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QM Chen

Louisiana State University, QMChen@unix1.sncc.lsu.edu

C.R. Mount

Scientific Testing Laboratory Inc, crmount@sciTestLab.com

T. Warren Liao

Louisiana State University, ieliao@unix1.sncc.lsu.edu

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QMChen@unix1.sncc.lsu.edu

Department of Information Systems and Decision Sciences
E.J. Ourso College of Business Administration
Louisiana State University, Baton Rouge, LA 70803

[C.R. Mount](mailto:crmout@sciTestLab.com), crmout@sciTestLab.com

Scientific Testing Laboratory Inc., Baton Rouge, LA 70810

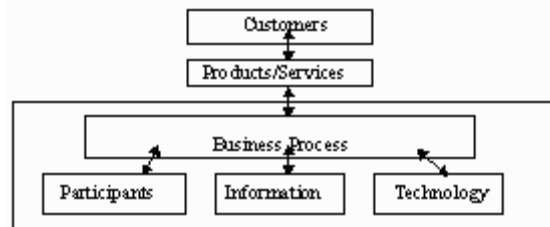
[T. Warren Liao](mailto:ieliao@unix1.sncc.lsu.edu), ieliao@unix1.sncc.lsu.edu

Department of Industrial & Manufacturing Systems Engineering
Louisiana State University, Baton Rouge, LA 70803

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Work-Centered Analysis

Work-centered analysis (WCA) is developed by Alter (1996) for "thinking about business processes and the systems that support them". The framework, shown below, consists of six elements: a business process, the products/services provided by that process, the internal/external customers for those products and services, the human enablers as participants, the information enablers, and technology enablers of the process. The framework uses a box incorporating the business process, participants, information, and technology to indicate a working system. The system's outputs are the products/services received and used by its internal/external customers. An information systems repository using the WCA methodology as a tool for BPR is being developed by Ives (The URL is <http://isds.bus.lsu.edu/cvs/learn/bprtools>).



A significant contribution of the WCA approach is that it enables a system designer to understand any existing or proposed business process using a single framework. That is, each of the six elements are considered in first determining the *scope* of the system and then in analyzing the process from five necessary perspectives, including examining the *architecture* of its components, measuring the *performance* of the process, identifying the *infrastructure* supporting the process, understanding the *content* the process resides within, and assessing the *risks* associated with the process. Determining the scope of the system, however, presents a major challenge to the system designer. Consider below some of the questions needed to be addressed in the six elements of the WCA framework related to scoping (Alter, 1996, p.71). Alter also notes that the lengthy exercise is to answer the central issue: What business processes shall be included in the scope?

WCA Elements	Some of Questions Needed to Be Addressed
Customers	Who are the customers? How do they use the process outputs?
Products/Services	What are the outputs of the process? In what direction might improvements lie?
Process	What steps are included in the process? Do you need to consider them all?

Participants	Who participates in the process? What are the skills and the incentives of the participants?
Information	What information is used? What information is generated?
Technology	What technologies does the process rely on? What are other technologies that might be considered?

Frequency-Based Work-Centered Analysis

In this paper, we propose a frequency-based approach to help a designer scope the WCA project. The approach is based on the well-known Pareto principle: 20% of the customers (products/services) make up of 80% of the business. The approach starts with classifying the customers into three classes: frequent, infrequent, and potential. Next, it classifies the products/services into three classes: simple, moderate, and complicated. The combination of the two classifications generate nine different versions of business processes. Each process also includes three interrelated subprocesses: before service, during service, and after service. The table below shows the framework of the frequency-based approach.

	Frequent Customers	Infrequent Customers	Potential Customers
SIMPLE CASES	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess
MODERATE CASES	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess
COMPLICATED CASES	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess 	<ul style="list-style-type: none"> • Before Service Subprocess • During Service Subprocess • After Service Subprocess

The frequency-based approach addresses in two ways the central issue in scoping WCA, i.e., What business processes shall be included in the scope? First, it enables the designer to identify nine major process portfolios which the WCA methodology does not address. Second, it provides an easy framework for the designer to prioritize the portfolios and create appropriate value-added services to each portfolio's customers accordingly. The determination of scope and value added is a major design issue according to Alter (1996, p.57).

The prioritization and value-added process may involve with three stages. First, identify, maintain, and increase the yield from loyal customers, through long-term, interactive, value-added relationships. At this stage, the buying behavior of the frequent customers are well understood and the service process is

customized to each specific customer to satisfy all the needs. Second, once a well-managed one-to-one relationship with the frequent customers has been established, apply the same market relationship to the infrequent customers. Third and the most difficult stage, the company is ready to market the service to the potential customers who have done no business with the company before. At this stage, the company has pretty much understood the buying patterns of the current customers and is ready to conduct the direct marketing to the potential customers who have similar demographic information as the current customers.

