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8   FEDERAL TRADE COMMISSION

9   MOBILE DEVICE TRACKING

10   SPRING PRIVACY SERIES

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24   Reported By: Stephanie Gilley

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1   WELCOME

2   MS. KOULOUSIAS: Thank you all for coming

3   today and welcome to our seminar today on mobile device

4   tracking, which is the first in our series of spring

5   privacy series seminars.

6   My name is Amanda Koulousias and I am an

7   attorney here at the FTC in the Division of Privacy and

8   Identity Protection.

9   We are going to get started with our first

10 presentation in a few minutes, but first I just need to

11 go over some housekeeping issues.

12   Anyone who goes outside of the building

13 without an FTC badge will be required to go through the

14 magnetometer and x-ray machine prior to reentry into

15 the conference center.

16   In the event of a fire or evacuation of the

17 building, please leave the building in an orderly

18 fashion. Once outside the building, you will need to

19 orient yourself to New Jersey Avenue. Across from the

20 FTC is the Georgetown Law Center. Look to the right

21 front sidewalk and that will be our rallying point.

22 Everyone will rally by floors and you'll need to

23 check-in with the person accounting for everyone in the

24 conference center, which will likely be me or Kristen,

25 so you could look for us.

1   In the event that it is safer to remain

2   inside the building, you'll be told where to go. And

3   if you spot any suspicious activity, please alert

4   security.

5   This event may be photographed, videotaped,

6   webcast or otherwise recorded. By participating in

7   this event, you are agreeing that your image and

8   anything that you say or submit may be posted

9   indefinitely at FTC.gov or one of the Commission's

10   publicly-available social media sites.

11   For anybody who wants to submit questions

12   today, we will be taking question cards, which are

13   available in the hallway, immediately outside of the

14   conference room if you haven't gotten one yet. And if

15   you have a question, just fill out your card, raise

16   your hand, and someone will come and get it from you.

17   For those of you who are participating via

18   the webcast, you can email your question to

19   mobiledevicetracking@FTC.gov, you can Tweet it with the

20   #FTCMOBILE or you can post it to the FTCs Facebook page

21   on the workshop status thread. Please understand that

22   we may not be able to get to all questions, but we will

23   do our best to incorporate as many as we can.

24   Now, we're going to get started today, first

25   with a presentation by Ashkan Soltani, who is going to

1   give us a technical overview. Ashkan is an independent

2   researcher and consultant who focuses on privacy,

3   security, and behavioral economics. His research has

4   examined the prevalence of online tracking and exposed

5   practices designed to circumvent consumer privacy

6   choices. And he has previously served as staff

7   technologist in the Division of Privacy and Identity

8   Protection here at the FTC and also worked as the

9   primary technical consultant on the Wall Street

10   Journal's, What They Know investigative series. Please

11   welcome Ashkan.

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1   TECHNICAL OVERVIEW

2   MR. SOLTANI: Good morning everyone. I am

3   glad you all made it on this rainy day. I am going to

4   just quickly go over how some of this technology works

5   and then let people jump on the panel on some of the

6   specifics. It's going to be a very kind of high-level

7   overview, but feel free to ask any questions and

8   clarifications.

9   So the panel is on mobile device tracking. I

10   am going to speak about location-aware devices, and

11   then I'm going to speak about device-aware locations,

12   and then kind of touch on some of the benefits and some

13   of the concerns from a technical perspective.

14   So we are talking about mobile phones,

15   generally, smart phones more than kind of traditional

16   phones, although traditional phones, feature phones,

17   still kind of fall into the space. And we are kind of

18   all probably aware of location-aware devices, so most

19   of our smartphones allow us to find where -- you know

20   map our location or find out restaurants.

21   The device itself collects its location from

22   a variety of sources, so via GPS antenna that is on the

23   device that kind of positions itself on the globe based

24   on satellites in the sky, via local wi-fi signals that

25   allow it to triangulate and query against databases

1   like Google and Apple, to tell it where it is

2   approximately located, and via the cell towers, the

3   mobile providers like AT&T and Verizon, allow the

4   devices to triangulate their location and then view

5   queries like what are the, you know, restaurants in my

6   area.

7   This is kind of a quick overview that I

8   provided to, I think, a Senate panel about two years

9   ago, but it kind of generally describes all the way the

10   device collects location and puts it onto the device.

11   We've done, with the What They Know series

12   and the FTC has also done a lot of reviews on what apps

13   collect and what apps collect location. This might

14   become kind of old news to you, but often times an app

15   will collect location to tell you where a restaurant

16   is, but then it might share it with third-party ad

17   networks or share it with other entities, to either

18   benefit the user or to kind of provide advertising.

19   And location generally, when you say

20   location, it can mean a number of things. GPS location

21   can be accurate, you know, down to 100 feet or even --

22   depending on the technology used. Wi-fi is often

23   accurate to a city block level, but generally -- and I

24   think the FTC has some nice definitions of what

25   location is in their COPPA -- I think the COPPA

1   guidelines describe location down to a city

2   intersection. Generally, we mean where you are

3   relative to kind of a map.

4   And one technology that I didn't talk about

5   in the earlier slide at the Senate hearing is kind of a

6   newer technology called Bluetooth Low Energy, which

7   isn't very flashy, so iBeacons, that's what Apple

8   refers to it and other people refer to it. And this is

9   essentially another way for a device to determine its

10   location based on low-energy Bluetooth signals from

11   beacons that stores or you yourself could purchase and

12   put, so you could buy a beacon at your home and, when

13   your device encounters that beacon, you could set it to

14   do something.

15   One of the common uses here is often times

16   stores are starting to roll out beacons that would

17   allow you to, when you pass an item on a display, give

18   you an alert when you pass by that system to say, like,

19   hey, this item is on sale or here's a coupon. The

20   technology works essentially by the Bluetooth antennae

21   in your device monitoring what other Bluetooth devices

22   are around it and then, once that's detected, it will

23   signal a particular message or a particular website or

24   a particular action on your phone. And they're often

25   very accurate down to, you know, five meters or less,

1   it depends on the specific device. And they're

2   often -- they're starting to be rolled out in stores.

3   The other thing that is starting to be more

4   commonly rolled out in stores, or a class of store, is

5   device-aware stores or device-aware locations. This is

6   an example from a Cisco interface about a particular

7   interface for a mall to allow the mall to identify

8   where users are traveling, what stores they are

9   traveling to, and what displays they are looking at.

10   So this would be an example of a device-aware location.

11   In fact, Sweet Green here, many in the U.S. go to Sweet

12   Green for salads, Sweet Green is a device-aware

13   location. It, I think, partners with Nomi to identify

14   what devices come to the store, how long they stand in

15   front of the register, kind of what devices might be

16   repeat customers, for example. So if you've gone to

17   one Sweet Green and then later come back to another

18   Sweet Green.

19   As I said, when the device -- when your

20   smartphone kind of tries to determine its location,

21   it's actually a two-way signal, right? So often

22   Bluetooth and cell tower location services are two-way,

23   both the device is receiving as well as the device

24   transmitting. And by transmitting, the signals that

25   the receiver receives essentially allow them to

1   triangulate the location of the device.

2   Another way to look at your device is

3   actually a series of transmitting antennas, right? So

4   a typical smartphone will have Bluetooth antenna, a

5   wi-fi antenna, a GPS antenna which is for receiving

6   typically, and then a GSM antenna, the antenna that you

7   use to speak to AT&T or T-Mobile or whoever your

8   provider. And each of those antennas emit signals and,

9   in those signals, the provider, for example, is able to

10   triangulate the location of the device.

11   So here, Verizon and AT&T, based on its

12   network of cell towers, can tell either which cell

13   tower you are closest to, or triangulate a more

14   accurate position based on kind of the distance between

15   towers. And this is based just by your phone being on

16   and sending beacons to the network saying, hey, I need

17   a cell phone signal or what signal is near me or when

18   you use the phone. So this can happen just by the

19   device being on.

20   Similarly, there are companies like Path

21   Intelligence that intercept those same signals, that

22   Verizon or AT&T receives, to also perform triangulation

23   of your device. So this is -- the antenna in the top

24   right corner is a device that Path Intelligence sells

25   that malls and other stores can place in their mall.

 1   And essentially, as your phone is beaconing to AT&T or

 2   T-Mobile or whoever, these devices also pick up the

 3   phone's identifier and its location, or approximate

 4   location, in the mall.

 5   Bluetooth happens the same way. So as your

 6   device tries to look for a Bluetooth signal or is

 7   communicating to a Bluetooth or wi-fi signal, wi-fi

 8   networks, the device is transmitting basically a beacon

 9   or a frame, looking and essentially trying to identify

10   nearby networks.

11   There are companies, I think some here today,

12   that also intercept those beacons, those signals, and

13   provide geolocation services based on your wi-fi, kind

14   of wi-fi emanations. And something -- this can happen

15   either when the device is on a network, it can happen

16   by the network you're on, so if you go to a hotspot,

17   often times the hotspot might have this feature built

18   in, or this can happen independent. So you can go to

19   Starbucks and Starbucks might have a Starbucks wi-fi

20   network, but they might also feature one of these

21   devices to also triangulate your device based on your

22   communications to the Starbucks network.

23   There are variety of methods, I kind of just

24   touched on a couple. Your phone might have other

25   antennas like NFC or RFID. There's -- this is a kind

1   of a schema from an Opus Research paper about magnetic

2   and LED lighting-based location detection, so

3   emanations from your phone's LEDs or kind of magnetic

4   field that it emits.

5   I'll say that the more kind of developed ones

6   that I know about are the cell-tower-based and

7   wi-fi-based location technologies, as well as the

8   Bluetooth iBeacon-type technologies. And the way these

9   things -- so the question is, how do you identify the

10   user and what is identification in this? Are they

11   tracking you by name? How do they identify the same

12   device to where it comes back to the store?

13   And the key to remember is, each of these

14   antennas that we talked about on the device, the wi-fi

15   antenna, the GSM antenna, the Bluetooth antenna, they

16   all have a unique serial number, a globally unique

17   identification. This is kind of like your Social

18   Security Number, but it's specific to the chip set on

19   your phone, right? So it is designed to be globally

20   unique such that no other person or no other device has

21   that same number. And it allows them to uniquely

22   identify that device.

23   So it might not refer to the device by name,

24   but it will say, for example, you can ascertain whether

25   it's an iDevice, an iPhone device, an Apple device, or

1   an Android device from this information, as well as

2   whether it was the same device that you saw yesterday.

3   And essentially this device, while it doesn't

4   reveal perhaps the owner's information directly, it

5   kind of helps to indicate what the location habits of a

6   particular device are. So you can say, this device

7   travels through these set of cell towers at a given

8   time or this device has come to Sweet Green before

9   yesterday or went to a different Sweet Green store last

10   week. And it allows essentially to refer to the device

11   uniquely.

12   One thing to remember is those serial numbers

13   are persistent to the device, they are hardware serial

14   numbers. There is actually very little users can do to

15   delete or change them. In fact, there was a bill last

16   week, I think Schumer was trying to propose, to make it

17   illegal to change some of these, such that when phones

18   are stolen, they could be blacklisted based on this

19   information.

20   So as long as you have the device, this

21   information is persistent to the device. So it's a

22   pretty reliable or robust identifier.

23   And sometimes -- often times you might hear

24   of the device identifier as being hashed. Hashing is

25   just a kind of mathematical algorithm you can apply to

1   a particular identifier. So that top line, the one

2   beginning with B8, that's my particular MAC address for

3   one of my devices. And the bottom -- the number

4   starting with 48 is the hashed version of that

5   identifier.

6   And the key with hashing is that it kind of

7   obfuscates the numbers, so it's very hard to go back

8   from has number to the MAC address, the original Mac

9   address, but you're guaranteed to always get the same

10   outcome. So any time you see my device and you hash it

11   with the same algorithm, in this case, this is a SHA-256

12   hash, you would get the same outcome.

13   And so what's key here is, again, the hash

14   identifier, while it's not revealing the actual

15   identifier, it is still another robust, unique or

16   globally unique identifier. It is just as robust as

17   the wi-fi address.

18   Actually, there was a great blog post by Ed

19   Felten, I think last year, about whether hashing makes

20   data anonymous. And he goes into great detail on how

21   this work and the fact that hashing doesn't make it

22   anonymous, it just basically transforms it from one

23   identifier to another, but it still a robust

24   identifier.

25   And another way to -- there was a response,

1   for example, Euclid Analytics is one of the analytics

2   companies that do wi-fi analytics. They would argue

3   that this information is anonymous, it's very difficult

4   to identify people, right? And they said this doesn't

5   refer to an individual. But in response to a series of

6   letters from Senator Al Franken, they responded that,

7   yes, if you'd provided a device to law enforcement --

8   or if law enforcement provided them with a device, they

9   could perhaps tell what other locations that device had

10   been.

11   So you are able to get, from a device, to a

12   historical location, even if the information is hashed.

13   So that's something to be mindful of. So it's

14   anonymous in the sense that it doesn't refer to a

15   person by name, it's hashed in that it might obfuscate

16   the original MAC address, but you can still provide

17   historic device location based on some of these

18   identifiers, even if they are hashed.

19   And often times these things are used for

20   things -- you know, what are the benefits of these

21   technologies? Well, one of the big benefits is

22   coupons, for example. Everyone loves coupons. Or you

23   might be able to quickly see a deal that's happening

24   near you or maybe find the location of your seat.

25   There is actually a great number of use cases where

1   this is helpful, both from the consumer side as well as

2   the retail side.

3   The retailers can, for example, use the

4   technology to identify what stores are popular, what

5   displays are popular, where users are going, whether

6   there is repeat customers. They can kind of use the

7   information to determine how queues are progressing,

8   whether people stand in line too long and, if after

9   five minutes you jump out of line, you might want to

10   add another queue.

