TITLE

Tools and Techniques for Implementing ABC/ABM

CREDITS

This statement was approved for issuance as a Statement on Management Accounting by the Management Accounting Committee (MAC) of the Institute of Management Accountants (IMA®). IMA appreciates the collaborative efforts of the Cost Management Competency Center at Arthur Andersen LLP and the work of Dr. C.J. McNair, CMA, of Babson College, who drafted the manuscript.

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IMA INSTITUTE OF MANAGEMENT ACCOUNTANTS
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Tools and Techniques for Implementing ABC/ABM

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I. RATIONALE

Activity-based costing and activity-based management have received accolades in the 1990s and will continue to grow at a rapid pace as we move into the 21st century. In the private sector, thousands of companies have adopted activity-based costing and management approaches to control cost and grow revenue. These efforts are taking place in companies that span a range in size, focus, and diversity, such as Hallmark, Tampa Electric Company, John Deere, American Express Inc., and the U. S. Postal Service. Local and national public sector organizations are also beginning to apply activity-based cost management (ABCM) for purposes of reinventing government.

Gaining the full benefits of ABCM lies in assessing, designing, and implementing the underlying data collection and analysis system. An effective ABCM system focuses on providing information on the strategic business issues facing the organization as well as on meeting the operating data requirements of the organization's decision makers.

Achieving a robust, effective ABCM design begins with the initial planning phase of the implementation and continues through the development of ongoing improvements and adjustments to the system as an organization's needs change.

II. SCOPE

This Statement on Management Accounting (SMA) is addressed to financial professionals and others who may lead or participate in efforts to implement ABCM in their organizations. It supplements two of the Institute of Management Accountants' SMA publications, specifically:

- *Implementing Activity-Based Costing*, published in 2006, which describes ABC terms and the basic ABC implementation process; and
- *Implementing Activity-Based Management: Avoiding the Pitfalls*, published in 1998, which describes key pitfalls in each stage of ABM implementation and how to avoid them.

The focus of this SMA publication is on *core* tools and techniques needed for successful ABCM implementations. While other tools and techniques exist, this document will emphasize those that are essential for the majority of ABCM initiatives.

The discussion presented in this SMA assumes that the reader is already familiar with basic ABCM concepts. It is intended for organizations that have already decided to implement ABCM and have developed a reasonable understanding of the costs, benefits, and challenges of this effort. The tools and techniques presented here will apply to:

- all levels of an enterprise whether large or small;
- all functions in an enterprise; and
- enterprises in all business sectors.

This guideline will be useful to those who may lead or participate in efforts to implement ABCM. It will help them to:

- develop a framework for planning and managing the implementation of ABCM;
- learn to use core tools and techniques to improve the effectiveness of ABCM projects; and
- understand the roles and responsibilities of financial professionals in ABCM implementation projects.

III. ROLE OF MANAGEMENT ACCOUNTING

The financial professional plays a crucial role in assessing, planning, designing, implementing, and maintaining an ABCM system. Serving as the

financial expert on the implementation team, this individual brings to this effort a unique perspective and ability to bridge the gap between traditional financial information and the requirements of the new approach. Identifying what information (financial, operational, etc.) is needed, finding data that already exists to support these requirements, and structuring new data collection and reporting practices are just a few of the activities the financial professional supports.

The role of management accounting in ABCM implementation efforts typically includes the following activities:

- identifying key information requirements for the ABCM system;
- assessing existing data sources and their applicability to the new structure;
- developing data collection methods for new data sources;
- designing and creating the ABCM system database/module;
- analyzing and designing report formats and structures;
- integrating ABCM data with existing financial and nonfinancial systems;
- assessing and monitoring data integrity within the ABCM system;
- creating and delivering educational programs to train individuals in all parts of the organization on how best to access, use, and interpret activity-based information;
- supporting the design and implementation team in the development of the ABCM system and the desktop decision support tools that will be made available to line managers; and
- tracking the results, costs, and benefits provided by the ABCM system both during and after implementation.

Management accounting drives the ABCM initiatives in many organizations, but it is critical that a nonfinancial champion be part of the project from the outset if the initiative is to be seen as more than "just another finance project." An ABCM's value is defined by its users; understanding the needs of organizational decision makers and gaining their acceptance and support for the system is essential if the system is to be institutionalized and benefits gained.

IV. PROJECT IMPLEMENTATION STEPS

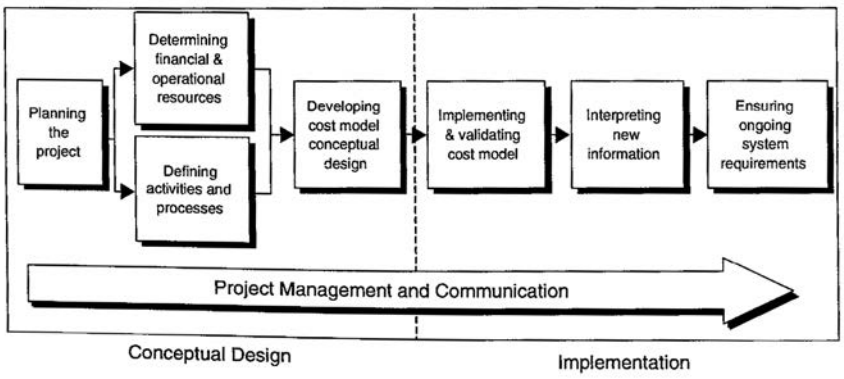
Any activity-based initiative has seven key steps. These seven steps, along with the pre-project preparation, represent a standard work plan, a framework for training, and a basic structure for the implementation of ABCM.

While each ABCM project is unique, an organization's actual implementation plan will likely include most of or all seven steps outlined in Exhibit 1, although not necessarily in the exact order presented. For example, sometimes activity analysis is completed before resource analysis, sometimes resource analysis is completed first, and sometimes they are done simultaneously. Keeping this in mind, the seven basic steps to ABCM implementation are:

- planning the project;
- determining financial and operational resources;
- defining activities and processes;
- developing the cost model conceptual design;
- implementing and validating the cost model;
- interpreting new information; and
- ensuring ongoing system requirements.

While organizations can modify the sequence and emphasis placed on these steps to meet the needs of a particular situation, these

EXHIBIT 1. ABCM PROJECT IMPLEMENTATION STEPS



activities are recommended as a guide for implementing activity-based initiatives.

V. IMPLEMENTATION TOOLS AND TECHNIQUES

Planning the Project

While the planning phase of an ABCM implementation represents only a small part of the total time and effort of an ABCM initiative, it has a major impact on the overall success of the implementation. Key objectives in the planning phase are:

- identifying the business imperative;
- confirming objectives and scope of the project;
- identifying and educating key stakeholders and sponsors;
- organizing and educating project teams; and
- developing implementation work plans and schedules.

Communication, top management and sponsor support, as well as the education of project teams regarding the objectives and benefits of the ABCM system lay the foundation for downstream acceptance and use of the activity-based information. No matter how good the underlying ABCM information is, it will have little or no value to the organization if it is not accepted and used effectively.

During the planning phase, core tools and techniques utilized to improve the effectiveness of the overall implementation include:

- agreed-upon project objectives and scope;
- a project team; and
- ABCM implementation, education, and training.

Agreed-Upon Project Objectives and Scope

Before ABCM is implemented, management must plan how it will be used, or its effectiveness will be lost. The ultimate success of the ABCM implementation requires consensus and clarity of the overall objectives to align efforts and resources efficiently and effectively. Objectives frame the design and implementation of the ABCM cost and reporting structures.

When the objectives of the proposed system are well defined (i.e., to improve the accuracy of cost estimates for customized product offerings, or the cost of serving customers, whether geographically or by class), ABCM designers and

EXHIBIT 2. THE BUSINESS IMPERATIVE AND DESIGN IMPLICATIONS

Business Imperatives	Design Implications
Product and customer profitability and pricing	• Activities below the cost center level • Product- and claim-type sensitive cost drivers • Fixed versus variable contribution implications of pricing decisions • On-line inquiry and "what if" capabilities
Volume-based budgets and plans and effective control during contract year	• Fixed versus variable, to understand leverage in growth • Standard unit costs to compare "volume sensitive" budgets with actuals • More timely reporting of cost accounting information
Overhead (especially corporate unit) expense management and control	• Costs allocated only when center manager can do something about it • Allocations communicated in meaningful terms to users • Management process and culture changes
Reaping benefits of technology and improved business processes	• Periodic updates of unit cost estimates as process changes materially • Rigorous activity-based evaluations of technology impact on activity levels and costs
Quantifying cost/benefit of "managed care" actions	• System tracks and aggregates activities to services (e.g., cost containment) across cost centers (CCs) • On-line inquiry (e.g., medical policy, review, and customer services)
Focusing dollars on high-value activities and quality	• System tracks and aggregates activities and their costs to key quality concerns (e.g., rejected claims) across all CCs • On-line inquiry and "what if" capabilities

Source: Angela Norkiewicz, April 1994: 29.

users should develop targeted, precise definitions of required data and how the resulting information will be used. Without this clear specification of objectives and scope, the ABCM system becomes difficult to design, implement, or use. The specification of project objectives and scope should include the following items:

- the business imperative;
- planned use of the information;
- users of the information;
- product and service information;
- units of focus; and
- implementation approach.

