

QIP

QUALITY PROGRESS

Perfecting
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Creative FIRE

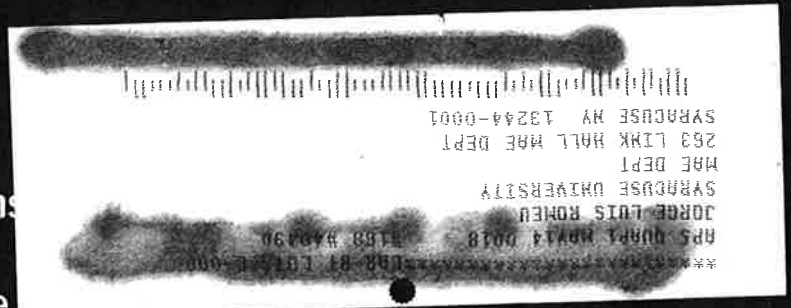
7 strategies
to fuel your
team's best
thinking p. 18



The Global Voice of Quality

Learn to lead
innovation teams

10 dilemmas
consultants face



Catching

7 strategies to ignite
your team's creativity

by Shu Liu

IN THE POST-AMERICAN WORLD,

Fareed Zakaria points out that in a world in which capital and labor are now commodities, a country's competitive advantage lies in ideas, energy supply and energy efficiency.¹

The source of ideas is creativity, which is not a divine gift enjoyed only by prodigies. Anyone with a functioning brain possesses essentially the same mental components as a creative genius, as demonstrated by neuroscience and psychology studies.²

Quality tools, such as the seven quality control tools,³ the seven planning and management tools^{4,5} and the seven data collection strategies⁶ have played a critical role in developing problem-solving capabilities. The seven creativity strategies do the same in that they help develop creativity and can be used directly in quality improvement.

In 50 Words Or Less

The seven creativity strategies are: brainstorming, mind mapping, analogies, metaphors, lateral thinking, TRIZ, and the SCAMPER technique. These strategies can be used to generate ideas for product development, process improvement, and service innovation. They are simple, easy to use, and can be applied to a wide range of problems.

Creativity strategies

The seven creativity strategies listed in Table 1 are transforming, dividing, brainstorming, mind mapping, associating, comparing and selecting. The first six strategies are used to stimulate divergent thinking to generate ideas, while the last strategy is employed to encourage convergent thinking to select the best ideas.

Divergent thinking is a type of creative thinking that follows many lines of thought and tends to generate new and original solutions to problems.⁷ Convergent thinking weighs alternatives within an existing construct or model to find the best solution to a problem.⁸

1. Transforming. The transforming strategy allows you to manipulate an existing item—whether it is an object, idea or process—into something new. One tool that works well for this purpose is SCAMPER, which is a mnemonic device for substituting, combining, adapting, modifying or magnifying, putting it to other use, eliminating, and reversing or rearranging.^{9, 10} The tool is used to spur ideas by looking at a problem and asking how the actions that make up SCAMPER could help solve it.

2. Dividing. This strategy divides information into its components to gain new entry points for solving problems. It helps ensure you don't leave any component unexamined.

- **Slice and dice.** Identify and list the different attributes of your problem and work on one attribute at a time.¹¹

- **Subdivision.** Divide your problem into core concepts to come up with ideas from different angles.^{12, 13}

3. Brainstorming. The purpose of brainstorming is to generate ideas from all participants by pulling out their knowledge and creativity. There are various forms of brainstorming:

- **Classic.** Participants freely give ideas as they come to mind.¹⁴⁻¹⁶
- **Imaginary.** Participants formulate a new problem statement by substituting one of the elements of the original problem with an imaginary element and generating ideas for the new problem.¹⁷
- **Ping-pong.** This is structured brainstorming between two people. The participants take turns putting forward an idea based on the other person's idea.¹⁸
- **Brainwriting 6-3-5.** In a group of six people, each person writes three ideas in five minutes on a form (the particular numbers used can be flexible in practice). Repeat the step by circulating the worksheets for the other participants to add their ideas until all the worksheets contain ideas from every participant.^{19, 20}
- **Brainlining.** This is a technique used to conduct brainstorming through the internet. In the brainlining process, all participants type in their own ideas or ideas inspired by other people's ideas.²¹
- **Oracle method.** This method is also used to run a brainstorming session when participants are not in the same location. In the process, all participants send their ideas to the session leader, who combines them to form one idea and sends the new idea out to generate more ideas.²²

7 creativity strategies / TABLE 1

Strategy name	Tools	Thinking mode
Transforming	SCAMPER questions.	Divergent thinking
Dividing	Slice and dice, subdivision.	Divergent thinking
Brainstorming	Classic brainstorming, imaginary brainstorming, ping-pong brainstorming, brainwriting 6-3-5, brainlining and oracle method.	Divergent thinking
Mind mapping	Think bubbles, morphological box.	Divergent thinking
Associating	Word association, picture association, nature association, object association and hall of fame.	Divergent thinking
Comparing	Direct analogy, natural analogy and personal analogy.	Divergent thinking
Selecting	Multivoting and prioritization matrix.	Convergent thinking

SCAMPER = substituting, combining, adapting, modifying or magnifying, putting it to other use, eliminating, and reversing or rearranging

4. Mind mapping. A mind map is a graphic representation of the relationships among issues that come out from thought processes. It helps participants get a more complete and common understanding of the situation. Think bubbles and morphological boxes are two commonly used mind mapping tools.

