative interaction in very specific ways far more than simple war rooms.

Shorter meetings that have more value are a welcome relief to everyone involved; the increased skill in controlling project scope and solving both technical and administrative problems delivers real value to the organization. Without the important elements summarized in this article, Oobeya is just a big Gantt chart on the wall, but with them product development can be rapidly accelerated. No new technology is needed; only Post-it notes and a desire to change the working habits and culture of the team. ■

Toshio Horikiri is CEO of Toyota Engineering Corp. Don Kieffer spent 15 years at Harley-Davidson and now heads his own firm, Improvement Strategies. He also lectures at MIT's Sloan School. Takashi Tanaka helped develop the visual-based product development process at Toyota Motor Co. in the 1990s and now works for QV System. Craig Flynn is CEO of QV System, Inc.



PLANVIEW

Is your product roadmap ready to crush the competition?

Portfolio Management for Product Development

Planview Enterprise helps Product Development organizations pick the right product mix, no matter the industry or product line.

Get an edge on the competition. Make smart decisions about which products to invest in, and what people to put to work to drive innovation.

Check out the Planview Product Development Resource Center for tips, tricks, and tools to help you drive maximum innovation from your product portfolio.

<http://www.planview.com/crush>