



privacy by design

Steve Muller

privacy

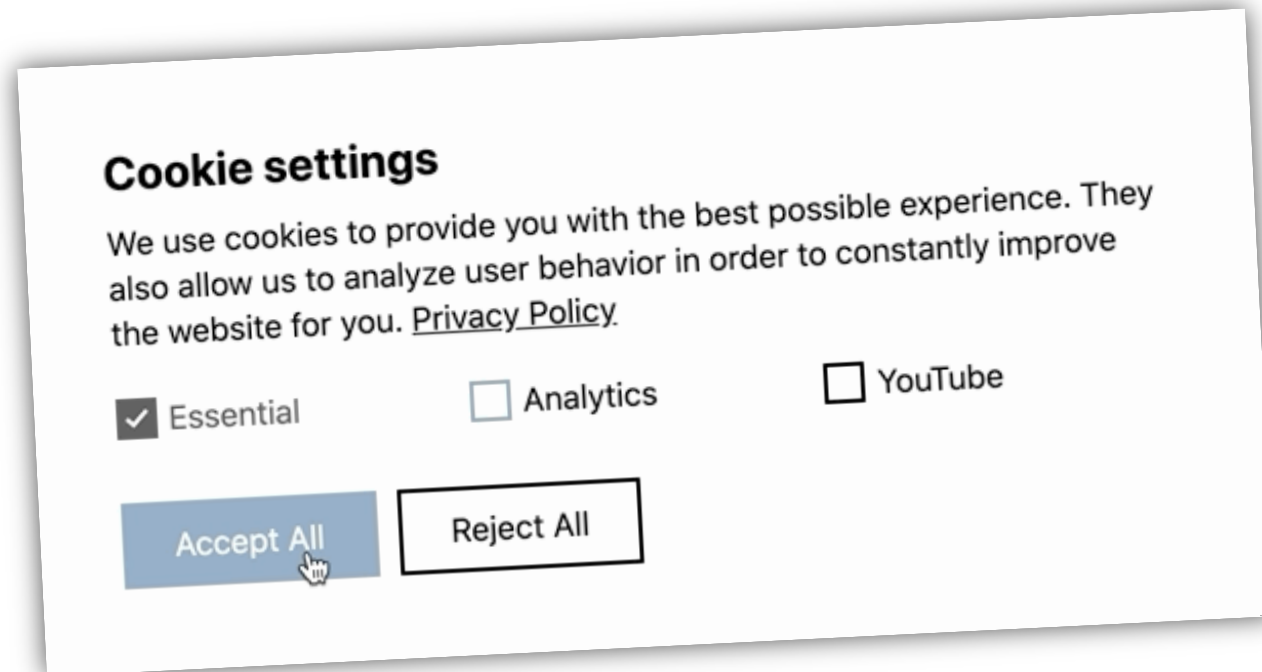
by design
“how”

by default
“what”



