

A Privacy Framework for (DNS) big data

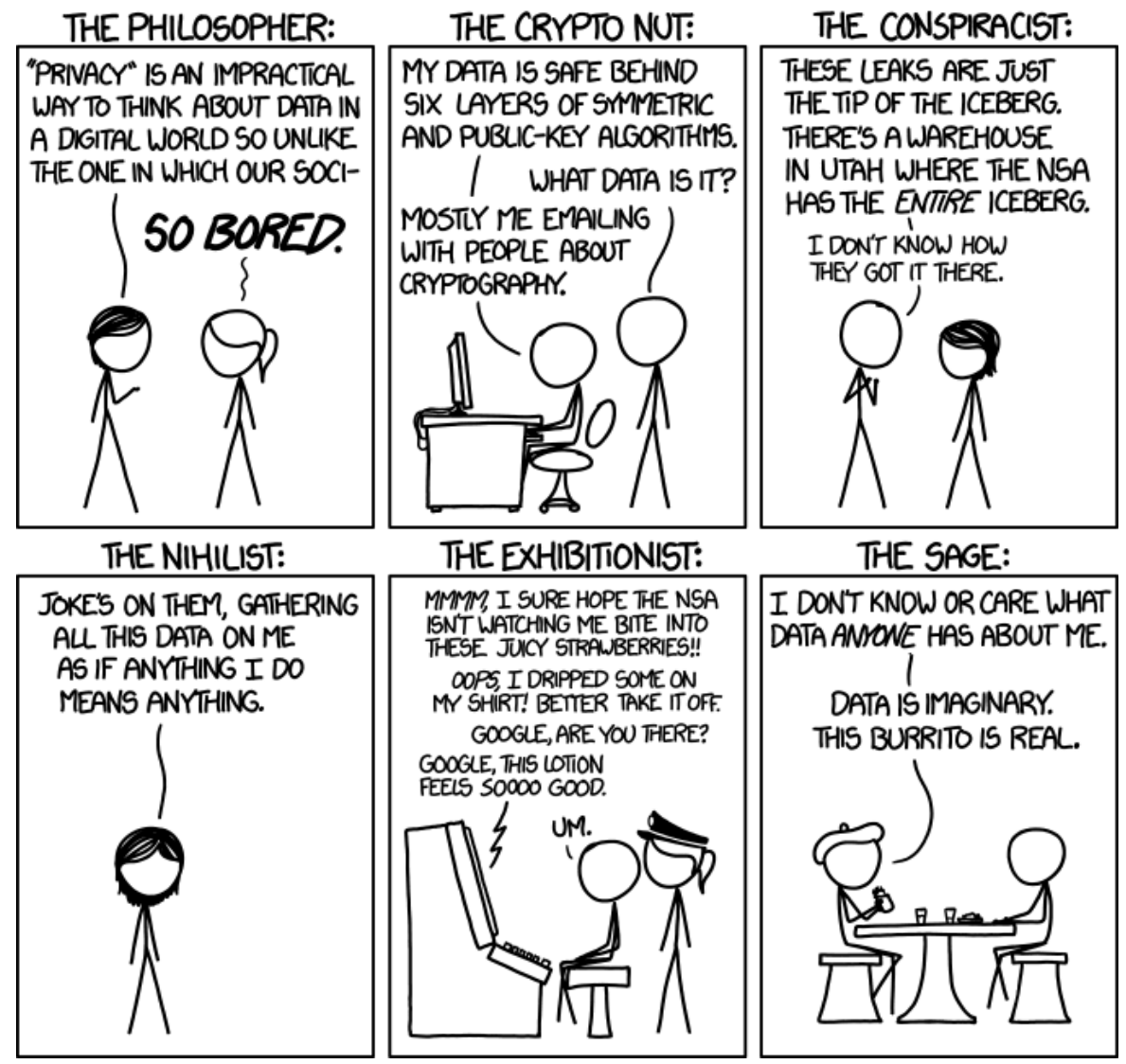
Jelte Jansen

Idnext event, April 16 2015

Overview

- Introduction
- Big data: Balance privacy and security?
- Our approach
- Current status

