

■ Case Study

Small Business Knowledge Management Success Story—*This Stuff Really Works!*

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Knowledge management (KM) is the sustained, integrated enterprise-wide application and optimization of intellectual capital to achieve organizational mission and goals. It provides private-sector and government organizations alike with the ability to anticipate and adapt to unpredictable change quickly and appropriately. As measured in direct benefits to your company or organization, KM:

- Improves enterprise-wide decision *quality* and *agility* through just-in-time intelligence
- Enhances mission performance
- Facilitates informed business development actions such as Bid/No-Bid decisions
- Fosters rapid prototyping of proposals and technical solutions for clients
- Encourages improved client support
- Supports organizational risk-mitigation initiatives.

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$$KM = [(PROCESSES + TOOLS) \times VISION]^{PEOPLE}$$

At the most fundamental level—that of a mathematical equation—KM is a dynamic combination of structured processes and automated tools multiplied by executive-level leadership and vision—and in turn leveraged exponentially by passionate people and *Communities of Practice* (CoPs) or user

groups. Passion, with proper focus, in the form of a KM champion is absolutely critical for KM initiatives to be sustained, successful efforts.

Major corporations in Europe, Japan, and the United States have led the way in introducing and implementing knowledge management business processes and repeatable, structured methodologies. But small companies in particular will benefit from the application of KM for enhanced decision support, expanded human performance, and sustained competitive advantage. It is increasingly imperative for small companies to leverage their collective intellect for business development achievement and superlative, long-term client support. Providing work environments that are conducive to the generation, exchange, and respect of knowledge and ideas will pay dividends in morale, staff retention, and financial revenue and profit margins. Pleasant physical facilities; progressive human asset policies; an 'open door' management culture; articulated, achievable incentive programs; and a culture of genuine partnership and collaboration all participate in inspiring and harnessing the best in and from knowledge employees.

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Knowledge management evolved in part from information management and the increase in computerization since the 1970s. To those important IT activities and developments must be added the fields of artificial intelligence, expert systems, semiotics (the study of symbols, signs, and their meaning), complexity theory, cognitive science, library science, and document management as well as organizational psychology theory and dynamics, operations research, human resource development, and technical writing. Significant, however, were the contributions of management theorists and practitioners in Europe, the Pacific Rim, and the United States to our collective understanding of how knowledge is produced, used, and disseminated throughout organizations. Among them were Everett M. Rogers and his groundbreaking work on the diffusion of innovations, and Thomas J. Allen's (of MIT at the time) research on information technology and technology transfer.

SMALL BUSINESS SUCCESS STORY—KM AS AN INTEGRAL PART OF A METEORIC GROWTH CURVE

Three years ago, my employer, RS Information Systems, Inc. (RSIS[®]), in McLean, Virginia, initiated and now continues to fund and proactively support the RSIS Business Development Knowledge Base as an integral part of its enterprise-wide KM initiative. At the time in late 1998, the company stood at 120 staff professionals and \$15 million in annual revenues. Incredibly, we closed the financial books on CY2001 with 1200 staff members nationwide and \$142 million in revenue. That's quite a meteoric growth curve!

Incorporated in September 1992 and certified by the US Small Business Administration (SBA) as an 8(a) small disadvantaged firm through February 2003, RSIS is focused on *mission-critical* information technology (IT), engineering, and scientific services and solutions for US Federal Government defense, civilian, law enforcement, and intelligence agencies. Headquartered in McLean, Virginia (USA), and built upon a foundation of integrity coupled with technical and programmatic excellence, RSIS is an African-American-owned firm whose diverse professional talent base includes 60% minorities, women, veterans, and handicapped individuals. Many of our employees hold Microsoft, NetWare, and other industry certifications in systems engineering, network administration, and relevant disciplines. This large, well-educated and experienced talent pool allows RSIS to respond rapidly to emer-

ging and surge technical support requirements, thereby guaranteeing high-quality and timely project execution.