Business imperative. Since the primary purpose of an ABCM system is to add value to the organization, it should be justified on the strength of the benefits it will provide. For the ABCM system to be effective, it must provide new or useful information for managing the organization. That is, it must be able to generate information that will be useful in the pursuit of improved productivity in terms of costs and profitability. The ABCM model needs to be designed with this specific information and these analysis requirements in mind.

For example, when Pennsylvania Blue Cross/Blue Shield embarked on its ABCM effort, the types of issues and related priorities driving the change ranged from customer to product profitability. This analysis was accomplished by focusing efforts on high-value-creating activities, as illustrated in Exhibit 2. Based on the level of information identified, the framework for an ABCM model emerged.

Planned use of the information. Downstream uses of the ABCM information drive the design of the system and reports. Questions that need to be asked include:

- What specific information will be provided?
- How will the information be used?
- What format, level of precision, and frequency do users require? (i.e., fully-loaded costs, core versus support costs, etc.)

Users of the information. It is important to identify the primary and secondary users of the ABCM system in order to define their specific needs and ensure that all necessary decision support information is built into the model and reporting structures. For example, National Paper & Packaging made a conscious decision to adopt an ABCM system using a relatively simple model that provides a moderate level of detail. This choice was based on the way National Paper would use the information and who would be applying it. Because the majority of the users were in nonfinancial positions, the model would have to be meaningful to those in operations.

This foresight delivered visible benefits to National Paper and its people. The benefits included: (1) easy use and high-level buy-in to the process and information by the sales force, as evidenced by their active involvement in developing and implementing customer profit improvement plans, and (2) the use of the model to quantify the potential impacts and communicate the benefits of alternative supply chain programs to vendors, resulting in significant sales and profit growth for both channel partners.

Product and service information. Understanding what product and service information is available, how the products or services will be organized for analysis, what types of product/service decisions are likely to be made on an ongoing basis, and where in the organization these decisions will be made, provides the basic structure for the data collection process and the framework to perform analysis. Typical product- or service-based structures include:

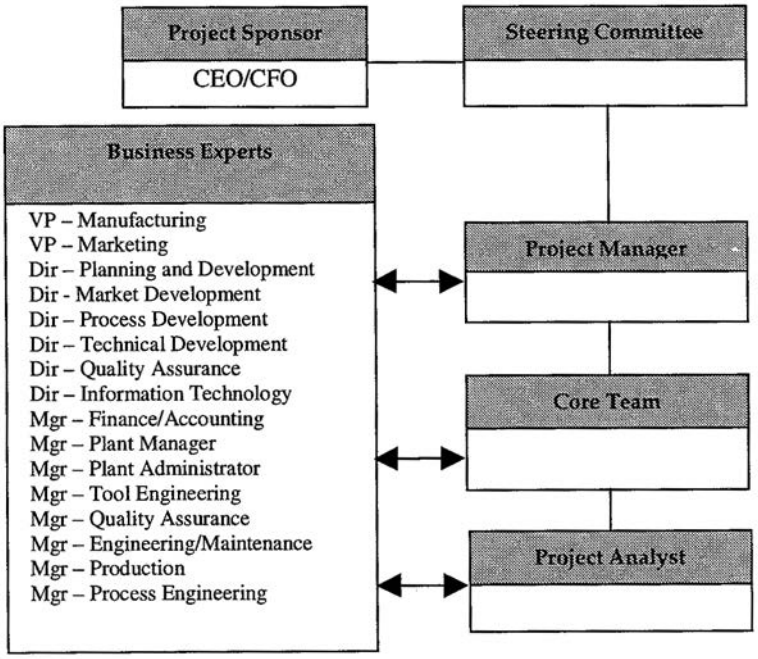
- product lines;
- service offerings;
- sales channels (direct sales, value-added distributor (VAD) or value-added reseller (VAR);
- customer types; and
- geographical market segments.

For example, National Car Rental System Inc. elected to take a customer-focused design approach to structuring its ABCM model and management reporting. This gave the organization a better understanding of its service costs and related customer group profitability. Refining the costs of various buying characteristics allows National to generate cost estimates useful in evaluating past and future profitability of marketing campaigns to a given customer group.

One or all of these dimensions can be built into the ABCM system through the use of targeted, well-defined data attributes that become tags for the data in downstream reporting and analysis.

Units of focus. Another important dimension of the planning and design of an ABCM system is the identification of functional and/or process areas that will be included within its scope. An

EXHIBIT 3. TOP-DOWN ABCM PROJECT STRUCTURE



entire business unit, one or more sites within that unit, or a particular product/service line can be the basic unit of focus for an ABCM project.

Identifying the structure at Meridia Home Care Services, a Cleveland-based health care system, revolved around identifying the portion of the system that should be costed and how that portion should be classified. To that end, the project team identified Meridia's key functions, shown below, as the focus of its ABCM project.

Standard Home Care
Special Services: Pulmonary
Special Services: Mental Health
Special Services: Maternity
Special Services: Infusion Therapy
Special Services: Wound Care
Special Services: Diabetes Education

Identifying the structure to be costed in this way allowed Meridia to obtain critical data for the development of health care proposals, as well as the ability to calculate break-even analysis in aggregate for the agency as well as by service discipline or provider group.

Implementation approach. Most organizations choose from one of the following implementation approaches:

- *Prototype*: a demonstration of concepts and principles of ABCM based on examples;
- *Pilot*: a program usually done at a unit-of-focus level using actual or budgeted costs to develop ABC rates and product costs;
- *Staged*: a program usually done for a group of focus units. It involves extending the pilot approach into the ongoing operations of the business. In its advanced stages, it may include using ABCM for pricing, performance

measurement, process value analysis, activity budgeting, or variance analysis; and

- *Full-scale*: a program done for the entire organization. The advantage of a full-scale implementation is that everyone from the start begins to use the new system at the same time, an option that takes a great commitment of time and resources.

A Project Team

Developing a cross-functional perspective and application of ABCM begins with the project team. It is imperative that the team include key individuals from various functional and management levels if the ABCM project is to be seen as more than just another finance initiative.

While team structures can and do vary by organization and implementation, several basic roles need to be assigned if the ABCM project is to proceed smoothly, as suggested by Exhibit 3. The advantage of this structure is that it assigns accountability and responsibility for the ABCM results to all levels of management. This project team structure can be a major factor in removing existing barriers and communicating the strategic goals of the ABCM system. Finally, it provides top-down communication of individual accountability for the project results and emphasizes senior management involvement.

Project sponsor. The project sponsor serves a critical role in the ABCM implementation, communicating with senior management and securing their commitment to the effort. The sponsor's primary role is to provide overall direction to the project team. Project sponsors are typically senior executives who strongly believe that improved financial information could enhance the strategic and operational decision-making process and provide better measures to quantify project and organizational performance.

Steering committee. The primary role of the steering committee is to establish high-level direction, to provide project oversight, to review project status for adherence to strategic objectives, and to resolve cross-organizational or cross-functional policy issues. It would be appropriate for either the chief executive officer or the project sponsor to appoint the steering team.

At Pennsylvania Blue Shield, the steering committee comprised senior managers from all areas of the organization. They met frequently in the early stages of the project to set the direction and make decisions regarding the use of the ABCM information. They then appointed individuals from their staff to serve on the core team.

Project manager. The primary role of the project manager is to coordinate the entire project, ensuring that the activities are carried out so as to meet project objectives, timelines, and budgets. Some of the core responsibilities of the project manager are maintaining open communication with the project sponsor and the organization while providing cost management expertise or ensuring that this expertise is readily available as input to the project team.

According to successful ABCM implementers, the project manager is the single most important project team member. They state that this individual accounts for more than 70 percent of the success or failure of a organization's ABCM implementation initiative.

Project analyst. A project analyst usually is assigned to work full time on the project as a team member. The role of the project analyst is to document team proceedings and to build the ABCM model.

Core team. The core team is charged with performing the day-to-day tasks designated in the project implementation approach and plan. The core team also serves as a liaison to the organization, communicating project achievements, benefits, and progress to other managers and affected parties. Two factors drive the success or failure of a core team: (1) the team makeup and commitment and (2) the team's "communication efforts."

- *Make up and commitment*. It is critical that this team be crossfunctional. A finance-only team is bound to fail due to lack of ownership by the end users, lack of full understanding by the financial professionals, and lack of interest in "just another finance project." It is also important that the core team be fully committed for the duration of the project.
- *Communication efforts*. The team must publicize its implementation efforts throughout the organization because ABCM will change the entire way that the organization looks at cost management and at its product/service cost.

Business experts. The role of the business expert on an ABCM project team is to provide operational or technical expertise to the project core team. A business expert should be involved in the project only on an "as needed" basis. As specific implementation challenges emerge, the business expert can help the core team identify solutions that will reflect organizational realities and meet with acceptance from affected individuals.

ABCM Implementation, Education, and Training

Training is an important tool of implementation because much of the analysis is quite different from the analysis used in traditional cost accounting. Three levels of education and training must be considered early in any ABCM project: senior management, users, and project team members. Each of these groups, and their unique educational needs, should be specifically addressed if the ABCM project is to be a success. The extent of training will vary depending on the existing skills and knowledge of various participants as well as their degree of interaction with or dependence on the system, as suggested by the following discussion.

Senior management. Much of the focus on senior management training will be on the definition and uses of ABCM information as it applies to the organization at large. The primary objective of this education is to ensure the active support and buy-in of management to the project and its objectives.

It is important that senior management has a clear understanding of what the ABCM project will or will not accomplish. Misunderstandings about the capabilities of the system and the types of information it will provide can be addressed during the training phase, preventing many downstream problems. Conversely, the ABCM educational process can be used to point to areas that need improvement.

