Cloud & Smarter Infrastructure

Turning Opportunities into Outcomes

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A new connected talent pool will accelerate the need for transformation

YOUNG POPULATION

- In 2010, **over half** of the **population** in emerging markets are **under 30**
- South Asia and Africa will add 187 million new workers in the next 2 decades
- **Interconnected** via **Mobile** devices, they are ready to make a leap to mobile **Banking** and other services


TELCO **BANKING**

EMERGENCE OF MIDDLE CLASS

- **By 2030, 93%** of the world's **middle class** will be **from emerging markets** up from 56% in 2000
- Fierce competition for talent requiring new skills development
- Increase in **need for Smarter Infrastructure** to cater to increased demand for govt. services and urban infrastructure


ENERGY **TRANSPORT**

MIDDLE CLASS & CONSUMPTION

- **By 2025**, emerging economies will account for nearly **50% of the world's consumption**
- That is 2 Billion people spending $20T which is **twice the current consumption of US**
- Young middle class are fueling **Retail** growth, including online shopping

RETAIL

AGEING

- **By 2040,** Korea, Taiwan, and Singapore will be vying with Germany, Italy & Japan for the title of **oldest country on earth.**
- For these aging countries, social / government related services (**Healthcare, Insurance**) will be key focus for the future
- Currently emerging market contributes to only 12% of global healthcare spending


INSURANCE **HEALTHCARE**

By 2025, 75% of the top 600 cities will be in emerging economies

Within 20 Years, a city of 5 million can generate the following benefits

ECONOMIC

- Potential in excess of $15 billion
- +9.5% GDP Increase

SOCIAL

- Creation of 375k new jobs

ENVIRONMENTAL

- Increased Energy Efficiency by 30%

Source: IBSG Study

Top 600 cities in the world

…will drive global growth to 2025

- Where 75% of these cities are in emerging economies
- By 2025, emerging market cities will have more higher end middle-income households than developed countries

…will attract:

- Talent
- Investments

Source: McKinsey Global Institute March 2011

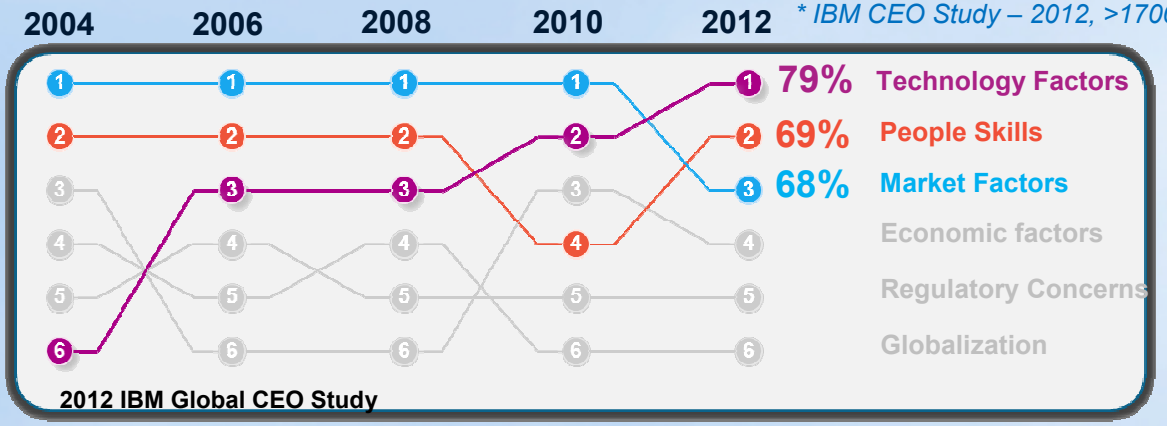
Smart City Best Practices

Songdo (South Korea) - around 40% of the city is green space; recycling the 'grey water' from sinks and dishwashers leads to significant reduction in drinking-water requirements; a pneumatic waste-collection system that sends refuse directly to landfill via a network of pipes

Curitiba (Brazil) - rapid bus-based transit, used by 70% of its residents; balanced, diverse economic development strategy; ranked as the 3rd greenest city in the world

Chongqing (China) – Started its smart traffic control system; Ordering a taxi in the city will be easy with a smartphone; integrated use of smart bus stops

Technology Will Play a Key Role…



For the first time, CEOs identify technology as the most important external force impacting their organizations

Faster Delivery

90%

CEOs view cloud as critical to their plans

Improved Reach

1 Billion

Smart phones , a +34% increase from 2011

Responsive Operations

20 B

Intelligent business assets

Expanding Risk and Cost

60 K

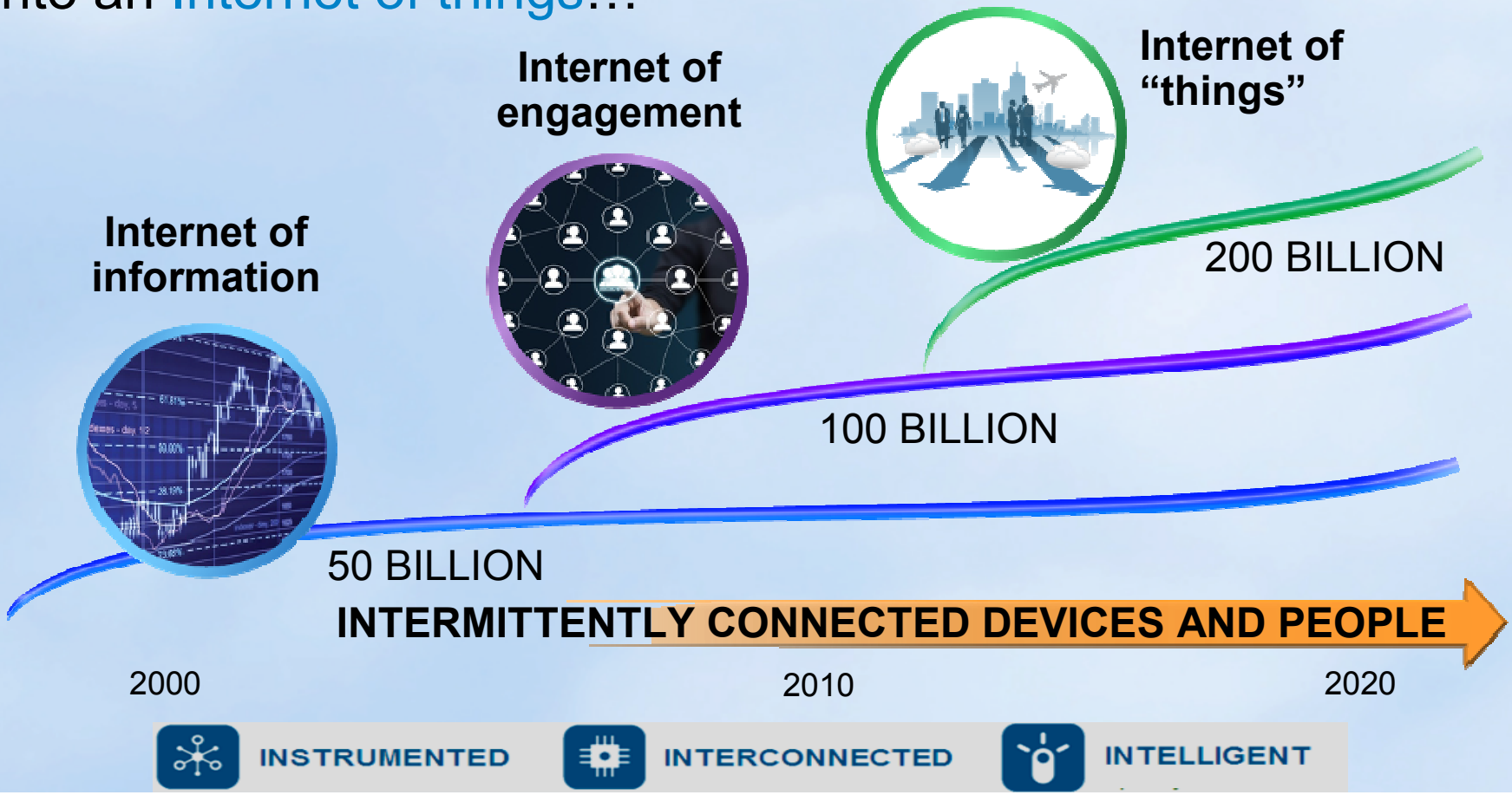
Cyber attacks per day on individual networks

