

“WA” (Harmony) based holistic transformation management in a multi-project environment

A study of TOC Critical Chain and Japanese shop floor best practices

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In real life, project organizations exist as multi-project environments, not in a sets of isolated single projects. New management techniques being implemented in the hope of improvement sometimes create more confusion, often spreading "silo" mentality throughout organization. This paper illustrates the mechanism of how multi-project realities cause confusion in organization management, and proposes a very simple but effective TOC-based holistic management solution harmonized with Japanese shop floor best practices and culture.

Keywords: TOC, CCPM, Critical chain, Dandori, holistic management, multi-projects, transformation management

1. The Reality of Management

In real life, organizations are managed as a multi-project environments; there are R&D projects, product development projects, production ramp up projects, management transformation projects, cost reduction projects, productivity improvement projects, etc. Furthermore, projects are complex; there are few projects that can be accomplished within a single department. Therefore most projects are executed by multiple departments within a company involving various stakeholders, including clients, subcontractors, suppliers, shareholders, etc. Even for mass production-type companies, which used to focus solely on production, management of projects is being recognized as a higher and higher priority. It is no exaggeration to say that a company's competitiveness can be determined by how companies accelerate their R&D activities and product development to keep pace with ever-changing market demand. Furthermore, once production starts, a series of challenges still awaits, such as integrating in cost reduction projects, lead time reduction projects, yield improvement projects, supply chain management projects, etc. in order to win the competitive race in the marketplace. There is increasing discussion in the industry about how to cope with this situation and how to manage these multiple projects to success with a holistic view.

The Trap of visibility

Various management methods are actively being developed and introduced in order to cope with these challenges. However, it is still very rare to see remarkable success in the real world.

First, let us verify the following statement:

In order to “achieve the goal”, it is necessary to “have visibility of project status.”

This seems to be a common-sense statement and many people would agree with it. Indeed, with the very high uncertainty and complexity of projects, there is little hope of success proceeding on projects without having visibility of the ever-changing situation. Now let’s verify the logic in a different way:

If you “have visibility of project status”, you can “achieve the goal”

Looked at this way, the statement appears to be insufficient. Even if visibility is in place, it is not always possible to achieve the goal. In other words, **“visibility” is a necessary but not a sufficient condition.**

