Thoughts on prevention of cybercrime and online fraud

What can we learn from medical sciences.

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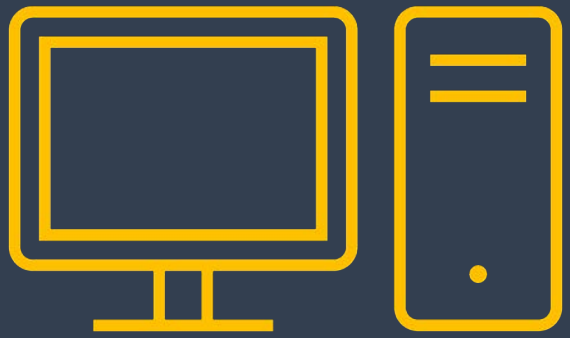

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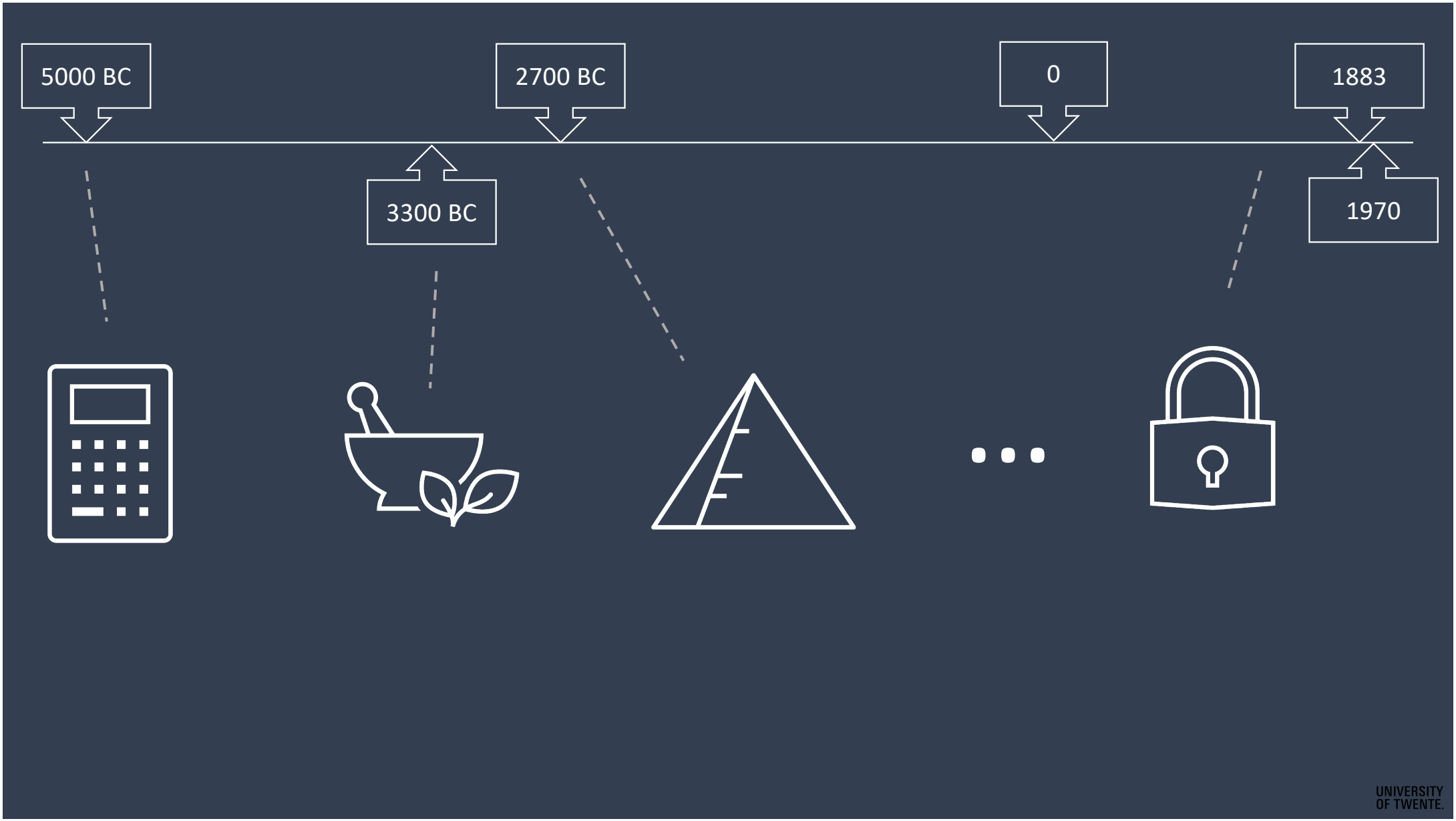
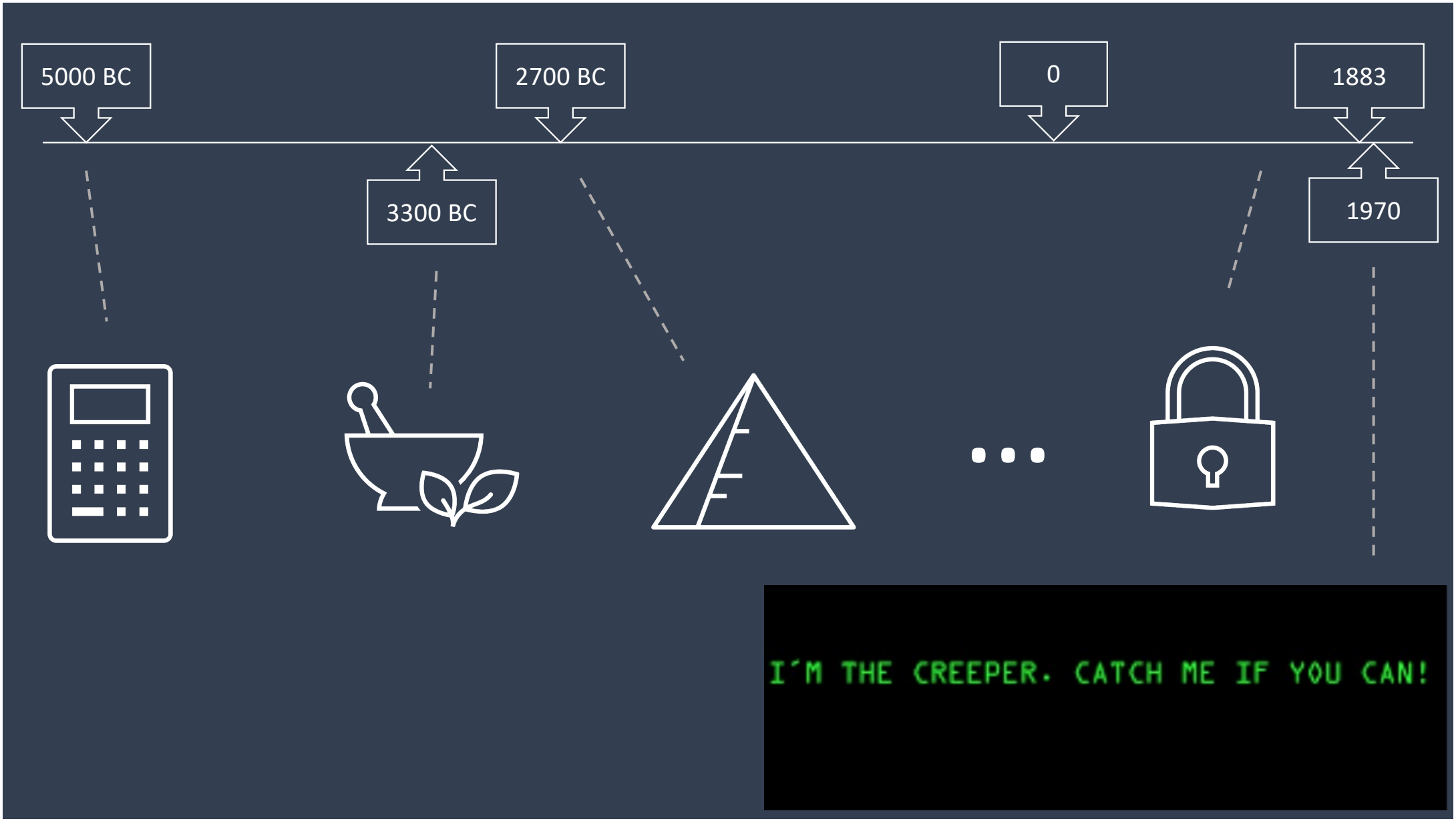

5000 BC
3300 BC
2700 BC
0
1883
1970

Wat gebeurde er in 1970 op deze tijdlijn?

