User Authentication
Access control
Identity and Access Management
Passwords
Biometrics
Social engineering

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September 8. 2025

UNIVERSITY OF COPENHAGEN

The next lectures

Sep 12:	Crypto part 2, Key establishment and Certificate management
Sep 15:	Operating systems, mail, browser and web-security, Introduction to risk assessments and risk management
Sep 19:	Security management and Disaster recovery
Sep 22:	Malicious software
Sep 26:	Software security
Sep 29:	Security architecture (perimeter, zero trust, OT), Hardware security
Oct 3:	Cloud-security, AI-security, IoT-security…
Oct 6:	Intrusion detection, Network attacks
Oct 10:	Forensics
Oct 20:	Privacy, Data protection
Oct 24:	Privacy engineering, Privacy by design, PETS and GDPR

OS Security and Access Control

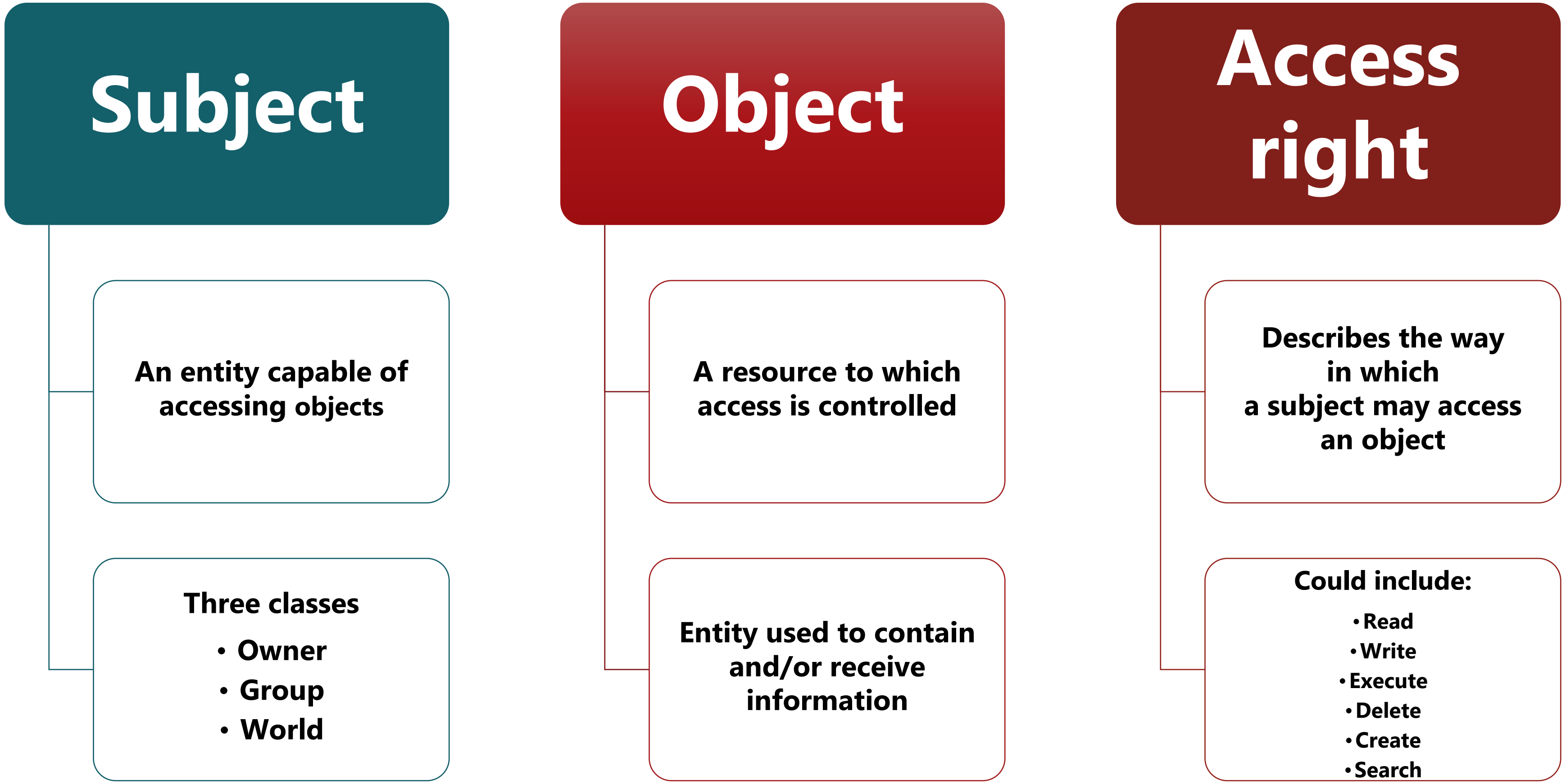
Identity and Access Management - ACL

An access control list (ACL) is a list of permissions attached to an object.

An ACL specifies which users or system processes are granted access to objects, as well as what operations are allowed on given objects

Alice: read,write; Bob: read

Subjects, Objects, and Access Rights



Subject

An entity capable of accessing objects

Three classes

- Owner
- Group
- World

Object

A resource to which access is controlled

Entity used to contain and/or receive information

Access right

Describes the way in which a subject may access an object

Could include:

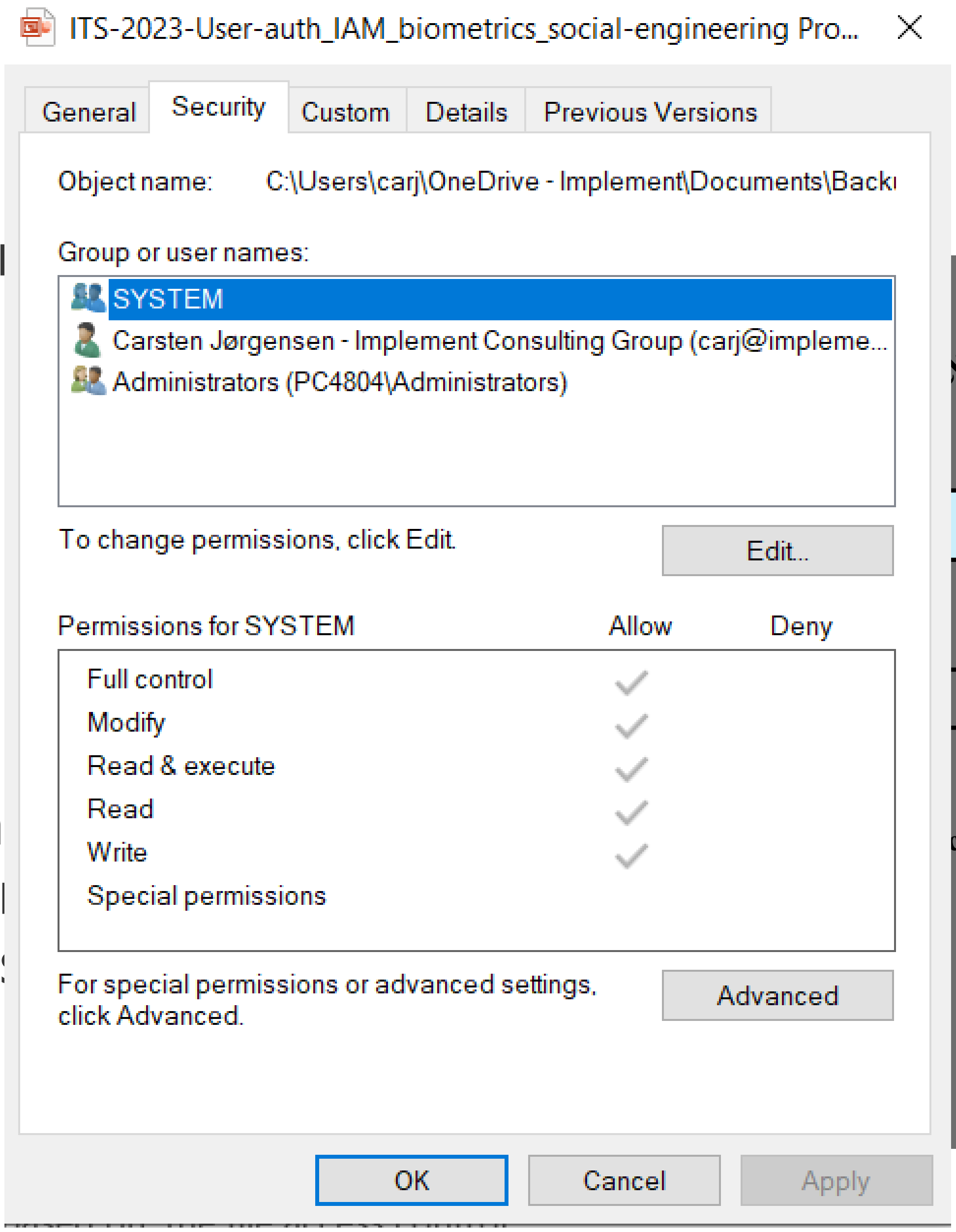
- Read
- Write
- Execute
- Delete
- Create
- Search

Access Control Policies

- **Discretionary access control (DAC)**
  - Controls access based on the identity of the requestor and on access rules (authorizations) stating what requestors are (or are not) allowed to do
- **Mandatory access control (MAC)**
  - Controls access based on comparing security labels with security clearances

UNIX – File Access Control

- Unique user identification nu
(user ID)
- Member of a primary group
identified by a group ID
- Belongs to a specific group
- 12 protection bits
    - Specify read, write, and
execute permission for th
owner of the file, membe
the group and all other u
- The owner ID, group ID, and
protection bits are part of th
file's inode



ITS-2023-User-auth_IAM_biometrics_social-engineering Pro...

Object name: C:\Users\carj\OneDrive - Implement\Documents\Back

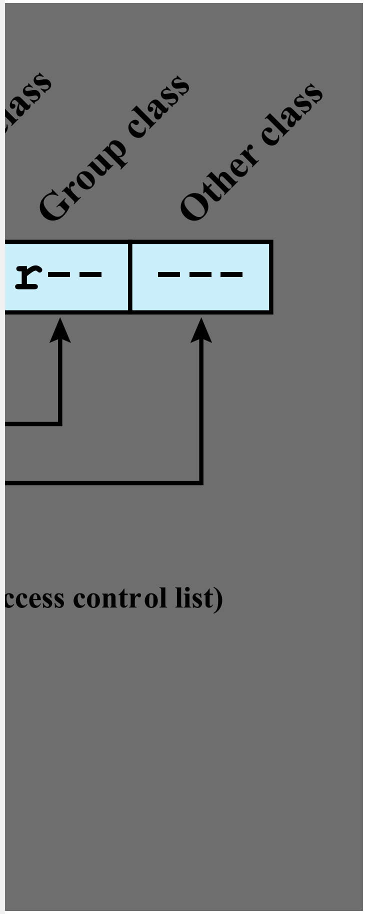
Group or user names:

- SYSTEM
- Carsten Jørgensen - Implement Consulting Group (carj@impleme...
- Administrators (PC4804\Administrators)

To change permissions, click Edit.

Permissions for SYSTEM	Allow	Deny
Full control	✓	
Modify	✓	
Read & execute	✓	
Read	✓	
Write	✓	
Special permissions		

For special permissions or advanced settings, click Advanced.



Traditional UNIX - File Access Control

- “Set user ID”(SetUID)
- “Set group ID”(SetGID)
  - System temporarily uses rights of the file owner/group in addition to the real user’s rights when making access control decisions
  - Enables privileged programs to access files/resources not generally accessible

- Sticky bit
  - When applied to a directory it specifies that only the owner of any file in the directory can rename, move, or delete that file

- Superuser
  - Is exempt from usual access control restrictions
  - Has system-wide access

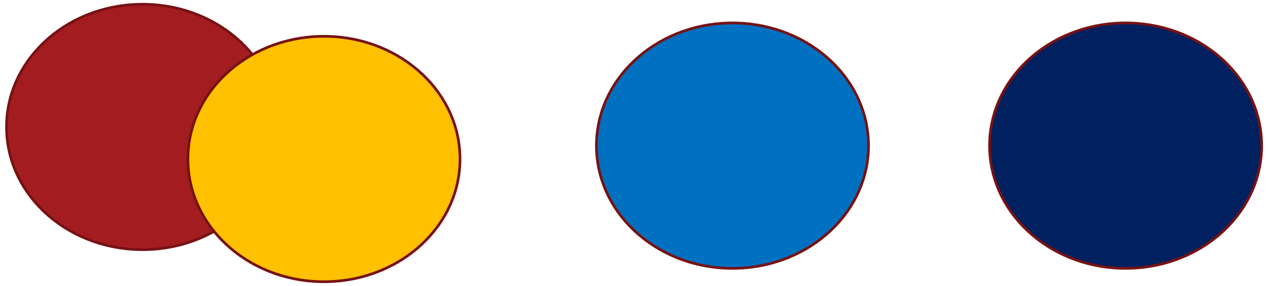
Issues with these concepts…

IAM

Role Based Access Control (RBAC)

Peter is a current employee, Peter is Administrator
Mia is an employee, Mia has access to SAP
Susan is no longer employee, Susan has Guest-access

Jens has resigned, he was Administrator, does he still have access?



Access Control Policies

- **Role-based access control (RBAC)**
  - Controls access based on the roles that users have within the system and on rules stating what accesses are allowed to users in given roles
- **Attribute-based access control (ABAC)**
  - Controls access based on attributes of the user, the resource to be accessed, and current environmental conditions

Access Control Policies

Discretionary access control (DAC)

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IAM – and PAM

An administrative process coupled with a technological solution which validates the identity of individuals and allows owners of data, applications, and systems to either maintain centrally or distribute responsibility for granting access to their respective resources to anyone participating within the IAM framework.

IAM refers to the processes, technologies and policies for managing digital identities and controlling how identities can be used to access resources

Limiting user access rights

- Daily use: only strictly necessary access rights (also applies to administrators)
- Privileged access must be controlled and limited
- Process for assigning administrative access rights (for time-limited periods?)
- Logging assigned (administrative) rights

IAM – Identity Life Cycle Management

Identity, Authentication and Authorization
Principle of Least Access
Groups and Roles
Administration
Auditing, Logging and Reporting
Segregation of Duties/Funktionsadskillelse

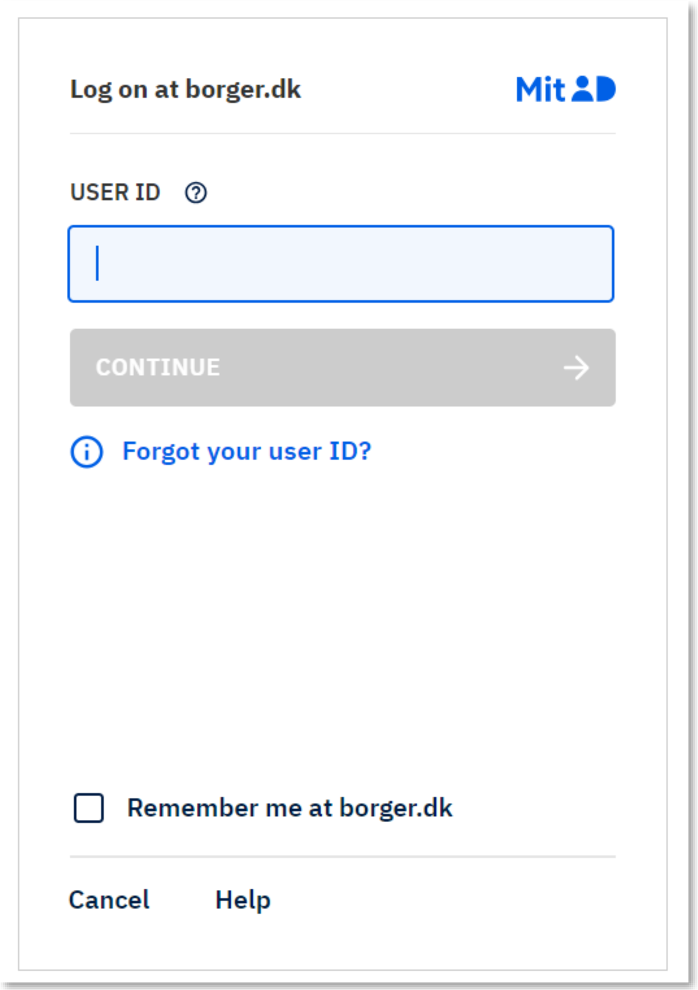
IAM

Identity: Who are you (person or a computer): UserIDs, certificates, cards…

Authentication: Prove your identity:
challenge-response: Passwords, Private keys, PINs…
Your possession of the secret proves you are who you claim to be

Authorization: the system controls which resources you're allowed to access. Typically through the use of a token or ticket mechanism.
Allows you to access only that which the administrators have determined is necessary, thus enforcing the *principle of least privilege*

Identity, authentication, authorization – MitID ?



Log on at borger.dk

USER ID ⓘ

Forgot your user ID?

□ Remember me at borger.dk

Service Providers authorizes - provides access to services based on their own risk assessment

IAM - Case

Du arbejder på et internt projekt til udvikling af nyt økonomisystem til din virksomhed.

Projektlederne fortæller, at for at overholde tidsplanen skal der ikke bruges bruger-id’er. Systemet skal i stedet have et stærkt hardcodet password (17 tegn incl. specialtegn)
Alle der skal have adgang til økonomisystemet vil få oplyst koden hvis de har brug for adgangen.

Hvad siger du til projektlederen?

