Engineering for Ethics, Privacy, and Fairness in Computer Systems

CMSC 25910 (“CS 259”)

Winter 2026

The University of Chicago

THE UNIVERSITY OF CHICAGO

Course Overview

Course Description

This course takes a **technical approach** to understanding **ethical issues** in the design and implementation of computer systems. Technologies like machine learning systems, large language models, the web, ubiquitous sensing, algorithmic personalization/targeting, and surveillance systems all raise numerous ethical concerns. **Tensions** often arise between a computer system's utility and its privacy-invasiveness, between its robustness and its flexibility, and between its ability to leverage existing data and existing data's tendency to encode biases. The course will demonstrate how computer systems can violate individuals' privacy and agency, impact sub-populations in disparate ways, and harm both society and the environment. It will also introduce computational approaches to privacy, fairness, transparency, anonymity, internationalization, and auditing. Through hands-on programming assignments and a final project, students will design and implement computer systems that reflect both ethics and privacy by design. They will also wrestle with fundamental questions about who bears responsibility for a system's shortcomings, how to balance different stakeholders' goals, and **what societal values computer systems should embed**.

Course Staff

Blase Ur
(Instructor)

Madison Pickering
(TA)

Office Hours

- Mondays 4:30pm – 5:30pm (Blase, JCL 363)
- Tuesdays 10:30am – 12:00pm (Madison, JCL Common Area 3C)
- Thursdays 2:15pm – 3:45pm (Madison, JCL Common Area 3C)
- …or by appointment

Coursework / Grades

- **Lectures**: interactive; attendance required

- **Assignments**: 7 × 7% = 49%
- **Reading responses**: 7 × 1% = 7%
- **Written, in-class midterm**: 16%
- **Final project**: 24%
- **Class participation**: 4%

Communication

- **Course website (linked from Canvas)**: Syllabus, schedule
- **Canvas**: Distribution of assignments and reading responses
- **Ed**: Questions, announcements, requests; **don’t email us**
- **Gradescope**: Submission of prose (single PDF), code, and data for assignments
- **Gradescope**: Submission of reading responses
- **Gradescope**: Posting grades, regrade requests

Course Policies

- **P/F grading**: Post on Ed with “P/F request” by end of ninth week
- **Late submission**: Up to 24 hours late with -15 point penalty
  - Applies to both assignments and reading responses
  - Not permitted for project due to grading deadlines
- **Extensions**: Granted only for medical/personal emergencies
  - Not granted for other classes, interviews, travel, RSOs/sports
- **Wellness**: Reach out in a private Ed post to the course staff
  - Emails to Blase are also ok

Academic Integrity

- Detailed on syllabus
- All work submitted must be your own
- You may speak in general terms about approach, but not share code; **do not look at each other's code**
- Encouraged to talk to classmates and form study groups
- On each Gradescope assignment submission, you **must document everyone in the class with whom you discussed the assignment, as well as every major resource you consulted** other than what we provide

Academic Integrity

- Example for the top of your Gradescope submission:
  - “I discussed the whole assignment with Jane Smith. We also discussed Part 3 with John Doe. I consulted: *https://www.helpfuldomain.com/helpfulpage.html* to understand the fetch() API and I used two lines from *https://www.other.com/page.html* in Part 3.”
- Code reuse from websites, Stack Overflow, and other published resources only allowed if **all** of the following apply:
  - Around 4 lines of code or fewer
  - Doesn’t solve the **intellectual point** of that part of the assignment
  - Documented at top (see above) or as comments
  - Exception: If the assignment itself points you directly to a tutorial, it’s ok to reuse larger code fragments (with attribution)

Academic Integrity: LLMs

- LLMs may not be used to produce **any prose** in this class
- For **LLMs**, you must include the LLM **and prompt(s)** you used
- Code generated by LLMs only allowed if **all** of the following apply:
  - Around 4 lines of code or fewer
  - Doesn’t solve the **intellectual point** of that part of the assignment
  - Documented at top or as comments
  - Exception: If the assignment specifically outlines a different LLM policy

Course Topics and Schedule

https://www.classes.cs.uchicago.edu/archive/2026/winter/25910-1/schedule.html

Class Introduction

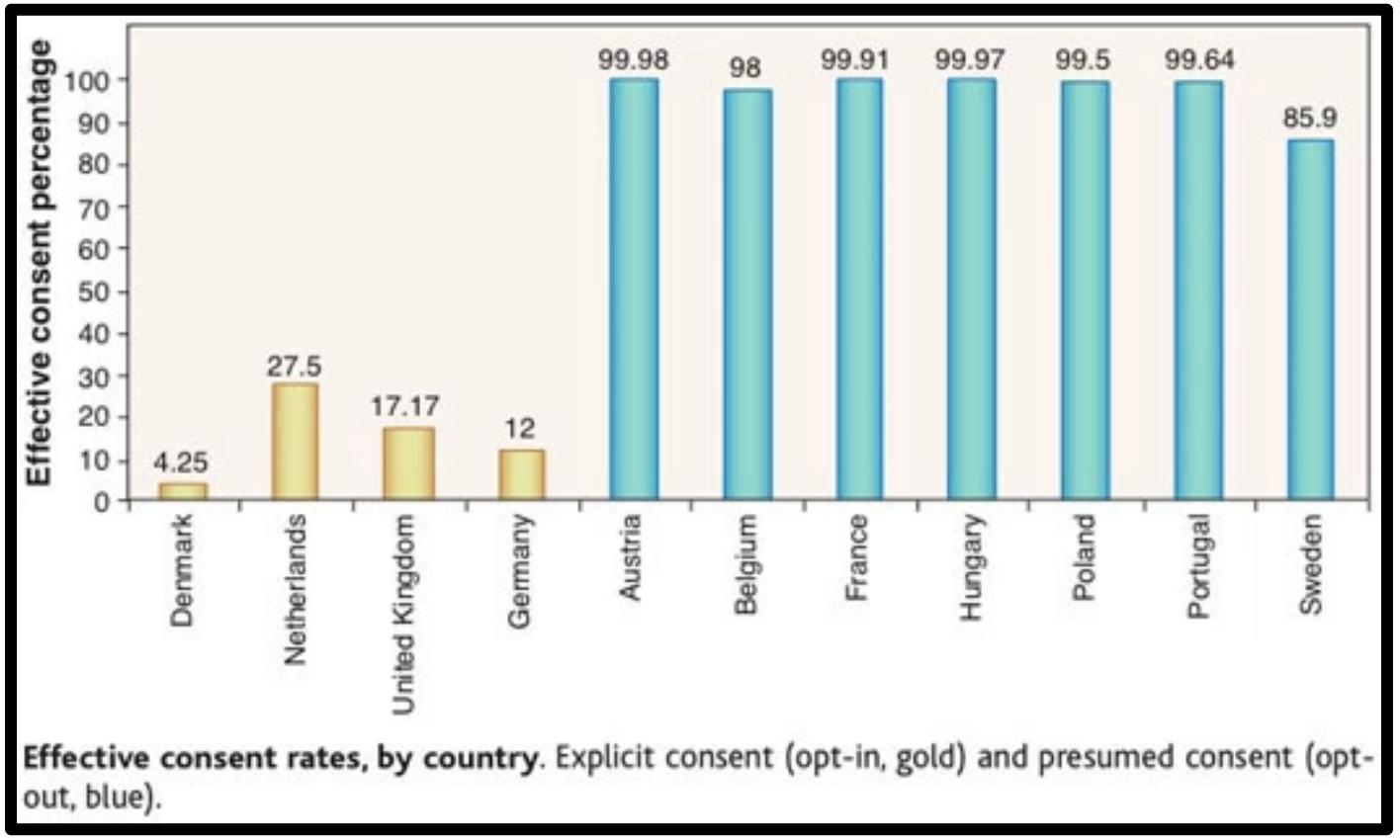
1) First name
2) Class year and major (e.g., third-year CS major)
3) Topic you are most interested in learning about

