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Antoine Zimmermann

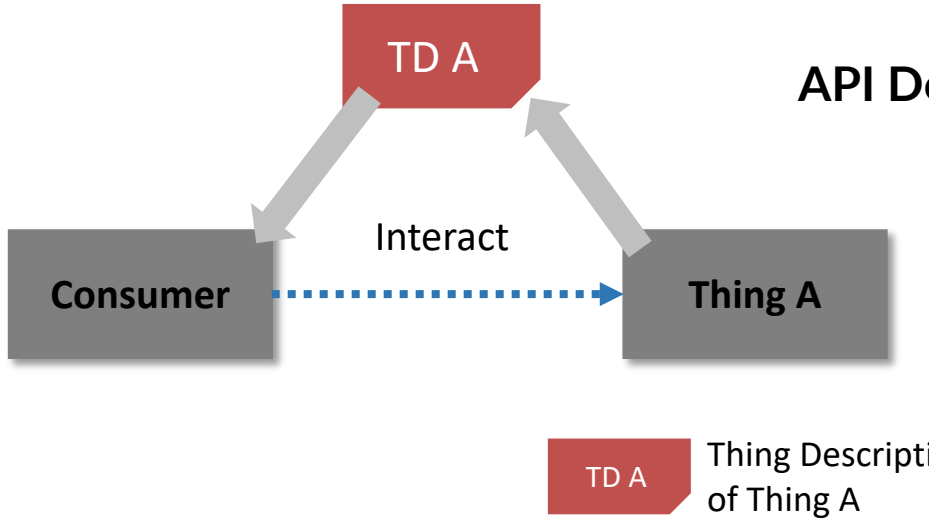
WebAgents CG: F2F Kick-off

★ W3C TPAC 2023, Seville, 11–15 September ★

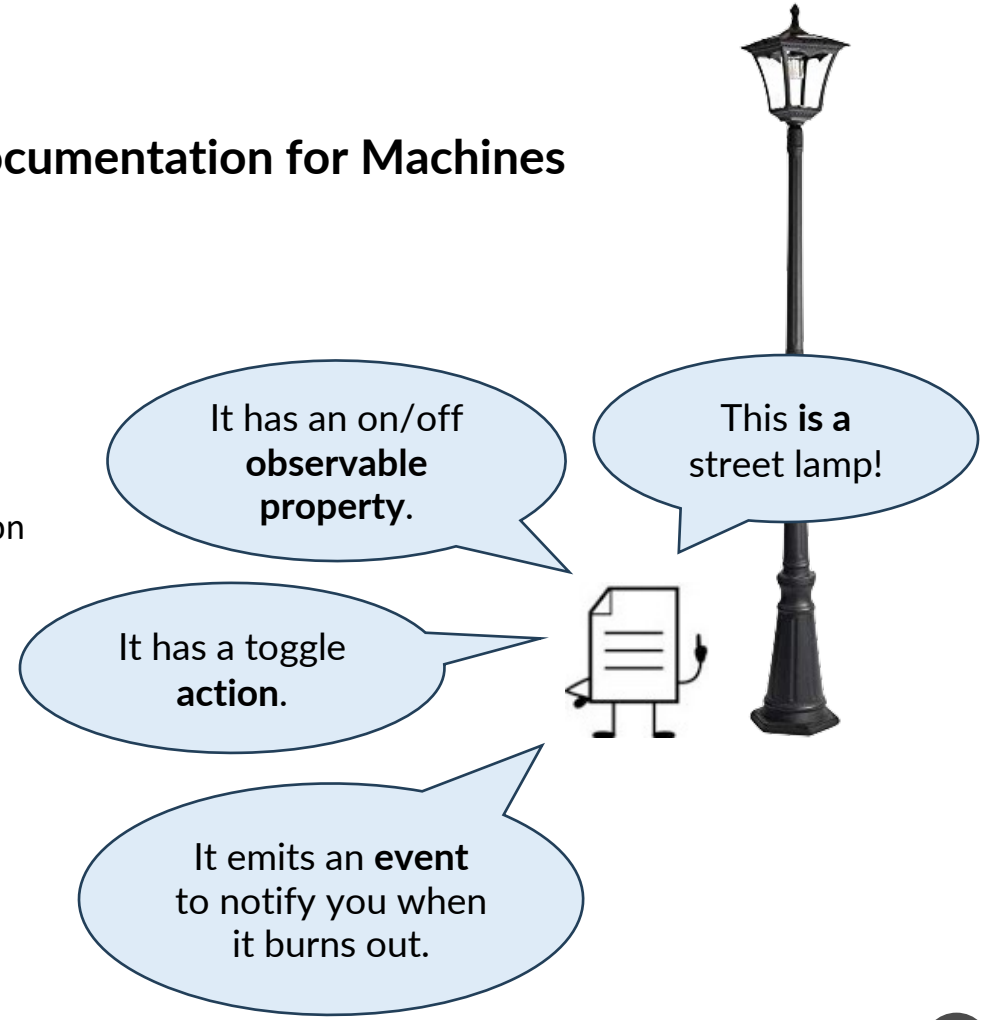
A Web for Machines

Sir Tim Berners-Lee (WWW'94):
https://videos.cern.ch/record/2671957

The W3C Web of Things

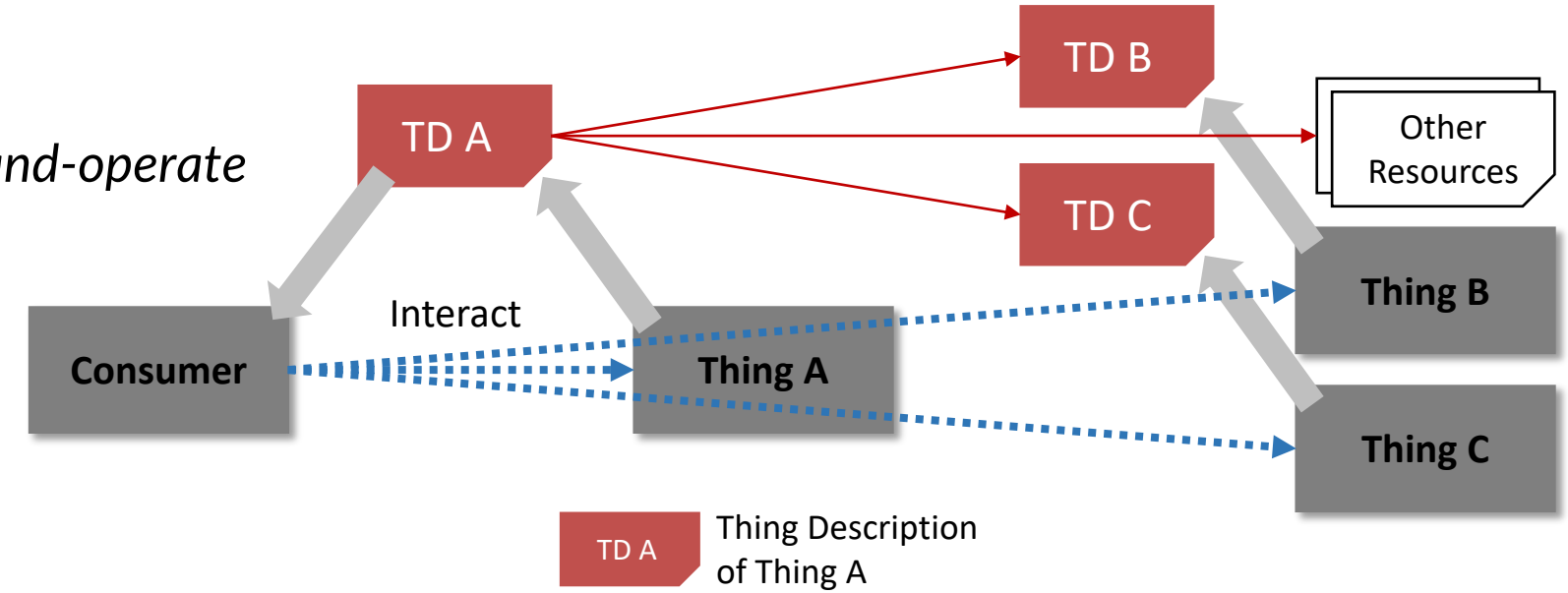


API Documentation for Machines



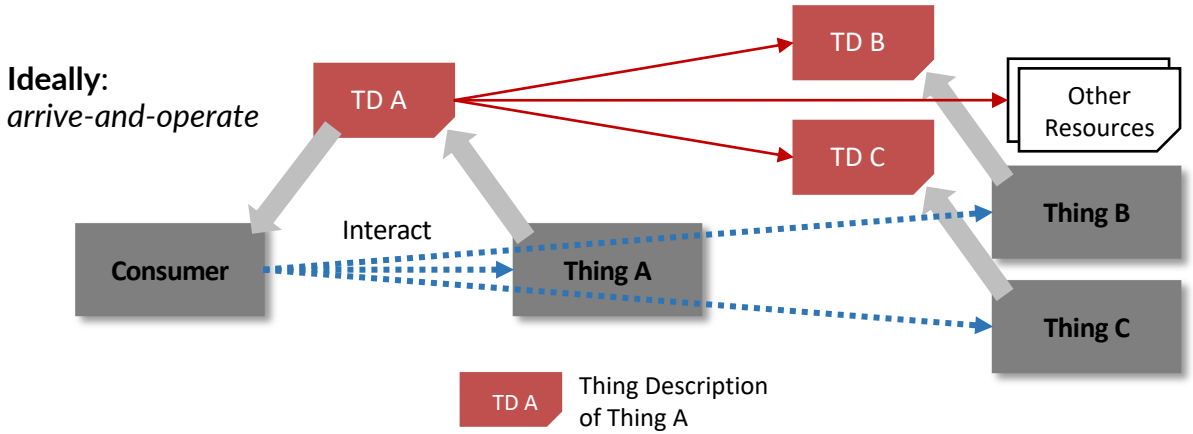
The W3C Web of Things

