

Usable privacy notice and consent for websites and IoT

Lorrie Faith Cranor
@lorrietweet

September 2020



About Our Privacy Policy

Whenever you do something like buy one of our products, watch a show or download an app, information is created. Because we know your privacy is important, we have a Privacy Policy to explain how we collect, use and protect that information. There's a quick summary below, and the actual policy is written in an **easy to understand "Frequently Asked Questions" (FAQ) format (/sites/privacy_policy/terms)**. We want to simplify this explanation, so you can make informed choices about your privacy, and then spend the rest of your time enjoying our products and services.

Effective July 24, 2015

A Quick Summary of Our Privacy Policy

Our Privacy Policy applies to your use of all products, services and websites offered by AT&T and our AT&T affiliates, such as DIRECTV, unless they have a different privacy policy. Because some apps, including some AT&T and DTW branded apps, require additional information, or use information in different ways, they may have their own privacy policies and/or terms and conditions. These apps may also offer you additional choices for managing your personal information.

Back to Top

Our privacy commitments

- We don't sell your Personal Information to anyone for any purpose. Period.
- We keep your Personal Information in our business records while you are a customer, or until it is no longer needed for business, tax or legal purposes.
- We will keep your information safe using encryption or other appropriate security controls.

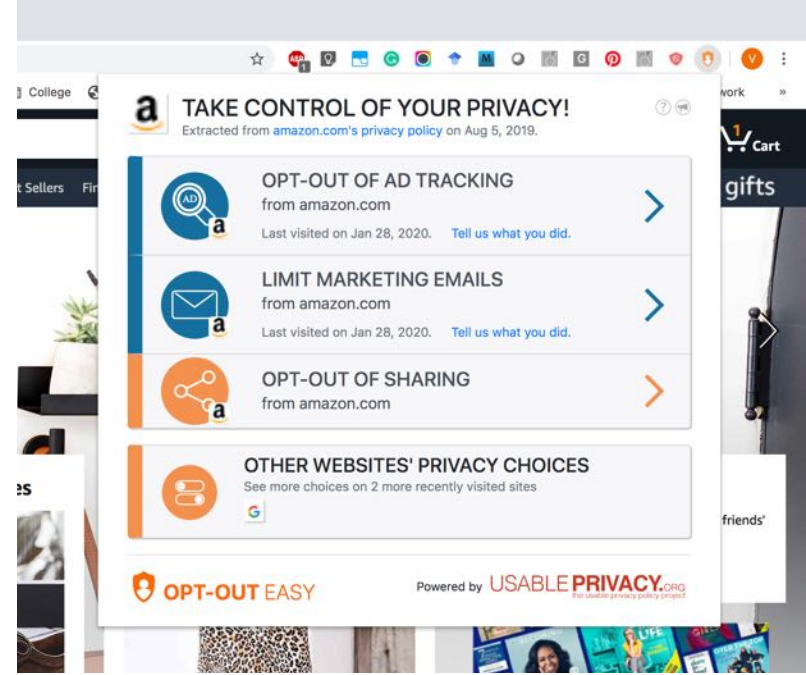
<p>What is this?</p> <p>This document explains our privacy practices and how we collect, use and protect your Personal Information.</p> <p>Who is this for?</p> <p>This document applies to our customers and subscribers, our AT&T Business and MyDirectTV customers and our MyDirectTV app users.</p> <p>Why is this important?</p> <p>Understanding our privacy practices helps you make informed choices about your privacy and how we use your information.</p> <p>Where is this document available?</p> <p>This document is available on our website at www.att.com/privacy and on the MyDirectTV app.</p>	<p>What are the key commitments in our Privacy Policy?</p> <ol style="list-style-type: none"> We don't sell your Personal Information to anyone for any purpose. We keep your Personal Information in our business records while you are a customer, or until it is no longer needed for business, tax or legal purposes. We will keep your information safe using encryption or other appropriate security controls. <p>How do we use your information?</p> <p>We use your information to provide our services, to improve our services and to provide you with a better user experience.</p> <p>How do we protect your information?</p> <p>We use a variety of security technologies and procedures to help protect your information from unauthorized access, disclosure, alteration, and destruction.</p>	<p>How do we share your information?</p> <p>We share your information with our service providers, partners and affiliates to help us provide our services and to improve our services.</p> <p>Do we use cookies?</p> <p>Yes, we use cookies and other tracking technologies to enhance our services and to provide you with a better user experience.</p> <p>How do we handle children's information?</p> <p>We do not knowingly collect or use the Personal Information of children under the age of 13.</p>	<p>How do we handle your information?</p> <p>We use your information to provide our services, to improve our services and to provide you with a better user experience.</p> <p>How do we protect your information?</p> <p>We use a variety of security technologies and procedures to help protect your information from unauthorized access, disclosure, alteration, and destruction.</p> <p>How do we handle your information?</p> <p>We use your information to provide our services, to improve our services and to provide you with a better user experience.</p>
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CyLab privacy notice & consent projects

