

In The Moment Nudges: Applying nudge theory to awareness

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In the moment nudges – What? How? Applying nudge theory to awareness

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What is nudge theory?

Soft nudges towards a desired behaviour without restricting choice

- ▶ Popularised by Thaler and Sunstein
- ▶ Contrasts with typical “forcing” methods.

How?

- ▶ Influence “choice architecture”

Powerful when incorporated into what you are already doing

Examples

Supermarket
Saving
Hand washing
- NHS & abattoir!



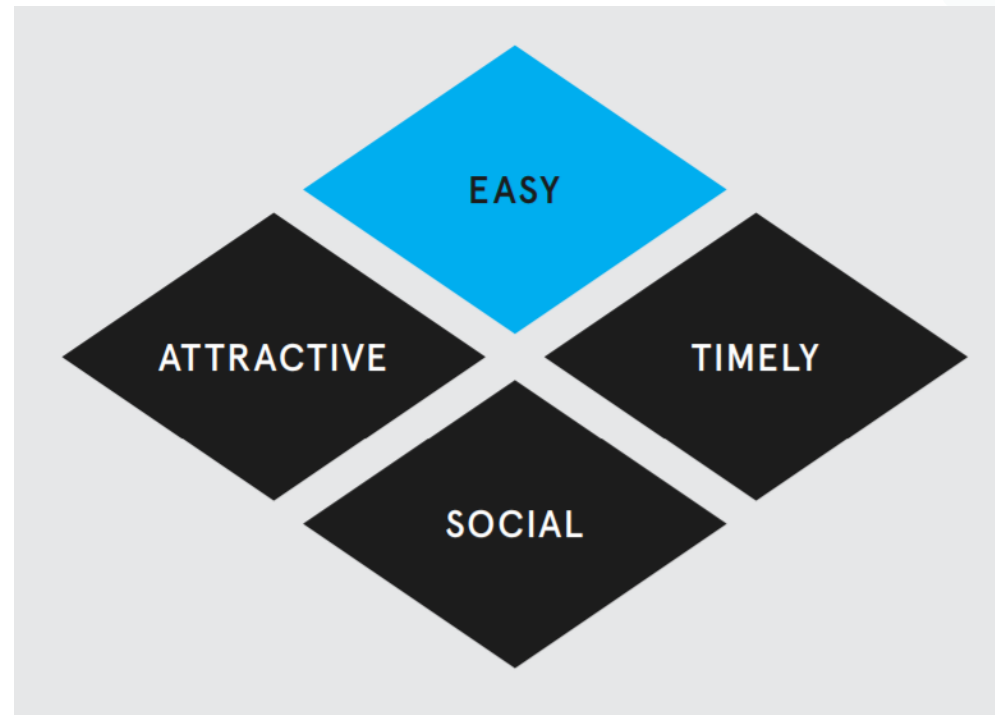
What makes a good nudge? MINDSPACE

Messenger	We are heavily influenced by who communicates information
Incentives	Our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses
Norms	We are strongly influenced by what others do
Defaults	We “go with the flow” of pre-set options
Salience	Our attention is drawn to what is novel and seems relevant to us
Priming	Our acts are often influenced by subconscious cues
Affect	Our emotional associations can powerfully shape our actions - take care over fear without agency
Commitments	We seek to be consistent with our public promises and reciprocate acts
Ego	We act in ways that make us feel better about ourselves

What makes a good nudge? EAST

The four components of an effective nudge...

- ▶ **Easy**
- ▶ **Attractive**
- ▶ **Social**
- ▶ **Timely**



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Applying nudge theory – part 1

- ▶ You are communicating anyway... Refine it
 - ▶ MINDSPACE, EAST
 - ▶ Other cognitive biases – availability, loss aversion, reciprocity, social norms
- ▶ Tesco delivery saver 10.2% uplift (See “Ripple” Groom and Vellacott)
 - ▶ Framed as a loss: Don't miss out on unlimited FREE deliveries
 - ▶ Friendly delivery driver image – “hot state” of receiving groceries
 - ▶ Smiling face – mimicry/positivity
 - ▶ Looking towards ...
 - ▶ “Delivery saver customers save on average £76.44” [authority]

BJ Fogg Behaviour Model

The three factors for ANY behaviour to happen...