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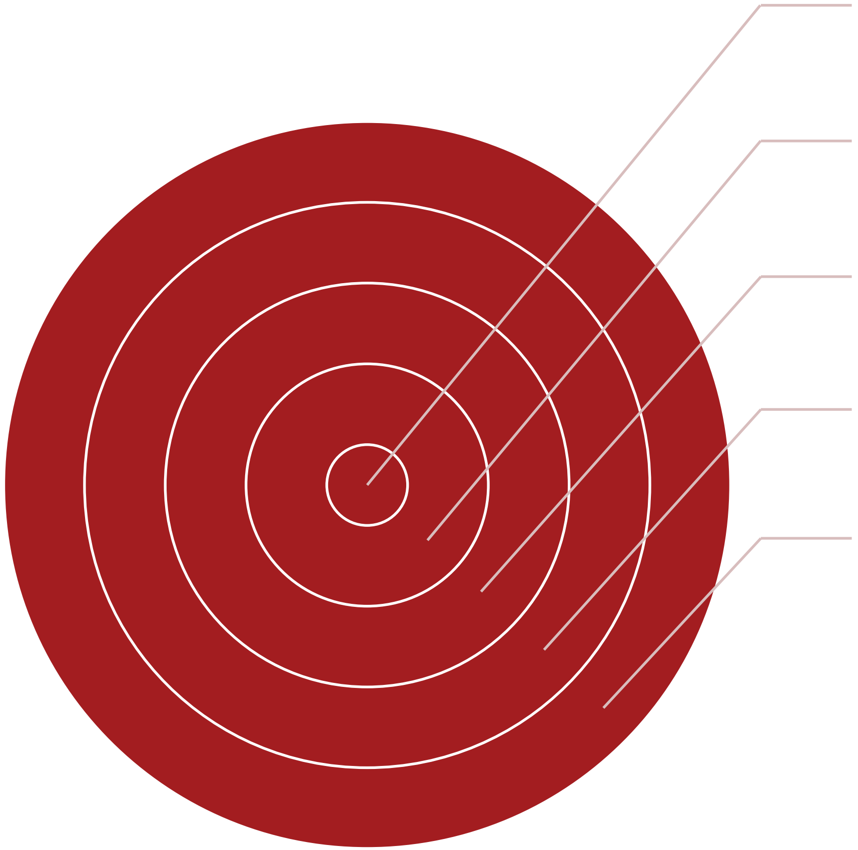
Identity and Access Management (IAM)



Establishing user identity

Authentication (User approval)

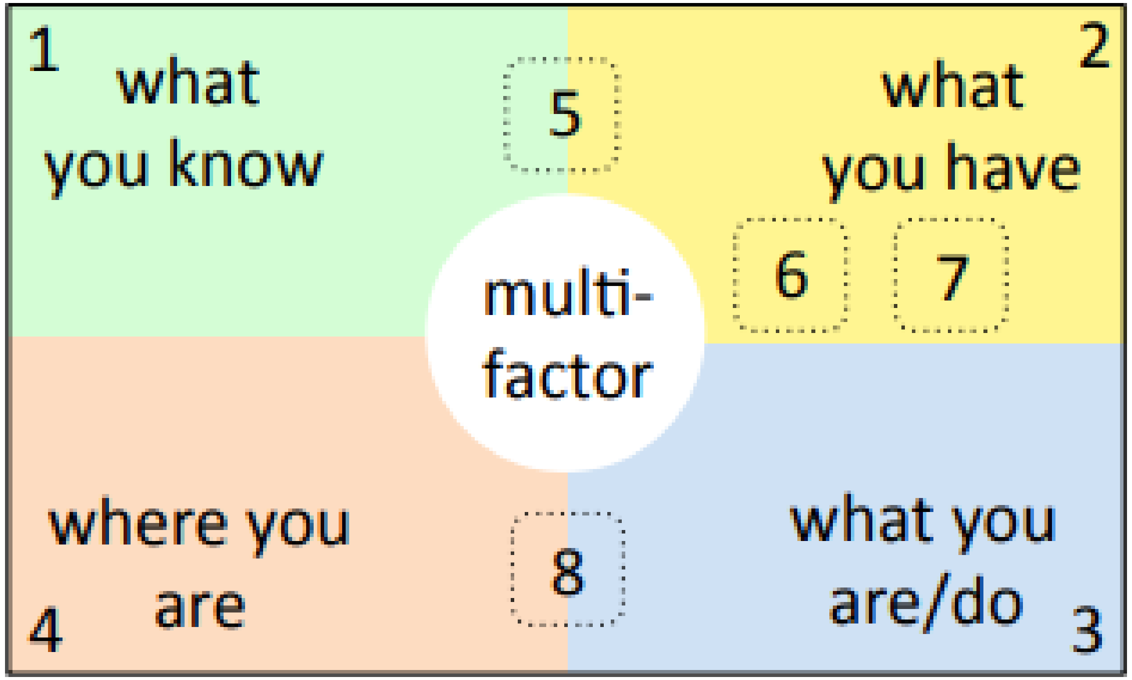
Authorization (access rights)

Separation of duties (funktionsadskillelse)

Logging, audit

Three factors+ for authentication

User authentication categories based on type of verification evidence



Something you **do**, **where** you are, what **time** it is

Hvad er et godt password?

Om brugen af kodeord

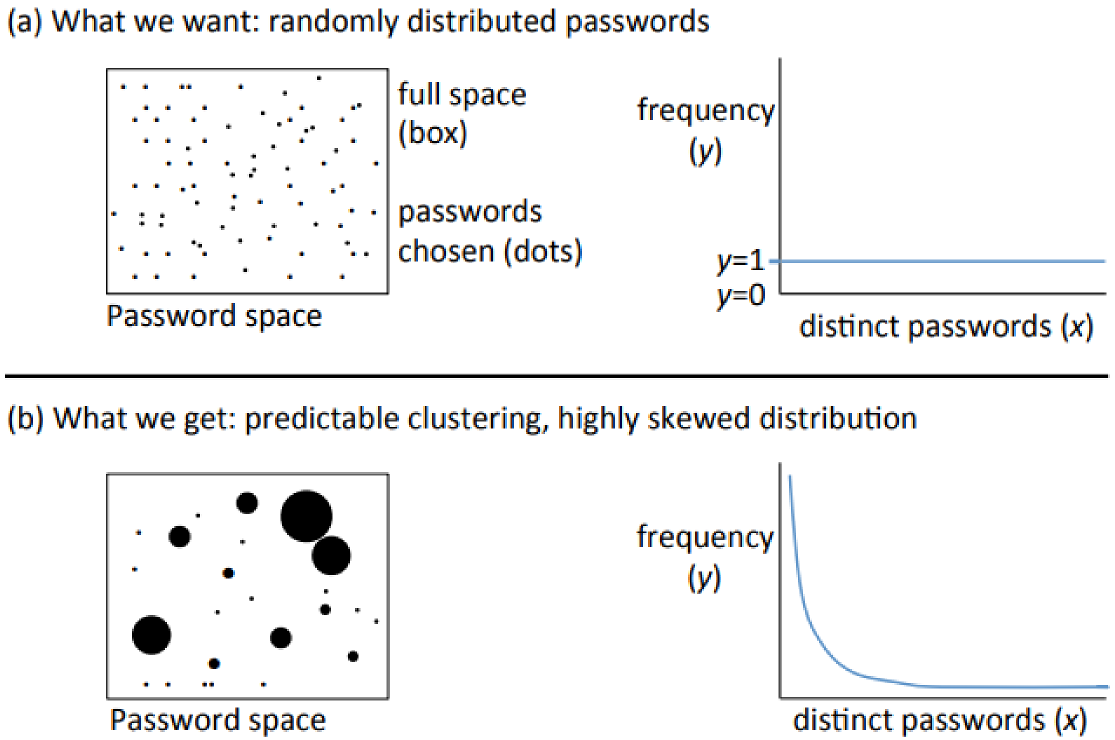
Kodeord har været anvendt i tusinder af år, men…

Hvad er et godt password?

Brugernes passwords er altid dårlige

Opfylder kun lige akkurat de tekniske krav der stilles

Dvs. password regler styrker passwords, men kun op til den tekniske grænse løsningen tvinger brugerne til



Hvad er et godt password?

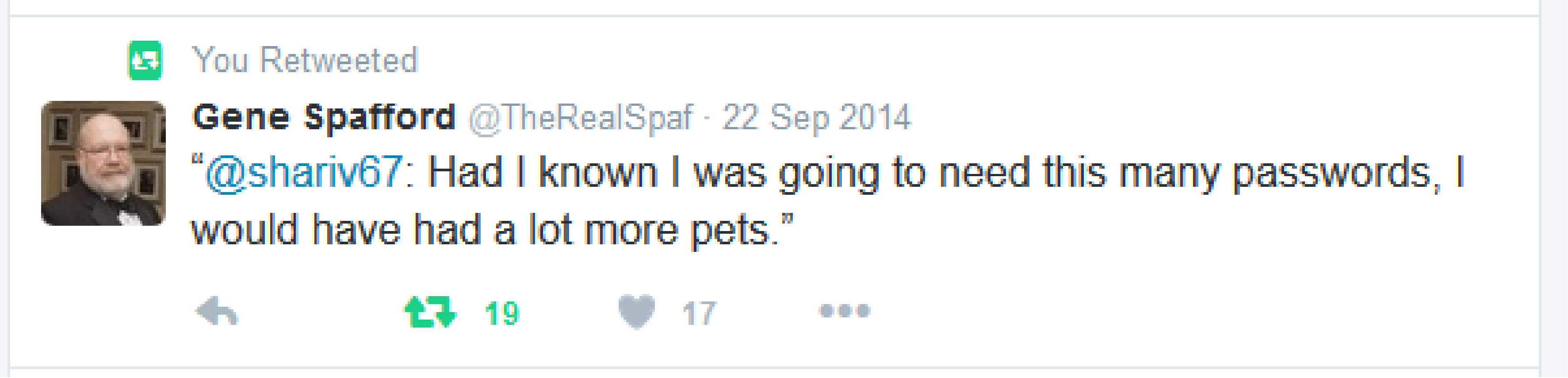
Med mindre vi bliver tvunget - eller undervist –
i andet, så vælger vi alle sammen password
efter dette mønster:

Hvad er et godt password?

1. **Ingen koder**
   Hvis man giver en bruger frit valg vil alle brugere selvfølgelig, alt andet lige, vælge at ikke bruge passwords, fordi det er det mest brugervenlige (dvs. letteste)

2. **Almindelige ord**
   Hvis systemet tvinger til at bruge et kodeord, er første problem hvordan man selv husker sin kode.
   Så man vælger i første omgang sin kode ud fra, om man tror man kan huske den, ikke fordi man tænker på ”sikkerhed”
   – brugerens risikovurdering

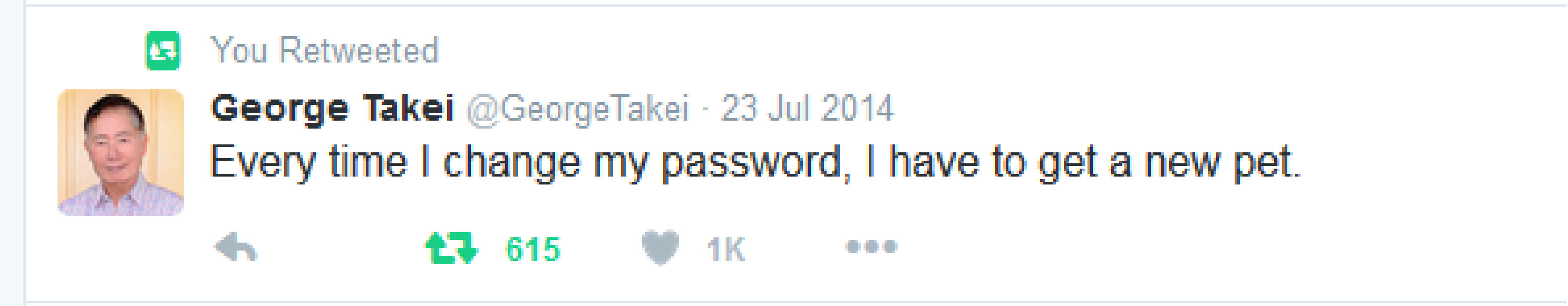
Mental models – "noget man tit tænker på"



You Retweeted

Gene Spafford @TheRealSpaf · 22 Sep 2014

"@shariv67: Had I known I was going to need this many passwords, I would have had a lot more pets."



You Retweeted

George Takei @GeorgeTakei · 23 Jul 2014

Every time I change my password, I have to get a new pet.

Hvad er et godt password?

Systemer:
problemet er, at vi bruger alle sammen de same systemer:

- Hvis krav om både STORE og små bogstaver bruger man kun ét stort bogstav – og det står altid først:
  Passwordet bliver ”Password”, ikke ”pAssword”

- Hvis krav om numre står de altid til sidst: ”Password12”

- Specialtegn er sidste del, og kun hvis de er krævet
  Så det “super-stærke” password er ”Password12!”

- Vi laver mønstre: "1234", "1122", "1111" eller årstal/datoer, som "1945”
  (så en PIN bør være mindst 8 tegn)

To Passwords

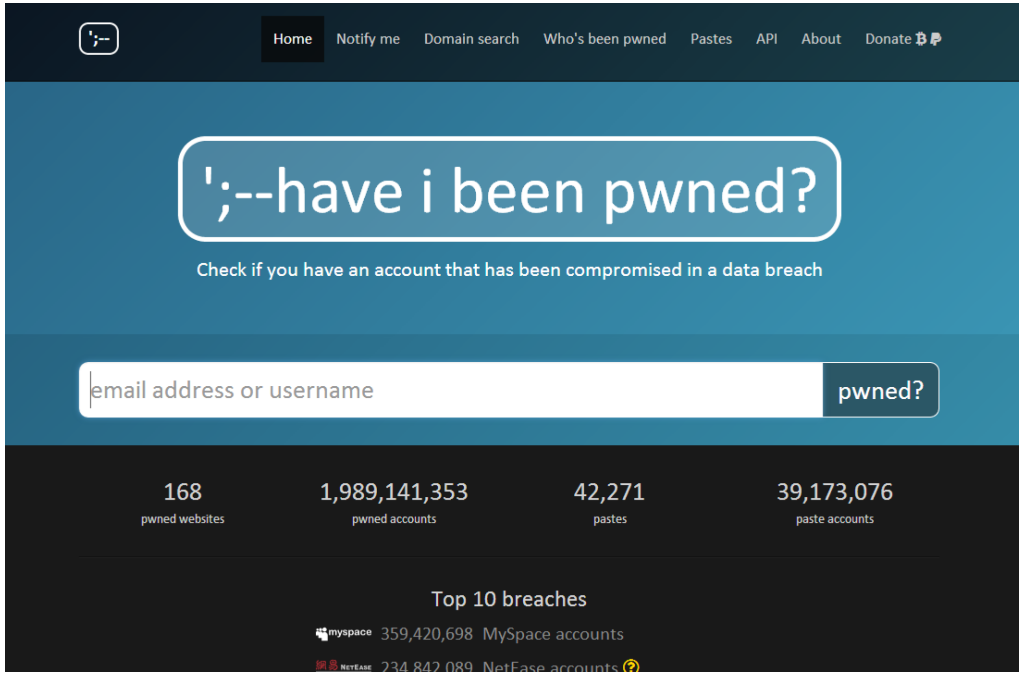
Password123oct **hY6%%#2873GH/GtAQ?08-dPe2>S**

- Hvis man kender det første PW kan alle fremtidige PW gættes
- Brugeren kan huske de første PW - nr.2 bliver skrevet ned, særligt når der er krav om skift af PW

- Hvilket password er bedst nu?
- Hvilket password er bedst næste måned?

Password reuse

Model 2: det samme password på mange sites
Er det et problem?



';--have i been pwned?

Check if you have an account that has been compromised in a data breach

168	1,989,141,353	42,271	39,173,076
pwned websites	pwned accounts	pastes	paste accounts

Top 10 breaches

myspace 359,420,698 MySpace accounts

NetEase 234,842,089 NetEase accounts

Password reuse:
https://haveibeenpwned.com

Hvad er et godt password?

"The password must be impossible to remember and nowhere written down"

Peter Gutmann

Må man skrive sine passwords ned?

https://www.youtube.com/watch?v=Srh_TV_J144

Hvor langt skal et password være?
- Hvad med special tegn?

http://howsecureismypassword.net

Hvad er et godt password?

Password huskere/password managers

Overvej password managers, f.eks. 1password

Kan beskytte koderne og kan give adgang til de gemte koder med et "super-password"

Autogenere stærke koder:
Undgår genbrug af passwords på forskellige sider
Password længden kan øges

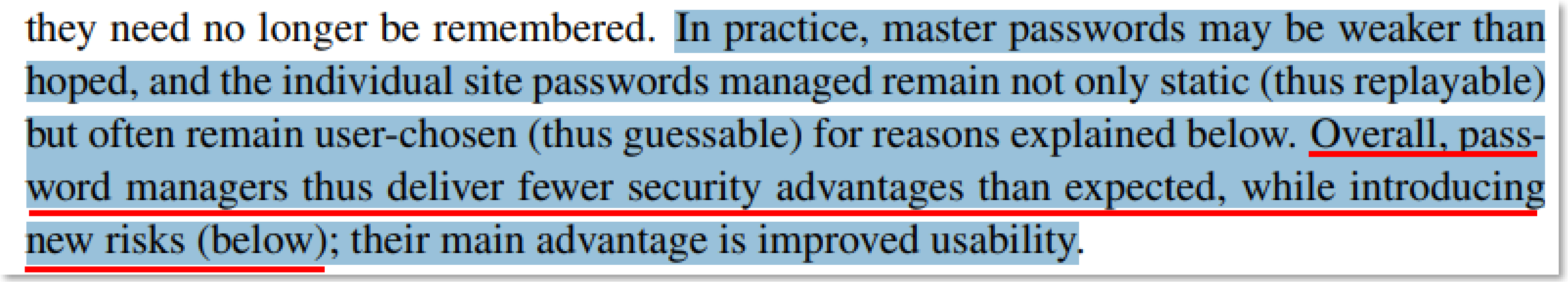
Password managers

Undgår password genbrug
Stærke, lange passwords alle steder

Problemer?

“Password manager salt”

Sikkerhed er ikke sort-hvidt



they need no longer be remembered. In practice, master passwords may be weaker than hoped, and the individual site passwords managed remain not only static (thus replayable) but often remain user-chosen (thus guessable) for reasons explained below. Overall, password managers thus deliver fewer security advantages than expected, while introducing new risks (below); their main advantage is improved usability.

