



# BCG IT UPDATE

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Information Systems Consulting to the Construction Industry

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## CFMA Conference

Don't miss Christian Burger at the upcoming CFMA conference at the Las Vegas Convention Center, May 23-26, 2006. For more details, visit [www.cfma.org](http://www.cfma.org) or call Christian at (630) 510-1875.

## Change, Growth, Chaos, Success

A Message from Christian Burger



During technology initiatives such as implementing new systems, we seem always to focus on technology or software rather than on the more significant and variable component: change in the organization.

*Atlantic Monthly* recently ran a retrospective on what some of their distinguished contributors had to say about various market-based issues. One contributor was Lester Thurow, a former Dean of the Sloan Business School at MIT and a well-known columnist for *Newsweek* and *The New York Times*. His essay was on wealth-building strategies; but I want to share a particularly important excerpt that has wider relevance:

*Successful societies create and manage a tension between order and chaos without letting either of them get out of hand. New ideas are easily frustrat-*

*ed if societies are not receptive to the chaos that comes from change, yet societies have to maintain an appropriate degree of order to take advantage of creative breakthroughs.*

Though unintended I am sure, Thurow's point is clearly applicable to organizations in the process of implementing new software or processes. He suggests that organizations (societies) must allow for some unpredictability or lack of control while important change is underway. At the same time, for organizations to benefit from such change, a degree of control must be exerted. This means maintaining a delicate balance—another fine role for the Executive Sponsor.

At Burger Consulting, two of the most common causes of failed implementations we see is an unwillingness to let go of old processes and procedures and an insistence that the new system mimic the old. Thurow would suggest that the organization is “not being receptive to chaos.” (continued on p.5)

## Vendors Vying to Win Viewer Wars

Competition Heats Up for Technology Providers by Angus Frost

Whenever clients ask about document imaging, management and collaboration tools, viewer technology routinely comes up. A truly paperless solution may still be far off, but as our industry moves towards a combined hard- and electronic-copy environment, sharing and collaborating on documents becomes more helpful and important.

Viewer technology—which allows a user to view specific files without having the originating application installed—has been around for years. Viewing files this way is typically faster than using the original application, simply because one does not have to load all of the editing capability as well. The basic requirements of such technology are the ability to view a variety of different file formats, to provide document markup and redaction and, importantly, to protect the document from printing, editing and/or copying by third parties. This

last feature is becoming increasingly important; for as documents become easier to share and distribute, controlling and protecting proprietary technical information and other intellectual capital is vital.

### Is A Single Solution Possible?

A single, seamless viewer technology solution for all the tools in our industry may be years away. Part of the complexity is the capabilities of different systems:

- Document imaging systems typically scan paper documents to what's called a TIFF file—essentially a single image that amounts to a storage mechanism for visual information. These systems normally provide a viewer that allows a user to add notes, markups, and even to redact certain text within the document for routing and later retrieval. (continued on p.3)

## Two Senior Consultants Join BCG

Burger Consulting is pleased to announce that two accomplished consultants, Angus Frost and John Patridge, joined the firm late last year. In both cases, BCG's existing relationship with an experienced individual resulted in a valuable addition to our consulting team.

### Angus Frost

Christian had worked with Angus Frost when the latter was CTO at Wight & Co., a prominent AEC design/build firm based in Chicago, during its search for a new software solution. It was obvious that his skills were complementary to the work that BCG was doing for clients, and so after staying in contract for some years, we welcomed the chance to work together more closely. Previous to working for Wight & Co., Frost was involved in IT projects at the large executive search firm, Spencer Stuart. He was able to provide help to our clients immediately with infrastructure evaluation and IT staffing—areas in which he is particularly knowledgeable. Born in the UK, Frost has worked in Australia and in the US; he now lives in Oak Park, IL, a short train ride to BCG's main office.

### John Patridge

John Patridge was client services manager at Profitool when Christian met him some years ago. At Profitool, which markets well-known software for the construction industry, Patridge was responsible for implementations and consulting assignments for all of Profitool's customers—including such prominent contractors as Rosendin, TIC, and Zachery. After leaving Profitool in 2004, he spent a year in a similar role with Activant Solutions, a provider of ERP applications for the building materials industry. We are fortunate to find someone as skilled in implementation project management and knowledgeable in the construction industry.