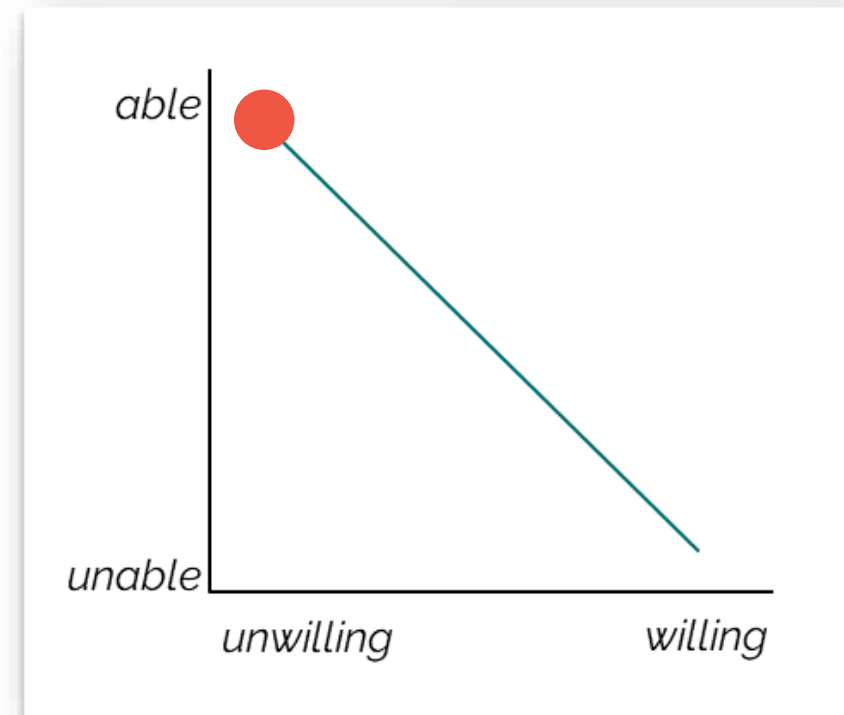
Motivation

Ability

Prompt

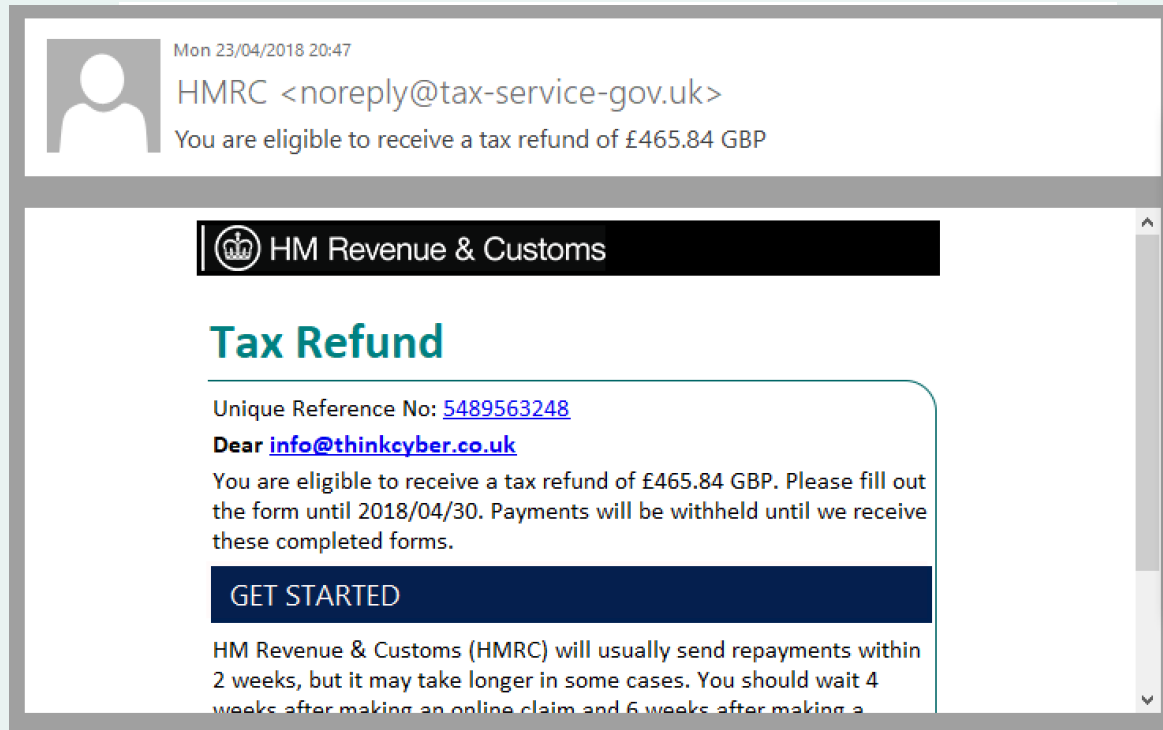
Order matters

- ▶ Don't start with motivation, start with a prompt



See BJ Fogg - <https://www.tinyhabits.com/>

Applying nudge theory – part 2



Key behaviours to avoid phishing:

- ▶ Think before you click
- ▶ Report suspicious emails

How do we achieve those behaviours?

Example: safe email use

PROMPT

(Prompt the change)

Timeliness is key

- ▶ Deliver the prompt when in email
- ▶ A clearly visible reporting button can be a good prompt
- ▶ “You’re in email, remember phishing”
- ▶ “Is this link safe?”

ABILITY

(Make it easy)

Easy to remember

- ▶ Don’t over-complicate
- ▶ Reinforce need to be cautious with email

Easy to act

- ▶ Simple message: “if it doesn’t feel right, then report it”
- ▶ Reporting button

MOTIVATION

(Make people want to)

Threat appraisal

- ▶ How many phishing emails received?
- ▶ Distribute real examples

Social proof

- ▶ How many reports have been made? (“Your colleagues are reporting...”)



Delivered in context

Reminder when interact with email

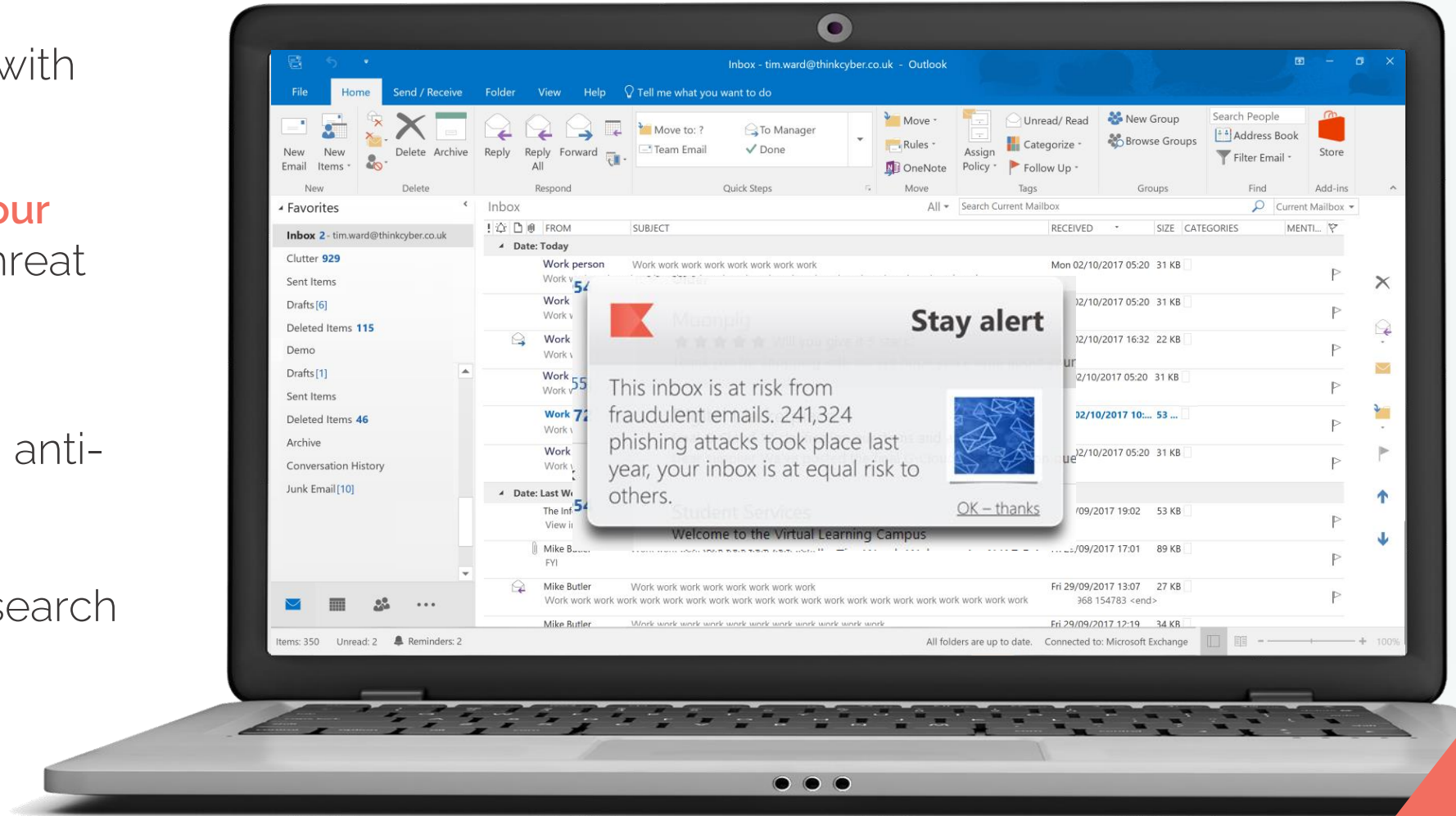
Promotes desired behaviour

Reminds people of the threat

Timely, salient, priming

Threat/coping, authority, anti-optimism bias

Measurable impact in research project with Cardiff University



Example: safe email use

PROMPT

(Prompt the change)