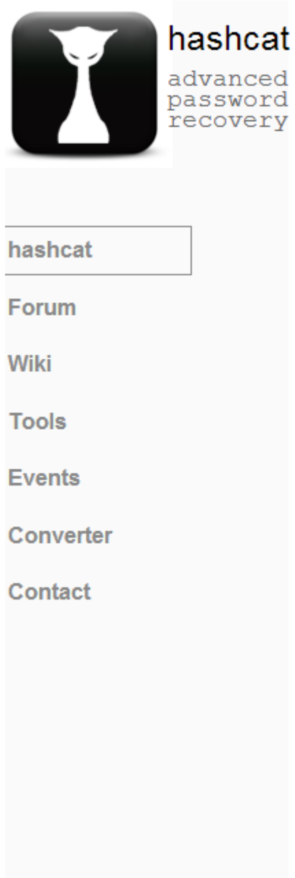
Computer Security and the Internet: Tools and Jewels from Malware to Bitcoin, Second Edition by Paul C. van Oorschot p.77

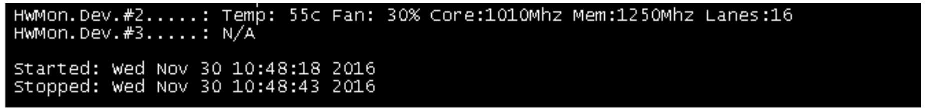
Angreb imod brugerens passwords

1. Hvad er dit password? (spørge)
2. Gætte / default passwords
3. Dictionary Attack
4. Brute Force (f.eks. imod LanMan hash)
5. Rainbow Tables

Password cracking

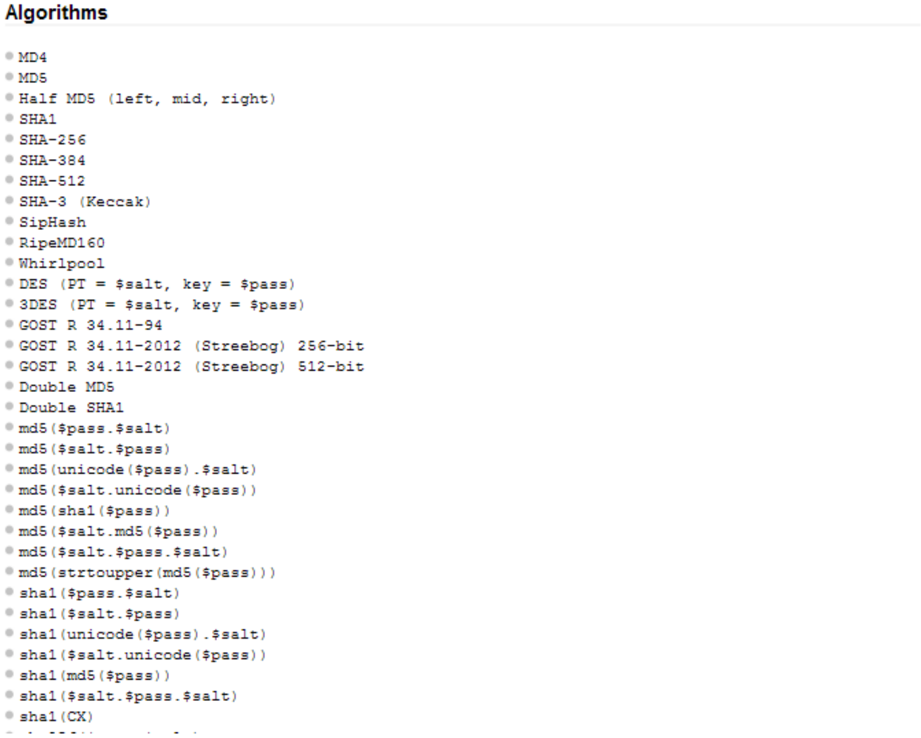
Hashcat: https://hashcat.net





```
HWMon.Dev.#2.....: Temp: 55c Fan: 30% Core:1010Mhz Mem:1250Mhz Lanes:16
HWMon.Dev.#3.....: N/A

Started: Wed Nov 30 10:48:18 2016
Stopped: Wed Nov 30 10:48:43 2016
```



Algorithms

- MD4
- MD5
- Half MD5 (left, mid, right)
- SHA1
- SHA-256
- SHA-384
- SHA-512
- SHA-3 (Keccak)
- SipHash
- RipeMD160
- Whirlpool
- DES (PT = $salt, key = $pass)
- 3DES (PT = $salt, key = $pass)
- GOST R 34.11-94
- GOST R 34.11-2012 (Streebog) 256-bit
- GOST R 34.11-2012 (Streebog) 512-bit
- Double MD5
- Double SHA1
- md5($pass.$salt)
- md5($salt.$pass)
- md5(unicode($pass).$salt)
- md5($salt.unicode($pass))
- md5(sha1($pass))
- md5($salt.md5($pass))
- md5($salt.$pass.$salt)
- md5(strtoupper(md5($pass)))
- sha1($pass.$salt)
- sha1($salt.$pass)
- sha1(unicode($pass).$salt)
- sha1($salt.unicode($pass))
- sha1(md5($pass))
- sha1($salt.$pass.$salt)
- sha1(CX)

Default passwords

Eksempel på dårlige passwords:
Amerikanske Dankort maskiner

Amerikanske ATM/Dankortmaskiner hacket med default password

ATM hacket, tror indeholder 5$ sedler i stedet for $20 => udbetaler 3x for meget

Pre Paid Card

9 dage før kunder rapporterede

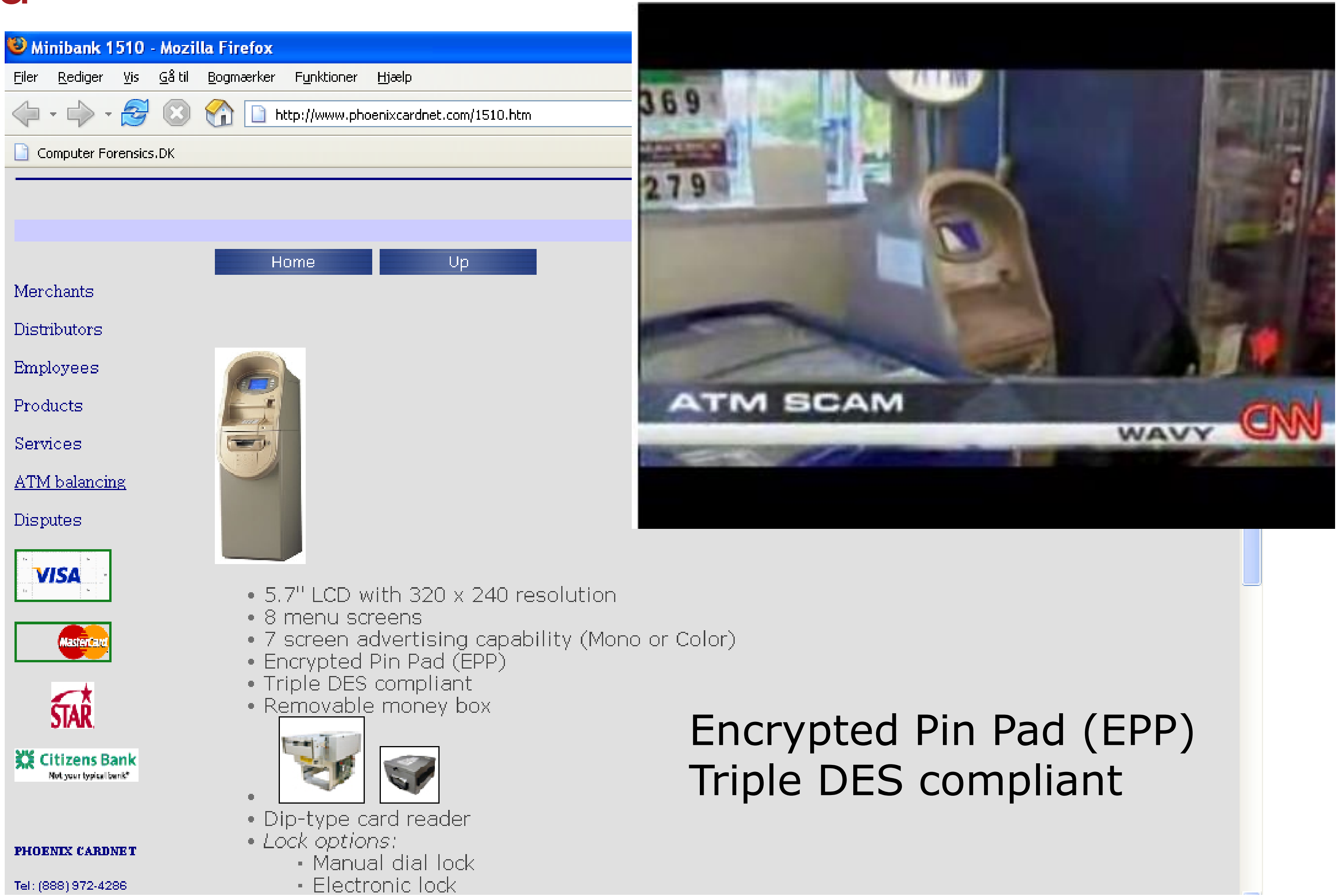
Amerikanske ATM/Dankortmaskiner hacket med default password

http://www.youtube.com/watch?v=cmW_4R81jVU

CNN Report: Robber Tricks ATM machine

CNN Report: Robber Tricks ATM machine

Amerikanske ATM/Dankortmaskiner hacket med default password



Minibank 1510 - Mozilla Firefox

http://www.phoenixcardnet.com/1510.htm

Computer Forensics.DK

- Merchants
- Distributors
- Employees
- Products
- Services
- ATM balancing
- Disputes

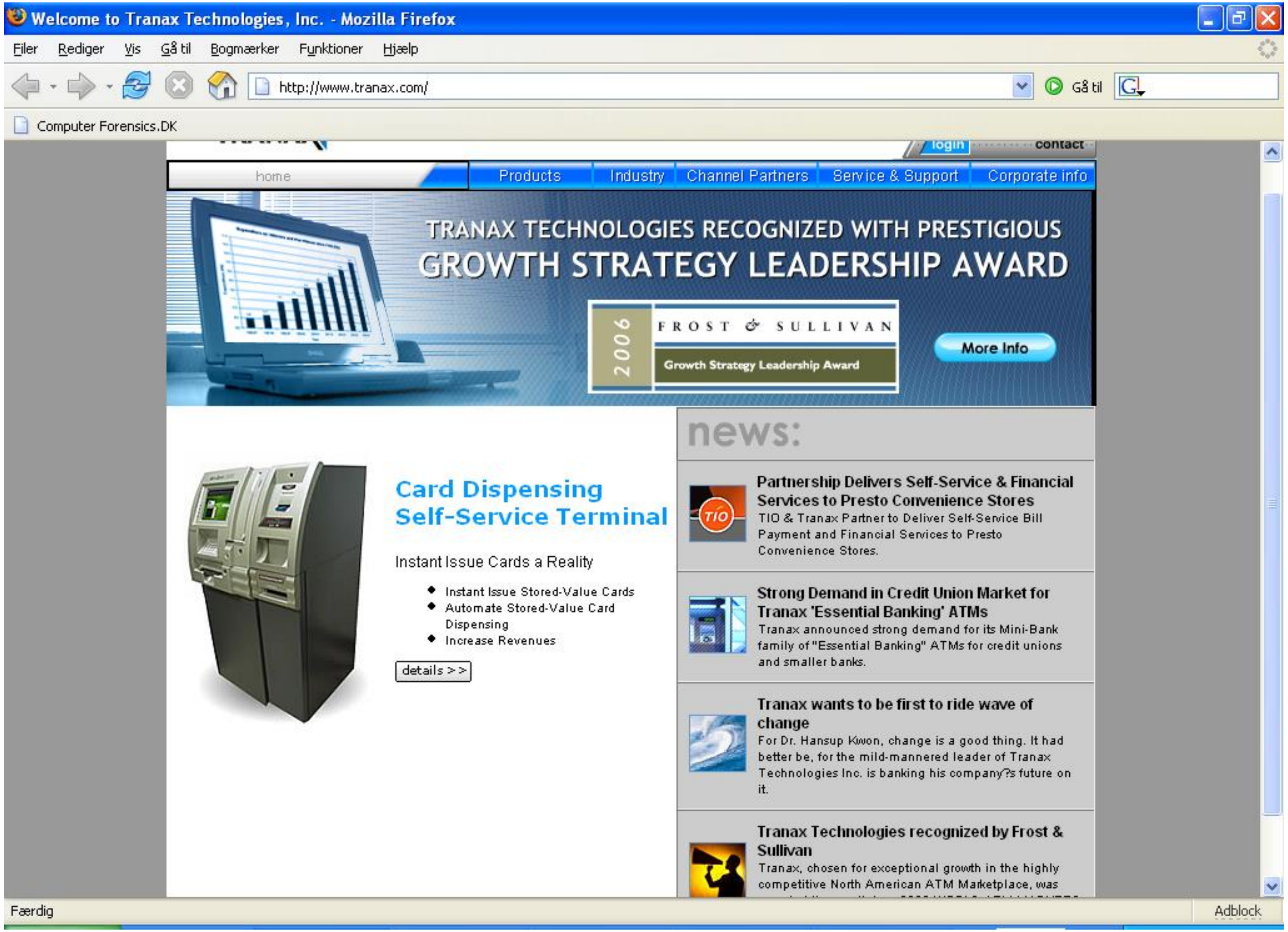
- 5.7" LCD with 320 x 240 resolution
- 8 menu screens
- 7 screen advertising capability (Mono or Color)
- Encrypted Pin Pad (EPP)
- Triple DES compliant
- Removable money box
-
- Dip-type card reader
- *Lock options:*
  - Manual dial lock
  - Electronic lock

PHOENIX CARDNET

Tel: (888) 972-4286

Encrypted Pin Pad (EPP)
Triple DES compliant

Amerikanske ATM/Dankortmaskiner hacket med default password



http://www.tranax.com/

TRANAX TECHNOLOGIES RECOGNIZED WITH PRESTIGIOUS GROWTH STRATEGY LEADERSHIP AWARD

Card Dispensing Self-Service Terminal

Instant Issue Cards a Reality

- Instant Issue Stored-Value Cards
- Automate Stored-Value Card Dispensing
- Increase Revenues

news:

Partnership Delivers Self-Service & Financial Services to Presto Convenience Stores
TIO & Tranax Partner to Deliver Self-Service Bill Payment and Financial Services to Presto Convenience Stores.

Strong Demand in Credit Union Market for Tranax 'Essential Banking' ATMs
Tranax announced strong demand for its Mini-Bank family of "Essential Banking" ATMs for credit unions and smaller banks.

Tranax wants to be first to ride wave of change
For Dr. Hansup Kwon, change is a good thing. It had better be, for the mild-mannered leader of Tranax Technologies Inc. is banking his company?s future on it.

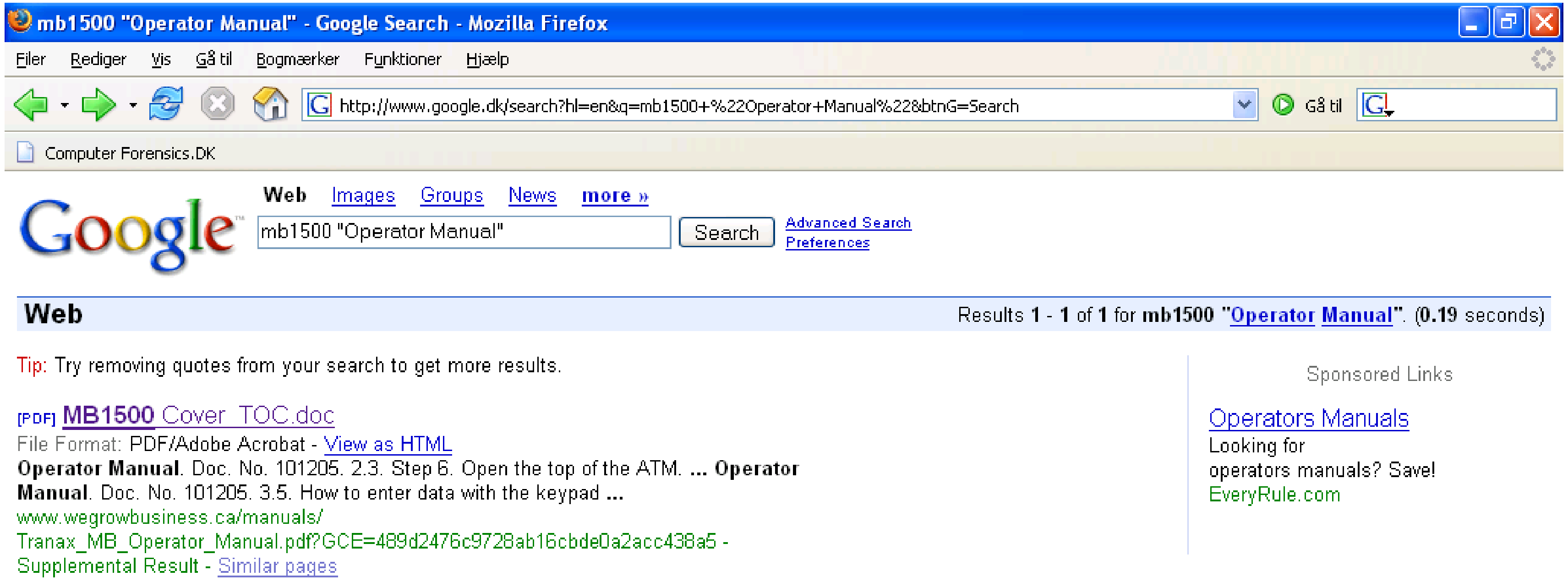
Tranax Technologies recognized by Frost & Sullivan
Tranax, chosen for exceptional growth in the highly competitive North American ATM Marketplace, was

Amerikanske ATM/Dankortmaskiner hacket med default password

Knowledgebase:

“The ATM is programmed with the passwords that the distributor requests when the order is placed to program a new ATM. *When special passwords are not requested they are left at the factory default (see your mini-bank operators manual)* Every new ATM that is shipped from Tranax has a copy of the print setup included in the “open me first” box or envelope. The master password is hand written at the top of the print setup for the convenience of the installer.“

Amerikanske ATM/Dankortmaskiner hacket med default password


mb1500 "Operator Manual" - Google Search - Mozilla Firefox
Filer Rediger Vis Gå til Bogmærker Funktioner Hjælp
http://www.google.dk/search?hl=en&q=mb1500+%22Operator+Manual%22&btnG=Search
Gå til
Computer Forensics.DK
Web Images Groups News more »
mb1500 "Operator Manual"
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Results 1 - 1 of 1 for mb1500 "Operator Manual". (0.19 seconds)

Tip: Try removing quotes from your search to get more results.

[PDF] MB1500 Cover_TOC.doc
File Format: PDF/Adobe Acrobat - View as HTML
Operator Manual. Doc. No. 101205. 2.3. Step 6. Open the top of the ATM. ... **Operator Manual**. Doc. No. 101205. 3.5. How to enter data with the keypad ...
www.wegrowbusiness.ca/manuals/
Tranax_MB_Operator_Manual.pdf?GCE=489d2476c9728ab16cbde0a2acc438a5 -
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EveryRule.com

Tranax manual inurl:pdf

Amerikanske ATM/Dankortmaskiner hacket med default password

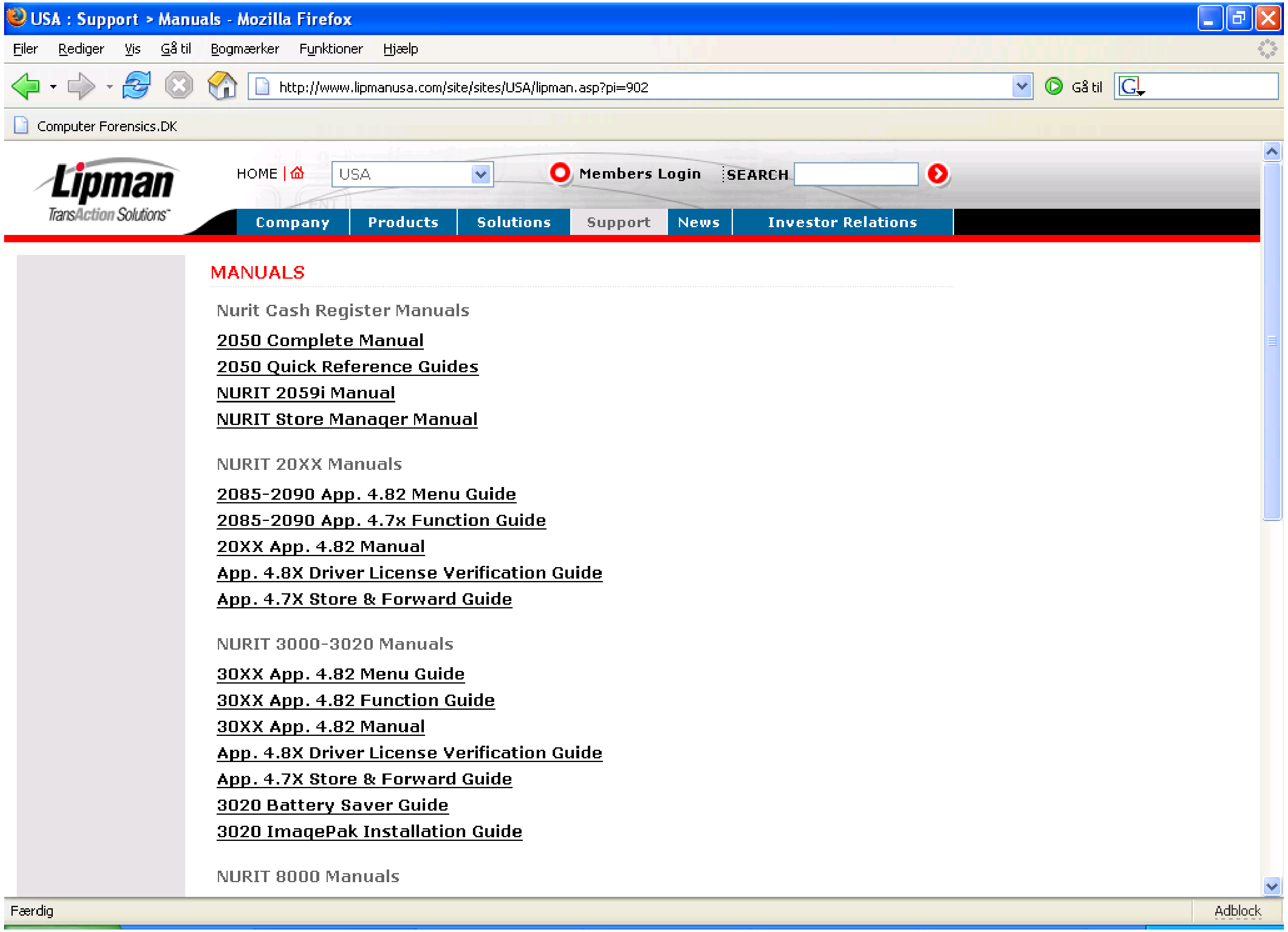
Thranax:
Master = 555555
Service = 222222
Operator = 111111