11   But there is also a number of concerns with

12   this technology, which I'm sure the panel will get

13   into, but just to touch on them briefly, this

14   information can be kind of sensitive, in the sense that

15   it can provide demographic information about people's

16   age. There's no way, for example, to tell whether it's

17   a kids device you're tracking or an adult's device

18   you're tracking.

19   Data based on the types of other locations

20   you've been going to, you might be able to infer

21   demographic information like lifestyle interests. This

22   is a company, Turnstyle, that provides demographic

23   interests, in the bottom right, about, you know,

24   nightclubs and music and particular interests. So you

25   can infer, just like behavioral advertising, you can

1   infer kind of interests based on people's location

2   behaviors as well.

3   The other kind of -- this is Verizon's

4   analytics. So Verizon, as a carrier, they provide

5   their -- I think it's called Precision Insights. And

6   this is, for example, a tale of people's activities in

7   one city, in aggregate. But you know, how people spend

8   their day, whether they go to -- have hotdogs in the

9   morning or whether they go to -- the top five

10   restaurants they go to. And this is essentially

11   aggregated analytics, but it provides kind of a big

12   picture people's day, right?

13   So they can track, for example, T-Mobile and

14   Verizon know how you spent your entire day, in terms of

15   the location data. And so that might be a concern to

16   some people.

17   And the general, kind of classic concerns are

18   that, like most other tracking debates, it's

19   essentially that the collection is invisible and

20   passive. People need to opt-out versus opt in, how

21   difficult it is to opt-out. So -- group has provided

22   an opt-out system that lets you, for example, provide

23   your MAC address to this network to create kind of a

24   blacklist for people who want to not be tracked.

25   That's difficult for most users, I suspect, to go and

1   find their MAC address. There's probably going to be

2   iterations on this.

3   One idea I had was, for example, to set up an

4   opt-out wi-fi network at each location, such that a

5   user can just join that network for a brief instance

6   and that network can capture the wi-fi address, kind of

7   like what Latanya was doing outside. So you briefly

8   join an opt-out network, it catches your MAC address,

9   adds you to the opt-out list, and kicks you off of the

10   network. That could be done in a few minutes by either

11   Seth or myself using some open source software, and

12   that would be maybe an easier way, but it is still a

13   difficult process. Users have to know that it is

14   happening. It's the typical kind of tracking debate.

15   We touched on how the identifiers might not

16   be, you know, fully anonymous or they are

17   pseudo-anonymous. And then one of the big issues, I

18   think, is that the retention period of even the

19   pseudo-anonymous copy of information is unclear, so

20   whether law enforcement or other, you know, divorce

21   attorneys or whoever can get this information might be

22   of concern.

23   Convergence, finally, is one of the areas

24   that are kind of potentially sensitive. This is

25   Turnstyle -- sorry, this is Retail-Next and they, for

1   example, collect or combine your location history,

2   wi-fi activity, point-of-sale activity, payment cards,

3   et cetera to provide a kind of more complete picture of

4   the user and the user experience.

5   And so as you combine things like location

6   with other types of activity like tracking or things

7   where you might -- sorry, like purchases, where you

8   might identify yourself or use a credit card or sign up

9   for a mailing list, I think people will find that the

10   location information, combined with information about

11   them, might also be sensitive.

12   This is just an example I just ran, I think,

13   the other night where CVS provides a mobile app to let

14   you, like, you know, find coupons and kind of find your

15   store, but it transmits your hashed identifier. That's

16   my hashed identifier we saw earlier in that SHA-256

17   algorithm. The app itself sends home or phones home

18   your MAC address to CVS. And Apple is trying to curb

19   this behavior, but on the Android platform, this still

20   happens.

21   And so this information about my usage of the

22   app, my signing into the app, can be combined with some

23   of the their analytics, like the retail location

24   tracking, to get a better picture of who I am and what

25   stores I go to.

1   So that's the general kind of landscape of

2 how this stuff works. I'd be happy to take some

3 questions.

4   MS. KOULOUSIAS: Yeah, if anyone in the

5 audience has any questions, feel free to fill out your

6 question cards and somebody will come and get that for

7 you and we can ask those.

8   Just to get started, Ashkan, I had a quick

9 question on -- so you talked about the different ways

10 that companies can do some of this and you talked about

11 both the wi-fi and the GSM interception.

12   MR. SOLTANI: Mm-hmm.

13   MS. KOULOUSIAS: Can you give us a little bit

14 of insight into why a company might want to use one or

15 the other?

16   MR. SOLTANI: Sure. So GSM-based, cell

17 tower-based location analytics usually can be collected

18 by your carrier, so the AT&T and Verizons, as well as

19 companies like Path Intelligence that have these

20 antennas. They are essentially kind of collection

21 devices that intercept the communication to your

22 carrier.

23   This is a pretty robust way to track users

24 because you are -- often times your phone is always

25 connected to your provider. So unlike wi-fi,

1   because you might not have your wi-fi antenna on or you

2   might not be using it, whereas your GSM often sends a

3   heartbeat every, kind of every -- it depends on the

4   carrier, but at a pretty regular interval, pinging the

5   tower to identify what towers are associated with you.

6   So it's a pretty robust way to track individuals.

7   Additionally, the GSM protocol requires one

8   of the identifiers to -- there's a persistent

9   identifier, but there's a second identifier which is

10   often the one used to track individuals called the

11   TIMSI, these rotate at some interval, but my

12   understanding is that they can be kind of persistent

13   for up to 30 days, so it provides kind of a good

14   picture of a person's location habits over 30 days and

15   whether they come to the same store or not. So it's a

16   good signal, in the sense that most people don't turn

17   off their phones.

18   MS. ANDERSON: And what about Bluetooth?

19   MR. SOLTANI: So Bluetooth is a more -- it's,

20   I would argue, most people or not as many people leave

21   their Bluetooth antennas on. I think maybe the panel

22   can speak to what the prevalence and penetration of

23   this stuff is. I would argue, like, in the grand

24   scheme of antennas, you have the GSM antenna, which is

25   almost always on, the wi-fi antenna which, if it's on,

1   is beaconing and maybe not connected to a network, and

2   then Bluetooth often is low energy and the distance is

3   lower, but it provides some additional benefits in that

4   the resolution is much more fine grain. You can

5   actually have much more -- you can say whether I'm next

6   to you versus the other end of the table pretty

7   accurately. So Bluetooth has some benefits in this

8   context.

9   MS. ANDERSON: And does it also go in that

10   order, GSM, wi-fi, and then Bluetooth, in terms of how

11   popular each of those technologies is right now?

12   MR. SOLTANI: I would argue, at least I know

13   of more companies that are doing wi-fi-based partially

14   because I think it's potentially cheaper, it's

15   potentially more -- I think the law is also a little

16   bit clearer on the interception of a wi-fi signal

17   versus the interception of a GSM signal, but I think

18   the panel can probably speak to that.

19   MS. KOULOUSIAS: Well, it looks like we've

20   got about a minute left, so I think we've got time for

21   one question that we've gotten from the audience,

22   which -- so somebody has asked, they said they assume

23   that there are multiple hashing algorithms and to

24   aggregate data for a phone across multiple locations,

25   they assume all locations would need to hash the same

1   way or use the same analytic form, is that true?

2   MR. SOLTANI: That's right. So the

3   hashing -- so a hash is essentially a transform. You

4   can hash my name by adding one character at the end of

5   my name or by changing my name by one letter. And

6   everyone would have to agree on that hash for them to

7   be able to synchronize data.

8   The one thing that is missed, I think, in a

9   lot of the hashing debates is that, often times, the

10   technology is now there where we can -- while it is

11   difficult to reverse, so while it's difficult to take a

12   hashed identifier and go back to my MAC address, you

13   can essentially enumerate the list of all MAC addresses

14   and all hashes under a set of hashes, and this is

15   called like a rainbow table, and this is -- you know,

16   I'm sure people have been following the recent Target

17   breaches and all of the other breaches, this is how

18   hackers will determine your password.

19   It's very difficult to go back from a hash,

20   but you can say, you know, my name always ends up in

21   this hash, precomputed ahead of time, and then look for

22   a match.

23   So yes to the question, retailers would need

24   to be using the same hashing algorithms, coordinated

25   across different retail collection points. My

1   understanding is that the popular ones are SHA,

2   SHA-256, sum MD5 -- and so, but even if they don't, it

3   is still possible to reverse engineer to what the

4   original information was.

5   MS. KOULOUSIAS: All right. We've got we've

6   got one more question. It looks like we're running out

7   of time, so if you could answer this one --

8   MR. SOLTANI: Sure.

9   MS. KOULOUSIAS: -- really quickly and then

10   we'll get to it in more detail on the panel, I think.

11   But somebody has asked, can you just briefly

12   discuss security hacking concerns with wi-fi use?

13   MR. SOLTANI: Sure. So I think one of the

14   issues with wi-fi is that it's not a private

15   identifier, right? It's kind of the same issue of a

16   Social Security Number. Both my app can know my wi-fi,

17   the network around me can know my wi-fi, the ad network

18   can know my wi-fi. So as people are using wi-fi as a

19   robust identifier, it's just good to know that, for

20   example, lots of people -- you know, Latanya outside

21   knows your wi-fi identifier. And so if people are

22   making associations to that, then it is potentially

23   problematic from a privacy and security perspective.

24   MS. KOULOUSIAS: Great. Thank you very much.

25

1   PANEL DISCUSSION

2   MS. ANDERSON: We'll invite our panelists to

3   come on up.

4   We're in the process of trying to turn the

5   air down in here, so that we can be heard a little bit

6   more clearly. So I apologize if anybody couldn't hear

7   what we were saying a little earlier.

8   My name is Kristen Anderson, I am also an

9   attorney with the Division of Privacy and Identity

10   Protection. And Amanda Koulousias and I will be

11   co-moderating this panel.

12   As a reminder of how to submit questions, if

13   you're in our live audience, you can fill out a

14   question card and someone will come around and get

15   that. We may be taking them throughout, but we will

16   definitely take them at the end.

17   And if you are watching via webcast, you can

18   submit your question via email to

19   mobiledevicetracking@FTC.gov. You can Tweet it to

20   #FTCMOBILE or post it to the FTC's Facebook page in the

21   workshop status thread.

22   So now we'll begin our panel. When we put

23   together panels like these, we try to include as many

24   different perspectives as possible so that we can

25   evaluate these emerging technologies from different

1   angles.

2   Today we are joined by, starting at my left,

3   Ilana Westerman. She's a CEO and cofounder of Create

4   with Context, a digital innovation firm focused on

5   strategic research and design. She's responsible for

6   corporate development, as well as hands-on client work,

7   including research, innovation, and design.

8   Next, we have James Riesenbach, who has built

9   and led wide-ranging digital media, marketing, and

10   analytics businesses for over 25 years. He's been the

11   CEO at iInside since January of 2013, after previously

12   serving as strategic advisor to the firm.

13   Next, we have Seth Schoen, who is a senior

14   staff technologist at the Electronic Frontier

15   Foundation, where he has worked since 2001, promoting

16   understanding of the implications of technology for

17   individual rights.

18   Next, we have Mallory Duncan, who has served

19   as senior vice president and general counsel for the

20   National Retail Federation for more than 15 years.

21   He's responsible for coordinating strategic,

22   legislative, and regulatory initiatives involving

23   customer data privacy, financial services, and consumer

24   protection.

25   And finally, we have Glenn Tinley, who

1   founded Mexia, with a focused vision to help companies

2   understand how the changing dynamics of an increasingly

3   online world impact consumer behaviors at

4   brick-and-mortar locations and how consumer experiences

5   can be improved by understanding these behaviors.

6   Before we get started, I will have Seth just

7   very briefly provide an overview of what the Electronic

8   Frontier Foundation is and what its interest is in

9   mobile device tracking.

10   MR. SCHOEN: Thanks. The Electronic Frontier

11   Foundation is a nonprofit advocacy organization based

12   in San Francisco. We actually have one lawyer who

13   works here in D.C., but dozens of people out in San

14   Francisco.

15   We are interested in the implications of

16   technology for individual rights, including privacy.

17   And we tend to think of location as one of the most

18   sensitive forms of personal information because of the

19   way that it implicates all of the other kinds of

20   personal information. And I can talk more about that,

21   but it's sort of the meta of personal information

22   because you can use it to deduce some many other kinds

23   of things. So we are interested in the implications of

24   location tracking for personal privacy in that respect.

25   MS. KOULOUSIAS: Thanks, Seth. Ilana, if you

1   could just briefly introduce yourself and Create with

2   Context.

3   MS. WESTERMAN: Sure. Ilana Westerman,

4   Create with Context, we are an experienced design firm,

5   so what we do is we design user experiences for digital

6   devices. So anything from mobile to web to wearables,

7   anything that has a digital interface.

8   And what we really do is try to understand

9   the consumer first. What do they care about, what are

10   they doing, what do they need, what do they want. And

11   based on that, that's how we do our design. So it's a

12   data-driven design process.

13   MS. ANDERSON: Thank you. And to get us

14   started, we'll just have Glenn from Mexia and Jim from

15   iInside, if you can just each take a few minutes to

16   describe the services and technologies that your

17   companies offer and the kinds of insights they are

18   providing to retailers and your customers.

19   MR. RIESENBACH: Sure. Well, good morning

20   and it's a pleasure to be here. iInside is a

21   technology company that's been in the business of

22   creating location-based services for many years now,

23   but our focus has moved, over the recent years, to

24   creating technologies that help our clients, which are

25   primarily retailers, better understand how to improve

1   the customer service and customer experience and their

2   operations and also, at the end of the day, help them

3   compete more effectively against the growth of

4   e-commerce companies that have compromised and made it

5   a little bit more difficult to compete in today's

6   retail brick-and-mortar environment.

