

IBM Public Sector

Together, we're building a smarter planet

IBM Public Sector Top Innovators Report



Success stories from the Public Sector's top innovators

A message from Anne Altman, General Manager, Global Public Sector



IBM is pleased to present this innovation report as a way to share new insights and solutions born out of the emerging collective will to create a smarter world. In these pages you will find dozens of short, real-life stories of challenges met—and transcended—through fresh thinking and the creative application of state-of-the-art information technology (IT).

IBM has had the privilege and the opportunity to help these exemplary organizations take their place at the forefront of public sector innovation. They are not just making small improvements, but transformational, game-changing ones that will help change the world. May they inspire us all as we navigate the challenges and the opportunities of a smarter planet.

The planet has been getting smaller and more interconnected. But it's also getting more intelligent—as evidenced by the groundbreaking initiatives we're now seeing in public sector organizations worldwide. We're seeing innovations in systems, processes and models for government, education and healthcare, at a breathtaking speed. And it's happening everywhere you look.

Smarter government is about using scarce resources in ways to make societies and cities work better. It's about digitizing information and connecting systems to sense, analyze and integrate data and respond more intelligently to citizens. It's about becoming more efficient and responsive, so government can provide the leadership needed to find—and implement—sustainable solutions to today's urgent social problems.

Smarter education is about leveraging advances in education technology to refresh outdated infrastructures with new functionality. It's about eliminating redundancies that have created tremendous inefficiencies, ballooning costs and silos of resources. Our schools, colleges and universities will meet the growing worldwide demand for knowledge workers, despite the constraints of limited resources and budget cuts.

Smarter healthcare is about serving people with interconnected, collaborative, coordinated health systems. It's about helping individuals remain healthy, while assisting care delivery organizations to deliver more personalized healthcare. It's about connecting people to information, to experts and to each other to enable better preventive and therapeutic care.

One thing is clear: we have the tools to get there. The technology is here and ready on a number of fronts including cloud and stream computing, sensor capabilities, virtualization, visualization and algorithmic models. The only question that remains is: how creative can we be in using these tools to address the complex challenges before us?

Anne K. Altman
General Manager, Global Public Sector

Using this report

We have organized the stories in this book by sector: Government and Education, Healthcare and Life Sciences. We have included private life sciences firms because of the important societal benefits of their work.

Some of these stories are relevant to more than one focus area. We've repeated these in each area for reading and printing convenience.

Executive summary

2

Government and Education

3

Healthcare and Life Sciences

22



Government and Education:

Smarter government and education for a smarter planet are about institutions improving their outcomes and value to society. They will do this by finding new ways to share information and resources – laying the foundation to think and act in new and smarter ways.

Government

- Alameda County achieves potential millions in cost savings while improving public assistance 4
 - Cheshire County Council creates a new model for delivering services to senior citizens 5
 - City of Albuquerque meets public demand for fast and cost-effective access to information 6
 - Denmark takes e-government to the next level 7
 - EPELFI – French government agency launches electronic land-registry system 8
 - Finnish Defense Forces – Winning the battle for closer cooperation between service branches 9
 - Geoscience Australia speeds access to more than 1.2 petabytes of critical research data for new energy sources 10
 - Her Majesty's Revenue and Customs (HMRC) develops clear roadmap to clean up carbon emissions 11
 - Institute for Information Industry helps maintain the integrity of new research in genetics 12
 - Natural England launches initiative to cut carbon emissions in half by 2010 13
 - NYPD – Smarter information management takes a bite out of crime 14
 - Pacific Northwest National Laboratory (PNNL) empowers utility customers with smart appliances and real-time market-based energy management 15
 - Polish National Police improves national security with improved screening at the border 16
 - Stichting Flood Center 2015 – New flood control measures backed by remote monitoring solution 17
-

Education

- École Polytechnique Fédérale de Lausanne finds a smarter way to study the human brain 18
 - Hannover Medical School optimizes patient treatment, lowers costs with innovative tracking solutions 19
 - North Carolina State University turns to Cloud Computing to meet growing demand for computing resources 20
 - Swansae University – Powerful computing partnership creates knowledge and jobs 21
-

Executive summary 2

Government and Education 3

Healthcare and Life Sciences 22

Alameda County achieves potential millions in cost savings while improving public assistance

Alameda’s new information management system helps close service gaps with a better, richer view of client cases

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty’s Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

As with many social agencies, limited funding and scarce resources were creating challenges for Alameda County, California. So was new legislation. Though caseworkers were doing lots of good work, a study showed that Alameda had a work participation rate for welfare recipients of only 12 percent. This placed them last among California’s 58 counties and well below the state average of 22 percent. Alameda had to increase that number to at least 50 percent.

Another concern was that staff could not always quickly see where clients were in the social service system. Alameda urgently needed to give caseworkers direct access to information about their individual cases and faster, better reporting.

Solution

Alameda County teamed with IBM to deploy their Social Services Integrated Reporting System. It combines IBM Entity Analytic Solutions (EAS) with IBM Cognos® business intelligence software and other technologies into a powerful data warehouse.

EAS gives Alameda, for the first time, a complete understanding of an individual’s situation, all in one place. It also helps caseworkers identify programs that might work better for the recipient.

Reports that once took weeks or even months to generate can now happen in minutes. This allows the agency to drive waste out of the system very quickly and control fraud much better. Workers know right away if someone has moved or is not complying with program rules.

Benefits of innovation

- Enables savings of over US\$11 million
- Gives managers and caseworkers immediate feedback and understanding of case and program status
- Generates reports in minutes instead of weeks or months – allowing caseworkers to apply their expertise by trying “what if” scenarios based on current data
- Documents performance on a daily basis to comply with regulations.

“It’s not just about making us more efficient, though it’s certainly doing that... It’s about using our resources wisely and effectively to improve people’s lives, better than we ever could before.”

– Don Edwards, Assistant Agency Director, Alameda County Social Services



Cheshire County Council creates a new model for delivering services to senior citizens

Cheshire County Council brings its social service agencies together to improve care of the elderly

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Growing resource constraints and a government mandate led Cheshire County Council to rethink the way its various agencies serve senior citizens. The challenge: each organization had its own manual, unconnected processes, making it difficult to coordinate services. The Council needed to shift to a shared services model to better coordinate the activities of all its agencies.

Solution

The Council became one of the first local authorities to address the U.K. government's requirement for a uniform, standardized way to assess the services its senior citizens need. The new automated process is called the Single Assessment Process. It enables agencies to act as a single virtual community of providers to better coordinate their activities.

The new process leverages a shared service model, hosted and managed by IBM e-business Hosting Services. Each agency pays for this support based on their usage. This provides an inherently flexible framework for resolving and managing budget issues across different agencies. The solution now has a thousand users and is expected to add thousands more in the coming months.

Benefits of innovation

- Improves quality and continuity of care by providing a single seamless view of a citizen's case history
- Improves ability to proactively manage the course of health and social care for the elderly



- Reduces time and cost required to perform in-home visits to seniors by 20 percent
- Improves use of health and social care resources
- Reduces administrative costs through improved coordination between healthcare providers and social agencies.

“We’re not only helping Cheshire to be at the leading edge in the way it provides services to its older citizens. With IBM’s help and insight, we’ve also developed a whole new model of how local government can provide services to citizens in an innovative and joined-up way.”

– Alan Allman, Senior Manager for Business Strategy, Planning and Performance, Cheshire County Council

City of Albuquerque meets public demand for fast and cost-effective access to information

American city reduces resources needed to manage data, generate reports and support its public Web site – achieving a 2000 percent return on investment in new software

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

The city of Albuquerque in the southwest United States wanted to give residents easy access to city data over the Internet – including vital public safety information. Yet delivering this data was no simple task. It had to be sourced from various systems in multiple formats. This made the task of consolidating and presenting data for public use even more daunting.

The city needed a solution that would be easy for people to use with minimal training. It would also need to scale to serve many simultaneous users with fast response times.

Solution

After considering several business intelligence solutions, the city chose to standardize on IBM Cognos® software. This solution automates data collection and information sharing among 7,000 employees in more than 20 departments – from public safety to water services to libraries. It is designed to scale quickly and also meet the stringent requirements of a public-facing Web site.