## Brrr! It's Cold Out Here!

Burger Consulting recently engaged the Chicago-based marketing and public relations firm, Clovis, to develop a new advertising campaign to raise our visibility. We asked for something different and unconventional—and we got it! Look for our dapper tuxedoed penguins as they grace the pages of CFMA's *Building Profits* and AGC's *Constructor*. We're thrilled with the new creative and hope it catches your eye as you review these prominent trade journals.

## Help for Oracle Database

For those of you running an Oracle database for your ERP or CRM applications, BCG has identified a new service provider. Gold Systems, based in Salt Lake City, has some forty professionals on staff, and Mike Dow and Christian Burger recently visited their offices to meet with their principals and the head of their construction group. Steve Wright and Michelle Taylor are both seasoned Oracle developers with years of experience in construction. They are currently working with a number of CMiC customers, but are certainly not exclusive to them. They are doing a lot of data conversion work, report-writing, custom programming, and application development. They are also a DBA for some applications and offer hosting as well. Mike and Christian both came away feeling good about this firm and their capabilities. For more information on Gold Systems, visit [www.goldsystems.com](http://www.goldsystems.com).

# Tell me you're KIDDING.

**You ask a lot of your IT systems and processes. Can they carry the load?**

At Burger Consulting Group, we know managing IT at construction companies can be a challenge. Since 1997, we've provided strategic advice and hands-on expertise to general contractors, civil contractors, heavy/highway firms and a full range of specialty contractors.

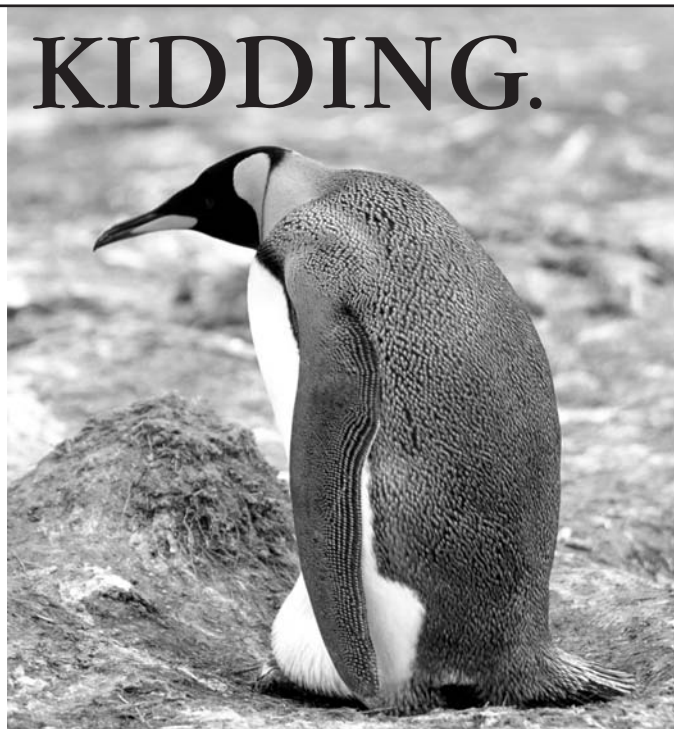
Burger Consulting Group can help you assess infrastructure, identify appropriate technologies, and implement systems and internal processes that improve performance. We understand industry best practices and work closely with clients to find solutions that fit their specific goals.

And because we're independent of software developers or hardware vendors, we can give objective advice on charting the best course for your organization.

Lighten the load. Call us at (630) 510-1875. Or e-mail [lreeves@burgerconsulting.com](mailto:lreeves@burgerconsulting.com).



**BURGER CONSULTING GROUP**  
*Information Systems Consulting to the Construction Industry*



IT Strategy

Infrastructure Assessment

Software Selection

Implementation Management

## Viewer Wars

(continued from p.1)

- Document management systems store multiple file types, and provide a viewer for viewing files for users without the original application.
- Document collaboration or project collaboration tools often tout the capability to do red-lining on CAD documents and online markup. They rely on viewer technology to do this.