Timeliness is key

- ▶ Drip feed
- ▶ Ongoing
- ▶ Topical

Annual awareness training is a poor prompt

ABILITY

(Make it easy)

Easy to access

- ▶ Content delivered to the user
- ▶ Quick and easy to digest
- ▶ User choice

Easy to do

- ▶ Actionable advice

MOTIVATION

(Make people want to)

Threat appraisal

- ▶ Personal context and real examples
- ▶ “Fear of loss”
- ▶ “Positive frame”

Exploit curiosity

- ▶ Engaging content
- ▶ Stories & narrative

Biases & learning science techniques

When do we intervene?



eLearning
Videos

TOO SOON

Quickly forgotten
Out of context

CONTEXT



TRIGGER



ACTION

Prime before
the behaviour

Intervene
just-in-time

Baseline
behaviour



Post incident
simulations

TOO LATE

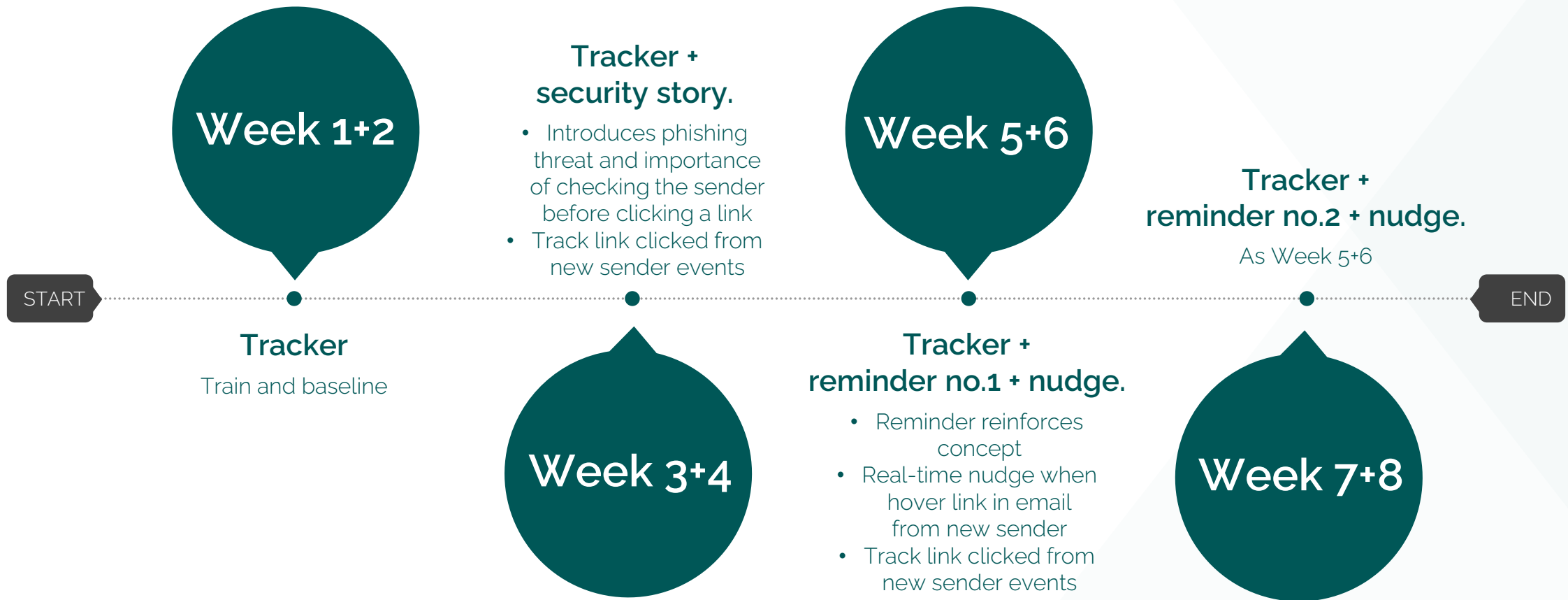
Punishment with training
Hard to contextualise

Behaviour change campaigns

- ▶ One behaviour (or group of related behaviours) at a time
- ▶ 2-3 months to see impact
- ▶ Coherent and consistent content
- ▶ Subtle and relatively infrequent
- ▶ Mix things up to avoid habituation



