

Comment of NetChoice on “Protecting Competition and Innovation in Home Technologies” before the Senate Judiciary Committee

June 15, 2021

NetChoice

Introduction

The digital economy has grown rapidly over the past several decades in size and scope. Some of this growth can be attributed to the various ways in which the internet has empowered traditional industries to expand their operations and introduce novel features aimed at better serving the needs of their customers.

For example, the retail industry has developed considerably as a result of the rise in the popularity of online marketplaces and the ever-increasing importance of e-commerce capabilities for consumer shopping. No longer are consumers confined to the narrow selection of stores, products, and services offered in their local area. Instead, customers from across the United States can now mix and match local in-store options with online offerings to best meet their specific needs. Not only does this benefit consumers through increased choice and competition, it also benefits businesses who are now able to reach a much wider range of potential customers.

Similarly, Financial Technology—often referred to as “FinTech”—has become one of the main areas of focus for both financial service businesses and regulators alike who are thinking about the future of the financial sector. Rather than having to choose between the handful of banks and credit unions in their immediate vicinity to obtain a loan or open a new checking account, Americans can now compare multiple offerings immediately with virtually none of the restrictions often imposed by geographical limitations.

However, the impact of the digital economy is by no means limited to the empowerment and expansion of traditional industries. It has also spurred entirely new industries, products, and services that would have been largely unimaginable in a pre-internet world. Perhaps the best example of this is the subject of today’s hearing: the “Internet of Things” (IoT) ecosystem.

The Internet of Things refers to the wide array of physical products integrated with dedicated software designed to connect and share data with other devices via the

internet. It includes everything from wearable devices created by dozens of providers like Garmin, Whoop, Samsung, Fitbit, Apple, Citizen, and Google to name just a few to smart home infrastructure like the ADT home security system and the Ecobee Smart Thermostat to more industrial-focused applications like predictive maintenance and remote production control. It also includes in-home products including virtual AI assistants like Microsoft's Cortana, Samsung Bixby, Apple's Siri, Amazon Alexa, and Google Assistant.

The biggest challenge with IoT seems to be deciding what isn't captured. If products within the IoT are defined as an electronic device that connects to the internet, then it would include common everyday devices like a laptop computer and a cell phone. If it must have a screen to be an IoT device, then would it include an internet controlled coffee machine or thermostat? If it is defined as something that requires voice input, then it would likely discount the thermostat, but would still include voice controlled televisions and cable boxes.

In essence, the easiest and most logical way to define IoT is as the name implies, a device in the physical world that connects with other devices through the internet. That is how researchers have considered it and the FTC has recognized this as a way to frame the issue.¹

The Internet of Things is a vibrant and dynamic ecosystem featuring robust competition between a wide range of products. In many ways, the IoT represents the "next evolution of the Internet."²

In 2003, there were approximately 500 million devices that were connected to the internet.³ As of 2020, that number reached over 35 billion and is expected to reach over 83 billion by 2024.⁴ The global IoT retail market was valued at over \$31 billion as of 2020 and is projected to increase at a compound annual growth rate of 26.0% from 2021 to 2028.⁵

This is clearly an important area of economic activity that is only likely to grow more important in the coming years. As such, we want to thank the Senate Judiciary Committee for holding this important hearing.

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- 1 Federal Trade Commission, *Internet of Things: Privacy and Security in a Connected World*, FTC Staff Report (Jan. 2015), <https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-staff-report-november-2013-workshop-entitled-internet-things-privacy/150127iotrpt.pdf>.
 - 2 Dave Evans, *The Internet of Things: How the Next Evolution of the Internet Is Changing Everything*, Cisco (Apr. 2011).
 - 3 *Id.*
 - 4 Markus Rothmuller & Sam Barker, *IoT ~ The Internet of Transformation 2020*, Juniper Research (Apr. 2020).
 - 5 *Internet Of Things In Retail Market Size, Share & Trends Analysis Report By Solution, By Hardware (Beacons, RFID Tags, Sensors, Wearables), By Service, By Technology, And Segment Forecasts, 2021 - 2028*, Grand View Research (Jun. 2021).