The expectation that CAD, scheduling, imaging and all other associated application documents will be available on any computer from which an employee, contractor, or owner accesses them is unrealistic. Costs will be high; and the complexity and support overheads are prohibitive—especially when all we are doing is viewing a file for reference, or at the most marking up or redacting sections and not performing major edits. In some cases, it's important to keep an original file intact.

### What Vendors Bring to the Table

Of the three basic requirements of viewer technology, the need to share files securely is paramount. Users must ensure that files they send to others cannot be copied, printed, or edited without their express permission.

Several vendors are vying to be the “viewer of choice” in the AEC industry, but all are taking different approaches to get there. Microsoft has their Digital Rights Management component that is used to manage permission in Microsoft Office products, but two vendors who are pushing the technology in the AEC space are Adobe and Informative Graphics Corporation (IGC).

Acrobat Reader is probably the best known viewer; Adobe's free PDF reader has been around for more than ten years. Recently, Adobe appears to have focused considerable effort on the AEC industry, introducing the ability to move from 2D to 3D display, which allows users to capture 3D documents from common tools such as Revit and Sketchup and display them in the latest Acrobat Reader. Adobe's product comes in 10 different flavors, the most basic being the free Adobe Reader. To assign security to a document or view 3D items, one needs to purchase one of the advanced versions.

While Adobe certainly has the lion's share of the market place, IGC has

been working away developing relationships and licensing their technology with many of the major web-based project management vendors. Their web site lists Citadon, Constructware, PrimeContract, Meridian Project Systems, e-Builder, 4Projects, Bricsnet etc. In addition, IGC has also developed integrations with Documentum, Opentext and Microsoft. Instead of having to convert all documents to a PDF to make viewing possible as in the case of Adobe, IGC's Brava is able to read a variety of different formats natively, including Office, DWG, DWF, DGN files and interestingly PDFs. If one wants to provide security to the files being viewed in Brava, it is necessary to convert the files to a format called CSF (Content Sealed Format), a proprietary format of IGCs.

Adobe Acrobat requires approx 90MB of available disk space on a PC (up to 110 MB for a Mac) compared to approx 60MB for the Brava Viewer (Desktop). The Brava desktop does not support Macintosh. Brava's viewer comes in three varieties, again the most basic being the free viewer, but to assign security one needs to purchase one of the other variants. Brava uses Stellant's INSO technology to view file formats other than those created as a CSF file. Both systems provide the ability to view large multi-page documents rapidly without having to wait for every page to download. If you are viewing a 100-page document, you can start on page one while the rest downloads in the background.

Many document viewers are available, but it seems that Brava and Adobe are making the most progress in the AEC space in providing tools to view and convert documents and for document markup. Acrobat Reader is more open than Brava's viewer, however, and many other developers have created tools built around the Adobe Acrobat model. On the other hand, Brava has made major inroads in the Project Collaboration and Document Management space for AEC.

If you simply want to view multiple file formats without having to convert them to a common format first, Brava provides good tools. If your goal is to mark-up documents, assign security, etc., and provide some type of DRM, Adobe may have the edge in terms of the existing user base of Adobe Acrobat Reader.

## Current Clients and Projects

Burger Consulting is currently assisting the following companies with important IT-related engagements:

Client	Location	Engagement
Baker Roofing	Raleigh, NC	Infrastructure assessment
CDM Service Group	Omaha, NB	Software selection
HBE	St. Louis, MO	Software selection
Konover Construction	Hartford, CT	Implementation project management
Power Contracting	Chicago, IL	CIO search
Rigging International	Alameda, CA	Software evaluation and selection
Shook, Inc.	Dayton, OH	CRM search and infrastructure assessment
Vanguard Contractors	Paducah, KY	Software implementation

BCG thanks those who have furnished us references. We genuinely appreciate your confidence in our skills and services.

## Schedule Optimization *by Mike Dow and John Patridge*

Scheduling is always a challenge for contractors. Some provide schedules to owners, to meet contractual requirements, but don't use them as a planning tool. Others use available technology half-heartedly: the output makes for good wallpaper—impressive, logical-looking adornments for a job trailer.

