# The Design of a Framework for the Detection of Web-Based Dark Patterns

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# Ethics4EU Objectives

- The project has the following objectives:

1. To identify gaps in computer science lecturers' knowledge of ethics
2. To develop a common understanding of pan-European values in ethics in technology
3. To develop a repository of open and accessible online curricula, teaching and assessment resources to support computer science ethics
4. To produce practical guidelines and instructor guides for the teaching of computer science ethics
5. To develop a sustainable European Community of Practice in computer science ethics
6. To develop an online training programme through the HubLinked Global Labs model for computer science lecturers in ethics.

# Ethics4EU: Partners

Technological University Dublin, Ireland

European Digital Learning Network, Italy

Informatics Europe, Switzerland

Mälardalens Högskola, Sweden

Institut Mines-Telecom, France

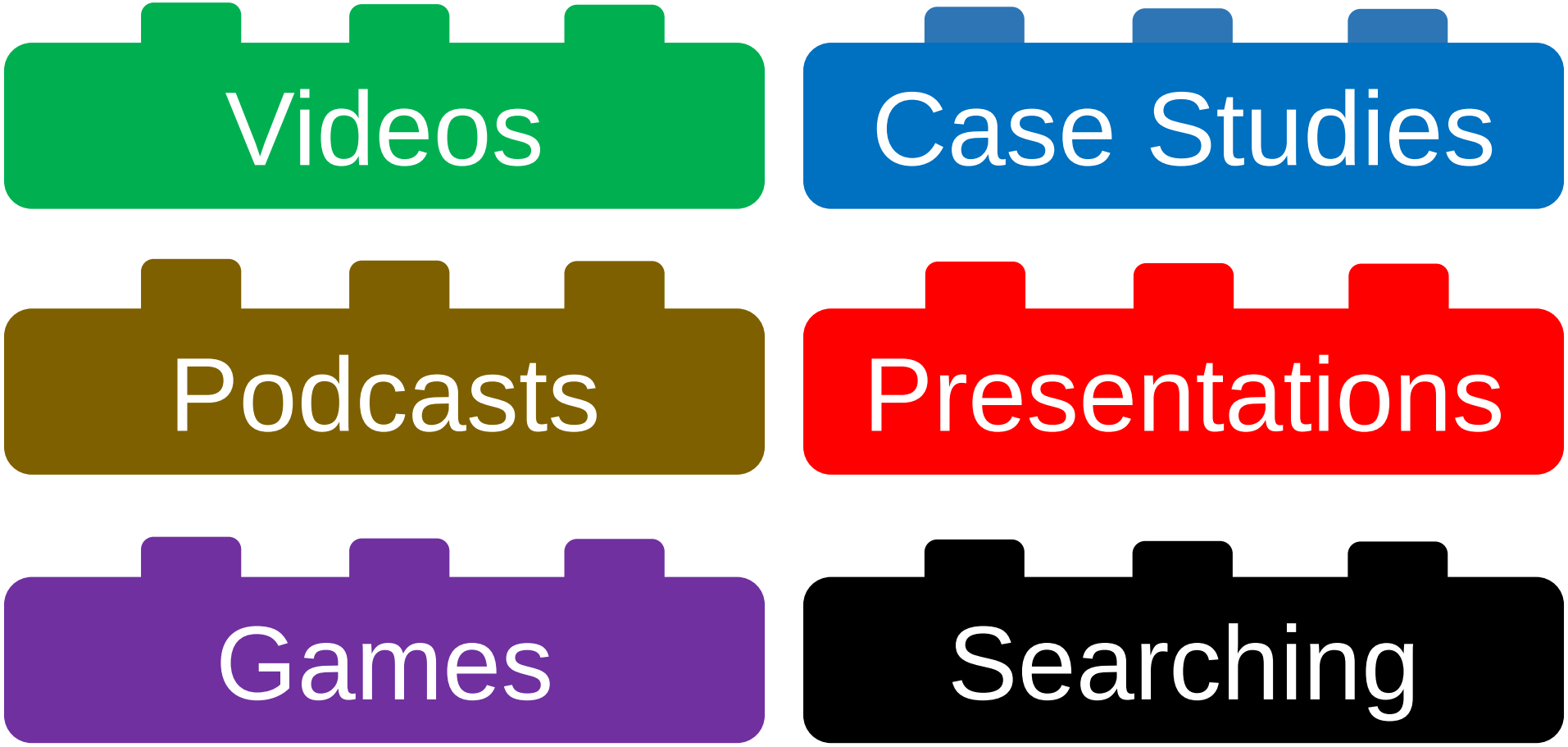
Erasmus+

# Who are our Audience?

- The content is to be developed to help Computer Science lecturers teach, so there's two types of content being developed:

1. Content speaking to the lecturer about how to deliver content
2. Pre-made content aimed at Computer Science Students (1st Year to MSc)

