SSAC105 IoT & DNS

Andrey Kolesnikov, SSAC, TLDCON 2019 Vilnius

Security and Stability Advisory Committee (SSAC)

Who We Are

- **39** Members
- Appointed by the ICANN Board

What We Do

Role: Advise the ICANN community and Board on matters relating to the security and integrity of the Internet's naming and address allocation systems.

What is Our Expertise

- Addressing and Routing
- Domain Name System (DNS)
- DNS Security Extensions (DNSSEC)
- Domain Registry/Registrar Operations
- DNS Abuse & Cybercrime
- Internationalization (Domain Names and Data)
- Internet Service/Access Provider
- ICANN Policy and Operations

How We Advise

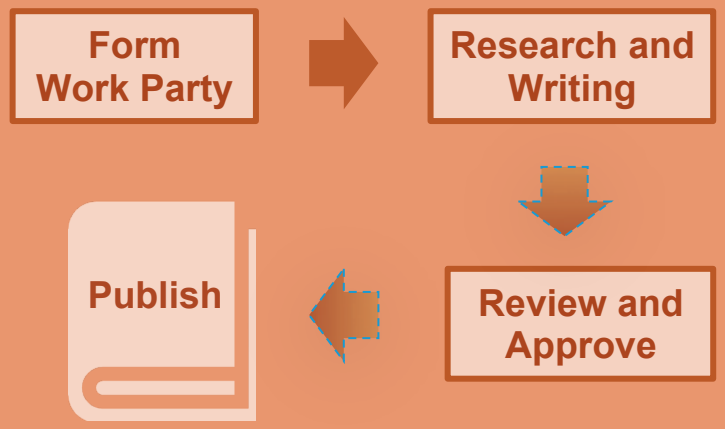
106 Publications since 2002

Security and Stability Advisory Committee (SSAC)

ICANN's Mission & Commitments

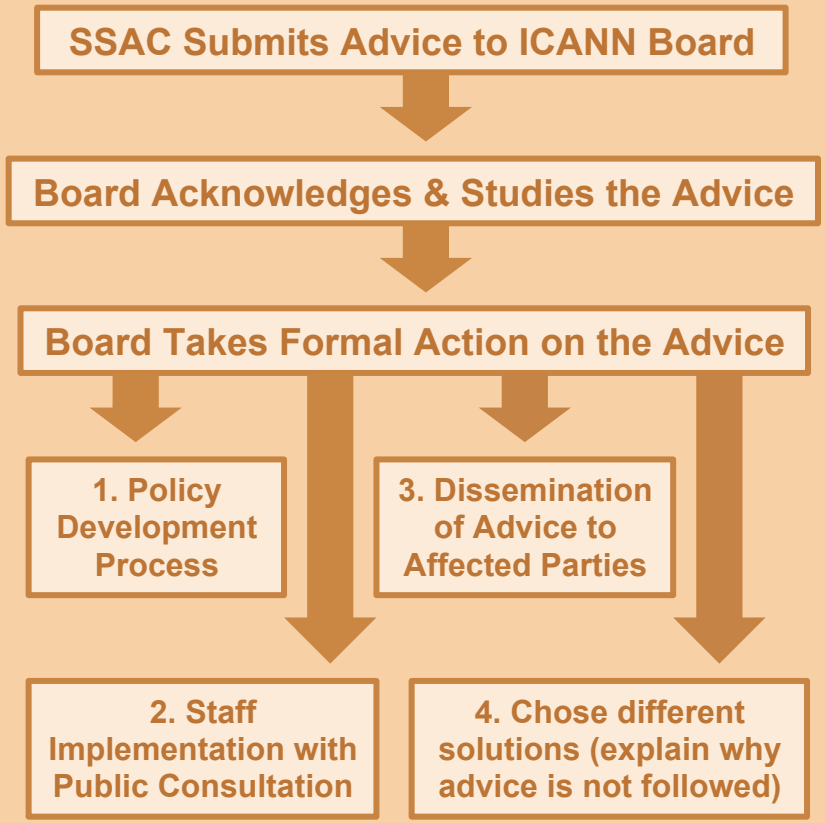
- To ensure the stable and secure operation of the Internet's unique identifier systems.
- Preserving and enhancing the operational stability, reliability, security and global interoperability, resilience, and openness of the DNS and the Internet.