Triton:
12345

Lipman:
Merchant = 2222222
Technician = 1111111

GTI:
1234

Amerikanske ATM/Dankortmaskiner hacket med default password


USA : Support > Manuals - Mozilla Firefox
Filer Rediger Vis Gå til Bogmærker Funktioner Hjælp
http://www.lipmanusa.com/site/sites/USA/lipman.asp?pi=902
Gå til
Computer Forensics.DK
Lipman TransAction Solutions
HOME
USA
Members Login
SEARCH
Company
Products
Solutions
Support
News
Investor Relations
Færdig
Adblock

MANUALS

Nurit Cash Register Manuals

- 2050 Complete Manual
- 2050 Quick Reference Guides
- NURIT 2059i Manual
- NURIT Store Manager Manual

NURIT 20XX Manuals

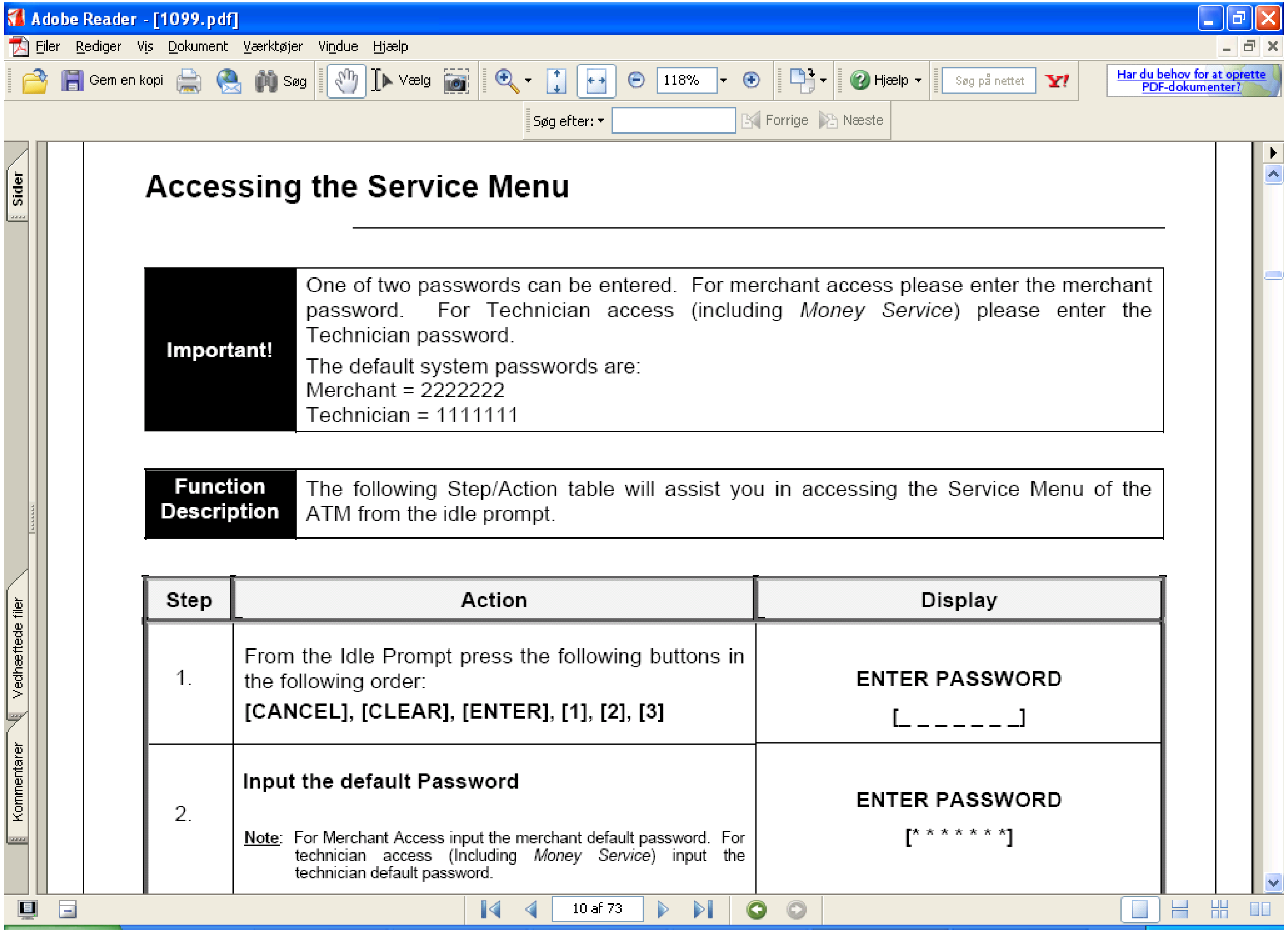
- 2085-2090 App. 4.82 Menu Guide
- 2085-2090 App. 4.7x Function Guide
- 20XX App. 4.82 Manual
- App. 4.8X Driver License Verification Guide
- App. 4.7X Store & Forward Guide

NURIT 3000-3020 Manuals

- 30XX App. 4.82 Menu Guide
- 30XX App. 4.82 Function Guide
- 30XX App. 4.82 Manual
- App. 4.8X Driver License Verification Guide
- App. 4.7X Store & Forward Guide
- 3020 Battery Saver Guide
- 3020 ImagePak Installation Guide

NURIT 8000 Manuals

Amerikanske ATM/Dankortmaskiner hacket med default password


Adobe Reader - [1099.pdf]
Filer Rediger Vis Dokument Værktøjer Vindue Hjælp
Gem en kopi
Søg
Vælg
118%
Hjælp
Søg på nettet
Har du behov for at oprette PDF-dokumenter?
Søg efter:
Forrige
Næste
Sider
Vedhæftede filer
Kommentarer
10 af 73

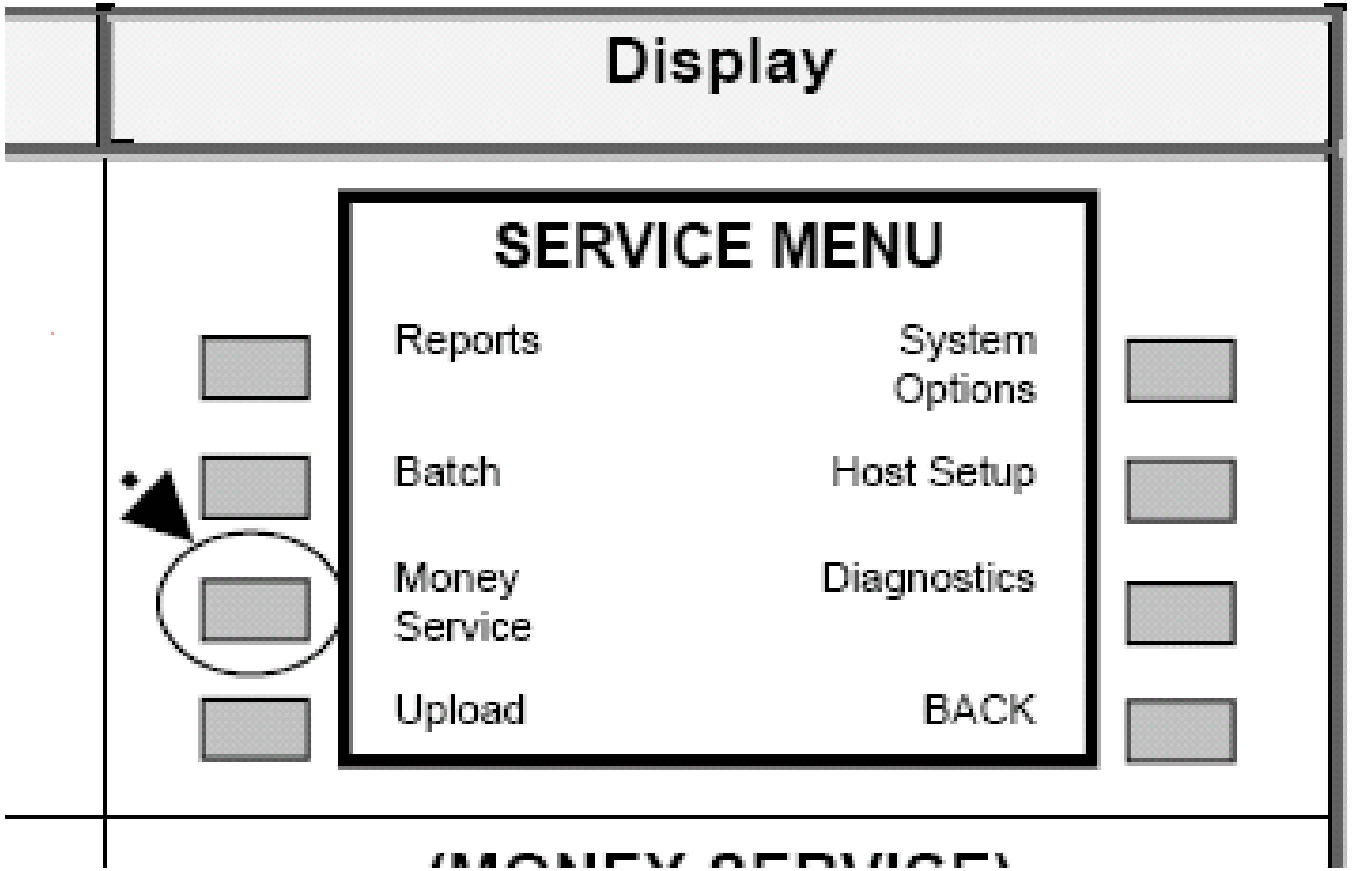
Accessing the Service Menu

Important!	One of two passwords can be entered. For merchant access please enter the merchant password. For Technician access (including *Money Service*) please enter the Technician password.
	The default system passwords are:
	Merchant = 2222222
	Technician = 1111111

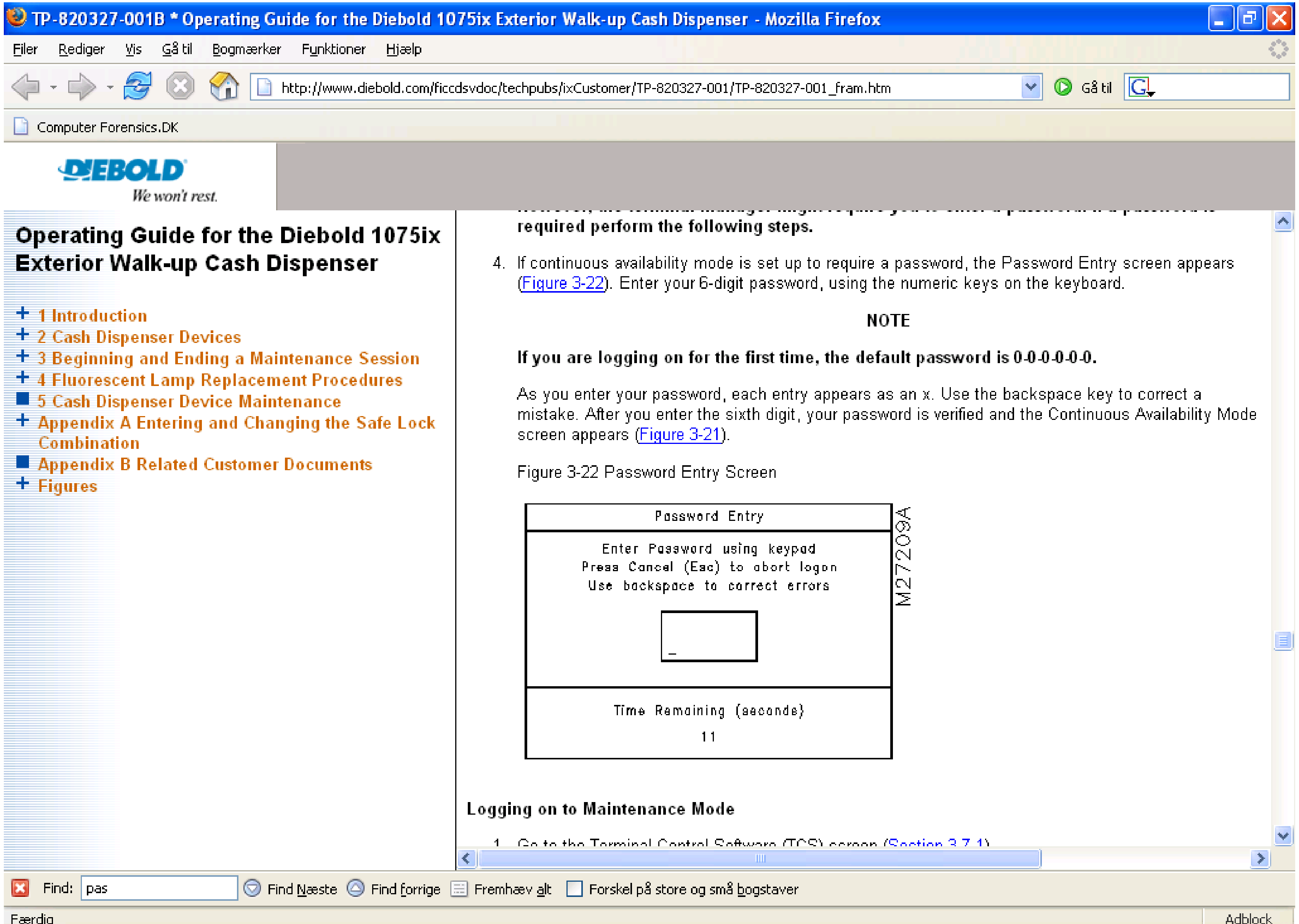
Function Description	The following Step/Action table will assist you in accessing the Service Menu of the ATM from the idle prompt.

Step	Action	Display
1.	From the Idle Prompt press the following buttons in the following order: **[CANCEL], [CLEAR], [ENTER], [1], [2], [3]**	**ENTER PASSWORD** **[_ _ _ _ _ _ _]**
2.	**Input the default Password** <u>Note</u>: For Merchant Access input the merchant default password. For technician access (Including *Money Service*) input the technician default password.	**ENTER PASSWORD** [* * * * * * *]

Amerikanske ATM/Dankortmaskiner hacket med default password



Amerikanske ATM/Dankortmaskiner hacket med default password


TP-820327-001B * Operating Guide for the Diebold 1075ix Exterior Walk-up Cash Dispenser - Mozilla Firefox
Filer Rediger Vis Gå til Bogmærker Funktioner Hjælp
http://www.diebold.com/ficcdsvdoc/techpubs/ixCustomer/TP-820327-001/TP-820327-001_fram.htm
Gå til
Computer Forensics.DK
DIEBOLD
We won't rest.
Find: pas
Find Næste
Find forrige
Fremhæv alt
Forskel på store og små bogstaver
Færdig
Adblock

Operating Guide for the Diebold 1075ix Exterior Walk-up Cash Dispenser

- 1 Introduction
- 2 Cash Dispenser Devices
- 3 Beginning and Ending a Maintenance Session
- 4 Fluorescent Lamp Replacement Procedures
- 5 Cash Dispenser Device Maintenance
- Appendix A Entering and Changing the Safe Lock Combination
- Appendix B Related Customer Documents
- Figures

required perform the following steps.

4. If continuous availability mode is set up to require a password, the Password Entry screen appears (Figure 3-22). Enter your 6-digit password, using the numeric keys on the keyboard.

NOTE

If you are logging on for the first time, the default password is 0-0-0-0-0-0.

As you enter your password, each entry appears as an x. Use the backspace key to correct a mistake. After you enter the sixth digit, your password is verified and the Continuous Availability Mode screen appears (Figure 3-21).