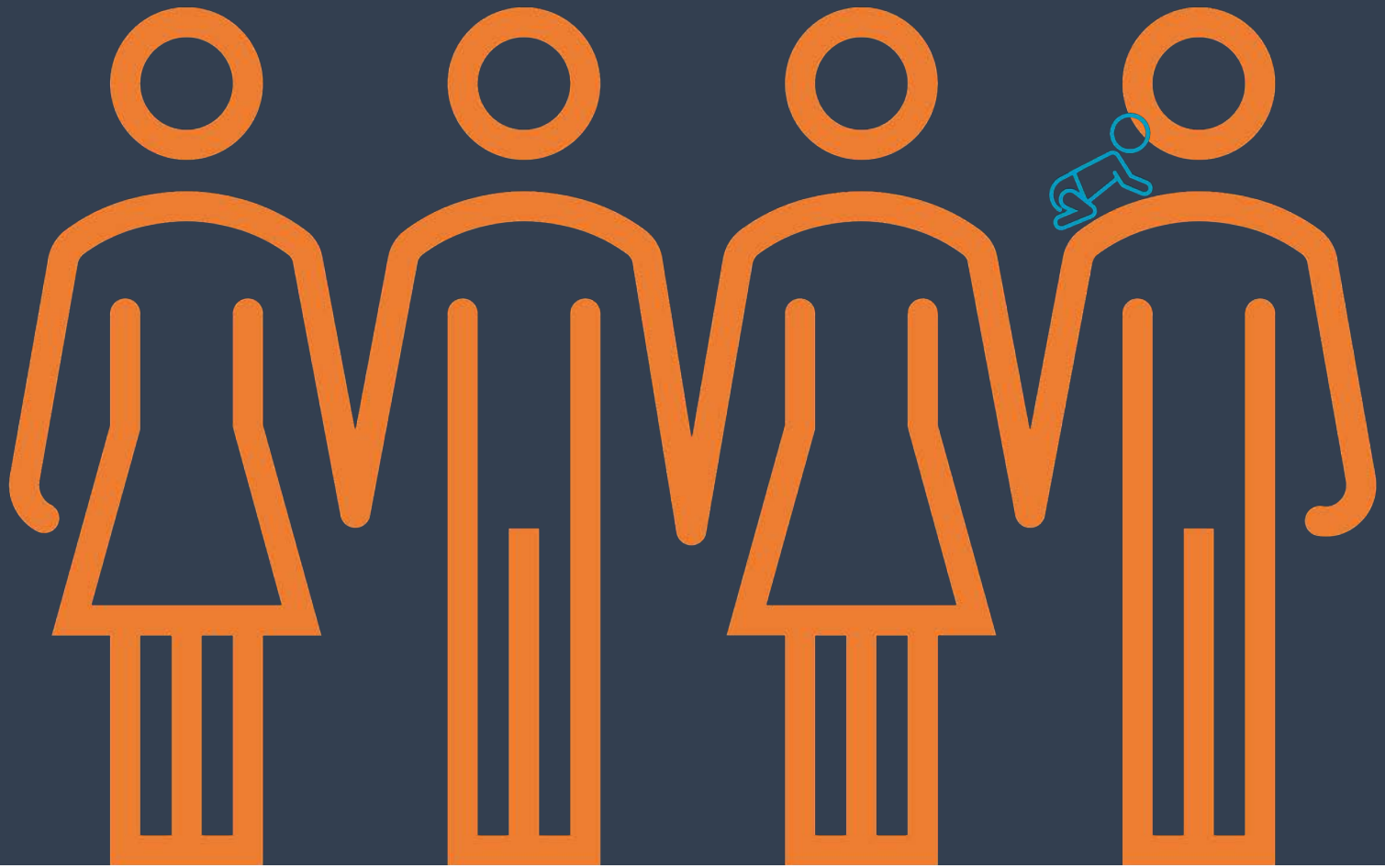
- **Eerste computer virus**
- **Eerste internet worm**
- **Eerste ransomware aanval**

Wat gebeurde er in 1970 op deze tijdlijn?

- Eerste computer virus (1986 – Brain - Floppy for IBM PC)
- **Eerste internet worm**
- Eerste ransomware aanval - (1989 - $378 ransom)


5000 BC
2700 BC
0
1883
3300 BC
1970
I'M THE CREEPER. CATCH ME IF YOU CAN!

Prevention



Preventions

Tertiary (Treatment)	**Manage disease after being diagnosed** Countermeasures to reduce further damage (*e.g. chemotherapy*)
Secondary (Screening)	**Early detection and identify disease** Treatment of diseases in early stage (*e.g. Guthry test detects 20 conditions*)
Primary (Prevention)	**Before disease occurs** Changing or elimintaing risky behaviours (*e.g. healthy food prevents obesity*)

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Preventions

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Screening for susceptibility to cyber crime and online fraud?

- 10 criteria from Wilson, J. M., & Jungner, Y. G. (1968)
- 5-point scale
  - ++ **Strongly Present**
  - \+ **Present**
  - +/- **Neutral**
  - \- **Not Present**
  - -- **Strongly Not Present**

