



Federal Trade Commission

How to Regulate the Internet of Things Without Harming its Future: Some Do's and Don'ts

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Good afternoon. I am very pleased to be here today before the Chamber and to have this opportunity to discuss my perspective on the "Future of the Internet of Things." I would like to thank Rich Cooper for all his effort in pulling this event together. I was here to speak before your Telecommunications & E-Commerce Committee just about a year ago and I have to say that you are one of my favorite

* The views stated here are my own and do not necessarily reflect the views of the Commission or other Commissioners. I am grateful to my advisor, Beth Delaney, for her invaluable assistance in preparing these remarks.

audiences. The Chamber is an important voice and I am looking forward to hearing your thoughts and questions after the conclusion of my remarks.

Introduction

Before delving into the policy ramifications of how to, or not to, regulate the Internet of Things, it might be helpful for me to provide some relevant context for our discussion today. As you all have probably noticed, over the last few years, use of the term “Internet of Things” has become ubiquitous. Despite all of the recent attention placed upon this concept, it is interesting to note however that the term itself was coined over 15 years ago.¹ Our intense focus on the Internet of Things is very recent in nature. Indeed, according to Google Trends, over the last two years the appearance of the term “Internet of Things” in U.S. web and news searches has grown exponentially.² Timing is everything, and the advent of the smartphone, the development of applications (apps), and technological innovation in the processor, sensor and wireless spaces have all converged, bringing a fully operational Internet of Things to fruition. Accordingly, it is no wonder that interest in this topic -- and its future -- has never been higher or more relevant to the business community, policy makers, academics, and consumers.

¹ Alex Wood, *The Internet of Things is Revolutionising our Lives, but Standards are a Must*, THE GUARDIAN (Mar. 31, 2015), <http://www.theguardian.com/media-network/2015/mar/31/the-internet-of-things-is-revolutionising-our-lives-but-standards-are-a-must>.

² See GOOGLE, <https://www.google.com/trends/> (last visited May 19, 2015).

At its simplest, “Internet of Things” means just what it says – “things” connected to the Internet. However, a more useful, and certainly more technical, description goes something along the lines of: a “network of physical objects embedded with electronics, software, sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected devices. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure.”³ For today’s discussion, there are two key concepts encapsulated in this latter definition that highlight why the potential of the “Internet of Things” has garnered so much attention – of both the wildly enthusiastic as well as highly-cautionary variety – and why that attention will continue for the foreseeable future.

The first element of this definition I find critical to consider is the ability of the Internet of Things to allow us to “achieve greater value and service.” This point cannot be overstated. On a daily basis, we see illustrations in the media of the limitless possibility of the Internet of Things to improve the quality of our lives. Take just one tiny segment of the IoT market – personal wearables – as an example. We all are familiar with Fitbit, Jawbone, the Apple Watch and other popular wearables that allow us to monitor exercise, sleep and caloric consumption, among other things. Clearly, as a threshold matter, consumers find the basic ability of these devices to be valuable.

³ *Internet of Things*, WIKIPEDIA, http://en.wikipedia.org/wiki/Internet_of_Things (last visited May 20, 2015).

Sometimes policy discussions mistakenly assume that what is at stake for consumers can be approximated by the size of the so-called “IoT market.” But this dramatically understates things from a consumer protection perspective. What is at stake in terms of consumer benefits is not just what consumers actually pay for their IoT goods and services, but the value they extract from them. Economists usually measure this “consumer surplus,” as a consumers’ willingness to pay less than what the consumer actually paid for the product. So how much consumer surplus are we talking about when it comes to the Internet of Things?

This is the fundamental economic question that should be a starting point for regulatory discussions: how much consumer welfare is derived from new product introductions enabled by the Internet of Things or the increased value consumers derive from existing goods and services that are improved? With an answer to this question we can start to address questions like how various policy changes will impact economic incentives and affect consumer welfare. Unfortunately, and as I will discuss, while the FTC’s Internet of Things Report acknowledges in passing that there will be some benefits – not a major concession – this appears to be not much more than lip service. No real effort was made to assess the magnitudes of these benefits. But I think magnitudes are important. Fortunately, the economic literature can give us some sense of rough magnitudes to provide an empirical lens through which we can motivate our discussion. Economists have long studied the economic value generated by new

products – taking into account the fact that these new products are often substitutes for existing ones – and calculated the total consumer surplus arising from their introduction.

