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Navigating Information Technology Horizons^{SM}

Solutions — The Timely Way to Buy Technology in Cold Economic Times

Analyst: Anne MacFarland

Management Summary

Hunkering down during a protracted economic slowdown has a way of bringing enterprises face to face with their inefficiencies and overspending and their need to evolve their business process – all things that could be postponed or overlooked when revenues were flush and markets were expanding. **In lean times there is a constant call to do more with less – but there is also a need to simply do more**. Constrained budgets beg additional revenue streams. Federal regulators, driven by their own need to optimize, ask more of the industry enterprises they regulate. Within the enterprise, the need to second source supplies grows. **Even with curtailed operations, enterprise data continues to grow**.

Enterprises must do more for their customers as well. More customer data is collected, and this data must be more accessible. More applications must be linked to woo customers and close a sale when margins are thin. High quality of customer service drives another *more* asked of enterprise data. As enterprises continue to cope from growing data volumes, the pain is exacerbated when there is not a regular volume of revenues to deal with it.

Optimizing business processes, generally by integration, is the answer, but this usually involves spending money – and the risks of spending wrong are considerable. If you start with a limited deployment, the benefits or ROI achieved may not justify future purchases. On the other hand, if you implement on a large scale, business requirements may change before the capability is fully deployed. The risks of deploying increasingly-complex systems are large, but the penalty of failure or inaction is even larger. Many enterprises do not have the staff or skills to evolve their computer environments the way they would have when revenues were a safe presumption. **You must be able to implement small and grow as needed. One way to do this is to buy solutions.**

Dorothy Parker once said, "People don't want to write – they want to have written." **Similarly, many enterprises want to have their solution integrated, tested, safely deployed, and moved from pilot to production without unanticipated delay or expense.** That said, they also want to purchase integrated solutions that address specific business problems but integrate with their other information systems. Open standards can allow solutions to integrate into the larger environment. Autonomic or self-healing capabilities, give resiliency and availability needed in high demand environments. Read on for details and two solution examples from IBM.

The New Solutions

In the not-so-old days, most enterprises had vast IT shops teeming with clever programmers writing application code for "do-it-yourself" solutions. Over time, however, these skills became scarce and many enterprises realized that their fundamental business was not developing and running custom applications. For a long time there were few good alternatives. Now, integrated solutions, consisting of a core application, server and storage hardware, middleware software, and complementary consulting and implementation services are now available as a single package with business-centric pricing. End-to-end, integrated solutions are designed specifically to facilitate ease of implementation and more rapid attainment of production than with the piece parts approach. **The value of buying an IT solution increases when the expertise of the people engaged in a business process lies outside of IT.**

Solutions can be placed into one of three categories:

- **Infrastructure Solutions** architected into a framework of hardware, operating systems, connectivity, middleware software, and applications upon which companies will build their enterprise applications and business solutions;

- **Enterprise Application Solutions** categorized as either Enterprise Resource Planning (ERP), Supply Chain Management (SCM), or Customer Relationship Management (CRM); and

- **Industry-Specific Solutions** developed to accommodate an industry's core business, e.g., content creation, life-cycle management and distribution of unstructured digitized data such as video, audio, or medical images.

These solutions allow a business to refocus on evolving the business processes that IT supports to meet their current needs.

The Customer Perspective

In order to deliver viable solutions, vendors must have a detailed understanding of enterprise requirements within the context of the specific business issues that need to be addressed. **End-to-end solutions must be:**

- **Pervasive** (not just departmental in scope) and extensible;

- **Quality-guaranteed** (with the resilience and quantification to allow the cost of the solution to be built into the business model);

- **Integrated** with the rest of the IT environment through open standards, both for aggregated management at the physical and application level, and for integrated data access where appropriate; and

- **Supported** by vendor resources that make evaluating, buying, and deploying them a reasonable process.

Whether large or small, enterprises want comprehensive product offerings and global support services that are typical of a large vendor. **Enterprises may need the comprehensive expertise of specialists at many levels, but they want only what they need, and they want it at a reasonable cost.** They also require a personal relationship and single point of contact.

Major vendors need to offer a range of applications and delivery methods to be able to offer the right-sized and right-priced solution for each customer. They also need business partners to sell to customers who need more than online-sales and support, but who do not spend enough money to justify a direct sales call from a large vendor.[1]

These local or industry-specific business partners need large vendor partners for their credibility, permanence, broad portfolio, support services and global reach. As middlemen, the business partners can offer an aura of neutrality, together with a range of product choices, to their customers.

The Deployment Spectrum

The success of a deployment depends on everything working well together – both the organizations delivering the solution, and the products and services they deploy. **A comprehensive, preferably nearby, test bed may be necessary to prove the validity of specific solution configurations to prospects.** All elements of the solution should be scalable to

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[1] "Enough" used to be about a $.5 million. But these days, the largest vendors don't want to sell directly unless several-to-many millions are involved.

support different strengths and sizes of implementation, and should be deployable wherever the whims of the market may take the business. **With the implementation of high-speed networks using open standard protocols, enterprises are attaching their data storage to networks to facilitate** *"any file, anytime, anywhere accessibility of data."* However, at the same time, they must be comfortable that their implementation will ensure the integrity and security of their valuable business data.

