"Competitive Advantage in the Era of Smart"
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Thanks, Richard. I'm truly delighted to be here at the Council on Foreign Relations. CFR and IBM have such a long history together, dating back to the 1920s, and I'm proud that our company was a founding supporter of the Corporate Program.

To start, I'd invite you to consider a few recent events:
  ➢ A police department reduces the incidence of rape – by moving pay phones inside of convenience stores.
  ➢ A Mexican cement maker launches its first global product in record time – not by building a new factory, but by building a social network.
  ➢ A U.S. Presidential campaign doesn't rely on opinion polling – and yet predicts the final vote in a key swing state within 0.2 percent.

These events may seem random, unrelated. But I want to convince you that they are all instances of the same phenomenon: a new way in which organizations of all kinds are learning to compete in a very new landscape.

What is that landscape? Well, five years ago – in this room, actually – IBM introduced the idea of a Smarter Planet. It was short-hand to describe something seminal that we saw emerging in our work with clients across many different industries. Today, we all hear about clouds... we all use smart mobile devices... and social networks are for everyone, not just the kids.

All of this is ultimately about data – generated by social networks, mined by corporations for insights, transacted by billions of people. Even the CFR is holding panels on Big Data!

Data is indeed the basis of competition in the 'smarter' era. And Big Data is indeed the next natural resource – promising to do for our era what steam, electricity and oil did for the Industrial Age.

But saying that is like saying having access to steam engines or to oil fields made you an Industrial Age power a century ago. In our time, everyone will have access to data... to cloud infrastructures... to mobile devices... to social networks.

What will determine winners and losers? How do management and organizations – not just technology – need to evolve?

Let me suggest three principles of change. Whether a corporation, a city, a healthcare system or a government agency, we all do three basic things: We make decisions – about capital, people, products, services. We create value. And we deliver value – to consumers, citizens, patients, students.

Principle 1: Decisions will be based not on "gut instinct," but on predictive analytics.

We need to do this for two reasons. First, *we can*.

Every two days, we now generate the equivalent of all of the data that existed up to 2003. And thanks to advanced computation and analytics, we have the tools to turn that data into insight, knowledge and better decisions.

The second reason to embrace analytics is because *we must*. The way we make decisions today too often leads to bad outcomes.

A global survey of top risk managers a couple of years ago identified the #1 method for identifying and assessing risk. What was it? "Senior management intuition and experience." This, in the aftermath of the biggest recession in our lifetime, one many believe was caused by an inability to manage risk.

Of course, this is nothing new. Humans have always made most decisions by gut instinct, below the level of consciousness. But we tend to forget that those mechanisms persist, even in fields that rely heavily on science.

For example, consider the psychological mechanism called "anchoring bias." This is the human tendency to rely too heavily on a single piece of information that we have already internalized. So even in medicine, a physician hears about two or three symptoms, seizes on a diagnosis consistent with those, and subconsciously discounts evidence that points to something else.

In contrast, let me give you an example of how data and analytics are transforming decision-making in just one kind of organization: a police department, this one in Memphis, Tennessee.

> A decade ago, traditional policing practices were losing the battle to rising crime in Memphis. With budgets tight – so they couldn't simply put more cops on the street – the city's police department looked for a new approach. Working with academics from the University of Memphis, they developed a system called Blue CRUSH – which stands for Crime Reduction Utilizing Statistical History.

> Using reams of data and sophisticated analytics, Memphis police were able to create multilayer maps that showed crime hot spots. These maps were based on multiple factors – type of criminal offense, time of day, day of the week, victim and offender characteristics. Commanders could see many patterns and insights that were previously invisible.

For example, it turned out that rapes committed at night were correlated with the presence of pay phones outside convenience stores. This hadn't occurred even to veteran patrol officers. Armed with this insight, the department persuaded store owners to move the phones inside – and the number of rapes went down.

By creating a system and a culture based on data and analytics, the Memphis Police Department was able to increase targeted, effective police presence on the street and eliminate "random patrolling," without increasing overall manpower. What they have increased is new skills. No system is perfect, but crime in Memphis was reduced 30 percent – at no additional cost to taxpayers.

At IBM, we have seen similar shifts in industry after industry, and in the public sector, too. We're seeing new ways to be a mayor – using Intelligent Operations Centers in Rio de Janeiro… Davao in the Philippines… and Miami, Florida.

And here's the key point: This isn't just a change in tools. It's a change in mindset and organizational culture. Which is also the greatest challenge it poses: the need to "unlearn" deeply engrained professional and leadership assumptions:

How you treat a patient… and how you run a hospital.
How you manage enterprise risk… and how you manage an enterprise.
How you teach… and how you build an educational institution.

And yes, what it means to be a cop. The success of Blue CRUSH required cops not just to learn new skills, but to learn a new job. Eventually, this led to a big bump in morale, says Police Director Toney Armstrong: "This is what our officers love. They're making positive arrests and seeing dramatic results, all while helping people."

They don't yet teach these new skills and approaches in police academy… or in medical school… or in teacher training… or in civil engineering curricula. But they will.

Principle 2: The social network is the new production line.

In 1959, the legendary management guru Peter Drucker coined the term "knowledge worker," defined as someone who does "non-routine" work… seeks and makes sense of information (he estimated 38% of the worker's time)… and renders judgment – creating what we now call intellectual capital.

Now consider what that means today. What's happened to information since 1959? Well, there's that exponential increase in volume, speed and variety of data that I mentioned. Now think about what tools are available. In 1959 – files, spreadsheets, tabulators. Today, we have advanced analytics… heading toward systems, like IBM's Watson, that aren't programmed… they learn.