Responsible and Respectful User Interfaces

Should a Technology Product Express an Opinion?

The Power of Defaults

The Power of Defaults (Organ Donation)

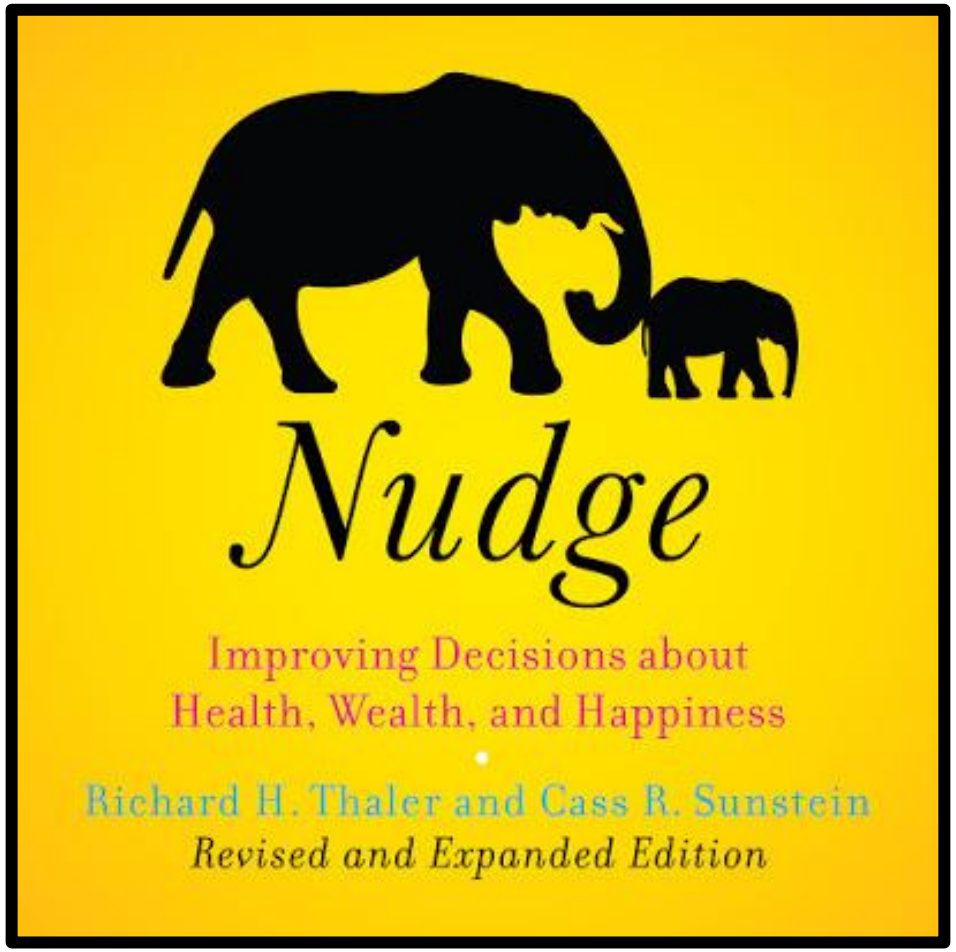


Effective consent rates, by country. Explicit consent (opt-in, gold) and presumed consent (opt-out, blue).