Users of the information. The eventual users of the ABCM system need a more in-depth knowledge of the model, including data reporting formats and capabilities of the system, than does senior management. The type of information that should be conveyed is usually available in two formats: hardcopy reports and executive information systems (EIS). User training includes some or all of the following items:

- what information is available from activity-based costing;
- how activity-based information should be used in decision making;
- the limits and underlying cost behaviors of activity cost data;

- how to perform sensitivity analysis with activity data;
- what reporting structures are built into the ABCM system and what types of ad hoc reports are supported;
- reliability and accuracy of various estimates;
- assumptions used to create the estimates wherever these assumptions impact the resulting decisions; and
- how to interpret the ABCM information under varying conditions.

Understanding ABCM information, how it differs from existing cost data, and how the resulting information should be used in decision making are the core elements of user education.

Core team members. Members of the core team should be trained to perform their role on the team. The training does not need to occur in any particular sequence, nor does everyone on the team need to be trained in software use or other details of the underlying system. For example, many software tools are available to do ABCM, and each requires specific training for those who will actually use the software.

Keeping team member training focused on required skills will maximize the use of time and ensure that the project does not place unnecessary demands on team-member time or resources.

Determining Financial and Operational Resources

Activity costs are calculated by determining the cost of the resources consumed by the performance of the activity. An important step in ABCM implementation, therefore, is to understand and define the operational and financial resources consumed by an activity, such as equipment, technology, facilities, materials, labor, supplies, and any other items used in the performance of a specific activity. The objectives of the resource analysis phase of the ABCM initiative are:

- understanding the organization's financial and operational resources; and
- identifying the resource drivers.

For this effort, it is useful to obtain an up-to-date and reconciled organization headcount, floor layout plans, and an inventory of machines and computer systems applications. These items are necessary to ensure that all aspects of the organization's resources have been appropriately captured. Several core tools and techniques used at this stage of the project include:

- general ledger and payroll information;
- labor and non-labor resource templates; and
- resource hierarchy.

General Ledger and Payroll Information

The general ledger is the primary source of cost information for the ABC model. Most ledgers are structured in a hierarchy of accounts and subaccounts. Typical accounts might include Labor, Depreciation, Occupancy, and Material. Subaccounts contain more detailed account information; for instance, labor subaccounts might be contract labor, benefits, overtime, and vacation. In most cases the ledger subaccounts are mapped to resource cost elements in the ABCM model, using what are known as resource drivers.

Payroll information is needed when it becomes necessary to identify unique labor classifications for a given cost center. For example, if tool and die repair machinists and machine operators were in the same cost center, then the payroll system would be used to differentiate the resources, so that their cost would be assigned to their respective activities. In any case, a map-

EXHIBIT 4. LABOR RESOURCE TEMPLATE

-Operations: Lineman CSA (Dave Wilson & Bill Stewart)

Time Distribution in Percentages					
Activity	Crew Leader	Lineman	Telephone	Vehicle	PC/Network
Number of positions		22			
Plan work day	10	5			X
Close out work day	5	5		X	X
Travel to/from job site	10	10		X	
Attend required meetings	5	5			
Direct and control distribution work	20		X	X	X
Unload/set/remove poles	10	15		X	
Install/remove anchors	15	15		X	
Frame poles/string wires	20	40		X	
Set up personal protection devices	5	5			
TOTAL	100	100			

ping must be done so that period costs, whether budget or actual, are captured.

Labor and Non-Labor Resource Templates

The key data elements of operation resources are departmental labor and non-labor costs. Data templates can be developed for assigning these resources.

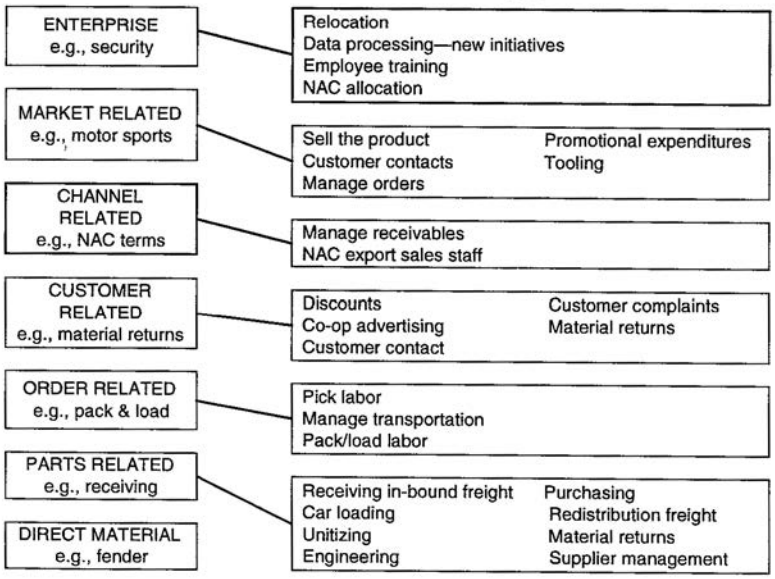
A typical labor template might include the labor classification, compensation level, skill level, department, hours worked, or percent of time by activity. This template does not need to include individual names but should instead focus on general types of labor used, where it is deployed, and the activities and outcomes it supports. A typical labor resource template is illustrated in Exhibit 4.

In a related way, non-labor templates can be developed that identify the placement, cost, capacity, and current use of material, equipment, occupancy, supplies, and related support costs. To the extent possible, non-labor costs should be directly assigned to activities that consume them. Creating data tables will improve the efficiency and usefulness of the ABCM database, serving as a support for both implementation and maintenance of the ABCM system.

Resource Hierarchy

Classifying resources by assigning attributes and organizing them into a hierarchy provides a useful way of viewing information and making decisions. This is depicted in Exhibit 5. The exhibit illustrates how resources are classified and consumed by different levels of the service parts operations of General Motors (GM). Identifying the outputs at each level of the organization as

EXHIBIT 5. ABC CLASSIFICATION OF RESOURCE COSTS



well as the type and number of resources consumed, is a key technique of ABCM system design.

Defining Activities and Processes

In the cost model conceptual design step, activities and activity drivers must be identified. Regardless of an organization's size or number of employees, an almost unlimited set of activities might be selected.

Driven by defined goals and required information, the choice and number of activities will vary based on the use of the information. For instance, detailed definitions of activities are often not necessary to improve product cost accuracy or decision making. More detailed activity cost data is necessary for operation managers who want to use this information to manage their workload.

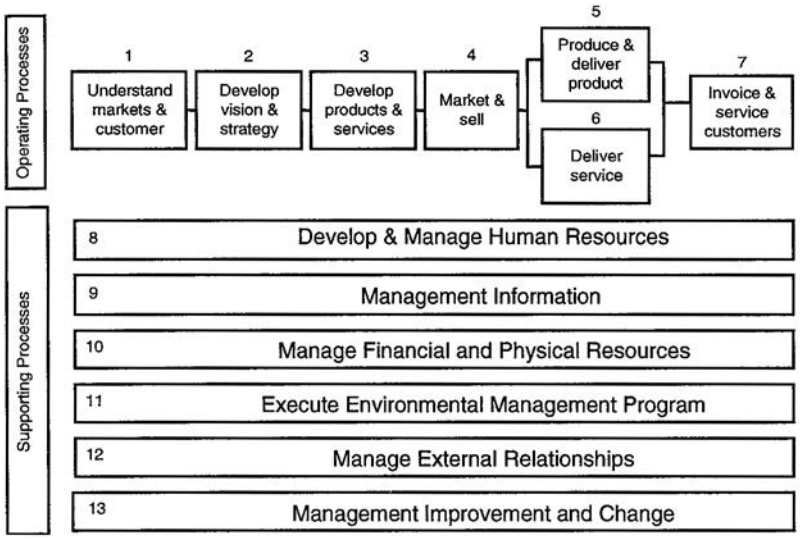
How detailed should the ultimate activity list and definition be? The trade-off faced in each situation is the benefit of the added detail versus the added cost to collect and maintain more data. A good rule of thumb is to define an activity as the work that would typically make up 5 percent or more of someone's effort and to define tasks as those elements of work needed to do an activity. A process is then defined as a collection of related activities. The objectives served by activity and process analysis include the following:

- identifying activities and business processes;
- defining outputs and output measures;
- defining activity attributes; and
- identifying activity cost drivers.

Several core tools and techniques are typically used in this effort including:

- universal classification scheme;
- activity dictionary;
- activity effort analysis worksheet;
- activity attribute analysis;

EXHIBIT 6. UNIVERSAL CLASSIFICATION SCHEME



Source: Arthur Andersen and International Benchmarking Clearinghouse.

- process mapping; and
- process overview form.

Universal Classification Scheme

The Universal Classification Scheme can be used to assist in classifying the activities within an organization into the correct business processes. The scheme, illustrated in Exhibit 6, contains 13 business processes that apply to almost any organization in any market.

The first seven processes are operating processes that companies follow to develop and move products to market. These processes include understanding markets and customers, designing products and services, and marketing and selling. The last six processes are management and support processes that make it possible for the organization to perform its operating processes effectively. These processes include human resources management, information systems management, and finance and accounting.

Beyond these 13 high-level business processes is a hierarchy of subprocesses that further define the activities of each category. An example of the subprocess associated with "deliver product" is depicted in Exhibit 7.

