



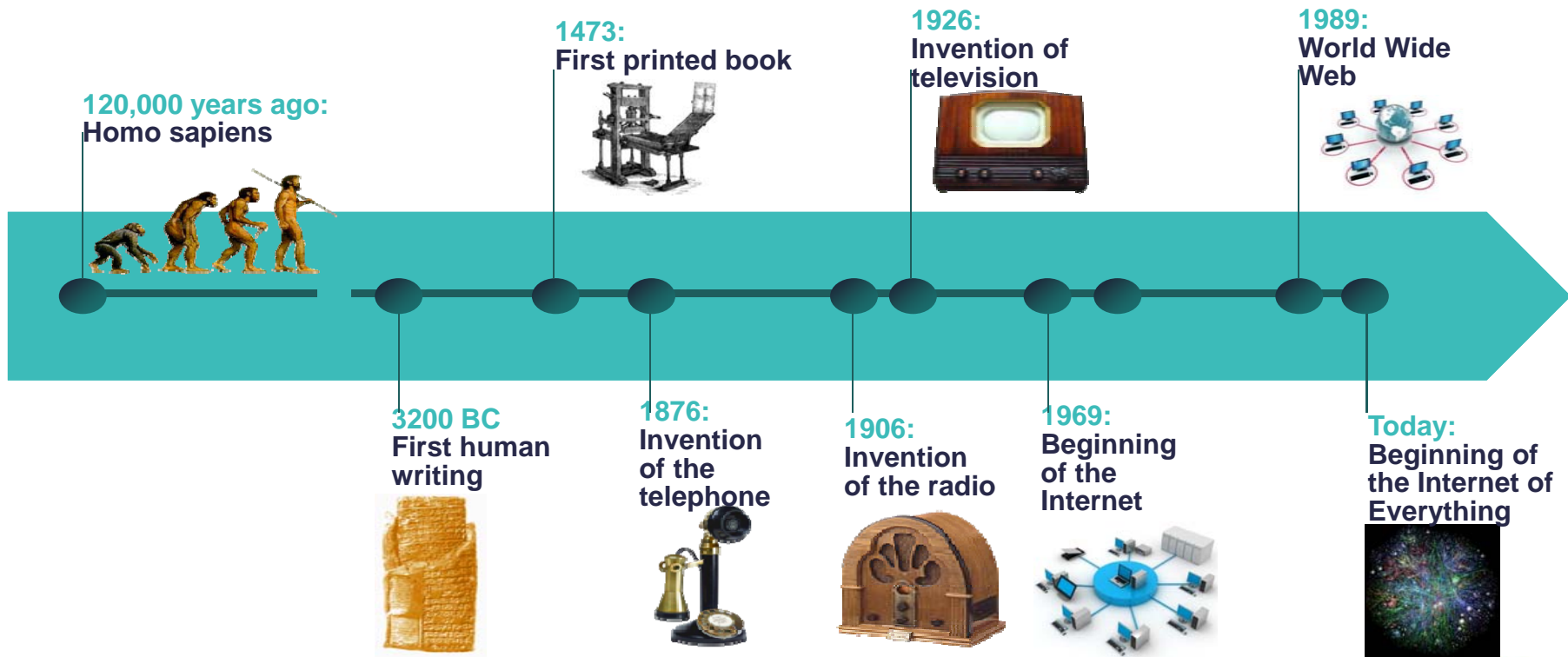
El Internet de las Cosas

Conectando lo Desconectados

Alvaro Retana
Distinguished Engineer
Cisco Services



Innovations in Communications Have Transformed Humanity



...and the Pace of Business Is Accelerating...



210 billion

email messages per day



560 apps downloaded every second. An estimated 77 billion downloads in 2014

As of the end of 2013, we create more new information every 10 minutes than we did in all of human history, up to 2008

releases every week



Home to **140 billion** photos, 10B per month

We take **500 billion** photos a year



2/3 of the world's mobile data traffic will be video by 2015

We store **92%** of this new information

...Making It Challenging To Succeed

\$30 million

Scale is expensive—cost to UPS if each driver goes 1 more mile a day

75%

Loyalty is cheap—percent of customers who would switch their smartphones for a real-time discount

\$2 trillion

Business friction slows progress—cost of conducting cross-border business

50%

Adoption cycles accelerating—Telephone: 70 years; TV: 25 years; Internet: 12 years, cell phone: 5 years

