Big Data: Capitalizing on the Potential

A Roundtable Overview

Americas Chapter Discussion
Big Data: Capitalizing on the Potential

A Thought Leadership Roundtable on Digital Strategies
An executive series presented by the
Center for Digital Strategies at the Tuck School of Business

The Americas chapter of the Roundtable on Digital Strategies recently convened at Bechtel’s facilities in Glendale, Arizona, for a discussion of so-called “Big Data.” In the 10th anniversary roundtable in October 2011 Big Data had been selected as the technology mega-trend that was the least mature, yet likely to ultimately have the greatest impact. Nearly 18 months later, the group convened to focus on Big Data specifically. The CIOs and their business colleagues addressed topics from the seemingly simple questions of “What is Big Data and why is it useful?” through specific examples of useful applications to broader questions of how to incorporate Big Data into daily business operations. Participants in the session included executives from Bechtel, Brown-Forman, Chevron, Compuware, Dell, Eastman Chemical, Eaton Corporation, Mindshare Marketing, Time-Warner Cable, and YUM! Brands, as well as academics from the Center for Digital Strategies at the Tuck School of Business at Dartmouth. The roundtable was moderated by John Gallant, Senior Vice President and Chief Content Officer of IDG Enterprise.

Key Insights Discussed in this Overview:

- **Big Data is already yielding compelling results.** With industrial operations and data-mining of social media leading the way, many enterprises have deployed high-value/high-return applications..........................................................................................................................4-6, 9, 11-12
- **Variety matters more than volume.** The integration of different data sources and different types of data, especially unstructured with structured, yields more new insight and business differentiation than simply crunching massive databases ........................................2, 3-4, 5-6, 9-10, 11
- **People skills are the scarce resource.** From complying with security and privacy policies to integrating intuition with analytics, getting the people part right is harder than finding the right technologies ..........................................................................................................................6-7, 8, 9-10
- **Big Data doesn’t have to be hard.** Early wins are coming from accessing and aggregating disparate data sets through APIs to create new classes of simple, lightweight apps that provide real business value ..........................................................................................................................3-4, 5-6, 12, 13-14
- **Personalization is key to the next generation of Big Data.** Whether it’s delivering new value to end customers or giving internal executives and decision-makers individualized access, Big Data is driving new business models for delivery of applications, content, and value ..........................................................................................................................4-5, 11-13
- **Hype cycles and real results notwithstanding, we are at the very beginning of the Big Data wave.** Innovations in integration, visualization, governance, and application development will lead to even more changes in business models and competitive advantage ..........................................................................................................................3-5, 10-11, 12-13
Introduction

“Big Data.” Even though the numbers have become part of daily conversation, the scale continues to amaze:

- Walmart processes more than one million transactions per hour
- YouTube adds 72 hours of content every minute
- Facebook users “like” something 35,000 times per second

Alternatively, consider the aggregate: It’s been estimated that every word written by humans since the first glyphs in Sumeria through Homer, Tolstoy, that interminable sophomore-year chemistry textbook, and even the entire corpus of both *Harry Potter* and *Twilight* would fit into 5 exabytes of storage (an exabyte is one quintillion bytes). Those 5 exabytes represent the sum of 6 thousand years of human output. In comparison, by the end of 2013 humanity and its devices (“the internet of things”) will have created and stored more than 3 zettabytes of data – that is, more than 3 thousand exabytes: the equivalent of 18 million years of human writing. And, the volume is expected to grow by 40 to 50 percent in 2014 and each year beyond. This is no longer simply human output — in addition to audio, text, graphics, and video, we are now capturing and storing data from countless millions of sensor devices. According to International Data Corporation, more than 90 percent of all this data will be unstructured: “full of rich information, but challenging to understand and analyze.”

Collectively, this outpouring of content has become known as “Big Data.” Capturing it, storing it, retrieving it, and analyzing it has become one of the major challenges of IT organizations in this decade. IT vendors as well as venture capitalists have invested billions of dollars in developing technologies to support these needs, and enterprises of all shapes and sizes have spent a comparable amount in deploying these technologies. Now, figuring out just what to do with all the available information has become one of the major challenges of businesses and other enterprises everywhere. Many companies can highlight purpose-built applications that meet specific business objectives, yet IDC estimates that “Only a tiny fraction of the digital universe has been explored for analytic value. …By 2020, as much as 33% of the digital universe will contain information that might be valuable if analyzed.”