7   So we provide a variety of tools. Everything

8   we do is aggregated. We view ourselves as part of a

9   continuum of marketing research companies that have

10   been out there for many, many years, providing insights

11   based on statistical samples of data. We are not in

12   the business of looking at individual consumers or

13   trying to provide individual insights. We are in the

14   business of providing aggregated views that help our

15   clients compete more effectively.

16   MR. TINLEY: And Mexia Interactive is

17   somewhat similar to iInside. We are a location

18   analytics firm, so we capture data for our clients

19   based, again, on aggregate collection of that data,

20   that helps our clients understand what is happening

21   within their locations.

22   Our core belief is that we want to give them

23   the advantage and help them understand those behaviors

24   so that they have the added benefit of understanding

25   what is happening online and being able to compare it

1   on location, or within those locations.

2   Our clients primarily are airports, shopping

3   centers, and large retailers, who all are trying to

4   understand what they can do better to help the consumer

5   experience and make that more effective, more efficient

6   for consumers when they are in the location. And we

7   work specifically with clients on a one-to-one basis to

8   analyze that behavior and anonymize it in varied,

9   multiple different fashions so that there is no

10   combining or profiling to be happening within any of

11   the deliverables that are provided.

12   MS. ANDERSON: Could each of you talk a

13   little bit about what exact technology you're using to

14   provide those services?

15   MR. RIESENBACH: Sure. What we do is we will

16   work both with the retailer's existing technology, if

17   they have wi-fi access points that are used for public

18   wi-fi, to allow them to provide wi-fi to consumers,

19   that those sources of hardware can also cull the data

20   and help us aggregate it.

21   And we also have our own hardware that we

22   will place throughout the store that utilizes a

23   combination of Bluetooth and wi-fi to sample the

24   shopper audience or in airports or other environments.

25   MR. TINLEY: And again, we're very similar.

1   We capture either a Bluetooth -- what's called

2   Bluetooth Classic or Bluetooth Low Energy, as well as a

3   wi-fi signal. We are a little bit different in that we

4   only assemble and install our own hardware in

5   facilities, so we are not dependent on pre-existing

6   installations of anything to use and capture the data.

7   We are installing our own hardware in spaces, based on

8   deliverables of what the client is trying to achieve

9   and depending upon the granularity that they're trying

10   to achieve.

11   MS. ANDERSON: And are each of you also

12   combining all of the data that comes from the wi-fi and

13   the Bluetooth?

14   MR. RIESENBACH: Yes, we combine it. And

15   what we try to do is de-duplicate, so if we are seeing

16   the same behaviors in multiple cases, we try to look

17   just in aggregate. So we want to make sure that we're

18   providing the most valid, statistically reliable

19   samples that we can to our clients.

20   MR. TINLEY: And I'll answer that a little

21   bit differently. By combining, if you mean combining

22   within an individual client, we will make sure that one

23   device either has both, if we capture both signals,

24   it's one device. But no data is ever combined with

25   other clients, so I just wanted to be clear about that.

1   We're not combining data amongst clients. It's always

2   within an existing client.

3   MR. RIESENBACH: And that applies to us as

4   well.

5   MS. ANDERSON: Great, thanks.

6   MS. KOULOUSIAS: Great. So Mallory, if you

7   could just give us a little bit of insight into what

8   retailers are looking to gain from these technologies?

9   Are there particular insights that you know are

10   particularly important to NRF members? And just some

11   of their thoughts on this.

12   MR. DUNCAN: Sure, I'd be happy to. Let me

13   just start by saying NRF represents the broad range of

14   the retail industry, from single store operators to

15   some of the largest retailers in the U.S.

16   And retailers obviously want to be

17   successful, but to be successful they've got to do two

18   things. First of all, they have to understand their

19   customers and secondly is they have to understand their

20   stores. Now that may sound very obvious, but in fact

21   it's very, very difficult to do in each case.

22   The first drive for retailers is try to find

23   how do we deliver the services and the attention that

24   our customers want so they will be encouraged to come

25   back to that particular store.

1   The second one, which is understanding the

2   store, is how is your store laid out? How are things

3   arranged in that store in such a way that people are

4   attracted to it? How do people move through the store?

5   And that could be factored by your product selection,

6   it's location within the store, and necessarily, what

7   are the avenues for loss. And so loss prevention is a

8   big part of it.

9   We use these tools in order to increase our

10   understanding of the stores and their operation. And

11   when you do that, you're striking a balance. You're

12   maximizing the store's effectiveness, which increases

13   your ability to compete with others, and at the same

14   time, you can't go so far in doing it that you destroy

15   the trust that's inherent in the first thing, which is

16   to bring people in so they want to shop in your store.

17   So we are using these tools to try to find

18   the best possible balance between those two.

19   MS. KOULOUSIAS: Great. And so, you know,

20   Jim and Glenn, you both mentioned the variety of kind

21   of insights that you can offer to retailers or other

22   customers. I'm wondering if you can give us a little

23   bit more detail about some of the particular insights

24   that you offer? For example, you know, are you looking

25   at new versus returning customers, are you able to tell

1   who has actually entered as opposed to possibly walked

2   by a location?

3   MR. RIESENBACH: Yeah. There's a range of

4   data that we're able to collect via our methodologies.

5   The first is pathing. So we are able to look, in

6   aggregate, at how shoppers move throughout the store.

7   The retailers are using this in many ways to optimize

8   their store environments.

9   We have many retailers -- one of the most

10   expensive aspects of running a retail business is real

11   estate. And they want to understand, where do shoppers

12   go and how are they optimizing that environment, both

13   from a merchandising and marketing perspective, but

14   also from a flow for customers, so that customers are

15   able to easily find what they're looking for. So

16   pathing is very important.

17   The second one is dwell time. So we are able

18   to look at, again in aggregate, how many shoppers go

19   into a particular department and what's the average

20   time they spend in that department. Now, that helps

21   them to understand -- the retailer to understand are

22   they providing the right level of customer service, do

23   they have the right staffing at a particular time, are

24   they providing the right products and the right mix of

25   products side-by-side?

1   The third, and this is very important, and

2   this is both in retail and in other environments, is

3   wait time. Our clients are very focused on providing

4   the best throughput, if you will, at the cash

5   registers. And to basically assure that customers

6   don't wait in line.

7   One of our clients has a benchmark that they

8   set that says two minutes is the maximum time that they

9   want any customer to wait at a cash register. And so

10   what we do is we help them say, over the course of a

11   week, by day of week and time of day, these are the

12   areas where you are meeting your benchmarks and this is

13   where you're not and here's how you have to reconsider.

14   Do you open more lanes, do you staff differently? So

15   that's important.

16   And the final one that we are able to do is

17   because of the way that we hash, and Ashkan talked

18   about this, we can see the same device multiple times,

19   but again that is done in a way that will show a

20   retailer, first of all, how many -- what percentage of

21   shoppers came back to their store on a recurring basis.

22   Many grocers and convenience stores are really

23   interested in that because they want to understand how

24   are they doing in customer loyalty and repeat

25   visitation and also even across the single chain.

1   Now, we don't share across different

2   companies, but within the same chain, a convenience

3   store company, for instance, may want to know are their

4   customers going to multiple stores within the same

5   chain.

6   So those are the basics of what we do.

7   Glenn, I'm sure you have some others as well.

8   MR. TINLEY: Well, just touching a little bit

9   on what Mallory had said is, retailers and malls, which

10   are a collection of retailers, are interested in --

11   they have departments that are set up to help them

12   determine what products they are going to go across a

13   chain of stores or a grouping of stores.

14   So they are interested in knowing, are groups

15   of -- are our customer base spending time in certain

16   aisles or around certain products where, in one area of

17   the country, where they may not be in a different area

18   of the country. And that helps them to determine maybe

19   is their product selection different, or should it be

20   different, or should their product mix be different.

21   And by measuring whether or not, or

22   collecting the data of whether or not they're dwelling

23   in specific aisles or by specific displays, and are

24   customers then actually stopping at checkout, because

25   that helps them to measure conversion of, are people

1   actually coming into the store and leaving without

2   checking out.

3   So product selection and where aisles are

4   placed and how aisles are placed in stores are crucial

5   understanding points for retailers.

6   In a shopping mall environment, the

7   collection of retailers is very important. So how is

8   our store mix set up? So we work with some mall

9   clients who introduced a new store into one mall and

10   they want to understand, are those customers that are

11   going to the new store there, are they also going to

12   other stores, are they spending time in other stores,

13   or are they not visiting the new store? And if they're

14   getting a positive amount of information from that,

15   then they can look to expand the store maybe across

16   some of their other locations, some of their other mall

17   locations.

18   These are things that -- these are decisions

19   that affect millions of dollars, in terms of real

20   estate, in terms of leasing, product selection, product

21   mix, and these are the decisions that this data is

22   helping companies to make. All, again, in aggregate.

23   But one of the other things is in relation to

24   staffing. We recently worked with a company, a mall

25   company, who we determined that they had security staff

1   coming in at a specific time of day on a consistent

2   basis across a network.

3   And what we provided them with was, you know,

4   your traffic and what you think is happening, or what

5   you traditionally think is happening in that center,

6   has shifted by about an hour-and-a-half. So they

7   readjusted some of their staffing schedules of their

8   security because they wanted to staff up more when they

9   are required and they don't need as many on-hand when

10   there are less people. It's all based on ratio.

11   And that is allowing them, not currently

12   right now, but as they roll this out, they estimated

13   that this is about a quarter-million dollar savings to

14   their bottom line. So they are helping their bottom

15   line, but they're also making sure that their customers

16   are getting the attention, in terms of having staff on

17   when the ratios are requiring it.

18   So the customer experience is not necessarily

19   impacted immediately there, but it is, because if

20   something were to occur, they know that they have got

21   appropriate security staff on hand.

22   So those are just different ways that taking

23   the information, and it's general information based on

24   patterns and movements and behavior, that is allowing

25   them to then analyze that and make these decisions.

1   MS. ANDERSON: Okay. I have a bit of a

2   technical question. So with respect to the wi-fi and

3   Bluetooth, are you -- whether it's tracking within a

4   mall, can you set it up so that you're only tracking

5   within common areas of the malls and not spilling over

6   into the stores? Or for individual retailers, can you

7   ensure that the tracking is taking place just within

8   the walls of the stores or does it spill out a little

9   bit into the hallway? And how do you account for those

10   things?

11   MR. RIESENBACH: We are able to attenuate the

12   devices so that we can basically either narrow or

13   increase the range, depending on the goals and

14   objectives. So we can actually, each individual piece

15   of hardware, can have a range that we determine that

16   says, we only want to track within this store or even

17   within this department or even down to within this

18   particular lane for cash registers.

19   So we have a variety of technologies that

20   allow us to geo-fence and block off other areas we

21   don't want to see.

22   MR. TINLEY: Very similarly, in a mall

23   environment or a large environment like that, naturally

24   a signal is still a signal, so there is a certain

25   amount of movement, but based on what the deliverable

1   is, in terms of maintaining signals within a common

2   area is how things are reported

3   on.

4   MS. KOULOUSIAS: And so we've gotten a

5   question, both of you mentioned that one of the

6   insights that you are able to offer is kind of the new

7   versus returning customer rate.

8   And so, you know, in order to determine that,

9   how long do you keep that individual information to

10   determine that?

11   MR. TINLEY: Well, in terms of individual

12   information, we don't report -- we are not reporting on

13   specific devices necessarily that are returning.

14   They're captured in an aggregate form, so it's a

15   percentage. What we report on is 12 percent of the

16   customers in this store visit three times per month, 8

17   percent visit four times per month. So that's what is

18   being reported and managed.

19   And the reason to do that is, (a) it is

20   aggregate, so it is percentages or, you know, a total

21   number of counted devices that are coming back in. So

22   it's not this device. And some will say that, yes, you

23   can still track it or bring out, specify, a specific

24   device, but in the end, our clients don't have access

25   to that individual data, they have access to aggregate

1   data. That data is automatically aggregated at the

2   time that it's collected and moved to a different set

3   of servers, so it's not able to then highlight out a

4   specific person.

5   MR. RIESENBACH: The other thing that's

6   important to recognize is that the turnover of mobile

7   devices is frequent and increasing. Therefore any

8   device that is seen is going to have a limited lifespan

9   in general, as far as the use of that data. Because

10   consumers upgrade the device and then we basically are

11   going to see a completely new device. We obviously

12   don't know who that consumer is or anything about them

13   anyway, but that is one of the self or automatically

14   refreshing aspects of the methodology.

15   MR. SCHOEN: So it seems like it would be

16   useful to draw the distinction here between what you

17   report to the retailer and what you, as the analytics

18   provider, know.

19   I think the intention of the person asking

20   the question was what do you, as the analytics provider

21   know? What information do you have, as opposed to what

22   information goes your retail clients.

23   MR. TINLEY: Well, I guess there's two

24   different things. Two things about -- our contracts

25   are very specifically and purposefully set out that the

1   data that is collected on an ongoing basis with our

2   clients is our client's data.

3   So we are legally and code of conduct

4   obligated, and contractually obligated, that we don't

5   go into that data to then determine -- the data belongs

6   to our client. So we're not going back in to figure

7   out specific -- or pull out specific devices, as well

8   as the data is still on an aggregate server. So it's

9   being reported that way.

10   But yes, as an analytics firm, I guess you

11   could say that yes, we have access to -- we have access

12   to the data across, but we as a company do not combine

13   any of that data and it belongs to the individual

14   clients.