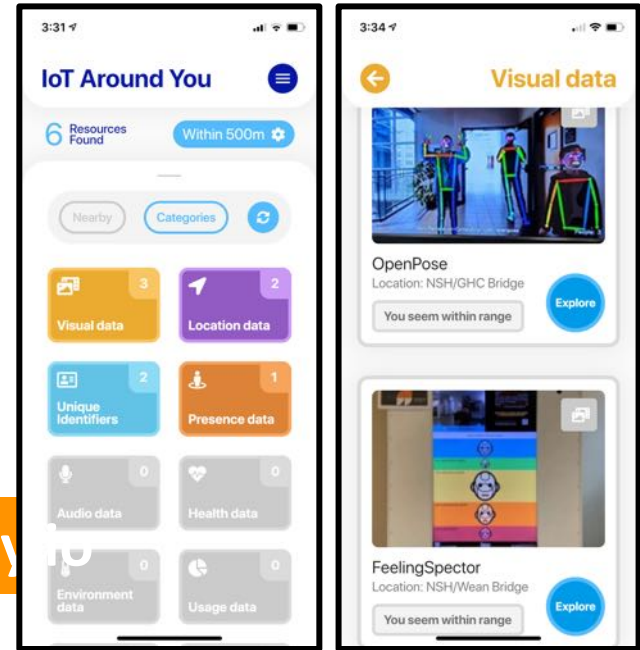
- Opt-out Easy web browser pluggin
Find opt-outs on websites

USABLE **PRIVACY**.ORG
the usable privacy policy project



CyLab privacy notice & consent projects

- Opt-out Easy web browser pluggin
 - Find opt-outs on websites
- IoT Assistant App
 - Learn about IoT device data collection around you



CyLab privacy notice & consent projects

- Opt-out Easy web browser pluggin
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- IoT Assistant App
 - Learn about IoT device data collection around you
- IoT Security and Privacy label
 - Learn about security and privacy of IoT devices before purchase

<http://iotsecurityprivacy.org>

Security & Privacy Overview
Smart Security Camera NS200
Firmware version: 2.5.1 - updated on: 6/15/2019
The device was manufactured in: United States

Casa

Security Mechanisms

- Security updates:** Automatic - Available until at least 1/1/2022
- Access control:** Password - Factory default - User changeable, Multi factor authentication, Multiple user accounts are allowed

Data Practices

Sensor data collection	Camera	Microphone	Physiological	Location
Sensor type	Camera	Microphone		
Purpose	Providing device functions, Research	Providing device functions, Research		
Data stored on device	Identified	Identified		
Data stored on cloud	Identified - Option to delete	Identified - Option to delete		
Shared with	Manufacturer, Third parties	Manufacturer, Third parties		
Sold to	Not sold	Not sold		

Other sensor data collection: Movement

Other collected sdata: Account info, Payment info, Device setup info, Device tech info, Device usage info

Privacy policy: www.NS200.example.com/policy

More Information: www.iotsecurityprivacy.org/labels

CyLab privacy notice & consent projects

- Opt-out Easy web browser pluggin
 - Find opt-outs on websites
- IoT Assistant App
 - Learn about IoT device data collection around you
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 - Learn about security and privacy of IoT devices before purchase
- Privacy Options icon
 - Find [privacy choices on websites](#)



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Sensor data collection



Audio

Physiological

Location

Sensor type

Camera

Microphone

Purpose

Providing device functions, Research

Providing device functions, Research

Data stored on device

Identified

Identified

Data stored on cloud

Identified - Option to delete

Identified - Option to delete

Shared with

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TECHWATCH

By [Fredric Paul](#), Network World | MARCH 28, 2018 07:10 AM PT

About

Fredric Paul is Editor in Chief for New Relic, Inc., and has held senior editorial positions at ReadWrite, InformationWeek, CNET, and PC World. His opinions are his own.

