IBM BusinessConnect 2014
A New Era of Smart

5th May 2014 | Armani Hotel Dubai

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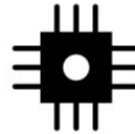# A Smarter Planet needs a Smarter Infrastructure

Ken Donnelly, Worldwide Sales Leader
Smarter Infrastructure

IBM

The world is changing and becoming smarter, which brings significant opportunity

INSTRUMENTED

Digital technologies (sensors, embedded systems, and monitoring instruments) are being embedded into every object, system and process.

INTELLIGENT

All the data generated by digital and operational technology is an enabler for better outcomes, improving our responsiveness and our ability to predict and optimize for future events.
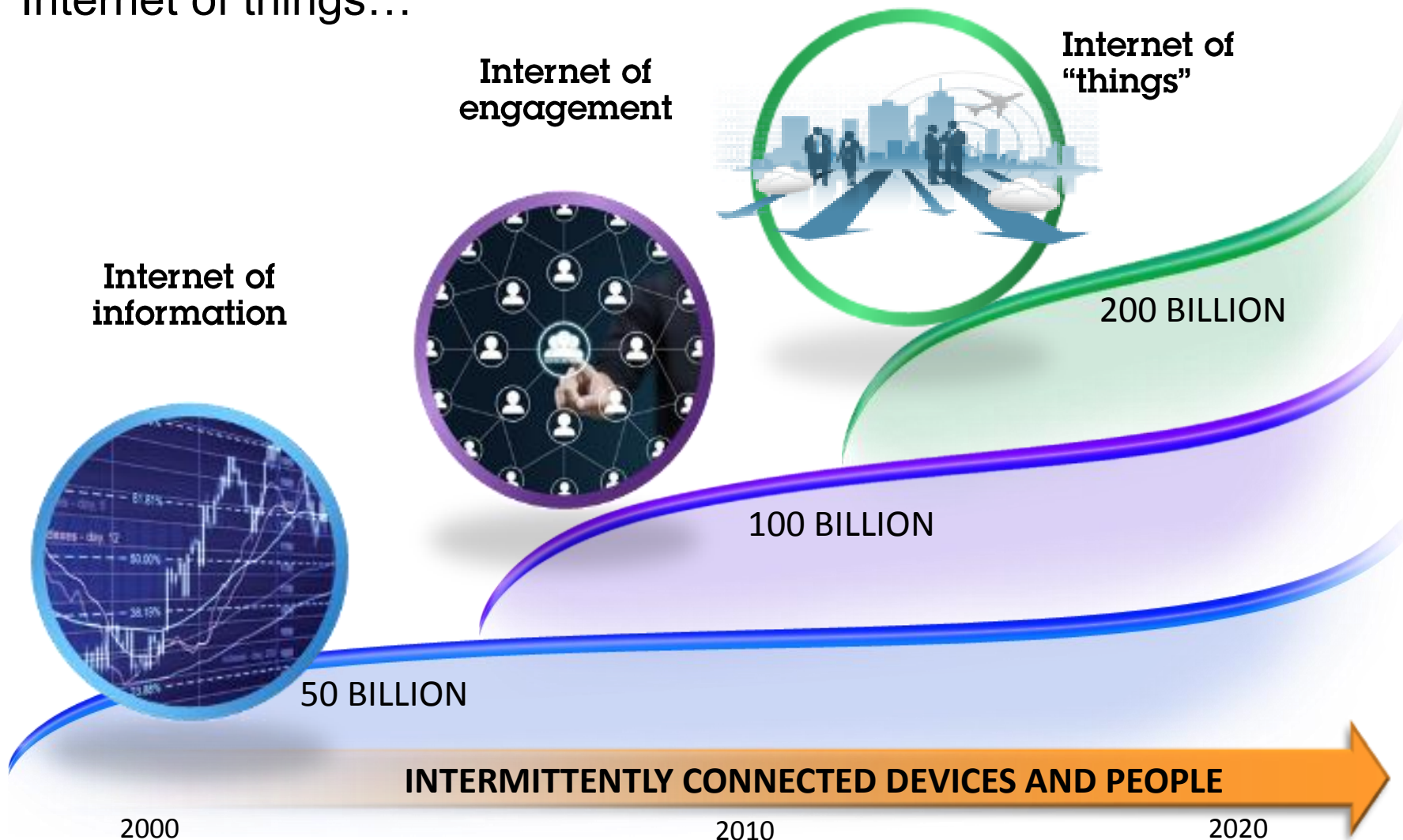
INTERCONNECTED

In the globalized, networked world, people, systems, objects and processes are connected, and they are communicating with one another in entirely new ways.

