Technology Megatrends
Driving Innovation

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A Definition of Innovation

Innovation is the development of **new customer value through solutions** that meet new needs, inarticulate needs, or old customer and market needs in new ways.

Accomplished through different or more effective products, processes, services, or technologies.

Differs from invention in that innovation refers to the use of a better and, as a result, novel idea or method. (Lat. innovare: "to change") rather than doing the same thing better.
The Big Shift: Forces driving transformation

Power Shift To Consumers
- Increasing influences of Social Communities

Connected Experiences
- From Product to Products, Services & Content

Globalization & Emerging Economies
- New Growth Markets
- Global Manufacturing
- Reverse Innovation

what are the
OPPORTUNITIES & CHALLENGES these create?

Changing Demographics
- Aging Workforce
- New Millennials
- Global Workforce

Sustainability
- Sustainability Driven Growth

Complex Regulations
- Impact of Changing Regulations

what are the new
REQUIRED CAPABILITIES?
Key Business Imperatives

**Innovate**
- Foster a culture of innovation in the Enterprise
- Launch new products, create new segments
- Gain insight from connected consumers/devices
- Accelerate product development and Time to Market
- Create competitive differentiation and advantage

**Perform**
- Reduce costs
- Drive Productivity and Operational Excellence
- Increase product quality for differentiation
- Be Agile and quickly respond to market opportunities
- Ensure business continuity under major disruptions

**Grow**
- Gain new audiences and accelerate revenue growth
- Deliver Connected Customer and Brand Experiences
- Build Customer Intimacy and Deliver excellent customer service experiences
Building Momentum

**Mobile**

- Windows 8
  - 2,400 devices certified

Dissolving walls between business and consumer

**Social**

- KINECT
  - 24 million sensors sold worldwide
- Yammer
  - 7+ million registered Yammer users at 200,000 organizations worldwide, 85% of Fortune 500
- Office
  - >1 billion people use Office – 1 in 7 people on the planet

**Data**

- Microsoft Partner Network
  - 640,000+ customers with over 3,000,000 users
- SQL Server
  - 39,000+ partners in 170 countries, offering unmatched choice to meet unique enterprise needs

Sparkling the imagination with technology

**Cloud**

- XBOX LIVE
  - 48 million members in 35 markets worldwide. Users in the U.S. average 84 hours a month using the service.
- Windows Azure
  - 50% of Fortune 500 firms use Windows Azure

Using insights to innovate

- XBOX
  - 76m+ Xbox 360s sold since inception eight years ago
- Bing
  - 3.5 billion searches each month
- Office
  - >1 billion people use Office – 1 in 7 people on the planet

- Skype
  - 1/3 of worldwide phone traffic is driven by Skype
- Windows Server
  - 74% of current organizations’ VMs run Windows Server
- Windows Azure
  - 50% of Fortune 500 firms use Windows Azure

- Windows Partner Network
  - 640,000+ customers with over 3,000,000 users
Modern devices - new scenarios
Social Mobility

Big data

Mobility

Devices

Cloud

Social
people
explore and share

data
collect and connect

analytics
refine and process
digital content grew to 2.7ZB in 2012, up 48% from 2011, rocketing toward 8ZB by 2015.

80% growth of unstructured data is predicted over the next five years.
Mobility

Devices

Cloud

Social

Big data
Over 80% of new apps will be distributed or deployed on clouds in 2014.

70% of businesses are either using or investigating cloud computing solutions.
1. Virtual Machines

- The basic cloud building blocks that give you full access to virtual machines with the ability to scale and shut down when not in use.

- **Benefits:**
  - Manage multiple operating systems on a single physical machine.
  - Scale up or down as needed.

2. Cloud Services

- Managed services provide users with access to cloud services without the need to manage infrastructure.

- **Services:**
  - AWS (Amazon Web Services)
  - Azure
  - Google Cloud

3. Web Sites

- For applications that are compatible with web, the underlying servers are abstracted from the web server platform, hardware, and operating system.

- **Example:** Deploying an application to a cloud provider.

4. Mobile Services

- Develop apps in all the major platforms to support cloud use cases.

