

















# Demonstration of the Amazon Echo and Some Apple Stuff

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# Background Information

- Improvements in Computer Hardware:
  - Processing power ↑ ↑ ↑ (Moore's Law)
  - Graphic processing ↑ ↑ ↑
  - Cost of digital storage ↓ ↓ ↓ (cost)
  - Data storage (primitives, arrays, lists, trees, DBMS, hashes, etc)  URL ← Active link
- Improvements in Software:
  - New languages  URL  URL  URL
  - Open source software  URL  URL  URL
  - Artificial intelligence
  - Speech recognition




# Background (cont.)

- Artificial Intelligence— computer systems that are able to perform tasks that normally require human intelligence (e.g., visual perception, speech recognition, decision making, & language translation) 
- Beginning in the 1950s—artificial brain 
- Turning point in AI—2014/2015    
- IBM's Watson   
  - Games (chess, Jeopardy)
  - Medical diagnosis and providing medical advice (dozens of hospitals—in oncology and medical imagery)

# Background (cont.)

- Dramatic advances in speech recognition: 



- "Big Data"—extremely large data sets that may be analyzed by computer to reveal patterns, trends and relationships   

# Amazon Echo

aka “A-l-e-x-a”





Shh... don't say  
that word!







# The Wake Word

- “A-l-e-x-a” is the default “wake word” for the device
- In referring to the Amazon Echo, say:
  - “Alex”
  - “The Echo”
  - “you-know-who”
- “Echo” and “Amazon” are alternative “wake words”

# Amazon Echo and Privacy

- Society's concept of privacy has changed dramatically—much more liberalized
- No data are sent to Amazon's cloud processing until the “wake word” is spoken 
- You can erase everything you've asked of the Amazon Echo  
- Wi-Fi connection does not support ad-hoc peer-to-peer networks 

# Opinions on Amazon Echo Privacy

- “Amazon Echo is the ultimate spy device...” 
- “Alexa does not eavesdrop on your conversations” 
- The likelihood of the Echo getting hacked... is very small...” 
- “Amazon’s A-l-e-x-a is not even remotely secure and I really don’t care” 




**So is the Amazon Echo private  
and secure?**

**Yes**

**No**

**Maybe**

# What is the Amazon Echo?

- A wireless smart speaker
- A Cloud-based assistant
- Voice controlled (99+ %)
- Has a seven-piece microphone array
- Connectivity: Wi-Fi and Bluetooth
- Released June 23, 2015
- Price \$179.99
- Sales of ~5 million as of Nov 21, 2016 



For more information see





No audio jack for additional speakers

# Turning off the microphones



# How to Set Up the Amazon Echo

- Download the A-l-e-x-a app to your smartphone or tablet (Fire OS, Android, iOS)
- Turn on the Amazon Echo (plug it in)
- Run the A-l-e-x-a app and connect the Amazon Echo to your Wi-Fi network
- **That's it!**
- For details see  

# Echo



\$180

VS

# Tap



\$130

VS

# Dot



\$50

- Speaker
- Plugged in
- A-l-e-x-a—on

- Speaker
- Portable
- Battery
- Tap for A-l-e-x-a

- Tiny speaker
- Plugged in
- A-l-e-x-a—on

# All Cloud-based assistant “Alexa”




For more information see  [URL](#)  [URL](#)  
and *ConsumerReports*, Sept 2016, pp, 10-13

# What Can the Amazon Echo Do?

- Play music:
  - iTunes via Bluetooth to iPhone or iPad (iOS)\*
  - Amazon Prime Music
  - Spotify
  - Pandora
- Play radio:
  - NPR
  - BBC
  - TuneIn
  - iHeartRadio

\*Also other Bluetooth enabled music devices

# It can do more...


- Provide diverse information—just ask...
  - Deliver news
  - Provide weather information
  - Provide sports information
  - *Much much* more...
- Ask Uber for a ride  
- Order pizza from Domino's 
- Order goods and services from Amazon.com
- Track orders from Amazon









# It can do even more...

- Set timers
- Set alarm on the clock
- Tell time
- Track airline flights
- Information from Wikipedia
- Convert units
- Basic arithmetic
- Define words

# Not done yet...





- Control various devices 
  - Lights
  - Light Dimmers
  - Coffee machines
  - Thermostats
  - Electric plugs
  - Irrigation sprinklers
  - Ceiling fans
  - Door locks

# And almost finally...

- Other devices  
  - A-l-e-x-a compatible smart home hubs\*
  - Security devices (hubs)
- *Many* commands...    









Provide greater functionality than the Echo can natively

# Amazon Skills

- Amazon has made an API\* available (called Smart Home Skill API)—for third-party developers to create apps for the Amazon Echo
- About 2000 Skills are available, see  
- Skills enabled with the A-l-e-x-a app 
- Create your own Skill, see  for the Smart Home Skill Kit

\*Application Program Interface

# Samples of Amazon Skills

- **DC Metro**—arrivals, departures, etc. 
- **Genesis**—remote start your Genesis car 
- **SciGuy**—ask for a science fact 
- **Top Box**—recommended movies & ratings 
- **Ocean Sounds**—noise of ocean waves 
- **National Park Finder**—find parks by state 
- **Kit**—best recommend products (shopping) 
- **LostThings**—locate your Apple devices 

## And finally...

- You-know-who adapts to your speech patterns, vocabulary and personal preferences
- *Rapid* expansion of:
  - new commands
  - Skills
  - information resources
  - hub-based devices

# Demonstration Time

Do I need an umbrella?

Amazon Echo

No rain is expected in San Francisco today.