In some cases, solutions are not deployed directly by the enterprise but are accessed through an Application Service Provider (ASP). **An ASP makes compelling sense for those enterprises where the benefits of maintaining IT skills do not justify the cost.** It also saves the enterprise the related capital expense and allows the costs of both purchase and operation to be shared through a per-transaction cost that may be more than offset by reduced operational costs. In some cases, such as a large enterprise, that already has an established data center, the prepackaged solution can be acquired as an internally hosted utility.

The multi-dimensional spectrum of solution deployment has the flexibility to satisfy all parties by providing customers with solutions tailored to the need, not just to how much they can or are willing to spend. **With the exponential explosion of stored data in data-intensive industries, storage has emerged as a vital and integral part of end-to-end business solutions.** Storage solutions for two data-centric industries help illustrate the benefits of the solution approach.

Medical Imaging Solution

The Situation Requires Action

Concerns about patient confidentiality and perennial budget constraints have made healthcare institutions slow to move away from paper and film to digitized images and integrated information systems. While first generation computerized patient information systems are increasingly common now, computerized imaging systems have been slower to evolve.

Responding to cost and liquidity pressures,

many healthcare institutions have joined as geographically-dispersed consortia. While HMO and group practices have succeeded in increasing patient loads, they remain under extreme pressures to control costs. Doctors are ordering more imaging procedures both to improve health care and to reduce liability risk. These trends have exacerbated inefficiencies of traditional medical imaging practices: un-integrated departmental-level systems, incom–plete or hybrid systems, and, particularly, courier- (or patient-) based medical image transfer, with its potential for security violations. While health care institutions are limited in their ability to absorb new costs, particularly if the penalty for doing nothing is not obvious, HIPAA mandates[2] are compelling these institutions to address the medical imaging situation now.

The Need to Tie into IT

With DICOM[3] medical data standards, a medical imaging management system can interface with the patient scheduling system, which improves the basic content distribution process. Digitized medical images are large files whose transfer can clog a network or system. Since appointments are mostly known in advance, an automated pre-fetch of appropriate records to the local cache at the office or hospital typically occurs during the lull in network usage the night before the appointment. This "just-in-time" approach also minimizes the distributed storage capacity needed to support the system.

The Results

Medical imaging solutions have done more than facilitate pervasive access, which was their primary goal. They have:

- **Improved quality of care**;

- **Delivered fail-safe data integrity**, since there is a master copy which cannot be modified or "lost";

- **Enhanced viewing options for procedures**, like MRIs that involve not just a dozen but hundreds of slices;

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[2] The Health Information Portability and Accountability Act of 1996 covers general patient information as well as PACS (Picture Archiving and Communication Systems) and addresses privacy security and confidentiality issues.
[3] Digital Imaging and Communication in Medicine.

- **Provided durable access** to medical records which can aid in subsequent research and statistical studies;

- **Added disaster recoverability** for medical records, a problem many hospitals did not realize that they had; and

- **Created auditable documentation** of procedures performed to help in hospital liability cases.

While many of these benefits are hard to quantify financially, they are undeniable.

Longer Term Ramifications

As hospitals get more competitive, digitized image systems can attract top notch admitting physicians that fill the beds. Not only do the image systems supply state-of-the-art service, but their automated searches can speed the research that allows hospitals to become specialist institutions for a given practice (e.g., burns, wounds, or a specific disease). Once digitized medical imaging is pervasively deployed, the ability to make digital records anonymous will allow cheaper and more pervasive population studies, leading to more efficient research.

The opportunity to diversify the avail–ability of a patient's records to wherever s/he is receiving care will ultimately depend on political, not technology decisions. Once digitized records are secured within a hospital (by permissions and/or encryption), there is no security reason[4] not to extend the geography, and many reasons to do so. If you have a heart attack in St. Louis, it would be helpful to access your earlier cardiograms that are in Boise.

Solutions Are The Answer

Most hospitals and medical facilities do not see themselves as do-it-yourself data processing experts; but as medical experts. Many are happy to rely on other experts to meet their technical needs, and to pay for imaging on a per image or per transaction basis as part of the cost of doing business. With no capital outlays, it is a way to implement a comprehensive solution that just might otherwise be impossible. **Solutions give these customers what they need without making them do more than they desire to do or are incapable of doing.**

Digital Media Management Solution

The Environment

The audio and video production industry (media, entertainment, education, etc.) requires multiple solutions encompassing the creation, distribution and management of vast amounts of digitized data. All share a need for pervasive and timely access to large files. Tape cartridges and sneaker nets won't do, particularly when geographically-significant distances are involved. Whether they are large enterprises or small independents, these customers need to retrieve large files when and where they need. These customers also need tiered storage capabilities to offload the large files that are at a state of *finished* to a lower tier of storage to optimize access time for the more active files[5]. Reads tend to be sequential, so tape might be used effectively for lower-cost archiving. Their storage environments must conform to business needs, not to architectural or scaling limitations. At the same time, many want to continue to re-use proprietary remnants of earlier systems.

