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Fluid teams:
Solutions to the problems of unstable team membership☆

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Building high performance teams can be difficult, even under the best of conditions. Unstable membership poses an added challenge, and is often considered a valid explanation for the dysfunction or failure of any group that suffers from it. Having group members come and go during the team's life makes it very difficult, some would say impossible, to foster teamwork. Yet certain task, personnel and environmental conditions make unstable team membership unavoidable or even desirable.

We call groups with unstable membership that organizations create and hold responsible for one or more outcomes fluid teams. Such teams have been common in health care and aviation (flight crews) and are increasingly common in engineering, professional service firms, product development, sales and customer support. In this article we provide guidance to managers of fluid teams, and those who design organizations with dynamic membership, by identifying four main reasons why unstable membership reduces the likelihood that teams will work well and offer solutions to each of these dilemmas.

WHY FLUID TEAMS EXIST

There are at least seven situations that increase the utility or unavoidability of fluid teams in organizations (summarized in Fig. 1). Five of these (in circles) are the result of choices managers make about how best to manage and allocate people. Two (in squares) are imposed on the organization by circumstances beyond most managers' control.

One reason why managers choose to create fluid teams is the need for different skills at different stages of the team's work. For example, most engineering firms use some sort of project management matrix structure that forms project specific teams of limited duration, where the skills of different individuals are only needed for a limited time. In some of these firms, individuals are explicitly assigned in and out of a team during a project, only belonging while their skill set is required.

Even where this isn't managed explicitly, belonging to more than one team can result in individuals putting their full attention to any one team only when their expertise is called upon. The experience of group meetings is that membership is unstable, creating a kind of fluid team. The main reason for these fluid teams, explicitly or implicitly created, is efficiency. It's just too expensive to allow individuals with specific skills to sit idle in the service of creating teams with stable, unchanging membership when the nature of the task demands that different expertise wax and wane in importance over the life cycle of the group's work.

A second situation that increases the attractiveness of fluid teams for efficient operation is adapting to scheduling and labor availability. Flight crews on airlines are often designed as fluid teams, as are health care teams, like surgical units. Compared with teams that have permanent members, fluid teams allow for more efficient utilization of skill sets common to a pool of employees, and cope much better with the need to adapt schedules to meet individual needs and/or constraints in collective agreements.

A third reason to increase the instability of team membership is to allow for skill development, knowledge transfer and overall career development in organizations. Managers may create roles, or whole departments, where internal turnover is expected to be quite high in order to provide career development opportunities for employees. It is not uncom-