This is a useful starting point. Not all innovations are as popular as the Apple Watch or the Fitbit. So let's start small. The classic economic study in this literature is M.I.T. Professor Jerry Hausman's estimate that General Mills, by adding apple and cinnamon to its classic Cheerios formulation, generated about \$66.8 million dollars *per year* in additional consumer value.⁴ There are other examples: an online newspaper generated \$45 million annually in consumer surplus,⁵ direct broadcast satellites generated over \$5 billion in consumer welfare,⁶ and the introduction of the minivan in the United States increased consumer welfare \$2.8 billion from 1984 to 1988.⁷ The point is that consumer welfare benefits from new products, even ones as "minor" as Apple-Cinnamon Cheerios, generate substantial gains for consumers. It is simply impossible to calibrate an economically coherent approach to regulating the Internet of Things without confronting the relative magnitudes of the gains to consumers at stake when assessing various policy tradeoffs.

⁴ Jerry A. Hausman, *Valuation of New Goods Under Perfect and Imperfect Competition*, in THE ECONOMICS OF NEW GOODS (Timothy F. Bresnahan & Robert J. Gordon eds., 1996).

⁵ Matthew Gentzkow, *Valuing New Goods in a Model with Complementarities: Online Newspapers*, 97 AM. ECON. REV. 713 (2007).

⁶ Austan Goolsbee & Amil Petrin, *The Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV*, 72 ECONOMETRICA 351 (2004).

⁷ Amil Petrin, *Quantifying the Benefits of New Products: The Case of the Minivan*, 110 J. POL. ECON. 705 (2002).

With those estimates in mind, consider the consumer surplus that might arise from some of the innovation currently on the horizon or already here. For example, building on the established wearables market, IBM announced last month that it was striking deals with Apple, Johnson & Johnson and Medtronic in an effort to integrate electronic data collected and used by medical professionals with the data collected from personal wearables in order to optimize patients' medical care.⁸ IBM will be using its Watson supercomputer and is launching an entire Watson Health Unit.

Wearables are also making an impact in the life insurance sector – reinvigorating life insurance policy sales and offering discounts to consumers. Following the lead of insurers in South Africa, Europe, Australia and Singapore, John Hancock will introduce a program for American consumers that allows them to share exercise habits, cholesterol levels and other medical information in exchange for points that can be converted into premium savings and other perks.⁹ As some have noted, this program upends the traditional approach to life insurance underwriting by shifting from a “static snapshot” of medical status to one that will allow for continuous re-evaluation.¹⁰ As the director for the Center for Health Incentives and Behavioral Economics at the Leonard

⁸ Hayley Tsukayama, *IBM Wants Your Smartwatch to Talk to Your Doctor*, WASHINGTON POST (Apr. 13, 2015), <http://www.washingtonpost.com/blogs/the-switch/wp/2015/04/13/ibm-wants-your-smartwatch-to-talk-to-your-doctor/>.

⁹ Tara S. Bernard, *Giving Out Private Data for Discount in Insurance*, NEW YORK TIMES (Apr. 8, 2015), http://www.nytimes.com/2015/04/08/your-money/giving-out-private-data-for-discount-in-insurance.html?_r=0.

¹⁰ *Id.*

Davis Institute has pointed out, this model has the potential to change insurance “from a passive vehicle that pays the bills if something happens, into a more active vehicle to get people to lower their risk.”¹¹

And earlier this week, UNICEF and ARM, the British chip designer, announced their “Wearables for Good” initiative. The goal of this project is to jumpstart an industrial ecosystem for sensing and data technology that assists mothers and children in developing nations. The initiative is being launched with a contest to generate ideas. To illustrate the kind of impact the project is anticipating, the co-founder of UNICEF Innovation used the example of pneumonia, the leading cause of death for children under 5 in poor countries. A wearable sensor that measures breaths per minute – by monitoring the rise and fall of the chest -- could provide an alert that detects early-stage pneumonia in children.

