



Dark Patterns

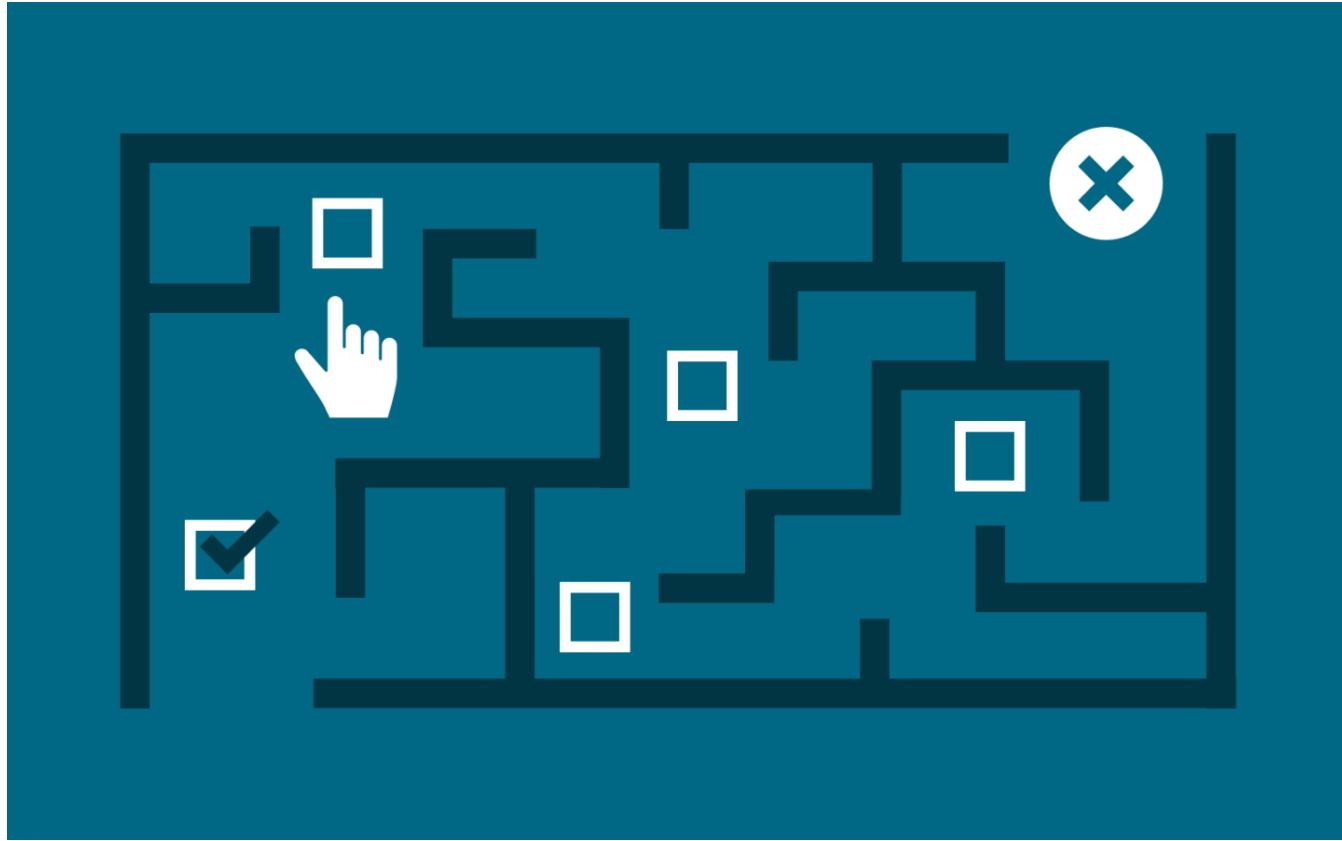
Dr. Balázs Pejó

www.crysys.hu



Agenda

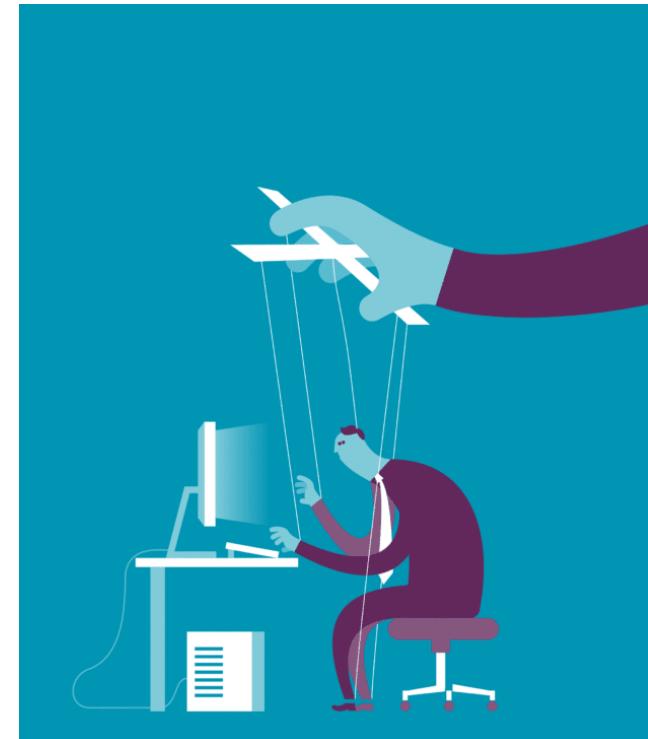
- Dark Patterns
- Tracking
- GDPR
- Deidentification (x2)
- Machine Learning
- Anonymization (x2)
- Cryptography (x2)
- What are they?
- How many are there?
 - Dark Pattern Types
- How to stop them?
 - Legal Countermeasures
 - Other Countermeasures
- Why they work?
 - Bounded Rationality
 - Cognitive Biases



Dark Patterns Basics

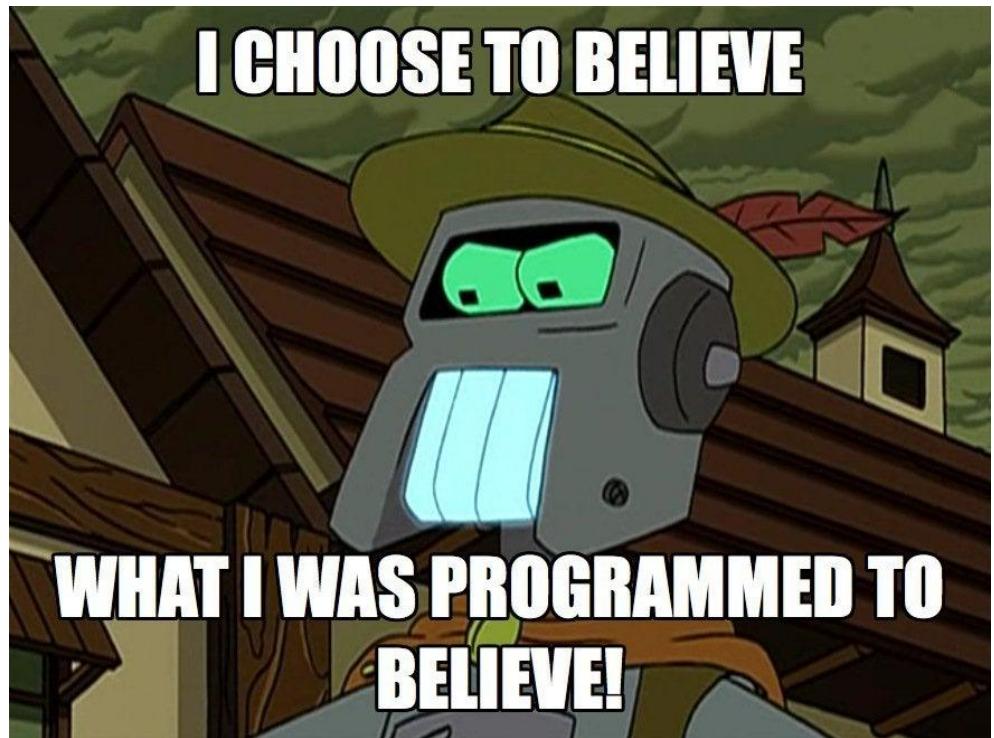
Definition

- Dark Patterns are carefully crafted interfaces that trick people into making decisions or performing actions that they otherwise would not.
 - Coined by Harry Brignull UX designer in 2010
- Dark Patterns exploit human psychology for the sole purpose of encouraging people to act against their best interests.
 - We are not as in control of our actions as we like to think we are.
- Now called Deceptive Design.



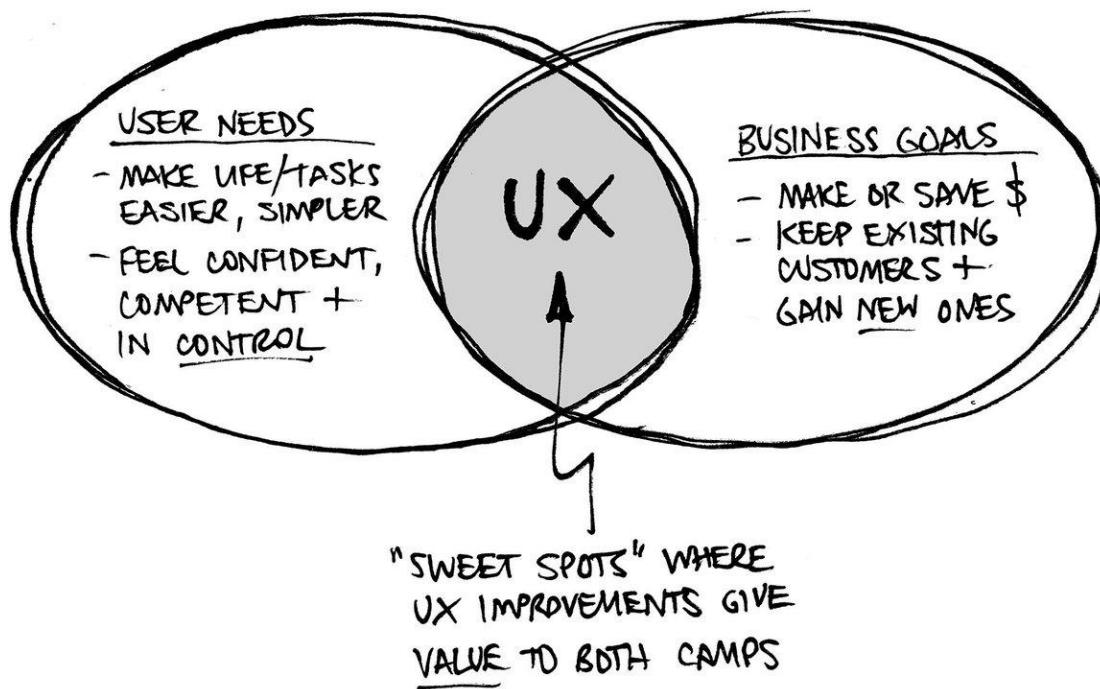
Privacy Paradox

- Paradox: Internet users assert strong interest in privacy while simultaneously disclosing substantial personal information for a meager reward.
- Users can only click on the buttons or select the options presented to them.
- By shaping the menus we pick from, technology hijacks the way we perceive our choices and replace them with new ones.



