OpenINTEL
A Large-Scale Active Measurement Platform for the DNS

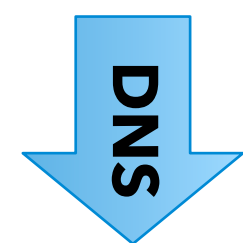DACS — Design and Analysis of Communication Systems · UNIVERSITY OF TWENTE. · SIDN LABS · NLNET LABS · SURF
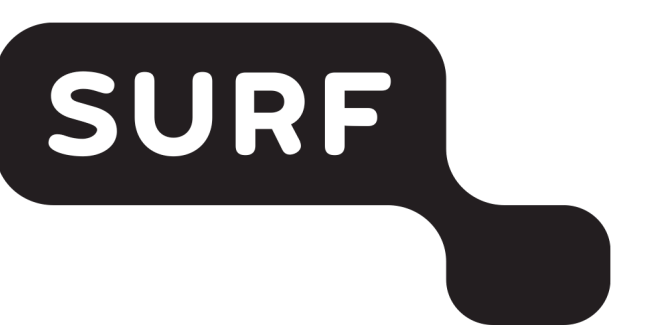
## About OpenINTEL

Measuring the Internet

www.example.com ?

DNS

93.184.216.34 !

The **Domain Name System** (**DNS**) is crucial for the Internet. It **maps human-readable names to machine-readable addresses**. *Without DNS, there is no Internet*. This makes **studying what is in the DNS** crucial **to understand the evolution, security and stability of the Internet**. The OpenINTEL project is the first and only long-term, large-scale study of the DNS and its role in the Internet.

Responsible Measurement Practice

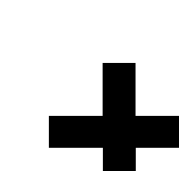Legend: Other answers · Other queries · Measurement answers · Measurement queries
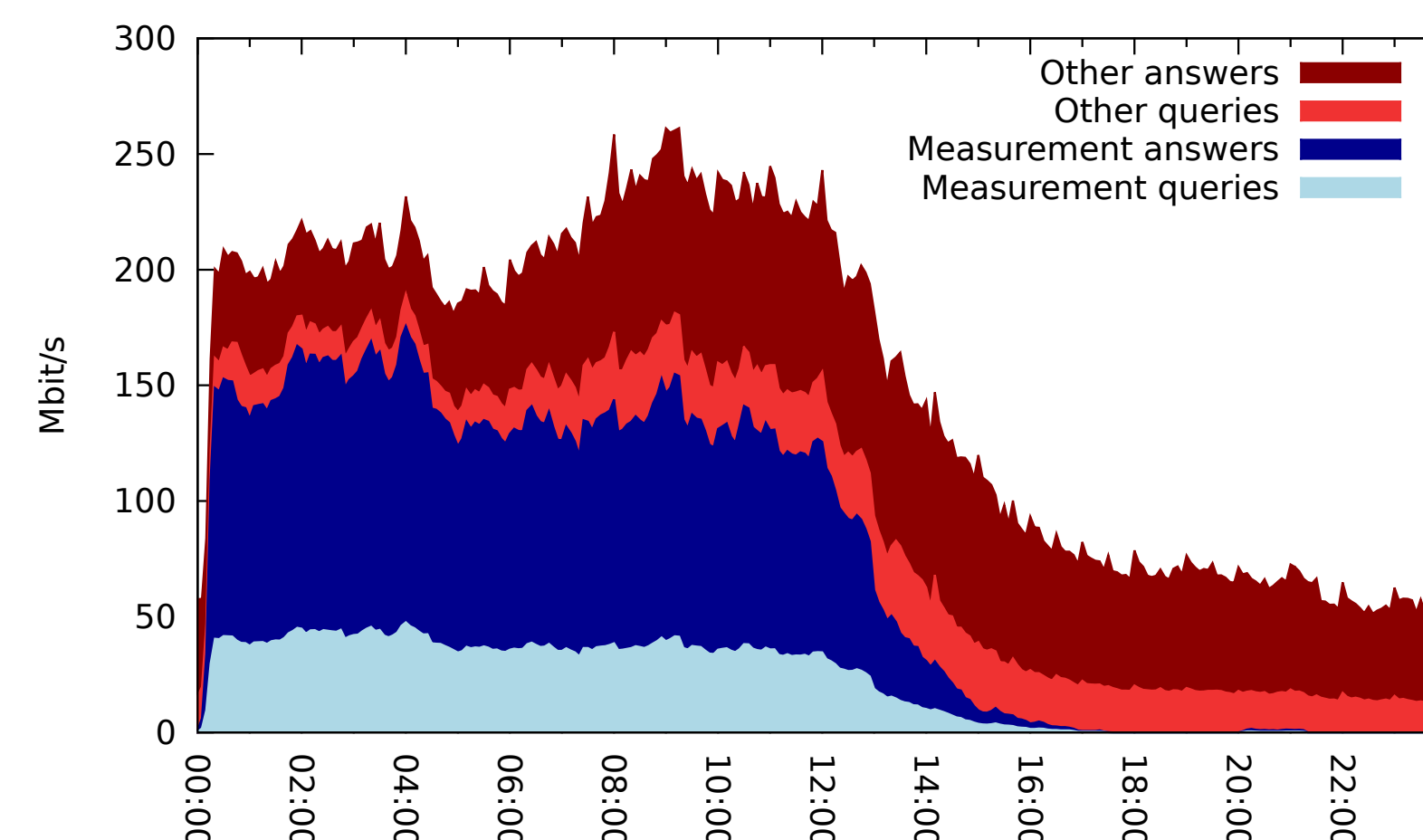
- Extensive analyses of impact on global DNS
- Active engagement with "top talkers"
- Clear points of contact and prompt opt-out
- Data sharing with fellow researchers
- Open access data where possible