Figure 3-22 Password Entry Screen

```
Password Entry

Enter Password using keypad
Press Cancel (Esc) to abort logon
Use backspace to correct errors

_

Time Remaining (seconds)
11
```

M27209A

Logging on to Maintenance Mode

1. Go to the Terminal Control Software (TCS) screen (Section 3.7.1)

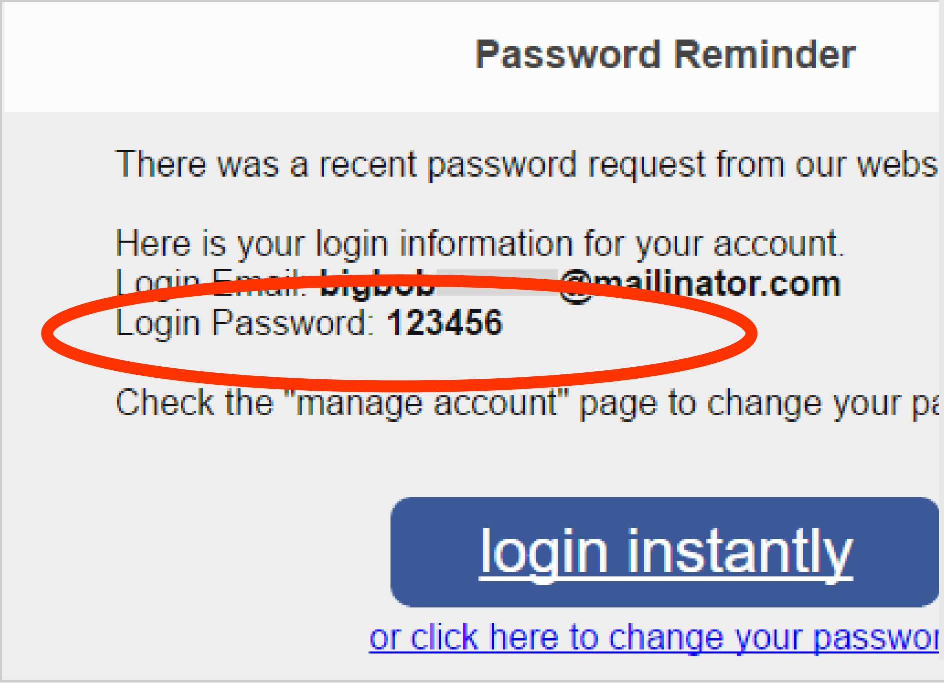
Pause

Password baggrund

Password hash,
hash og salt,
scrypt/bcrypt

Password baggrund

Password hash,
hash og salt,

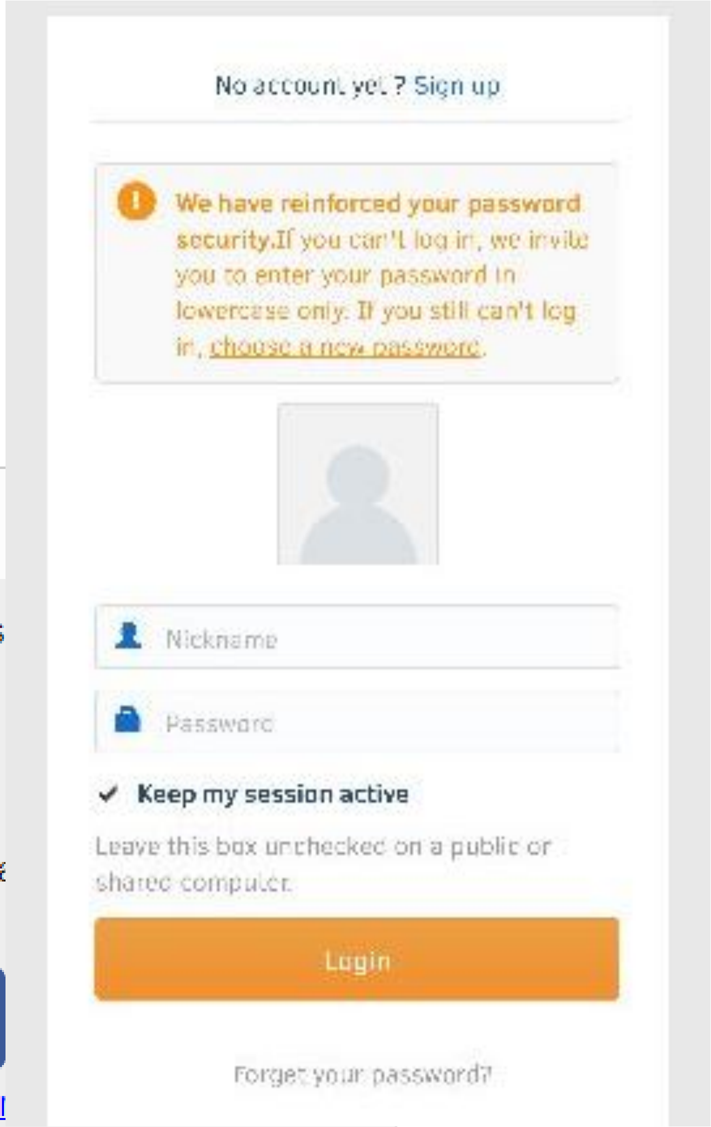


Password Reminder

There was a recent password request from our webs

Here is your login information for your account.
Login Email: **bigbob @mailinator.com**
Login Password: **123456**

Check the "manage account" page to change your pa



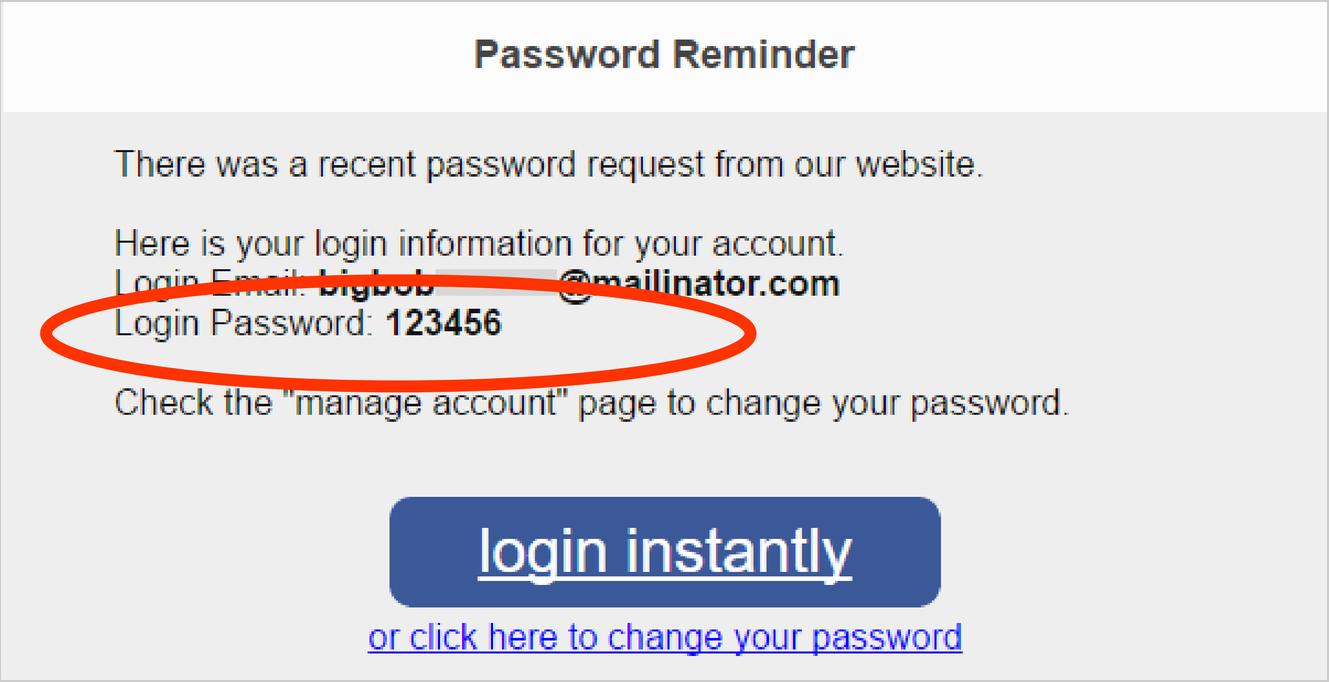
No account yet ? Sign up

We have reinforced your password security. If you can't log in, we invite you to enter your password in lowercase only. If you still can't log in, choose a new password.

Password baggrund

Don't store the password, store a hash of the password

Password hash,
hash og salt,



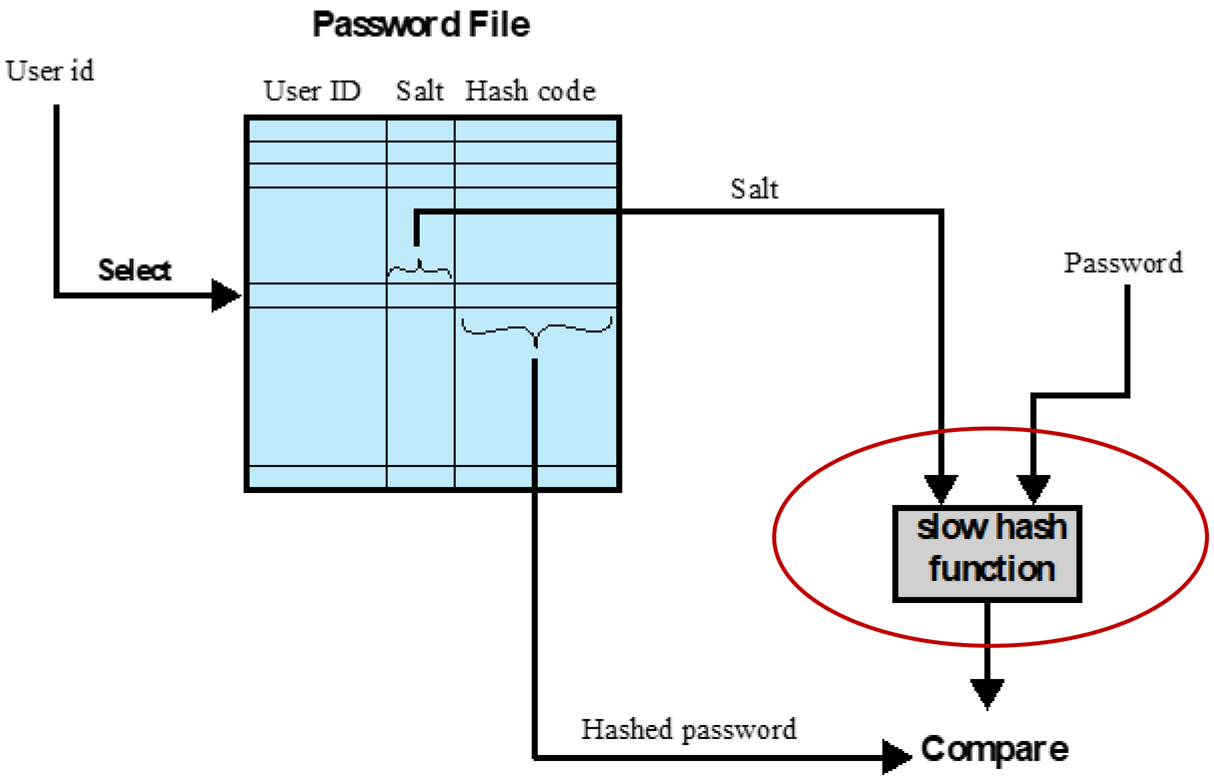
Password Reminder

There was a recent password request from our website.

Here is your login information for your account.
Login Email: **bigbob**[redacted]**@mailinator.com**
Login Password: **123456**

Check the "manage account" page to change your password.

Salt



(b) Verifying a password

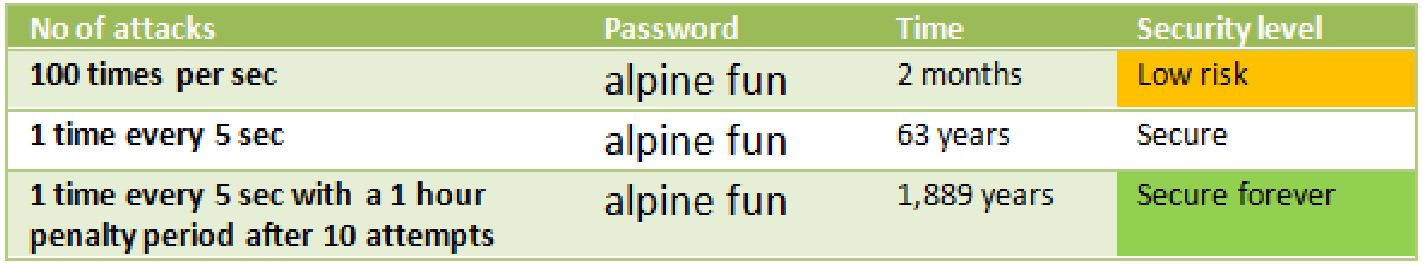
Password hash?

Direkte off-line adgang til password hash
eller
Online - forbinde til serveren hver gang?

- Begrænsninger på antallet af forsøg?
- Time-delay mellem sign-in attempts, brug penalty period (f.eks. 1 time) hvis forkert password er indtastet for mange gange - f.eks. 10 gange

Password hash?

The password **"alpine fun"** can be brute-forced in only 2 months if the server can be attacked 100 times per second. But, with a penalty period and 5 second delay, the same password can suddenly sustain an attack for 1,889 years.



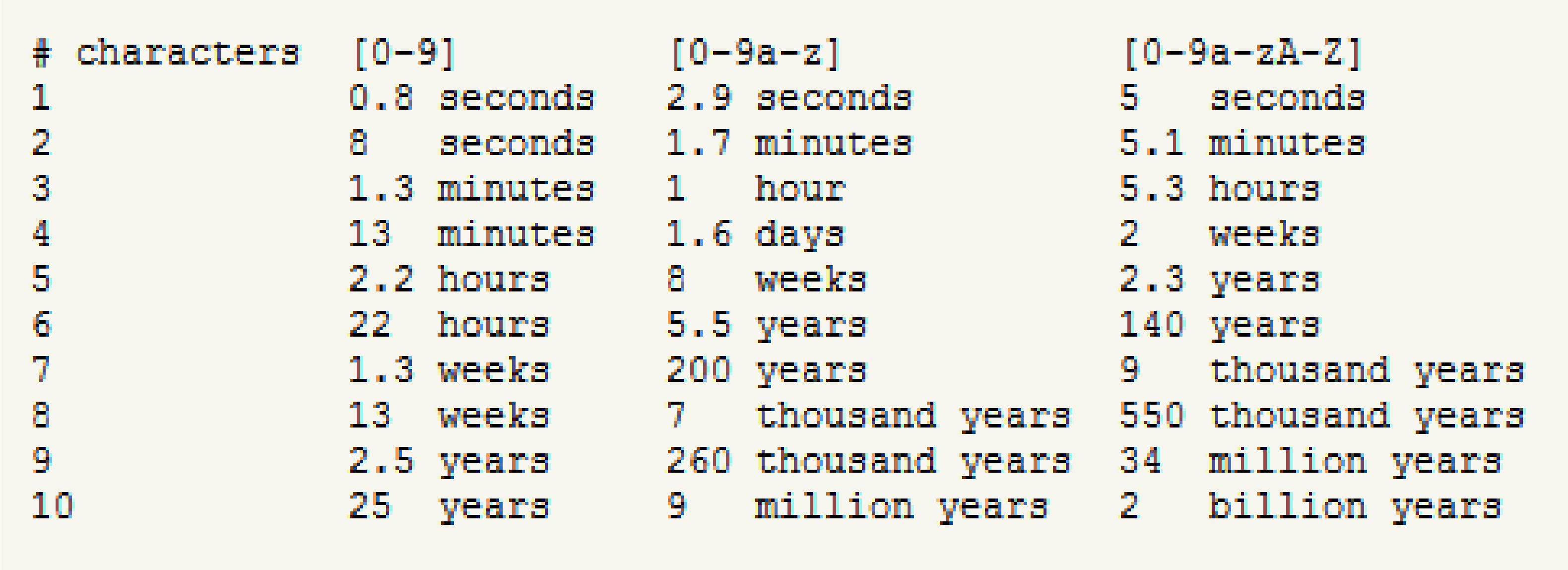
No of attacks	Password	Time	Security level
100 times per sec	alpine fun	2 months	Low risk
1 time every 5 sec	alpine fun	63 years	Secure
1 time every 5 sec with a 1 hour penalty period after 10 attempts	alpine fun	1,889 years	Secure forever

Se f.eks. ”The Usability of Passwords” http://www.baekdal.com/tips/password-security-usability og ”The Usability of Passwords FAQ”: http://www.baekdal.com/tips/the-usability-of-passwords-faq

Apple

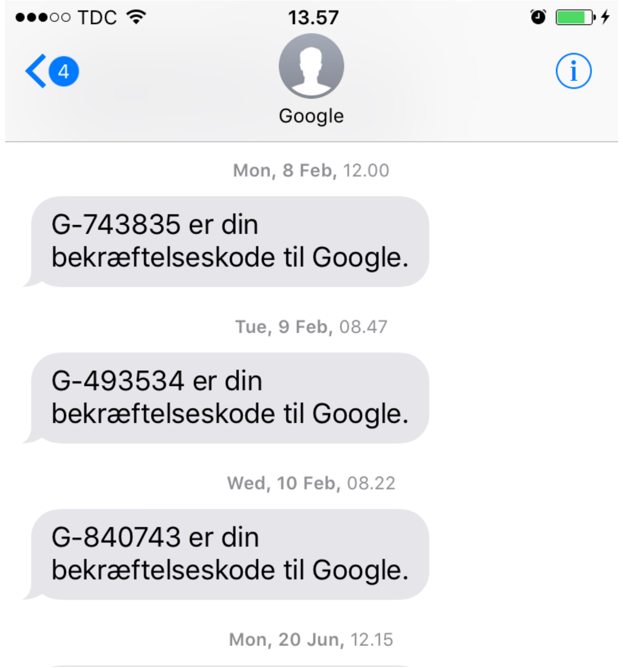
Apple default: 80ms per password attempt delay
Enforced by tamper resistant hardware

Indbyggede lille forsinkelse per password-forsøg medfører eksponentiel vækst ift. at bryde passwordet:



# characters	[0-9]	[0-9a-z]	[0-9a-zA-Z]
1	0.8 seconds	2.9 seconds	5 seconds
2	8 seconds	1.7 minutes	5.1 minutes
3	1.3 minutes	1 hour	5.3 hours
4	13 minutes	1.6 days	2 weeks
5	2.2 hours	8 weeks	2.3 years
6	22 hours	5.5 years	140 years
7	1.3 weeks	200 years	9 thousand years
8	13 weeks	7 thousand years	550 thousand years
9	2.5 years	260 thousand years	34 million years
10	25 years	9 million years	2 billion years

Two Factor Authentication (2FA)



Mon, 8 Feb, 12.00

G-743835 er din bekræftelseskode til Google.

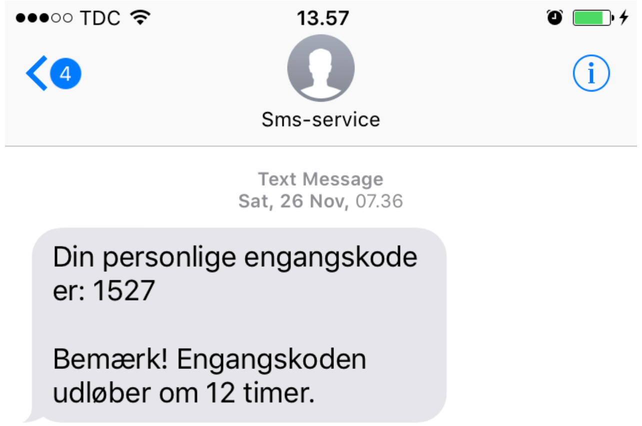
Tue, 9 Feb, 08.47

G-493534 er din bekræftelseskode til Google.

Wed, 10 Feb, 08.22

G-840743 er din bekræftelseskode til Google.

Mon, 20 Jun, 12.15



Text Message
Sat, 26 Nov, 07.36

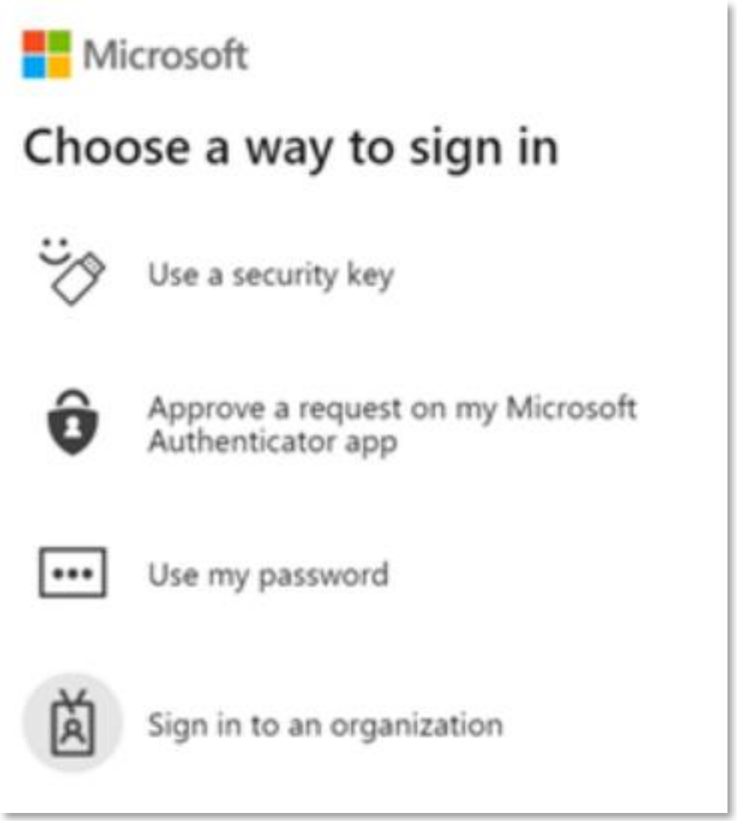
Din personlige engangskode er: 1527

Bemærk! Engangskoden udløber om 12 timer.