Now vendors working for the city can check the payment status for their services online. Citizens can:

- Find out who contributed to campaigns
- Request the removal of graffiti – and have it acted on within 24 hours instead of 2-4 days
- Request pick up of large-size garbage items – and have these items picked up on the same day, instead of waiting a week.



Benefits of innovation

- Achieved an almost 2,000 percent return on investment (ROI) from its overall Cognos deployment (Source: Nucleus Research)
- Reduced administrative overhead and identifies ongoing cost-saving opportunities
- Reduced time to create reports for the public using information pulled from various city systems – in some cases from several hours to minutes.

“With Cognos, it is now possible for us to use relatively few resources to provide information to a large and diverse audience.”

– Brian Osterloh, Applications Development Manager, City of Albuquerque



Denmark takes e-government to the next level

Danish government redefines public services with a new, collaborative model that puts citizens at the center

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Having made Denmark a leader in e-government, the Danish government was facing the challenge of its own success. Many of the easiest solutions were already in place. Further improvements would require more coordinated action across traditional administrative borders – not only among ministries but also among local, regional and central government and agencies.

It would also require a consolidated and shared view of the public sector in Denmark today. This was no small challenge, given that Danish public sector services are among the most extensive in any market-oriented economy.

Solution

To get started, the Danish government needed to create a consolidated view of public sector services across the thousands of authorities and institutions in the Danish public sector. The government's Digital Taskforce turned to IBM to tap its experience and its Component Business Model Methodology. This approach enabled the project team to model a complex, diversified public sector independent of individual current processes, organizational boundaries and systems.

The result: a consolidated and shared view of the public sector that puts citizens in the center. It's called The Shared Public Sector Business Reference Model – in short FORM, based on the Danish name FællesOffentlig Reference Model. FORM is the launching point for new e-government and other collaborative initiatives.

Benefits of innovation

- Provides a universal approach that other national public structures can use
- Reflects the fact that the public does not care who is producing the service, but how the service meets their needs
- Could open the way for governments to use a common language in describing their services, potentially increasing collaboration across nations to resolve issues that are cross-border in nature – such as social service and security, health, traffic – and moving towards international best practice in service delivery.

“A business component model has become an indispensable tool in our endeavors to modernize the public sector across traditional boundaries. The new holistic approach, based on FORM will, over time, compel changes in responsibility, in tasks and in processes in and between the public institutions and authorities.”

– Lars Frelle, Chief Information Officer in the Ministry of Finance and head of the Digital Taskforce



French government agency launches electronic land-registry system

EPELFI (Établissement Public pour l'Exploitation du Livre Foncier Informatisé) uses biometrics for smarter document access and security

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

In eastern France, the storage of land ownership records had not changed for more than a century. Documents were stored locally in 46 branch offices. To validate each transaction, records had to be updated and signed by a judge.

As the decades passed, this system became unwieldy. Local courthouses had accumulated large numbers of handwritten documents – kept in more than 40,000 paper volumes.

Now the government of France wanted to replace the paper documents with an automated system of electronic records. To spearhead the effort, it created EPELFI (Établissement Public pour l'Exploitation du Livre Foncier Informatisé). A top concern was to ensure the security of documents and proper authentication.

Solution

EPELFI engaged IBM to create a security-rich, online land-registry system. To help prevent unauthorized access to documents, the solution includes a biometric authentication framework requiring fingerprint verification. Only judges can validate online transactions, just as formerly they had exclusive rights to update and approve paper documents. Other users – such as landowners, businesses, notaries and banks – will have permission to view certain records based on their profiles.

The solution will process 750,000 registration transactions each year. Some 2.5 million registrations are now online.



Benefits of innovation

- Improves convenience for citizens and businesses to access documents while reducing costs in the long term
- Eliminates need for notaries to travel to local courthouses to get copies and register documents
- Provides security against unauthorized tampering and alteration of documents.

“Security was as important as convenience in designing the electronic land registry system. IBM addressed our concerns by creating a secure biometric identification system for authenticating judges’ signatures.”

– Jean-Luc Vallens, president of EPELFI

Winning the battle for closer cooperation between service branches

European national defense force develops an SOA-based command, control, communications and computing (C4) service hub that allows all branches of the military to share C4 applications and operations, and enables the defense force to coordinate and communicate with forces from other nations

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

The Finnish Defense Forces (FDF) is responsible for defending Finland's national sovereignty in all situations. The FDF realized that its vision of a faster, more flexible and more coordinated force required not only institutional change but also a fundamental change in the way it managed information. While the FDF knew that closer coordination between its own service branches and those of other nations was essential, deeply entrenched silos in its command, control, communications and computing (C4) systems presented a major barrier. The FDF adopted a NATO study group's resolution – to rely on SOA technology – as a guideline for its own transformation effort.

Solution

The FDF teamed with IBM to create an SOA-based service hub that enables all branches to share common C4 applications and – by enabling the dynamic reuse of services – allows the FDF to get new applications out to the field in a fraction of the time. The SOA framework developed by IBM also helps the FDF to bind its operations more closely with other nations' forces and – by enabling service reuse and rapid development – enables the FDF to adapt its operations quickly in response to situational changes on the ground.

Benefits of innovation

- Projected 80 percent reduction in time required to develop new command, control, communications and computing systems via SOA service reuse and a projected 75 percent reduction in required C4 systems infrastructure through consolidation and virtualization
- While interservice coordination is a key goal of the FDF's initiative, it is also a prerequisite to the broader goal of working with external parties (as well as other Finnish agencies). Because the FDF is consistent with the SOA framework laid out by NATO, it will be far better positioned to share information with other military forces in international engagements.
- The fact that it can control information access levels provides the security capabilities it needs to work in collaboration with the armed forces of other nations.

“The solution we are developing with IBM will give us the flexibility and resource efficiency our military needs to adapt to a more dynamic and uncertain world.”

– Mika Hyytiainen, CIS Chief Architect, Finnish Defense Forces



Geoscience Australia speeds access to more than 1.2 petabytes of critical research data for new energy sources

A high-performance data management system helps Australian government and scientific communities make informed decisions about resources, the environment and infrastructure

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Geoscience Australia maintains a vast archive of offshore seismic data and satellite remote sensing data. The agency expects this archive to more than double over the next 10 years. The Australian government uses this data to attract international investment in the search for petroleum and gas.

Geoscience required a solution that would not only meet its current data infrastructure needs, but also provide a smooth growth path in capacity and performance for the future. To efficiently manage its large datasets, Geoscience needed a system that would:

- Make it faster and easier for industry and other clients to access the petroleum, remote-sensing and other large data repositories
- Effectively manage this valuable scientific data.

Solution

Geoscience Australia joined hands with IBM Business Partner, Tardis Services Private Ltd., to implement a new high-performance, reliable IBM storage solution. IBM scale-out file services provide Geoscience with high performance and unmatched filer node and storage reliability.

As higher priority data is migrated to the new system, Geoscience can reduce access times to data from a month or more to as little as a day. The data is now contained on new media types in a secure, protected environment rather than a storage warehouse.



Benefits of innovation

- Provides significantly faster access to over 1.2 petabytes of research data
- Eliminates manual processes for improved operational efficiency
- Will meet the agency's growing storage needs for years to come.

“The IBM solution came out favorably in the tender process. In particular, it was very favorably priced compared to other options.”

– Paul Trezise, Executive Officer of the Petroleum and Marine Division, Geoscience Australia

Her Majesty’s Revenue and Customs (HMRC) develops clear roadmap to clean up carbon emissions

The United Kingdom’s tax and revenue agency launches initiative to cut overall carbon emissions in half by 2010

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l’Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty’s Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

HMRC aims to be at the forefront of sustainable development within government. The agency was making strong progress against many of the environmental targets set by the Sustainable Development Commission. But the sheer size of the organization made it difficult to get a reliable overview of carbon consumption and the priority areas for action.

HMRC wanted a clear roadmap to reach the set target for reducing carbon emissions from offices 12.5 percent by 2010.

Solution

IBM worked with HMRC to review its current carbon management using a range of carbon diagnostic tools based on the IBM Component Business Model. This review helped to identify gaps between current HMRC practices and leading practices for carbon management.