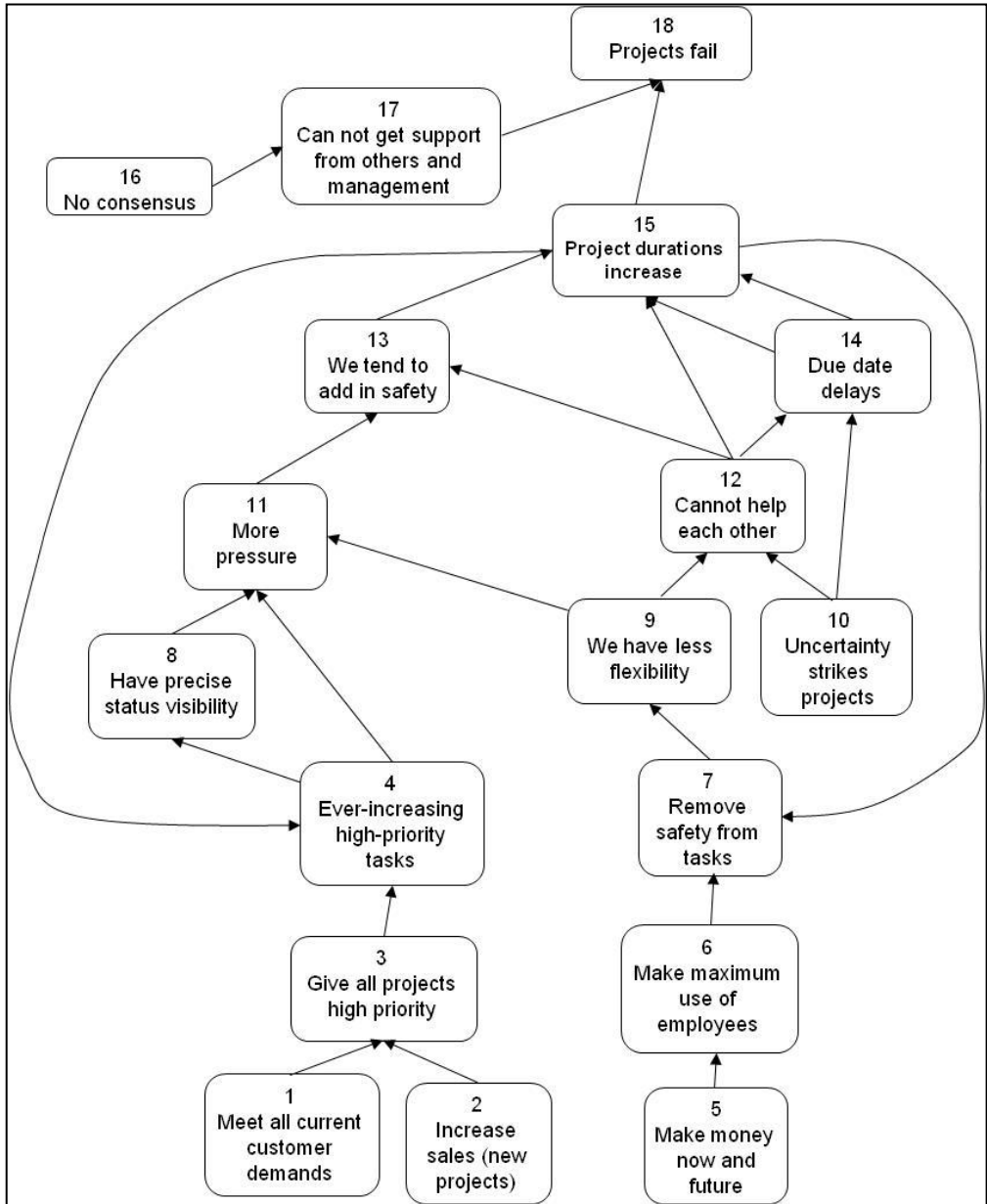


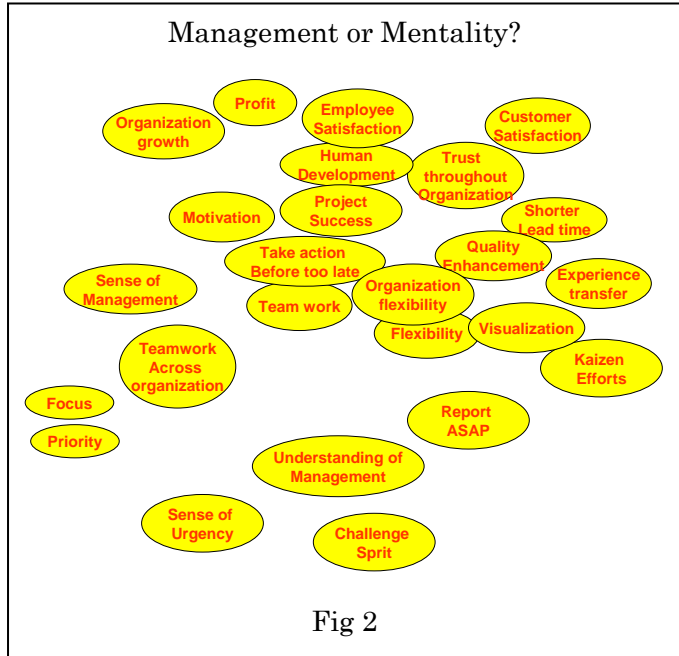
Figure 1

Figure 1 shows an analysis of the situation surrounding projects. With management emphasis on the importance of customer satisfaction, we want to meet all current customers' requests (1). At the same time, we must increase sales (new projects) as much as possible (2). In such a situation, there is a tendency to put priority on each request (3), and this leads to the situation where there are ever-increasing immediate jobs to be done (4). At the same time, in order to make money now and future (5), we want to make maximum use of employees and want efficiency to improve (6). In order to increase efficiency of all employees, we feel pressure to remove the safety from each task (7). And in order to make sure ever increasing jobs are done in a correct and timely manner, we need to have precise visibility of status (8). If safety is removed and more tight control is in place, we lose flexibility (9) when uncertainty strikes the project (10). With tight control and status visibility, ever increasing jobs lead to more pressure to meet commitments (11). With no safety in

the project, even if a problem occurs or another project is in trouble, we cannot help each other (12). When we learn that we cannot help each other out in case of trouble, we feel pressure to put more safety into each task (13) “just in case.” When management realizes project members are putting more safety in tasks, they will remove the safety again in order to increase efficiency (7). Meanwhile, if we can not help each other, with little flexibility, when an uncertainty strikes project, it causes due date delays (14). If due dates are delayed, project durations get longer (15), creating even more pressure to meet commitments and even more precise visibility of the status of projects. Furthermore, if the project goals are not clearly agreed upon, and there is little consensus in the organization (16), the support of management and people surrounding the project cannot be obtained (17), we cannot help each other when encountering trouble. In a situation in which we cannot help each other, with little flexibility, we cannot deal appropriately with problems when they arise, causing due date delay. Since new projects need to be started immediately together with existing projects that are behind schedule, tasks continue to increase. With little flexibility and consensus on project goals, and when we face unexpected problems which are nature of the projects, the risk of the project failure increases further (18). If projects continue to fail, a more strict control management approach is needed in the efforts to tightly control budget and monitor status. What is worth noting in Figure 1 is the feedback cycle. The failure of a project accelerates a tighter management control approach. Due date delay results in further increasing high priority tasks, and because help cannot be expected, we are pressured to add more safety to prepare for uncertainty; the feedback cycle of additional safety drives management to remove it more intensively, which turns into a endless downward spiral, and as time passes, the situation becomes more serious.

