Contact: Bill Chamberlin, HorizonWatching Community Leader

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Internet of Things:
Trends To Watch In 2014

A HorizonWatching Community Trend Report (Summary Version)

Horizonwatching

Emerging Trends and Technologies

About This Deliverable

- **Purpose:** The slides provide information about the Internet of Things trend in 2014

- **This is a Summary Version of this Trend Report.**
  - This file can be downloaded at http://www.slideshare.net/horizonwatching
  - A more detailed Powerpoint version of this deck is located at http://www.billchamberlin.com/reports-books/. The 37 page report has more information and resources for you, including a list of over 100 trend and prediction articles for 2014.

- **Content:** Summary information about this emerging trend is provided along with many links to additional resources, including a list of over 100 trends and prediction articles about this trend. The slides are meant to be read/studied and the links are there for you to continue your learning. You may want to view the slides in slideshow mode so you can easily follow the links

- **For more information on Emerging Technology Trends,** see the *HorizonWatching* blog

Note: This presentation represents my own personal thoughts and ideas….not those of my employer.
 - Bill Chamberlin, http://www.billchamberlin.com/

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1. Trends to Watch in 2014

2. What Others Are Saying About Internet of Things for 2014

3. Additional Resources

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Internet of Things Trends to Watch in 2014

1. **From Hype to Reality:** In 2014 IoT will become real with the ubiquity of connectivity and proliferation of devices, and wearable computing. Automakers lead the way by embedding smart systems in cars.

2. **Wireless Sensors and Devices:** They are getting smaller, smarter, and cheaper….and there are billions of them….producing billions of data points.

3. **Machine to Machine (M2M):** Sensors and devices talking to each other and data centers via wireless communications.

4. **IOT Apps:** New apps required to integrate sensor based data into business applications

5. **Industry Partnerships:** Traditional IT vendors accelerate their partnerships with global telecom service providers and semiconductor vendors.

Koby's predictions for the Internet of Things in 2014 and beyond – James Kobielus

**Where is the Internet of Things heading in 2014?** – CIO.com

Internet of Things Trends to Watch in 2014 (cont.)

6. Big Data to get Bigger: These 'things' (sensors, chips, computers) will produce even more data than we have now, taxing our already complex enterprise Information Management systems.

7. Clouds Required: Aggregating all this big data and acting on its findings will best be achieved by capturing, analyzing and responding from the cloud.

8. IoT Analytics: Advanced analytics and dashboards will be needed to provide insights from all the 'things'.

9. New Business Processes Required: IoT enables new automated sense and respond systems, disrupting traditional processes.

10. CIOs Need to Prepare: CIO Leaders and Innovators will begin strategizing how to best make use of IoT for their organizations.

Access more 2014 Internet of Things trend articles, blog posts and related information via the Horizonwatching Blog

The Economist: The Internet of Things business index
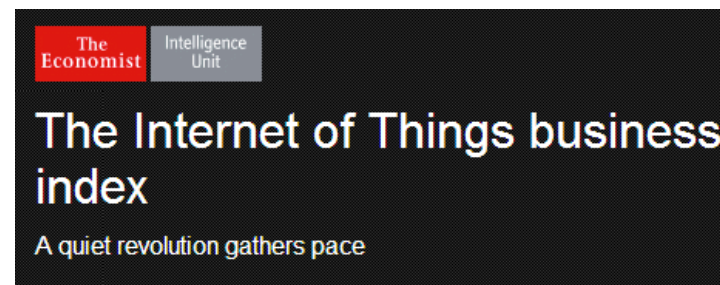
Internet of Things Trends to Watch in 2014 (cont.)

11. Education Needed: Increased demand for education and skills training related to Sensor Networks, how to implement them and what to do with the data collected.