Recently, however, BCG has noticed a growing appreciation among clients for the value of Construction Project Management (CPM) scheduling and a substantial increase in investment in scheduling technology industry-wide.

Recently, BCG reviewed a new scheduling add-on from Clevor Technologies called “schedule optimization.” The system enhances the scheduling and resource choices of larger self-performing GCs, civil contractors and trade subcontractors, maintenance operations, manufacturers, and professional services companies. Clevor's product gives the scheduler the option of applying “intelligence” about external elements (such as liquidated damages) that cannot be captured in off-the-shelf scheduling software.

Clevor's President & CEO, Ravi Maithel, enthusiastically demonstrated the power of the technology, running different scenarios against a CPM schedule and presenting their effect. It is fascinating to consider how this can help a project manager to review options that may not only reduce the risk of delays but could also save thousands or even millions of dollars on a given project.

Ravi demonstrated a real-world example for us: A sample project—resourced with man-power and equipment—was entered into the schedule. However,

in the scenario used, the Project Manager knows that an early-completion bonus is on the table and that additional resources are locally available for a limited time. The Clevor technology can incorporate this additional knowledge, rapidly producing schedules and cost comparisons that show the economics and time benefits of each scenario.

It was a very powerful demonstration. Anecdotal evidence points to 15-25% improvement in time and profit for companies using this technology, which is a significant improvement.

During our review of the product, we learned about significant assumption for this technology to really work: scenarios do not return good data unless the logic of the schedule is already accurate. Without that accuracy, the complex formulas and programs will not generate an accurate presentation of the alternatives. As many companies struggle with this issue, Maithel and Clevor have developed another solution: Clever Technologies can also act as a schedule service bureau, and they'll do your schedule for you.

AREVA/COGEMA Resources recently contracted with Clevor Technologies to provide schedule optimization for various projects associated with the shut-down of their McClean Lake Operation in Saskatchewan. We expect other success stories for this new approach to scheduling in the future and will continue to study this technology and report our findings. More information on Clevor Technologies is at [www.clevor.com](http://www.clevor.com).

## R&D Report: Textura

CFMA members may have wondered what happened to our fellow member Herb Brownett. Herb is now lead business development manager for Textura, a Chicago-based service provider that has developed a web-based payment portal for general contractors, owners, and subcontractors.

BCG recently visited with the new company, and learned more about this new service. Paid for on a per transaction basis, Textura's service is designed for companies that want to streamline the draw request process, including document and lien waiver collection and subcontractor payments. It is currently stand-alone from a company's accounting system, although interfaces have been developed. Textura's development partners include a bank which is helping them process the ACH transactions and acting as a trust for the transactions and a security product that is helping them encrypt the digit signature.

A general contractor using the Textura portal would e-mail notices to their subs asking them to sign on to the site and enter payment requests for the current month. Once all payment requests are received and approved, the owner's draw request is automatically prepared, with overrides of course, and forwarded with all necessary documents. Once they remit payment to the GC, the subs' lien waivers are electronically collected and all subcontractor payments are automatically made via EFT or check.

Based in the Chicago area, Textura is privately held and is adequately capitalized; they have an impressive list of clients. The portal is a clean design with impressive functions. The product somewhat overlaps with the Subcontract Management application of the ERP, but it better streamlines document collection. BCG made a few usability recommendations during the company's demo and discussed with the Textura developers the complexity of ERP interfaces; but in our final analysis, Textura has a service worthy of consideration, and in our view is a company to watch.

## Explorer's Appetite Not Yet Sated

Jim McFarlane, CEO of Explorer Systems, continues in his quest for building a larger enterprise. Recently, he announced his company's acquisition from TSC of the former McKosker system, TrueLine. TSC had been quietly working on their applications, specializing in home building and civil construction firms. Explorer's plans for the TrueLine product and customer base have not been announced. BCG will continue to monitor the situation as Explorer's plans for the TrueLine product and other recent acquisitions gain momentum.