Ideally:
arrive-and-operate



Lagally et al. (eds.), Web of Things (WoT) Architecture 1.1, W3C Recommendation, 2023.

A Web for Machines (29 year later...)



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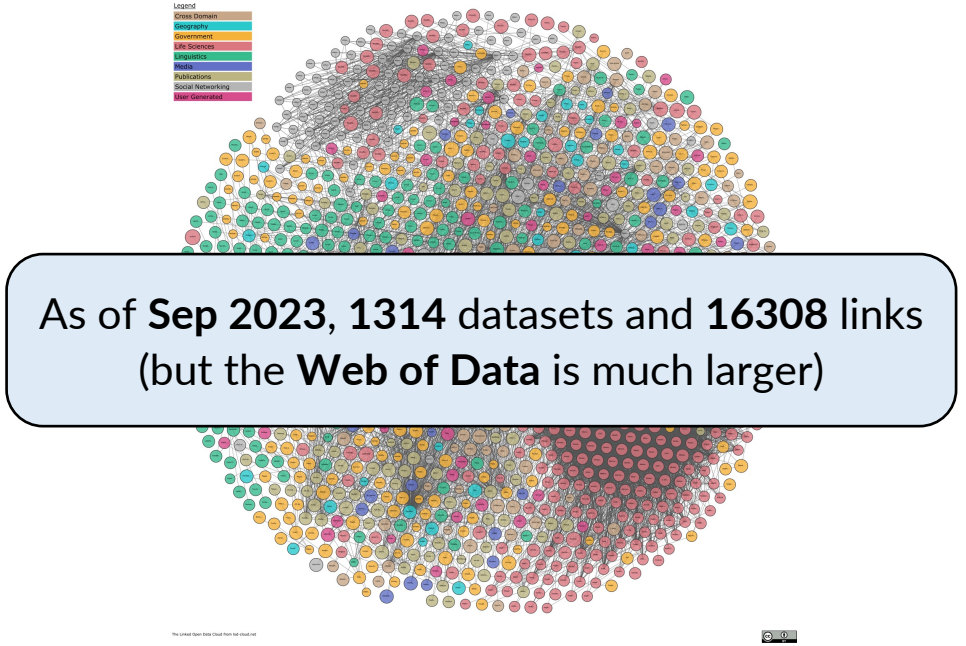


As of **Sep 2023**, **1314** datasets and **16308** links (but the **Web of Data** is much larger)

The W3C Web of Things

https://www.w3.org/TR/wot-architecture11/

Linked Open Data Cloud

https://lod-cloud.net/

Solid (Social Linked Data)

https://solidproject.org/

A Web for Machines (29 year later...)

How to design hypermedia-based environments that ***support autonomous behavior***?

How to design software agents able to ***plan***, ***learn***, and ***adapt*** in order to achieve their tasks through ***flexible autonomous use of hypermedia***?

How to design, represent, and reason about ***interactions*** among autonomous agents, people, and any other resources on the Web?