User Experience (UX)

- UX is important from both a user and a business perspective.
 - It helps users get what they want as simply as possible, which will likely attract more customers.
- Dark Patterns emerge when the interests of the users and the company diverge.



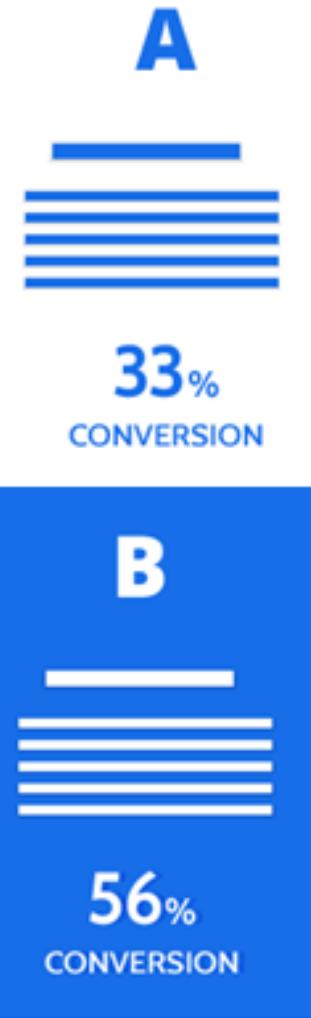
History

- The underlying concepts of Dark Patterns predate the internet. A classic examples of similar practices in the offline world can be found in pricing.
 - Prices that ends in 99.
 - Buy one get one free.
 - Limited time only offers.
- These and other techniques are effective ways of manipulating us into spending more than we otherwise would want to spend.
 - Slow and unreliable feedback loop.



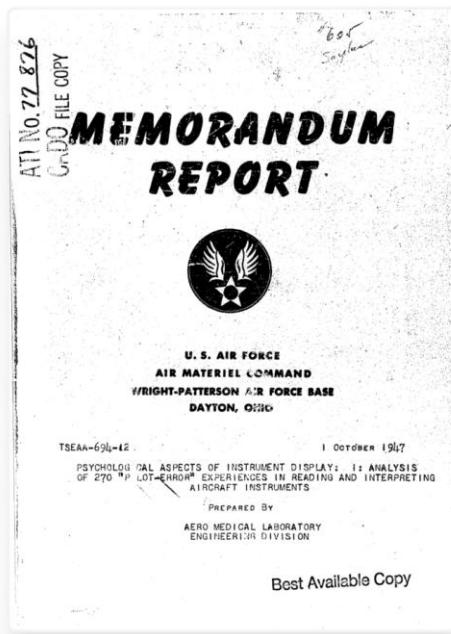
A/B Testing

- A randomized experimentation process wherein two or more versions of a variable (web page, page element, etc.) are shown to different segments of website visitors at the same time to determine which version leaves the maximum impact and drives business metrics.
- If an organization does these tests again and again, to every element of the user's journey through their website or app, they can optimize every single component to make users more likely to pursue the organization's desired course of action.



Experiment

- Psychological Aspects of Instrument Display
 - 1947, U.S. Air Force, Wright-Patterson base, Dayton, Ohio
- Pilots were given aircraft reading instruments to use in a flight simulation set-up, however, the system were purposely set to fail.



Result

- Pilots tended to blame their own skills in the context of the reading instruments, rather than blaming the instruments, because of their low understanding of technology behind it.
- Unethical aspects of the design may fly under the radar primarily because people are unaware that they're intentionally manipulated BY DESIGN.
 - You see notifications in Instagram, yet, when you open the app, you realize there is no new notification.
 - You tend to blame internet issues or think it's a minor glitch in the app or an issue with your phone.
 - But this wasn't a mistake, it was an intentional Dark Pattern (Phantom Notification) to lure you into using the app.



Short vs Long Term Goals

- Dark Pattern designs have been quite prevalent in the digital space as businesses think it to be an easy way to increase traffic and thus conversions.
 - Clever marketing or scams, what they all have in common is that they undermine users' intentions and cost them time or money they never meant to spend.
- Dark Patterns might give a company short-term gains, however it can cost them users in the long term.
- *Trying to retain Ecommerce customers is harder than hiding the cancel button.*
 - James Pruden



Statistics (from 2020s)



- Apps tend to have more Dark Patterns than their web counterparts.
 - Popular apps tend to include slightly more.
- 95% of apps contains Dark Patterns.
 - Most users could not recognize them.
- Users exposed to mild (aggressive) dark patterns were twice (four times) as likely to sign up for a dubious services.
 - Less educated users are significantly more susceptible to mild Dark Patterns than their well-educated counterparts.
 - On average creating an account requires 18 clicks and took 1.7 min. In contrast, deleting the account requires 27 clicks and took 4 min.





“Dark Patterns infest filthiest places of the internet; they drain your will out of the user experience. Get too near to one and all of your time & money will be sucked out of you.”

Unknown Dark Pattern Scientist

Dark Pattern Types

Dark Pattern Types

- Nagging
- Social Proofs
- Misdirection
- Obstruction
 - Roach Motel
 - Price Comparison Prevention
 - Intermediate Currency
- Sneaking
 - Sneak into Basket
 - Hidden Cost
 - Forced Continuity
 - Bait & Switch
- Interface Interference
 - Toying with Emotions
 - Confirm Shaming
 - Preselection
 - Tricky Question
 - Disguised Ad
- Scarcity
- Urgency
- Forced Action
 - Social Pyramid
 - Privacy Zuckering
 - Gamification
 - Friend Spam

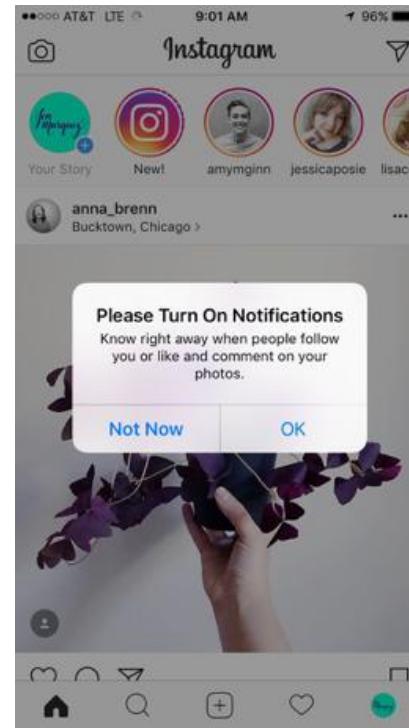
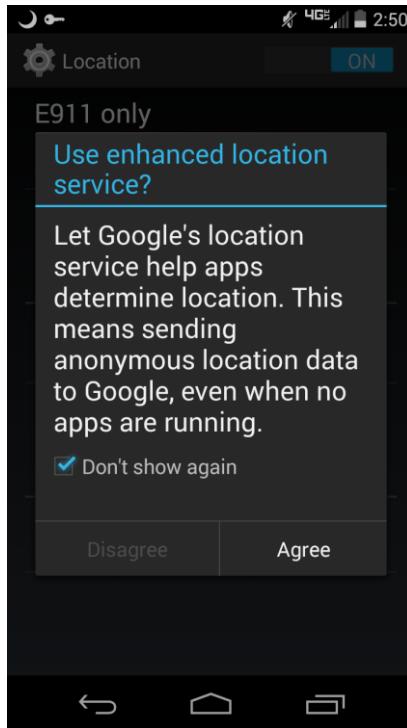


Dark 2
Update
Example



Nagging

- The site or the app repeatedly interrupts customers with an ad or a call-to-action.
 - Redirection of expected functionality that persists beyond one or more interactions.





Social Proofs

- False or misleading notice that others are purchasing, contributing.
- False or misleading positive statements from customers.

BUZZOID

BUY PACKAGES

[Buy Instagram Likes](#)

[Buy Instagram Followers](#)

[Buy Instagram Views](#)

[Buy Automatic Likes](#)

Buy Reviews

- Google Reviews
- Google Local Guide Reviews
- Google LSA Verified Reviews
- Google LSA Reviews
- Google Playstore Reviews
- Facebook Reviews
- TrustPilot Reviews

GBP Services

- GBP Listing Management
- GBP Verification
- Fake Google Review Removal
- Fake GBP removal
- Business Listing / Citations

SEO

- All Inclusive SEO
- On-page SEO
- Manual Link Building
- Website Audit

Social Media

- Social Media Marketing

Websites & UX

- Web Design & Development

Content

- Content Marketing

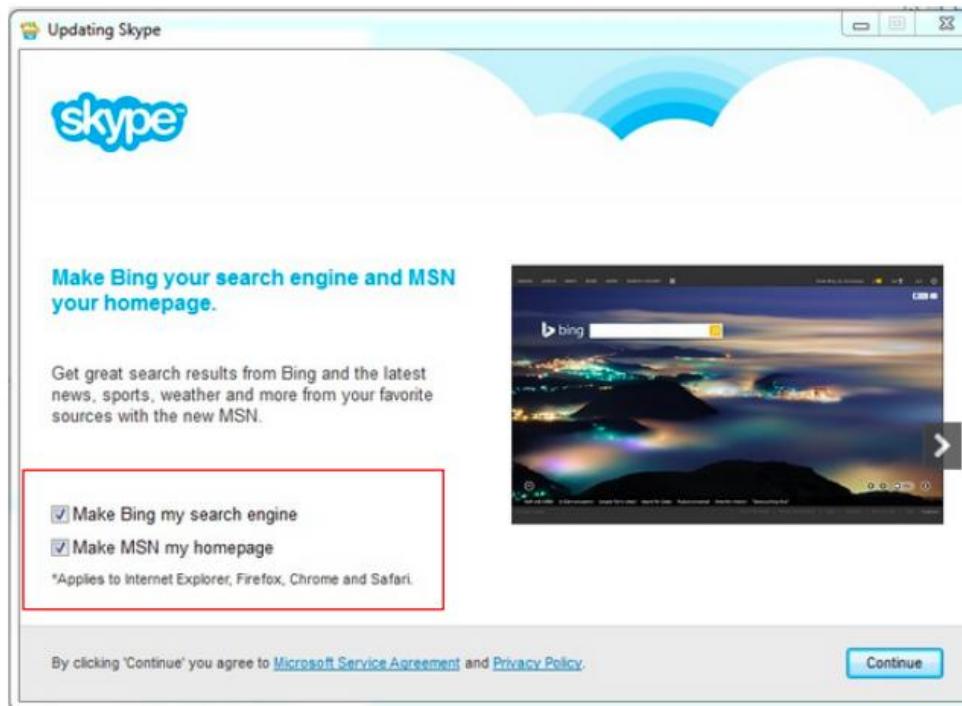
Got questions?