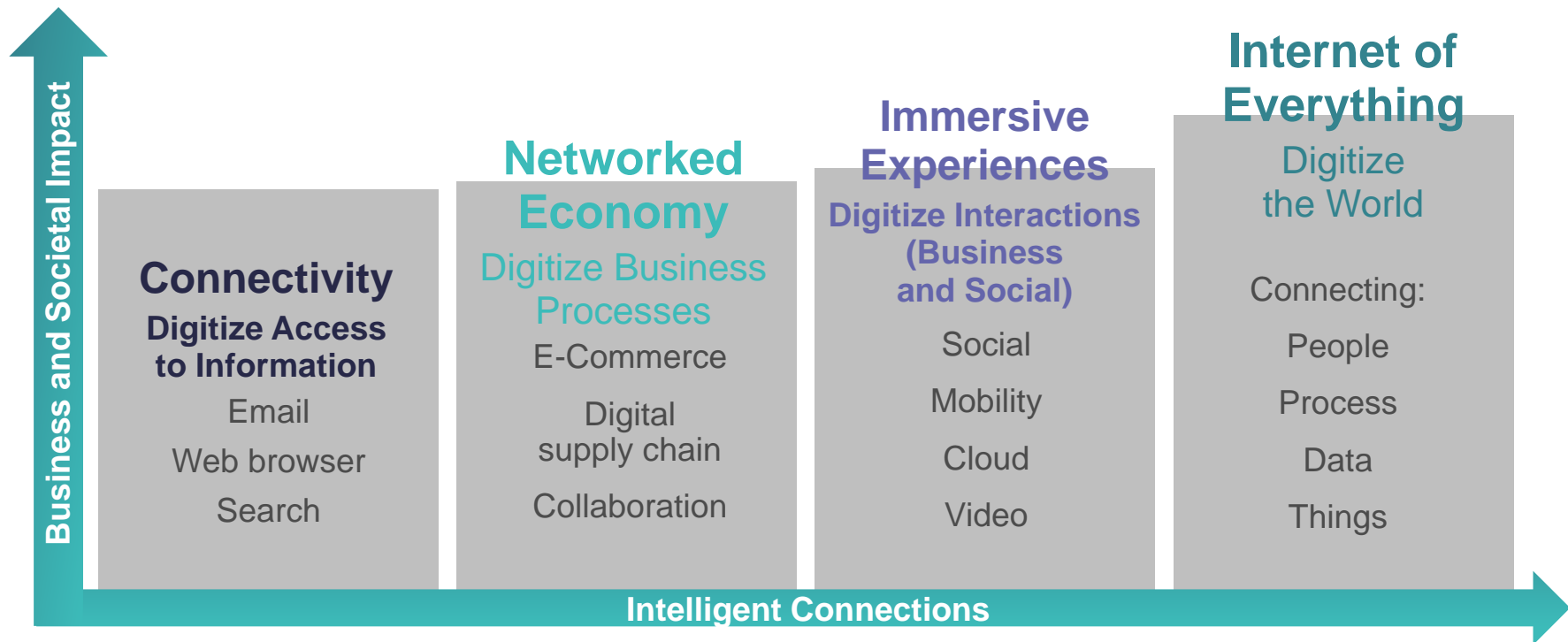
What Is the Internet of Everything?