New Insights

2.7 ZB

of digital content in 2012, a +50% increase from 2011

… and convergence of technology is transforming the world into an Internet of things…



…and is fueling an explosion of data—a new economic asset that has become the basis of significant opportunity

In just two days

we now generate as much data as was generated in total through 2003

80% of all data

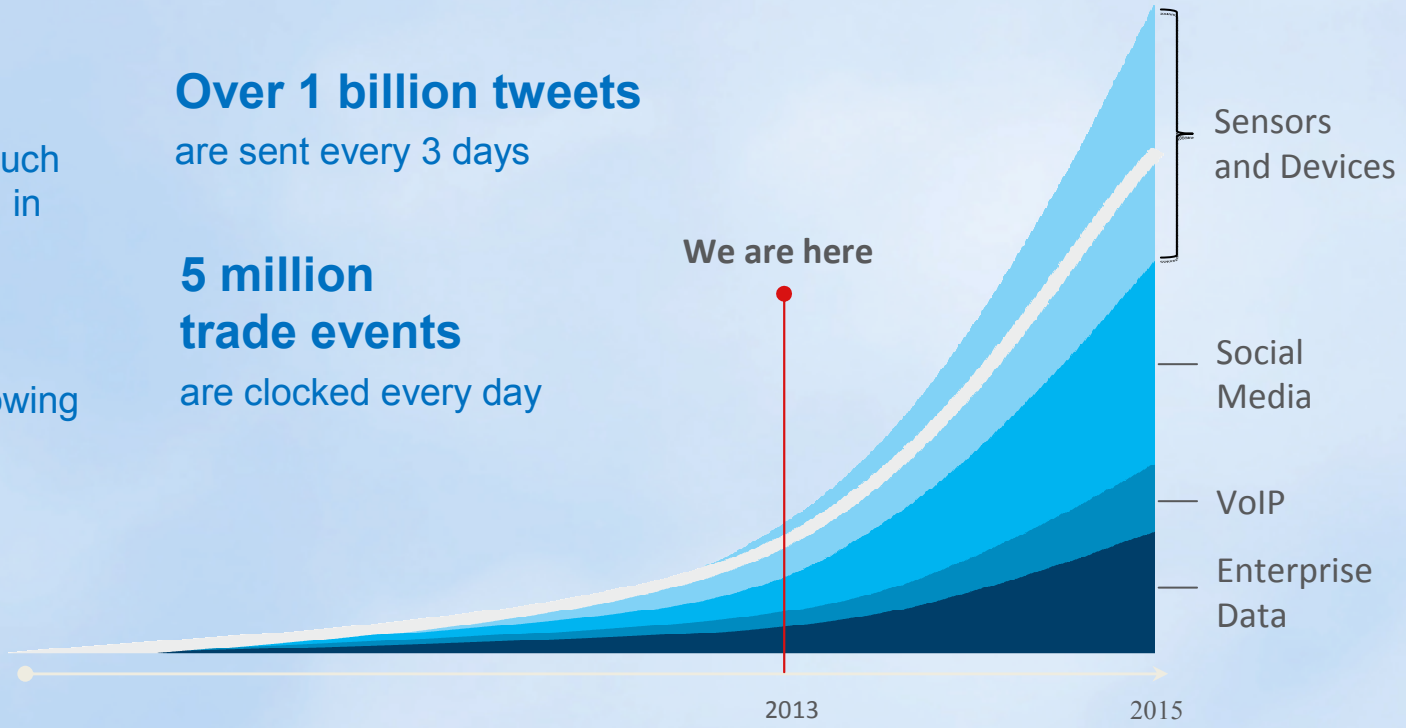
is unstructured and growing 15 times the rate of structured data

Over 1 billion tweets

are sent every 3 days

5 million trade events

are clocked every day



Traditional Systems of Record are being extended via New Modes of Engagement…

Systems of Record

- Data & Transactions
- App Infrastructure
- Virtualized Resources

Cloud Based Services

New Modes of Engagement

- Expanding Interface Modalities
- Big Data and Analytics
- Social Networking

Data & Transaction Integrity

Smarter Devices & Assets

The ability to balance Optimisation and Innovation will be critical to success…

Drives need for continuous

optimisation

Optimisation

Innovation

Fuels investments in

innovation

However, organisations are challenged in Optimising product & service delivery, and in turn, driving Innovation….

Customers → **Business** → **Development** → **Operations**

41% experience **development** delays

34% experience **deployment** delays

45% experience **production** delays





Source : A commissioned study conducted by Forrester Consulting on behalf of IBM, 4Q2011

A better approach to bridging business and IT is needed – one that balances Optimisation & Innovation…

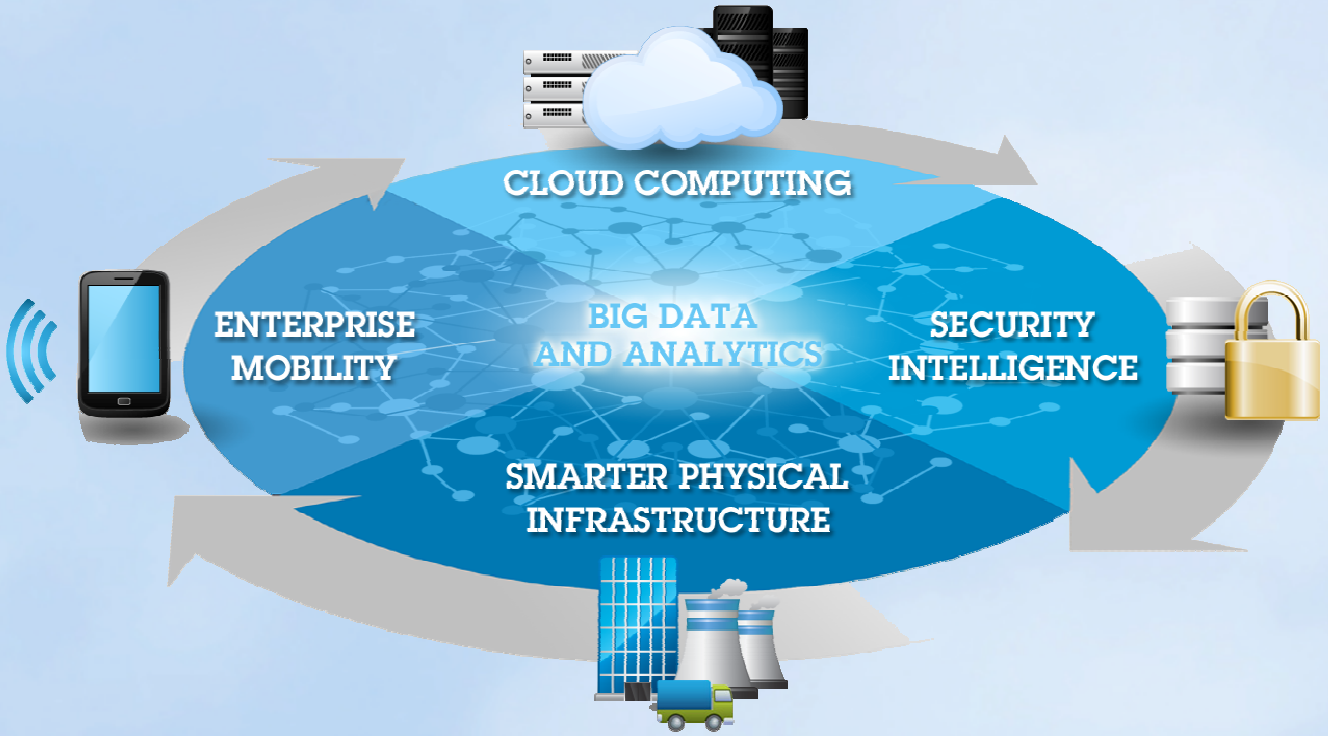
Visibility, Control & Automation will be central, because you cannot control what you cannot see. You cannot automate what you don't control. And if you cannot automate, costs skyrocket and innovation stagnates.