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

Internet of engagement

Internet of "things"

Internet of information

200 BILLION

100 BILLION

50 BILLION

INTERMITTENTLY CONNECTED DEVICES AND PEOPLE

2000   2010   2020

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A World fueled by disruptive technology

Disruptive technology is within our infrastructure…

Operational Technology

Problem
• **Complexity**: Technology is pervading electro-mechanical products and equipment – 'operational technology' is increasing sophistication across the 'life cycle'
• **Manage and Secure**: 'OT' requires process and tools thru the life cycle, as back office 'IT' staff and practices collide with the front office to design, build, operate, and maintain

Connectivity

• **Connect**: Connecting products, equipment, and people in new ways
• **Capture:** Capture and store volume and variety of data from 'things
Consume: Provide efficient access to data, and devices, for consuming applications and analytics

Unlocking Insights from Data

Problem
• **Signal vs. Noise**: what data is required vs. excessive
• **Generating insights**: applying analytic capability and models aligned to patterns
• **Action:** Transform insights into outcomes with timely automated action

Changing Business Models

• **Adoption**: Operational technology is underpinning new innovation – leaders will leverage, laggards will delay
• **Collaboration:** Market is looking to connect and collaborate across the information supply chain, breaking down traditional barriers
• **Risk**: Operational risk increases as business rely on increasingly complex infrastructure and face cultural change

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A World fueled by disruptive technology

- Persistent challenges remain to maximize life cycle performance of complex products and physical infrastructure
  - No longer afford the status quo, due to intense economic, regulatory, and competitive pressure

- Organizations are investing in complex products and physical infrastructure that is increasingly instrumented, interconnected, and leveraging 'operational technology'
  - Value creation is being limited by process, information and cultural silos

- IBM believes there is a new approach to solve these persistent challenges, we call this '**Smarter Infrastructure**'
  - Enabling process and data integration within and across the life cycle
  - Managing and securing 'operational technology'
  - Turning vast amounts of operational data into insights, and outcomes

Adopting and managing a Smarter Infrastructure enables better outcomes

Operational agility to develop, test, and deploy new business models	Improve return on assets (ROA) with more accurate and timely insights	Manage increasingly complex infrastructure and diverse workforce
Develop products more aligned to client functional and serviceability requirements	Improving alignment of CAPEX and OPEX with organizational priorities	Improve time and cost from design to startup

React
with agility for changing requirements, regulations, and budgets

Achieve
required outcomes from limited investments

Reduce
unnecessary risk and cost, and 'time to value' for new facilities or mods

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Outcomes align to patterns of innovation, within industry context

Industry icons: A&D · Auto · Electronics · Telco · Transportation · Utilities · Cities · Natural Resources

Outcome	Priority for Industry	Secondary Priority
Operations and Maintenance Optimization	Transportation, Utilities, Natural Resources	Telco
Connected Communities	Cities, Transportation, Utilities	
Product Life cycle Innovation	A&D, Auto, Electronics, Transportation	Natural Resources, Utilities
Operational Technology Utilization & Management	A&D, Transportation, Utilities, Cities, Natural Resources	Auto
Connecting Assets & M2M	Auto, Electronics, Telco, Transportation, Cities	A&D, Utilities
Predictive Analytics and Action	Transportation, Utilities, Natural Resources, Telco, Cities	A&D, Auto, Electronics

Innovating to create a new business model

Business Challenges

- **Grow services revenue from 10% to >50%** of revenue (in less than six years) – per challenge from Board
- Effectively, move to selling 'thrust' availability vs. selling an engine and spares
- Operational technology is essential to manage the servicing and maintenance of the engines

Opportunities for Innovation

- Client has identified an **additional $$$ of expense** to address through a combination of:
  - Engineering "design for service" (rather than "design for manufacture")
  - Accurate parts traceability
    - Currently only 1% of parts are traced through the 30 year lifecycle

A Smarter Infrastructure enabled business model

1) Fault identified and communicated in near real time.