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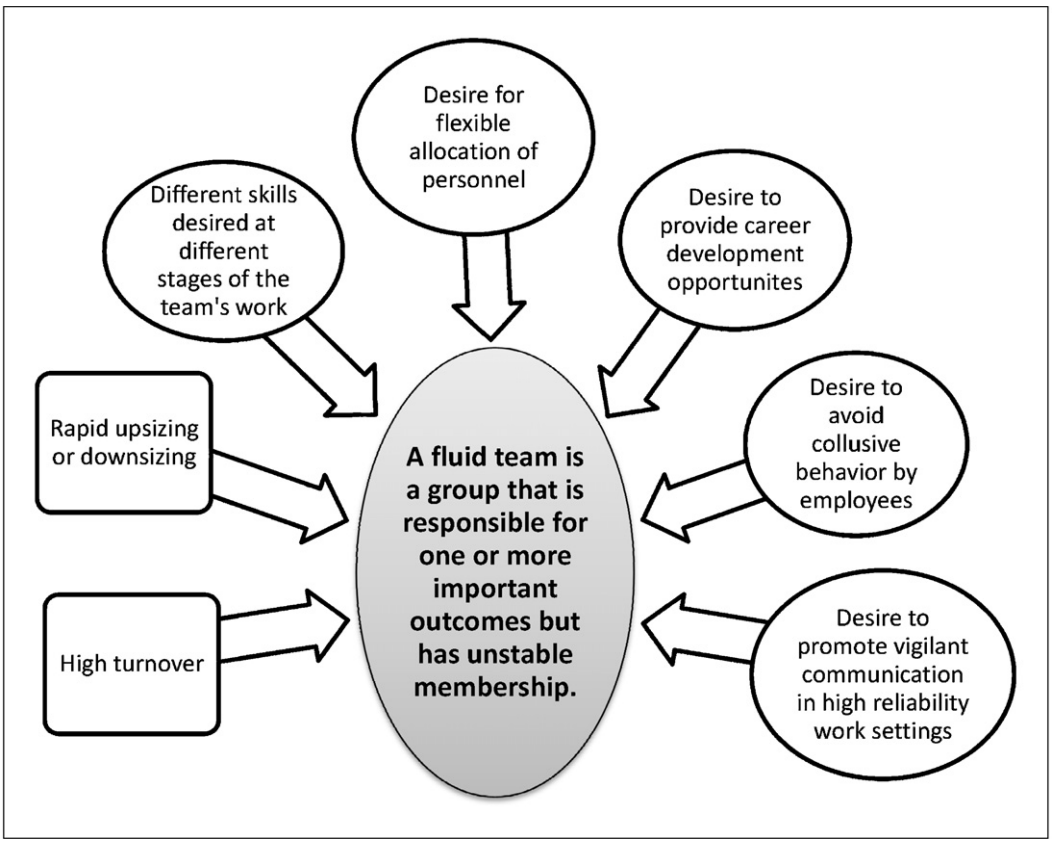

Figure 1 Conditions for Fluid Teams

mon to rotate employees in and out of customer service and technical support functions as a training ground to broaden their exposure to and understanding of the business.

A fourth reason is to reduce the likelihood of employee theft or other collusive behaviors. Keeping teams fluid helps to minimize the chance a team may develop norms that sanction illegal activities or other behaviors that are bad for the organization. Using this logic, Jerald Greenberg advocates keeping group memberships in organizations unstable to reduce employee theft.

In high reliability organizations, where the consequences of error can be quite severe, a fifth reason managers might choose to create fluid teams has been identified. Unstable membership seems to help maintain an increased level of vigilance in communication among team members. While studying fluid teams that occur on naval warships, Rochlin, LaPorte and Roberts found that stable membership could foster lax and sloppy communication among members, leading to misinterpretation and errors. Regular interaction with new members requires a much higher level of precision in communication and thereby supports maintenance of safe operating practices.

One of the uncontrollable situations that make fluid teams unavoidable is extreme environmental turbulence. Companies can undergo swings in employment growth and layoffs, or industry consolidation can result in successive mergers and buyouts. Groups within these organizations must continue to perform critical business functions even though organizational and group membership is uncertain and unstable. This can be characteristic of some industries, rendering fluid teams inevitable for some period of time.

The second condition that forces managers to deal with high levels of team fluidity is high employee turnover. Some might argue that the level of turnover in a company is to some extent under managerial control and that both managerial behavior and organizational processes play an important role; if managers don't want turnover, they just need to treat people better. The other side of that argument was summed up for us by a Silicon Valley veteran who stated, ''Increasingly upwardly mobile professionals consider themselves to be permanent free-agents, and they will leave one organization for the next at the drop of a buck or two!''