Internet-Wide Coverage

Generic TLDs

.com .info
.net .mobi
.org .name
.biz new gTLDS

+ ≈ **85%** of the global DNS name space

Country Code TLDs

.nl .se .nu .ca .fi .at
.dk .ru .рф .us .gt .na .ee
.co .ch .li .sk .fr .cl

In total 308M domains (2025)

Lasting National and International Collaborations

Academia

NSF · DARPA · University of Maryland · MIT · RIT · UC San Diego · CAIDA · Max Planck Institute for Informatics · Universität Konstanz · TU Berlin · CISPA · Jacobs University · University of Sydney · UCL · Université catholique de Louvain · HAW Hamburg · VT · TU Wien · RWTH Aachen University · Northeastern University · Stanford · Universität Münster · Duke · UFRGS Universidade Federal do Rio Grande do Sul · UCL · TU Delft · TU/e · b-tu Brandenburgische Technische Universität Cottbus-Senftenberg · TUM

Collaboration and Data Sharing

From the start, OpenINTEL was **designed** to **share data** with other researchers. We use the **open source Apache Parquet data format** to store data and publicly **share our data dictionary** on our website. This makes our results **usable** in big data analytic toolchains such as **Spark**, and **ClickHouse**, but also means data can be analysed with simpler tools.