15   MR. RIESENBACH: It's important to note that

16   the only data that is stored by any of the companies

17   that are signatories to the code of conduct are hashed

18   MAC addresses.

19   Now, we understand from Ashkan's

20   presentation, is there a theoretical possibility that

21   that could be used in a way that you could see a

22   pattern from that same device? Sure, if there were a

23   massive number of implementations across the entire

24   universe. That's not really the state of the industry

25   and it won't be for a long time to come.

1   What we have is a hashed MAC address, so we

2   don't actually store anything that is identifiable,

3   even to the specific device right now. And even for

4   our own purposes, the only thing that we will do is use

5   it against the statistical modeling methodology.

6   So we never pretended or claimed to be a

7   tracking company. We are a statistical modeling and

8   marketing research company that provides profiles of

9   what happens in the store based on a relatively small

10   sample size.

11   You know with Bluetooth, and the question was

12   raised earlier, what percentage of devices are actually

13   seen when people go into a store. Well, Bluetooth is a

14   very precise methodology to see, down to a granular

15   level where consumers are, but at the same time, we're

16   seeing about 5 percent of the shoppers that walk into a

17   store. So this is a technology that is suited to very

18   high traffic environments, stores that have 1,000 or

19   2,000 shoppers a day, when you're seeing 5 percent it

20   becomes meaningful data. And so that's really the way

21   the approach is working.

22   And so if you are seeing 5 percent, maybe you

23   are going to see a larger percent with wi-fi, maybe as

24   much as 25 percent, but it is still a sample and it is

25   not about trying to track or identify, it is really

1   about creating insights that are useful to the

2   business.

3   MS. KOULOUSIAS: Okay, thank you. So we've

4   gotten a lot of great questions from our audience. One

5   of them that has come in is for Mallory. Somebody has

6   asked if you could expand upon how this technology

7   helps with loss prevention.

8   MR. DUNCAN: Sure. I mean, retailers use a

9   lot of techniques for loss prevention. We have

10   security cameras in the stores, for example, we will

11   have anonymous security personnel in the store. It is

12   also possible that, if you see goods moving out of the

13   store in conjunction with particular, again, anonymous

14   identifiers, that shows you where there are leaks in

15   your operation and it can also potentially show you

16   where there are -- there might be groups, we have a lot

17   of problems with organized retail threats, there may be

18   groups that are moving collectively, in order to commit

19   crimes in the store.

20   MS. KOULOUSIAS: Thank you. And Jim, one of

21   these questions that has come in is actually about

22   something that you had said about the aggregate

23   information.

24   And so the question is, for information at

25   the retail -- is the information aggregated at the

1   retail location or is it collected and stored

2   individually on your servers and then aggregated for

3   reporting?

4   MR. RIESENBACH: Well, okay. Let me try to

5   interpret the question.

6   MS. KOULOUSIAS: Sure.

7   MR. RIESENBACH: So I assume that's -- how do

8   we collect the data and report it. We collect

9   everything specifically within each individual

10   environment where we have presence. So for some

11   chains, where let's say we have 20 or 50 stores, each

12   individual store is collected in its own data file, so

13   to speak.

14   And then what we'll do is, it's important for

15   clients that they are able to see this data, either at

16   the store level, at the regional or divisional level,

17   and at the corporate level. And so what we'll do is we

18   will, in keeping with the notion of aggregated

19   reporting, we will roll it up into the appropriate

20   level of detail that the people that are going to

21   actually use the data want to see it. And in many

22   cases, it is at a corporate level.

23   But it's important for us that we're

24   providing the tools. At the end of the day, if a

25   retailer is trying to improve the customer experience,

1   that happens where the -- you know, where the rubber

2   meets the road is at the store level. And the store

3   manager really wants to be able to understand, what can

4   they do on a day-to-day basis to staff appropriately,

5   to market and merchandise their products appropriately,

6   and to make sure that they have the right number of

7   lanes and cash registers open.

8   MS. ANDERSON: Okay, thank you. At this

9   time, since we talked a little bit about the insights

10   that some of the retailers can gain and the benefit

11   that can accrue to customers, we'd like to learn a

12   little bit more about consumers' perspectives and their

13   experience as they are navigating the retail

14   environment.

15   So at this time, we'll invite Ilana Westerman

16   to give a presentation on what she's found through some

17   of her research.

18   MS. WESTERMAN: Thank you. Before I get

19   started with what customers think and want, I want to

20   just do a little bit of background.

21   And really what we find is, is what

22   retailers want to do is create trust with the

23   consumers. And consumers want to trust the retailers.

24   But there's four things we really need to have for that

25   to happen.

1   The first thing is is that consumers have to

2   understand, there has to be transparency. So they have

3   to be aware of what's happening. The second thing is

4   that they have to have choice and they have to be able

5   to control it, if they care. They don't always care,

6   but if they care. The third is engagement. So if you

7   try to go control it, is easy to do? And lastly, that

8   they're getting value. So if they're giving you

9   something, are they getting something back.

10   The other thing that I wanted to do, just

11   from a background perspective, is talk a bit about

12   design and how design differs from art. So if you're

13   an artist, what you're doing is you're creating

14   something for yourself. But if you're a designer, what

15   we try to do is we create for other people.

16   So it's really important for us to begin

17   with, before we even draw anything, is to understand

18   the people we're designing for, who are they, what do

19   they care about? What's their context, what's their

20   environment, and making sure that we're designing for

21   that.

22   So really what I want to talk about today is

23   that first phase of understand, and some of the

24   research we recently did.

25   So this was a fairly large study, over 4600

1   Americans participated. We looked at retailers across

2   the country, they were only large retailers, in a

3   series of different techniques, both qualitative and

4   quantitative.

5   And what we found overall is that Americans

6   do trust. We do trust. In general, we trust retailers

7   a little bit more than average, so that's a good spot

8   to be in.

9   The other thing that we found is we are

10   willing to give up our information. 97 percent of us

11   will give up a piece of data for a deal, so it's not

12   that we are not willing to do it.

13   So in this short little video here, Alicia is

14   going to tell us a little bit about what she thinks

15   about an article she read. So in this experiment, what

16   we did is we had people read an article about stores

17   tracking their cells and asked people just to give us

18   their reaction.

19   (Video played: "That's crazy, that they can do

20   that. Even if you don't sign into their wi-fi, that they

21   can track you. But at the end of the article they talked

22   about giving people the option to, you know, giving people

23   to get Amazon credit or Google Play credit if they give

24   their information and let people track them. Yeah, they will

25   get a lot more people to agree to that willingly than if

1   they just look at it.")

2   So again, as long as we get value, we are

3   willing to give up information. But what we find here

4   is people are much more likely, 2.5 percent more

5   likely, to give up information if it makes sense to

6   them.

7   So here, we asked people about giving up their

8   location information to find something in a store, so a

9   map-type app. And it made sense to people why their

10   location was needed, so 75 percent said they would give that

11   information.

12   30 percent still would give information when

13   it didn't make sense, to the books and magazines that

14   they read, but still just to have an application, like

15   a map application, they would still give up that

16   information.

17   The third thing we found, which is really

18   important, is all data is different. Some data means

19   more things to people than others. And the first thing

20   is, things that you would think, like your name, your

21   phone number, your address, those are the things to the

22   far right, those directory information, that people

23   care the least about. They are very willing to give

24   that information up.

25   But what we find that people care the most

1   about is personal digital data. These are things on

2   your device such as the pictures on your phone, your

3   address book, your social network connections. Those

4   sorts of things people care the most about. And the

5   reason we find that is because people say, you know,

6   these are other people, not just myself. I can give up

7   my data, that's my choice, but I really don't have the

8   right to give up somebody else's data. So my contact

9   list has other people, photos of other people on my

10   phone, so that's when people get really sensitive.

11   The other thing that is really, really

12   important, there is a big distinction with location.

13   So people are very willing to give up where there

14   location is right now, they are starting to see

15   benefits to that. It is not something that they're

16   terribly concerned about.

17   But when you ask about where they have been,

18   now people care. And that's something that they don't

19   want to give up. So there's a big distinction when it

20   comes to that type of location.

21   So now Mark also, in this experiment, read a

22   similar article and he's going to tell a little bit

23   about what he cares about and what doesn't matter as

24   much.

25   (Video playing: "I can see why they would do it,

1   just so they know what customers are looking at at the malls

2   or using their cell to gather information, but that's kind

3   of invading your privacy though. I don't mind if they're

4   tracking what I'm doing in the store, but getting the

5   information from my cell phone, that worries me. And I

6   wouldn't want them to get my contacts, my files, my apps, or

7   anything from my cell phone. My location is fine, but where

8   I'm walking through the store, and I'm -- whether their

9   cameras are tracking what I'm looking at and things like

10   that, but my personal information, that bothers me a lot,

11   because I do have private information on my cell phone.")

12   So what's really important, as designers, is

13   to understand that. Because we want to message people

14   and explain things to people and we want to know what

15   do they care most about, and messaging them about that

16   versus things that they care less about.

17   But the other thing that we found, which is

18   really important, is that that component of trust, that

19   we really need before anything else, is transparency.

20   So people have to be aware that something has happened,

21   otherwise they are not going to go try to control it.

22   And so we see this really low awareness

23   overall of the fact that stores are collecting

24   information. 33 percent thought that maybe that could

25   happen. It gets a little bit higher when you ask

1   someone about location.

2   But then when we interview people afterwards,

3   there is a lot of confusion around this. They said,

4   well maybe it could happen, but I'm not quite sure how

5   it would happen. And it's not quite clear to consumers

6   what's happening.

7   (Video playing: "So I said maybe just because you

8   know this is kind of something I'm not sure about. For

9   example, one of my coworkers was just talking about

10   something like this at our work, because we have wi-fi, and

11   so when you're at work or when you're in a store or whatever

12   your phone generally connects to the wi-fi, and you might be

13   looking at something on the Internet while you're strolling

14   through, or you might be, maybe you scroll through and look

15   at your bank account real quick or something like that, but

16   I don't know. So it's something that kind of like a

17   question that's been brought up, so I'm not positive about,

18   and I'm not really that good at technical things, so I

19   wouldn't really know unless I asked somebody who was and so

20   that's why I was kind of like maybe.")

21   So from a design perspective, we really want

22   to start by creating that awareness. So what we looked

23   at is the most logical places are signage in stores or

24   on the device. And this would be an easy way to create

25   general awareness.

1   So the first thing we did is we said, okay,

2   let's look at signs. And so we had people go into

3   stores and shop for things and then we had them come

4   back and draw out what they saw in the stores. And

5   what we found is that people only recalled 8 percent of

6   the signs that they saw in the store. And so this is

7   pretty low if you want to create general awareness.

8   I'm going to skip this video.

9   The other thing that we found is that

10   consumers, when you have a consumer notification such

11   as this one here that is in one of the counties where

12   we did the research, zero percent of the people

13   recalled seeing this sign, and it was in all of the

14   stores.

15   The next thing we want to look at is that,

16   okay so fine, maybe they can't recall, you know,

17   exactly what they saw, but was there any form of

18   ambient awareness. Did they see it out of the corner

19   of their eye? Were they aware that it was there and it

20   didn't actually maybe register specifically what the

21   sign was?

22   So we showed them signs that were present in

23   the stores and signs that weren't. What we found is

24   that, overall, people were more often wrong than right.

25   They thought a sign was in the store that wasn't,

1   versus a sign that actually was in the store.

2   So there's so much coming at us, there's so

3   much information across all of the store signs, that we

4   are not really paying attention in great detail.

5   (Video playing: "What I'm amazed at is how much I

6   don't notice. That's amazing. Yeah, I was surprised how

7   much I didn't notice. I mean, you go to stores all the

8   time, and I guess you don't always notice, and they're

9   spending all this money. I just thought, Oh my God,

10   spending all this money on all these signs, and I didn't

11   even notice them.")

12   So why aren't people looking at signs? Well,

13   we find that some people are kind of in the mode of get

14   in and get out. They really want to get that job done,

15   efficiency mode shopping. But other times when you're

16   shopping, you're really focusing on the product and

17   that's what it's about, or the experience of the store,

18   so that's where the attention goes.

19   But that doesn't mean that there weren't some

20   signs that did well. There are some signs that people did

21   notice at 8 percent. And what we found is there is

22   three factors that really increased awareness.

23   The first is context, if the sign is part of

24   the activity. So if you are trying to find socks in

25   the store, the sign to tell you where menswear is could

1   be helpful. Also, when it's at eye level and there's a

2   lot of repetition of the message, then people recalled

3   it. And at a glance, easy to parse. So if you look at

4   the sign over here to the right, the all body care,

5   that was a sign that was recognized by most people.

6   Compare that to the consumer notification sign with all

7   of those words, very hard to parse. So people aren't

8   spending that time to actually engage with it.

9   So the next thing we wanted to look at was,

10   well, can we just message on smartphones. And there

11   was a good study that Google did recently that said

12   that 84 percent of smartphone shoppers use their phones

13   in stores.

14   And so what we wanted to try to find out is

15   how often are they using the phones in stores, because

16   that could be another easy way to potentially message

17   them.

18   But unfortunately what we found is that only

19   11 percent of consumers had phones visible at any point

20   in time in the store. And so that's a pretty low

21   percentage.

22   We compared that to people who were in a mall

23   area and we found that 30 percent of the people had

24   phones visible in that area.

25   And then we kind of looked at, well, why is

1   this? Why aren't people having their phones out?

2   Well, one reason is that your hands are busy. And what

3   we did then is we counted people's ability to have

4   their phone out and available. And so what we saw was

5   -- we counted how many hands they had free. So when

6   you had no ability, then obviously you couldn't hold

7   your phone. You might have limited ability, to have

8   one hand free, or you could have full ability with two

9   hands free.