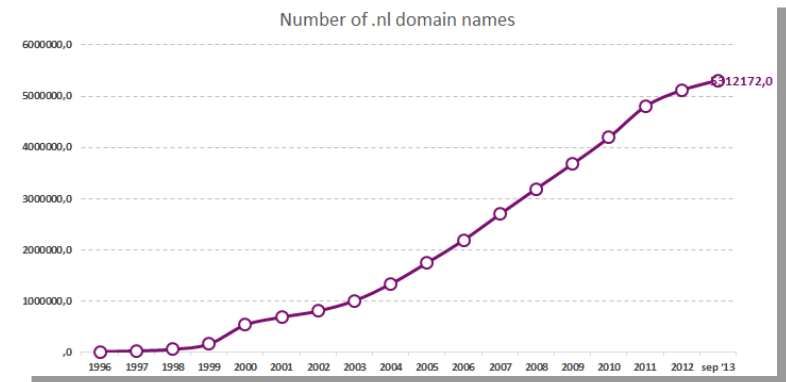
OPINIONS ON INTERNET PRIVACY



Source: <http://xkcd.com>

SIDN

- “.nl” (Registry of the Netherlands)
- > 5.5M domain names, > 1.600 registrars
- > 1.300.000.000 DNS queries per day
- Private organisation with public task



SIDN Labs

- R&D team SIDN
- Improve services of SIDN
- Center of expertise
- Improve security of the Internet in the Netherlands
- Facilitate external research



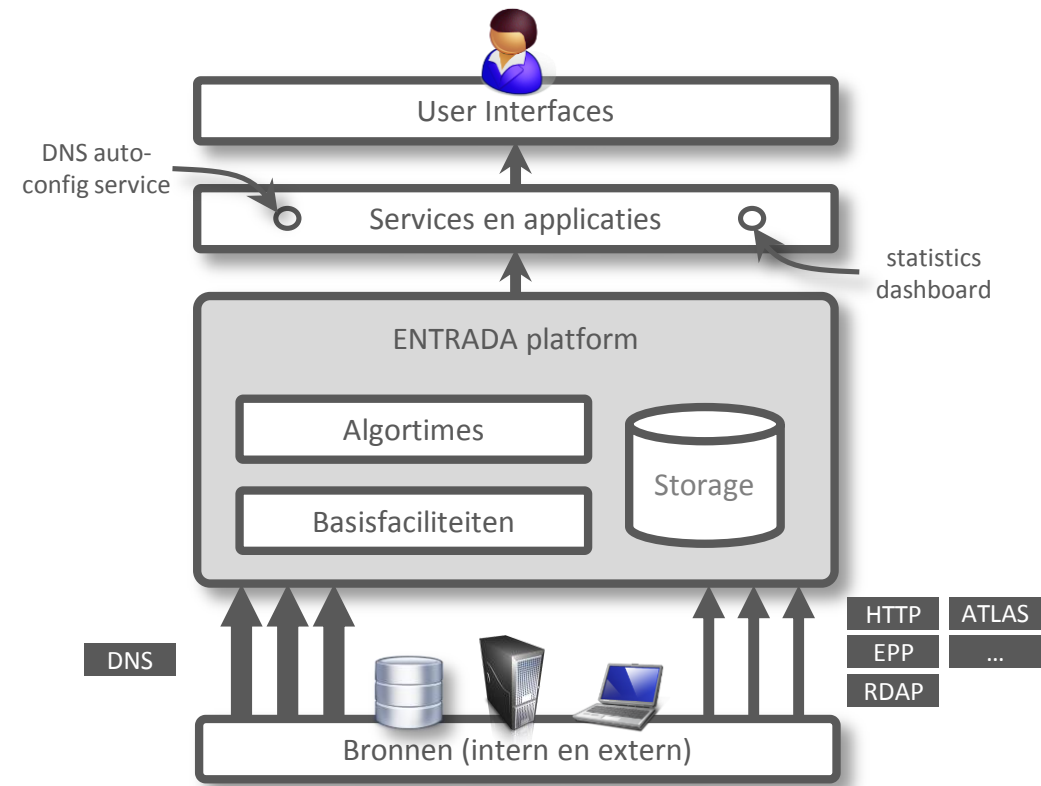
Domain names and abuse

- Malware
- Botnets
- Spam
- DDoS
- Etc.