Over the past years, we have **built lasting relationships** with TLD operators. For example, in many cases, we **measure their TLD** and then **provide results back to them** so they can perform their **own analysis**.
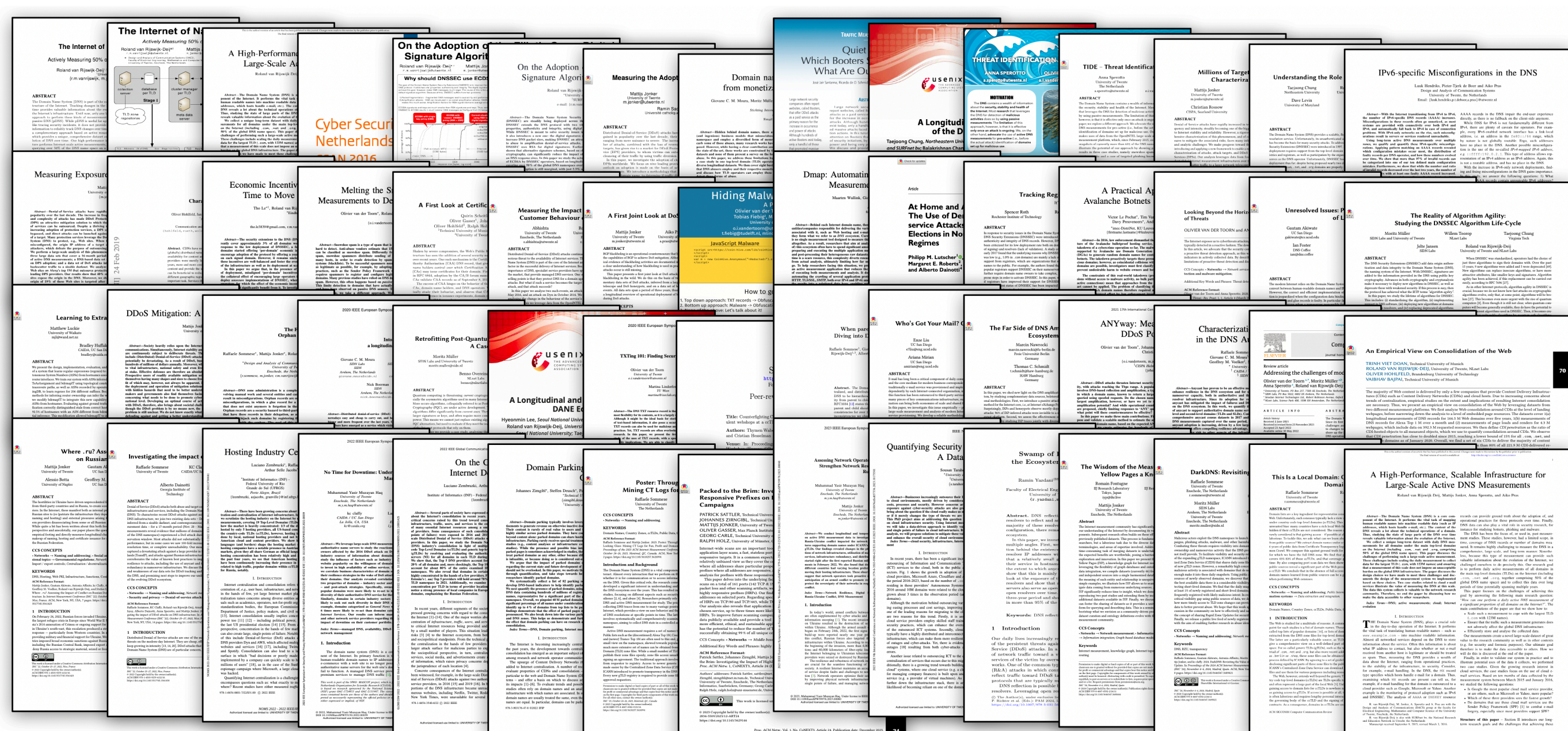
In addition to this, we have established **lasting relationships** with other **universities and research institutes**, **initiated** both **by us** and **by them**. We have **provided data** as well as co-authored **shared papers**.