John Gallant, SVP and Chief Content Officer of IDG Enterprise and the moderator for this Roundtable session, launched the conversation by asking “What is different about so-called ‘Big Data?’” For 30 years, whether it’s been called ‘datawarehousing’ or ‘business intelligence’ or ‘analytics,’ this goal of getting business insights and more-actionable information for your business has been at the forefront of IT. It’s also been an area of tremendous frustration over the years, where people feel that this task is too big, it’s too hard, the tools aren’t right. It’s been very challenging. What makes Big Data different? Have the technology underpinnings changed enough that it’s finally possible to achieve what we’ve tried to do so often in the past?”

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1 “IDC Predicts 2012 Will Be the Year of Mobile and Cloud Platform Wars as IT Vendors Vie for Leadership While the Industry Redefines Itself,” International Data Corp., 01 Dec 2011
How Big is “Big?”

Buddy Lang, General Manager, Facilities Engineering, Chevron Upstream and Gas, characterized what’s changed in the technology: “One of the early barriers was simply the generation of data. That’s exponential now, so we have more data coming at us. The other barrier was being able to collect it and store it and try to find a way to use it. Those barriers are dropping pretty quickly.”

Mark Hillman, SVP Strategy and Business Development from Compuware Corporation, suggested that the removal of these barriers has caused changes in both scale and accessibility:

Amazon and the other mega-web guys have created a discontinuity because they dwarf anything that’s ever been done. CIOs like those here today count servers in the tens of thousands; Amazon counts in the millions. The biggest data center in the United States is 1.2 million square feet. Have you ever stood on the 50-yard line on a football field? This is the size of 20 football fields in contiguous space. And you can process this stuff cheaply. The amount of data has gotten massive, but the fact is now we can actually do something with it, because we can process it practically in real-time. That’s fundamentally different.

Rob Schmidt, Executive Director of Business Intelligence IT at Dell, concurred: “We’ve always had this capability; this is the next generation of BI. But it’s not about capability, it’s about cost. Dell has 8 billion page views per year. Each of those page views generates an enormous amount of data for us, and we have to choose, ‘Do we store it or not?’ ‘Do we analyze it or not?’ It’s a cost play, it’s not a capability play.”

Bill Braun, CIO of Chevron Upstream and Gas, made a distinction between traditional ‘large data sets’ and the current Big Data:

Chevron does lots of analytics on data we know, technical data, but we don’t call that ‘Big Data’ even if it is really massive. In fact, that’s the biggest part of our data, and we do really advanced analytics, and it’s really important, but I don’t think of that for today’s discussion. When we apply advanced analytics to stuff we don’t know, that’s what I think is where we go in terms of thinking about Big Data, that’s what is the really great business opportunity. Some of it we’ve had a long time; some of it is sensor data coming off new facilities; some of it is data coming off drill ships; some of it is 3D data and other new and as-yet unexplored data types from our contractors and partner organizations. We’re getting all this data that we’ve never gotten before, and we really don’t know what to do with it.

Geir Ramleth, Senior VP and CIO of Bechtel, combined these themes into another perspective on what’s new about Big Data:

Before, if data wasn’t all in rows and columns, then it wasn’t accessible to us. What we have learned from the Facebooks and the Googles is that we can go after unstructured data. So, Big Data is two things: It’s either really, really deep because of its volume, or
it’s really, really wide because it has a high degree of variety. It’s that second one that’s more interesting than the depth, because you can start to actually compare data that you never, ever had a chance of putting together before. If you can really get your hands around that breadth, that’s when you can get leading indicators or predictive analysis and make decisions about what might come up, rather than about what’s already happened.

“The Largest Focus Group in the History of the World”

Moderator Gallant picked up on Ramleth’s description of the significance of Big Data: “We’ve described some of the changes that are enabling this. What is most promising about Big Data? Why is it so important to your organizations?”