1,000 Internet Devices in 1984
50,000,000,000 in 2020

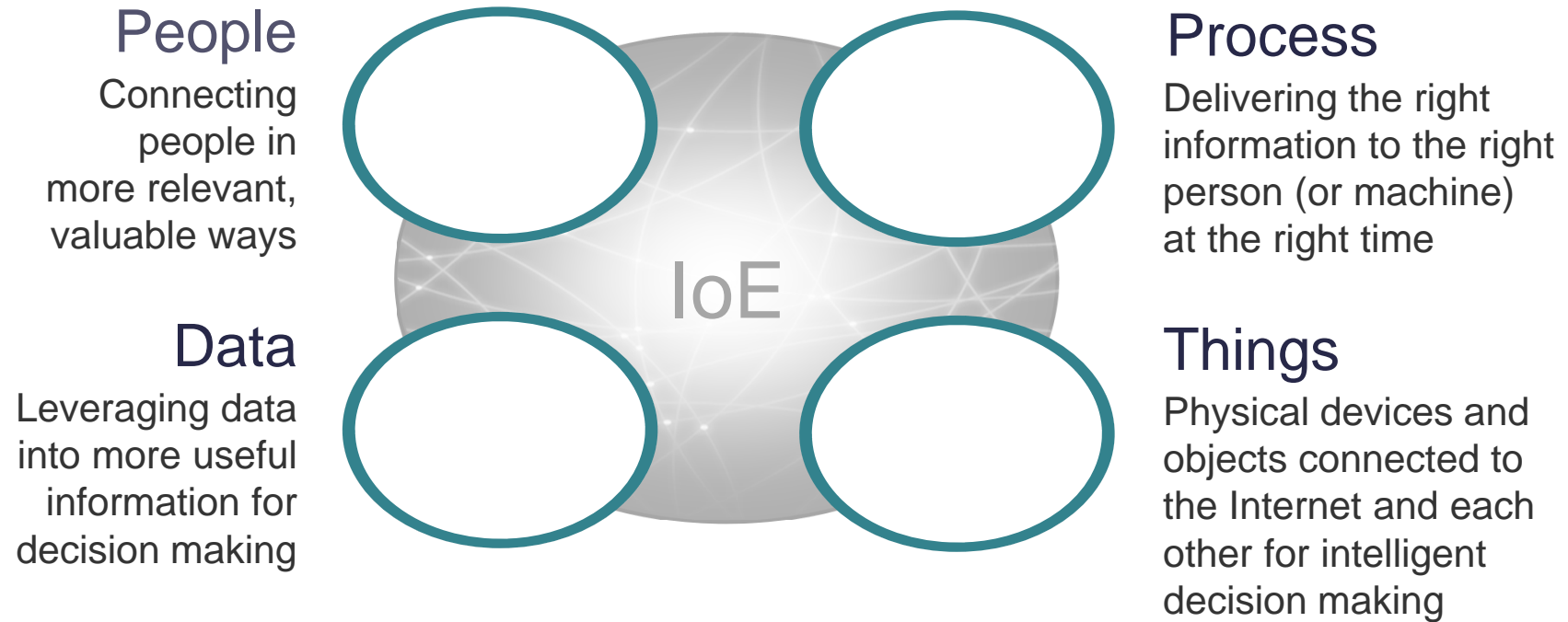
The Internet Continues To Evolve

Most Influential Platform for Innovation Since Electricity



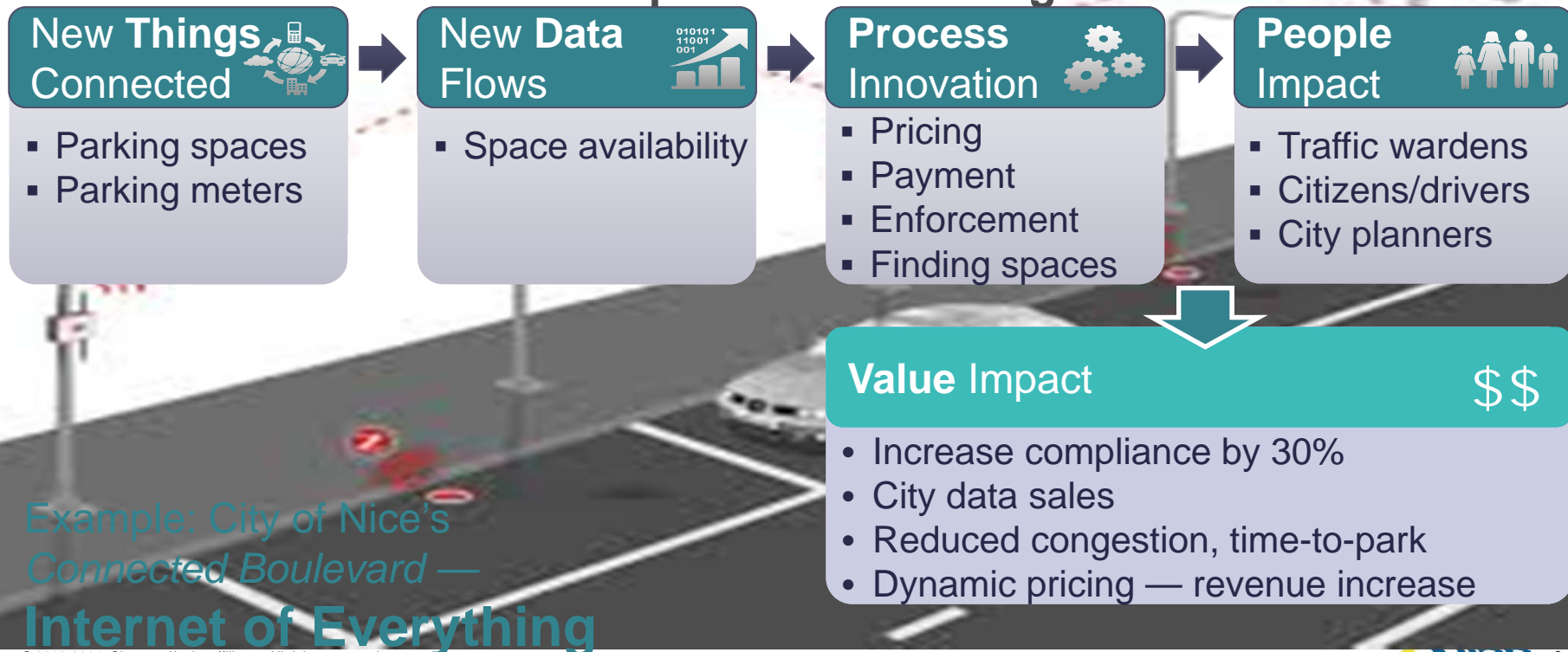
The Internet of Everything

Networked Connection of People, Process, Data, Things