- **Think bubbles.** Think bubbles are a graphic picture of a thought process. Each key word in a bubble represents an issue of the problem, and the lines between bubbles represent the relationships among them.²³⁻²⁵
- **Morphological boxes.** A morphological box is a table that displays solutions for each part of a problem. Different options are linked as participants build alternative solutions for the entire problem and choose the best one.^{26, 27}

5. Associating. Association strategy helps you break away from familiar patterns by making a forced connection between the problem and something dissimilar to the problem, such as a word, picture, or analogies to nature or an object.^{28,33} It also could be a person whom you admire and respect, which is a technique called hall of fame. When applying the associating strategy, you create ideas for the associated entity and transfer these ideas back to the problem.³⁴

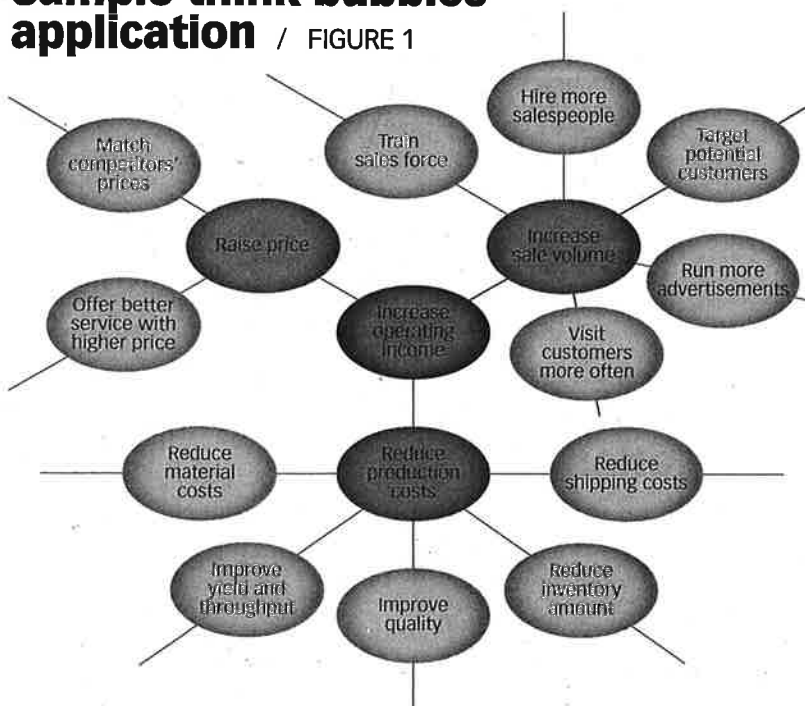
6. Comparing. An analogy is the comparison of the similar attributes of two things. When you compare something familiar with something unfamiliar, you reverse your usual thought process to search for new connections and ideas. Several analogy tools can be used to create ideas:

- **Direct analogy.** Write down major characteristics of a chosen object or subject, and think creatively about how to apply them to the problem.^{35, 36}
- **Natural analogy.** Take advantage of nature's wisdom and apply the solutions in nature to a problem.^{37, 38}
- **Personal analogy.** Imagine yourself as part of the problem, and try to see the challenge from that perspective. Put your feet into the shoes of the selected part of the problem, come up with ideas with a deep empathy from that position, and transfer the ideas to the problem.^{39, 40}

7. Selecting. The selecting strategy assists in organizing and structuring ideas in a way that leads to a single-best or usually correct answer.

- **Multivoting.** This is a group activity to select final solutions from a long list of possible solutions through a multistep voting process. The

Sample think bubbles application / FIGURE 1



The open-ended lines denote possible further expansion.