# Range of Approaches



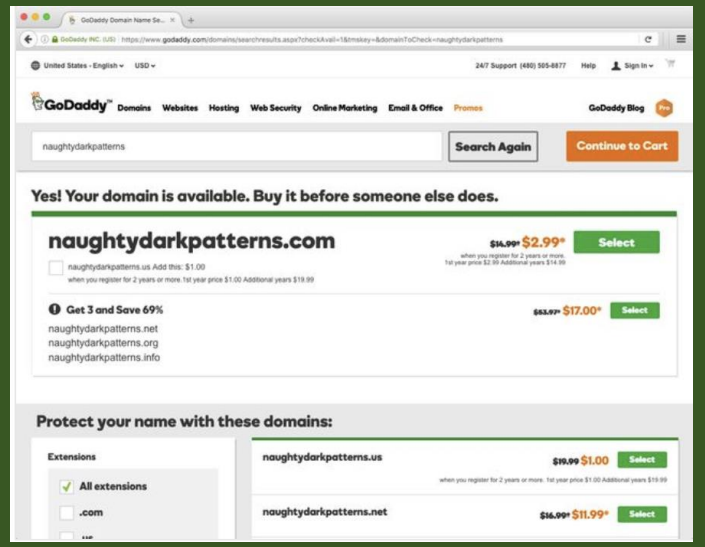
# Range of Topics

- Dark Patterns Brick
- Developing Countries Brick
- Cyberharassment Brick
- Programming Pitfalls Brick
- Smart Pills Brick
- History of Digital Ethics Brick

- http://ethics4eu.eu/Bricks/

# Dark Patterns Brick

- Lesson Content
  - Introduction to Content
  - Exploring the Patterns
  - Ethics of Patterns
- Instructor Guide
- Exam Question
- In-Class and Take-home Activities
- Research Papers




*Some websites use tricks to make people agree to share more data than they intended to, or to spend more money than they planned to.*

# What are Dark Patterns?

- User Interface experts got together and categorized a number of these tricks that are commonly found on websites, and called them *Dark Patterns*.

# Dark Patterns: Ethical Concerns

- Dark Patterns trick people:
  - Into sharing information they don’t intend to
  - Into paying more than they thought
  - Into subscribing to mailing lists that they don’t want to
  - Into downloading programs that are disguised
  - Into spamming their contacts
  - By preventing price comparison
  - By changing the meaning of a commonly used symbol
  - By using guilt to get people to spend more money

# Types of Dark Patterns

- Trick questions
- Sneak into Basket
- Roach Motel
- Privacy Zuckering
- Price Comparison Prevention
- Misdirection
- Hidden Costs
- Bait and Switch
- Confirmshaming
- Disguised Ads
- Forced Continuity
- Friend Spam

https://darkpatterns.org/types-of-dark-pattern.html

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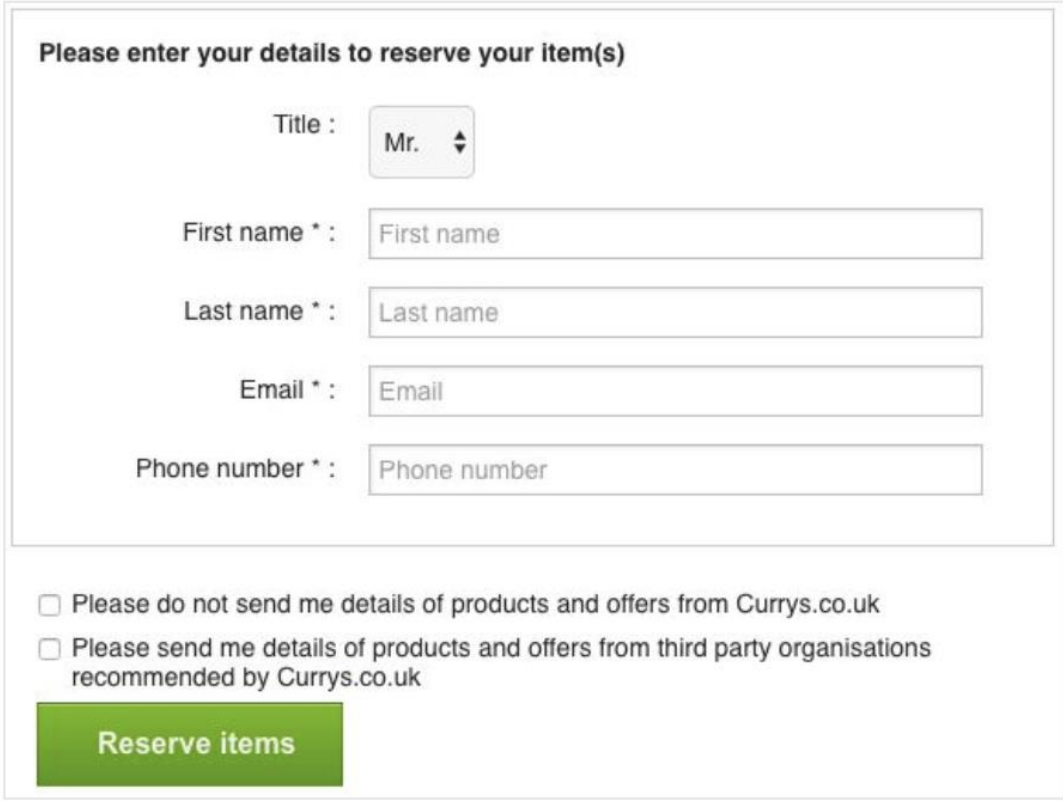
# DARK PATTERN

## Trick Questions

# Trick Questions

- This is very common when registering with a service. Typically a series of checkboxes is shown, and the meaning checkboxes is alternated so that ticking the first one means "opt out" and the second means "opt in".



