Our 25th Annual Ranking

Where Innovation Gets Real

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Healthcare company UPMC is exploring cloud computing not because that’s trendy, but because it must cope with 5 PB of patient data that will double in the next 18 months. ConocoPhillips is just now embracing more real-time analytics on its natural gas wells, because it sees the chance to turn that data into double-digit percentage increases in gas output. Miami Children’s Hospital is testing a tablet app that allows for remote doctor visits, because it sees the potential for a new revenue source.

We see in all our profiles of InformationWeek 500 companies the very practical ways they’re using IT to drive their businesses. But just as important, the information we collect from surveying 500 business IT innovators provides a reality check on the most hyped trends.
follows are some surprising things we learned about cloud, data analytics and mobile from this year’s N’500 research.

Cloud: Not So Sophisticated

It’s a surprise to see how uncommon hybrid clouds are. Just 12% of N’500 companies can switch between public cloud infrastructure and in-house data centers based on demand. Another 11% are testing that capability, and about a fourth intend to try it within a year. But 43% have no plans for hybrid cloud computing.

Cloud advocates tout “cloud bursting” — when a company, for example, runs its website in-house but switches over to a public cloud if a promotion overloads the company data center. It’s a compelling concept, but our data shows hardly anyone is doing it.

It’s also surprising to see no increased uptake since last year’s survey in the use of platform-as-a-service — 26% of N’500 companies are using it, nearly the same as the 27% last year. A sizable 21% are pilot testing PaaS, but 38% have no plans to use it from an outside vendor. (We didn’t ask this year about software-as-a-service use, since last year 85% of N’500 companies were already using it.)

Given the tepid use of hybrid or platform cloud computing, it’s interesting that when we asked about the use of “storage, compute or other cloud infrastructure,” only 7% said they have no such plans — 59% are using cloud infrastructure. 21% are pilot testing it, and 13% plan to roll it out within a year.

I see two likely explanations for the gap between infrastructure/platform-as-a-service use. One, where companies use public cloud, it’s for quick development projects or some other standalone initiative that doesn’t interact with production systems. And second, because we didn’t specify “public” cloud in our cloud infrastructure question, I suspect some companies are counting their “private clouds,” meaning a highly virtualized environment inside their own data centers. Both cases point to a limited, not terribly sophisticated role for cloud computing among N’500 companies.

Analytics: Just Getting Started

Managers at most N’500 companies use analytics tools to monitor operations, but it’s still early days for the next wave: predictive analytics and widespread employee use.

For example, 72% of N’500 companies are monitoring revenue daily or more frequently, and another 13% are testing or will roll out such a capability within a year. Fifty-seven percent of companies provide dashboards to 20% or more of their employees to monitor key metrics just

Have You Rolled Out These Tech Strategies?

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Storage, compute or other cloud infrastructure services for app. dev.</td>
<td>54%</td>
</tr>
<tr>
<td>Providing of smartphone or tablet apps based on employee role</td>
<td>7%</td>
</tr>
<tr>
<td>Use of platforms as a service (e.g., Microsoft Windows Azure, Google App Engine) for app. dev. or production</td>
<td>38%</td>
</tr>
<tr>
<td>Ability toutsch between public/cloud infrastructure and in-house data center resources based on demand</td>
<td>2%</td>
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Date: 2011 Informa Inc. InformationWeek 500 Executive Survey, June 2011
10% have no plans to do so. So daily monitoring and manager dashboards have become standard practice.

More cutting edge analytics work involves giving dashboards to a majority of employees. Just 29% of companies do that; 39% are testing or planning to roll out those dashboards within a year, and 36% have no plans. Likewise, 47% of IW 500 companies allow end user what-if analysis with no IT involvement, and another 37% are in testing or plan to roll it out. Enabling such what-if analysis shows IT moving away from simple report building and toward facilitating creative thinking.

Predictive analytics isn’t widely adopted. Just 54% of IW 500 companies do predictive revenue analysis, though another 19% plan to do within a year.

One of the biggest question marks is whether sentiment analytics — analyzing social data to assess what people are saying about brands and products — will prove critical. Just a third of IW 500 companies use sentiment analytics tools today, but another fifth are testing them and 17% plan to use them within a year. Almost 30% have no such plans. Sentiment analytics is becoming essential for consumer goods companies, but for business-into-business companies it’s a tougher sell.