Sample prioritization matrix / TABLE 2

Criteria	Possibility of success	Cost	Sustainability	Priority score
Weights	50	25	25	
Ideas				
Raise price	1	5	1	$50 \times 1 + 25 \times 5 + 25 \times 1 = 200$
Increase sale volume	2	3	4	$50 \times 2 + 25 \times 3 + 25 \times 4 = 275$
Reduce production cost	5	1	5	$50 \times 5 + 25 \times 1 + 25 \times 5 = 400$

Sample SCAMPER application / TABLE 3

SCAMPER questions	Ideas
What can be substituted in the film?	Substitute resin A with resin B.
What process step can be combined ?	Combine roll change with die change to reduce down time.
What can we adapt to the process?	Adapt statistical process control to improve quality.
What can we modify in the process?	Modify the gear box.
What can we magnify or add to the process?	Increase yield and throughput.
How can we put bad quality films to other uses ?	Regrind them to make a lower grade resin.
What can be eliminated from the process?	Qualify the resin supplier to eliminate incoming resin inspection.
What process steps can be reversed or rearranged ?	Change consignment storage to just-in-time delivery.

solutions with the fewest votes are eliminated.^{41, 42}

- **Prioritization matrix.** This is a method for prioritizing several ideas based on the priority scores. The ideas and criteria are arranged in a matrix. The priority score for each idea is calculated by adding the products of the rating and the weight under each criterion for that idea.^{43, 44}

Creativity and Six Sigma

Six Sigma's define, measure, analyze, improve and control (DMAIC) method is a roadmap for problem solving and

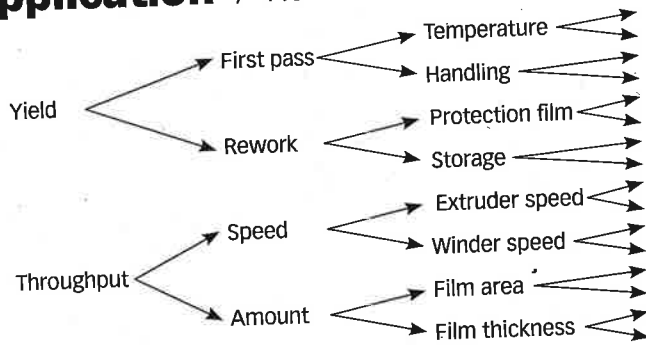
process improvement. Applying the seven creativity strategies will aid idea creation and selection in every stage of the DMAIC process. An example illustrates how these creative strategies are applied to a Six Sigma project.

The operating income of ABC Corp., a plastic film producer, has been shrinking in recent years. Top management forms a team to tackle this problem using the DMAIC method.

In the define phase, the team employs the think bubble tool from the mind mapping strategy to graphically map out its thought process (Figure 1, p. 21). The team writes the problem: "In what ways might we increase our operating income?" in a bubble and places it in the center of a flipchart. It writes solutions in bubbles as the next level of the map. The team continues to generate detailed solutions at the subsequent levels of the map. The process continues as the map expands until the team is satisfied with the number of ideas generated.

The team switches from divergent thinking to convergent thinking using the prioritization matrix tool from the selecting strategy to choose the best solution, as shown in Table 2 (p. 21). It rates three ideas on a one-to-five scale against three criteria, each with a weight. The team multiplies each rating by the weight associated to each criterion to get the score for each idea under each criterion. All the weighted scores are added to calculate

Sample subdivision application / FIGURE 2



The open-ended lines denote possible further splits.

Sample word association application / TABLE 4

Attributes of bird	Possible root causes
Bird has feathers.	Film surface smoothness varies.
Bird flies high and low.	Extrusion temperature jumps high and low.
Bird grows.	Die gap loosening.
Bird gets sick sometimes.	Oil pumps malfunction.
Bird sings.	Shift change room is too noisy so some information is lost during the meeting.
Bird eats food.	Extruder is left untended during lunch break.
Bird gets tired.	12-hour shift time is too long and operators get tired.
Bird will die.	The gear box is very old.

Sample direct analogy application / TABLE 5

In what ways might a teacher improve students' behaviors?	In what ways might we reduce the variation of extrusion temperature?
Teach morality and citizenship.	Train operators and write the procedure.
Set clear rules and expectations.	Set clear targets and control limits.
Be a role model.	Implement best practices.
Reward and discipline.	Study the past records of successes and failures.
Invite soldiers to tell their stories.	Synchronize temperature controls.
Build trust.	Establish autonomous maintenance.
Set a good learning environment.	Reduce variation of ambient temperature.
Challenge their intelligence potential.	Run a design of experiments to find the optimal point.
Encourage their search for meaning.	Search for a high-quality oil.

the priority score for each idea. The team selects “reduce production cost” as the best idea because it has the highest priority score.⁴⁵

Now the problem statement becomes: “In what ways might we reduce production cost?” The team applies the SCAMPER tool from the transforming strategy and members ask themselves the SCAMPER questions to generate a wide range of ideas, as summarized in Table 3 (p. 21). The team then employs the multivoting tool from the selecting strategy to select the idea of increasing yield and throughput.

In the measure phase, the team employs the subdivision tool from the dividing strategy to come up with ideas about what data to collect. First, the team splits the problem into two separate attributes: yield and throughput. Then, each attribute is divided into two more attributes. The attribute division continues until the team believes it has enough to work on.

