

# Technology Futures –2016

A Presentation by

Dana R. (Rick) Richardson CPA.CITP, CGMA

## ADDITIONAL MATERIALS FOR ATTENDEES

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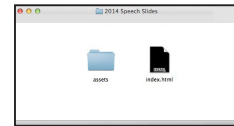
**WINDOWS**

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Once you have decompressed the ZIP file you will have a folder with several handouts in it and two folders with the slide show. The slides are too large to fit in a single file, so I've split it into two pieces. Part 1 goes through Trends-Companies and Part 2 is all of the rest of the presentation



To start the movie, double click on the Index.html file and it will run in your browser. On Windows machines, **Firefox** is best. On Mac machines, both **Safari** and **Firefox** are equally good.

When you run the slide show, you can move forward with a single left mouse click or you can use any of the following keys: right arrow, down arrow, return, space. You can use the left arrow or up arrow to move backwards. You will also see a small up-arrow on the menu slides in the upper right hand corner of each navigation box.



If you click in the arrow, it will take you to the first slide of that section or sub-section. Every slide has a home symbol in the lower left.



If you click on the home, you will be taken to the first main menu.

One of the handouts is a flyer describing my new weekly newsletter, **Technology This Week**. As I do my research for this speech, I gather all of the week's current events and other articles of general interest into an easy-to-read publication that is published every Sunday.

You can subscribe to the newsletter by visiting this URL:

[www.TechnologyThisWeek.net](http://www.TechnologyThisWeek.net)

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## **I. Prior Year Predictions**

- A. Good**
- B. So Close**
- C. Poor**

## **II. Trends**

### **A. Companies**

#### **1. The Big Five**

- a. Companies
- b. Financial Comparisons
  - 1) Capitalization
  - 2) Revenue
  - 3) Net Income
- c. The World's Most Valuable Platforms
  - 1) Span so-called "Old Tech"
  - 2) As well as "New Tech"
  - 3) Network Effects
- d. Even competitors and start-ups need Big Five
  - 1) HP
  - 2) Netflix

#### **2. Apple**

- a. Where does the money come from?
- b. 2 Big Challenges
  - 1) Growing beyond the iPhone
  - 2) Improve software quality
- c. By The Numbers
  - 1) Enterprise business
  - 2) Devices sold in last 12 months
  - 3) Revenue growth overall and in China
  - 4) Apple Music subscriptions
  - 5) iCloud users
  - 6) Apple Watch & Mac Revenues compared to Facebook & Google
  - 7) R & D expenditures
  - 8) Cash on hand
- d. Executive Changes
  - 1) Rónán Ó Braonáin
  - 2) Jonathan Cohen
  - 3) Doug Bowman

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**3. Google**

- a. Where does the money come from?
- b. 2 Big Challenges
  - 1) The Cloud
  - 2) Advertising
- c. By The Numbers
  - 1) Search Users - Google vs Competition
  - 2) Manual page review 38,000 yrs, Google .5 sec.
  - 3) YouTube bandwidth
  - 4) Internet Searches - over 3.5 billion searches per day and 1.2 trillion searches per year worldwide
  - 5) In 2014, Google paid Apple \$1 billion to become the default search engine for iOS devices
  - 6) 8 out of every 10 phones worldwide is operating on Android
  - 7) Google acquired Android in 2005. There have now been more than one billion Android device activations and 50 billion mobile apps downloaded.
  - 8) 900 million people use Gmail
- d. Executive Changes
  - 1) Diane Greene
  - 2) Daniel Graf

**4. Microsoft**

- a. Where does the money come from?
- b. Challenges
  - 1) The Cloud
    - a) Going after Amazon
    - b) The strategy they're using is "Land and Expand"
    - c) It's not very profitable
    - d) Dell and Microsoft announce 'Azure in a box' for \$9,000 a month
  - 2) Windows Phone
    - a) Background
    - b) Q2 2014 = 10.5 million phones Revenue \$2.3bn
    - c) Q2 2015 = 4.5 million phones Revenue \$1.1bn
    - d) Microsoft's own estimates for next qtr are the same level of decline.
    - e) Q3 2015 Surface revenue has now overtaken Microsoft's phone revenue

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- c. By The Numbers
  - 1) 1.2 billion people use Microsoft Office
  - 2) 90 of Fortune 100 use Skype for Business
  - 3) 700,000 apps in the Windows Store
  - 4) More than 200 million devices are running Windows 10 in 192 countries
  - 5) Goal is 1 billion by 2018
- d. Executive Changes
  - 1) Jim Hanna
  - 2) Joe Belfiore
  - 3) Bob Stutz