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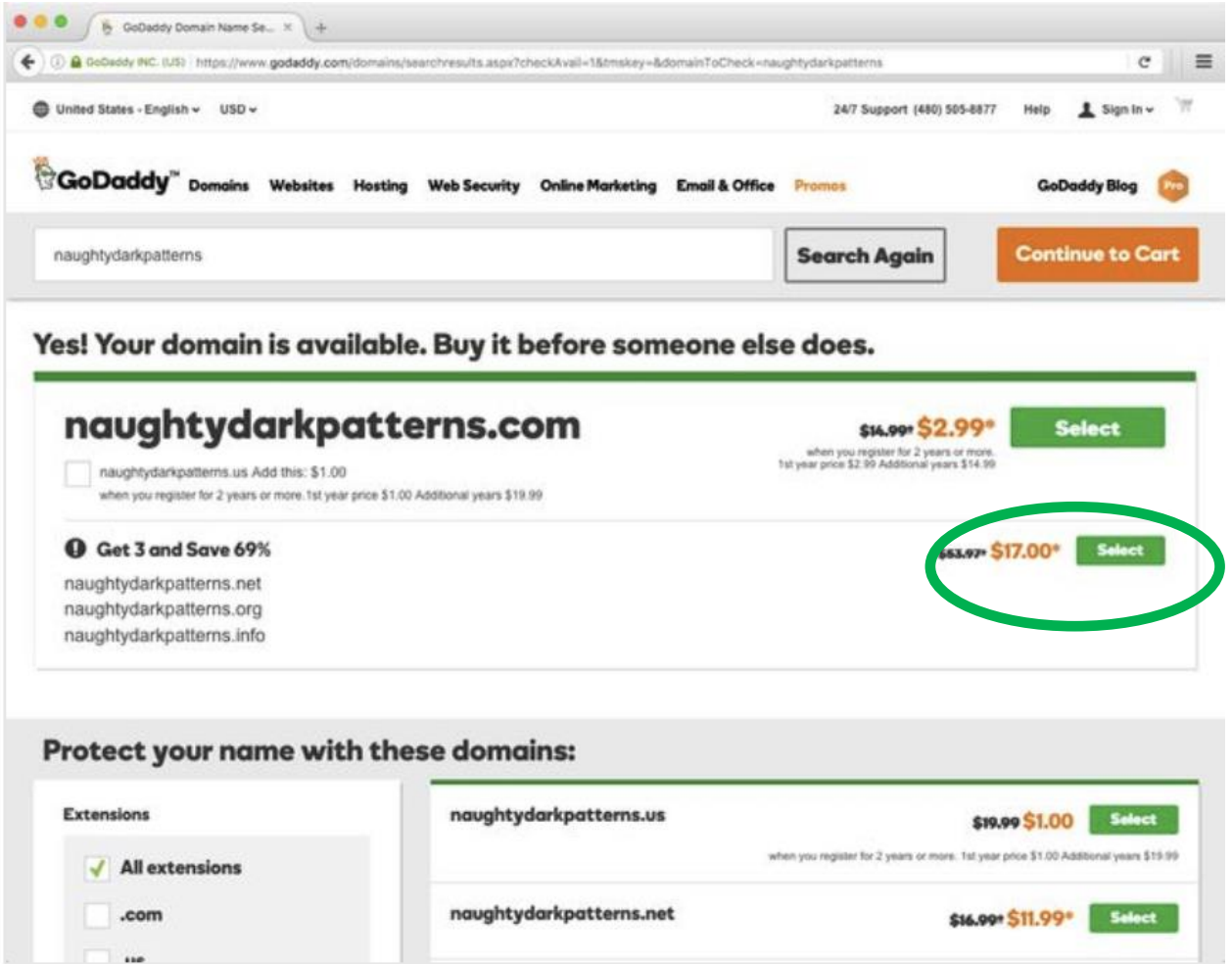
# DARK PATTERN