10   So in stores, only 63 percent of people had

11   some ability compared to 80 percent in the mall.

12   So at the end of the day, if you ask us, so

13   should we not put notice on signs and devices, well, it

14   can definitely reinforce the message of what's being

15   collected, but it's not going to be a way to really

16   create wide-spread awareness. After people are aware,

17   will they see it out of the corner of their eye? Yes,

18   if the signs are well-placed and the messaging is

19   well-placed and done in context, it can. But at the

20   onset, if people aren't aware, then this is not

21   necessarily the way to create that wide-spread

22   awareness.

23   So the next thing is -- this is kind of like

24   a sad story, I'm telling you how everything doesn't

25   work. Now I'm going to tell you how things maybe can

1   work. So as designers, we take that -- this is this

2   context, we can't change this. We can't make people

3   take their phones out if they don't want to. We can't

4   make them pay attention to signs if they don't want to.

5   So therefore, how can we solve this problem, given that

6   context?

7   So there are three different ways that you

8   can really create awareness. The first way is the best

9   way, which is called implicit awareness and that is

10   when you don't need notice at all. So an example is

11   your map app. Does your map know where you are? Yeah,

12   I hope it knows where I am, I want it to know where I

13   am. I don't need notice to know that, it's implicit.

14   The second is explicit, and that's direct

15   communication. It could be an advertising campaign or

16   something like just in time notice. And you have to

17   get their attention for people to have explicit

18   awareness.

19   And last is that ambient awareness that we

20   were just talking about, which is signs. And this is

21   something that can be very helpful to reinforce what

22   somebody already knows.

23   So just a quick hypothetical with implicit

24   awareness, and this is how -- what we really advocate

25   for as much as possible when collecting information is give

1   people value that makes sense to them why you have

2   it.

3   So an example is, let's say that you

4   downloaded a wish list app at the holidays and all of

5   your friends and family joined and told you what they

6   wanted. And let's say that your mom really likes some

7   perfume. I don't know about you guys, but I have a

8   hard time buying for my mom. So she really likes a

9   certain perfume and then, when you walk into a

10   retailer, it says, oh yeah, we have that perfume. So

11   you go ahead and you buy it.

12   And then say next year, you're online, you're

13   at the same retailer's site and they say, oh, by the

14   way, if your mom liked that perfume, other people that

15   liked that perfume liked this sweater, maybe you want

16   to buy her this sweater. And people love that. Yeah,

17   that would really make my life easier if I have that.

18   And all of the sudden, what do I know? I

19   believe that you know where I am, I believe that you

20   know where I am over time, I believe that you know my

21   social network, I believe that you know who I am when I

22   am on my computer or another device, and I'm getting

23   value for all of that. And you haven't had to give me

24   any notice, it's just implicit in the actual

25   application. So Ellen is talking about this.

1   (Video playing: "My niece wanted the Harry Potter

2   movie, and I walked into Target, and they just didn't have

3   it, so what would have been nice is —- I didn't realize that

4   I also went to Walmart that day, but I also was in

5   Walgreens. If I was in that store, and they alerted me they

6   had that movie, I would have cut half my time, so it would

7   have been wonderful if I had a reminder.")

8   So the second thing is explicit awareness.

9   And with this, we're really at this point in time

10   where, because people aren't aware, we are going to

11   have to use techniques around explicit awareness. And

12   not everything can be implicit. There are going to be

13   certain things that are going to be collected that

14   people don't necessarily understand how it's actually

15   helping them.

16   So in these cases, the best way to do it is

17   currently in with just-in-time notice. So when you

18   need the information, asking for the information.

19   This crazy concept to the right, we're not

20   advocating for it, but it's just a way, from a design

21   perspective you could solve it, which is potentially a

22   way to plug in your phone to get power while you're in

23   a store with a cart and then, all of the sudden, you

24   could see your phone. So this is the way to overcome

25   the issue of no hands. But this would be a potential

1   way to give explicit awareness.

2   And ambient awareness, again, looking at the

3   future, there is going to be -- as we see more and more

4   wearables, the ability to do more tactile kinds of

5   things, vibration and things like that could come. But

6   for today, right now where we are at is more about

7   visual signs and screens. And again, auditory might

8   help in the future as well.

9   But this is a big design challenge. I mean,

10   what we are trying to do is make people aware of

11   something and it doesn't always make sense to them why

12   you need the information. So this isn't easy. This is

13   something that's going to take time.

14   And so what we've been working on first is a

15   my data symbol. So as we do explicit campaigns, as we

16   do more around implicit awareness, at some point we

17   have to continue to reinforce this. And we'd like this

18   to be something that's really universal across all data

19   collection.

20   So the goal really here was to communicate to

21   people that information was being collected and

22   transmitted, we wanted to make sure that it was

23   flexible for all different types of screens and

24   signage, and we are just aware that we are not going to

25   get this immediate awareness.

1   So if you look at the image right there, the

2   wheelchair image, that is a great icon. It's a classic

3   icon. It tells you, without any words, what it means.

4   That's very difficult to do, it's not something that is

5   common in the icon world. But when you look at the

6   recycle icon below it, that is also a very well-done

7   icon and it does explain what recycling is, but at the

8   onset it wasn't something that you could roll out

9   without words. You had to explain it at first so that

10   people recognized and understood what it meant.

11   So it's a process and we have tested over 300

12   symbols to date and we're still not there. So I am

13   just going to show you, at a high level, some of the

14   things that we are looking at and kind of what feedback

15   we're getting from consumers.

16   So these are some of the different concepts

17   we are looking at. Many of these tested well, but over

18   300 different concepts we looked at to even get to the

19   point we're at right now.

20   And so what we did is we take this and we ask

21   people, look at this and just tell us what you think it

22   means. And we don't tell them anything about personal

23   information or data tracking. And we're seeing

24   overall, I've given you the list, some words actually

25   do apply and some don't. And we're starting to see

1   some traction here. We're getting up to 55 percent

2   when it comes to sending and transmitting, but "my

3   data" is still down at 32 percent. And having people

4   understand that this is my data being transmitted is

5   difficult.

6   When you compare it to locations symbols as

7   the positive control here, we are seeing over 70

8   percent, so that's really our goal. So we are going to

9   continue to -- and try to get there. But at the end of

10   the day, this is a process I think we all have to go

11   through, from a design perspective. We are not going

12   to, tomorrow, all of the sudden have people wake up and

13   be aware.

14   But if we can get to a point where we can

15   actually create this implicit awareness applications,

16   create an environment where people are getting value

17   for giving information, and then reinforcing it in a

18   way that they are aware it's happening and that, if

19   they care about, they can go control it. If they don't

20   care about it, it's not getting in the way.

21   MS. KOULOUSIAS: Thank you, Ilana.

22   MS. ANDERSON: Okay. So we've been getting

23   several questions from the audience and a lot of them

24   have been about notice and awareness.

25   Ilana talked a lot about that and how

1   important transparency is, so we'll start off by

2   directing a question to Mallory and just ask how you

3   and your members have thought about providing notice

4   and creating awareness around this type of mobile

5   device tracking.

6   MR. DUNCAN: Sure. It's a very good question

7   and, as I said at the beginning, it's really about what

8   is necessary in order to preserve the level of trust

9   with your customer.

10   Let me give you one easy example that I think

11   will make it clear. There's a lot of discussion in

12   this field about talking about tracking. One could

13   just as easily, in many cases, substitute the word

14   observing and it suddenly sounds a lot less scary. And

15   the question is, do you have to give notice for

16   observations?

17   One example in the retail environment would

18   be the use of heat maps. Both of the gentlemen here

19   provide heat maps that show how groups of people move

20   around the store. Well, you could have a situation,

21   say, in a grocery store where, where most of us shop, we

22   go off first immediately to the produce and we end

23   up buying the frozen food at the end of the

24   transaction.

25   Well, if you've got heat map observation that

1   flows in your store and you see an unusually large

2   number of people in the frozen food section, it means

3   they are probably about to check out, so the retailer

4   might take that information and say, okay, I'm going to

5   open up more lanes, get more sales associates up front,

6   so that the amount of time that it takes people to

7   check out is a lot shorter than it would be otherwise.

8   Now that's, I would argue, a benefit to

9   consumers, but it's not necessarily something that you

10   are going to provide notice about because it's almost

11   an intrinsically, good management of the store

12   operation, as I was talking about earlier.

13   Now why is that important? There's obviously

14   a big conflict going on right now, or an apparent

15   conflict, between online stores and brick-and-mortar

16   stores. One of the things customers like in the online

17   world is that they can very quickly accomplish their

18   shopping. And many online stores have moved to

19   one-click shopping, one-click checkout. So in the

20   brick-and-mortar department, if we are going to compete

21   in that area, those stores would like to replicate that

22   very fast click-through checkout, which means putting

23   more sales associates on the line and getting customers

24   out of there, so that in the brick-and-mortar

25   environment you have both the personal interaction of

1   being able to get questions answered quickly and

2   combine that with the quick checkout, which lets the

3   brick-and-mortar stores compete more effectively with

4   the online store.

5   Again, all of this is part of competition and

6   all of this goes to building consumer trust. None of

7   it requires notice.

8   MR. RIESENBACH: Mallory, can I ask you a

9   follow-up on that?

10   MR. DUNCAN: Sure.

11   MR. RIESENBACH: So one of the things that

12   we've come to understand is that consumers basically

13   understand that, when they enter a retail environment,

14   you know, there's been loss prevention surveillance

15   techniques that have been used for years and we've come

16   to believe that that's a common awareness and

17   understanding among consumers when they enter most

18   retail environments that that's part of the approach

19   that retailers are taking and not to mention that, once

20   they do check out and actually buy something, all of

21   that data is part of their record permanently as well.

22   So do you think that there is, already, a

23   high degree of awareness of consumers about these types

24   of things?

25   MR. DUNCAN: I can't say what the awareness

1   is to any specific element that you mentioned, and that

2   would vary from retailer-to-retailer, which makes

3   competition and what makes it possible for retailers to

4   garner trust with their particular set of customers.

5   But by and large, the fact that you are engaging in

6   observable activity in a store is something that people

7   are aware of.

8   Now in terms of the details of the

9   transaction, that will vary dramatically from one

10   retailer to the other. In some instances, it's

11   essentially an anonymous transaction, in others, if

12   you've opted into a loyalty program, it may be much

13   more detailed, so it varies tremendously.

14   MS. ANDERSON: So is there something unique

15   about this type of tracking though that does require

16   notice? And Seth, you may have something to say about

17   this, and we'll follow up with Glenn and Jim as well.

18   MR. SCHOEN: I mean, I feel like hearing all

19   of this, I have quite a different paradigm because

20   there has been a lot of focus in this conversation on

21   notice and not a focus on consent and not a focus on

22   whether there is an underlying harm or problem with the

23   possibility of tracking occurring without people asking

24   for it.

25   And so I would start much earlier in the

1   process and, rather than criticize people on this

2   panel, I would criticize the IEEE 802.11 standards

3   committee and say, why did you put a persistent unique

4   identifier into people's phones? Why didn't you

5   recognize people's privacy and security interest in not

6   having something in their pocket shouting where they

7   are to everyone who sets up a laptop to look at them?

8   Now, there is this conversation that we've

9   been having and I'm hearing here that, well, if a

10   retailer puts this up for a particular purpose, then

11   there is a question of how appropriate is their purpose

12   or how invasive is that? Or statistic information is

13   not very invasive at all compared to profiling. But I

14   would start earlier and say, why are these devices

15   screaming an identifier to all and sundry in the RF

16   environment and saying, "Hey, it's Ashkan's phone!

17   Hey, it's Ashkan's phone! Hey, it's Ashkan's phone!"

18   Why did the standards committees make these identifiers

19   unchanging and persistent? That's really where I would

20   start.

21   Now, you know, I think there is a lot of

22   merit in saying, well, in the context of a particular

23   retail use, it's not necessarily what people are

24   expecting, it's not necessarily something that they've

25   consented to. If you ask them in a survey, they

1   wouldn't necessarily know that it was happening or that

2   it was physically possible or how it was done, but for

3   certain categories of use, there is not necessarily a

4   lot of harm in that instance. And there may be benefit

5   in that instance.

6   So from the perspective of the individual

7   retailer or from the perspective of the individual

8   retail industry or from the perspective of the folks on

9   this panel who are doing these analytics for

10   statistical purposes, they can say, well, given that

11   the technology is there and given that this possible

12   and given that we are trying to do this in a relatively

13   noninvasive way for relatively noninvasive purposes,

14   you shouldn't blame us.

15   So I'm going to provisionally grant that and

16   say let's blame the technology industry for putting

17   these persistent unique identifiers that can be read,

18   without consent, by strangers, wirelessly without

19   people's awareness in any situation for any purpose,

20   into things that people are carrying around all day in

21   their pockets.

22   MS. KOULOUSIAS: Great, thank you. And so

23   Glenn and Jim, I think one of the things that we wanted

24   to hear a little bit about is your companies thoughts

25   on, you know, are there ways that your companies are

1   working to create transparency around the use of this

2   information?

3   MR. TINLEY: I want to answer that, but I

4   just want to also make a clear distinction that -- and

5   there's a lot of conversation and there's actually a

6   lot of market confusion. I spend a lot of my time

7   speaking with clients and potential clients about the

8   confusion that is -- there are applications that are on

9   a device that a person downloads and, as part of that,

10   accepts certain terms and conditions that we all

11   understand that 99.9 percent of people are not reading.

12   But those are accepted and it's those

13   applications that are, and Ashkan's presentation

14   demonstrated, that the Pandora app is streaming

15   information about the device or the person and

16   different things on those devices to different parties.