12. Product Design: Consumers and Customers will increasingly expect products to come with embedded sensors.

13. Wearables: In 2014, the consumer buzz will be around wearable devices, including glasses, watches, and health/fitness monitors. Enterprises will integrated wearables into future strategies

14. Security & Privacy: These two issues are big components of any IoT strategy and must be considered for the devices, the connections, and the cloud.

15. IPv6 Required: Transition from IPv4 will continue in 2014. IoT will not fully become a reality until the 'things' have full access to IPv6.

The Internet of Things – **An IBM Video**
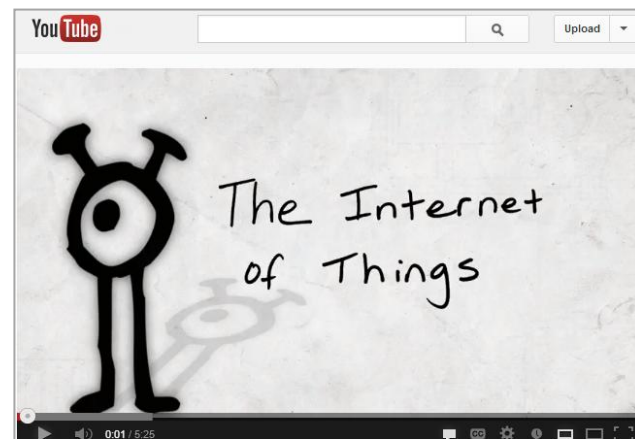
"Internet-of-Things (IoT) provides the foundational infrastructure for a smarter planet, and offers significant growth opportunities in IT, infrastructures and services" – **IBM (link)**

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Billions of devices, sensors, and chips that are able to communicate via the Internet makes up "The Internet of Things"

"The Internet of Things refers to uniquely identifiable objects (things) and their virtual representations in an Internet-like structure." – **Wikipedia** (link)

"The Internet of Things is the network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment." – **Gartner** (link)

"The Internet of Things (IoT) represents a new construct in the information and communications technology (ICT) world that is occupying the minds of IT vendors, service providers, and systems integrators as it represents huge potential for new streams of revenue and new customers." – **IDC** (link)

"The Internet of Things represents an evolution in which objects are capable of interacting with other objects. Hospitals can monitor and regulate pacemakers long distance, factories can automatically address production line issues and hotels can adjust temperature and lighting according to a guest's preferences, to name just a few examples." – **IBM** (link)

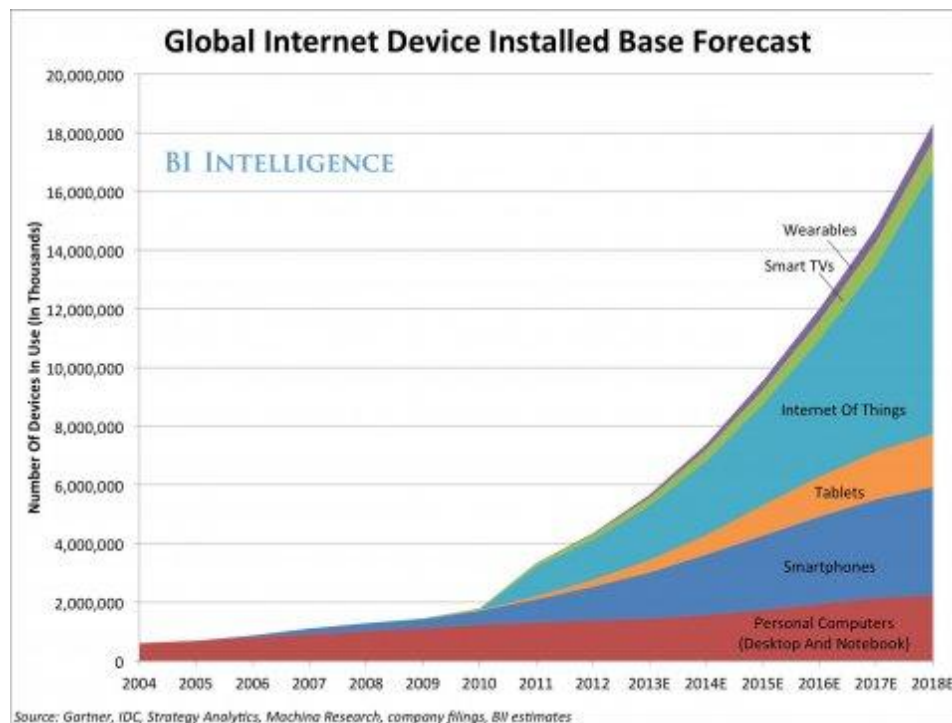# Forecasts call for billions and billions of connected devices