1. 2. Talking about management or talking about mentality?

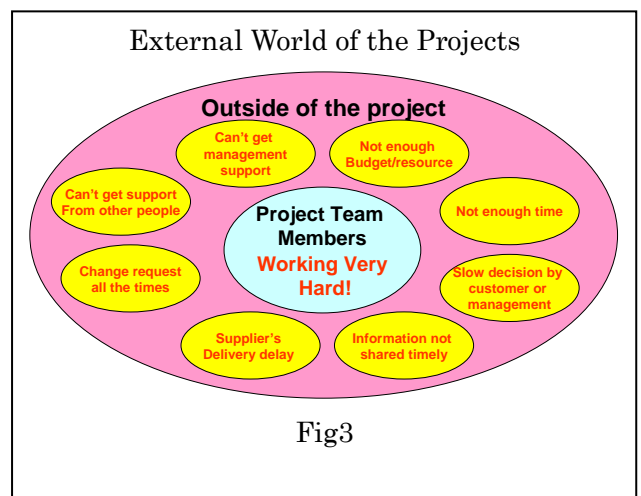
Management cannot leave such a situation unaddressed for long, and usually starts working on management reform. The following phrases begin to be proclaimed loudly everywhere in the organization: “profit improvement”, “customer satisfaction”, “growing organization”, “human resource development”, “successful projects”, “motivation”, ”trust among the organization’s members”, “shorten lead time”, “quality improvement”, “take actions before it’s too late”, ”sense of management”, “teamwork”, “flexibility of the organization”, ”hands down experiences and know-how”, “cooperation across organization”, “focus,” “prioritize”, ”create flexibility”, “visibility”, ”Kaizen” “report ASAP”, “understanding by management”, “sense of urgency”, and etc. These phrases are mostly good things for the organization,



common sense which most of us can agree with. However, if we try to apply them to our real world, things get very tough. This is because projects belong to the real world, where multiple departments (which often have different priorities) and outside parties (which have their own objectives) are associated in complicated arrangements. In this situation, if we fall into mentality discussions, which are not bad in themselves, we sometimes take too long to resolve project issues, which can be critical and urgent.

1.3 . External World of the Project

The reality of projects is that successful execution is really tough. The budget, resources, and timeframe of projects are often not enough, and this situation is only magnified in the severe competition of the market place. Moreover, decisions of the client or management can be slow, information is not shared in a timely manner, and delivery from suppliers is delayed. Moreover, project scopes change often. Even if there are serious problems, support is not necessarily obtained from management, or from other project stakeholders in a timely manner. In spite of such circumstances, project members are working very hard, with a strong sense of

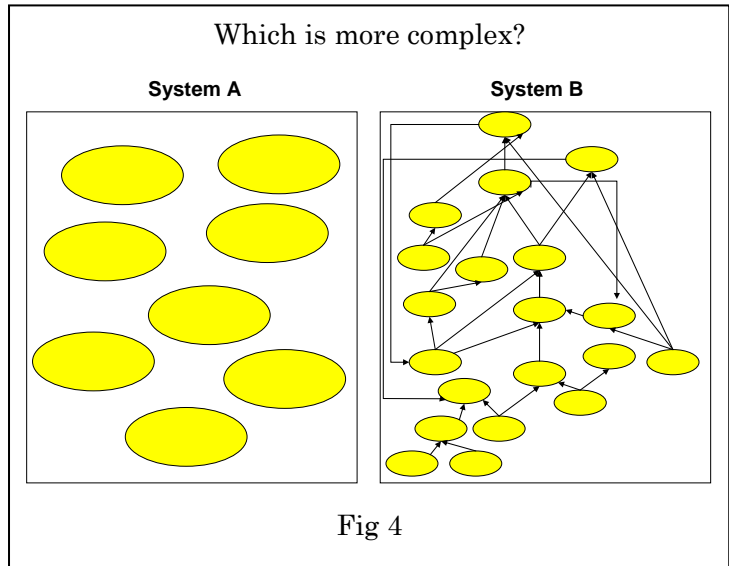


responsibility and are willing to work even around clock to comply with all kinds of expectations from the stakeholders. In fact, many of the real problems of projects are not internal problems, but are those caused by external factors outside the project members' control.

2. An Approach that Handles Complexity in a Simple Manner

The critical chain method (CCPM-Critical Chain Project Management) deals with these factors by taking the approach of changing the behavior of project members only slightly and providing project members with a better project environment.