Example campaign: Check the sender





Focus on key learning points

Provide actionable security advice, with click-through for more information

Desktop 'overlay' format

Low friction but conspicuous.
Engaging paged content including Q&A

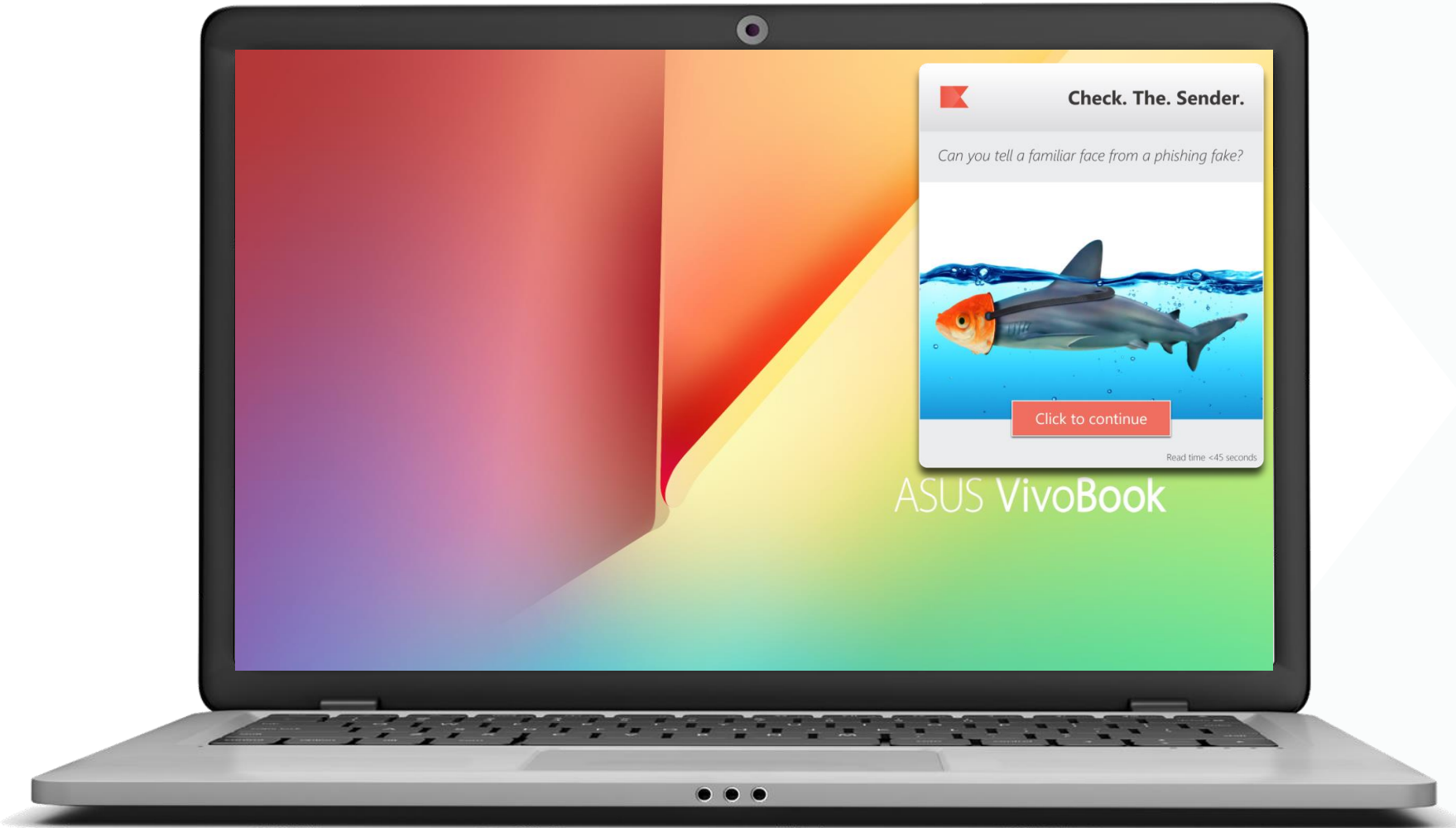
Engagement tracking

Measurement of dwell time and click-through statistics

Ease, timeliness, salience, availability

The image displays three overlapping desktop overlay cards, each titled "Check. The Sender." and featuring a red square icon with a white diagonal line in the top-left corner.

- Top Card:** Contains the text "Can you tell a familiar face from a phishing fake?" and an image of a shark with a goldfish's head. A red button labeled "Click to continue" is at the bottom.
- Middle Card:** Contains the text "Phishing emails often pretend to be something they're not. Typically, they will try to **trick you** into believing they're from someone you know or recognise." and an image of a person in a white mask. A red button labeled "Tell me more" is at the bottom.
- Bottom Card:** Contains the text "That's why it's crucial you Check The Sender before you act on an email. Do you recognise the name AND email address of the person who sent it to you?" and a screenshot of an email interface. The email header shows "Douglas Longhorn <douglaslonghorn@hotmail3.net>" and "To: John Roberts". A red circle highlights the sender's name and email address. A red button labeled "Next" is at the bottom.