Visibility
to **see** and **understand** your business in **real time**

Control
to **transform** and **adapt** while limiting **risk & cost**

Automation
to **achieve** greater **efficiency** and **agility**

IBM provides an open, and holistic approach to managing the delivery of products & services across smarter infrastructures…



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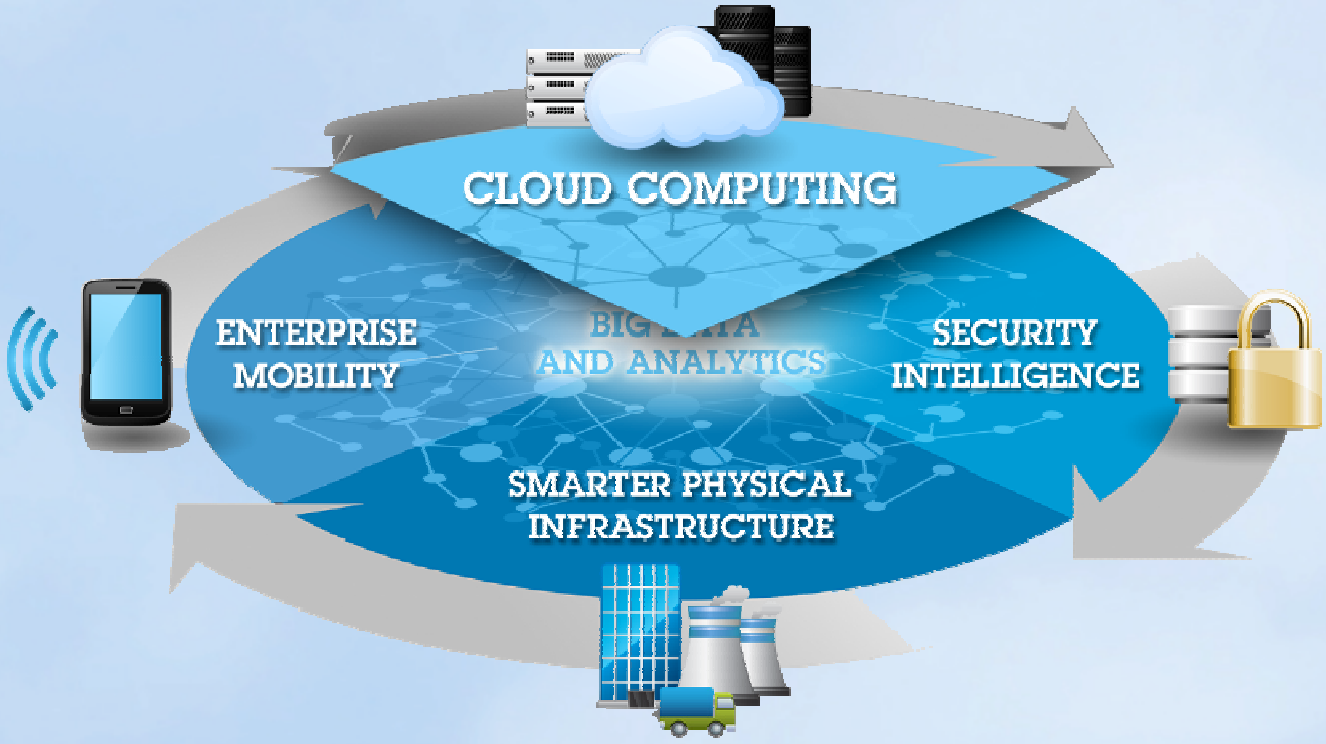


Cloud Computing Definition

NIST * (Technical Definition)

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. servers, storage, network, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Automation

Characteristics

On demand self-service

Broad network access

Resource pooling

Rapid elasticity

Measured service

Virtualization

Deployment models

Public Cloud

Private Cloud

Hybrid Cloud

Standardization

Service Layers

Business Process as a Service

Software as a Service

Platform as a Service

Infrastructure as a Service

** NIST - National Institute of Standards and Technology*

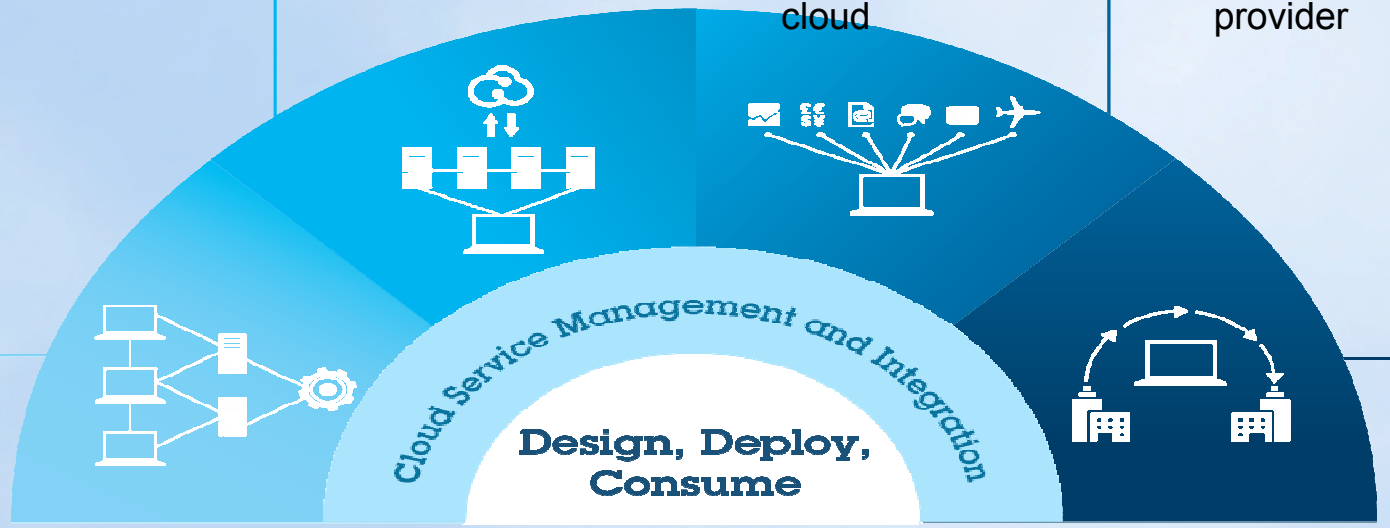
Adoption patterns are emerging for successfully beginning and progressing cloud initiatives.