Organizations use the process classification scheme for different purposes such as determining the scope of their ABCM analysis or for benchmarking purposes. The scope will be dictated by the objectives the organization wants to achieve through ABCM and the questions that it wants to be able to answer based on the ABCM information.

For example, the principal focus of the ABCM initiative at Furst-McNess, a leading distributor of agricultural feed and household products, was to identify and relate major activities, costs, and cost drivers associated with how it "goes to market." The organization included in the scope of

EXHIBIT 7. DELIVER PRODUCT SUBPROCESS

5	DELIVER PRODUCT
5.1	Make Delivery
	5.1.1 Arrange product shipment
	5.1.2 Deliver products to customers
	5.1.3 Install (if specified)
5.2	Manage Delivery Process
	5.2.1 Document and monitor order status
	5.2.2 Manage inventories
	5.2.3 Assure quality
	5.2.4 Schedule and perform maintenance
	5.2.5 Monitor environmental constraints

Source: adapted from Steve Player and James W. Gibson, Jr., 1997:152.

its ABCM project only those processes associated with its "go-to-market" strategy.

Activity Dictionary

An activity dictionary is an absolutely critical tool in any ABCM project. It is a comprehensive listing of all definitive activities including their descriptions, attribute tags (if any), cost drivers, suppliers, customers, and any input and output measures. The dictionary also serves as an effective communication tool when activity analysis worksheets are distributed to employees.

The sample activity dictionary illustrated in Exhibit 8 begins with employee interviews led by the core team. The interviews establish how employees spend their time in terms of the top 10 to 15 activities they perform. The rule of thumb for assigning time percentages is to equate an activity with no less than 5 percent of the day. The team develops a comprehensive list of these detailed activities and then enters each one in the "Activity" column of the sheet. Generally, activities are described using verb-nouns. Then the team lists the tasks associated with each activity in the "Description" column, giving a deeper sense of the activity.

The next element of the activity dictionary is the "Driver" column. The driver is a unit of measure

EXHIBIT 8. ACTIVITY DICTIONARY FOR PRODUCT DELIVERY

Activity	Description	Driver	Process	Process Step
1. Filling orders	Pulling all line items from stock on shelves in warehouse to fill order and placing in staging area	# of line items filled	5.1	5.1.1
2. Sending UPS shipments	Printing UPS label from system; labeling box; taping box closed; shipping order to customer via UPS carrier or other common carrier	# of UPS shipments	5.1	5.1.1
3. Unloading trucks/receiving products	Physically unloading material from vendors and placing items into stock on shelves in warehouse; checking items in from vendors; logging into system items received; restocking when inventory on shelves is low	# of line items received	5.2	5.2.2

that reflects the frequency and intensity of the demand placed on the activity by a cost object. This enables the organization to measure resource consumption by activity. For example, to measure the activity "processing invoices," many companies would use the activity driver, "*the number of invoices processed*."

To illustrate the linkage of an activity dictionary with the process classification scheme, two additional columns have been added to the activity dictionary in Exhibit 8. These columns relate to the activities performed by warehouse and delivery employees of the sample organization.

Activity Effort Analysis Worksheet

Once the activity dictionary is completed, the next step is to gather information from the organization's employees regarding how much time they spend on each major activity. This step is usually performed using activity effort worksheets. An example of a worksheet is depicted in Exhibit 9.

Activity data can be derived from a variety of different sources including operational records, brainstorming, procedures manuals, quality studies, job descriptions, labor reports, process charts, interviews, and workshops. The method chosen depends on the amount of time available to complete the work as well as the resources

EXHIBIT 9. ACTIVITY EFFORT WORKSHEET

Summary of Job Activities
Function/Group: _____

Supervisor: _____
Prepared by: _____
Phone #: _____
Date: _____

Complete a separate form for each activity.
Duplicate as necessary prior to completing.

1. Activity Number: _____ Activity (short description):
_____
(must correspond to activity number and name on the summary of Job Activities Form)

2. Detailed description of activity (key procedures or actions):
_____

3. Who/what initiates this activity? (e.g. reports/information received)

Name/description	Source (dept.)	Frequency
_____	_____	_____
_____	_____	_____

4. How often do you perform this activity? Daily____ Weekly____ Monthly____ Annually____ Other____ (please specify)

5. When is this activity performed (e.g., Friday, end of period, etc.) _____

6. What are the key volume indicators?

(e.g., number of invoices processed, etc.)	Volume
_____	_____
_____	_____

7. What are the benefits of this activity?
_____
_____

(people and software) dedicated to activity identification and analysis at the individual level.

Activity effort analysis worksheets are generally compiled in some form of PC-based application (worksheet or model). These can be loaded in and then linked with payroll and/or general ledger information at the appropriate level to compute activity costs by employee/group/department and in total for the organization. Total costs per the model should be reconciled to the general ledger as a validity check.

Activity Attribute Analysis

Organizations interested in using ABCM for performance improvement can use grading methods to evaluate the activities that contribute to the output of goods and services. These grading methods assess whether the activities are necessary, if they support critical strategic success

EXHIBIT 10. VALUE-ADDED CONTENT SCORING SCHEME

Department	Activity	Total Cost	Value-Added	NVA
Assembly	Perform final assembly	$ 653,000	$ 653,000	
	Prepare subassemblies	389,000	389,000	
	Inspect work in process	128,000		$128,000
	Rework parts	62,000		62,000
	Prepare special orders	45,000	45,000	
	Department total	$1,277,000	$1,087,000	$190,000
Shipping/Receiving	Ship product	$253,163	$253,163	
	Receive materials	113,050	113,050	
	Ship special orders	40,425	40,425	
	Inspect materials	24,500		$24,500
	Return vendor materials	6,362		6,362
	Department total	$437,500	$406,638	$30,862

factors, or if they are performed efficiently. Using activity attribute analysis creates an orderly approach for reporting purposes. Attributes quantify different aspects of business processes, providing multiple views with which to focus, prioritize, analyze, and measure organizational efforts and outcomes.

Activity attribute analysis uses various coding methods for scoring and evaluation. The very simple value-added/nonvalue-added approach emphasizes the need to reassess nonvalue-adding activities and optimize the time and resources dedicated to value-adding efforts. The more complex differentiating methods use multi-dimensional criteria to score and rank activities. The most popular differentiating categories of activity attributes include:

- *Impact*. Each activity can be graded based on its near-term and long-term impact on the organization and its effectiveness, ranging from high, medium, low to no apparent impact.
- *Value-added content*. This scoring scheme assesses the degree of value-added effort within an activity from the customer's point of view (e.g., high, medium, low, or none). It can also be used to rank the value-enabling capability of an activity from a product or process perspective as well as to determine whether an activity is nonvalue-adding (NVA) from all

EXHIBIT 11. COST OF QUALITY USING ACTIVITY ATTRIBUTES

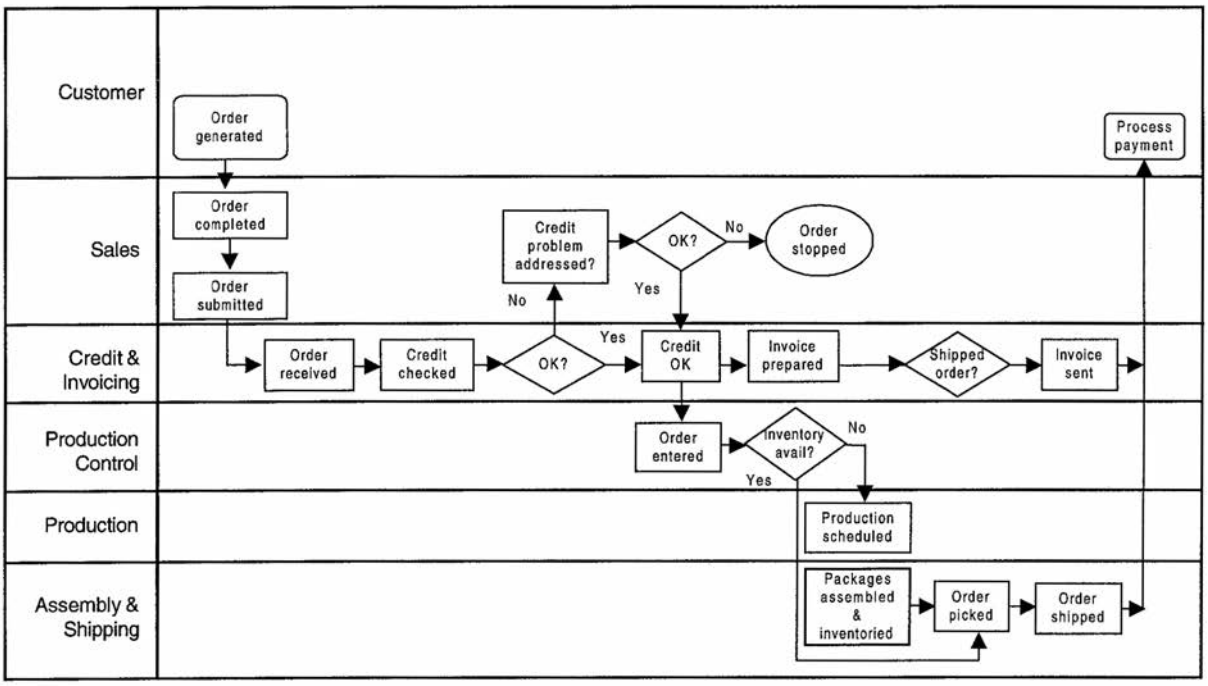
	Conformance		Nonconformance	
	I Prevention	II Appraisal	III Internal Failure	IV External Failure
Definitions	• Activities designed to prevent errors and mistakes during make and delivery	• Activities to review, audit, evaluate, or measure to assure conformance	• Activities correcting errors prior to customer receipt	• Activities correcting errors after customer receipt
Activity group examples	• Training • Advanced quality planning • Performing statistical process control (SPC) • Fool proofing	• Incoming inspection • Process review • Line inspection • Approvals • Finished goods inspection	• Process scrap • Rework • Unplanned downtime	• Handle complaints • Warranty charges • Process returns • Expedited late order • Lawsuits

Source: adapted from Gary Cokins, 1996: 108.

three of these viewpoints. Value-added content can also include an assessment of the degree of value-added effort within an activity (e.g., 50 percent value-added, 50 percent nonvalue-added). Exhibit 10 provides an illustration of this attribute in use. Notice the nonvalue-added activities such as inspection, rework, and returning vendor materials.

