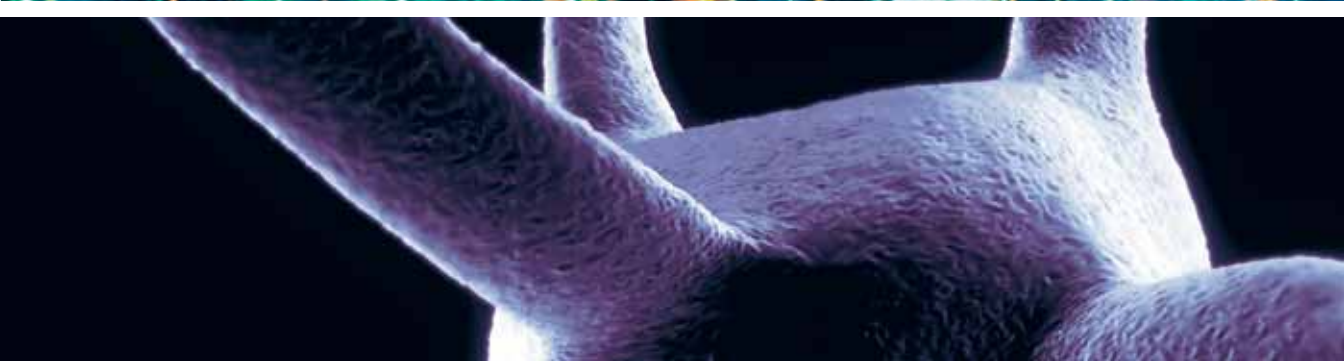
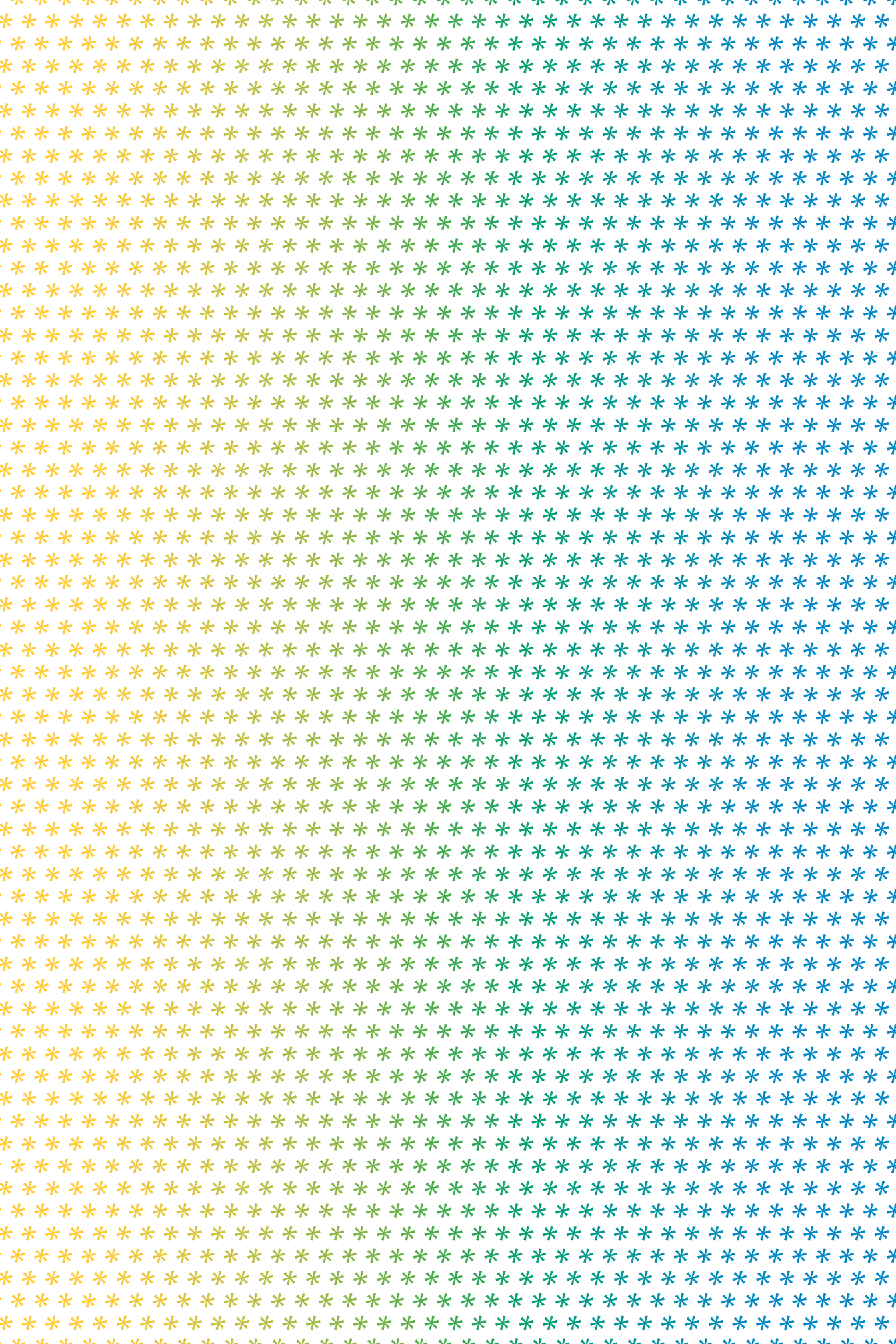





It's a great time to be an innovator.