ENTRADA: DNS Big Data Platform

- ENhanced Top-level domain Resilience through Advanced Data Analysis
- Purpose: Create applications and perform research to:
 - Safeguard stability of '.nl'
 - Improve security of (Dutch) Internet
 - Detect van botnets and abuse
- What about privacy?



Resolver



A screenshot of a web browser displaying the SIDN website. The browser's address bar shows the URL <https://www.sidn.nl/a/over-sidn/welkom-op-onze-nieuwe-website>. The website header features the SIDN logo and a navigation menu with items: [.nl-domeinnaam](#), [Diensten](#), [Veilig internet](#), [Kennis en ontwikkeling](#), and [Over S](#). The main content area has a dark blue background with the text "Gepubliceerd op: donderdag 13 november 2014" and a large heading "Welkom op onze nieuwe website". A breadcrumb trail at the bottom reads: [Home](#) → [Over SIDN](#) → [Nieuwsberichten](#) → Welkom op onze nieuwe website. The SIDN logo is also present in the bottom right corner of the page content.

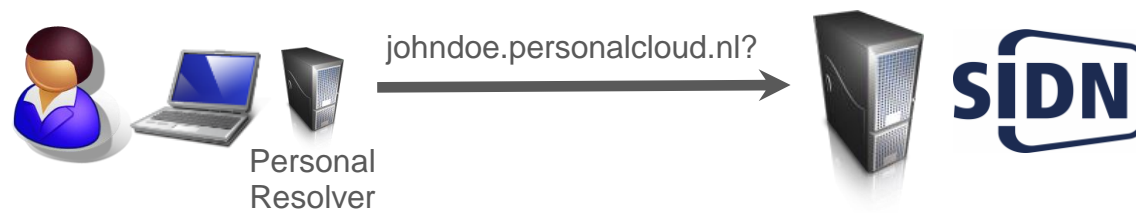
A screenshot of a Mozilla Firefox browser window. The title bar reads "Mozilla Firefox Start Page". The address bar shows the URL <https://www.sidn.nl/a/over-sidn/welkom-op>.

Personal data?

- Sometimes (direct queries, domain name that is queried)
- Sometimes not (shared resolvers, general queries)