- *Effectiveness in performing the activity*. This activity attribute emphasizes how well the organization performs against customer or process expectations when completing a specific activity or process step. Emphasizing doing the right activities at the right time, rather than doing the activity correctly (efficiency), is the reason for applying this attribute. The attribute highlights effectiveness of time, quality, cost, and overall reliability of performance.
- *Importance in supporting management's strategic plans*. Matching activities to management's strategic goals (i.e., critical, essential, necessary, or postponable) is the focus of this activity attribute. A test question that can be used to assess this aspect of an activity might be, "If we eliminated this activity completely, what would be the consequences?" An activity that would potentially have a major negative impact on attaining management's strategic goals if not done, or not done effectively and efficiently,

EXHIBIT 12. CURRENT "AS-IS" PROCESS MAP



Source: V. Daniel Hunt, 1996: 9.

should receive special attention in the design and implementation of the ABCM system.

- *Quality content*. Activity attributes that emphasize quality charactistics classify each activity based on accepted total quality management categories (TQM), as suggested by Exhibit 11. The purpose of quality cost attributes is to help an organization produce a product or service with the highest possible quality at the lowest possible cost. These apparently conflicting objectives are mainly achieved by measuring the current and estimated costs of nonconformance (failure to meet quality standards), such as rework, returns, and lost sales.
- *Cost influencing content*. Assessment of the relationship between a specific upstream activity with a certain downstream activity is the focus of this activity attribute. Emphasizing the cause-and-effect relationship an activity has on another is the reason for using cost-influencing attributes. It is better to understand the total system's impact of nonconformance within a process from the viewpoint of the customer. In many cases, it has been found that an error in the beginning of a process can lead to a 100-fold increase in the total cost of producing a product or service. The defects ripple through the process and an increased amount of effort is incurred, resulting in excess cost.

Process Mapping

Process mapping involves documenting the sequence of steps that different functional units undertake to convert inputs to outputs for a specific process or subprocess. A process map shows the units involved in the process, the steps performed, and the key decisions that are made, as illustrated in Exhibit 12. Synonymous

EXHIBIT 13. PROCESS OVERVIEW FORM

Process: Accounts Payable

Process Mission: To ensure vendors are paid according to the terms agreed upon when purchase was made.

Inputs:
Merchandise invoices
Expense invoices
Merchandise receipts
Purchase orders

Outputs:
System-generated checks
Manually-generated checks
Wire transfers

Departments Involved: Accounts Payable, Merchandising, MIS, Inventory Control, Store Operations, Data Entry

Measure	*Purpose*	*Unit*	*Goal*	*Current*
No. of invoices processed	Processing speed	Invoices	2,000	1,500
No. of unmatched invoices	Exceptions generated	Invoices	25	250
No. of checks generated	Unit output	Checks	1,500	500
No. of days to cut check	Timely payment	Days	10	28

Perceived Concerns:
Payment terms negotiated are not being met.

Lost invoices.

Overpayment or duplicate payment of some vendors.

Lack of understanding of accounts payable process by those involved.

Lack of trust in accounts payable process by other departments within company.

with value chain analysis, process mapping helps organize activity and process information, ensuring that it is complete, understandable, and easy to analyze.

Process maps should be kept at the activity level. This is the same level that serves as the focus for collection, measurement, and reporting of activity-based cost information. In fact, ABCM process maps are used to define the sequence of activities in an organization and the associated cost per activity. This alignment of activity-based data with the process flows provides organizations with important information about improvement opportunities.

Process Overview Form

To help analyze and organize process mapping efforts, organizations can use a process overview form. The process overview form illustrated in Exhibit 13 lists the process and its associated vital information such as the mission, inputs, outputs, departments, and performance measures.

- *Process*: Name of the process
- *Process mission*: Purpose of the process/function
- *Inputs*: Listing of all forms, documents, reports, and files that feed the process
- *Outputs*: Listing of all forms, documents, reports, and files that are a result of the process
- *Departments involved*: Listing of all departments or divisions involved in the process
- *Performance measures*:
  - ✓ *Measure*: What are the measures by which process performance is judged?
  - ✓ *Purpose*: By pursuing this measure, what results and behavior is management attempting to achieve for this process?
  - ✓ *Unit*: What is the unit of measure?
  - ✓ *Goal*: What are the benchmarks or targets for this process?
  - ✓ *Current*: What is the current status of the process in terms of performance?
- *Perceived concerns*: Listing of issues that team members or management anticipate from the process.

Developing a Cost Model Conceptual Design

The conceptual design phase is probably the most critical stage, because the model design determines what data is to be included and how the results will be used. The ABCM system must be designed to meet the needs and requirements of the organization. The purpose and use of the system will drive both the amount of information that must be collected and the detail in which it must be obtained.

In general, ABCM applications that are process and performance related such as process improvement, reengineering, project management, activity performance, and benchmarking require more detail and frequency of reporting than those decision-related applications like product costing, capital justification, and target costing. High importance must be placed on identifying the system's purpose and use during the conceptual design stage, which includes the following steps:

- developing cost object, activity, and resource hierarchies;
- determining resource-to-activity relationships;
- determining activity-to-cost-object relationships;
- defining cost model data requirements;
- establishing data collection methods;
- developing measures, calculations, and prototype reports;
- establishing attributes and units of measure for the model; and
- building the cost model and verifying its operational flow.

Core tools and techniques used to improve the effectiveness of this step include:

- system design considerations;
- converting the general ledger and payroll detail to resource cost elements; and
- cost flow diagrams.

System Design Considerations

In a product or service cost application, the minimum base information that must be collected on a forward-looking basis for a specified period of time (i.e., month, quarter, year) includes the following:

- actual resources expended;
- how people spend their time on activities;
- how machine time is spent on activities;
- how facilities were used on activities;
- how other costs were traced to activities;
- counts of activity outputs; and
- how activity outputs were consumed by the cost objects identified.

In addition to this minimum base information requirement for product/service costing, counts and measures of activity performance, cost drivers, and benchmarks are often required for process improvement-related applications. Other issues to be considered in developing a cost model conceptual design include:

- accuracy;
- frequency of update; and
- relevance.

Accuracy. The level of accuracy required by the ABCM system is dependent on the accuracy of the data entering the system. High levels of accuracy require fact-based, reliable data. That is why in some organizations, where high levels of accuracy are required, people provide regular updates on how they spend their time by activity.

Frequency of update. The frequency update is largely a function of the ABCM's purpose and use. Some organizations view ABCM only as a strategic tool. Activity-based information is updated and used annually to set goals, to align resources for capital appropriation, and for product/service-related decisions of mix, pricing, and capacity. Other organizations see the strategic value of ABCM information and supplement this use with quarterly updates as a way to monitor activity performance and product/service cost.

Relevance. For an ABCM system to be useful, its focus must be on the important aspects of the organization, at a level relevant to the improvement efforts and for decision making. ABCM systems should be designed so that users can compare relevant internal costs and performance measures of activities with externally driven targets. This allows a comparison of internal costs and measurements with external standards and requirements. Management can then set standards or highlight performance gaps for a particular activity or business process.

Converting the General Ledger and Payroll Detail to Resource Cost Elements

The next step in developing an ABCM system is to determine the organization's current labor-based activities and costs, as well as the resources they consume. This begins with an in-depth review of the general ledger and payroll system for labor-based costs. These two systems provide the cost data for the ABCM model. The payroll system comes into play when labor within a cost center needs to be uniquely defined, something the ledger usually does not provide. Often the cost data must be translated in order to organize it into a useable format, because:

- general ledgers are typically organized around expenditures rather than activities;

- general ledgers are extremely detailed, typically beyond the level required by ABCM;
- certain ledger accounts may be aggregated and may need to be broken down (i.e., salaries at a division level, occupancy, and depreciation); and
- general ledger costs are designed to address financial requirements as opposed to the true economic usefulness and consumption of a resource.

Translating the general ledger costs for ABCM has some basic guidelines.

Combine accounts. Combine those accounts that serve a common purpose and are assigned to activities in a similar manner. For example, salaries and fringes, including benefits, would typically be combined into an account called personnel or labor costs. This quickly defines the number of accounts that will flow into the model, simplifying design, maintenance, and input requirements.

Adjust accounts to address economics. An ABCM system is not designed for financial reporting requirements. Thus, it makes sense to translate general ledger items that are designed for reporting considerations versus economic consumption. Two typical examples would be depreciation costs and product design costs.