The three-level split is shown in Figure 2. The team examines each attribute for ideas and tries to combine some attributes to come up new ideas. After examining all the ideas created, the team eliminates three ideas—handling, storage and film area—from the list using the multivoting tool from the selecting strategy.

In the analyze phase, the team uses various creativity strategies to analyze and determine the root causes of the defects. For example, it applies the word association tool from the associating strategy to identify possible root causes for film thickness variations, which is one of the areas identified in the measuring phase. Team members randomly select the word “bird” and think of links, relationships and associations between the attributes of a bird and the root causes of the variations of film thickness. This creative thinking is demonstrated in Table 4.

The whole idea of word analogy is that pairing two things that have nothing in common will spark a fresh association of ideas. The word selected must be random and irrelevant to the stated problem. The team picks most likely root causes from Table 4 applying the multivoting tool from the selecting strategy.

In the improve phase, one of the challenges that the team encounters is: “In what ways might we reduce the variation of extrusion temperature?” It applies the direct analogy tool from the comparing strategy to create ideas. The team looks into an unrelated field—education—and decides the analogy question is: “In what ways might a teacher improve students’ behaviors?” Team members brainstorm a teacher’s solutions to his or her challenge and try to translate

Sample brainwriting 6-3-5 application / TABLE 6

Problem statement: In what ways might we train technicians in the China facility on control charts?		
Hire a temporary bilingual trainer in China.	Teach Chinese technicians English and have them study training materials in English.	English-speaking MBB conducts web training with an interpreter.
Have all technicians come to the United States during a shutdown month.	Teach the English-speaking MBB Mandarin and send him or her to China.	English-speaking MBB conducts real-time video training with an interpreter.
Hire a temporary bilingual trainer in the United States and send him or her to China.	Translate training material to Mandarin for Chinese technicians to study.	English-speaking MBB conducts real-time audio training with an interpreter.
Send an English-speaking MBB to China with an interpreter.	Teach Chinese technicians English and have them study an interactive CD-ROM in English.	Temporary bilingual U.S. trainer conducts web training.
Train a few Chinese technicians in the United States and have them train others.	Make an interactive CD-ROM in Mandarin and send it to China.	Temporary bilingual U.S. trainer conducts real-time video training.
Send a group of U.S. engineers to China for one-on-one coaching.	Video record the temporary bilingual U.S. trainer training session and post it on an Intranet.	Temporary bilingual U.S. trainer conducts real-time audio training.

MBB = Master Black Belt

these solutions to their own challenge (Table 5).

The team then uses the prioritization matrix tool from the selecting strategy illustrated in Table 2 as an example to choose the right ideas from Table 5.

In the control phase, one of the major tasks is the implementation of control charts, which will require extensive training. To train technicians in the China facility, who do not speak English and lack the basic knowledge of statistics, is a daunting challenge. To answer the question: “In what ways might we train technicians in the China facility on control charts?” the team carries out brainwriting 6-3-5 from the brainstorming strategy to produce a long list of ideas.

In the brainwriting session, each participant receives a form consisting of a problem statement and a three-column table. Everyone writes three ideas on the form in about five minutes and passes it

Screen Time

A video of Shu Liu discussing more about teams and creativity will be posted later in May at www.qualityprogress.com.

to the next person. Continue this process until the team collects enough ideas. Table 6 (p. 23) shows one of the complete forms.

The team of five participants uses the multivoting tool to select a final solution from the long list of ideas. At each step of the voting process, each participant selects a certain number of ideas from the list (the number participants are asked to select is roughly half of the total number of ideas). At each step of the multivoting process, the ideas that have a low number of votes are eliminated. This process is repeated until a final conclusion is reached.

Table 7 illustrates the last three voting steps. The green color indicates the ideas chosen at each voting step. On the first vote, each of the five participants selects four ideas from seven ideas, and the three ideas with the fewest votes are eliminated. On the second vote, each participant selects three ideas from four ideas, and two ideas with the most votes remain in the race. On the final vote, each participant chooses one idea. In this example, all the votes go to the idea: "Train a few Chinese technicians in the United States and then have them train others."

Applying the strategies and their tools to any improvement project can help teams creatively develop new ideas to better improve processes and solve problems. Living in a flat world where global competition is intense,^{46, 47} the seven creative strategies and their tools can help you and your organization win. **QP**

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Sample multivoting application / TABLE 7

Ideas	1st vote	2nd vote	3rd vote
Make an interactive CD-ROM in Mandarin and send it to China.	0		
Hire a temporary bilingual trainer in China.	2		
Hire a temporary bilingual trainer in the United States and send him or her to China.	5	5	
Train a few Chinese technicians in the United States and then have them train others.	5	5	5
Video record the temporary bilingual U.S. trainer training session and post it on the Intranet.	4	3	
Temporary bilingual U.S. trainer conducts web training.	1		
Temporary bilingual U.S. trainer conducts real-time video training.	3	2	

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by H.F. Ken Machado

EVERY IMPORTANT BUSINESS project has a logical starting set of conditions, followed by a set of events that lead to a logical completion of defined objectives. Each worthwhile project must be properly defined and managed to accomplish a given set of objectives in a timely manner.