The result: a comprehensive list of priority actions from which HMRC can build a program to reduce its carbon footprint – including a range of energy-saving initiatives for the IT area. For example, consolidating its data centers could provide energy and floor space savings of up to 90 percent by reducing over 400 servers to 14.

If HMRC implemented every action on the list, it could reduce its total carbon output by up to 50 percent. Most of the initiatives would also provide a cost saving.



Benefits of innovation

- Provides a comprehensive picture of current carbon emissions along with a clear set of recommendations to help it exceed required targets
- Identifies actions that will have greatest and fastest impact for a total potential carbon reduction of up to 50 percent along with significant cost savings over time.

“The work we did with IBM has been very important in getting the carbon issue on the agenda within HMRC. It helps people understand what needs to be done and is a powerful way of highlighting the key areas of activity required across the organization.”

– Judy Greevy, Head of Corporate Social Responsibility and Diversity at HMRC



Institute for Information Industry helps maintain the integrity of new research in genetics

Secure, flexible infrastructure protects the privacy of genetics data for Taiwan Biobank

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

The Institute for Information Industry is a government agency that supports the development of the IT industry in Taiwan. When Taiwan Biobank, a genetic database project, was in its pilot stages, it turned to the Institute for help creating the right IT infrastructure. The Institute identified two main challenges:

- It was difficult to scope how the project's IT requirements would change over time
- A new government regulation regarding privacy and genetic information had yet to be finalized.

The new IT infrastructure would need to be flexible and scalable to support the long-term success of the Biobank project in a rapidly evolving environment.

Solution

The Institute teamed with IBM Business Partner Tung-I Information Service Co. to implement IBM Clinical Genomics Solution software. This solution's integrated architecture helps researchers identify and analyze the molecular basis of disease. The solution also provides a data repository for phenotype and genotype information, as well as data privacy and security technologies.



Benefits of innovation

- Provided Biobank the flexibility and scalability needed to adapt to evolving user needs
- Cut development time almost in half
- Enabled researches to deliver the first two phases of the genetic database project within a tight timeframe.

“The IBM solution offered the flexibility and scalability we need to quickly adapt to changing project requirements and parameters.”

– Belinda Chen, Ph.D., Institute for Information Industry



Natural England launches initiative to cut carbon emissions in half by 2010

Leading environmental group aims to exceed government targets using new IBM technologies

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Created in 2006, Natural England is working to conserve and enhance the environment. The organization has a strong imperative to show leadership within the United Kingdom by significantly reducing its corporate carbon footprint. So, when the government's Climate Change Bill set the goal to reduce carbon emissions 26 to 32 percent by 2020, Natural England set out to exceed that target. Its goal: to achieve a 50 percent reduction by 2010.

Solution

Natural England chose to work with IBM to develop and deploy a comprehensive vision, change roadmap and detailed delivery plan. Motivating people is the key to success, so early on IBM helped devise and implement a staff communication program, based on leading practices in employee engagement.

IBM is also helping National England explore how IT solutions can act as an enabler for carbon reduction. For example, having identified travel as one of the four biggest contributors to carbon production, the two companies are exploring how videoconferencing, teleconferencing and Web 2.0 style collaboration and interaction tools can help reduce the amount of travel to internal meetings.



Benefits of innovation

- Provides a clear roadmap to help cut carbon emissions in half by 2010
- Supports success with a strong, evidence-based carbon measurement and management system
- Meets target of achieving 20 percent carbon reduction in one year.

“IBM has taken a lead in the area of carbon management, particularly across government organizations.”

– David Young, Executive Director of Strategy and Performance, Natural England



Smarter information management takes a bite out of crime

NYPD uses a consolidated view of crime information to prevent and solve crimes more quickly, improving public safety

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

NYPD is the largest police department in the U.S. Law enforcement generates broad and diverse streams of information related to crime. Over the years, major police departments have become extremely adept at capturing this information. The problem, however, is where the information goes after it's ingested. In the case of the NYPD, that information was almost as compartmentalized and siloed as the department itself. NYPD recognized that to more effectively solve and prevent crimes, it needed to provide information to key users—from precinct detectives to crime analysts to department leadership—more holistically, thus strengthening its ability to synthesize various bits of information into actionable intelligence.

Solution

IBM helped NYPD develop the Crime Information Warehouse (CIW), which provides a single, easy-to-use point of access to data on virtually all crimes committed in NY's five boroughs. The CIW solution provides the information foundation for the NYPD's state-of-the-art Real Time Crime Center. Using IBM Cognos® Business Intelligence software along with Global Information System (GIS) mapping and visualization tools, officers and analysts in the center can detect crime patterns as they are forming, enabling precinct commanders to take proactive measures to keep ahead of these trends—and head off spikes in criminal activity.



Benefits of innovation

- Helps prevent crimes through pattern recognition and information gathering
- Enables faster closing of cases through more efficient gathering, consolidation and analysis of crime-related data; reports that could take weeks or months are now available instantly
- Dispatchers can flag dangerous situations for responding officers, thus contributing to increased officer safety
- Enables officers to concentrate on solving crimes rather than gathering information and writing reports about them.

“The NYPD’s innovative policing strategies depend on our ability to gather, share and act on information. IBM – its people, partners and technology – have helped us redefine how information can be used to fight crime.”

– James Onalfo, Chief Architect and CIO, NYPD



Pacific Northwest National Laboratory (PNNL) empowers utility customers with smart appliances and real-time, market-based energy management

Intelligent power management and smarter appliances reduce customer electric bills while lowering stress on the electrical grid

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Across the United States, the electrical grid is under unrelenting stress. Recent years have borne witness to increasing problems. On the west coast, power shortages resulting in rolling blackouts have become a fact of life. In 2003, a massive blackout struck eight states in the northeast and midwest, as well as parts of Canada.

As part of the U.S. Department of Energy's GridWise® Program, the Pacific Northwest National Laboratory (PNNL) wanted an innovative way to keep the electrical grid healthy. The goal: to manage demand for electricity through a combination of intelligent technology and financial incentives.

Solution

PNNL tested two new technologies to help manage consumption and use of electricity. In one, the lab teamed with IBM to create a virtual marketplace where consumers can trade flexibility in usage for lower costs. Intelligent devices (such as thermostats) in consumers' homes were tied to the PNNL system, which automatically controlled power consumption in near-real time based on pricing signals and customer preference.

The second study tested "smart" appliances that could sense and respond to stress on the grid by temporarily curtailing electricity use. Both studies were highly successful in managing demand and reducing stress on the grid.

Benefits of innovation

- Cut short-term peak electricity distribution loads by up to 50 percent during times of stress on the grid, helping to avoid power restrictions and cascading blackouts
- Decreased average peak loads for consumers by 15 percent over the course of one year in exchange for a 10 percent saving on their electricity bills
- If widely adopted, could reduce peak electricity prices substantially and eliminate the need to construct approximately US\$70 billion in new generation, transmission and distribution systems over the next 20 years.

“We’re finding that people are actually curtailing their use and saving energy simply because they have greater control.”

– Don Hammerstrom, Project Manager,
Pacific Northwest GridWise Demonstration Projects



Polish National Police improves national security with improved screening at the border

Mobile system ensures highly accurate identity and visa checks of people and vehicles entering Poland

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Open borders can pose tough security challenges. This was the case for Poland as it prepared to join the Schengen Agreement. The Agreement provides free movement of people within 15 countries in Europe.

To protect national security, the Polish National Police needed a foolproof system to check the identity and visa status of people and vehicles entering the country. The Police also needed to develop a mobile system enabling access to the Schengen Information System (SIS). This system records the details of people:

- Wanted for arrest
- To be placed under surveillance or subject to specific checks
- To be refused entry at external borders (on either national security or immigration grounds).

The system also checks lost or stolen items.

Solution

IBM helped the police develop a mobile system to give police officers access to both internal Polish criminal databases and SIS-related systems – including the Visa Information System and national registers. Polish police patrols can now check the identity and visa status of individuals and vehicles in Poland using PDA mobile terminals. The solution features multi-layer security to protect the mobile terminals so that loss of a device or theft won't pose a threat to the network, data systems or police operations.