During these same 3 years, RSIS has become one of the premier small businesses in the country as measured by its national ranking in *Inc.* magazine and #62 standing in *Washington Technology's* Top 100 Federal Prime Contracting Firms, as well as the dozens of quality, performance, and leadership awards the company has received. In 2000, RSIS was selected as NASA's 'Minority Contractor of the Year'. The Society of Financial Service Professionals selected RSIS as the recipient of its 2001 American Business Ethics Award in the Mid-sized Company category at the US *national level*. In addition, RSIS is one of 15 companies named 'Best of the Best' of minority-owned companies in the Commonwealth of Virginia in 2001 by the Virginia Department of Minority Business Enterprise, a part of the Virginia Department of Commerce. As a highly successful prime contractor with a funded contract backlog of \$800 million, RSIS has demonstrated an enviable history of meeting the quantitative demands of metrics-driven, *performance-based* contracting. The company supports 80 prime contracts and 125,000 users from Korea and Hawaii to Elizabeth City, North Carolina, and from Washington, DC, to Colorado Springs. RSIS is clearly an example of a successful small business on a positive trajectory to become a stable, long-term *Fortune 1000* company.

Are the knowledge management initiatives integral to the very tangible successes the company has enjoyed? Absolutely! We're able to develop more high-impact, client-focused winning proposals than ever before and do multiple proposals *concurrently*. Direct-charge technical staff are able to stay focused on their client support activities rather than be required to spend days at corporate headquarters writing proposals. This practice translates to enhanced customer satisfaction because people stay on their primary job. And importantly, RSIS' Bid & Proposal (B&P) costs are contained. In addition, RSIS technical staff are able to harness the best-of-breed and lessons learned from the company's 80+ prime contracts and apply these innovative and proven solutions quickly to address their client's technical and programmatic requirements. RSIS' 'Birds of a Feather' (BOF) program facilitates the near-real-time sharing of industry-standard best practices among RSIS projects nationwide. This program is conducted through our firewalled intranet and email systems. Technical staff are grouped into 'flocks' that include database administrators, help desk specialists, applications developers, and network engineers, Web developers, and

telecommunications specialists. When an individual encounters a technical or programmatic challenge on the job, they query the BOF system and often receive multiple responses from around the country within 1–3 hours.

Let's say that Ms Smythe has just been asked by her National Weather Service (NWS) customer to investigate automated, commercially available help desk software packages. She sends an email to the members of the Help Desk Birds-of-a-Feather flock, asking for their experience with commercial off-the-shelf (COTS) help desk software applications. RSIS Headquarters Management Information System (MIS) Team replies that they are also interested in getting copied on the responses because the Team is considering using a help desk software package at RSIS Headquarters. Ms Jones replies with her experience with the Support Magic tool at the General Services Administration (GSA). Mr Scott also replies with the Department of the Interior's (DOI) Support Magic experiences, including their use of the Escalation Server. Ms Murphy replies with her experience at the US Air Force Pacific Air Forces (PACAF) Headquarters with Heat, and Mr White weighs in with his experience using Lotus Notes at the Department of Energy in Las Vegas, Nevada. In a few hours, the original requestor, Ms Smythe, is able to provide valuable feedback to her NWS government customer, and the Corporate MIS Team is able to provide an educated recommendation to RSIS Executive Management. That is the value, speed, and efficiency gained from proactive, grassroots knowledge-sharing processes, which are aided by automated computer and telecommunications tools such as the intranet and email servers and routers.

SMALL-SCALE, PILOT KM INITIATIVES APPLIED TO PROPOSAL DEVELOPMENT

Small-scale pilot KM initiatives are critical to launch and sustain, and then to leverage and propagate their success throughout the organization. Successful pilots become *proofs of concept* that can be transplanted and adopted in other parts of the organization. Importantly, knowledge initiatives focused on measurable and achievable business benefits will have a higher probability of acceptance and sustained success.