Business Insider Intelligence: Global Internet Device Installed Base Forecast

"In 2020, Over 30 Billion Connected Devices Will Be In Use." – **Gartner** (link)

"Driven by reducing price per connection and the consequent rapid growth in the number of machine-to-machine (M2M) connections, we expect the number of connected objects to reach 50bn by 2020 (2.7% of things in the world)." – **Cisco** (link)

"There will be 212 B devices or things connected to networks by 2020" - **IDC** (link)

Global Internet Device Installed Base Forecast

BI INTELLIGENCE

Source: Gartner, IDC, Strategy Analytics, Machina Research, company filings, BI estimates

"There are more than 10 billion wirelessly connected devices in the market today; with over 30 billion devices expected by 2020.." – **ABI Research** (link)

"From vehicles and smart phones to containers and machines – by 2015 more than six billion things will be connected to the internet." – **Bosch** (link)

The economic value of the IoT economy is expected to be large.

"Service Revenues for the IoT will reach $500 Billion by 2018, dwarfing the $33 Billion in revenue expected from devices in 2018" - **Harbor Research** (link)

"IoT product and service suppliers will generate incremental revenue exceeding $300 billion, mostly in services, in 2020." – **Gartner (link)**

"Sized applications of the Internet of Things could have direct economic impact of $2.7 trillion to $6.2 trillion per year in 2025." – **McKinsey (link)**

Bloomberg Article: Cisco CEO Pegs Internet of Things as $19 Trillion Market

Cisco CEO Pegs Internet of Things as $19 Trillion Market

ZDNet Article: Internet of things: $8.9 trillion market in 2020, 212 billion connected things

Internet of things: $8.9 trillion market in 2020, 212 billion connected things

"IoT technology and services spending to generate global revenues of $4.8 trillion in 2012 and $8.9 trillion by 2020, growing at a compound annual rate (CAGR) of 7.9%." – **IDC (link)**

"Economic value-add (which represents the aggregate benefits that businesses derive through the sale and usage of IoT technology) is forecast to be $1.9 trillion across sectors in 2020. The verticals that are leading its adoption are manufacturing (15 percent), healthcare (15 percent) and insurance (11 percent).." – **Gartner (link)**

The Internet of Things will require new approaches for CIOs and new skills for IT professionals

"The converging Nexus of Forces and the Internet of Things are creating the digital industrial economy. In 2014, CIOs must embrace and help lead this transformation. Doing so will require novel approaches and radical new thinking combined with unwavering attention to operational performance." – **Gartner (**link**)**

"As it becomes easier and easier to design and develop smart systems, competitive differentiation will shift away from unique, vertically focused product features towards how the product is actually used and how the product fosters interactions between and among users in a networked context." **– Harbor Research (**link**)**

The Executive's Guide to the Internet of Things

The Executive's Guide to the Internet of Things
– ZDNet e-book (registration required)

"While CIOs recognize the importance of the right staff to enterprise success, they are finding it increasingly difficult to find skilled talent in the locations they require, for a price they can afford." - **IDC** (link)

"Survey found that 51 percent of CIOs are concerned that the digital torrent is coming faster than they can cope and 42 percent don't feel that they have the talent needed to face this future." - **IDC** (link)