[Message us](#)

Misdirection



- The user's attention is purposefully focused on one thing in order to distract from another.
 - Skype Software Update took advantage and pre-selected Bing.com to be the user's default search engine and MSN their homepage while updating the application.



Obstruction



- Impeding a task flow, making an interaction more difficult than it inherently needs to be with the intent to dissuade a particular action.
 - It often manifests as a major barrier to a particular task that the user may want to accomplish.

Deleting/updating your card details

To register a new card or update your existing details (i.e. expiry date, preferred currency, etc.), head to our Cashier and make a deposit.

To be redirected to your Cashier, press the button below:

Press here

Before you submit your new deposit request, you can select the option "Save payment information and make this

How to update your current card details?

If you received a replacement card and want to update the card details registered with us, you'll need to consider the following:

- Is it the old card expired?
- Does the replacement card have the same number but a different expiry date and CVV code?
- Does the replacement card have a different number?

If your card has a different number, or if the old card is expired, you'll just need to initiate a new deposit and register the card details follow the steps mentioned above.

If the replacement card has the same number and the old card is not expired, you'll need to contact our support, for them to review the possibility of blocking your old card.

PokerStrategy.com

Home Bonus Offers Free Play Promotions Forum News Strategy Videos Poker Tools Invite Friends Buy Status

PokerStrategy.com Forum > Poker Rooms > PokerStars

How to remove a card from the cashier

Last post First unread post

tommygeerts 02.02.2009, 10:46

Hi,

I have two cards in my cashier setup. how can i remove one ??

Dont want to do a quick deposit from the wrong card

Reply **Quote**

4 replies

opal99 02.02.2009, 17:17

Hi tommygeerts;

the easiest way is to send email to their support.. I doubt you can remove it from cashier by yourself.

btw: how the hell I don't have my credit card saved in cashier? 😊

Reply **Quote**



Roach Motel

- Your entrance is an easy one-two step process, making it look worth it. However, the exit is painstaking and impossible.
 - For example, subscribing is easy, but when it comes to canceling the subscription — the option is neither findable nor discoverable.





Price Comparison Prevention

- The retailer makes it hard for the user to compare the price of an item with another item, so they cannot make an informed decision.

Join the millions of LinkedIn members using Premium to get ahead.
Start your free 1-month trial today.

Category	Description	Plan Options
Career	Get hired and get ahead	<ul style="list-style-type: none">Stand out and get in touch with hiring managersSee how you compare to other applicantsLearn new skills to advance your career Select plan
Business	Grow and nurture your network	<ul style="list-style-type: none">Find and contact the right peoplePromote and grow your businessLearn new skills to enhance your professional brand Select plan
Sales	Unlock sales opportunities	<ul style="list-style-type: none">Find leads and accounts in your target marketGet real-time insights for warm outreachBuild trusted relationships with customers and prospects Select plan
Hiring	Find and hire talent	<ul style="list-style-type: none">Find great candidates, fasterContact top talent directlyBuild relationships with prospective hires Select plan



Intermediate Currency

- Users spend real money to purchase a virtual currency which is then spent on a good or service.
- It disconnects users from the real value spent in order to cause the user to interact differently with the virtual currency.
 - This may result in users spending the currency more liberally than they would with fiat currency.





Sneaking

- An attempt to hide, disguise, or delay the divulging of information that has relevance to the user.
 - Sneaking often occurs in order to make the user perform an action they may object to if they had knowledge of it.

Jing J Travel Insurance

Medical Expenses up to £2,500,000 (excess of £75, double excess for aged 65+)

Personal Belongings (excess of £75)*

Cancellation circumstances (excess of £15, depending on reason)

Ticket Refund in case of Ryanair cancellation

Passenger 1

Already insured? Don't Insure Me

Finland
Hungary
Latvia
Lithuania
Malta
Netherlands

Summer in One Case – SAVE over \$100 SALE

The Ultimate Summer Collection

★★★★★ 4.2 Average bottle rating i

[Case Summary >](#)

15 bottles for JUST \$13.29 each

\$199.35
Reg. \$306.35
SAVE \$107.00

Shipping Rates

Enjoy **FREE shipping** with WSJwine Advantage [Learn More](#)

Add to Cart

Item No. A07897

Your Shopping Cart

Log in for faster checkout (and to view other items you've saved for later).

Item Description	Qty	Remove	Price	Subtotal
The Ultimate Summer Collection Item #: A07897 - 15 btls	1	<input type="button" value="update"/>	\$306.35 \$199.35	\$199.35
WSJwine 1 Year Advantage Delivery Membership Item #: 15245UL	1	<input type="button" value="update"/>	\$89.00	\$89.00

Proceed to Checkout



Sneak into Basket

- Somewhere in the purchasing journey the site sneaks an additional item into your basket.
 - Either automatically or by tricking the user.

The screenshot shows the SportsDirect.com website with a search bar and navigation menu (Mens, Ladies, Kids, Football Shirts, Accessories, Sports, Brands, Clearance). Below the menu are three promotional banners for socks: 'PACK OF 10' classic socks from £4.00, 'PACK OF 10' Donnay trainer socks from £3.49, and 'PACK OF 12' Donnay socks from £3.49. The main content area shows a 'My Bag' summary table:

Product details	Quantity	Unit price	Total
adidas Duramo Elite Ladies Running Shoes Colour Blk/Wht/SolPink Size 5 (38)	- +	£19.00	£19.00
SportsDirect Fantastic Value Magazine and Free Giant Mug (Go to Your Basket to remove) Colour - Size N	- +	£1.00	£1.00
x Remove		x Clear bag	
		Update bag	
Sub total £20.00			

At the bottom left is a link to 'Continue shopping', and at the bottom right are 'Secure checkout' buttons.



Hidden Cost

- A specific price is displayed for a product or a service during the purchase until the checkout where some unexpected charges have appeared, e.g., delivery charges, tax, etc.
 - By the time the hidden costs are revealed, the user have already invested a great deal of effort, so (s)he will be more willing to complete the purchase rather than give up and start all over again with another website.

The composite screenshot shows four pages of the ProFlowers website illustrating a hidden cost pattern:

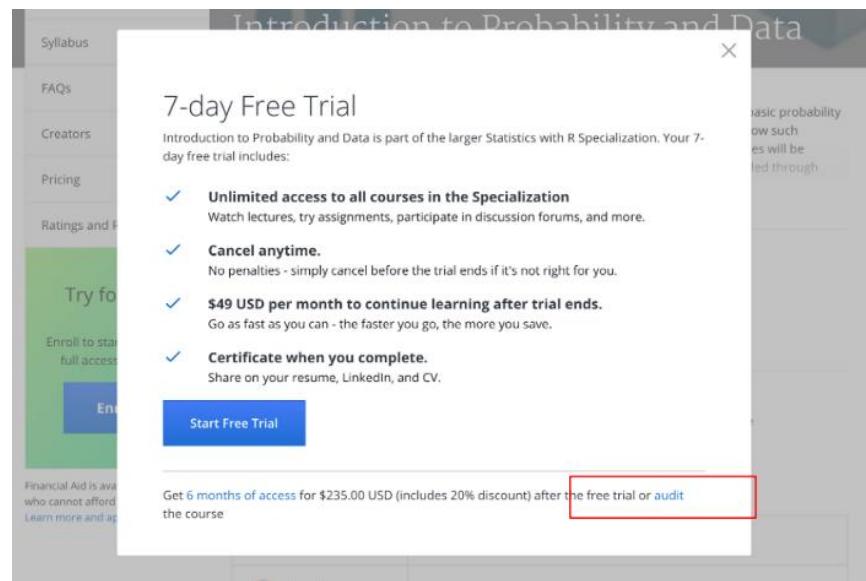
- Page 1 (Left):** Shows a large bouquet of roses in a vase on a shelf, with a "feedback" button on the right.
- Page 2 (Second from Left):** Shows a "Shopping Cart" section with a message: "Can't complete your order".
- Page 3 (Third from Left):** Shows a "Enter your payment method" section with "Payment Method" and "Credit Card" fields.
- Page 4 (Right):** Shows the "Secure Checkout" process. It displays:
 - "For Delivery To: Matt Damon Delivery Date: 12/30/2016"
 - "CONFIRM ORDER NOW" and "CONFIRM ORDER & CONTINUE SHOPPING" buttons.
 - "Delivery Information" and "Billing Information" sections.
 - A "Card Message" field with the note: "No card message included. Gift will be sent anonymously."
 - "Special Codes" and "Delivery Type" sections.
 - An "Order Total" summary table:

Birthday Frills	\$34.99
Standard Delivery	\$14.99
Delivery Rebate Click Here	
Care & Handling	\$2.99
Taxes	\$0.00
Order Total	\$52.97



Forced Continuity

- When you have to start your free trial by adding your card details, or you need to enter your email to continue using a website or an app.
 - When a free trial with a service comes to an end, the credit card silently starts getting charged without any warnings.
 - On Coursera, the free (no certificate) offering is buried deep in the ‘Audit’ section, which is almost impossible for a new user to find. Instead, users end up signing for the 7-day free trial version, which needs their credit card information.





