

2020 Communication Technology Update

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University of South Carolina

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The Year of the Network

2020

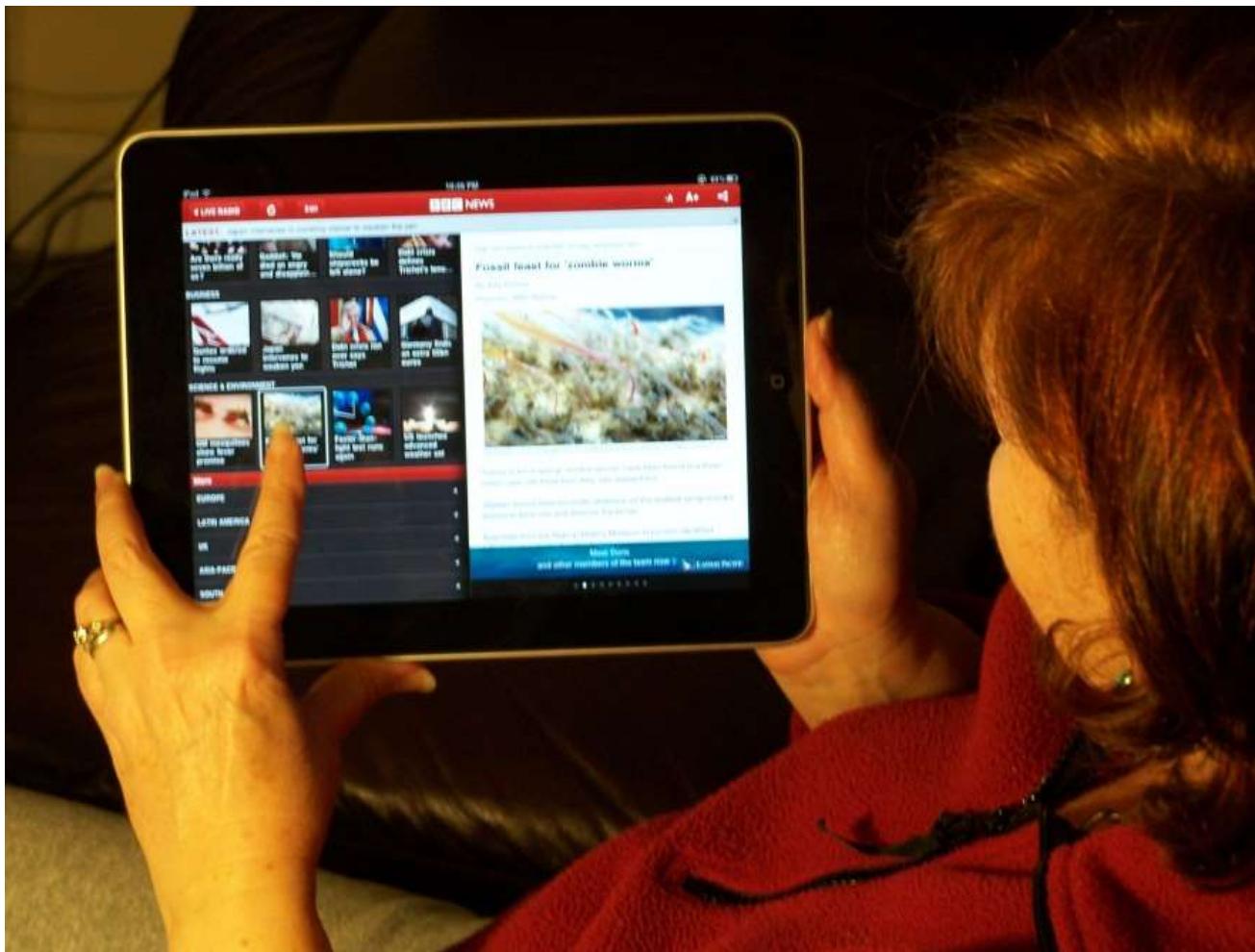
Network Update

5G

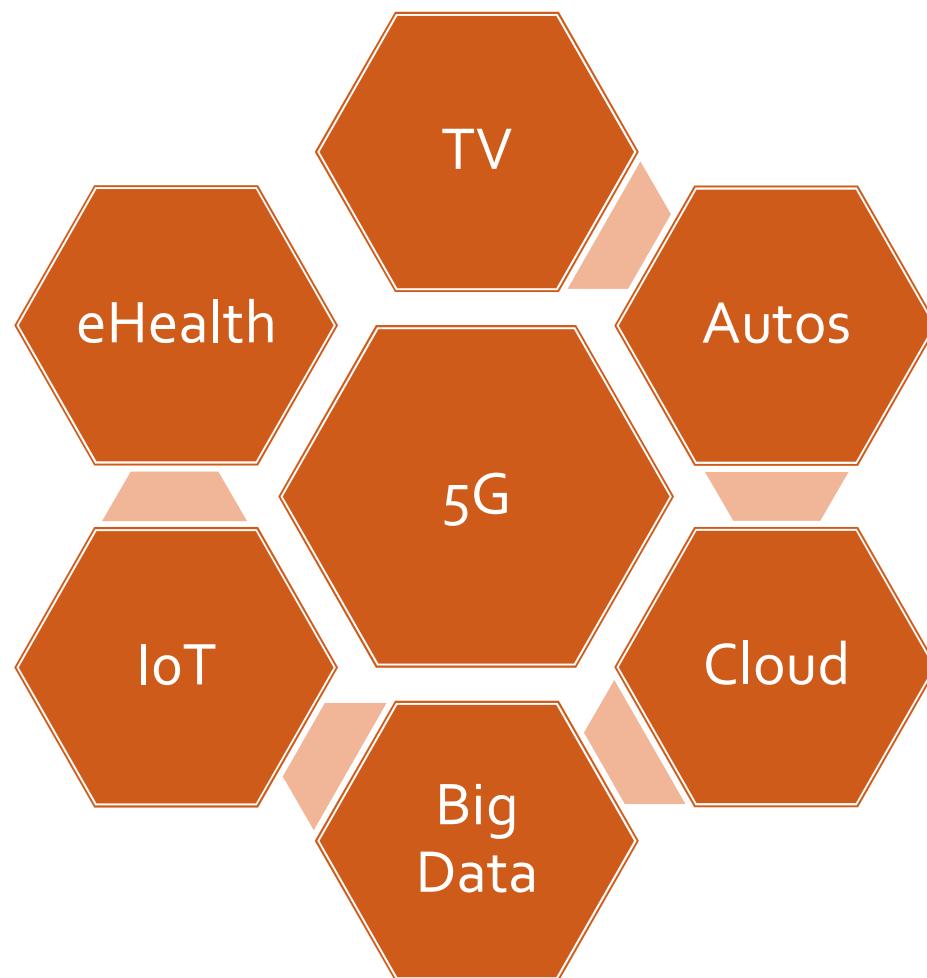
Three dimensions of 5G

- Network
- Users
- Marketing

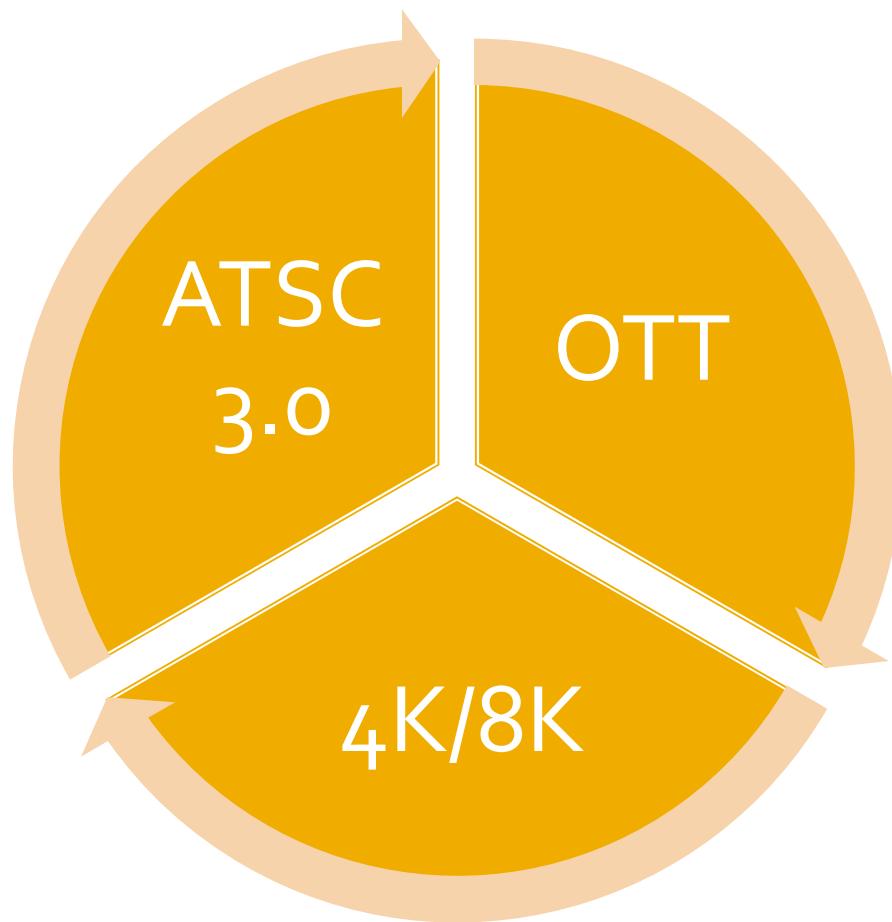
Networks: Mobile=Ubiquitous



Everything is Connected



Let's Start with TV...



ATSC 3.0 Broadcast Standard

- Delivery of 4K
- Up to 120 fps
- HDR
- Enhanced audio
- Mobile television
- Need for bandwidth
- Broadcast transition
- Targeted Advertising



ATSC 3.0 Challenges