People are really worried about IoT data privacy and security—and they should be

Despite rising spending on IoT security, consumers and businesses are right to worry about how data will be used and protected.



amazon try Prime Amazon Devices EN Hello, Sign in **Account & L**

Deliver to Pittsburgh 15213 Your Amazon.com Today's Deals Gift Cards Whole Foods Sell Help

Amazon Devices Echo & Alexa Fire Tablets Fire TV Kindle Home Security Device Deals Accessories Certified Refurbished Device Support Manage Your Content and Devices

echo dot

Add Alexa to any room

amazon music Apple Music Spotify SiriusXM hue PHILIPS ADT

Roll over image to zoom in

See what Alexa can do

Echo Dot (3rd Gen) - Smart speaker with Alexa - Charcoal

by Amazon

★★★★★ 29,879 customer reviews | 1000+ answered questions

Amazon's Choice for "alexa"

[Get the Best Deal](#)

List Price: ~~\$49.99~~
 With Deal: **\$29.99** & **FREE Shipping**. [Details](#)
 You Save: **\$20.00 (40%)**

In Stock.

Want it Friday, May 3? Order within **1 hr 59 mins** and choose **Two-Day Shipping** at checkout. [Details](#)
 Ships from and sold by Amazon Digital Services LLC. Gift-wrap available.

Color: **Charcoal**

Configuration: **Echo Dot**

[Echo Dot](#) [With \\$15 TP-Link Smart Plug](#) [With \\$20 Smart Lighting Kit](#)

- Our most popular smart speaker - Now with a fabric design and improved speaker for richer and louder sound.
- Voice control your music - Stream songs from Amazon Music, Apple Music, Spotify, Sirius XM, and others. You can also listen to audiobooks from Audible.
- Bigger, better sound - Pair with a second Echo Dot (3rd gen) for rich, stereo sound. Fill your home with music with compatible Echo devices in different rooms.
- Ready to help - Ask Alexa to play music, answer questions, read the news, check the weather, set alarms, control compatible smart home devices, and more.
- Connect with others - Call almost anyone hands-free. Instantly drop in on other rooms in your home or make an announcement to every room with a compatible Echo device.
- Use another speaker - Connect to your own speakers over Bluetooth or with a 3.5 mm audio cable.
- Alexa has skills - With 50,000+ skills, Alexa is always getting smarter and adding new skills like tracking fitness, playing games, and more.
- Voice control your smart home - Turn on lights, adjust thermostats, lock doors, and more with compatible connected devices

Jump to: [Compare devices](#) | [Technical details](#)

Used & new (2) from \$26.39 & FREE shipping. [Details](#)

Setup Technology	Amazon Wi-Fi simple setup enables customers to connect smart devices to their Wi-Fi network in a few easy steps. Wi-Fi simple setup is another way Alexa is always getting smarter. Learn more
Warranty and Service	Size 3.9" x 3.9" x 1.7" (99 mm x 99 mm x 43 mm)
	Weight 10.6 oz. (300 grams) <i>Actual size and weight may vary by manufacturing process</i>
	Wi-Fi connectivity Dual-band Wi-Fi supports 802.11 a/b/g/n/ac (2.4 and 5 GHz) networks. Does not support connecting to ad-hoc (or peer-to-peer) Wi-Fi networks.
Accessibility	

No information about privacy or security

Included in the Box	free voice control is not supported for Mac OS X devices. Bluetooth speakers requiring PIN codes are not supported.
Audio	Built-in speaker for voice feedback when not connected to external speakers. 3.5 mm stereo audio output for use with external speakers (audio cable not included).
Generation	
System Requirements	Echo Dot comes ready to connect to your Wi-Fi. The Alexa App is compatible with Fire OS, Android, and iOS devices and also accessible via your web browser. A list of supported operating systems can be found here . Certain skills and services may require subscription or other fees.