Security will be an increasingly hot topic within the IoT trend

Proofpoint Uncovers Internet of Things (IoT) Cyberattack
– Proofpoint Press Release

Proofpoint Uncovers Internet of Things (IoT) Cyberattack

More than 750,000 Phishing and SPAM emails Launched from "Thingbots" Including Televisions, Fridge

The Internet of Things Is Wildly Insecure — And Often Unpatchable, Wired.com

WIRED GEAR SCIENCE ENTERTAINMENT BUSINESS

The Internet of Things Is Wildly Insecure And Often Unpatchable

BY BRUCE SCHNEIER 01.06.14 6:30 AM

Video: Internet of Things - Privacy & Security in a Connected World Workshop , by USA FTC , with Vint Cerf, Google

"As we become increasingly reliant on intelligent, interconnected devices in every aspect of our lives, how do we protect potentially billions of them from intrusions and interference that could compromise personal privacy or threaten public safety?" **– Wind River (**link**)**

There are many other related terms around the IoT Trend topic

Machine to Machine (M2M)

"Machine to machine (M2M) refers to technologies that allow both wireless and wired systems to communicate with other devices of the same ability. M2M uses a device (such as a sensor or meter) to capture an event (such as temperature, inventory level, etc.), which is relayed through a network (wireless, wired or hybrid) to an application software program), that translates the captured event into meaningful information (for example, items need to be restocked)." – **Wikipedia (**link**)**

The Web of Things

"The Web of Things is a vision inspired from the Internet of Things where everyday devices and objects, i.e. objects that contain an embedded device or computer, are connected by fully integrating them to the Web. Examples of smart devices and objects are wireless sensor networks, ambient devices, household appliances, RFID tagged objects, etc." – **Wikipedia (**link**)**

Sensor

"A sensor is a converter that measures a physical quantity and converts it into a signal which can be read by an observer or by an (today mostly electronic) instrument." – **Wikipedia (**link**)**

Wireless Sensor Network

"A wireless sensor network (WSN) of spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bi-directional, also enabling control of sensor activity." – **Wikipedia (**link**)**

Ubiquitous Computing

"Ubiquitous computing (ubicomp) is a post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities." – **Wikipedia (**link**)**

This vendor ecosystem Map from TechCrunch shows how crowded this still emerging market is becoming

