EPRI

Training Self-Assessment Guidelines

Technical Report

Training Self-Assessment Guidelines

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REPORT SUMMARY

This report provides guidance on how to conduct a training assessment. Many power companies today are relying on their training programs to prepare a renewed workforce to perform the many job tasks of operating and maintaining power plants. With the changing technology in plant systems and reorganization of roles and responsibilities, it becomes necessary to conduct an assessment of the training program to ensure that it meets the training needs of the organization. These needs will extend beyond the operations staff and encompass production management. EPRI will continue to conduct benchmarking studies and provide the users with tools and the methodology for conducting training assessments of their current training programs. This report also includes sample templates and instructions that can be used to gather and interpret data that will be collected from self-guided assessments. Additionally, justification metrics are established to help guide investment in new technologies and program enhancements. These tools are essential to developing an effective learning organization.

Background

In 2000, EPRI's Simulator and Training Center (S&TC) began to roll out its Operator Excellence Program (OEP) as a response to its membership's need to establish a uniform process for training future power plant operators. Since that time, three technical reports describing how to design, implement, and administer an OEP have been written. This report is designed as a companion to these OEP reports.

EPRI's second OEP technical report, *Implementing an Operator Excellence Program* (1004436), introduces EPRI's Power Plant Learning and Performance Methodology, STRAnD (Simulation & Training Rapid Assessment and Design). As its name (*Rapid Assessment and Design*) implies, this methodology, or process, focuses on a streamlined approach to conducting the all-important training needs assessment and designing a solution that supports the organization's training needs.

The assessment stage of STRAnD can be divided into four steps: 1) Analyze the request (why is an assessment being requested?), 2) identify the current situation, 3) analyze the data, and 4) gain a commitment from management and the workforce.

This report describes how to conduct a training needs assessment. It is intended as a guide for power plant training departments and is intended to be used by them. The S&TC strongly encourages them to educate their plant workforce on how to use Step 2, *identify the current situation*, of the methodology so that individual workers can actively participate in the assessment process by either assisting with the data-gathering process or actually performing their own assessment.

Objectives

- To provide members with an easy-to-use methodology for conducting training self-assessments
- To augment and support EPRI's Operator Excellence Program
- To function as an *evaluation phase* for a future project that will result in the creation of a set of automated tools (*see Destinations, Program 70*)

Approach

The S&TC, working with its membership, has encapsulated their combined expertise in the field of training needs analysis to craft the STRAnD methodology into an easy-to-follow, step-by-step process that should equip the readers with the ability to conduct a thorough assessment of their organizations' training needs. Furthermore, during the last three years, the S&TC has validated these processes during several simulator and training assessments conducted by the Center on behalf of its members, most notably City Public Services of San Antonio and Public Service Company of New Mexico.

Results

This report is the result of over three years of work performed by the S&TC in support of OEP projects undertaken by South Carolina Electric and Gas (SCE&G), Public Service Company of New Mexico (PNM), Progress Energy (PNG), and other members as they sought to identify their training needs and craft solutions tailored to their specific business objectives.

EPRI Perspective

The processes and procedures described in this report guide any organization through the process of gathering and analyzing the information required to perform a training needs assessment. EPRI strongly believes that the processes by which such assessments are performed can be successfully implemented by organizations who follow this guideline and that, when properly trained, individual workers can also perform, or at least contribute to, their own training assessments. To this end, EPRI's S&TC is working with its members to promote additional cost-saving approaches for developing and implementing best-in-class training programs centered on the Operator Excellence Program.

Keywords

Gather information
Self assessment
Analyze data
Gain commitment

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1
BACKGROUND

Our Fossil Plant Operations Learning and Performance Program is grounded in EPRI's Simulation & Training Rapid Assessment and Development Methodology (STRAnD), shown in Figure 1-1.

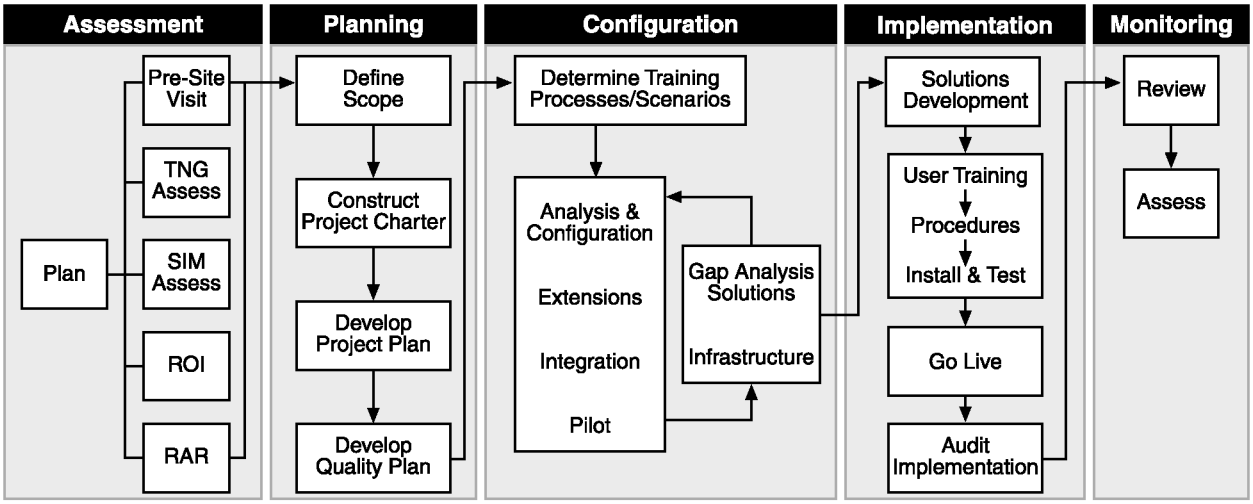

Figure 1-1
STRAnD Methodology

Purpose

STRAnD is the Simulator & Training Center's (S&TC's) five-stage phased approach, or methodology, that was created to assist its customers with justifying, designing, developing, and implementing an integrated training program that is tailored to meet their organizations' specific needs.

Each of the five stages of STRAnD is designed to be independent of the others. However, each step is also interlocked so that the results (deliverables) from each stage are the required input for the next stage. Additionally, activities within each stage can be bypassed during the conduct of that stage and completed at a later stage of the overall process. Finally, the last stage in this methodology (monitoring) and the first stage (assessment) are completely linked so that the customer's training plan created during the assessment stage can be updated during periodic internal or external training program reviews.

The five stages of STRAnD are:

- Assessment
- Planning
- Configuration
- Implementation
- Monitoring

This report addresses those activities associated with Stage 1, assessment. During the assessment, either the organization's training department, EPRI's S&TC staff, or a third party works with the requesting organization (the *requestor*) to fully define the scope of the assessment and, therefore, the deliverables.

This report is designed as a guide for conducting: 1) a training assessment, 2) a simulator assessment, and 3) return on investment (ROI) analysis. It is also designed as a guide for producing a readiness assessment report (RAR).

In step 1, the report discusses how to plan for the assessment. In step 2, the report presents various approaches and techniques for collecting data. In step 3, the report discuses how to analyze the data and information collected prior to and during the on-site visit and identify and collect any data that were overlooked, not then available, or discovered to be required as a greater understanding of the current situation unfolds. In step 4, the report, describes how you should begin to compile the analyzed data into a meaningful format as required by the specified deliverable(s). In step 5, the report discusses how to complete a draft of the deliverable for internal review. Following this review, the final report(s) are completed, and a presentation is scheduled with the customer.

For purposes of clarity, the term *customer* as it is used in this report may be used interchangeably to represent either an EPRI member or a department within the organization. It is a matter of perspective. For example, if EPRI's S&TC or a third party has been asked to conduct the assessment, then the customer is either the company, the training department, or the business unit (operations or maintenance). On the other hand, if the organization's training department is handling the request, then the customer is either the organization's corporate entity, plant management, or a specific business unit within the plant.

In today's de-regulated and re-regulated business environments, power producers are concerned, perhaps more than ever, with the cost of doing business. Out of this concern comes this question: Do we need to have a viable training program, and do we need to determine whether there is any need to conduct training? EPRI believes that the answer to this question still remains a resounding YES. However, experience has shown that there are certainly better and smarter ways of conducting in-house training programs, and that is precisely why EPRI developed its Operator Excellence Program (OEP). During the past few years, experience has also shown us

that the time-honored approach to determining whether and when training is needed is still valid. Experience with EPRI's Personal Proficiency Assessment (PPA) Program has also shown that there are better, more cost-effective ways to conduct the training needs assessment.

EPRI developed step 1 of STRAnD as a tool to be used by its members to streamline the assessment process and to encourage participation by individuals within the plant's workforce. There are five consecutive phases within the model:

1. Analyze the request.
2. Identify the current situation.
3. Analyze the data collected.
4. Determine a solution.
5. Gain commitments.

Each of these phases can be conducted in rapid succession and in minimal time. What used to take weeks, or even months, can now be accomplished in a matter of days. This speed is primarily a result of improved training assessment processes, greater familiarity with the art of assessing training needs by plant training departments, increased understanding of the role that training plays in an organization by management and workers alike, and technology.

2
ANALYZE THE REQUEST

Once a request for assistance is received, the first step is to analyze the request to determine the underlying rationale for conducting an assessment and to gain an understanding of the expected outcome as described by the requestor in the initial request. Because the best and quickest way to develop an understanding is to interview the requestor and validate the request, schedule a meeting or conduct a telephone interview with the requestor as soon as possible after receiving the request.

Validate the Request

During this interview, attempt to answer the following:

- What is the request for? Seek to identify what you are being asked to do.
- What role does the requestor play within the organization? (If you are a member of the plant's training department, you probably already know this.)
- What internal politics, business drivers, or other extenuating circumstances prompted the request? (You are also validating your own ideas and beliefs if you are part of the organization.)
- Is there any urgency to the request? What are the requestor's expectations on when they will see results? (Here is your opportunity to set appropriate expectations. Remember, it is always easier to set expectations early on rather than to attempt to change expectations later.)
- What does the requestor expect to gain or lose from the outcome of your assessment? What do you expect to gain or lose? These are important questions because, ultimately, it is the requestor whom you will later be asking to support your findings and implement your solutions. Also, if you are from the training department, you will also be expected to live with the results. Can you expect to have support from the requestor during the assessment? Perhaps the requestor is a manager. Will the requestor ensure that workers will cooperate with you? Will the requestor assign an individual, or group of individuals, to assist you with data collection? As you encounter resistance, will they not only support you but also assist in removing barriers?

