

# Welcome to the Decade of Smart

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Just over a year ago I was at the Council on Foreign Relations in New York City. I was there to share what we at IBM had come to believe was a seminal change in the way the world literally works. On that day we began a global conversation about how the planet is becoming smarter.

By a smarter planet, we mean that intelligence is being infused into the systems and processes that enable services to be delivered; physical goods to be developed, manufactured, bought and sold; everything from people and money to oil, water and electrons to move; and billions of people to work and live.

- > Enormous computational power can now be delivered in forms so small, abundant and inexpensive that it is being put into things no one would recognize as computers: cars, appliances, roadways and rail lines, power grids, clothes; across processes and global supply chains; and even in natural systems, such as agriculture and waterways.
- > All of these digital devices—soon to number in the trillions—are being connected through the Internet. Some call this the “Internet of Things.”
- > Lastly, all of that data—the knowledge of the world, the flow of markets, the pulse of societies—can be turned into intelligence, because we now have the processing power and advanced analytics to make sense of it all. With this knowledge we can reduce cost and waste, improve efficiency and productivity, and raise the quality of everything from our products, to our companies, to our cities.

We began this conversation in November of 2008. Of course, as we’ll all remember, the world financial system was in free fall, and most companies and markets were pulling in their horns and seeking shelter. At IBM, we decided to go forward with our point of view because we believed it was—and is—a pragmatic agenda for forward-thinking leaders. It’s not an aspirational vision, but rather a practical way to address the kinds of problems that were seizing the world last year and that still command our attention—from jobs and energy to the environment and the systemic problems of global finance.

We believe in this. And because we believe these solutions are within reach for business and society, we have committed the resources of the IBM company to making smarter systems a reality in every part of the world.

In the year since we began this conversation, we have learned a great deal. I would like to share some of that with you this evening, and to offer a perspective on the year and decade ahead.

## Smarter Planet is Real

To start, one thing we've learned this past year is that the idea of "smarter systems" is resonating with decision makers in the private and public sectors all over the world. We initiated outreach in more than 50 countries, both the established and emerging nations of the world. We have held nearly 100 conferences on the subject of Smarter Cities alone, attended by more than 2,000 civic leaders.

More than conversation, we are seeing increasing evidence that smarter systems are being implemented and creating value. I challenged the IBM team to create 300 smarter solutions in partnership with clients in 2009. Well, we exceeded our goal, and saw more than 1,200 examples brought forward in every major industry, in every section of both the developed and developing world.

As we look across all of these real-world examples, we are beginning to quantify the outcomes of investments in smarter systems:

- > In a study of 439 cities, those that employ transportation congestion solutions—including ramp metering, signal coordination and incident management—reduced travel delays on average by more than 700,000 hours annually and saved nearly \$15 million each. In four cities where IBM has helped deploy congestion management solutions, traffic volume during peak periods has been reduced by up to 18 percent, CO<sub>2</sub> emissions from motor vehicles were reduced by up to 14 percent, and public transit use increased by up to 7 percent.
- > Eight hospitals and 470 primary care clinics in Spain implemented smarter healthcare systems across their facilities—by making information available at the point of care to healthcare practitioners and applying insights into organizational performance. They improved clinical results and operational efficiency by up to 10 percent.
- > Banks and other financial services organizations around the world are achieving new levels of risk control, efficiency and customer service. Microfinancer Grameen Koota's optimized loan tracking and processing has helped increase its customer base from 70,000 to 250,000, while enabling it to predict cash requirements, better allocate resources and broaden access to capital. Payment processing costs at the Bank of Russia have been reduced by 95 percent. And CLS now handles most of the world's currency exchange transactions, securely eliminating the risk from trades worth \$3.5 trillion per day, and growing.

- > A year-long study by the U.S. Department of Energy's Pacific Northwest National Laboratory found that consumers in smart meter systems saved 10 percent on their power bills, and cut their power use by 15 percent during peak hours. And the potential savings are enormous. One industry study found that even a modest 5-percent drop in peak demand in the U.S. would be equivalent to eliminating 625 power plants and associated delivery infrastructure.
- > Four leading retailers have reduced supply chain costs by up to 30 percent, reduced inventory levels by up to 25 percent, and increased sales up to 10 percent. They've done so by analyzing customer buying behaviors, aligning merchandising assortments with demand and building end-to-end visibility across their entire supply chain.

This list could go on. We are quantifying the outcomes of smarter systems all around the world. And that's important, because measurable results like these give leaders everywhere the confidence to try something new.

### **What else have we learned?**

We've learned that there is enormous hunger to learn *how*. CEOs, CIOs, governors and mayors are asking:

- > How do I infuse intelligence into a system for which no one enterprise or agency is responsible?
- > How do I bring all the necessary constituents together?
- > How do I make the case for budget?
- > How do I get a complex solution through my procurement department?
- > How do I coalesce support with citizens?
- > Where should I start?