https://medium.com/@tanayj/the-power-of-defaults-976bc8b015b7

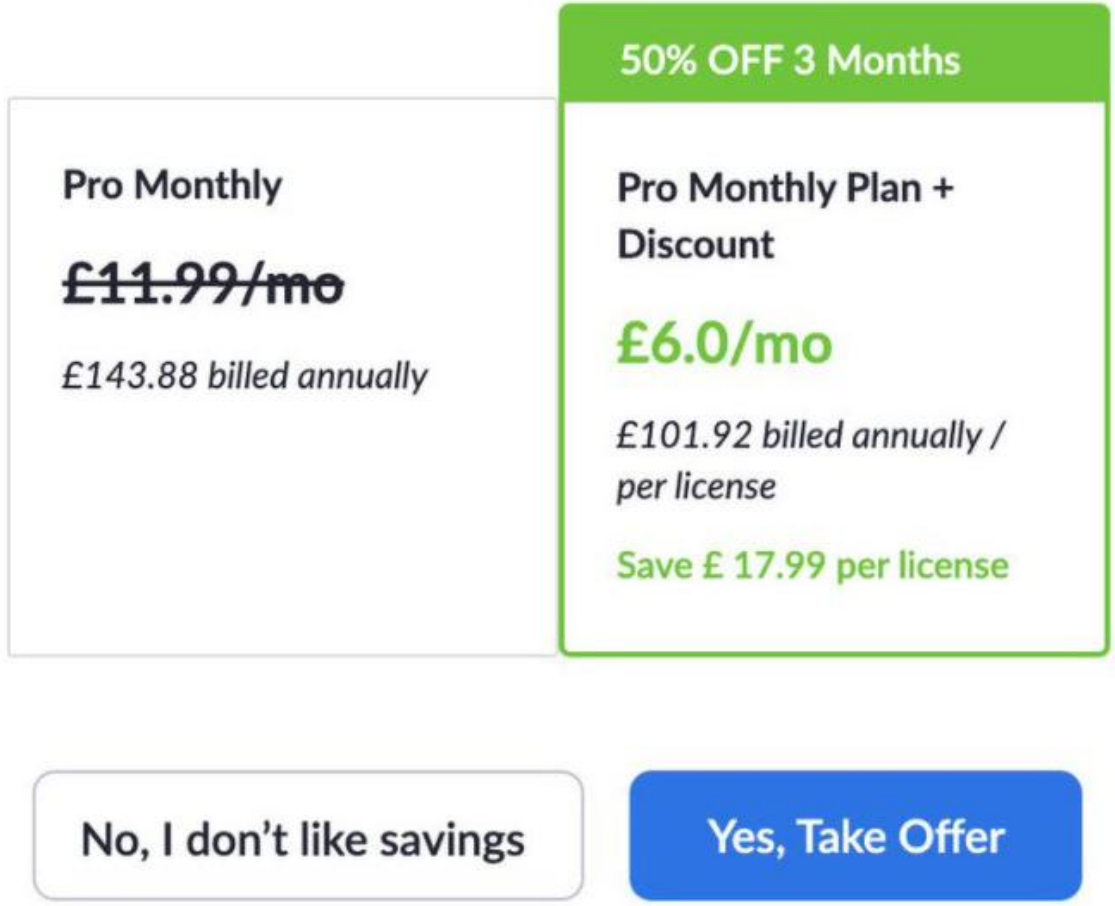
Interfaces That Influence

Behavioral Nudging

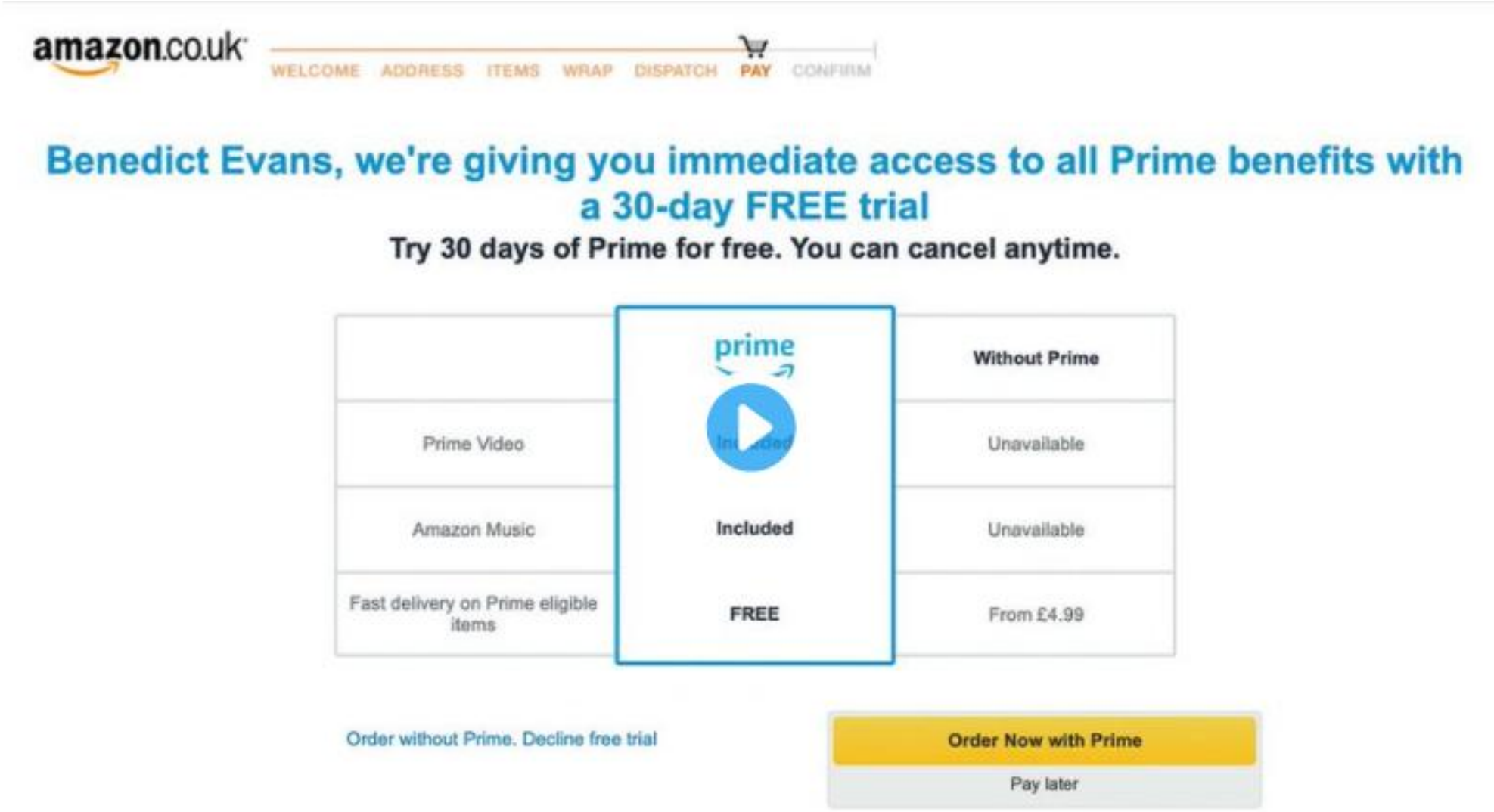


Deceptive Design (AKA Dark Patterns)