Case finding

Whom to treat

Test

History

Treatment

Facilities

Acceptable

Cost

Latent stage

Problem

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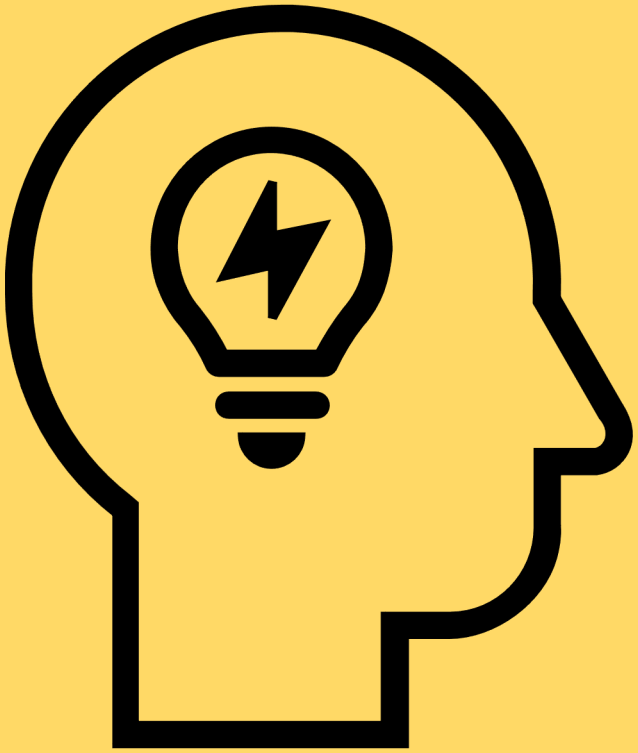
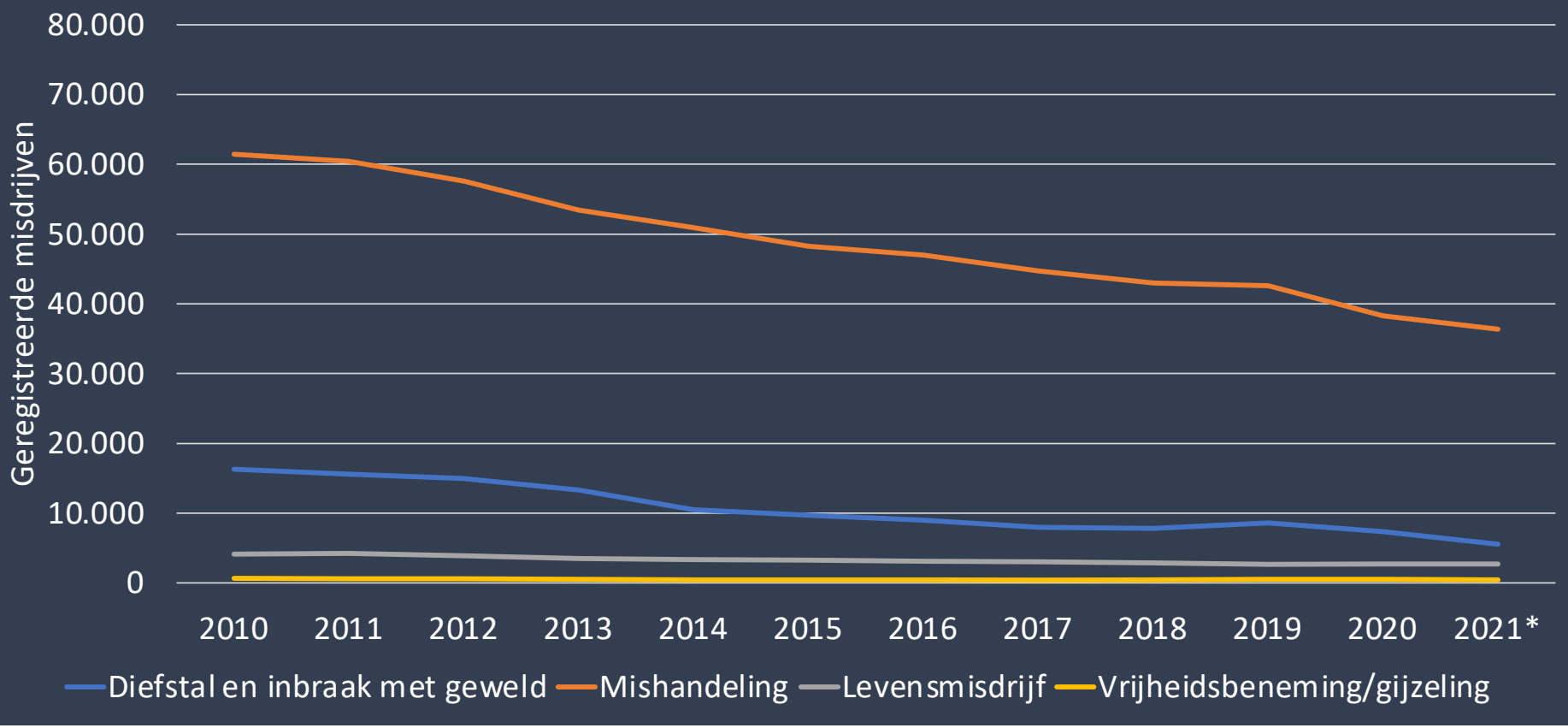


Problem

1. Problem – Decrease traditional crime



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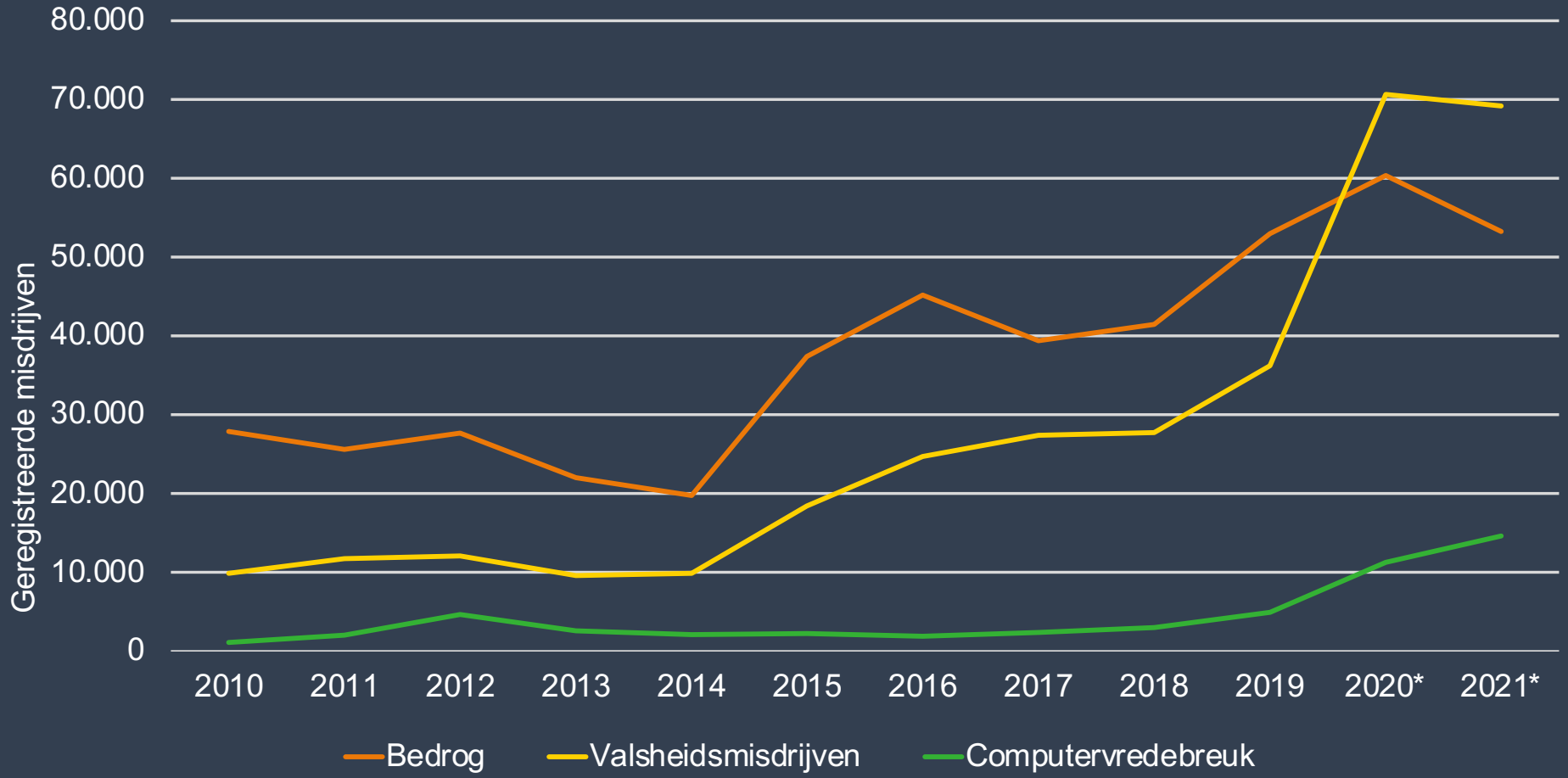
1. Problem – Increase online crime



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Welk percentage Nederlanders van 16+ jaar werd in 2020 slachtoffer van fraude?

9,4%

15,7%

21,1%

Welk percentage Nederlanders van 16+ jaar werd in 2020 slachtoffer van fraude?