Now that the request has been validated, it is time to begin preparation for the assessment. Step 2 is to gather some background information that will help set the context for the assessment. This step will help with identifying the overall assessment parameters. The following paragraphs contain a categorization of what information may be needed and its importance to the assessment effort.

Determine Background Information Needed

Identify Business Need

This information validates and establishes the scope of the potential problem that prompted the request. Information gathered here will help in determining how much time and effort the assessment might require and how many people might be involved. A clear understanding of the business needs helps to establish a linkage between those needs and any proposed solution. A clearer understanding of these linkages might also open up the potential for time-saving opportunities such as bypassing selected steps in the assessment methodology because they just are not relevant.

Areas to look at are:

- Economic drivers: market conditions, regulations, de-regulation issues, and so on
- Human resource drivers: current workforce and new-hire demographics, union issues, employee expectations, and so on
- Public perception drivers: local and regional issues and concerns
- Technology drivers: any new innovations that could create a need for change, such as a new distributed control system or new environmental control equipment installation
- Changes in business process or policies: new skill requirements, new performance requirements, or new safety training requirements

An organization establishes business objectives and strategies to respond to business drivers. Your power plant might be planning on implementing an OEP as a solution to economic, governmental, or the aging workforce influences. The OEP will impact individual performance needs. By identifying and linking these performance needs with the business drivers (in this case, the OEP and say, new governmental certification/qualification requirement), the expected outcome will show how the solution will address the performance needs.

Worksheet 2-1 provides an example of how you might go about aligning a potential, or even expected, solution with various needs.

Worksheet 2-1: Align Potential Solution to Performance Need

Potential Solution	Performance Need	Business Need	Business Driver
Create a new instructor qualification career path and develop a curriculum to support it.	Establish policy and standards for instructors.	Implement an OEP to meet new mandate.	New governmental requirements for plant operators.
Implement an electronic performance support system that provides the workforce with real-time access to a knowledgebase.	Transition work from one that is based on *corporate* knowledge to one that relies on a knowledgebase.	Recruit, hire, and train replacement workers without increasing overall training costs.	70% of current workforce will retire within the next four years.

Identify Expected Outcomes of Solution

Now that the business drivers have been linked to potential, or expected, solutions, it is time to identify what the expected outcomes are. This should be done in conjunction with the above step, thus saving time.

Note: During the meeting with the requestor, you are beginning to establish the requestor's expectations and set his/her expectations as well. However, you do not have to do *everything* during this first meeting. In fact, you will not have time and you could not do *everything* even if you wanted to. Set general expectations, review your notes following the meeting, prepare a summary, and conduct a follow-up.

During this initial meeting, try to identify what the requestor hopes to accomplish, that is, the results that he/she wants the learners to be able to produce once the solution is in place. Examples might include:

- Customer's vision of ideal operator
- Operator excellence program
- Heavier reliance on hiring from formal two-year educational institutions

The answers gathered here will set the parameters for what the assessment will explore and will ultimately be used to identify the objectives and measurements by which the solutions will be evaluated. The outcome of this interview should be:

- Realistic
- Business-related
- Measurable
- Achievable

If the requestor is unable to identify these aforementioned outcomes, then why not? Are the true business needs still unclear? Is there some other reason that is not related to performance that has prompted the request? What might the real reasons be? If you cannot get to the bottom of the reasons behind the request, suggest that a second meeting be scheduled and that the requestor re-assess the rationale for the original request. It may be that this original request was just a *knee jerk* reaction to an event. If this is the case, there is no need to proceed any further with the assessment. If not, then the follow-up meeting should clarify things and allow the assessment process to proceed.

Analyze Risk Associated with Analysis

You should now have the information you need to make an informed decision on whether to proceed with the assessment. The next step in the process is to determine what risk might be associated with the undertaking. During this brief assessment (allocate a few hours to perform this analysis), seek to answer questions like:

- What will happen if the problem is not solved?
- What will be the impact to the organization?
- If there is not any impact, then why attempt a solution?

An excellent way to arrive an analysis is to employ a worksheet similar to Worksheet 2-2.

Worksheet 2-2: Risk Analysis Worksheet

Risk Factor:	Your Assessment:
Reasons for request	
Commitment	
Clarity of business drivers	
Urgency	
Availability of funding	
Potential barriers	
Availability of information	
Availability of people resources	
Will the business environment change before the solution can be implemented?	

Through the process of completing this worksheet, a determination on whether to conduct the assessment can be made and that determination substantiated. Experience has shown that four or more risk factors might indicate a need to reconsider attempting an assessment. Should your initial interview result in four or more risks, EPRI recommends a follow-up meeting with the requestor. Present the risk analysis and attempt to identify errors that may have led to those conclusions and then explore, with the requestor, ways to mitigate them.

Gain Commitment to Conduct Analysis

Now that the need for the assessment has been validated and the risks, if any, identified and mitigated, it is time to secure a commitment from the requestor and the other individuals in your organization that may have a stake in the project. In addition to the requestor, these individuals might be the plant manager, human resources manager, operations manager, maintenance superintendent, and so on. Worksheet 2-3 provides a good recap of what documentation you should have assembled by that point. Reviewing it prior to actually going after the necessary commitments should help you in determining whether you have overlooked anything that might prevent gaining the required commitments.

Worksheet 2-3: Validation Information Inventory

Information Required:	Information Gathered:	Information Needed:
Interviewed requestor?	Yes _ No _	Yes _ No _
Identity of additional sponsors/stakeholders?	Yes _ No _	Yes _ No _
Description of target audience?	Yes _ No _	Yes _ No _
Description of performance improvement sought by requestor?	Yes _ No _	Yes _ No _
Is there a problem to be solved?	Yes _ No _	Yes _ No _
Project scope established?	Yes _ No _	Yes _ No _
All potential risks identified?	Yes _ No _	Yes _ No _
Expected outcomes identified?	Yes _ No _	Yes _ No _

By completing this worksheet, you should be able to gauge your confidence on whether you will have the support that you will need to move forward with the assessment. However, there is always the possibility that there will still be some resistance that will need to be overcome. There are some additional steps that might be helpful should you encounter additional resistance:

- Attempt to identify additional individuals who might have something to gain or lose from the assessment.
- Try to identify why someone else might have an objection to conducting the assessment. Are there any office politics that you have overlooked? Funding issues that were overlooked?

- Maybe you need to restate your interpretation of the business needs in different terms. People need to be assured that any change will not adversely affect them, so try to show how potential outcomes will benefit decision makers.
- Highlight the consequences that could result should the assessment not take place.

Note: At this point, the elapsed time is approximately two to three days.

Validate Information Needed from the Analysis

Now that a commitment to perform an assessment has been secured, it is time to validate the type of information that will need to be collected during the assessment. Let us go back and look at the request again. Does this request involve new skills training? Knowledge training? Performance training? A combination of all three?

In the first instance, the requestor may have been specific about the type of proficiency needed for the workforce. In this case, the assessment should be focused toward determining how to develop that proficiency.

Maybe the request was for a solution to close a *gap* in the worker's knowledgebase. This is highly probable in today's plant environment as older workers retire and new workers who do not possess the acquired knowledge of how the plant works are hired. Such knowledge only comes with experience or through well-designed training programs. In this case, the assessment might focus on knowledge transfer and how the new worker will apply that newly gained knowledge back to the job.

Perhaps the requestor has identified a potential performance gap, but is not sure if it is related to knowledge or skills. In such a situation, the assessment may need to focus on identifying the types of weaknesses present in the existing workforce.

In each of these scenarios, the information that may be needed is slightly different, and because this is a streamlined self-assessment process, the information needs to be identified and gathered quickly.

Worksheet 2-4 should prove helpful in determining what information should be gathered.

Worksheet 2-4: Validate Information Needed

Type of Request	Information Sought	How to Collect the Information
Skills training	Skills definitions: Define current skill levels of workforce, what skills are required for the job, workforce demographics, data to support deficiency, and so on.	Conduct a PPE, interview skills experts, identify foundation skills, review job descriptions, and review tasks list.
Knowledge training	What knowledge is required for this position? What is the current knowledge level of the workforce, data to support deficiency, and workforce demographics? What is the desired knowledge level sought?	Conduct a PPA, interview knowledge experts, and conduct focus groups.
Performance training	Assess current situation against desired outcome to identify gaps (gap analysis) and data that support requestor's assertions.	Conduct a PPA/PPE, conduct focus groups, and observe performance.
New equipment installation	Determine system specifications, projections for skills, and knowledge required of the new systems (contact suppliers/vendors). Assess job impact on workforce demographics.	Review documentation and conduct observations (possibly conduct site visits when this equipment is already installed).

After completing Worksheet 2-4, compare it with the expected outcomes identified in Worksheet 2-3 to determine if they are in alignment with each other. For instance, if the expected outcomes listed in Worksheet 2-3 identify the need for the workforce to acquire new knowledge, and Worksheet 2-4 indicates the need for new skills or improved performance, then there is a misalignment. Such a situation would imply that there is a disconnect that needs to be resolved. Contact the requestor immediately and resolve the discrepancy.

Now that the first five actions have been completed, it is almost time to make preparations to begin data collection, but before doing that, let us begin some pre-planning. The next two activities will complete the pre-site visit, or pre-data-gathering activities. Once they are complete, you will be ready to begin collecting data.

Determine What Information You Have and What Information You Need

An assessment cannot be accomplished without information. The quick turn-around at which a training department can conduct an assessment using EPRI's STRAnD methodology relies on the premise that any activity that can be pre-planned and pre-arranged has been. For that reason, this step in the process is very important. There is not any reason to spend valuable time searching for information that you already have or that you know where it is located.

Worksheet 2-5 should be used to identify what information you need, what information you have and will need, and what information you have that you will not need.

Worksheet 2-5: Information Requirements

Type of Information Needed	Have	Need	Don't Need	Who to Contact for Information
Organizational Information OEP project charter OEP guiding document Plant optimization guiding document Strategic plans Plant goals and objectives Description of major initiatives planned Other				
Best Practices Information Contact information at other power plants EPRI reports				
Past/Current Training Programs That Address These or Similar Needs Identify as necessary				
Workforce Information Demographics Type of facilities, condition, and so on Last PPA/PPE results Job/task descriptions Previous job task analysis List of supervisors with contact information List skills/knowledge experts with contact information Stakeholders with contact information Plant management with contact information				

Worksheet 2-5: Information Requirements (cont.)