We are surrounded today by
possibilities and inspiration.



What could you do if all objects were intelligent...



...and connected?



Could her idle PC help cure AIDS?



Could you cut insurance rates in real time for **safe** drivers?



Could your luggage find **you**?



Could his **pacemaker** call for help?

What could you do with
unlimited computing power...
for pennies?

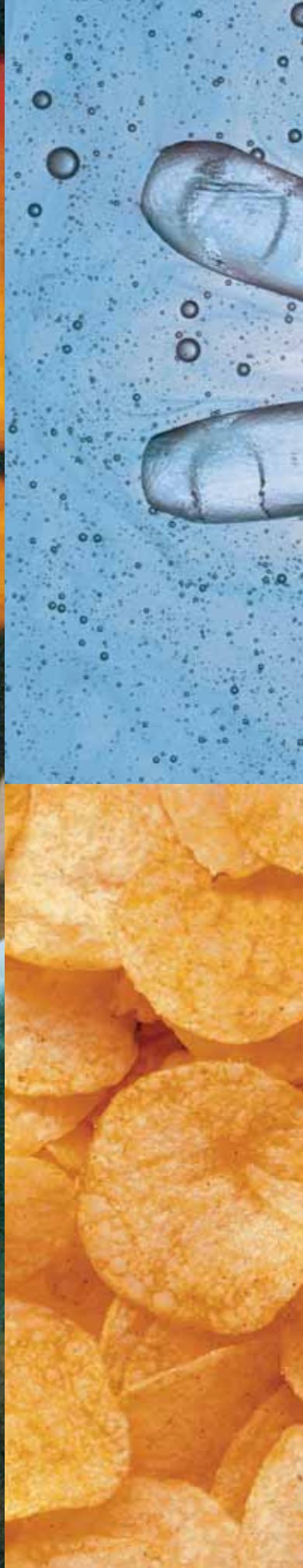
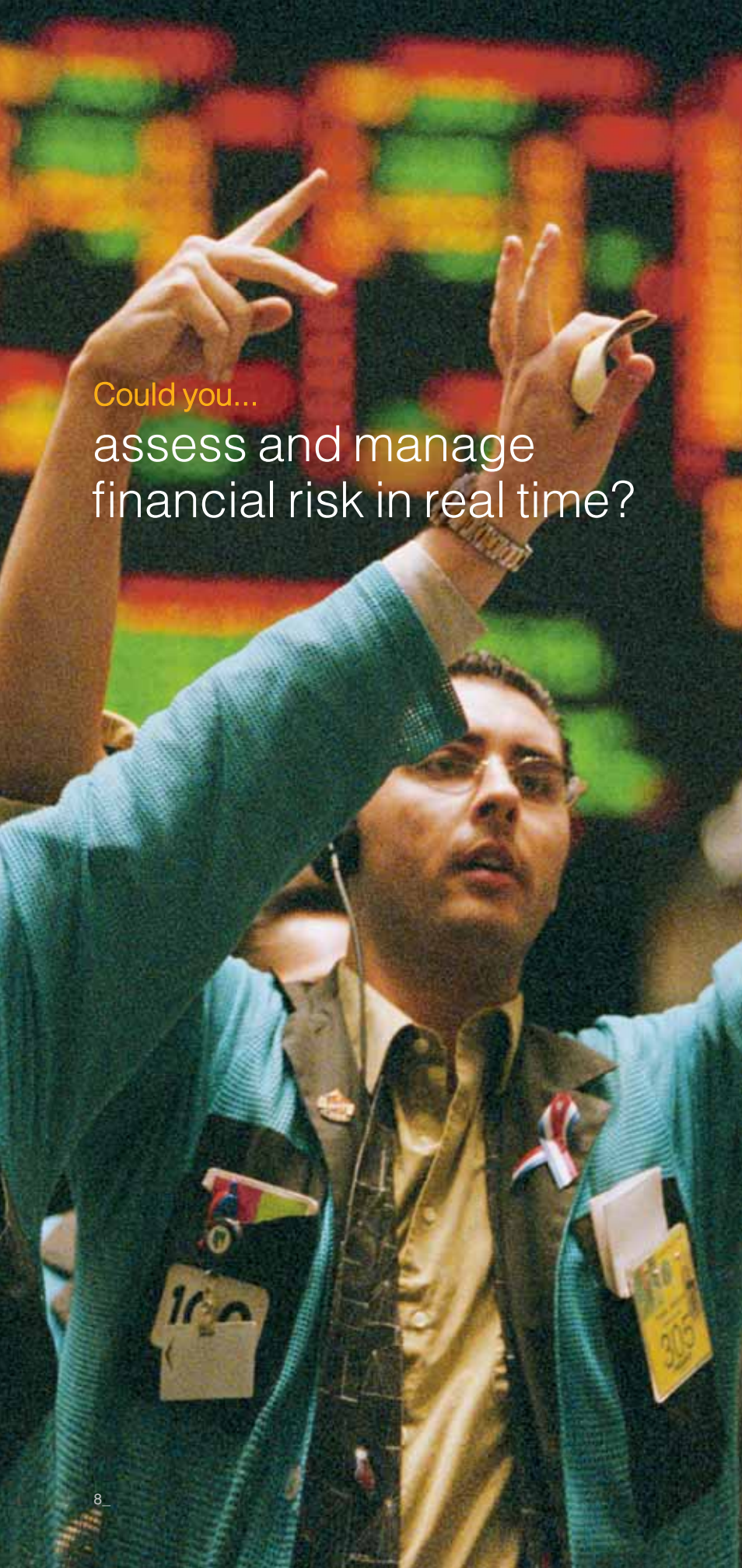


Could you predict the path of a storm
down to the square kilometer?