The entry point for many companies into the world of Big Data has been data-mining in social media. Dickie Oliver, Vice President of YUM! Brands’ Global IT, described how YUM! and its operating subsidiary Taco Bell have linked the two IT mega-trends:

We have about 750 million customers globally. When you’re trying to talk with that large a population, the ability to personalize the conversation is where we’re going to benefit. Today, marketing is generally yelling from the TV or some other media platform and hoping that people take action. Now we’re talking about having a personal conversation with some manageable subset of that 750 million about the products that are relevant to each of them, to their tastes and interests. It’s going to change everything about our business: How we buy properties, how we design stores, how we engage consumers when they show up, even how we go outside the store and potentially engage with them in their own homes.

Oliver’s colleague Lynn Hemans is Director, Industry and Competitive Insights for Taco Bell. She described Taco Bell’s activities in data mining in social media:

The speed with which you can get information out of social is now within seconds. Before it was word-of-mouth, then it was phone — it would take months to get our research out. There had been conversations or information posted where we simply couldn’t respond fast enough, and we needed a data set that enabled us to. Now, we actively monitor everything that’s public on the internet, 24/7. Every Twitter, every Facebook that’s public, blogs, news stories, comments on stories, anything that’s related to Taco Bell, our suppliers, our sister brands, our parent. The data is rather unstructured, and so processing it and understanding it is rather complex. But if you can get a rich sentiment analysis, you can quickly find insights that you can capitalize on.

Oliver finished the story: “I guarantee that the GM of Taco Bell doesn’t know what ‘Big Data’ is. But he knows that this project has brought his level of understanding of the customer to a new level. We’re able to react at a much quicker pace, and he could care less about the buzzword. What he knows is, this impacted his company and his efficiency, and improved his bottom line, because we’re listening to the biggest focus group in the history of the world.”
“What you’ve described is a lot of unstructured input. Do you marry that with structured data that’s been around for a long time, from sales systems and payment systems?” asked Hans Brechbühl, Executive Director of the Center for Digital Strategies at the Tuck School of Business.

Brian Hovey, Schmidt’s colleague and Executive Director of Global Marketing Operations at Dell, answered affirmatively:

Social media helps us get a better handle on what customers are really thinking. We take static information like transaction history and firmagraphic information, and now we overlay social data on top of that to augment our targeting and our opportunity identification in our propensity modeling. We’re seeing that flow back into business benefits, with much higher results in terms of likelihood of close. We’ve struck a chord with the leadership team at Dell around this customer experience. It’s a real opportunity to monetize Big Data. That is our consumer business, but we have a significant commercial business as well, and the social piece is just as important on that side.

Cyndee Everman, Group VP, Business Intelligence, Care and Marketing Solutions at Time Warner Cable, gave another current example of profitable use of Big Data from the business-to-consumer world. Like YUM!, TWC is

Very interested in being able to personalize the customer experience, to predict customer behavior based on the data elements. Our media team has a vision around monetizing the collection and use of data. For example, we now collect clickstream data on the set-top boxes to evaluate customer viewing patterns. So as you’re surfing up and down every evening watching TV, we’re collecting all that information. Now just to put your mind at ease, we immediately anonymize this data, even before we ingest it, and are not able to track it back to an individual, but we do know that it is the same customer that tends to watch this kind of programming. We enrich that with information from our data warehouse with specific demographic information and customer segmentation data to drive deeper insights.

Now the media team can meet with their advertising customers and present them with facts — “Look at this. If you had been advertising with us last night, look at all the eyeballs on Channel 8 at 6:00.” And so we will be able to drive that revenue with the advertisers because it’s no longer a guess based on the small percentage of customers that Nielsen tracks. It’s a fairly large representation of the client base. And then they can do things like overlay the results of eyeballs that stayed on the channel and whether they were watching a Ford ad or a Chevrolet ad, and they’re able to present all of that data through their mobile dashboards. They see this as real opportunity to turn this data into revenue!