SSAC Publication Process



Consideration of SSAC Advice

(to the ICANN Board)



Security and Stability Advisory Committee (SSAC)

Recent Publications

[SAC106] Comments on Evolving the Governance of the Root Server System (8 August 2019)

[SAC105] The DNS and the Internet of Things: Opportunities, Risks, and Challenges (3 June 2019)

[SSAC2019-05] SSAC's Participation in the Customer Standing Committee (12 August 2019)

[SSAC2019-04] SSAC Review Feasibility Assessment and Initial Implementation Plan (27 May 2019)

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Security and Stability Advisory Committee

Outreach

https://ssac.icann.org/

SSAC Intro: https://www.youtube.com/watch?v=eOVgtCY59e4

SSAC Chair Rod Rasmussen on IDN Homographic Attacks: https://www.youtube.com/watch?v=g3keTroHN2w

Current Work

- Name Collision Analysis Project (NCAP)
- SSAC Organizational Review
- DNS-over-HTTPS (DoH) & DNS-over-TLS (DoT)
- EPDP on Temp Spec for gTLD Registration Data
- Root Server System
- Improving SSAC Working Processes
- Emerging Security Topics (Ongoing)
- DNSSEC Workshops (Ongoing)
- Membership Committee (Ongoing)

SAC105: The DNS and the Internet of Things: Opportunities, Risks, and Challenges

Cristian Hesselman – WP Chair

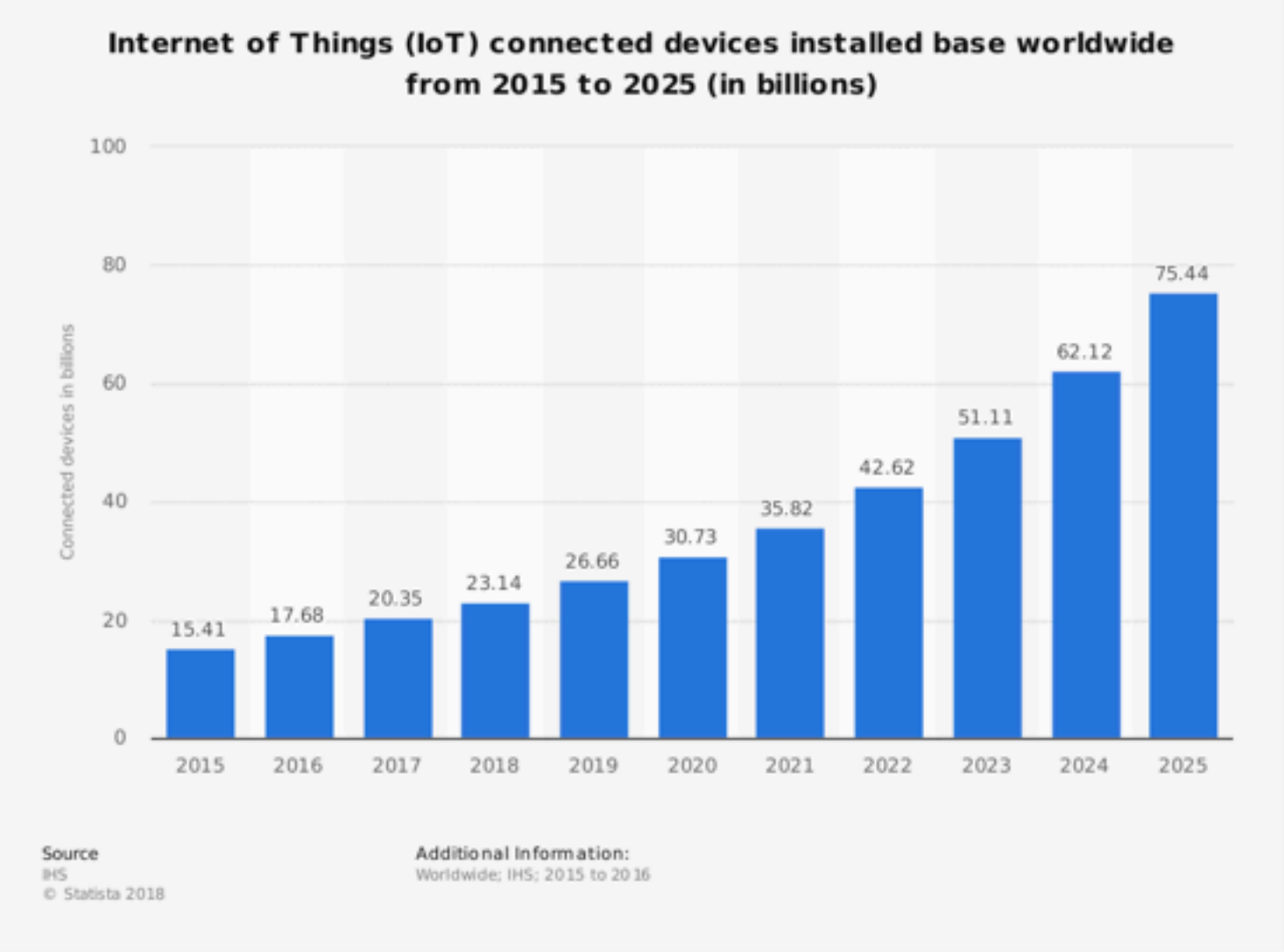
SAC105: The DNS and the Internet of Things