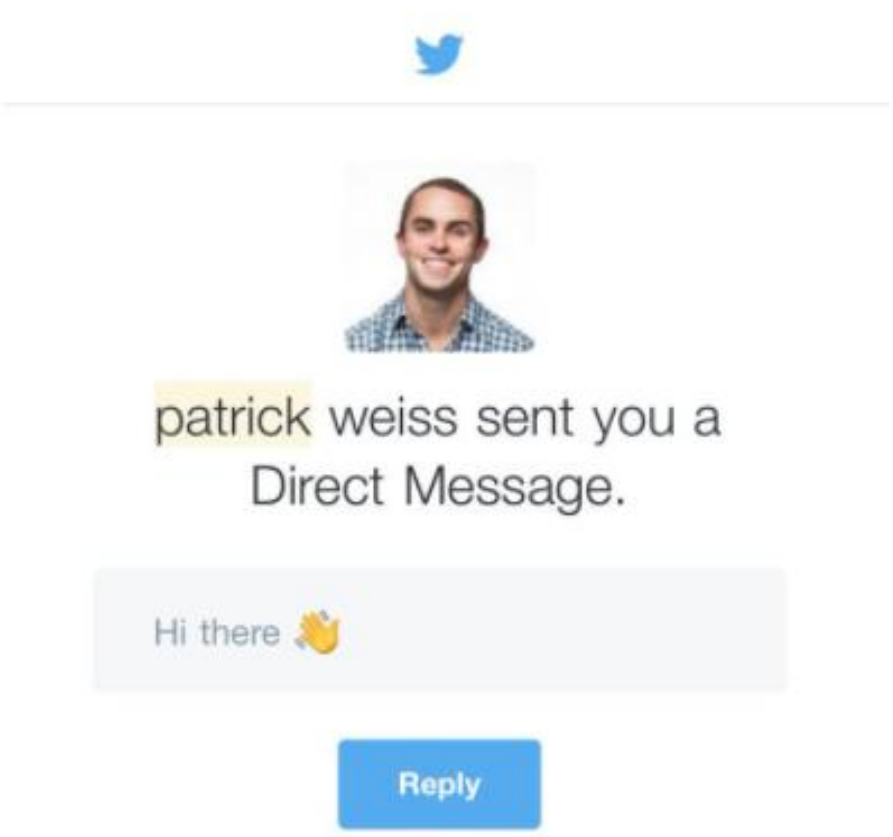
Examples from www.darkpatterns.org



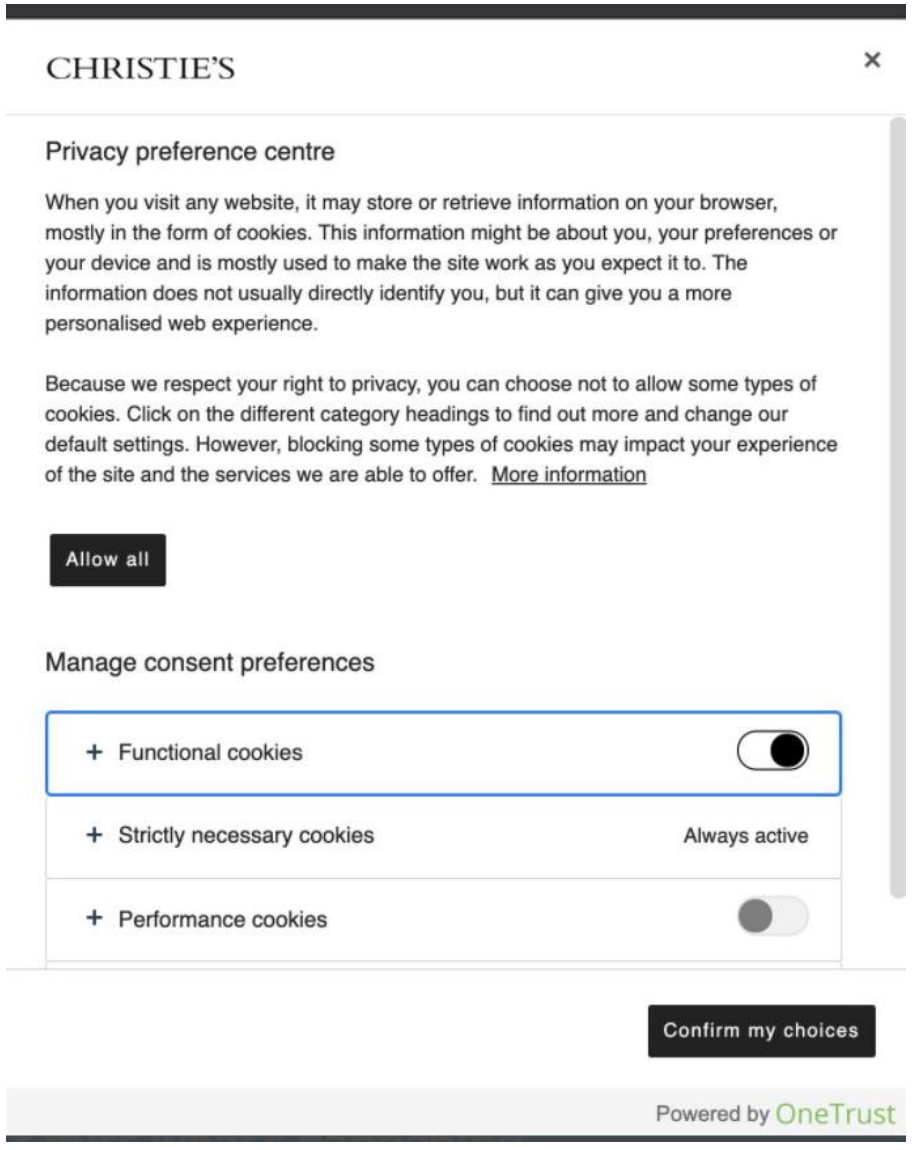
Examples from www.darkpatterns.org



Examples from www.darkpatterns.org