Schmidt compared Dell’s Social Media Command Center to YUM’s social media operations: “It’s very similar, in that we can view sentiment on different types of charts, and we can act very quickly, even in terms of reacting to something like Hurricane Sandy. We are global. We’re using Radian 6.”
But don’t confuse social media with big data,” Schmidt continued. “From an IT perspective, there are three distinctly different architectures that need to be in place to do everything we’re talking about with big data and social media. Radian 6 listens to real-time sentiment analysis and drives to very quick action. But then I need to marry it with a significant amount of other data, some structured, some unstructured. And then I need to drive it back to my master data management processes. I can’t derive all the value from a single platform.”

Participants from the industrial/business-to-business sector chimed in with other current high-value uses of Big Data. Bechtel’s Ramleth returned to his theme of combining different types of data to create new solutions to existing needs:

At Bechtel and Chevron, we put a lot of emphasis on safety. How can you make predictive measurements of safety? We know we have a very young workforce, people that haven’t been around very long. We know we have lot of heavy equipment around. And from Google I’m finding out that the weather forecast is not good. If I put all that together, I have a predictive measurement that tomorrow we might have a very tough safety challenge. We could never do that before, it was only a human thing. It wasn’t something that we could analytically predict.

Gallant picked up on Ramleth’s final point: “What made that shift from the analytical to the predictive possible? Because being predictive with Big Data is so important.” Braun answered Gallant’s question with an example using analysis of automated sensor data to improve operational efficiency at Chevron:

We have thousands of pump jacks from Kansas to California. They all have control units to help with power management, to configure them remotely depending on the well performance, so they’re not just robotically burning up a lot of electricity. The control unit also gathers the load on the rod — how is it performing, how much work is it actually doing. We have loads and loads of this data for a huge period of time. We’re using deep analytics to peer into it: ‘Here are 100 well failures and the data that led up to them.’ So now we can start to see when there’s more pressure starting to appear in the well, or that the casing might wear through or the rod might break.

Braun’s colleague Buddy Lang described the rest of the scenario:

The intent was to transform our workflows. We might have people in the truck who would actually drive to every single pump jack on those thousands of wells, and based on some information they would gather, they’d write a ticket and say, “You need to come repair such and such.” But with this data we’ve been able to develop a central control where they can look at this information and trend it, and they can predict and then actually electronically issue work orders. The ability to sense this stuff without a human being there is automated now.

So it’s not only a savings of time, it’s also a savings in the number of people who are needed to operate these fields. We’re using the analytics to predict failures and to make our business more efficient.
Rob Schmidt added commercial examples from Dell: “Our Secure Works technology for virus detection and intrusion detection generates log information back, and we mine it very, very quickly to predict and detect the next intrusion pattern. From a server perspective, every Dell server, every piece of Dell hardware has the ‘phone-home capability.’ On Dell internal machines, we log that data and we do predictive analysis on failure rates. Obviously on customer machines we only do that if they turn on that function.”

The Dark Side

The examples from Hemans and Schmidt about information being collected and fed back to a vendor identified one of the hot zones in the current conversation about Big Data: “At some point, is the public going to think, ‘So much is known about me that I’m really uncomfortable,’ and start a major push back on privacy?” asked Keith Sturgill, VP and CIO of Eastman Chemical.

“United Airlines knows a lot about me,” pointed out Eric Johnson, Professor and Director of the Center for Digital Strategies at Tuck. “It’s infuriating that they won’t use the data to make my life better when they know so much. There are as many, if not more, people who feel that way than who object to the privacy creep-out factor right now.”

“It’s about how the data is used,” proposed Dell’s Hovey. “People will share openly so long as they’re getting something in return, but if the data start to get used in a manipulative way, they’ll react.”

Compuware’s Hillman agreed: “The key to solving privacy is exchange of value. ‘I’ll give you this if you give me something back,’ that’s the design element. If all you’re doing is taking my data, and you’re getting value out of it, then I’m violated.”

“The privacy issue is huge if you’re global,” Hovey said, adding another dimension to the topic:

Different countries have different rules and regulations. It’s creating an environment where you have to be engaged to help shape and influence their direction, but you also have to be responsive to all these different needs. Canada just passed some of the strictest privacy regulations out there today. And so we’re scrambling to think about how it impacts our systems and tools when a lot of them aren’t managed only within Canada.

