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Cyber-Attacks: Social Engineering and Phishing

Social Engineering Modules and Manipulation

Safeguarding against Phishing in the age of 4th Industrial Revolution
This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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Safeguarding your digital future

Main Goals

- Explain influencing and manipulative techniques and learn to recognize them
- Explain social engineering and its psychological aspects.
- Review how decision-making is affected by emotions, workload, and our entire environment.
- Explain influencing and manipulative techniques and learn to recognize them

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Contents

- Human factor
- Social engineering
- Decision making process
- Psychological aspects of Social Engineering
    - Emotions
    - Weapons of Influence
- Reverse Social Engineering
- Tips to Prevent Social Engineering

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Human Factor

$ 400 BIL Estimated cost of cyber attacks on organisations globally

Organizations rarely invest in and plan for the human component of cybersecurity until after a breach occurred. For major breaches, this can cost the organization millions of dollars.

35 % of data breaches were attributed to human error or negligence

Types of cyber threats and methods of prevention change each day. Instilling a culture of cyber interest and awareness equips an organisation to better handle changing cybersecurity threats.

47 % Of IT professionals describe collaboration between security risk management & business as poor or nonexistent

Many executives have the mindset that cybersecurity is the responsibility of IT; rather it is everyone's responsibility. Employee awareness should be the first line for defense of an organization's digital assets.

[Walker at al. 2017]

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Human Factor

- People often represent the weakest link in the security chain and are chronically responsible for the failure of security systems.

- Technical security measures are constantly evolving, but people do not change they remain the weakest link in information security with their weaknesses, stereotypes and attitudes

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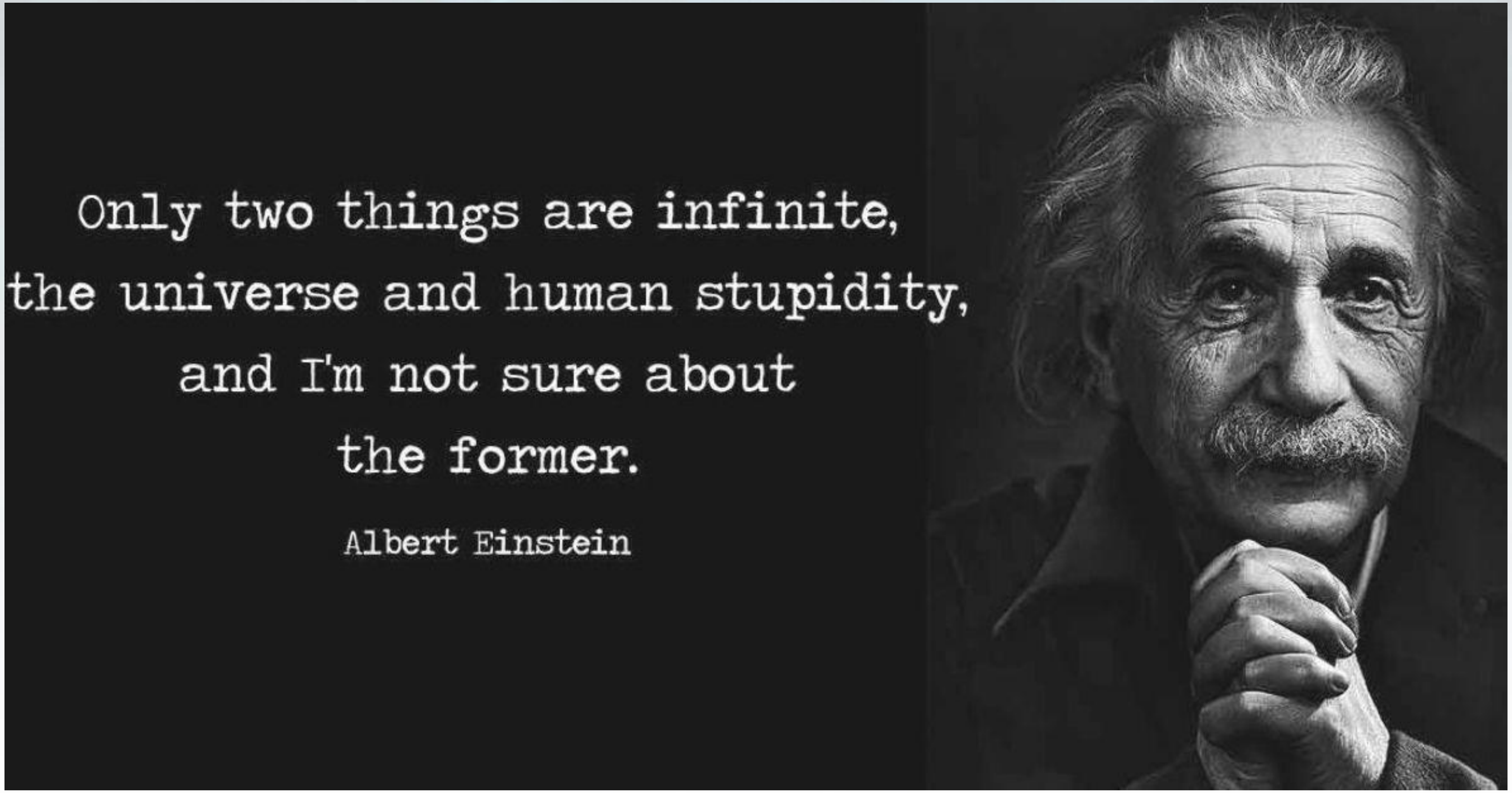
Human Factor



Only two things are infinite, the universe and human stupidity, and I'm not sure about the former.

Albert Einstein

Source: https://iheartintelligence.com/

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What is Social Engineering?

> **SOCIAL ENGINEERING**
>
> Social engineering is any act that influences a person to take an action that may or may not be in his or her interests

[Hadnagy, 2018]

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What is Social Engineering?

- Social engineering can be defined as the act of manipulating human beings, most often with the use of psychological persuasion, to gain access to systems containing data, documents, and information that the social engineer should not have access to obtain
- Social engineering is the art of exploiting human psychology, rather than technical hacking techniques, to gain access to buildings, systems or data.

[Washo, 2021]

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Social Engineering: Statistics

98% of cyber attacks rely on social engineering

43% of IT professionals targeted by social engineering last year

21% of current or former employees use social engineering

Social engineering attempts increased more than 500% in 2018

Source: https://purplesec.us/resources/cyber-security-statistics

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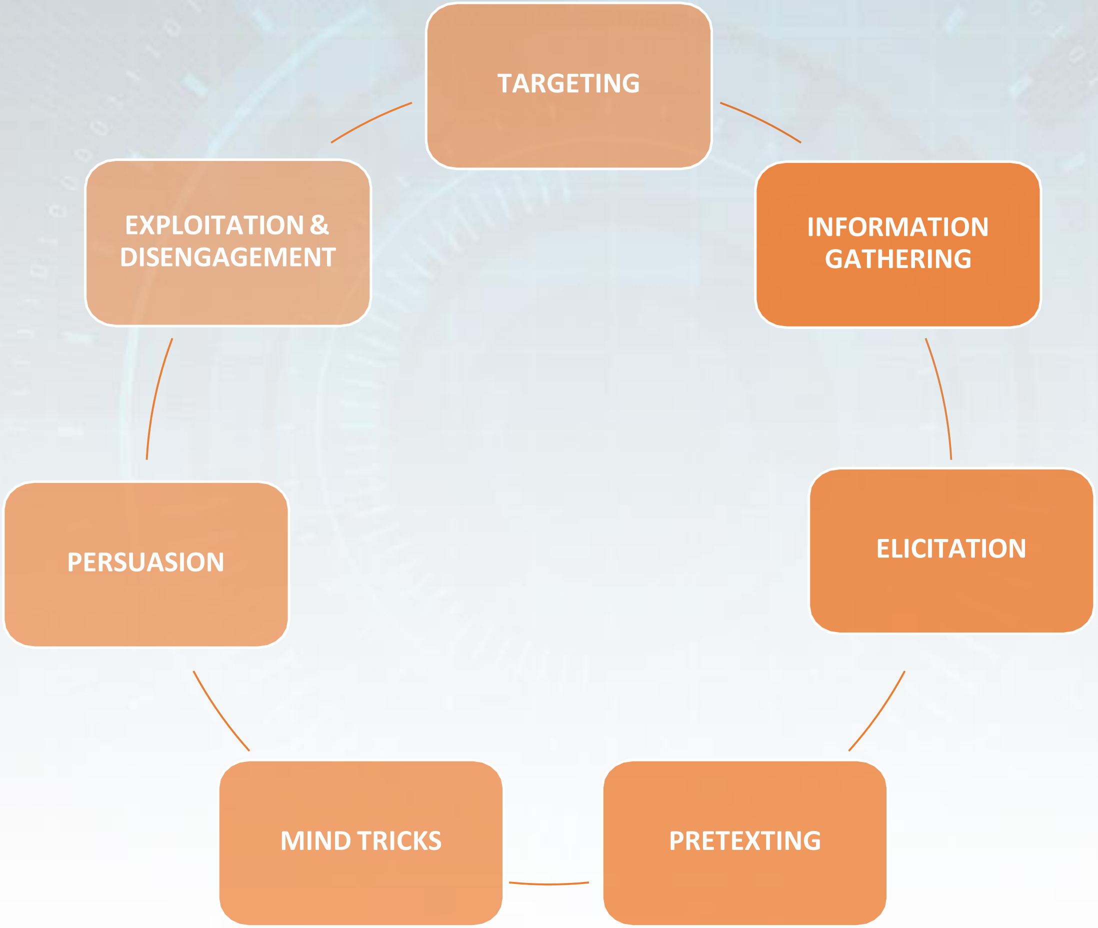
The Social Engineering Framework



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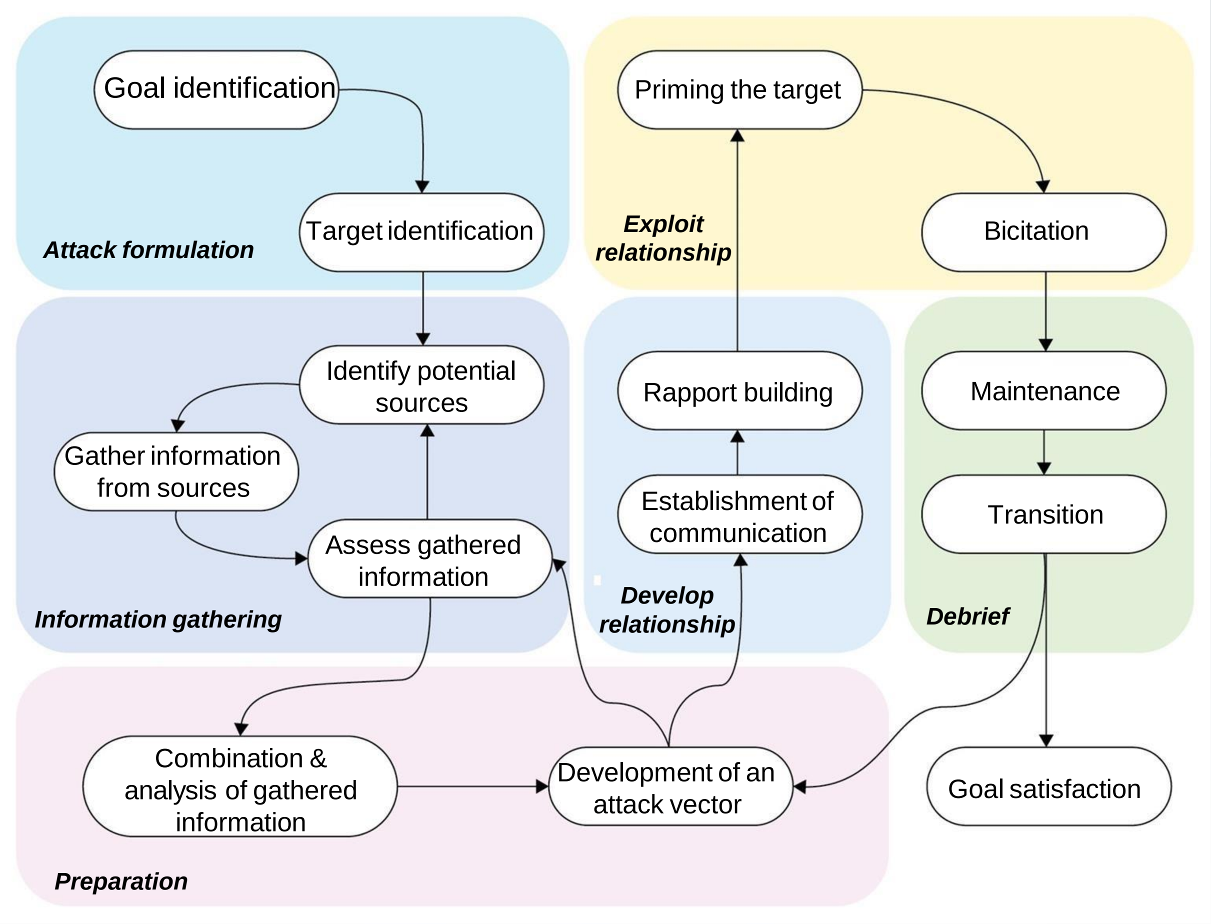
Social Engineering “Roadmap”



Source: Dr. Erdal Ozkaya “Learn Social Engineering”, 2018

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Step 1: Targeting

- Social engineering - target-specific
- Choosing a target based on the final “results” (e.g., information, money, etc.)

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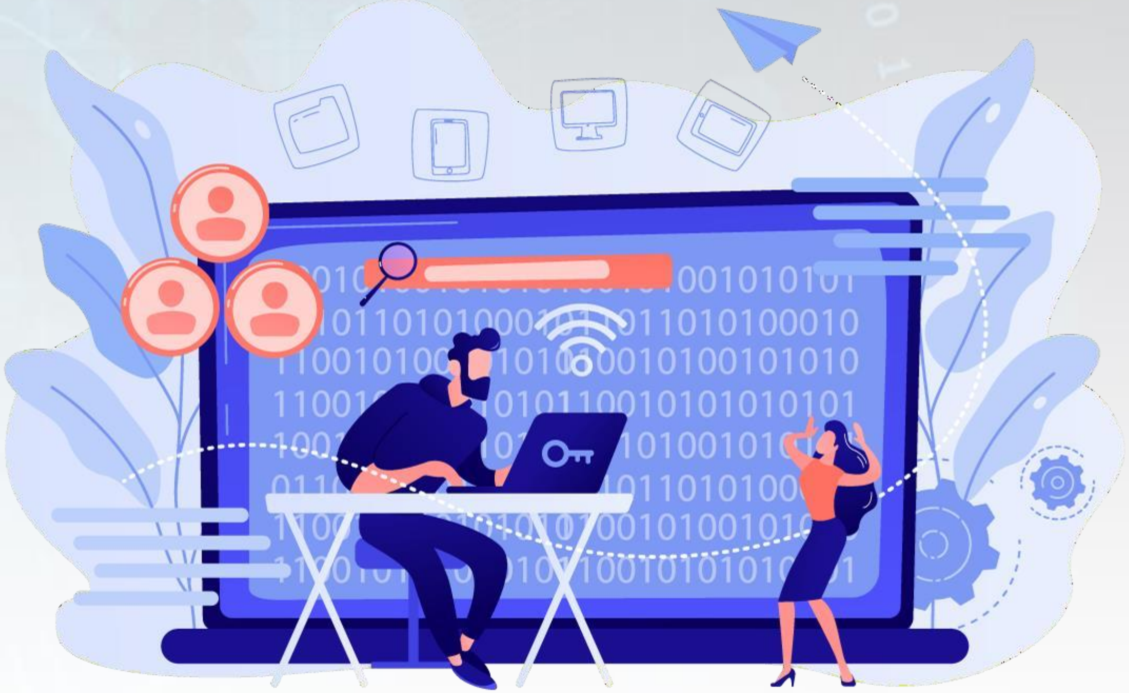
Step 2: Information Gathering

- Most tortuous step in the whole social engineering process
- May last anywhere from a few hours to a few years
- Information is rarely gathered all at once
- Use of social media platforms, specialised software, soft skills
- Two ways of gathering data:
  - *Non-technical/ Mechanical methods*
  - *Technical methods*



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Step 3: Elicitation

Elicitation can be defined as the act of drawing something out using logic. It is done through stimulation to get one to act in a certain class of behaviours.