# Demonstration of Amazon Echo

- **Alexa:** Do I need an umbrella today
- **Alexa:** Define pusillanimous
- **Alexa:** Set timer for four seconds
- **Alexa:** How is traffic\*
- **Alexa:** What's the alarm set for
- **Alexa:** What is the news today
- **Alexa:** Wikipedia the moon
- **Alexa:** more
- **Alexa:** What's the weather in Bergen, Norway

\*From my home to the American Chemical Society in Washington DC



## Demonstration of Amazon Echo (cont.)

- **Alexa:** How do you spell Wikipedia
- **Alexa:** How far is it to Perth, Australia
- **Alexa:** What time is it Nürnberg, Germany
- **Alexa:** What is phone number for the Rexall Drug Center in Vienna
- **Alexa:** What is the phone number for Dr. Masri-Fridling
- **Alexa:** What's 72 degrees Farenheit in Celsius

# Demonstration of Amazon Echo (cont.)

## Music

- Attach iPhone to Amazon Echo: Settings  
→ Bluetooth → Echo-663
- Select/play music on iPhone
- **Alexa:** Next (previous)
- **Alexa:** Play Nana Mouskouri\*
- **Alexa:** Play Johannes Linstead\*
- **Alexa:** Play Beethoven\*

\*From Amazon Prime Music

# Demonstration of Amazon Echo (cont.)

## Music

- **Alexa:** Play relaxing Prime Music
- **Alexa:** Play jazz Prime Music
- **Alexa:** Play Classical Focus (from Prime Music)
- **Alexa:** Play Glenn Yarbrough\*
- **Alexa:** Play Prime Music
- **Alexa:** Play Pandora Chet Atkins

\*From Amazon Prime Music


# Demonstration of Amazon Echo (cont.)

## Trivia

- **Alexa:** Tell a Christmas joke
- **Alexa:** Who was Donald Cram
- **Alexa:** How much does the moon weigh
- **Alexa:** Surely you can't be serious
- **Alexa:** What is two to the sixteenth power
- **Alexa:** What is the value of  $\pi$
- **Alexa:** Shut up!
- **Alexa:** How many cups in a gallon
- **Alexa:** What's the population of Orono, ME
- **Alexa:** How many calories in carrots

# New Topic

## Apple Siri—on Mac Computers

- Siri is an “intelligent personal assistant” controlled by a natural language user interface
- First available on iOS devices October 2011
- Available on Apple computers Sept 2016
- Invoked by clicking on the Siri icon (  ) on the Dock or Menu Bar—or holding “Option+Spacebar”
- “Hey Siri” doesn’t work on Mac computers

# Another Demonstration



# Using Siri on the Mac













- **Say:** What can you do
- **Say:** What files have I worked on today
- **Say:** What files have I worked on this week
- **Say:** Open Calendar
- **Say:** Open Contacts
- **Say:** Open Reminders
- **Say:** Open Microsoft Word
- **Say:** Open Google Earth Pro
- **Say:** Add to Calendar [go Christmas shopping]

## Using Siri on the Mac (cont.)

- **Say:** Read my last e-mail message
- **Say:** How much space on my hard drive
- **Say:** What's the serial number of this Mac
- **Say:** Tell me about this Mac
- **Say:** Give me directions to Milford, Maine
- **Say:** Where is the nearest Pizza Hut
- **Say:** What is the meaning of scrounge
- **Say:** Tell me a joke
- **Say:** What is the International Dateline



# The Competition













- **Amazon Echo** (Amazon products only\*)  
- **Apple Siri** (iOS, watchOS, tvOS & macOS) 
- **Google Home** (Nov 4, 2016)   
- **Microsoft Cortana** (Windows 10, Windows Phone 8.1, Microsoft Band, Xbox One, iOS & Android)   
- **Samsung Scoop** (released?) 
- **Google Now app** (Android, Chrome, iOS, Windows, and os x)  
- **Google Chrome** can accept voice input

\*Amazon has opened up its Alexa Voice Service to third parties (2015) 

# Books

<b>Title</b>	<b>Author</b>	<b>Paperback</b>	<b>Kindle</b>
Amazon Echo: 2016—The Ultimate Guide to Learn Amazon Echo...	Butler, Andrew	\$9.95	\$2.99
Amazon Echo User Guide: Newbie to Expert in 1 Hour!	Edwards, Tom & Jenna	\$9.99	\$0.00
Amazon Echo: 2016—The Ultimate Guide to Learn Amazon Echo in No Time...	Jacobs, Steve	\$9.95	\$2.99
Amazon Echo: Easiest User Guide To Master Amazon Echo Fast!	James, Eric	\$9.99	\$0.99
Amazon Echo: The Ultimate Amazon Echo User Guide	Johansen, Andrew	\$11.99	\$0.99
Amazon Echo: Master Your Amazon Echo; User Guide and Manual (Amazon Echo Updated 2017 User Guide	Mckinnon, Andrew	\$9.99	\$2.99
Amazon Echo: 2016 Edition—User Guide and Manual—Learn It Live It Love It	West, Dominic	\$10.97	\$0.99
Amazon Echo: Amazon Echo Advanced Echo User Guide (2016 Updated): Step-by-Step...	Wright, Steve	\$9.95	\$2.99

# References

- Videos about the Amazon Echo   
- Information from Amazon on Echo 
- Comparing Echo, Tap and Dot 
- Review of Echo (May 9, 2016) 
- Videos about Siri on the Mac   
- Second generation Amazon Dot 
- Google Home vs. Amazon Echo  
- Making “Hey Siri” work on the Mac 