Type of Information Needed	Have	Need	Don't Need	Who to Contact for Information
Other Constraints Politics Cultural factors Business drivers Additional info as required				
Supporting Data Last PPA/PPE results Recent assessment information Plant statistics (lost production, operator forced/unforced errors, EPA reports, and so on) Operating cost (fuel, replace rates, and so on) Additional information as appropriate				

This worksheet will become very helpful as you finalize your data-collecting plan. Using this worksheet will help identify gaps in what you have, what information you will require, and, most importantly, who has the information so that you can make arrangements to meet with them and get the information. If the assessment is being done at a remote site, this worksheet can assist you in setting up interview schedules. It can also be used very effectively by the assessment team to identify trusted agents. A trusted agent is someone at the plant site who will assist with the assessment either by participating in the actual assessment or as an assessment coordinator, arranging for meeting rooms, scheduling interviews, and so on.

Finally, as this worksheet is prepared, the process of preparing it will also identify specific information that will need to be collected and the methods that may be employed to collect that information.

Define Specific Information

In this step, the assessment team should begin by asking themselves the following questions:

- What research do we need to conduct before during and after the site visit?

- Who do we need to interview at the site?
- Who should be asked to participate in focus group discussions?
- What background information already collected needs to be reviewed before the site visit? Are there any new questions that need to be asked as a result of this review? Who do these questions need to be directed toward?

As these questions are pondered, a new worksheet should be developed. This worksheet might include the types, or category, of questions that will be asked while on site, or through a pre-site or post-site survey. Within each type, list the specific questions.

Hint: Develop a rationale statement for why the category, or the specific question, is needed.

An example of a pre-site visit questionnaire/survey is contained in Table 2-1. In this example, the survey is aimed at soliciting workforce feedback about how they feel about the work environment. Such a survey can identify potential problems associated with the workforce culture that might impact how a new training program is received.

Table 2-1
Pre-Site Visit Survey

INSTRUCTIONS: Please rate how strongly you agree or disagree with each of the following statements by placing a check mark in the appropriate box.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	1. I feel good about my work on the job.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	2. On the whole, I get along well with others at work.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	3. I am proud of my ability to cope with difficulties at work.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	4. When I feel uncomfortable at work, I know how to handle it.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	5. I can tell that other people at work are glad to have me there.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	6. I know I'll be able to cope with work for as long as I want.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	7. I am proud of my relationship with my supervisor at work.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	8. I am confident that I can handle my job without constant assistance.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	9. I feel like I make a useful contribution at work.
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	10. I can tell that my coworkers respect me.

It is almost time to conduct the site visit. There is one final activity: the project plan.

Develop Project Plan

Once all of the objectives of analyzing the request and identifying what information is to be gathered have been accomplished, and you have determined that the request is valid, a project plan should be initiated. This project plan will be used not only for the ensuing assessment but also for the overall STRAnD process: from analysis through monitoring. (Remember, the assessment step is just the beginning of the STRAnD methodology.) The project plan will become a part of the assessment deliverables and will form the basis for the project-planning workshop (PPW) conducted at the beginning of the planning phase (see *Implementing an Operator Excellence Program,* 1004436). Perhaps most importantly for now, this plan will become your road map and checklist for conducting the assessment. So go ahead and get the project plan built. For assistance, an outline of the project-planning workshop is in Figure 2-1.

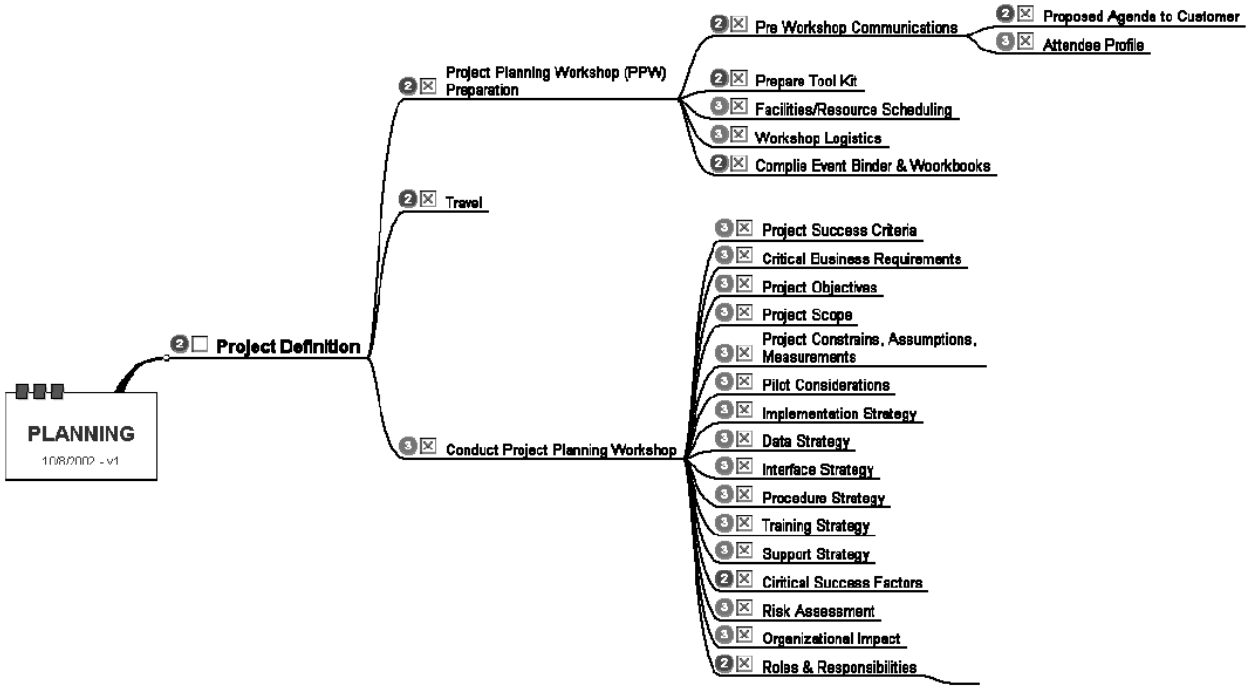

Figure 2-1
Project-Planning Workshop Outline

In this illustration, the PPW tasks that need to be accomplished during the assessment stage of STRAnD are listed under the branch titled *Conduct Project Planning Workshop*. A complete discussion of the project planning workshop can be found in *Implementing an Operator Excellence Program* (1004436).

Although the steps discussed in the preceding pages seem to require a lot of time to complete, they are quite straightforward. In fact, the entire process should not take more than a few days to complete. Think of these activities as one continuous planning activity that is designed to focus your attention on validating the request for action and then preparing for the assessment if the assessment is indeed warranted.

3
IDENTIFY CURRENT SITUATION

Now that the request for action has been validated, let us turn our attention to assessing the current situation at the plant site. Information about what is happening at the plant must be gathered quickly. Any delay could jeopardize the success of the overall project. The requestor may be operating under a timeline that requires a quick solution to a problem, or there may be an opportunity to get into the organization's budget process. No matter what the reasons, the assessment should be completed quickly.

During this step of the assessment, you will gather information about:

- The organization
- Best practices
- Existing training programs
- Workforce demographics
- Cultural/environmental issues and barriers

At the completion of this step, you will have the information that you will need to:

- Assess how the workforce is performing
- Identify barriers to success
- Identify performance issues and their causes

The activities that will be accomplished during this step are:

- Locating the required information that you will need to complete the assessment
- Determine by what means that information will be collected
- Collecting the information
- Identifying any gaps that may exist between what information was collected and what should have been collected
- Collecting additional, or overlooked, information

Conduct Pre-Site Visit Data/Information Collection

Identify Location of Information Needed

The first activity in this step is to locate the information that will be used during the assessment and identify the individuals who either possess that information or know where and how to find it. Although some information is contained in plant- or enterprise-wide performance support systems such as the Human Resources Information System (PeopleSoft application) or the Learning Content Management System (PlantView, Lumenix), you should seek assistance from those familiar with these systems for assistance. The rationale behind such a request is time reduction.

Worksheet 3-1 can prove beneficial with the information-gathering task. Using this worksheet, or something like it, will help establish a data-collection methodology and contribute to the success of this effort by helping to identify gaps in data.

Worksheet 3-1 will help you organize the data-collection process. Using this worksheet will help in getting all the data that are sought by:

- Restating what information is required (if a piece of data was missed in the planning stage, chances are that it will be identified here).
- Identifying where the data might be located and who has them or can assist in locating/retrieving them.
- Describing a plan and timeline for locating the information. Will the information be easy or difficult to locate? How will you attempt to get the information?

Note: An additional step that will aid in the analysis of the data collected is to categorize the types of data being sought. Is it organizational (strategic plans, goals and objectives, and so on), workforce demographics, or performance related?

Worksheet 3-1: Information Collection Planning Worksheet

Information Required	Where Is It? Who Has It?	Accessibility/Plan

Determine Data-Collection Method

Now let us determine how the information sought is to be collected. Using worksheet 3-2 will aid in making this determination. Again, restate the information sought and then state the method used. There are several well-accepted methods listed here, but feel free to consider additional approaches. After all, your goal is to identify and collect as much information as you can before you conduct the site visit and then being as brief as possible (less disruptive) when on site.

Consider using these data-collection methods:

- Telephone interviews
- Reviewing job tasks analysis (JTA)
- Conducting best-practices searches
- Contacting EPRI's Simulator & Training Center
- Conducting focus group sessions when onsite
- Observing tasks when on site

Worksheet 3-2: Methodology for Collecting Information

Information Needed	Method Used
Item 1	
Item 2	

Table 2-1 in the previous section provides an example of another type of data-collection tool that can prove valuable in your quest—the pre-site visit questionnaire. Using such an approach to collect data requires two planning steps: 1) identifying the audience and 2) securing a surrogate at the site.

This report assumes that the assessment team already has a business relationship with one or more individuals at the site. Certainly, this would be the case if the assessment is being conducted by the plant, or even corporate, training department. In such a situation, you probably already know who the audience is and whether you need a surrogate.

Now that you have identified the data needed, sent out the requests for information, and begun to receive responses, it is time to prepare for the site visit.

Assessment Pre-Departure Checklist

The pre-departure checklist (Worksheet 3-3) can provide the added assurance that you have covered all the bases and are ready to begin the on-site phase of the assessment. Using a checklist similar to Worksheet 3-3 will help with the planning and documenting your progress during the on-site visit. The example shown lists *Operations*, but you can rename it to *Maintenance*, *Environmental*, and so on as appropriate and then modify the type, or class, of data sought, if needed. Additional pre-departure checklists are listed in Appendix A.

