InterActief study tour 2024: safe travels from SIDN!
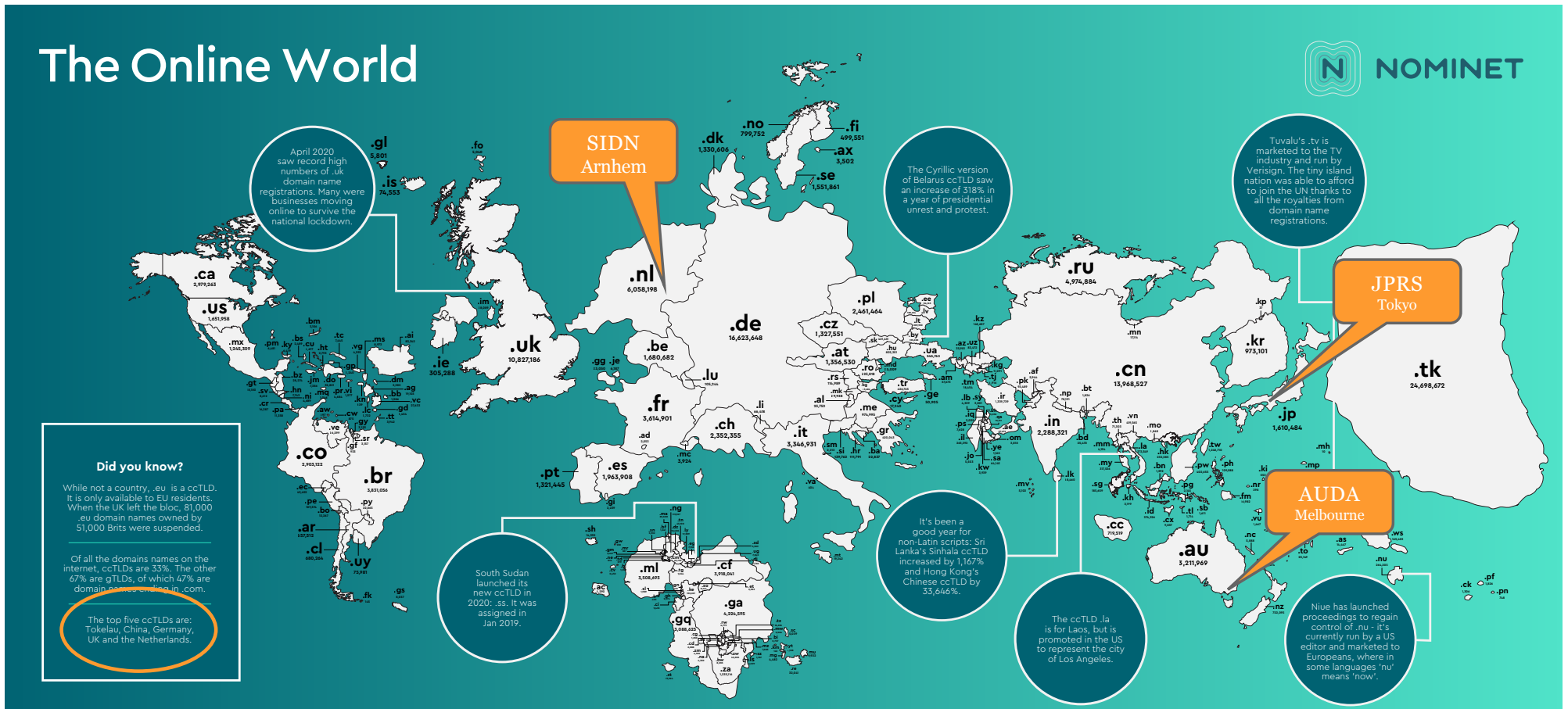
Cristian Hesselman

University of Twente | Fri Sep 20, 2024

From .nl to .jp and .au

The Online World

NOMINET

From pipes to a lasagna

Traditional deployment in "pipes" implies a tight control throughout the infrastructure

Organizations "on" the Internet, such as AWS, Google, and OpenAI

A continuous change towards a partial horizontal division of roles implies requirement for different control mechanisms throughout the architecture, between layers.