RSIS' Business Development Knowledge Base is a robust Web-based, password-protected interactive tool that RSIS staff professionals can access remotely to qualify marketing opportunities and develop proposals and presentations. Currently,

approximately 35 RSIS staff access the Knowledge Base on PC workstations and laptop computers, although the system can serve more than 1000 end users. Using the Inforouter search engine manufactured by Active Innovations, Inc., in a secure networked Windows NT 4.0 environment, company employees can browse thousands of indexed files or perform keyword searches to identify relevant files in multiple application formats, including MS-Word, Corel WordPerfect, HTML, XML, Rich Text (rtf), and PowerPoint as well as pdf (Adobe Acrobat), Excel, and MS Outlook email files. Queries result in lists of files *prioritized by relevance* and presented to users in the familiar format of a Yahoo or Google.com search result. The RSIS Knowledge Base captures the domain-specific technical knowledge as well as programmatic and client-specific expertise of the staff. In addition, the repository archives current best-of-breed proposal narrative, graphics, and oral presentation slides. Currency is a critical parameter of the validity and value of the Knowledge Base.

The direct business development benefits of the Business Development Knowledge Base have been *rapid proposal prototyping* as well as informed Bid/No-Bid decision making. By leveraging the Knowledge Base, RSIS Proposal Managers can generate first-draft proposal documents quickly with minimal Bid and Proposal (B&P) expenditure and little impact on billable technical staff. The proposal response lifecycle can then be used to enhance and polish the proposal documents, rather than expend the time and resources tracking and locating resumes, project summaries, and other company information assets. By September 2000, we had progressed to the point where three people could and did develop a 50-page technical and management proposal, including resumés and project descriptions, to the National Oceanic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL) at Princeton University within 24 hours from RFP release to delivery to the client! Without the Knowledge Base, that proposal would have required those same people at least a week. And RSIS marketing staff and Capture Managers use the Business Development Knowledge Base as one important tool to make informed determinations of the feasibility of pursuing a given procurement opportunity. This is done by assessing past and present contractual experience and technical skill sets of professional staff.

Table 1 provides a cross-section of the types of knowledge assets that a company should consider inventorying, capturing, and leveraging in its knowledge base.

Table 1. Cross-section of company knowledge and information assets

Company assets
 Company core competencies (technical discussion)
 Company bonding, registrations, and certifications
 Licenses
 Maps (office locations, project locations, number of projects by state or region, etc.)
 Customer base
 Patents
 Trademarks
 Company organizational charts
 Company best practices
 Industry certifications and accreditations (e.g. Software Engineering Institute (SEI), Capability Maturity Model (CMM), ISO 9001:2000, and IEEE)
 Facility and personnel security clearances
 Industry and business community awards, commendations, and recognition (e.g. SBA Entrepreneur of the Year, Ernst & Young)
 Customer endorsements and commendations
 Small/minority business involvement; HUBZone involvement
 Corporate-sponsored community service and outreach activities
 Company videos
 Facilities diagrams
 Best Management Practices (BMPs)
 Technical and business articles and books authored by company staff
 Interview guides
 Vendor manuals

Contractual resources
 Project/product descriptions or summaries
 Project performance metrics
 Award fee statistics per project
 Project success stories

Human resources
 Resumés
 Personnel diversity data (minorities, women, veterans, handicapped individuals)
 Incumbent capture rates
 Employee turnover rates
 Employee recruitment plan and metrics
 Employee retention metrics
 Staff by project, office, technical discipline, degree

Business development and proposal development assets
 Strategic plans and benchmarking data
 Market segmentation analyses
 Competitor information
 Bid and Proposal (B&P) spending patterns
 Winning proposals
 Multimedia presentations to clients
 Teaming agreements
 Teaming agreement statements of work (SOWs)
 Proposal templates (e.g. executive summaries, cover letters, etc.)
 Freedom of Information Act (FOIA) documents
 Proposal lessons learned (from client debriefings)
 Sales volumes by client sector, line of business (LOB), and geographic area
 Tactical business plans

Corporate infrastructure and process assets

Continues

Table 1. (Continued)

Documentation capabilities
 Business processes (procurement systems and mechanisms, financial systems, invoicing procedures, cost accounting, scheduling, automated tracking tools)