In order to handle problems in a complex system simply, the Theory of Constraints (TOC) views factors causing the problems as a system. Which of the systems depicted in Figure 4 is more complex? Is it system A? Or is it system B? Based on the number of entities involved, System B appears to be more complex. However, if we review the figure again with regard to



solving the problems in the system, it is evident that system B is simpler. Notice the cause-and-effect links for each phenomenon. CCPM makes use of these links to generate a simple yet powerful root-cause-solving solution. CCPM has four major factors which have something in common with a Japanese cliché that project managers frequently use to educate the best practices to young trainees in Japan:

2.1 ODSC : “Suriawase”

ODSC is the abbreviation for Objectives, Deliverables, and Success Criteria. CCPM recommends aligning objectives following this format. What are the objectives of the project? What are its deliverables? What are its success criteria? These questions are discussed among project members and stakeholders. They are simple but powerful. Figure 5 shows a typical example of ERP implementation project. Without a clear definition of the ODSC, the typical answer to questions regarding Objectives is: to “implement ERP”, for Deliverables: to “implement ERP”, and for Success Criteria: to

Objectives	Implement ERP
Deliverables	Implement ERP
Success Criteria	Implement ERP

Fig 5

“implement ERP”. It is quite surprising there are so many cases like this. However, if we diligently answer each question, project members realize that the objective of the ERP implementation project is in reality more basic: to reduce inventory, lead time, or increase productivities, market share, profit, etc. Implementing ERP is just a means to achieve these objectives. However, project members under big pressure of budget, resource and time constraints tend to focus on “deliverables” during project execution. This situation gets more and more serious when the project faces serious problems: people tend to focus more on deliverables rather than objectives. Therefore the mechanism exists to confuse “means” with “objectives”. The function of the ODSC is to clearly distinguish between “means” and “objectives”, to clarify success criteria that measure success based on evidence that the objectives have been reached, and to carry out the “aligning” of these elements amongst project stakeholders to avoid such a mechanism. In the project management sites in Japan, experienced project managers often use cliché of “Suriawase” which stresses the importance of “aligning” of project goals among all stakeholders. Most of them see that ODSC is a very simple and effective tool to practice “Suriawase” to align project goals.

2.2. Backward Planning : “Dandori Hachibu”

Once project goals are aligned through discussing and documenting the ODSC, CCPM proposes the use of the backward planning process.

Let’s suppose that you want to get on the train that leaves at 10:00 am. In order to make the train, you want to be at the train station at 9:50 am. In order to do so, you need to leave home at 9:40 am. And you need to have finished your preparation about 10 minutes before you leave your house. If you are ready at 9:30am, leave your house at 9:40 am, arrive at the train station at 9:50 am, buy the tickets, and go to the platform, you can get on the 10:00 am train.

In everyday life, if we have a goal, we make plans in backward manner. In order to do “y”, we must first do “x.” And then we check that we can achieve the goals step by step in a forward manner. This is how humans naturally think. The cliché “Dandori Hachibu” (80% of Project success depends on preparatory planning), is one of the most frequently used expression in Japanese project management. It can be said that discussing backwards from the objective is a practical implementation method of Dandori (preparatory plan) in a team setting; it allows team members to thoroughly discuss the Dandori to achieve the goals.

2.3 . ABP (Aggressive But Achievable) : ”Yutori”

Another essential CCPM proposal is buffer management. The safety time of each task is taken

away, where task durations are estimated at “aggressive but possible” (ABP) levels (50% level of confidence), and in return, 50% of ABP estimated duration is re-inserted at the end as a project buffer to protect the due date from uncertainty in the project. However, it is extremely difficult in real projects to get accurate initial estimates of ABP lead time. Although people theoretically understand a buffer will be added for safety, it is very hard for them to remove safety at each task because people have a “sense of responsibility”. Uncertainty is always the nature of projects. In order to protect due dates in this environment, it is natural for humans to add safety to each task to make sure they complete them on time. However, with safety imbedded in each task, accumulated safety normally pushes project schedules behind the due date. Then, with a 50% project buffer inserted, it drives the schedule far behind the due date. If this situation is realized and shared among all project members and stakeholders, it naturally drives them to discuss seriously how to improve the situation by focusing on tasks on the critical chain even before starting the project. In this situation, the discussion normally focuses on how to shorten task durations on the critical chain by sharing various ideas: *People want to secure safety. In the effort to secure a visualized project buffer, they intensively start to discuss how to reduce task duration on the critical chain, which is the constraint in the project.* The method for shortening task duration on the critical chain is not only to shorten the task time by removing safety at each task. Rather it is often more effective to divide one task into a few tasks to achieve more effective resource management, or to combine tasks that can be grouped together, or to consider the tasks that can be carried out simultaneously, or to review the sequential order of the tasks. In this discussion, the experienced project manager’s knowledge is being transferred to other people. Because of the Suriawase discussion in ODSC with shared goals, support from management, other sections and stake holders can be obtained much easier.