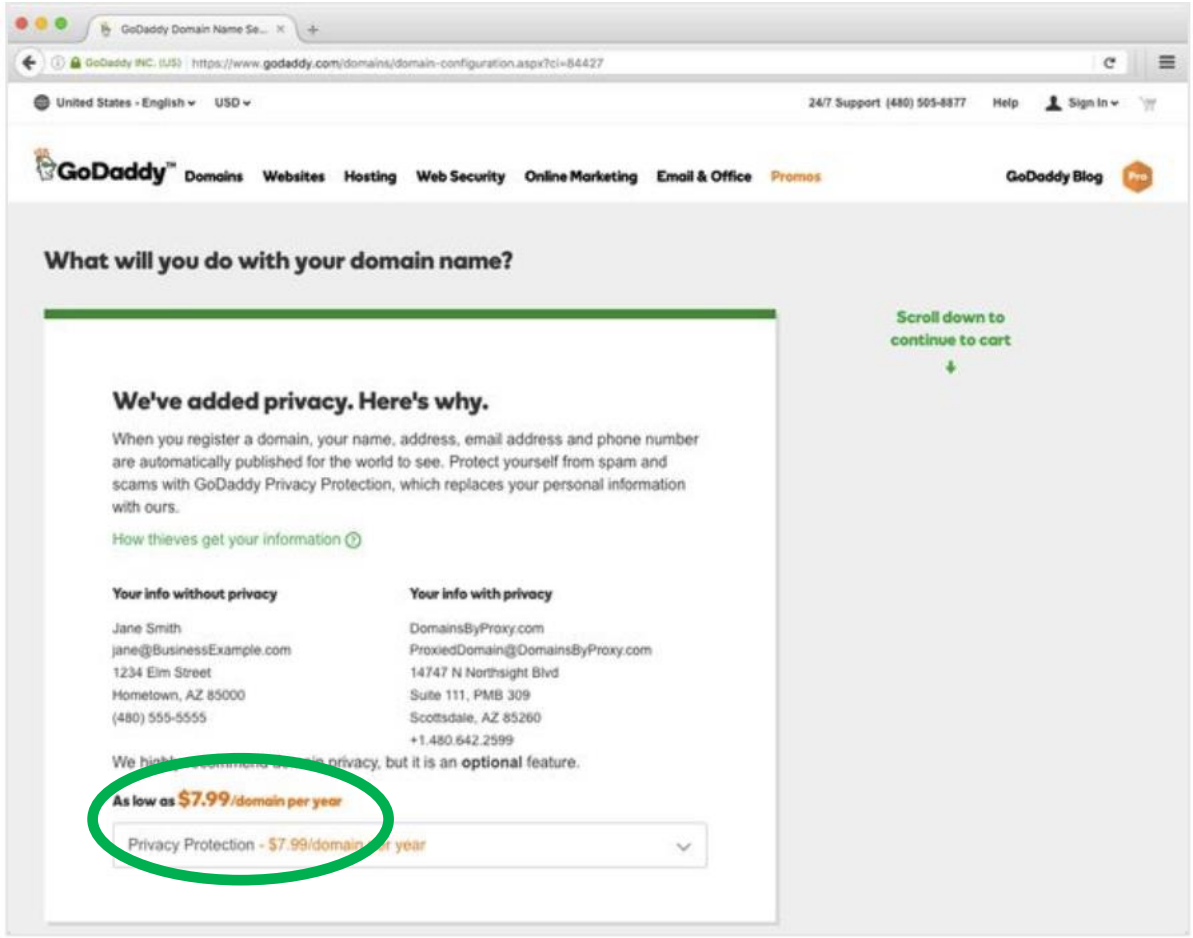
## Sneak into Basket

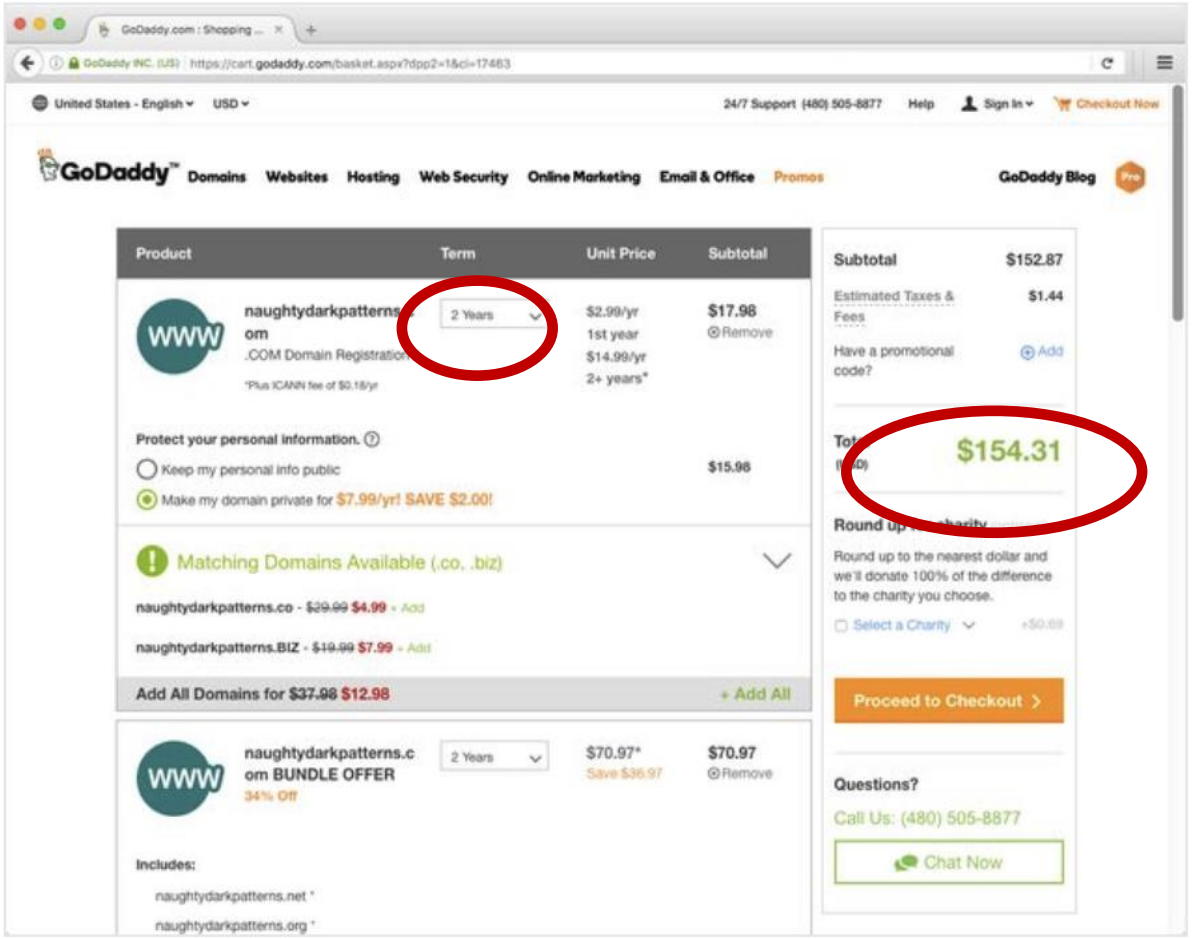
# Sneak into Basket

- You attempt to purchase something, but somewhere in the purcnasing journey the site sneaks an additional item into your basket, often through the use of an opt-out radio button or checkbox on a prior page.