Examples from www.darkpatterns.org



Meta-example from xkcd

MANAGE YOUR PREFERENCES

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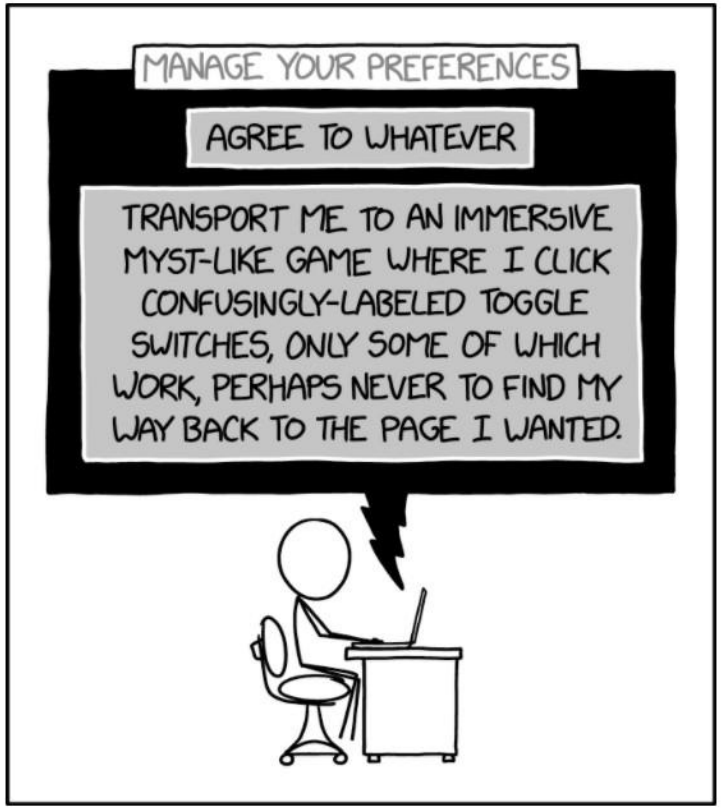