Delivered in context

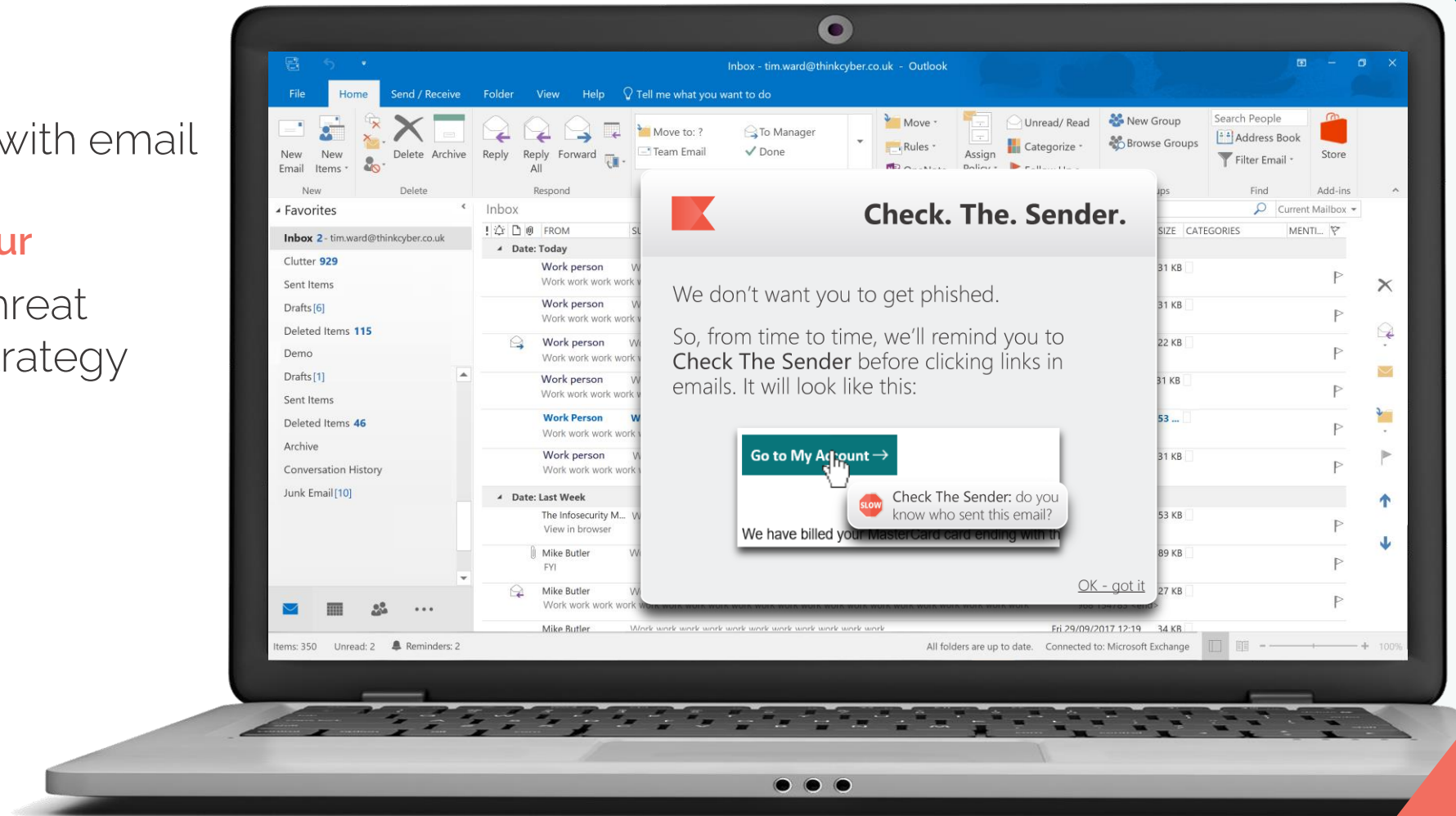
Reminder when interact with email

Promotes desired behaviour

Reminds people of the threat

Offers a simple coping strategy

Timely, salient, priming





Delivered in context

Nudge the user when they encounter a link in an email from an external sender

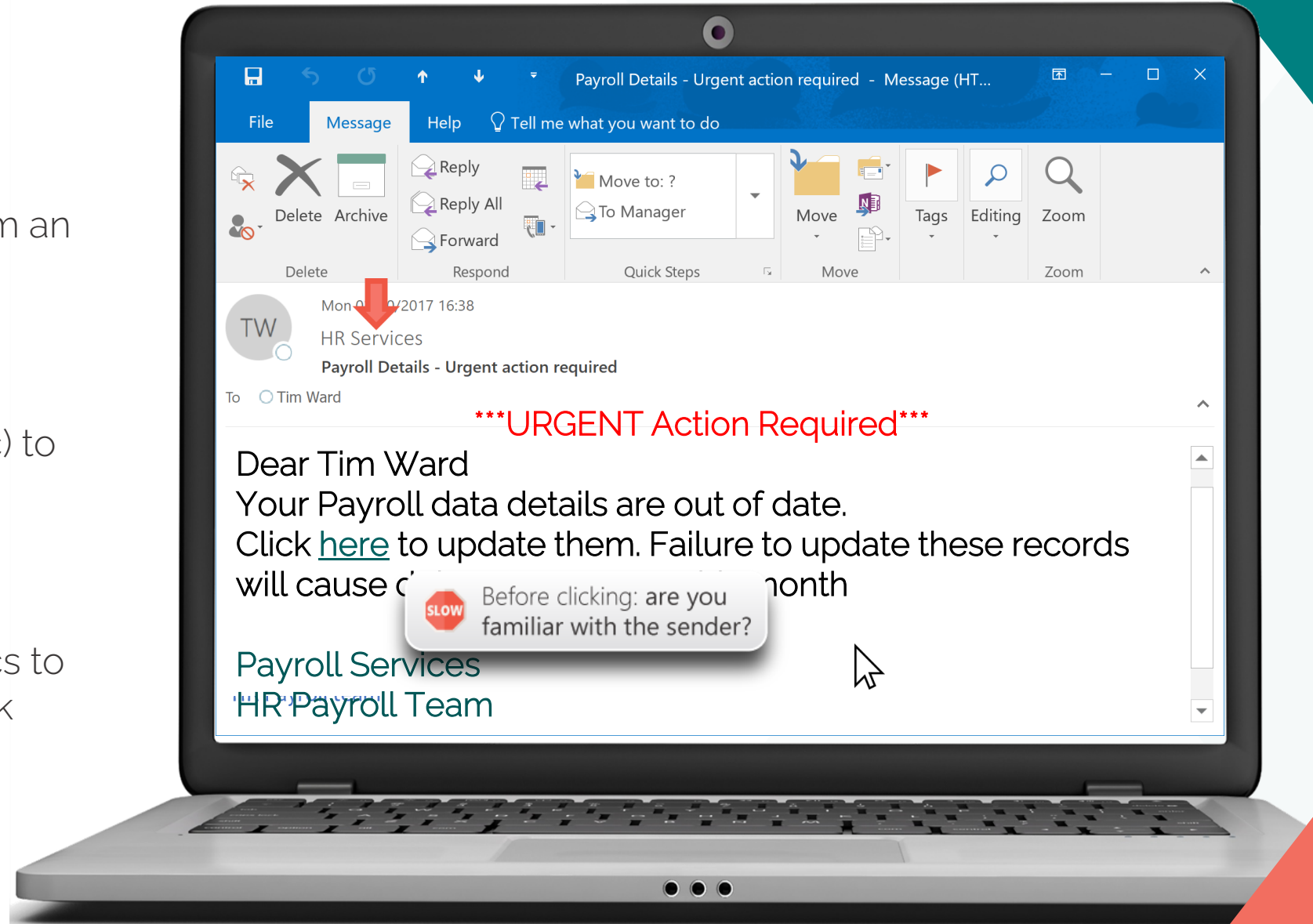
Promotes desired behaviour

Move from System 1 (automatic) to System 2 (deliberate) thinking

Engagement tracking

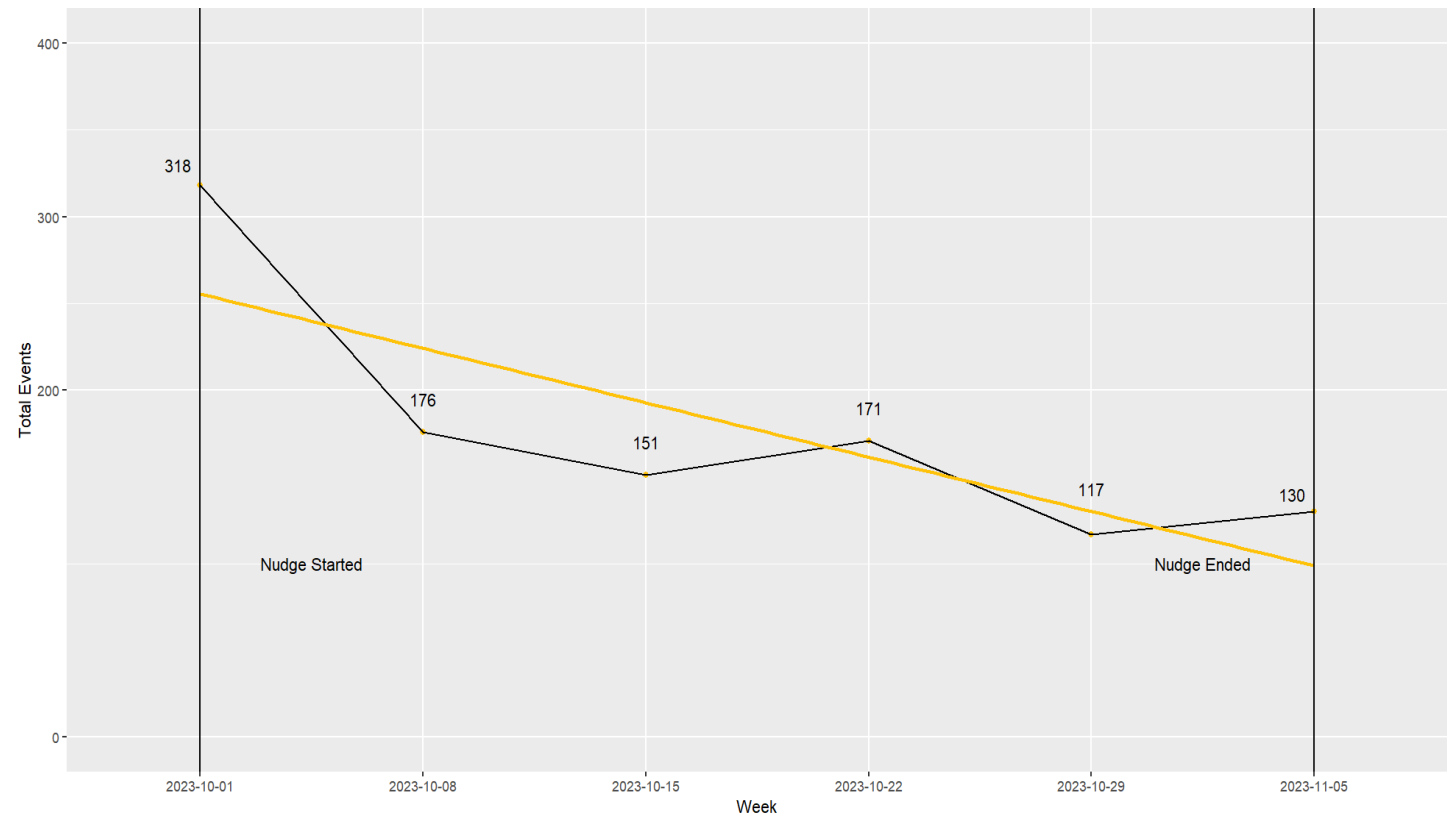
Measurement of nudge statistics to track trends Link hovered vs link clicked