Bait & Switch

- The user sets out to do one thing, but a different, undesirable thing happens instead.
 - An advertisement depicting a discounted subscription model that leads to a product page for a more basic option that costs extra because the advertised model is “no longer available”.
 - In 2016 Microsoft became increasingly aggressive and deceptive with the pop-ups: they switched the meaning of the “X” button at the top right from “close” to “Yes, upgrade my computer”.
- 



Interface Interference

- Manipulation of the user interface of a site or app prioritizes, preselect, or hide certain actions over others.
 - For instance, presenting a call-to-action option in the same color as the background.

The screenshot shows an email from Amazon.com. At the top left is the Amazon logo. To the right, there's a "Connect with us" section featuring icons for Facebook, Twitter, and Pinterest. In the middle of the email, there's a message: "We hope you found this message to be useful. However, if you'd rather not receive future e-mails of this sort from [Amazon.com](#), please [unsubscribe here](#)". A red oval highlights the "unsubscribe here" link. Below this, a note states: "Please note that product prices and availability are subject to change. Prices and availability were accurate at the time this newsletter was sent; however, they may differ from those you see when you visit [Amazon.com](#)". At the bottom, there's a copyright notice: "© 2016 [Amazon.com](#), Inc. or its affiliates. All rights reserved. Amazon, [Amazon.com](#), the [Amazon.com](#) logo and 1-Click are registered trademarks of [Amazon.com](#), Inc. or its affiliates. [Amazon.com](#), 410 Terry Avenue N., Seattle, WA 98109-5210." A reference number "Reference: 191734890" is also present.



Toying with Emotions

- Evoke an emotion in order to persuade the user into a particular action.
 - Manifest as cute or scary images, or as enticing or frightening language.

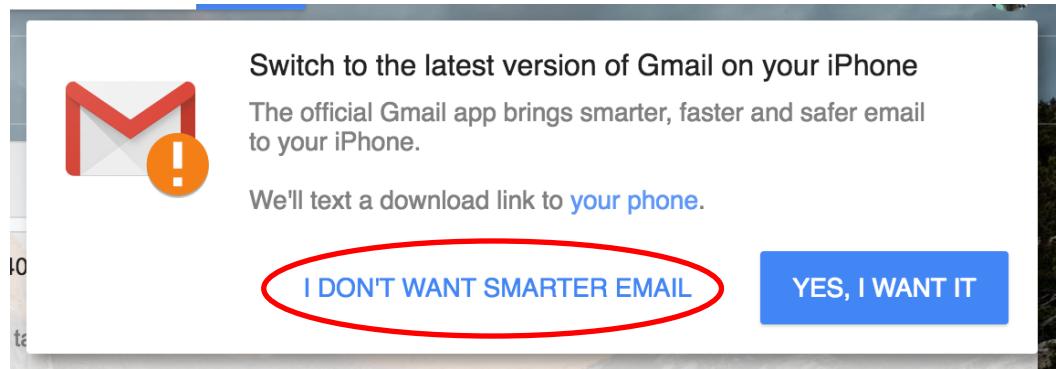
The image shows three sequential screenshots from a Facebook settings page regarding face recognition:

- Screenshot 1:** A cartoon illustration of two people. Below it, the text reads: "Turn on face recognition if you want us to use this technology". A detailed explanatory text follows, mentioning how face recognition helps protect users from strangers and those with visual impairments. It also notes that turning off the feature prevents strangers from impersonating the user or telling screen readers they're in photos unless they're tagged. A red oval highlights the last sentence about screen readers.
- Screenshot 2:** A similar cartoon illustration. Below it, the text reads: "Face recognition". It says that before managing data settings, examples can help decide what choices to make. It includes a callout about how face recognition protects users from strangers and those with visual impairments, and another callout with the same text as the first screenshot about screen readers.
- Screenshot 3:** A title "Manage your settings for face recognition". Below it, a text block explains that the system compares user profiles with photos and videos to know when they're tagged. It contains two radio button options: "Allow Facebook to recognise me in photos and videos" and "Don't allow Facebook to recognise me in photos and videos".



Confirm Shaming

- The act of guilt tripping the user into opting into something.
The option to decline is worded in such a way as to shame the user into compliance.
 - The most common use is to get a user to sign up for a mailing list, and it is often found in exit intent modals and other popups.





Preselection

- The preselected default option is preferred by the business rather than by the customer.

You have added this product to your basket :

CRUCIAL mSATA m4 - Solid state drive - 256 GB

 Customers who bought this also added:

Extended warranty up to Up to 5 years (€ 37,51 Inc. VAT)
 Extended warranty up to Up to 3 years (€ 21,47 Inc. VAT)
[See the terms & conditions of our extended warranties](#)

[Continue shopping](#) [Proceed to checkout](#)

 **Basket**

Vehicle Check £14.99

Promotion code

[Apply](#)

Total **£14.99**

I have read and understood the [Terms and Conditions](#)

[Less info ▲](#)

By submitting your details you consent to RAC keeping you informed by mail and email of exclusive offers and services from us and from carefully selected partners. For more information about how we use



Tricky Question

- Via confusing language such as a double negative
it tricks the user to do the opposite it intends to.

Please enter your details to reserve your item(s)

Title :

First name * :

Last name * :

Email * :

Phone number * :

- Please do not send me details of products and offers from Currys.co.uk
- Please send me details of products and offers from third party organisations recommended by Currys.co.uk

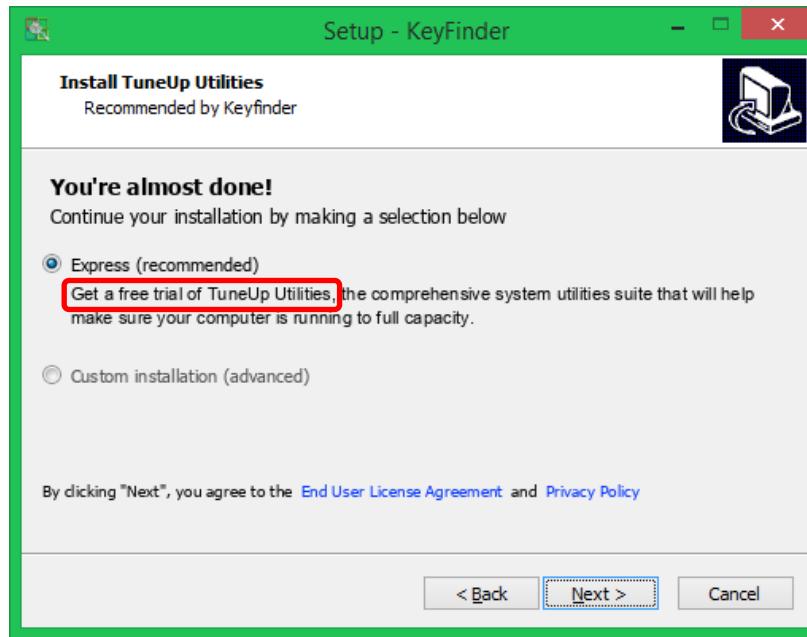
Reserve items





False Hierarchy

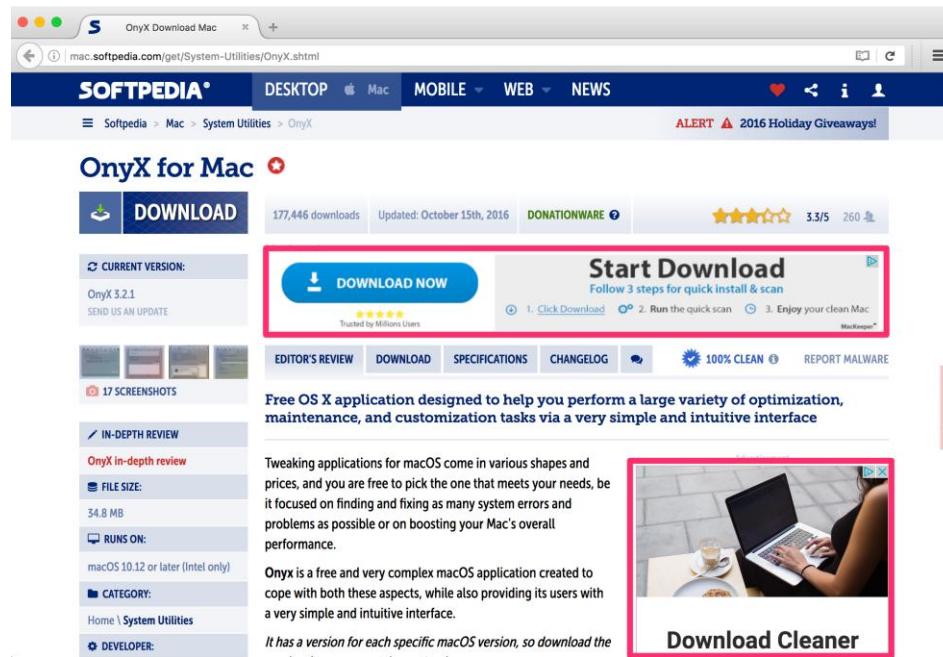
- Gives one or more options visual or interactive precedence over others, particularly where items should be in parallel rather than hierarchical.
 - This convinces the user to make a selection that they feel is either the only option, or the best option.





Disguised Ad

- A disguised ads are blending in the page or app, as if they were a part of the regular content or navigation.
 - For instance, the ad replicates a call-to-action button.
 - Every third click on an ad is by mistake, often by tricking the user.
 - Softpedia often run advertisements that look like a download button, tricking users into clicking on the ads rather than getting the thing they wanted.





Scarcity

- Low stock message
 - Consumer informed of limited quantities.
- High demand message
 - Consumer informed others are buying remaining stock

Recommended for You:

Park Plaza Cardiff ★★★★

[Cardiff Centre, Cardiff](#) · Excellent location · [Show on map](#)

centre

Superior Queen Room - Disability Access -

1 large double bed

Only 1 room left on our site!

Risk free: You can cancel later, so lock in this great price today.

Luxe City Center Hotel

Downtown LA, Los Angeles, CA

7 people are currently looking at this property
Booked 24 times in the last 24 hours

Today's Value Price See more

Double Room
In high demand!

10 "Amazing Place to stay"

Brilliant place to stay clean and tidy Centrally located

Urgency



- Countdown timer
 - Opportunity ends soon with blatant visual cue
- Limited time message
 - Opportunity ends soon

The JustFab homepage features a prominent "Welcome to JustFab, Princeton!" message. A large offer banner states "NEW VIP MEMBER EXCLUSIVE 2 STYLES FOR \$29.95 + FREE SHIPPING". Below it, a message says "Your personal boutique is the works and will be here within 12 hours. But don't wait to shop, new season styles have already arrived!". A red-bordered countdown timer shows "00:59:48". Navigation links include My Boutique, New Arrivals, Sandal Shop, Shoes, Clothing, Bags + Accessories, Plus Size, Looks, and What's Hot. A search bar at the top is labeled "Search products (by style, name, color)".