Decompose costs to the department level. Cost items maintained at a level higher than the focus unit or functional area being examined need to be decomposed to unit and departmental levels. This can be accomplished only by understanding the nature of the cost item. Decomposition stops at the level at which activities are defined. Quite typically this is at the department level where the activity data has been obtained.

Cost Flow Diagrams

The cost flow diagram is a graphical depiction of the way resources, activities, and processes flow within an organization to produce outputs. The cost flow model depicts the operational relationships as they exist at a specific point in time and as such should be updated as conditions dictate.

A cost flow diagram defines the software model architecture and data requirements of an ABCM system. It also defines the level of complexity and amount of detail that will need to be managed in the model.

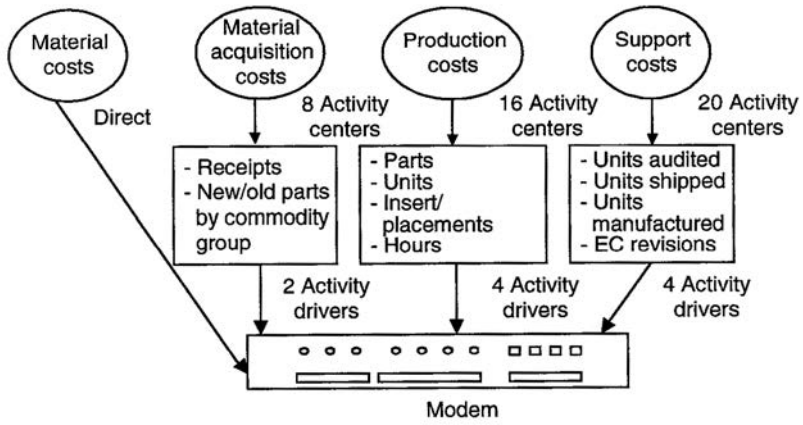
It is easier to make sense of the cost model flow on paper; it then can be used as the basis to create input data files for the ABCM system software. Approximately 75 percent of all data elements identified by the cost flow diagram are nonfinancial, including driver and output volume by activity.

For example, Exhibit 14 illustrates the cost flow model developed at AT&T Paradyne Corporation, an organization specializing in data communications equipment and services. The model consisted of four major cost elements (material, material acquisition, production, and support), 44 activity centers, and 10 activity drivers.

Implementing and Validating the Cost Model

The next major step in the ABCM project is to implement then validate the cost model. After the data has been gathered and organized and the conceptual design completed, the organization is ready to input the data into a software model. The objectives pursued during this stage reflect its executable nature and the need to reaffirm the conceptual design through application and validation. The objectives of this implementation stage include:

EXHIBIT 14. COST FLOW DIAGRAM—BUILDING A MODEM



Source: Steve Player & David Keys, 1995: 158.

- importing data into the cost model; and
- validating cost model data.

Achieving these objectives requires the use of a set of core tools and techniques that emphasize the reliability of the cost data, specifically:

- structuring data in the cost model;
- importing data techniques; and
- using cost model data validation techniques.

Structuring Data in the Cost Model

Loading the ABCM software model generally involves creating definitions and structures within the software for resources, activities, and cost objects. The links for these structures are created by defining the driver relationships and their quantities consumed. Similarly, the relationship of activities to other activities, as well as activities to cost objects, must be defined within the software.

This task is accomplished by entering the information into the software application to define the relationships and the mathematical values underlying the relationships (e.g., driver quantities). A typical example of an ABCM model structure is presented in Exhibit 15.

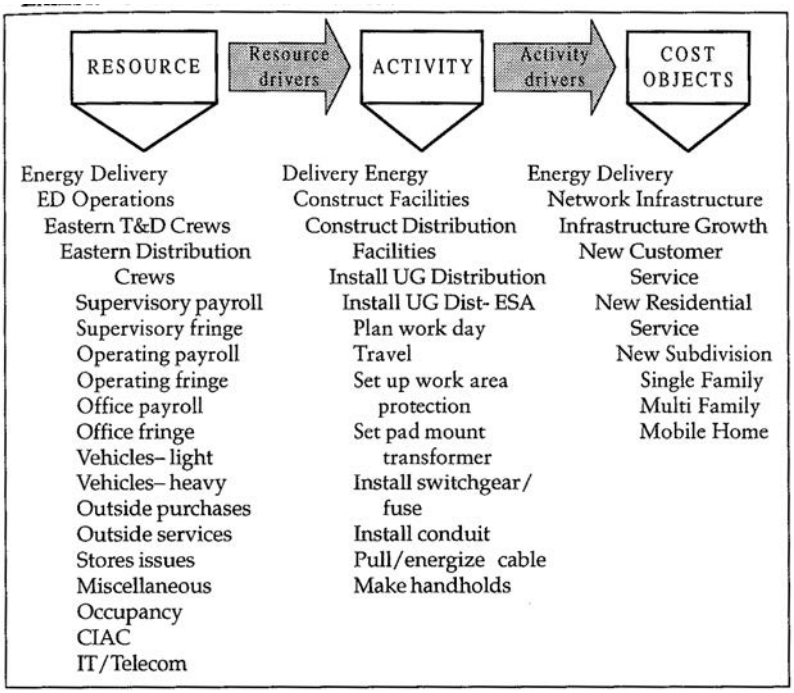
Importing Data into the Cost Model

Once the structure of the cost model has been created, the data can be loaded. A practical issue that emerges at this point concerns the most efficient way to enter new data into the selected ABCM software. There is always a cost associated with entering the data, but this cost varies with the design of the system and the data sources. Given this fact, the two basic ways to load data into the system are through automated downloads and manual entry.

Automated downloads. In most instances, commercially available ABCM software permits operational and financial data to be imported from other information systems. The electronic transfer of data is ideal when data already exists in an electronic format that is compatible with, or easily converted to, the ABCM model format. Initial definition of the data link may require up-front programming, but the downstream use and maintenance of the system will be much easier once these linkages are developed.

General ledger interfaces are common to most implementation efforts. Other sources of infor-

EXHIBIT 15. ABCM MODEL STRUCTURE



mation can be less practical to achieve through direct linkage but should still be investigated since the long-term benefits of this approach normally exceed the costs to establish the linkage. For example, a cost driver may be sales volume, measured in terms of the number of units of "product sold." This information would typically be maintained in a sales reporting system. If this is the only piece of data required from the sales system, it would not be worth the effort to build an interface. Instead, some form of manual data entry would be more logical.

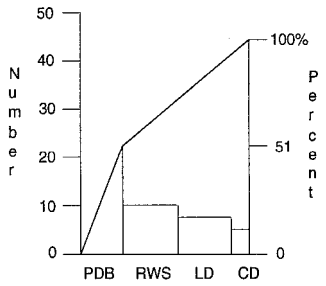
Manual entry. The most time consuming, yet most flexible, alternative to inputting data into the ABCM database is manually keying the information directly into the system. The more complex the system, the more cumbersome this effort can be. Yet there are many cases where data manipulations are required to get existing information into a format usable by the system. This may make manual entry the most desirable alternative. As a general rule, however, an automated interface should be employed whenever possible. When manual entry is required initially, it is important to find ways to automate ongoing data entry and maintenance to improve the reliability and decrease the effort required to keep the system current.

Validating Cost Model Data

Once the ABCM software model is built and the data loaded, it is necessary to verify all elements of the system to ensure that the model is accurate and the underlying database contains the defined data elements in the correct format and structure required for ongoing use. Reconciliation of the totals in the ABCM model to

EXHIBIT 16. PARETO ANALYSIS OF BILLING DEPARTMENT DATA

Activity	Number	Percent
PDB	22	51
RWS	10	23
LD	6	14
CD	5	12
	43	100%



Key to activity codes

PDB = Process denied bills (for resubmission)
RWS = Review with supervisor
LD = Locate documentation
CD = Copy documentation

Source: Judith J. Baker, 1998: 143.

the general ledger totals is a vital step, ensuring data capture integrity.

The core team must be very sensitive to any system results that do not make intuitive sense. The team must rigorously test the validity of any counter-intuitive results, or in other words, perform a "sanity check." Are these results reasonable? If not, why not? Reconciliation of the model includes validation of resource, activity, and cost object data.

Resource data validation. Validations should be performed to assess the accuracy and reliability of the following resource data elements:

- Are total costs entered into the model correctly?
- Have resources been accurately assigned to activities and/or cost objects?
- Are department costs correctly reflected?

A variety of reports can be used to perform resource data validation. They include the following:

- resource cost by department;
- resource Pareto: fixed/variable;
- resource Pareto: department;
- resource Pareto: cost category (labor, non-labor, etc.); and
- resource Pareto: drivers (list resources that use each driver and total cost of resources using each driver).