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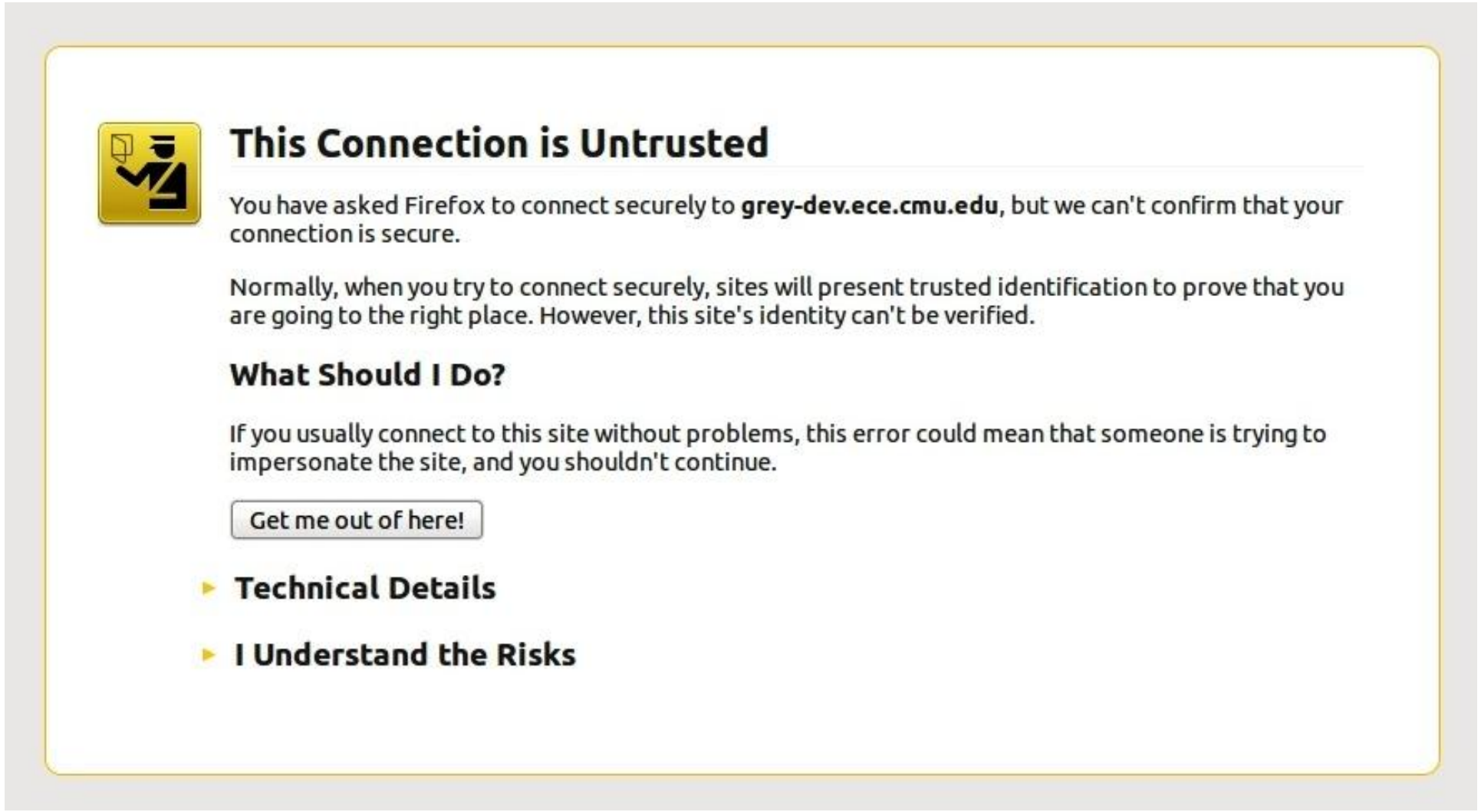
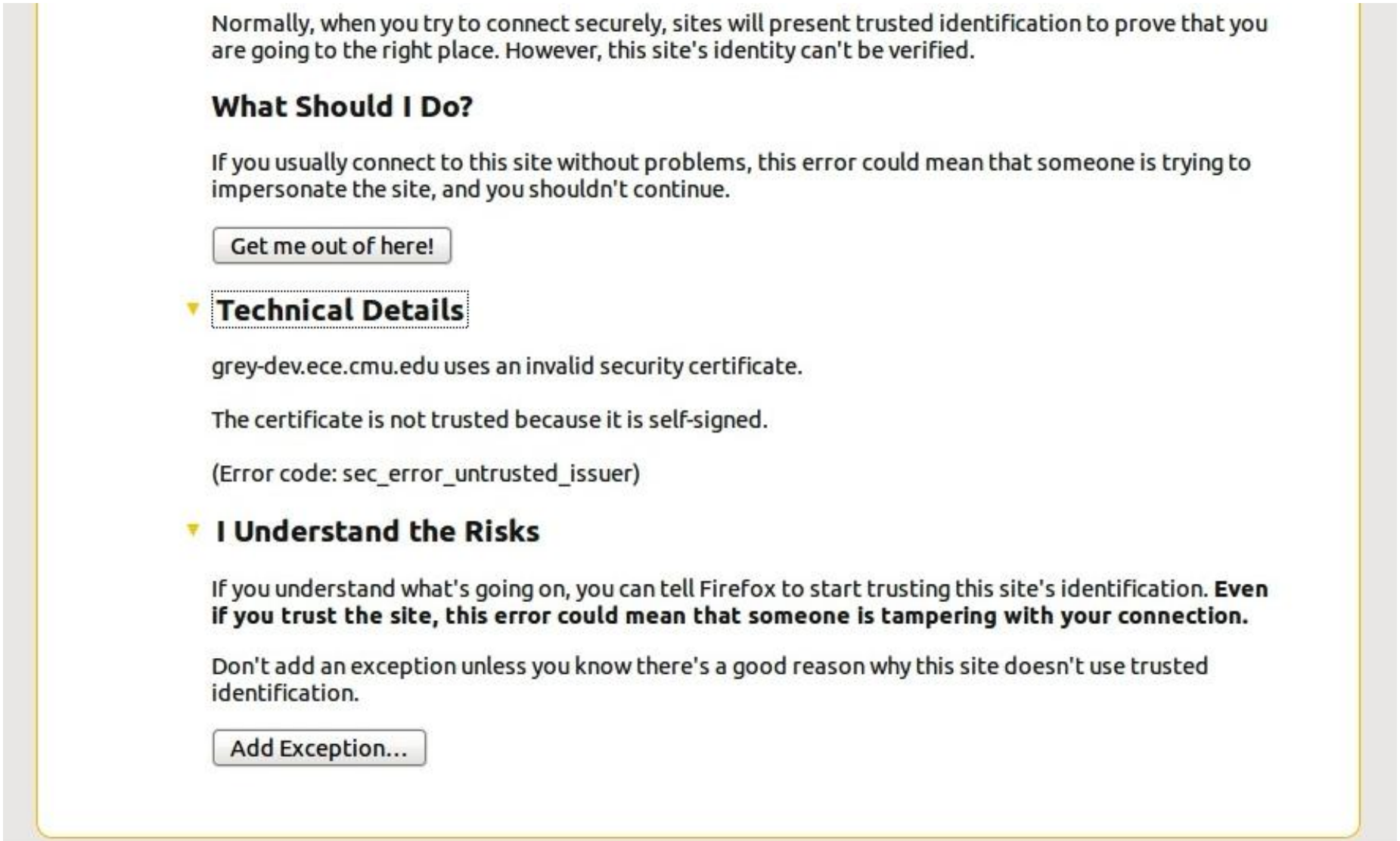
PERMANENT LINK TO THIS COMIC: HTTPS://XKCD.COM/2432/

