

# **An organic-adaptive organization:**

## **The MAPS method**

Ralph H. Kilmann



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**M**ost contemporary organizations are designed according to bureaucratic principles—that is, top management determines the major objectives, policies, procedures, and rules, as well as how the organization is divided into subunits, in order to maintain close and rigid control over members' behavior. Such bureaucratic organizations work best in stable environments and with employees who prefer highly programmed roles that don't entail much responsibility and decision making. But today's business environment is more dynamic than stable. New ideas and knowledge are rapidly translated into new technologies, services, and products; government has much greater control over economic and political factors;

and people, too, are changing. As they become more affluent and better educated, they are increasingly influenced more by higher-order needs—for example, growth rather than security—and this concern demands their greater involvement in organizational activities of responsibility and decision making.

All these developments call for an “organic-adaptive” organization staffed by resourceful and self-motivated individuals. Some characteristics or properties of such an organization are these:

- *Participative management.* It has been demonstrated that giving people greater influence on decisions that are important to them raises their levels of performance and satisfaction. While these decisions are generally confined within a given organizational unit or within a given set of objectives, the time has come to consider allowing individuals to influence the decisions that determine the design of the organization, since the design is a major determinant of the activities that are performed.

- *Management by objectives.* Related to participative management is management by objectives, and the research underpinnings of MBO suggest that participants' performance and satisfaction will be enhanced if they can be meaningfully involved in the setting of objectives, for the organization as a whole and for their own departments, as well as for themselves. Thus, at one level, members might influence how the organization is divided into subunits and then influence objectives and task activities to be pursued in their own subunits. Because of this periodic participation in the objective-setting process, the organization is better able to adjust or change its objectives in response to changes in its task environment.

- *The management of interdependencies.* Leadership in organizations is being described more and more as the management of interdependencies and interfaces and the management of conflict. Highly trained and specialized individuals have to interact with others in different areas of expertise to solve complex problems, since no one individual has the skill or knowledge to solve such problems by himself. Consequently, effective teams or departments have to be developed to handle these interdependencies, and the leadership required to facilitate the interfacing of these subunits has the key problem of containing the more crucial interdependencies within specific subunits for logical and convenient coordination.

Naturally, conflict frequently emerges. How the various subunits are designed in terms of which interdependencies are contained within which units has important implications for the kind of conflicts that arise and the way they are handled. Bureaucratic organizations do not have these

particular conflict problems because they have stable, well-defined rules for resolving interdepartmental differences, but organizations in dynamic environments cannot predict what conflicts there will be, so they can't draw up rules to anticipate them.

- *Organization development.* OD practitioners attempt to provide methods to improve the organization's internal efficiency—that is, utilization of its human and technological resources—as well as to enhance the organization's effectiveness in adapting to a dynamic environment. All the popular approaches to OD concentrate, however, on improving existing departments, teams, groups, and so forth, on the assumption that the existing design of the organization is appropriate, when in fact, it may be highly bureaucratic.

Some attempts at designing organic-adaptive structures are referred to as matrix organization, project management, or temporary systems. These designs are based on selecting members from different functional areas to work on specified short-term projects set up to address particular (and changing) needs. But these project teams are often bureaucratic in respect to leadership styles and in the fact that members have no choice about whom they work with and to what projects (objectives and tasks) they are assigned.

### **The MAPS method of organization design**

A method has been developed by the author and William McKelvey, a faculty member of the U.C.L.A. school of management, to design an effective organic-adaptive organization by systematically applying the concepts we have just discussed—participative management, management by objectives, management of interdependencies, and organization development. It is called the MAPS method (for multivariate analysis, participation, and structure) and specifically, it is based on the following procedures:

- The participation of members of the organization in defining the tasks that they believe would best accomplish organizational objectives.
- The use of multivariate analysis to separate the total set of tasks into task clusters, so that the important task interdependencies are contained within the clusters.
- The use of multivariate analysis to place members into subunit structures where they have similar preferences about the task cluster assigned the subunit, so that the members of each subunit can work well with one another.

The premise throughout is that such a separation of tasks into task

clusters and members into subunit structures is conducive to organization development (OD) efforts aimed at realizing the full potential of the organic-adaptive design through individual, group, and organizational behavior.

It should be emphasized that only through the use of multivariate analysis can all the information relevant to designing an organic-adaptive organization be processed and utilized. No group of top management people could possibly comprehend and process all the task preferences, task abilities, interpersonal preferences, task interdependencies, and so forth of 20 or more employees in order to designate an efficient organic-adaptive organization.