- Incompatible with current TV
- Separate transmission channel needed
- User awareness
- Will enable spectrum repack
- Note: revenue opportunities with digital services and targeted advertising

OTT/Streaming Today

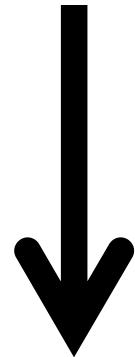


Streaming Tomorrow



Lessons from the Airlines

Disintermediation



Reintermediation

High-resolution TV



Next waves in TV

- 8K
 - Primary a display technology
 - Will be used extensively in digital signage and TV production
 - Network issue—Vast increase in bandwidth
- Frame rate (30, 60, 120, 240)
- HDR

Addressable Advertising

- Use of bandwidth to deliver and store multiple ads
 - Viewers see only the most relevant ads
 - Enables highly targeted advertising
 - Could result in fewer ads shown per program
- Significant revenue potential
 - Development of industry standard
 - Adoption needed by manufacturers, networks, & advertisers

Audio Technologies

- iHeartMedia adoption of AI to program radio
- Potential purchase of iHeartMedia by Sirius/XM (which purchased Pandora in 2019)
- Audio remains ubiquitous

Video Games

- Massive market
 - Significant crossover with:
 - VR
 - eSports
- New consoles
- Constant introduction of new titles

Video Game Consoles

- Late 2020
 - New Xbox
 - Sony PS5
- Most significant change:
 - Transformation to cloud-based architecture