Project-specific assets
 Customer Evaluation Reports (A/E Contract Appraisal System Support (ACASS), CPARS, PPAIS, and PPIMS ratings)
 Contract deliverables
 Earned Value Analysis (EVA) Results by project
 Work breakdown structures (WBSs)
 Project management plans

Computer-related assets
 Software development capabilities and practices
 Software source code
 Non-operational hardware and software *testbed* environments
 Computer equipment and resources

Financial assets
 Budget forecasts
 Capital expenses
 Annual revenues

Relationship assets
 Cooperative agreements with colleges and universities, particularly HBCUs
 Strategic business alliances (with organizations such as Microsoft Solutions, Lotus, Dell, and Oracle)

Public relations assets
 Ads placed in professional and trade journals
 Tradeshow modules (text and graphics)
 External news releases

Engineering/manufacturing assets
 Engineering 'white papers' (position papers)
 Manufacturing defect rate data
 Engineering drawings
 Engineering Change Proposals (ECPs)
 Test procedures
 Requirements data

Policies and plans
 Make-or-buy policy
 Management plans
 Health and safety plans
 Technology transfer plans
 Professional compensation plans
 Design control plans
 Software quality assurance (SQA) plans
 Phase in/Phase out and transition plans
 Subcontractor management plans
 Configuration Management (CM) Plans

BALANCE OF TOOLS, DISCIPLINED METHODOLOGIES, AND A SUPPORTIVE BUSINESS CULTURE

Structured processes for knowledge transfer and capture ensure the sustained value and validity of the RSIS Knowledge Base Best practices, lessons learned, client commendations and awards, performance metrics and standards, emerging technologies, staffing success stories, incumbent capture



statistics, and information regarding rapid contract transitions are routinely funneled into the RSIS Proposal Development Department. Sources of this information span executive management, monthly technical progress reports for projects nationwide, division-level leadership, and direct interviews of select subject-matter experts and other technical staff. The direct knowledge transfer and sharing expertise and experience of RSIS professional staff are also captured annually as an integral part of the corporate resume update process. These knowledge transfer processes are reinforced regularly by all levels of management. Successful KM at RSIS results from the dynamic integration of supportive, forward-looking executive leadership; a business culture of and organizational commitment to mutual trust and sharing; the passion of people at all levels of the organization, and technology-based, user-driven solutions and tools.

DEVELOPMENT DRIVERS AND CHALLENGES

The RSIS Business Development Knowledge Base, and indeed the company's entire KM initiative, began 3 years ago. Given the reality of 120 total company staff in 1998 and only 2 full-time professionals in Proposal Development at the time, the need to do more with limited resources was immediate and critical. We had no centralized, electronic repository of information. There were no institutionalized or even *ad hoc* processes in place to identify, audit, collect, archive, and leverage key knowledge within the company. On the other hand, we had a significant number of electronic directories and files of proposals, presentations, resumés, and project summaries. One individual prior to 1998 had actually attempted to extract, catalogue, and organize proposal-related information into some semblance of order, but that initiative had never been completed. After having developed and received management buy-in for the *architecture* of the initial proposal system, one of my staff (a full-time Proposal Manager) and I began the arduous task of manually sorting through scores of proposal directories and hundreds of related files. This was done in addition to a full-time proposal development workload. Within 7 months, 5 years' worth of electronic files for proposals, presentations, resumés, project summaries, awards and commendations, white papers, public relations materials, and other information had been reviewed, purged as appropriate, and organized into the pre-approved architecture. The initial search engine selected was *dtSearch*[®], manufactured by

dtSearch Corporation, which is incorporated in Virginia. Unfortunately in late 1999, *dtSearch* required frequent, time-consuming, and manual indexing and re-indexing. Server space demands were significant as the number of proposal modules increased. Search results were not as user-friendly as they needed to be for our requirement.

