# Developing Operating Procedures For Projects Involving Multiple Organizations Using a Linear Responsibility Chart

**By Tom Clark Project Success Incorporated**
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One of the difficulties of managing projects that involve several (perhaps many) organizations is that the group has no pre-established procedures for handling actions that cross organizational boundaries. Such actions often include:

- Technical decisions (e.g., specification or design changes)
- Managerial decisions (e.g., schedule changes)
- Administrative processes (e.g., issuing payments for work)
- Project activities that involve more than one organization (e.g., approvals or inspections, placing purchase orders)

If such inter-organizational actions are not anticipated and procedures put in place to guide their performance, confusion and miscommunication will result, which will lead to unnecessary delays, wasted resources, and potentially even conflict among the organizations.

The development of operating procedures for multi-organizational projects can be facilitated by the use of a tool known as a "liner responsibility chart" (LRC). Consider the hypothetical and simplified example illustrated on the next page. Cavendish Chemicals is planning the design and construction of their new Plant Clearwater. The project will involve the individuals, departments, and organizations shown in the columns of the chart. The inter-organizational actions that can be anticipated on this project are listed in the rows of the chart. Several responsibility codes (letters) are defined in the upper left corner, and these codes are used in each cell of the chart to indicate the responsibility(s) of the entity in that column relative to the action in that row. By reading the codes in any row of the LRC, it is possible to ascertain an overview of the procedure for the action associated with that row.

The LRC, however, is not intended to be an end in itself. Rather, the LRC is an efficient tool that is used to collect and verify information about how the organizations intend to work together, so that written procedures for each action can be developed quickly and with minimum rework. The process involves several steps as follows:

1. Identify the individuals, departments, and organizations that should be represented in the chart and develop the column headings for those entities.

2. Develop an initial set of responsibility codes, such as the codes shown in the example.

3. Interview the project manager. Make an audio recording of the interview. Ask the project manager to:
   - Identify inter-organizational actions that should be included in the chart and ultimately in the project procedures manual. Enter these actions in the rows of the chart.

- Talk through the procedure for each action as he or she would prefer that it be performed. Enter responsibility codes into the cells of the chart to capture the procedure as described. If necessary, create additional codes.

# Cavendish Chemicals, Inc.

## Linear Responsibility Chart
## For
## Design and Construction of Plant Clearwater

| RESPONSIBILITY CODES | INDIVIDUAL / DEPARTMENT / ORGANIZATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **A. Requests / Initiates**<br>**B. Performs / Takes Action**<br>**C. Must Be Consulted**<br>**D. Must Approve**<br>E. **Must Be Informed** | **Cavendish Chemicals** | | | | | | | | | |
| **ACTION** | **VP - Production** | **Project Manager** | **Process Engineering** | **Plant Engineering** | **Architect** | **General Contractor** | **Subcontractors** | **Equipment Vendors** | **EPA** | **County Bldg. Inspector** |
| Process design specification changes | D | E | A/B | C | E | E | | E | D | |
| Plant design changes | E | E | C | A/B | C | C | E | | E | D |
| Design schedule changes | D | B | A/C | A/C | | C | | | | |
| Construction schedule changes | D | B | | A | C | C | E | E | | |
| County inspections | | E | | E | E | A | E | | | B/D |
| EPA inspections | | A | E | E | | | | | B/D | |
| Owner inspections | E | B/D | | | E | E | | | | |
| Payments | B | D | | | D | A | A | A | | |

4. Interview other key individuals who are identified in the LRC or who represent departments or organizations identified in the chart. The order in which these interviews are conducted is not critical. Show each interviewee the actions that have been entered into the LRC by previous interviewees. Ask the interviewee to identify additional actions that should be included and to describe the preferred procedure. Again, enter the appropriate codes in the LRC, create additional codes if necessary, and make an audio recording of the interview.

5. When the interviews have been completed, hold a meeting of the key individuals who are identified in the LRC or who represent departments or organizations identified in the LRC. Make an audio recording of the meeting. Give out copies of the LRC.
   - Explain the procedure for each action as described by the responsibility codes. Ask for comments, suggestions, or concerns on the procedure for each action. Seek consensus on all changes. Make changes to the codes as appropriate.
   - Ask for any additional actions that should be added to the LRC. Have the group discuss the preferred procedure for any such actions and record the appropriate codes on the LRC. Again, seek consensus.