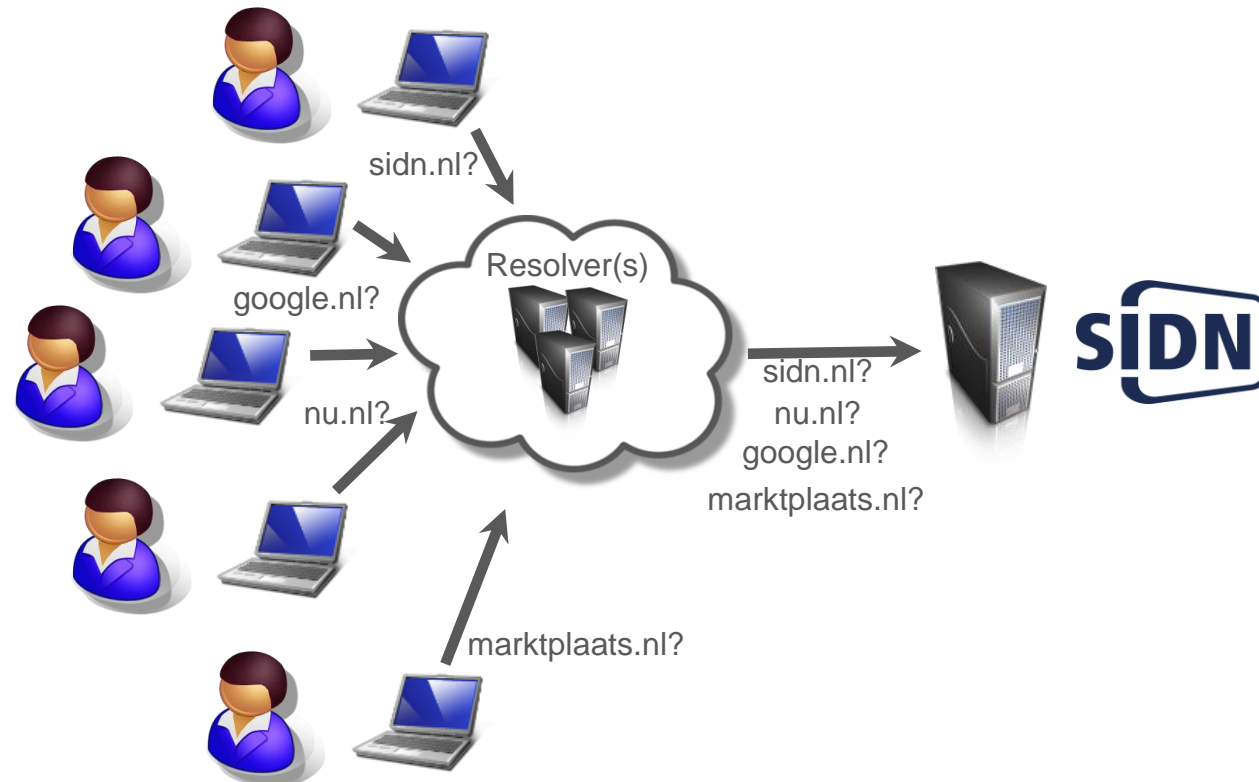
Personal data?

- Sometimes (direct queries, domain name that is queried)
- Sometimes not (shared resolvers, general queries)



Personal data?

- Sometimes (direct queries, domain name that is queried)
- Sometimes not (shared resolvers, general queries)



Needed data differs per application

- Example: Detecting botnets
 - Queried domain name not important
 - But IP Address is

- Example: measuring DDoS patterns
 - IP Address not relevant
 - Query name and type is