## Field2Base: A Review

Recently, BCG's Mike Dow and Angus Frost traveled to Morrisville, North Carolina, to visit Field2Base at their headquarters. The two saw a demonstration of the company's core product—innovative technology aimed at meeting the field/office communications needs of superintendents and foremen. Field2Base sells software, hardware and a Tablet PC-based communications service that automates the secure transfer of data between field personnel (project engineers, superintendents, inspectors, etc.) and office personnel (architects, engineers, project managers, owners, etc.). The tool has two main components, Forms2Base and Field2Base.

Forms2Base allows traditional paper-based forms, including information such as photographs, to be completed and digitized on the Tablet PC in the field. Then, the complete package is transmitted to a main office, either as an email or integrated into other applications via XML. Field2Base extends the capability of Forms2Base by allowing the inclusion of annotated CAD files, handwritten notes, and sketches, etc., into a package that can be emailed. Field2Base handles all the communication and, if transmitting over slower networks, collects the data and transmits over time.

Field2Base is an interesting option for basic data capture in the field. One benefit is that, because it allows paper forms to be rapidly converted and deployed, field personnel for whom English is a second language can use the tool in their native language without major programming or customization. However, its adoption should be planned as part of an overall application strategy rather than as a stand-alone approach to eliminate faxing and express mail. Field2Base's tablet-based service offering is available on a monthly subscription basis, with prices varying according to the term. Financing options also allow customers to pay for new Tablet PCs over the subscription term. For more information, visit [www.field2base.com](http://www.field2base.com).

## Our Professionals Present

BCG professionals are presenting at several upcoming industry conferences, including:

*May 20-24, 2006*

**CFMA's 2006 Annual Conference & Exhibition, Las Vegas**

- Christian Burger, "Current IT Trends: Think Strategically, Act Tactically"

*May 23-26, 2006*

**Geac Alliance 2006, Las Vegas**

- Christian Burger, "Information Systems and Software in the Construction Industry"

Christian Burger also recently published the following article:

- "Great Expectations: Better Planning & Implementing IT," *Contractor Tools & Supplies* (Mar/Apr 06)

Christian Burger, "New Development in Technology for Project Management," part of the Northwestern University & ACEC Continuing Education course "Project Management for Project Leaders," June 15, 2006

## Message from Christian Burger

*(continued from p.1)*

Put another way, out-of-the-box thinking—even radical ideas—can and should be encouraged, just not allowed to get out of hand. Implementations need structure, but people implementing change also need room to invent. When you assign a team or person the task of implementing a new system, they need to know what the boundaries are. They also need to embrace and benefit from the chaos that comes with change. You hope they will be creative, and you want to make sure the rest of the organization knows what to expect.

Change is upon everyone in the construction sector from a different direction as well. As I noted in our last newsletter, consolidation and acquisition in our industry is continuing apace—often with its own chaotic effects. Acquisition activity includes Explorer's recent announcement of plans to acquire the Trueline system. Also, Maxwell Systems, currently responsible for their original product as well as the American Contractor, just acquired Cheetah, the Ft. Collins-based software application for the heavy/highway sector. AutoDesk has completed its acquisition of ConstructWare, and Geac—now renamed as Extensity—was purchased by California-based private equity firm Golden Gate Capital.

BCG certainly sees the necessity of some of this consolidation. But the pace seems a bit brisk, and while some acquisitions make strategic sense, others seem to be value-shopping.

Notwithstanding the motive for these acquisitions, companies that acquired legacy products must now examine how to absorb new customers and create an economical as well as efficient migration path for them. If you are among those running a software application that now has a new owner, you might want to ask that new owner a few questions as you plan for the next several years:

- 1) How long will you support the current product? Does this include enhancements or only statutory compliance items (e.g., tax-table updates)? How many full-time developers will be dedicated to maintenance and enhancements?
- 2) Do you plan to maintain and develop the product going forward? If so, what are your primary intentions?
- 3) Are you, as a new owner, planning to build a migration tool to convert data from the current system to your premier product?
- 4) Will there be a charge to move to the new product?
- 5) Are current support staff going to be retained and accessible via telephone?
- 6) Can I purchase new licenses (seats) or applications for my current system? For how long?