The Samsung product page for the "HMD Odyssey+ - Windows Mixed Reality Headset" shows a 3D rendering of the headset. At the top, there are tabs for BENEFITS, SPECS, REVIEWS, and SUPPORT. The product title is "XE800ZBA-HC1US HMD Odyssey+ - Windows Mixed Reality Headset". It has a 3.6 rating from 48 reviews and a "Write a review" button. The price is listed as "\$299.99" with a note "You Save \$200". A red-bordered callout box states "Price includes \$200 instant savings - 40% off. Limited time only.".

Forced Action



- Requiring the user to perform a certain action to access (or continue to access) certain functionality.
 - For example, Consumer tricked into thinking registration necessary.

LUMA

[Sign In](#)

1 Shipping Address

Email Address *

Register / Choose a password

Password*

Confirm Password*

First Name* Last Name*

Street Address *

Country* State/Province*

United States Please select a region, st

City Zip/Postal Code*

2 Shipping Methods

5.00 Fixed Flat Rate

15.00 Table Rate Best Way

3 Payment Methods

Check / Money order

Montonio Finance

Order Summary

Zing Jump Rope
Qty: 12.00

Cart Subtotal 12.00

Shipping Not yet calculated

Order Total 12.00

Apply Discount Code

Order Comment

Subscribe to newsletter

PLACE ORDER



Social Pyramid

- Requires users to recruit other users to use the service often by promising benefits from the platform.

Refer a friend to Western Union and earn rewards!

You'll both earn a \$20 Amazon.com e-gift code*.

[Log in](#)

[Register](#)

How to refer friends to Dropbox and get more storage space

You can earn free extra storage when you invite your friends to try Dropbox.

- [Dropbox Basic](#) accounts get 500 MB per referral and can earn up to 16 GB
- [Dropbox Plus](#) accounts get 1 GB per referral and can earn up to 32 GB

How to Reward a Friend

Tell your friends all about Marriott Bonvoy—and get rewarded for it.

Refer up to five new members each calendar year to make the most of this exclusive offer.



Up to 50,000 bonus points for you

Earn 2,000 bonus points for each stay your referrals make, up to five stays per referral. That's up to 50,000 bonus points for you.



Up to 10,000 bonus points for your friends

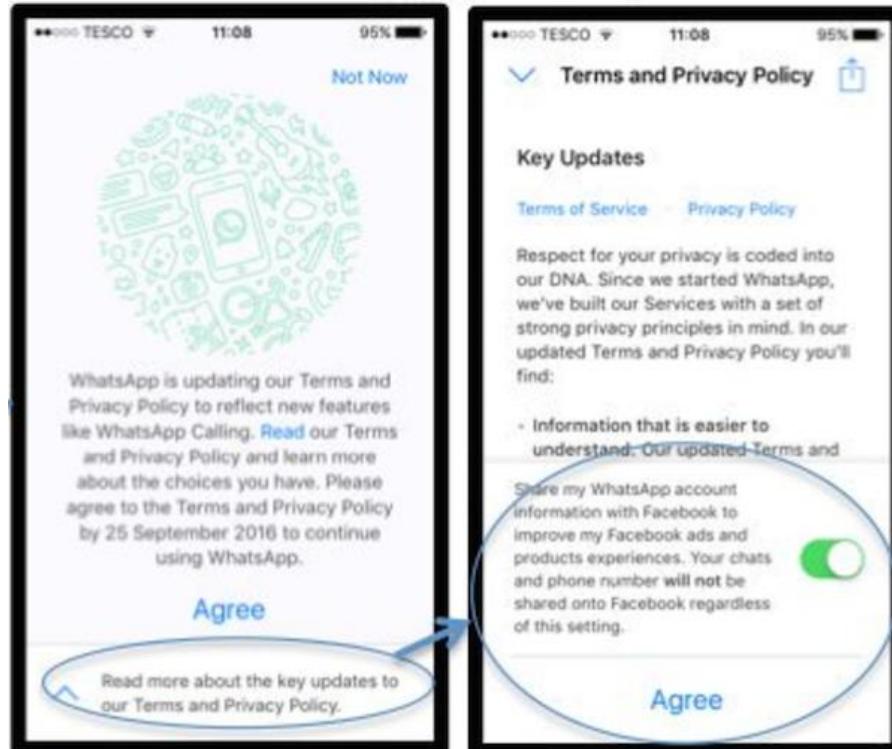
And your friends will earn 2,000 bonus points for each stay, up to five stays. That's up to 10,000 bonus points total for them.

[Send Invites](#)



Privacy Zuckering

- Tricking the user into publicly sharing more information about them than they intended to. Users may give up information unknowingly or through practices that obscure or delay the option to opt out of sharing.
 - Nowadays it takes place mainly behind the scenes: the small print hidden in the Terms and Conditions gives permission to sell personal data to anyone.





Gamification

- Situations in which certain aspects of a service can only be "earned" through repeated (and perhaps undesired) use of aspects of the service.
 - E.g., "grinding", a term used in many video games to describe the repeated process of killing monsters to gain experience points in order to level up the user's character.

The screenshot shows a mobile application interface with the following elements:

- Top Bar:** Displays the time (10:18 AM), battery level, signal strength, and a small icon.
- League Progress:** Shows the user is in the "Gold League" with 100 days remaining to advance to the next league.
- User Profile:** Shows the user's name, profile picture, and XP (e.g., Wribhu Tyagi, 44 XP).
- Leaderboard:** A list of top 10 users with their names, profile pictures, and XP scores.
- Streak Counter:** A large orange flame icon with the number "100" above it, indicating a 100-day streak.
- Text:** "100-day streak!" and "You're making great progress!"
- Routines Section:** Shows various routines with counts: Routines (75), Home 1 (116), Intro 3 (5), Counting (8), Family 1 (2), and Restaurant (1).
- Bottom Buttons:** "CONTINUE" button and navigation icons (back, forward, home).



Friend Spam

- The product asks for the user's email or social media permissions under the pretense it will be used for a desirable outcome e.g., finding friends, but then spams all their contacts in a message that claims to be from them.
 - LinkedIn used this, which resulted in \$13 million dollars fine (\$10 per affected individual) as part of a lawsuit in 2015.
 - During sign-up, LinkedIn encourage you to give them access to your email account to give "your career a strong network". Rather, they send invitation to all of your contacts, claiming to be sent by you.

The screenshot shows a LinkedIn sign-up interface, Step 2 of 2. The title is "Pick up where you left off". It says "Stay in touch with your contacts we found when you added your address book. Invite them to LinkedIn so they can connect with you." A checkbox "Select All" is checked, and the count "688 Selected" is shown. Below is a list of contacts with their names and email suffixes:

Contact Name	Email Suffix
Catherine	@sch.ci.lexington.ma.us
Alycia	@columbia.edu
@columbia.edu	@quotidianventures.com
David	i@columbia.edu
Yuankai	@sch.ci.lexington.ma.us
adicu	@noreply.github.com
Afiya	@lenovo.com
Billybobmario	billybobmario@gmail.com
	@adicu.com

At the bottom are buttons "Add to network" and "or Skip this step »".



Dark Pattern Countermeasures

Legal Point-of-View

- Legislation is challenging in the tech sector, because laws move slowly, while technology is fast and constantly adapting.
- Europe
 - General Data Protection Regulation
 - Unfair Commercial Practices Directive
 - Digital Services Act
 - Digital Market Act
- United States
 - State level: CCPA, CPRA, CPA, VCDPA
Privacy & Data Protection Laws
 - Federal: FTC
“Enforcement against Illegal
Dark Patterns” statement



European Union Study

- The most prevalent Dark Patterns deployed by the most popular websites are (1) false hierarchy, (2) preselection, (3) nagging, (4) roach motel, and (5) forced action.
- The prevalence of Dark Patterns nonetheless varies between different types of websites and apps.
 - Countdown timers or limited time messages are quite prevalent on e-commerce platforms, while the use of nagging is more customary in health and fitness websites/apps.
- Unfair practices are rarely used in isolation, and it is common to combine several Dark Patterns in one interface design.
- There is a lack of consumer awareness regarding the use of unfair practices.



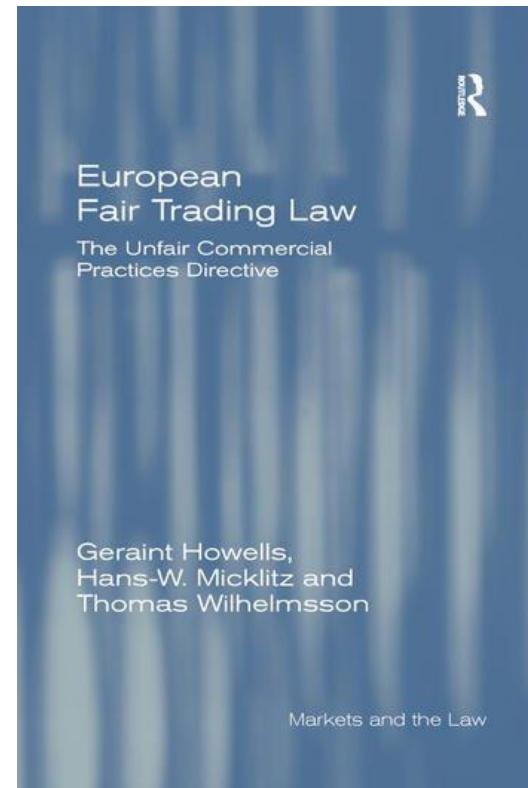
Europe - GDPR

- General Data Protection Regulation (2018)
 - The GDPR requires personal data to be processed “lawfully, fairly and in a transparent manner in relation to the data subject”. [Article 5(1)(a)]
 - To seal those principles, the regulation requires the implementation of privacy-by-design-and-by-default by controllers. [Article 25 GDPR].
 - Dark Patterns are used as an attempt to circumvent the data protection regulation and they usually (or always) fail to comply with GDPR’s principles.



Europe - UCPD

- Unfair Commercial Practices Directive (2016, 2021)
 - Platforms must not use unfair, misleading, or aggressive trading practices to manipulate users' decisions. [Article 5]
 - To determine if a commercial practice is unfair, the UCPD uses the 'average consumer' as a benchmark.
 - Dark Patterns are based on psychological mechanisms that affect most people's behavior without being noticed, and this will usually include the 'average consumer'.