Could you identify another 20 percent of proven oil reserves without drilling one hole?

Could you...
assess and manage
financial risk in real time?





...accelerate drug discovery?

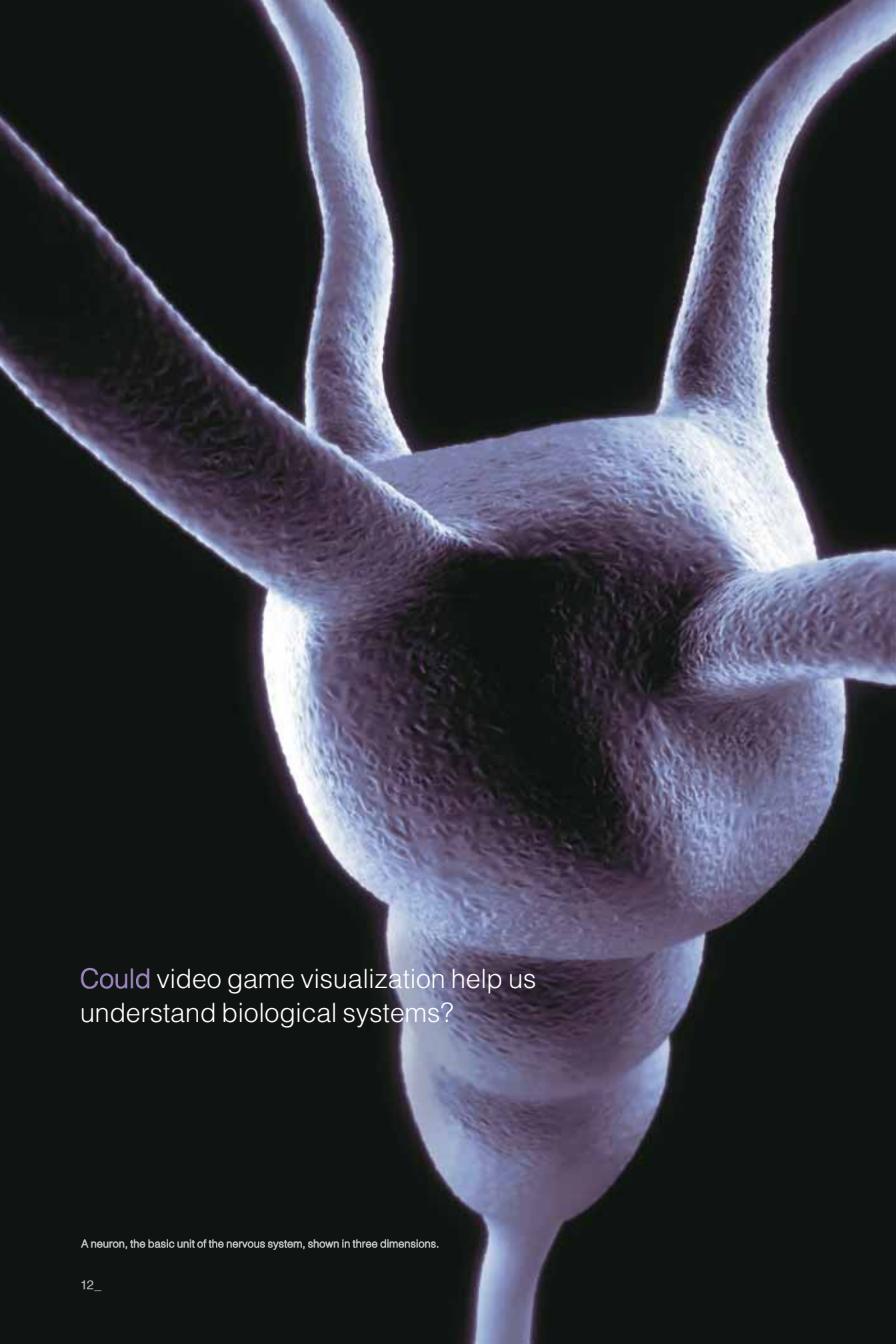
...find **new ways** to manufacture?



What could you do with a million-person
product development lab...



...or a billion-person workforce?



Could video game visualization help us understand biological systems?

A neuron, the basic unit of the nervous system, shown in three dimensions.



For businesses and
institutions everywhere,
there have never been so many
new possibilities
at our disposal...

A whole new generation of tools, techniques and models has come of age:

Innovation enablers

that are more powerful, affordable and accessible than ever before.

Consider just a few.