PROBLEMS FLUIDITY CREATES FOR TEAMWORK

As we survey the sparse literature on fluid teams, and our own experience, the reason unstable membership reduces teamwork comes down to two things: a reduced sense of belonging to the team, and a diminished ability to get the work done (efficacy). Research by Bushe and Coetzer, among others, demonstrates that teams don't develop into effective ones if members don't feel they belong, or want to belong, to the team. Those with transitory membership are less likely to feel they belong and act accordingly, and that may cause those with longer tenure in the team to feel less desire to commit effort alongside unmotivated members. Whether the

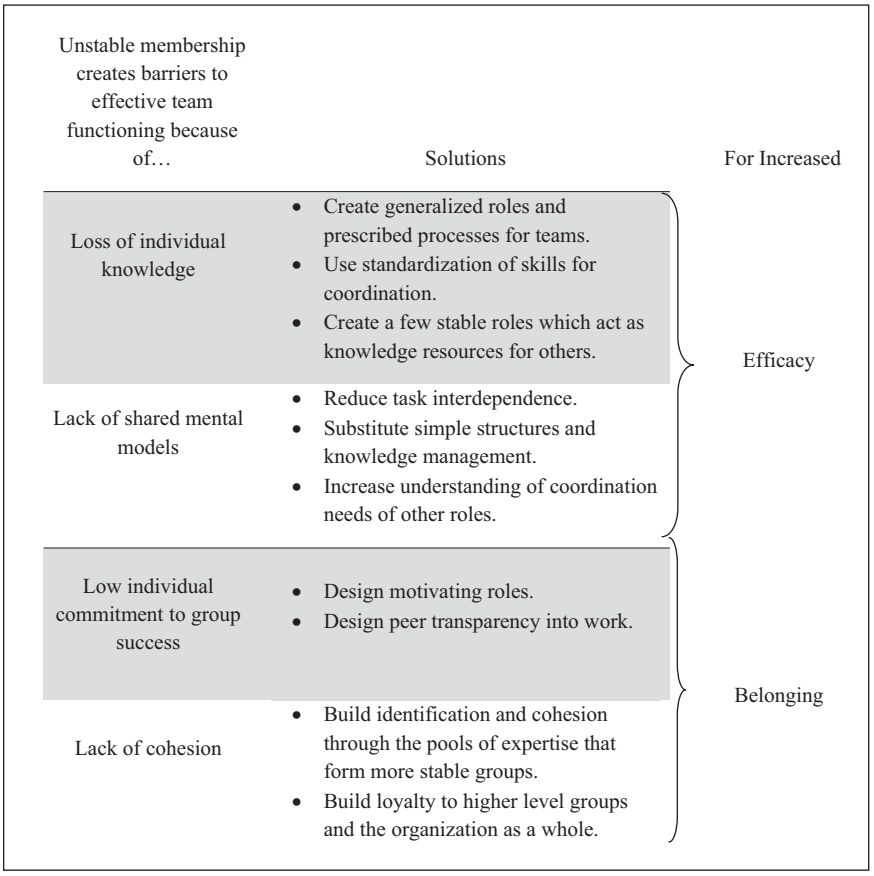

Figure 2 Problems and Solutions for Fluid Teams

team has the capacity to succeed at its work also influences people's desire to belong, and the ultimate success of the team. We've identified four separate mechanisms that reduce member belonging and team efficacy. The remainder of this article will describe each and suggest practical solutions to increase the efficacy and belonging in fluid teams (summarized in Fig. 2).

Problem: Loss of Individual Knowledge

Stable membership allows each team member to develop important knowledge about the team's task, environment, customers, suppliers, and so on. Each time a member leaves or is replaced, that knowledge disappears, thus reducing the team's efficacy. The main solution to this problem, and one that in turn influences many of the other solutions we offer about fluid teams, is structural. The best way to deal with the loss of knowledge that unstable membership creates is to use different coordination processes than those generally associated with teams, situate knowledge management outside of the group itself and design groups with more formalized roles and procedures.

In Henry Mintzberg's classic text on organizational structure, he identified five different ways of coordinating work. One of these, almost synonymous with teamwork, is "mutual adjustment;" a continuous coordination of work through face-to-face interaction. Mintzberg argued that mutual adjustment is such a costly form of coordination that it could only be used successfully in businesses that faced highly uncertain environments and highly creative tasks, where efficiency was unlikely to provide competitive advantage, and, instead, learning and adaptability were critical. Inconsistent membership makes it difficult, and more costly, to rely on mutual adjustment for coordination. Each time that membership changes, time and money must be taken away from the task to orient and integrate the new member so he or she can mutually adjust with other members successfully.