CC BY 3.0 Ralf Roletschek

pseudonymisation



find
privacy-
friendly
alternatives



2

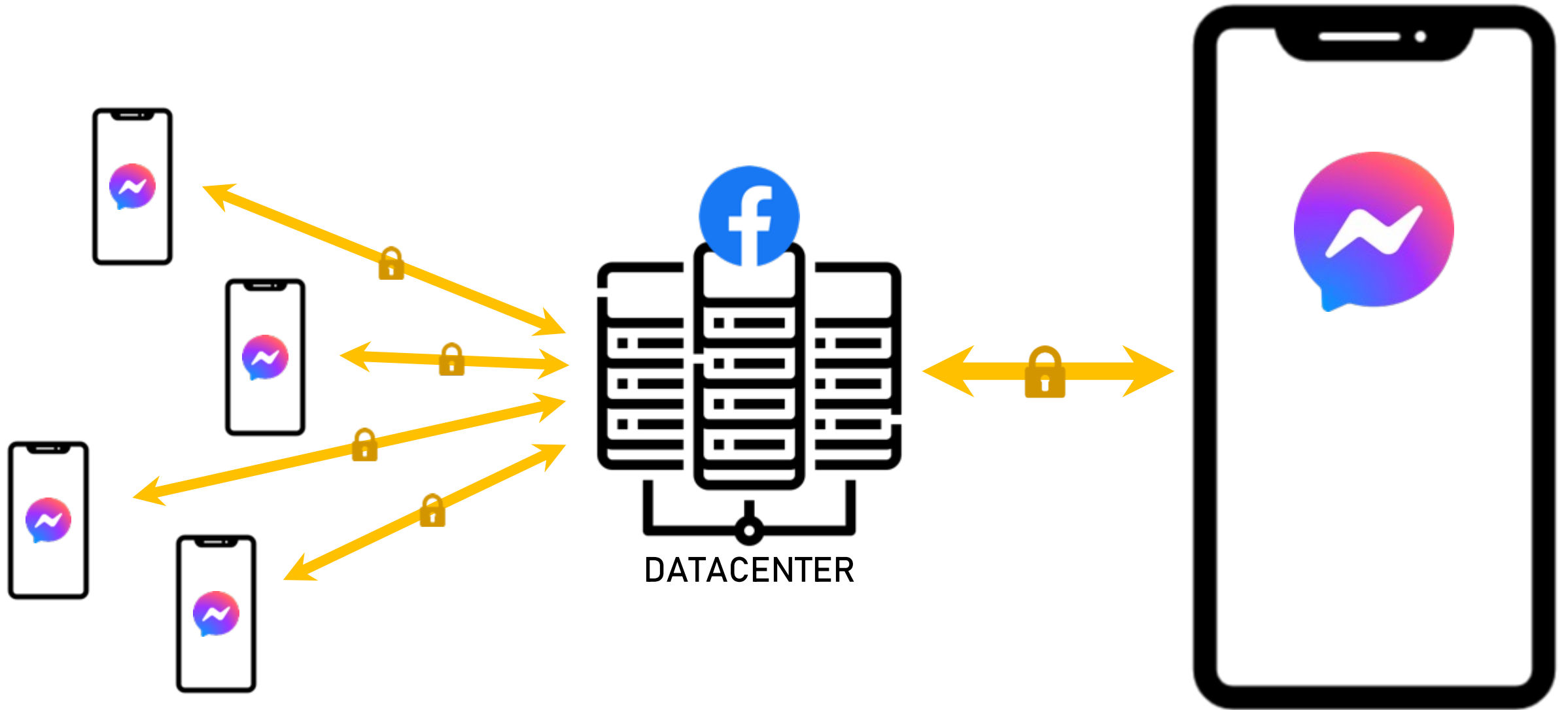
purposes
of this talk



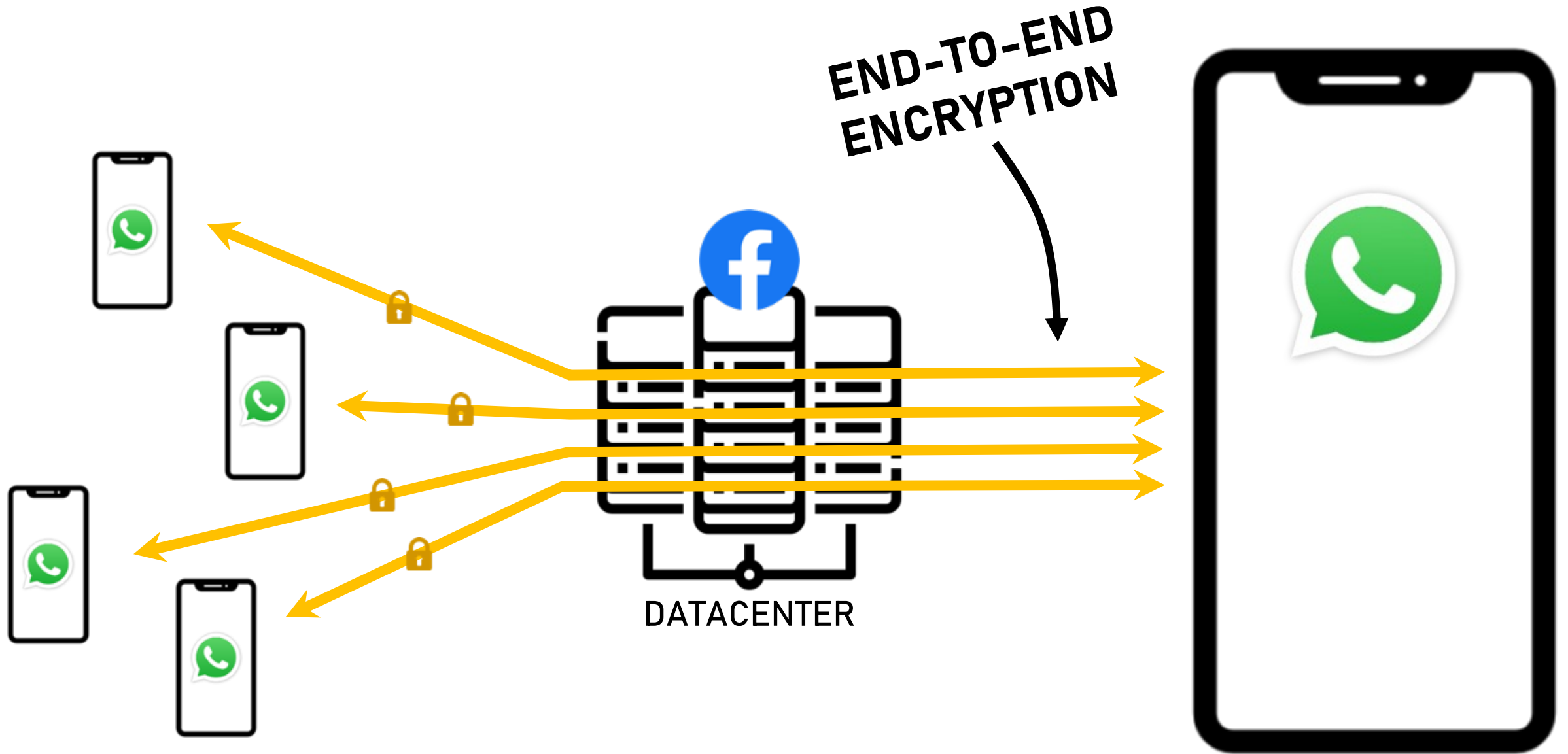
get inspired
by how
others do



INSTANT MESSAGING

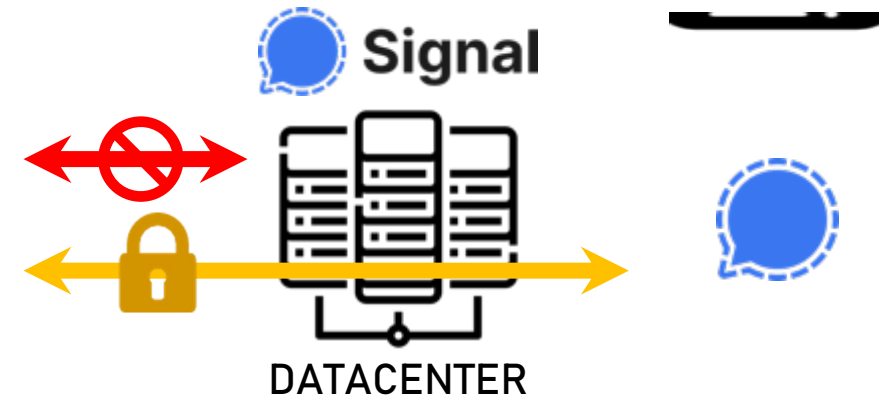
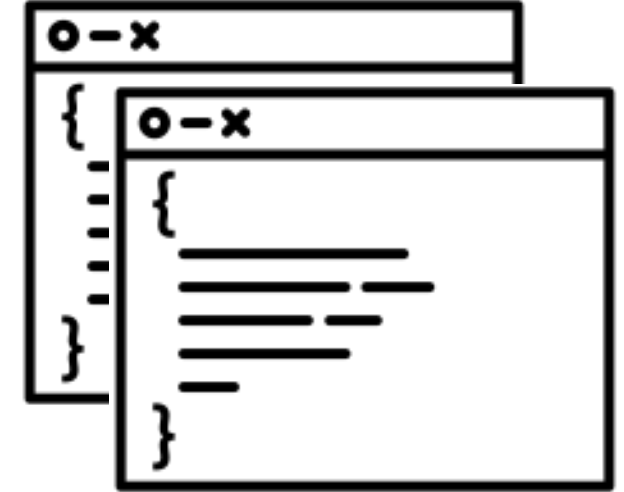
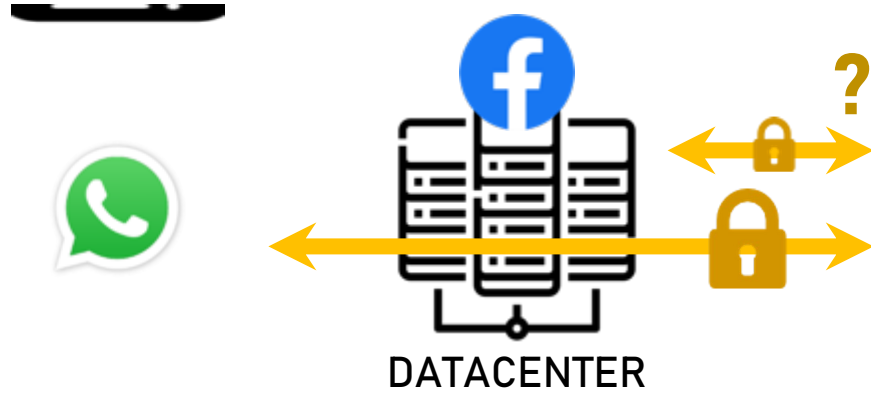