Factors making elicitation effective:

- Most humans will try to be polite when talking to a stranger
- Professionals, when questioned, will want to appear knowledgeable
- Most people would not lie to someone who appears genuinely concerned
- It is more likely than not for someone to respond to well-posed questions about themselves

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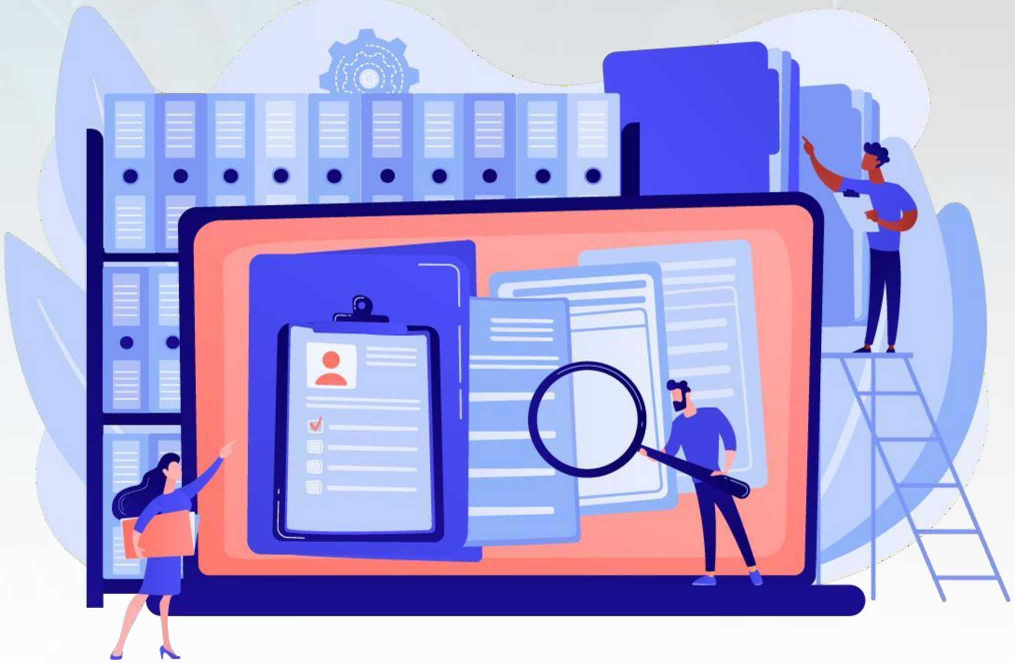
Step 4: Pretexting

Pretexting is an imperative skill that any social engineer needs in order to accomplish an attack.

Pretexting puts a person in the skin of another.

General principles of pretexting:

- Research more
- Use personal interests
- Practice expressions or dialects
- Use simpler pretexts
- Logical conclusions



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Step 5: Mind Tricks

Mind tricks are more of a psychological affair, and they are used to unlock the minds of the targets exposing them to the control of the social engineer.

MIND TRICKS ≠ SCIENCE

There are three modes of thinking that can be exploited in a human:

1. **Visual thinking**
2. **Auditory thinking**
3. **Kinaesthetic thinking**

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Step 6: Persuasion

To persuade a target, a social engineer needs to appeal to the target's interests first. Persuasion gets targets to react, think, and do exactly as the social engineer wants.

5 fundamentals used in persuasion by social engineers:

1. Clear goals
2. Rapport
3. Being in tune
4. Flexibility
5. Reciprocation

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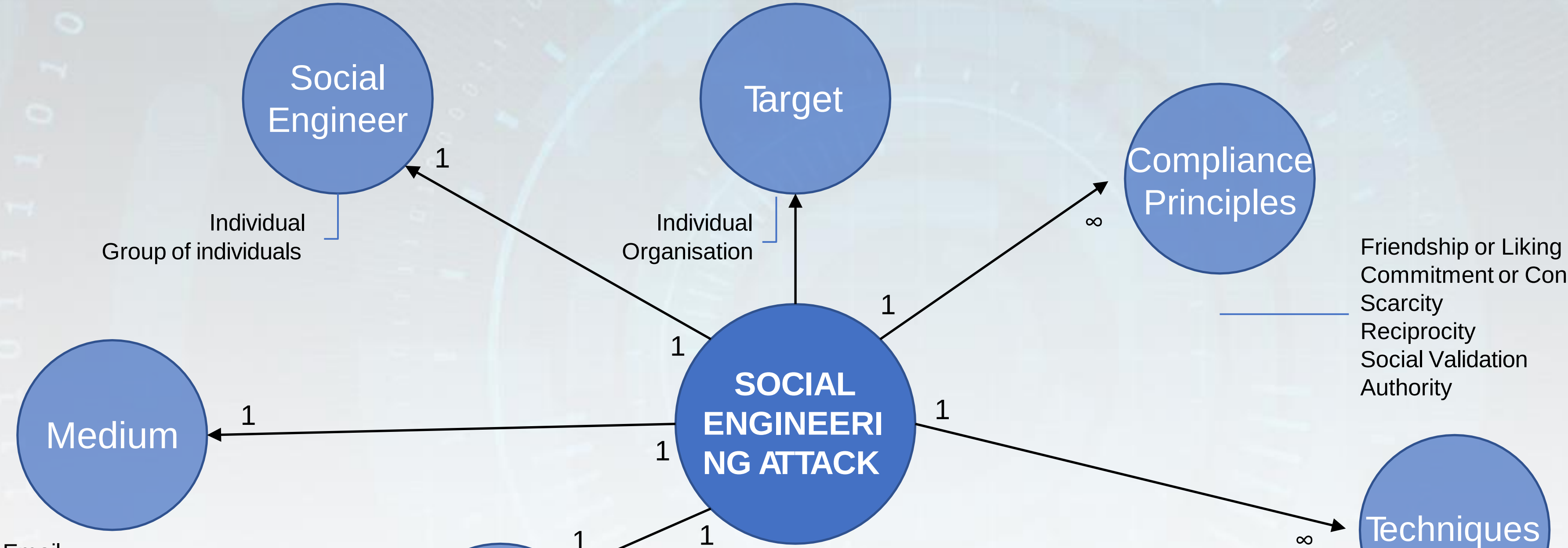
Step 7: Exploiting and Disengaging

- Exploiting the victim once trust and a weakness are established to advance the attack
- Disengaging once the user has taken the desired action

An Ontological Model of a Social Engineering Attack



Individual
Group of individuals

Individual
Organisation

Friendship or Liking
Commitment or Consistency
Scarcity
Reciprocity
Social Validation
Authority

Email
Face to Face
Telephone
SMS
Paper Mail
Storage Media
Webpage
Pamphlets

Direct Communication
- Bidirectional Communication
- Unidirectional Communication

Indirect Communication

Phishing
Pretexting
Baiting
Quid Pro Quo

Financial Gain
Unauthorized Access
Service Disruption

[Merwe and Mouton, 2017]

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Social Engineering Attacks

Several people lost thousands of dollars in cryptocurrency after the Ethereum Classic website was hacked, in 2017. Using social engineering, hackers impersonated the owner of Classic Ether Wallet, gained access to the domain registry, and then redirected the domain to their own server. Criminals extracted Ethereum cryptocurrency from the victims after entering a code on the website that allowed them to view private keys that are used for transactions.

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Social Engineering Attacks

Shark Tank television judge Barbara Corcoran was tricked in a nearly USD 400,000 phishing and social engineering scam in 2020. A cybercriminal impersonated her assistant and sent an email to the bookkeeper requesting a renewal payment related to real estate investments. He used an email address similar to the legitimate one. The fraud was only discovered after the bookkeeper sent an email to the assistant's correct address asking about the transaction.

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Social Engineering Attacks

One of the biggest social engineering attack was perpetrated by Lithuanian national Evaldas Rimasauskas against two of the world's biggest companies: Google and Facebook.

Rimasauskas and his team set up a fake company, pretending to be a computer manufacturer that worked with Google and Facebook. Rimsauskas also set up bank accounts in the company's name.

The scammers then sent phishing emails to specific Google and Facebook employees, invoicing them for goods and services that the manufacturer had genuinely provided - but directing them to deposit money into their fraudulent accounts. Between 2013 and 2015, Rimasauskas and his associates cheated the two tech giants out of over $100 million.

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Why is Social Engineering so Effective?

- We are social by nature;
  - Our desire to stand out from others

- Other people make a big impact on our decisions;
  - Our desire to be helpful
  - Our tendency to trust people we don’t know

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Why is Social Engineering so Effective?

- We are overloaded with information and look to shortcuts to save time.
  - Our desire for all good things to happen quickly and effortlessly
  - Our fear of getting into trouble

- Lack of security knowledge;
- Oversharing personal information on social media;

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Psychological Aspects of Social Engineering

Some authors advocate treating social engineering cyberattacks as a particular kind of psychological attack.

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[Montañez at al. 2020]

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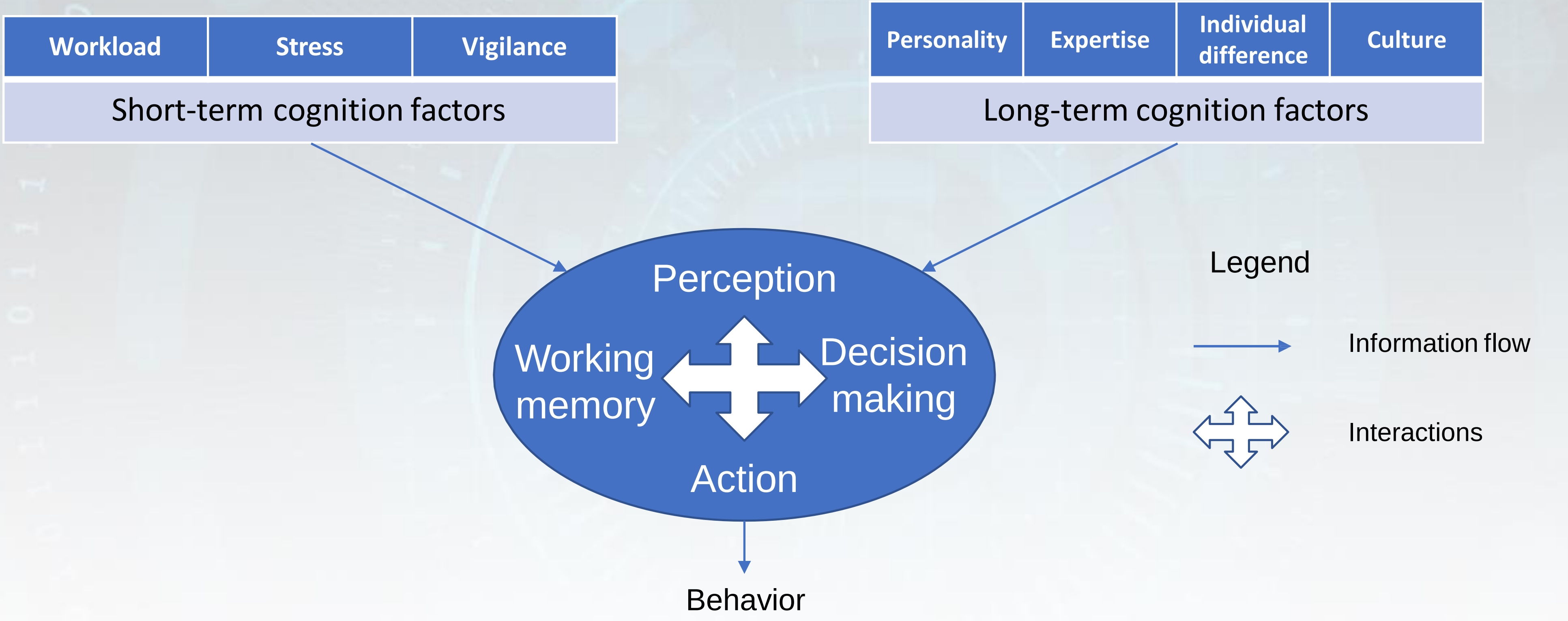
Human Cognitive Functions



a high cognitive workload, a high degree of stress, a low degree of attentional vigilance, a lack of domain knowledge, and/or a lack of past experience makes one more susceptible to social engineering cyberattacks

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[Montañez at al. 2020]

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The Psychology of Online Persuasion

*"The current generation of internet consumers live in a world of **instant gratification and quick fixes**, which leads to a **loss of patience and a lack of deep thinking**." - Rob Weatherhead, The Guardian*

- Our behaviors, thoughts, and beliefs are constantly shaped by the environment around us, as well as by our own experiences
- influence and the art of persuasion is the process of getting someone else to *want* to do, react, think, or believe in the way you want them to.

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Heightened Emotions

Emotional manipulation gives attackers the upper hand in any interaction. You are far more likely to take irrational or risky actions when in an enhanced emotional state.

