The IT Factor

Information technology is at the core of any successful business. But effective IT management requires more than simply putting the latest systems and solutions in play.

By Samuel Greengard

Takeaways

>> IT tools that improve firm-to-client communications and project time to delivery are increasingly important.

>> An influx of personal mobile devices on company networks creates security concerns for IT staff.

>> Managed services, such as cloud computing, provide secure options for firms to store and manage large amounts of data.

Globally connected information technology (IT) systems have ushered in untold opportunities for engineering firms. Ironically, the same tools and resources that promise to help engineers work smarter for clients have given rise to a host of challenges—and potential risks—that firms must overcome to succeed. >>

With names such as Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Computer-Aided Design (CAD), and Building Information Modeling (BIM), keeping the acronyms straight is a chore all its own. Apart from equipping employees with the know-how to navigate complex systems, firms are saddled with the unenviable task of ensuring clients and project teams are comfortable with these resources, too.

It's not easy. But in an age of business deals being won and lost because of a dropped connection, executives say having an IT infrastructure that improves firm-to-client communication and reduces project time to completion is a must.

"Technology has always been an important component for architecture, engineering and construction firms," says Bret Tushaus, director of product marketing for enterprise software and information solutions provider Deltek. "Over the last several years, it has become critical. Today, information technology increasingly drives performance, productivity and business results."

"Our customers tell us that it is almost a necessity to keep pace with technology in order to address the ever–increasing complexity of the projects they are working on," says Karen Weiss, senior industry marketing manager for Autodesk, Inc., a design software provider for the A/E/C industry. "One of our customers recently completed a rail project that extends over 14 massive bridges and 180 winding tunnels, located amidst complex topography as well. For them, using advanced technology was the difference between project success and failure."

For many firms, it's a constant and ongoing struggle to assemble the right components and keep systems, devices and tools up to date. That challenge is made even harder by an influx of personal mobile devices—from smartphones to tablets—that employees use to file work and communicate across client and company-owned networks.

"As the volume of data grows and the complexity of IT increases, organizations must establish a clear and consistent strategy," says Ron Gant, global director of civil transportation marketing for Bentley Systems, Inc., a software provider that caters to professional services firms. This includes everything from a firm's global enterprise network and financial reporting software to the latest modeling and cloud computing tools and, yes, even its presence on social media such as Facebook and Twitter.

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>
> JAMES WALSH
> AECOM

Mobility Matters

Although the fundamentals of business haven't changed much over the years, the ability to handle projects quickly and efficiently—while managing relationships effectively—is increasingly essential for long-term success. Businesses that fall behind the IT curve risk obsolescence, even failure.

Mobile devices and collaborative software have unleashed a level of connectedness and interaction unimaginable a decade earlier. "The old days of sitting at a desk and having a workstation are gone," says Markus Weidner, director of IT for Philadelphia-based Pennoni Associates, Inc., with 900 employees and 28 offices across the Northeast. "Workers are mobile, and IT must provide the tools to support working from anywhere, anytime," he says.

The "bring your own device," or BYOD, movement, in which employees and stakeholders—many of them just starting out in their careers—connect their own devices to company-owned networks, is also radically changing the nature of business and IT. A 2011 Accenture survey found that 79 percent of Gen Y workers choose where they will work based on the IT available to them and their ability to select and use their own devices.

At Black & Veatch, a $2.6 billion (2011 revenues) firm ranked No. 18 in the world for design-build firms, Senior Vice President and CIO Brad Vaughan is revamping systems to accommodate smartphones and tablets. The firm has incorporated "application virtualization," where employees can re-create desktop tools on mobile technologies to extend its network beyond the existing firewall. That extension has created a need for new policies and security procedures—including the use of "remote wipe" applications in the event a personal device is lost or stolen. "It's now necessary to extend our applications and platforms to workers as well as business partners and vendors," Vaughan says.

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>
> MARKUS WEIDNER
> PENNONI ASSOCIATES, INC.