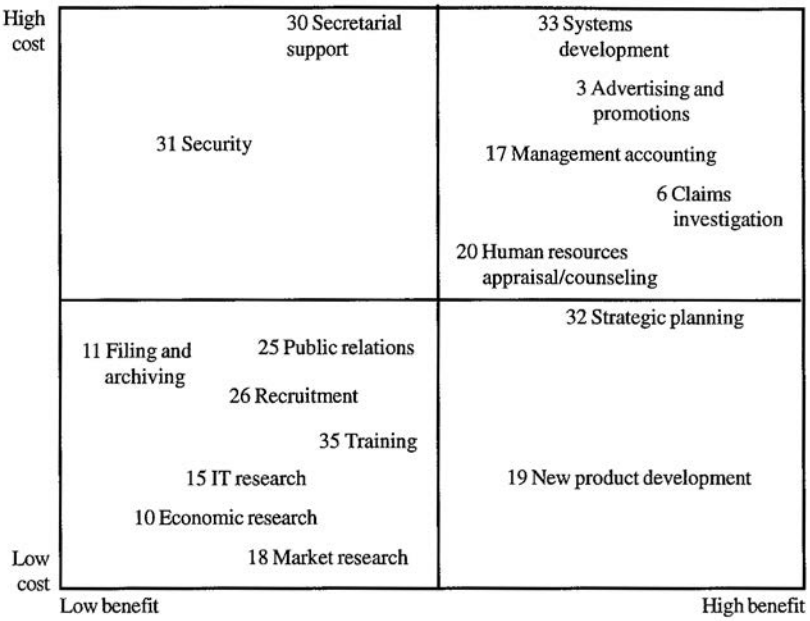
Typical resource data reconciliation problems occur, such as the following:

- direct labor headcounts are incorrect, but the general ledger is fully accounted for; or
- electricity consumption appears to be fully accounted for, but the calculated cost by kilowatt hours is extremely high.

Activity data validation. The key concerns faced when assessing the validity of activity data include:

- Have all activities been identified?
- Are activity time percentages reasonable?
- Are activity costs reasonable?
- Are activity attributes correct?

EXHIBIT 17. COST/BENEFIT MATRIX



Many different reports can be used to provide assurance of the validity of the activity cost data including:

- activity costs by process (include unit costs);
- activity Pareto: process attribute;
- activity Pareto: value attribute (value-added/nonvalue-added), cost of quality;
- activity Pareto: primary/secondary indication; and
- resource contribution reports (with and without attributes).

The usual way to display the results of an activity analysis is through the construction of a Pareto diagram. A Pareto diagram displays the important causes of variation from highest to lowest or most significant to least significant. Exhibit 16 presents an example of a Pareto diagram constructed to verify the activities involved in resubmitting denied bills at a major U. S. hospital.

Cost object data. In a related way, the cost object data embedded in the ABCM design and database needs to be validated prior to end-user reporting. The questions that need to be addressed at this stage include:

- Have activities been correctly associated with cost objects?
- Are cost object costs reasonable?
- Are cost object costs significantly different from what was expected?

Reports that can be used to address these specific questions include the following:

- cost object cost summaries (were all costs assigned?);
- cost object attribute costs;
- activity contribution report (with and without attributes, including value-added, nonvalue-added, process, and related factors); and
- costs for the period and unit costs.

LOCATION:	A	B
Total paid proof operator hours	38,000	24,000
Less vacation, holidays, sick/personal hours	(4,340)	(2,160)
Total proof operator work hours	33,660	21,840
Less nonproductive proof work hours (breaks, meetings, training, etc.)	(8,580)	(7,450)
Total productive proof operator work hours	25,090	14,390
Percent of total proof operator work hours	75%	66%
Processing hours per total fields encoded	1,870	1,870
Total proof operator fields encoded	18	12
Fields encoded	63,753,360	27,182,170
Fields encoded per productive hour	2,542	1,889
Total personnel expense (fringe loaded)	$474,240	$271,920
Total personnel dollars per total fields encoded per hour	$12.48	$11.33

Source: Mays and Sweeney, 1997: 25.

Having validated the results, the attention of the ABCM project team now turns to learning how to report and use this new source of cost information and insight.

Interpreting the New Information

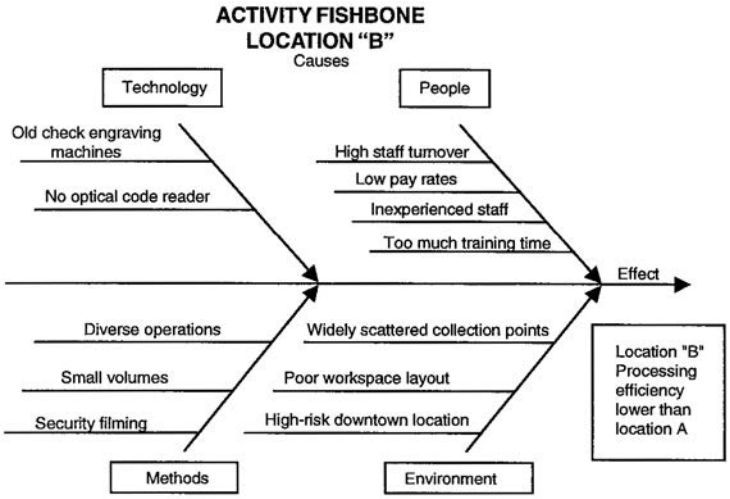
Once ABCM results are released, no one is likely to remain neutral about them. Given that ABCM provides a very different view of costs, the results should be analyzed with an emphasis on using them for improvement opportunities, rather than having to defend them. Several core tools and techniques can be used to facilitate the interpretation of the new information, including:

- cost/benefit matrix;
- root cause analysis;
- cost improvement plan; and
- process cost opportunity improvement tracking form.

Cost/Benefit Matrix

A cost/benefit matrix helps management focus attention on the activities that fall under various headings, units, and responsibilities. Flexible in nature, this technique involves obtaining consensus on the value to be placed on each activity in relation to the strategic goals of the organization. Activities are then ranked in relation to each other, resulting in a report similar to that portrayed in Exhibit 17 for an insurance organization.

EXHIBIT 18. FISHBONE DIAGRAM



Source: adapted from Mays and Sweeney, 1997: 25.

Management should focus initially on those *high-cost*, *low-benefit* activities that could be eliminated, reduced, improved, or automated to reduce the cost while increasing the value placed on the activity. *High-cost, high-benefit* activities should also be reviewed to identify ways in which costs can be reduced or improvements made in the efficiency and effectiveness of the activities.

Management should consider the *low-cost, high-benefit* activities that could be promoted, increased, or enhanced to increase their benefit to the organization. Finally, management may review the *low-cost, low-benefit* activities to determine whether improvements can be made.

The process of reviewing the activities identified on the cost/benefit matrix and finding opportunities for reducing costs and improving efficiency is one of the most important steps in an ABCM cost improvement initiative.

Root Cause Analysis

Root cause analysis involves the identification of cost drivers and their relationships in determining what factors cause work and costs to occur. These relationships are also used as the basis for product and customer profitability analysis, activity-based budgeting, product and service line costing, and "what if" scenario planning.

Root cause analysis is a popular brainstorming technique that the project team can use to analyze and understand what and where changes need to be made to existing processes to improve performance. Root cause analysis enables comparison of current processes against customer expectations. For example, at First Tennessee National Corporation, a regional bank-holding organization, cost management personnel who previously had applied ABCM to one operation at location "A" studied the same function at location "B," interviewing the appropriate personnel to gain insight into the operation. This process highlighted the unit costs of product components and the applicable cost drivers list-

ed below. Their analysis determined that processing efficiency in location "B" was lower than in location "A."

The resulting fishbone diagram illustrated in Exhibit 18 mapped out a list of root causes that were responsible for the differences in operations at locations "A" and "B." The branches titled "technology," "people," "methods," and "environment" represented the main categories of causes for the lower processing efficiency at location "B."

In this exhibit, *causes* reflect the reasons an activity occurs, whereas *effects* describe the activity that is the result of the cause. This ABCM data reveals more effect than cause; costs are really symptoms of more deep-seated process issues.

Cost Improvement Plan

Having more accurate process costs enables organizations to prioritize and set realistic cost goals for process reengineering efforts. Equally important is the ability to simulate and later track actual performance following process reengineering efforts. An example of a cost improvement plan developed at Delco Electronics is illustrated in Exhibit 19.

EXHIBIT 19. COST IMPROVEMENT PLAN

For Department 100

Activity	Annual Base Cost	Planned Improvement	Owner	Target Completion	Annualized Savings	Status
Quality	$ 2,508,000	Opers do SPC	Joe/Tom	May – 95	$ 240,000	Training started
		Elim burn-in	Sally	Dec – 95	500,000	Pilot in-process
		Add 100% visual	Jeff	Feb – 95	(175,000)	Containment in place
		Elim 100% visual	Jeff	Jun – 95	175,000	Root cause analysis being done
People admin.	181,830			May – 95	200,000	
Sticklead/pot	5,083,800	No clean	Fred/Sue	Apr – 95	75,000	Awaiting qualification
		Move 3 parts to SMT	Harry	Sep – 95	90,000	Complete
		Reduce screws on conv.	Tim	Jun – 95	145,000	Redesign in process
Conf dip coat	890,340	Impl select coat	Tom	Mar – 95	30,000	Areas being identified
		Improve clean-up process	Tom	Feb – 95	60,000	Complete
Totals	$8,663,970				$1,340,000	

EXHIBIT 20. PROCESS COST OPPORTUNITY IMPROVEMENT TRACKING FORM

Business Process: _____

Current Process Unit Cost: _____

Target Process Unit Cost: _____

Department: _____

Activity: _____

Opportunity: $_____ What impact does this change have on:

Improvement Category:

- ☐ Eliminate
- ☐ Simplify
- ☐ Combine
- ☐ Add new activity

- Customer satisfaction?
- Quality?
- Cost reduction?
- Revenue enhancement?
- Time to market?
- Employee satisfaction?

Action Plan:

_____

_____

Improvement Opportunity Owner:

_____

Investments Required:

_____

Timeline to Complete:

_____

Impacts on Other Areas:

_____

Source: Steve Player and James W. Gibson, Jr., 1997: 125.

