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A Visible Solution Paper

Enterprise Engineering

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This paper describes Enterprise Engineering, the Enterprise Engineering life cycle, and a computer-based Enterprise Engineering "tool set"

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Enterprise Engineering

"Enterprise Engineering," as it is defined by *Visible*, involves all the activities that organizations ("enterprises") perform to improve productivity, gain and maintain competitive advantage, optimize resources, deliver quality products and services, and meet customer expectations and demand. These can include traditional activities such as reorganization, concentration on core products and competencies, niche marketing, acquisition, merger, and new technologies. Enterprise Engineering also includes new techniques and methods such as business process re-engineering, continuous process improvement, total quality management, enterprise architecture, and enterprise integration.

One thing that distinguishes today's successful enterprise, business and government, is the ability to adapt to changes in environment, in markets, and in customer expectations. In order to survive into the 21st century, an enterprise must make change management an integral, enterprise-wide process. The nation's newest management "gurus" urge enterprise executives and managers to think in radical terms, often recommending dramatic overhaul of entire operations at a single stroke.

"Most of [the new gurus] agree that [an enterprise] should organize itself on the basis of process, such as fulfilling an order, instead of functions, such as marketing or manufacturing," writes John Byrne in *Business Week*. "That takes the enterprise's focus off its own internal structure and puts it on meeting customers' needs, where it belongs. [They] generally agree that time can be squeezed out of every job; that self-managed teams throw more challenge and meaning into employment; and that enterprises sorely need to create networks of relationships with customers, suppliers and competitors."¹

According to Byrne, they also tend to agree that smaller is better, yet they do not applaud wholesale downsizing as a cure-all. "If all you try to do is flatten your existing organization, you'll kill it," says Michael Hammer, president of Hammer and Co., Cambridge, MA. "The fat is not waiting around on top to be cut. It's marbled in, and the only way

you get it out is by grinding it out and frying it out."² This may mean that enterprises need to totally "re-engineer" how work gets done -- new goals, new methods, new processes, new measures, new technologies.

Enterprise Engineering Life Cycle

Enterprise Engineering provides both a road map and a vehicle for an enterprise's journey into the future. The Enterprise Engineering life cycle involves a multi-phased approach that coordinates strategic, operational, and organizational demands. The following is a typical Enterprise Engineering cycle:

1. Describe the enterprise mission in a brief statement of purpose: what the enterprise does, how, and for whom.
2. Make assumptions and gather data about external factors; for example, government policies, rates of inflation, markets, and demographic changes.
3. Assess enterprise strengths and weaknesses.
4. Establish goals and objectives and measures linked to the enterprise mission.
5. Develop strategic and operational plans to meet the goals and objectives.
6. Design/re-design and integrate cross-functional processes to meet goals and objectives.
7. Implement information systems that support enterprise processes and assist decision-making.
8. Evaluate performance to ensure that goals and objectives are being met.
9. Reevaluate and change goals, objectives, processes and measures as necessary.

Enterprise Engineering often involves wholesale enterprise culture change, and is quite difficult. The innovative and constructive use of computer-based tools, at every step in the cycle, can make such change much easier.

Enterprise Engineering Tools

Visible has an integrated E-CASE (Enterprise - Computer Aided Systems Engineering) product, *Visible Advantage*, that is uniquely suited to support the requirements of Enterprise Engineering.

Visible Advantage is a Windows™-based, Enterprise Engineering support system that includes extensive reporting capability, and state-of-the-art modeling, charting, analysis and information system design tools.

Visible Advantage can be used effectively as just a strategic planning tool, and such use will result in superior, multi-level strategic plans, but its strengths are best utilized when enterprises also use its power for all Enterprise Engineering-related activities. For example, *Visible Advantage* can be used to document an enterprise's performance measures and link them to appropriate elements of strategic plans. This linkage allows quick reaction to changes in environment, policy or customer requirements. Using *Visible Advantage*, the information requirements that support an enterprise's performance measures can also be modeled and translated into database, data warehouse, decision support system (DSS), and executive information system (EIS) designs. These designs can then be developed and implemented to provide for automated capture, reporting and analysis of performance measures.

In addition to its own tools, *Visible* uses Ventana Corporation's collaborative technology, GroupSystems, to facilitate many of the critical elements of strategic planning, such as consensus building and group decision making. GroupSystems is a set of computer-based tools that uniquely supports group sessions by allowing both simultaneous and anonymous participation. Anonymity allows ideas to be evaluated on their merit and not their source -- pressure to conform to a group norm is alleviated without losing group consensus. Simultaneous participation using networked computers significantly reduces the time required for meetings (average timesaving ranges from 50% to 80% with commensurate cost savings). Using Ventana's electronic meeting support systems,

Visible is able to conduct strategic planning sessions, that are extremely effective and productive, in an atmosphere that is both relaxed and supportive.

Visible also integrates workflow modeling and simulation tools with *Visible Advantage* and GroupSystems to complete its Enterprise Engineering tool set. The specific workflow product is based solely upon the needs of *Visible's* client enterprise.

Even though *Visible's* Enterprise Engineering tools are "high tech," they are extremely "user friendly."