1. Smart objects

Last year, the world produced **more transistors** (and at lower cost) **than grains of rice**.¹

Some chips are so small and so inexpensive they are disposable, opening up uses that reach far beyond the computer. Tiny micro-processors, sensors and tags are finding their way into everything from airport luggage to poker chips, pets, household appliances, car engines, pregnancy testers and blood-sugar monitors. Sensors take environmental readings remotely. RFID tags combine chips with wireless communications to identify and track products, shipping containers and other objects in real time. Technologies like the Cell Broadband Engine, developed by Sony, Toshiba and IBM, are so powerful and flexible they can infuse game consoles, televisions or medical diagnostic devices with the processing, visualization and simulation capabilities of supercomputers.

The Cell Broadband Engine could have a theoretical peak performance of 256 billion mathematical operations per second. With that much processing power, the chip would have placed among the top 500 supercomputers on a list maintained by scientists at the University of Mannheim and the University of Tennessee as recently as June 2002.



2. The connectedness of every *thing*

The **Internet of people** is one billion strong. The **Internet of things** is headed toward a trillion.

The Internet has become a familiar and indispensable tool for communications and commerce among people. But this is only a fraction of the network that also

Today there are 4.2 billion Internet addresses. The new Internet Protocol Version 6 addressing system will support more than 35 trillion separate subnetworks, each of which could connect millions of devices.

joins together tens of billions of objects—heading into trillions—with embedded intelligence. Also interconnected are the massive amounts of data being generated by businesses and institutions of all kinds.

This is the emergence of the Internet as platform—what some are calling Web 2.0—in which all manner of business services and applications are developed for and delivered via the Net.

3. Supercomputing for everyone

By 2010, supercomputers will be capable of **one quadrillion calculations per second**.



More powerful computers are a given. What's new is massive supercomputing power that's affordable and readily available. With so much computing power so accessible, it can now be applied to many more fields and industries by more companies and institutions of all sizes—and even individuals, anywhere in the world—to solve more problems than ever before.

How has supercomputing become commonplace? By being built of relatively inexpensive components. For instance, the world's most powerful supercomputer today, IBM's BlueGene/L, capable of more than 280 trillion calculations per second, is based on IBM's innovative Power Architecture technology, and runs on the open source Linux operating system. Powerful computers can also be assembled by “virtualizing” separate blade servers or grids of PCs—and can be tapped on demand. And thanks to new visualization capabilities, they can simulate how the real world works—from traffic patterns, to fluid dynamics, to biological systems.

4. Information put to work

By the year 2010, the codified information base of the world is expected to double every 11 hours.²

The promise of integrating and extracting insight from the world's ever-growing ocean of data has long been the dream of many: medical researchers seeking breakthroughs that could be gleaned from patient records and clinical trial data; economists searching for predictive financial modeling based on global market data; city police forces hoping to enhance security and safety by analyzing city-wide or national crime patterns.

Now, those dreams – and many more like them – are a reality, thanks to new technology, advanced analytics and the mass adoption of standards. Just as networking standards made the Internet possible, so data and process standards in financial services, manufacturing, retail and virtually every other field are unlocking insights, answers – and revelations.



Drawing on IBM's work with the open community, collaborative capabilities like Technology Collaboration Solutions and On Demand Innovation Services, and our expertise in human capital management, our clients build collaborative partnerships and create new intellectual capital.

5. Collaboration and co-creation

As many as 40 percent of a company's customers modify or tinker with its products in some way.³

In the past, businesses felt they had to create everything themselves. Today, radically new forms of collaboration are possible. Employees can share ideas and work together on projects with unprecedented ease. Engineers and experts can team with those of another company. The open source software movement shows how widely distributed communities can come together virtually, to create and improve products. And any business can engage with the entire networked world to learn, to capture feedback – or to turn their customers into co-creators.

² Nick Bontis and Jac Fitz-enz (2002). "Intellectual Capital ROI: a causal map of human capital antecedents and consequents," *Journal of Intellectual Capital*

³ Eric von Hippel (2005). *Democratizing Innovation*. Cambridge, The MIT Press



6. The marketplace for expertise

Today, **exceptional talent is everywhere**—from quality design, to HR, to order fulfillment and more. In 2004 alone, India graduated more than 200,000 engineers and China 600,000.

And thanks to new software architectures and new business models, their skilled work can be integrated seamlessly and dynamically into any company's daily workflow.

As shared ways of connecting businesses and services have spread, enterprises are knitting together best-in-class capabilities from highly specialized outside providers in every part of the world. They can access experts like product designers, financial asset managers, risk modelers, facilities managers, legal services and experts in customer relationship management.

IBM is a global leader in business transformation outsourcing, a market which Yankee Group predicts will see a 21 percent compound annual growth rate through 2007.



7. The virtual corporation

A business can now be built from **interchangeable blocks** of expertise, assets, capital and information.

For years, people have talked about the inevitability of “the virtual corporation.” Today, thanks to new models like asset-hosting and IBM's Component Business Model, as well as new “service-oriented” software architecture (SOA), you can design, build and manage one. And that makes it possible for you to plug into vast stores of expertise on a global scale—new service providers who deliver world-class business processes and functions, such as human resources, manufacturing, R&D and customer care.

According to Forrester Research, 41 percent of the world's 2,000 largest companies have deployed projects based on SOA.⁴

⁴ *Topic Overview: Service-Oriented Architecture*, Forrester Research, Inc., December 2005

And there are
hundreds more.