“Disruptor” or “Spark”



Measurable behaviour change

- Shows how clicking link behaviour decreases over time after the nudge starts.
- Percentage decrease = 59.1%
- Portal data also shows you click through rate, dwell time, engagement and other metrics
- Demonstrate that your interventions are having a direct effect, and people like them!



Generations of security awareness

Gen 1 Bore?



eLearning
Videos



Gen 2 Trick?



Post
simulation
follow up



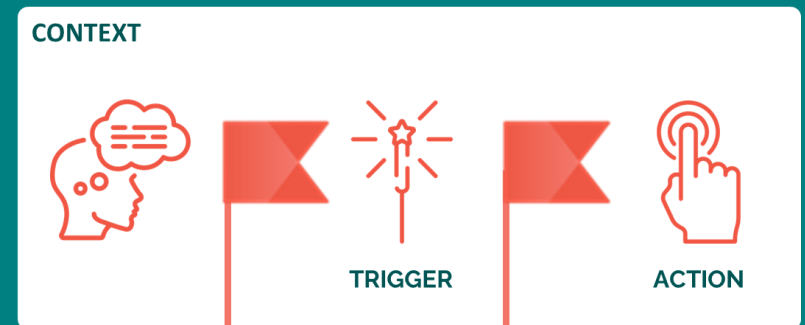
Gen 3 Nag?



Post
"incident"
follow up



Gen 4 Nudge!
Real-time security awareness



Prime before
the behaviour


Intervene
just-in-time

Baseline and
measure change



**SECRETS OF SECURE
REMOTE WORKING #1**

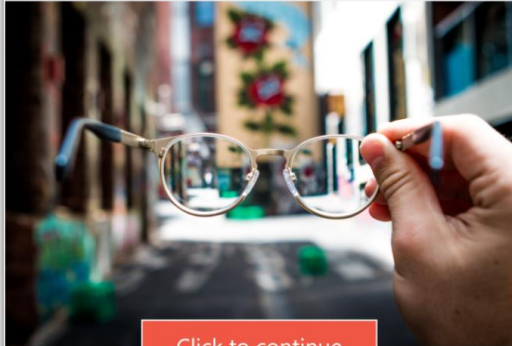
*...key steps to stay secure when working
from home...*



Click to continue →

Deepfake Deception

Can you always trust what you see and hear?




Click to continue

Read time <45 seconds

**THE SAME PASSWORD
FOR EVERYTHING?**

Passwords are the keys to our digital lives...