We've heard these questions again and again, as we work with clients in both the developed countries and developing markets. We heard them from city leaders in our Smarter Cities forums—this past June in Berlin, in October in New York, in Ho Chi Minh City in December, and in nearly 100 other cities. And I hear the same thing in my own conversations with leaders in business and government around the world.

Importantly, they are not questions about technology. These are questions about leadership. And, encouragingly, we are learning how to answer these questions from progressive leaders who are showing the way.

Like **“Where to start?”** Consider Don Spencer, associate director of medical informatics for the University of North Carolina. He decided that the place to begin was with the thorniest problem in his hospital system: the volume and disconnectedness of their data. The smart hospital solution Don built now enables doctors and administrators to see not just their individual patients but the whole practice.

**“How fast should I move?”** Technology may be ready, but your culture may not be. That was the realization of Terry Rhode, system controller and IT manager for Rosenau Transport in Canada. Truckers tend to be conservative, which leads to some built-in resistance to change. By working over a period of two years to build knowledge and acceptance within his company—and by training the company’s drivers not only how to use the technology, but *why*—Terry was able to get his culture to accept a radically new system. And that, in turn, is measurably improving their customer service.

As Terry’s experience shows, when it comes to culture, you need to work both from the top down and the bottom up. That’s also what Patricia Graham, CIO of CenterPoint Energy in Houston, did. She understood that many roles throughout CenterPoint were going to change—and many employees had no idea what automated metering was. So she didn’t just issue a mandate from on high. She began interacting with the workers in the field—“the guys who own the meters,” as she put it—engaging them in the proof of concept, in brainstorming and in focus groups. Today, CenterPoint is reading its meters every 15 minutes, as opposed to once a month.

**“How can I gain citizen support?”** Gunnar Söderholm, head of the Environmental and Health Department for Stockholm, found his smart traffic plan becoming mired in legal and political roadblocks. His response? He decided to launch it as a pilot. That did two things. First, it enabled him to prove the concept. After seven months, they had hard statistics showing that a multifaceted, systemic approach was required—including both improvements in public transit and congestion pricing—in order to make an impact on traffic, carbon emissions and increased use of public transportation. Second, it gave the public a chance to experience both the benefits and the constraints of the new system. And then the public voted with their... votes. Ultimately, it was the popularity of this radical new approach with the citizens of Stockholm that gave Gunnar the political capital he needed to get the plan approved.

**“How do I make a system smart when no one owns it?”** Dr. Britta Buchholz at MVV Energie AG, a power utility in Germany, created an energy “marketplace” that draws on all the key players in the value chain—research partners, academia, infrastructure providers and government.

Collaboration was also the key to success for the smart telecom project led by Mario Domingo, head of product design and creation, Globe Telecom in the Philippines. He forged a partnership across the project’s vendors and internal constituencies—from the sales process all the way to delivery. This collaboration was about much more than

logistics and coordination. It generated an extended knowledge pool about what should be deployed, how they should go about it and overall best practices.

**“How do I coalesce an ecosystem?”** Don Edwards, assistant agency director for the Alameda County Social Services Agency, in California, said: In local government, it’s not just your colleagues that you have to convince. It’s also the board of supervisors, the county administrator and the general public—not as an abstract category, but people you see on the street every day.

These leaders didn’t wait for legislation to be passed, or an industry consortium to be formed. They reached out across multiple constituencies, took the initiative and drove change. Change that produces both immediate ROI and long-term competitive positioning. Change that reduces their carbon footprint and increases their communities’ economic vitality.

Over the past year we have also validated what we believed would be true—and that is, the most important aspect of smarter systems is *data*—and, more specifically, the actionable insights that the data can reveal.

## The Answers Are Hidden in the Data

It’s logical, isn’t it? All of this pervasive instrumentation enhances our ability to sense and capture what is actually happening in any given system. Where we once inferred, we now know. Where we once interpolated and extrapolated, we can now determine. The historical is giving way to the real-time.

We are amassing an unimaginable amount of data in the world. In just three years, IP traffic is expected to total more than half a zettabyte. (That’s a trillion gigabytes—or a 1 followed by 21 zeroes.)

And it’s not just about volume and velocity. The *nature* of the data we are collecting and analyzing is changing, too. Consider that 30 percent of the data in the world now consists of medical images. Consider the 10,000 security cameras here in London that are connected to the Web, feeding it video 24 hours a day. Or take the 1,000 connected sensors monitoring a new bridge in Hong Kong—and multiply them by the millions of roads, bridges and buildings in cities around the world.

We’re capturing data about temperature, soil condition, water flow, vibration and location. And then there’s the growing torrent of information from billions of individuals, through so-called social media. They are customers, citizens, students and patients—and they are telling us what they think, what they like and want, what they’re witnessing.

As I said, all this data is far more real-time than ever before. Most of us today, as leaders and as individuals, make decisions based on information that is backward-looking and limited in scope. That’s the best we had, but that is quickly changing.