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[Montañez at al. 2020]

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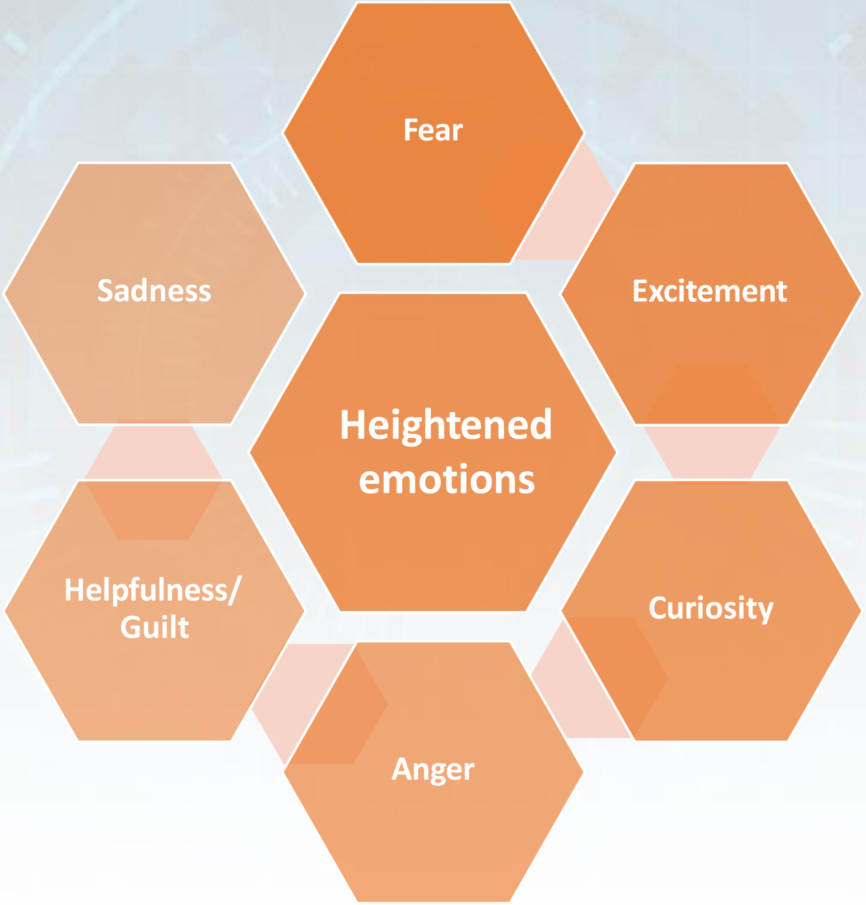
Heightened Emotions



[Montañez at al. 2020]

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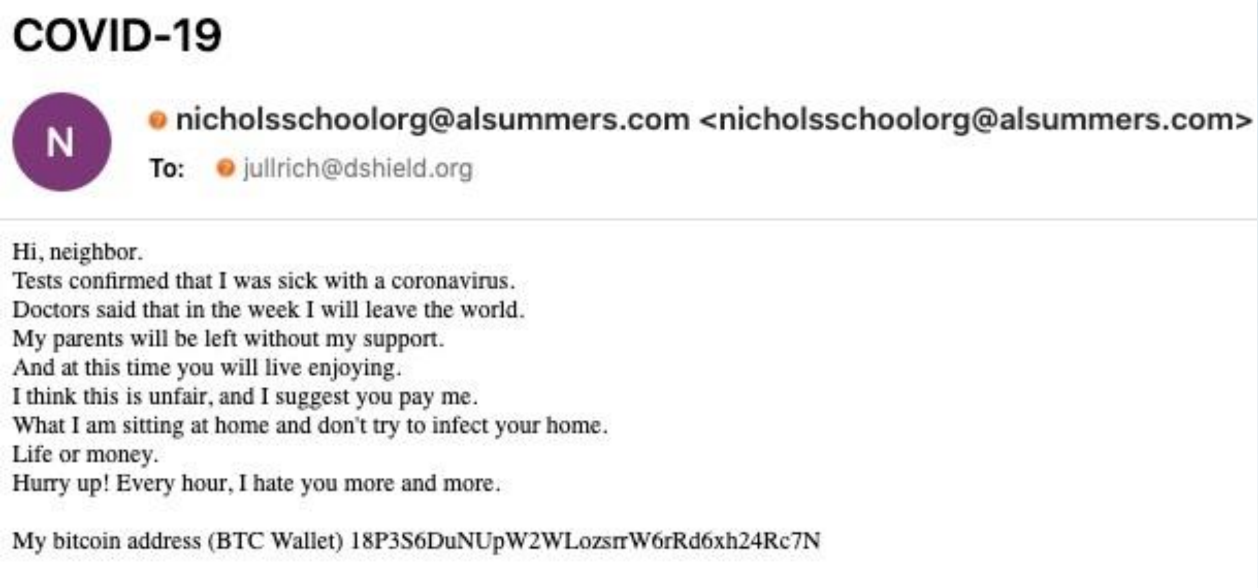
Fear



COVID-19

N

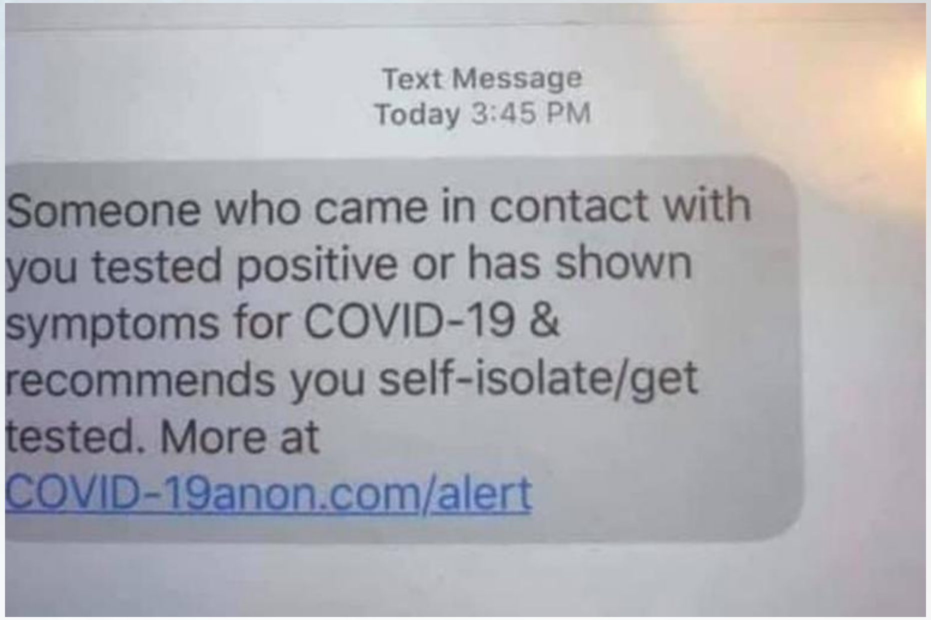
nicholsschoolorg@alsummers.com <nicholsschoolorg@alsummers.com>

To: jullrich@dshield.org

Hi, neighbor.
Tests confirmed that I was sick with a coronavirus.
Doctors said that in the week I will leave the world.
My parents will be left without my support.
And at this time you will live enjoying.
I think this is unfair, and I suggest you pay me.
What I am sitting at home and don't try to infect your home.
Life or money.
Hurry up! Every hour, I hate you more and more.

My bitcoin address (BTC Wallet) 18P3S6DuNUpW2WLozsrrW6rRd6xh24Rc7N

Source: Vilnius University Kaunas faculty internal phishing database



Text Message
Today 3:45 PM

Someone who came in contact with you tested positive or has shown symptoms for COVID-19 & recommends you self-isolate/get tested. More at COVID-19anon.com/alert

Source: https://www.thesun.co.uk/news/11422572/scam-message-hoax-tricks-americans-exposed-to-coronavirus-must-self-isolate/

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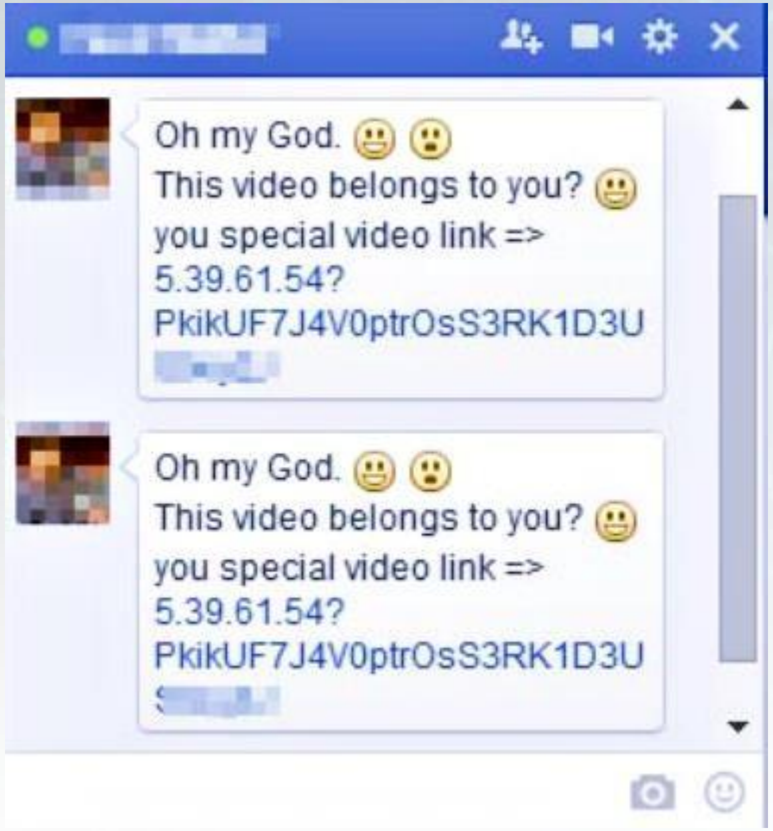
Curiosity

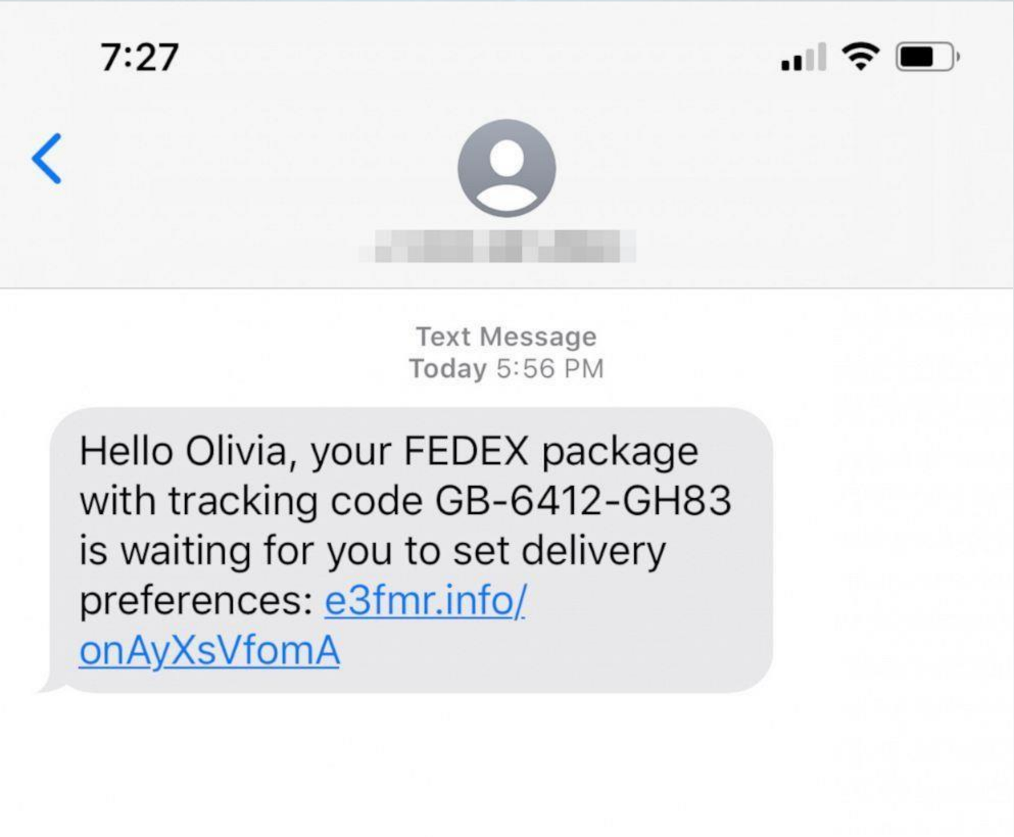


[redacted]

Oh my God. 😀 😮
This video belongs to you? 😀
you special video link =>
5.39.61.54?
PkikUF7J4V0ptrOsS3RK1D3U
[redacted]

Oh my God. 😀 😮
This video belongs to you? 😀
you special video link =>
5.39.61.54?
PkikUF7J4V0ptrOsS3RK1D3U
[redacted]

Source: https://soravjain.com/cyber-security-for-women-in-social-media/



7:27

[redacted]

Text Message
Today 5:56 PM

Hello Olivia, your FEDEX package with tracking code GB-6412-GH83 is waiting for you to set delivery preferences: e3fmr.info/onAyXsVfomA

Source: https://www.scamadviser.com/scam-reports/scam-trends/4293/delivery-scams-all-in-one-dhl-fedex-usps-and-dpd

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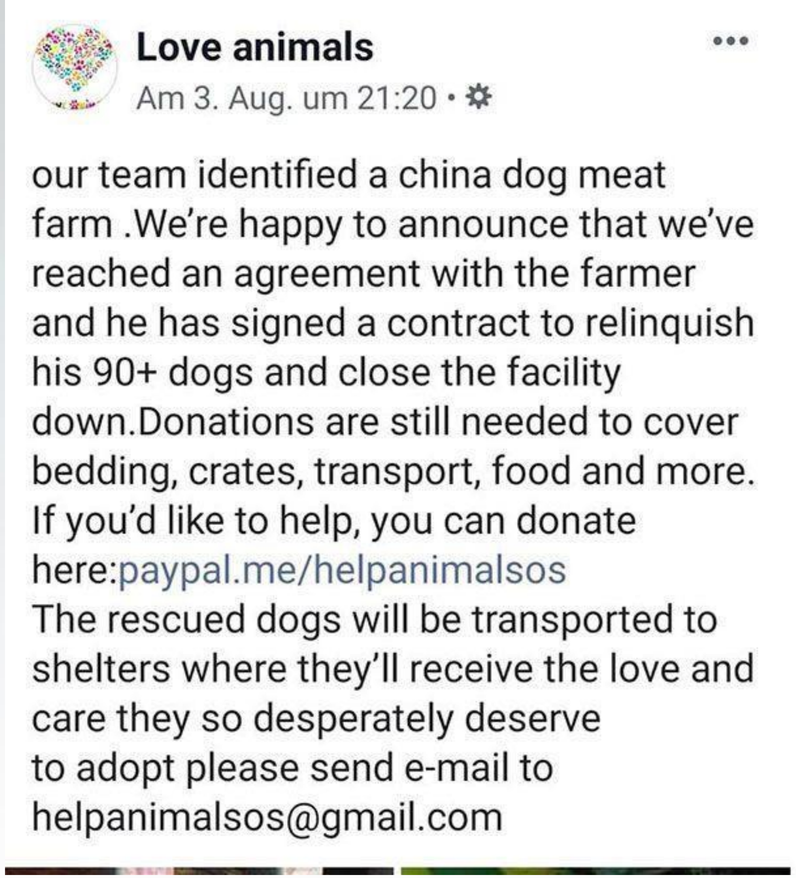
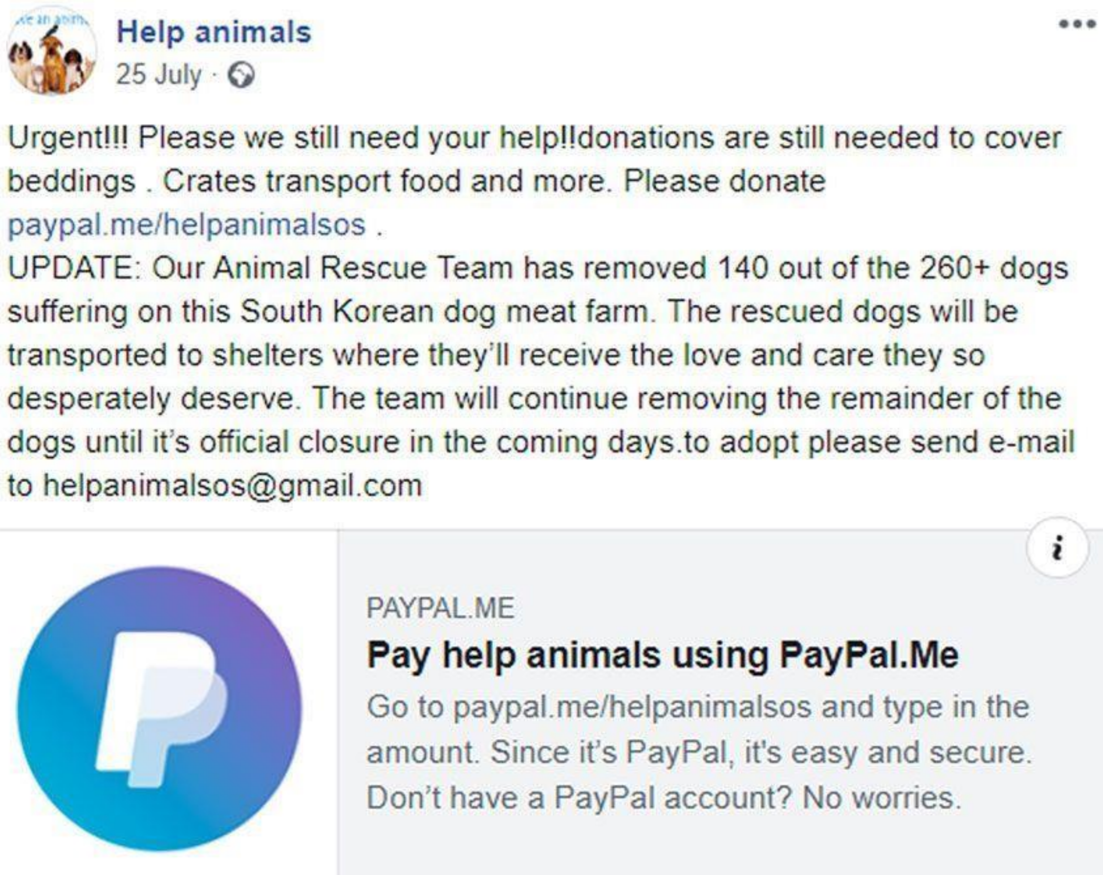
Helpfulness