17   And in the other presentation, one of the

18   videos was, you know, I have personal photos on my

19   phone, I don't think those should be shared. And we

20   agree 100 percent.

21   There's a difference between monitoring,

22   observing, tracking of something from an application

23   that is on a device that you are using versus a device

24   being seen or observed as a dot.

25   And the analogy that I would give to our

1   clients is, think of it as, I have a bag of beans that

2   I'm going to make soup and I pour all of the beans into

3   the soup and I stir it all up. No one told me -- I put

4   them into different bowls, but you don't know which

5   bean came from what and we don't really care. What we

6   care about is the fact that these beans are in here and

7   we know that there's some over here and there's some

8   over here and some never actually got out of the pot.

9   But we're not necessarily concerned about what bean is

10   what and who we are going to associate that with.

11   We're not interested in individual consumers

12   and there is no technological way to take a MAC

13   address and determine -- or go into a device, there's

14   no connection ever made to a device. So in an

15   application, there's a connection made to a device and

16   that connection made to the device allows it to obtain

17   information. We don't do that in any way, shape, or

18   form.

19   A phone calls out, a mobile device calls out

20   and says, to Seth's point, yes, I'm here. We see a

21   number, sort of like your vehicle identification number

22   on a car that is unique to the car, it's unique to the

23   device. But that's all we know, we just know that it's

24   a car. We might know it's a Ford car and we might know

25   that it's an iPhone, but that's it. We don't know that

1   it's Ashkan's phone.

2   And so there needs to be a distinction that

3   we are not tracking or monitoring or observing any of

4   that application data. We are taking the data that is

5   completely -- almost irrelevant, because it can't be --

6   there is no connection made to a device to go and

7   capture any individual information at all or see what

8   you're looking at or any payload data or anything along

9   those lines. So there needs to be that distinction in

10   that regards.

11   And then again, to Mallory's point, there is

12   a large amount of trust that retailers have with their

13   clients inherently, or their consumers, the customers

14   inherently. Retailers want to understand what's

15   happening so that they can help make the customer

16   experience better. They are not interested in any way,

17   shape, or form about upsetting the apple cart of the

18   trust that they've spent years building with consumers

19   to make them loyal customers. A retailer would never

20   then take that and say, well, now let's start to try to

21   identify, without people knowing, let's try to identify

22   who these people are so that we can, you know, do

23   something that's going to degrade that level of trust

24   that we've spent years building.

25   So it's not application-based and it's

1   completely separate of that. And it's completely not

2   connected to it at all, there's never a connection made

3   to a mobile device at all by anybody in the industry.

4   And then secondly, that inherently there's that level

5   of trust that retailers are adamant about protecting

6   and they want to make sure that that's being protected.

7   So those are the -- there are not going to do

8   something that's going to upset that. So I hope I

9   answered the question, Kristen. I probably got off

10   track.

11   MR. RIESENBACH: So let me add to what Glenn

12   was saying. I agree with his points, but I do think

13   that there was a question about what are the companies

14   doing specifically to help with disclosure and

15   awareness. And we, as an industry, and Glenn's company

16   and my company and a dozen others, have been

17   participating in what we call a code of conduct across

18   the industry that essentially establishes guidelines.

19   And in many cases, there is aspects of this that we

20   have agreed are legally binding on the companies that

21   are involved.

22   But there is a set of principles that we went

23   to develop this under, recognizing that this is an

24   evolving marketplace and technology is evolving

25   quickly. So we can't let good be the enemy of perfect,

1   or vice-versa. It's important that we know that this

2   is one step in a continuously evolving process.

3   But what the core principles are, first of

4   all, is that we will do everything we can to create

5   that level of transparency and disclosure. And so what

6   we're doing is we're asking -- every firm that

7   participates in this code is asking the retailers to

8   provide signage.

9   Now what are we doing? I think, to Ilana's

10   point, that awareness is relatively low of signage.

11   Well, we believe that the best thing to do is to come

12   together as an industry, and we are working with Ilana

13   in trying to create some types of visual cues that will

14   have that type of ubiquity when they are out, throughout

15   the marketplace, and over time.

16   We don't believe today a consumer is going to

17   walk into a store and know what that means, but we do

18   believe that, when that is spread across tens of

19   thousands of stores across the entire U.S., and

20   consumers see it on a daily basis, that it will become

21   a visual cue that will tell people what's going on.

22   And so that's a step along the way, from a disclosure

23   standpoint.

24   And we are also putting it on our websites.

25   We are asking our retail partners to put it on their

1   websites, what we're doing. So we are doing the best

2   and the current methodologies available to us to

3   disclose as an industry.

4   The second is that we are providing choice to

5   the consumer. And what's really important is that, if

6   the consumer does not want their device to be seen,

7   even though we are only aggregating and providing

8   statistical insights, that consumer has an ability, as

9   of now, to opt-out. And not only to opt-out with our

10 company or a particular retailer, but to be able to

11 opt-out of having their device seen across the

12 industry.

13   And so we announced yesterday, with our

14 group, in addition to the code, that we have launched

15 an opt-out capability. And we've done this in

16 conjunction with a company called the Wireless Registry,

17 they've created the code. And essentially what we're

18 doing is allowing consumers to opt-out across the

19 industry. That will be active within 30 days, so we

20 will allow consumers to opt-out.

21   We have a variety of other aspects to the

22 code, some about hashing and preventing us from

23 basically collecting the actual MAC addresses and

24 storing them. So we all agree that we will hash. I

25 understand Ashkan's point that it's not impossible for

1   that to be used in other ways, but for all practical

2   purposes we don't believe that that is a reality

3   anytime in the foreseeable future.

4   For right now, what is important is that,

5   you know, that we move forward with that. And I think

6   that it's also important that we hold, not only

7   ourselves, but our clients accountable to the use of

8   the data, so that we have, within the code, an

9   understanding that the data will not be redistributed

10   to someone else or aggregated with other sources of

11   information that could be used to personally identify

12   the individual.

13   So we are trying, as an industry, to be good

14   actors. We are disclosing this, we are doing

15   everything we can to communicate this across the

16   industry right now.

17   MS. WESTERMAN: And I'd just like to jump in

18   here, because I got really concerned when you mentioned

19   that this is a bad thing, you having your address put

20   out there.

21   I think, from a consumer's perspective, there

22   is a lot of value they can get. I mean, being able to

23   walk into a store and have it know you and know what

24   you like and recommend things to you, that could be a

25   real benefit to this --

1   MR. SCHOEN: So you should install an app for

2   that store and say, when I got to this store, I want

3   you to tell this store, rather than have your phone do

4   that for you, without consent, for every kind of entity

5   that could possibly be listening.

6   MS. WESTERMAN: There could be ways of going

7   about it, but to shut down the ability to innovate, the

8   ability to personally identify each person,

9   potentially, and be able to deliver value to me that I

10   want, in the future, that might be beneficial to

11   consumers. They might like that.

12   And so yes, you know, having that

13   transparency, making sure that they're aware, is

14   important, having that control is very important. But

15   at the end of the day, do retailers really want their

16   customers to be angry with them? I just don't think

17   so. I think they are trying to provide more benefit

18   and I'd hate to see that shut down.

19   It has to be done in a way that creates

20   trust. There are ways -- there are good ways to do it

21   and bad ways to do it, but to shut it down, I would

22   be concerned about.

23   MR. SCHOEN: So I think it would be a lot of

24   fun to talk about hashing. And it may be kind of a

25   distraction from the more fundamental privacy issues,

1   but I just wanted to say hashing doesn't work for the

2   purpose of actually making yourself not know a MAC

3   address or actually making yourself unable to recognize

4   a MAC address or get the history of it.

5   And the blog post by Ed Felten that Ashkan

6   pointed to goes into this a bit. The problem is that

7   the space of possible MAC addresses is too small and,

8   as Ashkan eluded to, you could actually try every MAC

9   address as a candidate and put it to the hash and see

10   if it's that one.

11   So I actually want to issue a challenge to

12   the industry, if people think that MAC addresses are

13   somehow not readily identifiable, I want you to send me

14   a couple of hashed MAC addresses that you've actually

15   collected in the wild, of actual mobile devices, tell

16   me what the hashing algorithm was, and I'll crack them

17   and tell you what the MAC addresses were. I don't

18   think it's technically challenging to do so, the space

19   of MAC addresses is just too small to make that

20   actually difficult to crack.

21   MR. RIESENBACH: And if that was done, what

22   would be the use of the MAC address? Because that

23   still doesn't encompass any personally identifiable

24   information. It would be something that is

25   identifiable to a device.

1   So you know, as I said, we try to look at

2   this through the filter of practicality and is there

3   some use that could actually be meaningfully harmful to

4   consumers, if even you were able to go through this

5   process and take the time and cost and resources to

6   actually go and find a MAC address?

7   MR. SCHOEN: I mean, I think the time and

8   cost of resources is about a week of time on one

9   laptop. And I hope that people will take me up on this

10   challenge, because I can actually do it and show that

11   it's a real possibility. And it's not like I'm going

12   to rent a supercomputer. It's like, I'm going to run

13   it on my laptop and brute-force it on one device,

14   that's my expectation.

15   You know, I think that a lot of people have

16   said that any given identifier is anonymous in some

17   sense because it doesn't have someone's name on it.

18   And actually Latanya Sweeney was a pioneer in

19   questioning that. And there's been a whole academic

20   field within computer science talking about

21   de-anonymization of data. So people have certain

22   intuitions about something being anonymous and you're

23   starting from a certain point and you're saying, well,

24   that's not someone's name, so I don't know who that is.

25   One of the underlying difficulties is that

1   you have something that, although it's not someone's

2   name, is unique. And it is unique in all the world, as

3   a MAC address is. And so if you have some

4   circumstances where you have some opportunity to

5   observe that thing, or some database that contains that

6   thing, along with other data, then that can be

7   combined. And we like to say that de-anonymization is

8   really a one-way street. You can go down the

9   de-anonymization street and then the anonymity has

10   been lost.

11   So I know that, with this code of conduct,

12   the part of the industry that's represented here is

13   very solicitous about the idea that they don't actually

14   want to know who you are and they are not actually

15   going to make efforts to know who you are. I think

16   Ashkan's presentation referred to the CVS app and

17   pointed to the fact that there are a lot of pressures

18   to do that and there are a lot of companies that will

19   be interested in doing that. And they may not even be

20   companies that see themselves as part of this

21   particular analytics industry or that see the code of

22   conduct as even relevant to them. But Ashkan has

23   already demonstrated on his slide that there are

24   companies that are collecting MAC addresses from within

25   apps. And those companies absolutely will know the

1 identity, in the classic sense, of the person to whom

2 that MAC address relates.

3   And they are making those associations

4 because they are interested for their commercial

5 reasons or whatever reasons. And those associations,

6 technically, are very easy for app developers to make

7 if they're interested in doing it.

8   So there's a prospect. And it's not a

9 prospect again, that these companies on this panel are

10 interested in doing for their business purposes, but

11 it's a prospect that other parts of the industry will

12 be interested in, I think, which is converging

13 different kinds of analytics and converging different

14 kinds of data sets and saying, well, if we have the

15 ability to know your off-line identity and your online

16 identity and how those relate, why wouldn't we do that?

17 And again, these people on the panel have businesses

18 that don't rely on that and they don't do that and I

19 think that's great. But I think that there are other

20 parts of the industry that say, well, if we have that

21 capability to make those associations, why not?

22   MS. WESTERMAN: Well, and I guess I get

23 concerned, too, when I think about the potential for

24 data and collection and analytics being good or bad. I

25 mean, data in and of itself isn't good or bad.

1   Analytics isn't good or bad. It can be how it's used.

2   And we did and interesting study recently

3   where we asked people, let's say a child is tracked

4   from 5-years-old on. Everything they did for school

5   was put out there and analyzed. And let's say there

6   was algorithms that were written, this is hypothetical,

7   to figure out that kids who spelled poorly and liked

8   the hamster dance on YouTube would do better at UCLA

9   versus University of Michigan. So let's say this

10   happened.

11   When we asked parents and we said, if you

12   could have that information to figure out which school

13   your kid should apply to, people loved the idea. When

14   we asked the same question, well, what if the schools

15   used that to admit students, people hated the idea.

16   So the concept that the data itself being

17   collected is bad, that the algorithms are bad, to me it

18   just -- to me, it concerns me that we're limiting

19   ourselves in the future for what could be innovation.

20   There is definitely boundaries. People care, right?

21   And we have to make sure we understand those matters in

22   the context and design within it, but just to shut it

23   off completely and say that we shouldn't be doing this,

24   and everyone always wants to be anonymous, really

25   limits the future of potentially giving more value to

1   people. So it just -- it concerns us.

2   MR. SCHOEN: Well, the privacy community, I

3   think, really has a consent model where the distinction

4   is consent. And the default for the privacy community

5   is that people don't know sensitive personal

6   information about you, unless you decide to share it

7   with them for purposes that you understand.

8   And I think that's a good norm and that's an

9   appropriate norm and it's not a norm that very many

10   areas of technology are respecting today, whether this

11   area of technology or others.

12   MS. WESTERMAN: And people want choice, you're

13   right. Consent needs to be -- sorry. So you know, you

14   have to make your consumers aware, you need that

15   transparency. They don't like to be surprised, they

16   want to know what's happening. And they do want to

17   have choice, if they care.

18   But I think, you know, the idea that

19   everybody wants to be anonymous and that nothing should

20   be collected, that's my concern. We might limit

21   ourselves.

22   MR. SCHOEN: If you have someone who realizes

23   some day that they didn't want something to be known

24   from, say, a year ago, that they didn't even realize

25   technologically could be known, it's a bit late for

1   them to go back and erase that data, which is

2   considered the property of the person who observed it,

3   typically. It's a bit late for them to back and say,

4   oh, I didn't know that you could know that about me

5   about what I did a year ago, about who I was with, where I

6   was with, what I was doing. Now regret it, now that

7   you know it and I want you to erase it. Well, it's a

8   little late for that.