Click to continue →

In context nudges

Delivered in context

Nudge the user when they enter credentials AFTER clicking

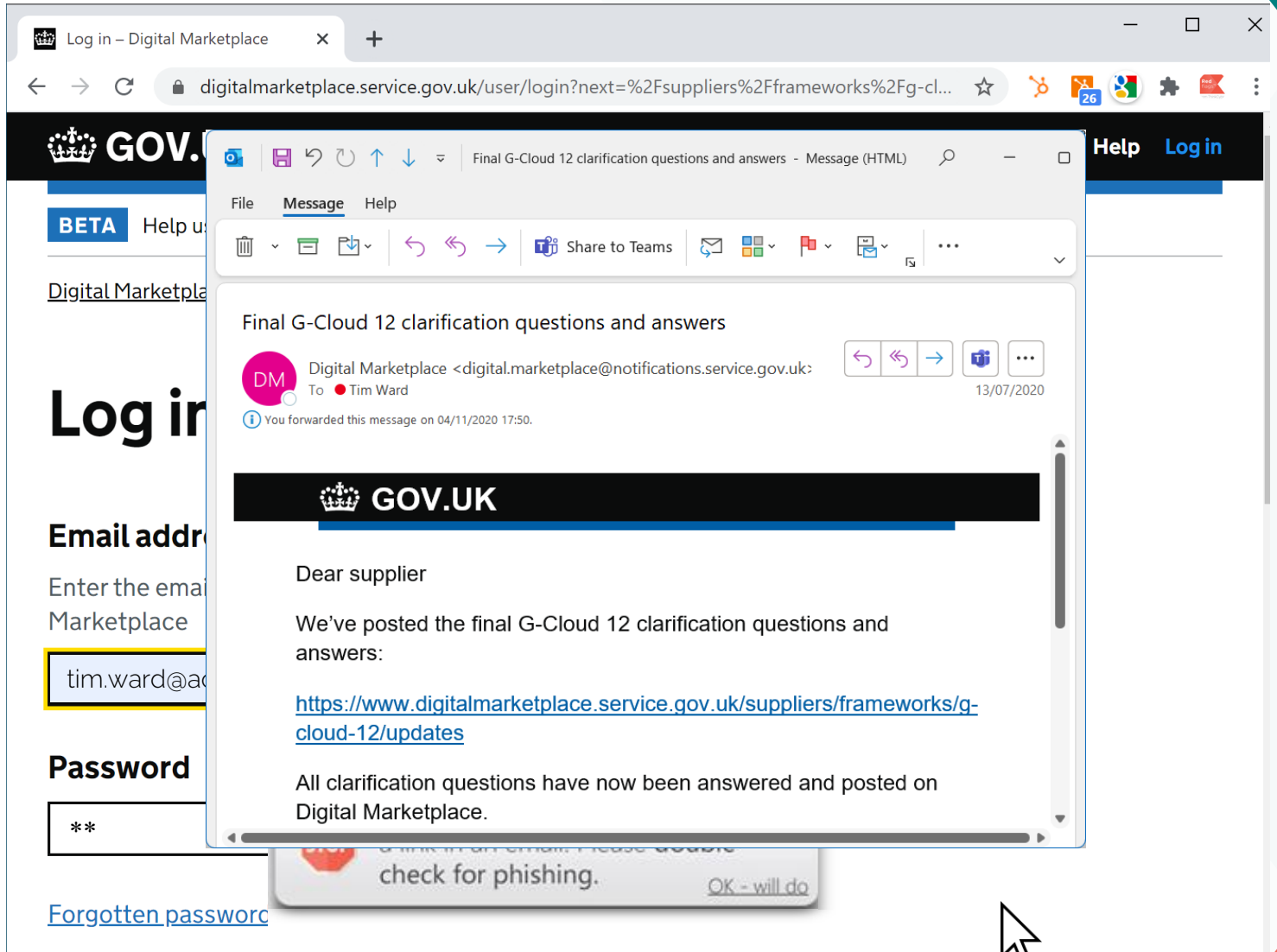
Promotes desired behaviour

Move from System 1 (automatic) to System 2 (deliberate) thinking

Engagement tracking

Measurement of nudge statistics to track trends

Timely, relevant



The screenshot shows a web browser window with the URL `digitalmarketplace.service.gov.uk/user/login?next=%2Fsuppliers%2Fframeworks%2Fg-cl...`. The page is the 'Log in' page for Digital Marketplace, featuring a 'BETA' badge and a 'Help' link. The login form includes fields for 'Email address' (containing `tim.ward@ac...`) and 'Password' (containing `**`). A 'Forgotten password' link is visible at the bottom. An email nudge window is overlaid on the page, titled 'Final G-Cloud 12 clarification questions and answers'. The nudge is from 'Digital Marketplace <digital.marketplace@notifications.service.gov.uk>' to 'Tim Ward' on 13/07/2020. It contains the text: 'Dear supplier', 'We've posted the final G-Cloud 12 clarification questions and answers:', a link to `https://www.digitalmarketplace.service.gov.uk/suppliers/frameworks/g-cloud-12/updates`, and 'All clarification questions have now been answered and posted on Digital Marketplace.' A 'check for phishing' warning is visible at the bottom of the nudge window.

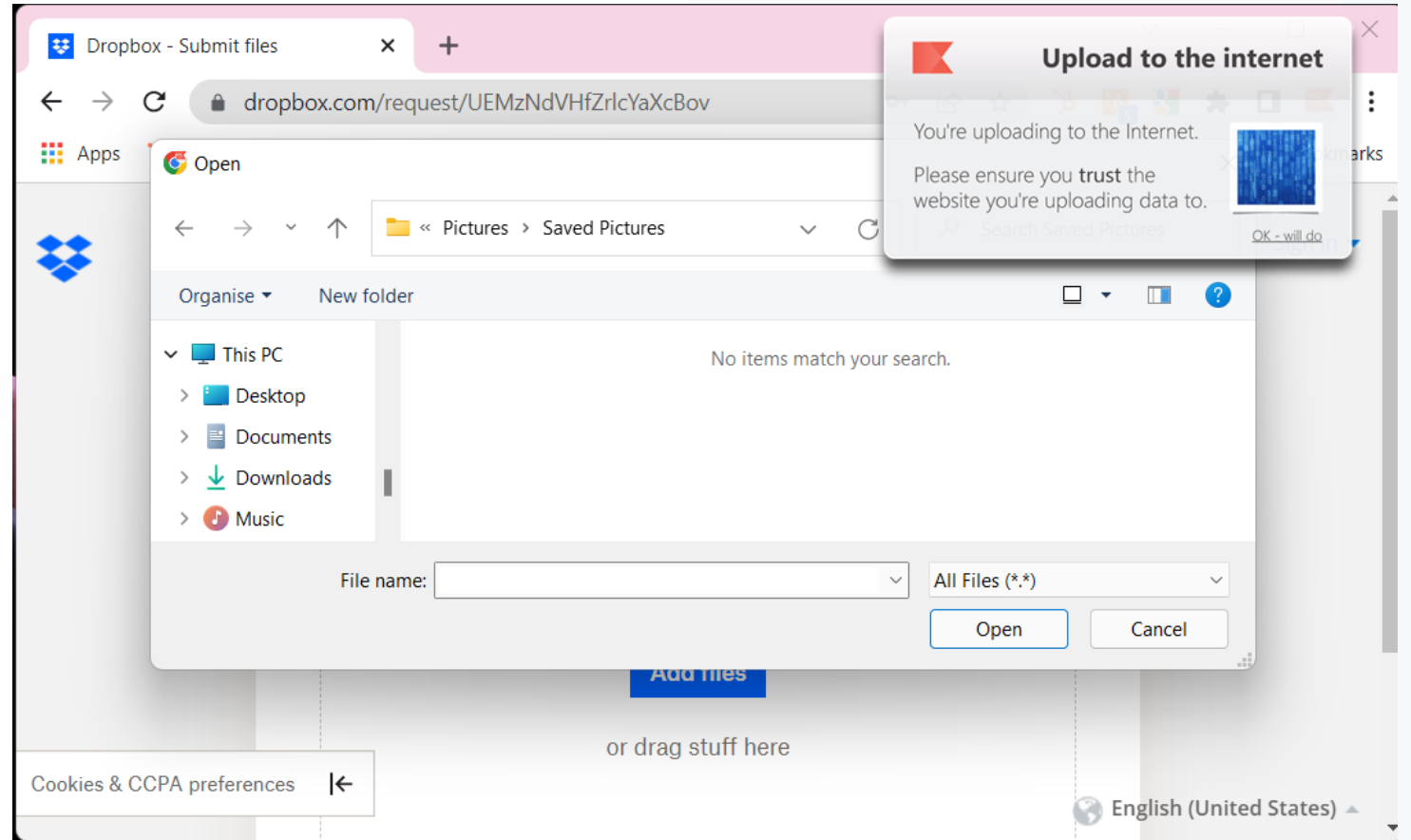


Delivered at point of risk

Behavioural prompts delivered at the right time

Multiple use cases

- ▶ Phishing: link click, inbound attachments, username into browser
- ▶ Data loss: web uploads / copy, outbound attachments, removable media
- ▶ Safe browsing: web downloads, social media, insecure wireless
- ▶ Policy: admin account use, screen locking, printing





Untitled - Message (HTML) Search

File Message Insert Draw Options Format Text Review Help

Send To Cc Bcc Subject

To ● Tim Ward; ● Tim Ward; ● Tim Ward; ● Tim Ward; ● Tim Ward; ● Tim Ward; ● Tim Ward; ● Tim Ward;

Consider using Bcc

This email has a large number of recipient addresses in the To and Cc fields. Please consider using Bcc instead.