Technology Is Providing New Opportunities To Address Today's Challenges

Example: Smart Parking

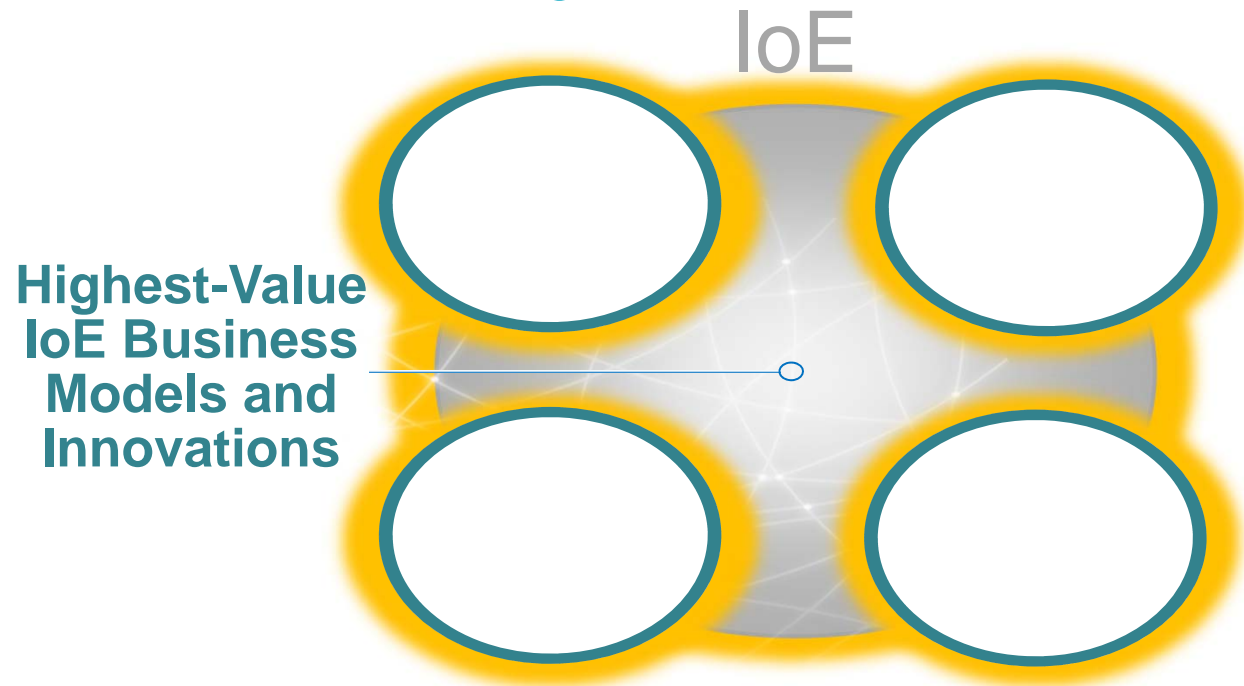


Example: City of Nice's
Connected Boulevard —
Internet of Everything

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How IoE Drives Value