Global data synchronization

RSS

Bluetooth

Real-time information access

WiFi

Instant messaging

Wikis

Blogs

Linux

Virtualization

Massively multi-player virtual experiences

Smart cards

Digital simulation

OpenDocument

Digital light processing technology

AJAX

Electronic product code

Map of the human genome

General public license

Open APIs

Real-time risk modeling

Biometrics

Meetups

Real-time inventory management

Congestion pricing

Expertise location

Nanotechnology

Skill inventories

Life-long learning

Folksonomy

Consumer-driven supply chain networks

Grid

Electronic healthcare record

ATOM

Global positioning systems

Social networks

Bioinformatics

Seismic imaging

Digital content management

Service-oriented architecture

Telematics

Just-in-time learning

Millimeter wave band

Multi-core processors

Telemedicine

Business componentization

IP-TV

Autonomic computing

Entity analytics

MicroElectroMechanical systems



These possibilities are real,
and they're available to you today.

But by themselves,
they're not innovation...not yet.

In the past, a new technology alone might
have been enough to differentiate you.

Today, you have to combine capabilities in new ways,
and integrate them with your company's products,
operations and culture.

First, though, you have to answer
[one important question.](#)

What makes you

- Your products?
- Your services?
- Your financial strength?
- Your customer base?
- Your supply chain?
- Your management systems?
- Your business model?
- Your history?
- Your brand?
- Your expertise?





special?

Whatever it is that makes you unique... infuse it with the new enablers of innovation, and you can earn higher profits, penetrate new markets, drive productivity—in a word, differentiate yourself from the competition.


It's happening more and more every day, in every industry, everywhere in the world.

IBM and our clients are creating innovation that matters...

You can
innovate
your business
model
and disrupt your industry.

Thanks to global integration, new kinds of expertise and co-creation, and new software architectures, companies can reimagine the fundamental design of their business.





Maybe the “heart” of your business isn’t what you think it is. Take telecommunications. Most telcos consider their cellular network and IT systems to be the core of their operations. But Bharti Tele-Ventures recognized that it had a choice. It could follow the traditional, capital-intensive path of owning everything—or build a radically new model to harness the expertise of specialty providers.

With licenses to operate across India in hand, Bharti Tele-Ventures worked with IBM business consultants to outsource and integrate functions like network and program management, help-desk support, disaster recovery, IT and billing. This freed the company to focus their in-house capabilities on the things where they could add the most value, like the marketing and customer service strategies that draw in new customers and keep existing ones loyal.

As a result, Bharti Tele-Venture’s subscriber base has grown from around 7 million to more than 18 million customers in two years, and its revenue increased more than 60 percent in 2005.

About Bharti Tele-Ventures: Established in 1995, Bharti Tele-Ventures is one of India’s leading private sector providers of telecommunications services. It is the only telecom operator with an all-India presence.

Bharti’s telecom licenses



Outsourcing



Business componentization

NEARLY TRIPLED
CUSTOMER BASE



Special business design

Special utility model

The 20th century utility meter wasn't born smart—but it doesn't have to stay dumb. And the introduction of intelligence into a mundane object can open up whole new markets.

Italian power company Enel infused its meters, deployed in about 30 million homes across the country, with new digital technology to monitor usage, regulate supply and suggest power-saving ideas to residents on demand.

IBM systems integration and business transformation expertise are powering Enel's Automated Meter Management system, enabling it to exploit power-grid potential—and opening up new business opportunities. The two companies are partnering to market the Automated Meter Management system to electricity, gas, water and heating utilities around the world.



Enel's electricity meters in every home

+

Embedded devices

+

Data analytics

PERSONALIZED ENERGY MANAGEMENT

About Enel: Enel is Italy's biggest power company, and Europe's second-largest listed utility. Enel produces and sells electricity in Europe, North America and Latin America. The company is also the second-largest Italian distributor and vendor of natural gas, with more than 2 million customers.

Bharti Tele-Ventures and Enel are two examples of disruptive business models. **Others include:**

Special process integration



Simple outsourcing is one thing, business transformation something else entirely. An ambitious business transformation outsourcing partnership between IBM and **NiSource** provides the energy company with fully integrated financial and procurement systems, new tools for contact centers, meter-to-cash management and common workplace tools. And this collaborative model has teeth: NiSource and IBM are committed to continuous improvement of customer service, business efficiency and functional integration.



* Special finance and procurement systems

Through business componentization, appliance maker **Whirlpool** is creating a unified view of real-time finance and procurement information, so it can adjust its go-to-market strategy dynamically. IBM also helped Whirlpool unify its disparate regional operations into a global platform by standardizing its processes, data and systems in a single solution.

* Special market position

LiaoNing TV became the first broadcaster in China to convert analog content into reusable digital assets to help create profitable new programming. How? An IBM digital media solution automated workflow and streamlined production, enabling LiaoNing to add 40 new digital feeds without increasing staff, thereby growing potential viewership and profits.



You can
collaborate
with others

to create innovation that matters.

Enterprises that harness the creativity of many make better products—and get them to market faster.





R&D that matters

One great company, working alone, can invent a great product.

Three great companies, working together, can transform an industry.

They can even change the way humans visualize and understand information. Seeking exponentially more powerful graphics, action and simulation capability, Sony, Toshiba and IBM worked collaboratively for five years to create a radical new chip, optimized for rich media and intensive computing workloads.