9   MS. KOULOUSIAS: Great, thank you. So I

10   think everybody has made some great points about, you

11   know, some of the differences, you know, if this

12   information were to become identifiable or, you know,

13   whether it may become identifiable.

14   But we want to take a step back for a minute

15   and talk about, you know, what is going on mainly right

16   now, which seems to be the aggregated analytics and

17   transparency around that. So what we want to find out,

18   are stores that are using that, the aggregated

19   analytics, notifying their customers right now?

20   MR. TINLEY: Well, with our clients, it's

21   part of the code of conduct, they are incorporating it

22   into signage within stores. And they are doing that in

23   different ways, either existing signage that is being

24   re-done with information being put in or in other ways

25   at customer service.

1   We've had conversations with store managers

2   that, if there's a question that comes up, we are

3   helping them to make sure that they can address and

4   answer those questions as well. You know, it's not

5   a -- there is transparency. They do want consumers to

6   understand and realize, but there is, again, the

7   diversion of you are collecting something personal

8   about me just because you see my MAC address.

9   You can't send an offer to a device just

10   because you have a MAC address. You have to have

11   something else to deliver and that means that they've

12   opted into it, so they are cognizant of that. But

13   yeah, they are looking at signage and putting up

14   signage and we are recommending different signage.

15   There is a smart store privacy -- or smart store logo,

16   there's different things. And Ilana is working on

17   things to help move that along so that, more and more,

18   that's being adopted.

19   MR. DUNCAN: I have to step in here because,

20   although I appreciate debate about the signage or the

21   approach and the various elements that might go into

22   this proposed code, on behalf of the retail industry, I

23   have to say that the overwhelming majority of the

24   industry is not at a point that we think that this code

25   has all of the elements that we think are necessary or

1   appropriate.

2   Just using the example I gave earlier, in

3   terms of heat mapping for purposes of shortening

4   checkout lines is not something that we think is

5   necessary to be over-signing in the stores, especially

6   if we have evidence indicating that most consumers

7   aren't reading most signs anyway. To suddenly

8   proliferate whole bunches of new signs, either for this

9   technology or for other technology that's used to

10   accomplish essentially the same thing, strikes us as

11   perhaps a bridge too far at this point, in light of

12   what's actually happening.

13   MR. RIESENBACH: There's certainly an issue

14   where it's early in this game, it's constantly

15   evolving, and the approach that we've taken within the

16   industry is, as I said earlier, we're not going to sit

17   here today and say this code or what we're doing is the

18   perfect solution.

19   But we felt that there is a lot of confusion

20   out in the marketplace and this is a good first step.

21   And the retailers that we're working with, and I've

22   heard that from others in the industry as well, are

23   asking for ways to inform, not only their consumers, but

24   even their employees, so their employees are aware of

25   what they're doing.

1   And so we recognize that this is not the

2   ideal perfect solution forever and there may be, to

3   Mallory's point, many ways that we should be doing it,

4   in a much broader sense, in conjunction with all

5   possible technologies, in conjunction with all

6   retailers, but that is something that, for practical

7   purposes, we could probably be talking about five years

8   from today.

9   So our attitude has been, let's get as far as

10   we can right now. Let's get something out into the

11   marketplace that shows positive intent, positive steps,

12   and what we can do today as an industry. So that's

13   been the approach.

14   MS. WESTERMAN: And I would say the best way we

15   see is that implicit awareness. If we can do more of

16   that, creating that value for consumers.

17   So I have an app, for example, that knows

18   where I'm at and gives me value for it. Then all of

19   the sudden, if they use that information to do heat

20   maps and make the lines shorter, people are very happy

21   about that, that's fine. They are aware that you have

22   the information and you're using it for good.

23   I think trying to get people to stop and pay

24   attention is always going to be difficult, especially

25   when there is so much going on in the retail space.

1   But I think there could be a win-win here, in that the

2   more functionality that comes online, that uses this

3   information and helps consumers, then you've created

4   awareness about the notice and you've created an

5   environment that helps the retailers and the consumers.

6   And then what happens is, you get the ambient awareness

7   of the notice that's there so people, if it's placed

8   properly, once they are aware that it's happening, if

9   they care, then they become aware that, okay, here's a

10   store where I don't want them to have it and then I can

11   opt-out.

12   But in general, you know, I think the

13   implicit awareness is the right first step to take.

14   MS. ANDERSON: So my understanding from Jim

15   and Glenn is that you are already taking steps to make

16   explicit the notices in your current locations. So

17   your retailers, Jim, are they -- they are putting up

18   physical signage in the stores? Are they putting them

19   at the registers, are they putting them in the windows?

20   And then Glenn, for you, I think that you were

21   saying that a lot of your clients are bigger clients,

22   like shopping malls and airports, so do you have an

23   example of where that signage might be and how

24   consumers might notice it?

25   MR. RIESENBACH: Well, we are working with

1   retailers, knowing that we as an industry are working

2   to develop a set of signage and visual cues that we are

3   planning to carry across all retailers and across all

4   of these companies. We've been working on an interim

5   basis to put some signage up, but we have also

6   essentially informed our retail partners that we are

7   working on something that we will be delivering and

8   that's something that's part of the coalition that

9   we've put together and working with Ilana to develop.

10   So we are expecting that it's going to become

11   much more prevalent as we get through this year.

12   MR. TINLEY: And we're much the same, we've

13   got some our clients that they have existing signage on

14   the wall that will talk about different privacy

15   policies or different codes of conduct that the mall

16   owner or operator will abide by in, you know, different

17   wings of the mall. And in most cases, it's being added

18   as one of those items in there.

19   MS. KOULOUSIAS: And so we've talked a little

20   bit about whether notices are being provided and where

21   they might be being provided, and so the question that

22   I wanted to raise for everybody is, what are the goals

23   of the notice? What are the important pieces of

24   information that need to be conveyed to consumers?

25   MS. WESTERMAN: Well, you know, what consumers

1   care about is what information is being collected and

2   how is it being used.

3   And so if you are asking someone to make a

4   choice about something, they need to understand the

5   implications. And as you saw in some of the videos,

6   frequently it is something that they don't care so much

7   about or if it's being used to streamline things, they

8   are okay with it.

9   There are other things they care a lot more

10   about, so if those things were being collected, we

11   would be much more strongly advocating for different

12   types of explicit-awareness type notice.

13   But one thing I would like to bring up is the

14   mall areas and that's something that we didn't

15   research, that would be the next step. Since we're

16   seeing many more phones out in the mall areas, we're

17   seeing people having more attention paid in the mall

18   areas, that might actually be a place where you could

19   get more awareness of signage. I don't have the data

20   right now, so I don't know, but that would be a next

21   step to look at, is that a place where we could place

22   them.

23   MR. RIESENBACH: The other thing is that

24   there are ways, and we are experimenting with this,

25   that the signage can actually convey consumer benefit.

1   And so one instance where we are doing this right now

2   is in airports, where the TSA queues can backup and you

3   can have hundreds of people in line, but there can be

4   three different TSA queues at the same airport.

5   So what we're doing and, as I said, we're

6   testing this in a number of cases, is we are using our

7   methodology to put big monitors up at the beginning of

8   each of the TSA queues to tell the consumer, when they

9   get there, what's the wait time in this line. It says,

10   line one, 12 minutes, but line two is 8 minutes and

11   line three is 4 minutes. So it's a self-regulating

12   path for consumers to actually benefit and see how they

13   can save time at an airport. And we are using the same

14   approach in many cases, as I mentioned earlier, in

15   grocery stores. And that can be a very similar

16   approach.

17   So there are some direct consumer benefits

18   that tie into the signage and the disclosure.

19   MS. KOULOUSIAS: Thanks. And so one of the

20   things that you mentioned before is that, you know,

21   with this code of conduct, that consumers have the

22   ability to opt-out. Is that ability to opt-out

23   something that is mentioned in any of the notices that

24   are being put in stores?

25   MR. TINLEY: Yes, as part of the signage or

1   verbiage that is being put up, there is a website

2   address in most cases, or in all cases right now, to be

3   able to go and do that.

4   And as Ashkan pointed out, and as I think we

5   all understand, that is not the most seamless -- there

6   is not a seamless way to be able to do it, but it is a

7   way to do it that does give consumers the option to do

8   so.

9   We've also had emails from people who have

10   just said, you know, I've seen a sign and here's an

11   email, could you please remove me? And we do so and we

12   respond to the email immediately to say that this has

13   been done. So there are ways to do it and there is a

14   web address or an email being applied in there.

15   MR. RIESENBACH: I think we've all learned,

16   and Ilana may testify, that as soon as you start to try

17   to convey too many messages with too much information

18   and too many words on a sign, you essentially lose the

19   chance of actually communicating effectively.

20   So what we're trying to do is minimize the

21   amount of text, maximize the amount of visual impact,

22   as well as giving a very easy way for consumers to know

23   where to go to find that information.

24   MS. ANDERSON: We've gotten a lot of

25   questions about where people can find the code online.

1   I don't know if any of you have the URL with you that

2   we can provide? But we would like to be able to do

3   that.

4   And then also if one of you can talk a little

5   bit more about how the opt-out actually works, how

6   consumers access it, once they get to the website, what

7   do they have to do?

8   MR. RIESENBACH: We are working with an

9   organization called The Future of Privacy and they are

10   a Washington-based think tank and they've helped us to

11   put this group together and develop the code. And the

12   code is actually live on their site. Now, all of the

13   companies that are participating are also putting this

14   live on our sites as well.

15   And then, of course, within the opt-out

16   there's going to be the information, when people go

17   into that, if they choose to opt-out, there's much more

18   information. There's a whole frequently asked

19   questions area that talks about the code.

20   MS. ANDERSON: Instructing you on how to find

21   --

22   MR. RIESENBACH: Yeah.

23   MS. ANDERSON: -- your MAC address and enter

24   it and all of that? Okay.

25   MS. KOULOUSIAS: Seth, so we wanted to go

1   back to some of the points that you have actually made

2   a little bit earlier, some of the concerns that you had

3   about persistent identifiers and, you know, how they

4   are being broadcast from the phones.

5   And what I am wondering is, you know, given

6   the fact that the MAC address is being broadcast from

7   the phone right now, that it is what's going on, what

8   are your thoughts on transparency and choices for

9   consumers around that and why it's needed and ways to

10   do that?

11   MR. SCHOEN: I mean, I think that the people

12   who are making these devices, in a sense, are, as I

13   said earlier, more to blame for the prospect of people

14   randomly knowing where you are at any given moment and

15   situation and place.

16   I guess I'd like to see device makers warning

17   people, you know, when you use wi-fi or when you have

18   wi-fi on, the wi-fi networks that you are on or near

19   can recognize you. I agree that there is a very

20   challenging question about how to convey information

21   and how to get people to pay attention to it, whether

22   they are in a store or whether they are opening their

23   cell phone for the first time. And I don't presume to

24   know the best way to go about conveying that, but I'd

25   like to see device makers actually warning people, you

1   know, people will know where this device is when you

2   use it as intended, and these are some of the kinds of

3   people who can know that. So that's something that I'd

4   like to see.

5   I certainly think that, if there's a store or

6   somewhere that's doing this, that putting up a sign, as

7   we've just been talking about, is an appropriate thing

8   to do in that context, that it's a sensible thing to

9   warn people and to give people an opt-out.

10   I guess as I said earlier, thinking of the

11   app that Ashkan found that is collecting MAC addresses,

12   I'm much less concerned about the relatively

13   responsible people who are affirmatively interested in

14   warning people and in giving people an opt-out and in

15   giving people more control. And I'm more concerned

16   about the notion that, there's really such a low

17   barrier to entry for location tracking.

18   For those of you who were here in time to see

19   the demo earlier, that demo of location tracking was done on

20   an ordinary laptop with very ordinary hardware. It wasn't

21   done with some super high-tech thing that is only

22   available from going into research labs or something.

23   It's an ordinary laptop.

24   And in fact, Dr. Sweeney was saying that she

25   had to actively program it not to track everyone who

1   walked by and that that was an actual effort that she

2   had to go to to make sure that it wouldn't track all of

3   you as you walked into the building.

4   So the barrier to entry for doing fairly

5   involved tracking is relatively low and there are a lot

6   of different kinds of entities that could undertake it,

7   not just entities who have signed on to the code or

8   that are trying to put up signs and inform people.

9   MR. DUNCAN: May I just add on to what Seth

10   was saying here? Look, this is relatively new

11   technology. There are some advantages to retailers and

12   to our customers from its use, but it's not so

13   pervasive that it is critical to retailers operations.

14   We would like to see it grow and we are not

15   interested in seeing technology arrested, I agree with

16   Ilana on that; however, if device manufacturers wanted

17   to put a kill button on cell phones, that would be

18   something that you wouldn't find the retail industry

19   objecting to as a general proposition.

20   MR. SCHOEN: I think the more concretely

21   useful thing would be a button that says "Change my MAC

22   address." And I don't think that that -- I think it

23   has substantial privacy benefits and I think it has

24   very few adverse technical consequences. And I think

25   for the statistical purposes, at least in terms of

1   dwell time, wait time, not necessarily in terms of

2   repeat visits, you would still be able to do that.

3   So certainly if we are thinking about what

4   button we'd like to have, I'd like to see the "Change

5   My MAC Address" button. Now it does mean that you

6   wouldn't get the repeat visits or the repeat visits

7   data would be a little bit less accurate, but for the

8   dwell time and wait time, you could still get that.