Worksheet 3-3: Pre-Departure Checklist

Operations	Assigned	Date Required	Comments
Verify pre-site visit data.			
Perform operations knowledge assessment.			
Review plant operations documents.			
Observe plant operation practices.			
Interview supervisors.			
Review plant system documents.			
Review control system documents.			
Simulator version.			
Assess:			
Fundamental knowledge.			
System knowledge.			
Procedure knowledge.			
Emissions permanent knowledge.			
Malfunctions analysis/corrective action.			
Changes in controls/plant/equipment permits.			
Operations, staffing, and training history.			
Control screen printouts.			
Maintenance request process.			
Water chemistry, operator understanding.			

Establish On-Site Data/Information-Gathering Process

We have already discussed the need for establishing a methodology for gathering information from the organization before the on-site phase begins. Let us now look at developing a process for collecting data while at the site.

Worksheet 3-4 provides an example of one form a data-collecting worksheet that can be used to collect data before the site visit via telephone or while on site. Using this format, or any format that is suited for your objectives, is a convenient way to collect and preserve information obtained during the visit. In this example, the information being collected is of a general nature (type). A form like this one will also prove invaluable later on during the assessment phase when the data collected are being analyzed. It will be easy to contact someone for additional information that might be needed to fill in the gaps.

When the interview begins, collect the interviewee's phone number and e-mail address first.

Note: you may have already had this information from the pre-site visit preparation. If so, then verify the information.

Begin the interview by making the interviewees feel at ease. Let them tell you about their perception of how things are done at the plant, or within their work area. In this example, the objective is to determine if the current training program is adequate, so the lead-in question invites the interviewees to describe the program.

Note: Make sure that the interviewees and the customer understand that all information obtained in this fashion (interview), whether over the phone or during face-to-face encounters, is confidential and the identity of the individual will not be divulged.

Maintaining confidentiality during the data-collection phase is essential if the assessment team hopes to gain a clear understanding of the current situation. For this reason, having an independent third party conduct the assessment may produce the best results.

Worksheet 3-4: General Purpose Interview Form

INTERVIEWEE: _____PHONE NUMBER:_____

E-MAIL ADDRESS: _____

Type	Opening Questions	Purpose
General	Describe Current Training Program?	Is the training program adequate?

As you begin the interview process, whether by phone or in person, open with a restatement of the purpose for the interview and its confidentiality. Clarify the interviewee's position and the length of time that they have been at that position. Consider spending about 5 to 10 minutes discussing their backgrounds and concerns because such an approach will help *break the ice* and put them to ease.

As you begin to probe for information, ask them questions like:

- In general, what technical knowledge does someone need to do your job?
- In general, what skills are required?
- What type of training have you received during the past year? Three years? Five years?
- What type of technical education/training do you have? While at the company? Before joining this company?
- Do you feel that your education and training background prepared you for this job? How?
- How do you feel about the current job-related training you receive? Could it be improved? How?

These types of questions are designed to solicit information that might be hidden and to help the assessment team spot areas that might need improvement.

So far, our discussion of data-collection techniques has focused on telephone and face-to-face interviews. Let us now turn our attention to other methods.

Another data-collection activity that can be begun before the site visit is that which is associated with the job task analysis (JTA) portion of the assessment. The JTA examines the actual work performed by personnel working in the area being assessed (operations, maintenance, coal yard, and so on). The end product of a job task analysis is a job task list (JTL). If the client already has performed a job task analysis and has a job task list, then the JTL documents should be reviewed.

Should no job task list exist, then the analysis of the job will be performed (this will be discussed later on) and one will be developed. Therefore, one of the first groups of documents that should be requested is the current job task lists. Using a JTL, complete as much of Worksheet 3-5 as you can before the site visit. Doing so will help speed up the JTA/job-mapping process later on during the assessment.

Consider sending this worksheet to selected (pre-identified) job experts and have them complete as much as possible before your site visit. If there is time, have them return the completed worksheets to you so that you can review them before the visit. In this way, you will save time while at the site. If you elect this step, then have these same individuals gather in a focus group during the on-site portion of the assessment and review, validate, and complete the worksheet at that time.

Worksheet 3-5: JTA/Job Mapping Worksheet

Mapping Components	Opening Questions or Statements about the Job/Task
Job	
Tasks	
Conditions	
Standards	
Knowledge requirements	
Skills requirements	
Miscellaneous	

One final activity that can be accomplished, or at least begun, before for the site visit is to conduct research into best practices. This research could prove important later on when the solutions are being developed. An excellent source of best-practices information is EPRI's Simulator & Training Center.

Worksheet 3-6 illustrates how a best-practices worksheet might look and the type of information being sought. List the topic and associated keywords that might trigger a response (this is valuable if you are conducting an Internet search). The final step is to identify where the information is being sought (target sites).

Worksheet 3-6: Best-Practices Worksheet

Topic	Key Phrases	Target Web Sites

By this time, data are beginning to come in. You and your team have been conducting telephone interviews and sending out requests for information, and the results of your efforts are beginning to pay off. Let us begin to review and analyze that information.

Analyze Data/Information

This analysis should not be confused with the in-depth analysis that will be discussed later in the *assessment* portion of this report. At this point in the process, you will want to determine whether the data you have requested is what will be needed to complete the assessment and what data might still be needed. This review/analysis will also help in final preparations for the site visit.

Identify Gaps in Data Collected

It is now time to determine if there are any gaps in the information collect thus far.

Note: You also perform this same procedure after completing the onsite visit.

Worksheet 3-7 can help you in completing this activity and help you in identifying any additional information that you will need to collect while on site. Begin by reviewing Worksheet 3-1. It contains the original lists of information needed. Verify that this information has been gathered and whether it is adequate and accurate (you may need to conduct a follow-up telephone call to the individuals who supplied the information). If you determine that you need additional information, list what and where that information is. You might also list who will get that information for you (a team member or someone in the organization).

Worksheet 3-7: Identify Gaps and Errors in Data

Information Need	Information Gathered	Information Adequate and Accurate (Yes or No)	If No, What Else Is Needed?

Once you have identified that there is additional information that will be required, the next thing to do is go get it.

Collect Additional Data (as Required)

Now that you have determined that additional information is still needed, let us make plans to get it. Worksheet 3-8 is designed for that function. Begin by listing the type of information needed, how you will collect it (telephone interview, e-mail, face-to-face during the site visit, and so on), and what risks, if any, that might be associated with getting the information (is it sensitive, are there political constraints, and so on).

Next, attempt to identify who has the information, or where you might find it. Then, begin collecting the information.

Worksheet 3-8: Additional Information/Data

DEPARTMENT: _____

PERSON COLLECTING INFORMATION: _____ PHONE: _____

E-MAIL: _____

Additional Information Needed	How to Collect	Risk in Collecting	Information Collected

Well, it looks like you are ready to conduct the site visit. At this point, you have probably collected about one half to two-thirds of the information that will be needed to finish the assessment, and you're about three weeks into the project. (The actual time will vary depending on the scope of the project.) Let us now focus of the final stages of data gathering—the site visit.

Conduct On-Site Visit

During the previous activity, you have collected information and identified people and areas that you and your team will interview, observe, and visit while at the site. The amount of time you allocate to the site visit is totally dependent on the scope of the assessment. EPRI's experience in conducting training and simulator assessments indicates that one person can adequately complete all site visit activities for each assessment (training or simulator) during a five-day visit.

However, these are intense five-day work schedules. Begin with an *in-brief*, a meeting with plant management. Attendees may also include selected members of the workforce, but normally, it is attended only by the managers. During this meeting, about one hour in length, restate the purpose

for the visit and what the expected outcomes are. Verify that the workforce is aware of the visit and that those individuals who will be interviewed, and the departments that will be visited, have been briefed about the visit. If this has not been done, then request that they be contacted immediately following the *in-brief*.

Note: This report assumes that a *trusted agent* was identified in the earlier planning stage and that that individual, or group of individuals, has been actively supporting the assessment team's efforts up to this point. This active support includes assisting with the data-collection process and scheduling interviews and department visits.

Identify these trusted agents during the *in-brief* and praise their efforts.

Remember, the purpose of the site visit is to verify preliminary findings obtained from the pre-site visit analysis by:

- Observing actual work being performed
- Conducting face-to-face interviews
- Reviewing existing documentation not previously collected (training records, simulator profiles, and so on)

Worksheet 3-9 provides an excellent example of the type of information that the observer is looking for during an observation. Begin the observation session by stating its purpose and informing the individuals being observed that the information obtained will be kept confidential.

Note: All of the information contained in the left side of the worksheet should have been completed before the observation began.

Because the purpose of the observation is to gather information about how the job, or task, is performed and to identify any strengths or weaknesses on the part of the performer, try to limit questioning during the observation. There will be time for follow-up questioning later.

Worksheet 3-9: Observation Worksheet

Job type:	
Observation site:	
Environment/people observed	
Date: Time started: Time stopped:	
Reason(s) for observation: [ ] Seeking detail of actual job performance [ ] Seeking of optimal job performance [ ] Observing barriers, potential success factors, or problems that occur [ ] Observing general information	
Describe identified performance need	
Identify business drivers which this job contributes	
General observations: behaviors, skills, knowledge demonstrated	Comments and details

Try to complete a debrief with the persons being observed immediately following the observation. If, for some reason, this is impossible, schedule a time with those persons before departing the work area. It is always best to debrief immediately while the activity observed is fresh on the observer's mind and that of the person being observed. In this way, any misunderstandings on what was observed or further explanations can be discussed and clarified while memories are fresh.

Another form of on-site data collection is the interview. There are two interview formats that will, in all likelihood, be conducted during the site visit. They are the focus group interview and the individual interview. The processes are similar, but their execution is not. In the focus group interview, you will need to establish some *ground rules* first. After all, you may not want

everyone speaking at once. Another aspect of the focus group interview that is different from an individual interview is the need for a facilitator and a recorder. Normally, these two functions are performed by the assessment team. However, there may be times where only one member of the assessment team is available. At such times, the roles can be played by one assessment team member, or a member of the organization (a trusted agent) might fill this role, or even a member of the focus group. In the latter two instances, the facilitator must ensure that 1) confidentiality is maintained and 2) the focus group member is allowed to actively participate in the discussion.

Worksheet 3-10 gives an example of how an interview worksheet should look. Note that the type of interview is listed (the type may need to be recalled during the analysis) and a brief checklist of what the pre-interview briefing should include is shown.

Worksheet 3-10: Interview Worksheet

Type	Interview Questions
Focus Group	*Introductory Comment to Group:* Purpose Participant's role Expected results Ground rules Confidentiality of responses Solicit comments/questions

When constructing the interview form, have the customer assist with identifying who will be interviewed, who will attend the focus group sessions, what questions should be asked, and so on.