That said, while this Committee is considering the intersection between the Internet of Things and competition policy, we ask that the Committee also keep in mind three important facts:

1. The number of businesses and products involved in IoT is much larger than some say as today, finding a consumer or commercial electronic product that does not connect to the internet seems to be the exception, not the rule.
2. There is robust and dynamic competition between a variety of different businesses and products within the Internet of Things ecosystem;
3. There is substantial interoperability between various devices and developers within the Internet of Things ecosystem, further strengthening competition; and
4. Both competition and interoperability are spurring innovation across the Internet of Things and in related digital markets.

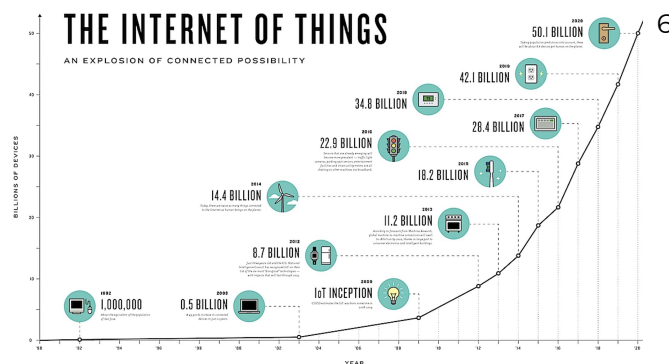
We appreciate your consideration of our views, and please let us know if we can provide any additional information.

IoT is Everywhere

Today, finding electronic devices that do not connect to the internet is the exception. Consumers and businesses now expect their devices to connect to the internet. Take the automotive industry as an example.

For decades cars were relatively simple machines. Now, however, consumers expect the ability to control their cars via smartphone -- unlock doors, remote start, and remote unlock. Likewise the automotive industry is engaging with connected cars to better help with safety, traffic management, and the movement towards self-driving capabilities.

The shipping industry is using IoT to better track containers. Stores use IoT connected products via RFID to help prevent inventory shrinkage. Doctors use internet-connected blood-pressure cuffs to better track patients' health. Chefs have IoT stoves and even IoT sous vide devices to cook their food perfectly the first time around. This is an ever-evolving space that is spanning to impact virtually every sector of our modern economy.



6 NCTA, Infographic: The Growth Of The Internet Of Things, <https://www.ncta.com/whats-new/infographic-the-growth-of-the-internet-of-things>.

Robust Competition within the IoT ecosystem

One defining characteristic of the IoT ecosystem is the intense competition that occurs within it between a variety of different manufacturers and developers. Competition that is both direct and overlapping.

To put this type of overlapping competition in context, here are just a couple of: in-home “smart speakers” all of whom compete with one another:

- Bose Home Speaker 500
- Amazon Echo
- Google Nest
- Sonos One
- Marshall Stanmore II Voice
- Apple Home Pod
- UE Megablast

Of course these devices also compete with other products like Microsoft's Cortana, Apple's Siri and Samsung's Bixby. A consumer may use their in-home virtual AI assistant to figure out the answer to a question or block off a section of their calendar one minute, then use their iPhone or computer to do the same the next minute. They may request a song through their Roku smart TV, or they may request it through their Sonos one speaker.

Moreover, a device from a single manufacturer may facilitate multiple options for virtual AI assistants from various companies. Similarly, multiple devices from several different manufacturers may use the same virtual AI assistant. Though many products enable use of Alexa or Google Assistant through their devices, there is also growing competition in the market for voice-controlled AI. Microsoft's AI, Cortana, remains the default on the largest PC operating system in the world.

Prominent examples include SoundHound Inc.'s virtual AI assistant, which is being used by brands like Mercedes-Benz and Kia in the development of smart cars, and Mycroft AI's virtual assistant, which is being used to develop their own smart speaker.

Somewhat unique to many areas, the channels for competition in the in-home IoT ecosystem are varied and multifaceted.

This robust competition can also be seen in how the market for smart home speakers has changed over time. When Amazon first launched the Amazon Alexa in 2014, it was a first-of-its-kind product. Amazon had brought the product to market before its potential competitors had even considered entering the market and thus enjoyed the advantage that comes with being the first one to introduce a product to the market. As of 2016, Amazon controlled over 93 percent of the market for in-home smart speakers.⁷

7 Lionel Sujay Vailshery, *Market share of global smart speaker shipments from 3rd quarter 2016 to 4th quarter 2020, by vendor*, Statista (Apr. 7, 2021).

