Reengineering business systems

by GEORGE H. RITTERSBACH
Peat, Marwick, Mitchell & Company
Chicago, Illinois

ABSTRACT

The cost of developing replacement business systems is astronomical. The choices of software packages or custom development seem to be multiyear, multimillion-dollar, and multirisk projects. But now the use of software tools can substantially reduce the time and cost of producing target systems through reengineering of in-place applications. Thousands of hours can be salvaged, to a large extent as a result of processing current systems through these structuring software tools. This generates a building-block prototype that can be extended functionally and technically. Users of this approach claim significant improvement in building the application systems they need.
INTRODUCTION

For a generation (a computer generation, that is) software engineers have been building application systems tied to the techniques and methodology of a system development life cycle (SDLC), with the underlying support of a system development project management (SDPM) system. The SDLC methodology is typically phase and task oriented, with the gradual production of a series of specific deliverables, requiring their formalization to be completed around a specific set of forms and documents. The SDPM is used by project managers to monitor the gradual preparation of the deliverables and to manage necessary resources related to the number of application system development personnel assigned to a project. It is also used to track specific tools and capability necessary to support a project and to monitor computer time. SDPM is a recording mechanism that highlights issues, problems, and constraints and constantly reevaluates the estimate to complete the project.

Certainly, the formalized SDLC-SDPM capability has been extremely beneficial in planning, administering, and producing application systems required for major business activity in most corporations. The actual methods and techniques applied to a particular process will produce specific deliverables that can be shared by the project team, presented to users, and become the basis for accepting and ultimately implementing an application system. Nevertheless, these tools present many difficulties to project managers and executive users for whom the systems are being developed.

Many work activities in systems development projects require participation by several team members, including a user representative, a system analyst, programmers, database professionals, and others. At present, incrementally developed systems deliverables are generally shared by providing copies of paper, which represent the gradual delivery of the system. These often include the definition of data, an analysis of intended work flow, tables of specific codes within the system, and a description of functional requirements. The circulation of all the documents, the continuing reviews, and the updating mean that the "states" of the applications system are hard to keep fixed, and the final preparation of the formalized documentation for the system is often an unpredictable process.

Much of the gradual production of the deliverables requires work to be redone, because increasingly detailed definition typically requires new or replaced forms and documents, and because each participant in a project has a specific idea what the system needs. For instance, the definition of data elements by the user varies significantly from the kind of definition that a programmer desires, and the programmer's definition is different from the more detailed definitions that a database administrator would complete for a data dictionary.

Gaining compliance with the SDLC process is often difficult because of the paper-oriented nature of the activity. The continuing review of the finished work by the project manager (work that frequently is done to a "percentage level") imposes a high project management workload of, simply, administration. Finding, organizing, and evaluating the work done by a project team is frequently difficult and always time consuming. Project participants follow the SDLC-SDPM guidelines to some extent, but almost never, it seems, to the extent necessary to make the project management tasks easier.

The implementation of computer installation standards for systems design, programming, and computer production constraints are difficult to enforce. Considerable investment in work already accomplished on a project, which does not meet defined standards for quality, frequently is overlooked simply because the work is already done. Toward the end of projects, all of the necessary but uncompleted work related to system documentation, controls, and some functional considerations is reevaluated in terms of the originally planned timetables and targets. If the project is running considerably past intended deliverable dates, the quality of the work drops dramatically in order to get the project done on time.

THE SYSTEM DEVELOPMENT WORKBENCH

The system development workbench is a combination of mainframe computer-resident and personal computer-resident capabilities. It is used as a work station by system development project participants. The workbench capability is provided to assist project participants in the orderly, gradual production of specific deliverables required for the system. Primarily, workbench capabilities are directed at the participants in a project, including the system designer and analyst, the programmer, the users' representative, the database administrator, the data administrator, and the project manager.

A series of specific system development workbench capabilities are included to permit all project participants to produce deliverables gradually and to share their development efforts with all other participants during the course of the project. The workbench also permits the project manager to follow, review, and address the gradual production of deliverables and the timely management and resolution of open design issues, and to address the resource allocation requirements related to meeting schedules.

Project participants make use of the system through a series
of work station panels that provide entry into the automated capabilities. From the beginning stages of requirement definition, system design, data analysis and development, work flow and job stream organization, data dictionary development, and database management interface, and on to program code generation, JCL generation, system test planning, system test execution, and other specific tasks, the participants have automated support for their activities. This can significantly reduce the number of persons involved in the deliverable production, and even more significantly reduce the amount of coordination, the number of meetings, and the amount of communication time necessary for such projects. Let us examine the benefits.