IaaS: Cut IT expense and complexity through a cloud enabled data center

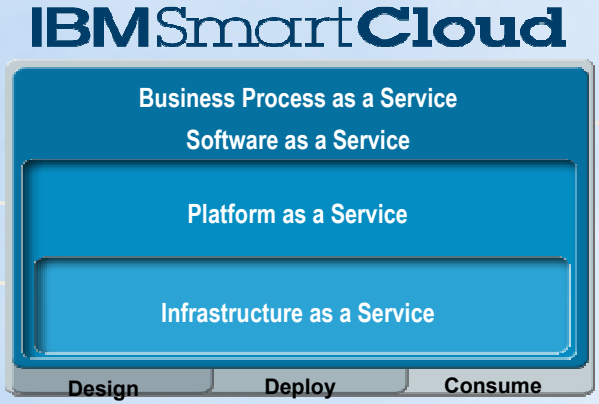
PaaS: Accelerate time to market with cloud platform services

SaaS: Gain immediate access with business solutions on cloud

Innovate business models by becoming a cloud service provider



IBM SmartCloud provides a complete set of capabilities for every stage of cloud adoption



IBM SmartCloud Foundation

Cloud Enablement Technologies

Enables private/hybrid cloud service delivery and management

PureSystems

IBM SmartCloud Services

Managed Cloud Services

Secure and scalable cloud managed services platform

IBM SmartCloud Solutions

Cloud Business Solutions

Pre-built Cloud SaaS business applications and solutions

IBM Business Partner

Cloud Computing: IBM SmartCloud Foundation

An integrated set of capabilities for enabling private/hybrid clouds and the virtualization, automation and management of service delivery

- **Resilient** to speed of change
- **Choice & flexibility** of servers, networks, storage & middleware
- **Workload-aware**
- **Analytics**
- **Patterns of expertise**

- **Interoperable** capabilities based on Standards & Cloud Reference Architecture

Cloud Standards Customer Council — Common Cloud Management Services built on a standards reference model

openstack CLOUD SOFTWARE

Open Service Lifecycle Collaboration

OASIS

ISO

Cloud Computing: Client Case Studies

National Australia Bank

IaaS Private Cloud

- Business Challenge: data centre cost, technology currency, sub-optimal resource utilisation, many sites.
- IBM developed a **private cloud to** host infrastructure, software and related services that can be tapped on-demand.
- Flexibility as services could be bought on a **consumption basis** as opposed to capital expenditure.
- Tivoli software used to **manage and provision** services

Dancom

Full Cloud Platform, IaaS, PaaS, SaaS Public Cloud

- Business Challenge: Many SMBs don't want to own & deploy there own infrastructure due to cost and implementation complexity. Dancom saw an opportunity to provide Tivoli software as a service.
- Various Dancom's re-seller s wanted to leverage this service to improve their own service and cost structures.
- Implemented full cloud infrastructure - virtualisation, (VMWare, KVM), monitoring, orchestration, charge back, storage back-up/restore, service desk, end point mgt, IT asset mgt.

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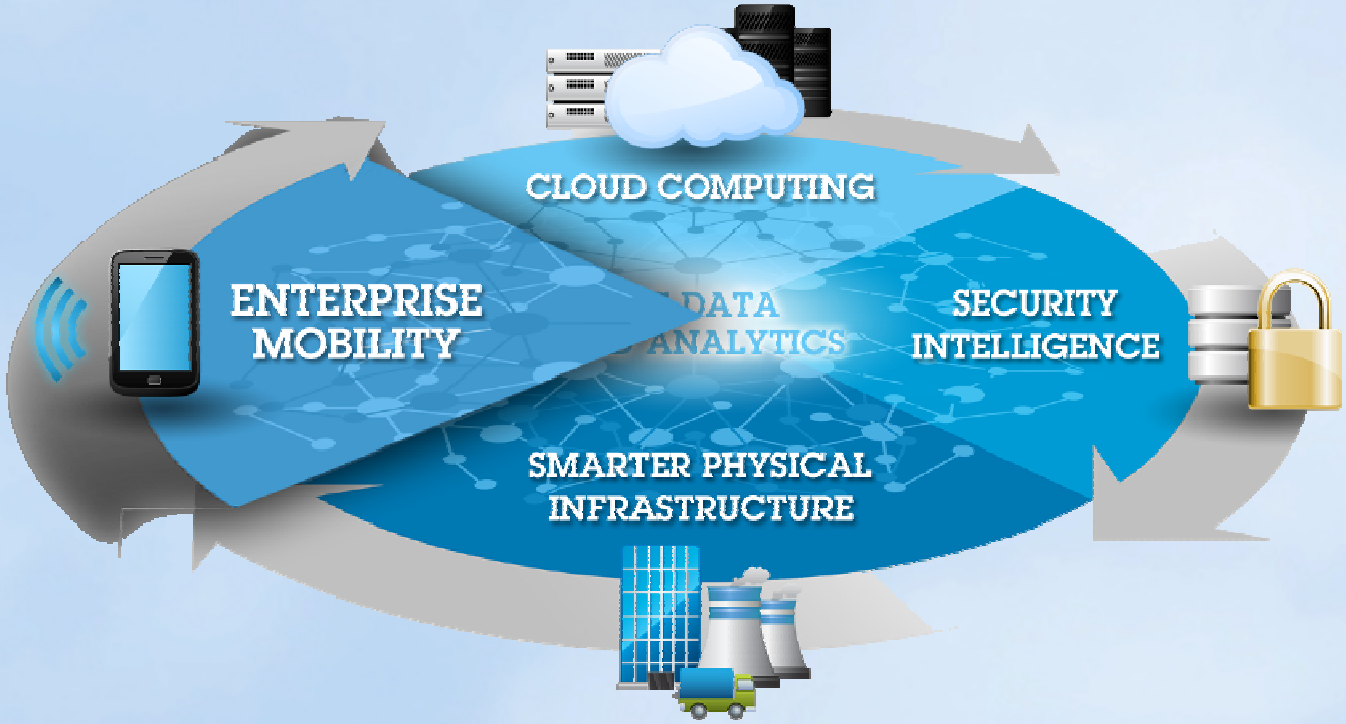