Ramleth gave a similar example:

Information consists of bit and bytes, and there are regulations about where you can put it and where you can move it. You meet large operational issues in the form of various privacy laws. For example in Sweden, you cannot move HR records out of the country. Well, that means you cannot take the data sets that sit in your system out of that country. There have even been disputes about whether you can view that data from outside the country. And then you add social, and the requirements on what was structured before now may apply to all that unstructured data, you meet some really interesting challenges.
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Tightly related to privacy is data security. “It’s a concern to be responsible for information security and the productivity of the workforce,” said Sturgill. “You can clamp down everything and disappear in a few years, or, you can be wide open and still disappear in a few years. Getting that security/productivity balance right within the organization is a real struggle.”

“We’re all going to continue to struggle with security,” responded Ramleth. “How do we deal with data security when two different pieces are pretty benign, but when the two come together, suddenly they’re confidential? We’ve spent so much time locking down the system and the database and access, but the data is now already out in the wild. How do we change people’s behavior around this?”

Ironically, Ramleth continued, security is one of Bechtel’s early applications of Big Data: “Our center of excellence for Big Data is actually coming out of our security analysts. Those guys have a high degree of big data and they are good at staying agnostic to the data. They don’t have a preconceived notion of what they are looking for. They are just mining data to look for things that people otherwise wouldn’t see.”

Is More Better? Or Just More?

Privacy issues, including laws in certain countries about data export even within an enterprise, as well as security concerns, were clearly identified as brakes on the adoption of Big Data. Yet the examples from both the consumer and the industrial companies showed compelling economics. If the insights from Big Data are so valuable, then why is it still in such early stages of adoption?

Amos Avidan, Bechtel’s Senior VP and Manager, Engineering & Technology, challenged the fundamental premise:

We are building three liquefied natural gas plants in Australia, side by side. The plants are almost identical. The first plant is designed in a tool that’s been used for many years. It will have something like 300,000 pieces of data. The two plants next to it are being designed with the newest software, and each has several million objects. The same plan, the same capacity, the same number of pieces of equipment, but now we have 7 million data elements.

Those 7 million objects are there because we generated them, not because our clients asked for them. What we haven’t figured out yet is, ‘Can we take these 7 million pieces of data and use them in a way that would make us more efficient in designing this plant than the one that has 300,000 objects?’ Today that’s not the case. We’re not seeing an improvement in productivity. Our clients will operate these plants for 40 to 50 years. We are wondering, ‘How can we make this information valuable to them throughout the life cycle?’

T.J. Graven, VP and CIO of Brown-Forman, agreed: “We think about Big Data in context of how to drive our business in new ways, how we can use it to make our business better and to
drive growth. But we’re struggling with the fact that the tools have progressed to a point where the information available now exceeds our capability to think about how to apply it.”

Avidan suggested that the current state of Big Data is analogous to vision: “The human eye can see 30 megapixels of quality. But the brain doesn’t process 30 megapixels every fraction of a second. We evolved to look at light, dark, movement, and we ignore the other 99-plus percent of the information. With Big Data, the data is there. You can store it for quite a while. But let’s be intelligent about it, because it’s not everything, and more of it doesn’t necessarily make it better.”

“I see so far very little evidence,” Avidan continued,

That the drive to Big Data is increasing our productivity, certainly not in the engineering and construction area where I am working. On the contrary, there are a lot of indications in the Western world that the productivity of engineering and construction is going down, maybe proportionately with the increase in the amount of data. So that goes back to the question: ‘Are we really monetizing?’ And if not, it’s distraction. It’s an added cost. It’s a confusing thing. Knowledge is simplicity, not complexity.

“Somewhere between tools and capability,” commented Dell’s Hovey, “We find we’re spending more and more time just on collecting, cleaning, and aggregating data, as opposed to analyzing, interpreting, and driving insights from it. We have to figure out how to break that, how to go back to a simpler world so we can spend more time getting real insight, because just spitting out data isn’t going to get us where we need to go.”