Briefly, multivariate analyses, such as factor analysis, are ways of reducing the apparent complexity of large amounts of information to a number of separate clusters via the elimination of redundancy and overlap. Pieces of information are grouped together because they overlap (are similar and "co-vary" together), while the separate clusters or groupings themselves are unique (are dissimilar and independent). Not only do multivariate analyses reduce the complexity of large amounts of information, but the resulting clusters of information are totally consistent with the objective of an organic-adaptive design—for example, they contain the important task and member interdependencies within the clusters or subunits, so that they can be effectively managed.

### Developing the MAPS questionnaire

The MAPS method requires employees to respond on a scale to two types of questionnaire items, indicating to what extent particular tasks within the person's competency he regards as important now or for the future to reach organizational objectives, and the extent to which the person can interact well with each of his organizational colleagues in performing tasks.

A preliminary to the questionnaire, of course, is deciding on its scope—whether the entire organization is to be involved, or simply one or more divisions or departments. The determining factors include the number of people in the organization and identification of some major interface problems between two or more functional areas. For example, a product division of a major U.S. corporation recently went through the MAPS analysis by focusing on the sales, marketing, and engineering areas. The manufacturing department was skipped, because it was not directly affected by the major interface problems that had shown up among the other three areas, but top management acknowledged that the

design analysis could be expanded to include the manufacturing department later on, depending on the outcome of the first MAPS analysis.

- *Task items.* Once the design boundaries have been defined, it is desirable to have all members within these boundaries involved in the development of the task items, because their information, perspectives, interests, task abilities, and so on are likely to be the most relevant to the possibilities for attaining organizational objectives, and also because their commitment to any new design is essential if that design is to be successfully implemented.

A general procedure for developing the task items is for top management to first outline some broad categories of either objectives or basic functions to which the organization is committed. Then, with those in mind, the employees are asked to list specific tasks that describe their current activities, that they think should be performed, and/or that they would like to perform. Obviously, this process attempts to integrate individual and organizational objectives in an MBO manner. If more than 100 task items are produced, it will usually be necessary for a representative group to cull the list, eliminating or combining redundant or ambiguous items and reducing it to approximately 40 to 80 items that are acceptable to both top management and the employees involved. Each item should be very concise and its meaning should be entirely clear to every-one engaged in the design analysis.

Figure 1 shows a few of the task items in a final list of the first portion of a MAPS questionnaire. These items were among those developed by 50 members of a division of a U.S. corporation comprising five levels of management, from first-line supervisors to the vice-president and general manager of the division.

- *Colleague items.* For the second type of item appearing on the MAPS questionnaire, all employees who are involved in the design analysis are listed, and, as is shown in Figure 2, each is asked to indicate how much he would like to interact with each of his colleagues in the pursuit of organizational objectives. The point here is to summarize the interpersonal factors, shared interests, and political or personal reasons for desired interactions among members, but because of the general manner in which the questionnaire is phrased, employees can, of course, apply their own criteria. And the answers also allow for the possibility of members' choosing one another for reasons of congruency, or compatible differences, as well as for similarity.

It stands to reason that if various groups were composed of individuals with too diverse interpersonal styles, attitudes, and values, the subunits would have a very difficult time to fully utilize their technical resources

in a task environment that required much interaction among members. Consequently, an organic-adaptive design needs to be formally based on a degree of interpersonal and social compatibility within subunits.

**Figure 1**  
**Typical Items in Section 1 of the MAPS Questionnaire**

Please indicate how much you would be interested in participating in either all or a portion of each of the following organizational tasks.

	Not at all	Much be- low avg.	Be- low avg.	Aver- age.	Above avg.	Much above avg.	Of prime inter- est
Acquaint or sell customer on proposed system job	—	—	—	—	—	—	—
Furnish technical support in meetings with customer	—	—	—	—	—	—	—
Attempt to influence customer specifications	—	—	—	—	—	—	—
Participate in specification review with customer	—	—	—	—	—	—	—
Prepare detailed system description	—	—	—	—	—	—	—
Determine if all customer obligations have been met	—	—	—	—	—	—	—
Recommend design changes to simplify, reduce cost, and standardize	—	—	—	—	—	—	—
Coordinate new assemblies to utilize standard parts	—	—	—	—	—	—	—
Identify new product opportunities	—	—	—	—	—	—	—
Develop new product sales promotion and literature	—	—	—	—	—	—	—
Introduce new products to the customer	—	—	—	—	—	—	—

### Analyzing the questionnaire responses

While a great variety of multivariate analyses can be made of responses to the MAPS questionnaire, the most important are separating the list of task items into distinct clusters and separating respondents to





structure," in which interrelationships of task items remain obscure or hidden.