Passwordless / FIDO2

Passwordless autentifikation er en form for multi-faktor autentifikation (MFA)

Erstatter passwords med to eller flere verifikations faktorer, sikret og krypteret på brugerens enhed, f.eks. fingeraftryk, ansigtsgenkendelse, device pin, eller en nøgle



Microsoft

Choose a way to sign in

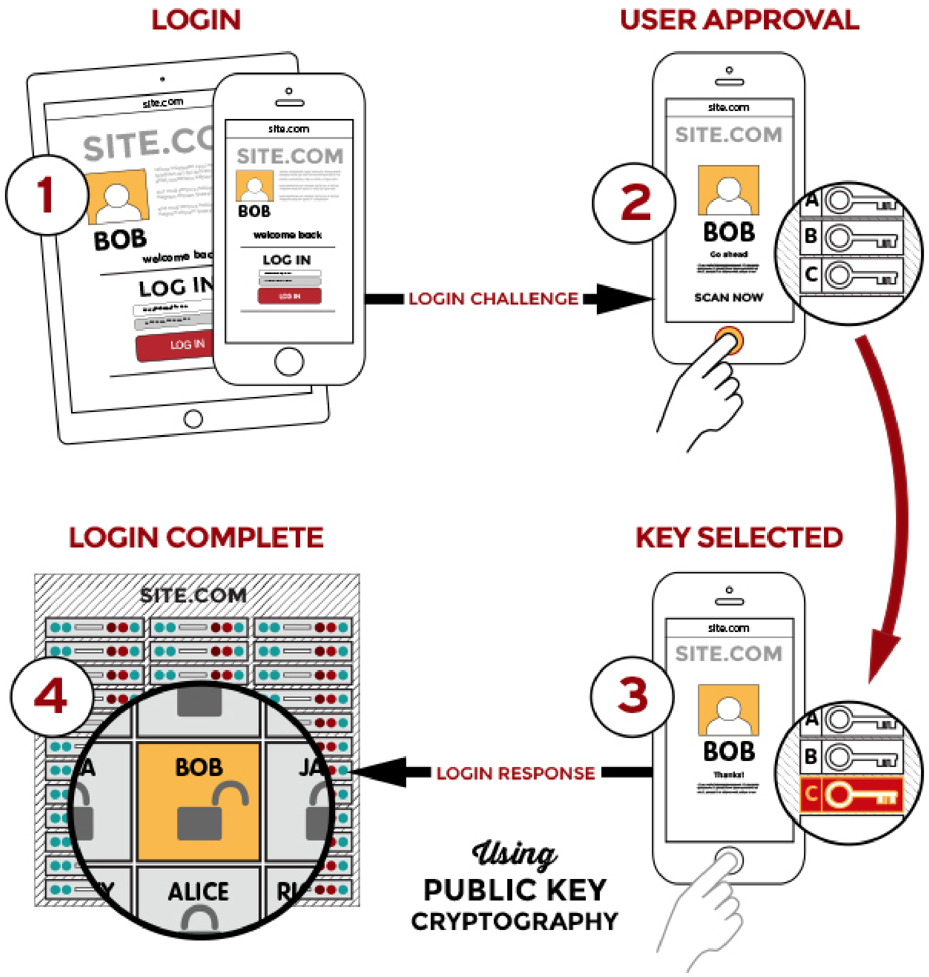
Use a security key

Approve a request on my Microsoft Authenticator app

Use my password

Sign in to an organization

Passwordless / FIDO2



Hvad er et godt password?

Hvor tit skal password skiftes?

Ikke kritisk (afhængig af hvor man har indtastet passwords)

Krav om skift f.eks. hver 90 dage kan være et problem fordi mennesker så typisk vælger svage passwords.
=> ”Password06” eller ”PasswordJuni”

Hvad er et godt password?

Overvej det hvis det er muligt at bruge 2-faktor autentifikation på en site

Næsten altid en forbedring af sikkerheden

Support er dyrt
Pas på "secret questions"
Backup systemet for glemte passwords må ikke være svagere end dit password.

Meget lavere sikkerhed

Pick a secure password:
"0k5ijU)=2w8VAiqxozKyB&3d‟

Now, in case you forget it, what's your favorite color?
"Blue”

Kort sagt

2FA er næsten altid bedst
(brug det hvis i overhovedet kan)

Brug en password manager

Lange passwords er bedre end komplekse passwords
(passphrases over 14 tegn)

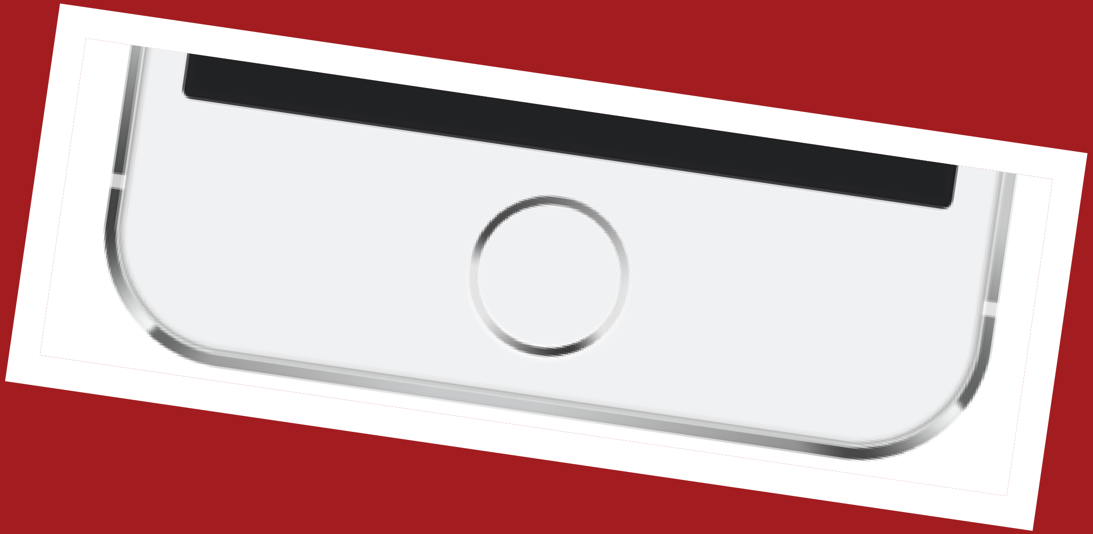
Brug forskellige passwords på forskellige sites
(password manager)

Back dine passwords op

Lange passwords er bedre end hyppige skift - med mindre der har været risiko for aflytning

Hvad er et godt password?

Biometri



Biometri

Noget man ved
Noget man har
Noget man er
Hvor man er

Biometri bør altid kombineres med BrugerID+password

Biometri samles typisk i en hash

Biometri

Er biometri identity eller authentication ?

Public or private?
Man efterlader biometri-data overalt

AI/Deep-fakes (stemme, ansigt osv)

Biometri som autentifikation – uden andre faktorer –
er potentielt et problem
(risiko vurdering!)

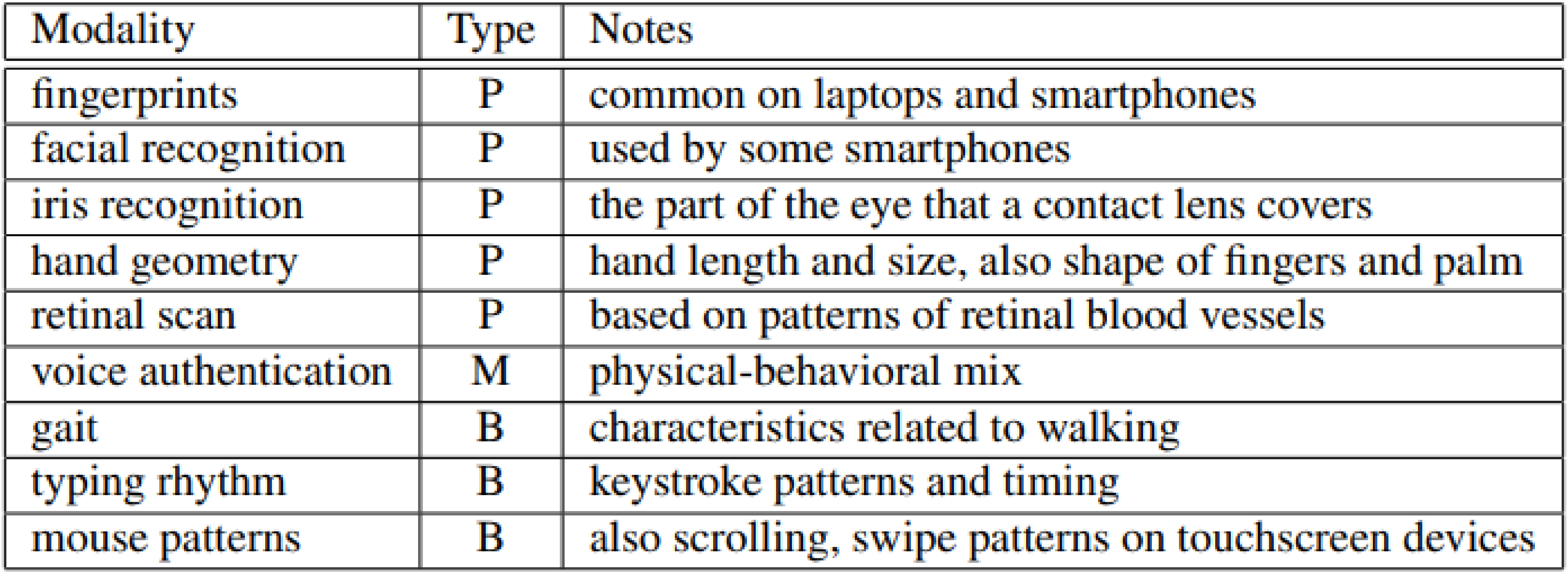
Biometri

To biometriske målinger er aldrig helt ens,
derfor er der altid element af usikkerhed:

False Acceptance Rate:
Rate at which someone other than the actual person is falsely recognized.

False Rejection Rate:
Rate at which the actual person is not recognized accurately.

Biometri



Modality	Type	Notes
fingerprints	P	common on laptops and smartphones
facial recognition	P	used by some smartphones
iris recognition	P	the part of the eye that a contact lens covers
hand geometry	P	hand length and size, also shape of fingers and palm
retinal scan	P	based on patterns of retinal blood vessels
voice authentication	M	physical-behavioral mix
gait	B	characteristics related to walking
typing rhythm	B	keystroke patterns and timing
mouse patterns	B	also scrolling, swipe patterns on touchscreen devices

Table 3.2: Biometric modalities: examples. P (physical), B (behavioral), M (mixed). Fingerprint (four digits) and iris biometrics are used at U.S.-Canadian airport borders.

Biometri

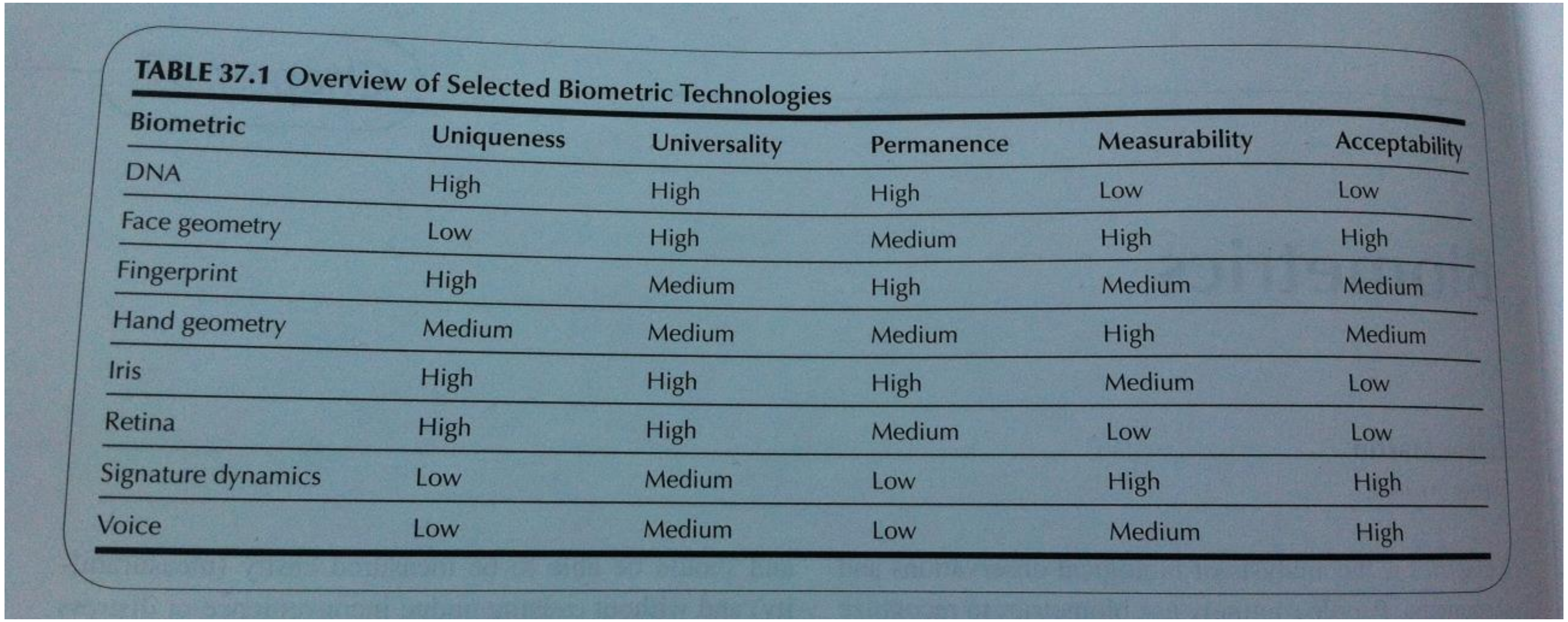


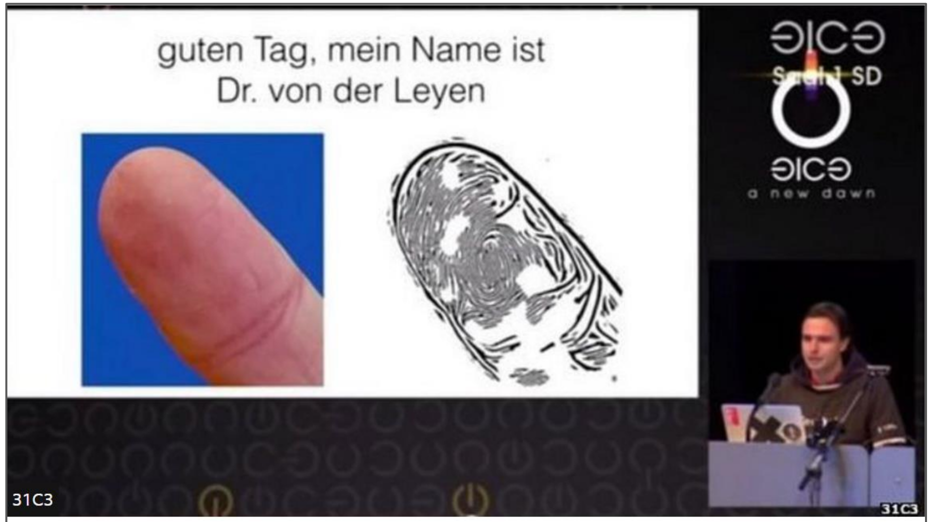
TABLE 37.1 Overview of Selected Biometric Technologies

Biometric	Uniqueness	Universality	Permanence	Measurability	Acceptability
DNA	High	High	High	Low	Low
Face geometry	Low	High	Medium	High	High
Fingerprint	High	Medium	High	Medium	Medium
Hand geometry	Medium	Medium	Medium	High	Medium
Iris	High	High	High	Medium	Low
Retina	High	High	Medium	Low	Low
Signature dynamics	Low	Medium	Low	High	High
Voice	Low	Medium	Low	Medium	High

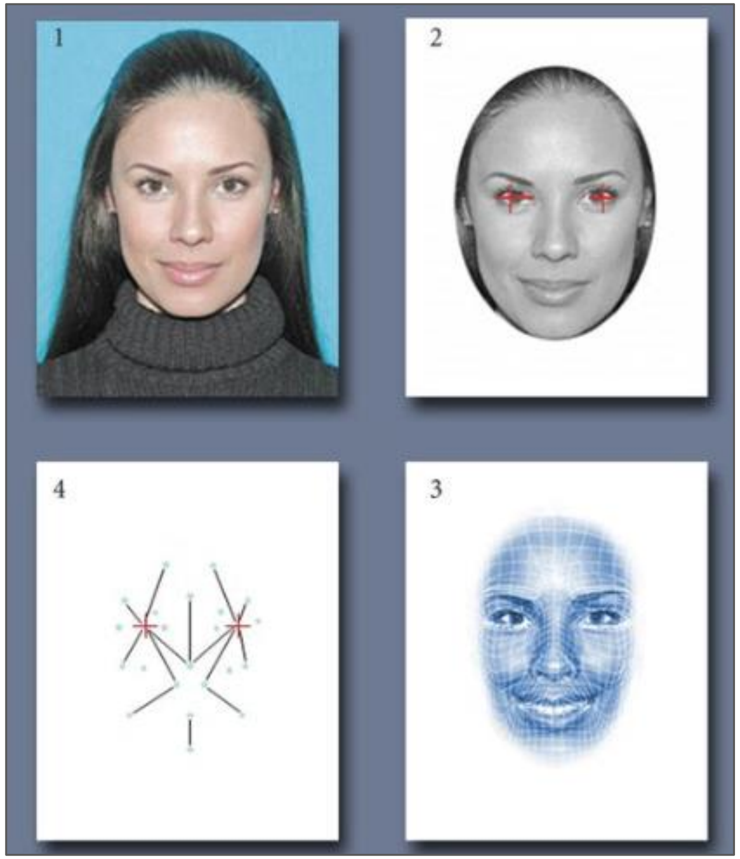
Hvor let er det at stjæle credentials ?
Hvad skal løsningen beskytte?