Avidan’s colleague Ramleth seconded the concern: “Do the people who are analyzing understand what they’re trying to analyze? Or can they come up with some very, very wrong answers because of the wealth of the information that is being given to them? ‘The computer came up with the answer,’ so it must be right. Well, maybe not, because you put some ill-founded assumptions into it.”

Dick Kerr, Vice President, Architecture and Information Management at Eaton Corporation, gave another view of the same question: “One of the challenges is in seeing patterns where there are none. More data means more opportunity for true patterns, and more opportunity for false ones, as well. How do you develop the acuity to choose the right question, and not to follow the false pattern?”

“That’s impossible,” stated Oliver from YUM!. “What I can do is arm you with the information. I can pull the data. I can bring tools to enable you, but you’ve got to have people capability within your organization that can take information and turn it into action, into money for your company.”

“So it’s not a data problem, necessarily,” observed Eastman Chemical’s Sturgill.

Information is not the problem; our people are flooded with information. Improving the judgment of the people that use the data has got to go along with the increase in the data. With the speed at which information flows, you can go down a really bad path, really
quickly. You could miss or over-exaggerate an opportunity based on what you think the data is telling you. This idea of data enhancing judgment, data enhancing intuition, is going to be ever more important in this new world. It’s being able to get that information to every level of our organization from the people that are the front line with the customer all the way up to our boardroom: Getting that relevant information to them in a way that they can make a decision, make a quick decision, and make an accurate decision. You can get into a place where you’re churning forever to make a decision. ‘Give me more data.’ There’s always more data. How much is enough? The data will never give you the answer, but it will, done well, enhance your intuition or support or counter your intuition. It will never make the decision.

“Technology enables us to handle more data and more complex data, so we try to do so. But there are business processes that benefit from radical simplification, rather than from more variables and variations,” concluded Bob Morison of Mindshare Marketing. “Decision-makers need to be aware of their process of making decisions. And to sense when they need more data, or when the data isn’t very good — to know when to say, ‘I have to rely on my intuition here.’”

Exposing the Possible

The powerful current applications notwithstanding, a recurring theme throughout the discussion was just how early it is in the development and deployment of Big Data technologies. “We’re in the first minute of the first period,” said Compuware’s Hillman. “We’ve been looking at data for a long time, but this is going to require a complete generational shift from where the world was.” “We’ve just scratched the surface,” added Hemans.

Chevron’s Robert Watson, Regional Manager, Facilities Engineering for Chevron Upstream and Gas, returned to the topic of the interaction between people skills and data:

The data’s becoming available. The systems are here to generate lots of information. But to turn that into a business decision means that somebody who understands the business has got to look up the pipe at what information is coming along, figure out how we move that information into standards and systems and processes we can interpret, and then get the information out to use in the business process.

Competency for doing that, for looking up the pipe, is the challenge. If you’ve got a surgeon, for example, who wants to get information about previous surgeries the survival rates. But his competency is in surgery, and now he’s got to think about the data side of it and say, “How do I get that information, from what systems, and how is it all getting integrated?” That competency gap from the end user is one of the bigger issues that I see.

Watson’s colleague Lang continued: “I think of things in terms of barriers. The ability to generate a lot of data was the first barrier that dropped because of all the sensing equipment that’s available now. The next barrier was how to manage it all, but the hardware and software is available now to restructure business processes and centralize a lot of them into control centers.
So people are the last barrier — people with that blended skillset who can talk data and talk business and see things, connect the dots, who can transform the way we work by using data.”

“Everywhere I go,” said Johnson, “Companies are saying ‘Where do we start?’ Big Data feels a bit like pixie dust — you sprinkle it in and good things happen. But okay, where do I find a data scientist?”

Sturgill described how Eastman is approaching the competency problem described by Lang:

We have an engineering culture, and we pride ourselves that we’re data-driven in everything we do. I don’t think even we are prepared for the Big Data wave, however. So we’re in the process of bringing together three unique skillsets within Eastman globally. First we have, the traditional IT business analytics — the business intelligence skillset focused on visualization and data governance and those traditional things. We’re bringing those people together with our statisticians group and our operations research group, with the hope that together they all can become inside enablers, with a combination skillset of stats, math, operations research, and traditional BI. We hope to change the culture around starting to expose what’s possible. We’ll see if magic happens.