echo dot

Add Alexa to any room

*"Alexa, play today's
top hits"*

"Call Mom"

"What's the weather?"



amazon

 FAR-FIELD
VOICE CONTROL

-  ALEXA
-  BLUETOOTH
-  WIFI
-  AUDIO LINE OUT

echo dot



No information about privacy or security



Privacy & Security Facts

Security Camera S200
 Smart++, incorporated in United States 2017
 Firmware version 3.1.6 (updated June 12, 2018)

CR Consumer Reports
 Overall score out of 100 **55**



PRIVACY

Collected data: Video, device configuration, login info

Purpose: Security, maintenance, advertisement

Retention time: Forever

Shared with: Manufacturer

Choices: None

Independent Privacy Lab Rating: ★☆☆☆☆

Level of detail for the data that is being used: Identifiable

Level of detail for the data that is being collected: Identifiable

SECURITY

Automatic updates: No

Updates lifetime: Until January 1, 2020

Choices: Configurable updates, purchase extended updates

Encrypted communication: Yes

Authentication method: Fingerprint

Internet connectivity: Required

Independent IT Security Institute Rating: ★★☆☆☆

MORE INFORMATION

i Tip(s): Register your device to receive updates

Scan QR code for manufacturer's privacy and security information



P. Emami-Naeini, H. Dixon, Y. Agarwal, L. F. Cranor, Exploring How Privacy and Security Factor into IoT Device Purchase Behavior, CHI2019.

Security & Privacy Overview

Smart Security Camera NS200
Firmware version: 2.5.1 - updated on: 6/15/2019
The device was manufactured in: United States

Casa

Security Mechanisms

Security updates	Automatic - Available until at least 1/1/2022
Access control	Password - Factory default - User changeable, Multi-factor authentication, Multiple user accounts are allowed

Data Practices

Sensor data collection	Camera	Audio	Physiological	Location
Sensor type	Camera	Microphone		
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Other sensor data collection

Movement


Other collected sdata

Account info, Payment info, Device setup info, Device tech info, Device usage info
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Privacy policy www.NS200.example.com/policy

More Information

Detailed Security & Privacy Label:
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Access control	Password - Factory default - User changeable, Multi-factor authentication, Multiple user accounts are allowed
Security oversight	Audits performed by internal security auditors
Ports and protocols	www.NS200.example.com/ports
Hardware safety	www.NS200.example.com/hw_safety
Software safety	www.NS200.example.com/sw_safety
Personal safety	www.NS200.example.com/user_safety
Vulnerability disclosure and management	www.NS200.example.com/vul_report
Software and hardware composition list	www.NS200.example.com/BOM
Encryption and key management	www.NS200.example.com/encryption

Data Practices

Sensor data collection	Visual	Audio	Movement
Sensor type	Camera	Microphone	Motion sensor
Collection frequency	Continuous - Option to opt out	Continuous - Option to opt out	Continuous - Option to opt out
Purpose	Providing device functions, Research	Providing device functions, Research	Providing device functions, Research
Data stored on device	Identified	Identified	Pseudonymized
Local data retention time	Up to a year	Up to a year	Up to a month
Data stored on cloud	Identified - Option to delete	Identified - Option to delete	No cloud storage
Cloud data retention time	Up to a month	Up to a month	No cloud storage
Shared with	Manufacturer, Third parties	Manufacturer, Third parties	Manufacturer, Third parties
Sharing frequency	Periodic - Adjustable	Periodic - Adjustable	Periodic - Adjustable
Sold to	Not sold	Not sold	Not sold

Other collected data

Account info, payment info, product setup info, device tech info, usage information

Data linkage

What could be inferred from user's data	Data will not be linked with other data sources
Special data handling practices for children	No
In compliance with	GDPR
Privacy policy	www.NS200.example.com/policy

More Information

Call Casa with your questions at	412-313-2793
Functionality with no internet	Limited functionality on offline mode
Functionality with no data processing	Limited functionality on dumb mode
Physical actuations and triggers	Device blinks when motion is detected
Compatible platforms	Amazon Alexa



Towards IoT label deployment

- Our research shows that two-layer label design informs consumers and provides important information for experts
- Complete **label specification** now available
- Web-based **label generator** now available
- Label ready for pilot deployment on IoT devices
 - We're looking for companies to try it out!