Standardize roles and skills

The form of coordination we advocate for fluid teams is a variant of what Mintzberg called "standardization of skills." In this form of coordination, the skills that are required in order to take on any particular team role are identified by some agency or authority outside the group. People are hired in and out of specific roles they have been trained to perform to the specifications of that agency or authority. This requires identifying and differentiating the roles a team will need at a fairly general level, so that individuals can move in and out of a multitude of different teams as needed.

In health care, a number of specific skill sets have been identified, and credentialing in those skills is managed by external authorities (e.g., the American Medical Association). People are then hired into roles with little direct coordination from the organization — having the right credentials, they are trusted to be able to do their jobs with little supervision. In effect, health care organizations have outsourced their coordination costs to external regulatory bodies (creating other costs in employee identification and

control over service standards) in a way that makes it easier to build the best structure for fluid teams, one in which there are clear roles and processes the team organizes around.

In organizations that don't operate in such environments, internal authorities can be created that specify processes and procedures to be followed by pools of talent that are able to perform specific tasks. Those internal authorities could be a group of senior managers, a group of experienced employees with high levels of expertise or a group of technical specialists who design the jobs that others will do. Project matrix structures, with pools of specialists who report, on the one hand, to managers with expertise in their role or function, and also report to the project managers of the fluid teams they belong to, operate this way. As we'll show through examples later in this paper, clear roles and tasks related to each of those pools of specialization can be standardized and then generalized to the kinds of fluid teams utilized by the firm.

Such a system relies less on an individual's accumulated knowledge on the job and emphasizes training in role-specific knowledge and responsibilities. The individuals playing each role are less the focus than the actual role being played. This allows for a smoother in-and-out for roles of short duration in a team's life. In the case of a role incumbent being replaced, a newly inserted team member is effectively an understudy assuming the departing cast member's position. Even a well trained understudy will be unable to hit the ground at full speed until he or she accumulates some pertinent knowledge, but the ability to immediately make a contribution is much higher and he or she may even offer unique knowledge and abilities not possessed by his or her predecessor.

Knowledge resource roles

One other common solution to this problem is the identification of individuals with high levels of accumulated knowledge who are stable team members and act as a knowledge repository for the team. The customer support function for crystal reports at SAP-Business Objects, the leading business intelligence company, was designed around fairly fluid teams that had two stable roles: a team leader role held by a person who was interested in and capable of administrative functions the team needed to perform, and a "resource member" role held by a person with deep expertise in the technical aspects of the team's work. Through frequent interaction with all team members, these individuals acted as repositories of individual knowledge, so that much less was lost when other team members left.

Problem: Lack of Shared Mental Models

Shared mental models are ways of thinking held in common by team members that allow team members to easily coordinate their actions, resulting in higher team efficacy. Research shows that effective teams have several shared mental models related to processes like how to do the task, how to manage the environment, how to communicate with each other, and information about specific team members, such as their skills, knowledge, preferences and attitudes. Typically, shared mental models are developed through familiarity and interaction over time, so unstable membership and turnover make it difficult for group members to develop and maintain these cognitive structures. Fluid teams need to be designed in a way that compensates for this.

Reduce task interdependence

Again, the solutions are structural and contradict conventional wisdom about teams. While teamwork in stable teams seems best served by increasing task interdependence (needing to rely on each other to get the work done), we argue that fluid teams are best served by reducing, where possible, task interdependence. Find ways to reduce the need for mutual adjustment among team members, and the need for shared mental models diminishes. In fluid health care teams, this is supported by having very clear, formalized, processes for handoffs between team members. Once the handoff occurs, there is little need for members to seek out and talk to each other. Instead, new team members can then execute their responsibilities fairly independently.