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15,7%

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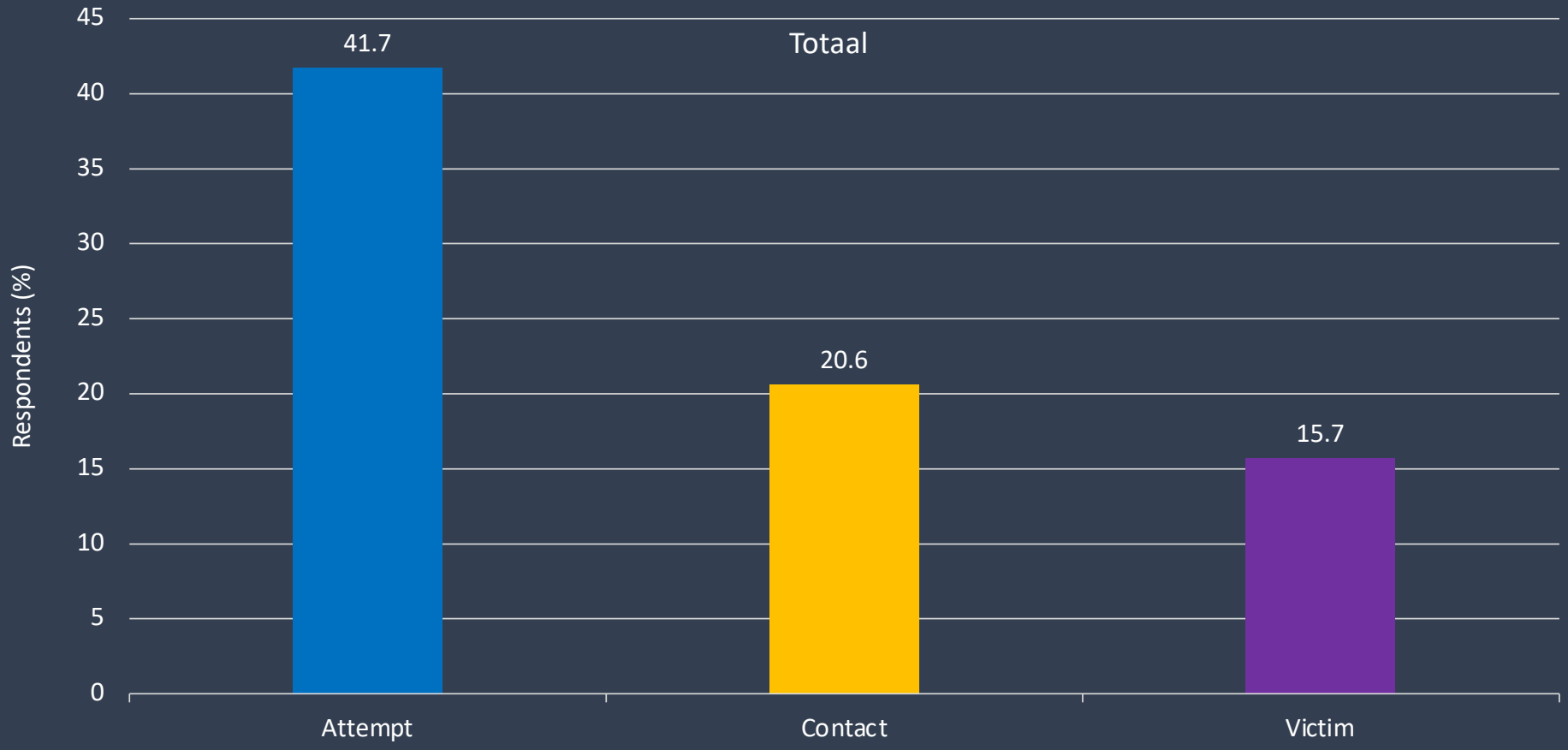
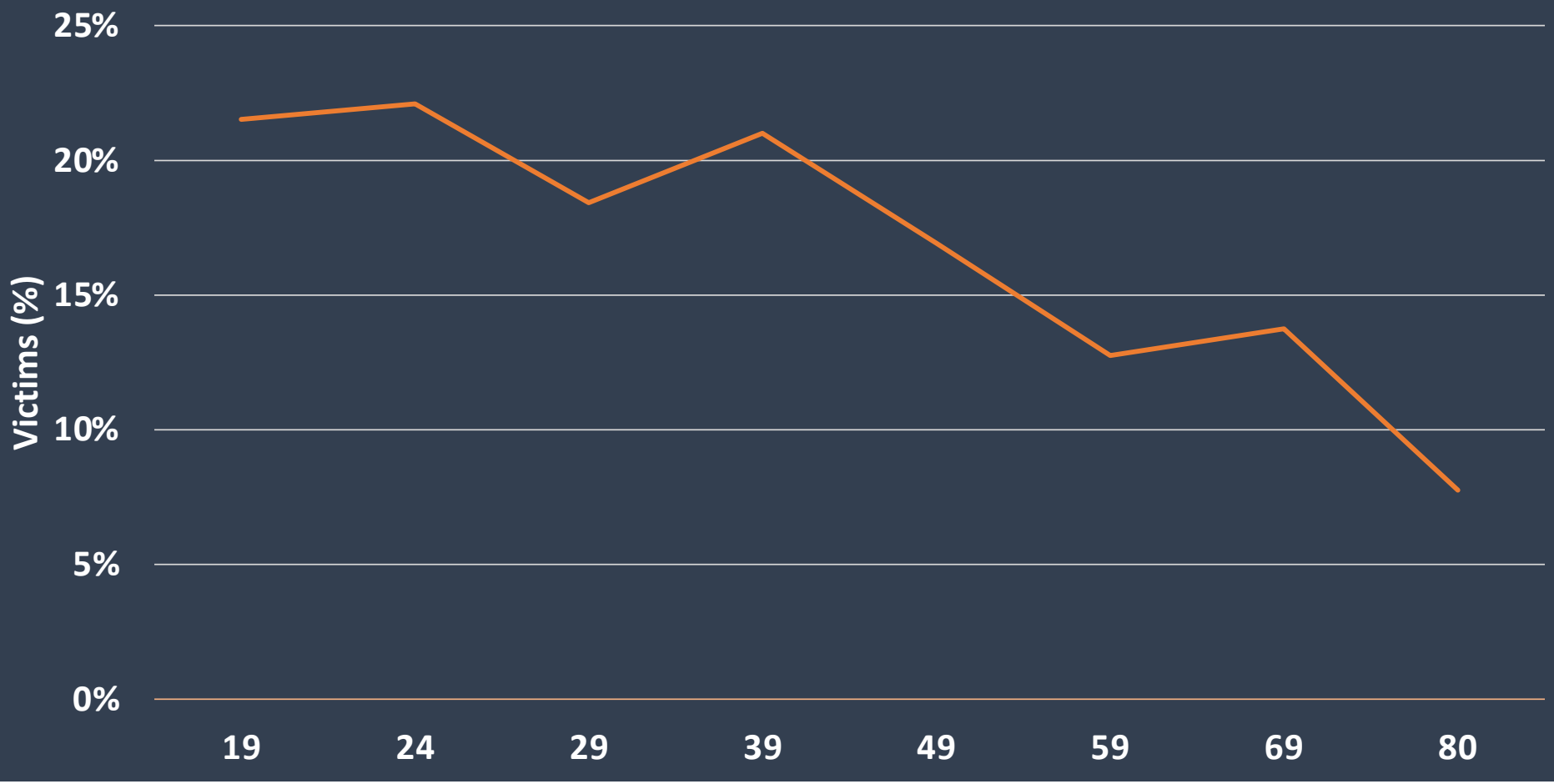
1. Problem – Attempts, contact and victims

~ 1 in 6 were victimized: 2.3 million persons (16+ NL)