Is Deceptive Design Always Bad?

Security Dark Pattern



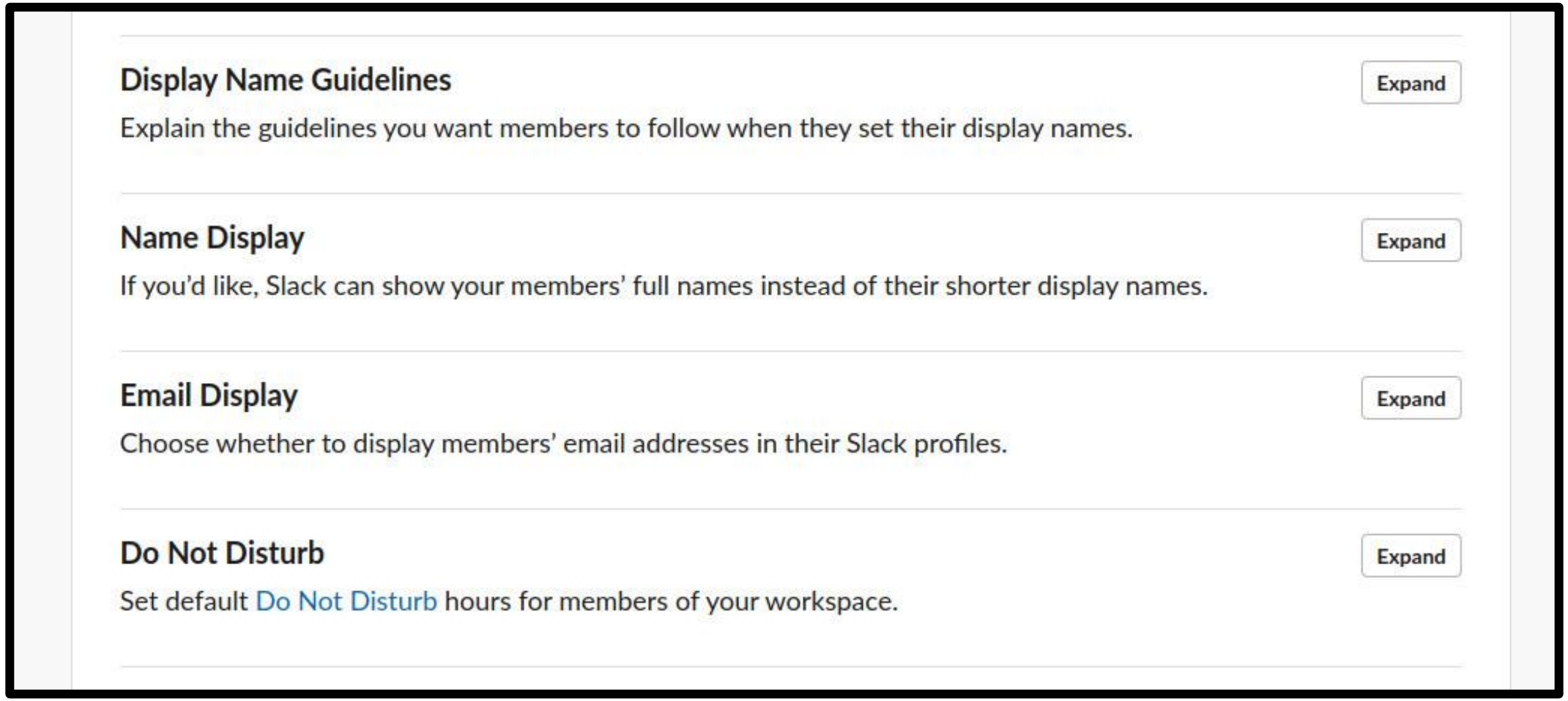
Security Dark Pattern



Interfaces That Incentivize Behaviors

Who Sets Policies?

- Slack organizational policies about names

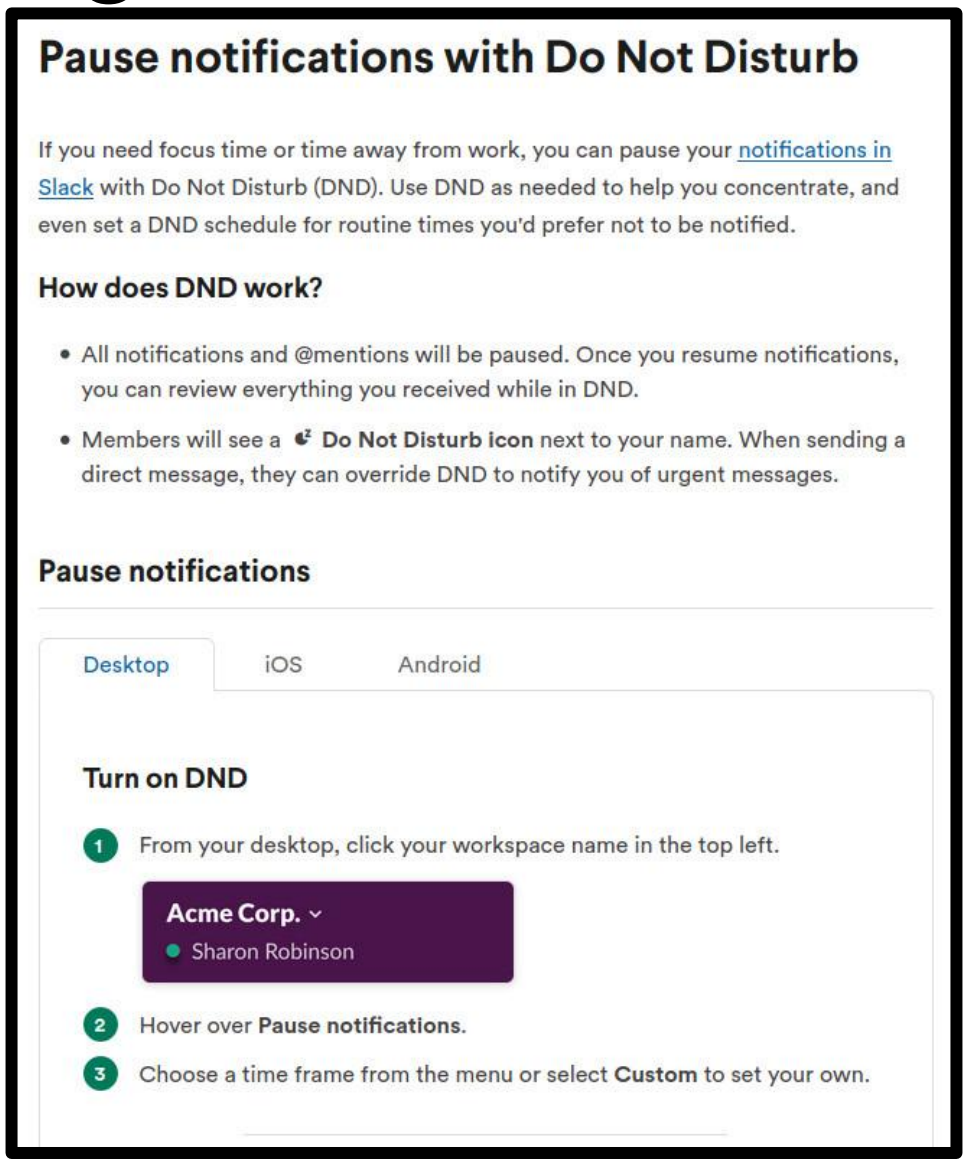


Respecting Time

Expectations About Notifications

- Email vs. text vs. in-app notification
- Are notifications *push* or *pull*?
- Does your device make a sound? Does it buzz?
- Is there an unread number on your screen?

Slack Pausing Notifications



Pause notifications with Do Not Disturb

If you need focus time or time away from work, you can pause your notifications in Slack with Do Not Disturb (DND). Use DND as needed to help you concentrate, and even set a DND schedule for routine times you'd prefer not to be notified.

How does DND work?

- All notifications and @mentions will be paused. Once you resume notifications, you can review everything you received while in DND.
- Members will see a **Do Not Disturb icon** next to your name. When sending a direct message, they can override DND to notify you of urgent messages.