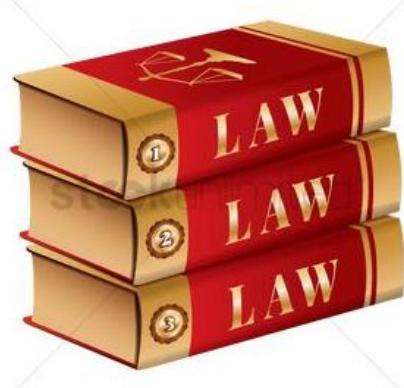
Europe - DSA

- Digital Services Act (2022)
 - In contrast to GDPR and UCPD, DSA contains specific provisions that prohibit platforms to use Dark Patterns. [Recitals 39a and 62]
 - It only covers Dark Patterns that fall outside of the UCPD and GDPR.
- In theory all kind of Dark Patterns are covered by these three (GDPR, UCPD, DSA) legislations.



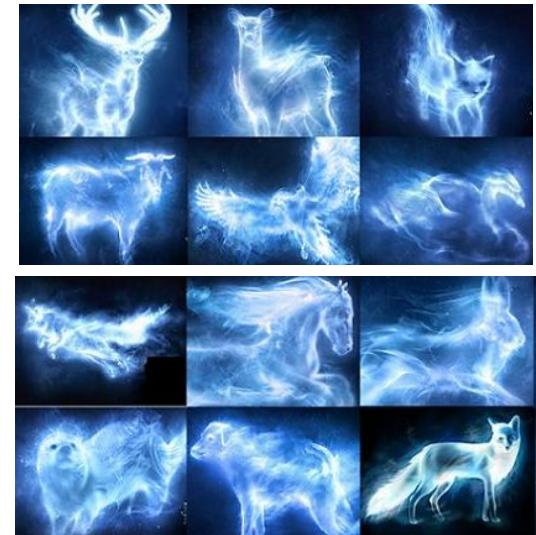
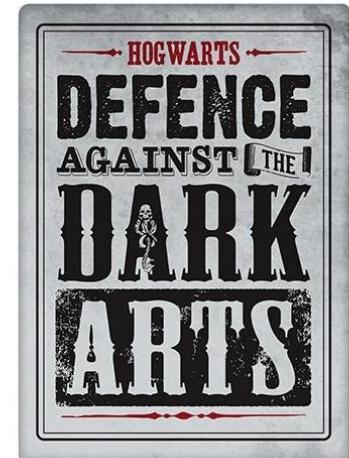
State of Affair

- European Data Protection Board (2022)
 - Guidelines 3/2022 on Dark Patterns in social media platform interfaces:
How to recognize and avoid them
- These manipulative strategies are already unlawful under the existent legislation.
 - Why the current regulations were not enough to ban manipulative designs?
 - Are Dark Patterns widely used due to the lack of specific legal provisions, or due to lack of enforcement?



Technological Countermeasures

- Comprehensive legislation against all types of Dark Patterns will be long and arduous.
- There are a few add-ons that can help to deal with some aspect of the problem:
 - Ninja-Cookie, Cookie Block, Consent-O-Matic, uBlock Origin, Easylist Cookie List, I Don't Care About Cookies, NoScript, etc.
- As Dark Pattern are high-level, there are no specific protections against them.
 - Most of the above are applicable for preventing some, but they are designed with something else in mind.



Other Countermeasures

- Technical countermeasures could affect the user experience in general, sometimes even break completely the desired site.
- Combat Dark Patterns by understanding them: once you are aware of these tactics, you will notice them, so it will be much easier to avoid falling for these tricks.
 - You can also report it to shaming websites: a little bit of pressure may push some of these companies to give up on certain deceptive practices.

The image displays three browser screenshots side-by-side, each showing a different website related to dark patterns:

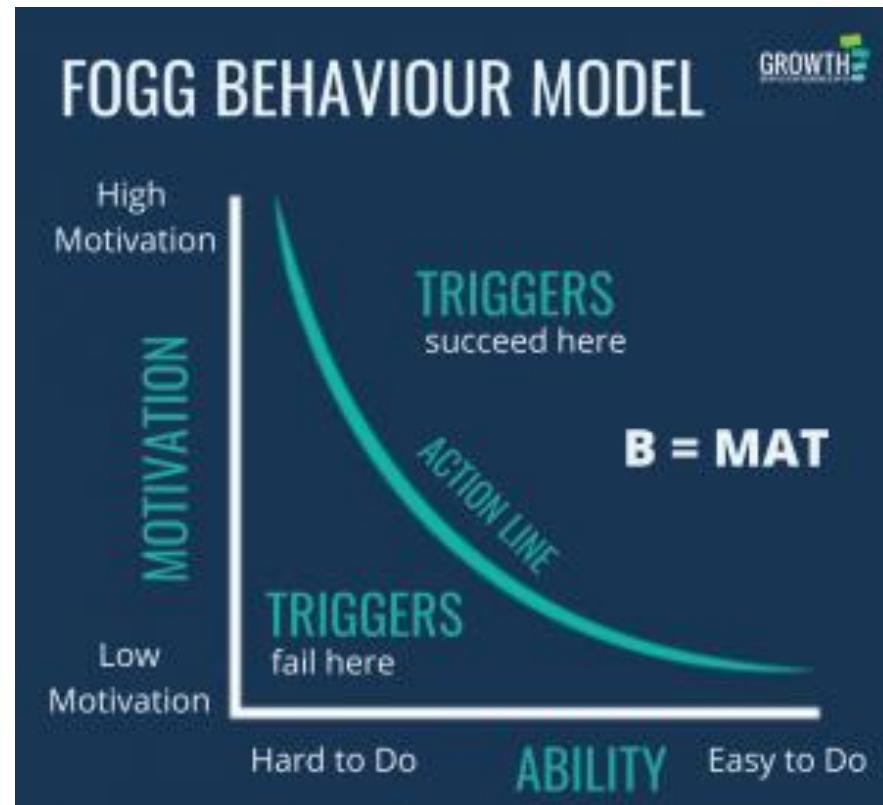
- Left Screenshot:** A dark-themed website titled "DECEPTIVE DESIGN". The main heading is "Hall of shame". Below the heading, there's a search bar labeled "Search dark patterns" and a row of buttons for "All", "Google", "Facebook", "Amazon", "LinkedIn", "Microsoft", and "Apple".
- Middle Screenshot:** A dark-themed website titled "Dark Patterns Hall of Shame". It features a gold trash can icon above the title. Below the title, a subtitle reads "The collection of various dark patterns and other examples of unethical designs used all over the internet.". There is a search bar at the bottom.
- Right Screenshot:** A dark-themed website titled "DARK PATTERNS TIP LINE". It includes a subtitle: "Every day, we're exploited for profit through dark patterns: design tactics used in websites and apps to persuade you into doing things you probably would not do otherwise.". Below this, another subtitle states: "We need to take a stand against dark patterns—and you can help by reporting a dark pattern today. It will help us fight back against companies using manipulative dark patterns to take our private information, money, and time. You deserve respect, online and off.". At the bottom, there is a button labeled "REPORT A PATTERN".



Psychology

Fogg Behaviour Model

- Companies that use Dark Patterns are very familiar with cognitive science and neuroscience to influence you to make unconscious actions.
- The Fogg Behaviour Model says that for a behaviour to occur, there needs to be a sufficient level of both motivation and ability.



Rationality

- Many of our decisions are not carefully rationalized, and we can be influenced by these simple nudges.
 - Rather than a pro and con list to rely on, we often just go with whatever is convenient, easy, or whatever everyone else is doing.
 - If things long, complicated, and boring enough, you will just accept whatever they are trying to cram down your throat, so that you can move on.



Bounded Rationality

- Too much information
 - Prioritize unusual and surprising over ordinary facts.
- Not enough meaning
 - Using prior information to fill gaps.
- Need to act fast
 - Prefer simple acts over more complex acts.
- What to remember
 - Forming stereotype and generalization.
- We do not see everything
 - The information we filter out is useful and important.
- We conjure illusions
 - We imagine details that were filled in by our assumptions.
- We make flawed decisions
 - The quick reactions are suboptimal, self-serving, and counter-productive.
- Our memory reinforces errors
 - The stuff we remember for later makes all the above more biased.

Cognitive Bias

- The world is complex and fast, yet people must process and interpret information for instance decision making.
 - We receive roughly 11 million bits of information per second, but we can only process about 40 bits of information per second.
- Cognitive biases arise from our brain's efforts to simplify / make sense of the world to reach decisions (often as rules of thumb).
 - While the mechanism is effective, its limitations can cause subconscious (unintentional) errors.
- *I've studied cognitive biases my whole life and I'm no better at avoiding them.*
 - Daniel Kahneman