Putting BIM to Work

Despite its obvious potential, many AEC firms have struggled to migrate to advanced Building Information Modeling (BIM) systems. Part of the problem, says Ron Gant, global director of civil transportation marketing for Bentley Systems, Inc., is that "BIM is a concept and a method, not a standard." There's also resistance because the technology "intimidates a lot of people," and not everyone is trained or understands how to use these systems, says Bret Tushaus of Deltek. "It requires a different way of thinking and working. Internal teams must be more collaborative."

With increasingly complex projects, massive volumes of data and client mandates, most firms have no choice but to adapt. "The model first environment can benefit engineering firms because it enables more accurate, accessible, and actionable insight for more informed decisions, ultimately producing better engineered projects," says Autodesk's Karen Weiss.

"The ability to extrapolate information from a design set and make it repeatable and reusable significantly enhances the value we provide to clients," says AECOM CTO James Walsh.

Black & Veatch has also turned to BIM to build complex 3D models and understand projects more holistically. The biggest challenge for the firm, says Black & Veatch CIO Brad Vaughan, is assembling the expertise and providing the training to use these tools effectively. "BIM has required considerable resources, but delivered significant benefits," he says of the technology.

A growing number of firms are using tools such as Microsoft SharePoint, Microsoft Lync, Cisco WebEx and others to spur knowledge exchange between employees, contractors, clients and others. Organizations also increasingly rely on videoconferencing and Web presence tools to provide instant and dynamic online meetings over a unified communications network.

Cloud Coming

IT advances have done wonders for back-office systems, to be sure. But technology is also paying dividends on the front end, where firms make their money.

AECOM, which has 45,000 employees in 130 countries, and revenues topping $8.2 billion, has committed itself to building a robust IT infrastructure. It uses an Oracle eCore ERP platform to run its business, but employs Deltek software and Sage Accpac at smaller locations not equipped to support the firm's primary enterprise system. It also uses Salesforce.com for customer relationship management, CAD and BIM systems, and a variety of collaboration tools.

"Technology doesn't create standards; it is merely a way to propagate them," says James Walsh, senior vice president and CTO for AECOM. Walsh puts much of his focus on developing internal standards for CAD, GIS and BIM technologies. But he also works with major software vendors to adapt their applications for mobile iOS and Android devices, so employees can take the technology with them in the field.

The growing complexity of managing and delivering IT services has prompted a growing number of firms to migrate to managed services, including the cloud, in which computing and storage capacity is delivered remotely over the Internet. Proponents say the technology can reduce system complexity and help trim total cost of IT ownership, including the need for periodic patches and hardware and software refreshes.

IT execs say cloud computing—including point clouds used for CPU-intensive 3D processing—enables organizations to add scalable servers and computing capacity on demand.

AECOM's Walsh says that the cloud will play an increasingly important role in his firm's IT strategy over time. "It's a way to use technology resources more efficiently and make the IT department more strategic."

Framework for Success

As firms decide between homegrown IT infrastructure, managed services or some combination of the two, executives must ask whether they have the personnel and hardware to manage systems and data internally, or whether it's best to turn to a third party, says Bentley's Gant. It's also critical to understand who touches data, how they touch it and what value they add along the way.

In the end, "there is no simple way to approach IT," says Pennoni's Weidner. "An organization has only so much capacity and a certain amount of resources to adopt new technologies. It's essential to prioritize and determine what technologies provide the maximum value and return on investment—and put the organization's entire weight behind an initiative." ∎

10 IT Best Practices

- Adopt standards-based IT systems whenever possible.
- Embrace mobility, including the use of smartphones and tablets.
- Build effective internal collaboration tools, including systems that rely on social media.
- Use managed services when and where there's a strategic fit.
- Incorporate cloud computing into the business as it makes sense, and consider using point clouds for 3D-intensive projects.
- Migrate to BIM and incorporate it into more complex projects.
- Develop robust policies, governance and security.
- Provide adequate training, particularly in a BYOD environment.
- Establish a cross-functional committee to oversee IT and help establish a road map.
- Pilot tools, technologies and new concepts before rolling them out on a wider scale.