Questions or topics to be discussed should include:

- What barriers, if any, are present that could affect training, learning, and so on?
- What does the individual, or group, think or feel about the work environment, training program, training equipment, and so on?
- If the objective is to design a new training program, ask for their input.
- Seek their input into the question of implementation.
- Seek their input on the role of management and the worker's role in the organization, both currently and in the future.
- Save some time for open discussion.

Remember, it is always easier to discard information than to collect it. Once the opportunity to solicit input has passed, it is very difficult, if not impossible, to re-establish the conditions under which the information was first sought. Collect as much information as time will allow.

It should be noted here that with recent improvement in telecommunications, the focus group interview process can be successfully accomplished via Web cast or remote video conferencing. Employing these technologies in this way can have a significant impact on reducing the overall cost of conducting an assessment if the assessment team is an independent third party or if the organization is conducting a self-assessment with coaching coming from the corporate training department or an independent third party.

The final activity of the on-site data-gathering step is to conduct an *out-brief*. Similar to the *in-brief* in many ways, except that it is in reverse, the *out-brief* gives the assessment team an opportunity to thank the plant's management for their corporation and to set the tone, or their expectations, of what results the assessment may produce.

The *out-brief* also gives both sides an opportunity to ask any final questions and clarify any potential misgivings. The *out-brief* should take approximately one hour to complete.

The third step in EPRI's STRAnD methodology is to analyze the data.

4
ANALYZE THE DATA

In this step, the assessment team begins to develop an understanding of what the information collected really means and then compares that information and data with the expected outcome while identifying any information gaps that might be present. There are numerous sources that describe how to perform the analysis. This report is not intended to restate them or establish new ones. What this report is indented to do is to provide a sound overview of how to approach the process of data analysis.

Activities during this step are:

- Planning for the data analysis
- Analyzing the data
- Interpreting the data
- Tabulating the data

Planning for the Analysis

As previously discussed, a little planning will go a long way toward saving time. The first step in this activity is to decide what type of analysis will be used. There are three general types of analysis that are associated with training assessments:

- Content: Involves the process of identifying and organizing the strategic focus and business objectives, classifying the findings into categories and sub-categories, and validating key findings and recommendations.
- Process: Used to analyze the data collected during observations and job task analysis.
- Quantitative: Commonly used to analyze and report on information obtained form surveys or form information systems such as those found in human resources or maintenance. Examples of this kind of data are: workforce demographics, numbers (such as coal tonnage, NO_x emissions, and replacement energy cost), or percentages (of outages, of retirements, and so on).

You should consider using content analysis as a means to write up your findings, while the process analysis methodology should be used to analyze the data collected during observations and in performing the training needs analysis. Quantitative analysis should be used to substantiate findings. Most commonly, this type of analysis is used in ROI studies.

Analyzing and Interpreting the Data

Regardless of the analysis method chosen, analysis begins by sorting the data by type, location, or some other identity process. If you refer to the previous section and look over the worksheets, you will quickly notice that they all have some sort of identifying mark: *department*, *type* (general, focus group, and so on), or *stated purpose*. These identifiers are ways in which you can categorize the worksheets (and therefore the data) and begin the process of compiling the information into *chunks* or *themes* from which the assessment report will begin to take shape.

Because each individual's, or organization's, writing style is different, this report will not devote any time to discussing how to write the assessment report. The purpose here is to describe a process of assembling the information into a suitable format that can then be used to write the reports.

Begin this process by sorting the data into groups. As this sorting processes progresses, you will soon discover any errors generated by the way the data were collected. For example, most inaccuracies in surveys are generated by misinterpretations on behalf of the persons completing the surveys. Sometimes interviews or observations are cut short due to unforeseen events. After all, they do take place in the plant. As you begin to identify gaps in the information, take a few moments to complete the *Telephone Interview/Follow-up* (Worksheet 4-1) or the *Additional Information Request Worksheet* (Worksheet 4-2). Either of these worksheets will work. The first one may provide a quicker turnaround, while the latter one may work best from a planning perspective in that it allows you to give some careful consideration of how to go about collecting the information and the risks associated with making the request. They both provide space to document the new information.

Worksheet 4-1: Telephone Interview/Follow-Up

DEPARTMENT: _____

PERSON COLLECTING INFORMATION: _____ PHONE: _____

E-MAIL: _____

Item 1
Item 2
Item 3

Worksheet 4-2: Additional Information/Data

DEPARTMENT: _____

PERSON COLLECTING INFORMATION: _____ PHONE: _____

E-MAIL: _____

Additional Information Need	How to Collect	Risk in Collecting	Information Collected
Describe what information is needed.			

Tabulating the Data

The objective here is to reduce the data from their raw state into some type of quantified format without changing their meaning. Interpretation of data cannot begin until the data have been tabulated. The preferred way to accomplish this is through data comparison. There are four types of data comparisons:

- Chronological arrangement: Arrange the data in order of their occurrence, where the data were collected. This process is especially helpful when analyzing jobs or tasks.
- Partition: The process of decomposition of the data into smaller parts and then studying the underlying functions, relationships, or interdependencies. This process is helpful when the objective of the analysis is to gain a better understanding of how systems function.
- Cause and effect: Conducting a cause-and-effect analysis is especially helpful when you are attempting to analyze why something happened, such as when attempting to identify why there is a performance issue.
- Classification: Use this analysis approach when you are trying to group the data into specific classifications. This approach can be helpful in analyzing the results of a focus group session.

Interpreting the Data

When you are certain that the data have been condensed into a stable form, you are ready to interpret what all these data mean. During this step, look for patterns in the content to emerge. Are there specific groups of data that seem out of place? What content seems to be repeated from one interview to the next? Are there any specific topics that the data seem to be falling under? Are there any trends? If so, do these trends point toward barriers, performance, knowledge, or skills?

Interpreting Data Through Content Analysis

Begin the data intrepretation process by asking and answering questions such as the following:

- What content is repeated throughout interviews/observations?
- What content is specific to a certain group, shift, and so on?
- What content is mentioned infrequently and by what demographic group?
- Are there any performance trends?
- Do the data fall within specific topics? Identify topics.
- What data are missing that were expected?
- Any environment barriers detected?
- Any performance-related trends noted? List/quantify trends.

As you begin to look at the processes that were observed, try to spot inconsistencies. They may point toward deficiencies in training standards or instructor competencies. Are there any processes and procedures that varied from one shift to the next or from one individual to another individual within the same shift? Are there any specific topics that the data seem to fall within?

Interpreting Data Through Process Analysis

Process analysis seeks to identify patterns associated with the following work procedures. This analysis should seek to:

- Identify tasks or steps that are consistent across each shift.
- Identify tasks or steps that vary across shifts.
- Can we establish workflow/process trends from individual to individual and shift to shift?
- Can we establish performance trends? Within shifts? Across shifts?
- Can we classify data by topics? If so, list topics.
- Are there any missing data?

Interpreting the quantitative data may be a little more straightforward because it most likely came from a business system. What you should consider doing here is to assign some sort of measurement to the data (such as percentage or ratio). For example, how many workers are expected to retire in the next five years? What percentage of the overall workforce population do they represent? What is the cost of training an individual (in dollars)? How much should the company expect to pay for training new workers? How much should a new simulator cost? These analyses will be reflected in the ROI study.

Interpreting Data Through Quantitative Analysis

As mention earlier, qualitative analysis seeks to identify facts. Therefore, look for quantifiable information such as:

- Target audience demographics.
- Trends noted/observed.
- Can specific topics be identified? If so, list them.
- Is any data missing?

Identify Key Findings

Now that you've interpreted the data, you should begin to list the key findings. These findings, or discoveries, should be aligned by category. For instance, group your key finding about the organization under that category, and list findings regarding the current training program under *Training*. Likewise, general discoveries about the workforce's skills and knowledge should be listed under a *General* category.

Worksheet 4-3: Current Situation Key Findings

Category	Findings
Organizational	There are no clear performance objectives set at the corporate level for operator qualifications.
Training	20% of those workers interviewed could not identify _____.
Best practices	Instructors are trained in mentoring skills.

Key findings should include, but not be limited to, the following categories:

- Findings directly associated with the original request.
- Organizational-related discoveries.
- Information pertaining to the workforce skill levels and knowledge levels. Note: If the project did not allow for a personal performance assessment (PPA) or evaluation (PPE), then consider recommending that one be performed.
- Perceptions.
- Best practices.
- Observations.

The final step is to align these key finding with the business and performance needs of the organization. Using a worksheet similar to 4-4 will help in performing this step. State the findings and then list the performance and business needs and their associated business drivers. The business driver is listed on this worksheet as the validater for the business need, which, in turn, validates the performance driver. Finalize the four statements and develop a solution that links them.

Worksheet 4-4: Align Results with Needs

Key finding:
Solution:
Performance needs:
Business needs:
Business driver:

After completing this activity, you should have a good understanding of whether the current situation, if remedied by the solution, will support the business and performance needs.

Identify Gaps (Gap Analysis)

This analysis should help determine the difference between the expected, or required, outcome and the current situation that was identified during the data analysis. Worksheet 4-5 illustrates an example of a gap analysis worksheet that could be used to evaluate and validate a gap (in this example, a performance gap). The key finding that supports the current performance is listed along with what was observed and what is expected. The difference, if any, is the *gap*. A solution

that will help close the gap can then be formulated. This solution may or may not find its way into the final report. For a moment, let us consider that the proposed solution was originally put forth by the requestor as part of the request to conduct the assessment. That solution may or may not close the gap, or it may only partially close the gap. In any event, the worksheet validates this and provides you with the supporting documentation that you will need later on when you seek to gain the requestor's commitment and the commitment of management to the proposed solutions.

Worksheet 4-5: Identify Performance Gap

Key finding:
Expected performance:
Current performance:
Gap:
Proposed solution:
How will the proposed solution close the gap?

5
DEVELOP SOLUTIONS

Although the assessment just completed was for an existing or proposed training program, or to validate the need for a plant simulator, the potential solutions are too varied to attempt giving specifics here. However, what can be included here is a worksheet (5-1) that can assist with the formulation of solutions.

Worksheet 5-1: Solution Criteria Evaluation

Analysis Criteria: *This column contains a list of all of the issues discovered and validated during the assessment.*	Related Data: *Example: A new control system (DCS) is being installed.* *Recent increase in forced outages.*	Relationship of Key Findings: *Performance standards for instructor staff are not in place.* *Work relationships between operations and maintenance are weak or non-existent.*
What is the business problem being solved?		
What are the expected outcomes?		
What are the job performance issues? How are they related to the business problem?		
Is there a skills issue?		
Is there a knowledge issue?		
Is there an organization issue?		
Is the organizational issue a functional one?		
Does the organizational issue involve a management issue?		