Benefits of innovation

- Greatly improves police force operations – shortening the time for queries communicated over the radio and eliminating most errors
- Enables Polish police to access information from both internal and external systems
- Protects security of police operations with multi-layer security.

“The new system greatly improves the field police force operation. It shortens the long waiting time for queries communicated over the radio, while practically eliminating errors and omissions. An additional advantage is the simplified data reading from documents, using a bar code and two-dimensional Aztec code reader built into the terminal.”

– Andrzej Machnacz, Ph.D., Director of the Information and Communication Technology Bureau at the National Police Headquarters

Netherlands introduces new flood control measures backed by remote monitoring solution

New intelligence on performance of levees helps prevent flooding and potentially saves lives

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Flooding is a frequent threat for the people of the Netherlands. Stichting Flood Control 2015 is a government foundation tasked with delivering new flood control measures across the country. A vital part of this operation is to monitor and inspect levees across the country.

In the past, levees were inspected visually. But this approach cannot detect the true conditions inside the levee. With more frequent and increasingly severe weather conditions, high water levels and droughts, Stichting Flood Control 2015 needed to find new ways to monitor and inspect levees—for example, by introducing robust sensory networks.

Solution

IBM worked with the Netherlands-based Deltares (delta technology experts) and TNO (a scientific research organization) to develop and implement a robust monitoring solution for sensor networks to assess the stability of the country's levees. The sensors are connected via traditional protocols to a PC that aggregates all the sensor feeds. TNO produced a visualization client that displays the vital information with three different views:

- A maintenance view, featuring a map of where the events took place
- A decision maker view, featuring a color-coded image of the levee using green, orange and red
- An analyst view, featuring graphs and detailed sensor readings.



Benefits of innovation

- Was validated under real-world conditions using a 100-meter levee that was made to collapse
- Enables the government to identify and strengthen weak levees or effectively warn the population in case of evacuation.

“Thanks to the robust services provided by IBM, TNO and Deltares, the government now has improved insight into the stability of the Netherlands levees.”

– Jos Maccabiani, Deltares

École Polytechnique Fédérale de Lausanne finds a smarter way to study the human brain

Supercomputing power enables rapid simulations, cutting research time from days or weeks to just seconds

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

École Polytechnique Fédérale de Lausanne is an education, research and technology institute in Switzerland. Its Brain Mind Institute has the mission to “understand the fundamental principles of brain function in health and disease, by using and developing unique experimental, theoretical, technological and computational approaches.” This type of research requires high-resolution computer modeling. Hundreds of thousands of parameters need to be taken into account to model the brain at the cellular level.

How could the institute get the computing power it needed to pursue the medical breakthrough of a lifetime?

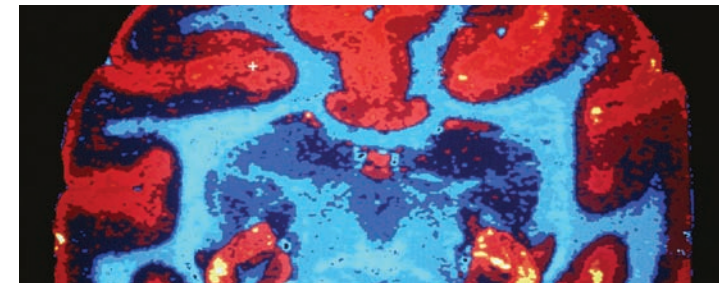
Solution

The École embarked on a remarkable project, called the Blue Brain Project, to create a model of the fundamental building blocks of the human brain. The project uses an IBM eServer™ Blue Gene supercomputer to run simulations of the brain, eventually working down to the molecular level.

This research will help scientists gain new insights into internal processes such as thought, perception and memory. Much of the pretesting and planning normally required for a major experiment can now be done electronically, rather than in the laboratory.

Benefits of innovation

- Reduces experiment and research time exponentially, while adding an enormous wealth of information to the research community



- Provides a reusable computer model, together with a central research database and a command-and-control tool, that will enable the global neuroscience community to run simulations and analyses to increase the global understanding of brain functioning
- Will generate not only a host of research publications for the École but also industry partnerships, patents and spin-off enterprises.

“A few seconds of computer simulation could replace days, even weeks, of wet lab research.”

– Henry Markram, Professor and Founder, Brain and Mind Institute, École Polytechnique Fédérale de Lausanne

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansea University	21
Healthcare and Life Sciences	22

Hannover Medical School optimizes patient treatment, lowers costs with innovative tracking solution

How one of the world's top university medical centers is prioritizing and tracking patients from admission to discharge

Challenge

Medizinische Hochschule Hannover (Hannover Medical School) is one of the world's leading university medical centers. To continuously improve, the school wanted to:

- Improve patient treatment
- Reduce wait times
- Optimize processes.

In the past, patients were being seen in the order they arrived at the hospital. There was no way to systematically track admissions based on medical priority.

The school envisioned a patient tracking solution that would automatically gather and record data about patient treatment, including wait times and patient location. Over time, the school would expand this solution to include other capabilities, such as locating and tracking medical devices.

Solution

Using a service-oriented architecture approach, IBM created a comprehensive tracking solution for Hannover Medical School. The solution uses radio frequency identification (RFID) technology to automatically track and record the position of each patient or device. Doctors and medical staff can check patient location, wait times and treatment via a secure portal.

The solution is currently being piloted within the hospital's trauma surgery department. In the future, the school can add other tracking solutions for medical devices and assets reusing the same hardware and system architecture.



Benefits of innovation

- Provides an affordable entry-level tracking solution today
- Can expand over time to support a fully integrated enterprise-wide tracking solution
- Helps staff locate and prioritize patients from the moment they enter the hospital until the time they are discharged
- Helps optimize treatment processes, reduce waiting times for patients, increase patient security and reduce the cost of patient care.

“The tracking solution, built using state-of-the-art technologies like RFID, along with an open source approach, provides the medical school with an inexpensive entry-level tracking solution that we can build on for the future.”

– Timo Stübiger, Doctor and Project Manager at Hannover Medical School

North Carolina State University turns to Cloud Computing to meet growing demand for computing resources

Major research university develops first-of-kind solution to deliver computing resources more quickly and cost-effectively

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

North Carolina (NC) State University is a comprehensive university known for its leadership in education and research. It is also recognized worldwide for its science, technology, engineering and mathematics programs.

Growing demand for academic computing resources made it increasingly difficult for the university to meet the service levels that key users required. NC State envisioned a more flexible, user-driven provisioning framework that would enable fundamental change—both in the way users accessed academic computing resources and, more broadly, in the way the university managed these resources.

Solution

IBM adapted lab computing into a virtualization model that can deliver more resource support at lower cost. NC State deployed the IBM BladeCenter® platform across the university to run high-performance computing, research and learning applications.

NC State also built a first-of-a-kind provisioning and scheduling system—known as the Virtual Computing Lab—that has completely redefined the way users interact with NC State's IT resources. The new “cloud computing” model for provisioning

technology offers the school a quantum improvement in access, efficiency and convenience over the traditional computer labs of the past. The success of this project has allowed NC State to extend their cloud services throughout the state to both higher education and K-12 institutions.

Benefits of innovation

- Supports a more efficient licensing strategy based on real utilization, reducing its future licensing costs by up to 75 percent
- Enables the university to increase the average number of students served per license by more than 150 percent
- Allows NC State to handle the academic computing requirements of a growing student population while minimizing the growth of its infrastructure.

“Our goal was to rethink the way we met the academic computing needs... By collaborating with IBM, we are now better able to deliver on that mission.”