**5. Facebook**

- a. Where does the money come from?
- b. Challenge
  - 1) Google
    - a) Becoming the next Google
    - b) Facebook's credentials
    - c) Going after search business
    - d) Spawning "Add A Link"
    - e) Customer-based reviews
    - f) Streamlined Communication
    - g) Universal Internet Access
    - h) Where Google Can't Touch Facebook - User Data
- c. By The Numbers
  - 1) 1.6 billion monthly active users
  - 2) Percentage of all online adults visit Facebook at least once a month = 72%
  - 3) Percentage of US senior citizens that use Facebook = 31%
  - 4) Average number of Facebook friends for US females = 250
  - 5) Percentage of millennials (15-34) that use Facebook = 91%
  - 6) "Like" button clicks per day = 6 billion
  - 7) Size of user data kept by Facebook = >300 Petabytes
- d. Executives
  - 1) Chris Cox
  - 2) Regina Dugan

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**6. Amazon**

- a. General
- b. Where does the money come from?
- c. Challenge
  - 1) The Cloud
    - a) Comparison to its competitors
    - b) Amazon's march to own the future
- d. By The Numbers
  - 1) Products in the AWS marketplace
  - 2) Number of servers in AWS net
  - 3) Every day, AWS adds enough new server capacity...
  - 4) Q3 Revenue & Profit
- e. Executives
  - 1) Arthur Valdez
  - 2) Rex Tibbens

**B. Mobile Platforms**

**1. Mobile Platforms General**

- a. Mobile Continues Up The Importance Scale
- b. Global vs US market shares
  - 1) Global smartphone market share - 2015 - source IDC
  - 2) Global tablet market share - 2015 - source IDC - overall declined 7%
  - 3) US Phone
  - 4) US Tablet Market shares - source: Statista
  - 5) Enterprise market share Phones - source Good Mobility Index
  - 6) Enterprise market share Tablets - source Good Mobility Index
  - 7) Mobile shopping - Black Friday and the 4-day Thanksgiving Shopping Season - Source Custora's E-Commerce Pulse

**2. Android**

- a. Fragmentation
  - 1) 24,000 devices from 1,300 brands
  - 2) Chart
- b. Merging Chrome OS with Android
  - 1) Chrome came out in summer 2010
  - 2) Plans to power new crop of ARM & Intel netbooks
  - 3) Got broadsided with Apple's iPad
    - a) Devasted existing netbook market
    - b) Blunted all growth in Windows PCs

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- 4) New system will open new devices to the million+ Android Apps
- c. Challenge
  - 1) China is now single largest technology market
  - 2) Google has been effectively shut out of China
  - 3) The free version of Android has been used as staging platform for direct competitors to Google's software and services
- d. Android Is Becoming the New Windows
  - 1) Hardware agnostic
  - 2) Android world-domination strategy
  - 3) The real goal is controlling your data in the cloud
  - 4) The device ecosystems may be different
  - 5) But the goal is the same
  - 6) Microsoft and Google want to create platforms that control the information machines of our world
  - 7) As PCs fade in importance, connected devices will take over, leaving Android to inherit the kingdom that Windows will lose

### **3. iOS**

- a. Fragmentation
  - 1) 24 devices from 1 brand
  - 2) Chart
- b. Market Share - Units & Profits
- c. IBM partnership - MobileFirst
  - 1) December - introduced the 100 app exclusively for iOS
  - 2) Now span 14 industries and 65 professions
  - 3) Major new move using the iPad Pro
- d. Swift Programming Language
  - 1) Has become de-facto programming language for immersive, responsible apps
  - 2) Apple has made it "Open Source" available to anyone
  - 3) Ultimately, this move will help Apple move deeper into the enterprise by grabbing the attention of corporate developers.

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**4. Mobile Payment Systems**

- a. Global Mobile Payments Market - Statista
- b. China Statista = 2018 = \$2.8 trillion, 2017 = \$2.3 trillion, 2016 = \$2.2 trillion
- c. Accenture survey
  - 1) 52% of North Americans are “extremely aware” of mobile payments
  - 2) Only 18% use them on a regular basis
  - 3) Millennials and higher-income households lead the pack, with 23% and 38% using contactless payments at least once a week, respectively
  - 4) Four Trends
    - a) The evolution in ways to pay continues—with no end in sight.
    - b) Mobile payments awareness is higher than ever.
    - c) Rewards can speed mobile payments adoption.
    - d) Peer-to-peer payments are on the move.
- d. Major Players - 2015 market share
  - 1) Apple Pay - iPhone 34%, iPad 31% = 65%
  - 2) Android Pay - Google Wallet - phones 27%, tablets 7.6% = 34.6%
- e. Other Developments

**C. Hardware**

**1. Telematics**

- a. General
  - 1) Industry ripe for disruption
    - a) Electric Vehicles
    - b) Autonomous Driving
    - c) Tech Bridging To Mobile Devices
    - d) New & Relatively New Players
  - 2) Consumers are ready and will pay
- b. Electric vehicles
  - 1) EV Market 2015 Shipments
  - 2) Apple’s “Project Titan”
  - 3) Google’s Driverless Car