But as these products increased in popularity and demand for in-home smart speakers continued to rise, a number of different competitors entered the market to compete with Amazon. And even in spite of Amazon's first-mover advantage, they were wildly successful in chipping away at Amazon's position in the market. Amazon's market share decreased drastically from over 93 percent in Q3 of 2016, to under 29 percent as of Q4 2020.⁸

Now, there are numerous different manufacturers of these devices and no one of them has a market share of over 30 percent. These major shifts, new entrants, and low market share percentages serve as evidence of the robust competition that occurs in the in-home IoT ecosystem.

Openness and interoperability within the IoT

Interoperability is not just common within the IoT, it has become the default due in part from the open systems designed by both Amazon and Google. Recognizing that the more open their systems the more utility there is for users, both Amazon and Google have made their systems widely accessible so that third-party developers can easily integrate their apps and products and make them compatible with these devices.

This leadership has led to open systems becoming standard practice for IoT devices -- ensuring compatibility with a variety of virtual assistant softwares and smart products, making it simple for consumers to incorporate new smart devices into their daily lives and have these devices interact with each other in a virtually seamless manner.



Moreover, this interoperability is likely to persist, as it is beneficial to both the product's creator and the third-party developers that gain access to the product. As more developers integrate their apps and services into a product, the value of that product increases for users. Consumers want to be able to access a variety of different services through their in-home smart device.

Given this, product developers are likely to continue facilitating widespread interoperability, as it greatly increases the value of their devices and the likelihood that a consumer will continue to use their device. Moreover, product creators have a direct incentive to keep third-party developers happy, as a decision to disintegrate their services from the product will meaningfully decrease the value of their product for customers.

8 *Id.*

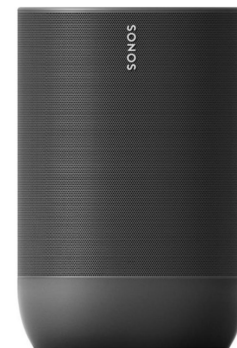
In the interest of advancing such interoperability in smart home technology, Amazon, Apple and Google—in addition to 18 companies such as IKEA and Samsung SmartThings—have begun the adoption of a new standard for device compatibility. Using a network technology called Matter, home products developed by a variety of manufacturers are enabled to work together within one smart home network.⁹

The widespread adoption of Matter highlights the ways in which industry is coming together to develop standards for the benefit of the consumer. Not only will this standard allow further innovation in smart home technologies by eliminating the need to connect products to any one operating system, but it increases consumer choice in the market for smart devices.

IoT devices are designed for easy integrations and interoperability -- even with competitors

As of 2020, 28.9% of internet users owned some type of in-home smart speaker.¹⁰ Interoperability provides these consumers with increased choice in purchasing devices with the assurance that new, innovative products will be compatible with the devices they already own. For example, the Ring home security system, which sold approximately 1.4 million devices in 2020 alone¹¹, is designed for compatibility with Alexa and Google Assistant as well as smart devices made by companies such as Samsung SmartThings, GE, EcoLink, and Leviton even though it is owned by Amazon and operates as an Amazon device. Even Sonos, a direct competitor to Amazon, is able to leverage the Amazon developed AI Alexa and Google Assistant for its backend.

Sonos
Sonos - Move Smart Portable Wi-Fi and Bluetooth Speaker with Alexa and Google Assistant - Black
Model: MOVEUS1BLK SKU: 6361922
★★★★☆ 4.8 (2,017 Reviews) | 1 Expert Review | 79 Answered Questions



One of Ring's biggest competitors, SkyBell, which sold approximately 800,000 devices in 2020, also supports integration with Amazon and Google virtual assistants and a variety of other IoT connected devices. Both companies have expanded which devices and softwares are compatible with their products since their launches, demonstrating the market trend towards increased interoperability. They have also made it much easier for third-party developers to figure out how best to integrate their products into these ecosystems by providing them with the tools necessary to build interoperability into their products and services when they are being designed.