[IoTSecurityPrivacy.org](https://www.IoTSecurityPrivacy.org)

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More Information	Detailed Security & Privacy Label: www.iotsecurityprivacy.org/labels				



Website privacy choices: hard to find

- Most websites offer choices related to email communication, targeted ads, data deletion, and more
- We analyzed opt-out choices on 150 websites [SOUPS 2019]
 - Many were difficult to find and required numerous actions to exercise, even if you take the shortest path
 - No standard location to find choices, and no standard headings for them in privacy policies
- We watched 24 participants attempt to opt-out [CHI 2020]
 - Participants were often confused and took far longer than the shortest path
- Consumers need a standard place to find web privacy choices



CHAPTER 20. CALIFORNIA CONSUMER PRIVACY ACT REGULATIONS

PROPOSED TEXT OF REGULATIONS

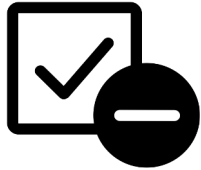
§ 999.315. Requests to Opt-Out

(a) A business shall provide two or more designated methods for submitting requests to opt-out, including, at a minimum, an interactive webform accessible via a clear and conspicuous link titled “Do Not Sell My Personal Information,” or “Do Not Sell My Info,” on the business’s website or mobile application. Other acceptable methods for submitting these requests include, but are not limited to, a toll-free phone number, a designated email address, a form

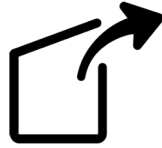
(e) Opt-Out Button or Logo

(1) The following opt-out button or logo may be used in addition to posting the notice of right to opt-out, but not in lieu of any posting of the notice. [BUTTON OR LOGO] TO BE ADDED IN A MODIFIED VERSION OF THE REGULATIONS AND MADE AVAILABLE FOR PUBLIC COMMENT.]

Choice/consent



Opting out



Do not sell (personal info)

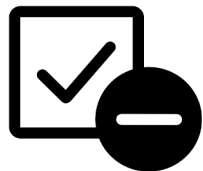


DAA Privacy
Rights

First icon evaluation

- 240 Mturk participants
- Tested 12 icons with and without “Do Not Sell My Personal Information” tagline
- Displayed 1 icon
 - Asked what the icon means and what would happen if you click on it
- Displayed all 12 icons
 - Asked which best conveyed Do Not Sell and Privacy Choices concepts