Biometri

Biometri er let at bruge, er let tilgængelig
- men har lavere sikkerhed alene

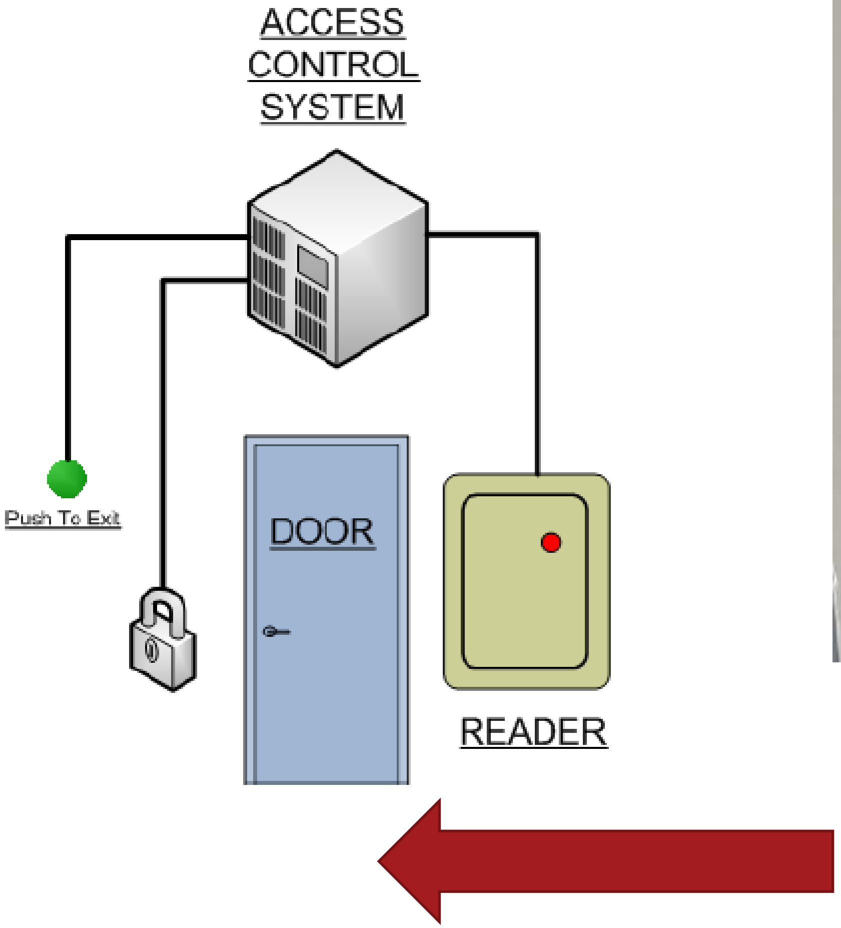


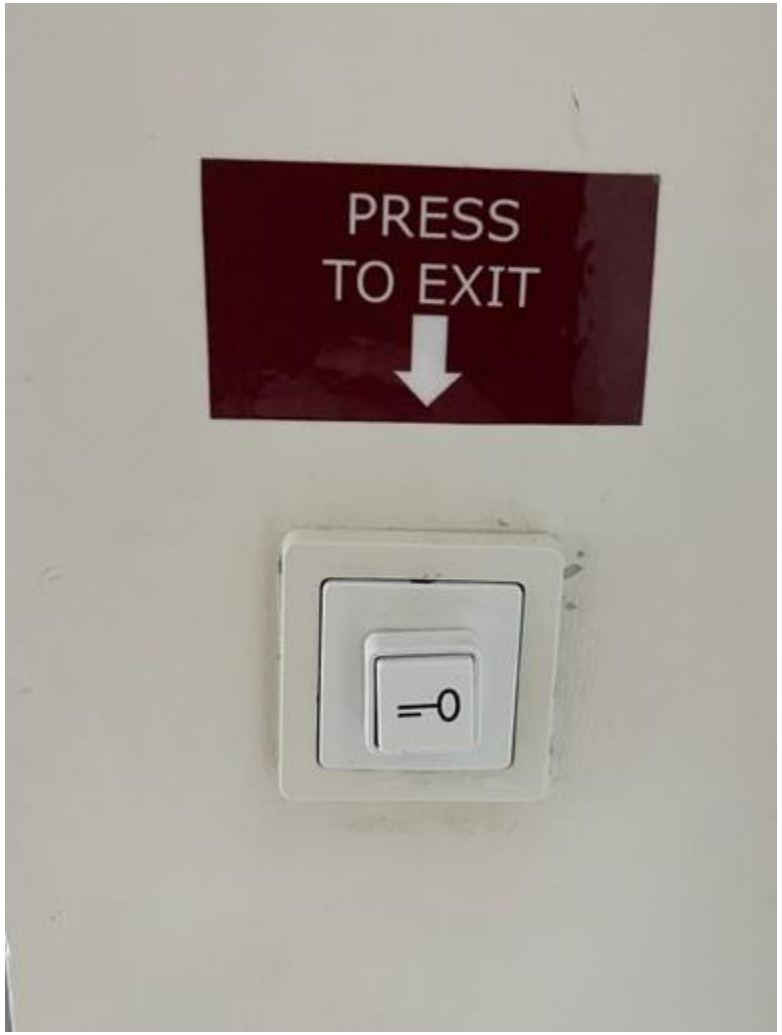
Mr Krissler provided details of his technique at a convention in Hamburg



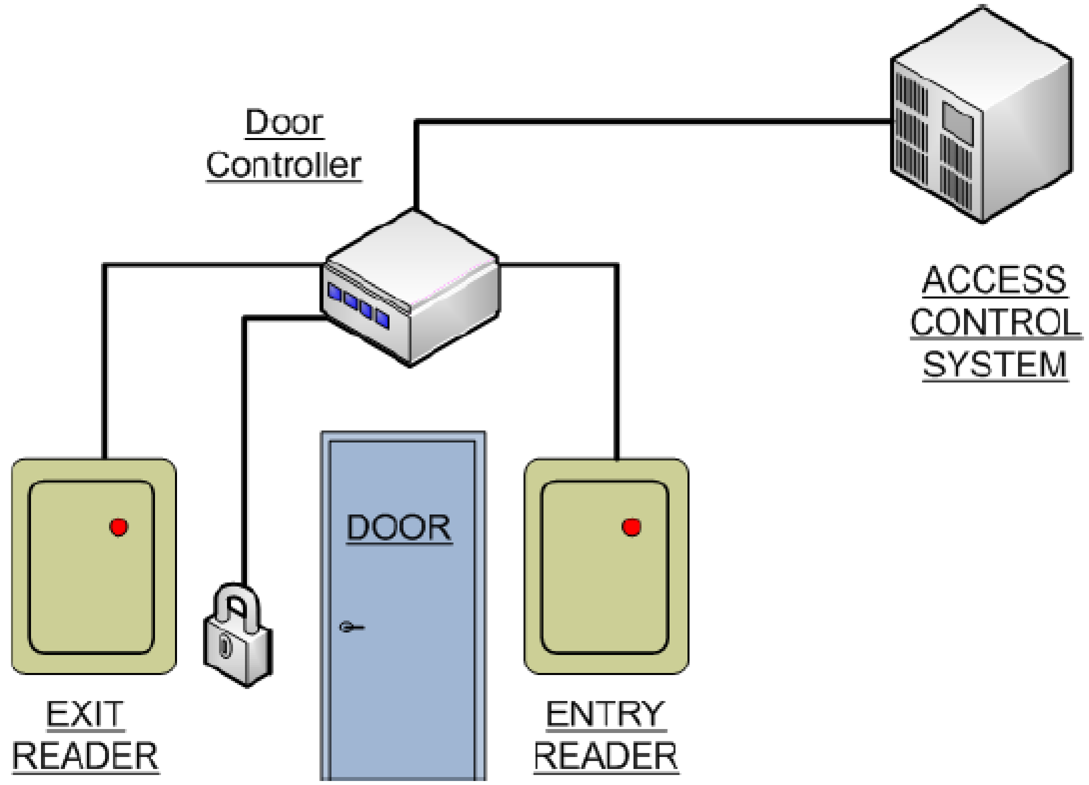
Basic system

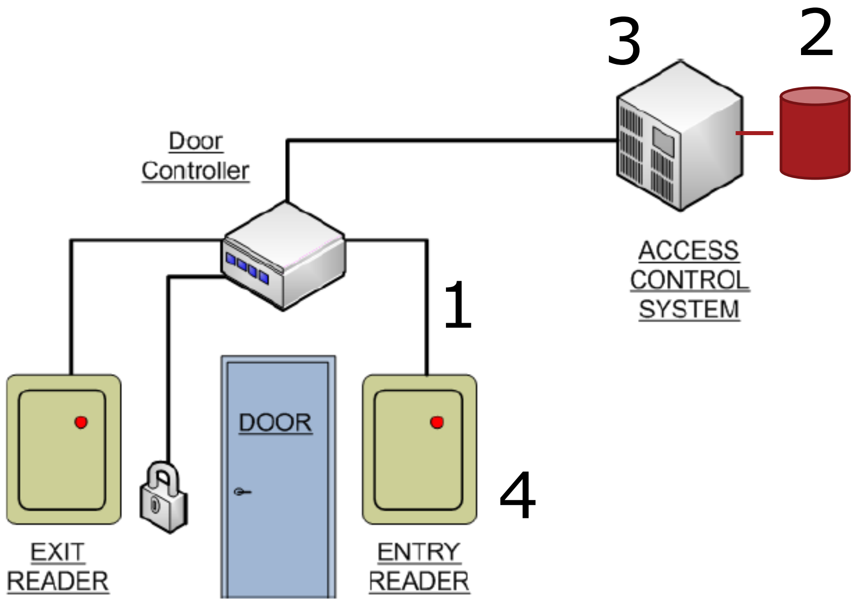
Placering af "request to exit" knapper er vigtig, kan de aktiveres ude fra?





Anti-Passback system



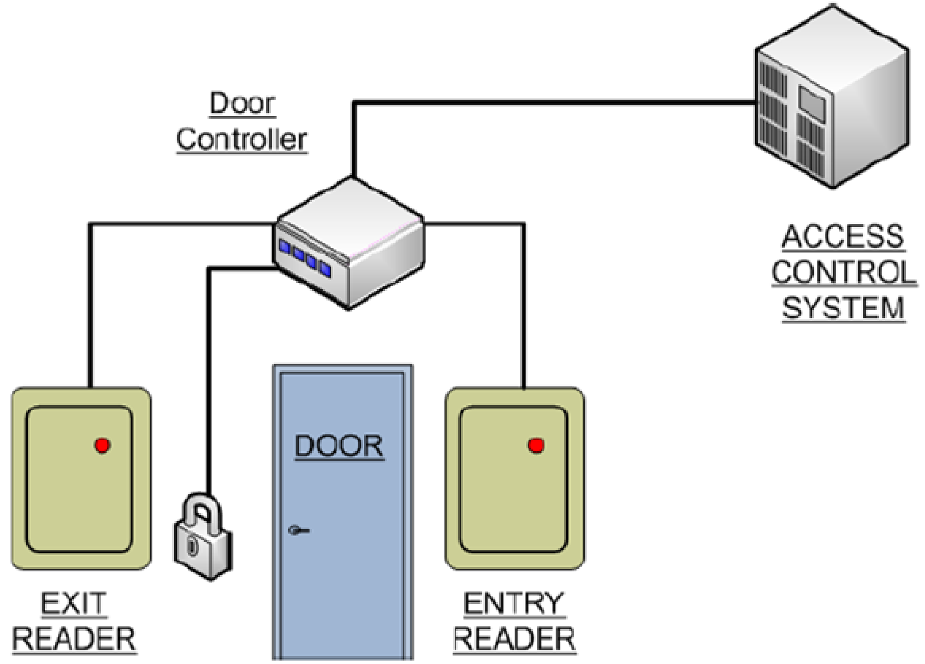


1. Angreb imod data og kommunikation
2. Angreb imod templates
3. Angreb imod software
4. Angreb med sensoren

Biometri

- Der findes også default access nøgler til smart cards.
- F.eks. - kan en MD5 hash af UID og master nøglen give adgang til smartcardet/administrator kortet

Anti-Passback system



Credential revocation

- Fingeraftryk / hånd revokering

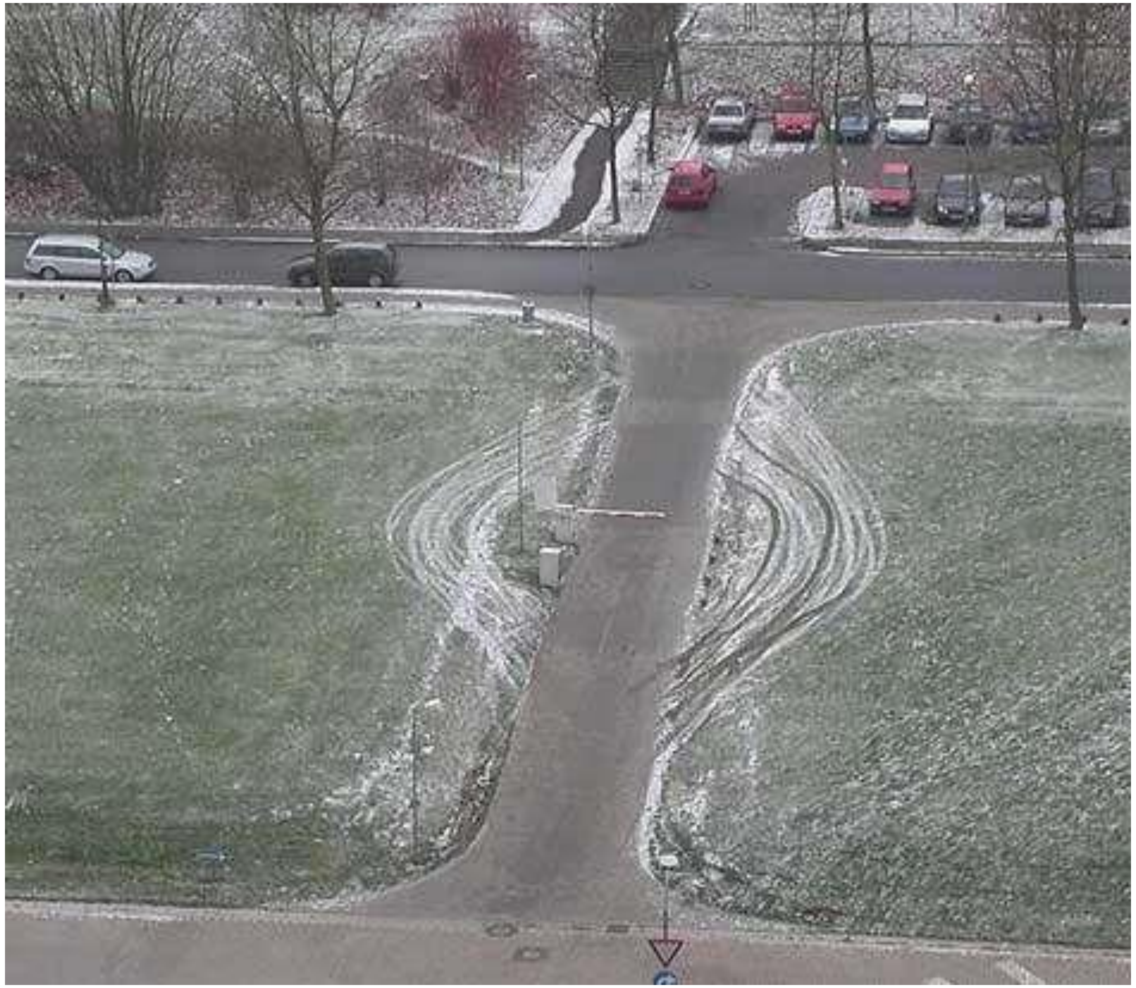
Beskyttelse af biometri-data

Defeating Facial Recognition Systems doesn't have to be Hi-Tech
facebook.com/OneTruth4Life

”Cheating”: Social engineering

Security is difficult (but fun)

Intelligent adversaries



Kompromittering via Social Engineering

- At narre mennesker til at gøre ting de ellers ikke ville gøre eller udlevere fortrolige oplysninger.
- Kan fører til hacking og identitetstyveri.
- F.eks. ved at optræde som insider med afsæt i viden om virksomheden.

Hvordan kan en angriber opnå viden om en virksomhed?

Fremgangsmåden

Informationsindsamling

Opbygning af tillid

Scenariet

Pres for en løsning - ”hvad kan vi gøre?”

Bagrundsviden

0. Indformationsindsamling
Internet, sociale netværk, dumpster diving, besøg, opsøge medarbejdere, webmail, linkedin, jobannoncer osv, osv.

Hej, hvad er dit password?

1. Opbygning af tillid
Det er sjældent nok at sige
”Hej, hvad er dit password?” eller
”Hallo – det er din chef, giv mig Admin passwordet eller du er fyret”

En række venlige, trivielle spørgsmål først
(opbygger tillid)

Hej, hvad er dit password?

2. Baggrundsscenariet (pretexting)
Ramme for angreb, kan være en hel identitet (baseret på indledende research)

Hej, hvad er dit password?

3. Pres
"Hvordan løser vi det her?"

Kropssprog, stemmeføring,
høflig/vred/travl/autoritær osv

Han er ”en af vores”

Samme sprog og jargon
Det rigtige tøj

Overbevise folk om man ”hører til”

Påklædning er vigtig

Dress as a DJ:
https://www.youtube.com/watch?v=uoIL2x6slC8

Hvad ville have virket i bussen?

Man er usynlig i en neon-vest

https://www.youtube.com/watch?v=tFur1-i6BpA

”Pre-loading”

Mange, mange teknikker

Påvirke inden faktiske møde/hændelse
Verifikation af identitet

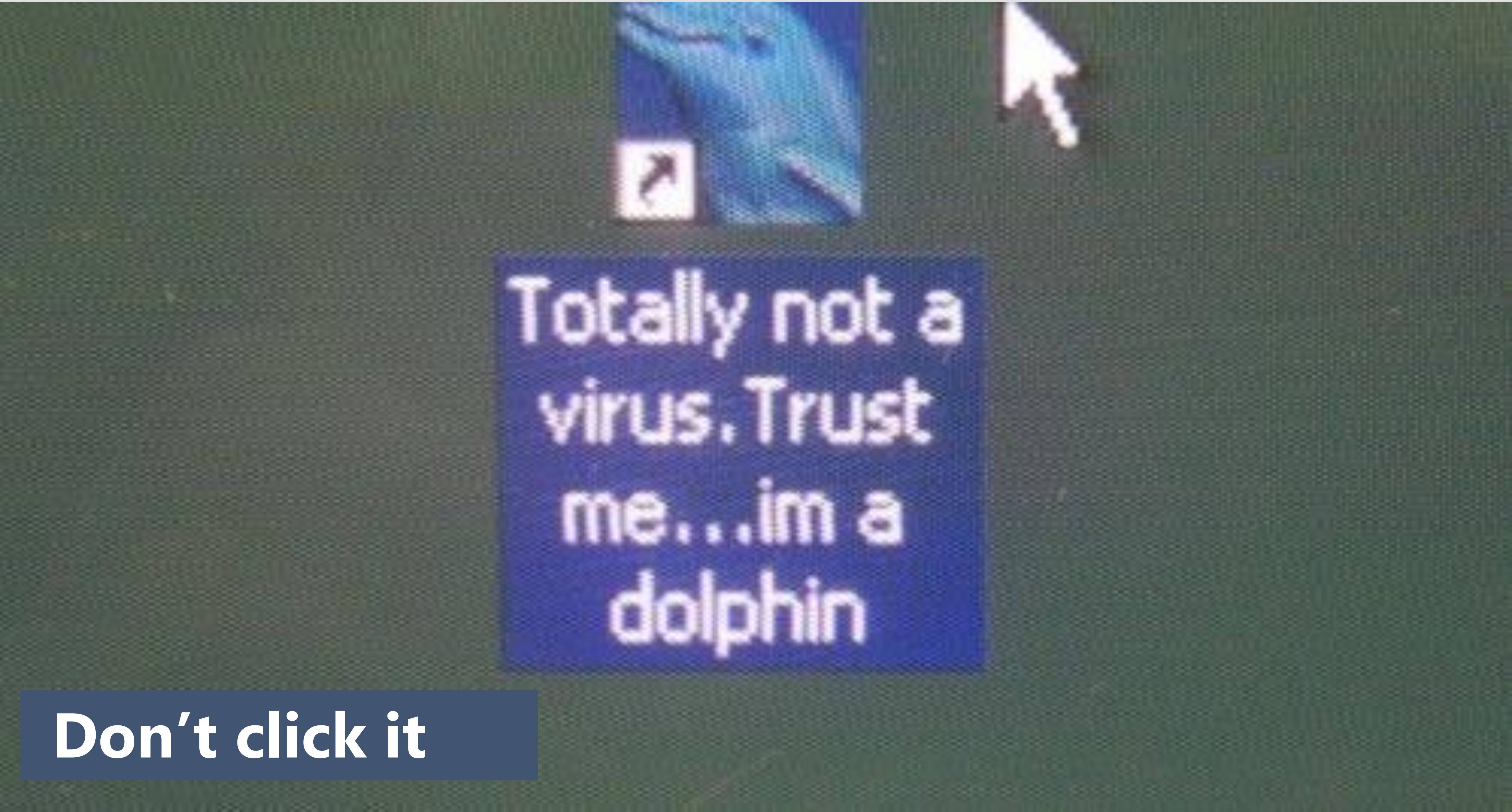
Det svageste led i sikkerhedskæden

Telefon, personlig fremmøde,
USB, CD, websider, pdf-filer, hacke
e-mail, vinde gaver, voice beskeder