Mobile: No Great Rush

Someone forgot to tell most IW 500 companies that we’re in the midst of a mobile revolution. Our com-
Company profiles do include creative uses of mobile apps — what General Motors is doing to integrate iPads into its dealer sales process, for example, or how satellite TV company Dish has moved its in-home service technicians onto an oversized "phablet" style Samsung smartphone. But our data shows that a majority of the S&P 500 companies are going mobile at a more relaxed pace.

Forty-two percent have widely deployed mobile apps for customers, up a respectable five points from a year ago but still short of a majority. Just 30% of the S&P 500 companies have widely deployed mobile apps for employees, with another 58% in limited deployment — both percentages little changed from a year ago. There are even some signs of mobile cooling off. A year ago, 38% of companies said that broader deployment of tablets was one of the top ways they boosted productivity; this year, it’s just 30%. In comparison, 50% said they’re deploying analytics more broadly, up from 43% a year ago.

Will IT organizations have the money to move forward with their grand plans? Sixty percent of companies expect 2013 IT spending to increase from 2012 levels. 28% said it would hold steady, and just 12% said it would decline. Last year, 68% expected their IT spending to increase.

All these numbers are cold comfort for IT leaders. For every data point that says companies are easing up on tablet expansion, for instance, there’s a story of factory workers or salespeople using tablets to improve productivity. Whether it’s cloud, analytics, mobile or some other emerging tech, the leaders who apply for the S&P 500 aren’t just trying to stay ahead of the average; they’re trying to get ahead of the best.

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UPMC Plays To Win In The Tech Game

Information technology has two broad roles at UPMC. First, it must improve the operations of the company’s hospitals and health insurance plan, improve the care of patients, and drive down the company’s costs. Second, technology should make money for UPMC — it’s not just a cost center.

At most companies, that second goal is a nice-to-have if things work out that way. But under the leadership of CIO Dan Drewbaugh, UPMC is explicit that its IT organization will develop unique technologies that it can sell to other healthcare providers and insurers.

A clear example of the two roles coming together occurred in March, when electronic health records vendor Allscripts acquired c4Motion, which makes software...
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That helps healthcare providers share medical information across software platforms. UPMC was the largest shareholder in dbMotion, so it bought a stake in the company in 2006 and then helped develop the software for its own and others' use. UPMC's take from the Allscripts acquisition: $67.8 million, on an original investment of $30.5 million.

UPMC (formerly University of Pittsburgh Medical Center) is one of the country's largest integrated healthcare companies, a nonprofit with fiscal year 2013 revenue of more than $10 billion. It operates more than 20 hospitals and 400 physician offices and outpatient sites in Pennsylvania, and it's also one of the state's largest health insurance plans with more than 2.1 million members. In its role as both provider and payor, it takes an aggressive approach to implementing and developing technology to make healthcare more effective and efficient. For its track record of executing on its IT strategy, InformationWeek chose UPMC as the No. 1 company in this year's InformationWeek 500 ranking.

A Haven For New Development

Observers can see UPMC's technology ambitions in action at its Technology Development Center, a tech incubator lab located in a hip area of Pittsburgh. (TDC is housed in the same renovated bakery building as Google's Pittsburgh office: Look for the yellow, red and blue picnic umbrellas on the roof.)

There about 120 employees — it plans to hire 80 more over the next two years — search for the next dbMotion. "Everything we do here is done with an eye to bringing a product to market," says TDC president Rebecca Kaul.

UPMC's model is to first try to use off-the-shelf technology to meet the needs of its clinicians, insurance teams and other business groups. It uses EHR systems from Cerner and Epic, for example. But if it can't quickly find the technology it needs, TDC will look to develop it, often in a joint venture with a large vendor or by taking a stake in a startup, in which case UPMC can influence development.

For example, TDC is developing a telemedicine platform called Virtual Care Collaboration. By combining videoconferencing with medical records, UPMC is hoping it can kickstart the much-discussed but little-used practice of telemedicine. For UPMC, that initiative could add revenue if more rural Pennsylvania residents — people who wouldn't have braved the congested bridges and tunnels around downtown Pittsburgh for an in-person visit — use UPMC specialists for video consults.

The pieces of the browser-based VCC system aren’t unique, but TDC thinks it can bring them together in a unique way. VCC so far is used in two UPMC hospitals and several of its clinics.