Cell Broadband Engine opens a new era of visualized information management—photorealistic presentation of how the real world works, from healthcare and industrial uses, to consumer electronics, home entertainment and more.

Consumer electronics
expertise



Advanced chip
technology



Scientific
collaboration

**NEW WAYS
TO SIMULATE
REALITY**

About the partnership: Sony, Toshiba and IBM created the Cell Broadband Engine (pictured) at the STI Design Center, a dedicated unit in Austin, Texas, staffed by 450 engineers drawn from all three companies. To promote collaborative development for this new computing platform, IBM has released 700 pages of documents describing the Cell Broadband Engine's new architecture, along with a free, 1,100-page development kit.



Inventory management that matters

Today, a family-run business can be a global competitor.

NIBCO makes flow-control products of high quality – but these days that doesn't insulate them from global competition. To stay in the game, the company decided not simply to buy additional hardware or software, but to work with IBM researchers on something new. That collaboration produced custom algorithms to manage inventories at a down-to-the-part level for more than 16,000 NIBCO products.

Today, the company can plan and manage its supply chain's strategy and operations in a matter of minutes – setting targets, running distribution and manufacturing scenarios, and gaining clear line of sight on inventory levels. Plus, thanks to this collaboration, other small and medium businesses now have access to an innovative new solution – IBM Express Services for Inventory Management.

About NIBCO INC.: Indiana-based NIBCO is a worldwide manufacturer of flow-control products for residential and commercial construction, and for the fire protection, industrial and irrigation markets. NIBCO has been family-owned and -operated since 1904. The company has 12 manufacturing plants and five distribution centers throughout the United States, Mexico and Poland, and has more than 3,000 employees.

- NIBCO's product quality
- +
- Local supply chain
- +
- Custom algorithms

GLOBAL PRESENCE FOR A FAMILY BUSINESS





Cell Broadband Engine and NIBCO are two examples of collaborative innovation today. Others include:

* Making small businesses matter



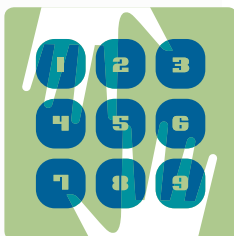
Adopting and maintaining enterprise software is tough for small companies. **Parametric Technology Corp. (PTC)**, a leading provider of product-lifecycle management software, wanted to expand its enterprise solutions business into the lucrative small- and medium-size business market. So PTC collaborated with IBM to create targeted software, available on demand via a shared hosting environment. One result? Customers report 78-percent-reduced time to prototype.

* Engineering services that matter

Mayo Clinic physicians, physicists and engineers developed a new MRI coil that improved hand and wrist imaging. The problem? Each one was hand built. IBM engineers collaborated with Mayo to turn the MRI coil into a manufacturable product, while preserving its industry-leading imaging capability.



* Product collaboration that matters



The future of telecommunications services lies in the convergence of “traditional” telco and information technology. **Nortel** and IBM assets and experts come together in a joint development center, collaborating on the design and development of new products and services. As a result, Nortel has reduced R&D costs and entered market segments more quickly, and is serving more customers faster than ever before.



You can
innovate
in services
to de-position your competition.

The new enablers of innovation are transforming the world's services businesses—offering unprecedented flexibility, customization, collaboration and customer value.



Special delivery

What if a cargo container could “call you up” when it reaches its destination, to tell you the status of its contents? Is the produce spoiled? Did the calculators get wet? Sparked by the need for increased real-time visibility and security in international trade, IBM’s research and business consulting teams are partnering with major companies along the trade lane, including customs brokers and shipping logistics leaders, on an innovative new service. It draws on open standards and IBM’s software and server technologies to provide wireless global access into container content-status and location.

Once completed, the Secure Trade Lane solution will include embedded controllers in shipping containers, enabling shippers and their customers to continually monitor motion and atmospheric conditions inside. The data is consolidated onboard and beamed via satellite to any importer or exporter, helping improve accountability and security. As a result, businesses’ supply chains can sense and respond to product data—and customs officials can decide which containers warrant more scrutiny and which can be expedited.

About global shipping: Each year, 108 million cargo containers pass through the world’s seaports. Almost 90 percent of the world’s manufactured goods are transported by container, much of it stacked on large transport ships.

Logistics expertise



Smart objects



Universal network access

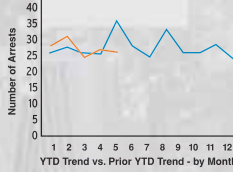
SECURE GLOBAL SHIPPING



Index Crime Comparison

Arrests

Charge	Prior YTD	YTD	Diff	% Diff	Trend
Murder	3	1	-2	-66.67%	▼
Rape	3	10	7	233.33%	▲
Robbery	36	24	-12	-33.33%	▼
Fel Assault	58	43	-15	-25.86%	▼
Burglary	14	29	15	107.14%	▲
Grand Larceny	24	27	3	12.50%	▲
GLA	10	12	2	20.00%	▲



Special crime fighting

The cop on the beat knows his or her precinct better than anybody else in city government. But how could the New York City Police Department take that deep, personal, on-the-street understanding, combine it with other important crime data, and make neighborhoods – and the entire city – safer?

The IBM Crime Information Warehouse solution – based on IBM database software and advanced analytics – links and analyzes data collected from 911 calls, crime reports and other sources. Satellite imaging and sophisticated, precinct-based mapping of New York City then lets police cross-check the data to help predict where and when crimes might occur – and deploy officers in time to prevent them.