Icons hard to interpret w/out words



Refined icons for evaluation

ID-Card



Slash-Dollar



Stop-Dollar

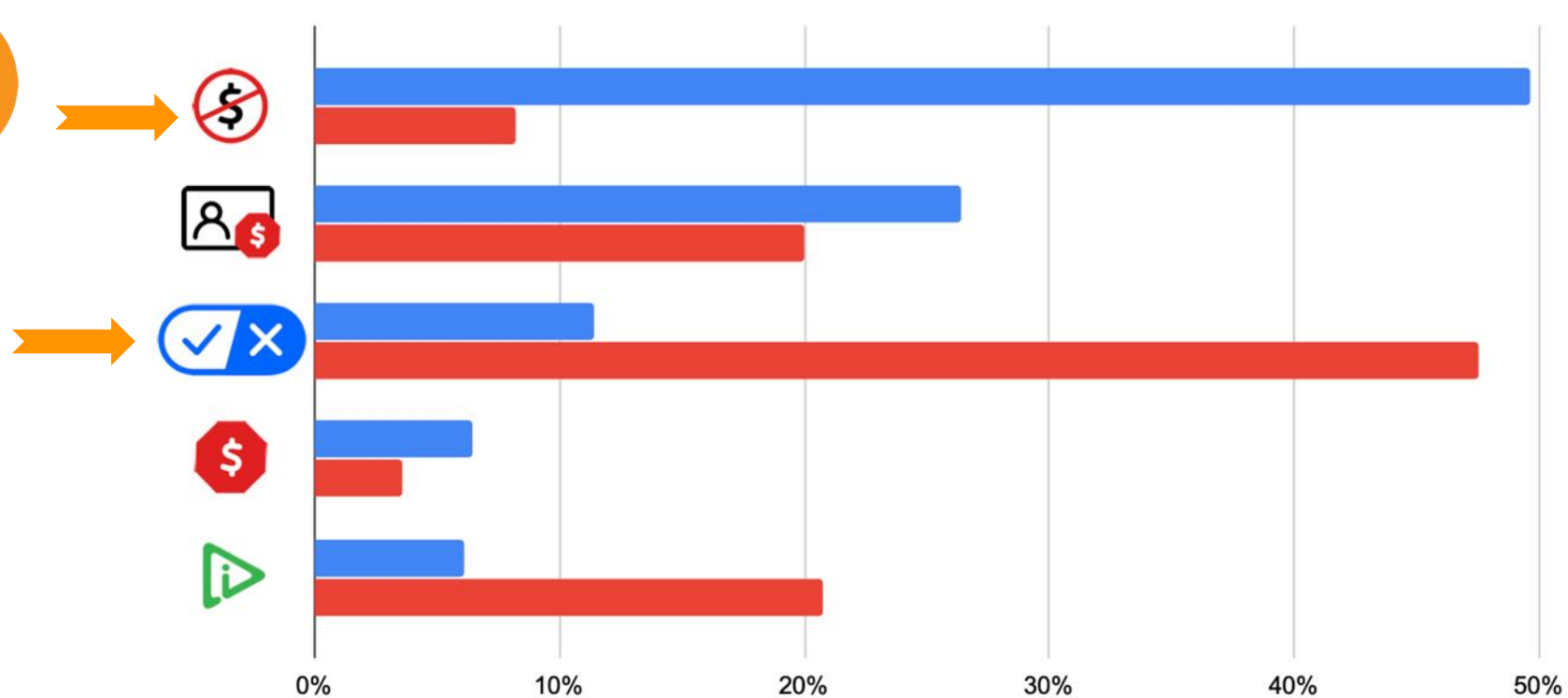


Toggle



DAA





Best conveys **do not sell my personal information**

Best conveys **choices about the use of personal information**

Icon

Common Interpretations without tagline (# of participants)

Toggle



- **accept/decline something (11)**
- **activate/deactivate something (5)**
- okay/exit options (4)
- mark as true/false (4)

DAA



- get more information (15)
- start audio/video content (7)
- denotes website is safe or private (3)
- move forward or next (2)
- something related to ads (1)

Slash-dollar



- something is free or requires no money (12)
- cash/dollars not accepted (7)
- money (4)
- **selling is not allowed (1)**

Correct interpretations
highlighted in red

Tagline ideation + testing

- Do Not Sell My **Personal Information**

- Do Not Sell **My Info**

- Don't Sell **My Info**

- Do Not Sell

- Don't Sell

- Do-Not-Sell **Choices**

- Do-Not-Sell **Options**

- Do-Not-Sell **Opt-Outs**

- **Privacy Choices**

- **Privacy Options**

- **Privacy Opt-Outs**

- **Personal Info Choices**




- **Personal Info Options**

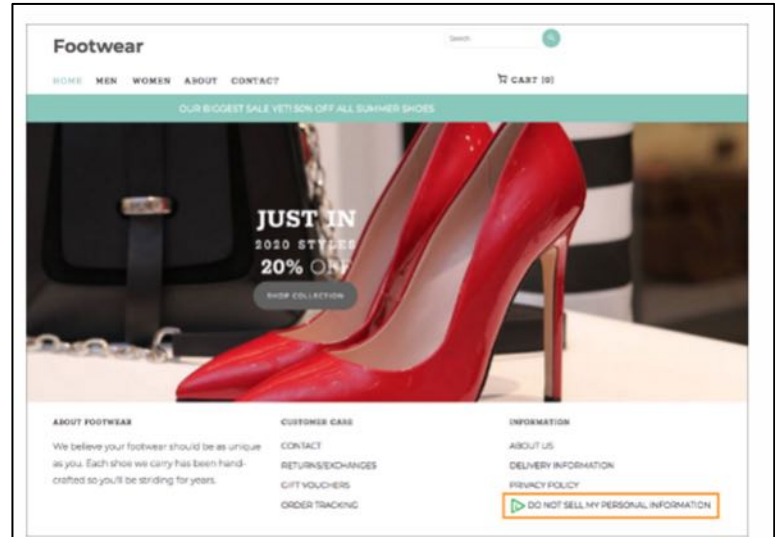
- **Personal Info Opt-Outs**

- **Do Not Sell My Info Choices**

- **Do Not Sell My Info Options**

Combo testing

- Mturk study with 1,416 participants
- Tested 3 icons + no icon
 - 
 - 
 - 
- Tested 5 taglines + no tagline
 - Do not sell my personal information
 - Do not sell my info
 - Privacy choices
 - Privacy options
 - Personal info choices
- 23 combinations tested