In 50 Words Or Less

- An organization's success depends on how it plans and manages individual projects, regardless of the project's size or complexity.
- Management and teams must embrace control and order to ensure projects are successfully completed.
- One organization used a more disciplined approach to handle a project that addressed complex internal processes.

Without the proper disciplines in place, experience shows too often that although an effort is made, improved results are not always achieved. Casually managed projects lead to substandard results along with lost business opportunities. Continually achieving project success in a timely manner is therefore fundamental to long-term business success.

In today's business climate, senior management must continually review all changing business needs and place them on a prioritized list of projects and events that will leverage return on investment potential.

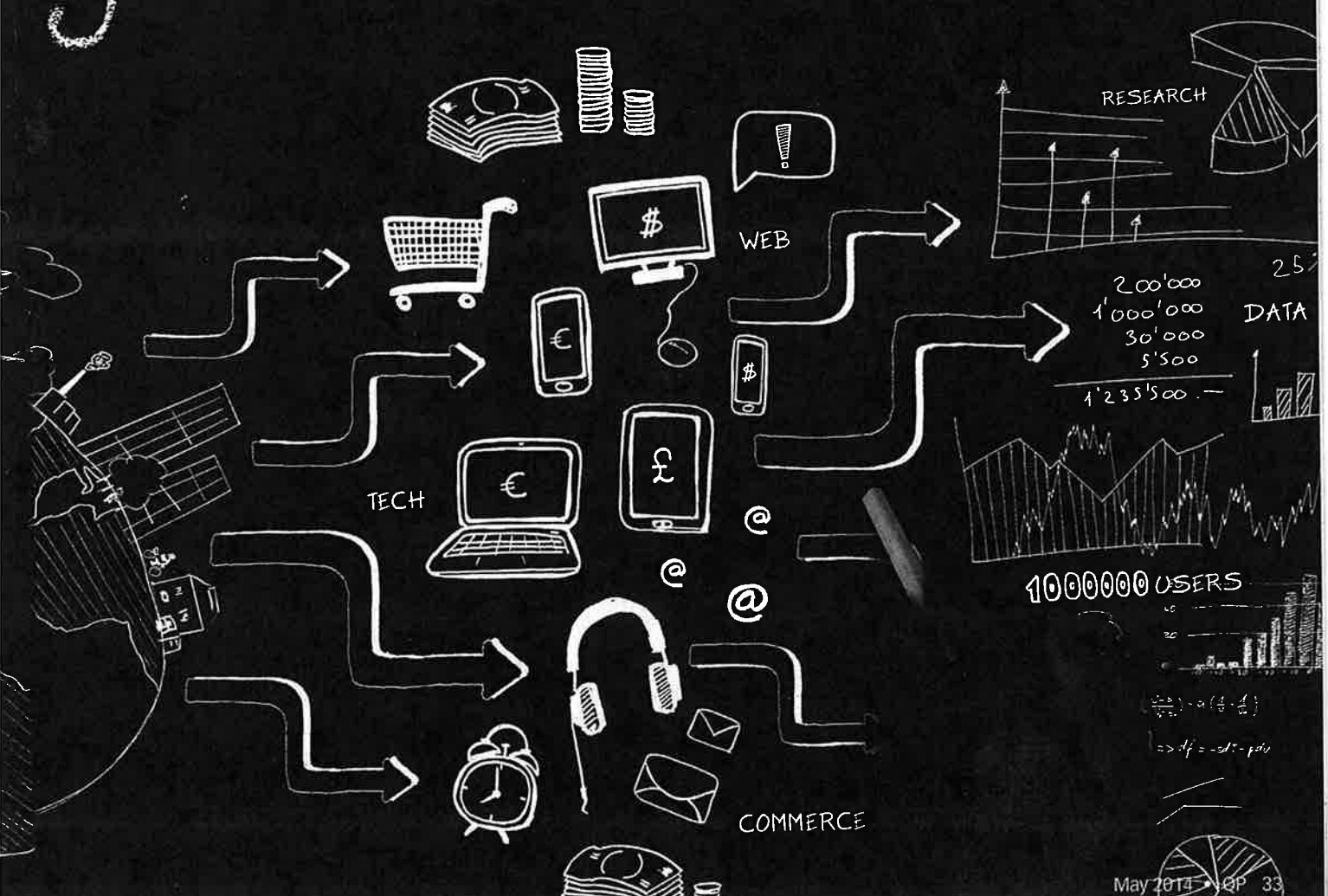
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Managing the anatomy of your key projects is fundamental to organizational success

Strategy Execution

Success



Typically, the organizations cannot afford to work on all priority requirements that demand attention. At the same time, certain projects stand out because they are fundamental to business success. For those projects, the conditions for success must be formally and fully defined.