# Sneak into Basket

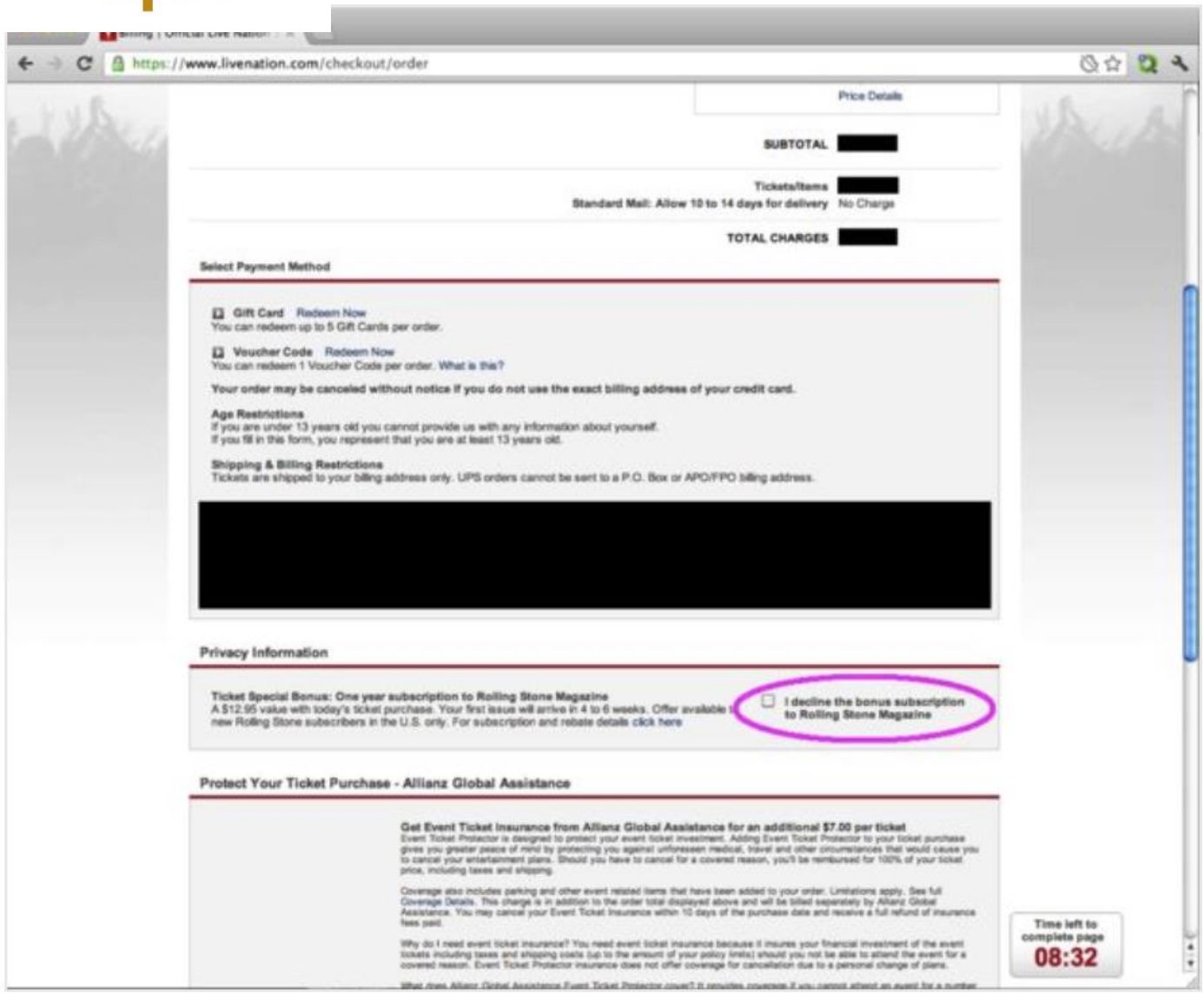



**2 years was "sneaked into basket". Costing of multiple domain names was unclear from the outset.**

Roach Motel

# Roach Motel




- When purchasing tickets, *livenation.com* tries to sneak a subscription to a magazine ( **into your basket** via a **trick question** on the checkout page, shown in screenshot.
- Note that the design is "opt out" - the purchase is made for you automatically unless you notice the checkbox and realise you need to tick it to opt out.

Privacy Suckering