Value Comes from Increasing Connections Among People, Process, Data, Things






The IoE-Ready Organization: Three Key Attributes

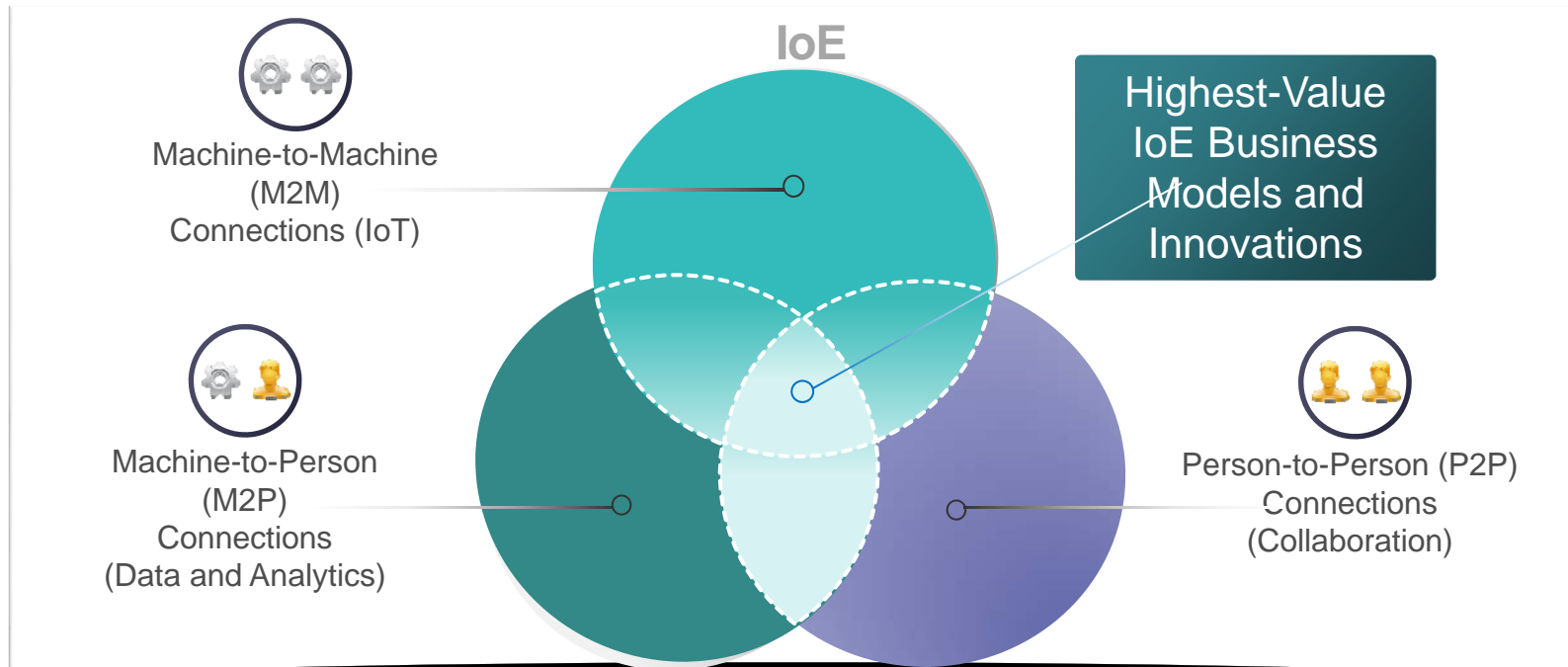


Accelerating Innovation

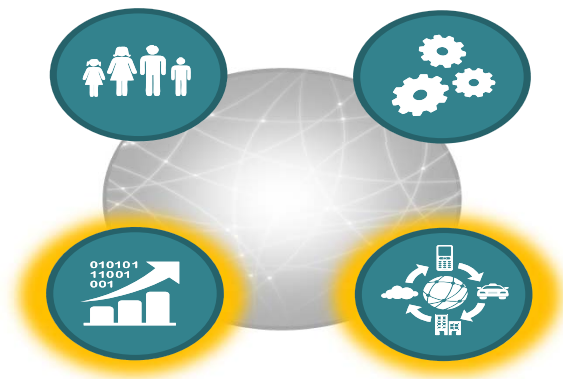
IoE Consists of M2M, M2P, and P2P Connections