INSTANT MESSAGING

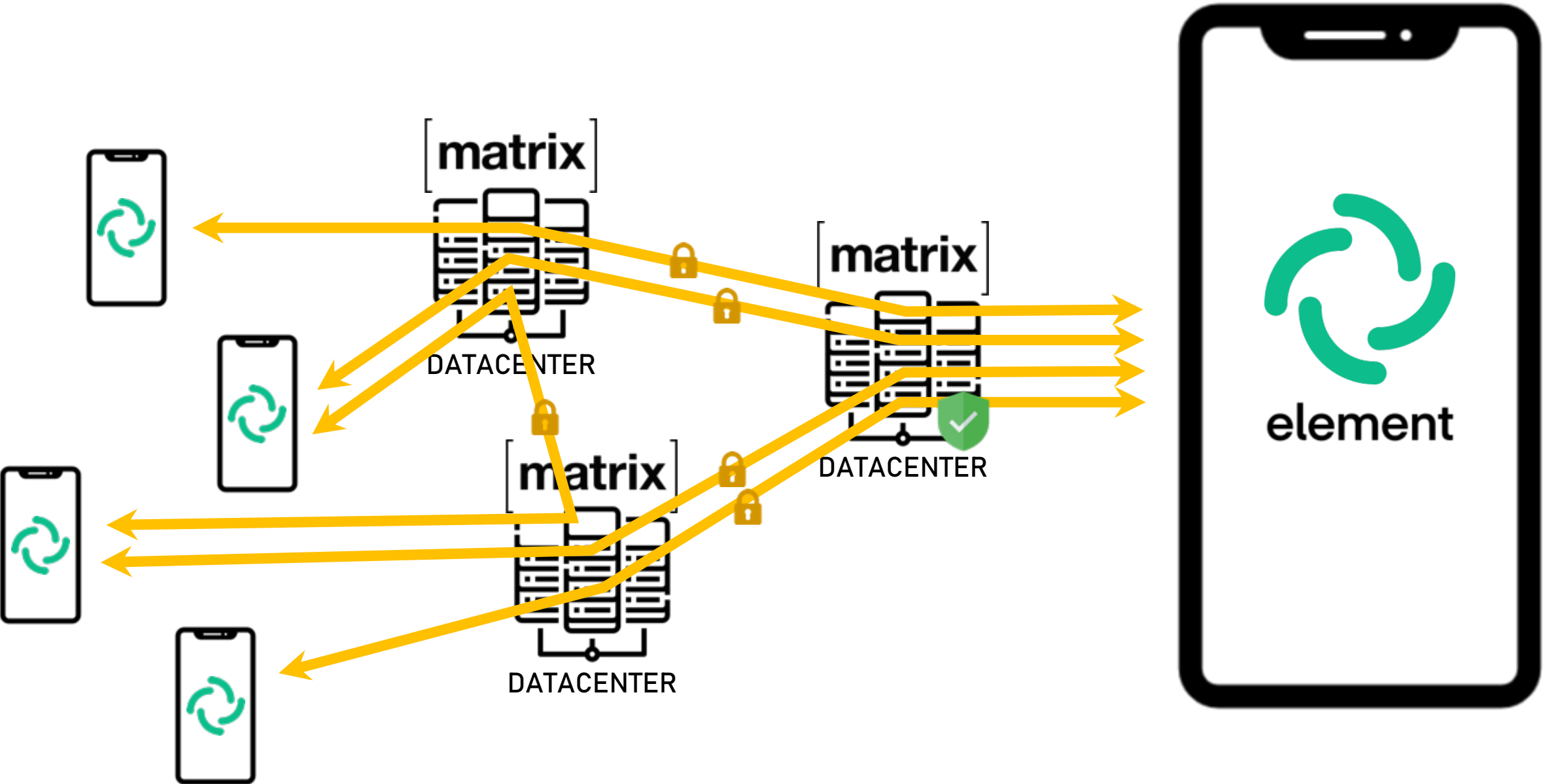


INSTANT MESSAGING

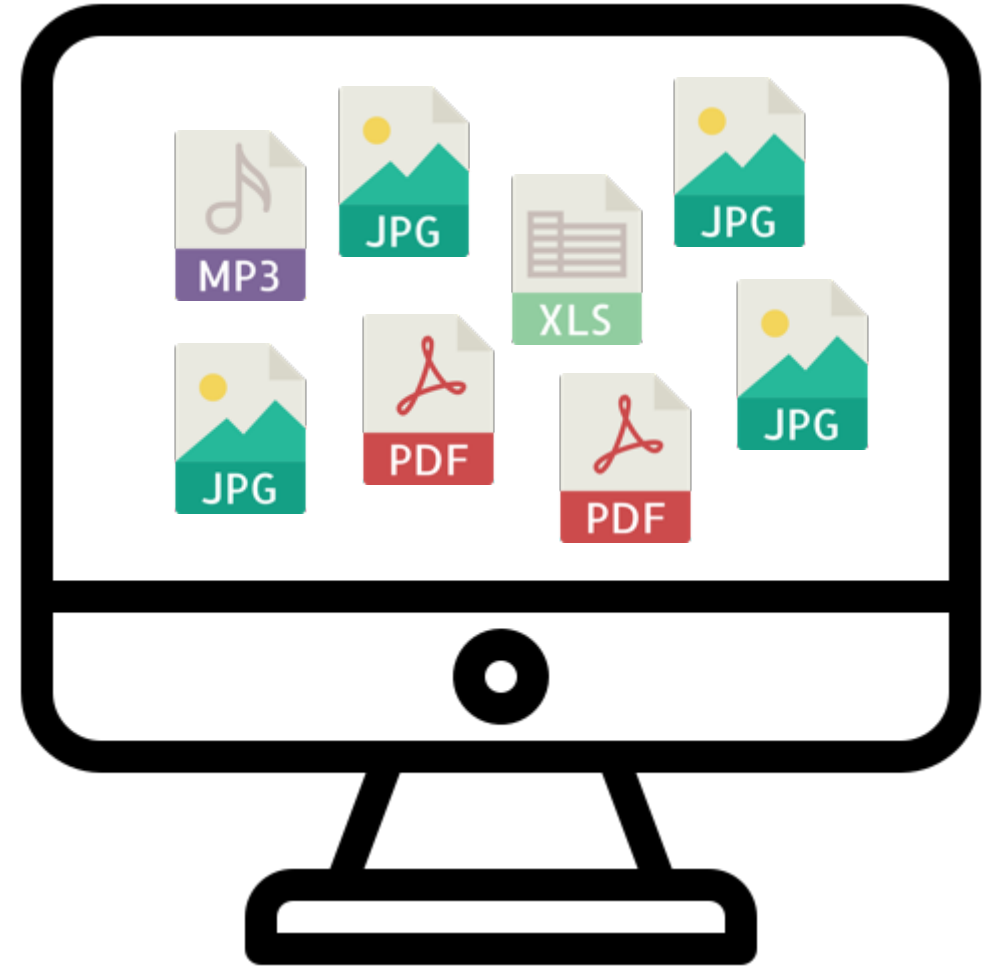
<https://github.com/signalapp>



INSTANT MESSAGING



CLOUD STORAGE



CLOUD STORAGE



CRYPTOMATOR

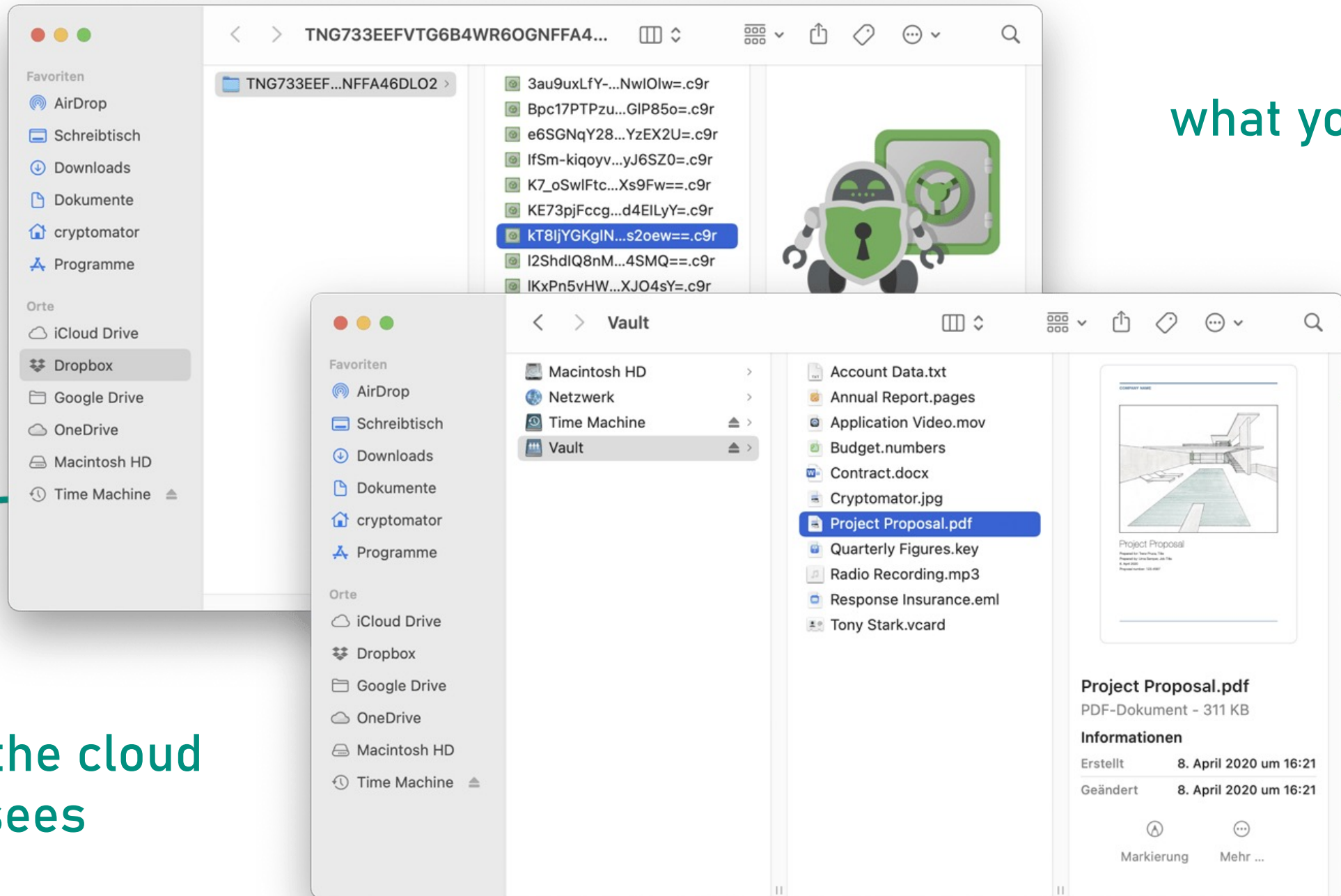