About the New York City Police Department (NYPD): The NYPD is one of the largest police departments in the United States. Over the last four years, in part through improved use of information, the NYPD has cut crime by more than 20 percent, and made New York one of the safest cities in the world.

NYPD's street-level knowledge

+

Advanced analytics

+

Service-oriented architecture

PREVENTING CRIME WAVES



Secure Trade Lane and the NYPD are two examples of service innovation today. And there are plenty more:

* Special fleet lifecycle service



Renting a car seems simple—but it actually involves a whole community of companies, from insurers, to repair shops, to the leasing company itself. To enable real-time collaboration across all those players for the life of each vehicle, Belgium-based **UBench International** and IBM built a revolutionary management system, featuring wireless telemetry. The payoff: UBench's leasing-company customers saw 35 percent lower administrative costs and 50 percent fewer insurance adjustments.

* Special entertainment service

Sesame Workshop's greatest assets are its globally beloved characters used to educate children. To maximize the value of this rich trove of intellectual property, Sesame Workshop uses IBM-managed hosting and digital content solutions to run a Web-based library and archive that makes its content easily accessible to business partners and constituents—consolidating digital assets of multiple types.



* Special risk-management service

The life insurance industry is based on risk analysis. The more insight insurers have on risk, the better their business design. IBM's first-of-a-kind, grid-based, risk management solution produces that insight for **Nippon Life Insurance Research Institute** by drawing on underused desktop computers to create an efficient, virtualized computing platform. The Institute can now simulate risk scenarios, flexibly and affordably tap world-class analysis, and offer high-quality data to meet its customers' growing demands.



You can
innovate
to make
a difference.

Business and technology are changing the world. Make your innovation matter.



Scientific discovery that matters

Where do we come from? It's an age-old question that we are now attempting to answer. In a unique, five-year scientific partnership with IBM, the National Geographic Society set out to build the largest DNA database in the world for anthropological research. Led by genetic anthropologist Spencer Wells, the project is collaborating with and collecting DNA from indigenous and traditional peoples around the planet. In addition, members of the public everywhere are also invited to join the project—to voluntarily submit their own DNA to this growing, secure database.

IBM is providing the core computational knowledge and infrastructure that will manage this massive database. Now, more than 100,000 members of the public are participating, tracing their human migratory patterns through 150,000 years of our history. And the learning goes both ways: Those who participate get a customized “genograph” of their own history, personalized information addressing that age-old question.

Genetics expertise



Data analysis
experts



Supercomputing

MAP THE JOURNEY
OF MANKIND

About The Genographic Project: IBM and the National Geographic Society created this innovative partnership (www.nationalgeographic.com/genographic). The National Geographic Society—the largest nonprofit scientific and educational institution in the world—is contributing expertise in genetic anthropology. IBM's Computational Biology Center, one of the world's foremost life sciences research facilities, will use advanced analytical technologies and data sorting techniques to interpret the samples and to discover new patterns and connections within the data they contain.



Healthcare delivery **that matters**

1.5 Million mammograms
+
Grid-enabled supercomputing
+
Data mining

HOPE FOR A CURE

One mammogram can help save a woman’s life. 1.5 Million mammograms can unlock the secret to a cure. The National Digital Medical Archive (NDMA) stores digital medical images in a centralized, accessible database. Doctors and researchers use this database – powered by an IBM solution that draws on the power of grid computing clusters in geographically separate locations – to find patterns in the images. Those patterns can lead to accelerated treatment and prevention strategies.

Also, with “myNDMA,” patients can securely contribute to, access and manage their own records, as well as share them with doctors of their choosing. When patients are empowered to ask the right questions and be active partners in their own care, it’s healthier for everyone.

About NDMA/i3ARCHIVE, Inc.: The National Digital Medical Archive, operated by i3ARCHIVE, Inc., is the first distributed database system of its kind that collects, retrieves, distributes and stores digital medical images and related data to benefit physicians, patients and researchers.

The Genographic Project and NDMA are just two examples of how innovators are changing the world. Others include:

* Teaching tools **that matter**

IBM built and deployed new wireless and broadband communications systems across 42 campuses that help make teachers in the **Syracuse City School District** more responsive to students. Tailoring policies and teaching approaches to student needs has improved their performance and decreased absenteeism and drop-out rates.



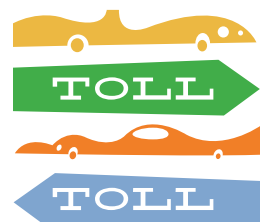
* Citizen engagement **that matters**



The UN-HABITAT's **World Urban Forum** reached out to its 10,000 member organizations – and beyond, to the slum dwellers of the world – to join together in transforming 21st century cities. Using IBM's innovative “jam” solution, citizens engaged online for 72 hours with thinkers and leaders from business, academia and government on problems that included sustainable access to water, urban safety and security, governance and the environment. IBM's advanced analytics mined the online conversations among tens of thousands of participants to create the themes shaping the agenda of the World Urban Forum III conference, to be held in Vancouver in June 2006.