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- c. Smart vehicles
  - 1) Six Pieces
    - a) Automatic
    - b) Vinli
    - c) Metromile
    - d) Cruise RP-1
    - e) Car Play
    - f) Android Auto
  - 2) Who's Supporting What?
- d. Autonomous vehicles
  - 1) Who's In The Game
    - a) Tesla
    - b) Google
    - c) Uber
    - d) GM
    - e) Baidu
    - f) Faraday Future
  - 2) Tesla Summon and how it works
- e. Samsung Safety Truck – Movie

**2. Wearables**

- a. Market Size Forecast - Gartner
  - 1) Bluetooth Headsets
  - 2) Smart Watches
  - 3) Wrist Bands
  - 4) Sport Watches
- b. Smart Watch Market Shares - IDC
  - 1) Apple
  - 2) Android
  - 3) Pebble
  - 4) Samsung

**3. Gadgets**

- a. Rufus Cuff
- b. Eko Stethoscope
- c. Olloclip Lenses & Studio Kit
- d. Ossia's Cota Wireless Charger
- e. ili - Speech Translator



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**D. Communications**

**1. The Internet**

- a. From Space
  - 1) OneWeb
  - 2) Elon Musk

**2. Wi-Fi**

- a. Li-Fi (Light Fidelity)
  - 1) Li-Fi - Definition
  - 2) First Implementation
- b. WiFi HaLow: IoT's Low-Power Savior?
  - 1) Wi-Fi HaLow adds third frequency (900 MHz) for Wi-Fi beyond 2.4 GHz and 5 GHz
  - 2) Going below 1 GHz adds several benefits

**3. The Cloud**

- a. Market
  - 1) Leaders - AWS, Microsoft, IBM, Google
  - 2) Google Making Major Moves
  - 3) Amazon Gaining & Losing
- b. Trends
  - 1) Increase in global cloud traffic will outpace growth of global data center traffic
  - 2) No longer new or unusual
  - 3) Shift from price war to feature war
  - 4) Preferred cloud configuration is a hybrid cloud
  - 5) Microsoft's Azure Stack
- c. Redefining App Development
  - 1) Containers
  - 2) Microservices
  - 3) DevOps
- d. FASB ruling – "Intangibles – Goodwill and Other – Internal-use Software (Subtopic 350-40)"

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**E. Big Data**

1. Sizes — A Review
2. How Big Is Big? Example
3. Market Data
4. 5 Big Data Trends
  - a. The Cloud
  - b. Datafication
    - 1) The process of collecting huge data from various sources and storing them in centralized places to find new insights that lead to better opportunities is now termed “Datafication”
    - 2) Datafication will take big data analysis to new heights
    - 3) Datafication is what happens when technology reveals previously invisible processes
  - c. Predictive Analytics
    - 1) Definition - Using big data to recognize trends and behavior patterns before they occur
    - 2) IIA predicts that computing will become increasingly microservice-enabled, where everything – including analytics – will be connected via an API
    - 3) IDC predicts that by 2020
    - 4) Cognitive Services will be embedded in new apps
    - 5) Public Accounting Initiatives
      - a) Rutgers and AICPA Unveil Data Analytics Research Initiative
      - b) PwC has been working on a 10-year project as part of their assurance transformation efforts
        - (1) Software architecture
        - (2) The audit tagline ‘Engagement, Performance and Quality’
  - d. Data Security
    - 1) Big data is now transforming
      - a) Intrusion detection
      - b) Differential privacy
      - c) Digital watermarking
      - d) Malware countermeasures
    - 2) Forward thinking companies are now using advanced analytics capabilities to manage privacy and security challenges

### **III. Enabling Technologies**

#### **A. Robotics**

1. While much of the focus on robotics centers around manufacturing and autonomous cars, it's clear that the robotics movement is set to invade almost every part of our daily lives
2. Rubic's Cube
3. Chatbots

#### **B. Medicine**

1. Flexible nano-sensor for tumor detection
2. Pneumatic tech for the blind

#### **C. The Extra Large**

1. New molten battery for grid storage
2. Plastic Roads Made In a Factory

#### **D. The Extra Small**

1. Farewell Silicon - Hello Carbon Nanotubes
  - a. IBM has patented a new way to shrink transistor contacts without reducing performance
  - b. Composed of a one-atom thick matrix of carbon atoms rolled into an infinitesimally small tube
  - c. Electrons move more easily in carbon transistors than silicon-based devices
  - d. Improve high-performance computers
  - e. Enable faster analysis of Big Data
  - f. Increase the power and battery life of mobile devices and the Internet of Things
  - g. Allow cloud data centers to run more efficiently and economically

### **IV. Current Year Predictions**

#### **A. Hardware**

#### **B. General**

#### **C. Communications**

#### **D. Software**