As a child, did you work on jigsaw puzzles with your family? If so, you probably have fond memories of working together to create the picture displayed on the puzzle box. For many of us, this was one way we learned to be integrators. At one time, puzzles were a standard rectangular shape consisting of 500 pieces. Today, puzzles are more complex, with 1,000 to 10,000 pieces, more challenging pictures and different shapes such as circles, triangles — even three-dimensional shapes. Similarly, projects in our organizations are reflecting increased complexity with interdependencies within projects and interdependent projects within programs.

My experience with complex programs and organizations, multiple integrated leadership teams, more than 50 integrated product teams, projects aimed at improved integration processes and numerous mergers has given me a great appreciation for the value of effective integration. “Integration” means bringing interconnected parts together so that something is whole or complete. Project deliverables that have integrity satisfy customers and stakeholders because they are whole and complete as expected. Lack of integration leads to project failure; some integration yields some results; and great integration optimizes the project effort and leads to project success.

A century ago, productivity made a big leap forward when organizations adopted Frederick W. Taylor’s theory on specialization of work. Organizations increased production by specializing workers to the parts and pieces of a system. Many organizations have mastered the application of this theory. But, there remains a struggle with the disadvantages of stovepipe organizational structures. In a world of subject matter experts and complex projects, there’s a growing need to understand the whole system and master integration.

What does great integration involve? It begins with understanding the system of which the project’s deliverable is a part. It involves being able to understand that system, including all the pieces, interdependencies and measurement standards. Understanding the whole aids us with envisioning the end result and the project goals. Once we understand the entire system, we can then work within it to create a new or improved product or process. Finally, the interdependent parts can be assembled in
order to produce the desired whole that satisfies the functional requirements of our customers and stakeholders.

**Mapping the System**

Understanding the whole picture of a system is vital to planning successful projects. Just like when working on a jigsaw puzzle, the project manager, team members and stakeholders need to be able to see the whole as well as the parts representing the system they are about to create or to change. A project is typically an intervention within an organization that ultimately provides a revised or new process or product within the organization. This can be true even when the project’s end result is a product that is sold to another organization. Having a picture of the “as-is” system or process gives us a place from which to start. Understanding the parts (tasks, materials, equipment, measurements) and their relationships helps us answer questions such as: What needs to be integrated? How? Who? When? What integration do we need for the new or revised system? Considering both the positive and negative effects of a change promotes better decisions regarding strategy, solutions and plans.

Mapping the system using SIPOC (supplier, input, process, output, customer) diagrams, process flows and layout diagrams gives us the whole picture and makes interdependencies visible. A project involves process input, suppliers, tasks, equipment and output. Therefore, the SIPOC diagram is a powerful tool that helps project teams and stakeholders to understand the “as is” system.

A SIPOC diagram (see Figure 1) displays the activity in the process, parts, roles and relationships and captures before, during and after pictures. It aids in identification and establishment of boundaries or scope of a project, identification of stakeholders, analysis of proposed deliverable solutions and documentation of the final implemented result.

**Integrating: Working with the Parts**

There are various techniques we all use on a daily basis to integrate information and interdependent pieces. For example, we sort jigsaw puzzle pieces by elements such
as color, pattern and shape. In other words, we identify interdependencies in order to put the puzzle pieces together.

The following are some key integration activities used in a typical project, as well as tips on how to make these activities more effective:

- **Sharing information via two-way communication** - Meetings are the most common method for discussing information. However, meetings that use one-way communication are not effective integration activities. Design meetings that foster two-way communication and feedback in order to ensure understanding and agreement of the interdependent items.

- **Mapping elements and details between the existing system and the planned deliverables** - Often, integration teams utilize customized matrices to compare information and ensure that all parts come together appropriately. Be sure to track change requests and use a change control process to ensure changes are integrated into the existing plan.

- **Documenting information to trace decisions, requirements, designs and more** - The fast pace in organizations today often causes people to avoid documentation because it is time-consuming. Yet, documentation is key to successful integration. Find ways to keep documentation simple so that workers do not fall in to the trap of “there’s not enough time.”

- **Solving problems together with the stakeholders** - Solve problems together using tools such as process flows, statistical process control, cause and effect analysis, brainstorming and affinity diagrams. Identify “what if” scenarios and design tests to analyze and solve problems.

**The Role of the Project Manager and the Team**

The project manager is responsible for producing a deliverable that has integrity and must perform the role of integrator. In this role, the project manager is responsible for assembling a network of people who collectively integrate their interdependent parts to pull together the end result. It is vital to appreciate the value gained from integration and incorporate it into the roles and activities of the team.
Obstacles to Integration

Puzzle pieces can fall on the floor or be hidden behind someone’s elbow at the jigsaw puzzle table. When working cross-functionally and globally in organizations, pieces of information are sometimes not shared or even lost.

Ineffective partnerships. Integration across functional lines of authority is crucial to the success of the project; however, effective problem solving and communication may fall short of what is needed. This occurs for multiple reasons. One reason is ineffective and uncommitted partnerships. Team members and stakeholders are often aligned with the part of the company where they directly report. This affects commitment and accountability. The stovepipe or silo mentality — a by-product of a century of specialization — may encourage some parts of the organization to focus only on their own area. Alignment with one’s “home turf” often occurs. Such stakeholders may take actions that benefit their own functional areas, even though they are intelligent enough to understand the potential negative impact on the organization as a whole. Team members assigned to a cross-functional project are sometimes assigned to work on the project while also told by their reporting manager to “not give in,” “hold the line” or “come back to us for decisions.”

What often weakens the commitment or partnership of team members or stakeholders is the invisible organizational structure. Within the project structure, people who are responsible for integration are often caught in the middle; they are between others in the organization who sometimes want them to take sides. For example, the project manager and team members are between functional managers, suppliers, customers, sponsors and others.

According to Barry Oshry, author of Seeing Systems (1996), there is a predictable organizational condition for those caught in the middle. This condition produces a predictable response where integrators often, without realizing it, fall out of partnership by giving up their own independence of thought and action. Great partners stick it out together with what they know is sound and right until they resolve situations for the greater whole. To be an effective middle person or integrator for your project, take a stand and share information that helps the project team create a whole and complete deliverable according to the agreement with the customer. Work for win-win solutions.

Reality of team turnover. On mid- to longer-term project efforts, it’s common to have team and stakeholder turnover. When players come and go, integration weakens.
Some think turnover is a risk. Instead, accept the reality that there will be turnover. Create project strategies and plans that aid in integration even as the members change.

**Integration takes time.** Often, planning for integration is overlooked or skipped due to a perceived lack of time. Years of experience has taught us that projects cost less when done right the first time and cost more with rework. When analyzing and selecting projects during project initiation, confront the reality that complex projects need time for integration.

**Integrate Now, Not Later.** In 400 B.C., the Romans developed a much-needed network of roads to connect people and businesses. In 900 A.D., the Anasazi built a network of roads in the American Southwest to connect parts of their world. Building networks and integrating has been with us for a long time. Today, organizational integration is more difficult than ever due to existing patterns and greater complexity.

A century of specialization represents five generations. The Native Americans have a phrase about choosing to live in a way that considers the next seven generations. Organizations and project teams can succeed by mastering integration to create sustainable value — before the last two generations of specialization play out. Choosing both specialization and integration together can be a wise move for those in the middle.

**References:**


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