Services
Companies, public sector and others offer services like web, email and apps to companies, citizens and consumers.
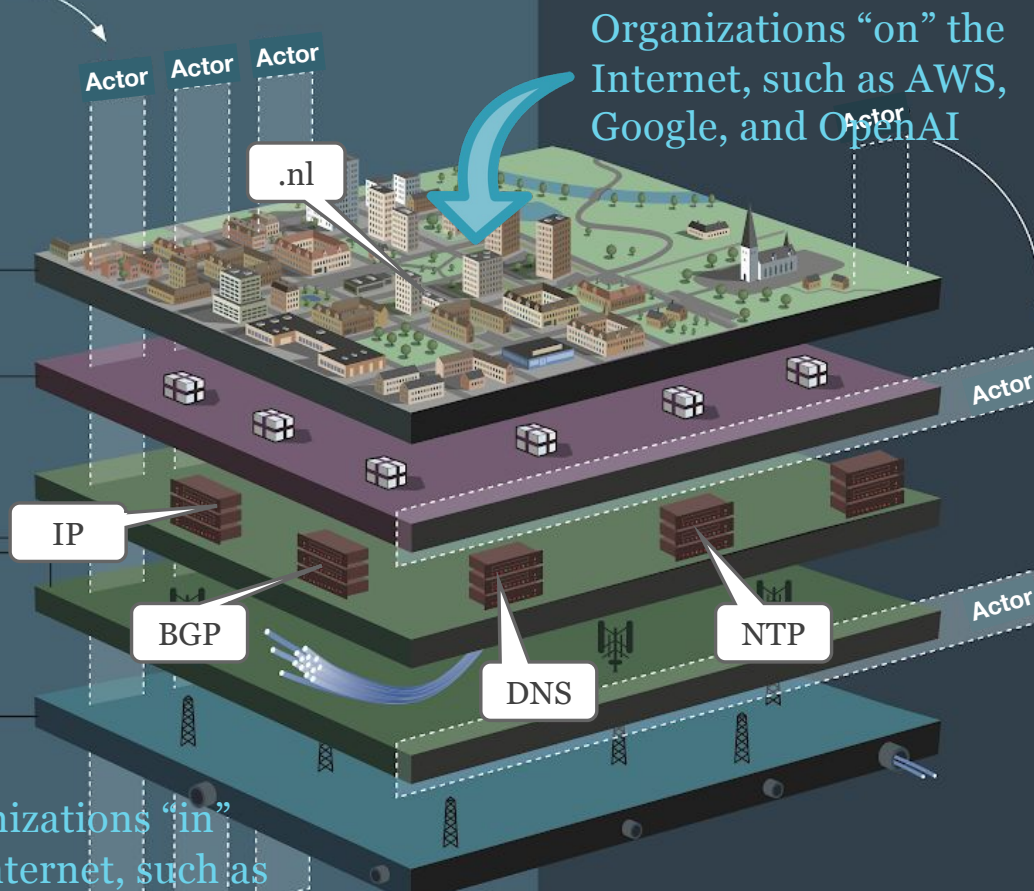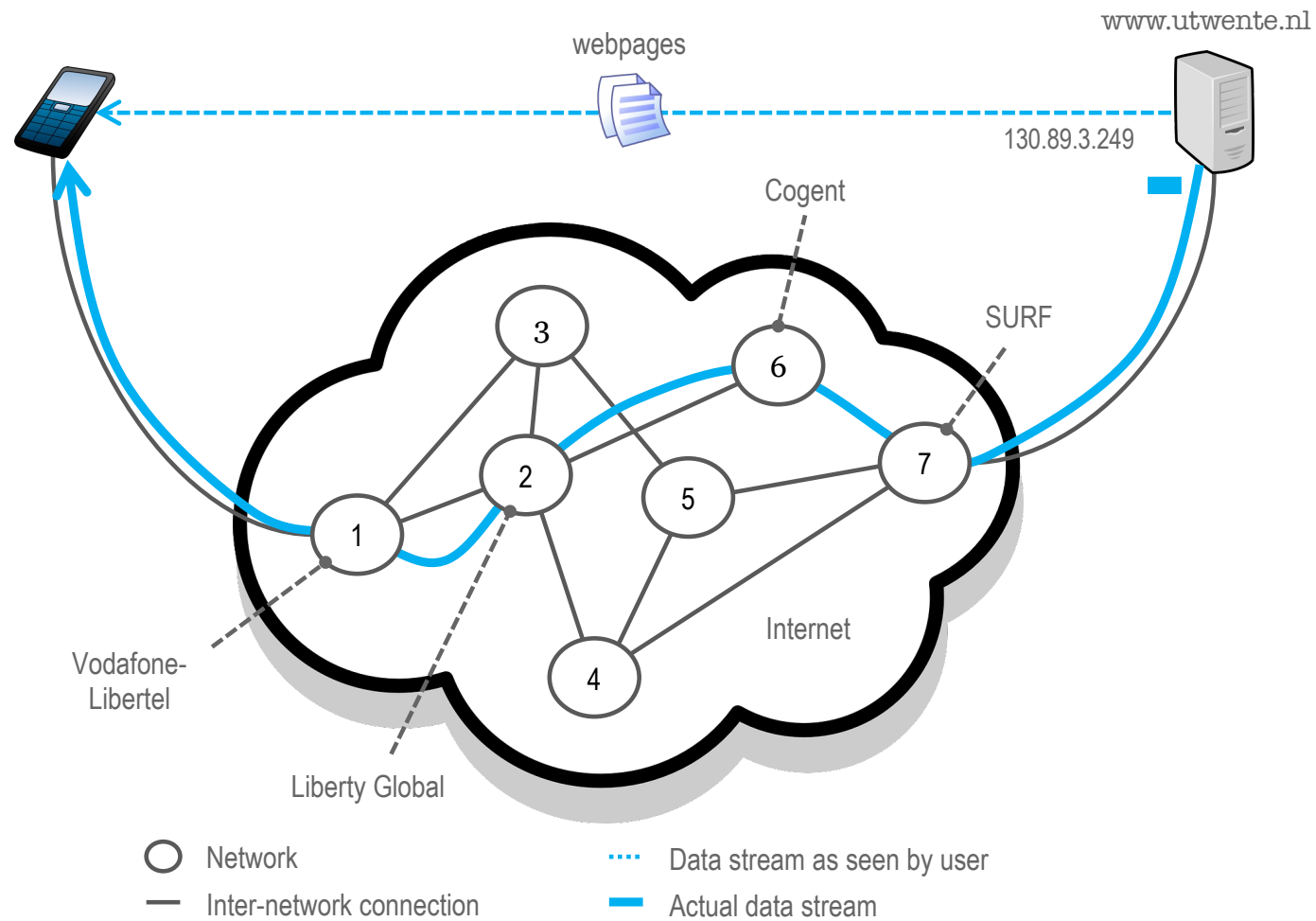
Internet Access
Internet- and mobile operators give companies and consumers access to Internet.