In teams structured this way, it's the team members who perform the same role that need to share mental models. This allows them to be interchangeable in a fluid team, with less need for mutual adjustment among those from the same pool. Take for example a pool of repairmen who independently service customers. Such groups were successfully turned into self-managing teams in Telus, a leading Canadian telecommunications company, with no training or coaching in teamwork. Their lack of task interdependence reduced the chance of conflict and coordination problems between members. As a group they were responsible for important organizational outcomes, and their allocation to specific repair activities was highly fluid. As a result, the same customer could be serviced by a sequence of repairmen with very little or no mutual adjustment between team members.

Substitute simple structures

Creating simple structures and processes that substitute for mental models is another way to increase the effectiveness of fluid teams. At Vancouver General Hospital, the primary tertiary care facility for the Province of British Columbia, the emergency room where trauma surgeons resuscitate trauma victims has a formalized process called "the box." A large number of individuals might be in the emergency room at any one time. It may not be apparent at any point in time who is part of the team and who is observing or waiting for their role to be called in. Who is in charge may even be fluid. If this same group of people performed every resuscitation together, they could build up a shared mental model that would reduce this ambiguity, but because of how hospital staff are scheduled, that doesn't happen.

An effective solution (that illustrates how fluid teams need more structure) was to draw a boundary (i.e., a rectangle or "box") on the floor around the operating tables with a clear designated spot for the team's leader. Whoever is in the box is part of the team and whoever isn't in the box, at that moment, is not part of the team (to the point that they are not allowed to talk inside the room). Whoever is standing in the leader's position has the ultimate decision-making authority while standing in the assigned location.

Substitute knowledge management

A third solution to the lack of shared mental models caused by fluidity is to implement knowledge management systems to help store information on behalf of a team. This helps to make the team less reliant on shared mental models, by recording information so that it is easily accessible to new team members. An example of a knowledge management

tool is something as simple as a blog kept by an engineering team to chart the progress of a project and the roles and responsibilities of team members involved. More complex systems may be kept by HR managers attempting to efficiently record the roles and duties of individuals as they expand beyond existing job descriptions. While these systems may not be a perfect substitute for team stability, they may provide some measures by which to minimize the negative effects of turnover when teams are reliant on shared mental models.

Increase understanding of other roles

A different set of solutions to this problem is for managers or team members to place added attention on the importance of communication, strictly adhered to processes, and training. In studies on how to mitigate the effects of turnover on combat teams in the U.S. army, providing information to existing group members regarding the task relevant skills of newcomers, mitigated all negative effects on performance that were otherwise typically observed with turnover. This suggests that a little effort to introduce new team members into fluid teams might yield large paybacks.

In another study of surveillance/defense missions using a commercially available helicopter simulator, researchers found that members of teams engaging in high quality planning before their missions were able to form greater shared mental models of each team member's information requirement and pass information to each other in advance of explicit requests. The findings suggest that pre-briefing or simulation training influences the degree to which team members share understandings of each role's coordination needs and requirements. If roles in teams are highly formalized, than such simulation type planning and training can increase the ability for team members to anticipate the coordination needs of other roles (what information and action is needed by others, when?) without relying on mutual adjustment.

This is exactly what happens with airline pilots who are trained to be interchangeable in cockpit teams. In fact, the work environments (cockpits) are highly standardized so that the same things tend to be located in the same places. The left seat is always for the pilot and the right for the co-pilot. Between legs of a flight, two pilots may switch seats, and thereby swap roles, with hardly any need for discussion about how to coordinate their work.

Examples of managing lack of mental models

Electronic Arts (EA) one of the world's leading developers of video games experienced such rapid growth between 2001 and 2004 that fluid teams became a fact of life throughout the organization. In the early days of the company, the same team would work together from game to game; however, with rapid growth, EA experienced two key pressures that made fluid teams unavoidable: the need to manage the distribution of scarce talent (such as senior artists and technical architects) and the requirement to maximize the efficient use of staff resources.