Balance Security/Stability vs Privacy



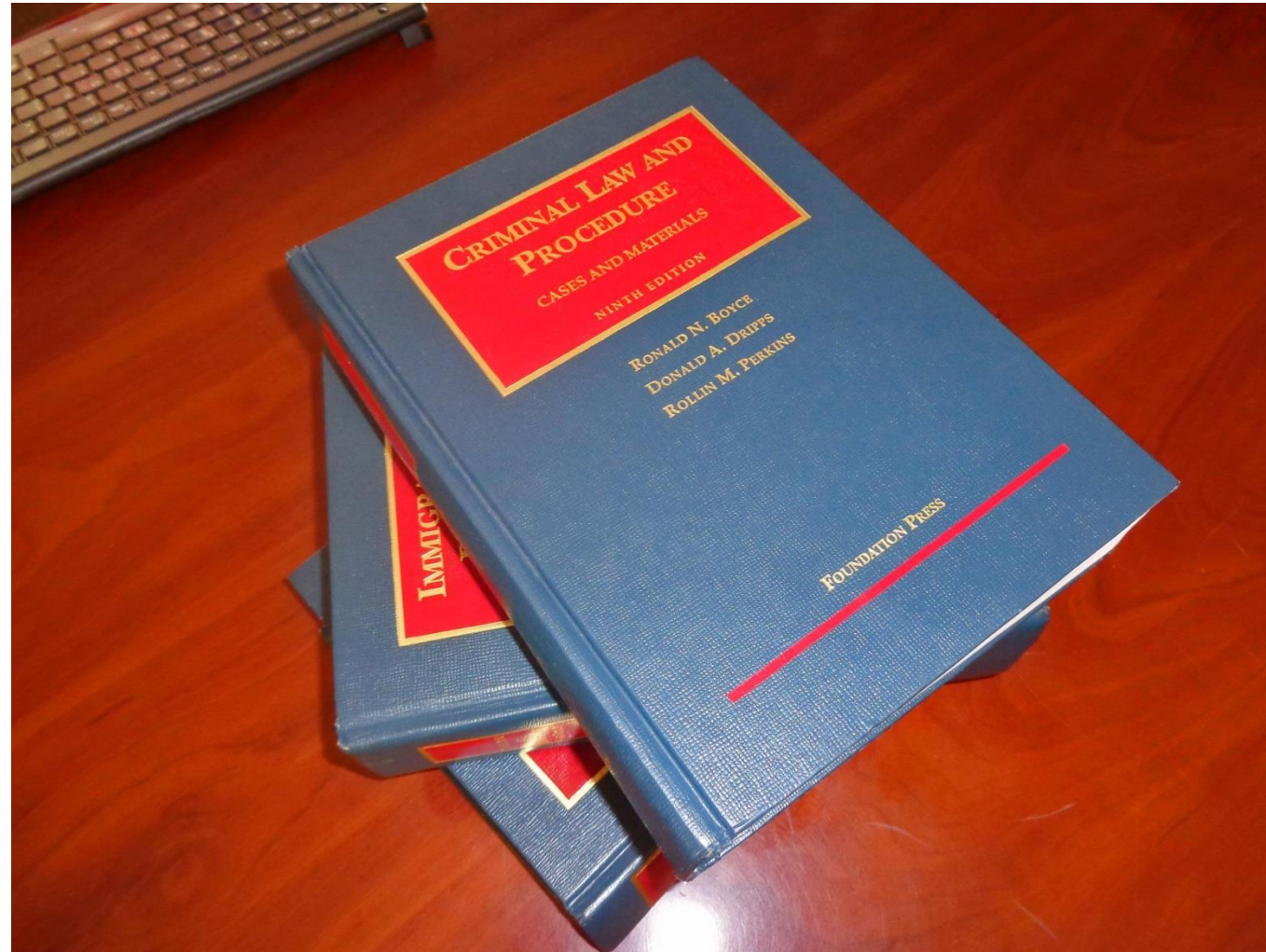
Multidisciplinary approach

- Technical
 - Filtering / Aggregation
 - Hard retention limit
 - Data silos
- Judicial
 - Dutch Data Protection law
 - EU Data Protection Regulation
- Organizational
 - Privacy board
 - Privacy Policies



Multidisciplinary approach

- Technical
 - Filtering / Aggregation
 - Hard retention limit
 - Data silos
- Judicial
 - Dutch Data Protection law
 - EU Data Protection Regulation
- Organizational
 - Privacy board
 - Privacy Policies