Active infrastructure
Transmission providers ensure transport of data to internet- and mobile operators.

Passive infrastructure
Ducts, fibre, masts etc. Built by municipalities, private companies and others.

Organizations "in" the Internet, such as SIDN and RIPE

Actor   Actor   Actor   Actor

.nl

Actor

Actor

IP

BGP

DNS

NTP

Pros:
- Simpler management of control
- Increased ability to innovate
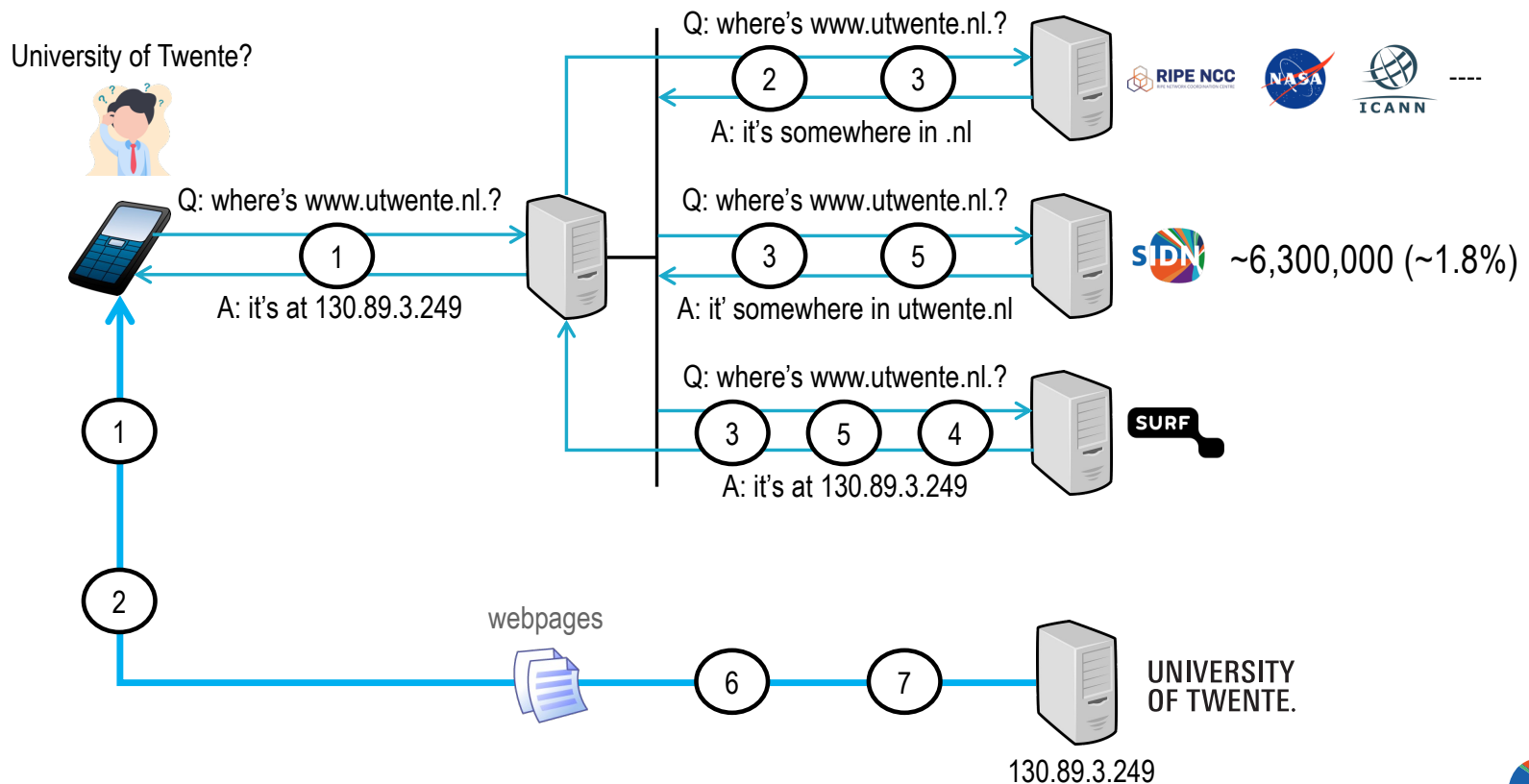- Standardization leads to replaceability of products and services

Cons:
- "Markets" on different layers that do not work as efficient as possible
- Lack of control and planning
- Low skills regarding procurement
- Non-optimal risk management for the society as a whole

3

https://www.iva.se/det-iva-gor/projekt-och-program/digitalisering-for-okad-konkurrenskraft

How the "Internet plumbing" works

# Finding your destination within milliseconds

SIDN Labs is the research arm of SIDN

- Goal: further increase the security of the Internet, with a special focus on .nl and the Netherlands

- Applied technical research: large-scale Internet measurements, prototyping new Internet systems, evaluating them, contributing to standards