Google has made integration between apps or devices and existing virtual assistants a

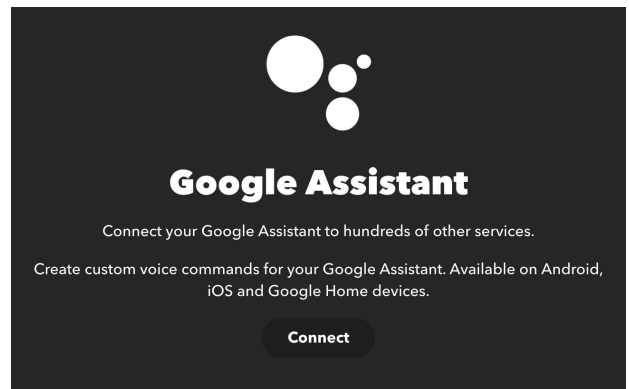
9 Stephen Shankland, *Google, Amazon, Apple back Matter standard so smart home devices cooperate*, cnet, (May 21, 2021)

10 Amy He, *Amazon Maintains Convincing Lead in US Smart Speaker Market*, eMarketer (Feb. 18, 2020)

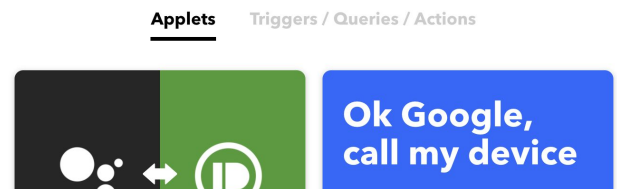
11 Jack Narcotta & Bill Ablondi, *Amazon's Ring Remained atop the Video Doorbell Market in 2020*, Businesswire (May 12, 2021).

core part of its business model and has taken steps to make it extremely simple for developers to engage in this process. This allows small businesses and up-and-coming entrepreneurs to easily enter the market for smart home products while providing additional benefits for users already connected to Google operating systems by giving them access to innovative third-party content and products.

The Google Assistant site for developers provides detailed instructions for third parties to build voice control into apps and connect products to the larger Smart Home network.¹² Developers are then able to easily build integration capabilities into their products before submitting them to Google's review process, which is also made accessible on the site.¹³



Amazon has provided similar resources and tools to third-party developers. The "Alexa Skills Kit" allows integration between third-party products and the Amazon Alexa voice controls.¹⁴ Amazon provides the options of either connecting developers to agencies with the appropriate expertise in the development of Alexa skills, or completing a series of instructional modules provided by Amazon designed to empower developers with the knowledge they need to facilitate integration. Amazon also requires products and apps that want to integrate with Alexa to undergo a simple certification and review process, based on policy guidelines and functionality tests.



Finally, both Google and Amazon allow integration with services like "If This Then That" (IFTTT) so that users can create custom scripts and integrations for their devices.

Conclusion

The Internet of Things is an important component of the 21st century economy and is likely to become even more important over time. A careful look at the IoT ecosystem reveals three important facts: 1) the number of businesses and products involved in IoT is much larger than some say as today, finding a consumer or commercial electronic product that does not connect to the internet seems to be the exception, not the rule; 2) there is robust competition within the in-home IoT ecosystem; 3) the significant amount of interoperability provided by products in the Internet of Things ecosystem further

12 *Integrate with Google Assistant*, Google, <https://developers.google.com/assistant>.

13 *Submit your project*, Google Assistant, <https://developers.google.com/assistant/conversational/submit-project>.

14 *Alexa Skills Kit*, Amazon, <https://developer.amazon.com/en-US/alexa/alexa-skills-kit>.

strengthens this competition; and 4) this competition and interoperability spurs innovation within the IoT ecosystem and digital markets more generally.

As always, we stand ready to work with Congress to achieve good policy outcomes that promote the interests of the United States and benefit American consumers and innovation. We appreciate your consideration of our views.

Sincerely,

Carl Szabo, Vice President & General Counsel, NetChoice

Chris Marchese, Counsel, NetChoice

Trace Mitchell, Policy Counsel, NetChoice

Malena Dailey, Research Fellow, NetChoice

NetChoice