- **Platforms:**
  - Windows
  - iOS
  - Android
  - HTML5/SaaS
200+ cloud services at scale

40+ million users in 35 markets

5.5+ billion worldwide queries each month

200+ million active users

4 trillion objects in Azure Storage

2-4+ billion emails per day

60+ million active accounts

88 markets 32 languages

280+ million connected users per month

50+ million active users

Office Web Apps

Microsoft
Mobility

Devices

Cloud

Social

Big data
The Internet of Things: By the Numbers

B3B
IoT Market Forecast CY17

Intelligent Systems $1.7T

<table>
<thead>
<tr>
<th>Industry</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto &amp; Trans</td>
<td>$7 B</td>
</tr>
<tr>
<td>Retail</td>
<td>$16 B</td>
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<tr>
<td>Manufacturing</td>
<td>$197 B</td>
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<td>Healthcare</td>
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<td>Energy</td>
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<td>Computing</td>
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<tr>
<td>Telecom</td>
<td>$179 B</td>
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<tr>
<td>Consumer</td>
<td>$356 B</td>
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</table>

Source: IDC Sept 2013 and Microsoft
IoT Device Taxonomy

- **Large**
  - POS terminal, ATM, MRI
  - x86, PC-like, apps
  - Embedded Industry 8.1, Standard

- **Mobile**
  - Industry handheld, POS tablet
  - ARM and x86, shell experience, apps
  - Embedded Handheld 8.1

- **Small**
  - Gateways, wearables, panels, cars
  - ARM and x86, diverse hardware, no shell
  - Embedded Compact, Auto

- **Micro**
  - Controllers, fixed-use, sensors, actuators
  - ARM, constrained hardware, headless
  - .NET Micro Framework
Cloud-connected

- Large
- Mobile
- Small
- Micro

Device management
Command & Control
Data Analytics

Azure M2M

Monitoring
Content Distribution
Remote Access
Configuration Management
IPv6 is a critical IoT enabler as it allows potentially unlimited growth of connected devices.

Worldwide share of IPv6 capable mobile devices

% of install base

2012: 14%
2017: 42%

IPv6 stack
Optimized for low power connectivity

- Application: CoAP
- Transport: UDP
- Network: 6LoWPAN
- Link: RPL
- IEEE 802.15.4
Moore’s law and low cost manufacturing are driving sharp cost reductions in IoT components.
Multiple competitive wireless technologies have emerged to target specific application areas.

### Comparison of key wireless technologies enabling Internet of Things

<table>
<thead>
<tr>
<th>Network technology</th>
<th>Maximum Range</th>
<th>Maximum Data Speed</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>WiFi</td>
<td>10 cm 10 m 20 m 100 m 200 m 300 m 10 km</td>
<td>10 100 200 300 400 1 100 kbps kbps kbps kbps mbps mbps mbps</td>
<td>0 mW 100 mW 200 mW 300 mW</td>
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<tr>
<td>Bluetooth Low Energy</td>
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</tr>
<tr>
<td>RFID</td>
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<td>10 100 200 300 400 1 100 kbps kbps kbps kbps mbps mbps mbps</td>
<td>0 mW 100 mW 200 mW 300 mW</td>
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<tr>
<td>NFC</td>
<td>10 cm 10 m 20 m 100 m 200 m 300 m 10 km</td>
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<tr>
<td>ZigBee</td>
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<td>Thingsquare</td>
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<tr>
<td>Weightless</td>
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<td>0 mW 100 mW 200 mW 300 mW</td>
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</table>
Wearables
3D Printing
Design your own Lumia 820 back panel

Make it for yourself. Make them for others. Both!

The Personal Factory is not a gimmick. It's the manifestation of trends.

Printed Central Wing Spar

Same mechanical properties as forged part.

http://www.3ders.org/articles/20130118-3-meter-long-titanium-airplane-part-3d-printed-in-one-piece.html
Thank you!

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Disruptive technologies - opportunity and challenge

**Big Data**
Only 7% of data store is meaningful... for a short period of time

**Cloud Computing**
Must guarantee dependability, security and real-time

**Mobile**
Participative workforce with secure integration of home-work

**Social**
A potential risk to productivity and secured transactions