Industry and Government

SIDN · SURF · Switch · iiS · National Cyber Security Centre Ministry of Security and Justice · NBIP nationale beheersorganisatie internet providers · VERISIGN · CIRA BUILDING A BETTER ONLINE CANADA · IIJ Internet Initiative Japan · TNO innovation for life · RIPE NCC RIPE NETWORK COORDINATION CENTRE · Akamai · nic.at · .dk hostmaster
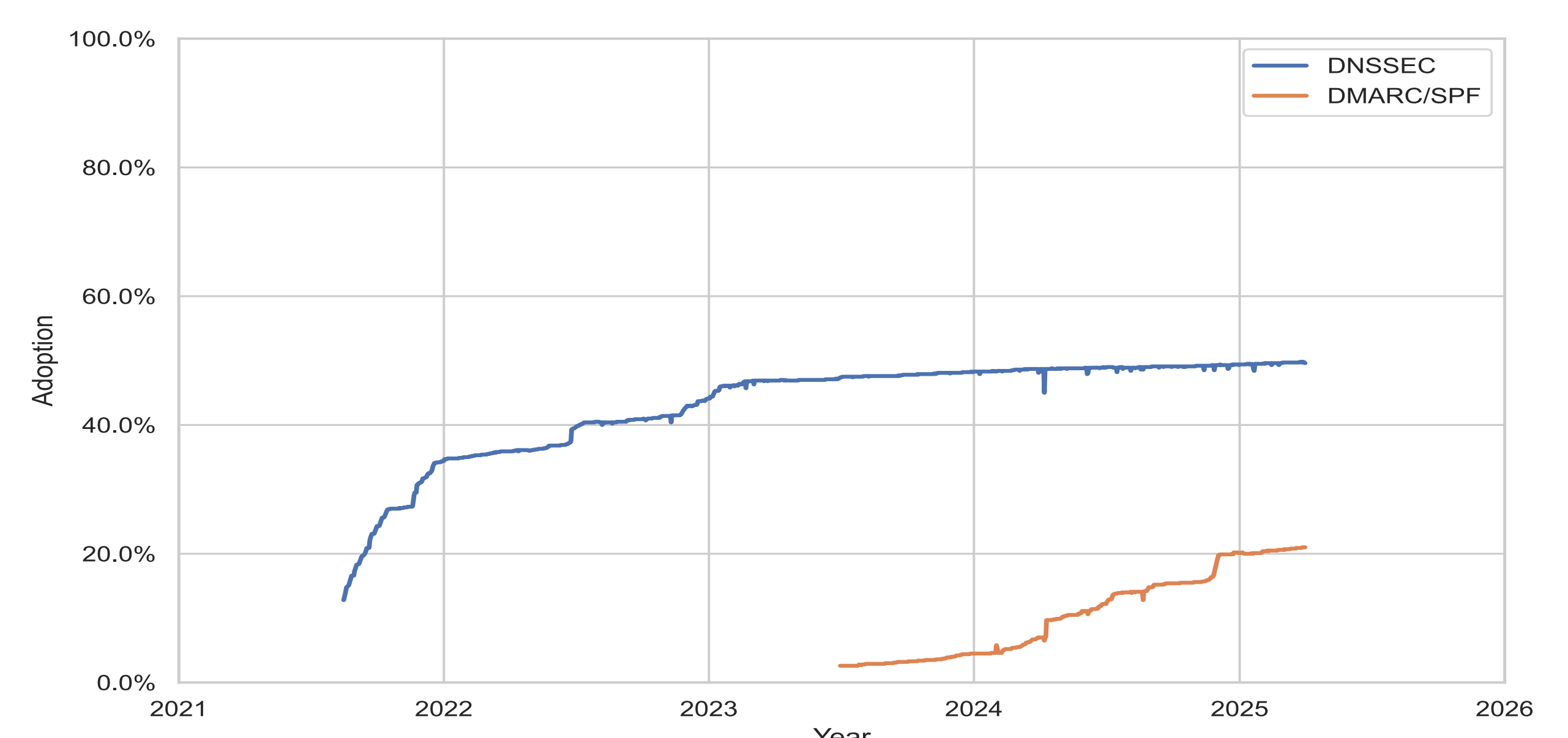
Impact on Science and Society

Academic and Governmental

OpenINTEL data is being used in academic research and governmental policy making leading to **54 papers** and **5 posters** in **10 years**.

Industry Highlight

Legend: DNSSEC · DMARC/SPF

In **collaboration with Switch**, the .ch and .li country code TLD operator, OpenINTEL data **drives the adoption of modern security practices** and **increases the security and resilience** of the Swiss and Liechtenstein DNS.

Open INTEL **Visit our website: https://www.openintel.nl/**