The answers to these questions can help you plan for—and benefit—from change. And if you need to discuss how to adapt systems, software, or processes to take advantage of change in your own markets, feel free to give us a call.

## Imaging & Workflow

*Key Functional Areas for Consideration by Doug Nichols*

Most companies have a good reference point for evaluating the functionality of new accounting packages. They can simply base evaluation criteria on their existing system, and on the new functionality they know they need.

Not so for choosing the right imaging and workflow solution, which can be confusing and difficult, especially since most companies are buying such software for the first time. Information on the software's functionality is typically provided only by vendors selling it, and because of this, it is difficult to know whether key capabilities you need or want are available.

To provide a point of reference that many lack, BCG decided to summarize key functions you should consider when reviewing imaging and workflow solutions. Though by no means complete, our list provides a good starting point for discussion.

### Document/Image Capture

Images need to be “captured” so they can be filed and accessed electronically. Paper-based images are converted to digital format via scanning, usually being processed into the imaging software in batch. Either optical character recognition (OCR) or image character recognition (ICR) is performed on the saved images. Digital files such as Excel spreadsheets or Word documents can also be imported in a batch in much the same way. The software should manage the items in the batch, and should allow for creating “documents” by attaching multiple pages. Where necessary, it should also delete items from the batch as they are processed.

### Electronic Filing, Search, & Retrieval

Finding images once they are filed electronically is critical to system functionality. Like any successful method for filing physical documents, the key to electronic filing is being able to later search for and retrieve them. This means creating “look-up” values, or what are generally referred to as index values. The software should let you establish multiple lookup or index values for each document and should also let you create drop-down boxes or pick lists for these index values to aid in standardizing values for each index. It should also allow you to establish search criteria (e.g., < value, > value, = value, list values, etc.) on multiple index values and obtain a list of all documents meeting your search criteria. You may also want full text-search capabilities within the imaging system. Once obtained, you should be able to print, fax, attach to an email, or export to a CD.

### Email Capture

Given its value in business today, being able to file email in your imaging file cabinets is especially important. So, though they are already electronic, capturing email files deserve special consideration. The available functionality may include drag-and-drop from your email client to a cabinet or “printing” the email to an image file and then filing electronically.

### Image Editing

Annotating images, much like making notes on paper documents, is an important means of communication on electronic documents. The software should allow notations that are separate from the images themselves and reside in a separate layer of software so as not to alter the original image.

### Viewing

Another important consideration—especially if you are storing and sharing a large number of file types—is allowing people without the native application on their PC to view images from various file types (e.g., stand-alone “viewer” software). Having a viewer for users without the native application may be important.

### Image Security

Properly securing images from unauthorized viewing and alteration is another important area. Document security should be available by user, filing application (i.e., AP Invoices, Payroll, etc.), and document type. Additionally, the ability to specify which users may add, change, or delete documents, annotations, or index values should be considered as well.

### Workflow

Imaging software workflow modules allow you re-engineer paper processes to systematically move documents for review, approval, comment, and coding electronically from user to user. Features may include the ability to route documents based on a pre-defined routing list (such as job number), based on criteria (such as dollar amount), and ad hoc routing from user to user. Reporting the status of the document in the workflow process is an important feature. Audit trails of document activity and document history reporting are also important functions that deserve consideration.

### Integration

If your document imaging solution is a module of your main accounting and job-cost system, it is likely already integrated with the other applications in the package. If you are considering a third-party package, you should discuss integration touchpoints, which may include obtaining index values directly from documents or software screens, obtaining index values for the imaging system directly from other application databases, and automatically updating indexes when they change in the databases you are integrating with. Another important feature is the ability to view the images inside your application at the appropriate preview report or inquiry screen.

As more companies embrace imaging and workflow technology to improve efficiency, the marketplace for these products continues to develop. Understanding what functions are available and their benefits to your company are important prerequisites for selecting the proper solution. We hope this list of key items is helpful in your review. For more detailed discussion of imaging solutions, call Doug Nichols or Angus Frost at (630) 510-1875.

*Angus Frost assisted with this article.*