Connection Type	IoE Value (2013-2022)
 <p>Machine-to-Machine (M2M)</p> <ul style="list-style-type: none">• Data sent/received from one machine (thing) to another• Often called the “Internet of Things”	\$7.4 Trillion
 <p>Machine-to-Person (M2P)</p> <ul style="list-style-type: none">• Data sent/received from a machine (thing) to a person• Often called “data and analytics”	\$4.6 Trillion
 <p>Person-to-Person (P2P)</p> <ul style="list-style-type: none">• Data sent/received from one person to another• Often called “collaboration”	\$7.0 Trillion

When Connections Are Combined, We Solve Higher-Order Business Problems



Internet of *Things*: Asset Monitoring Increases Efficiency in Real Time



Asset Monitoring

Business Problems Solved

- Value from lighting up “dark” assets?
- What’s their condition?
- Are they secure?

Challenge

- Increase production and efficiency in manufacturing plants

Solution

- Use **Wi-Fi sensors** to monitor production inventory on plant floor

Business Value

- Increased tire production by 13%
- Cut wasted tire components by 20%

Internet of *Everything*: Enabling New Business Models Through Multiple Connections



Business Transformation

Business Problems Solved

- How can I differentiate myself from competitors?
- How can I create compelling products, services, and experiences at a lower cost?

Challenge

- Transform building management to attract tenants in competitive market
- Reduce energy and operations costs

Solution

- **Sensors** connect all 95,000 building points and systems
- **Data analytics** track energy usage for all 95,000 sensors in real time
- **Collaboration** through mobile devices

Business Value

- Cut energy costs by 21% in 2012

What New and Better Connections Mean for the Public Sector

Connections

M2M



- Smart buildings and campuses
- Smart lighting
- Smart payments
- Intelligent public transit
- Smart grid



Citizen/Employee /Student Experience



Improved Asset Utilization



New Revenue Streams



Energy Optimization

M2P



- Video surveillance
- Smart parking
- Disaster response
- In-patient monitoring



Enhanced Security, Safer Communities



Increased Revenue/ Compliance



Smart Public Safety Fleets



Better Health Outcomes

P2P



- Telework
- BYOD
- Connected learning
- Travel avoidance
- Expertise availability
- Work/life balance



Employee Productivity



Lower Costs



Improved Student Outcomes



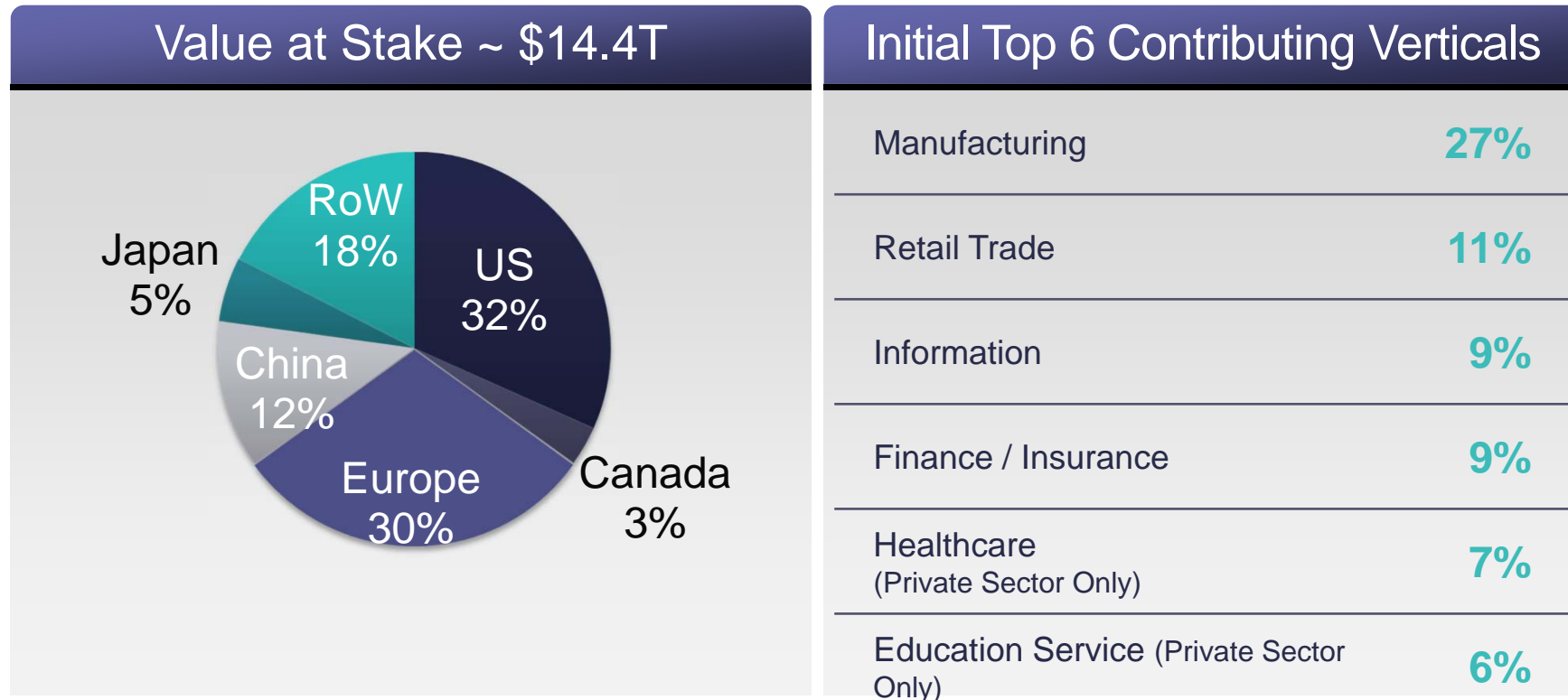
Increased Efficiency through Remote Testimony