9   MR. TINLEY: Seth, I also just wanted make a

10   point that comes back to the CVS app is, within an app,

11   when an app is downloaded, and Apple did this and

12   Google is actually doing it with their new versions of

13   Android, the MAC address is actually wiped out, so

14   there is actually no MAC address broadcast when you are

15   in the Google or Apple, I call it their ecosystem. The

16   MAC address is actually not transmitted, it is a 02 and

17   a series of zeros. Apple and Google apply an

18   identifier, unique identifier, to the application or to

19   the device. So then, because Jim and myself and

20   others, we live outside of that ecosystem and we see

21   that MAC address, we could not even then combine, even

22   if we technologically wanted to, we could not combine

23   the application that someone has and a MAC address to

24   the generic MAC address, or the MAC address that we're

25   capturing. There's no way for us to even combine

1   those.

2   So again it even, from our standpoint,

3   separates the ability to collect anything personally

4   identifiable or anything along those lines, it puts

5   another, we'll call it a wedge, in there as a

6   protection against that and against profiling and the

7   other sort of negative connotations of those things.

8   MR. SCHOEN: So I think it's very important

9   that mobile operating system developers should prevent

10   applications from reading the MAC address as well as

11   other identifiers.

12   MR. TINLEY: Well Apple and Google did that.

13   MR. SCHOEN: And so there is a trend in that

14   direction in recent mobile OS versions and I think

15   that's great and I think that's very welcome.

16   I think a bigger picture indication, from

17   what Ashkan found, is that there were app developers

18   who were willing to try to use that information, if

19   they had access to it. And that suggests to me that,

20   whoever created that app is willing to try to use other

21   technical means to circumvent that privacy measure.

22   And my prediction is that there are other

23   technical means that are available -- we can talk

24   about, and I think it should be a separate conversation

25   later, I think there are other technical means that

1   will be found to circumvent that privacy measure and do

2   that reconnection of MAC address and identity.

3   So it's not necessarily that it's going to be

4   the particular way that Ashkan found that the CVS app

5   is doing it, which I agree, mobile OS developers are

6   trying to plug that hole. It's that there is the

7   willingness, in some parts of the industry, to try to

8   make those associations. And I think we are going to

9   see that, technologically, in this context, there's a

10   will, there's a way.

11   MS. WESTERMAN: One thing that I'm also kind of

12   concerned about is that we are over simplifying the

13   problem. And so when you talk to people about

14   anonymity, there are definitely times when we want to

15   be anonymous. But there's also times when we're okay

16   with you kind of knowing who we are in aggregate. And

17   there's also times when we actually want you to know

18   who we are.

19   So an example of this is like when you're

20   checking out in a store and you don't want your credit

21   card taken, do you want to personally be identified?

22   Yeah. People don't sign the back of credit cards, they

23   want you to look at their ID. There are times when we

24   really do want that to be in place. And there's other

25   times when we want to be anonymous.

1   So I think it's a difficult design problem

2   and we have to take a step back and look at, what do

3   consumers really want, what do they really care about, and

4   not oversimplify a solution. And not assume it's going to

5   happen overnight either, all working toward that

6   positive outcome, but we have to first understand what

7   people care about.

8   MS. KOULOUSIAS: Seth, I just wanted to

9   follow up quickly on a point that you had made. When

10   you were talking about the ability to possibly reset a

11   MAC address, you know, one of the things that might be

12   lost would be the new versus returning visitors.

13   And so what I wanted to just hear briefly

14   about is, you know, to what extent do you think the

15   privacy concerns differ if you're looking just at, you

16   know, the current location versus that location over

17   time, with the returning visitors?

18   MR. SCHOEN: Well, I think the location over

19   time, you know, Ilana alluded to the idea that it's

20   something people that people are anxious about. And I

21   think people have very imperfect memories and machines

22   have perfect memories. And people often don't even

23   remember the sensitivity, or the potential sensitivity,

24   of things that they've done or the places that they've

25   been.

1   An amazing example that someone in this field

2   gave me a few years ago is that you can use location to

3   detect if people are having an extramarital affair

4   because certain people spent the night in the same

5   place, you observed in the place in the evening and you

6   observed them in the place in the morning. And that

7   sort of falls out of location accidentally.

8   Obviously, no one has started a company to

9   detect if people are having extramarital affairs using

10   location data, but people's sort of imperfect memories

11   make them not even see the sensitivity in the location

12   trail that they leave behind and the data trail they

13   leave behind. And for that reason, Bruce Schneier has

14   compared data trails to a kind of pollution, because

15   you can't necessarily see it and you're not necessarily

16   harmed by it in the short-term.

17   So I think the inferences that are sensitive,

18   that can be drawn from people's locations, clearly are

19   much more extreme over the long-term, in terms of

20   people's habits and habitual activity. And if someone

21   goes to a particular place of worship every weekend,

22   you conclude that they probably are a member there and

23   they probably actually belong to a particular religious

24   group, as opposed to someone who was once observed

25   apparently at that place of worship. Well, maybe they

1   were attending a musical concert or something.

2   So all of these things, as you get the

3   overall picture of someone's life, of someone's habits,

4   of someone's associations, are much more significant

5   over time. And I agree that there's not that much

6   sensitivity in that momentary observation, oh, this

7   person went to the store on this one day. That's not

8   really very sensitive at all. But this person goes to

9   this kind of place, oh this person knows this person

10   because they were seen together, oh this person is in

11   an intimate relationship with this person because they

12   were seen together in certain kinds of places. That's

13   much more sensitive and that's information that falls

14   out, over time.

15   MS. KOULOUSIAS: Great.

16   MR. TINLEY: Seth, just also -- I just wanted

17   to follow up on that. The inference is that, if you

18   were talking about our company, we would have to have

19   our sensors installed at all of the hotels, every place

20   of worship. That we would have to have -- that we

21   would be everywhere, which I'm wonderful to have that

22   happen, from a business standpoint, but the reality of

23   it happening is -- we're reaching a little bit, in

24   terms of, you know, the place of worship would have

25   been hired us to install our sensors within there, to

1   then observe their visitors every Sunday to find out

2   who is coming every Sunday or what percentage of them

3   are coming every Sunday. If they were then to sort of

4   use that -- it's their data to use. They wouldn't use

5   that to then profile their own people. So it's just --

6   and this is where sometimes it gets -- you can go a

7   little -- we can get where there is so much data being

8   collected, and there is a lot of data being collected

9   and obviously protection of that data is paramount, but

10   there is things required to have connections drawn.

11   And in almost all cases, those things that are used to

12   connect those things are not connected at all and never

13   could be or never will be.

14   MR. SCHOEN: So I would absolutely agree that

15   the current scale of commercial location analytics is not

16   dense enough to make some of the most extreme privacy-

17   invasive inferences, because you don't have sensors in a lot

18   of the places that people are most anxious about people

19   knowing that they've been, and you may never have sensors in

20   those places.

21   I guess it's a big picture concern and it's a

22   long-term concern about, as you get more uses of

23   location by more kinds of entities, some of those

24   things actually will show up in some of those sensory

25   networks.

1   And in the online world, those are already

2   showing up in the sense that websites are able to get

3   that from an IP address. And I was discussing with

4   Ashkan, there are companies that are trying to bridge

5   the IP address and physical location both.

6   So if you look at the big picture of the

7   industry, I think some of those concerns can develop

8   over time.

9   MS. KOULOUSIAS: Thanks. We really hate to

10   cut off the conversation, but we are basically out of

11   time.

12   We want to give everybody just 15 seconds

13   each to just kind of give your closing thoughts on

14   this, so we can start down at the end with Glenn.

15   MR. TINLEY: I don't think -- just to

16   reiterate, we agree and support 100 percent that

17   consumer privacy is, again, paramount to everything

18   that is being done.

19   I think that, as an industry, we actually

20   stepped up and said, look, we understand this and we

21   want to develop a code of conduct that is at least a

22   starting point and that can help bridge some of the

23   next timeframe.

24   My only caution is the market confusion over what

25   is within an app that somebody is downloading and using

1   on a daily basis, that they want to use, that is not

2   even giving out a MAC address, versus what is being

3   observed on ongoing basis to help retailers with

4   customer experience and just compete in that more

5   online world.

6   MR. DUNCAN: I think I'll conclude as I began

7   by saying that this ultimately, at least in the retail

8   environment, is going to come down to a matter of

9   trust. Rather than talking about notice for

10   observations, we should be talking about notice for

11   particularized uses that might be problematic.

12   And whether a use is problematic will depend

13   upon the relationship of the customer with the environment

14   they're in. In the store environment, for the reasons I

15   said before, it's likely that the store is going to find,

16   try very hard, to find that right balance. In a more open

17   environment, say in a mall where the customer doesn't have a

18   relationship, or perhaps at an airport, there may be a

19   different paradigm that applies.

20   But at least from our perspective, trust is

21   the key.

22   MR. SCHOEN: So I would just like to remind

23   everybody again that Dr. Sweeney set up that demonstration

24   on an ordinary laptop and had to actively program

25   it not to collect all of your MAC addresses. And if

1   she hadn't actively programmed it that way, then all of

2   your devices that have wi-fi interfaces enabled would

3   have an observation in that laptop, saying that you

4   were here at this time. And maybe it's not very

5   sensitive to you that you were here at this workshop at

6   this time, but maybe there's some place or some

7   interaction or some relationship that you wouldn't

8   actually like someone to be able to observe in that

9   way.

10   And so I think, you know, these statistical

11   and aggregate applications of location analytics are

12   not the scariest ones, from a privacy point of view.

13   Obviously, the profiling analytics that we haven't seen

14   deployed commercially so much to date are dramatically

15   scarier.

16   But I think the barriers to entry really are

17   extremely low. And I think to the extent that people

18   want their location to be used to provide services to

19   them and they want people to know their location, it's

20   really very technically easy to do that in a consensual

21   way by having people install applications that share

22   their location in a defined way for a particular

23   purpose. And we already have a lot of applications

24   that do that. So I think we should be looking to that

25   as the model for privacy protective use of location. I

1   am looking for technical means, like changing MAC

2   addresses, that actually don't require people to have

3   their devices be observable and recognizable in every

4   circumstance by everyone with a laptop.

5   MR. RIESENBACH: I think it's early in a

6   rapidly evolving industry, from a technology

7   standpoint, and it's important for us to keep in mind

8   what's theoretically possible from what's practical and

9   actionable and market driven in today's world.

10   And so I don't dispute some of the hypothetical

11   possibilities down the road, but you know, we are in the

12   business of helping real brick-and-mortar retailers

13   compete more effectively and serve their customers better

14   today and that's where we keep our focus.

15   And absolutely we have to continue to evolve

16   our technology, evolve our conduct, but at the end of

17   the day, I think market forces prevail and -- because

18   those retailers or other businesses that violate the

19   trust of their consumers will be punished by the

20   marketplace more than anything else.

21   And so I don't think that the reality is is

22   that some of the worst case scenarios will come to be,

23   because I don't think that the market will allow it.

24   MS. WESTERMAN: Yeah. And I think I always

25   look at it from the customer's perspective, from the

1   user's perspective. And so they, you know, they trust

2   retailers right now. And if you look at it from a

3   retailer's perspective, are they going to try to

4   compromise that trust? Why would they want to do that?

5   I mean, do they want their customers to come back?

6   Sure. Do they want to provide better goods and

7   services for them? Yeah. I mean, everyone is trying

8   to help each other in this particular environment.

9   And that doesn't mean, I think, to Seth's

10   point, that there might not be other areas where harm

11   can be done, but at the end of the day, the collection

12   of the information and the actual algorithms, are those

13   bad things? I don't think so. It's the outcome.

14   And so I think we just have to always try to

15   understand, you know, what do consumers really care

16   about? Provide that transparency so they know if it

17   benefits them or not so they can make a choice. And

18   realize that we're at the beginning. And to your

19   point, that this is a hard problem, trying to get

20   people's attention, trying to provide that

21   transparency. It's not going to happen overnight.

22   We're going to do it, but it's a process, it's a design

23   process.

24   MS. ANDERSON: Thank you all very much.

25   Thank you to all of our panelists for joining us today,

1   this has been a great discussion. Thank you to all of

2   you for participating and thanks to those who have been

3   viewing via webcast.

4   We hope you've enjoyed the discussion today

5   and we'd like to take this opportunity to remind

6   everyone that we are accepting public comments on this

7   topic until March 19. You can find instructions for

8   submission on the web page for this seminar.

9   Also, for our in-person audience, our Chief

10   Technologist, Latanya Sweeney, will be conducting her

11   demonstration again in the hallway, just outside of

12   this conference center, so if you didn't get a chance

13   to see it on the way in, you can go and see that

14   now.

15   And finally, we'd like to remind you that

16   this was the first in a series of three spring privacy

17   series. The second will be on alternative scoring and

18   that will take place here on the March 19th. The third

19   will be on consumer generated and controlled health

20   data and that will take place on May 7th.

21   Thank you all.

22   (Whereupon, the proceedings

23   concluded at 12:05 p.m.)

24

25

1   State of Maryland, County of Harford, to wit:

2

3   I STEPHANIE M. GILLEY, a Notary Public of

4   the State of Maryland, County of Harford, do hereby

5   certify that the within-named witness did appear at

6   the time and place herein set out.

7   I further certify that the proceedings

8   were recorded verbatim by me and this transcript is

9   a true and accurate record of the proceedings.

10   I further certify that I am not of counsel

11   to any of the parties, nor in any way interested in

12   the outcome of this action.

13   As witness my hand and notarial seal this

14   _____ day of _____, 2013.

15

16   _____

17   STEPHANIE M. GILLEY

18   NOTARY PUBLIC

19

20

21   My Commission expires on February 25, 2017.

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