Love animals

Am 3. Aug. um 21:20 •

our team identified a china dog meat farm .We're happy to announce that we've reached an agreement with the farmer and he has signed a contract to relinquish his 90+ dogs and close the facility down.Donations are still needed to cover bedding, crates, transport, food and more. If you'd like to help, you can donate here:paypal.me/helpanimalsos
The rescued dogs will be transported to shelters where they'll receive the love and care they so desperately deserve
to adopt please send e-mail to helpanimalsos@gmail.com



Help animals

25 July ·

Urgent!!! Please we still need your help!!donations are still needed to cover beddings . Crates transport food and more. Please donate paypal.me/helpanimalsos .
UPDATE: Our Animal Rescue Team has removed 140 out of the 260+ dogs suffering on this South Korean dog meat farm. The rescued dogs will be transported to shelters where they'll receive the love and care they so desperately deserve. The team will continue removing the remainder of the dogs until it's official closure in the coming days.to adopt please send e-mail to helpanimalsos@gmail.com

PAYPAL.ME

Pay help animals using PayPal.Me

Go to paypal.me/helpanimalsos and type in the amount. Since it's PayPal, it's easy and secure. Don't have a PayPal account? No worries.

Source: https://usa.kaspersky.com/blog/fake-charity-scam/18580/

Urgency

Time-sensitive opportunities or requests are another reliable tool in an attacker's arsenal.

You may be motivated to compromise yourself under the guise of a serious problem that needs immediate attention.

Alternatively, you may be exposed to a prize or reward that may disappear if you do not act quickly.

Either approach overrides your critical thinking ability.

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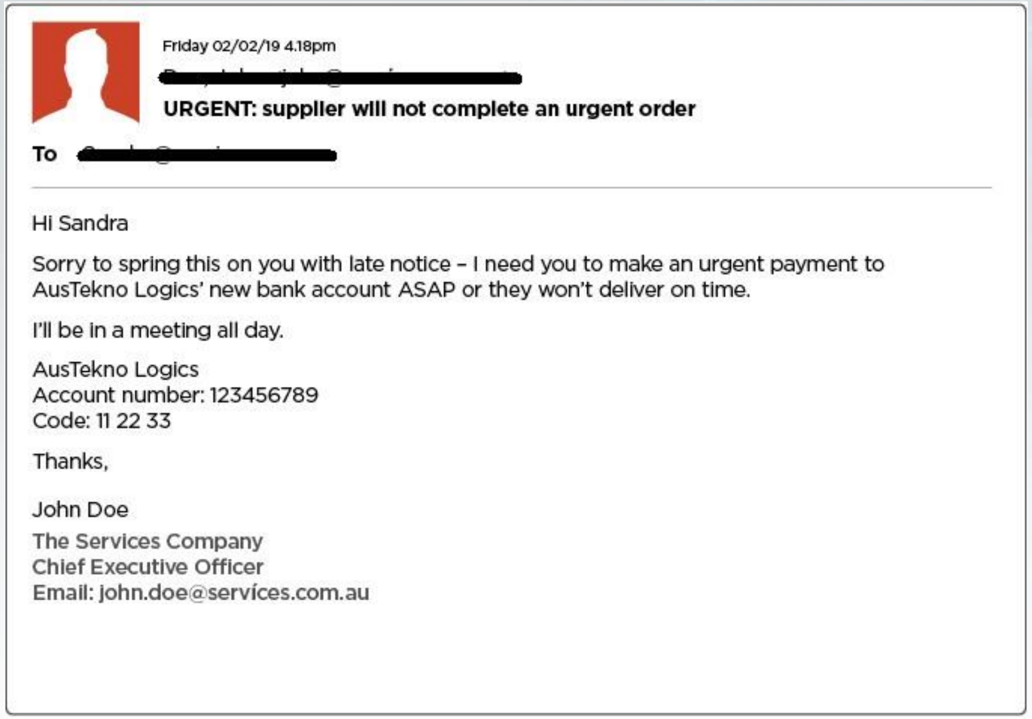
Urgency



Friday 02/02/19 4.18pm

[redacted]

URGENT: supplier will not complete an urgent order

To [redacted]

Hi Sandra

Sorry to spring this on you with late notice – I need you to make an urgent payment to AusTekno Logics' new bank account ASAP or they won't deliver on time.

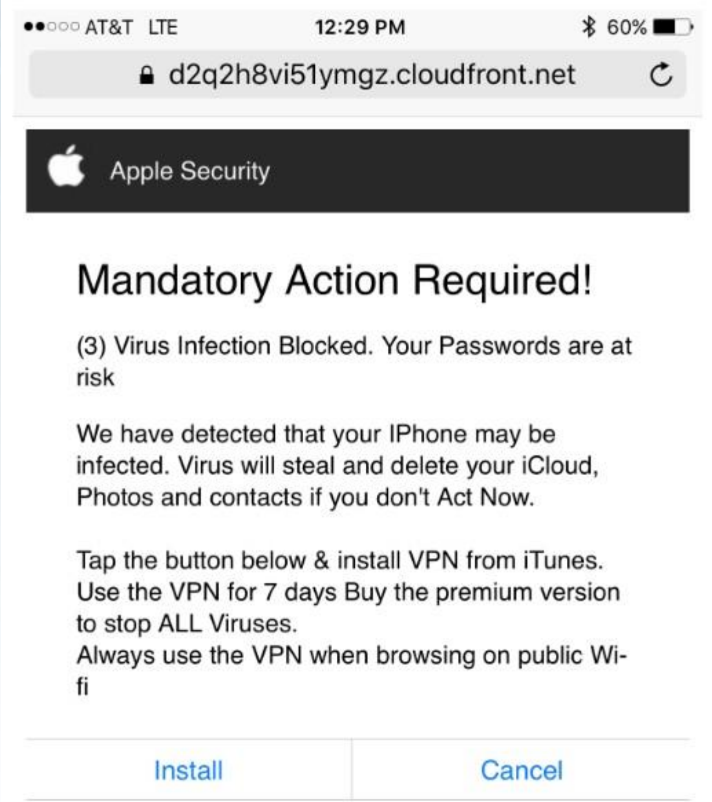
I'll be in a meeting all day.

AusTekno Logics
Account number: 123456789
Code: 11 22 33

Thanks,

John Doe
The Services Company
Chief Executive Officer
Email: john.doe@services.com.au

Source: https://www.scamwatch.gov.au/about-scamwatch/tools-resources/online-resources/spot-the-scam-signs



Mandatory Action Required!

(3) Virus Infection Blocked. Your Passwords are at risk

We have detected that your IPhone may be infected. Virus will steal and delete your iCloud, Photos and contacts if you don't Act Now.

Tap the button below & install VPN from iTunes.
Use the VPN for 7 days Buy the premium version to stop ALL Viruses.
Always use the VPN when browsing on public Wi-fi

Source: https://www.reddit.com/r/jailbreak/comments/78b2tv/request_remove_this_fucking_vpn_ad_please_like/

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Anger

- We avoid angry people
- We avoid conflicts

- Angry "boss" calls employee asking for password

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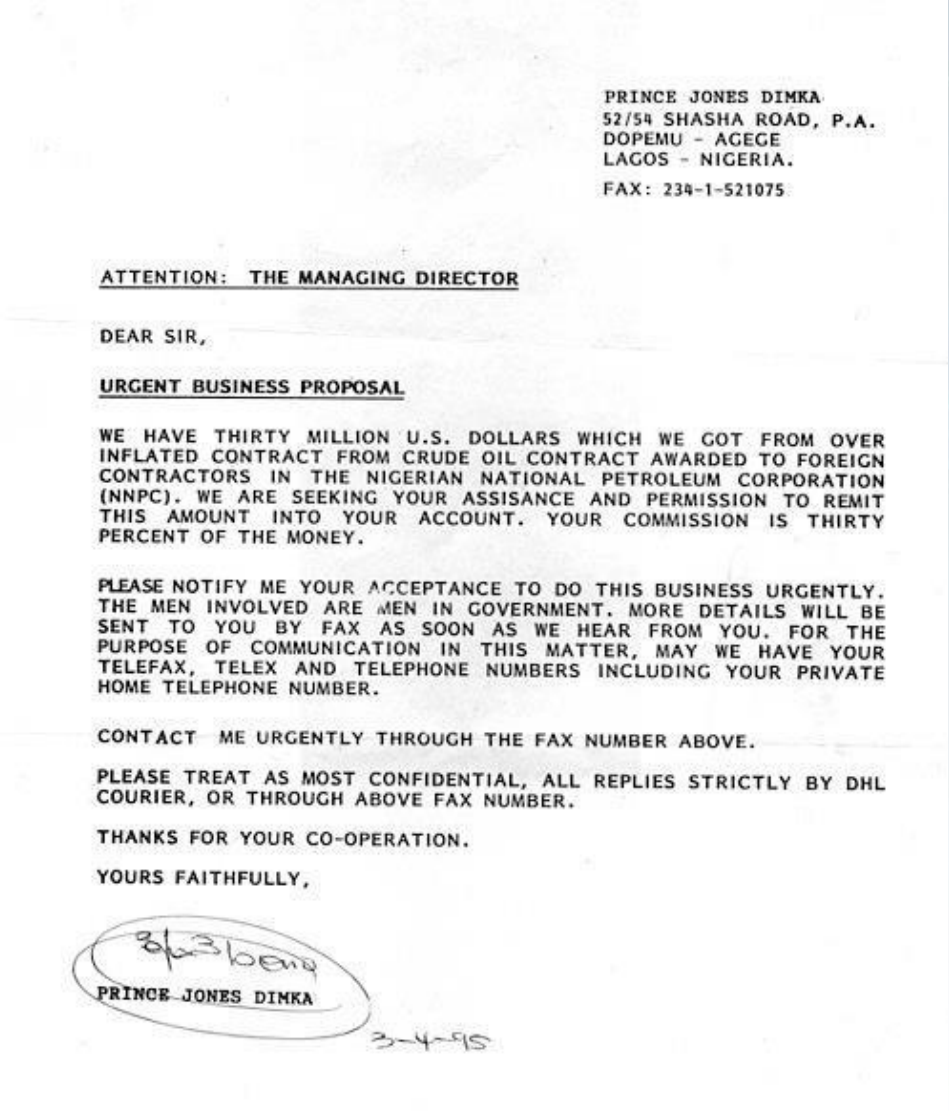
Greed

- These are some of the oldest scams—promising wealth from Nigerian princes or military personnel offering to share some stolen treasure.
- Sometimes it’s a wealthy widow dying of cancer, or a British solicitor delivering your share of an estate.



PRINCE JONES DIMKA
52/54 SHASHA ROAD, P.A.
DOPEMU - AGEGE
LAGOS - NIGERIA.

FAX: 234-1-521075

ATTENTION: THE MANAGING DIRECTOR

DEAR SIR,

URGENT BUSINESS PROPOSAL

WE HAVE THIRTY MILLION U.S. DOLLARS WHICH WE GOT FROM OVER INFLATED CONTRACT FROM CRUDE OIL CONTRACT AWARDED TO FOREIGN CONTRACTORS IN THE NIGERIAN NATIONAL PETROLEUM CORPORATION (NNPC). WE ARE SEEKING YOUR ASSISANCE AND PERMISSION TO REMIT THIS AMOUNT INTO YOUR ACCOUNT. YOUR COMMISSION IS THIRTY PERCENT OF THE MONEY.

PLEASE NOTIFY ME YOUR ACCEPTANCE TO DO THIS BUSINESS URGENTLY. THE MEN INVOLVED ARE MEN IN GOVERNMENT. MORE DETAILS WILL BE SENT TO YOU BY FAX AS SOON AS WE HEAR FROM YOU. FOR THE PURPOSE OF COMMUNICATION IN THIS MATTER, MAY WE HAVE YOUR TELEFAX, TELEX AND TELEPHONE NUMBERS INCLUDING YOUR PRIVATE HOME TELEPHONE NUMBER.

CONTACT ME URGENTLY THROUGH THE FAX NUMBER ABOVE.

PLEASE TREAT AS MOST CONFIDENTIAL, ALL REPLIES STRICTLY BY DHL COURIER, OR THROUGH ABOVE FAX NUMBER.

THANKS FOR YOUR CO-OPERATION.