Value at Stake: How Much Is IoE Worth?

Sizing the Opportunity



Value at Stake Crosses Every Geography and Industry



Source: Cisco Internet Business Solutions Group, 2013

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IoE Creates \$14.4 Trillion of Value, Yet Companies Are Leaving Money on the Table

Asset Utilization	\$2.5T
Employee Productivity	\$2.5T
Supply Chain/ Logistics Efficiency	\$2.7T
Improved Customer Experience	\$3.7T
Innovation	\$3.0T



IoE Is Driving Hyper-Innovation

A Few Examples...

Manufacturing: Harley-Davidson Uses IoE To Improve Floor Productivity / Worker Training

Harley-Davidson's smart factory uses Cisco's industrial Ethernet, wireless networks, and integrated video/digital signage to produce multiple models on same assembly floor while improving worker training



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People ➤ Machine ➤ People

-  Stakeholders view / make decisions based on what's happening on factory floor
-  New processes enable centralized location-driven "ubiquitous display"
-  Digital media content creates world-class "visual factory"
-  Video monitors relay real-time visual information to key stakeholders

Manufacturing: Coke Increases Supply Chain Responsiveness/Accuracy with VoIP





Voice commands from order selector routed through supply chain network of 3,000 warehouse associates in 100 facilities

- 99.8% shipping accuracy
- Saved \$2 million using off-the-shelf VoIP phones / standard headsets



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People ➤ Machine ➤ Machine

-  People interact with order service using voice commands
-  New business and IT processes implemented to enable new service
-  Voice commands converted into data to drive order through supply chain
-  Kiosks in fulfillment facilities automatically print shipping labels

Manufacturing: Volvo Converts Data into Business Value

Terabytes of data from embedded sensors in cars provide real-time information to Volvo that allows engineers to improve product safety, increasing brand equity and customer satisfaction



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Machine ➔ Machine

- Engineers use information from sensors to improve car safety
- New processes ensure information results in improved products
- Data analysis yields predictive information (defects yet to occur)
- Sensors placed in key locations (i.e., brakes) to gather critical data

Connected Medicine: Proteus Pill Patient–Caregiver Collaboration

FDA-approved ingestible sand-sized chip integrated into pills uses body fluids to activate and send signal to smartphone alerting doctors that medicine has been taken



People ➤ Machine ➤ People



People ingest pills that send alerts to doctors



Doctors change processes to communicate with patients about medicine intake



Signal from chip sent to patch, then to smartphone; doctors email patients with feedback



Sand-sized chip powered by body fluids produces voltage read by wireless skin patch

IoE: What Do Companies Think?