I have focused thus far on consumer welfare – but inherent within offering “value and service” is the effect of the Internet of Things – and the innovation it spurs – on our economy as a whole. Researchers have estimated 900 million devices were connected to the Internet in 2009, increasing to 8.7 billion devices in 2012, and now up to 14 billion devices today.¹² And it appears that the sky is the limit for the future of

¹¹ *Id.*

¹² Press Release, Gartner, Gartner Says the Internet of Things Installed Base Will Grow to 26 Billion Units By 2020 (Dec. 12, 2013), <http://www.gartner.com/newsroom/id/2636073>; *Internet of Things Market Statistics – 2015*, IRONPAPER (Mar. 5, 2015), http://www.ironpaper.com/webintel/articles/internet-things-market-statistics-2015/#.VVuwYGO1_7Q.

connected devices. While some predict that by 2020 there will be 25 to more than 30 billion devices connected to the Internet of Things,¹³ others indicate those numbers will be closer to 50 billion.¹⁴ Huawei, a Chinese maker of computing and communications equipment, estimates 100 billion connected devices by 2025.¹⁵ Qualcomm recently reported that it made \$1 billion in revenue last year on chips used in a variety of city infrastructure projects, home appliances, cars, wearables, and more than 120 million smart home devices.¹⁶ That is in addition to the 20 million cars equipped with its chips, and the 20 types of wearable devices that use its silicon.¹⁷

As the director of the Customer Business Transformation Team at Cisco's Consulting Services has recognized, the Internet of Things is "fundamentally about economic value – what it will do for business and individuals and organizations." She added that her company estimates the opportunity to be worth \$14.4 trillion.¹⁸ And a chief economic strategist for the Progressive Policy Institute has characterized the

¹³ Press Release, Gartner, *supra* note 12 (estimating 26 billion devices); Press Release, ABI Research, More Than 30 Billion Devices Will Wirelessly Connect to the Internet of Everything in 2020 (May 8, 2013), <https://www.abiresearch.com/press/more-than-30-billion-devices-will-wirelessly-conne/> (estimating more than 30 billion devices).

¹⁴ *Internet of Things Market Statistics – 2015*, *supra* note 12.

¹⁵ Quentin Hardy, *The Sensor-Rich, Data-Scooping Future*, NYTIMES.COM (Apr. 26, 2015), http://bits.blogs.nytimes.com/2015/04/26/envisioning-a-future-when-sensors-are-scooping-up-data-on-everything/?_r=0.

¹⁶ Aaron Tilley, *Qualcomm: The Internet of Things is Already a Billion Dollar Business*, FORBES (May 15, 2015), <http://www.forbes.com/sites/aarontilley/2015/05/15/qualcomm-the-internet-of-things-is-a-billion-dollar-business/>.

¹⁷ *Id.*

¹⁸ Andrew Nusca, *Tapping M2M: The Internet of Things*, ZDNET.COM (Sept. 19, 2013), <http://www.zdnet.com/article/the-internet-of-things-is-fundamentally-about-economic-value/>.

Internet of Things as enabling the ability to “remak[e] your whole economy to work to be able to deal with this new information that you didn’t have before, to make better decisions.”¹⁹ This is further illustrated by the seismic shifts that the IoT is causing in well-established industries. As reported by the New York Times, General Electric announced last month it was selling GE Capital, which has been recognized as a huge profit center for GE since the financial deregulation of the 1980s.²⁰ Things have changed. General Electric now has turned its attention to this sector and to things like computer-connected L.E.D. street lights that allow cities to collect and analyze information allowing for lower costs and improved safety.²¹ Other examples abound. For instance, connected cars are breathing life back into the automotive industry. One often-cited report has valued the global connected-car market at \$18 billion in 2012, and predicts that valuation will triple by 2018, and that every car will have some kind of IoT connection by 2025.²² Other analysts have recently pointed out that connected cars are expected to be a \$1 billion business for AT&T in 2015.²³

¹⁹ *Id.*

²⁰ Quentin Hardy, *supra* note 15.

²¹ *Id.*

²² GSMA, CONNECTED CAR FORECAST: GLOBAL CONNECTED CAR MARKET TO GROW THREEFOLD WITHIN FIVE YEARS 3 (Feb. 2013), *available at* http://www.gsma.com/connectedliving/wp-content/uploads/2013/06/cl_ma_forecast_06_13.pdf.