Phishing

A phishing attack usually comes in the form of a message meant to convince you to:

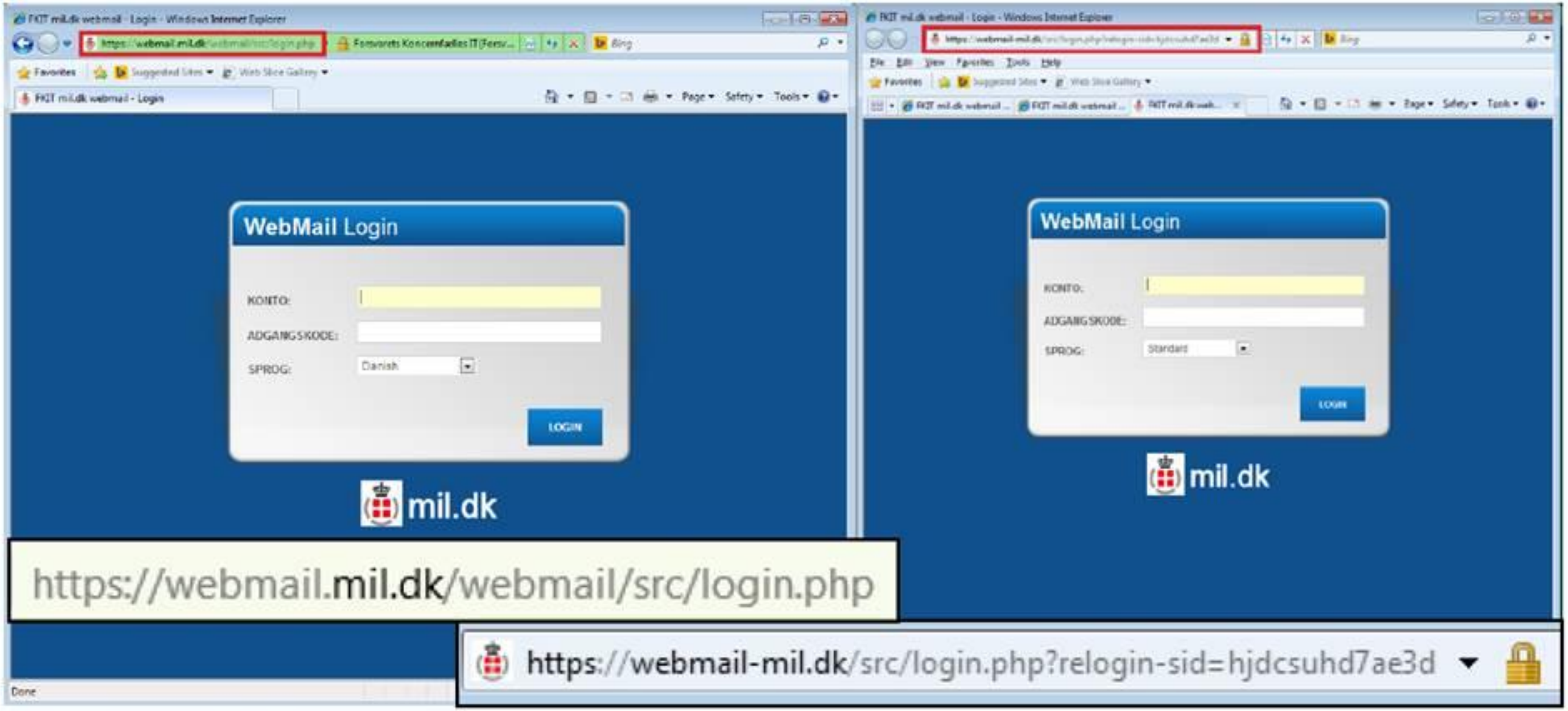
- **click on a link**
- **open a document**
- **install software on your device**
- **enter your username and password into a website that's made to look legitimate.**



Totally not a virus.Trust me...im a dolphin

Don’t click it

Can I click it?



KONTO:

ADGANGSKODE:

SPROG: Danish

KONTO:

ADGANGSKODE:

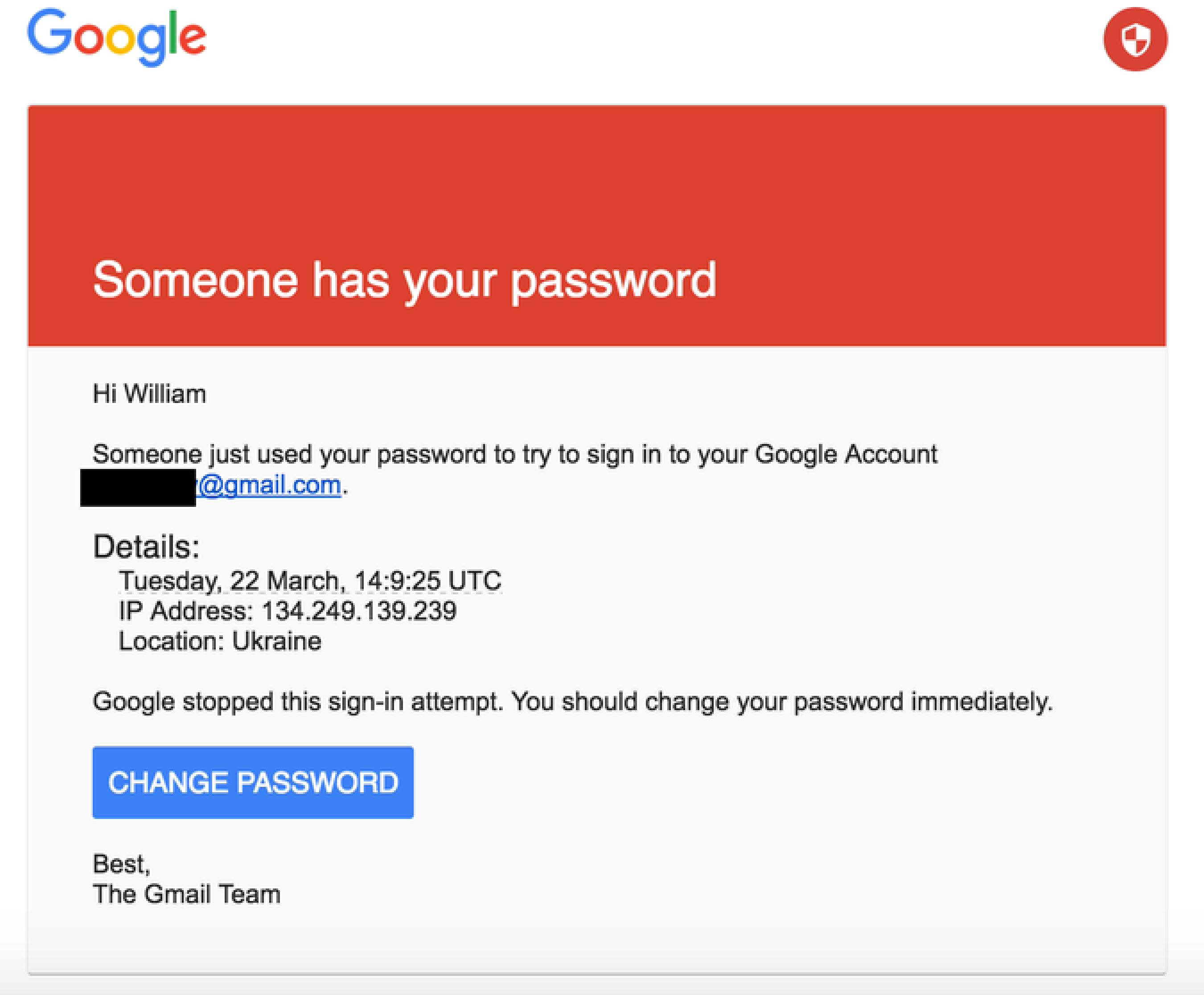
SPROG: Standard

https://webmail.mil.dk/webmail/src/login.php

https://webmail-mil.dk/src/login.php?relogin-sid=hjdcsuhd7ae3d

Billede 1: Den falske e-mail-login-side sidestillet med den legitime side. De to URL'er er fremhævet nedenunder.

Can I click it?



Someone has your password

Hi William

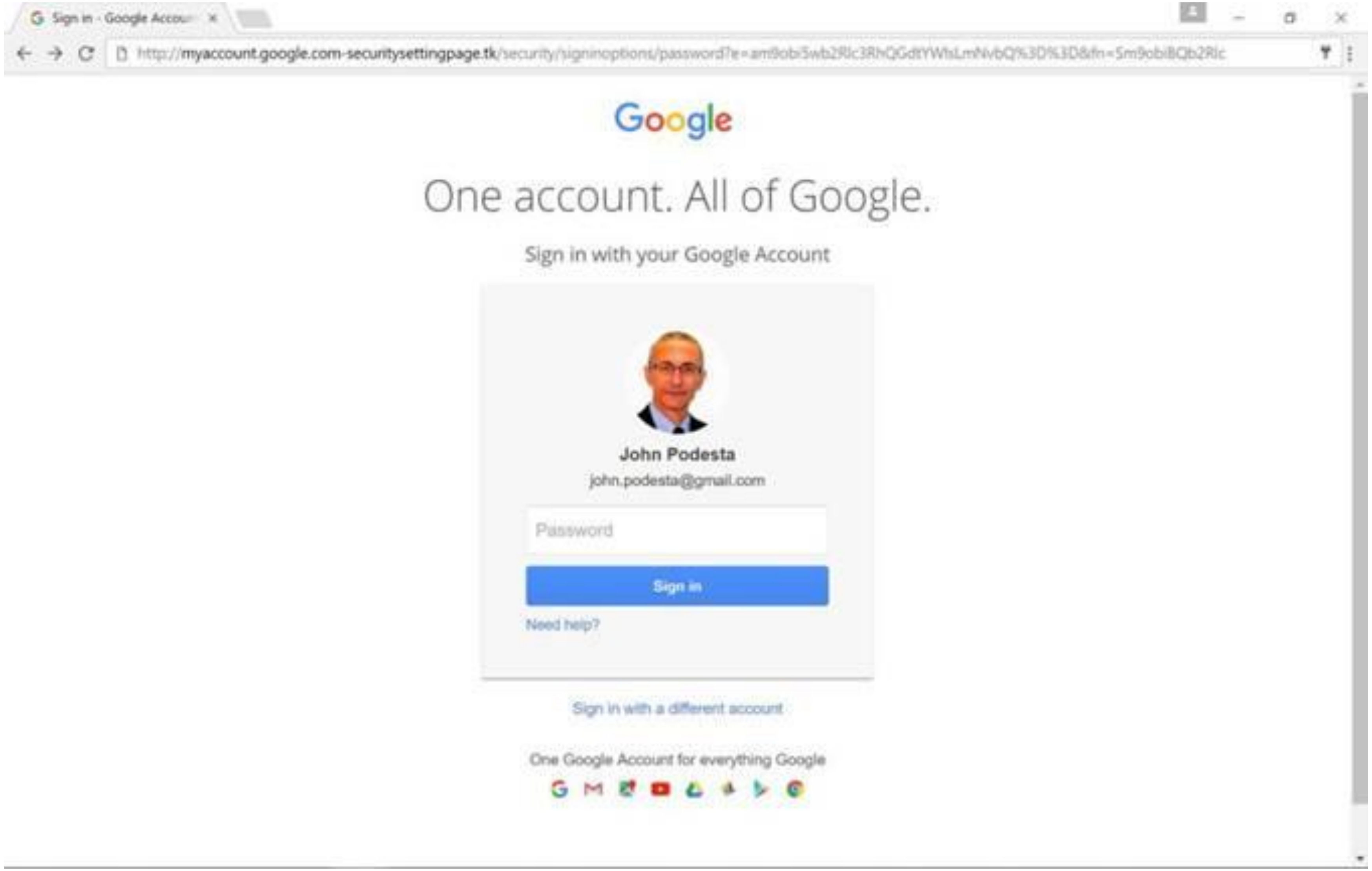
Someone just used your password to try to sign in to your Google Account [redacted]@gmail.com.

Details:
Tuesday, 22 March, 14:9:25 UTC
IP Address: 134.249.139.239
Location: Ukraine

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

Best,
The Gmail Team

Can I click it?



Sign in - Google Accou
http://myaccount.google.com-securitysettingpage.tk/security/signinoptions/password?e=am9obi5wb2Rlc3RhQGdtYWlsLmNvbQ%3D%3D&fn=Sm9obiBQb2Rlc
Google

One account. All of Google.

Sign in with your Google Account

John Podesta

john.podesta@gmail.com

Password

Sign in

Need help?

Sign in with a different account

One Google Account for everything Google

Can I click it?

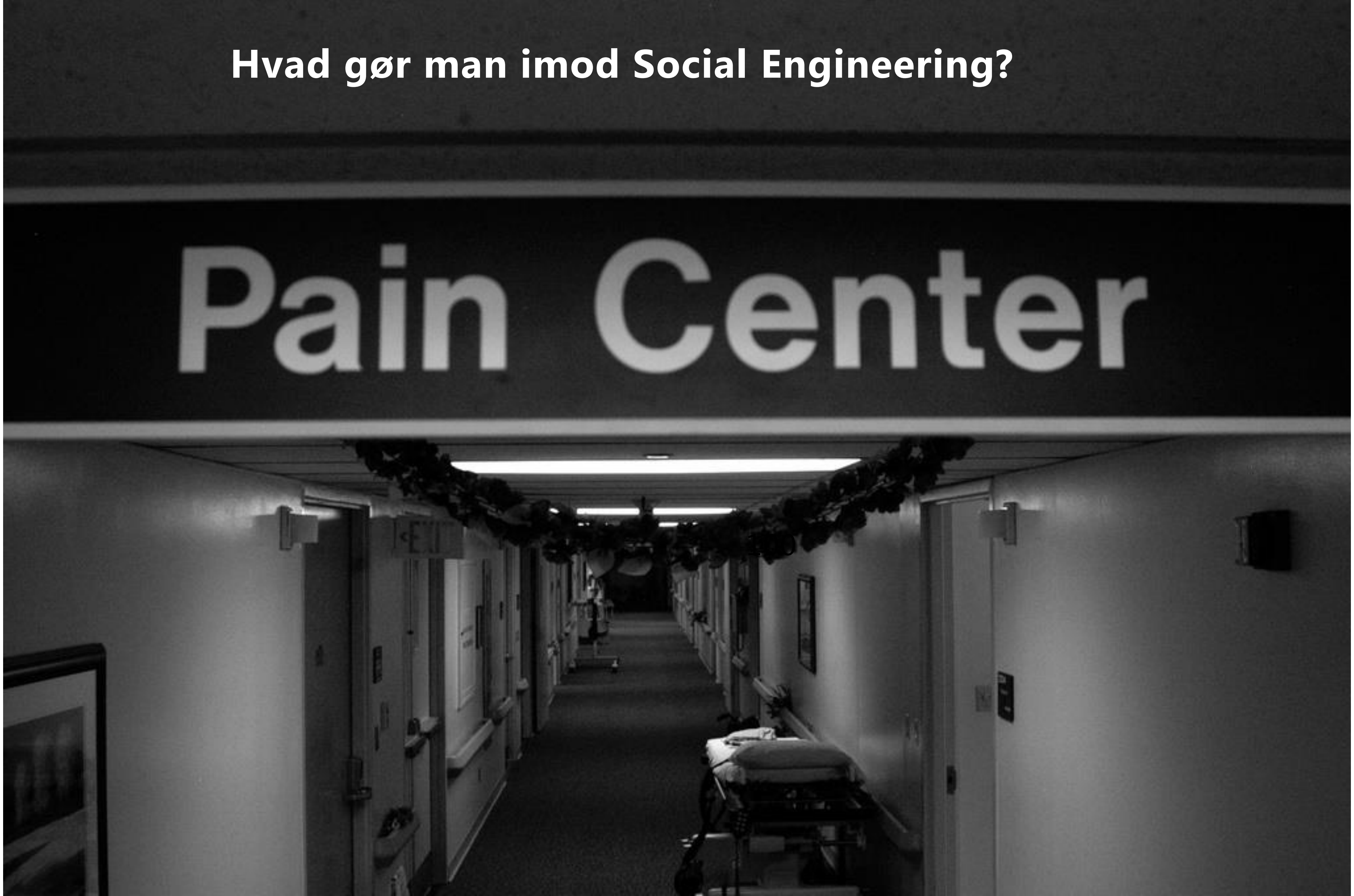
Be suspicious of all **links** that ask you to log in, regardless of the sender.
And be very careful of all **attached files** – regardless of the sender

Totally not a virus.Trust me...im a dolphin

Don’t click it – and don’t pick it up either!

Ah – og hvis du finder en USB-nøgle på jorden: lad være med at teste den !

Hvad gør man imod Social Engineering?



Forstå truslerne

Jo højere sikkerhed, jo mere sandsynlig er social engineering

Træning og understøttende procedurer
– hvad er advarselssignalerne
- procedure gør det svært for angriber

Ikke kun telefonen - også mail, chat, hjemmesider og fysisk fremmøde m.m.

”Hvordan kan vi forbedre vores procedurer?”

Ikke det samme for alle

Rette niveau af paranoia !

Hvis man føler sig *usikker* – ”der er et eller andet, der ikke føles rigtigt”

Forstå truslerne

0. Informationsindsamling
Makuler dokumenter
Forsigtig i offentlige rum
Information over telefonen, mail o.lign., særligt ved uventede henvendelser

1. Opbygge tillid
Meget snakkende
Hvorfor taler han om det?
Spørg ind ved fejl, hvis fejl fortsætter -> afslut

Forstå truslerne

2. Scenariet

Hvis usikker: gencheck, gencheck, gencheck

Tag dig tid og følg proceduren

3. Pres

Teknikker der benyttes (awareness)

Giv ikke efter

Henvis til politikker og procedurer

Tilkald en leder hvis usikker (overfør risiko), tag ikke beslutningen selv

Mulige tiltag

- **Awareness**
- **Opdateret software**
- **Brug 2FA (og/eller password manager)**
- **Bekræft med afsender (vha andre kanaler)**
- **Åben attachments på en sikker måde**
- **Backup**

"A sense of urgency is always the first big clue"

Giver pretext'en egentlig mening – ville et firma virkelig ringe til dig, eller bede dig om at ringe til dem?
Ville dét firma virkelig bede om den information?

Spørgsmål

?