The MAPS analysis also allows the list of task items to be separated into different numbers of clusters. Thus, 70 task items might be distributed into five, six, or perhaps as many as 20 clusters. These different task clusters might represent different task structures for the organization, with each task structure containing the important task interdependencies within the clusters.

- *Forming subunits of members.* The second type of MAPS analysis involves separating the respondents to the questionnaire into subunits according to their similarity in endorsing task items and similarity in indicating which colleagues they can best interact with. Thus, respondents are placed in the same subunit if they have congruent skills, attitudes, values, interpersonal styles, and shared commitment to the tasks. A subunit that has this congruency is more likely to marshal its problem-solving abilities and resources effectively, and to arrive at some consensus about what specific tasks the members would like to work at.

The MAPS analysis of respondents, like the analysis of the task items, permits different solutions—that is, a given number of respondents can be divided into different numbers of subunits. Thus, 50 members might be distributed into four, five, or 15 subunits. Each solution presents a somewhat different way of composing the membership in the attempt to bring together into subunits those who have interpersonal and task congruency.

- *Selecting an organic-adaptive design.* The foregoing analyses can be combined to specifically match up each subunit of members with a task cluster for each possible design solution. For example, a five-cluster solution would separate 70 task items into five task clusters and 50 respondents into five subunits of members. Figure 3 illustrates the MAPS design matrix for this hypothetical situation. Then, various management science, operations research methods are used to assign each subunit one of the task clusters with the objective of maximizing the overall "fit" between the two. In other words, as much as possible each subunit would be matched with a task cluster that represents the members' first choices.

The same match-ups can be determined for a six-cluster solution, a seven-cluster solution, and so forth, until the MAPS procedure has reached its statistical limits. At that time, an index can be computed that describes the closeness of fit between subunits and their assigned task clusters for each of the cluster solutions. With this index, the single "best" organic-adaptive design can be selected for comparison with the current design of the organization.

Figure 3

MAPS Design Matrix for a Five-Cluster Solution:  
50 Members and 70 Task Items

50 Members  
Distributed as:

70 Task Items Distributed as:  
TC1 TC2 TC3 TC4 TC5

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SUBUNIT 1 (10 members)**		*			
SUBUNIT 2 (5 members)	*				
SUBUNIT 3 (8 members)			*		
SUBUNIT 4 (12 members)					*
SUBUNIT 5 (15 members)				*	

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TC1 = Task Cluster 1 with specified task items, et cetera.

\* The most efficient matches between subunits and task clusters. With statistical means inserted into the elements in the matrix (based on member responses to the MAPS questionnaire, a "goodness of fit" index can be computed to compare the efficiency of several design solutions that can be derived from the same MAPS data source (i.e., comparing the five-cluster solution with the six-cluster solution, and so forth).

\*\* Members of each subunit are listed in alphabetical order.

### The MAPS organization design vs. the current design

For several reasons, the MAPS design may be quite different from the existing design. First, the current design is typically based on what the

present or past top management felt should be the design of the organization, while the MAPS approach portrays what the design would look like if it were based on employees' perceptions. If there is a considerable discrepancy between these two points of view, it may indicate a definite lack of underutilization of the resources, skills, and motivation of the members.

Second, in many cases the current design of an organization was developed to reflect stereotyped notions of skill specialization (that is, individuals are hired into "slots") or the traditional functional areas of design (marketing, production, finance, and so on). The MAPS method, however, is not biased by these notions; it does not "see" these categorizations, but simply develops task clusters and subunits by containing the important task and member interdependencies. Because of changes in the organization's environment and/or in the nature of members' skills, they may be quite different from the traditional expectations, so the MAPS design would be different from the current organization design.

Third, sometimes the physical layout of the organization imposes certain constraints on the possibilities for an effective design. For example, members located in different buildings or on different floors may have difficulty interacting with each other, though it may be necessary to their task interrelationships. The MAPS method is largely "blind" to architectural conditions; consequently, the MAPS design can suggest that some members should shift their physical location.

Fourth, it is possible that the actual activities taking place in the organization resemble the MAPS design more than that implied by the formal organization chart. Thus, the MAPS design might highlight the informal organization—how the work really gets done. The current, formal design may be misleading and out of date, but the organization chart generally does impose some constraints on behavior in the organization, and the MAPS design can help to formalize the true state of affairs.

### **The organic-adaptive design: Where OD comes in**

The MAPS analysis alone cannot guarantee that each subunit will fully realize its potential and be able more effectively to coordinate its activities with those of the other subunits. Usually, some organization development (OD) program would be necessary to translate the potential represented in the MAPS design into organizational behavior.