Enterprise Engineering Methodology

Visible's state-of-the-art products and proven, comprehensive methodology facilitate implementing results-oriented, customer-focused management in any enterprise. Basically, *Visible's* methodology provides guidance and a flexible framework that allow an enterprise to establish effective, management practices that, at the same time, reflect the enterprise's unique culture and requirements. *Visible's* consultants can help an enterprise prepare for, develop, implement, and improve any of the following Enterprise Engineering practices:

Strategic Planning

Visible Advantage provides an easy way to document strategic elements and their relationships, including expectations of stakeholders (the enterprise's stockholders, suppliers, regulators, customers, employees, etc.), strengths (including core competencies) and weaknesses of the enterprise, and any assumptions about external factors. From this data, long-term strategic plans are developed and documented. These multi-level plans identify goals, objectives, success factors, cross-functional processes, priorities, performance measures and potential resource requirements for all enterprise elements. These strategic elements become the basis for a computer-based enterprise architecture (see box).

Process Improvement

Once strategic elements have been documented, enterprise engineering teams begin improving enterprise processes. These teams include the managers and staff actually involved with the process. It is always easier for people who are

familiar with a process to improve it.

The teams use *Visible's* Enterprise Engineering tools to diagram and document enterprise processes. The resulting enterprise architecture models are rich with detail and linked to applicable goals and objectives.

Just as blueprints depicting a house must be readable to those who use them, so too, must the models and diagrams which depict the enterprise's architecture be usable by those who must make business engineering decisions.

The way in which enterprise models are developed also affects the usability of the enterprise architecture. For example, waiting until every element has been modeled before beginning improvements may eventually result in an excellent enterprise architecture, but it is unlikely that management or workers will be interested in such a long-term investment. When remodeling a house, the most successful approach is often to proceed a room at a time; so it is when remodeling enterprises. *Visible's* Enterprise Engineering methodology encourages enterprise teams to make improvements one process at a time.

Improving parts of an enterprise which are not critical to its success is, at best, a waste of time and resources; at worst, it can have a detrimental impact on the enterprise by focusing attention needed for crucial functions on areas which are of little relative value. *Visible's* Enterprise Engineering methodology allows enterprises to shape processes as efficient and effective ways to meet strategic goals and objectives. Initial focus typically targets high impact areas such as customer service, new product delivery, or significant revenue areas. Successful Enterprise Engineering concentrates on what the enterprise actually needs so that efforts result in both long-term and short-term accomplishments.

Once an existing process has been modeled, it is analyzed thoroughly and improvement opportunities are identified. Potential improvements are tested using the "what if?" simulation capabilities of *Visible's* Enterprise Engineering tool set, keeping costs at a minimum. Only those improvements that show promise in the simulations are integrated. New processes are similarly designed and tested using the simulation tools before they are integrated into enterprise operations.

As the enterprise changes, the enterprise architecture must be changed; otherwise, the architecture will not accurately reflect the enterprise and will become a questionable source of assistance for decision making and improvement. Suppose the blueprints for a house show the electrical lines that were

originally installed, but someone rewired a few rooms without changing the diagrams. If an electrician were to use those out-of-date blueprints for another remodeling job, the result could be confusion, higher cost and possible injury. Likewise, enterprises that invest in developing enterprise models, but fail to provide for maintenance can expect the value of the models to diminish over time, and, if still used, to have a negative impact

Performance Measurement

Establishing the right performance measures is the key to successful Enterprise Engineering. An enterprise must be able to tell whether progress is being made on its critical goals and whether stakeholder expectations are being met.

Visible's tool set allows an enterprise to develop performance measures that are cross-functional and which are linked to the appropriate strategies, objectives, and performance criteria. Management's targets and thresholds for the measures, often using external benchmarks, are documented in detail in the architecture as each process is engineered. These data elements form the structure for an enterprise's performance measurement system.

Performance measurement documentation includes not only the content of reports, but also documents the path of the data from source to final report recipient. The combination of all the reports of all the performance measures becomes the basis for a data warehouse and an Executive Information System (EIS) that is truly tailored to the enterprise's requirements. Executives and managers use the information produced by the EIS to reinforce initiatives, reward behavior and change strategies. Employees use it to adjust operations and respond to strategic needs. By linking timely accurate measures to specific goals and objectives, process management becomes more of a science and less of an art.

Enterprise Engineering Success

Enterprise Engineering, which applies equally to well-established and newly-forming enterprises, responds to the fundamental business drivers of the 1990's: migration to "agile" production, globalization of markets, changing labor pools, and volatile political and business environments.

The basic element of successful Enterprise Engineering is the

linkage of all critical elements. *Visible's* Enterprise Engineering methodology and tool set allow an enterprise to define its strategy, then design and implement processes which support the strategy, and then manage the processes to assure enterprise success -- all while maintaining focus on goals, success factors and stakeholder expectations.

According to Scott Wallace, an independent industry analyst, "The tools and techniques of [information technology]...are still the best means available to analyze, document and design performance measurement systems."³

"The reason to invest in information technology is to add value to the enterprise," says Robert J. Benson, Dean of the School of Technology and Information Management at Washington University in St. Louis. "Linking [information technology] investment to business contribution is an important first step in supporting enterprise performance improvement."⁴ The Enterprise Engineering tools described in this paper are the ultimate value-added use of information technology.

In today's enterprises, knowledge and information are key resources on a par with capital, personnel, equipment and plant. Information systems are tightly interwoven within today's enterprises, requiring close coordination between information systems professionals and business engineers. The impact of business engineering requires significant change in how information is processed in an enterprise, which means that systems supporting changed processes must also be changed. *Visible's* Enterprise Engineering methodology and tools not only make effective change management possible, they make it easy.

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1. John A. Byrne, "Management's New Gurus," *Business Week*, August 31, 1992, pp. 44-52
2. Ibid.
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4. See Note 2.

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