Several sets of project team members will generate their deliverables according to predefined processes which are automated and consistent with a given company’s standards and guidelines. The deliverables are accessible to all appropriately designated project team members, and passed along from one participant to another for gradual completion as required. The most current state of any deliverable is the only one officially existent; such status is attained only through the project manager’s approval. Each project member understands the process, and there can be no misunderstanding, because the automated workbench is a predesignated procedure for systems development.

The reworking necessary under the systems development workbench process is limited because the gradual production of deliverables is in conformance with accepted guidelines, and the work itself is committed to an electronically stored record. Necessary changes are made quickly, officially, and one time only. Immediately, all project participants have the latest version of the deliverable. The project bulletin board—produced once each day—makes note of significant changes in the condition, construct, status, or completeness of any deliverable, so that all project participants are fully informed.

Project administration workloads are significantly reduced by the predefined workbench processes. The benefits of value engineering—doing it right the first time—are because it is difficult to forget to do certain aspects of each task or to overlook them completely. Further, the growing volume of system deliverables is organized according to preferred procedures and available to all MIS management, user, project, and other groups as appropriate.

Because the project must follow the automated procedures, and so much of the deliverables are either generated (program code, JCL, testing scenarios) or conform to predetermined constructs, the right work must be done at the right time for the dependent tasks to be started. In essence, the approach of preparing the documentation later, or developing the test plan and data later is not possible without drastically overriding the MIS management prescriptions for the company’s systems development process.

**BENEFITS OF THE SYSTEMS DEVELOPMENT WORKBENCH**

The systems development workbench is among the most exciting and beneficial tools available to application systems developers to date. The integration of productivity aids, code generators, JCL generators, reengineering of current systems, statistical measurement of current systems, predefined testing constructs, CICS generators, code translators (Assembler to COBOL, COBOL to COBOL), and database converters—and many more—within the structure of a given company’s SDLC-SDPM and supported by an automated workbench is, simply, awesome.

Consider the major project under consideration at any company that intends to replace automated support that is old, incomplete, and inflexible. Such projects are always multi-year, multimillion-dollar, multi-risk and, ultimately, unavoidable. With the workbench, you can:

- Analyze the current in-place applications using PATH-VU to examine the good and bad code in the current systems and for defining which portions can be reengineered and used.
- Analyze the data for the in-place applications to determine problems with its current definition, access methods, database management approach, naming conventions, and the like. Further, you can examine the data for defining static, account, or other classes of code usage and definition, expected values for data names, and anomalies in current usage.
- Prepare the requirements definition and general design of the target system. Using the workbench, the user and systems designer analyst complete this work.
- Estimate the total project scope from a top down view using personal computer-based estimating tools to project ballpark investments for a new system in terms of personnel and computer processing production support.
- Reengineer selected portions of the existing applications using Structured Retrofit to produce state-of-the-art code. This permits the economically sound salvage of staff time in work on current systems, which can be used in the new target applications.
- Design and complete data definitions and structures and implement dictionaries and database managers using the workbench tools for users, database administrators, data administrators, and programmers.
- Generate prototype descriptions of major (or all) inputs and outputs for user assessment and agreement—even testing the use of screens, for instance, leading to final design agreements.
- Generate code automatically using MUTIGEN for teleprocessing support, and several COBOL and fourth-generation languages.
- Generate test plans and scripts, test data, and predefined test results using the workbench tools.
- Manage the gradual production of all these deliverables—and more—through the use of the project manager’s workbench.

**SUMMARY**

The cost of producing application systems for your corporate needs in the late 1980s and into the 1990s is astronomical. That trend has now been reversed. Through the systems development workbench, you can:
• Automate the systems development process through a series of workbench tools that reduce the time and effort of project participants, and increase the quality of the work done.

• Reengineer those portions of current application systems that meet target system needs, and drastically reduce the cost to produce that portion of your target system.

• Analyze data definitions, coding system requirements, and database management approaches through automated assessments of currently defined and used data to reach better defined descriptions of the target systems data requirements.

• Use a series of generation tools to produce COBOL code, 4GL Code, CICS command level code, JCL, testing scripts and scenarios, test data, and more, all for less time and cost than currently experienced.

• Automatically involve users in the systems SDLC–SDPM process through the user’s workbench, to better galvanize requirements and deliverables on a basis in which choices can be made productively and with benefit of prototype examples.

• Manage the SDLC–SDPM process using the project manager’s workbench to better control the gradual, measured, and reportable application systems building effort.