Close up of highlighted area:



What do you think would happen if you clicked on the symbol and link in the highlighted area on this web page?

Combo testing results

- Misconceptions
 - “Personal info choices” conveyed info about shoe sizes, site settings, payment methods, etc.
 - Slash-dollar icon occasionally suggested payment options and encrypted payments (42 participants)
 - Toggle icon occasionally suggested it was a real toggle (6 participants)
- None of the icons were very good without a tagline
 - Slash-dollar was especially bad
- Icons didn’t have much impact on interpretation of taglines

Recommendations to CA OAG (Feb 4)

Privacy Options

- This allows consumers to look for one button
- Prevent the proliferation of buttons

Do Not Sell My Personal Information

- Complies with CCPA as written

New proposed regulations (Feb 7)

(f) ~~(e)~~ Opt-Out Button or Logo

(1) The following opt-out button or logo may be used in addition to posting the notice of right to opt-out, but not in lieu of any posting of the notice of right to opt-out.



(2) When the opt-out button is used, it shall appear to the left of the “Do Not Sell My Personal Information” or “Do Not Sell My Info” link, as demonstrated below, and shall be approximately the same size as other buttons on the business’s webpage.
[BUTTON OR LOGO TO BE ADDED IN A MODIFIED VERSION OF THE REGULATIONS AND MADE AVAILABLE FOR PUBLIC COMMENT.]



(3) This opt-out button or logo shall link to a webpage or online location containing the information specified in section 999.306(c), or to the section of the business’s privacy policy that contains the same information.

Our blue toggle was turned into a big red button!



Twitter responds



Aaron Alva @aalvatar · 2h

This is terribly confusing. Was this disclosure user tested to make sure users' expectations align with what you're trying to convey? (Likely not)



Alex Stamos  @alexstamos · 14h

Quick, tell me what that button indicates in its current state. Are you opted into your data being used or out? Red X next to "Do Not", so does that cancel out the not?

The California AG's office is now mandating really bad interaction design. Great job, everybody.

So we ran another study



- Insignificant difference between icons with the big and small X
- But big differences between the CalAG icon and our stylized toggle
 - CalAG icon more likely to be misinterpreted as actual toggles
- Small differences based on color
- **Small changes can sometimes make a big difference and you won't know unless you test with users**

Opt-out button from regulation

Former subsection (f), regarding the proposed opt-out button, has been deleted in response to the various comments received during the public comment period. The OAG has removed this subsection in order to further develop and evaluate a uniform opt-out logo or button for use by all businesses to promote consumer awareness of how to easily opt-out of the sale of personal information.



Privacy Options

Evidence-based solutions for better privacy and security communications

Security & Privacy Overview Casa

Smart Security Camera NS200
Firmware version: 2.5.1 - updated on: 6/15/2019
The device was manufactured in: United States

Security Mechanisms

Security updates	Automatic - Available until at least 1/1/2022		
Access control	Password - Factory default - User changeable, Multi-factor authentication, Multiple user accounts are allowed		

Data Practices

Sensor data collection	Camera	Audio	Physiological	Location
Sensor type	Camera	Microphone		
Purpose	Providing device functions, Research	Providing device functions, Research		
Data stored on device	Identified	Identified		
Data stored on cloud	Identified - Option to delete	Identified - Option to delete		
Shared with	Manufacturer, Third parties	Manufacturer, Third parties		
Sold to	Not sold	Not sold		

Other sensor data collection: Movement

Other collected sdata: Account info, Payment info, Device setup info, Device tech info, Device usage info

Privacy policy: www.NS200.example.com/policy

More Information

Detailed Security & Privacy Label: www.iotsecurityprivacy.org/labels



Privacy Options