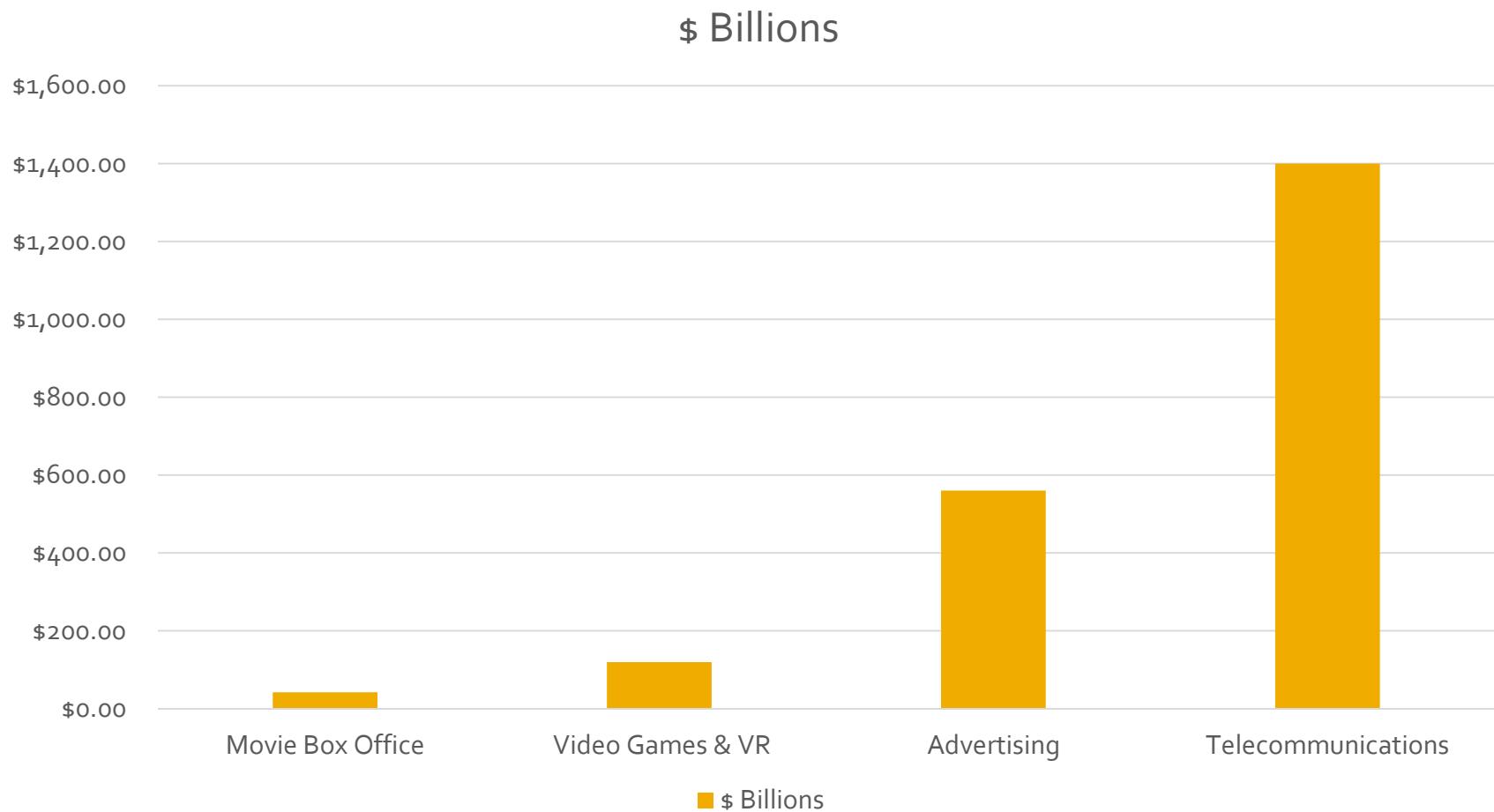
2019 Fortnight Revenues: \$1.8b



Video Games: Revenues

- Estimated 2019 global revenues: \$120 billion

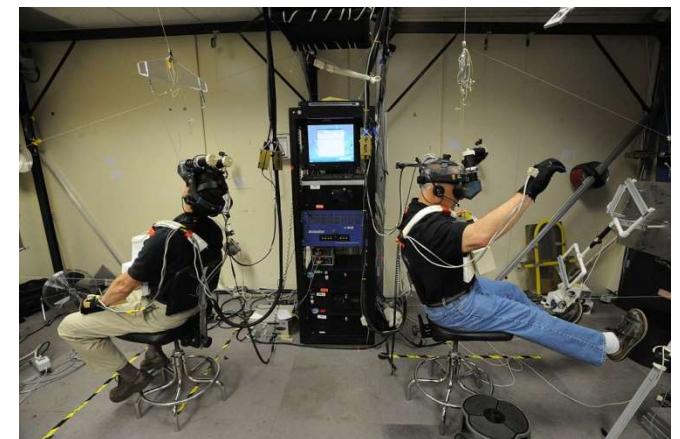
Relative 2019 Global Revenues



Virtual Environments

- Virtual Reality
- Augmented Reality
- 360° video

Virtual Reality



VR Applications

- Games (limited)
- Training
 - Examples: biology and physiology
- Business
 - Architecture
 - Research

VR Limitations

- Health issues
 - Injury during use
 - Dizziness
- Accessibility
 - Visual impairment
 - Hearing impairment
- Time
 - 5-10 minute experiences

Augmented Reality



Remember Pokémon Go?