- Results are public and generic (e.g., measurement methods and insights, designs, software) plus SIDN-specific adaptations for SIDN teams
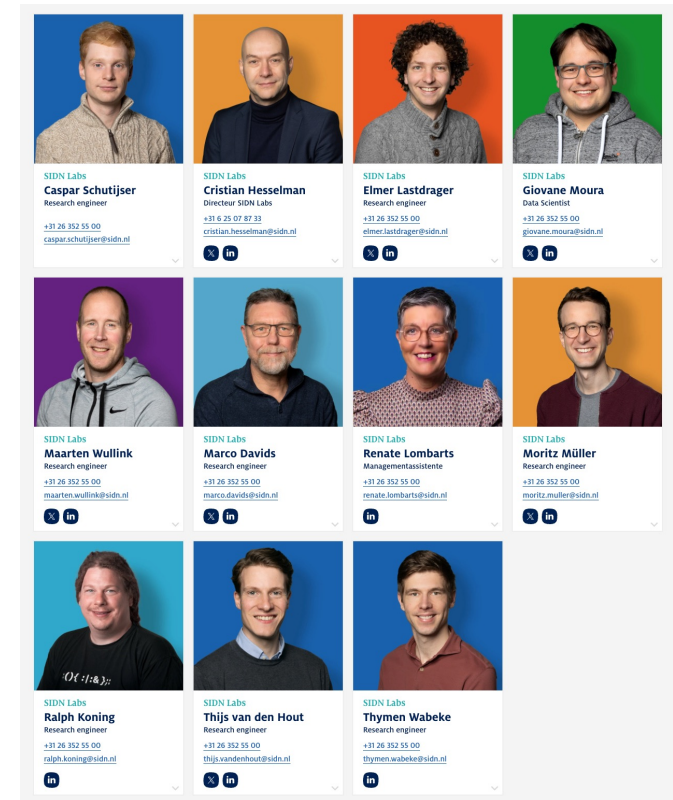