The peer on-boarding process they developed is another example of how formalized communication and training processes can reduce the disruptive impact of changes to team membership. EA utilized Maslow's hierarchy of needs (i.e., what do you need to survive, what do you need to be safe, and so on) to create a five step on-boarding process centered around peer mentoring that helped reduce the ramp-up time for employees to join new teams within the organization by 50 percent. The effects of such time saving are magnified when you consider the constant need to "on-board" staff members to new project teams in a fluid organization like EA.

One of the early steps in the process was the "air, food and water document" that each employee received at the start of a new role. This was a short but specific list of all the connections an employee needed to make before they could plug into the team, such as learning the right vocabulary for their project, obtaining the right passwords and permissions or making sure they were on the distribution list for team meetings.

A later part of the process was the "big picture conversation" between apprentice and mentor. At this step, apprentices needed to be able to answer a handful of questions about the project as a whole, as if they were their mentor, the expert. Given that everyone needs to make decisions and set priorities on the job, this conversation was particularly useful for gaining an understanding of overall context of a project.

The mentor and apprentice also reviewed a skill development plan. This was a template document that listed all the things an employee needed to be able to do before engaging on a project. These could be things the employee already knew how to do, or needed to get up to speed on through studying documentation or formalized training. This key step helped close the gap between the employee's knowledge and their project team, before they even began work on that team.

Since EA trained many individuals for similar roles, once an on-boarding process was developed for one job area, it could be easily replicated and tweaked, making it possible to spread the effort put into developing role specializations across teams. Over time, EA began to observe employees were actually driving their own on-boarding process to ensure they could efficiently join new project teams.

The crystal decisions customer support team at SAP-Business Objects developed solutions to the problem of team fluidity consistent with many of these suggestions, and was able to create teams that consistently scored in the top quartile for customer satisfaction in the enterprise software industry. The main reason for the high turnover in this function at Business Objects was that it served as an entry level position into more specialized roles in the company that were harder to fill off the street. It was expected that most individuals would rotate in and out of these teams.

They chunked the large complex support function down into much simpler discrete areas of customer support and built teams around these. New hires were given a three-week training course in the technical aspects of the product and the culture and values of the company, and then brought onto the team. Team members responded to customer calls individually, supported by a computerized knowledge base and, when necessary, other members. As part of their performance expectations, team members were responsible for writing up a fixed number of contributions to the knowledge base each month, which were sent to a knowledge-base team that cleaned up, standardized and cross-referenced each contribution. Team members were trained to use a common problem solving process, and to document each step in that

process as they worked with a customer. This ensured that if a customer called back and got another team member on the phone, that person could pick up the thread of the work and continue to service that customer seamlessly.

Problem: Low Individual Commitment to Group Success

In the previous two sections on efficacy issues we provided solutions for ensuring incumbent team members will have faith in a new member's competence, and new members can quickly make a contribution. Here we turn to issues of belonging, and identify two aspects of the problem caused by unstable group membership. The first is a lack of commitment to the task and the group's success from members who only spend a short time on a team. The second is lack of caring for the group, resulting in low group cohesion.

The dynamic nature of fluid team membership can bring into question individuals' commitment to achieving team objectives. Belonging has a strong effect on individual motivation — how much effort does a person expend on the team's objectives, especially if they are in conflict with personal desires? Creating a sense of belonging is the cheapest and most flexible method for aligning individuals with a group's goals. When membership is only partial and transitory it is harder to feel a sense of belonging. Turnover can affect not only the sense of belonging of temporary members, but incumbent members too. Longer serving group members may not want to compensate for a new member's shortcomings when the new member's level of commitment is questionable. Teammates have to be seen as motivated and competent for most people to feel committed to the team's objectives. To reduce the chance that fluid team members won't invest real effort into the team, we advise those who design and manage fluid teams to maximize the motivational potential of each role and make each role's contribution as transparent as possible.