1. Problem – Fraud Victimisation by age (avg: 15.7%)



1. Problem – Email phishing

27%

228.473 participants

50 studies

20%

34.884 participants

26 studies

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Problem

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Case finding

Whom to treat

Test

History

Treatment

Facilities

Acceptable

Cost

Latent stage

Problem

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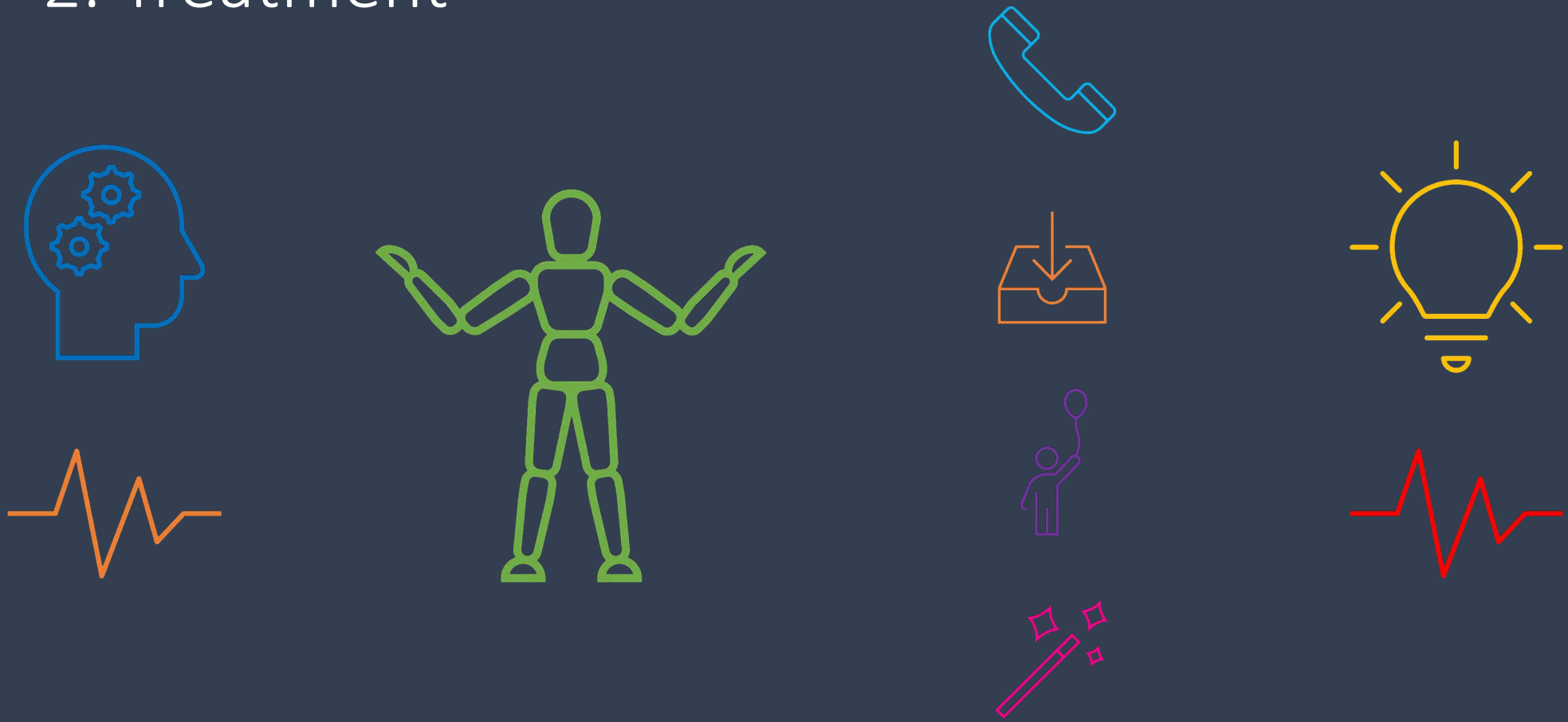
Treatment

2. Treatment



2. Treatment – Analysis of interventions

Hoeveel van de wetenschappelijk getestte interventies die social engineering tegen gaan is niet effectief?

- **50% (1 in 2)**
- **33% (1 in 3)**
- **25% (1 in 4)**

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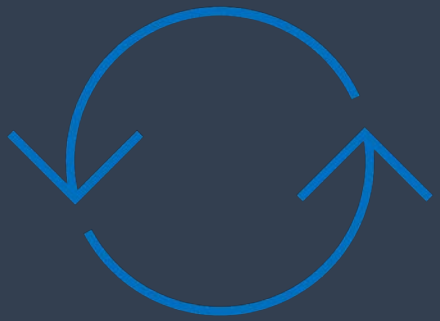
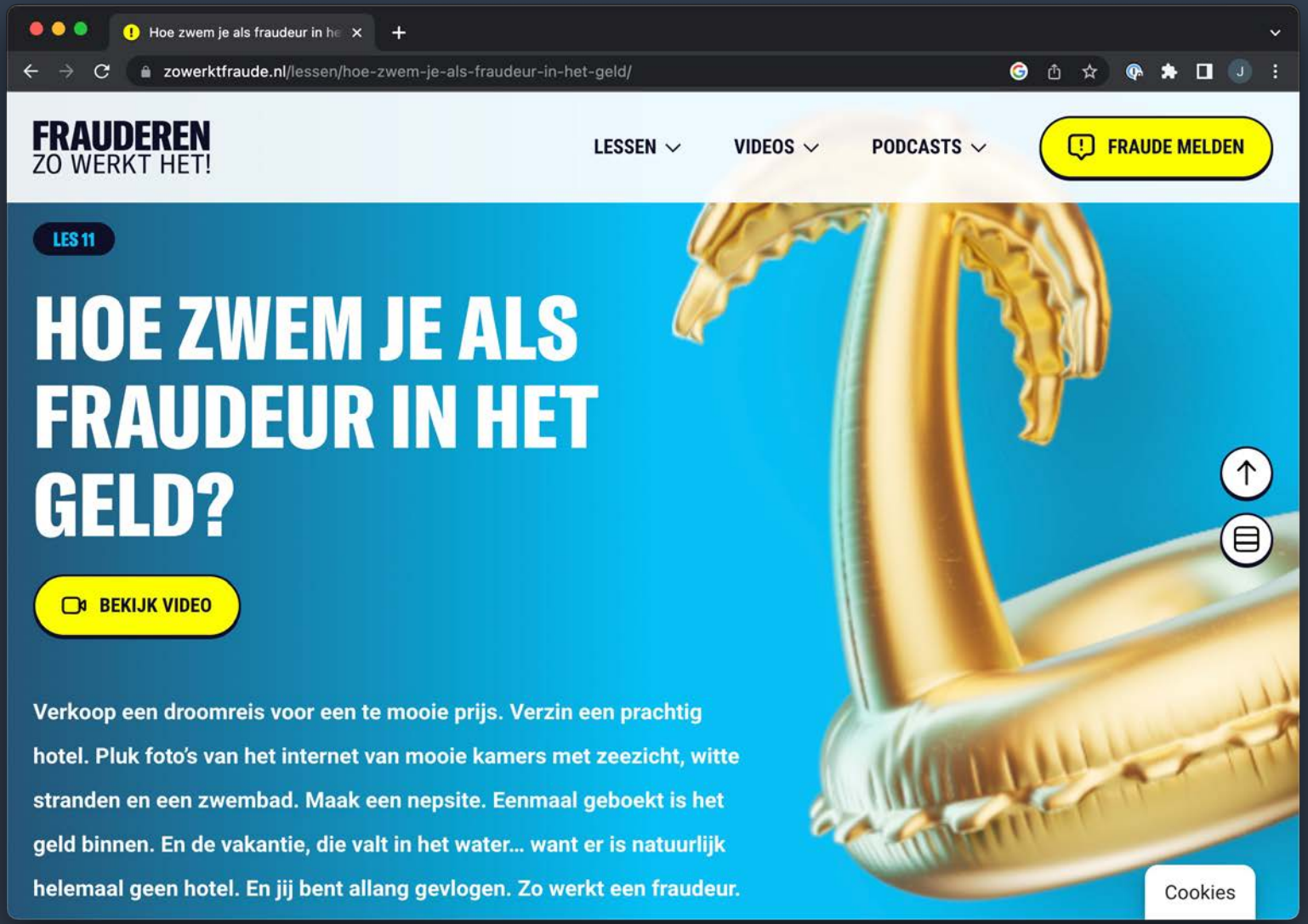
2. Treatment - Interventions are effective