Need IT expertise?

Samuel Greengard is a business and technology writer based in West Linn, Ore.

Peer-to-Peer Recommended Information Technology Consultants

The following list includes ACEC IT Affiliate Members (in **red**), select Member Firms,** Member Discount Providers*** and additional IT firms recommended by ACEC Members.

CALIFORNIA
Bering Technology
Campbell
Ph: 408-364-6500
www.bering.com
Specialty: Storage solutions for broad range of Hewlett-Packard technical and commercial computers, Apple Macintosh, and PC desktop and network servers.
Service Territory: W*
Leung Lok, President
llok@bering.com

EADOC, LLC
Oakland
Ph: 510-903-9658
www.eadocsoftware.com
Specialty: Secure web-based construction project management software for facility owners and construction managers.
Service Territory: W
Eric Law, Founder & CEO
eric.law@eadocsoftware.com

FLORIDA
BST Global
Tampa
Ph: 813-886-3300
www.bstglobal.com
Specialty: Technology programs for project management and solution implementation and consulting services.
Service Territory: W
Krystyna Simpson, Principal
ksimpson@bstglobal.com

Coastal Telecommunications
Clearwater
Ph: 727-898-9899
http://coastaltelecom.net
Specialty: Custom business telephone systems, telecommunication product services and installation.
Service Territory: L
Joe Young, President
jyoung@coastaltelecom.net

ILLINOIS
Peters & Associates
Oakbrook Terrace
Ph: 630-592-6214
www.peters.com
Specialty: Designs, implements and supports Microsoft solutions and general networking technologies.
Service Territory: L
Mike Cloud, Sr. Account Manager
mike.cloud@peters.com

RightPoint
Chicago
Ph: 312-920-8383
www.rightpoint.com
Specialty: Designs and builds digital marketing strategies, including user experience design, CRM and business process management.
Service Territory: N
Michael Gonzaga, Senior Technology Strategy
MGonzaga@rightpoint.com

KANSAS
Systems Management Consultants
Overland Park
Ph: 913-681-1530
www.sysmgmt.com
Specialty: Financial accounting systems, electronic deliverables, federal acquisition regulations, scope creep and technology's impact on professional liability.
Service Territory: N
Mike Ingardia, President
mike@sysmgmt.com

LOUISIANA
Ener Systems
Covington
Ph: 985-871-0333
www.enersystems.com
Specialty: Technology investment consulting, computer support and network services for small-to-medium businesses.
Service Territory: L
Rene Miller, Vice President
rmm@enersystems.com

MARYLAND
Plan B Technologies, Inc.
Bowie
Ph: 301-860-1006
www.planbtech.net
Specialty: Virtualization and cloud services; Microsoft solutions; security and network infrastructure; storage area networking, backup, recovery and archiving.
Service Territory: R
Brian Nelson, Account Manager
bnelson@planbtech.net

MASSACHUSETTS
IMAGINiT Technologies
Framingham
Ph: 508-663-1400
www.rand.com/imaginit
Specialty: Consulting, implementation, data management, software development and facilities management through Autodesk software.
Service Territory: W
Chantale Marchand, Vice President, Marketing
cmarchand@rand.com

Service Point USA
Woburn
Ph: 781-935-6020
www.servicepointusa.com
Specialty: Autodesk products and training for digital solutions.
Service Territory: N/U.K.
Michele Wasko, Marketing Director
mwasko@servicepointusa.com

MICHIGAN
NuWave Technology Partners
Kalamazoo
Ph: 877-342-4401
www.nuwavepartners.com
Specialty: Telecommunications solutions, computer network solutions, website and software development.
Service Territory: S
Kyle Paalman, Managing Partner, V.P. Operations
kpaalman@nuwavepartners.com

MINNESOTA
Agile Frameworks
St. Paul
Ph: 651-487-7044
http://agileframeworks.com
Specialty: Mobile applications, IT managed services, business technology consulting and strategic planning.
Service Territory: N
Michael Anders, President
manders@agileframeworks.com