Influential Roles of IT

In the era of increasing global competition and the constantly changing environment of the 1990's, businesses large and small need to have very efficient and effective business processes to compete. To achieve this goal, businesses are turning to IT for help. With respect to the WCA framework (Alter, 1996, p.246), improving efficiency means doing less work, requiring less time, or incurring less cost to produce the same outputs and is related to internal business process performance. Improving effectiveness, on the other hand, means producing various value-added outputs that are more appropriate for customers.

The roles and influences of IT in the frequency-based WCA framework are: (1) IT enables the prompt classification of a customer request in terms of customer type and product/service type and trigger the appropriate business process to respond to the request. That is, it helps the company to do the right thing at the beginning which is effectiveness; and (2) IT enables the working system efficient, i.e., doing the thing right, by automating and eliminating work in the business process, empowering the participants, and leveraging the rapid use of information without the limitation of time and place.

A Case Study

Scientific Testing Laboratory (STL) provides analytical and consulting services of failure analysis. STL's staff of Registered Professional Engineers routinely perform a broad range of metallurgical and materials analyses. Because of their years of experience in analyzing industrial process and equipment related problems, STL has developed a strong reputation for failure mode determinations among leading corporations. In its experiences, STL has realized that customers demand the service in a way that as if they were the only client. This is due to the intrinsic nature of the business; when a failure case occurs, all the related parties have to identify the causes of the failure and fix it in a very timely manner. In order to satisfy the urgent demand of the customers, an IT project was begun a year and a half ago to automate more than 18 years of industrial failure analysis records. The project focused on the two most important factors of the business: the customers and the failure cases. In principle STL found Pareto's 80/20 rule applies to both factors, i.e., 80% of failure cases were requested by 20% of the customers and 80% of time was spent on 20% of cases. The following table shows a portion of the frequency-based approach and the influential rules of IT in the project. The table identifies three process portfolios which in terms define three scopes of the WCA methodology.

	FREQUENT CUSTOMERS	INFREQUENT CUSTOMERS	POTENTIAL CUSTOMERS
	more than 30 projects/yr and/or more than 2.5% of sales	more than 10 projects/yr and/or more than 1% of sales	less than 5 projects
SIMPLE PROJECTS	BEFORE SERVICE	BEFORE SERVICE	BEFORE SERVICE
<ul style="list-style-type: none"> • client specified testing program • documentation of a common failure mode 	<ul style="list-style-type: none"> • provide access to a common material's property 	<ul style="list-style-type: none"> • offer a 10% discount for multiple projects submitted within 	<ul style="list-style-type: none"> • quarterly recipient of photo-postcard • logo-imprinted gimmick item

<ul style="list-style-type: none"> evidence of sufficient quality for easy, certain failure mode determination 	<p>database</p> <p>make available a list of routine services offered and what properties they can confirm</p> <p>DURING SERVICE</p> <ul style="list-style-type: none"> offer preliminary results within 24 hours complete the final report within at least 7 days <p>AFTER SERVICE</p> <ul style="list-style-type: none"> include quality scorecard with report send quarterly update newsletter 	<p>the same quarter</p> <p>DURING SERVICE</p> <ul style="list-style-type: none"> offer preliminary results within 48 hours complete the final report within at least 10 days <p>AFTER SERVICE</p> <ul style="list-style-type: none"> include quality scorecard with report send monthly infosheet on materials 	<p>sent upon return of completed inquiry postcard or website visit</p> <ul style="list-style-type: none"> offer FREE 1st analysis (w/some \$ limit!) <p>DURING SERVICE</p> <ul style="list-style-type: none"> offer preliminary results within 24 hours complete the final report within at least 7 days <p>AFTER SERVICE</p> <ul style="list-style-type: none"> include quality scorecard with report send monthly infosheet on materials
<p>ENABLING IT</p>	<ul style="list-style-type: none"> project log project traveler contact manager semi-automated report generator automated FAX transmission FAX-back information system WWW site & FTP server automated e-mail messages 	<ul style="list-style-type: none"> project log project traveler contact manager semi-automated report generator automated FAX transmission FAX-back information system WWW site & FTP server 	<ul style="list-style-type: none"> qualified prospect selection via databases contact manager direct mail system with business reply permit automated FAX transmission WWW site & FTP server

REFERENCE

Alter, S. *Information Systems: A Management Perspective*, Benjamin/Cummings, Menlo Park, CA, 1996.