360° Video



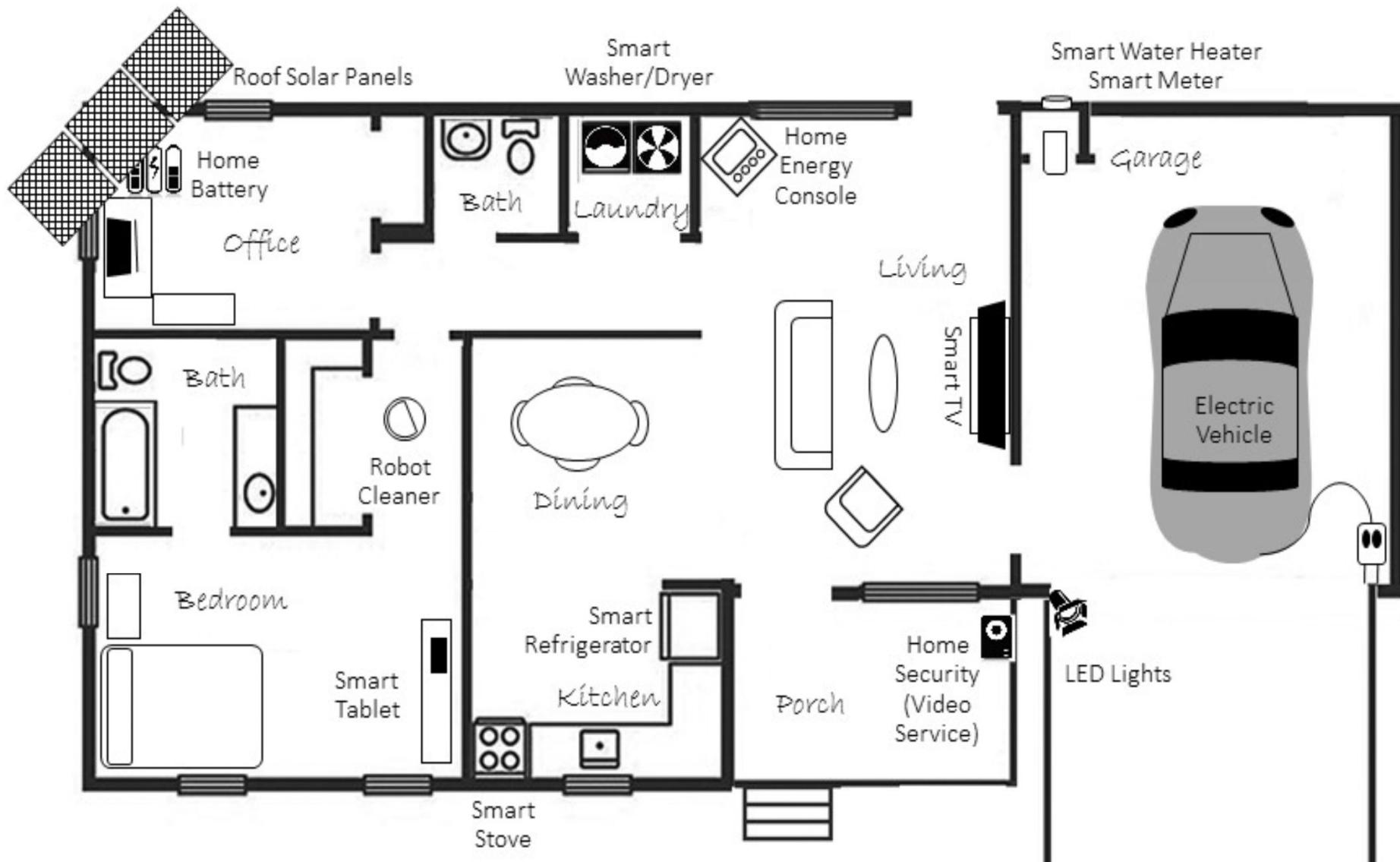
Internet of Things (IoT)

- Smart homes
- Personal assistants/smart speakers
- eHealth
- Automotive telematics