You may be thinking that the last thing we need is more information raining down on us, more noise. But we now have the capability, with advanced software analytic tools, to extract value from data—to see the patterns, the correlations and the outliers. Sophisticated mathematical models are helping us begin to anticipate, forecast and even predict changes in our systems. That's the promise of a smarter planet.

But with that promise come some disquieting implications. That's the final learning of the past year. Consider two of the more obvious ones: privacy and security.

Cameras here in London and in Chicago can help alert police and other first responders to emergencies far faster and more precisely than ever before. That saves lives. But, as you know, some citizens have expressed discomfort at living in... not a safer society, but a "surveillance society."

You may have read an article a few years ago that reported that the London flat in which George Orwell wrote *1984*—and introduced all of us to Big Brother—has 32 closed-circuit cameras within 200 yards, scanning every move. They weren't put there to watch his flat, of course. They're scanning traffic and providing security for businesses. Still, the irony—and the potential concern—are self-evident.

Yes, people like lower crime, less traffic, shorter queues, better health and all the other benefits of smarter systems. But they may be increasingly uncomfortable having so much information known about them. Who has all this data? What will they do with it? Do I trust them? Is it secure?

Similarly, companies and governments are excited about the competitive, economic and environmental advantages of smart infrastructure—smart grids, smart rail, smart sewers and smart buildings. But does that mean that our essential infrastructure is as secure and reliable as a laptop PC?

These are serious issues. And they will require serious consideration and collaborative decision making across all the stakeholders of civil society. We need to build more than systems. We must build constituency.

That's why IBM has taken a coalition-building approach in many areas of our smarter planet agenda.

For instance, we are part of the Global Intelligent Utility Network Coalition, a consortium of innovative utility companies serving nearly 100 million customers worldwide, which is working to accelerate the use of smart grid technologies and move the industry forward through its most challenging transformation.

The Patient-Centered Primary Care Collaborative—a coalition of major employers, consumer groups, patient quality organizations, health plans, labor unions, hospitals and clinicians in the U.S.—is developing approaches that optimize our healthcare systems around the patient.

We're also working with the Brussels-based think tank Security & Defence Agenda to build learning and consensus on issues of security and defense. We're doing it through a large-scale online collaboration that we call a "jam"—which we've found can significantly speed the path to decision and action. Security Jam, which will take place next month, will gather thousands of subject-matter experts and other thought leaders from business, government and nongovernmental organizations to analyze and clarify new threats to international peace and security. The result will be a set of recommendations that will go to the leadership of the EU and NATO in April 2010.

The key is collaboration. Just as the systems of a smarter planet are inherently multi-stakeholder, so the issues they raise inherently span all sectors of society. In that regard, consider some of those leaders I mentioned earlier. Think about both their bias for action and their approach to engagement—how they have reached out to a spectrum of stakeholders and of expertise across civil society in shaping their plans.

Finally, I would also circle back to the earlier point, about quantifying the benefits of smarter systems. The more we can do that, the more we as people can determine the balance point—between less crime, or better health, or lower costs, or reduced carbon emissions—and the potential risks and exposures.

## The Time to Act is Now

Taken together, the experiences and learnings of the past year have bolstered my confidence—not only that the planet is, indeed, becoming smarter, but that leaders are seizing the opportunity to drive meaningful change.

The world economy has stabilized somewhat, although significant challenges remain. Stimulus programs are making an impact, but they cannot and should not last forever. In fact, for the foreseeable future, we will be faced with addressing many pressing global issues with less, rather than more, resources.

Indeed, applying smarter technologies to drive cost out of our legacy systems and institutions—doing more with less—will be critical to our near-term and long-term economic prospects. We will need to extend our infrastructure's useful lifetime, and we will need to ensure that next-generation systems are inherently more efficient, flexible and resilient.

The good news is, it's happening. Every day, we are witnessing myriad smarter approaches in industries, cities and communities around the world. Forward-thinking leaders are creating tangible outcomes and benefits, and are learning how to make their parts of our planet smarter.

This is heartening. I believe it holds promise to deliver on the sense of hope we all felt just ten years ago, at the dawn of this new millennium.

As leaders, I believe we have a responsibility not to let this moment slip by. The time to act is now. And the way to act is together.

Let me leave you with one final observation, culled from our learning over the past year. It is this: Building a smarter planet is realistic precisely because it is so refreshingly nonideological.

Yes, debates will continue to rage on many contentious issues in our society—from energy, to security, to climate change, to healthcare, to the economy. Yes, we will surely continue to deliberate, for some time to come, over the role of government, of the private sector, of the new constituencies emerging across civil society.

There are serious and worthy perspectives on all sides of these controversies. But no matter which viewpoint one shares—or which ultimately prevails in any given society or industry—*the system that results will need to be smarter*—more transparent, more efficient, more accessible, more equitable, more resilient.

And that's one final reason for hope: making our planet smarter is in everyone's interest.

Thank you.