NEBRASKA
Tsys Merchant Solutions
(formerly First National Merchant Solutions)
Omaha
Ph: 800-354-3988
www.tsysmerchantsolutions.com
Specialty: Payment processing installation and services.
Service Territory: N
Mark Calhoun, Associate Director, Business Development

NEW HAMPSHIRE
Newforma, Inc.
Manchester
Ph: 603-625-6212
www.newforma.com
Specialty: Project information management for architects and engineers through information modeling, integrated project delivery and contract management.
Service Territory: U.K./Netherlands
Robert Batcheler, Executive V.P., Strategy
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NEW YORK
Binatech Solutions
West Seneca
Ph: 716-675-0256
www.binatech.com
Specialty: Server solutions, disaster recovery, backup systems and IT helpdesk.
Service Territory: R
Mike Haworth, President
mike.haworth@binatech.com

Tech Valley Webs
East Greenbush
Ph: 518-932-7483
www.techvalleywebs.com
Specialty: Web presence for small-to-medium size businesses with web design, search engine optimization, software development and graphic design services.
Service Territory: N
Jim Letzelter, President
jim@techvalleywebs.com

Underground Imaging Technologies
West Latham
Ph: 518-783-9848
http://uit-systems.com
Specialty: 3D subsurface data, engineering and geophysical solutions for risk mitigation and underground asset management.
Service Territory: N
Laurie Karian, Director, Marketing and Corporate Communications
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NORTH CAROLINA
SITEOPS
Charlotte
Ph: 704-409-7508
www.siteops.com
Specialty: Layout software for civil engineers, architects, landscape architects and land developers.
Service Territory: N
David Settlemyer Director, Civil Engineering
david@siteops.com

PENNSYLVANIA
Bentley Systems, Inc.
Exton
Ph: 610-458-5000
www.bentley.com
Specialty: 2D and 3D engineering design CAD software solutions to achieve sustainable infrastructure.
Service Territory: W
Ed Mueller, Chief Marketing Officer
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Stambaugh Ness
York
Ph: 717-757-6999
www.snbs.net
Specialty: Project management, installation, implementation and support for accounting, auditing and tax preparation software.
Service Territory: N
Chip Hayden, Director, IT Consulting Services
chayden@stambaughness.com

TENNESSEE
Solveras, Inc.*
Franklin
Ph: 615-550-9356
www.solveras.com
Specialty: Electronic payment processing through credit cards, mobile and online for all industries.
Service Territory: N
Kathleen Ervin, V.P. Marketing
kathleen.ervin@solveras.com

TEXAS
AX Global, Ltd.
San Antonio
Ph: 866-516-5999
www.ax-global.com
Specialty: IT consulting and support services, prepare server configuration to ERP ignition and provide ongoing software support.
Service Territory: W
Danny Blau, National Sales Manager
dblau@cgsinc.com

Perficient (joined Nascent Systems, LP)
Plano
Ph: 469-277-3600
www.perficient.com
Specialty: Technology and management consulting.
Service Territory: N

VIRGINIA
Deltek
Herndon
Ph: 703-734-8606
www.deltek.com
Specialty: Investment and performance consulting and training for government contractors and professional services firms.
Service Territory: W
Kelly Hydock, Director, Product Marketing
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WISCONSIN
Rockwell Automation
Milwaukee
Ph: 414-834-2000
www.rockwellautomation.com
Specialty: Training, resources and support for automation investment.
Service Territory: W
John Nesi, V.P., Market Development
janesi@ra.rockwell.com

CANADA
Abak Software, Inc.
Quebec
Ph: 418-658-4003
www.abaksoftware.com
Specialty: Accounting and billing software for any industry, supporting multiple currencies and invoice formats.
Service Territory: W
Patrick Vidal, Business Development
pvidal@abaksoftware.com

Halogen Software
Ontario
Ph: 613-270-1011
www.halogensoftware.org
Specialty: Software programs for strategic talent management.
Service Territory: W
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* Key
W: Worldwide   N: Nationwide   R: Regional   S: Statewide   L: Local