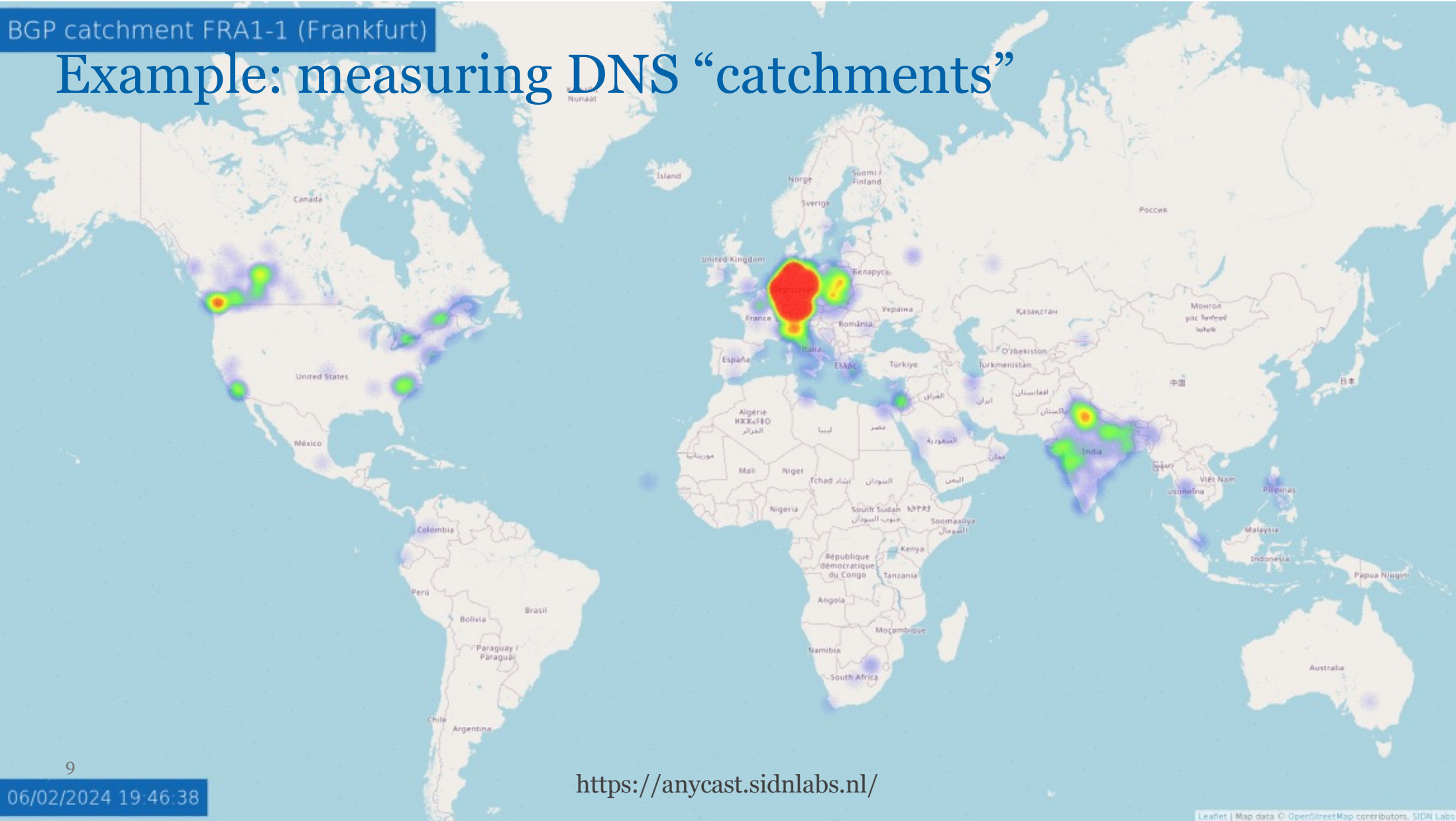
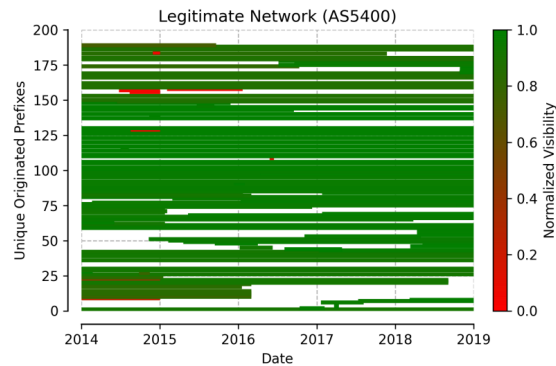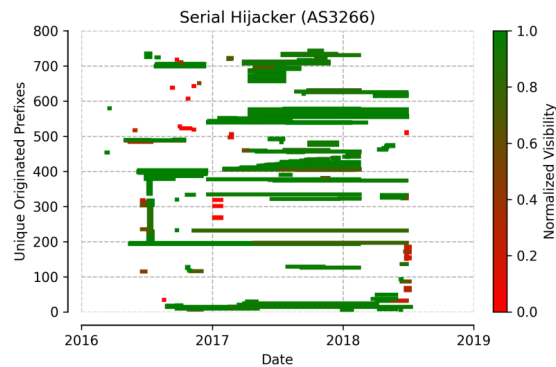# Bridge academia-industry gap through collaboration