2. Treatment – Decay can be countered




Hoe zwem je als fraudeur in he
zowerktfraude.nl/lessen/hoe-zwem-je-als-fraudeur-in-het-geld/
FRAUDEREN
ZO WERKT HET!
LESSEN
VIDEOS
PODCASTS
FRAUDE MELDEN
LES 11
HOE ZWEM JE ALS FRAUDEUR IN HET GELD?
BEKIJK VIDEO
Verkoop een droomreis voor een te mooie prijs. Verzin een prachtig hotel. Pluk foto's van het internet van mooie kamers met zeezicht, witte stranden en een zwembad. Maak een nepsite. Eenmaal geboekt is het geld binnen. En de vakantie, die valt in het water... want er is natuurlijk helemaal geen hotel. En jij bent allang gevlogen. Zo werkt een fraudeur.
Cookies

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Case finding

Whom to treat

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Latent stage

Problem

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Facilities

3. Facilities

Facilities

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Case finding

Whom to treat

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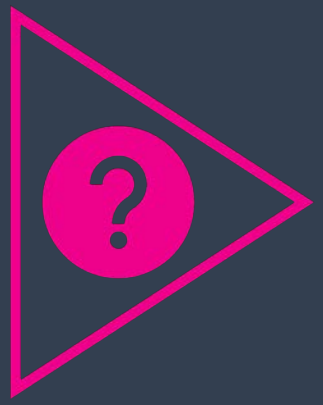
Latent stage

4. Latent stage



The Telegraph

Children as young as six preyed on by scammers

More than a thousand youngsters are being targeted by online fraudsters every month

By Rachel Mortimer
31 August 2022 • 6:00am

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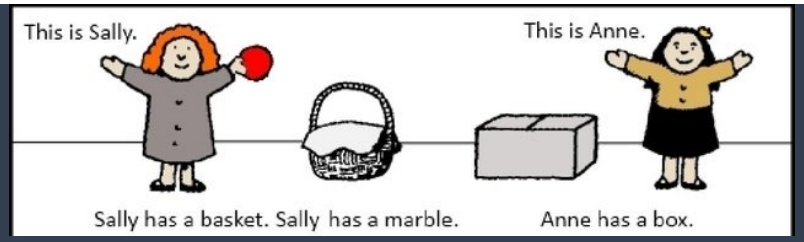
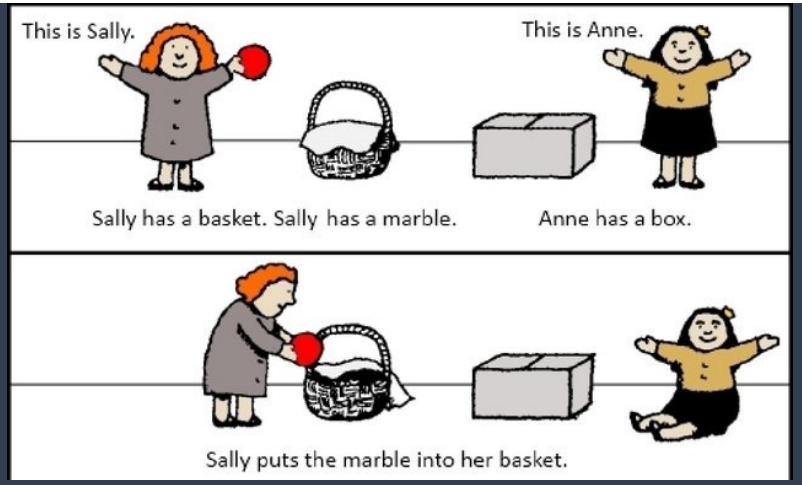
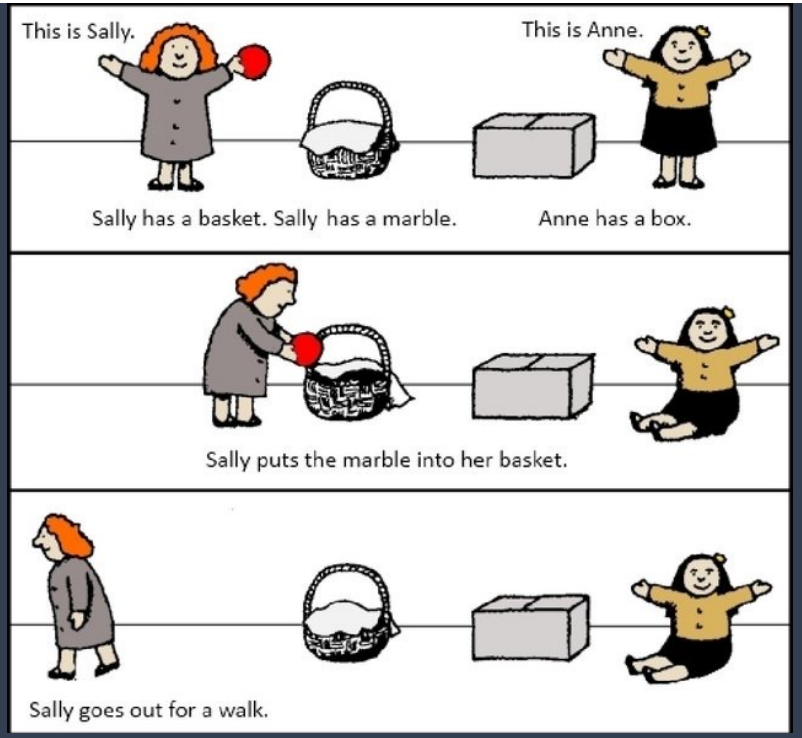
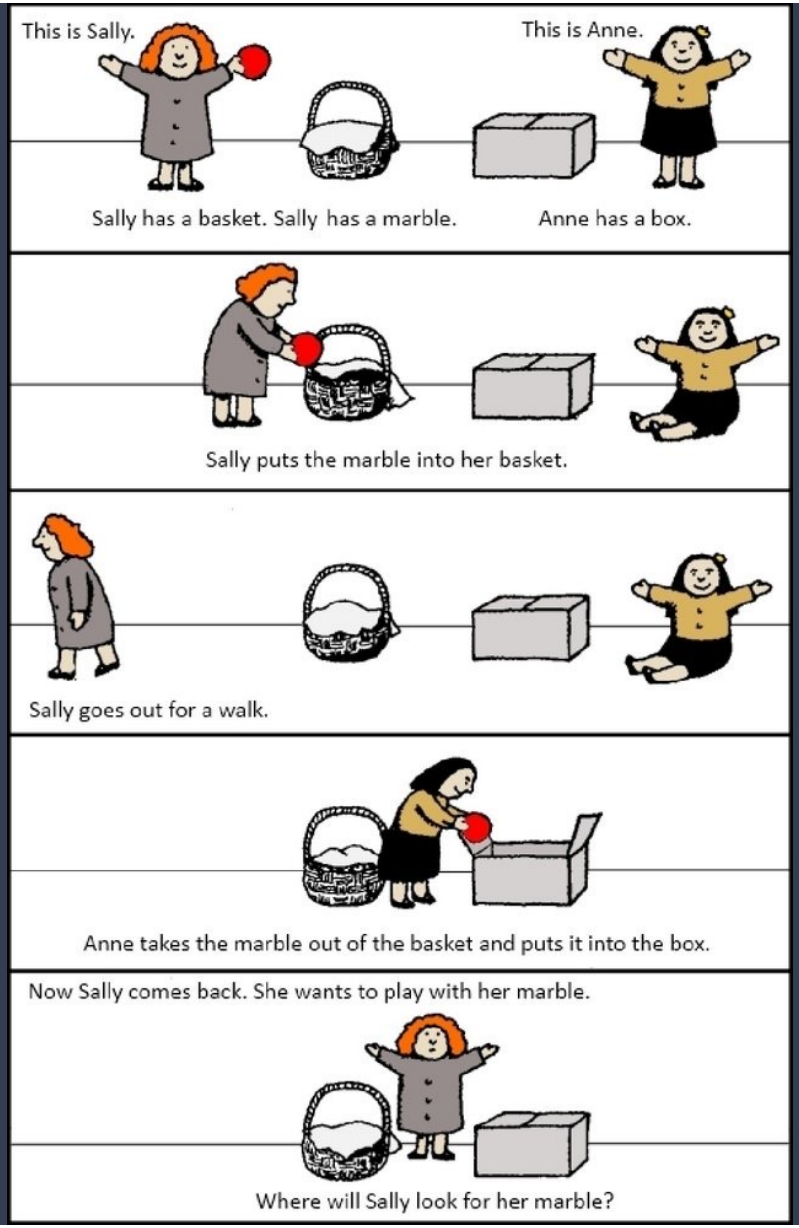
4. Latent stage


This is Sally.
This is Anne.
Sally has a basket. Sally has a marble.
Anne has a box.