In most cases, the longest tasks are not those that are contained entirely within the project. Rather, they are the ones associated with organizations outside the project. The duration of such tasks can often be shortened more by the support of management and others than by the efforts of each individual member. At this point, **team members realize afresh that teamwork is important. To secure flexibility is indispensable for dealing with the uncertainty in projects. They use every conceivable measure to squeeze time out of tasks on the critical chain, and start discussions to create the buffer, in other words, the flexibility (“Yutori” in Japanese) in the project.** With teamwork spirit created throughout organization, not only project members, but also other departments and management join in the effort to achieve the shared common goals in the “Suriawase” discussion. Members of the project team become more motivated, happier, and everybody feels a sense of trust spreading throughout the organization. In project management sites in Japan, it is often said that “Yutori” is not given but must be created. It can be said that CCPM provides a great lesson on how to do it practically and theoretically.

2.4 Buffer Management = Preemptive Management

Managing the progress of a project using CCPM is quite simple. The “Yutori” created above are visualized, and are utilized as buffers and managed. By monitoring the consumption amount of the buffers and watching the changes in the color, it becomes

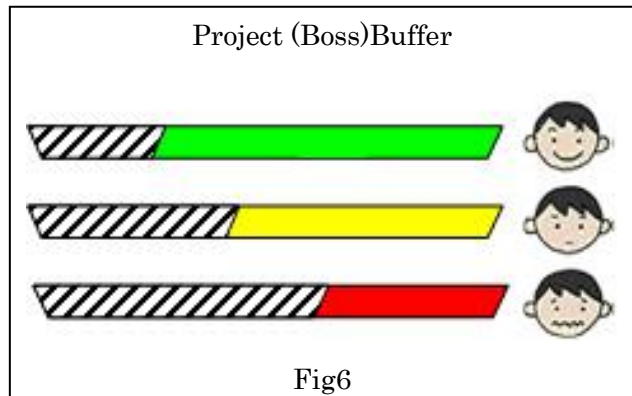


Fig6

possible for the project manager and management to take preventative counter measures far before it becomes too late. In reality, even if buffers turn yellow or red, it does not necessarily mean the project due date will be missed. The project manager can offer various kinds of support to project members working on specific overlong tasks. In other words, it means that the “preemptive management” mechanism has come into play here. The importance of “Sente Kanri” (preemptive management) is repeatedly emphasized by experienced project managers in Japan. They realize that buffer management is really “Sente Kanri” itself. Furthermore, with the shared goals in the “Suriawase” discussion and “Dandori Hachibu” planning, once project buffer status is shared with not only project members but also with others, everybody starts to help each other regardless of department, to achieve the shared common goals. People realize buffer management is a source of teamwork.

3. Managing “Yutori”

Figure 7 shows an image view of the status of multi-projects. With buffers, the status of all the projects across the company, regardless of the organization becomes clear at a glance. Furthermore, buffers are shown in simple colors, green, yellow, and red, as indices for “a holistic view.” Even busy top management can grasp the situation easily and see where to focus their support. Any potential delays are reported long before it becomes too late, enabling specific “Sente Kanri” actions.

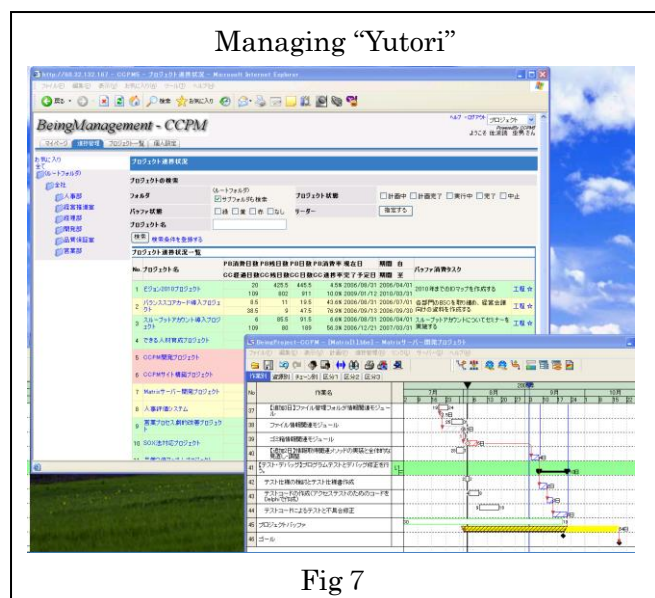


Fig 7

Projects advance while everyone from management to the people in charge of tasks make judgments using common criteria, with the perspective of holistic management and helping each other. The chart in Figure 7 shows a situation in which **“Yutori” for all of the projects across the company is shared.** With the **“Yutori” of all the company visualized,** the focus of

management shifts from managing progress of each project individually to managing “Yutori” with a holistic view, i.e., spontaneously viewing the portfolio of projects in the whole organization and managing “**Yutori**”, leading to overall success. With “Yutori” in place, it is possible to manage. *This is very important. “Yutori” is “shared safety” coming from safety at each task, where that safety is originally coming from people’s sense of responsibility. In other words, “Yutori”’s origin is people’s sense of responsibility. **Managing “Yutori” means managing the responsibilities of the organization and all associated project stakeholders.***