DATACENTER

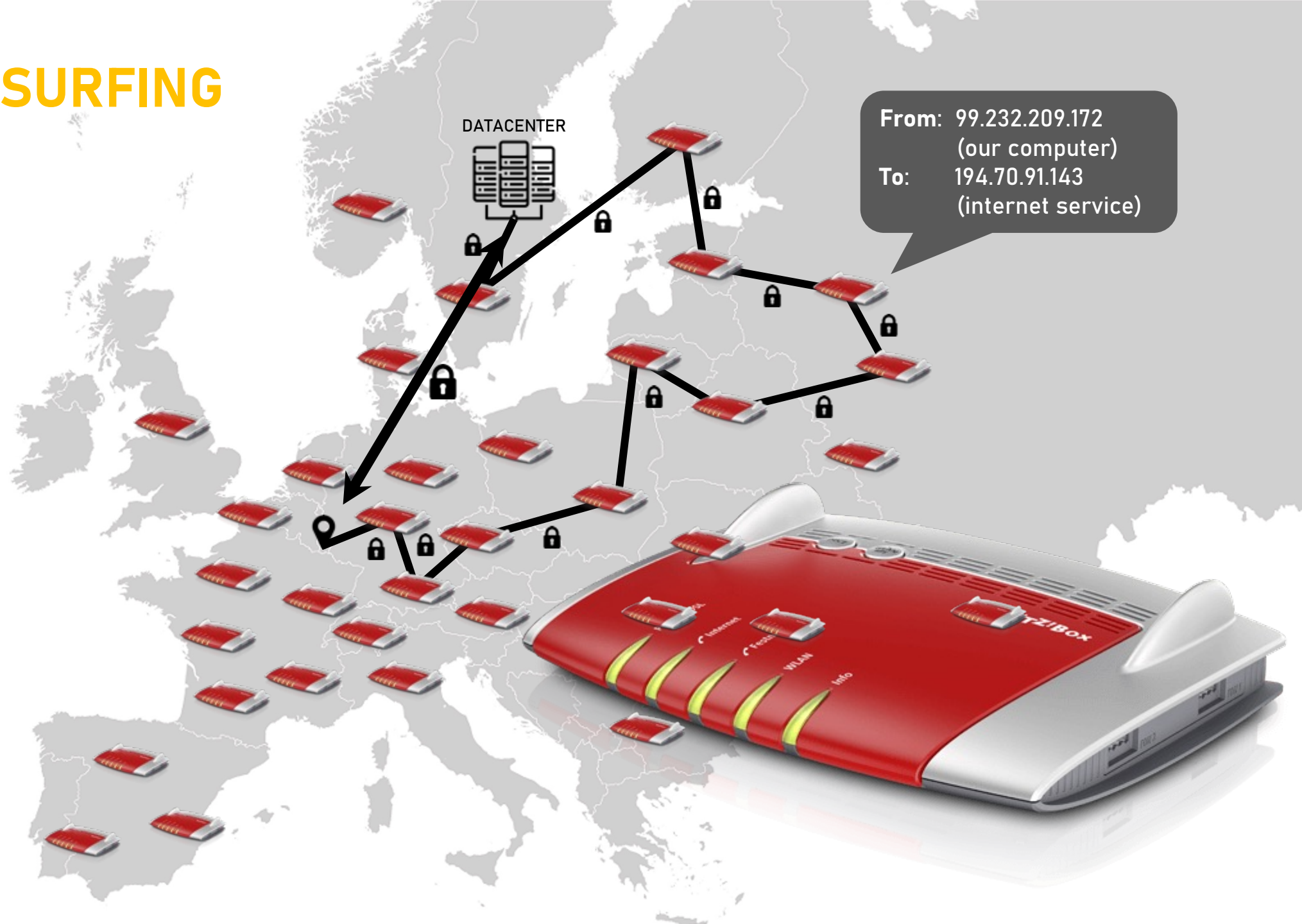


what you see

what the cloud
sees



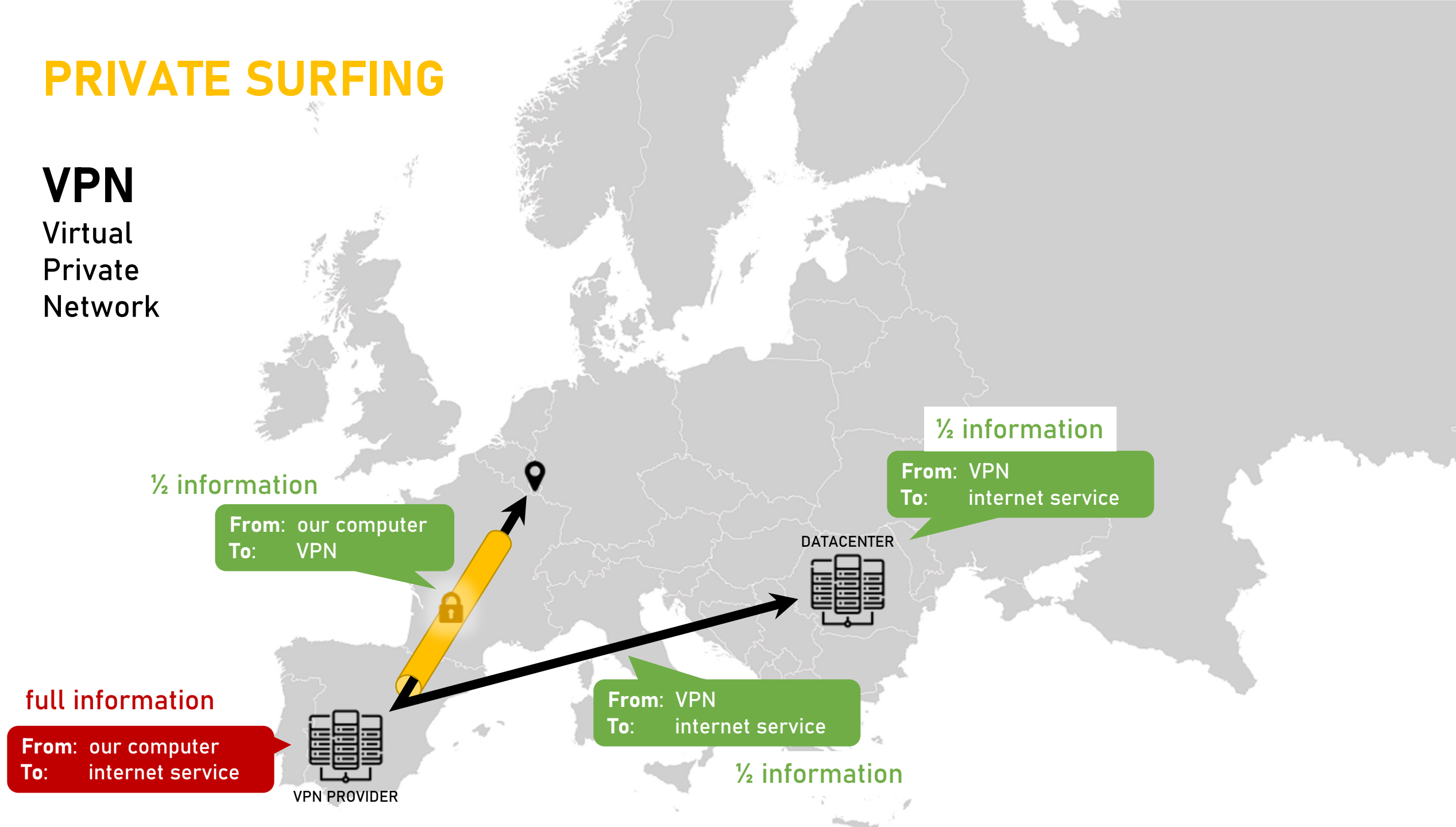
PRIVATE SURFING



PRIVATE SURFING

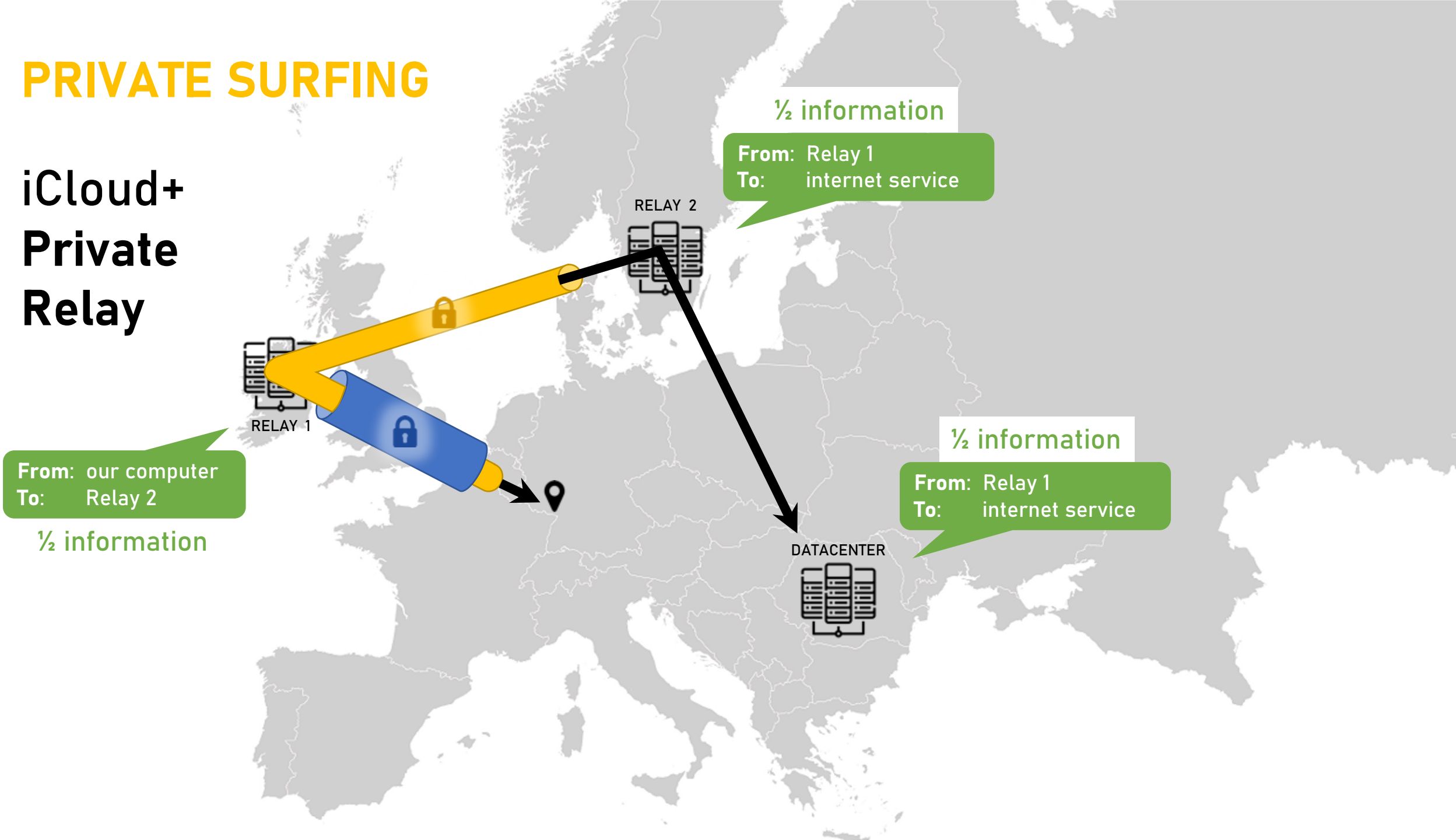
VPN

Virtual
Private
Network



PRIVATE SURFING