²³ Kevin Tofel, *Connected Cars Expected to be a \$1B Business for AT&T in 2015*, ZDNET.COM (May 19, 2015), http://www.zdnet.com/article/connected-cars-expected-to-be-a-1b-business-for-at-t-in-2015/?tag=nl.e539&s_cid=e539&ttag=e539&ftag=TRE17cfd61.

The second aspect of the IoT definition that is fundamental for today's discussion is "exchanging data with the manufacturer, operator and/or other connected devices." The "greater value and service" brought to us by the Internet of Things is only possible through the exchange of data. This is a simple, yet crucial point. Consumer welfare and economic performance simply do not improve without this exchange. The many gains to consumers from new and enhanced products and services resulting from the Internet of Things depend critically upon the free flow and exchange of data. However, government regulators have been slow, and at times outright reluctant, to embrace the flow of data. What I have seen instead is what appears to be a generalized apprehension about the collection and use of data – whether or not the data is actually personally identifiable or sensitive – along with a corresponding, and arguably crippling, fear about the possible misuse of such data.

This generalized fear of data takes many forms. And it has many costs. Any sensible approach to regulating the collection and use of data will take into account the risk of abuses that will harm consumers. But those risks must be weighed with as much precision as possible, as is the case with potential consumer benefits, in order to guide sensible policy for data collection and use. The appropriate calibration, of course, turns on our best estimates of how policy changes will actually impact consumers on the margin, not whether we can identify plausible narratives about how particular business practices might result in consumer harm.

At my own agency, I have seen a more narrative and anecdotal approach to identifying the potential effects of regulating the collection and use of data crowd out a more analytical, evidence-based data policy. A handful of examples come to mind, most recently with the issuance of the Data Broker Report in May 2014, the Internet of Things Report in December 2014, and the acceptance of a consent decree involving Nomi, a retail analytics firm, just last month. In each of these instances, it is my view that the Commission has, while fully intending to protect consumers, reacted prematurely and with an unwarranted general suspicion of data rather than grounding decisions and recommendations in economic and empirical analysis, or even waiting to see how some of these issues will actually evolve in the marketplace before acting.

The view that data is inherently suspect is apparent in the language used in some of these recent matters as well as the press releases issued to promote them. Take the Commission's Internet of Things Report, for example. In its discussion of the potential privacy risks to consumers associated with the IoT, the Report asserts that "the sheer volume of data that even a small number of devices can generate is stunning: one participant indicated that fewer than 10,000 households using the company's IoT home automation product can 'generate 150 million discrete data points a day' or approximately one data point every six seconds for each household."²⁴ Without any analytical lens through which to interpret this fact, frankly, so what? Yes, the Internet

²⁴ FED. TRADE COMM'N, INTERNET OF THINGS: PRIVACY & SECURITY IN A CONNECTED WORLD 14 (2015).

of Things implies the generation of large volumes of data. And yes, that generation of data has implications for both the benefits to consumers from the exchange of data and the risks of specific harms. But the fact that there are millions of data points is not -- in and of itself -- a privacy risk. What is required to inform policy is not a general suspicion of large data sets and their uses, but rather a more nuanced analysis at least acknowledging the tradeoffs involved for consumers at the margin. That nuance was absent from the IoT Report.

The Commission's press release announcing the release of the Data Broker Report similarly asserted that "[t]he extent of consumer profiling today means that data brokers often know as much – or even more – about us than our family and friends, including our online and in-store purchases, our political and religious affiliations, our income and socioeconomic status, and more."²⁵ These statements don't sound like those from an agency grappling seriously with the hard analytical questions required to conduct evidence-based data policy based upon economic analysis. They do not ask about costs and benefits. They do not ask about economic incentives. And they do not ask about policy tradeoffs. The statements sound instead, frankly, like the Commission is offering readers a reason to share its generalized fear of data. These types of

²⁵ Press Release, Fed. Trade Comm'n, FTC Recommends Congress to Require the Data Broker Industry to Be More Transparent and Give Consumers Greater Control Over Their Personal Information (May 27, 2014), <https://www.ftc.gov/news-events/press-releases/2014/05/ftc-recommends-congress-require-data-broker-industry-be-more>.

statements do nothing to further the discussion of how regulators should approach issues implicated by the Internet of Things.

