

Architecture of the **Web** of Things

Andreas Harth

Web

- HTTP + HTML (documents + hyperlinks)
- Request /Response, CRUD

Architectural Styles and the Design of Network-based Software Architectures

DISSERTATION

submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in Information and Computer Science



Architecture of the World Wide Web, Volume One

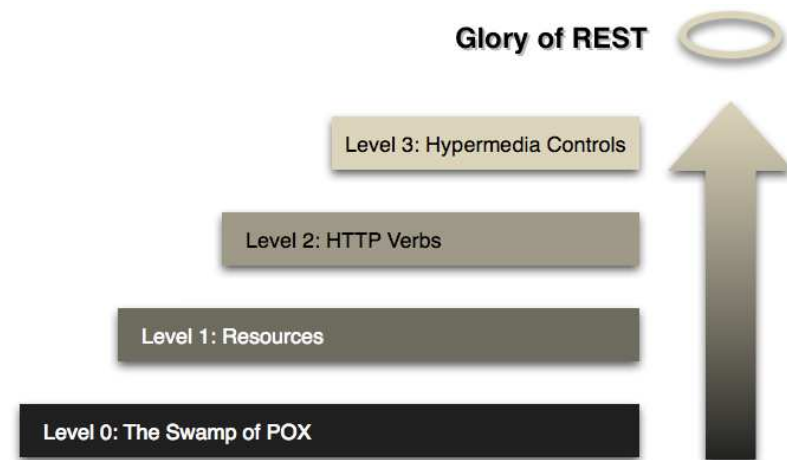
W3C Recommendation 15 December 2004

This version:

<http://www.w3.org/TR/2004/REC-webarch-20041215/>

<http://www.w3.org/TR/webarch/>

<http://martinfowler.com/articles/richardsonMaturityModel.html>



API Reference

Everything is organized in a single data object.



Data Model

- ☒ All
- ☐ Devices
- ☐ Structures

Permissions

```
{
  "devices": {
    "thermostats": {
      "peyiJNo0IldT2YlIVtYaGQ": {
        "device_id": "peyiJNo0IldT2YlIVtYaGQ",
        "locale": "en-US",
        "software_version": "4.0",
        "structure_id": "VqFabWH21nwVyd4RWgJgNb292wa7hG_dUwo2i2SG7j3-BOLY0BA4sw",
        "name": "Hallway (upstairs)",
        "estimated_arrival_window_end": "2014-07-04T18:48:11+00:00"
      }
    }
  }
}
```

Read/Write Linked Data

- HTTP + RDF (data + hyperlinks)
- Request/Response
- CRUD
- Read-Write Linked Data
<http://www.w3.org/DesignIssues/ReadWriteLinkedData.html>
- Linked Data Platform <http://www.w3.org/TR/ldp/>
- Our work on Linked Data in Smart Grids 😊
<http://www.w3.org/2014/02/wot/papers/harth.pdf>

Web v Runtime

Web

- Request/Response
- URIs
- Objects
- User agent
- Multi-party (Joerg)

Runtime

- Procedures (streams?)
- Pointers
- Objects
- Headless server (Ricardo)
- Single Party (Joerg)

What are the challenges for scripting? Sandboxing (Pablo)? Restrict expressivity of language to ensure termination?

Which paradigms are suitable for programming the Web of Things?
E.g., Flow-Based Programming network protocol, reactive programming

Which systems exist already?