In Being Co. Ltd., we have been implementing CCPM on hundreds of projects, including management transformation projects, software development projects, research and development projects, sales activities projects, etc. Within only several months, project durations were shortened by 75% without increasing resources. Even at present, they continue to be shortened by daily Kaizen efforts. What is surprising to note is that the way meetings are run has significantly changed through exercising such management. Only the red projects and the yellow projects are carefully discussed, focusing on forward-looking discussions that can possibly help solve problems. Members of the green projects willingly offer help. Time for administrative project reporting is drastically reduced. Management participates from across the organization, and members begin to focus on discussions of “Sente Kanri” as a team. Everybody feels accelerated “WA” which means harmony in Japanese, throughout the organization. The workplace gets cheerful and fun; some people are starting to say “What’s wrong if I am anxiously waiting for Monday morning?”

3.1 Turing a mentality discussion into a management discussion

The cause and effect relationship discussed so far is shown in Figure 8 as a summary. If project members are pursuing the high goals of the “Suriawase” discussion (1) and if they are aggressively pursuing it with ABP duration at each task (2), then management will prioritize projects (3, 4, 5). With priority and ABP duration for each task, project members can concentrate on one task (6). When members are challenging ABP task duration and sharing buffer with others (7), buffer management becomes possible (8). If buffer management is applied to multiple projects of the company with shared goals, flexibility for “Sente Knari” is enhanced to take actions before it’s too late through teamwork (9). The “Yutori” creation discussion enhances best practices knowledge transfer throughout project members (10, 11). If knowledge and the expertise of experienced people are shared, and if project members can focus on one task with concentration, the quality of work goes up (12). With the “Suriawase” discussion in ODSC, it becomes much easier to also obtain support from outside (13, 14). If support from outside is obtained with ODSC statements, consensus is gained not only with project members but also with stakeholders, and if buffer management is applied to multiple projects in the company, teamwork accelerates throughout organization and the associated stakeholders (15).