This is Sally.
This is Anne.
Sally has a basket. Sally has a marble.
Anne has a box.
Sally puts the marble into her basket.


This is Sally.
This is Anne.
Sally has a basket. Sally has a marble.
Anne has a box.
Sally puts the marble into her basket.
Sally goes out for a walk.

This is Sally.
This is Anne.
Sally has a basket. Sally has a marble.
Anne has a box.
Sally puts the marble into her basket.
Sally goes out for a walk.
Anne takes the marble out of the basket and puts it into the box.



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Waar zou een gezonde 3,5 jaar oud kind zeggen dat Sally haar knikker is?

Mand

Doos

Geen idee

Waar zou een gezonde 3,5 jaar oud kind zeggen dat Sally haar knikker is?

- Mand
- Doos
- Geen idee

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Latent stage

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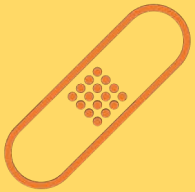
Case finding

Whom to treat

Test

History

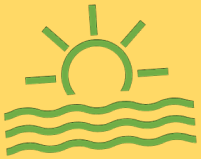


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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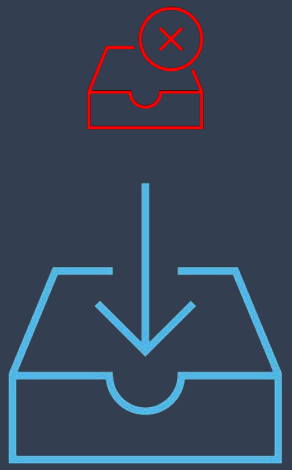
Test

5. Test - How to study phishing?



Test

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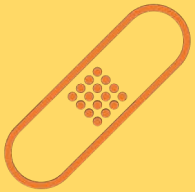
Case finding

Whom to treat

Test

History

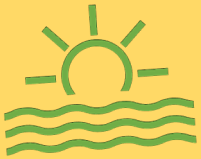


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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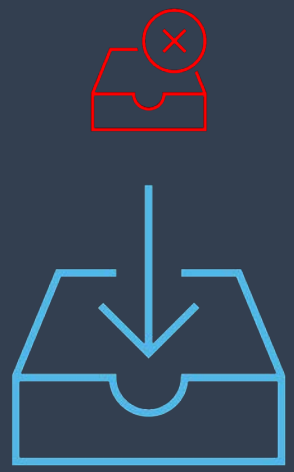
Acceptable

6. Acceptable



Acceptable

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Case finding

Whom to treat

Test

History

Treatment

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Problem

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History

7. History – Scenario 1

Hoe gaat de aanvaller het doelwit overtuigen?

Argumenten

Huilende baby

Slachtoffer spelen

Hoe gaat de aanvaller het doelwit overtuigen?

- **Argumenten**
- **Huilende baby**
- **Slachtoffer spelen**

7. History – Scenario 1

https://www.youtube.com/watch?feature=oembed&v=lc7scxvKQOo

7. History – Scenario 2

You have been travelling and just checked into your hotel room.

As you walk into your room and set your bag down, your bed side phone rings.

A nice girl introduces herself as Rebecca from the hotel front desk.

She explains that there has been an issue during check-in, and she needs to re-confirm your credit card information.

Assuming she is calling from the hotel front desk, you provide your credit card information.

She then inform you everything has been resolved and to enjoy your stay.

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Deception through impersonation

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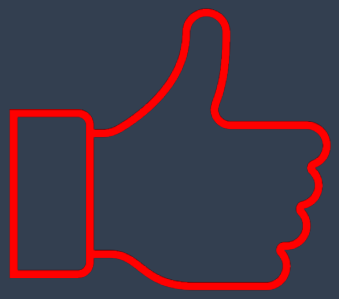
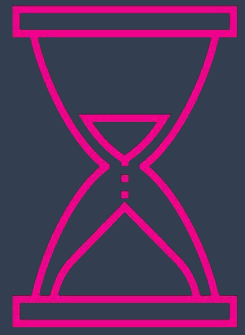
Deception through impersonation
Persuasion principles

Persuasion principles





7. History – Scenario 2

You have been travelling and just checked into your hotel room.

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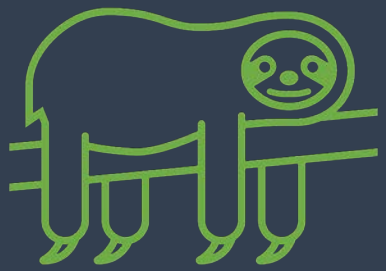
Deception through impersonation
Persuasion principles
Cognitive bias

7. History – Scenario 2



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Assuming she is calling from the hotel front desk, **you provide your credit card information**.

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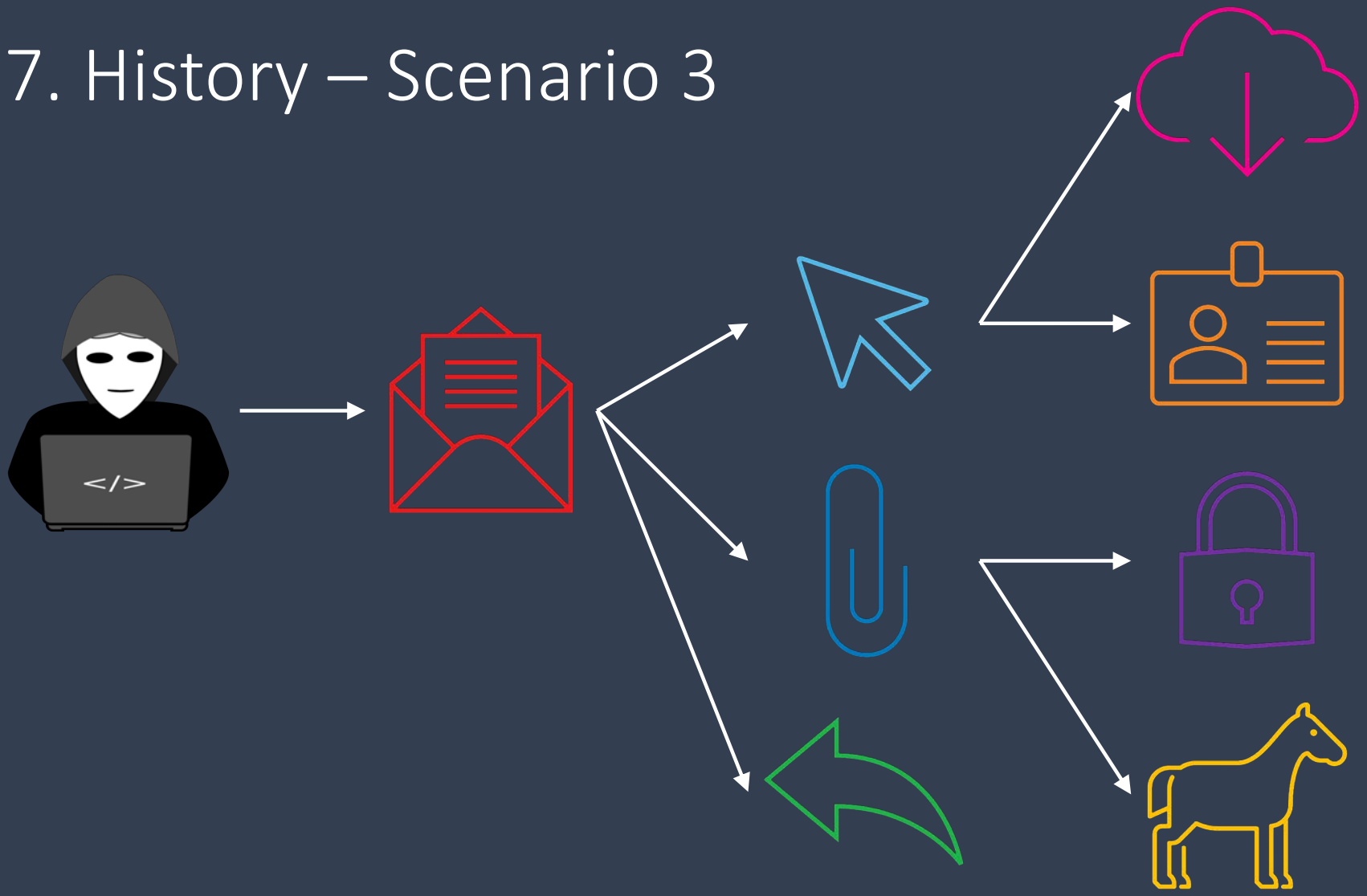
Deception through impersonation
Persuasion principles
Cognitive bias
Unaware of appropriate defence