Today I would like to explore where I think the Commission has gone wrong in examining the flow, collection and use of data and to set forth a few principles that I think would help get us back on track. These points are pretty straightforward – in fact, so much so – that they lend themselves to a presentation as a listing of my top “FTC Do’s and Don’ts” when examining emerging issues such as the Internet of Things. As my voting record on these matters might telegraph, I do have quite a few “Don’ts.” Bear with me.

#1: Don’t Regulate by Anecdote or Speculation

Perhaps it is because I am an economist who likes to deal with hard data, but when it comes to data and privacy regulation, the tendency to rely upon anecdote to motivate policy is a serious problem. Instead of developing a proper factual record that documents cognizable and actual harms, regulators can sometimes be tempted merely to explore anecdotal and other hypothetical examples and end up just offering speculations about the possibility of harm.

The Data Broker Report is, unfortunately, a good example of this phenomenon. Most of the Data Broker Report was a straightforward factual recounting about the data that this industry collects and the uses to which it puts such data. To the extent that the Report was providing a factual reckoning, I thought the Report did a fine job.

However, the Report started going off the rails in its obligatory “legislative and best practices recommendations” section. Take this example. In recommending that Congress consider enacting legislation that would require companies to provide consumers with transparency when the company uses a risk mitigation product and then denies them an opportunity to complete a transaction, the Report first imagined a detailed hypothetical scenario where a consumer would be denied credit, but where the protections of the Fair Credit Reporting Act would also not apply.²⁶ The Report then argued that legislation was needed because the consumer might be denied a something like a mobile telephone contract but would not know the reason for the denial. The FTC-recommended legislation would ensure that the consumer got access to the potentially inaccurate underlying information and then could correct it. As I pointed out in a dissenting footnote, this recommendation was premature because there was no evidence about the existence or scope of this hypothetical problem.²⁷ Indeed, the Commission itself – in a footnote but not the text of the Report – admitted as much, noting that it did not “have any information on the prevalence of errors in the consumer data that underlie data brokers’ risk mitigation products.”²⁸

²⁶ FED. TRADE COMM’N, DATA BROKERS: A CALL FOR TRANSPARENCY AND ACCOUNTABILITY 53 (2014).

²⁷ *Id.* at 54 n.96.

²⁸ *Id.* at 53 n.95.

#2: Don't Regulate by Slogan Either

A corollary to agencies not regulating by anecdote is that agencies should not be regulating by slogan either. The frequent use of slogans and catchphrases in Commission reports and testimony is troubling for two reasons. First, there is no evidence that these slogans and other terms of art are consistently defined. A recent article posted on the International Association of Privacy Professionals website highlighted this very problem and identified a litany of terms that the author characterized as arising frequently in conversation but where there is nothing close to an accepted definition or even a shared understanding.²⁹ The author included terms such as: first/third party; Big Data; Data Broker; Data Minimization; Deterministic; Device ID; PII; Precise Geo; Privacy by Design; Probabilistic; Sensitive; and Track. How valuable can a recommendation be if it uses language that does not support a common understanding?

Another, and in my view, even more significant drawback of the use of slogans like “security by design” and “data minimization” is that they do not appear to contain any meaningful analytical content. Relying upon the application of these concepts to the Internet of Things can instead substitute for the sort of rigorous economic analysis

²⁹ Brook Dobbs, *With Our Privacy Terminology, Are We Even on the Same Page?*, IAPP (May 8, 2015), <https://privacyassociation.org/news/a/with-our-privacy-terminology-are-we-even-on-the-same-page/>.

required to understand the tradeoffs facing firms and consumers.³⁰ An economic and evidence-based approach sensitive to those tradeoffs is much more likely to result in consumer-welfare enhancing consumer protection regulation. To the extent concepts such as “security by design” or “data minimization” are endorsed at *any* cost – or without regard to whether the marginal cost of a particular decision exceeds its marginal benefits – then application of these principles will result in greater compliance costs without countervailing benefit. Such costs will be passed on to consumers in the form of higher prices or less useful products, as well as potentially deter competition and innovation among firms participating in the Internet of Things.