A Closer Tie-in With IT

Once production images are digitized, many IT capabilities come into play. Since the files are not static, this becomes a **file management situations** rather than a content distribution situation. Synchronization and version control are crucial elements, requiring a file system that provides data storage flexibility and agility.

The Results

- **Superior sharing**, specifically, a more granular degree of access and data integrity, allowing a more parallelized editing process;

- **More predictable time to market** as the vagaries of physical delivery are removed;

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[4] The validity of the concept of "trusted spaces" has ebbed with the growth of temporary partnerships, cooperation with rivals, and a lack of confidence in the value of loyalty. Once you trust nobody, you can be gregarious in new ways.

[5] See *Tiered Storage Classes Save Money – Getting The Most Out Of Your Storage Infrastructure* in **The Clipper Group Explorer** dated August 29, 2002, at www.clipper.com/research/TCG2002030.pdf.

- **Better editing**, as the number of edits is not constrained by cumbersomeness; and

- **Elimination of the need to catalog, store, and physically retrieve** a large volume of analog videotapes, which themselves are prone to erasure and deterioration.

Longer Term Ramifications

Converting to digital film also changes the underlying process. There are no scraps of film left on the cutting room floor. All the assets persist as files, somewhere, that can be reused not only as teasers and trailers, but sold as cameos for product ads, and even as video games. News is recycled into nostalgia and reanalyzed as educational programming. In education, lectures become repeatable Webcasts.

Audio and video production was once merely the generation of a repeatable version of an ephemeral performance (lecture, play, concert). With digitization, the process produces a more optimizable, enhanceable, and reusable product – more like a book. Dubbing in another language is much easier (and cheaper) than it was in pre-digital days. This changes the economics of a once-risky business and the price of entry.

Brought to You by IBM

These, and other similar solutions, are what Kathy Smith, IBM's VP of Emerging Business Opportunity Marketing, calls "data-defined designs." She added, "They are all data-centric, which is why they are classified as Storage Solutions sold in conjunction with IBM Business Partners."

Most solutions do not originate in a *"one size fits all" f*orm. Customers bring different agendas, including:

- A desire for customizable solutions;

- Piece parts that will integrate with existing assets and components in solutions;

- The need for competitive parity or advantage through technology; and

- A need to identify the cheapest way to do what is necessary.

Suburban Imaging in Minnesota valued IBM Business Partner Emageon's Storage Proven standards-based medical imaging

solution and their ability to deliver it as a pay-per use utility. Swedish National TV chose the IBM Digital Media Management Solution for quicker processing of breaking stories.

Each customer is looking for a different variation on a common theme. IBM's extensive business partner network allows multiple sources of alternative products for different needs. The *IBM TotalStorage Proven* program, announced a year ago, is an interoperability-testing program where third-party hardware and software are tested with IBM's storage products. The Storage Proven program leverages the experiences of IBM's worldwide network of laboratories, the IBM Interoperability Centers, Solution Partnership Centers (SPCs), and Partner-owned *Total-Storage Solutions Centers* to test, customize, and integrate solutions before they are delivered to the customer. This enables enterprises to extend or retool their solutions as their business situation and industry architectures change.

Conclusion

As the lack of time changes the way we do business, solutions are one way to take the delay out of implementing a business process, while providing the flexibility of implementation to fully address each enterprise's situation. With the anchor of a large vendor and well-chosen business partners, the solution can be sized and featured to fit an enterprise's need and supported whatever an enterprise's geography. With the right implementer, the test bed to pre-integrate the components, and the proper post-sales support, enterprises can be assured of reduced risk, faster deployment, and speed of presence in the marketplace. By using open standards, integrating with the rest of the IT environment is easier.

Cost savings may be foremost on some minds, but cost avoidance and revenue generation are equally important. *Buying by the solution* **lets you tailor the buy to your vision in all three areas.**

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➢ *The Clipper Group can be reached at 781-235-0085 and found on the web at www.clipper.com.*

About the Author

Anne MacFarland **is Director of Enterprise Architectures and Infrastructure Solutions for The Clipper Group.** She joined The Clipper Group, where she previously was Director of Enterprise Systems Research, after a long career in library systems, business archives, consulting, research, and freelance writing. Ms. MacFarland specializes in architectures and strategic business solutions offered by enterprise systems, software, and storage vendors, in trends in enterprise systems and networks, and in explaining these trends and the underlying technologies in simple business terms. Ms. MacFarland earned a Bachelor of Arts degree from Cornell University, where she was a College Scholar, and a Masters of Library Science from Southern Connecticut State University.

➢ *Reach Anne MacFarland via e-mail at anne.macfarland@clipper.com or at 781-235-0085 Ext. 28. (Please dial "1-28" when you hear the automated attendant.)*

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