Worksheet 5-1: Solution Criteria Evaluation (cont.)

Are there any standards? Is that an issue?		
Workforce demographics?		
Is there resistance to changes?		
Are there any technological issues to overcome?		
Are there any special considerations? Do they need to be integrated with the solution?		

How one completes this worksheet is not important. Completing it is. However, it may be beneficial to list findings first, followed by criteria, and add any related criteria last. The important point is that using a worksheet similar to 5-1 will help in organizing thoughts and beliefs and ultimately help in deciding how to lay out the assessment report.

6
GAIN COMMITMENTS

It is now time to condense all of the data, analysis, findings, and solutions into a concise report that presents a compelling case for action. This report should include structure similar to Table 6-1.

Table 6-1
Assessment Report Outline (Typical)

Plant overview: One to two paragraphs that briefly describe the plants in terms of size, location, workforce, and so on.
Business case for action: A brief re-statement of what assessment was conducted. This integrated assessment seeks to answer the following business and financial benefits:
Refresher and new-hire training
Journeyman continuation training
Increased plant availability
Economic losses due to reduced loads
Plant equipment damage reductions
Improved environmental management
Note: This is an excellent place to re-state the company's mission and vision statements.
Executive summary: A one- to two-page overview of what is contained in the report.
Assessment methodology: A brief (two to three pages) statement of the process used to conduct the assessment.
Note: This report is based on EPRI's STRAnD methodology.
Training plan best practices: A concise presentation on industry best practices observed during the assessment.
Simulation best practices.

Table 6-1 (cont.)
Assessment Report Outline (Typical)

Assessment: Depending on the scope of the assessment, this section may be between five and 25 pages.
Recommendations: In this section, state the recommendation and the rationale for it. Be brief and concise. In most instances, this section will be extracted from the report, and along with the executive summary, forwarded up the chain to senior management.
Appendices
A – Acknowledgments
B – Findings
C – Knowledge Assessment
D – Skills Assessment
EXHIBITS
Simulator/EPSS Model Configuration
Simulator/EPSS Design Schematics

Perhaps the most important component of an assessment report is the ROI analysis. No matter how many times the report states a case for action, the lack of definitive financial evidence to back up the case will discourage, or event prevent, management's backing. It is imperative that the report include an informative ROI study. Appendix B provides tools and worksheets commonly used by the Simulator & Training Center to compute and substantiate returns on investments. Use them and include them in the report. They will pay handsome dividends.

The information contained in the assessment report is best presented in person. Before making the formal presentation, get prepared. Hopefully, you, the presenter, were intimately involved in the assessment. In fact, this report assumes that the presenter is perhaps the assessment team leader or, in the case of a small scope assessment, the person who performed the assessment.

In any event, become familiar with the report's details and anticipate the audience's responses and their questions and be prepared to answer them. Some points to consider when preparing for the presentation are:

- What were the issues surrounding the development of the proposed recommendations?
- What is the biggest weakness to a recommendation?

- What could you do to offset or overcome this weakness?
- Can you validate the rationale behind the recommendation?
- Are there any alternatives? If there are, consider including them with the recommendation and then be prepared to defend the recommendation against the alternative.

Having done your homework, you will be able to validate your recommendations in real time with the requestor and any other member of the management team who attend the presentation. You will have gained their commitment to move on to the next stages of STRAnD: planning and configuration.

A
PRE-DEPARTURE (SITE VISIT) CHECKLISTS

Assessment Pre-Departure Checklist	Assigned	Date Required	Comments
Management/admin/HR			
Verify pre-site visit data			
Review plant operation documents			
Training program vision			
Simulator vision			
Changes in controls/plant/equipment permits			
Training plans versus strategic plan			
Operations, training, staffing history			
Perspective on cross training, multi-skill, re-qualification/certification			
Proprietary information: release letter signed			
Training			
Verify pre-site visit data			
Interview training staff			
Tour training facilities/evaluate			
Review plant system documents			
Training program vision			
Simulator vision			
Changes in control/plant/equipment/permits			
Compliance training			

Assessment Pre-Departure Checklist	Assigned	Date Required	Comments
Operations, training, staffing history			
Perspective on cross-training, multi-skill, re-qualification/certification			
Operations			
Verify pre-site visit data			
Operations knowledge assessment			
Review plant operations documents			
Observe plant operation practices			
Interview supervisors			
Review plant system documents			
Review control system documents			
Simulator vision			
Assess:			
Fundamental knowledge			
System knowledge			
Procedure knowledge			
Emissions permanent knowledge			
Malfunctions analysis/corrective action			
Changes in controls/plant/equipment permits			
Operations, staffing, and training history			
Control screen printouts			
Maintenance request process			
Water chemistry and operator understanding			

Assessment Pre-Departure Checklist	Assigned	Date Required	Comments
Assessment team			
Take photos:			
Control room			
Major equipment			
Other			
Proprietary letter signed			
Engineering			
Verify pre-site visit data			
Interview supervisors			
Review control system documents			
Maintenance			
Verify pre-site visit data			
Interview supervisors			
Review control system documents			
Stores			
Verify pre-site visit data			
Coal yard			
Verify pre-site visit data			

B
WORKSHEETS FOR RETURN ON INVESTMENT

Operator-Controllable Losses (OCL)

ERPI Report AF-1041 indicated that 22.5% of forced outages were a direct result of operator or maintenance error.

Type of Loss	Cost of Loss	Potential Savings
Availability		
Thermal performance		
Component life		
Environmental compliance		

Thermal Performance Losses

Stack Gas Temp.	Condenser Pressure	Final Fd H_2O Temp.	Throttle Pressure	Excess O_2	Reheat Temp.	Superheat Temp.	Reheat Sprays

Uncontrollable Losses (UCL)

Uncontrollable Losses	Last 12 Months	Last 24 Months	Last 36 Months
Weather			
Plant design/configuration			
Company policy/procedures			

Cost Benefits Analysis of Simulators (CBAS)

Quantify operator performance to OCL.

Performance Indicators	Findings	Best Practices
Availability	Unit trips Unit load curtailment/derating Unit forced outages Equipment damage Equipment failure	
Thermal performance	Actual average Percent operator controllable	
Component life	Actual average Percent operator controllable	
Environmental compliance	Actual average Percent operator controllable	

Economic Assessment

	Base Year	Base Plus 1	Base Plus 2	Base Plus 3	Base Plus 4	Base Plus 5
Estimated cost						
Est. un-escalated savings						
Est. escalated savings						
Annual present value						
Total present value						
Total present value						
Net present value						
Avg. escalated savings						
Levelized annual savings						

Training Effectiveness of Simulator

- Full scope, first principle
- Reduced scope
- Reference plant

Simulator Benefit Analysis Calculation Worksheet

Unit information:	
Plant name:	
Unit number:	
Unit size (MW):	
Avg. potential savings (APS)/MWh	

Simulator Availability Worksheet

_____ MWh

X

$_____/MWh

=

$_____/Year

_____ Number of operator-preventable trips per year

X

_____ Average time (hours) per trip

=

_____ Annual number of hours lost during trips

X

_____ Unit MW size

=

_____ Average annual MWh losses

X

$_____ / MWh

=

$_____/Year

C
BEST-IN-CLASS TRAINING ANALYSIS STRATEGY

The following content describes a best-in-class training analysis strategy currently being used by Handshaw[1] and Associates, an e-Learning content provider. In their instructional design process (Handshaw ISD Model, Figure C-1), they perform four separate and distinct types of analyses. The process, along with easy-to-follow scenarios that illustrate how to apply the strategy, is described in this appendix.

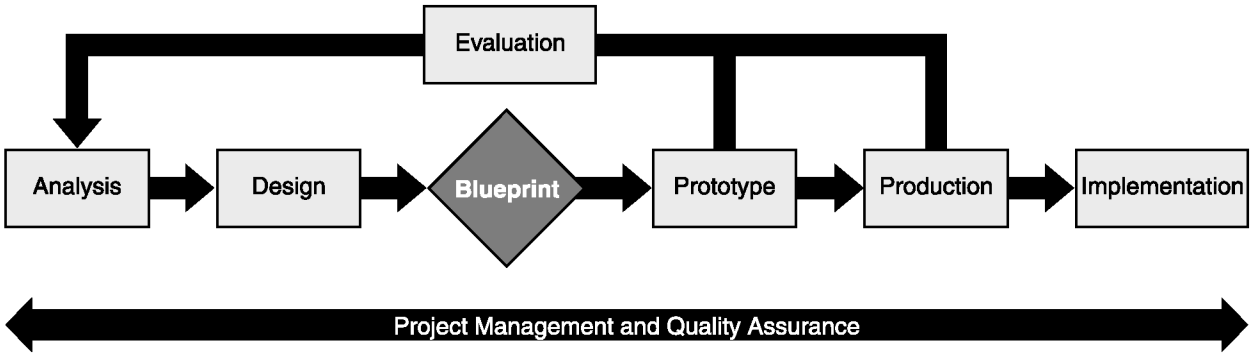

Figure C-1
Handshaw ISD Model

(Used With Permission)

The purpose of the analysis phase is to reach an agreement on the scope and intent of the learning. Information gathered during this phase is critical because it provides important information for the design phase.

- Audience analysis: The target audience must be identified in terms of both general characteristics (demographics) and entry behaviors. This is especially necessary for any self-paced learning because the course must often meet the needs of different audience groups.
- Learning culture analysis: The conditions and constraints under which the training will be conducted must be taken into consideration during the design process. This analysis lists factors in the learning environment that may affect the training design.
- Delivery systems analysis: This analysis surveys and documents the technical environment in which the training will be delivered. At a minimum, for CD-based courses, workstation configuration is examined. For courses delivered over an internal network, intranet, or the Internet, a more comprehensive review of servers, connectivity, and bandwidth is conducted.

[1] Handshaw and Associates, 2001, Charlotte, NC 28269. Used with permission.

- Task analysis: This step is a detailed analysis of the desired performance outcome. The job must be broken down into all the steps and underlying concepts that the learners need to master in order to succeed at the final task. This analysis prevents an important step or concept from being overlooked in the training.

Analysis

Input	Instructional Goal

Audience Analysis

When you walk into a classroom as an instructor, you can learn about your audience. You can tell:

- Whether they are men or women
- Whether they are young or old
- Whether they already know anything about what you are about to teach them

But if you have 500 or 20,000 people signing on to an e-Learning program, you do not really know how to talk to them or what they know or do not know. For your learning program to resonate with how they learn and communicate and for it to be individualized and adaptive in nature, you have to know more about them.