Businesses are Struggling with Unique Mobile Challenges

Nearly ½ of all devices accessing applications are mobile

Fragmentation of devices and platforms

Speed and frequent iteration of the mobile lifecycle and continuous delivery

Connectivity to back-end systems and cloud

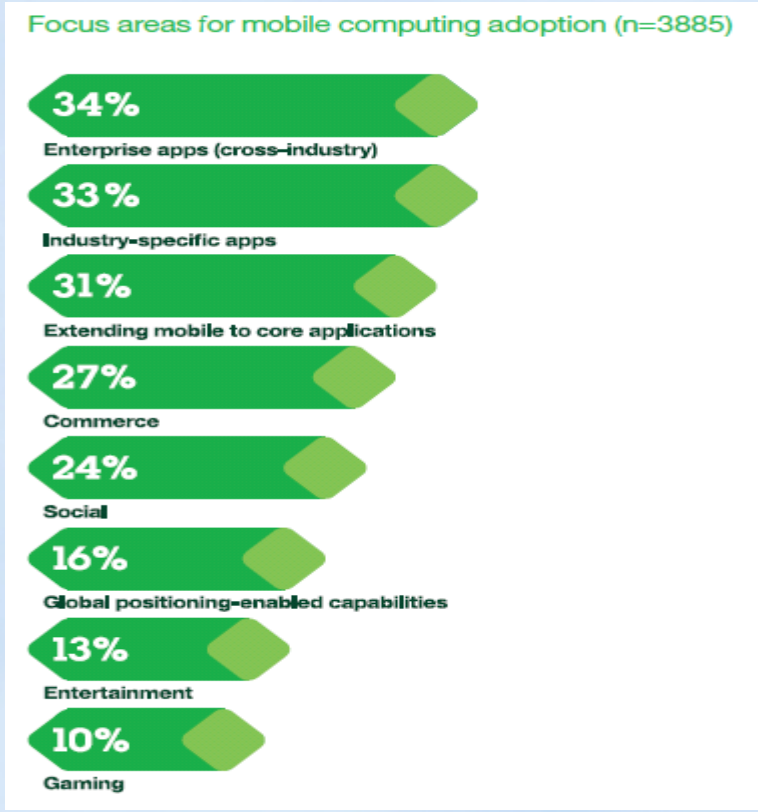
Security to protect corporate data and managing BYOD

Delivering high quality apps and rapidly incorporate customer feedback

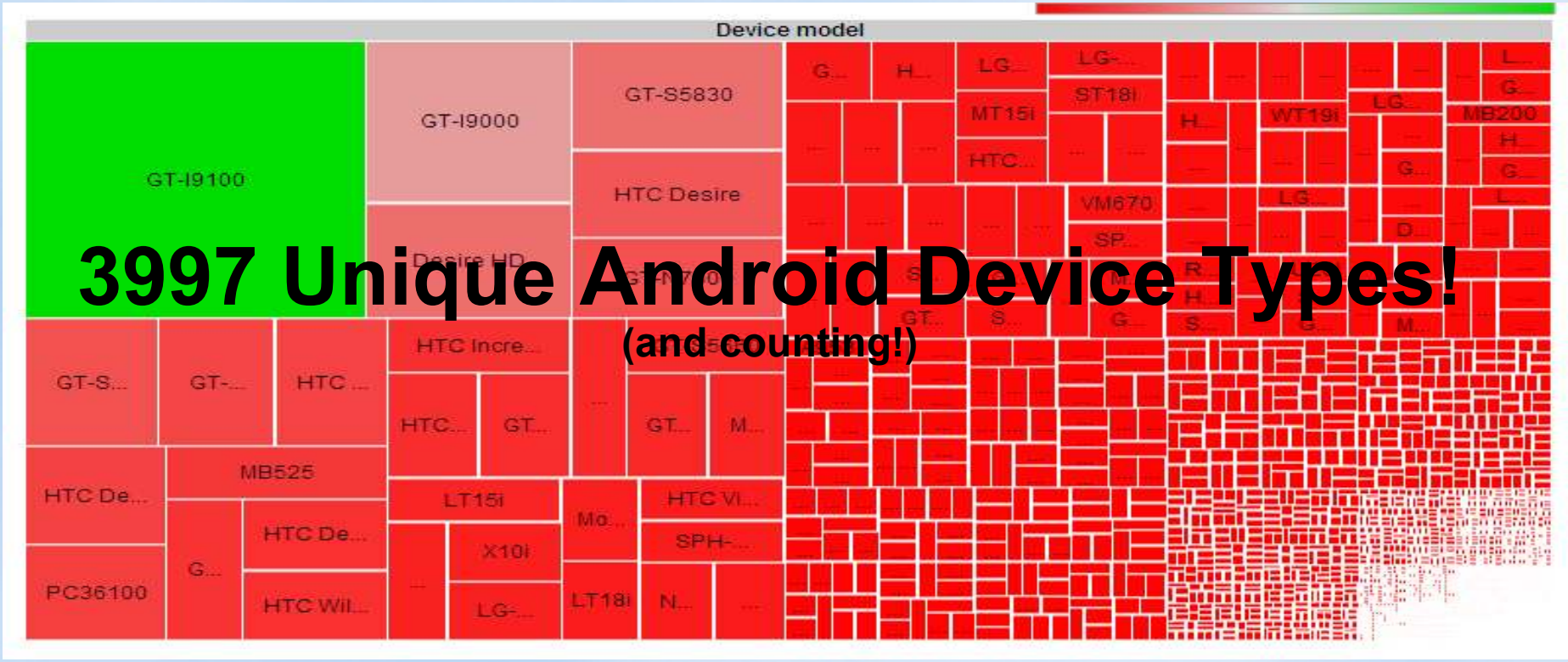
Mobile Context taking advantage of unique capabilities such as geo-location

- Search for store
- Order and pay while walking
- Collect & consume

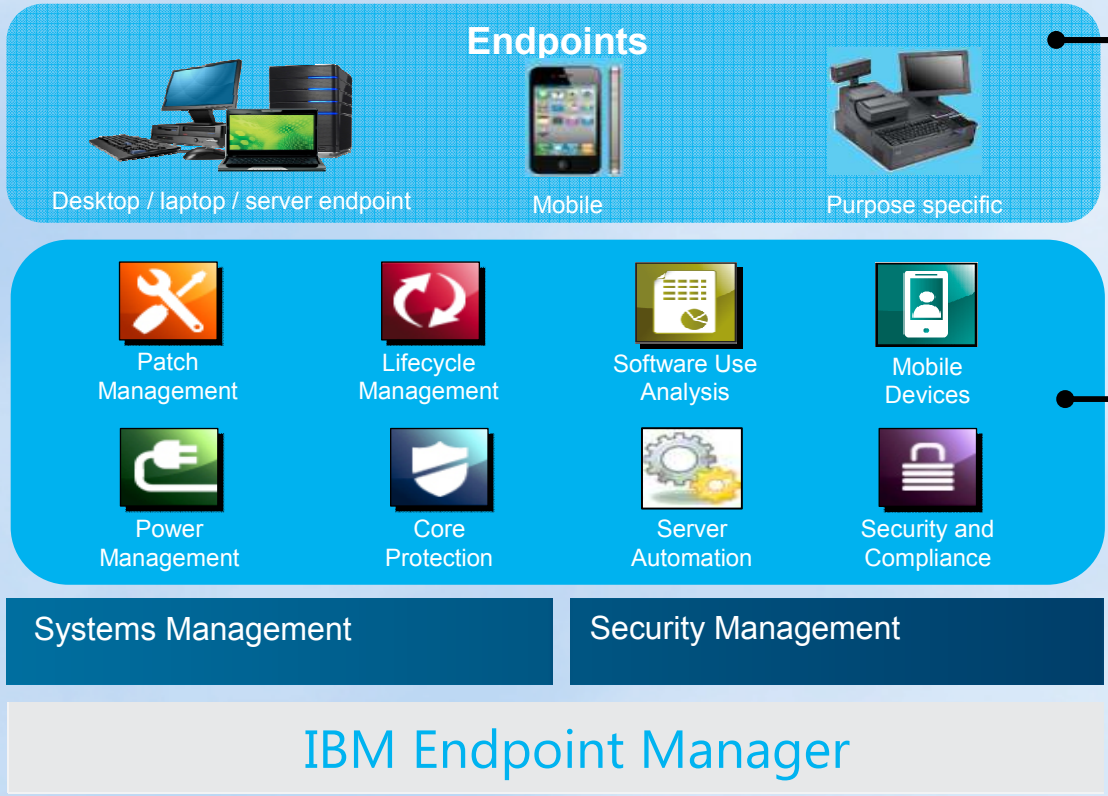
Focus: Platform & Usage Model



“Device diversity” - Android Fragmentation



IBM Endpoint Manager continuously monitors the health and security of all enterprise computers in real-time via a single, policy-driven agent



Integrated Approach!