– *Mladen Vouk, head of the Department of Computer Science, NC State University*



Powerful computing partnership creates knowledge and jobs

Welsh university helps revitalize the local economy while enabling major scientific breakthroughs with the help of IBM's powerful Blue C supercomputer

Executive summary	2
Government and Education	3
• Alameda County Social Services	4
• Cheshire County	5
• City of Albuquerque	6
• Danish Government – FORM	7
• EPELFI (Etablissement Public pour l'Exploitation du Livre Foncier Informatisé) (formerly GILFAM)	8
• Finnish Defense Forces	9
• Geoscience Australia	10
• Her Majesty's Revenue & Customs (HMRC)	11
• Institute for Information Industry	12
• Natural England	13
• New York City Police Department (NYPD)	14
• Pacific Northwest National Laboratory (PNNL)	15
• Polish National Police	16
• Stichting Flood Control 2015	17
• École Polytechnique Fédérale de Lausanne	18
• Hannover Medical School (Medizinische Hochschule Hannover)	19
• North Carolina State University	20
• Swansae University	21
Healthcare and Life Sciences	22

Challenge

Swansea University is central to achieving one of the Welsh Assembly Government's key strategies – maintaining employment and wealth in a region hit by the decline of its traditional heavy industries. By creating a concentrated cluster of public and private sector organizations around the University, the two organizations wanted to stimulate developing sectors such as life science and the knowledge economy. Together, the Welsh Assembly Government and Swansea University created a new Institute of Life Science at the University's School of Medicine.

Solution

The ILS brings together specialists in medicine, engineering, computing, physics and bioscience in a multidisciplinary environment that pushes traditional intellectual boundaries. With reliance on techniques such as bioinformatics for epidemiology, genetic and molecular research, or medical visualization for diagnostic body scanning, the ILS requires powerful computing and access to the best knowledge management expertise. The ILS houses IBM's "Blue C," one of Europe's fastest computers dedicated to life science research, giving the ILS the computing resources it needs to embark on a wide range of new medical research projects that were previously unapproachable.

Benefits of innovation

- Has helped create a vibrant business community with Alliance Boots locating its Center for Innovation at ILS

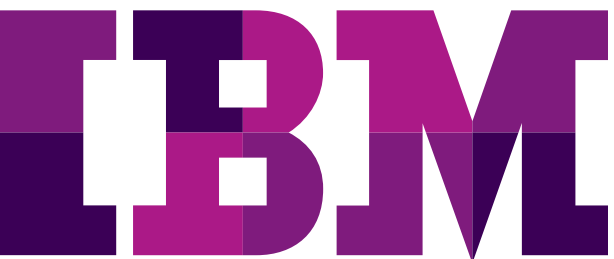


- Has supported many new research projects, including a nationwide epidemiology study in conjunction with the U.K. Department of the Environment, and a study concerning the potential impact of bird flu
- Has led to many medical breakthroughs, with over 20 high-quality publications produced in the first year alone.

“Using unstructured data in the way we are currently exploring with IBM can unlock unexpected insights. Many major breakthroughs have been made as the result of anecdotal evidence. If we can ease and enhance the use of this type of information the potential is hugely exciting.”

– David Lewis, Director, Blue C, the Institute of Life Science, Swansea University





Healthcare and Life Sciences:

A smarter healthcare system is a connected healthcare system. It seamlessly links research and drug discovery to those who diagnose and treat our illnesses, as well as to insurers, employers and the broader communities in which we live.

• American Hospital Dubai moves smoothly to a new model of patient care	23	• Implanet—Smarter supply chain improves medical device delivery and customer service	30
• École Polytechnique Fédérale de Lausanne finds a smarter way to study the human brain	24	• Merit Foundation—Pan-European arthritis-care database may revolutionize patient care	31
• Geisinger Health System advances medical breakthroughs with smarter integration of patient data	25	• Metabasis speeds time to market for new drug therapies for diabetes and other diseases	32
• GSMS Incorporated takes consumer safety a huge leap forward with smarter drug tracking	26	• Samarinda Lodge creates a new model for senior care where help is always close at hand	33
• Guang Dong Hospital—The best of Eastern and Western medicine meet at Southern China's largest hospital system	27	• Servicio Extremeño de Salud (SES): A brand new model for patient services	34
• Hannover Medical School optimizes patient treatment, lowers costs with innovative tracking solution	28	• Smarter records management helps Shanghai First People's Hospital improve patient care, lower costs	35
• New markets, new operations: Highmark redefines its business in a changing industry	29	• UPMC innovates and transforms to save, freeing up resources for patient care	36
		• Western North Carolina Health Network (WNCHN): creating a virtual network of patient care	37

Executive summary **2**

Government and Education **3**

Healthcare and Life Sciences **22**

American Hospital Dubai moves smoothly to a new model of patient care

Effective planning for change helps leading hospital in the Gulf States quickly tap the benefits of a new Healthcare Information System

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

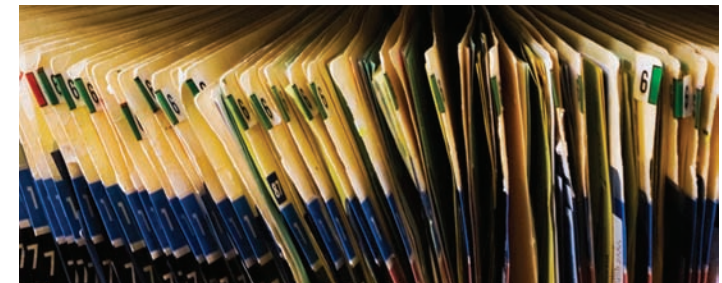
Hospitals around the world are introducing new clinical systems based on electronic health records. But even the most innovative approach to patient care will not yield the best results if it is not properly planned and implemented. So when American Hospital Dubai (AHD) wanted to get its new Hospital Information System off to a fast start, it sought a partner to:

- Develop a strategic technology plan
- Establish a system selection process
- Provide program and change management, including a plan to ease the integration of technology, process and people change.

Solution

AHD turned to IBM Healthlink (a division of IBM Global Business Services) to help plan and lead the implementation. IBM first gave AHD a strategic roadmap to implement the new Health Information System. This system will provide an electronic medical record for secure, real-time and online access to all patient information. It will include all inpatient and outpatient treatment as well as clinic visits to all AHD providers at various points of care.

IBM also gave AHD a complete physician and staff transition plan to help them quickly and smoothly adopt the new systems and processes.



Benefits of innovation

- Enhances the delivery of healthcare for the community of Dubai and surrounding Gulf States
- Gives caregivers secure, real-time access online to the complete medical records for every patient they treat
- Provides a complete transition plan for staff to proactively ease the various technology, process and people changes associated with the system implementation.

“IBM Healthlink’s strong track record and capabilities in the health sector made IBM the logical choice to provide Project Management and Change Management Services when AHD embarked on the HIS implementation.”

– Richard Larison, CEO, American Hospital Dubai

École Polytechnique Fédérale de Lausanne finds a smarter way to study the human brain

Supercomputing power enables rapid simulations, cutting research time from days or weeks to just seconds

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
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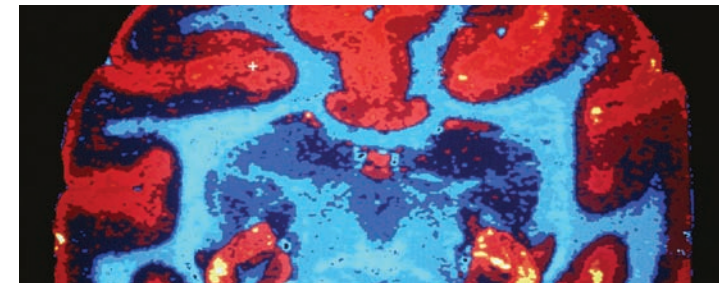
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This research will help scientists gain new insights into internal processes such as thought, perception and memory. Much of the pretesting and planning normally required for a major experiment can now be done electronically, rather than in the laboratory.

Benefits of innovation

- Reduces experiment and research time exponentially, while adding an enormous wealth of information to the research community



- Provides a reusable computer model, together with a central research database and a command-and-control tool, that will enable the global neuroscience community to run simulations and analyses to increase the global understanding of brain functioning
- Will generate not only a host of research publications for the École but also industry partnerships, patents and spin-off enterprises.

“A few seconds of computer simulation could replace days, even weeks, of wet lab research.”

– Henry Markram, Professor and Founder, Brain and Mind Institute, École Polytechnique Fédérale de Lausanne



Geisinger Health System advances medical breakthroughs with smarter integration of patient data

Geisinger develops a first-of-its-kind clinical decision intelligence system that supports improved patient care and new life-saving medical treatments

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Geisinger Health System is one of the leading fully integrated healthcare providers in the United States. Geisinger had used electronic health records for 10 years. Now it needed to manage its data to gain improved clinical insight.