“It’s critical that your senior management and executives understand this space in terms of connecting it to the big rocks they’re building on to drive the business forward,” added YUM!’s Oliver.

They hear the term ‘Big Data’ and they don’t want to talk about it. They don’t know what it is, but if you could start de-mystifying it and tackling down to business initiatives, then you’re going to get a lot more progress made. We’ve brought digital talent and expertise into the company, and we’ve grown individuals who’ve shown an interest in how we connect technology with our business. But the pressure is still on the people capabilities: We do not have enough people who clearly understand the value that this can bring, and can then take it and really scale it and leverage it.

Moderator Gallant asked about profile of these people. “Is it a marketing wonk who’s super analytics-oriented, or is it a whole separate role, this sort of ‘data scientist’ term that we hear? What’s the key skillset?”

“They who are good at it are intellectually very curious,” Taco Bell’s Hemans answered. “They have a hard science background, they want to learn and want to understand, they want to put things together. And they have to be passionate about what they do, because if they’re passionate and they’re curious, those are the successful ones.”

“Does this ultimately become a separate function within the organization, separate from IT, separate from marketing, or is this a function that’s embedded in every part of the business?” Gallant asked.

“The people who have done this best of us,” volunteered Braun from Chevron, “have ended up being very effective, but somewhat siloed. They get stuck because they’re in a hybrid role that
we didn’t mean to make, and they’re doing it really well, but we can’t replace them so they can’t go anywhere.”

“The business functions start playing around with the tools themselves,” answered Olivier, “And understanding and growing their own talent within the organization. So it’s not like you have one super set of individuals that are just sitting there answering questions. They become embedded in the organization — this is the new ‘business as usual.’”

“Big Data/Small Math”

“So we have all this data,” Gallant stated, in beginning to summarize the day’s discussions. “We are trying to glean insights from it, to make it accessible both to senior executives and to the decision-makers who are closer to the customer. How do you arm these people? What’s the most appropriate set of things to give people?”

Morison cited his co-author, analytics guru Tom Davenport of Babson College, who “likes to say that a lot of Big Data applications have small math. The value is getting the data together and asking new questions against it, and then providing the means for people to get at it.”

Ramleth described how Bechtel has made this approach work in practice:

We are on a journey, but you have to create a backend environment such that you can afford to write lightweight applications. You build them fast, they’re not big investments, and if they don’t work, you throw them away. If you enable that, then you can actually write specialized applications for certain user communities. As an example, all kinds of data about our people sits in SAP, but nobody wants to learn SAP to query four fields. So we wrote this little app that queries SAP faster than SAP queries itself, and it only took a week of application development.

Hillman built on Ramleth’s point: “You can bring in a crazy amount of data, hundreds of terabytes of data, but the analytics can be very simple. They can be spreadsheet math: counting, sorting — easy stuff — and the really interesting discovery is the value in doing simple apps. It has great potential without having to get into the hard stuff.”

“You do have a mix of different things,” agreed Hovey. “You have really complex data mining analytics that you have to solve in a new way, but a lot of the problem is getting the right information, which can be pretty simple information, out to the people in a way that’s consumable and in which you can be responsive to different groups.”

“We’ve used a visualization tool to help our business users find their requirements,” added Everman. “Marketing wanted access to a 10-terabyte database, refreshed every 15 minutes. So we gave them access to Tableau, so that they could come back with a more educated request.”

“This is the Big Kahuna opportunity in the transformation of IT,” said Hillman. “It’s going to be messy for a while, but some of these tools like Tableau are shocking in their simplicity and
ability to do complex visualizations. Even underneath, in the database, ETL tools and statistical models — it’s all absolutely rocking, and in the next five years it’s all going to start spinning out.”

The Road Ahead

So if it’s early in Big Data, as the Roundtable emphasized throughout the day, and the transformation of IT will be profound over the next 5 years, what other applications and use cases will we see in that time frame?