- SAC105: The DNS and the Internet of Things: Opportunities, Risks, and Challenges, published June 3rd, 2019
- A different kind of SSAC report:
  - **No recommendations** to the ICANN Board
  - A tutorial-style discussion intended to trigger and **facilitate dialogue** in the broader ICANN community
  - More **forward looking** than operational in nature
  - Partly within SSAC and ICANN's remit, but also goes beyond it
- Many aspects of our discussion are not new, except as they consider new challenges from IoT

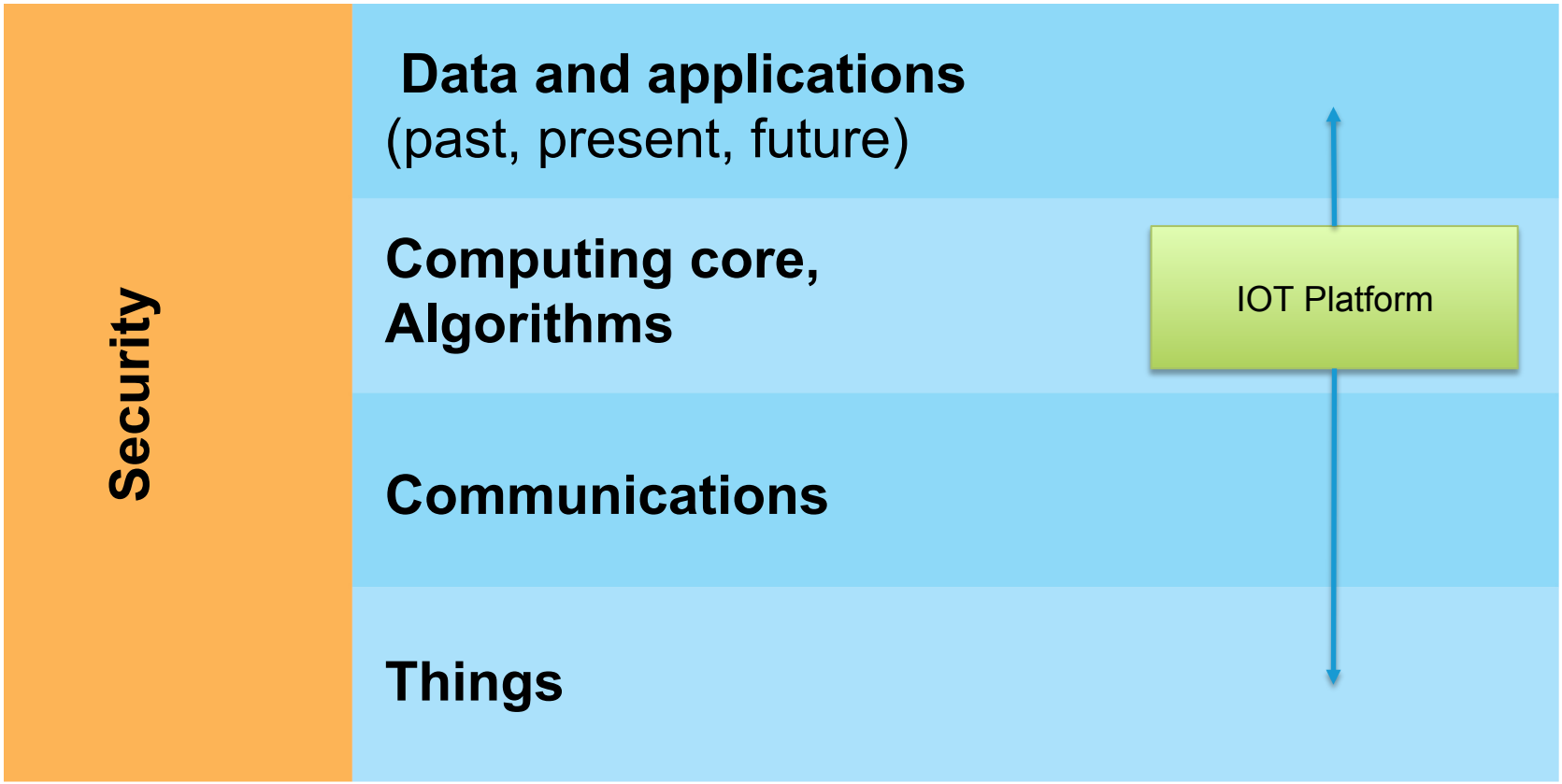
The Internet of Things (IoT)

- Internet application that extends “network connectivity and computing capability to objects, devices, sensors, and items **not ordinarily considered to be computers**” (ISOC, 2015)
- Examples: smart homes, smart cities, self-organizing dynamic networks of drones and robots
- Differences with “traditional” applications
  - IoT continually senses, interprets, and acts upon physical world
  - Often without user awareness or involvement (passive interaction)
  - Pervasive 20-30 billion devices operating “in the background” of people’s daily lives
  - Widely heterogeneous devices (hardware, operating systems, network connection)
  - Longer lifetimes (perhaps decades) and unattended operation