The big obstacle to telemedicine isn’t the
technology, Kaul says, it’s the business model. Health insurance plans often won’t pay for telemedicine consultations, and licensing rules can prevent doctors from treating patients across state lines. But UPMC Health Plan and some other insurers are starting to cover telemedicine appointments.

As for UPMC’s business model for VCC, Kaul is undecided. Is this a technology platform it should sell? Or is VCC part of a telemedicine service that lets UPMC sell its clinical services to new markets?

Cloud Computing Ahead

Cloud software and infrastructure aren’t very popular in healthcare because they require patient data to leave the healthcare provider’s own data center. But having done the math, UPMC CIO Drewbaugh is pretty sure that providers have to get over their cloud fears.

UPMC has about 5 PB of data today, and that volume is doubling every 18 months. So in about three years, it will have 20 PB of data, including medical images, genomic data and remote patient monitoring data. Drewbaugh doubts that UPMC can afford to build enough conventional data center capacity to cope with that data. “My gut is we have to partner,” he says.

Partnering means UPMC buying infrastructure-as-a-service from vendors such as Amazon Web Services, Hewlett-Packard, IBM or Oracle, so it doesn’t have to spend tens of millions of capital dollars on data centers. Any of those vendors can provide the underlying hardware. Drewbaugh says, “Then you look at the value add.”

That’s when UPMC’s entrepreneurial IT tendencies kick in. Can UPMC help one of those IaaS vendors build a cloud infrastructure tuned to the needs of healthcare providers and insurers? Drewbaugh’s on the case.

Analytics At The Heart Of Healthcare

Under one of the industry’s most ambitious IT initiatives, UPMC plans to spend $100 million over the next five years to create a data warehouse that combines clinical, genomic, insurance, financial and other information from more than 200 sources. It’s partnering with Oracle, IBM, Informatica and dbMotion.

The initiative ties into the aspect of U.S. healthcare reform that aims to change how care is delivered and paid for. Under this notion of population health and accountable care, providers will get paid to keep a group of people — say, all the employees at a company — healthy, creating financial incentives for providers to step up their preventive care and minimize mishaps that lead to hospital readmissions.

“You can’t do that without analytics,” says Dr. Steve Shapiro, UPMC’s chief medical and scientific officer. For example, in a recent...
UPMC study of the use of a particular catheter, it found that the catheter wasn't used consistently, but that on average it led to better outcomes. But the device is also more expensive, leading to the next layer of clinical data research to understand which patients benefit under which circumstances. All that data will eventually be presented to doctors to help them make decisions. (UPMC created a company, Evolent Health, with the Advisory Board Co. to market population health services and technology.)

That type of benefit cost analysis is just the start. Researchers such as Adrian Lee will push UPMC's IT department to do much more with data, to allow personalized medicine based on a patient's individual genome.

Lee, director of the Women's Cancer Research Center at the University of Pittsburgh Cancer Institute and Magee-Womens Research Institute, is studying the role of hormones such as estrogen and progesterone in the development of breast cancer. His work focuses on genomic data unique to each patient. That research will start to home in on particular genome combinations for certain types of cancer, applying to only four or five cases even for an operation as huge as UPMC. In order to create large enough data sets to study such small subsets, UPMC has no other option but to find better ways to share data with other healthcare providers. "It will force sharing," Lee says.

Change And Challenges
UPMC is no health IT novice. Chief medical information officer Dan Martich acknowledges that in the rush to implement EHRs to comply with government mandates and financial incentives, "we broke a lot of things." By letting physicians cut and paste in e-records, for example, an in-hospital progress note that used to neatly sum up the patient's daily status in half a page now can run 19 pages. "What we've created, unfortunately, is an ongoing patient blog," Martich says.

How frustrated are doctors? Physicians are notorious for ignoring internal communications, so Martich had low expectations when he sent staff physicians, residents and other clinicians a survey about EHRs. One-fourth responded, and about 1,000 of them included comments.

So Martich is leading an "e-record simplification" initiative aimed at capturing the data needed for quality, compliance, billing and patient care in the most efficient way.

A lot of change is being forced on the U.S. healthcare industry, and technology lies smack in the middle. Amid those changes, UPMC is determined to find new ways to put health IT to good and lucrative use — and quickly. — Chris Murphy chris.murphy@pm.cn