Process Cost Opportunity Improvement Tracking Form

A key function is to document and monitor progress against the cost improvement plan. The process cost opportunity improvement tracking form is a tool that can be used in this effort. Generally used by department and process heads to document specific actions, a tracking form records progress in reducing specific process unit costs. An example of this tool is shown in Exhibit 20.

In addition to documenting the action plan designed to improve overall business process unit costs, other important aspects of the change plan also need to be detailed. These include:

- *Quantification of expected benefit*. Based on activity analysis, it identifies the current process unit cost, activity unit cost, and the total estimated net cost savings targeted by implementing the action plan;
- *Responsibility for implementation*. A specific individual should have primary responsibility for overseeing implementation. While this person may not control all aspects of implementation, he or she should be accountable for

ensuring that the implementation plan is carried out; and

- *Impact on other areas*. Implementing a change brings the risk of having a positive impact on an activity or process in one area while at the same time creating unforeseen and negative consequences in another. For example, implementing a fixed order cut-off time of 2 p.m. could potentially improve warehouse productivity, but it could also have a negative impact on customer satisfaction levels if customers cannot send their orders until the next day. Therefore, it is important in developing action plans to consider the impact (positive or negative) of the planned change on customer satisfaction, quality, cost, revenue, time to market, and/or employee satisfaction.

Ensuring Ongoing System Requirements

The final step of a successful implementation is to determine how the ABCM system is to be maintained. Most ABCM implementations fail to place sufficient emphasis on installing the systems, procedures, and methods necessary to collect and report activity-based information on an ongoing basis. As a result, procedures and methods that are installed are often unresponsive to the needs of the users, difficult to update and maintain, and unreliable in the long term.

Like any information system, the ABCM information system must be updated and validated on an ongoing basis. Activities change over time. New activities are added. Drivers shift or the measurements needed to capture them are modified over time. Improvement initiatives will likely lead to the elimination of nonvalue-added activities. Activity performance measures will improve and change over time. New products and services will be added; others will be discontinued. These are just a few of the potential changes that need to be incorporated into the ABCM if it is to remain relevant, reliable, and accurate. The key objectives for the maintenance phase of ABCM implementation include the following:

- identifying areas for improvement to enhance the model and integrating them;
- establishing responsibility for ongoing model updates and maintenance; and
- establishing feedback on usage behavior.

To reach these objectives, a number of core tools and techniques can be deployed, including the following:

- periodic systems assessments;
- update interviews and measurements checks; and
- permanent ABCM team.

Periodic Systems Assessments

Database systems are constantly being improved as computer technology and the software that drives it are changed to incorporate innovations. The result of these macro trends is that installed ABCM systems need to be reassessed annually to determine if they are still the best fit for the organization.

Periodic assessments consider a number of factors, including:

- level of satisfaction of users with current system capabilities;
- degree of utilization of existing system;
- likelihood that the new system will give nonusers more incentive to incorporate ABCM information into their decision processes;
- effectiveness and efficiency of new systems compared to the existing one; and
- cost to install the new system versus updating the existing system.

New activities and a modified implementation plan will be generated by a decision to shift systems. The decision made at the end of the sys-

tems assessment will be based on the trade-offs between the cost to shift to an improved ABCM system versus the benefits (i.e., improved speed, efficiency, capabilities, reduced update costs) that will ensue.

Update Interviews and Measurement Checks

Depending on the frequency of reporting, individual interviews and measurement checks should be updated. Some organizations have decided to let a year pass between reviews and updates, coupling the revision of the ABCM data to the budget process that is already part of the corporate activities. Others have created monthly or quarterly data collection efforts, such as employee time reports, to update the ABCM database constantly. While no one way is optimal in every setting, there are rules of thumb to apply in making the decision about the length of time between updates, specifically:

- Is the ABCM data an intricate part of ongoing decision analysis?
- Is the organization undergoing significant restructuring?
- Are aggressive improvement targets being set and met?
- Does the organization face short life cycles for the majority of its product/service offerings?
- Is the customer base shifting rapidly?
- Are customer demands changing significantly over short periods of time?
- Can new time and activity reporting be used to improve performance and keep the organization and its management informed about market and customer service demand shifts?
- Would the culture respond favorably to new time and activity reporting?

If the answer to one or more of these questions is yes, it is likely that more frequent updates will benefit the organization due to the improved quality of the information provided to support key decisions made by management.

Update interviews and data from activity effort analysis need not be as exhaustive as the initial implementation interviews. In fact, the activities detailed in the first round of information gathering can be used as a template to create the periodic updating surveys. The advantage of this targeted approach is that it increases the comparability of the data collected, reduces the time needed to validate the information, and can serve to identify new activities or activities that are no longer performed in an efficient manner.

As the updates are completed, particular attention should be paid to such issues as any or all changes in drivers for the activities, any change in the type or nature of activities performed (e.g., their occurrence, frequency, task content, or time/resource consumption), shifts in key activity centers (i.e., the implementation of shared service centers or the outsourcing of support processes), and the development of new products or abandonment of existing ones.

Permanent ABCM Team

Once a satisfactory ABCM system is implemented and is being used on a regular basis by managers across the organization, the project team must continue to meet and be available to provide training for new employees, assess software or systems changes, and execute update initiatives. Maintaining the reliability and accuracy of the system requires ongoing review, analysis, and modification as organizational needs and realities change.

To ensure continuity in these core areas, at least two of the original ABCM core team members should remain actively involved on the permanent ABCM team. They should be joined by other

staff members to provide a cross-functional mix of perspectives, insights, and skills. Having rotating members on the team has proved to be a successful approach for many companies because it results in increased awareness and interest in the system required to obtain and retain needed resources.

A number of companies are assigning full-time ABCM job responsibilities to individuals to drive activity cost awareness deeper into the organization. Permanent employees can also be expected to provide more ongoing support and attention to system integrity than a revolving or ad hoc review team.

Regardless of the final nature, structure, or participation in the permanent ABCM team, its responsibilities should include the following:

- keeping ABCM information current;
- defining or updating the cost drivers;
- estimating future products and their activity/resource demands;
- developing cost improvement plans;
- providing ongoing user training and support;
- executing update routines;
- assessing the system software to ensure that it continues to be the optimal choice for the organization;
- meeting cost improvement targets; and
- supporting or spearheading efforts to achieve full ABCM integration.

VI. CONCLUSION

While this SMA provides a good summary of the core tools and techniques typically used to improve the ABCM implementation process, it should not be considered all inclusive. Every ABCM implementation is different, and the emphasis and elements to be covered are specific to the application and organization.

APPENDIX: ACTIVITY DICTIONARY DEVELOPMENT—GENERAL GUIDELINES

I. Principles

Verbs. Activities represent action; they are what people and machines do. They consume resources. Verbs are the only word forms that represent action. If it does not start with a verb, then it is not an activity.

Activities cut across organizational boundaries. Activities are not limited by arbitrary organizational boundaries. Activities frequently cut across these boundaries.

Hierarchy of activities. Most activity dictionaries are hierarchical. They take all or part of a business and define a series of level 1 super processes. Under each super process, a series of level 2 processes may be defined. Under each such level 2 process, a series of level 3 activities may be identified, and so forth until the dictionary is complete. A visual depiction of an activity dictionary should look like the roots of a tree.

Completeness. Everything performed by part or all of a business should be represented in the activity dictionary. The dictionary should be complete. At the end, the answer to the question, "Is this everything we do?" should be "Yes!"

Level of detail. A natural tendency is to develop dictionaries in too much detail. There is no concrete rule on how to determine what constitutes too much detail, but excessive detail should be avoided. Few people (or small organizations) really do more than 10 things. Also, consider the cost of collecting detailed activity information with respect to the benefits provided by the detailed information. An appropriate level of

detail can be achieved, in part, by identifying the key business issues that need to be addressed.

II. Key Issues

Which business issues need to be addressed? "Begin with the end in mind." Developing an activity dictionary should involve identifying the key business issue(s) that management wants to address. Without identifying these key issues, ABCM implementation will be suboptimized, and the issues will go unresolved.

How do we handle support activities? The question of where in the dictionary to put support activities (e.g., human resource, finance, accounting, etc.) needs to be addressed early in the dictionary development process. If "operate" and "maintain" are the two direct level 1 super processes, where should Human Resources or financial analysis go? If it directly supports "operate" or "maintain," does it go under "operate" or "maintain" or does it go under a separate level 1 super process? If it indirectly supports "operate" or "maintain," where does it go? How are direct and indirect support defined?

What are the cost objects going to be? The activities in the dictionary should be defined in a manner that will facilitate activity cost assignment to cost objects. What are the cost objects?

III. Process

Bottom-up or top-down? Activity dictionaries may be developed using either a bottom-up or top-down approach. If a bottom-up approach is used, key challenges include ensuring completeness and developing appropriate groupings of activities into processes. If a top-down approach is employed, a key challenge is making sure that current organizational structure does not play a major role in determining the level 1 super processes.

Iteration. Activity dictionaries are not developed in a day. Although it may be appropriate to set a goal of completing a dictionary in one day or in one meeting, this is rarely achieved in practice. Activity dictionary development is one of the most crucial steps of ABCM implementation. Let process owners and others review the dictionary, contemplate it, and refine it to make sure that it meets everyone's needs. Once the activities are "frozen" for surveying and activity cost determination, it is difficult to add, change, or delete activities. Make sure the activities in the dictionary will meet the overall objectives of ABCM implementation.

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