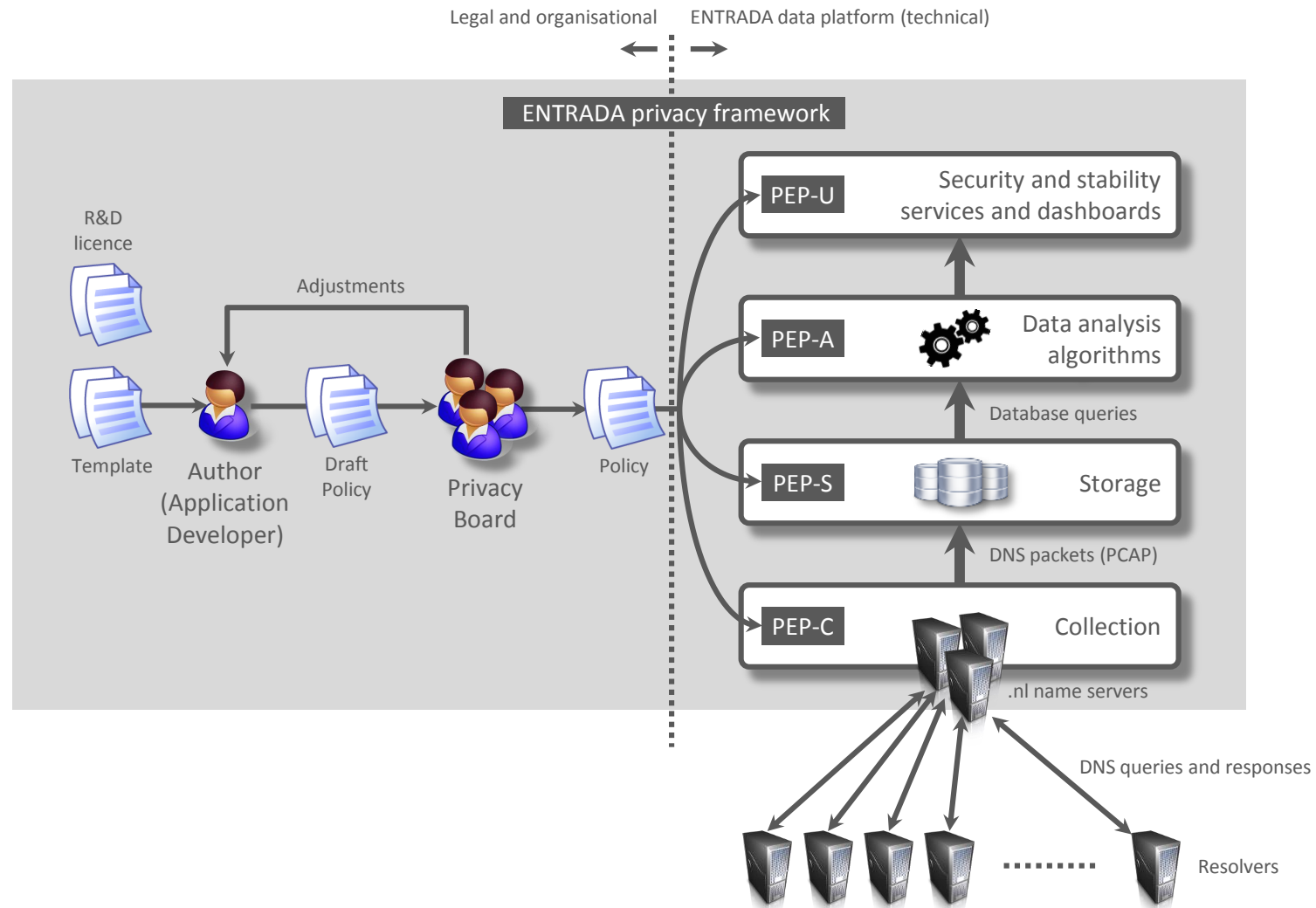


Multidisciplinary approach

- Technical
 - Filtering / Aggregation
 - Hard retention limit
 - Data silos
- Judicial
 - Dutch Data Protection law
 - EU Data Protection Regulation
- Organizational
 - Privacy board
 - Privacy Policies



Privacy framework: overview



Status Privacy Board

- Board founded with 3 members
 - Chair
 - Legal expert
 - Technical expert
- Processes in development
 - Instructions for submitting policies
 - Instructions for evaluating policies
- First policy being worked on
 - Evaluation and feedback sent back to submitter
 - After issues are resolved, the updated policy will be published

Procedures Privacy Board

- Developer or researcher submits policy by filling in template
 - Goal
 - What data
 - Which filters
 - Which security measures
 - Etc.
- Board evaluates policy
 - Checklist based on Position Paper and Data Protection Law
 - Is used data necessary?
 - Are the filters applicable and effective?
 - Do we have a good basis for the use of the data?
 - Etc.