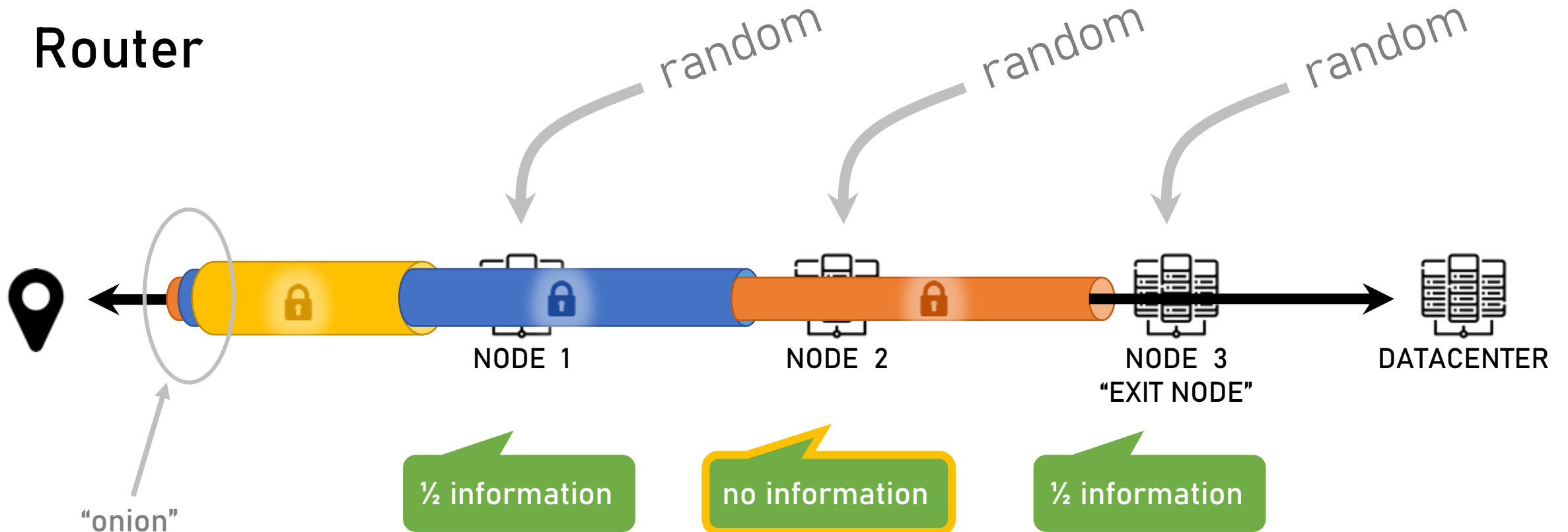
iCloud+ Private Relay



PRIVATE SURFING

TOR – “Dark Net”

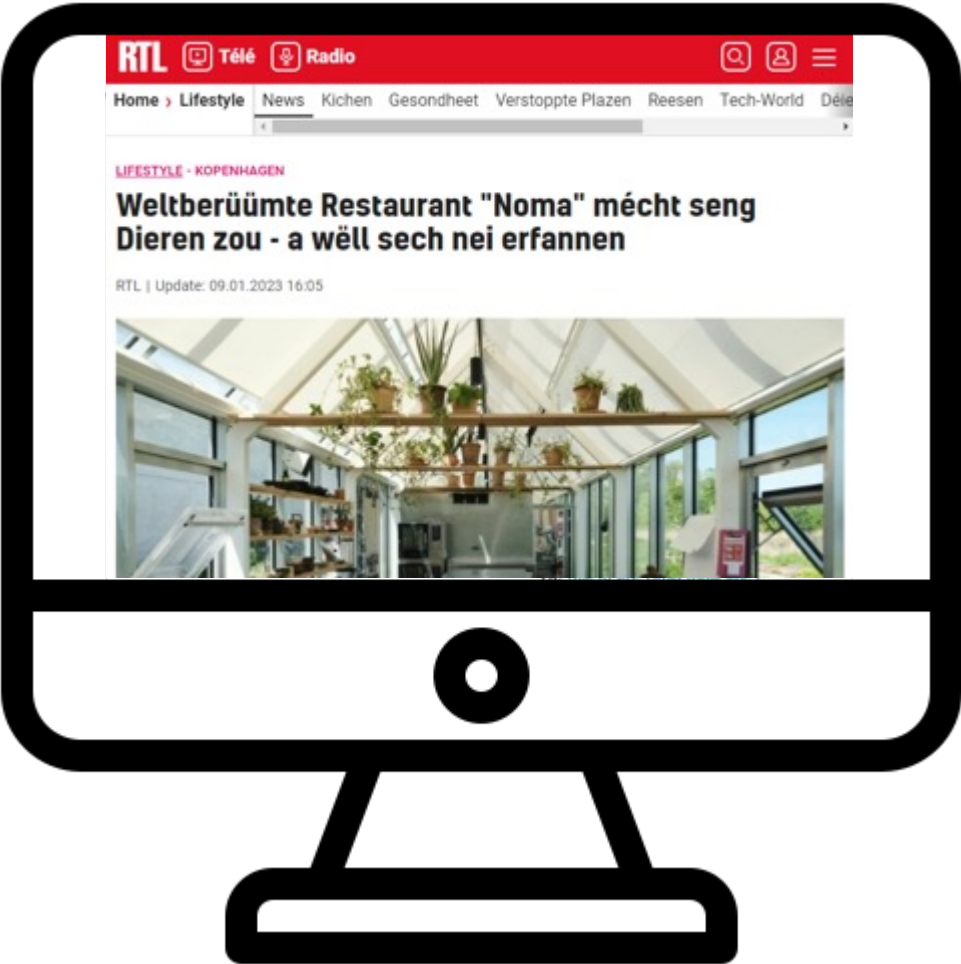
The
Onion
Router



PERSONALIZED ADS

COOKIE

J5DF13KD8HG6



Analytics
DATACENTER

<https://www.tui.co.uk/destinations/caribbean/holidays-caribbean.html>
<https://www.youtube.com/@PracticalEngineeringChannel>
<https://letzshop.lu/fr/alimentation-boissons/bonbons-et-chocolat/>
<https://www.amazon.com/Dolphin-Sneakers-Breathable-Lightweight>
<https://www.rtl.lu/lifestyle/news/a/2014221.html>