YOURS FAITHFULLY,

PRINCE JONES DIMKA

3-4-95

Source: https://www.businessinsider.com/online-scams-internet-phishing-2019-3

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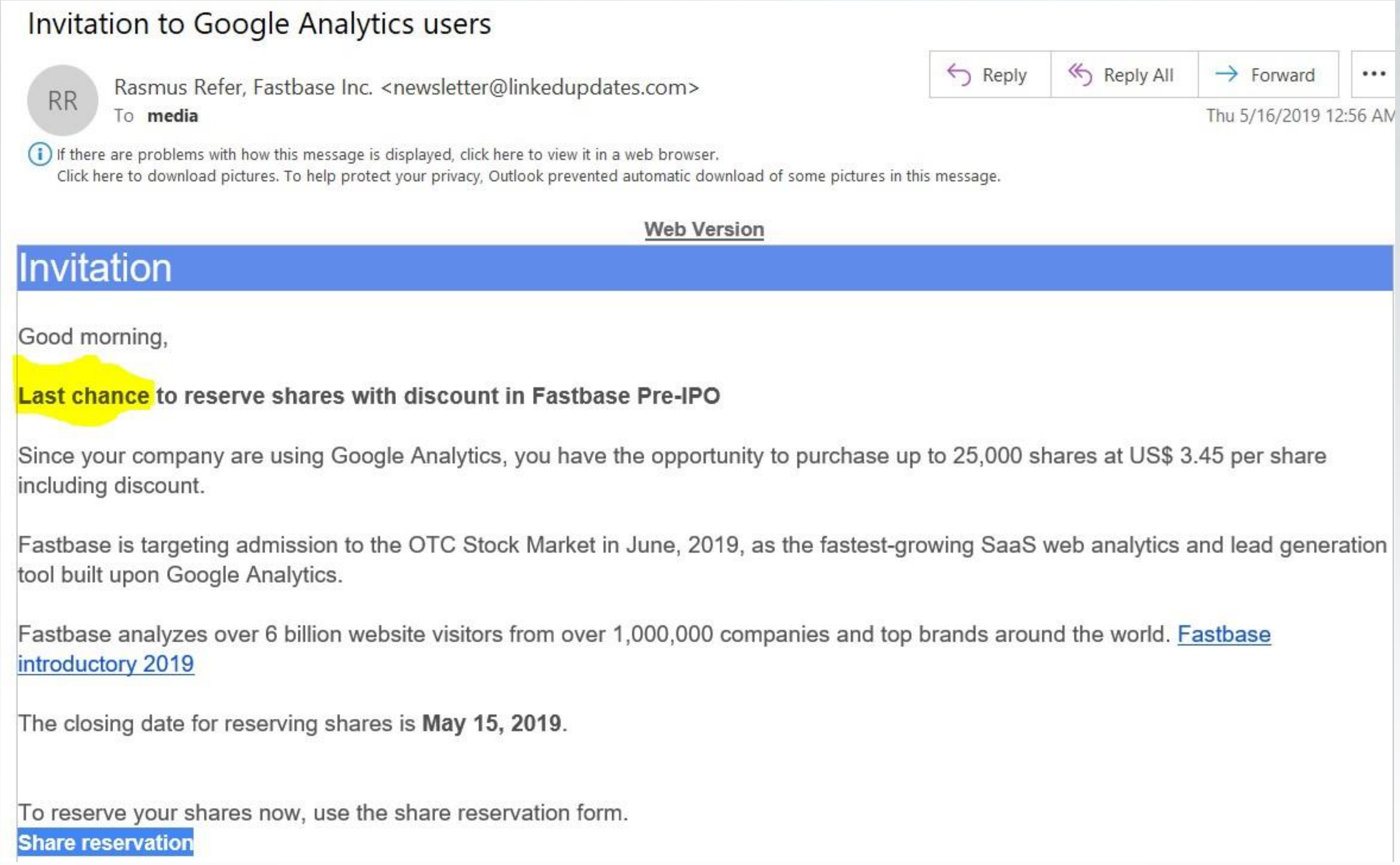
Greed



Invitation to Google Analytics users

RR Rasmus Refer, Fastbase Inc. <newsletter@linkedupdates.com>
To **media**

Thu 5/16/2019 12:56 AM

If there are problems with how this message is displayed, click here to view it in a web browser.
Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Web Version

Invitation

Good morning,

Last chance to reserve shares with discount in Fastbase Pre-IPO

Since your company are using Google Analytics, you have the opportunity to purchase up to 25,000 shares at US$ 3.45 per share including discount.

Fastbase is targeting admission to the OTC Stock Market in June, 2019, as the fastest-growing SaaS web analytics and lead generation tool built upon Google Analytics.

Fastbase analyzes over 6 billion website visitors from over 1,000,000 companies and top brands around the world. Fastbase introductory 2019

The closing date for reserving shares is **May 15, 2019**.

To reserve your shares now, use the share reservation form.
Share reservation

Source: Vilnius University Kaunas faculty internal phishing database

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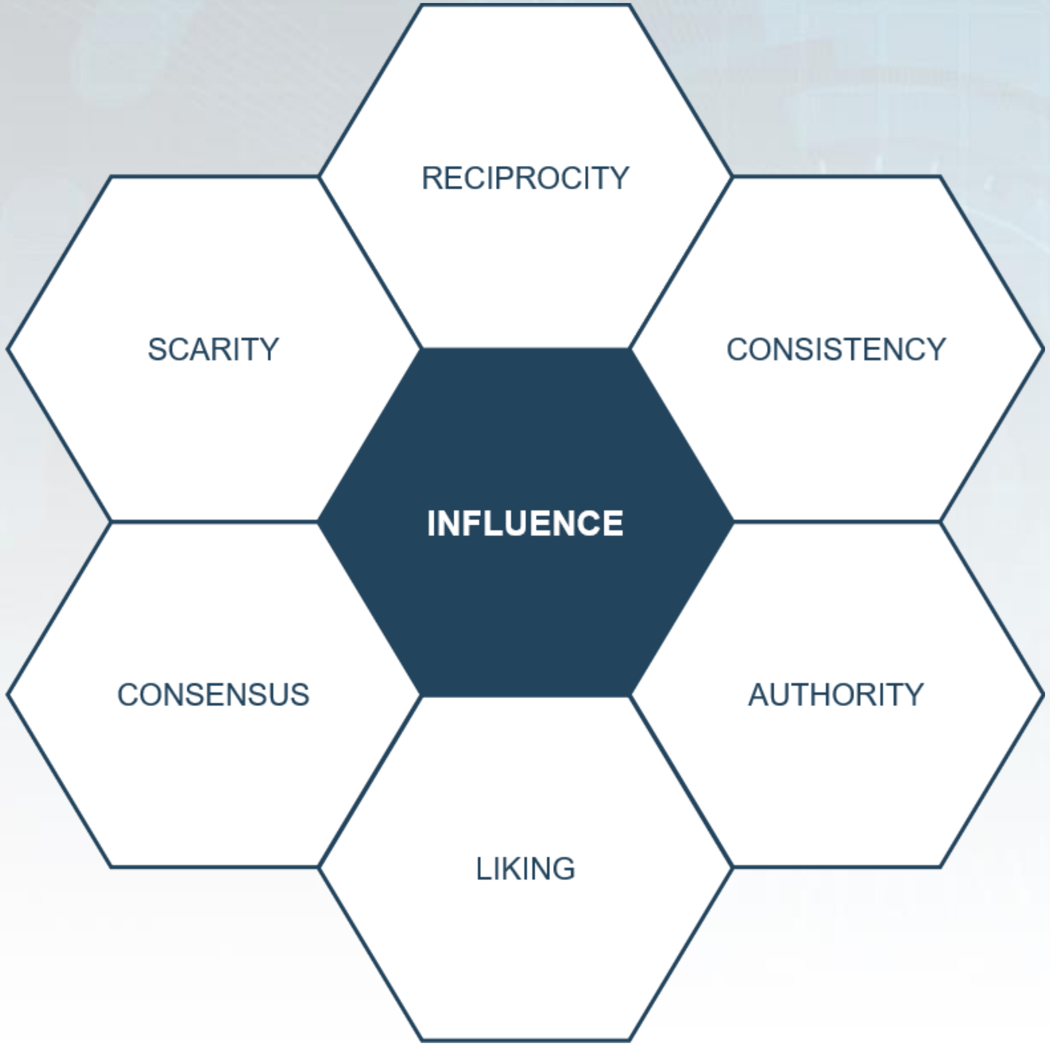
Weapons of Influence



[Cialdini, 2007]

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Reciprocity

- “…we should try to repay, in kind, what another person has provided us.”

- Technique 1: If someone makes a concession, we are obligated to respond with a concession
  Making a concession gives the other party a feeling of responsibility for the outcome and greater satisfaction with resolution

[Cialdini, 2007]

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Reciprocity

- Technique 2: Rejection then retreat: exaggerated request rejected, desired lesser request acceded to

- Technique 3: Contrast principle: sell the costly item first; or present the undesirable option first

[Cialdini, 2007]

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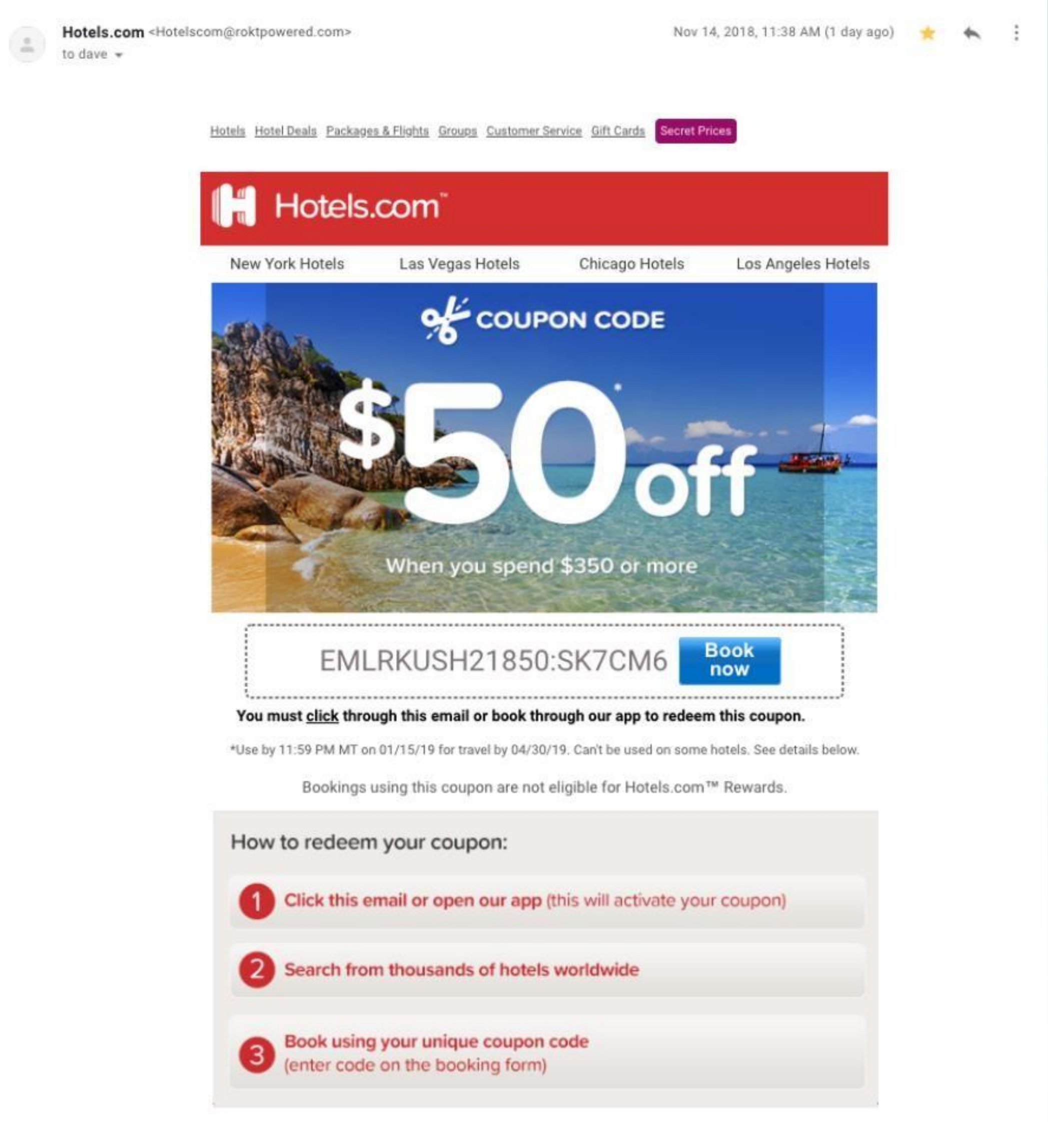
Reciprocity


Hotels Hotel Deals Packages & Flights Groups Customer Service Gift Cards Secret Prices
Hotels.com™
New York Hotels Las Vegas Hotels Chicago Hotels Los Angeles Hotels
Book now

Hotels.com <Hotelscom@roktpowered.com>
to dave

Nov 14, 2018, 11:38 AM (1 day ago)

COUPON CODE

$50* off

When you spend $350 or more

EMLRKUSH21850:SK7CM6

You must click through this email or book through our app to redeem this coupon.

*Use by 11:59 PM MT on 01/15/19 for travel by 04/30/19. Can't be used on some hotels. See details below.

Bookings using this coupon are not eligible for Hotels.com™ Rewards.

How to redeem your coupon:

1. Click this email or open our app (this will activate your coupon)
2. Search from thousands of hotels worldwide
3. Book using your unique coupon code (enter code on the booking form)

Source: https://www.securitymetrics.com/blog/7-ways-recognize-phishing-email

Funded by the Erasmus+ Programme of the European Union

Consistency

- We have a “nearly obsessive desire to be (and to appear) consistent with what we have already done”
- Once we have made a choice or taken a stand, we will encounter personal and interpersonal pressures to behave consistently with that commitment.

[Cialdini, 2007]

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Consistency

- The Foot in the Door Technique: agreeing to a small request increases the likelihood of agreeing to a second, larger request.

- The Door in the Face Technique: refusing a large request increases the likelihood of agreeing to a second, smaller request.

[McLeod, 2014]

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Consistency

- The Low-Ball Technique: the persuader gets a person to commit to a low-ball offer they have no intention of keeping; then the price is suddenly increased. Since a person has already committed, it is hard to say no to the new higher price demand.

[McLeod, 2014]

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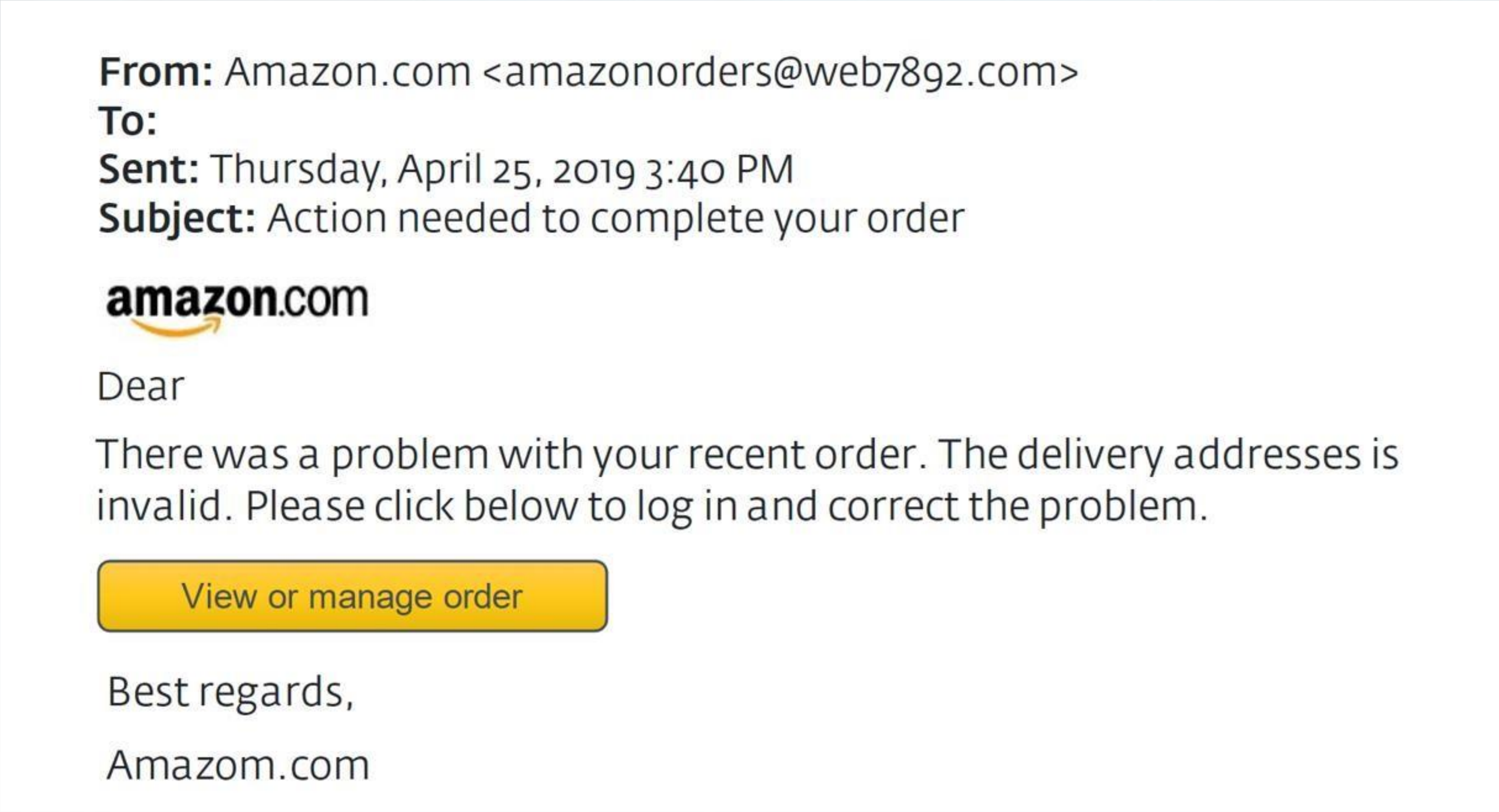
Consistency



From: Amazon.com <amazonorders@web7892.com>
To:
Sent: Thursday, April 25, 2019 3:40 PM
Subject: Action needed to complete your order

amazon.com

Dear

There was a problem with your recent order. The delivery addresses is invalid. Please click below to log in and correct the problem.