We also have billions of mobile devices, which are rapidly becoming the world's primary interface to the Internet. In one study in China, 90 percent of users said they have their mobile device within arm's reach 100 percent of the time.

Finally, and most importantly, knowledge workers today have 24-hour access to something else: each other.

In a world where value is shifting rapidly from things to knowledge, knowledge workers are the new means of production. And it follows that the social network is the new production line.

This is important. In a social enterprise, *your value is established not by how much knowledge you amass, but by how much knowledge you impart to others*.

We are in early days of this shift. But some pioneers are changing how they actually create value.

> Consider the Mexican cement maker CEMEX. The company wanted to create its first-ever global brand of concrete. It would have to accommodate multiple different specifications for concrete in different countries. To develop this, they didn't build a new lab or production process… they built a social network. It was called Shift, and it connected their product development staff in 50 countries. It grew to more than 400 active communities. They wound up launching the new global brand in a third of the time it used to take them to launch a new product within Mexico.
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> Now, this new way of operating is spreading across the enterprise. CEMEX is working with IBM Research to deepen the expertise functionality in Shift – to dynamically build heatmaps of recommended experts, materials and activities, so that any CEMEX employee knows how to become an "expert" in a given topic of interest. The first group to make use of the tool was the Alternative Fuels community. The long-term objective is an enterprise expertise model where information is analyzed automatically, content is organized in relevant topics and personalized action plans are created – and where rewards are shaped by who contributes the most and best ideas.

Remember, this is a cement company.

Note: This may have begun as an attempt to enhance connectivity and sharing. But it is taking a crucial next step to the actual creation of expertise… and the actual creation of experts.

Cemex is an example of the social dimension of the Smarter Enterprise. Could every organization follow its example? Could every company hire, compensate, evaluate and promote on the basis of how well one shares and catalyzes knowledge? I believe most can, and will. And we are working aggressively to do this at IBM.

For example, today, every IBMer has a social network page – as well as access to thousands of internal information sources, blogs, communities, wikis and universal instant messaging.

We are now working toward a future – a near-future – in which all IBMers will be rated by their peers and profession, based on how good they are at sharing their knowledge… how good they are at making it useful, consumable… how well they contribute to the community and to our clients' needs and experience. Five stars? Here's your bonus. Two stars? You have work to do.

Principle 3: Value will be created not for "market segments" or demographics, but for individuals.

Whether we are companies reaching customers, governments engaging citizens, hospitals and their patients, universities and students… In truth, all of us have understood and served, at best, segments of populations. Males 17 to 25… household incomes above $50,000/year… diabetics… "red" and "blue" states.

These are "averages." The rapid emergence of Big Data, social networks, mobility, location-based tracking is generating a thousand clues about the individual human being. This will bring about the death of the "average" and usher in the era of "you" – the unique consumer, citizen, patient, student.

> It is well known by now that President Barack Obama won re-election not by targeting broad populations, states or zip codes… but by using Big Data analytics and behavioral science to understand voters as individuals.

> Using dynamic models powered by voter contact data, the campaign's Analytics team ran 66,000 simulations each night to project who was winning every battleground state. They used this data to allocate resources – funding, campaign workers, outreach – in real time. The final simulations of the Ohio vote were accurate to within 0.2 percent.

> Obama for America used a "persuadability" score to model how susceptible an individual was to changing her mind based on campaign appeals.

> They used Twitter influence scores (looking at the number of tweets and followers) to target direct messages asking people to get involved.

In fact, this new science of politics bids fair to transform the field we've known – perhaps prematurely – as political science. And this capability is not restricted to politics.

> An example: Call centers were once measured on how fast they could get the customer off the line. But today at some companies, employees are trained to spend the extra time to gather useful information about customer needs that will serve the long-term relationship.

Advertising was once conceived only as promotion. Today, forward-thinking retailers are using it to initiate a dialogue with the customer – to learn more about them.

Traditional vehicles that businesses have used to capture information about individuals, like the loyalty card, are giving way to technology that tracks a great deal more information than what groceries you bought. For example, Progressive Insurance offers Snapshot, a device that gives you a personalized rate based on your actual driving habits.

When you look closely, you see that personalization isn't mostly resulting in better marketing. People are not clamoring for more of that. What's happening instead is that marketing is being replaced by service, by useful assets, by value. In exchange for their data – who they are, what they're looking for, even where they are standing or driving at this moment – they expect some kind of benefit in return… whether as customers, or patients, or students, or citizens.

So, to recap… three guiding principles for creating competitive advantage in the emerging era of "smart":
1. Make decisions based on predictive analytics and data.
2. Understand the social network not as your new water cooler, but as your new production line.
3. Deliver value not to masses or segments, but to individuals.

The challenge is not the technology. The challenge, as always, is culture… changing our entrenched ways of thinking, acting and organizing.
-   Analytics alone don't transform police work.
-   Internal social networks alone don't result in a new system of production.
-   Even the most powerful scientific breakthroughs can't change an industry or a culture if the professionals themselves don't want it to change.

The good news is that more and more of those professionals do – in industries, agencies, cities and communities around the world. Indeed, despite the many challenges we face, I am optimistic. We have, in Big Data, a vast new natural resource, as well as the means to mine it for value. And that is unleashing not only insight and knowledge, but new ways of creating business and societal value… and new ways of working that are more flexible, innovative, collaborative, humane.

Personally, I find this prospect highly appealing – and we are working hard to help our clients, and IBM itself, transform for competitive success in this challenging and hopeful new landscape.

Thank you.