Design motivating roles

Extrinsic motivation comes from factors that generate positive behavior and are external to the individual, such as monetary rewards, workplace recognition, or other incentives. Intrinsic factors are those that trigger a sense of accomplishment and satisfy an innate desire to achieve performance objectives. Numerous studies of work design have found that intrinsic work motivation can be influenced by elements that make the work challenging and worthwhile. Hackman and Oldham's classic job characteristics model identifies five job design elements: skill variety, task identity, task significance, autonomy and feedback. Each of these elements increases the intrinsic motivation of a job. Social contacts and opportunities to learn, inherent in a job, have also been shown to increase the motivation of employees.

A good example of designing motivation into jobs in fluid teams is the change from team nursing to primary nursing. Nursing teams in hospitals are typically fluid, with exact configurations of personnel ever-changing in response to scheduling and other constraints. The older team nursing model required each nurse to perform one specialized function to all inpatients within a unit, such as administering and recording all medications, or monitoring and recording all vital signs for those same patients.

In the newer primary nursing model, continuity of care is emphasized by having one nurse coordinate all aspects and provide complete care for a small group of inpatients within a unit. In the primary model, the duties are divided by patient rather than by function, providing the opportunity to satisfy a number of intrinsic motivators in the nursing profession. It also reduces the amount of task interdependence among nurses, reducing possible problems from a lack of shared mental models while, like the repairman example above, creating conditions that make handoffs among nurses easier to manage without a lot of costly mutual adjustment.

Design peer transparency into work

The "free rider" problem that can result from members knowing that they will not be around for long was dealt with in the crystal reports customer support department by making each team member's actions highly visible to all other team members. The physical layout had all team members in an open office environment sitting in fairly close proximity. In addition, on everyone's computer screens, was a diagram showing who was dealing with each call and what calls were in queue. Statistics on the team and each member's call response volume were discussed at weekly meetings. New hires who did not quickly adapt to the operating norms in customer support (e.g., taking on a certain level of calls, seeking and giving help freely) did not last long in the organization.

Problem: Lack of Cohesion

Cohesion is a measure of how much people want to belong to a group and care about the group. Decades of research indicate that certain kinds of cohesion are highly related to group effectiveness, particularly cohesion that comes from attraction to a group's task. Overall, cohesion is a measure of how identified individuals are with the group and its work, and fluid membership can be detrimental to that sense of identification and the resulting cohesion that flows from it. Our solution to this dilemma is to work at building identification not so much in fluid teams but in the pools of expertise that members are drawn from.

Build identification with stable pools of expertise

While fluid teams have unstable membership, the pools of expertise in any organization tend to be much more stable, and the key similarity members have with each other is task identity — they do the same work and presumably are attracted to that work. Because of their stable membership in a group (the pool) the organization has an opportunity to develop a sense of belonging and identification with the organization, the pool, and the tasks that fluid teams in the organization are used for.

A good example of this happened at a large property and casualty company headquartered in the Northeastern U.S. At the turn of the millennium about half of their business was in property casualty (insurance) and half in asset management. They had an information technology (IT) department with about 500 fulltime and 300 contract employees. During the 2001 recession, like many similar companies, their cash reserves became too low to meet regulatory requirements and they decided to divest the asset management business. This in turn caused the IT department to have difficulty

justifying head count in the numerous, permanent teams in its functionally aligned structure.

Wanting to stem the layoffs and uncertainties faced by IT staff, the chief information officer (CIO) decided to restructure into an "assignment based" organization, creating fluid teams that could ramp staff up and down on projects and retain fulltime employees. This created stable employment for IT staff members, but resulted in lower cohesion and morale. A typical complaint was, "I've had five different managers in the past year, so who is looking after my career?"