Specifically, Geisinger wanted to integrate real-time clinical data with medical histories to help uncover clinical trends, identify best practices and ultimately, improve patient care. When Geisinger began discussions with IBM, it was clear that they shared the same vision.

Solution

IBM implemented a first-of-its-kind Clinical Decision Intelligence System for Geisinger. This system leverages the healthcare provider's wealth of clinical data derived from its decade-long use of one of the industry's most advanced electronic health record systems. It consolidates records of injuries, illnesses and patients, including financial data that is now stored separately.

Physicians and researchers can use this information to:

- Identify important clinical trends
- Help ensure that patients receive recommended care
- Support clinical trials
- Identify best practices
- Take health services research in new directions.

Benefits of innovation

- Will serve as the foundation for integrating Geisinger's clinical, financial, operational, claims, genomic and other medical data in a format that allows for rapid analysis and reporting of vital insights from millions of patient encounters
- Will lead to the development of a customized healthcare approach based on best practices and evidence-based standards that improve patient outcomes.

“Innovation and technology play a crucial role in Geisinger’s vision. Building upon our electronic health record experience, our work with IBM now sets the stage for Geisinger to expand its role as a national model for patient engagement, research, and education, as well as leading to business and growth opportunities for the System.”

– Glenn Steele Jr., MD, PhD, President and Chief Executive Officer of Geisinger Health System



GSMS Incorporated takes consumer safety a huge leap forward with smarter drug tracking

Small pharmaceutical wholesaler and distributor gets an edge on larger competitors thanks to a groundbreaking track and trace solution

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Drug counterfeiting is on the rise. It is becoming ever more critical to regulate the wholesale pharmaceutical packaging and distribution industry. With a new “drug pedigree” law coming into effect in California in 2011, all prescription products in that state must be identified, tracked and traced right down to the level of individual items. Further, each item’s pedigree—a record of its path through the supply chain—must be validated before any other party can receive or distribute that product.

GSMS wanted to be the first to comply by implementing an innovative track and trace solution.

Solution

GSMS saw IBM’s technology, process expertise and market credibility as a strong foundation for the success of its initiative. The company needed a robust, flexible system that could accommodate the various labeling technologies used by pharmaceutical manufacturers. Through advanced sensor technology, the ePedigree solution can scan both two-dimensional barcodes and radio frequency identification tags. It can also:

- Share data between GSMS, suppliers and customers to let them know when packages are shipped and received
- Quickly detect the entry of counterfeit drug products at any point in the supply chain through a system of automated alerts.

Benefits of innovation

- Provides a major leap in consumer safety by validating and authenticating every drug that passes through the supply chain
- Enables GSMS to meet the emerging California regulations well ahead of the enforcement date – and larger competitors
- Positions GSMS to offer compliance services to existing and potential trading partners in the pharmaceutical industry
- Improves the competitive position of GSMS by expanding its supplier and customer networks.

“The peace of mind customers get from knowing where their drugs come from generates goodwill across the entire value chain. That’s why we see ePedigree as a tremendous benefit for the entire pharmaceutical value chain.”

– Jim Stroud, CEO, GSMS, Inc.



The best of Eastern and Western medicine meet at Southern China’s largest hospital system

Guang Dong Hospital launches first-of-its-kind clinical information system

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People’s Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

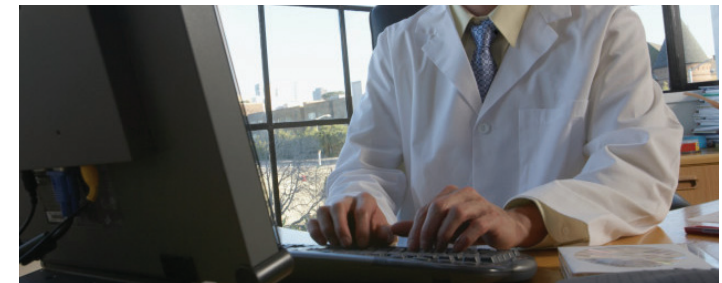
China’s state council recently passed a medical reform plan that includes a resolution to provide universal medical coverage to all citizens by 2011. To support this initiative, the government also wanted to establish common care standards and practices to improve patient care and increase cooperation among medical facilities.

To get there, Guang Dong Hospital needed to streamline a number of its operations, particularly in the area of patient records. The hospital is composed of a main facility and four branch treatment centers, but these locations did not share the same records systems. The differences between the systems made it particularly difficult to transfer records between locations. The hospital needed to deploy a more intelligent, patient-centric solution.

Solution

Working with China’s Ministry of Health and IBM Research, the hospital deployed an intelligent medical records system that consolidates medical data from multiple systems into a single record that can be easily shared. The new, first-of-its-kind Clinical and Health Records Analytics and Sharing (CHAS) system leverages the IBM DB2® 9 data server to create a common repository for medical information of various types and formats. The system incorporates advanced semantics technology from IBM that enables it to:

- Understand and analyze the scientific meaning of specific terms used in individual patient records
- Process those terms, regardless of format, terminology or language, into one standardized document, simplifying data tracking and encouraging rapid data access.



Benefits of innovation

- Improves the overall quality of patient care
- Makes it easier to share information within the hospital as well as with other healthcare facilities
- Enables staff to create highly personalized treatment plans that leverage the strengths of both Eastern and Western medicine
- Extends the use of medical data for deep analytics that drive cutting-edge research and innovation in global healthcare.

“We are committed to maintaining our exacting standards, and IBM’s CHAS technology is helping us do just that by moving us away from siloed, antiquated systems in favor of integrated, patient-centric processes.”

– Mr. Lv Yubo, President, Guang Dong Hospital of Traditional Chinese Medicine



Hannover Medical School optimizes patient treatment, lowers costs with innovative tracking solution

How one of the world’s top university medical centers is prioritizing and tracking patients from admission to discharge

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People’s Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Medizinische Hochschule Hannover (Hannover Medical School) is one of the world’s leading university medical centers. To continuously improve, the school wanted to:

- Improve patient treatment
- Reduce wait times
- Optimize processes.

In the past, patients were being seen in the order they arrived at the hospital. There was no way to systematically track admissions based on medical priority.

The school envisioned a patient tracking solution that would automatically gather and record data about patient treatment, including wait times and patient location. Over time, the school would expand this solution to include other capabilities, such as locating and tracking medical devices.

Solution

Using a service-oriented architecture approach, IBM created a comprehensive tracking solution for Hannover Medical School. The solution uses radio frequency identification (RFID) technology to automatically track and record the position of each patient or device. Doctors and medical staff can check patient location, wait times and treatment via a secure portal.

The solution is currently being piloted within the hospital’s trauma surgery department. In the future, the school can add other tracking solutions for medical devices and assets reusing the same hardware and system architecture.

Benefits of innovation

- Provides an affordable entry-level tracking solution today
- Can expand over time to support a fully integrated enterprise-wide tracking solution
- Helps staff locate and prioritize patients from the moment they enter the hospital until the time they are discharged
- Helps optimize treatment processes, reduce waiting times for patients, increase patient security and reduce the cost of patient care.

“The tracking solution, built using state-of-the-art technologies like RFID, along with an open source approach, provides the medical school with an inexpensive entry-level tracking solution that we can build on for the future.”

– Timo Stübig, Doctor and Project Manager at Hannover Medical School



New markets, new operations: Highmark redefines its business in a changing industry

Large health insurer prepares for growth with service-oriented architecture (SOA)

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Like many sectors, the U.S. health insurance industry is going through all the pains of a long-term consolidation. To achieve the expected gains from their mergers and acquisitions, insurers need to smoothly integrate people, processes and systems. Yet this integration is very difficult to achieve.

This was the challenge facing Highmark, a leading health insurer in the United States. After several acquisitions, the firm had evolved a highly complex infrastructure. It wanted to simplify these systems to gain the flexibility and efficiency needed to compete in a changing market.

The company also wanted to put a foundation in place to differentiate itself based on personalized insurance offerings. This strategy was vital with the market shifting toward consumers and leveraging new channels such as retail health.