#3: Do Hug an Economist, Or at Least Perform a Proper Cost-Benefit Analysis

A primary goal of my entire tenure at the FTC has been to encourage a deeper integration of economics and cost-benefit analysis into the consumer protection framework at the Commission. The hesitancy to fully incorporate economic tools into consumer protection analysis is discouraging, but not completely surprising. The biggest reason is probably that the vast majority of work that the Consumer Protection Bureau performs simply does not require significant economic analysis because they involve business practices that create substantial risk of consumer harm but little or

³⁰ See Dissenting Statement of Commissioner Joshua D. Wright, Issuance of the *Internet of Things: Privacy and Security in a Connected World* Staff Report (Jan. 27, 2015).

nothing in the way of consumer benefits. A team of Ph.D. economists, or even one, is usually unnecessary in a simple fraud case.

Applying economic theory in the consumer protection realm is fairly recent. Only in 1980, when the Commission adopted the Policy Statement on Unfairness, did it begin considering the benefits of various business practices and their corresponding impact of enhancing competition among firms or otherwise making consumers better off. Under this revised standard, and as subsequently codified by Congress in 1994 in Section 5(n) of the FTC Act, the agency may pursue enforcement action on the basis of “unfairness,” in cases where an act or practice “causes or is likely to cause substantial injury to consumers which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or competition.”³¹

In reformulating its unfairness standard, the Commission recognized that in utilizing its authority to deem an act or practice as “unfair” it must undertake a much more rigorous analysis than is necessary when it uses its deception authority.³² One of the primary benefits of performing a cost-benefit analysis is to ensure that government action does more good than harm.³³ Rigorous economic analysis protects against the

³¹ 15 U.S.C. § 45(n).

³² *Int'l Harvester Co.*, 104 F.T.C. 949, 1070 (1984).

³³ *Int'l Harvester*, 104 F.T.C. at 1070. See also Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L.J. 165, 245 (1999) (“CBA is superior to rival methodologies in enabling agencies to evaluate projects according to the extent that they contribute to overall well-being.”); see generally Exec. Order No. 13,563, 76 Fed. Reg. 3821 (2011).

risk that business practices that provide consumers net benefits are not erroneously condemned.

As we become fully immersed in the digital age, and as the Commission considers policy issues relating to topics such as the “Internet of Things,” the failure to engage in a thorough and appropriate cost-benefit analysis that incorporates recent economic insights can lead to serious policy errors. If the benefits of these welfare-enhancing business practices are not weighed correctly against the harms they present to consumers, we run the risk of squelching innovation and depriving consumers of these benefits. There is still serious resistance to adequately accounting for the full economic costs and benefits of various business decisions and practices. The tendency appears to be to discount benefits, as is the case in the Internet of Things Report. Other times, the Commission simply asserts that consumer benefits do not exist, as the Commission chose to do in finding unlawful Apple’s decision to allow the entry of a password upon a first transaction to trigger a 15-minute window during which users could make additional purchases without reentering the password.

The FTC has a talented group of consumer protection economists. They cannot and should not be asked to conduct rigorous cost-benefit analysis in all cases. But economic analysis ought to be more deeply integrated into the policy and enforcement agenda of the Commission.

#4: Don't Issue Recommendations or Best Practices Without Doing the Necessary Work, and While You're At It, Don't Forget About Your 6(b) Authority

The Commission has a long and well-regarded history of producing public reports that examine novel, emerging or otherwise important issues. These reports are integral to the Commission's role in protecting consumers and competition in the marketplace. The genesis of such reports varies. Congress may ask the Commission to investigate certain subject matter and then to submit a report to them on the findings.³⁴ In preparing such Congressional reports, the Commission sometimes will seek information using our authority under Section 6(b) of the FTC Act to compel private parties to submit information for review.³⁵ Commission staff reports often are the result of extensive research, rigorous investigation into certain industry sectors, practices or products, and economic analysis.³⁶ Reports taking advantage of the Commission's unique ability to collect and analyze data and to conduct economic

³⁴ See, e.g., FED. TRADE COMM'N, *MARKETING VIOLENT ENTERTAINMENT TO CHILDREN: A REVIEW OF SELF-REGULATION AND INDUSTRY PRACTICES IN THE MOTION PICTURE, MUSIC RECORDING & ELECTRONIC GAME INDUSTRIES* (2000).