6. Using the LRC (and audio recordings as necessary), develop a project procedures manual. Each row on the LRC should be converted to a written procedure. Each procedure should have:
   a. Date and draft number
   b. Action name/description (e.g., “Construction schedule changes”)
   c. Statement of the procedure based on the codes in the LRC. In addition, the statement can contain details, such as:
      - When making a submittal, exactly what documentation to provide and to whom it should be sent.
      - How long an entity normally has to review and act on an item submitted for their approval.
      - Who should receive copies of certain communications.
      - Whether hard copy or electronic communication are required/allowed.
   d. Signature lines for the project manager and for other key individuals who are identified in the LRC or who represent departments or organizations identified in the LRC. The signatures indicate that these key individuals approve the procedure and that they will follow and require other members of their organization follow the procedure.

   In addition to the individual procedures, the procedures manual should contain:
   - A table of contents
   - A directory of key individuals involved in the project, including phone numbers, mailing
   - addresses, and email addresses
   - The final LRC on which the procedures are based
   - A glossary of terms, if necessary

7. Distribute the procedures manual to all involved organizations in hard copy and/or electronic format.

The early development of a procedures manual as described above has proven invaluable on projects involving multiple organizations. The application of the LRC in the context of the steps

outlined above greatly facilitates the process, and it ensures that the procedures manual is complete and represents consensus among the involved organizations.

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# Why Track Actual Costs and Resource Usage on Projects?

**By Tom Clark Project Success Inc www.projectsuccess.com**

The importance of tracking actual costs and resource usage in projects depends upon the project situation. For some projects, tracking actuals is unnecessary or is not worth the effort required. In other cases, however, tracking actual costs and resource usage is an essential aspect of the project control function. In such cases, a system must be put into place to support the tracking process, and the collection/recording of the potentially voluminous quantity of data requires strong organizational discipline. Why then is tracking actual costs and resource usage on a project ever worth the effort required to accomplish it?

Depending upon the project/business environment, one or more of the following three reasons may underlie the mandate to track actual costs and resource usage on a project:

1. The financial accounting system and/or the managerial accounting system of the project organization may require the complete and accurate documentation of the ultimate actual cost of the project. This is especially true if the organization must report that actual cost to some outside organization(s), such as:
   - To the Internal Revenue Service to justify tax write-offs
   - To an external project customer to justify project fees

   In other cases, management of the project organization may simply want the capability to measure the cost of executing a strategic initiative or the profitability of a project performed for an outside customer.

2. Having knowledge of actuals-to-date is a requirement for effective cost control while the project is ongoing. When estimated project costs are budgeted by activity and actual costs are tracked by activity, the project manager has a powerful tool to support his/her efforts to control costs on the project. At any given point in the project, the actual cost of the activities completed-to-date can be compared against the budgeted cost of those activities, so that the cost variance from budget is known continuously. Corrective actions can then be taken to reduce any negative (i.e., over budget) variance. In addition, the budgeted costs (or revised estimated costs) for the remaining activities can be added to the actual cost of the completed activities to develop a new estimate of the total project cost at completion.

3. Tracking actuals allows the organization to build a historical database that will support budgeting and resource planning on future projects. Such a database is especially valuable if the organization performs many projects that are very similar to each other.

Tracking actual costs and resource usage is not necessary for every project or in every project environment. However, when good reasons exist for tracking actuals, the

necessary technical and procedural steps must be implemented to ensure that the process is executed on an accurate and timely basis.

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# Anticipating and Resolving Resource Overloads

**By Tom Clark Project Success Incorporated www.projectsuccess.com**

## The Concept of a Project Resource

In the context of project management, a *resource* is any entity that contributes to the accomplishment of project activities. Most project resources perform work and include such entities as personnel, equipment and contractors. However, the concept of a resource (and the techniques of resource management presented in this paper) can also be applied to entities that do not perform work, but which must be available in order for work to be performed. Examples include materials, cash, and workspace. This paper focuses on the resource that is of greatest concern to most organizations – personnel. In a project management system, personnel resources may be identified as individuals by name or as functional groups, such as computer programmers.

## The Purpose of Resource Planning

After a detailed schedule has been developed for a project, a nagging question remains to be answered: Will the resources required to execute the project according to schedule be available when needed? In the process of developing each project schedule, the average availability of resources should have been taken into consideration when activity durations were estimated. However, this estimating process does not guarantee that the total workload on any given resource (person or functional group) from all projects and non-project assignments will not exceed the availability of that resource during any future period. When resource overloads occur, personnel are subjected to unnecessary stress, and project activities fall behind schedule. The quality of the deliverables produced is also likely to suffer. Thus, the purpose of resource planning is to anticipate resource overloads, so that they can be resolved for the benefit of both the people and the projects.