J5DF13KD8HG6

dogs BMW cars kids cornflakes
engineering 25-33yo female Caribbean



Jordan IV Retro
White
£154.99
Foot Locker UK



Nike Air Jordan
VII Retro BG ...
£89.00
End.com



Nike Air Jordan
Eclipse ...
£90.00
ASOS.com



Air Jordan 1 Mid
Black 6 (25
£90.00
Nike.com
★★★★★ (16)



Jordan Eclipse,
Wolf Grey/ ...
£76.87
Kickz.co.uk

PERSONALIZED ADS

“Privacy sandbox”



<https://www.tui.co.uk/destinations/caribbean/holidays-caribbean.html>
<https://www.youtube.com/@PracticalEngineeringChannel>
<https://letzshop.lu/fr/alimentation-boissons/bonbons-et-chocolat/>
<https://www.amazon.com/Dolphin-Sneakers-Breathable-Lightweight>
<https://www.rtl.lu/lifestyle/news/a/2014221.html>



dogs BMW cars kids cornflakes
engineering 25-33yo female Caribbean

show ads related to
“dogs”, “BMW”, “engineering”, “cornflakes”, ...



Analytics
DATACENTER



Jordan IV Retro
White
£154.99
Foot Locker UK



Nike Air Jordan
VII Retro BG ...
£89.00
End.com



Nike Air Jordan
Eclipse ...
£90.00
ASOS.com



Air Jordan 1 Mid
Black 6 (25
£90.00
Nike.com
★★★★★ (16)

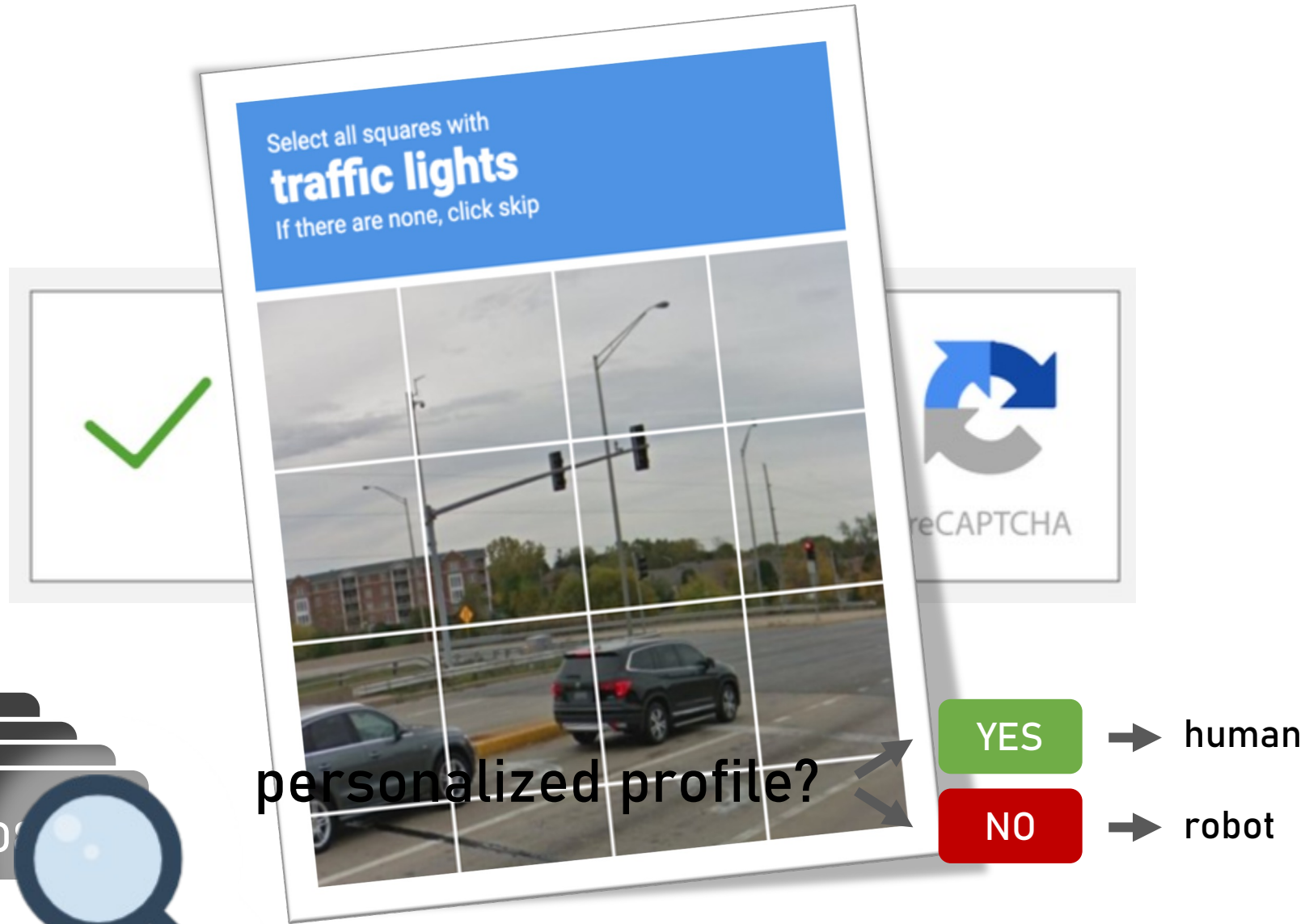


Jordan Eclipse,
Wolf Grey/ ...
£76.87
Kickz.co.uk

HUMAN VERIFICATION



personalized profile?