Success criteria must be clearly defined so there is a measurable way to know when the business goal has been accomplished. Successfully managing projects will lead directly to business success. To guarantee the success of each project, the responsible management team must take several deliberate steps in planning and monitoring the project, as shown in Table 1 and Figures 1 and 2.

Generally, there are three levels of project scope and complexity that are performed within a business organization:

1. Basic projects are limited in scope, complexity and

the amount of resources required. Table 2 (p. 36) offers more details of this level.

2. Moderately complex projects have a broader scope, are more complex and require more resources. The main complexity factors include covering more than one complex task and involving more than one process owner. This requires a common priority management system to ensure process development proficiency. See Table 3 (p. 36) for more details on this level of project.
3. Complex projects have a much broader scope, a good deal more complexity and take even more resources to successfully complete than moderately complex projects. The main complexity factors include complex cross-functional tasks and several cross-functional process owners. By definition, this effort requires a common priority management system to ensure process development proficiency. See Table 4 (p. 36) for more details on this level of project.

Steps to project success / TABLE 1

Planning the project	
1.	Define the organization's key potential priority projects and the associated business goals and objectives that will be met.
2.	Outline the major tasks involved from the project beginning to the conclusion, including the development of the success criteria for each milestone event.
3.	Develop the priority sequence of each key project, and match the project requirements with the available project manager resources.
4.	Select the best-fit person to coordinate the events, and manage each overall project.
5.	Conduct a meeting with the selected project manager and develop the specific milestone events and the associated objective timetable for completion of each milestone.
6.	After agreement, the project manager publishes the project events and the associated schedule to senior management and the project team.
Managing the project	
7.	The project manager monitors the major events and periodically (at least once a month) publishes status reports for all involved.
8.	If the project falls behind the schedule or there is a need to change the plan, the project manager proposes a recovery plan and a new schedule if necessary.
9.	The responsible senior manager and the project manager meet to review any issues and develop an agreed-on recovery set of events along with the associated schedule.
10.	After agreement, the project manager publishes the revised project plan to all involved and resumes the actions outlined in step seven.
11.	After project completion, the project manager publishes the final project report.

Project principals

The roles of the principals involved in each project also vary by project type. Basic project tasks are typically confined within one function and therefore have a limited scale of activities and span of control (see Table 5, p. 37).

Although the moderately complex project tasks are typically confined within one function, the expanded scale of the effort may require more than one process owner. This makes the tasks more diversified and accompanied by more complex problem solving and process-development skills on the part of the responsible staff (see Table 6, p. 37).

The complex project tasks are typically cross-functional and therefore require a process owner for each function involved. This makes tasks more diversified and accompanied by more complex cross-functional problem solving and cross-functional process development skills on the part of the responsible staff (see Table 7, p. 37).

Defining the success criteria

There are several important facets in defining the success criteria of a project. The first facet is that it must be the consensus answer to the question, "What problem are we trying to solve?" This question must be fully defined and collectively agreed on before

tasks are undertaken. The extended exchange required to formulate a concise consensus agreement is worth the team's effort.

The second important facet of success criteria is that it defines the goal of the project for everyone involved. Simply stated, it defines the condition or circumstance that signals the successful completion of the planned effort. That is how everyone involved recognizes when the job is done.

The third important facet of success criteria is that sometimes the goals must be expanded incrementally. Suppose an organization wants to improve its on-time delivery record: The organization is only at 65%, and management wants to reach 95%. The project team may view that goal as a quantum leap and balk at the task, but if the interim goal of 80% is set, the task required becomes more reasonable. After the goal of 80% is secured by the project team, the goal is reset to the original requirement of 95%, and the journey continues.

Managing the results

After the project is completed, the project manager issues a final report covering the following line items:

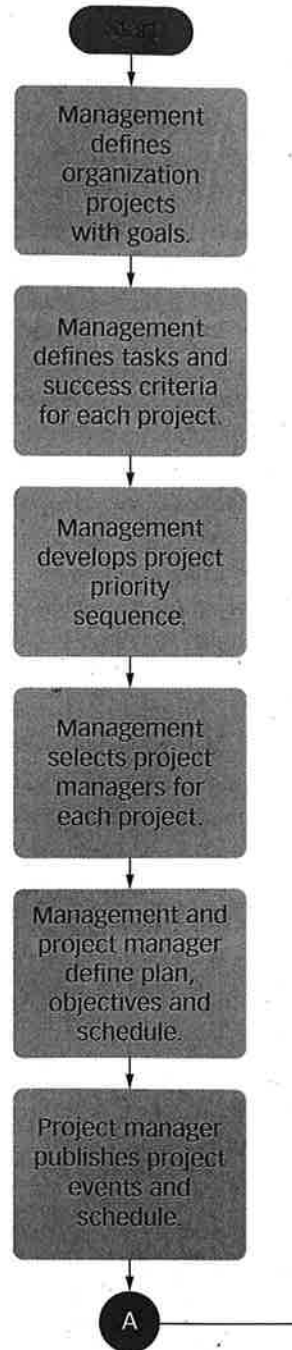
- Project description.
- Overall project objectives.
- Success criteria by milestone event.
- Line item results compared to the associated success criteria.
- A documented procedure with a flowchart and date of release to the document control system.

Formally measuring and reporting the final results yields some additional benefits. Everyone assigned to the project team knows the process has been monitored by senior management. Project expectations and progress is shared with the team, and progress is continually formally reported as the project moves toward completion. Experience has shown that by raising the profile of the projects in this manner, a higher percentage of projects will be accomplished as planned and on time.

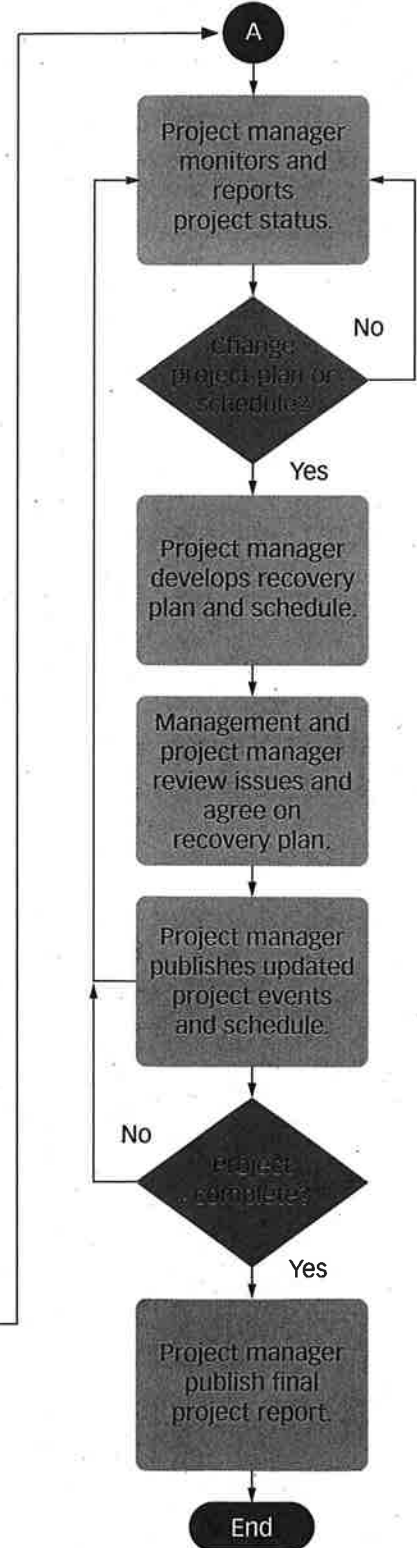
The second benefit of the approach is that top performers should and can be recognized by management as responsible and reliable contributors. Timely counseling of less-than-perfect performers also will raise the future performance levels of the substandard individual contributors and the overall team. Substandard performers should be trained in how to improve their performances as both individual performers and team players.

Another important byproduct of this approach is developing and setting expectations of the individual

Planning the project / FIGURE 1



Monitoring the project / FIGURE 2



project manager's formal performance improvement goals for future assignments.

Controlling a complex process

One large organization was having difficulty in effectively handling its intellectual property royalty agreements. By definition, the process involved in the development of royalty-based products is complex because it is cross functional and therefore requires a common priority system management approach. Functions involved are marketing, engineering, legal and finance, along with the close support of operations and IT.

The diversity of these functions inherently makes them difficult to coordinate. There also were process-related discontinuities from the lack of a repeatable communication and coordination method when changes to the existing royalty agreements were required.

The royalty handling difficulty occurred after the initial royalty agreement for the purchase of intellectual property had been formalized and agreed on. The issue surfaced after the second party submitted an invoice to the finance department for its services that did not match the formally agreed-on royalty amount.

Typically, the need for a change was determined by the assigned marketing manager, who worked with the assigned product engineer to determine the specific product improvements required.

When royalty agreements were involved, the second-party intellectual property owner also was consulted. After the product upgrade specifications were developed, the legal department was engaged to define the required royalty agreement changes.

It became apparent that what was needed was a joint-effort project that enlisted continual support from all functions involved. The objective was to develop a disciplined process and release-and-change control system participated in by all the functions involved. Because of the high degree of process and project complexity, a process improvement specialist was assigned to support the new process development effort.