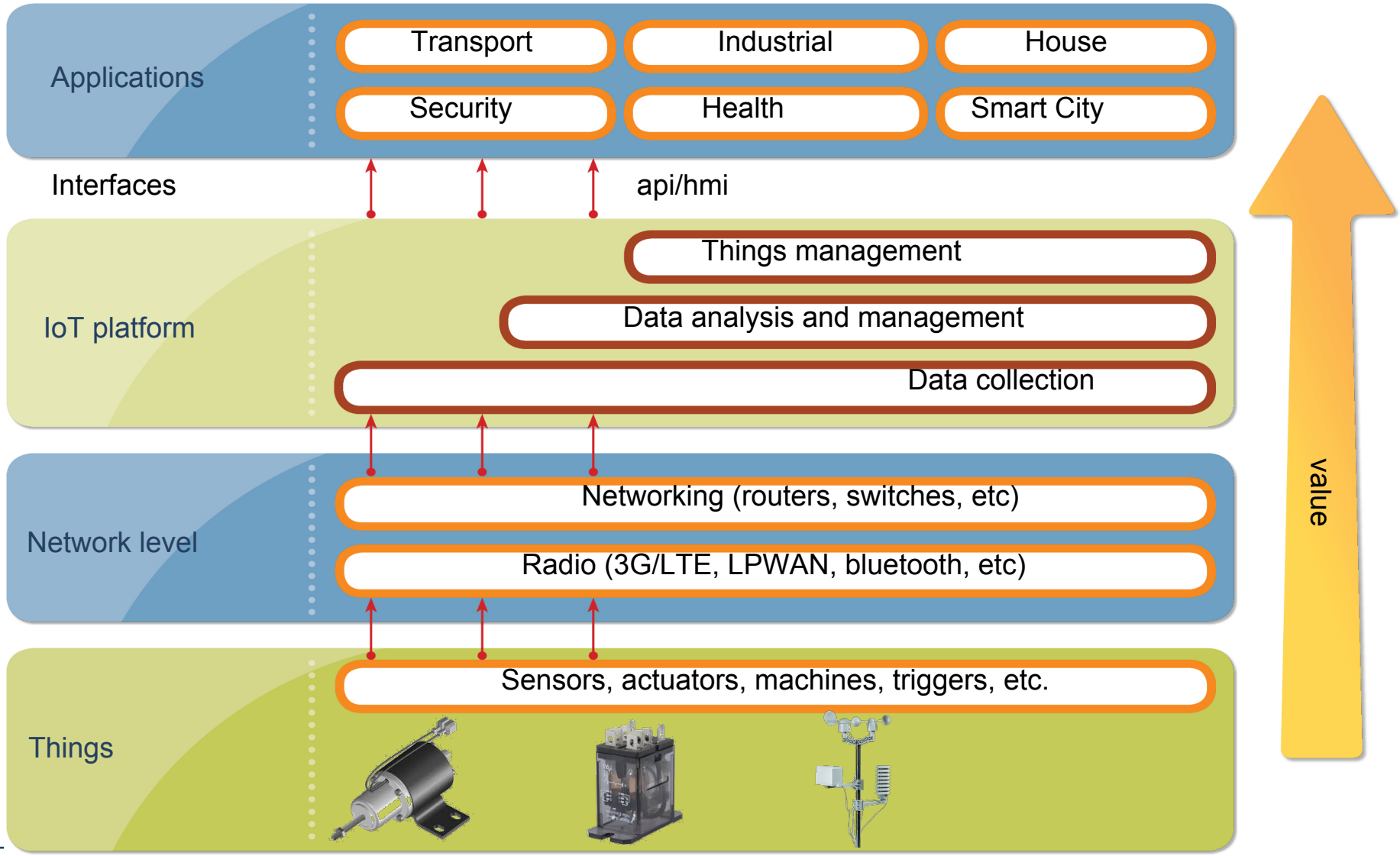
Numbers matter



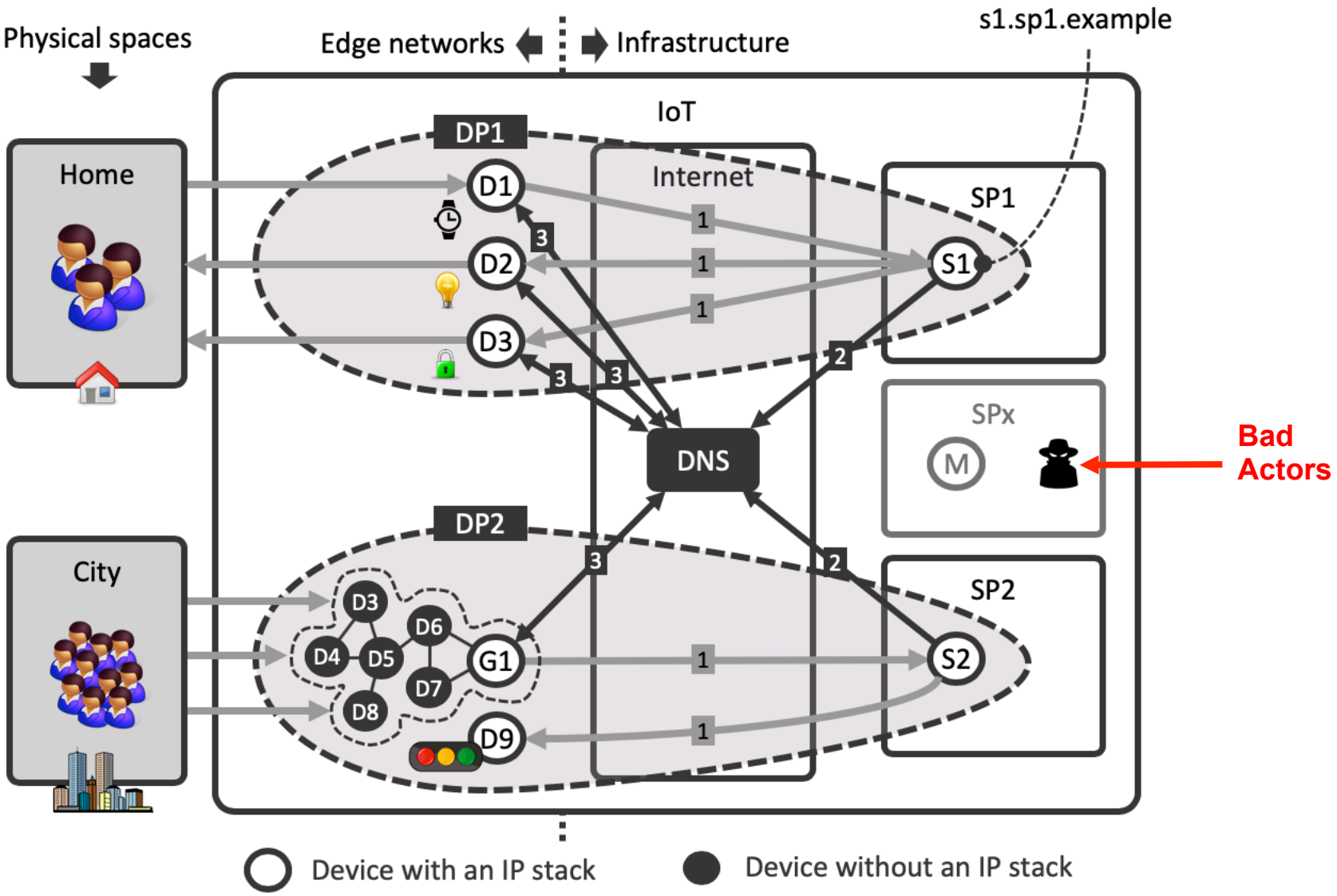
IoT vertical layout, simple



IoT vertical layout, colorful



Role of the DNS for the IoT



IoT and the DNS

- Remote services (cloud services) assist devices in performing their task (e.g., combining and analysing data from multiple sensors)
- Measurement studies show that IoT devices use the DNS to locate remote services (e.g., sleep trackers, light switches)
- **Opportunity:** DNS helps fulfilling IoT's more stringent security, stability, and transparency requirements stemming from seamless interaction with physical world
- **Risk:** IoT stresses the DNS, accidentally (e.g., large number of devices coming online simultaneously after a power outage) or on purpose (IoT-powered DDoS attack)
- **Challenge:** DNS and IoT industries can seize opportunities and address risks

Thank you