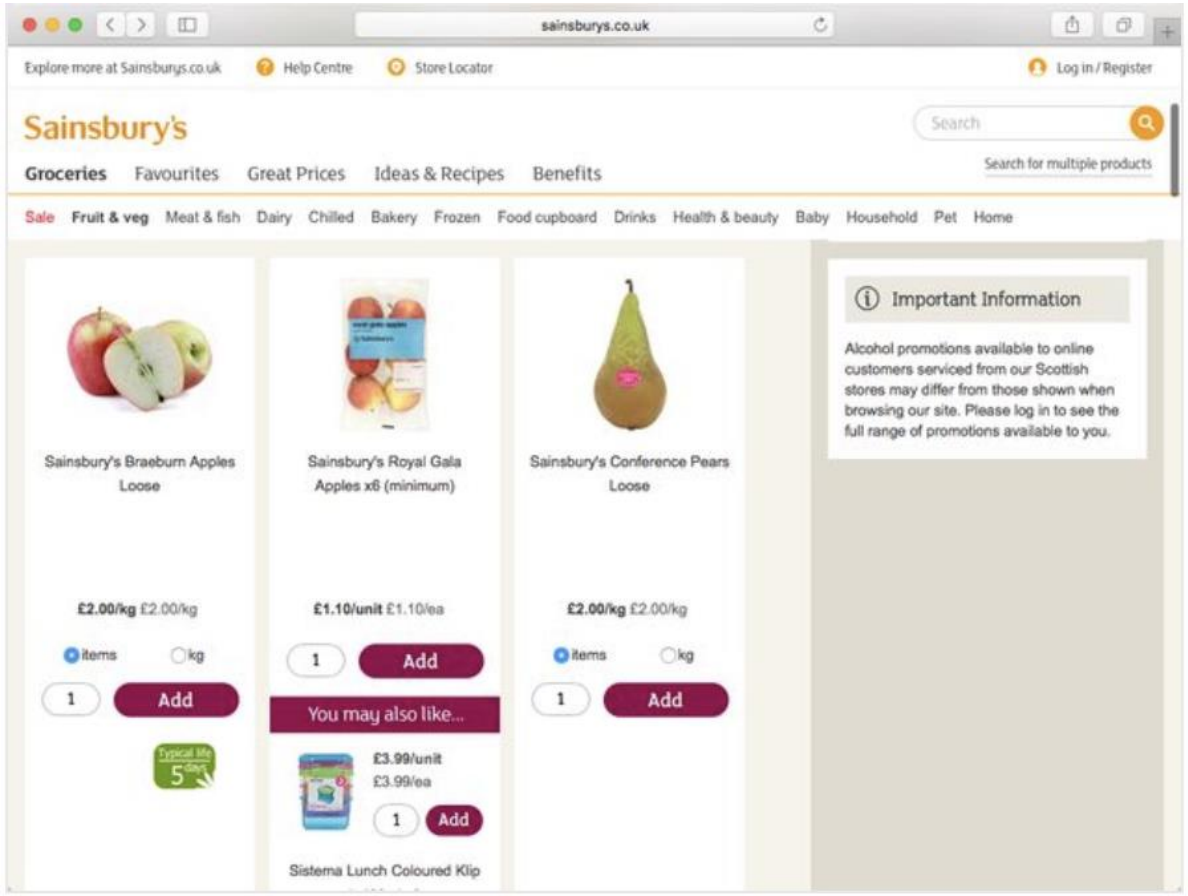
# Privacy Zuckering

- You are tricked into publicly sharing more information about yourself than you really intended to. Named by **Tim Jones** as a homage to Facebook CEO Mark **Zucker**berg.
- In its early days, Facebook had a reputation for making it difficult for users to control their privacy settings, and generally making it very easy to "overshare" by mistake. In response to feedback from consumers and privacy groups, Facebook has created a clearer, easier to use privacy settings area.