Pause notifications

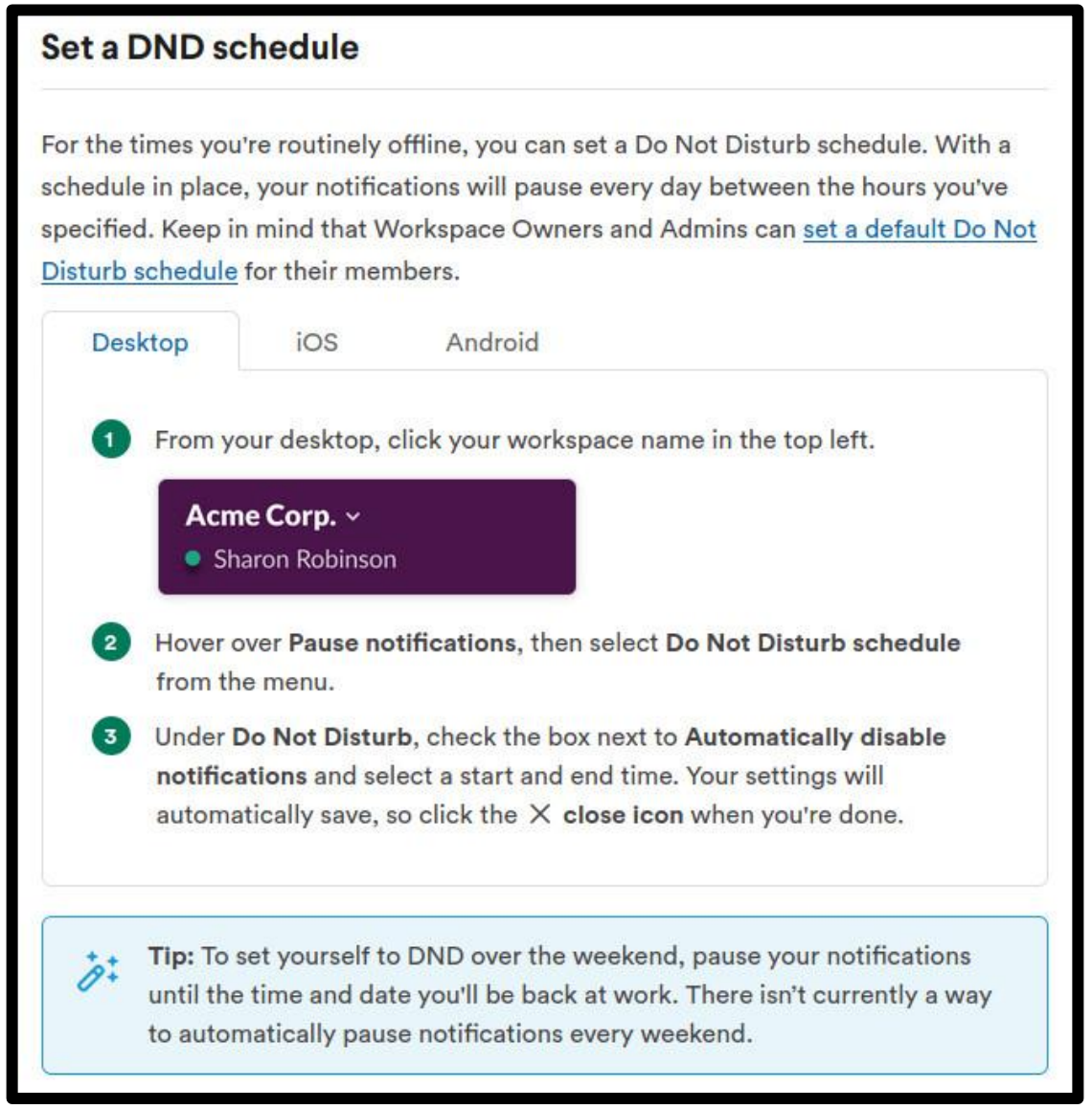
Desktop | iOS | Android

Turn on DND

1. From your desktop, click your workspace name in the top left.

2. Hover over **Pause notifications**.
3. Choose a time frame from the menu or select **Custom** to set your own.

Slack Scheduling Notification Pauses



Set a DND schedule

For the times you're routinely offline, you can set a Do Not Disturb schedule. With a schedule in place, your notifications will pause every day between the hours you've specified. Keep in mind that Workspace Owners and Admins can set a default Do Not Disturb schedule for their members.

Desktop | iOS | Android

1. From your desktop, click your workspace name in the top left.

2. Hover over **Pause notifications**, then select **Do Not Disturb schedule** from the menu.
3. Under **Do Not Disturb**, check the box next to **Automatically disable notifications** and select a start and end time. Your settings will automatically save, so click the ✕ **close icon** when you're done.

Tip: To set yourself to DND over the weekend, pause your notifications until the time and date you'll be back at work. There isn't currently a way to automatically pause notifications every weekend.

Online Status Indicators (OSIs)

- Note that users and Slack organizations can disable OSIs

Visibility of Audit Logs

- Organizations might want to know who is clocking in/out
- Zoom lets meeting hosts know when it is backgrounded

Funding and Financing

Software Licensing

	Free and open (software must have source code provided)			Non-free		
	Public domain	Permissive license	Copyleft (protective license)	Noncommercial license	Proprietary license	Trade secret
Description	Grants all rights	Grants use rights, including right to relicense (allows proprietization, license compatibility)	Grants use rights, forbids proprietization	Grants rights for noncommercial use only. May be combined with copyleft.	Traditional use of copyright; no rights need be granted	No information made public
Software	PD, CC0	MIT, Apache, MPL	GPL, AGPL	JRL, AFPL	Proprietary software, no public license	Private, internal software
Other creative works	PD, CC0	CC-BY	CC-BY-SA	CC-BY-NC	Copyright, no public license	Unpublished

Table from https://en.wikipedia.org/wiki/Software_license

Funding Models for Technology

- Who is funding technology?
- What are their goals?
- Who will benefit?
- How will the workforce be affected?

Oversight of Technology

AI • REGULATION

Actor Joseph Gordon-Levitt wonders why AI companies don't have to 'follow any laws'

By **Nick Lichtenberg**
Business Editor

December 15, 2025, 2:06 PM ET

Add us on

Joseph Gordon-Levitt at Fortune's Brainstorm AI conference.
PHOTOGRAPH BY STUART ISETT/FORTUNE

What Will YOU Do?

- **Real-world scenarios rarely have a perfect decision. Instead, you'll make and participate in myriad decisions that, together, will have consequences, good and bad.**