Solution

Highmark's solution: to introduce a flexible SOA framework, which would not only simplify the integration between various platforms, but also position the firm to develop new consumer offerings faster, at a lower cost. To this end, Highmark deployed a number of IBM SOA enabling products, including:

- IBM WebSphere® Process Server running on IBM System x® servers
- IBM WebSphere Message Broker on its core IBM System z® server.

Highmark also worked with IBM to:

- Establish a roadmap of initiatives to gain additional value from its SOA investments
- Develop a governance structure for managing its SOA environment
- Create a communications strategy to articulate the benefits of SOA to stakeholders to increase its adoption.

Benefits of innovation

- Lowers IT costs by reducing the complexity of application integration
- Lowers application development costs and shortens development cycles
- Speeds time to market with consumer-oriented offerings
- Improves ability to differentiate based on personalized insurance offerings as the market shifts to a more "retail mode"
- Reduces cost and time to integrate acquired or merged companies.

“We need to adapt not only to the growing cost pressures on the healthcare market, but also to the fundamental shift in the nature of the health insurance business. With IBM’s technology and expertise, we are positioning ourselves for success.”

– Pat Hale, Director of Technology Implementation and Consulting, Highmark



Smarter supply chain improves medical device delivery and customer service

Medical device distributor streamlines its supply chain and implements an RFID tracking solution to improve inventory management

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

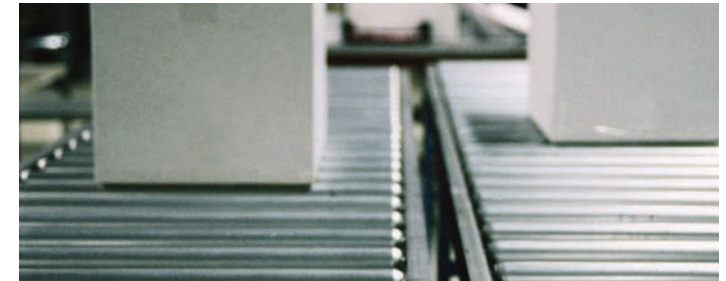
Focused on distributing, rather than creating, surgical implants, Implanet was dedicated to innovation that could help it deliver products to its customers more quickly and efficiently. In particular, the company wanted to create an automated supply chain process that would streamline its order and inventory management systems. With this change, Implanet also wanted to improve the traceability of products within its supply chain. By giving customers clearer insight into the location and status of their ordered products, Implanet hoped to improve customer service and satisfaction.

Solution

First, IBM teamed with Implanet to launch a standardized ERP solution based on the SAP Business All-in-One for Consumer Products solution. IBM then worked with Implanet to develop an accompanying client portal and traceability solution. The client now tags the surgical implants with radio frequency identification (RFID) tags that are tracked using IBM WebSphere® Premises Server software. Implanet can now track the medical devices via scanning terminals spread throughout Implanet's supply chain.

Benefits of innovation

- Reduced time for customers' operating room managers to manage inventory from approximately nine hours to one hour each week – a time savings that Implanet's customers definitely appreciate
- Simplified internal sales and business management practices, since customers can submit their own requests and manage inventories independent of sales staff



- Positions Implanet to increase its sales volumes without having to hire additional staff
- Automates data entry for sales representations, so these employees can now focus on more revenue-driving activities.

“The IBM consultants were very impressive – they had perfect knowledge of the technical architecture of the SAP software and a high level of specialist knowledge within each functional module. Additionally, it was a significant advantage to have in IBM a single partner capable of handling all aspects of our technology stack.”

– Emmanuel Grenier, Head of Information Systems, Implanet

Pan-European arthritis-care database may revolutionize patient care

A European non-commercial medical organization implements a first-of-its kind solution that uses a pan-European database of secure patient information to allow doctors across the continent to collaborate on finding the best treatment for arthritis

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

The Merit Foundation is a non-commercial, international medical organization based in the Netherlands. Doctors at Merit wanted to share knowledge with colleagues on how best to treat rheumatoid arthritis. When they found that there was no consistent way to capture and share vital information on patient treatment, they decided to embark on an ambitious program to create the first pan-European database of patient information. The Foundation would need to ensure the security of patients' personal information, while allowing doctors to access information on their own patients at a local level. Doctors also wanted to have the data presented on the screen so they could easily share it with the patient.

Solution

After determining that existing registries for rheumatoid arthritis were not adequate, IBM consultants collaborated to design and build an Internet-based solution (METEOR) that will revolutionize and improve patient treatment. For the first time, activities and outcomes can now be monitored and measured across Europe. The first application of its kind, the solution enables clinicians to check a patient's treatment and responses in a single view on a PC screen and then compare it with thousands of others in only a couple of minutes. The answer to the doctors' desire to present the information in a visually attractive way was to use a mannequin, highlighting all the key locations for arthritis, which patients then rate in terms of pain levels.

Benefits of innovation

- For the first time, arthritis patient care across Europe has been integrated, laying the foundation for future collaboration—clinicians now have access to thousands of anonymous patient records, covering several countries and many hospitals; they can learn from one another on the best treatment for patients
- Doctors now have a mechanism that uses internationally validated measures of disease activity to benchmark drugs' efficiency. This will accelerate learning on specific treatments, thereby allowing information-based treatment decisions by physicians
- The fact that IBM consultants designed and built the solution using Open Source software—making it free to users—was critical, and will drive rapid take up.

“The tool is designed so that patient and doctor fill in the questionnaire together. It's simple to use, patients love it and it makes them feel more involved in their own treatment.”

– Professor Tom Huizinga, Head of the Rheumatology Department at the Leiden University Medical Center and member of the Merit board, which supervises the METEOR project



Metabasis speeds time to market for new drug therapies for diabetes and other diseases

Pharmaceutical company redefines the research process with a first-of-its kind Computer-Aided Drug Discovery (CADD) solution

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Metabasis works to discover, develop and commercialize drugs used to treat metabolic and liver diseases. The company leverages Computer-Aided Drug Design (CADD) methods to accelerate the drug-discovery process.

The challenge: these methods did not always produce results with the desired degree of accuracy. Researchers often preferred manual techniques to synthesize and test each compound during the drug-discovery process. This process could take weeks or even months.

Metabasis wanted to develop a different CADD approach that would be more accurate and easier to use.

Solution

Metabasis developed a highly accurate CADD software solution based on Free Energy Perturbation. This approach produces more reliable predictions on which to base drug-design decisions. This in turn reduces the time it takes to identify suitable drugs to evaluate in human clinical trials. To support the complex, lengthy and CPU-intensive calculations required, Metabasis chose an IBM System p5® 575 supercomputer.

Metabasis first used its groundbreaking solution to find new clinical compounds for type 2 diabetes. The results of the drug trials were consistent with the experimental data—demonstrating the accuracy of the method as well as its potential in drug design.

Benefits of innovation

- Significantly reduces drug-discovery time and costs, enabling Metabasis to bring new drugs to market faster without sacrificing accuracy and safety
- Positions the company to commercialize its unique solution, which would accelerate the drug-discovery process across the industry
- Improves selection of candidate compounds to be synthesized and tested in the lab by providing important insights into the interactions of drug candidates.

“This [solution] is extremely valuable in that more accurate results are expected to enhance both drug design and lead optimization and therefore shorten the time and cost to discover potential drug candidates.”

– Dr. Mark Erion, Chief Scientific Officer, Metabasis



Samarinda Lodge creates a new model for senior care where help is always close at hand

Wireless solution from IBM and Vocera keeps staff and residents connected

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Samarinda Lodge is a not-for-profit residential aged-care facility in Australia. With only one caregiver per six residents, the facility needs its staff members to be able to communicate effectively with residents and with one another to ensure that each resident receives the highest quality care. However, the facility's existing communication system—cumbersome walkie-talkies sometimes combined with pagers and cell phones—did not allow residents to contact all staff members or allow staff members to contact one another quickly and easily. Samarinda Lodge needed a more effective communications solution to improve its responsiveness to its residents' needs.

Solution

Samarinda Lodge improved communication between staff and residents by working with IBM Global Technology Services to implement a hands-free, voice-based communications solution. Based on communication badges from IBM Business Partner Vocera Communications, the new solution enables staff members to easily call any resident's room, any other staff member or the front desk from almost any location, while continuing to attend to the task at hand. In addition, residents can use the phones in their rooms to call any staff member.