Best regards,

Amazom.com

Source: https://www.forbes.com/sites/barrycollins/2021/07/07/is-this-amazon-email-fake-how-to-spot-the-scams/?sh=605d881d119a

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Authority

- Information from a recognized authority can provide us a valuable shortcut for deciding how to act in a situation.

- Increasingly, the right authority is frequently the individual, brand, organization, or cause with the biggest audience.

[Cialdini, 2007]

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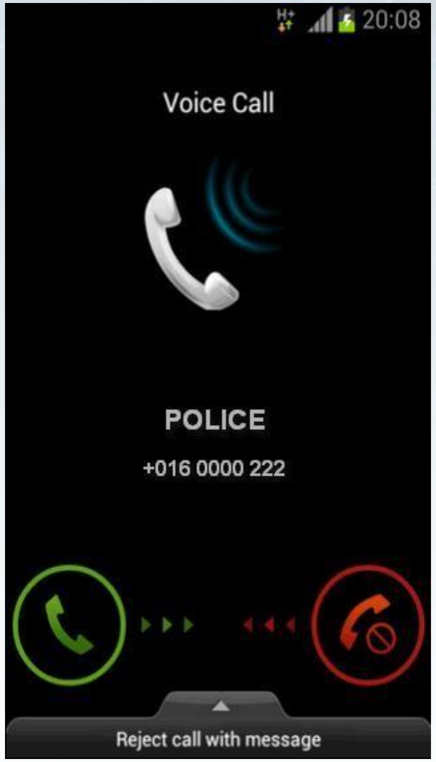
Authority

- Titles
- Uniforms
- Clothes
- Brands



Source https://apkpure.com/nl/call-from-police/com.opik.fakegv.fyuukfg

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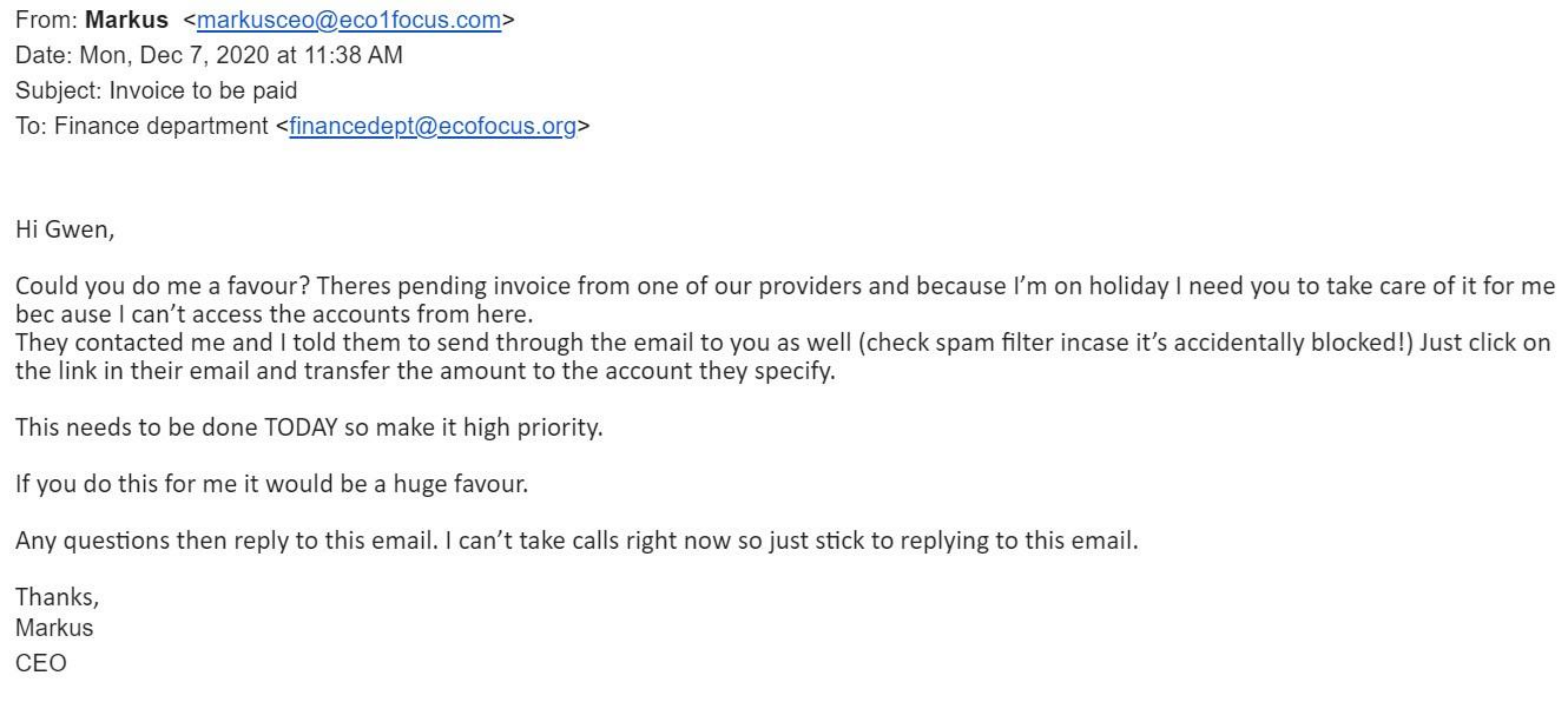
Authority



From: **Markus** <markusceo@eco1focus.com>

Date: Mon, Dec 7, 2020 at 11:38 AM

Subject: Invoice to be paid

To: Finance department <financedept@ecofocus.org>

Hi Gwen,

Could you do me a favour? Theres pending invoice from one of our providers and because I'm on holiday I need you to take care of it for me bec ause I can't access the accounts from here.
They contacted me and I told them to send through the email to you as well (check spam filter incase it's accidentally blocked!) Just click on the link in their email and transfer the amount to the account they specify.

This needs to be done TODAY so make it high priority.

If you do this for me it would be a huge favour.

Any questions then reply to this email. I can't take calls right now so just stick to replying to this email.

Thanks,
Markus
CEO

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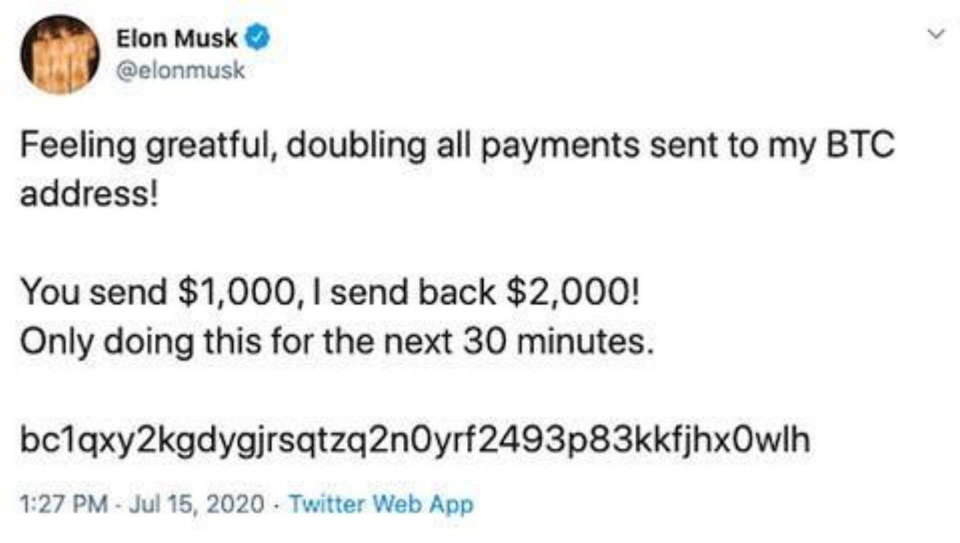
Authority



Elon Musk
@elonmusk

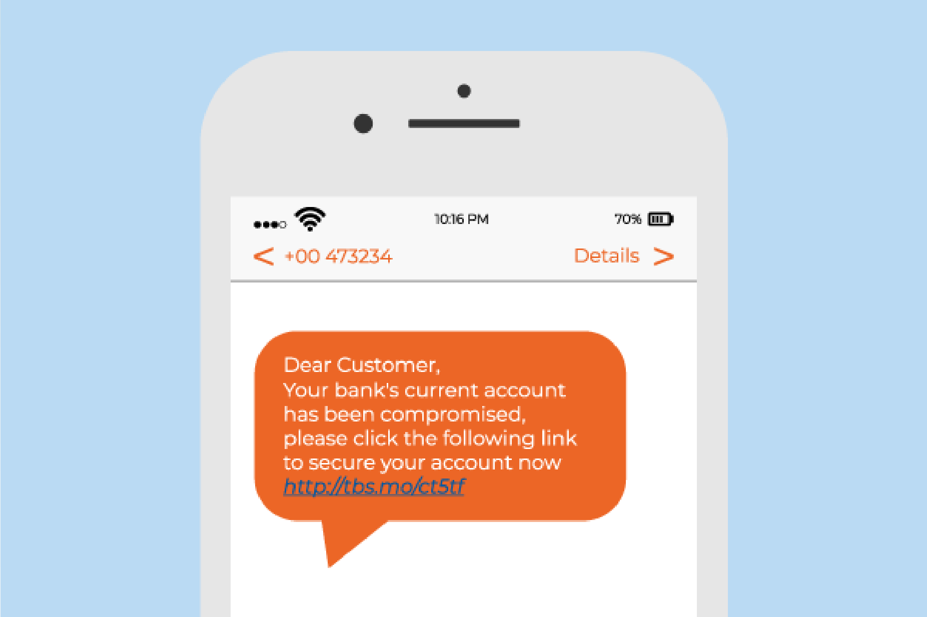
Feeling greatful, doubling all payments sent to my BTC address!

You send $1,000, I send back $2,000!
Only doing this for the next 30 minutes.

bc1qxy2kgdygjrsqtzq2n0yrf2493p83kkfjhx0wlh

1:27 PM · Jul 15, 2020 · Twitter Web App

Source: https://www.twitter.com



Dear Customer,
Your bank's current account has been compromised, please click the following link to secure your account now
http://tbs.mo/ct5tf

Source: https://rdcom.com/en/bulk-sms/what-is-sms-phishing-how-to-avoid-it/

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Liking

- People like those who like them, and are more influenced by those they like
- We are happy to fulfill requests from people we like

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Liking

- People tend to form trust with those they're attracted to, both physically and emotionally:
  - We like people who are similar to us
  - We like people who pay us compliments
  - We like people who cooperate with us towards mutual goals

[Cialdini, 2007]

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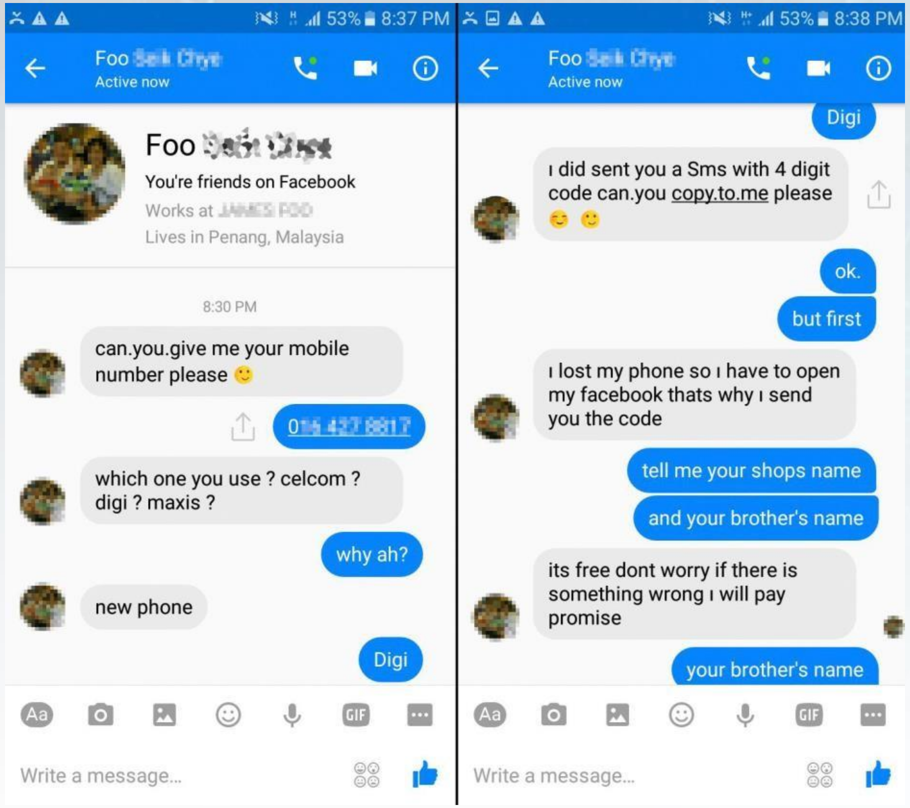
Liking



Foo [redacted]

You're friends on Facebook

Works at [redacted]

Lives in Penang, Malaysia

8:30 PM

can.you.give me your mobile number please 🙂

[redacted]

which one you use ? celcom ? digi ? maxis ?

why ah?

new phone

Digi

Digi

ı did sent you a Sms with 4 digit code can.you copy.to.me please 😊 🙂

ok.