2) Process optimization and analytics identifies approach to minimize disruption and cost.

3) Field technicians notified and resources aligned for work plan.

4) Field tech completes work to restore service. Analytics identify other engines that may develop this failure – to proactively address.

Turning a Government mandate into a business opportunity

Business Challenges

- Implementation of Positive Train Control (PTC), a collision avoidance system, **mandated by the U.S. Government**, to be completed by YE 2015
- PTC-based systems need to interoperate with existing 'aged' signal & train control technologies
- PTC Requirements will cover route-mile networks, locomotives, and freight cars
- Support mobile workforce

Opportunities for Innovation

- US $B investment in the PTC implementation
- Improve audit & compliance requirements by acquiring equipment within the PTC specifications
- Improve service quality and operating costs through failure analysis; e.g. design flaws
- Improve safety through better decision making based on real time environment and asset data – consists, tracks, signals, switches
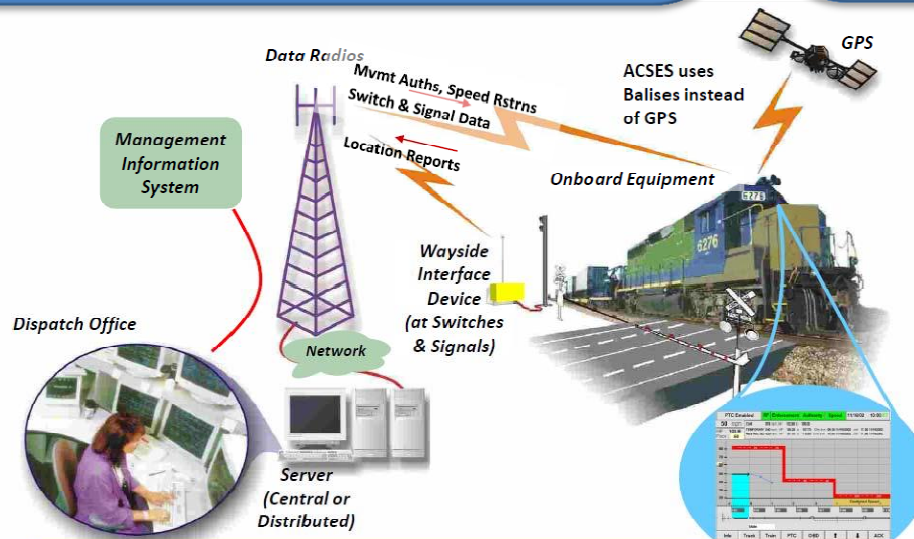
On board equipment governs train movement and speed, ensuring it operates within the track limits.

Reducing energy use thru space and energy optimization

Business Challenges
- Accurate visibility of owned and leased space (facilities, buildings, land)
- Maximize utilization of space and energy, and aligning space usage to business requirements
- Reducing operational and capital expense associated with buildings and land
- Time to provision and or modify space for use
- Managing lease processes and accounting

Opportunities for Innovation
- Reduce overall energy use with end to end approach and real time optimization
  - Optimize use of existing space
  - Analyze historical & real time energy use for insights and action to cut usage
- Reduce 'time to occupancy' with integrated approach to construction projects
- Implement new FASB/IASB accounting standards