Benefits of innovation

- Improves the care provided to residents through greater responsiveness to their needs
- Reduces labor costs by 10 percent and helped attract and retain staff
- Won several awards for innovation in healthcare.

“The new communications solution has literally transformed our operations. Our staff wonders how we used to function without it, and our residents are absolutely thrilled.”

– Tanya Connor, CEO, Samarinda Lodge

Servicio Extremeño de Salud (SES): A brand new model for patient services

A large regional public healthcare organization makes major strides in patient care

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Servicio Extremeño de Salud (SES) provides public health-care services for the regional Ministry of Health (Consejería de Sanidad y Dependencia) in Spain. SES operates 14 hospitals and approximately 400 primary care centers in the region. Each facility had its own patient records system, and could not share data. This put up barriers to delivering high quality patient care. It also burdened doctors with manual processes, such as filling out forms for lab orders and reports for other healthcare professionals.

SES envisioned a new world where healthcare professionals would be empowered to act as one team, with one common goal: to improve the quality and efficiency of patient care. How to get there?

Solution

For SES, the answer lay in four major initiatives:

- 1. Introduce a regionally integrated health care information system.** Authorized professionals can now access relevant clinical information for any patient anywhere in the system.
- 2. Transform its financial and logistics information systems.** SES has standardized all hospital processes. Healthcare centers can share information easily and optimize financial and material resources.



- 3. Eliminate barriers between primary and acute care.** SES has introduced a new management model that optimizes the Human Resources function and its business processes.
- 4. Engage patients in healthcare processes.** Patients have improved access to online resources such as e-prescription and e-dispense.

Benefits of innovation

With its unified healthcare system, SES has:

- Enabled doctors, nurses and other healthcare professionals to provide the best service to their patients because up-to-date patient information is available throughout the region to all hospitals, medical care centers and administrative offices
- Automated and streamlined business processes, saving resources and reducing clinical variability
- Improved administrative efficiency, significantly reducing the amount of bureaucracy involved in clinical practice.

Smarter records management helps Shanghai First People’s Hospital improve patient care, lower costs

Large Chinese hospital overcomes challenges of duplicate patient records, improving operational efficiency

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People’s Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Shanghai First People’s Hospital had built many new applications in the past several years. But staff could not share patient data across these applications because there was no unique identification (ID) for each patient. There was also a great deal of duplication of patient records, even within the same database. This created major challenges in managing patient records.

To solve these issues, the hospital wanted to build a Master Patient Index, assigning each patient a unique ID. Based on this ID, all patient data could be fully integrated across all systems.

Solution

The hospital asked IBM to help clean and standardize patient records, match the patient records to other data and remove duplicate data. One of the big challenges for the project team was to resolve identity duplication and identification issues arising from the challenge of Chinese double byte characters, and the use of multiple names and aliases within Chinese society. To meet the challenge, IBM implemented its Identity Resolution and Matching Solution (IRMS).

This solution targets data to eliminate duplicate and incorrect information and merges records of the same identity. To date, the hospital has identified and merged about a half million duplicate pairs of records.

The result: the hospital is creating a trustworthy, large-scale identity repository and Master Patient Index.

Benefits of innovation

- Will improve patient safety and care by reducing errors previously caused by fragmented and scattered records
- Will standardize all data in 1.9 million records
- Will decrease costs through improved operational efficiency, reduced errors and regulatory compliance.

“As a result of the IRMS system, the hospital’s Master Patient Index will enable the hospital to improve patient care through the integration of patient records and by ensuring that all historical care information on each patient resides in one record.”

– Hua Yu, Shanghai First People’s Hospital



UPMC innovates and transforms to save, freeing up resources for patient care

Major university medical center saves millions of dollars in capital costs with new virtualized IT infrastructure

Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Challenge

Growth drives new opportunity but also increases business costs. Just ask UPMC, Pennsylvania's largest integrated healthcare delivery system. After acquiring several hospitals and other care facilities, UPMC was faced with rising costs and complex IT systems to support the healthcare system. Support resources were another challenge. More applications, more users, and more information meant more systems and more people to run them.

All this growth consumed UPMC resources and physical space. UPMC's leaders saw that rising IT costs were competing with the budget for clinical and research investments needed to reach UPMC's long-term goals around innovation and patient care.

Solution

UPMC joined with IBM in an eight-year, US\$402 million partnership designed to transform its IT infrastructure. Through aggressive consolidation and virtualization, UPMC has achieved more than a quantum improvement in resource efficiency. It has fundamentally changed the link between processing and resource needs. This game-changing move has allowed UPMC to rewrite the rules that govern its resource decisions—enabling it to meet an ambitious clinical agenda with a far lower rate of IT investment.

For example, after its industry-leading electronic health records initiative took off, processing and storage requirements more than doubled. The traditional approach to addressing those needs would have meant doubling server and storage

capacity. With IBM technology and architecture UPMC was able to meet IT needs while actually reducing the number of servers, databases and floor space. The resulting cost savings were huge, and those cost savings can be applied to further research and patient care.

Benefits of innovation

- Saves US\$80 million in capital and operating costs through virtualization-driven efficiencies
- Increases processing capacity 150 percent with no increase in IT support costs
- Reduces IT-related floor space 40 percent, freeing up space for revenue-generating services
- Reduces number of servers 67 percent
- Expects to increase average utilization per server from three percent to nearly 80 percent
- Integrates acquired healthcare operations faster than ever before possible.

“We were being crushed by our own infrastructure. We saw increasing demand all around us, while at the same time systems had to be more reliable and run faster. We didn't see any light at the end of the tunnel for additional funding or staffing, so it became a question of how do we do more with what we have.”

– Paul Sikora, VP of IT Transformation, UPMC



Executive summary	2
Government and Education	3
Healthcare and Life Sciences	22
• American Hospital Dubai	23
• École Polytechnique Fédérale de Lausanne (EPFL)	24
• Geisinger Health System	25
• GSMS Incorporated	26
• Guang Dong Hospital of Traditional Chinese Medicine	27
• Hannover Medical School (Medizinische Hochschule Hannover)	28
• Highmark	29
• Implanet	30
• Merit Foundation	31
• Metabasis Therapeutics, Inc.	32
• Samarinda Lodge	33
• Servicio Extremeño de Salud (SES)	34
• Shanghai First People's Hospital	35
• UPMC	36
• Western North Carolina Health Network	37

Western North Carolina Health Network (WNCHN): creating a virtual network of patient care

Sixteen-hospital healthcare network improves service delivery with an integrated solution to share patient data

Challenge

WNCHN is a collaborative organization of 16 hospitals and health-care providers. But if patients traveled between facilities, or visited an emergency room outside their primary care facility, their medical records were unavailable to the doctors there. This affected patient care. It caused delays in treating patients and often put patients at risk as doctors sought to gather medical information from the patient.

WNCHN needed a solution that would allow its facilities to create, store and exchange patient records electronically. The system would have to integrate with, rather than replace, existing health information systems.

The goal: create a secure, reliable virtual network of patient care across the region.

Solution

Working with IBM WebSphere® and MedSeek software, WNCHN launched Data Link, a clinical portal solution. This solution allows participating doctors and other authorized hospital clinicians to easily and securely access patient information electronically in a matter of seconds. It is based on an innovative “virtual” medical records system that uses data from hospitals’ existing records instead of creating a new, centralized data repository.

Data Link searches all the WNC hospitals’ information systems for a patient’s records and pulls them together in a standardized format in real time. Clinicians can access the records through any Internet-connected device.

Benefits of innovation

- Speeds retrieval of patient records—from up to 30 minutes to mere seconds, ensuring faster patient care in emergency situations
- Improves security of medical records with user IDs, passwords, monitoring of users and restrictions on access to patient records
- Provides a higher level of patient care through reduced medical errors and unnecessary treatments
- Lowers overall costs through reducing duplicate lab tests, improving data entry and document management, and reducing human errors.

“For several years, WNCHN has been exploring the exchange of electronic medical records. IBM and MedSeek have finally made it happen, quickly and securely, without replacing our existing record systems.”

– Gary Bowers, Executive Director, WNCHN





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