How to design and ***govern communities*** of autonomous agents and people on the Web?

The W3C Web of Things
https://www.w3.org/TR/wot-architecture11/

Linked Open Data Cloud
https://lod-cloud.net/

Web Architecture and the Web of Things

Semantic Web and Linked Data

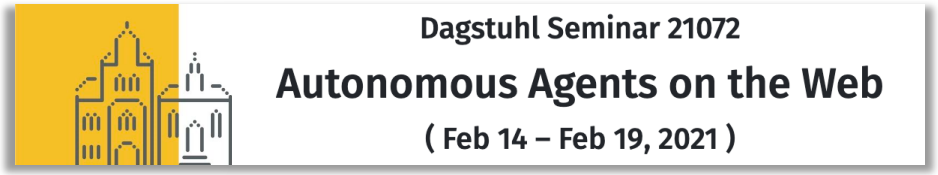
Autonomous Agents and Multi-Agent Systems

https://solidproject.org/

Agents on the Web: Community

May 2019 — HyperAgents 2019 @ TheWebConf 2019

Feb. 2021 — Dagstuhl Seminar 21072: "Autonomous Agents on the Web"



https://www.dagstuhl.de/21072

Feb. 2023 — Dagstuhl Seminar 23081: "Agents on the Web"

https://www.dagstuhl.de/23081

March 2023 — W3C WebAgents Community Group

https://www.w3.org/community/webagents/

WebAgents CG: Draft Charter

Goals

This CG aims to investigate the design of a new class of Web-based Multi-Agent Systems (MAS) that:

- inherit the beneficial architectural properties of the Web (Internet-scalability, evolvability, simplicity, etc.),
- preserve the beneficial properties of MAS (adaptability, openness, robustness, etc.), and
- are human-centric (support transparency, usability, accountability, etc.).

We are especially interested in the use of Linked Data and Semantic Web standards for weaving a hypermedia fabric that mediates uniform interaction among heterogeneous entities: people, artificial agents, (low-power) devices, digital services, knowledge repositories, etc. — for this reason, we refer to this new class of Web-based MAS as Hypermedia MAS. This community group brings together experts actively contributing to advances in autonomous agents and MAS, the Web Architecture and the Web of Things, Semantic Web and Linked Data, and Web standards in general — as well as any other areas that could contribute to this approach for distributed intelligence on the Web.

In particular, the WebAgents CG aims to:

- Collect relevant background materials to support the transfer of knowledge across the various areas of expertise relevant to Hypermedia MAS.
- Collect use cases for Hypermedia MAS from the broader community.
- Collect references to relevant technologies and implementation experience from the broader community.
- Facilitate experimenting with Hypermedia MAS by collecting relevant tutorials, organizing hackathons and challenges, and promoting playgrounds for developers.

WebAgents CG: Draft Charter

Scope of Work

To achieve its goals, the WebAgents CG pursues the following activities:

- Organizing events such as hackathons, plugfests, workshops, etc.
- Writing Community Group Reports on the findings of the CG.
- Curating online materials to help promote the work of the CG and to support experimenting with Hypermedia MAS.
- Creating liaisons with other groups at the W3C (Community, Interest, and/or Working Groups) that are relevant to the topics explored in this CG.
- Creating liaisons with the research community and the industry.

Joint meetings:

- WoT CG/WG: next session!
- Solid CG: Sep 26 (TBA)

Out of Scope

Under this initial charter, the work of the WebAgents CG is in an exploratory phase — and the scope of the relevant topics also needs to reflect the interests of CG members.

The WebAgents CG aims to maintain its complementarity with other CGs. For instance, while many of the topics related to the overall objective of this CG draw from (Decentralized) AI research, its main focus is primarily on architectures for and the engineering of Hypermedia MAS. Other W3C groups might be better suited for other AI-related topics (e.g., see the Cognitive AI CG, the AI Knowledge Representation CG, or the Human-Centric AI CG). The WebAgents CG provides a unique forum for everyone interested to integrate these aspects for exploring and designing large-scale, open, long-lived, and decentralized Web-based systems of people and intelligent (artificial) agents.

Today's Agenda

CET	Agenda
09:30-09:45	Welcome, Motivation, and Objectives
09:45-10:45	Presentations of Position Statements
10:45-11:00	Wrap-up & Next Steps
11:00-11:30	Coffee Break
11:30-13:00	Joint meeting with the Web of Things CG/WG