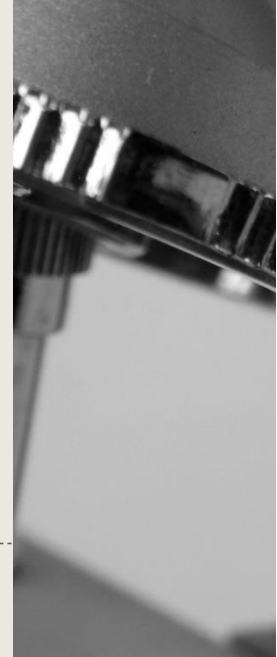
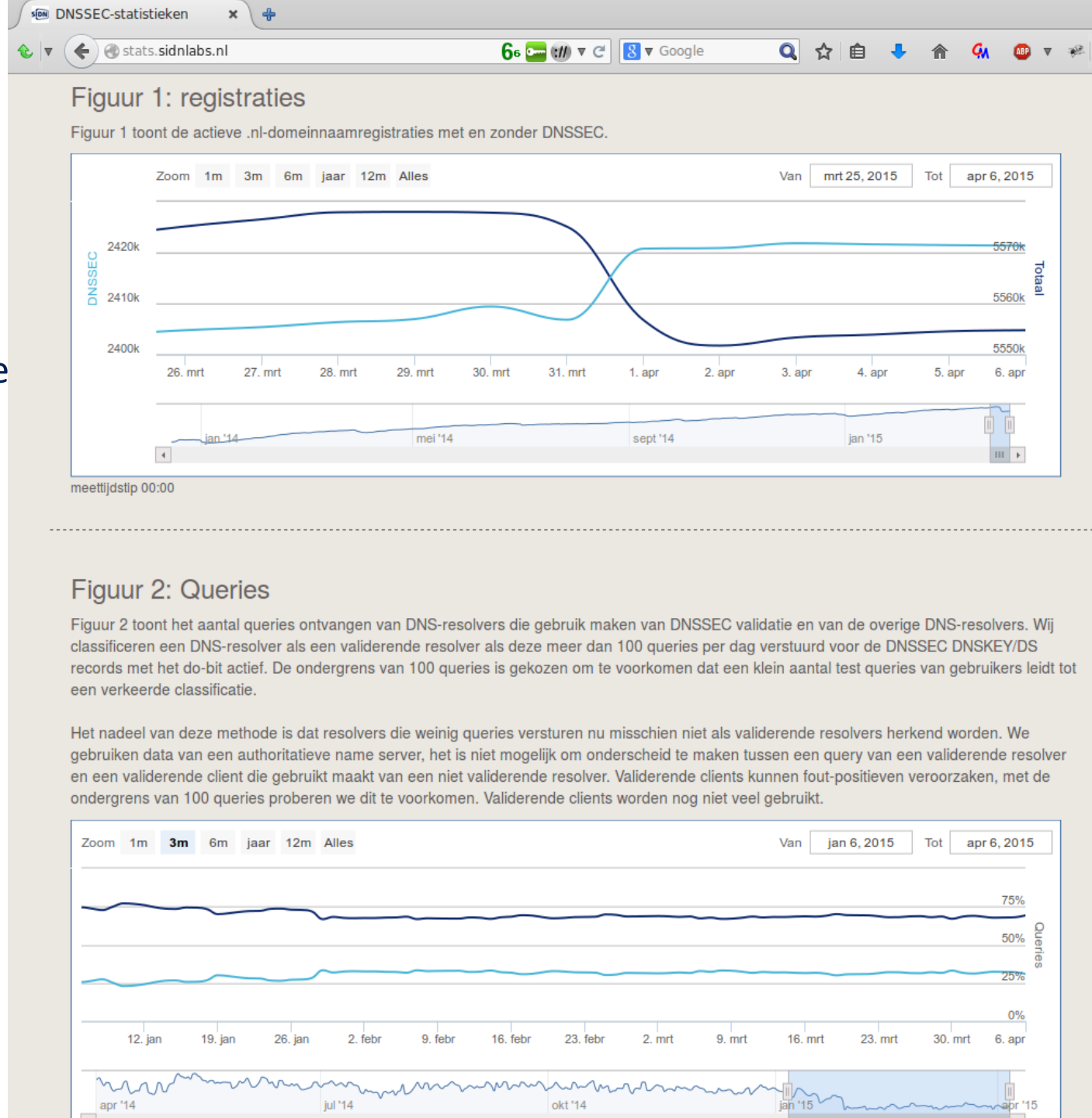
Status Platform