but first

ı lost my phone so ı have to open my facebook thats why ı send you the code

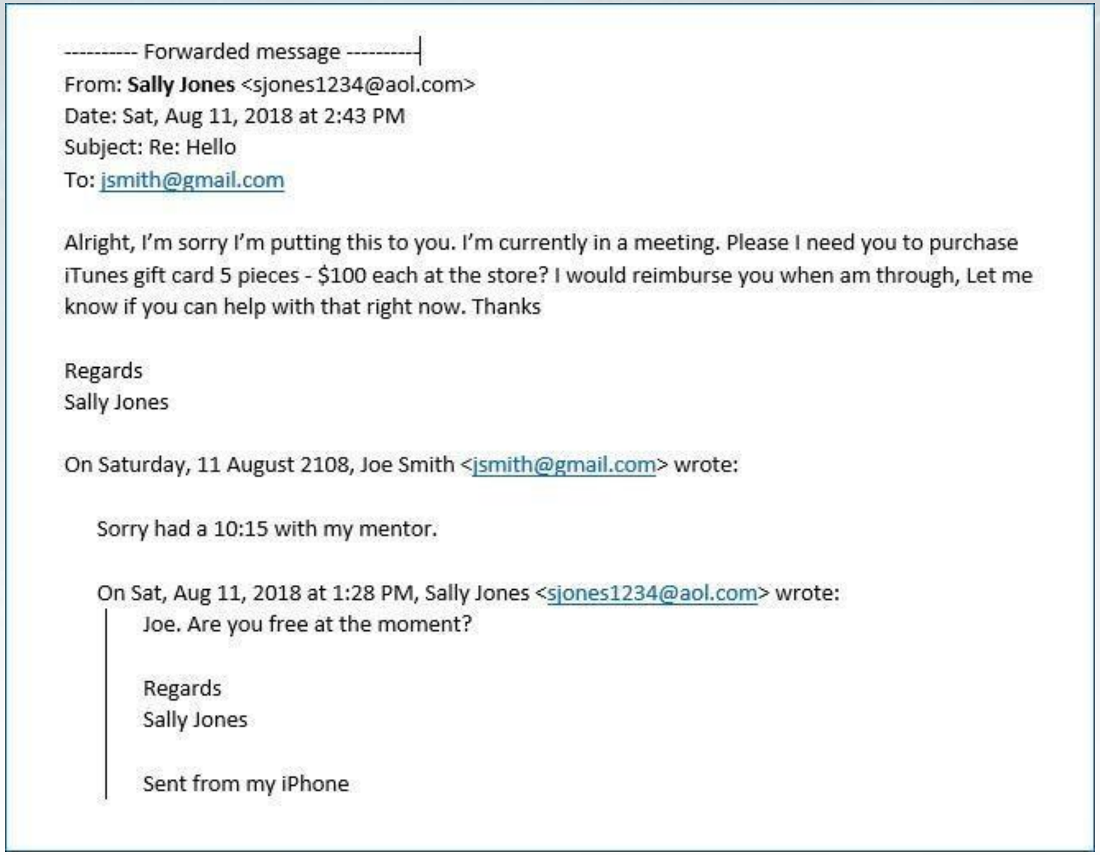
tell me your shops name

and your brother's name

its free dont worry if there is something wrong ı will pay promise

your brother's name

Source: https://says.com/my/tech/scammers-are-using-this-hot-new-tactic-to-hack-into-your-facebook-profile/



---------- Forwarded message ---------
From: **Sally Jones** <sjones1234@aol.com>
Date: Sat, Aug 11, 2018 at 2:43 PM
Subject: Re: Hello
To: jsmith@gmail.com

Alright, I'm sorry I'm putting this to you. I'm currently in a meeting. Please I need you to purchase iTunes gift card 5 pieces - $100 each at the store? I would reimburse you when am through, Let me know if you can help with that right now. Thanks

Regards
Sally Jones

On Saturday, 11 August 2108, Joe Smith <jsmith@gmail.com> wrote:

> Sorry had a 10:15 with my mentor.
>
> On Sat, Aug 11, 2018 at 1:28 PM, Sally Jones <sjones1234@aol.com> wrote:
>
> > Joe. Are you free at the moment?
> >
> > Regards
> > Sally Jones
> >
> > Sent from my iPhone

Source: https://www.apa.org/about/division/digest/leader-resources/convention-email-scams/

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Consensus

- One of the tools we use to determine what is right is to find out what other people think is right.
- The greater number of people who find an idea correct, the more the idea will be correct.

[Cialdini, 2007]

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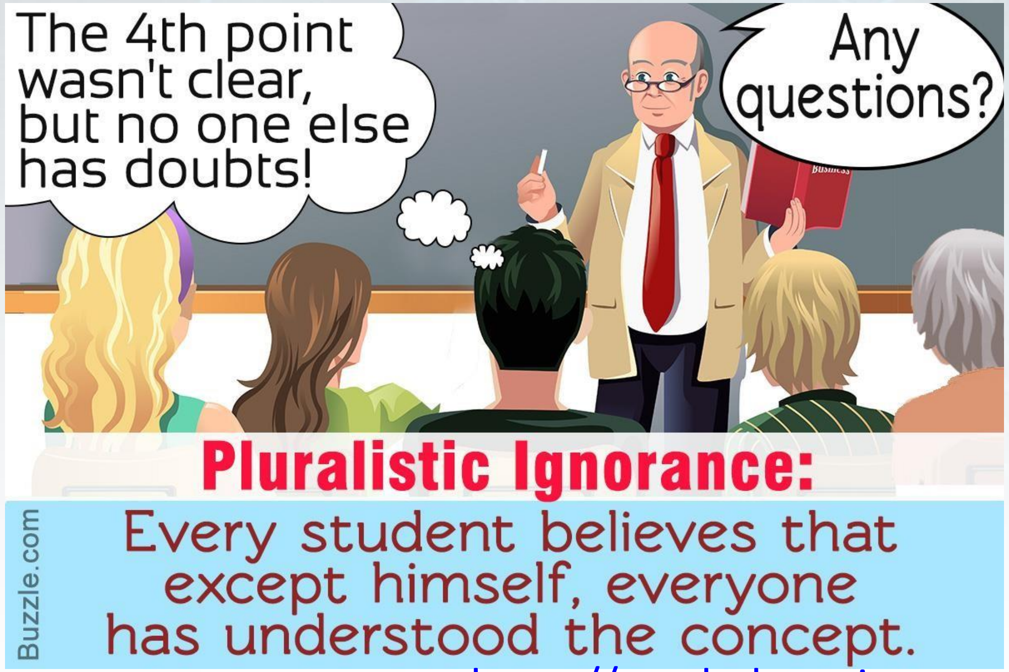
Consensus

- Pluralistic ignorance: each person decides that since nobody is concerned, nothing is wrong


The 4th point wasn't clear, but no one else has doubts!
Any questions?
Business
Pluralistic Ignorance:
Every student believes that except himself, everyone has understood the concept.
Buzzle.com

https://psychologenie.com

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[Cialdini, 2007]

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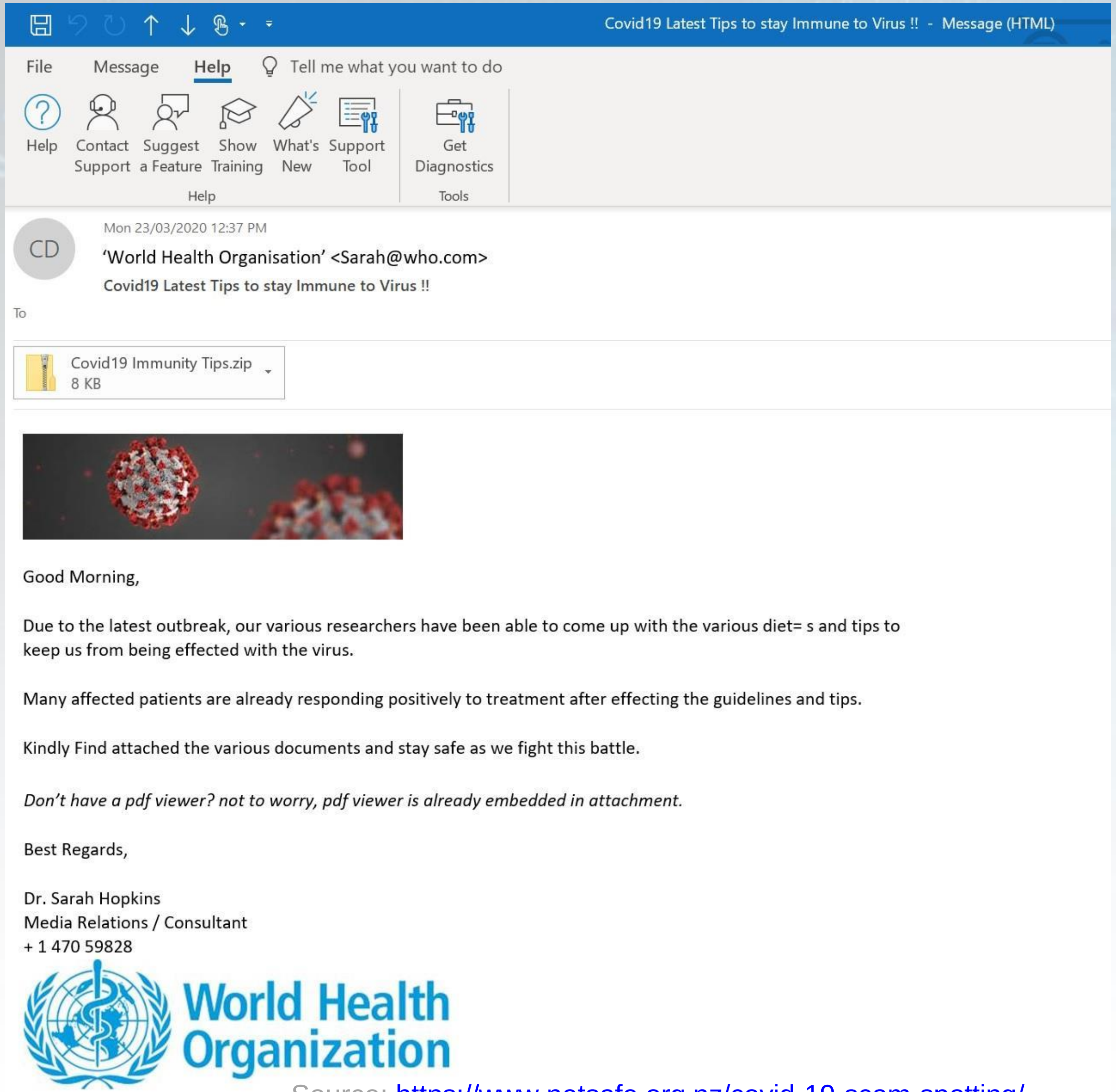
Consensus



Mon 23/03/2020 12:37 PM

'World Health Organisation' <Sarah@who.com>

Covid19 Latest Tips to stay Immune to Virus !!

Covid19 Immunity Tips.zip
8 KB

Good Morning,

Due to the latest outbreak, our various researchers have been able to come up with the various diet= s and tips to keep us from being effected with the virus.

Many affected patients are already responding positively to treatment after effecting the guidelines and tips.

Kindly Find attached the various documents and stay safe as we fight this battle.

Don't have a pdf viewer? not to worry, pdf viewer is already embedded in attachment.

Best Regards,

Dr. Sarah Hopkins
Media Relations / Consultant
+ 1 470 59828

Source: https://www.netsafe.org.nz/covid-19-scam-spotting/

Scarcity

- Opportunities seem more valuable to us when their availability is limited.
- We want it even more when we are in competition for it

[Cialdini, 2007]

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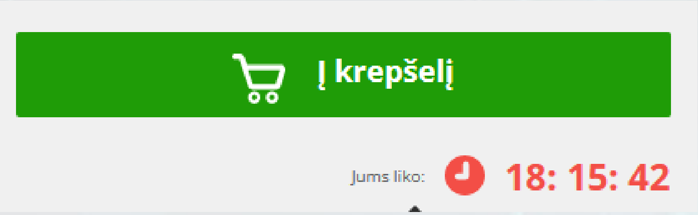
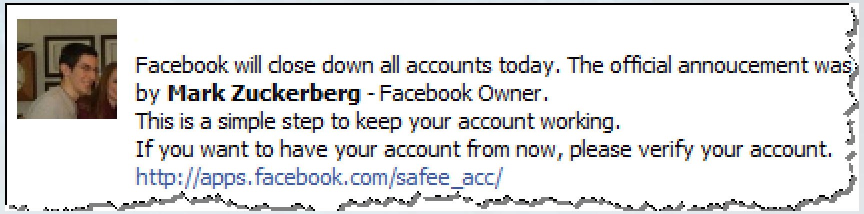
Scarcity

- Time Limitation

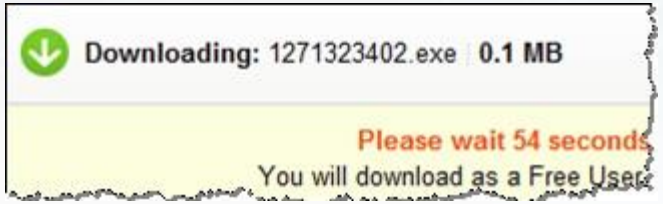


Jums liko: 18: 15: 42

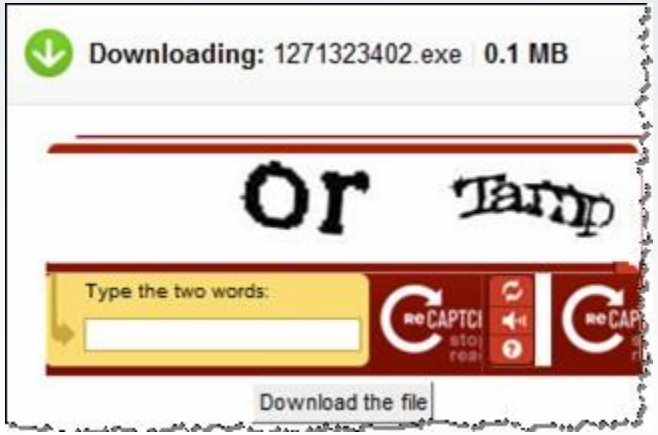
Source: https://pigu.lt/lt/


Facebook will close down all accounts today. The official annoucement was by **Mark Zuckerberg** - Facebook Owner.
This is a simple step to keep your account working.
If you want to have your account from now, please verify your account.
http://apps.facebook.com/safee_acc/

- Obstacle Restriction


Downloading: 1271323402.exe **0.1 MB**

Please wait 54 seconds
You will download as a Free User


Downloading: 1271323402.exe **0.1 MB**

Source: https://zeltser.com/how-the-scarcity-principle-is-used-in-online-scams-and/

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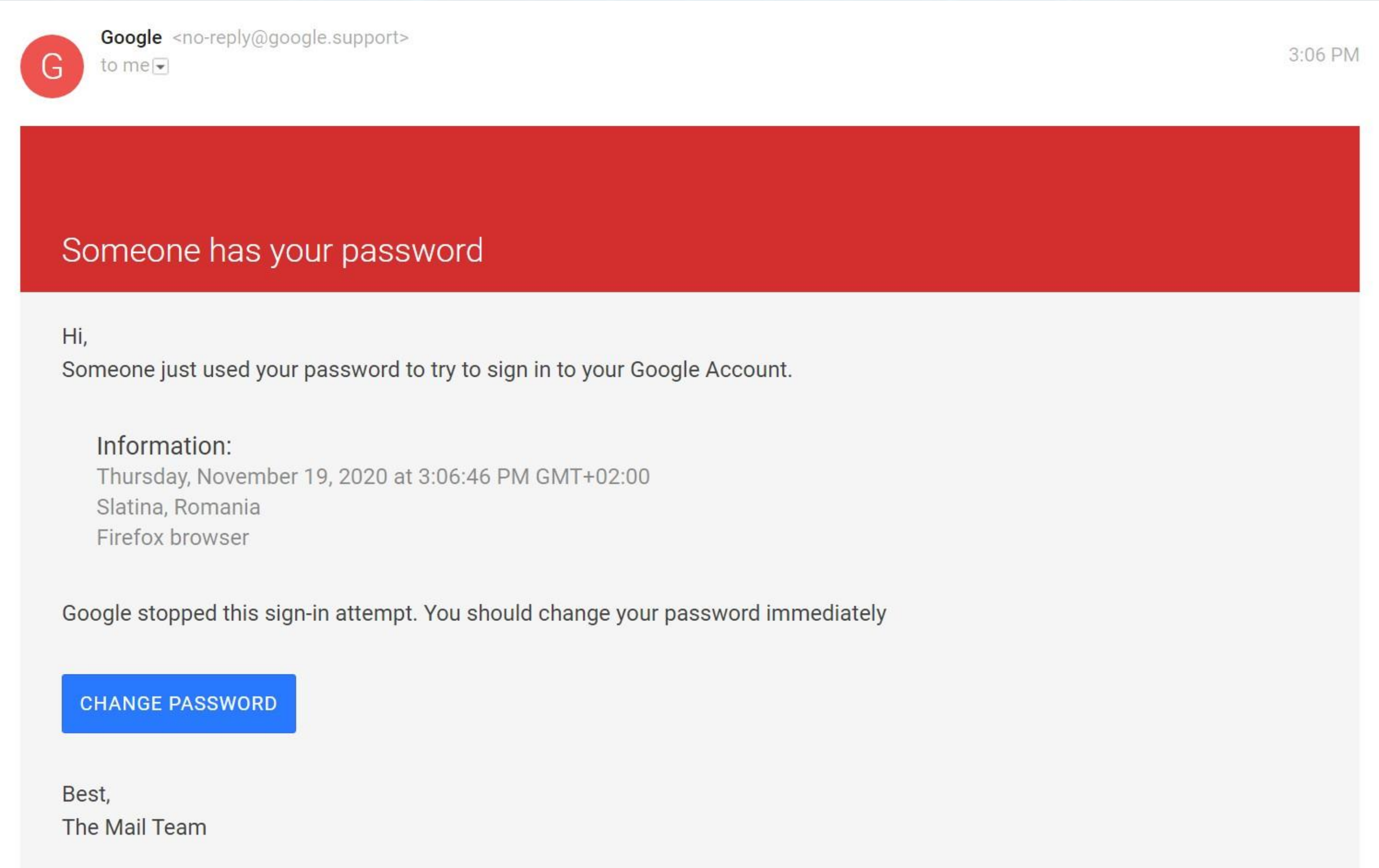
Scarcity



Google <no-reply@google.support>
to me

3:06 PM

Someone has your password

Hi,
Someone just used your password to try to sign in to your Google Account.