INTERNET OF THINGS LANDSCAPE

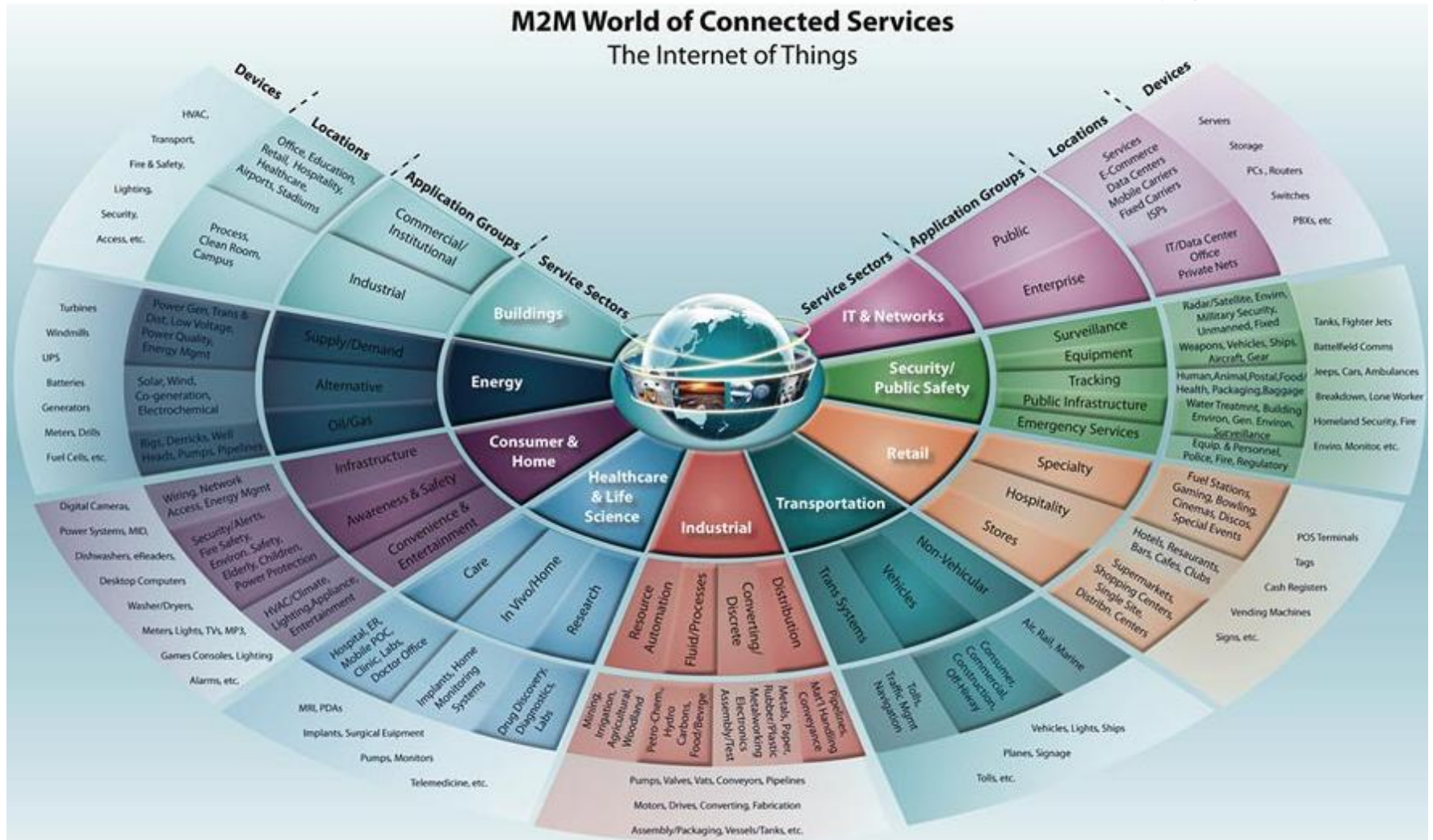Source: **Making Sense Of The Internet Of Things** (link)

© Matt Turck (@mattturck), Sutian Dong (@sutiandong) & FirstMark Capital (@firstmarkcap)

This infographic from Beecham Research provides a sector-based segmentation view of internet of things marketplace

Source: M2M/IoT Sector Map by Beecham Research

M2M World of Connected Services
The Internet of Things

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Internet of Things – Selected IBM Resources and Links

- Website: Internet of Things

- Recent Press Releases: IBM and Libelium Launch Internet of Things Starter Kit and Internet of Things Gets Major Distance Boost From IBM and Semtech

- Software: The Internet of Things / IBM MessageSight / IBM Messaging / Websphere Sensor Events / Intelligent Operations Center / Sample Sensor Solutions / Informix TimeSeries for Meter Data Management

- DeveloperWorks: Mobile Messaging and M2M articles and Fabric for Sensor Network Management and Data Transfer

- Redbook: IBM Intelligent Operations Center for Smarter Cities and Building Smarter Planet Solutions with MQTT and IBM WebSphere MQ Telemetry

- Website: Smarter Planet

- Healthcare Example: Connected Home Health

- Energy Example: IBM Intelligent Utility Network Solution and Smart metering and beyond

- Video: The Internet of Things

- Academy of Technology: Internet of Things

- IBM Research: Mote Runner / Sensor Systems / Wireless Communication for IoT / Wireless Network Cloud