7. History – Scenario 2

7. History – Scenario 3



7. History – Scenario 3 - Phishing cues

7. History – Outcomes

History

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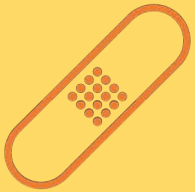
Case finding

Whom to treat

Test

History

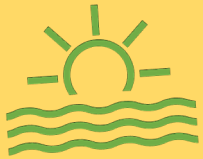


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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Whom to treat

Wie is kwetsbaar voor fraude en moet worden behandeld?

- **Jonge vrouwen**
- **Oude mannen**
- **Hangt er van af**

Wie is kwetsbaar voor fraude en moet worden behandeld?

- **Jonge vrouwen**
- **Oude mannen**
- **Hangt er van af**

8. Whom to treat

8. Whom to treat - Phishing

No difference

70.286 participants

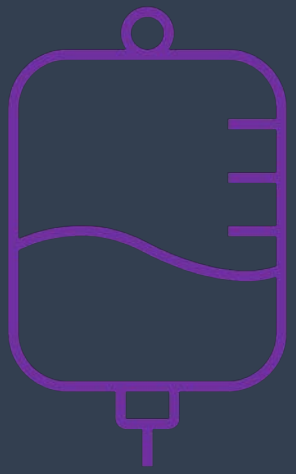
14 studies

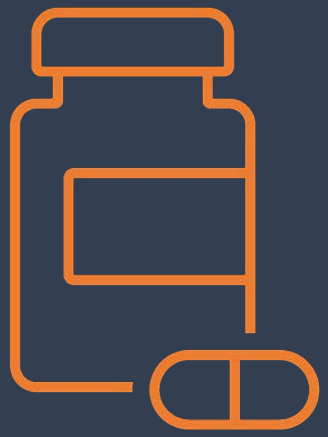
No difference

5.493 participants

7 studies

8. Whom to treat





Whom to treat

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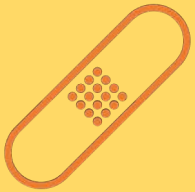
Case finding

Whom to treat

Test

History

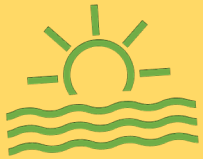


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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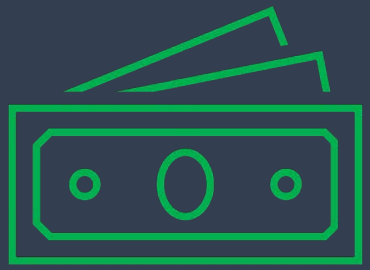
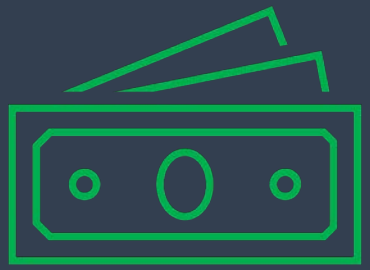
Cost

9. Cost





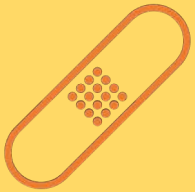
Cost

Case finding

Whom to treat

Test

History

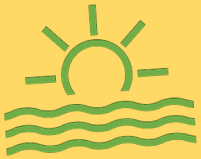


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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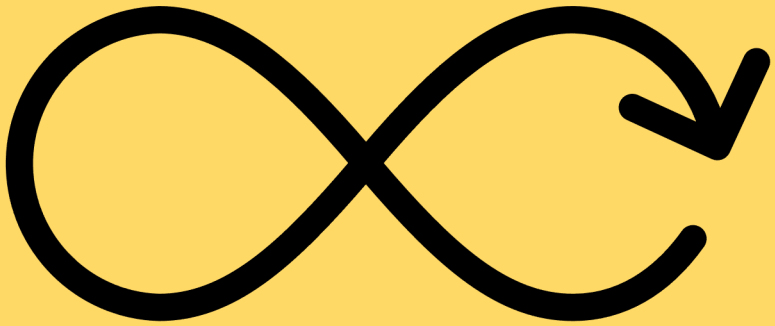
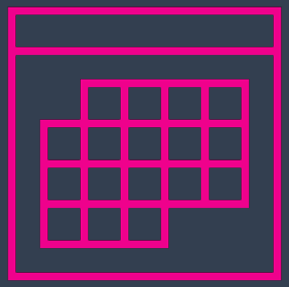
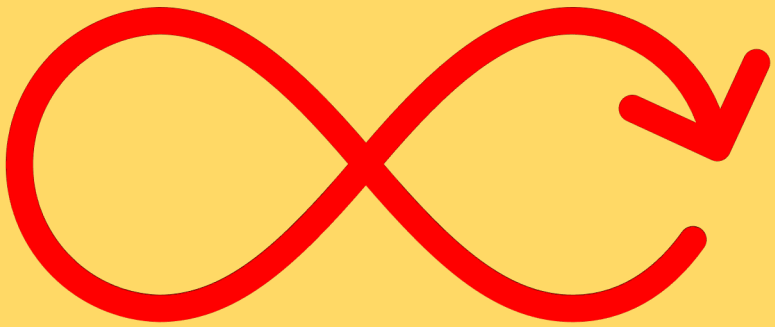


Case finding

10. Case finding





Case finding

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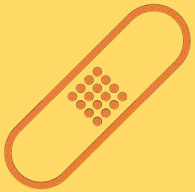
Case finding

Whom to treat

Test

History

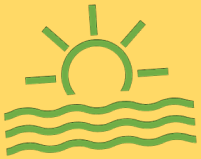


Treatment

Facilities

Acceptable

Cost



Latent stage

Problem

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Summary

- 1. Problem ++
- 4. Latent stage +
- 7. History +
- 9. Cost +

- 2. Treatment +/-
- 5. Test +/-
- 6. Acceptable +/-
- 3. Facilities -
- 8. Whom to treat -
- 10. Case finding -

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Omniscient

Winner - Congratulations

Approximation question

Approximation question

Tijdens de ransomware-aanval op de Universiteit Maastricht ontvingen 7 medewerkers een phishingmail. Hoeveel tijd zat er tussen het klikken op de link en de hackers die actief zijn in hun systeem?

Approximation question

- 15-October-2019 – 14:06: phishing mail was received;
- 15-October-2019 – 14:55: the linked excel file was opened;
- 16-October-2019 – 19:35: first manual activities of the offender on the target network.

- 1720 minuten
- 28 uur, 40 minuten
- 1 dag, 4 uur, 40 minuten

Winner - Congratulations