Royalty change requirements are typically initiated by the marketing and engineering functions working with the creator of the intellectual property. The proposal developed by the process development specialist needed to add improved discipline, coordination and communication to the overall process. The engineering function was well disciplined in product development, technical-specification development, and product release and change-control procedures. The new process would therefore take advantage of the existing engineering processes and procedures.

The proposed new process gave each separate royalty agreement a part number assigned to the top level of the product bill of material. Changes to the royalty terms would be implemented using the existing engineering change process. Using the organization's existing document control system, the assigned product engineer would create the proposed change order. The change order procedure requires review and approval of each responsible functional representative before

After an investigation of the process breakdown, it became clear that in some cases the terms of the original royalty agreements had been changed without the knowledge of all functions involved.

Following further analysis, it was determined the royalty-related changes were typically required due to market demand changes and in response to competitive pres-

Basic projects / TABLE 2

- Straightforward process performed within one organization or company function
- May be verbally described or be a documented step-by-step procedure (preferred)
- May or may not have a flowchart of operations (preferred)
- Requires a process owner

Moderately complex projects / TABLE 3

- Process performed within one function and covers a set of several complex tasks
- Requires a process owner for each internal activity
- Requires a common priority management system
- Requires a documented step-by-step operational procedure
- Requires a flowchart of operations
- Requires basic problem-solving skills
- Requires basic process development and improvement skills

Complex projects / TABLE 4

- Process performed across two or more organizational functions
- Requires a process owner for each function
- Requires a common cross-functional priority management system
- Requires a documented step-by-step cross-functional operational procedure
- Requires a flowchart of operations
- Requires advanced multifunctional problem solving skills
- Requires advanced and innovative process development and improvement skills

implementation. The new process was reviewed and approved by the functional managers and implemented by the assigned project team.

The organization started the implementation of the new process a year ago. Now, copies of the approved changes are sent to each of functional representatives for review and approval. Periodically, the status of the proposed royalty change is circulated to each function involved. The approved request for change instructions is drafted for review by the intellectual property owner in preparation for a formal approval meeting with the appropriate internal functions. After the joint agreement meeting, the royalty agreement is updated, and a new contractual agreement of record based on the approval of the project team is put into place.

The new, more-disciplined process resolved the previous cross-functional communication and process control issues. Moreover, the new process change procedure is periodically reviewed and coordinated with all the involved internal functions and with the owner of the intellectual property. After the implementation plan is complete, the result will be the successful development of a straightforward, disciplined solution to an inherently complex set of operational requirements.

The bottom line

An organization's business performance must display professionalism and successful execution to have the intended impact. Substandard performance leads to missed assignments and missed business opportunities.

These business fundamentals are perpetually linked to success. The assigned senior management has clear-cut responsibility for meeting the stated organization business goals and objectives, and for the development of the operational project staff.

There is no substitute for achieving a desired project outcome on a planned schedule. Professionally planned and performed project management is the key to ongoing business success. **QP**



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Basic project tasks / TABLE 5

Principal	Role
Project manager	<ul style="list-style-type: none"> • Activity manager.
Process owner	<ul style="list-style-type: none"> • Appointed by the activity manager. • Usually the person responsible for the task. • Helps document the process. • Takes action follow-up responsibility.
Process improvement and development specialist	<ul style="list-style-type: none"> • Formats the overall process. • Provides consulting support.

Moderately complex project tasks / TABLE 6

Principal	Role
Project manager	<ul style="list-style-type: none"> • Functional manager or appointee.
Process owner	<ul style="list-style-type: none"> • Appointed by the functional manager. • The person responsible for each task or activity. • Usually a seasoned subject matter expert. • Helps document the process. • Takes action follow-up responsibility.
Process improvement and development specialist	<ul style="list-style-type: none"> • Formats the overall process. • Performs basic problem-solving tasks. • Performs process-development tasks. • Performs process-improvement tasks. • Provides consulting support.
Experienced topical expert	<ul style="list-style-type: none"> • Provides consulting support.

Complex project tasks / TABLE 7

Principal	Role
Project manager	<ul style="list-style-type: none"> • Functional manager.
Process owner	<ul style="list-style-type: none"> • Appointed by each functional manager. • A separate process owner for each function. • Usually the person responsible for each separate set of tasks. • Shares responsibility for a common management priority system. • Helps document each functional process. • Takes follow-up responsibility.
Process improvement and development specialist	<ul style="list-style-type: none"> • Formats the overall set of cross-functional processes. • Performs advanced multifunctional problem-solving tasks. • Performs advanced multifunctional process-development tasks. • Performs innovative multifunctional process-improvement tasks. • Provides consulting support.
Experienced topical expert	<ul style="list-style-type: none"> • Provides consulting support.