Information:
Thursday, November 19, 2020 at 3:06:46 PM GMT+02:00
Slatina, Romania
Firefox browser

Google stopped this sign-in attempt. You should change your password immediately

Best,
The Mail Team

Source: https://au.pcmag.com/

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Unity

- 7th principle of persuasion later added by Dr Robert Cialdini
- Based on the idea that the more we identify ourselves with others, the more likely we are influenced by them

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The Social Engineering Personality Framework (SEPF)

Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Fantasy Aesthetics Feelings Actions Ideas Values	Competence Order Dutifulness Achievement Striving Self-Discipline Deliberation	Warmth Gregariousness Assertiveness Activity Excitement Seeking Positive Emotion	Trust Straightforwardness Altruism Compliance Modesty Tender-mindedness	Anxiety Hostility Depression Self-Consciousness Impulsiveness Vulnerability to Stress

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Source: Susanne Quiel "The Social Engineering Personality Framework"

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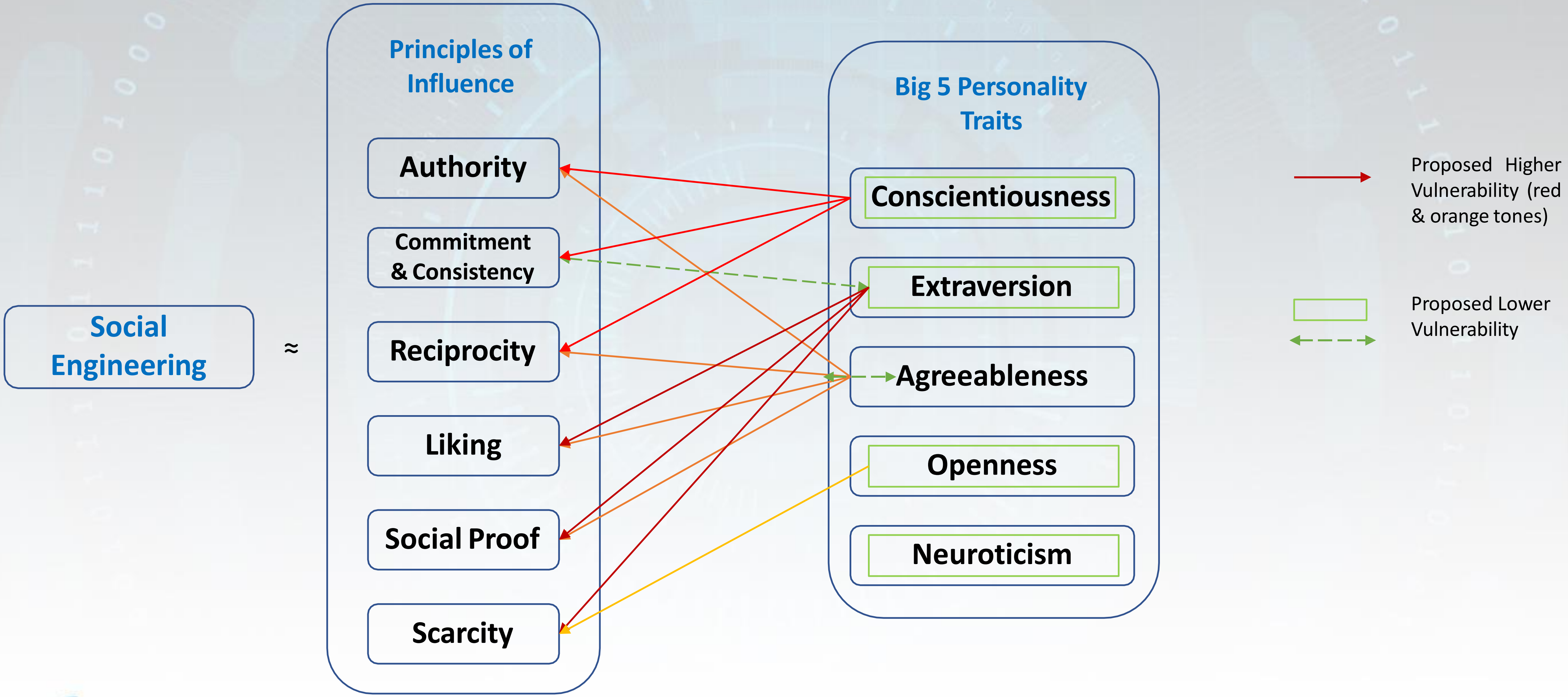
The Social Engineering Personality Framework (SEPF)



Social Engineering ≈

Principles of Influence

Authority

Commitment & Consistency

Reciprocity

Liking

Social Proof

Scarcity

Big 5 Personality Traits

Conscientiousness

Extraversion

Agreeableness

Openness

Neuroticism

Proposed Higher Vulnerability (red & orange tones)

Proposed Lower Vulnerability

Source: Susanne Quiel "The Social Engineering Personality Framework"

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Reverse Social Engineering

- The social engineer does not initiate contact with the victim
- The attack is organized in such a way that the victim himself turned to the attacker for help
- A relationship of high trust is created as it is initiated by the victim.

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Reverse Social Engineering

- It is usually realized in three steps:
  - A bait or pretext is created that stimulates the victim’s interest or curiosity (Target equipment is sabotaged or damaged)
  - It is ensured that the target knows that the attacker is an authoritative person and has the skills needed to repair the equipment
  - Assistance is provided in solving the problem, building a relationship of trust and access to target information or other resources.

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Reverse Social Engineering attacks

- Targeted/Untargeted

  In a targeted attack, the attacker focuses on a particular user. In contrast, in an un-targeted attack, the attacker is solely interested in reaching as many users as possible

- Direct/Mediated

  In a direct attack, the baiting action of the attacker is visible to the targeted users. Mediated attacks, in contrast, follow a two-step approach in which the baiting is collected by an intermediate agent that is then responsible for propagating it (often in a different form) to the targeted users.

[Irani at al. 2011]

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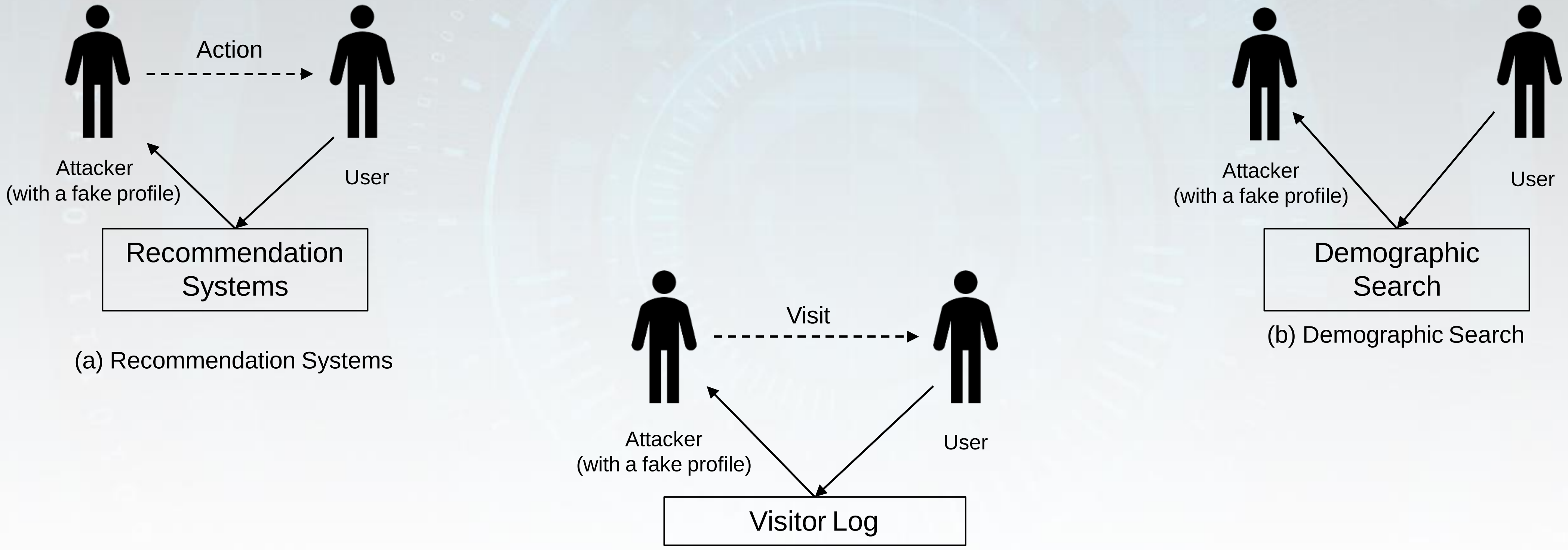
Different attacks of Reverse Social Engineering



(a) Recommendation Systems

(b) Demographic Search

(c) Visitor Tracking

[Irani at al. 2011]

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Tips to Prevent Social Engineering

- Train your awareness to recognize persuasion and manipulation
  - Are my emotions heightened?
  - Did this message come from a legitimate sender?
  - Did my friend actually send this message to me?
  - Does this offer sound too good to be true?
  - Attachments or links suspicious?
  - Can this person prove their identity?

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Tips to Prevent Social Engineering

- Manage your personal information
  - Know what your personal information is available online

- Protect Yourself
  - Manage accounts and passwords.
  - Use multifactor authentication
  - Keep software up to date
  - Enable spam filter
  - Secure your devices

Social engineering: Trends

1. Consent phishing on the rise
2. Business Email Compromise gets costlier
3. Deepfakes create deeper challenges
4. Nation-state attackers with social engineering in their arsenal
5. Expanding Phishing-as-a-Service market

! User awareness is no longer optional – it's essential !

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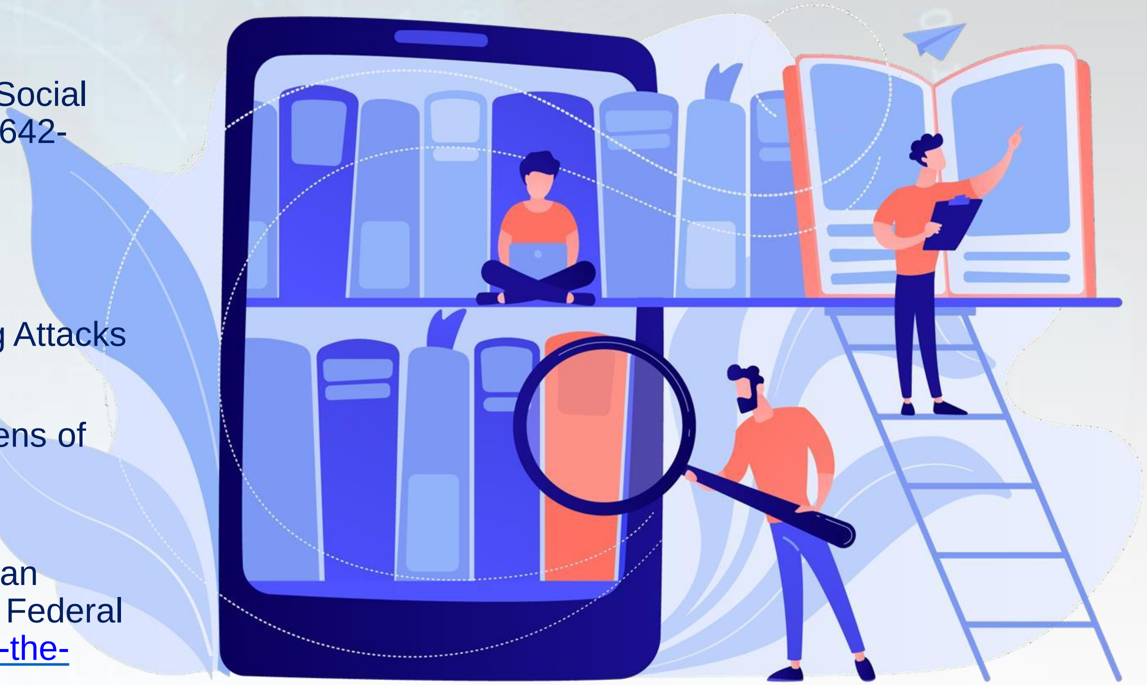
Further Reading

Material used in preparation of this lecture

- **Cialdini, R. B.** (2007) Influence: the psychology of persuasion. Rev. ed. ; 1st Collins business essentials ed. New York: Collins.
- **Hadnagy, C.** (2018) *Social engineering: The art of human hacking*. Indianapolis:John Wiley & Sons.
- **Irani, D., Balduzzi, M., Balzarotti, D., Kirda, E., Pu, C**. (2011). Reverse Social Engineering Attacks in Online Social Networks. 55-74. doi:10.1007/978-3-642-22424-9_4.
- **McLeod, S. A.** (2014). Techniques of compliance. Retrieved from https://www.simplypsychology.org/compliance.htm
- **Merwe, J. Mouton, F.** (2017). Mapping the Anatomy of Social Engineering Attacks to the Systems Engineering Life Cycle. HAISA.
- **Montañez, R., Golob, E., Xu, S.** (2020) Human Cognition Through the Lens of Social Engineering Cyberattacks. *Front. Psychol.* 11:1755. doi: 10.3389/fpsyg.2020.01755
- **Walker, E. Witkowski, D. Benczik, S. Jarrin, P.** Cybersecurity – the Human Factor. Prioritizing People Solutions to improve the cyber resiliency of the Federal workforce. Retrieved from https://documents.pub/document/cybersecurity-the-human-factor-nist-computer-the-human-factor-prioritizing.html
- **Washo, A.** (2021) An interdisciplinary view of social engineering: A call to action for research. Computers in Human Behavior Reports. Vol. 4. 2021. 100126.



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Short Videos

- Hacking challenge at DEFCON
  https://www.youtube.com/watch?v=fHhNWAKw0bY&ab_channel=ConflictInternational

- Breaking into company under 2 min

  https://www.youtube.com/watch?v=PWVN3Rq4gzw&ab_channel=CNNBusiness

- Science Of Persuasion
  https://youtu.be/cFdCzN7RYbw

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Thank you!

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