- Common management agent
- Unified management console
- Common infrastructure
- Single server

Why IBM Endpoint Manager ?

Li & Fung (Hong Kong)

Supports **37,000 endpoints** across 40 economies - mix of Windows, Linux, Mac and mobile

Rollout to 15,000 devices **completed in just 15 days**

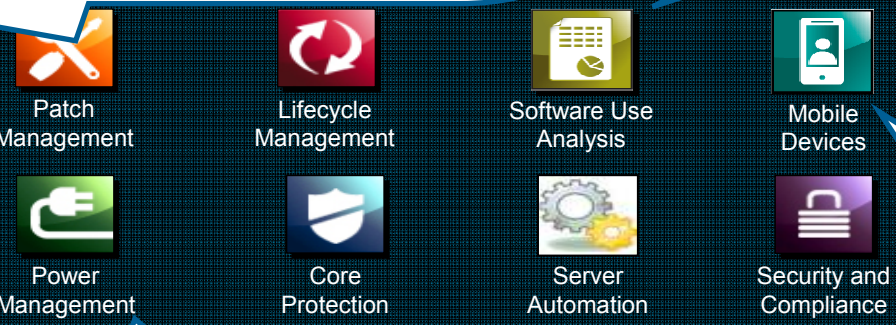
Went from **79 to 3 management servers** supporting all the endpoints and from **6 to 1 administrators**

Achieved **real-time reporting** and close to **100% first-pass patch rollout success** from 70% before

Concord Hospital achieves **98% first-pass patch rollout** success in hours on their Microsoft and 3rd party patches

Hutchinson Builders can now **easily track** the software installed and running computers across the **company's 16 offices** and up to **160 construction sites**

- Common management agent
- Unified management console
- Common infrastructure
- Single server



IBM has deployed Endpoint Manager to over 700,000 endpoints on three servers (o/w 70,000 are BYOD). Expects to save over $10M in Year 1

Over 13,000 mobile devices enrolled in 72 hours!

Bendigo Bank expects **to save $175,000** off its power bill **within 12 months** and avoided **2190 tonnes of carbon emissions**

Enterprise Mobility: The Industry's Most Comprehensive Mobile Portfolio

1

The Broadest Portfolio of Mobile Solutions

2

The Deepest Set of Services Expertise

3

New Industry Partnerships and Resources for Developers

IBM MobileFirst

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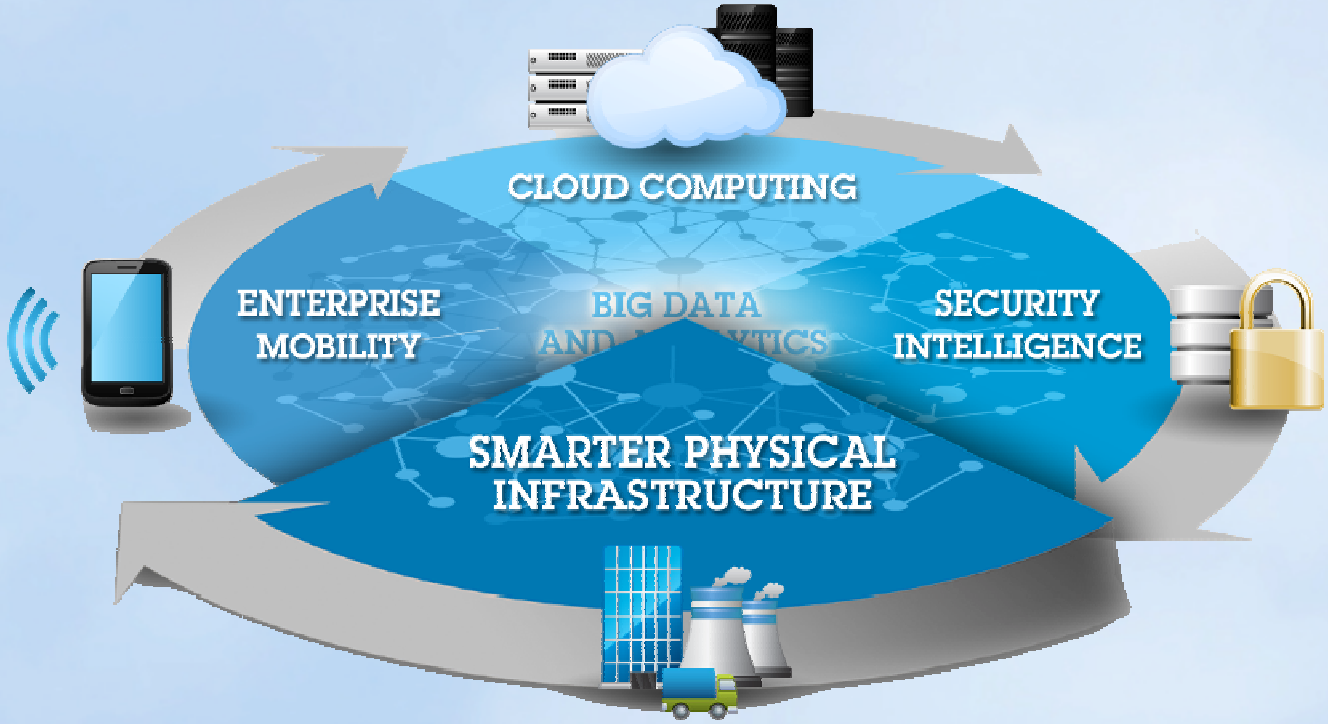


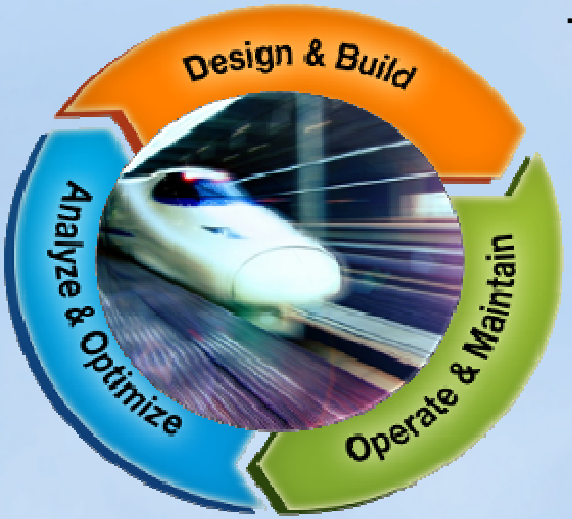
Smarter Physical Infrastructure:
Instrumented, Interconnected, Intelligent

Capabilities helping organizations manage plants, facilities, data centers, or cities operating effectively.