- R&D
- Some initial example applications



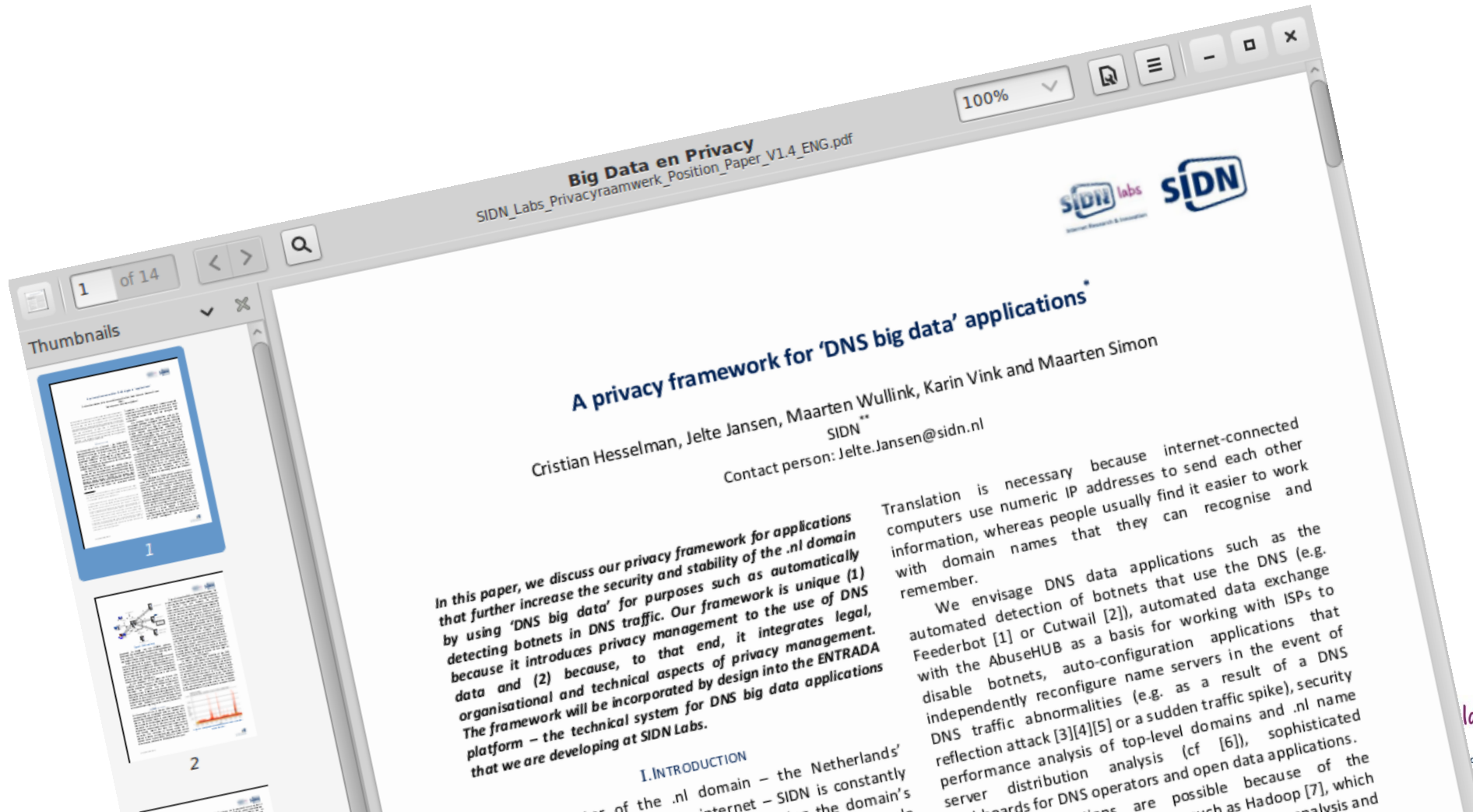
Status Platform

- R&D
- Some initial example



Position paper

https://www.sidnlabs.nl/uploads/tx_sidnpublications/SIDN_Labs_Privacyraamwerk_Position_Paper_V1.4_ENG.pdf



Questions

Jelte Jansen

Research Engineer, SIDN Labs

@twitjeb

jelte.jansen@sidn.nl

@sidnlabs

sidn.nl | sidnlabs.nl



THANK YOU FOR YOUR ATTENTION