Firms See Growing Significance of IoE as They Strive To Realize Value

79%

Viewed IoE pervasiveness as having “increased” or “significantly increased” over **past 3 years**

84%

Believe IoE pervasiveness will “increase” or “significantly increase” over **next 3 years**

N=7,501 Respondents

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IoE Accelerates Innovation, Satisfies Customers, and Automates Processes...

Top 3 Business Drivers of IoE

#1

Accelerating
Pace of
Innovation

N=7,501 Respondents

#2

Satisfying
Customer
Demand for
New Ways of
Interacting

#3

Need to
Automate
Business
Processes

...And Allows Companies to Thrive Amidst Accelerating Change

Top 3 Technology Drivers of IoE

#1

New Types
of Devices

N=7,501 Respondents

#2

Volume
of Data
Generated

#3

Cloud-based
Technology

UPT

By Embracing IoE, Companies Can Attain Key Benefits

Top Business Benefits of IoE

#1

**Operational
efficiency**

(Value drivers: asset
utilization, supply chain,
employee productivity)

N=7,501 Respondents

#2

**Customer
service**

(Value driver: customer
experience)

#3

**Collaboration
within company**

(Value drivers:
innovation, employee
productivity)

What We've Learned: Importance of People and Process

To capture more IoE value, companies must:

1

Invest In
high-quality
**technology
infrastructure**
and tools

2

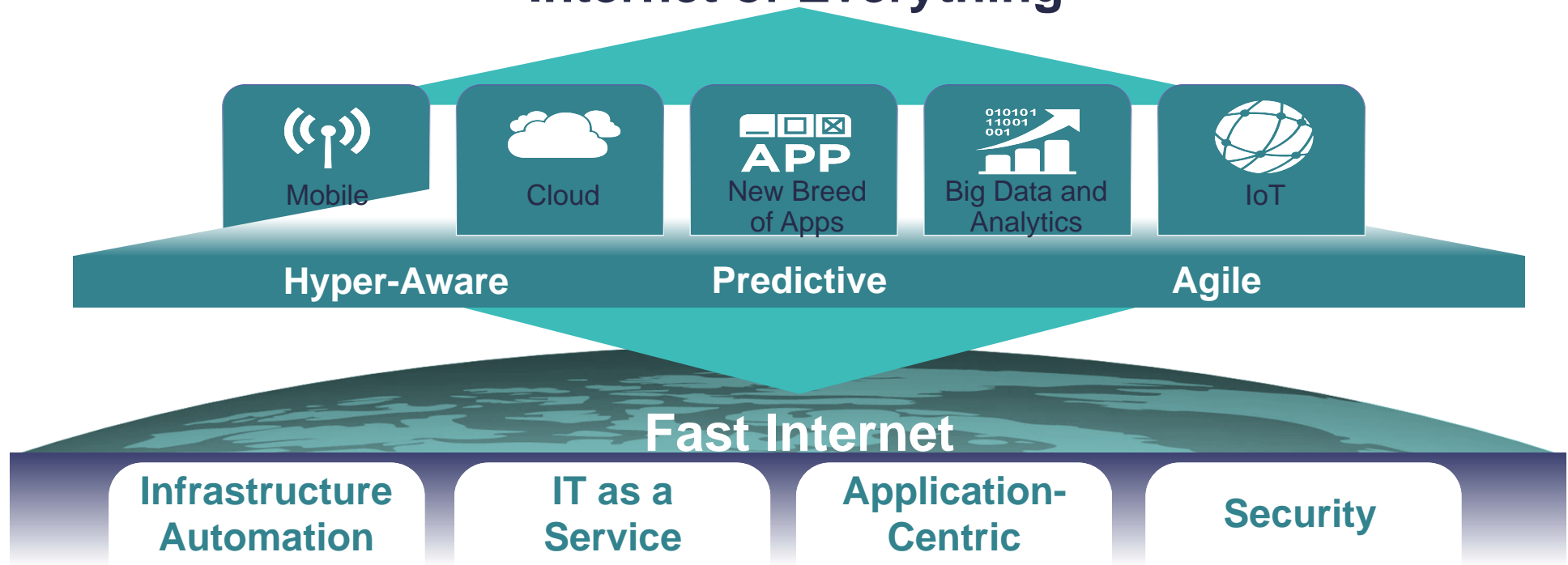
Adopt and
follow **inclusive
practices
that foster
collaboration**

3

Develop
effective
**information
management**
practices

...Requiring a New Model for Business and IT

Internet of Everything



Muchas Gracias!