Concurrent with our efforts to architect and populate our fledgling Knowledge Base, I worked closely with RSIS executive management to secure their support to institute knowledge transfer and collection processes in a disciplined and repeatable manner nationwide. Monthly technical progress reports now were being sent to me as well as to the technical managers. Those reports were then combed for relevant technical innovations, lessons learned, staffing successes, best practices, and so forth. Resumés were generated for every new hire, and annual resume updates were linked to the performance appraisal process. Eventually, 'Knowledge-Sharing Experience' was a key element incorporated into each RSIS resume for all staff nationwide. Project summaries are now created according to a structured, consistent, and comprehensive templates when contracts phase in. The summaries are then updated when major new tasks are added and then again upon contract completion. On a regular basis during business development review meetings and strategic planning meetings, critical knowledge is shared from across the many defense, civilian, and law enforcement contracts that RSIS supports. The culture of knowledge sharing with the company has extended to the establishment of technical Centers for Excellence (CFEs) and our 'Birds-of-a-Feather' program. Through these institutionalized programs, domain-specific technical knowledge and best practices can be applied rapidly to provide our clients with proven solutions in near-real time. Recently, an important, relevant development in Corporate Communications/Public Relations was integrated directly into a civilian agency proposal within 1 hour of notification.

SUSTAINMENT AND FUTURE ENHANCEMENTS

By mid-2000 one of my Proposal Managers, who is also our Knowledge Engineer, along with one Web developer and I migrated the prototype Knowledge Base from *dtSearch* to Microsoft Index Server. With this application, and 'fed' continuously by the established knowledge transfer processes, the current RSIS Business Development Knowledge Base was fielded in the Fall of 2000. In November

2001, the system was migrated seamlessly within 1 week to the Inforouter search engine (Active Innovations, Inc.) It is now maintained by our Knowledge Engineer and one Web developer. Of note is that RSIS paid for my Knowledge Engineer to complete the **Knowledge Management Certification** program. This program is conducted under the auspices of the Knowledge Management Certification Board (KMCB), an independent, non-profit organization whose mission is to set professional standards and provide certification for Knowledge Management professionals. KMCB is a member of the National Organization for Competency Assurance (NOCA). Importantly, KMCB also follows the draft standards set by the ISO Committee on Conformity Assessment. KMCB works with the Global Knowledge Economics Council to co-develop ANSI and ISO standards for KM competency.

The system maintenance requirements are modest at present. Incoming information is evaluated during the course of several days, and then indexed into the Knowledge Base rapidly. As Vice President of Knowledge Management for the firm, I provide both oversight for the KM initiative enterprise-wide as well as hands-on collection and analysis of various knowledge assets.

As part of our KM continuous process improvement (CPI) program, we envision the following enhancements to the maturing RSIS Business Development Knowledge Base by the middle of 2002:

- Additional structured categories to facilitate rapid retrieval of select full-text proposal modules
- Linkage with photographic 'lightbox' for browsing the current inventory of stock and company photographs
- Monitor and report performance metrics (time and B&P cost savings) associated with the KM

processes at RSIS for use in future planning and funding decisions

- Further integration of RSIS' Process Asset Library (PAL), which contains Performance Evaluation Metrics; Project Management Plans; Software Development Plans; Standard Operating Procedures (SOPs); and SEI CMM, ISO, and IEEE standards and practices with the RSIS Knowledge Base

TRANSFERABLE LESSONS LEARNED

There are four key ingredients in the RSIS KM success story. First was a KM **champion**, an individual who understood and articulated the tangible benefits of knowledge management to executive management as well as Business Development and technical staff. Second was **executive leadership**, support, and vision necessary to grasp the value of KM and then fund the processes and clear the internal impediments to knowledge sharing. Third was the **disciplined and repeatable processes** put in place enterprise wide within the company to funnel knowledge and information into one central point in near-real-time. And fourth was the **Web-based knowledge management tools**.

Experience has demonstrated the value of starting your own company's Business Development KM initiative as soon as possible in the corporate life of your firm. This approach does two things. First, there will be less raw information and data to review, purge, and categorize. Second, the sooner that your staff develop and hone their knowledge-sharing skills and behaviors, the more quickly that your firm will emerge as a learning organization—one that adapt and prosper in a business environment of fast-paced and unpredictable change.