Example: measuring DNS "catchments"
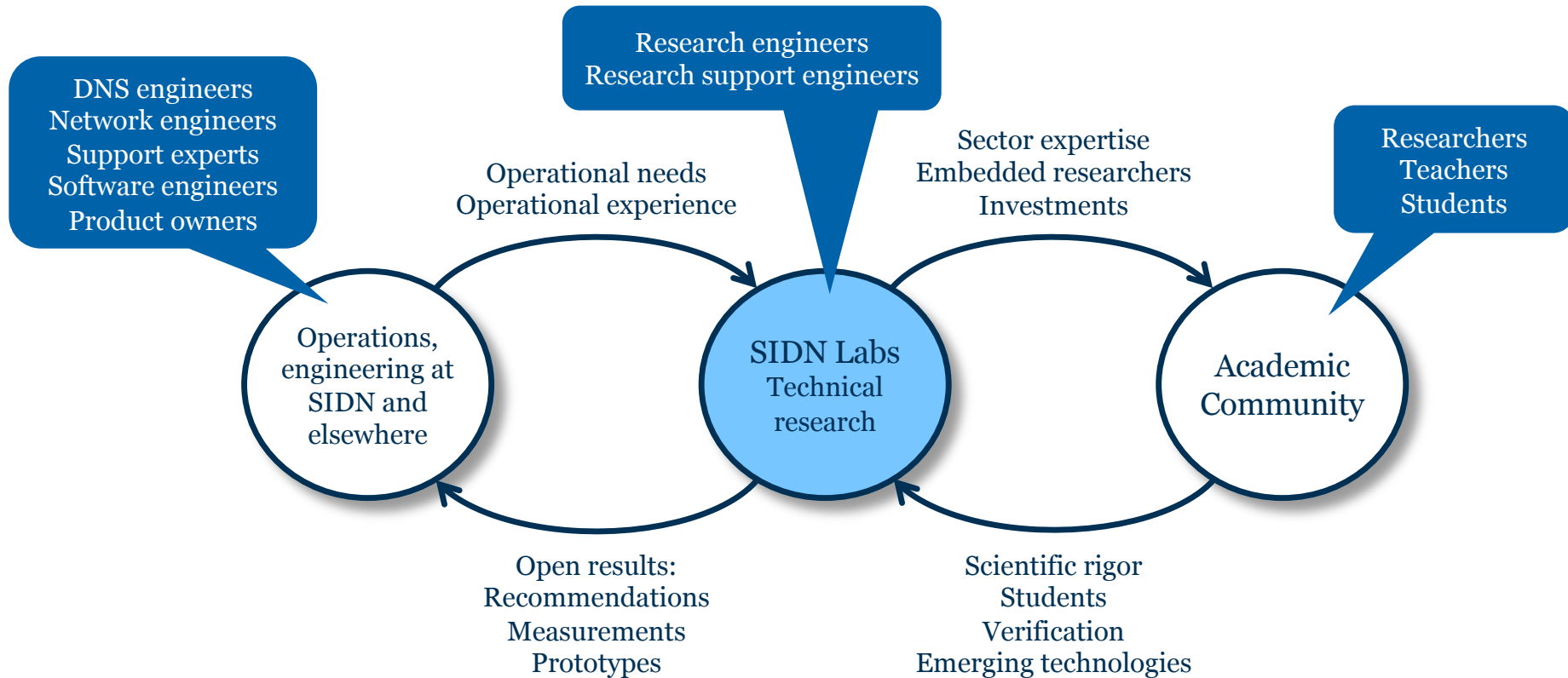
BGP catchment FRA1-1 (Frankfurt)