- White Paper: Driving innovation through the Internet of things

IBM Video: Connecting to Customers Using the Internet of Things,
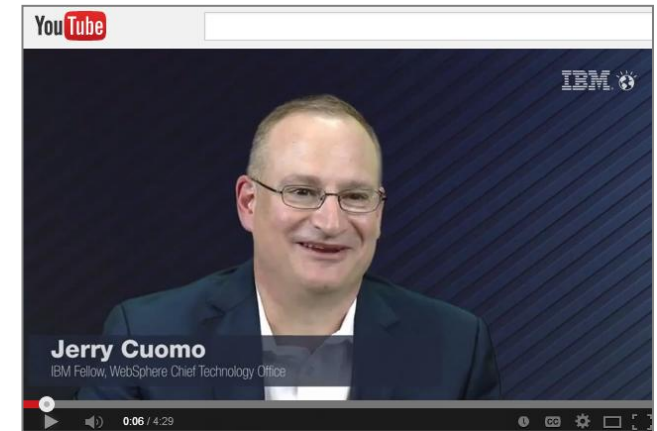
"If we can harvest the Big Data insights from all of the things connected to the Internet we can more precisely understand how our world actually works. By making Internet of Things application development easier, the answers to the grand challenges of our age becomes more feasible." - **Thorsten Kramp**, a computer scientist at IBM Research (link)

HorizonWatching Community

Internet of Things – Selected IBM venues on Social Media

- Blog: asmarterplanet

- Tumblr Blog: A Smarter Planet tag: Internet of Things

- DeveloperWorks Community: Fabric for Sensor Network Management and Data Transfer and Mobile and M2M

- Developerworks Blog Search: Internet of Things

- IBM Research Blog Post: Mobile data for the Internet of Things

- Facebook: People for a Smarter Planet

- Twitter: @SmarterPlanet

- Pinterest: Building a Smarter Planet

- Google+: Smarter Planet

Smarter Buildings – A Smarter Planet Blog

A Giant Step Forward for the Internet of Things and Big Data – A Smarter Planet Blog

19   Jan 2014   Internet of Things: A 2014 HorizonWatching Trend Report (Detail)

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Access additional thought leadership on emerging tech trends

A more detailed version of this deck is located at http://www.billchamberlin.com/reports-books/. The powerpoint deck has 37 slides and many more resources for you, including a list of over 100 trend and prediction articles related to the IoT trend for 2014.

Other HorizonWatching Content and Community Sites

- Linkedin Profile = www.linkedin.com/in/whchamb/
- Wordpress = Horizonwatching – Thought Leadership Blog
- Tumblr = HorizonWatching – Quote Blog
- Twitter = HorizonWatching – 140 Character Blog
- Slideshare = HorizonWatching - Slide Decks
- Facebook = HorizonWatching – Community Page
- LinkedIn Group = HorizonWatching – Community Group

Note: This presentation represents my thoughts and ideas….not those of my employer. Follow me for more technology trend information on my public blog - HorizonWatching at www.billchamberlin.com. Thanks, Bill Chamberlin

Other HorizonWatching Trend Reports are available for download

Available for download at: http://www.billchamberlin.com/reports-books/

– Typically 20-30 pages (Powerpoint format).

– For the current status of the availability of the reports, see Availability of HorizonWatching 2014 Trend Reports

Contents of the Detailed Trend Reports

1. Trends to Watch (Important developments to watch in 2014)
2. Trend Information (Market Opportunty, Growth Drivers, Adoption Challenges, Implications)
3. Quotes: What Analysts and the Media is saying about the trend
4. Lists of Websites and Resources
   - Analysts
   - Media
   - Selected IT vendor and consultant websites and resources
   - Top Trend and Prediction Articles
   - Social Media Sites & Searches
   - Selected Online Influencers
   - Selected white papers and other websites
   - List of 2014 Trend and Prediction Articles

Note: A summary of each of the detailed reports will also available in pdf format via the HorizonWatching account on Slideshare at http://www.slideshare.net/horizonwatching