# Price Comparison Prevention

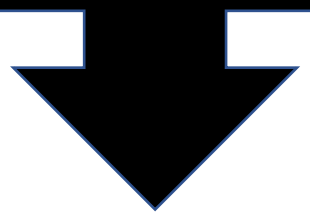
# Price Comparison Prevention

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




- Retailers typically achieve this by creating different bundles where it is not easy work out the unit price of the items within the bundles.
- In the Sainsbury's website, it is not possible to compare the price of the first item to the second item.

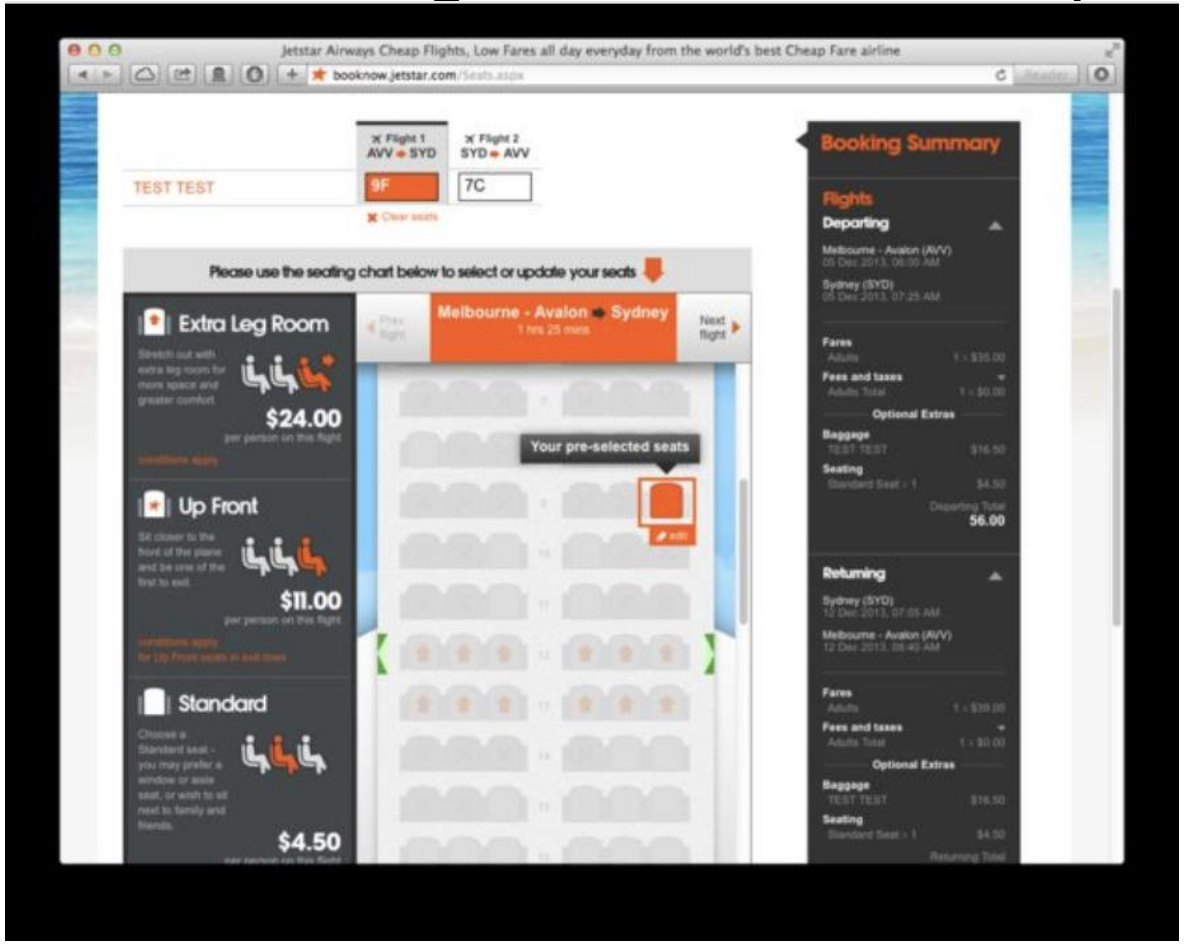
# DARK PATTERN



Misdirection

# Misdirection

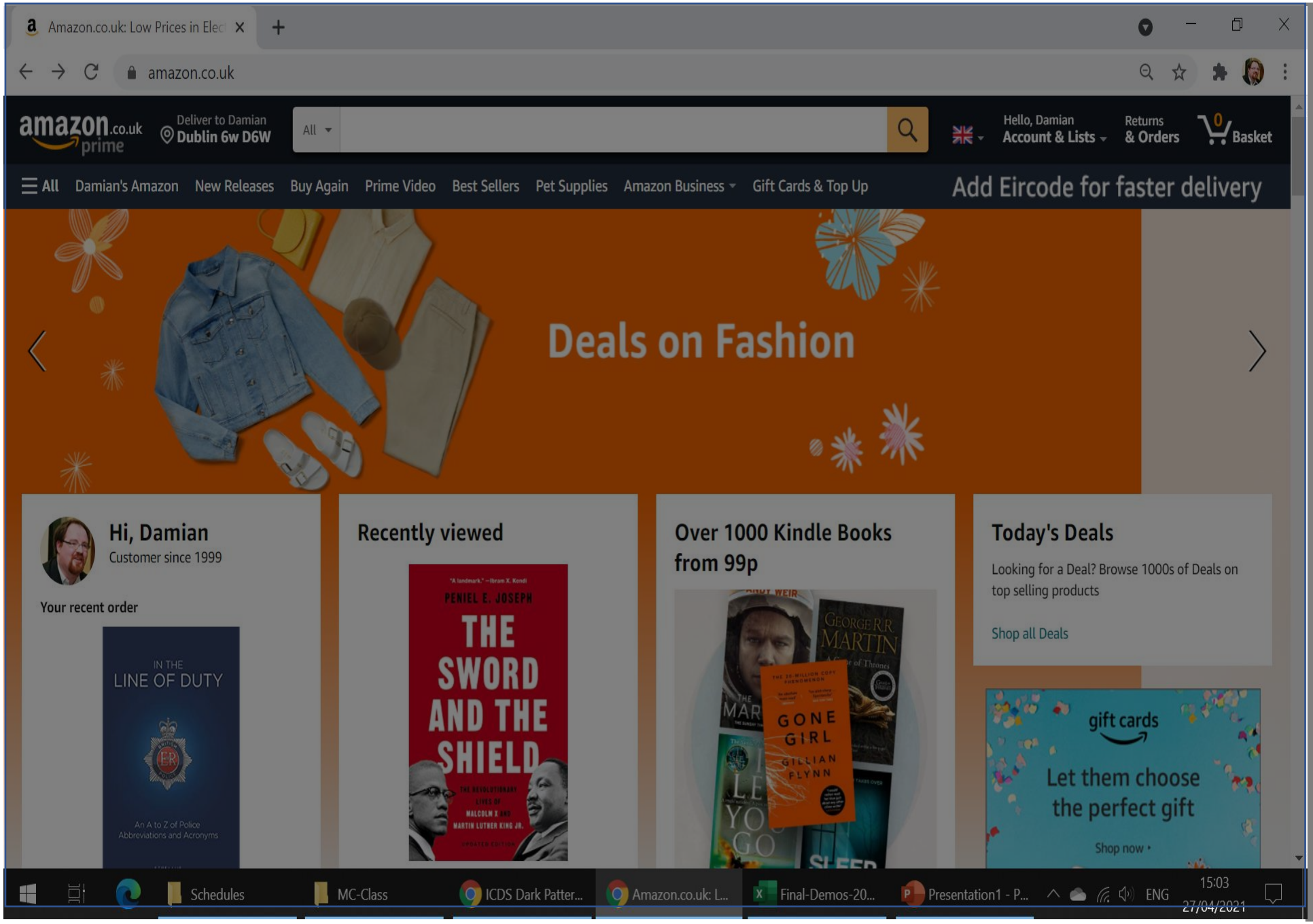
- The design purposefully focuses your attention on one thing in order to distract you attention from another.




- On **jetstar.com**, when this page loads, they have already preselected a random seat for you.
- They use word-play trickery, as a "preselected" random seat here costs $5, but if you opt out via the tiny "skip seat selection" link at the bottom of the page, you're assigned a random seat without the $5 charge.

# Framework

| Category | Pattern | Detection | Rationale |
|---|---|---|---|
| Sneaking | Sneak into Basket | Manual (fully) | Highlight changes in cost |
| | Hidden Costs | Manual (fully) | Highlight changes in cost |
| Misdirection | Trick Questions | Automated (partially) | Look for phrases like “opt-in” and “opt-out”, as well as pre-ticked checkboxes |
| | Misdirection | Cannot be detected | There is too much variation in how this pattern is implemented. |