9

06/02/2024 19:46:38

https://anycast.sidnlabs.nl/

Example: increasing routing system integrity
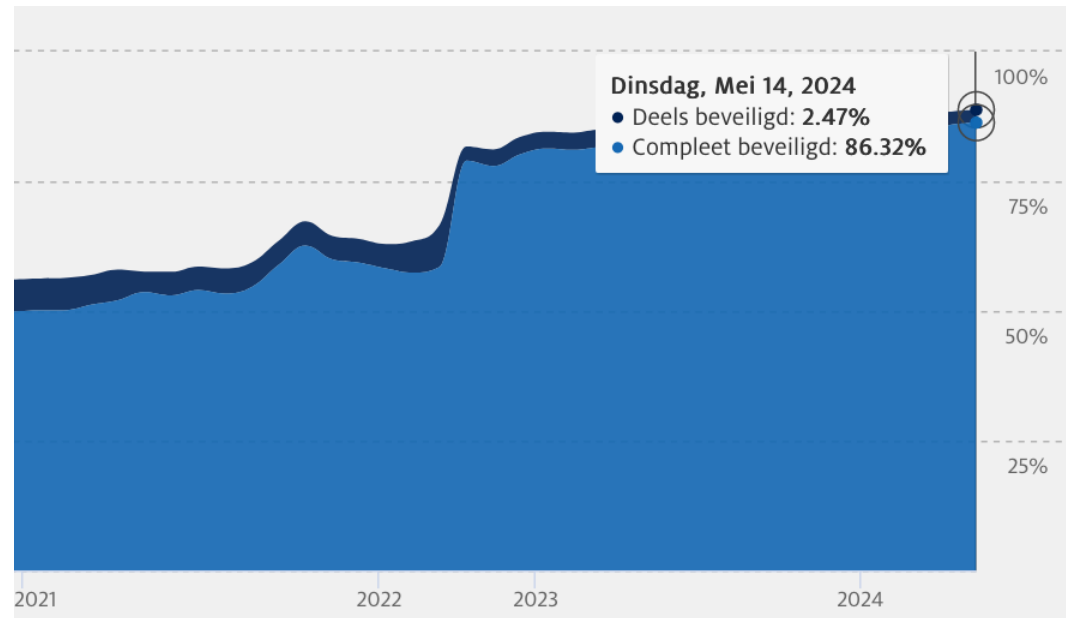