Elements of IoT Applications

- Data
- Network
- Processing
 - Local
 - Edge
 - Cloud

IoT=Smart Houses



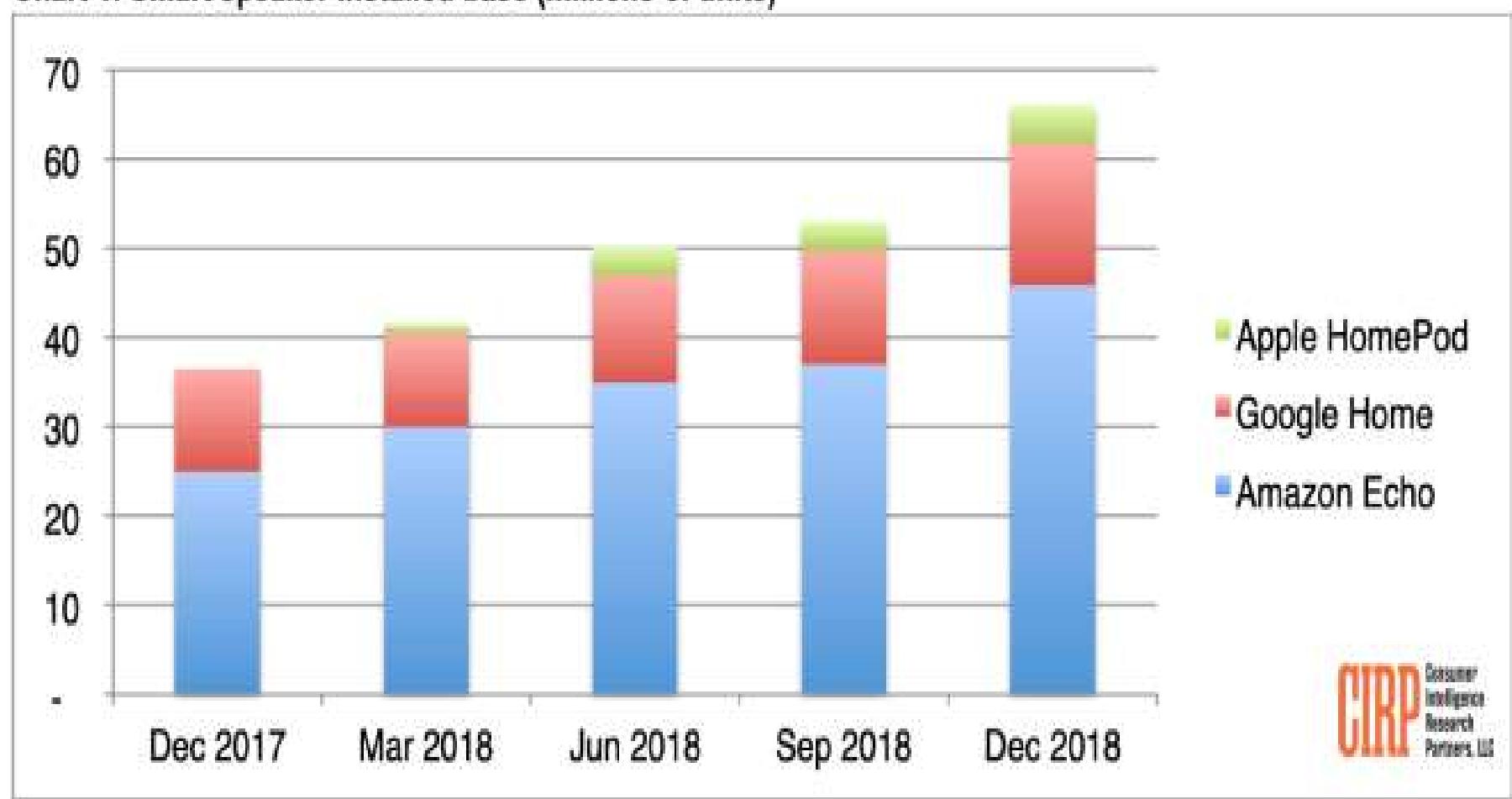
Personal Assistants

- Google Home and Amazon Alexa



Personal Assistant Adoption

Chart 1: Smart speaker installed base (millions of units)



eHealth



5

Sources: Fitbit, Kardia, Doctors on Demand

eHealth Applications

- Preventive care
- Diagnosis
- Monitoring
- Potential to mitigate fastest growing expenses?
 - 2019 Global spending: >\$10 T

Other Trends

- AI
- Translation
- Blockchain

Automotive Telematics

- Autonomous vehicles
- Assistive technology
 - Vehicle to vehicle
 - Vehicle to traffic control
 - Traffic control to vehicle
 - Charger networks