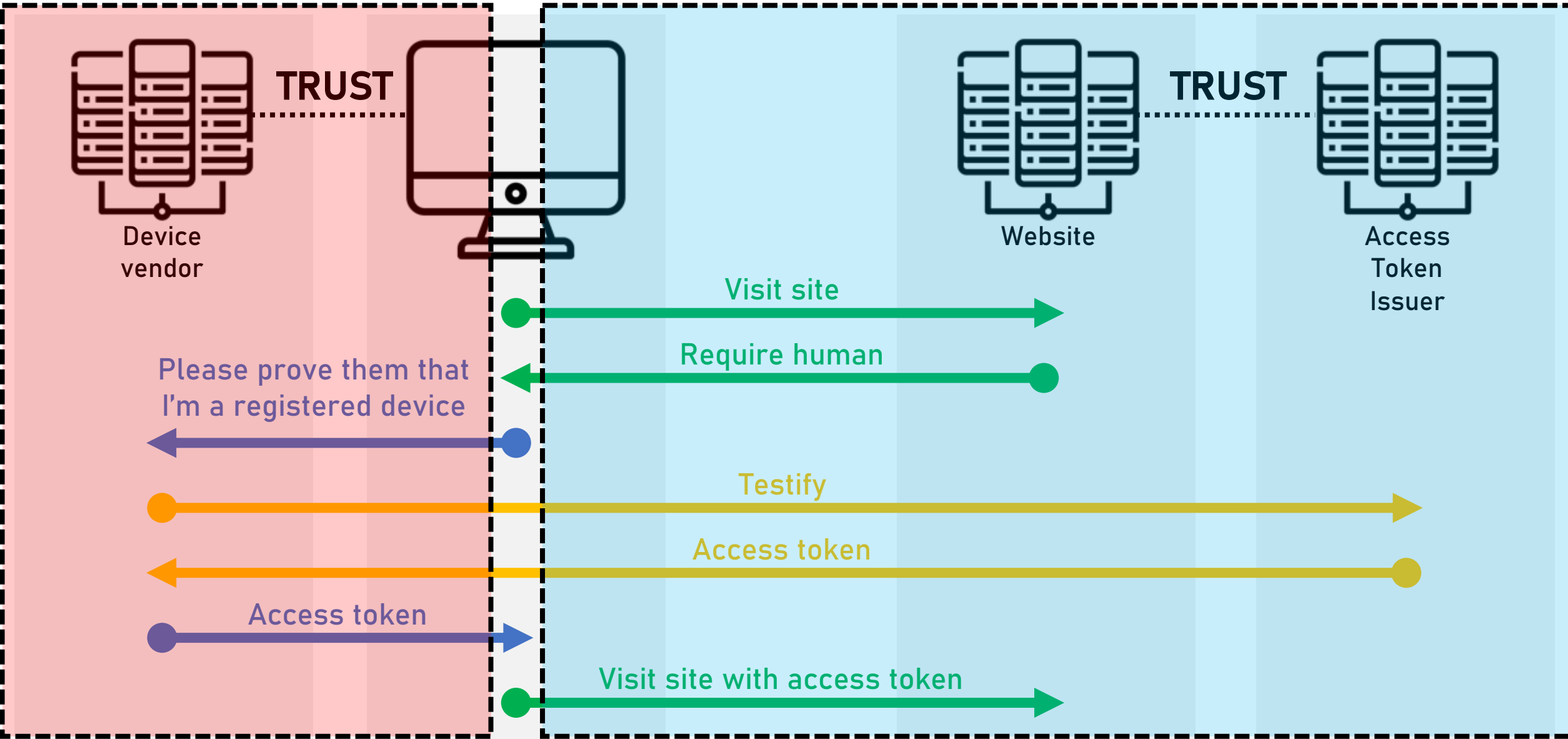


HUMAN VERIFICATION

Identifier

visited websites

“Private Access Token”



IDENTIFICATION

"OAuth"

CONTRACT

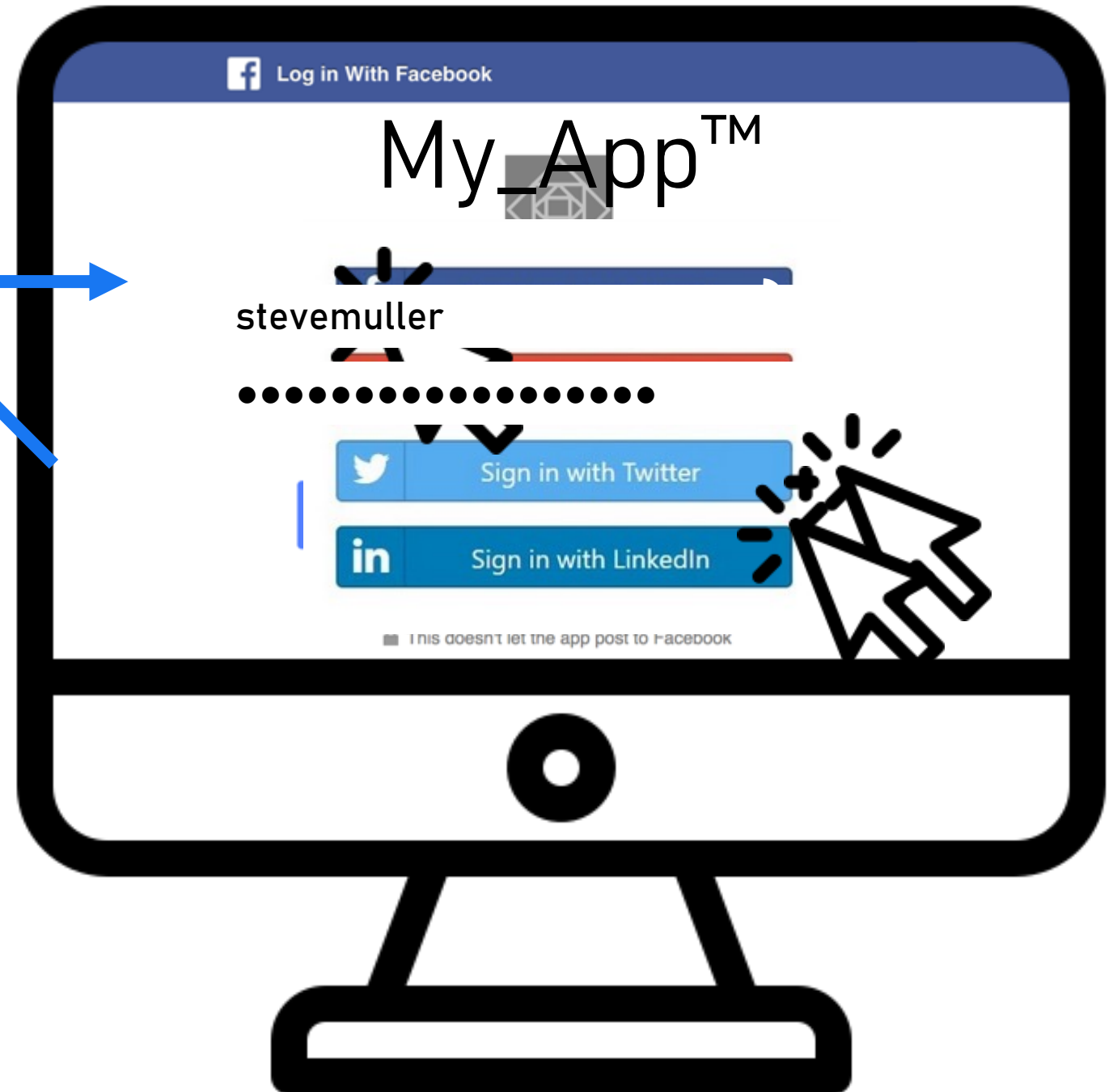
I, Steve M., hereby authorize **My_App** to:

- access my name
- access my profile picture



A stylized, handwritten signature in black ink.

Signature



so how to build

privacy by design

in practice?

MINIMIZATION

+ enforce with technical measures

pseudonymization

(end-to-end) encryption

decentralization, segregation

VERIFIABILITY

= prove privacy to data subjects

open standards

open source

decentralization, segregation