(a) Prefix origination pattern of British Telecom (AS5400).
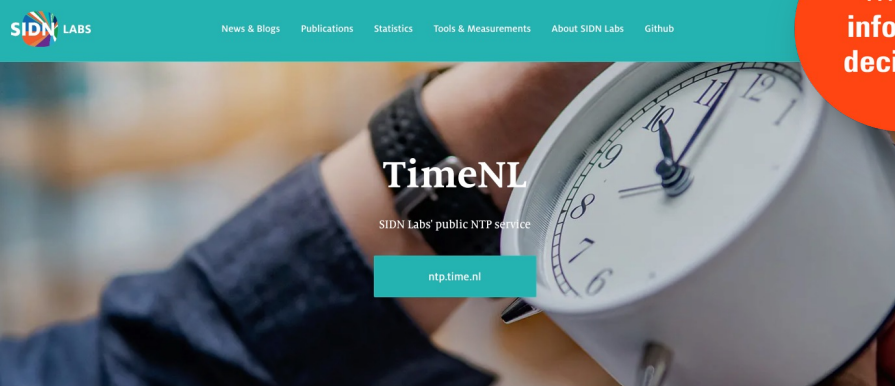
(b) Prefix origination pattern of a serial hijacker (AS3266).

https://hesselman.net/publicaties/
TMA2024-Serial-BGP-Hijackers.pdf

.nl domain names with adressess in the RPKI

Dinsdag, Mei 14, 2024
● Deels beveiligd: **2.47%**
● Compleet beveiligd: **86.32%**

https://stats.sidnlabs.nl/nl/web.html#secure%20routing%20(rpki)
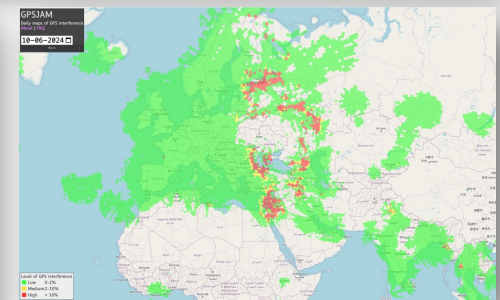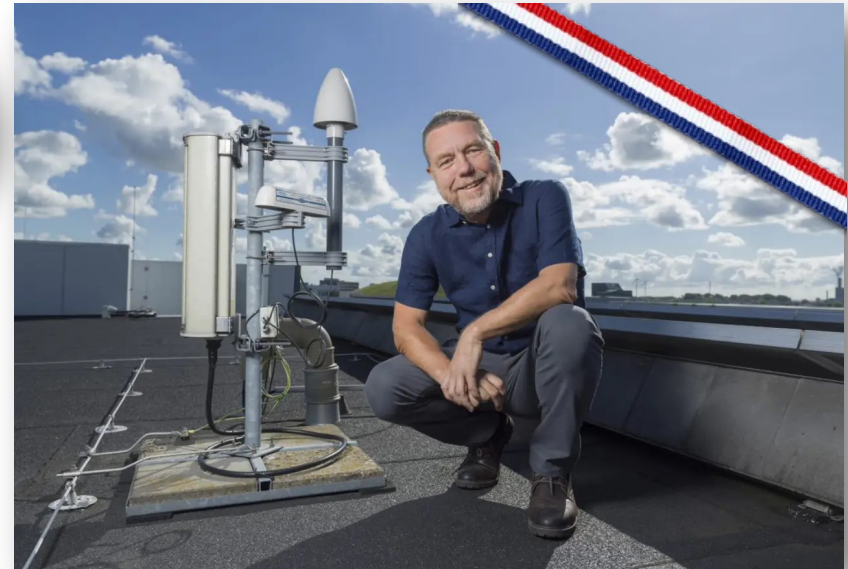
Example: public, resilient, transparent time service

https://time.nl

bron: https://gpsjam.org/

Do your master's project at SIDN Labs?
https://www.sidnlabs.nl/en/graduating

Other vacancies (B.Sc. and M.Sc.):
https://www.sidn.nl/en/work-at-sidn

Wanna know more? Contact Inge Loeff at our HR team at inge.loeff@sidn.nl

Safe travels!
(and stay connected :)

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