“A new service business that’s oriented around being able to take sensor data and make valuable use of it for ourselves and for our customers,” said Eaton’s Kerr. “The early opportunity comes from being traditionally a product-oriented company and looking at other ways to monetize this mass of information. Things we’ve learned in the aggregate are valuable to others, and you can monetize that data by selling it to adjunct markets in the broader ecosystem.”

Incorporation of even more new types and sources of data, suggested Graven from Brown-Forman. “We’re still spending a lot of time gathering information and storing it in proprietary places. Most valuable information to our business doesn’t actually sit inside our business, it’s with our partners.”

“I walked in not liking the term ‘Big Data,’” said Braun, “And I’m walking out liking it even less. I don’t mean that in a negative way: I mean you have to break it into its elements, because they’re actually quite different – video data, social media, sensor readings. To put one umbrella over all that may not make sense, when part of the power comes from aggregating dissimilar data types and amalgamating data in new ways.”

“The cross-pollination aspect is really important,” Kerr added. “The value has been to correlate things known internally and those available from external data sources, through suppliers and partners. Visualizing this information so that people can make better operational decisions has made a huge difference in areas like manufacturing execution.”

“One of the biggest potentials is the management of safe operations,” said Watson. “Having data come in at this rate and being able to assimilate it is going to be critical for the future of facility operations. Making sure all the control systems are operating inside their designs means that your plant becomes a lot more reliable, a lot safer, and a lot more productive. That’s the really cool stuff, the business differentiator that’s coming up.”

Incorporating data from internal and external sources can affect longer-term operations as well, suggested Sturgill. “One that’s very near and dear to us is profitability analysis. Today it takes many, many hours for us to churn through. Some of the Big Data technologies can help us improve, to react faster to market conditions, and start feeding that information to our innovation pipeline.”

Brechbühl cited a previous Roundtable on Digital Strategies:
Caterpillar collects usage data on their machinery in the field. "Since Caterpillar sales are a good indicator of how the economy is looking and when they start seeing usage of their equipment changing, it can be an indicator of where sales are headed. Some would speculate that the highest value for that particular data would be to sell it to Wall Street, not just use it to advise customers. It’s an example of an entirely different direction to monetize data that has almost nothing to do with the core business.

In a similar vein, Ramleth described how an elevator vendor was able to use daily operational data to predict for commercial landlords the likelihood of individual tenants renewing their leases. “It’s a business selling insight,” Hillman said.

Additional customization for the individual customer, proposed Everman. “We know what you like to watch, we’ve got the data. Instead of making you go through all 500 channels to get to the one you want, we should be able to offer up a personalized guide, and a recommendation advisor, and even serve up customer-specific advertisements.”

Big Data “fundamentally changes how you think about the types of things you create,” said Hovey. “Instead of direct mail pieces or advertising campaigns, you’re creating elements stored in a data management platform, and you’re pulling fragments of different elements dynamically. The available tools are huge enablers, but they do require marketers to totally re-think how they’re engaging and investing to reach different markets, or segments of the market.”

Finishing the day’s discussion, the group returned to the broader questions around Big Data. “Big Data doesn’t have to be big,” Ramleth reminded everyone. “Is the information you’re dealing with important as an operational tool, or is it important to your business existence in the marketplace? Big Data should be more about the big outcome, rather than the big influx.”

“It depends where you are in the cycle and what kind of decisions you’re making,” replied Avidan.

The world is complex. Steve Jobs was famous for saying ‘The customers have no clue what they want, don’t confuse me with that.’ So Apple was successful because they innovated with something that didn’t exist. Now look at Samsung, which has the exact opposite approach, and does incredible amounts of data collection. You have to be flexible to do all this. If you want to stay in business for 100-plus years as some of us have, you want to use all these strategies at the right time.

“That’s the thing that worries me most,” said Oliver.

It’s that gap of fully understanding the value that’s at our fingertips here, and then integrating that into business ahead of competitors. We can all see the actions they’re taking, the partnerships they’re forming, the investments they’re making. Some are moving faster than others, and we’re going to be at a competitive disadvantage if we don’t understand how Big Data is going to help us drive our companies forward. No one can afford to be the last one to get the joke.
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Big Data: Capitalizing on the Potential
February 13, 2013

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