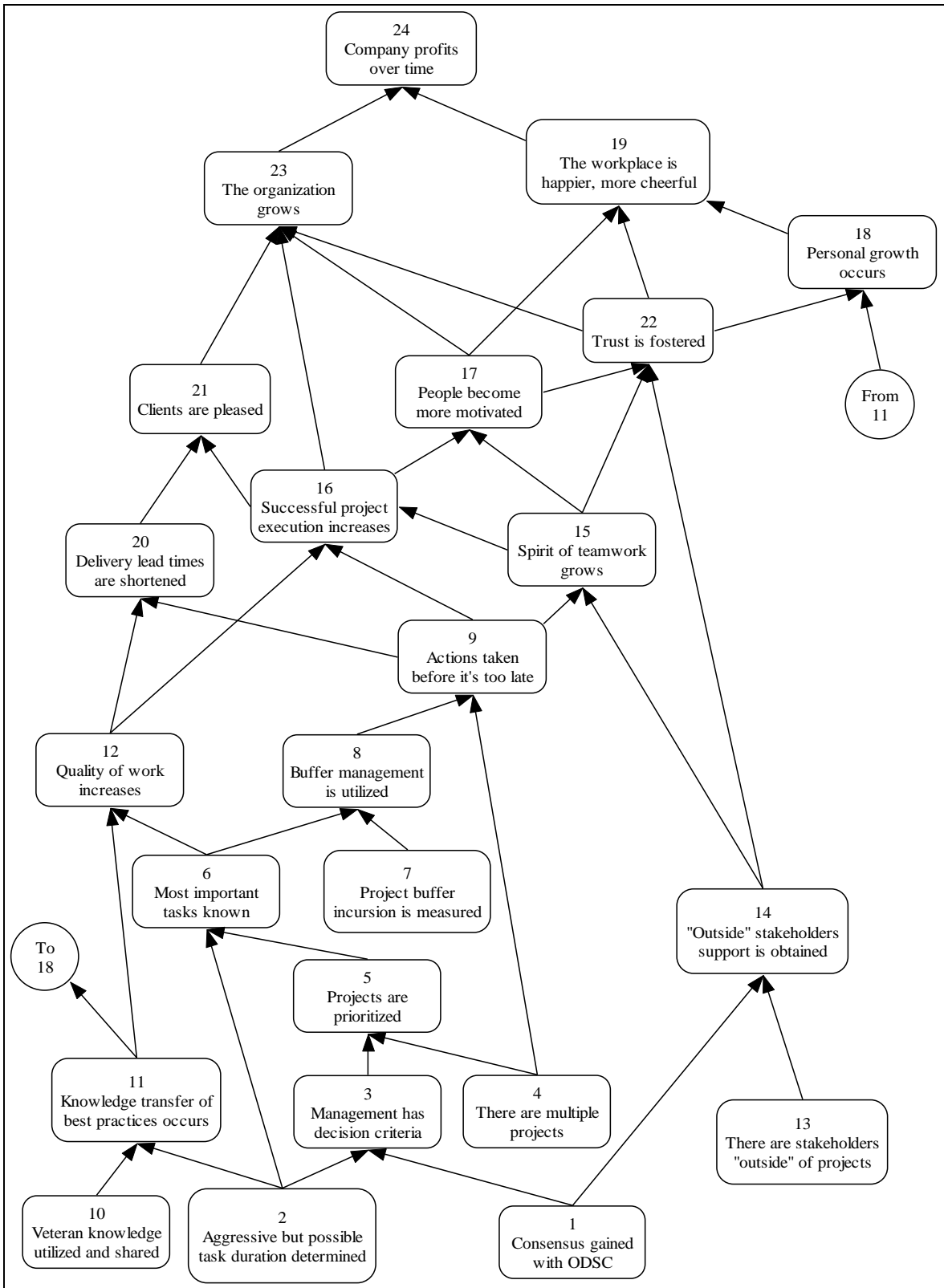


Figure 8

If buffer management is applied to multiple projects in the company, everyone including management will have common criteria for judgment, driving us to take actions before it's too late, bringing project success one after another (16). In an environment with teamwork where high

quality work is taking place, project members feel motivation (17). People grow in such an environment (18), and the workplace becomes a happier and more cheerful place (19). If people focus on ABP task duration and engage in high quality work, and cooperation from outside is obtained as well, then delivery time will be shortened (20). If delivery time is shortened and projects succeed one after another, clients are pleased (21). In an organization in which everyone has common criteria for decisions, and can work in an environment with teamwork, sense of trust is fostered (22). If there is sense of trust in the organization, the project team can agree on a higher objective and will continuously challenge ABP duration. If members feel motivation in doing their daily job, everyone is working together in the spirit of teamwork, and projects succeed one after another, then the organization will grow (23). In a growing organization, if projects succeed one after another, and clients are satisfied, and people grow and the workplace becomes a cheerful and happier place, then the organization will continue to generate profit (24).