In a nutshell, with this workbench, you can save time and money, reduce risk, get the quality you want in your systems development process, and produce automated systems that are economically viable for change as your business changes.
Panel: Directions in office automation: An expert’s view

Chair:
AMY D. WOHL, Wohl Associates, Bala Cynwyd, Pennsylvania

Member:
DALE KUTNICK, Consultant, Wayland, Massachusetts

Office automation is no longer a novelty or an interesting experiment for the few. It has become an important element in the successful management of any business. However, it is not easy to make management decisions about what to do in a section of the information processing industry that changes direction so frequently. Even the vendors' names seem to change annually. In this session two office automation experts present their perspectives on where office automation is going and what the data processing manager should do about it. These outspoken experts express their candid views on who’s selling, who’s buying, and what you should do. An interaction period with the attenders is included.

Panel: Information systems and competitive advantage

Chair:
M. VICTOR JANULAITIS, Positive Support Review, Inc., Los Angeles, California

Members:
MICHAEL S. HESCHEL, American Hospital Supply Corporation, McGaw Park, Illinois
RICHARD J. KISLOWSKI, Denny's Inc., La Mirada, California

This session discusses the ways in which organizations can effectively use information systems to the competitive advantage of their companies. Issues to be addressed by the participants will include

—Relative bargaining power over customers and suppliers
—Changing the competitive posture of an organization
—Increasing the cost of entry to new competitors
—Providing new/substitute products and services
Panel: The information systems executive in the 80’s

Chair:
JOHN P. SINGLETON, Security Pacific Automation Company, Los Angeles, California

Members:
DOUG BOTTIS, Continental Bank, Chicago, Illinois
EUGENE EIDENBERG, MCI Telecommunications Corporation, San Francisco, California

This session focuses on the following topics:
—An overview of major trends for information executives
—Issues in managing distributed data processing and the microcomputer revolution
—Team-building techniques
—Initiatives that management must take to make a better DP executive

Panel: Issues facing MIS executives in the late 80’s

Chair:
DALE F. LAKE, Wickes Companies, Inc., Santa Monica, California

Members:
TIMOTHY P. ROCHE, Beatrice Companies, Inc., Los Angeles, California
GEORGE van der VEEN, Positive Support Review, Inc., Los Angeles, California

The increase of automation within the MIS system development process will require the reeducation and retraining of many MIS professionals. This technological advancement will raise many issues that the MIS executive must address. These will include
—Staffing and human resource development
—Organizational and methodological issues
—Information technology itself as an element of change
—Technology changes as a determinant of competitiveness
This panel session considers these and other pertinent issues facing the MIS executive.
Panel: System development workbenches

Chair:
GEORGE RITTERSBACH, Peat, Marwick, Mitchell & Co., Chicago, Illinois
Members:
MILTON JENKINS, Indiana University, Bloomington, Indiana
NICHOLAS ZVEGINTZOV, Software Maintenance News, Staten Island, New York

The cost of developing replacement business systems is astronomical. The choices of software packages or custom development seem to be multiyear, multimillion-dollar, and multi-risk projects. The use of software tools can substantially reduce the cost and time for producing target systems through reengineering of in-place applications. These structuring software tools generate a building-block prototype that can be extended functionally and technically. Users of these approaches claim significant improvement in developing the application dependent systems they require. This session discusses the use of these tools and techniques.

Panel: Office systems and workstations—trends today and tomorrow

Chair:
RANDY J. GOLDFIELD, The Omni Group, Ltd., New York, New York
Members:
JOHN CRAMP, Merrill Lynch, New York, New York
MATT GOOBY, GAF Corporation, Wayne, New Jersey

This session considers the current technology situation in a large number of corporations today. It assesses the strengths and weaknesses of available technology according to both end users and the individuals responsible for acquisition of equipment within the corporation. After reviewing the current technology environment, the panelists project into the future, predicting trends they see emerging in the next few years.
Panel: Productivity-driven office automation

Chair:

Members:
JONATHAN A. BROWN, GTE Service Corporation, Stamford, Connecticut

Major office automation projects must be cost-justified to senior management on the basis that white-collar productivity improvement will pay for the technology applied. The panelists discuss phased, business-driven methodologies intended to install quick-hit pilot programs, measure their productivity and quality impact, and project the profit improvement contribution of office automation to the business enterprise.
BUSINESS APPLICATIONS

MARVIN EHLERS, Track Chair
Natural Gas Pipeline of America
Lombard, Illinois