Their solution, as described above, was to create stable pools of people with similar skill sets, that they called "practice centers." Since 2005, most IT staff members are assigned to a practice center led by a manager whose role is to manage people's careers, develop identification with the organization and cohesion within each practice center. Group members are flexibly assigned to projects as needed, but as a group they participate in activities like on-going training, off-site meetings, and "lessons learned across projects" meetings. Four years later, this structure is well regarded inside the company and is seen as having developed strongly cohesive groups.

Build loyalty to the organization through higher level groups

When hyper-growth hit Electronic Arts it became common for employees to move from team to team, depending on the needs of the business. This was jarring to employees used to working on close-knit teams, and some opted to move to smaller companies where employees would typically work in one group or on one game. Managers looking into the problem discovered that in addition, employees were now unhappy to find themselves working on teams managed by directors who had functional expertise in a different area then their own specialty, and so were unable to give skill-specific guidance.

As a partial solution, a career management role was created. Groups of employees shared a career manager who helped each individual chart a career path and develop functional skills. Career managers helped ensure employees were placed on the type of games or in the type of roles that fit their career aspirations. In between projects, career managers also arranged for employees to participate in development and training activities. By giving employees this support, they felt less like flotsam in the swirl of fluid teams and more committed to the individual projects they worked on, knowing they could work toward their own goals and that the organization had a vested interest in their success.

Group cohesion is important for groups to be able to transmit and enforce group norms that will support or impede team performance. Norms that will support fluid team performance can be instilled through activities and events focused on the pools like speeches by leaders, training sessions, group discussions, team building sessions, and off-site retreats. Core norms that are known to support fluid team success can be purposefully targeted.

For example, Richard Hackman suggests two core norms that increase the effectiveness of all teams and we would argue, of fluid teams in particular. One of them is the norm "members should take an active, rather than reactive, stance toward the team's environment." The other is that "behavioral boundaries of teams should be demarcated, identifying the small handful of things that members must always do, and those they must never do." Hackman shows the utility of these norms in an example of a fluid team of flight attendants who were able to successfully serve a planeload of vacationers going to Florida on a sunny day and then, on a subsequent trip, manage a weather-delayed plane of business travelers going to Boston. Through environmental scanning and adherence to the "must do" and "never do" prescriptions laid down by management, this fluid team successfully enacted very different processes under very different conditions with very different but ultimately satisfied customers.

CONCLUSION

Fluid teams may never have the same potential as stable teams to develop into synergistic, high performing teams, but sometimes the situation makes them unavoidable, or requires increased fluidity for cost and scheduling reasons. In such cases, well functioning fluid teams can be good enough to meet the organization's needs. However, the chances that any fluid team will operate to its potential are increased when managers and organizations provide structures and processes that manage, as best as possible, the barriers that unstable membership creates for effective team functioning.

In this article we've identified four of the key barriers created by unstable membership, and argued that structures and processes different from those normally prescribed for successful teamwork are most appropriate. Instead of focusing on creating conditions that support teams as self-regulating, self-designing and highly adaptive groups, we argue that fluid teams are most likely to succeed when managers focus on creating conditions that support teams as highly structured, role-bound groups with clear standard operating procedures.

In general, we find that successful use of fluid teams is most likely when teams have "task identity" (team members do the same kind of work) rather than "task interdependence" (team members rely on each other to get their work done). Even where team members each do different kinds of work, the problems of unstable membership can be reduced by increasing the structure and formalization of such teams. With clearly prescribed roles and processes, and specific pools of personnel who specialize in each role, personnel can be interchangeably substituted with fewer process losses. Use of knowledge management systems and having one or more stable members who anchor the team also seem to help.

Another characteristic of the successful fluid teams we've described is that their tasks and goals are distinctly prescribed. It is questionable whether a fluid team could be designed to take on an ambiguous task that requires negotiation with external stakeholders to set its own goals. Where the tasks and objectives are predetermined, however, we think that careful consideration and management of the structure of fluid teams, and the organizational supports provided to team members, can lessen the negative impacts of unstable membership on member belonging and team efficacy, increasing the performance and success of fluid teams.

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