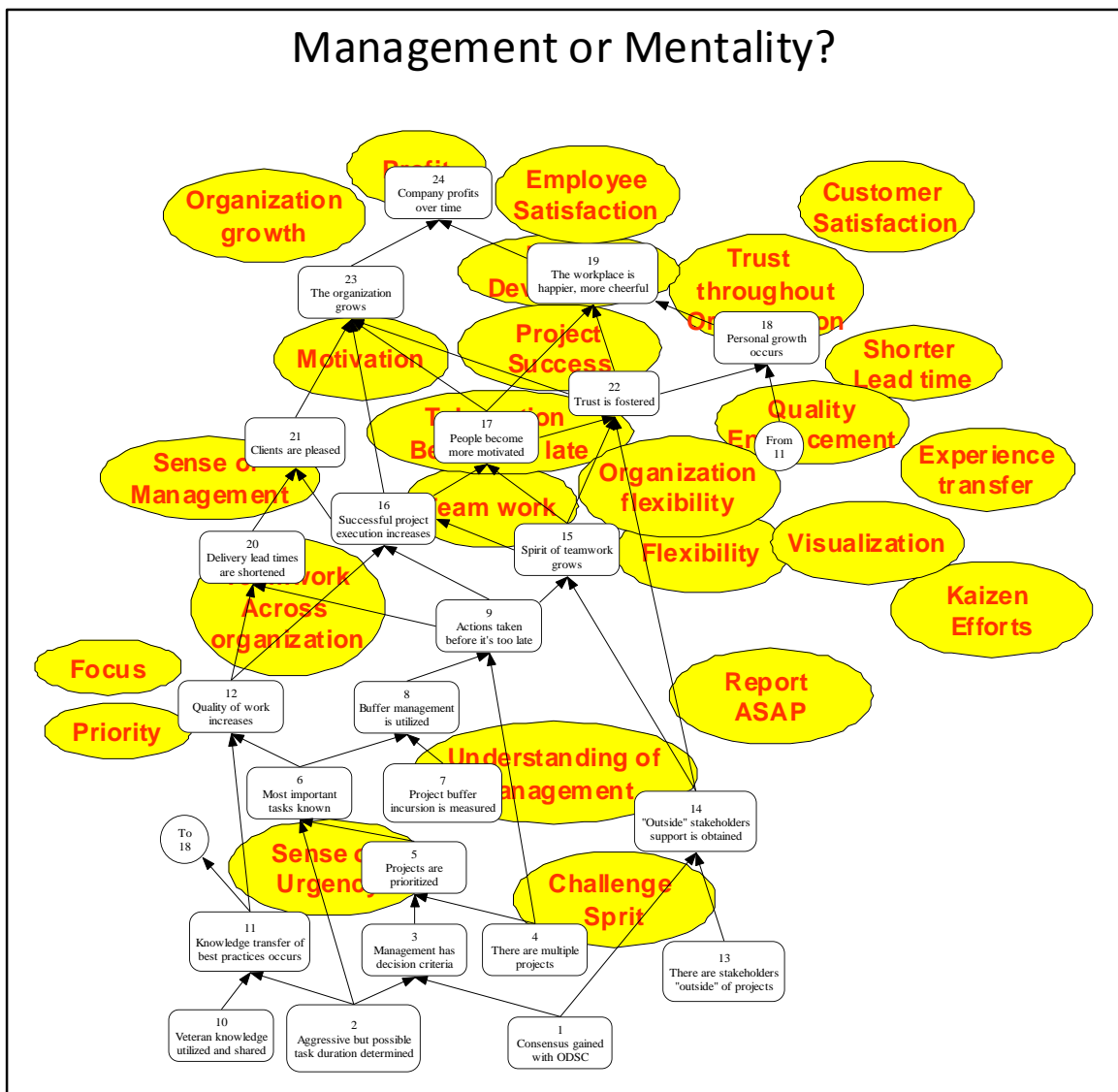


Figure 9

Figure 9 is figure 8 overlapped on figure 2. Nothing shown on figure 2 was wrong. Experienced managers always talk about the importance of the items shown Fig 2. They are exactly what experienced managers intuitively understand. However, when each item comes up from time to time from a mentality perspective, and is stressed to project members, they often become no more than vague mental exercises. How to achieve them is beyond understanding, especially to inexperienced members. By comparison, in Fig 9, all items are logically connected. It is far more understandable for helping people make an effective and holistic management transformation.

3.2.2. Origin of CCPM as holistic transformation management

TOC (The Theory of Constraints) is a management philosophy for holistic transformation management. In providing management consulting services in various project-oriented industries, TOC consultants analyzed troubled projects in multi-project environments such as the construction industry, research laboratories, the software industry, the high technological development industry, etc. These experiences resulted in CCPM being developed as a generic solution.

Corporate-level activities' exist as similar multi-project environments. The purpose of corporate projects, however, is to achieve business goals. First, the business goal is clarified through defining the project using the ODSC process, followed by setting management priorities in order to continuously achieve the business goals and to "Make money now and in the future."

It is natural for project deliverables to change even while the project is being executed. In these cases it is the business objectives that should be focused on rather than the deliverables. With buffer management, we can take action before it becomes too late. And each task is eventually linked to the project goal, which is discussed and verified using cause-and-effect logic. Projects are managed in the real world where we cannot guarantee 100% project success. A certain project might fail for unavoidable reasons. Even though this is the reality, in corporate multi-project environment it is possible to achieve the business objectives of the entire organization by making up for one failure with other projects success in a holistic view. CCPM was developed to manage projects by sharing buffers with a "holistic system view." In short, CCPM provides the logic of "Management", or *how to manage*, not individual projects, but multiple projects with the perspective of a holistic management view.

4. Conclusion

Excellent project managers in Japan always put emphasis on "people". This fact speaks truth: *When one looks at tasks, it is neither the technology nor the machines that perform the execution. It is the "people" who carry out the tasks.* Managing "people" is decisively important if you truly wish to manage projects.

It is said that TOC is based on common sense. As such, people often “take it for granted”. However, in our real world where multiple projects are complexly intertwined and participating departments have interests which often conflict, there is nothing more difficult than to practice business based on common sense. CCPM, understanding this complicated reality, offers a simple but practical method that anyone can practice in order to manage multiple projects with a holistic management view—to yield the greatest output for the whole organization. Dr. Eliyahu M. Goldratt once pointed out that TOC is a methodology which is extremely suitable for the Japanese people, who respect harmony. Harmony is “WA” in Japanese. In Japanese first constitution AD604, the first charter starts with “Respect WA”. It is not exaggerated to say Japanese culture is deeply rooted in “WA”. In fact, “WA” means harmony, circle and Japanese. Indeed, many people in Japan have responded positively to CCPM, saying that, it is so natural to us”. As the methodology of TOC itself is based on the philosophy of Win-Win, it is highly compatible with various other methodologies. In fact, the Omi business principle, which has historically produced successful businesspersons, stresses the importance of win-win-win—meaning the customer wins, the public wins, and we win. The author has been practicing the implementation of TOC together with various Japanese best practices, which seem to have synergy effects in accelerating the speed of success.

In the past, Japanese industry tended to focus on the visibility of status, while the author hopes to bring out a greater visibility—one of autonomic Kaizen at the management level, continuously turning implicit management knowledge into explicit knowledge in Japan.

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