| | Confirmshaming | Cannot be detected | There is too much variation in how this pattern is implemented. |
| | Disguised Ads | Automated (partially) | Look for buttons (noting colour and size) and see which ones link to external sites. |
| Obstruction | Roach Motel | Automated (fully) | Look for sites with “activate” or “subscribe” links or buttons but with no “deactivate” or “unsubscribe” |
| Forced Action | Forced Continuity | Cannot be detected | There is too much variation in how this pattern is implemented. |
| Variegations | Privacy Zuckering | Cannot be detected | There is too much variation in how this pattern is implemented. |
| | Price Comparison Prevention | Manual (fully) | Highlight if products are displayed with different units of the product |
| | Bait and Switch | Cannot be detected | There is too much variation in how this pattern is implemented. |
| | Friend Spam | Automated (partially) | Check if the site asks for email or social media permissions, and notify users. |




***Percentage of the webpage visible in your browser window***

| ***Number of checkboxes On page:*** | ***Pre-ticked checkboxes On page:*** |
|---|---|
| **15** | **7** |

| ***Number of Radiobuttons On page:*** | ***Pre-ticked Radiobuttons On page:*** |
|---|---|
| **5** | **0** |

***Shopping Basket Total:***

**0.00**

# Acknowledgements

www.Ethics4EU.eu

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