## The Range of Approaches to Anticipating Resource Overloads

The approach taken to the challenge of anticipating specific resource overloads in specific future periods depends upon the number of simultaneous projects undertaken by the organization and the extent to which people are shared across multiple projects.

If the organization undertakes only a very small number of projects at one time or if each person is dedicated to work on only one or two projects at a time, a “short-cut approach” may be employed. The easiest and probably most effective short-cut approach is to:

- Give each person a copy of the newly-developed project schedule showing only those activities in which that person will be involved, and
- Ask the person to check the schedule against their personal calendar and other work commitments (including the schedules for the few other projects in which they may be involved) and report any obvious conflicts.

A person may realize for the first time that, during a week which is three months in the future, they are scheduled to work on five major activities in two different projects, while preparing their operating budget request for the next fiscal year and participating in a two-day training program. Clearly, "something's got to give!" The key to this approach is that each person is given the opportunity and the responsibility to identify their own overloads.

However, if the organization shares resources (again, individuals or groups) across a significant number of simultaneous projects, short-cut approaches to the anticipation of resource overloads are inadequate. A "comprehensive approach" is required. To be effective the comprehensive approach must capture the workload associated with all projects in which the personnel are involved. Fortunately, most popular project management software systems support the comprehensive approach as described in the next section.

**The Comprehensive Approach to Anticipating Resource Overloads**

The first step in the comprehensive approach is called "resource loading," and it occurs during the planning process for each new project. For each activity in the project schedule, the quantity of each resource required to perform the activity (typically measured in staff-hours for personnel resources) is estimated and entered into the project management software system. Thus, we might estimate that an activity called "Develop computer code" should require about 30 staff-hours of Linda Baker's time and 120 staff-hours of effort from a group called "Computer Programmers." Since the estimates are attached to the activities, the project management software has the ability to determine when the resources will be needed, based on the scheduled start and completion dates for the activities. In other words, we now have a time-phased projection of resource requirements or workload for each resource (e.g., Linda Baker and the Computer Programmers). It is also necessary and possible to estimate and enter resource requirements for project-level work (such as project management) and non-project work (that is, the ongoing background process workload) for each resource.

The next step is performed periodically and must be centralized at the project-portfolio level, rather than being performed at the project level. For each resource, the time-phased resource requirements are summed across all projects (as well as the non-project workload) within the project management software system. The resulting "resource profiles" can be displayed in graphical and/or tabular format. By comparing the total workload projection for each resource with the resource's planned availability, overloads during specific future periods become obvious.

The above description makes the process sound easier than it really is. Challenges include:

- Developing, maintaining, and applying on all projects standard ways of identifying organizational resources.
- Developing the ability, confidence, and discipline to estimate resource requirements for all activities on all projects.

- Establishing the centralized infrastructure that supports the accumulation and analysis of total resource requirements across all projects.

**Resolving the Anticipated Resource Overloads**

Once a specific resource overload has been anticipated in a specific future period, explicit action must be taken to resolve the overload. The action will involve either increasing the planned availability of the required resource and/or decreasing the planned workload during the period of the overload.

Common methods of increasing planned resource availability include:
- If the overload is significant and long-term, use the resource analysis as the justification for seeking approval to hire additional personnel.
- Plan to use overtime.
- Plan to employ temporary personnel to supplement the resource group.
- Reschedule vacations, training, etc.

Common methods of decreasing workload on the resource include:
- Reassign project or non-project work to other people.
- Contract out work.
- Cancel or delay the start of low-priority projects.
- Delay the start of selected activities. Most popular project management software systems provide algorithms for selecting/suggesting activities to be delayed. Typically, these algorithms will start by selecting activities in the lowest priority project that can be delayed without affecting the scheduled completion date of the project (i.e., activities with slack).

If the methods listed above cannot resolve the overload, two last-choice options that are legitimate if authorized, but that should be avoided if possible, are:
- Reduction in the scope of one or more projects.
- Extension in the duration (scheduled completion date) of one or more projects.

The key to being able to resolve resource imbalances is the ability to anticipate them. Most of the methods listed above require advanced decision making and preparation in order to implement them when needed.

The good news is that you are not required to anticipate and resolve resource overloads. Indeed, few organizations make any attempt to do so. The overloads will always be resolved automatically. The bad news is that if you fail to resolve the overload, the default solution will virtually always be the unauthorized application of one or both of the two options listed above that should be avoided; that is:
- Some of the work on some of the projects will never get done, and /or
- Some of the projects will be completed late.

And, as mentioned earlier, the people working on the projects will experience unnecessary stress that is due primarily to the inadequacy of the organization's project management system.

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