Cognitive Bias Types

Fundamental Attribution Error We judge others on their personality or fundamental character, but we judge ourselves on the situation.	Self-Serving Bias Our failures are situational, but our successes are our responsibility.	In-Group Favoritism We favor people who are in our in-group as opposed to an out-group.	Bandwagon Effect Ideas, fads, and beliefs grow as more people adopt them.	Groupthink Due to a desire for conformity and harmony in the group, we make irrational decisions often to minimize conflict.	Availability Cascade Tied to our need for social acceptance, collective beliefs gain more plausibility through public repetition.	Declinism We tend to romanticize the past and view the future negatively, believing that societies/institutions are by and large in decline.	Status Quo Bias We tend to prefer things to stay the same; changes from the baseline are considered to be a loss.	Sunk Cost Fallacy (aka Escalation of Commitment) We invest more in things that have cost us something rather than altering our investments, even if we face negative outcomes.	Gambler's Fallacy We think future possibilities are affected by past events.
 Sally is late to class; she's lazy. You're late to class; it was a bad morning.	 You work harder due to hard work rather than luck. Meanwhile, you failed a test because you hadn't gotten enough sleep.	 Francis is in your church, so you like Francis more than Sally.	 Sally believes fidget spinners help her children. Francis does, too.	 Sally wants to go get ice cream. Francis wants to shop for t-shirts. You suggest getting t-shirts with pictures of ice cream on them.	 A story about razor blades appearing in candy eventually led to many people no longer offering homemade treats on Halloween in America.	 "In my day, kids had more respect!"	 Even though an app's terms of service invade Sally's privacy, she'd rather not switch to another app.	 "In for a penny, in for a pound!"	 Alice has lost nine coin tosses in a row, so she's sure to win the next one!
Halo Effect If you see someone as having a positive trait, that positive impression will spill over into other their other traits. (This also works for negative traits.)	Moral Luck Better moral standing happens due to a positive outcome; worse moral standing happens due to a negative outcome.	False Consensus We believe more people agree with us than is actually the case.	Curse of Knowledge Once we know something, we assume everyone else knows it, too.	Spotlight Effect We overestimate how much people pay attention to our behavior and appearance.	Zero-Risk Bias We prefer to reduce small risks to zero, even if we can reduce more risk overall with another option.	Framing Effect We often draw different conclusions from the same information depending on how it's presented.	Stereotyping We adopt generalized beliefs that members of a group will have certain characteristics, despite not having information about the individual.	Outgroup Homogeneity Bias We perceive out-group members as homogeneous and our own in-groups as more diverse.	Authority Bias We trust and are often influenced by the opinions of authority figures.
 Taylor could never be mean; she's so cute!	 X culture won X war because they were morally superior to the losers.	 "Everybody thinks that!"	 Alice is a teacher and struggles to understand the perspective of her new students.	 Sally is worried everyone's going to notice how lame her ice cream t-shirt is.	 "You should probably buy the warranty."	 Alice hears that her favorite candidate is "killing it" with a 45% approval rating, while she hears that the candidate is "tanking it" with a 45% rating. They have wildly different interpretations of the same statistic.	 "That guy with the fancy mustache is a hipster. He probably has a vinyl collection."	 Alice is not a gamer, but she believes "all gamers are the same."	 "My teacher told me this was fine."
Availability Heuristic We rely on immediate examples that come to mind while making judgments.	Defensive Attribution As a witness who secretly fears being vulnerable to a serious mishap, we tend to blame the victim less and attacker more if we relate to the victim.	Just World Hypothesis We tend to believe the world is just; therefore, we assume acts of injustice are deserved.	Naïve Realism We believe that we observe objective reality and that other people are rational, uniformed, or biased.	Naïve Cynicism We believe that we observe objective reality and that other people have a higher egocentric bias than they actually do in their intentions/actions.	Placebo Effect* If we believe a treatment will work, it often will have a small physiological effect.	Survivorship Bias We tend to focus on those things that survived a process and overlook ones that failed.	Tachypsychia Our perceptions of time shift depending on trauma, drug use, and physical exertion.	Law of Triviality (aka "Bike-Shedding") We give disproportionate weight to trivial issues, often while avoiding more complex issues.	Zeigarnik Effect We remember incomplete tasks more than completed ones.
 When trying to decide on which store to visit, you choose the one you most recently saw an ad for.	 Sally sat too long at a green light because she was playing with her phone. She got rear-ended! Greg, who is kind and empathetic, got out and yelled at the person who smacked into her.	 "Sally's purse was stolen because she was mean to Francis about their T-shirt and had bad karma."	 "I see the world as it really is — other people are dumb."	 "The only reason this person is doing something nice is to get something out of me."	 Alice was given a placebo for her pain, and her pain decreased.	 Greg tells Alice her purse was going to be great because he and his company had the same strategy. (But 10 other failed companies also had the same strategy.)	 "When the car almost hit me, time slowed down...."	 Rather than figuring out how to help the homeless, a local city government spends a lot of time discussing putting in a bike path and bike sheds.	 Greg feels guilty for never getting anything done, until he sees all of the tasks he's checked off on his task list.
Forer Effect (aka Barnum Effect) We easily attribute our personalities to vague statements, even if they can apply to a wide range of people.	Dunning-Kruger Effect The less you know, the more confident you are. The more you know, the less confident you are.	Anchoring We rely heavily on the first piece of information introduced when making decisions.	Automation Bias We rely on automated systems, sometimes trusting too much in automated correction of actually correct decisions.	Google Effect (aka Digital Amnesia) We tend to forget information that's easily looked up in search engines.	IKEA Effect We place higher value on things we partially created ourselves.	Ben Franklin Effect We like doing favors; we are more likely to do another favor for someone if we've already done a favor for them than if we had received a favor from that person.	Bystander Effect* The more other people are around, the less likely we are to help a victim.	Suggestibility We, especially children, sometimes mistake ideas suggested by a questioner for memories.	False Memory We mistake imagination for real memories.
 "This horoscope is so accurate!"	 Francis confidently assures the group that there's no kelp in ice cream. They do not work in the dairy industry.	 "That's 50% off? It must be a great deal."	 Your phone auto-corrects "its" to "it's," so you assume it's right.	 "What was the name of that actor in that funny movie? I've looked it up like eight times..."	 "Don't you love this pot I spent \$20 on? I painted it myself!"	 Greg loaned Francis a pen. When Francis asked to borrow \$5, Greg did it readily.	 In a crowd of students, no one called 911 when someone got hurt in a fight.	 "So did you fall off the couch before or after your mom hit you?"	 Greg is certain Sally said a really funny joke about pineapples, when that joke actually came from a TV show.
Reactance We do the opposite of what we're told, especially when we perceive threats to personal freedoms.	Confirmation Bias We tend to find and remember information that confirms our perceptions.	Backfire Effect Disproving evidence sometimes has the unwarranted effect of confirming our beliefs.	Third-Person Effect We believe that others are more affected by mass media consumption than we ourselves are.	Belief Bias We judge an argument's strength not by how strongly it supports the conclusion but how plausible the conclusion is in our own minds.	Cryptomnesia We mistake real memories for imagination.	Clustering Illusion We find patterns and "clusters" in random data.	Pessimism Bias We sometimes overestimate the likelihood of bad outcomes.	Optimism Bias We sometimes overestimate good outcomes.	Blind Spot Bias We don't realize we have bias, and we see it in others more than ourselves.
 One of Alice's students refuses to do his homework, even though both she and his parents tell him to.	 You can confirm a conspiracy theory based on scant evidence, while ignoring contrary evidence.	 The evidence that disproves your conspiracy theory was probably falsified by the government.	 "You've clearly been brainwashed by the media!"	 Sally mentions her supporting theory about your conspiracy theory, which you adopted wholeheartedly despite the fact that she has very little evidence for it.	 Greg thinks he visited a graveyard, but he's pretty sure he just had a spooky dream.	 "That cloud looks like your cat, Alice!"	 "Nothing will ever get better."	 "It's going to turn out great!"	 "I am not biased!"

Examples

- Decoy Effect: increases an option's attractiveness by presenting an unattractive option.
- Bandwagon Effect: the tendency for people to adopt certain behaviors or attitudes simply because others are doing so.

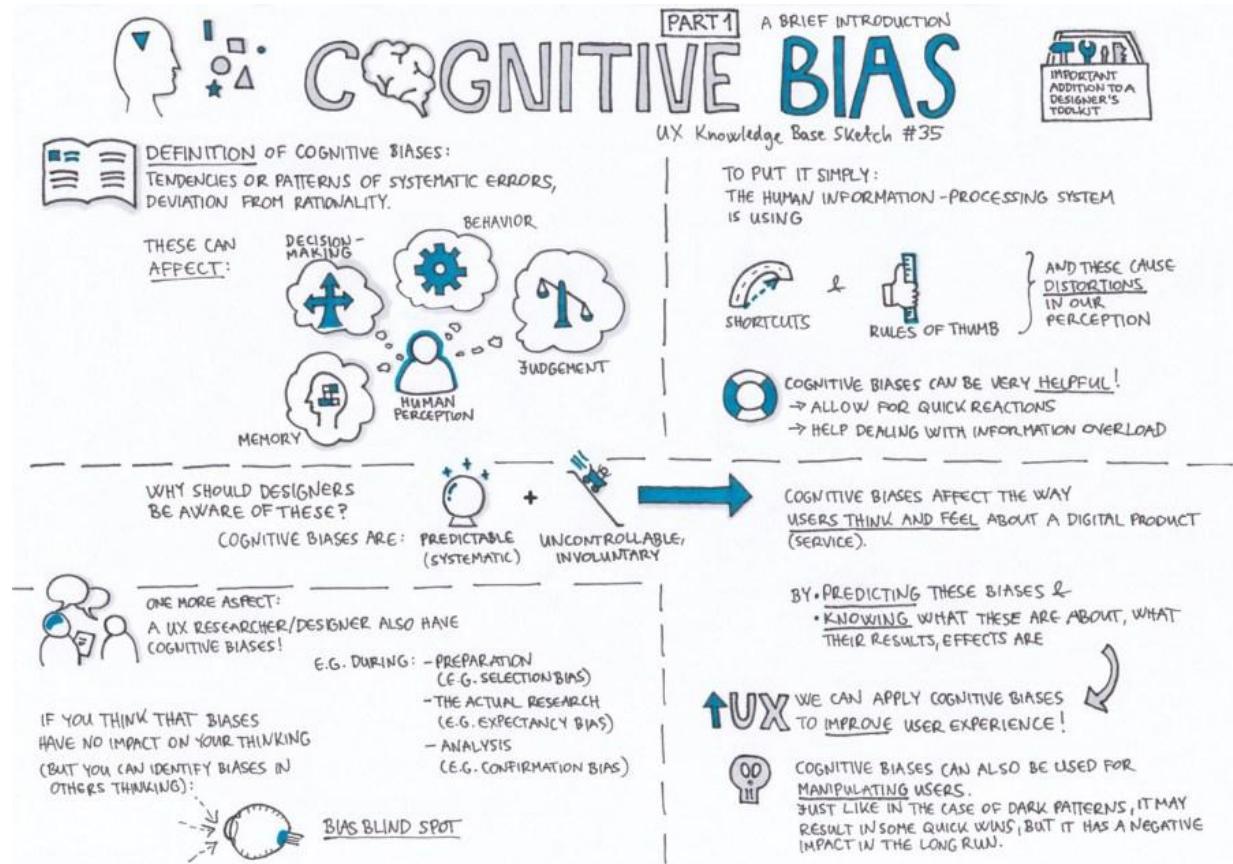
PERSONAL \$12 /MO	HOST POPULAR PROFESSIONAL \$16 /MO	BUSINESS \$24 /MO
<small>Billed annually or \$133 month-to-month.</small>	<small>Billed annually or \$200 month-to-month.</small>	<small>Billed annually or \$300 month-to-month.</small>
20 Pages, Galleries, and Blogs with 500 GB Bandwidth, 2 GB Storage, and 2 Contributors	Unlimited Pages, Galleries, and Blogs, with Unlimited Storage, Bandwidth, and Contributors	Unlimited Pages, Galleries, and Blogs, with Unlimited Storage, Bandwidth, and Contributors
Fully Integrated E-Commerce	Fully Integrated E-Commerce	Fully Integrated E-Commerce
Sell 1 Product & Accept Donations	Sell up to 20 Products	Sell Unlimited Products
Mobile Website and Store	Developer Platform	Real-Time Carrier Shipping
Custom Domain <small>FREE</small>	Mobile Website and Store	Label Printing via Shiptation