³⁵ See, e.g., FED. TRADE COMM'N, *CIGARETTE REPORT FOR 2011(2013)*; FED. TRADE COMM'N, *SMOKELESS TOBACCO REPORT FOR 2011 (2013)*; FED. TRADE COMM'N, *MARKETING FOOD TO CHILDREN AND ADOLESCENTS* (2008); FED. TRADE COMM'N, *CREDIT-BASED INSURANCE SCORES: IMPACT ON CONSUMERS OF AUTOMOBILE INSURANCE* (2007); Press Release, Fed. Trade Comm'n, *FTC Orders Nine Insurers to Submit Information for Study of the Effect of Credit-Based Insurance Scores on Consumers of Homeowners Insurance* (Dec. 23, 2008), <http://www.ftc.gov/news-events/press-releases/2008/12/ftc-orders-nine-insurers-submit-information-study-effect-credit>.

³⁶ See, e.g., FED. TRADE COMM'N, BUREAU OF ECON., *IMPROVING CONSUMER MORTGAGE DISCLOSURES: AN EMPIRICAL ASSESSMENT OF CURRENT AND PROTOTYPE DISCLOSURE FORMS* (2007); FED. TRADE COMM'N, *BROADBAND CONNECTIVITY COMPETITION POLICY* (2007); FED. TRADE COMM'N, *EMERGING HEALTH CARE ISSUES: FOLLOW-ON BIOLOGIC DRUG COMPETITION* (2009); FED. TRADE COMM'N, *POSSIBLE ANTICOMPETITIVE BARRIERS TO E-COMMERCE: WINE* (2003).

analyses to form the basis of its recommendations predictably have had significant impact on public policy debates.³⁷ It makes sense -- in this very limited context -- for the Commission to provide recommendations for legislation and best practices.

However, the Commission and its staff should exercise restraint in instances where the report being issued merely documents a public workshop conducted by the agency and the public comment process that usually accompanies the workshop. These documentary reports rarely reflect independent research or investigation, and their primary role is to synthesize the discussion at the workshop, the comments placed on the public record, and the Commission's enforcement actions and policy positions relating to the workshop topic. Using documentary reports as a vehicle for making recommendations for legislation and best practices is inappropriate in these circumstances. Pauline Ippolito, one of the most important contributors to modern consumer protection economics, and longtime FTC economist before her recent retirement, echoed this sentiment about the troublesome trend in recent Commission workshops and Reports, observing that "there ought to be more solid foundation if

³⁷ See, e.g., FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION (2011) (cited in *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120, 2129 (2014)); FED. TRADE COMM'N, GENERIC DRUG ENTRY PRIOR TO PATENT EXPIRATION (2002) (cited in *Caraco Pharmaceutical Laboratories, Ltd. v. Novo Nordisk A/S*, 132 S.Ct. 1670, 1678 (2012)); FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003) (cited in *Microsoft Corp. v. i4i Ltd. Partnership*, 131 S.Ct. 2238, 2252 (2011)); FED. TRADE COMM'N, POSSIBLE ANTICOMPETITIVE BARRIERS TO E-COMMERCE: WINE (2003) (cited in *Granholtm v. Heald*, 544 U.S. 460, 466 (2005)).

we're going to be making recommendations on legislation certainly, and even best practices," and that the FTC's role as "management consultant makes me nervous."³⁸

#5: Do Articulate a Cognizable Harm

Figuring out whether, and how, to regulate the Internet of Things is difficult. The Commission must exercise far greater restraint when examining an issue as far ranging as the "Internet of Things" – a nascent concept about which the only apparent consensus is that predicting its technological evolution and ultimate impact upon consumers is nearly impossible. The appropriate analysis involves complicated questions for which we frequently do not have answers. In instances such as these, one way regulatory bodies can avoid making policy missteps is to limit their recommendations to areas where cognizable harm has been established.

My recent dissent in the Nomi Technologies matter highlights some of these concerns. In that case, the Commission found itself in the unfortunate position of trying to fix a problem that no longer existed and a problem that caused minimal, if any consumer harm.