A first step in the OD program would have members of each subunit meet and prepare a detailed statement concerning the title, objectives,

and scope of their task cluster, with information regarding the resources and technology that will be necessary successfully to implement their work. Consideration should also be given to the "leadership structure" within the subunit—how each member can influence its management and operations—and to the question of whether a further subdivision of members within the subunit would facilitate matters. (If a subunit had 20 or more members, it might be useful to apply the MAPS method further to refine the design of the subunit.)

In a second step in the OD program, members of each subunit would share their "identity" statement with the other subunits, to foster an awareness of potential interface conflicts among the subunits and to have each subunit realize that it could not operate entirely independently of the others. Included in this interunit sharing would be a consideration of how the several subunits could best coordinate their efforts into a functioning whole. The traditional management hierarchy of a separate group of managers responsible for coordination might be considered, but Likert's concept of the linking-pin function is more supportive of an organic-adaptive design. (This coordination mechanism requires each subunit to nominate a "leader" to represent it to other such leaders whenever there is a need to negotiate interface issues among the subunits. Otherwise, the "linking pins" are just like any other members of their subunits.)

Carrying subunits further toward the organic-adaptive design with the linking-pin interunit coordination usually entails additional OD programs. Specifically, the OD techniques of team and interteam building would need to be applied over an extended period of time to help members learn a new kind of management and organizational behavior, because most people have not had the experience of working in a truly organic-adaptive organization and are unfamiliar with the different forms of decision making, communication, and leadership within and across subunits.

A continuing focus on organization design and development means that the process should not stop when an organic-adaptive design has been implemented. Aside from the many unforeseen obstacles that are likely to be encountered during the implementation and OD programs, the new design, like the old one, can become out of date with changes in the organization's task environment or changes in members' skills and interaction desires. Consequently, the organization could well institute a periodic review of its design to keep the theory and practice of organization designing as a recurring management process.

## Applications of MAPS

At the time of this writing, MAPS has been and is being applied in a number of different organizational settings: An educational institution has relied on MAPS to implement a new design for 99 faculty members in a graduate school of management; MAPS has formed 40 M.B.A. students into an organization to provide management consulting services to minority businessmen; and two major U.S. corporations are applying MAPS to test design changes across traditional functional areas. Moreover, a financial institution is using MAPS to test the functional effectiveness of one of its division's designs, and a medium-size retail company is utilizing MAPS to investigate the redesign of the entire organization.

While it is too early to tell what long-term effects will result from the MAPS approach to these organizations, the first study reported—on the redesign of a university department over a two-year period—is very encouraging. In light of experiences with the MAPS method, the following conditions are suggested to facilitate use of the method:

First, MAPS is most applicable in settings where organization members must work closely together to achieve organizational purposes—where there are many interdependencies and competent management of these interdependencies is essential to high performance. This situation is most likely to be encountered by industrial organizations in which the outputs of one job operation quickly become inputs for a subsequent operation. Thus, each member is dependent on others for resources and inputs to his own productive activity, and if his outputs are to be acceptable, he must conform to the input requirements of other members of subunits in the organization. Also, if the environment is changing, affecting the input-output transactions across subunits, a design change may be necessary. MAPS can be applied to quickly monitor the current design to assess whether it is conducive to optimum performance in the situation and at the same time, suggest alternative organization designs.

Second, the greater the extent of the design problem, in terms of numbers of people, tasks, and subunits, the more difficult it is for a manager to process the relevant data for such decisions. MAPS, however, because of its multivariate method and use of high-speed computers, can process large amounts of information that managers by themselves could not even comprehend. Therefore, the larger the design issue being analyzed, the more relevant and useful MAPS becomes.

Third, MAPS is most applicable when the management of the organization endorses Theory Y values. Management must believe in employees' ability to provide pertinent and reliable information for design

decisions and also believe that subunits composed by the MAPS method can take responsibility for defining and performing tasks that are consistent with overall organizational objectives. At the same time, the employees themselves must want to assume the responsibility of such influence in the design decision and for the subsequent implementation of a new design.



RALPH H. KILMANN is assistant professor of business administration at the Graduate School of Business, University of Pittsburgh, where he teaches behavioral science and organization theory. His research activities focus on organization design, organization development, conflict management, and interpersonal behavior. In these areas he designs and conducts specialized management development programs and is a consultant for numerous industrial, educational, and financial organizations. Dr. Kilmann received B.S. and M.S. degrees from Carnegie-Mellon University and a Ph.D. from the University of California, Los Angeles.

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