Privacy Implications

- Framing Effect
- Hyperbolic Discounting
- Anchoring Bias
- Default Effect
- Loss Aversion
- Optimism Bias

Dark 3

New Example



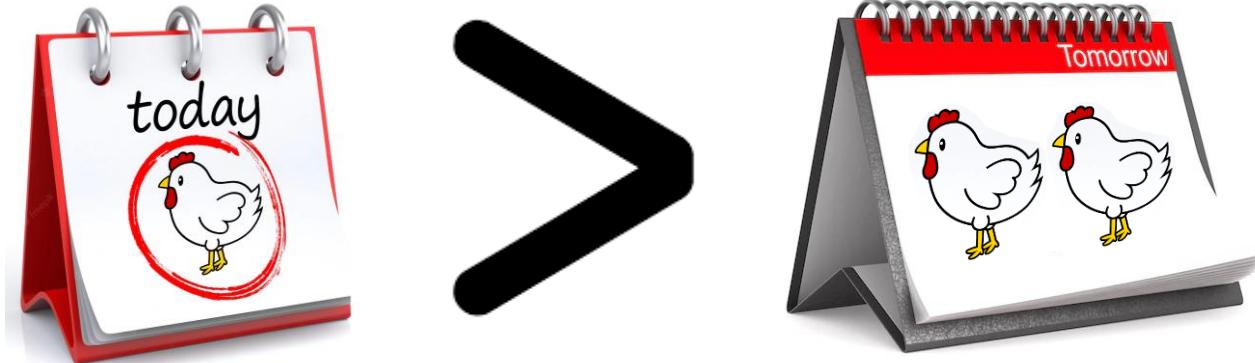
Framing Effect

- A decision maker's risk tolerance is dependent upon how a set of options is described: people are tending to be risk seeking when confronted with negatively framed problems and risk averse when presented with positively framed problems.
 - A 99% fat free yogurt has a stronger endorsements of healthiness than 1% fat yogurt.
- When asking if the user wants to start using a face identification service, the designer can highlight the novelty and the sophistication, leaving problematic privacy issues as a side comment.



Hyperbolic Discounting

- People's choices are often inter-temporally inconsistent: people prefer a larger, later consumption bundle over a smaller, sooner one as long as both are sufficiently distant in time but change their preference as both draw near.
- An individual often prefers to use a service immediately, even if it involves risks or possible long term privacy impacts, instead of not using the service now and preserving his or her privacy long term.



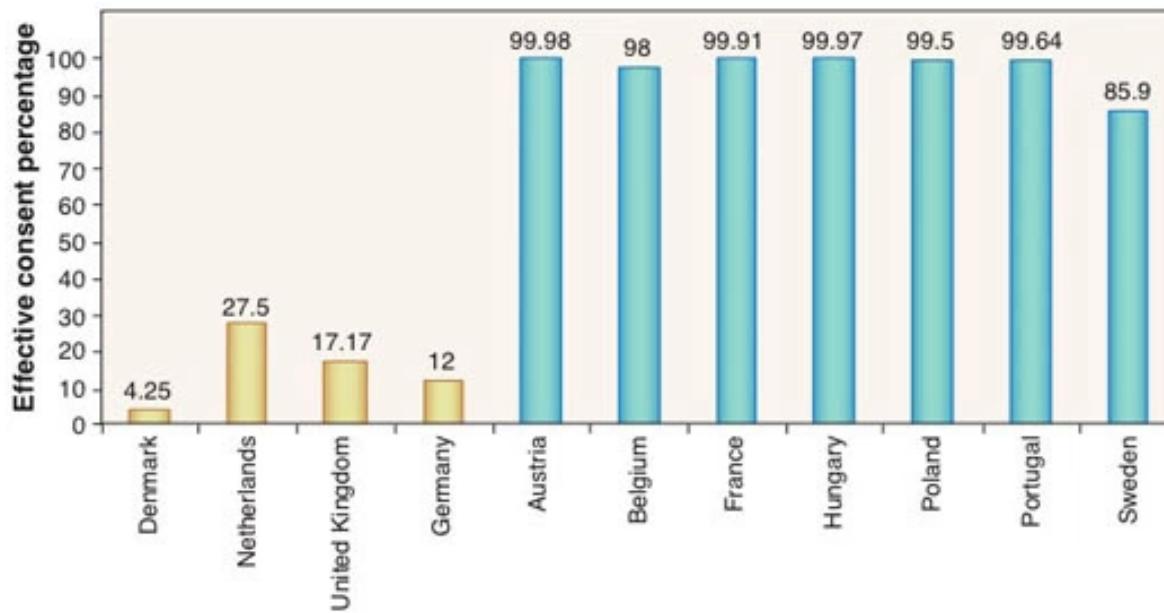
Anchoring Bias

- In a privacy menu, the pool of values from which the user will have to choose from is typically arbitrary, with the designer deciding what will be the broadest-sharing option and the least-sharing option.
- Relying on the anchoring bias, the designer can choose a first option that is privacy-negligent and additional options that are only mildly protective.
The user will be ‘anchored’ by the first option and induced to perceive the additional options as being privacy protective.



Default Effect

- The default effect is the observation that the default option is chosen more often than expected if it were not labeled the default.
- It has been shown that individuals will most commonly stick to the default privacy option instead of taking time to think and choose a more suitable alternative.
- Organ donation consent rate



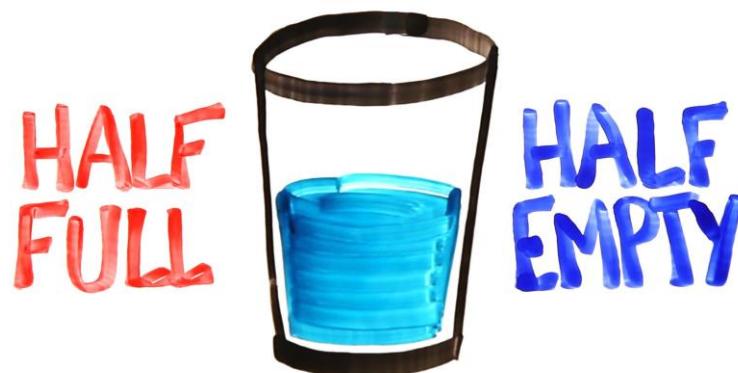
Loss Aversion

- The disutility of giving up an object is greater than the utility associated with acquiring it.
- It can be observed in the context of ‘free trials’, in which you allow the person to have access to a product or service for a certain, limited period and then, to allow continuity, one or more payments are requested.



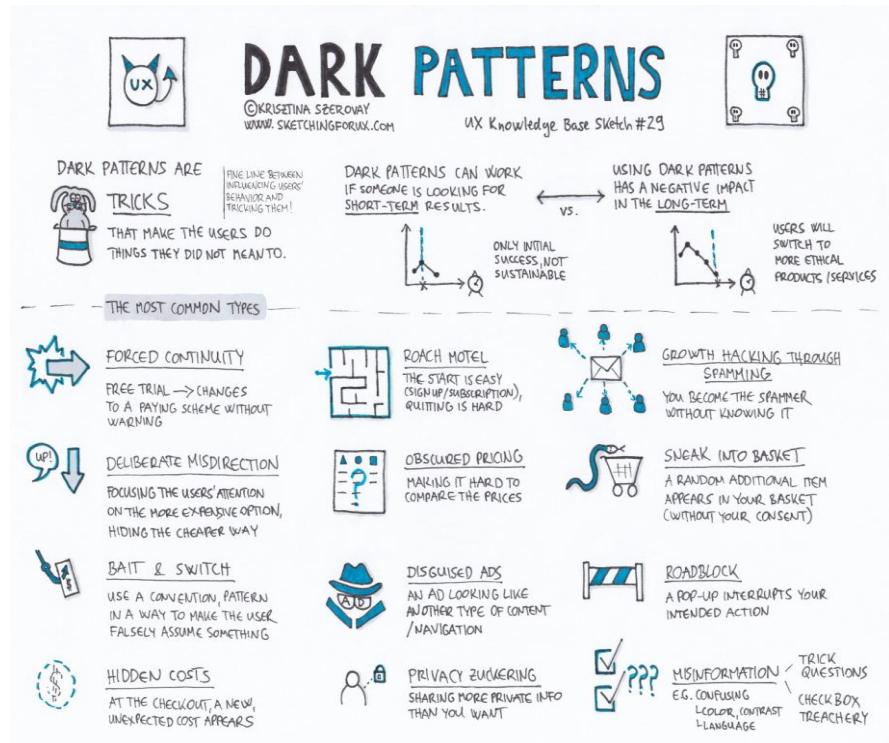
Optimism Bias

- People report they are less likely than the average person to experience negative events.
- People report they are more likely than the average person to experience positive events.
- In the privacy context, it represents the tendency to think that one is less likely to suffer any privacy harm, therefore possibly becoming a false reassurance that negligent, careless, and risky online behaviors are harmless.



Take Away

- Dark Patterns are omnipresent on the internet.
- They arise due to misaligned users and business incentives.
- They nudge customers towards behaving in the company's desired way.
- Battling them by legislative means are slow and ineffective.
- Raising awareness is crucial in tackling this issue.
- Most of them are corresponding to well-known Cognitive Biases.



Control Questions

- What are the Dark Patterns, how they work, and why they emerged?
- Name five Dark Pattern Types and explain one of them!
- Name two Cognitive Biases that could have Privacy implications, explain one of them, and provide a privacy-related example!



References

- Cognitive biases, dark patterns, and the privacy paradox
 - A Comparative Study of Dark Patterns Across Mobile and Web Modalities
 - UI Dark Patterns and Where to Find Them: A Study on Mobile Applications and User Perception
 - Shining a light on Dark Patterns
 - “Dark patterns” in online services: a motivating study and agenda for future research
 - Behavioural study on unfair commercial practices in the digital environment
-