³⁸ Pauline Ippolito, Former Acting Director, FTC Bureau of Econ., Remarks at TechFreedom & ICLC's *First Amazon, Then Apple: Where Is the FTC Heading on Digital Consumer Protection?* 14 (Aug. 4, 2014), available at <http://docs.techfreedom.org/FTCReformTechFreedomTranscriptAugust2014.pdf>. See also Howard Beales, Former Director, FTC Bureau of Consumer Protection, Remarks at TechFreedom & ICLC's *First Amazon, Then Apple* 15 (Aug. 4, 2014) ("What troubles me about a lot of the recent reports in particular...1:41.10 ...what the commission has the authority to do and the way it would like to see the world work. And what I think it's very consciously trying to do is to pressure people to do things that it understands it cannot require. I think that's very problematic when it's done sometimes with a very explicit threat...").

Nomi provided analytics services based upon data collected from mobile device tracking technology to brick-and-mortar retailers through its “Listen” service.³⁹ Nomi uses sensors placed in its clients’ retail locations or its clients’ existing WiFi access points to detect the media access control (MAC) address broadcast by a consumer’s mobile device when it searches for WiFi networks. Nomi passed MAC addresses through a cryptographic hash function before collection and created a persistent unique identifier for the mobile device.⁴⁰ Nomi did not “unhash” this identifier to retrieve the MAC addresses and Nomi did not store the MAC addresses of the mobile devices. Importantly, yet completely ignored by the majority, Nomi did *not* track individual consumers – that is, Nomi’s technology recorded whether individuals are unique or repeat visitors, but it did not identify them. The information collected was used only to provide analytics to Nomi’s clients. For example, even without knowing the identity of those visiting their stores, the data provided by Nomi’s Listen service can generate potentially valuable insights about aggregate in-store consumer traffic patterns, such as the average duration of customers’ visits, the percentage of repeat customers, or the percentage of consumers that pass by a store rather than entering it. These insights, in turn, allow retailers to measure how different retail promotions, product offerings, displays, and services impact consumers. In short, these insights help retailers optimize

³⁹ Compl. ¶ 3, Nomi Technologies, Inc., FTC Matter No. 132-3251 (Apr. 23, 2015).

⁴⁰ For more information on cryptographic hashing, see Rob Sobers, *The Definitive Guide to Cryptographic Hash Functions (Part I)*, VARONIS (Aug. 2, 2012), <http://blog.varonis.com/the-definitive-guide-to-cryptographic-hash-functions-part-1/>.

consumers' shopping experiences,⁴¹ inform staffing coverage for their stores, and improve store layouts.

Because Nomi did not follow its opt-out policy to the letter, the Commission brought a case alleging deception, despite the fact that there was no articulable injury other than the fact that consumers could only avail themselves of an online opt out rather than an in-store opt out. I dissented because – on these facts -- I did not find this to be a material misrepresentation. Deceiving consumers with a material representation that affects their behavior to their detriment is actionable under Section 5. This essential link between materiality and consumer injury ensures the Commission's authority is employed to deter only conduct that is likely to harm consumers and does not chill business conduct that makes consumers better off. This link also unifies the Commission's two foundational consumer protection authorities – deception and unfairness – by tethering them to consumer injury. When considering policy issues such as the future of the Internet of Things, the Commission should likewise engage only to the extent that it can be confident that its recommendations target actual,

⁴¹ See, e.g., Alyson Shontell, *It Took Only 13 Days for Former Salesforce Execs to Raise \$3 Million for Their Startup, Nomi*, BUSINESS INSIDER (Feb. 11, 2013), <http://www.businessinsider.com/former-salesforce-and-buddy-media-executives-raise-3-million-nomi-2013-2> (“The moment you open Amazon.com, your entire retail experience is personalized, down to the promotions you see and the products you are pushed. That’s because e-commerce is a data-driven industry, and websites know a lot about customers who stumble on to their websites. Physical stores however, where 90% of all retail purchases still occur, know nothing about the customers who walk in their doors.”).

cognizable harm and these recommendations will indeed result in improved consumer welfare.

Conclusion

Thank you very much for your time and attention today. I am happy to take any questions that you might have for me.