Deliver and maintain best practice, efficiency and cost reduction
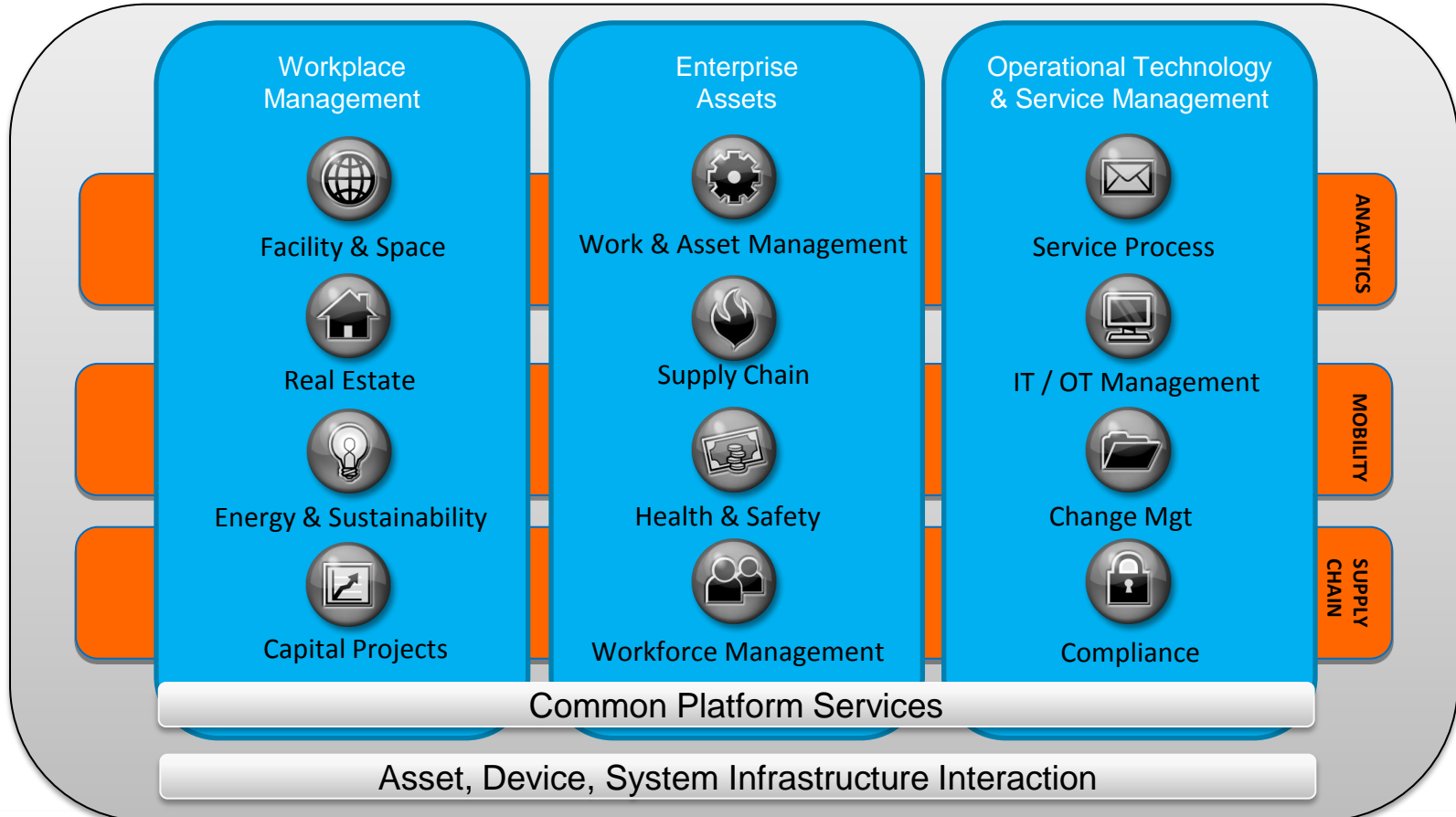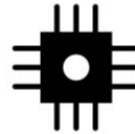
The world is changing and becoming smarter, which brings significant opportunity – **to those who adopt, manage, and change**

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Patterns of innovation

Pattern	Value Statement
Operations and Maintenance Optimization	Increase productivity and reliability of assets and infrastructure without jeopardizing service quality or compliance. Reduce and more effectively utilize CAPEX and OPEX
Connected Communities	Drive sustainable economic growth, and citizen centricity across operations. Enable leaders to analyze data, including social sentiment, to proactively resolve issues and opportunities and coordinate resources to operate effectively.
Product Life cycle Innovation	Accelerate innovation and time to market for products by coordinating processes and information across design domains and the product life cycle
Operational Technology Utilization & Management	Enable visibility, control, and automation to effectively manage the increasingly complexity of asset infrastructure, devices and products.
Connecting Assets and M2M	Connect diverse devices to a network, with two way communication, to enable process automation and feed information to business applications and analytics
Predictive Analytics and Action	Generate insights to identify and execute operational efficiencies, and opportunities for innovation, across people, processes, and infrastructure.