* Traffic management **that matters**

To meet the challenge of growing traffic congestion in the Stockholm city center, the **Swedish Road Administration** is testing a new congestion charging system that varies tolls by time of day to influence traffic patterns and congestion levels. IBM, as prime contractor, designed, built and operates the processes and technical operations of the system, which will result in reduced pollution and a less frustrating commute.



It's a great time to be
the innovator's innovator.

At IBM, we began to sense the new possibilities for innovation several years ago, as we worked with our clients to help them become more agile, more responsive, more adaptive...in other words, on demand.

Today, IBM provides our clients with an unequalled depth and breadth of technology, expertise and experience—and helps combine them to produce real results. We have done so for businesses and institutions of all kinds and sizes around the world, enabling them to make both a profit and a difference.

Of course, this idea of innovation is nothing new for IBM. We have always been an enterprise-focused innovation company. Through decade after decade, IBMers have explored the frontiers of the possible—and have brought those discoveries to profitable and beneficial life in business, government, education and society at large. IBMers call this “innovation that matters.”

We prepared this document to give you a sense of the possibilities of innovation—the abundance of technologies, skills, approaches and capabilities that are available to every decision-maker, in every part of the world. We also hope to inspire you through some role models—IBM clients who are innovating in some way, in some part of their business or organization, to create value and differentiation.

In a world of relentless competition, they stand out as very special leaders. We at IBM could not be more excited by the opportunity to work with them, and many others around the world, as their innovation partner.



Samuel J. Palmisano
Chairman, President and Chief Executive Officer
IBM

Additional resources available online:
www.ibm.com/innovation/guide

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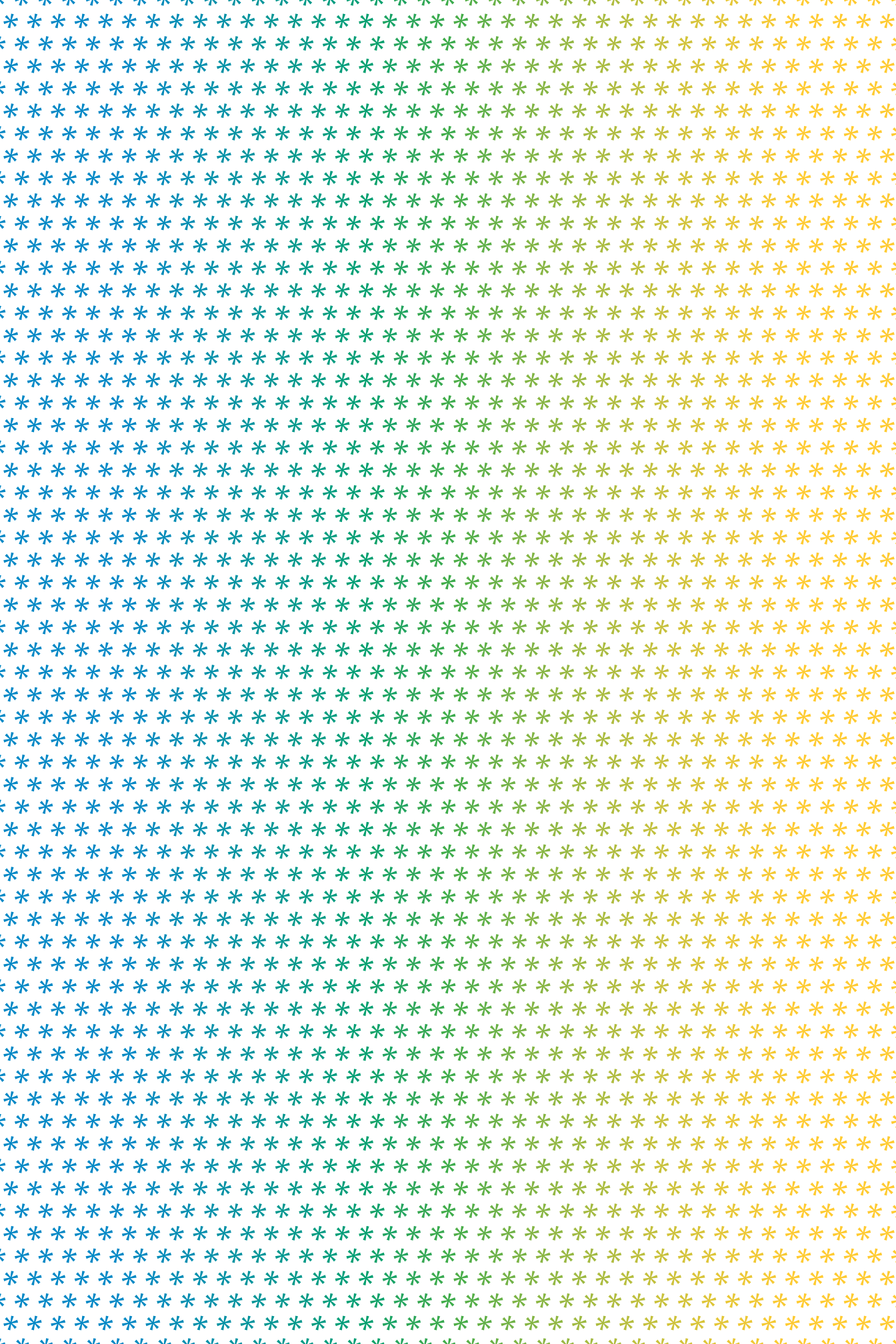
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