IBM maximo TRIRIGA

- Asset, work and inventory management
  - **Complex & embedded systems**
  - **IT & Enterprise assets**
  - **Facilities & real estate**
- Procurement, Materials, Contract, Mgt
- Dashboard views of **service health**
- Predictive **analytics** & reporting
- **Mobile** workforce support
- Event filtering and correlation
- Process & workflow **automation**, and rules management

Smarter Physical Infrastructure: End-to-end asset management



Facilities & Real Estate

Offices, Warehouses, Retail Stores, Land, Hospitals, Schools, Military Bases

Transportation & Fleet

Airports, Airlines, Seaports, Fleets, Railroads, Transit

Linear Assets

Runways, Roads, Tunnels, Electric/Gas Distribution, Telecom, Water

Plant & Production

Industrial, Mining, Chemical, Petroleum, Electronics, CP, Life Sciences, Power Gen

IT & Network Equipment

Laptops, Desktops, Servers, Networks, Routers, Software, Licenses

Why is real estate environmental sustainability important for organisations to manage?

Top 4

cost of business for two-thirds of organisations

35%

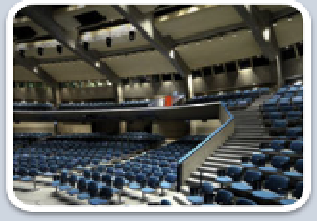
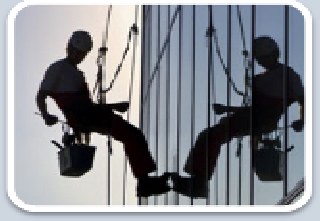
of an organisations balance sheet assets are typically real estate and facilities

48%

of an organisations greenhouse gas emissions are produced by buildings

[1] Source: CFO Research Services
[2] Source: NACORE
[3] Source: US Energy Information Administration

Smarter Physical Infrastructure: Enabling smarter buildings

Environmental & Energy Management	Facilities Management	Facilities Maintenance	Capital Project Management	Real Estate Management
Real-time energy & operating analytics	Space utilization	Asset management	Condition assessment	Strategic portfolio planning
Event filtering & correlation	Capacity planning	Work management	Capital planning & budgeting	Budgeting and forecasting real estate expense
Utility consumption tracking	Move, add, change	Inventory management	Construction estimating & project management	Lease & contract admin
Carbon measurement	Reservations	Supply chain		
Environmental investment analysis	CAD integration	Key management		
BMS integration		Condition monitoring		
		BMS integration		
Achieve Sustainability Goals	**Increase Utilisation of Facility Assets**	**Extend the Life of Critical Assets**	**Generate Highest Return on Invested Capital**	**Build More Effectiveness into Real Estate Operations**

Smarter Physical Infrastructure: Client Case Studies

Kiwi Rail

Preventative Asset Monitoring, Management & Reporting

- **Doubled** maintenance **crew productivity** through more effective planning and scheduling and near-real-time visibility into assets
- Improved operational **safety and performance** with preventive and predictive asset maintenance practices
- Increased the speed of generating accurate quarterly **compliance reports by more than 83 percent**

Certus Solutions Ltd
Cortell NZ Ltd

NT Power and Water

Predictive Facilities & Energy Management

- Service 80,000 customers spread across more than 1.3 million km
- Gained precise geographical **visibility of all dispersed assets** via Spatial Asset Management
- **Improved customer service** due to more proactive asset maintenance and saved operating expenses

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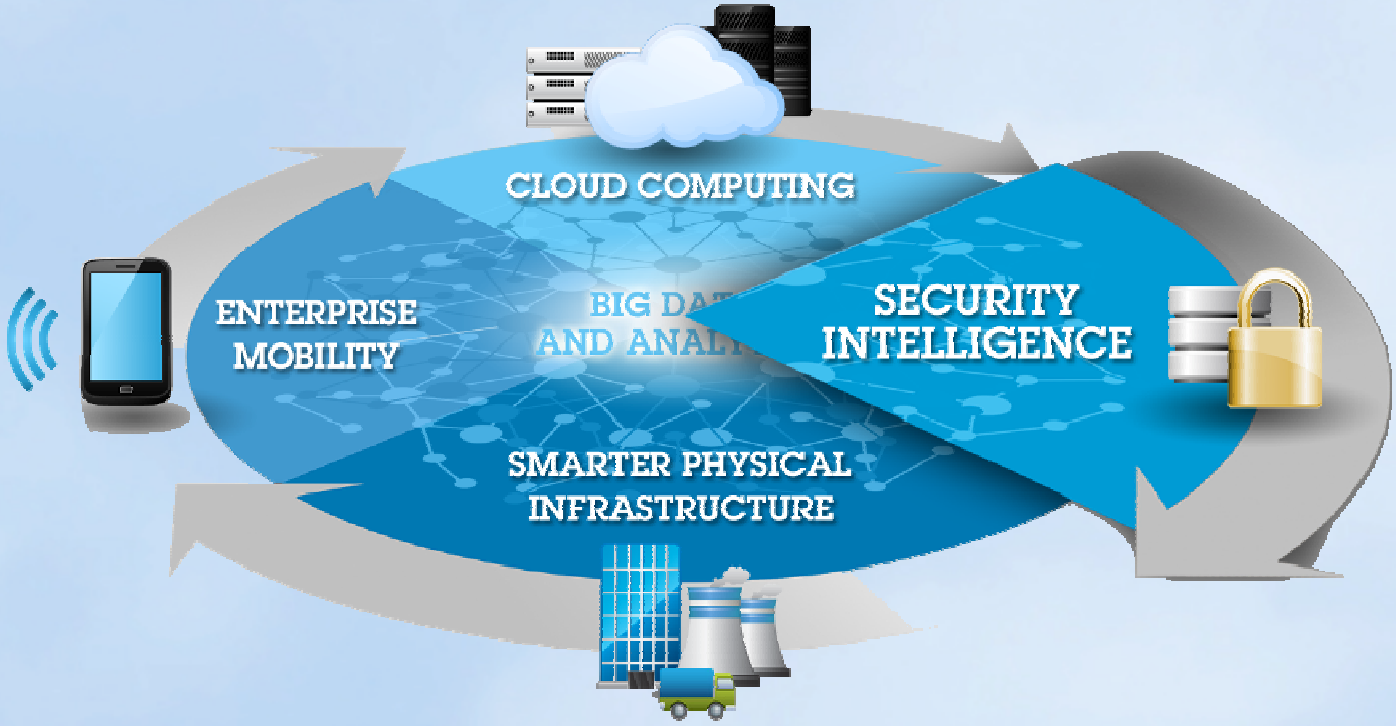
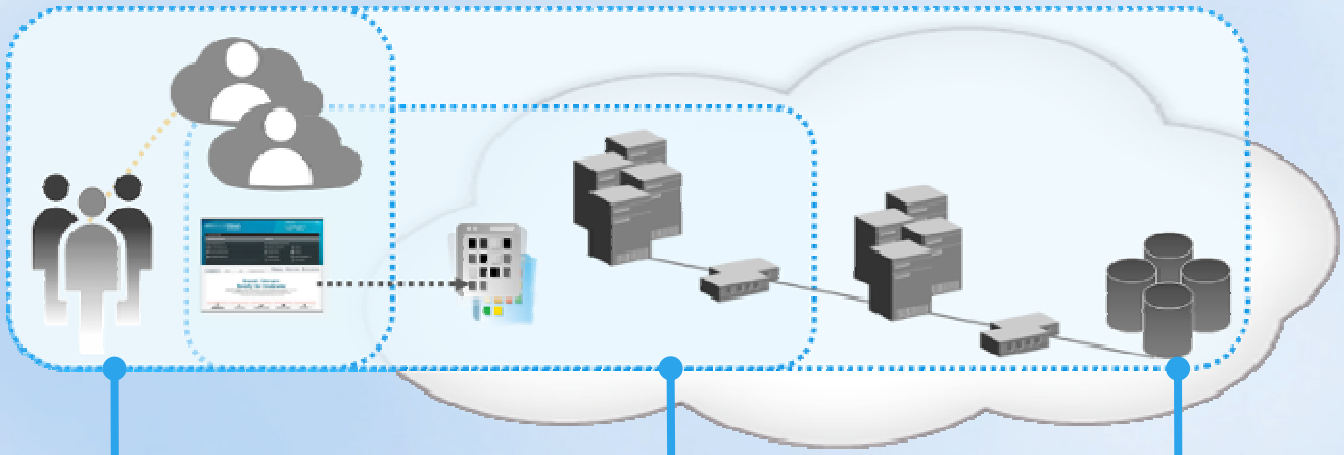