The audience analysis is a key component of the front-end analysis. In the audience analysis, the project team describes both the general characteristics and entry behaviors of the audience.

General characteristics describe the audience in demographic terms, such as age, gender, and education. The project team makes decisions about writing style, testing, and blended learning strategies based on these characteristics.

Entry behaviors describe skills that participants possess prior to training. This information is vital for the development of truly individualized and adaptive instruction.

Exercise: General Characteristics (Look for Demographics)

You have been asked to design a training program for bank tellers of a Southeastern-based bank called Long Line Banks. The training program will instruct the tellers on a new system they will use for daily operations at their Long Line branches. Following are some of the characteristics that you discover. Your job is to determine the implication (if any) of each characteristic.

Examples

General Characteristics		Implications
Ratio – Female : Male = 72 : 28		72% of the audience members are female. Scenarios, examples, and graphics used in the training should reflect this statistic.
High school or equivalent	82%	Only 18% of the audience has education beyond high school. Training materials should be produced at an eighth-grade reading level (level of the average high school graduate).
Some college	9%	
Technical school	3%	
2-year college degree	3%	
Less than high school	2%	
Bachelor's degree	1%	

Now You Try

General Characteristics	Implications
Race: 22% African American 16% Asian 34% Caucasian 20% Hispanic 08% Native American	
Audience members are geographically dispersed throughout the company's footprint. Quiet space for learning in many of the branches is not available.	
The average age of tellers is 27 years. The age range is 21 to 46.	

Output	Implications for Standards, Implementation Support Plan, and Blended Learning Design

Exercise: Entry Behaviors (Look for Skills, Attitudes, and Behaviors)

Studies done within Harvey's Old Rags retail store chain have shown that sales clerks are not meeting their sales quotas. The studies go on to say that confusion about many aspects of their jobs is a major contributor to the lack of sales.

The training director at Harvey's has hired you to develop a training program to improve the way sales clerks do their jobs and, ultimately, increase sales. In interviewing several clerks at Harvey's, you identify several entry behaviors that relate to this training goal. Your task is to determine the training implications (if any) for each of the entry behaviors that you have discovered.

Examples

Entry Behaviors	Implications
All sales clerks have strong selling skills. They are sent through the company's sales training program before going out on the floor.	Sales skills do not need to be included in this training.
Existing clerks know how to work the cash registers. New sales clerks do *not* know how to work the cash registers.	Training on the cash registers needs to be included in training for new hires.

Now You Try

Entry Behaviors	Implications
All new, and many existing, sales clerks have difficulty understanding the information included on the merchandise tags.	
Most sales clerks do not know how to complete the sales receipts. This slows them down when completing a sale.	
There is a great deal of mistrust among the sales clerks. They are hesitant to ask questions or to share information about new procedures or changes to the job.	

Output	Entry Behaviors for Task Analysis

Input	Instructional Goal

Learning Culture Analysis

Every organization has its own learning culture. The learning culture reflects:

- How employees receive learning
- How they are supported during and after the learning events
- How they are held accountable for the training and information
- How well the immediate supervisor and management support learning effort and achievement
- The linkage between learning and performance improvement
- The alignment of learning and business objectives

The learning culture analysis (LCA) is a process of structured interviews with key individuals and sample learners to identify gaps, obstacles, and misalignment that will keep the learning experience from achieving the desired results.

The resulting report defines the existing learning culture and the challenges that the organization faces as it embarks upon a learning culture shift.

Goal of the LCA

The learning culture analysis is designed to help the organization:

- Understand the business need for the initiative
- Articulate the vision and inspire champions
- Identify internal and external partners
- Leverage subject matter experts
- Connect the learner with the desired culture
- Align the initiative with the organization's brand, values, and business objectives
- Help learners find themselves in the organization's story
- Identify methods to measure success

LCA Procedure

To complete the LCA, do the following:

- Conduct interviews with the following:
  - Sample learners
  - Stakeholders in the success of the training initiative
- Produce report defining the following:
  - Existing learning culture
  - Challenges that the organization faces as it embarks upon a learning culture shift
- Share findings with the client

Exercise

You have been hired to develop training for a seafood restaurant chain called Jimmy's Gumbo that is implementing an extensive program for its front-line employees. You have conducted interviews with the project sponsor, appropriate regional managers, and several front-line employees.

Two recurring concerns about the project are the anticipated difficulty of scheduling employees during the workday for training and the desire to have employees take ownership of the responsibility for their own learning and professional development.

Data	Implications
The restaurant is open for lunch and dinner. Employees are required to report at 9:00 a.m. for setup. The restaurants close at 9:00 p.m. Employees must stay as late as 11:00 p.m. for closing procedures. There is no private room, no TV or VCR, and only one computer in the manager's office.	Logistical issues such as lack of time for training can torpedo even the best training program. An extension of that concern is the lack of *uninterrupted* time for effective learning. Scheduling is a significant issue that needs to be resolved.
Existing training takes place in the restaurant and is conducted by the manager or assistant manager. There is a corporate training manual, but training duration, times, and consistency vary greatly from restaurant to restaurant.	While ultimately the regional manager will be held accountable for being sure that employees have completed the training, the learning culture shift that is occurring requires that the employee take ownership for his/her learning. Opportunities to empower learners to take on that responsibility need to be identified.

Now You Try

Data	Implications
Although managers are required to take a written test and pass a cooking test, front-line employees are not measured by any consistent standard. Performance reviews are sporadically or never done.	
Jimmy's Gumbo experiences a high rate of turnover, even for the restaurant industry. The annual turnover rate for front-line employees is 250%, causing the tenure for most employees to be less than 90 days. The annual turnover rate for management employees is 100%.	
The restaurants have historically operated independently. While the regional managers have responsibility for financial performance, the manager of each location has been able to decide how to run the restaurant as long as the numbers are attained.	

Output	Implications for Implementation Support Plan, and Testing Strategy and Blended Learning Design

Input	Instructional Goal

Delivery Systems Analysis

As an instructional designer, you will have to make decisions about how to deliver instruction to your target audience. Many times those decisions will be easy ones based on the availability of resources. For example, you may be told to develop a course for an instructor-led training session because there is an instructor already in place and it has been determined to be the most cost-effective solution. However, there will also be times in which you can influence the way lessons are taught by completing a delivery systems analysis.

The delivery systems analysis (DSA) is another key component of the front-end analysis. In this phase, you survey the resources and technology available to determine current capabilities and the best way to successfully deliver the final product. Depending upon your intended delivery mechanism, you may survey VCRs and TVs, the space available in a classroom, or the capabilities of computers on your audience members' desks.

Once you have determined what to teach and what your audience looks like, your next step is to determine what resources are available to present your material.

A Procedure

To complete the DSA, examine the instructional goal and identify the potential delivery methods for the instruction. Various methods include:

- Instructor-led training
- Computer based training (CBT)
- Web-based training (WBT)
- Workbook study
- Video study

Depending on your selected delivery mechanism, take an inventory of your resources. Determine the obstacles you will have to overcome to ensure the success of the course. As you begin to design instruction, keep your findings handy and always be sure you are developing to the specifications of your delivery method and not above them.

Exercise

Crash and Burn Limited, a California-based computer software company, has recently rolled out its new product, Weave and Wish Integrator, designed to integrate data from multiple data sources. The company is a new one and has hired you as an instructional designer. You do not have much experience with this particular type of software, but you have been charged with designing a training curriculum for the product for various audiences, from internal employees who will be selling or implementing the product to customers who will actually be using the product in their environments. You need to decide how you are going to deliver this training—and quickly.

Data	Implications
You have a relatively small amount of time to complete this curriculum. However, you have resources in engineering that have volunteered their services to get this program up and running.	Because you do not have much background knowledge on the subject, you will have to maximize your use of subject matter experts (SMEs). Luckily, you seem to have a willing group of SMEs dedicated to your cause. Use them.
As you go about collecting data about the Weave and Wish Integrator, you learn that one engineer has a training background working as an instructor.	This is the person you need. Go to your boss, his/her boss, or whomever makes the call on resource allocation. You need this person to teach your classes, at least in the interim. It is your quickest and best solution.

Now You Try

You talked to Jane Solvit, and she graciously allowed you to use engineer Bill Nowitall as your instructor for the first month of classes. You are very excited to get the ball rolling. In fact, your manager has hired a full-time instructor who will serve as Bill's protégé for the next month until she is ready to teach classes on her own. Your first objective has been attained.

Now, here is a new one. Crash and Burn Limited has gotten a lot of up-front funding and, as a result, is opening offices all over the country. There is a whole new set of challenges for you now. There is only going to be one training department and one full-time trainer, with lots of employees to train. You have not even really started to think about training customers yet.

Data	Implications
Offices in Charlotte, Chicago, and Phoenix are opening soon. There will be sales and consulting teams targeting their respective regions. They need to experience the same training experience as those at headquarters.	
Crash and Burn Limited will spare no expense for technology equipment. Remember all that funding? They will use it here.	
The president and CEO of the company, Susan Demandit, wants the sales team ready to sell within the month. The product rollout cannot occur without an educated sales force.	

Another One

Now it is time to work on the courses for the customers who actually buy and want to implement Weave and Wish. From all the work you have completed getting training manuals and presentations ready for the instructor-led courses, you now have a good grasp on the course content. You decide that the first customer course you create should be an introduction to Weave and Wish.

Data	Implications
The introductory course will consist of an overview of Weave and Wish with some general setup tasks such as installing the product. The course will be designed for an audience of computer-savvy technicians who are responsible for installing and administering Weave and Wish.	

Output	Implications for Implementation Support Plan, Testing Strategy, and Blended Learning Design

Input	Instructional Goal

Task Analysis

The task analysis is the first important step in the instructional design process that helps differentiate this process from more traditional or non-systematic approaches. This analysis works at a very detailed level to define the required learning outcomes in terms of procedural steps and the knowledge required to choose or complete that step in the process or concept being learned. Think of it as a blueprint for a learning process as you would use a blueprint for building a house.

It is important that you make sure that you are working from an agreed-upon "best practice" before you begin the labor-intensive and, at times, tedious task of preparing your task analysis.