(If the Bcc field isn't present, you can enable it via the Options menu)

OK - will do

Red flags™
from ThinkCyber

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techUK Cyber Innovators of the year 2021



Log in - Digital Marketplace

digitalmarketplace.service.gov.uk/user/login?next=%2Fsuppliers%2Fframeworks%2Fg-cl...

GOV.UK Digital Marketplace [Guidance](#) [Help](#) [Log in](#)

BETA Help us improve the Digital Marketplace - [send your feedback](#)


[Digital Marketplace](#) > Login

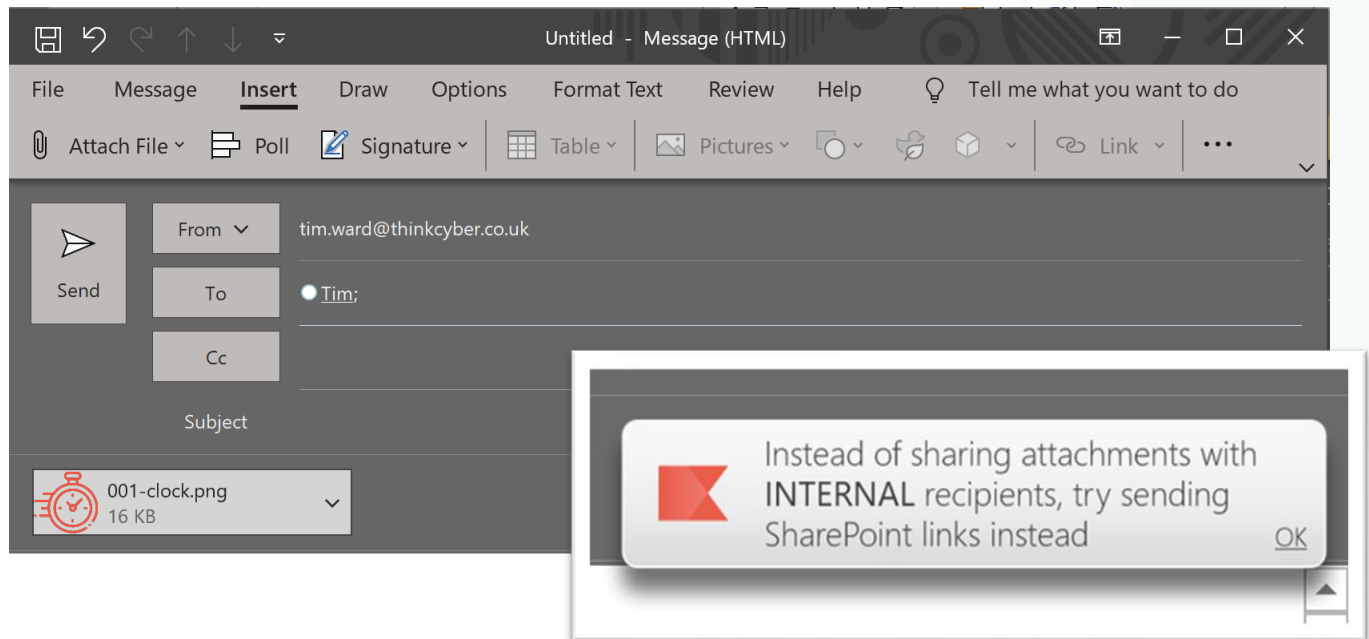
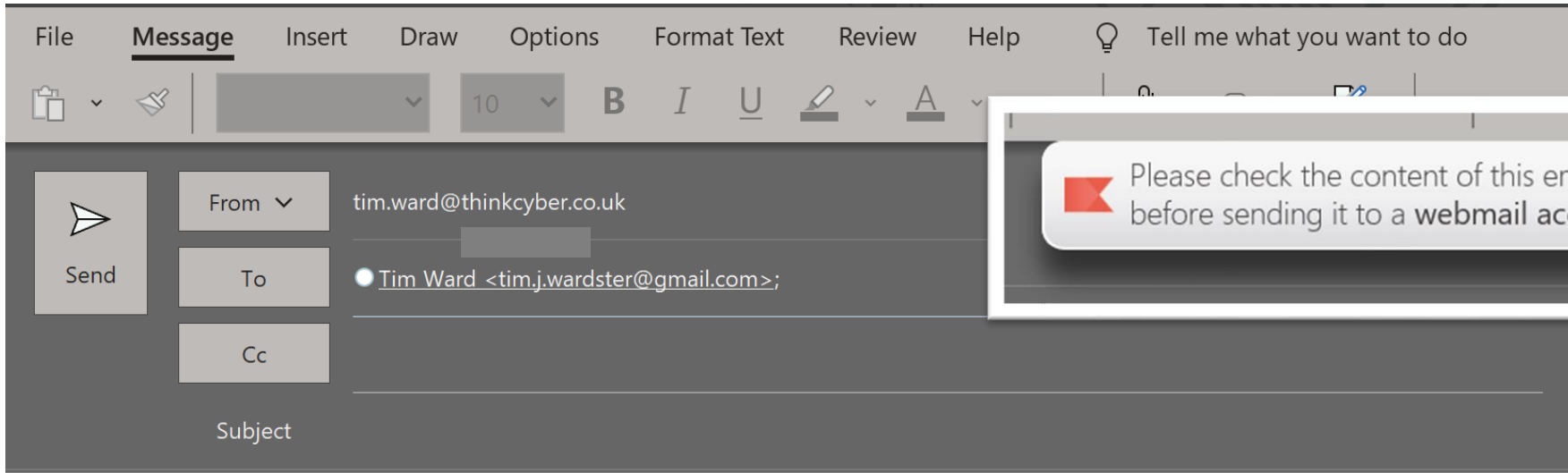
Log in to the Digital Marketplace

Email address

Enter the email address you used to register with the Digital Marketplace

Password

 You've entered your credentials. Do you trust this website?





The screenshot shows a browser window with the following elements:

- Browser Tab:** ChatGPT
- Address Bar:** chat.openai.com/auth/login
- Page Content:**
 - Header: ChatGPT ●
 - Main Text: Suggest fun activities for a team ●
 - Call to Action: Get started
 - Buttons: Log in, Sign up
 - Footer: OpenAI logo, Terms of use | Privacy policy
- Notification:** A grey tooltip with a red square icon and the text "Please don't copy internal company data to this website" is positioned over the main text area.

Final observations

- ▶ People don't (always) make rational decisions!
- ▶ Nudging is about "choice architecture"
- ▶ EAST / MINDSPACE / BJ Fogg offer simple frameworks
- ▶ Timeliness and context are fundamental
- ▶ Real-time interventions should be about supporting, not nagging!
- ▶ Make it measurable

Taking "nudge" to its logical conclusion...

Real-time nudges allow you to offer a tap on the shoulder
and measurably drive behaviour change



Don't miss your
chance to ask
questions!

And come and say Hello at booth A27

Tim Ward // CEO & Co-founder,
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