Security Intelligence: Across big data, mobile & cloud

Award-winning **X-Force®** **research**
One of the industry's **largest vulnerability databases**

Security Intelligence: Ensure cloud security



Identity Protection

- Administer, extend and help secure identity and access to / from the cloud

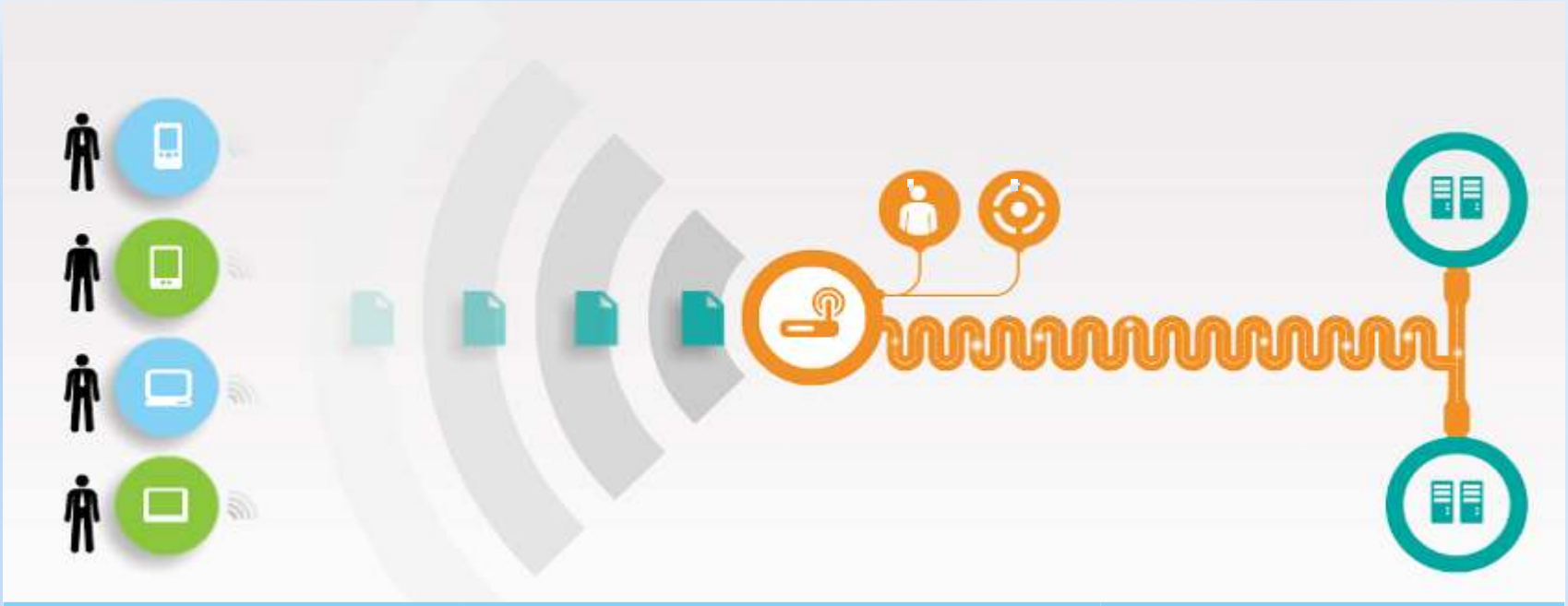
Data and Application Protection

- Help secure enterprise databases
- Build, test and maintain cloud applications

Threat Protection

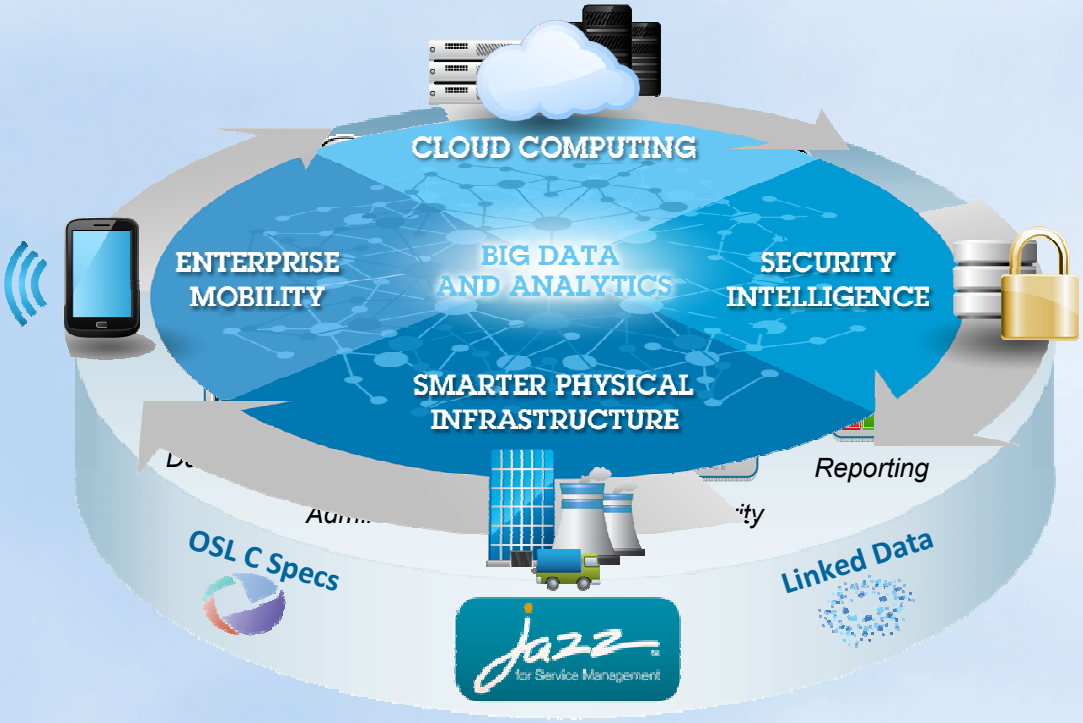
- Help prevent advanced threats with layered protection and analytics

Security Intelligence: Control mobile access



Device Management	Network, Data, and Access Security	Application Layer Security
Security for endpoint device and data	Achieve visibility and adaptive security policies	Develop and test applications

Only IBM provides a holistic approach that enables Visibility, Control & Automation across smarter infrastructures…



React
with agility to changing landscapes

Achieve
outcomes from limited investments

Reduce
unnecessary risk and cost

Thank You!