Procedural Analysis (Motor Skills)

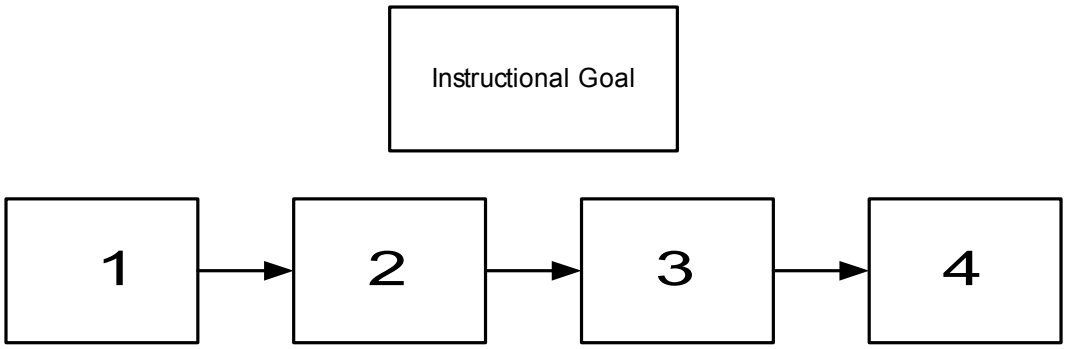

Figure C-1
Procedural Analysis (Motor Skills)

Hierarchical Analysis (Intellectual/Knowledge)

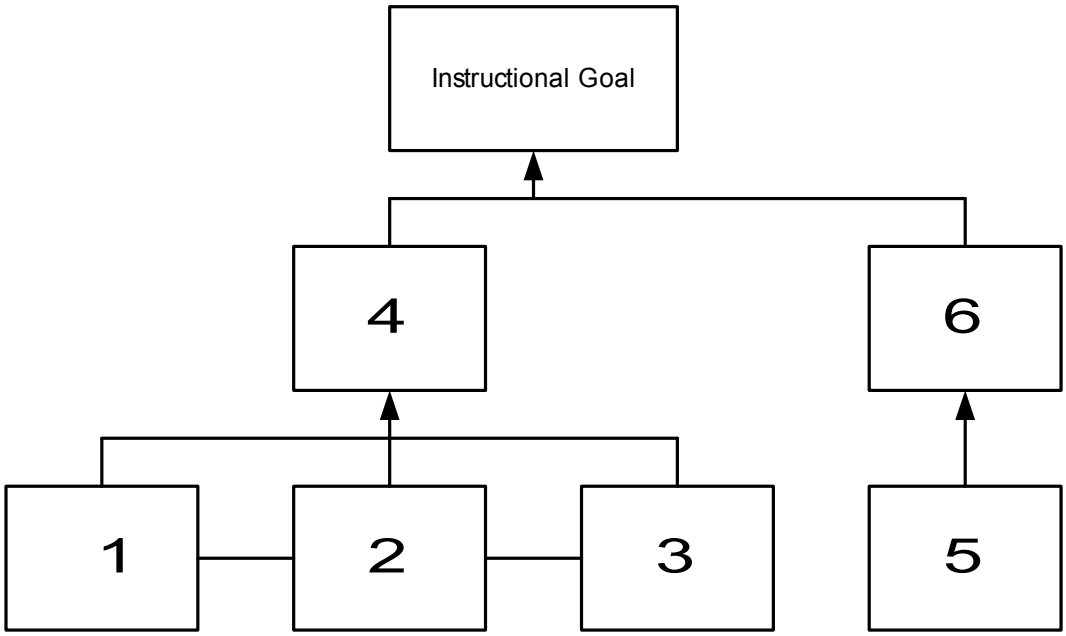

Figure C-2
Hierarchical Analysis (Intellectual/Knowledge)

Combination Analysis

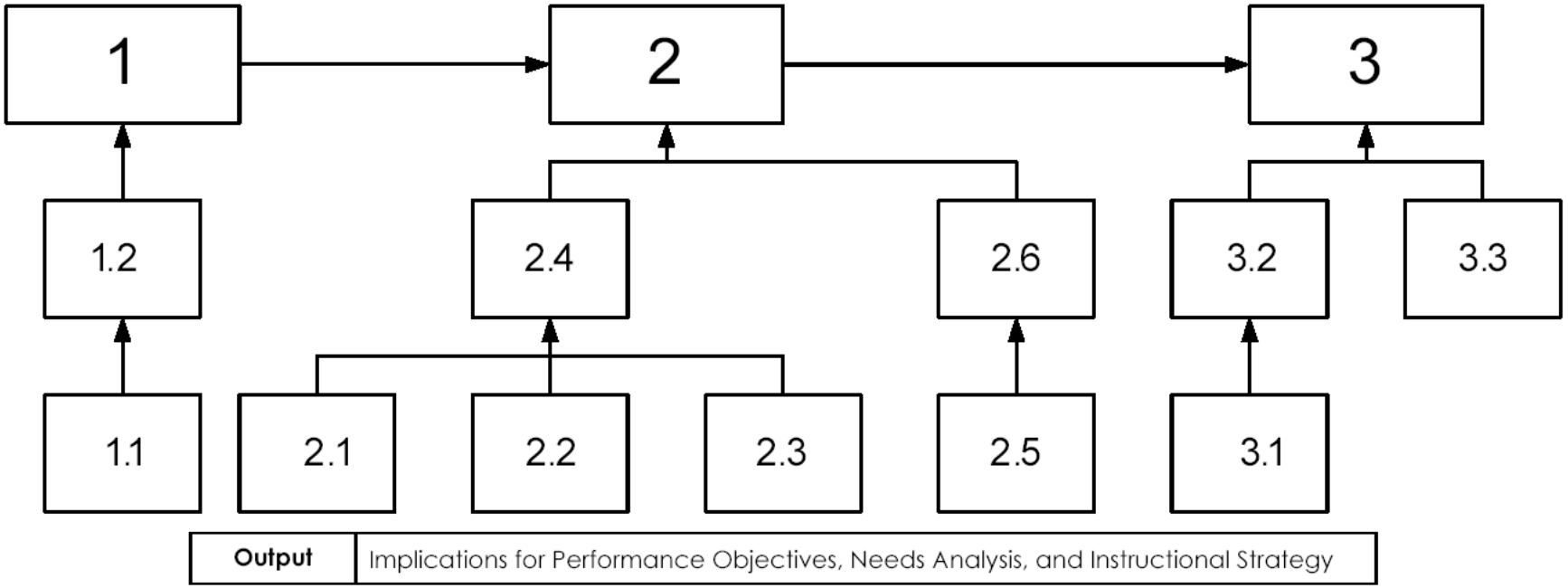

Figure C-3
Combination Analysis

Sample Task Analysis: Selling a Checking Account

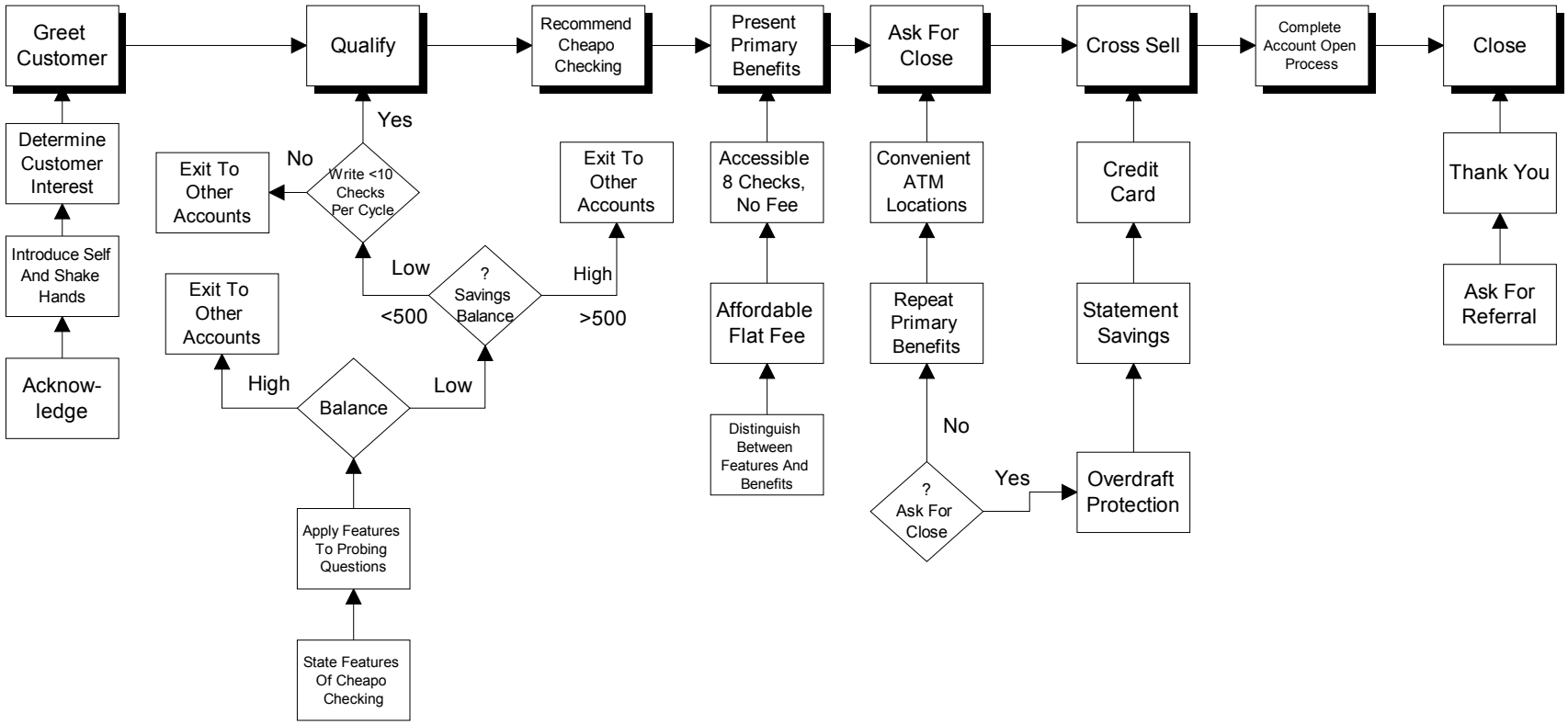

Figure C-4
Sample Task Analysis: Selling a Checking Account

Program:

Training and Simulators for Human Performance Enhancement

About EPRI

EPRI creates science and technology solutions for the global energy and energy services industry. U.S. electric utilities established the Electric Power Research Institute in 1973 as a nonprofit research consortium for the benefit of utility members, their customers, and society. Now known simply as EPRI, the company provides a wide range of innovative products and services to more than 1000 energy-related organizations in 40 countries. EPRI's multidisciplinary team of scientists and engineers draws on a worldwide network of technical and business expertise to help solve today's toughest energy and environmental problems.

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