Autonomous Vehicles

Eventually, commuting time will become media time

Short term:
Autos fully
networked w/
assistive tech

Source: Mercedes Benz

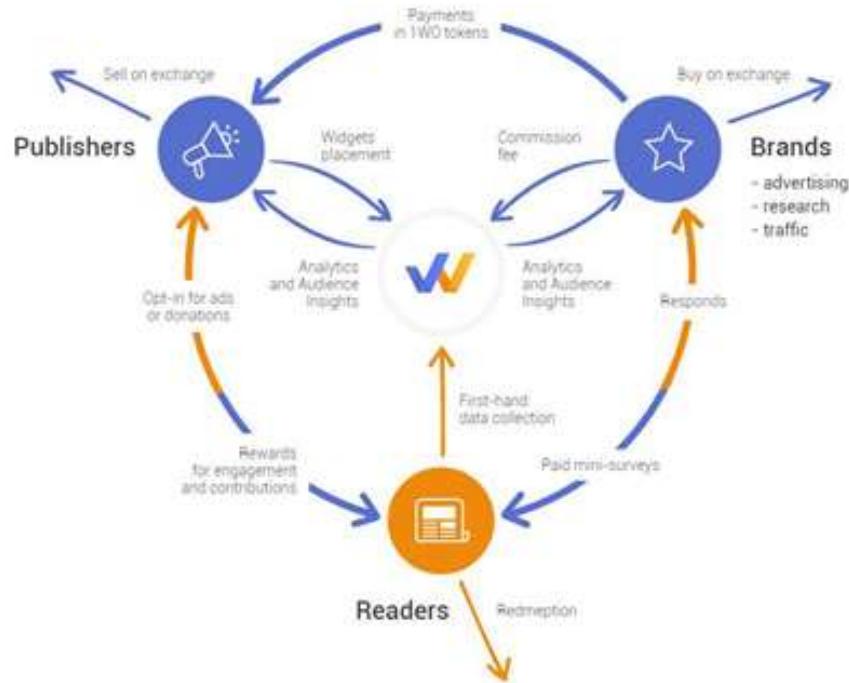


Blockchain and Cryptocurrency

■ Example:



1World Tokens (aka Media Coins) – ICO in 2017



Reward Readers Engagement

Increase Advertisement streams

New revenue: Research & more

AI

?

Regulatory Issues

- Privacy
 - GDPR (General Data Protection Regulations)
- Antitrust
- Equity and subsidy

Social Media

Social media are at a tipping point:

- Privacy
- Increased costs
- Decline in use
- Increase in hypertargeting
- Critical mass

Back to the Network

- Almost all developments require bandwidth increase
 - New applications
 - Edge and cloud computing
- Challenge
 - Dependence on the network increases importance of network security

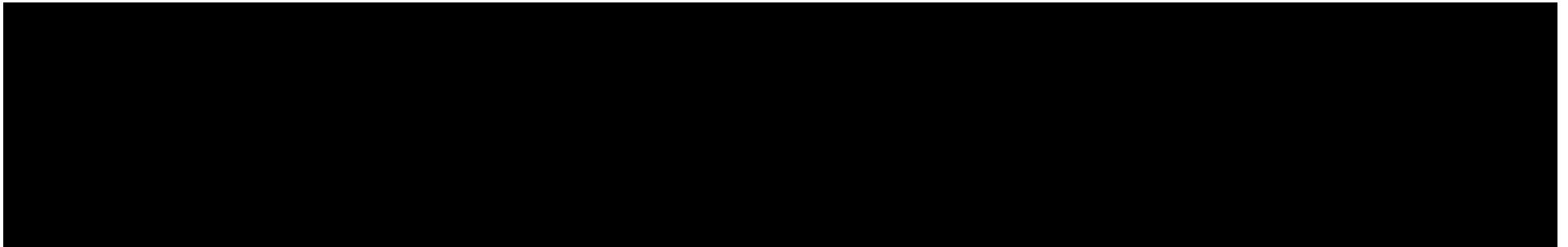
Things to watch in 2020

- 5G
- IoT
- Streaming video adoption
- Cyberwarfare
- Privacy

Thank you!

More Info:

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Communication Technology Ecosystem

