



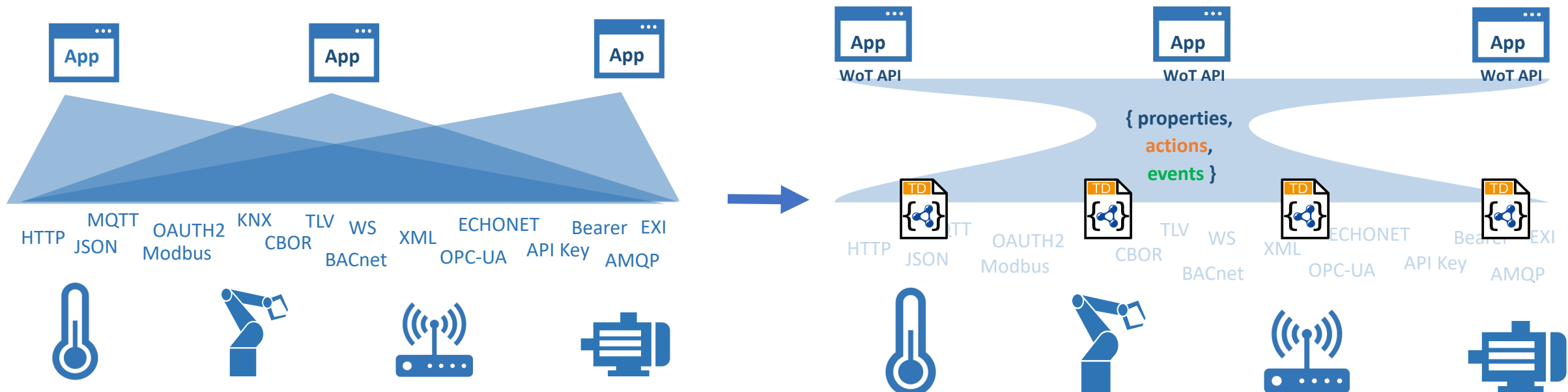
Summary and Smart Cities Use Cases

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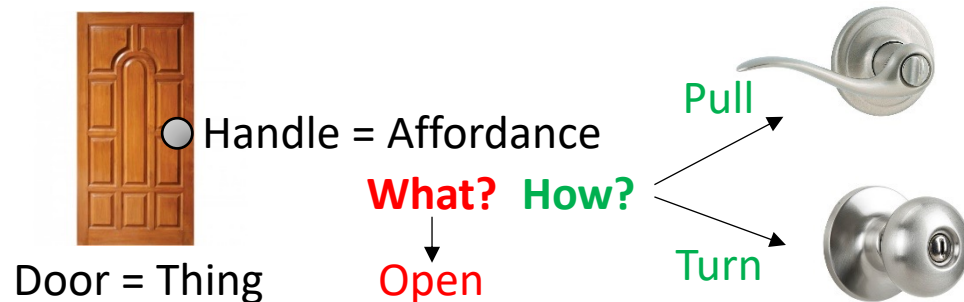
W3C Web of Things (WoT)

- **W3C WoT Working Group goal:** Adapting web technologies to IoT
- **Published:** Thing Description (TD) metadata format
 - TD describes the available interactions (network API) of a Thing
- **In Progress:** TD 1.1 Update, Thing Models, Discovery, Profiles
 - How to obtain TDs? How to ensure interoperability?



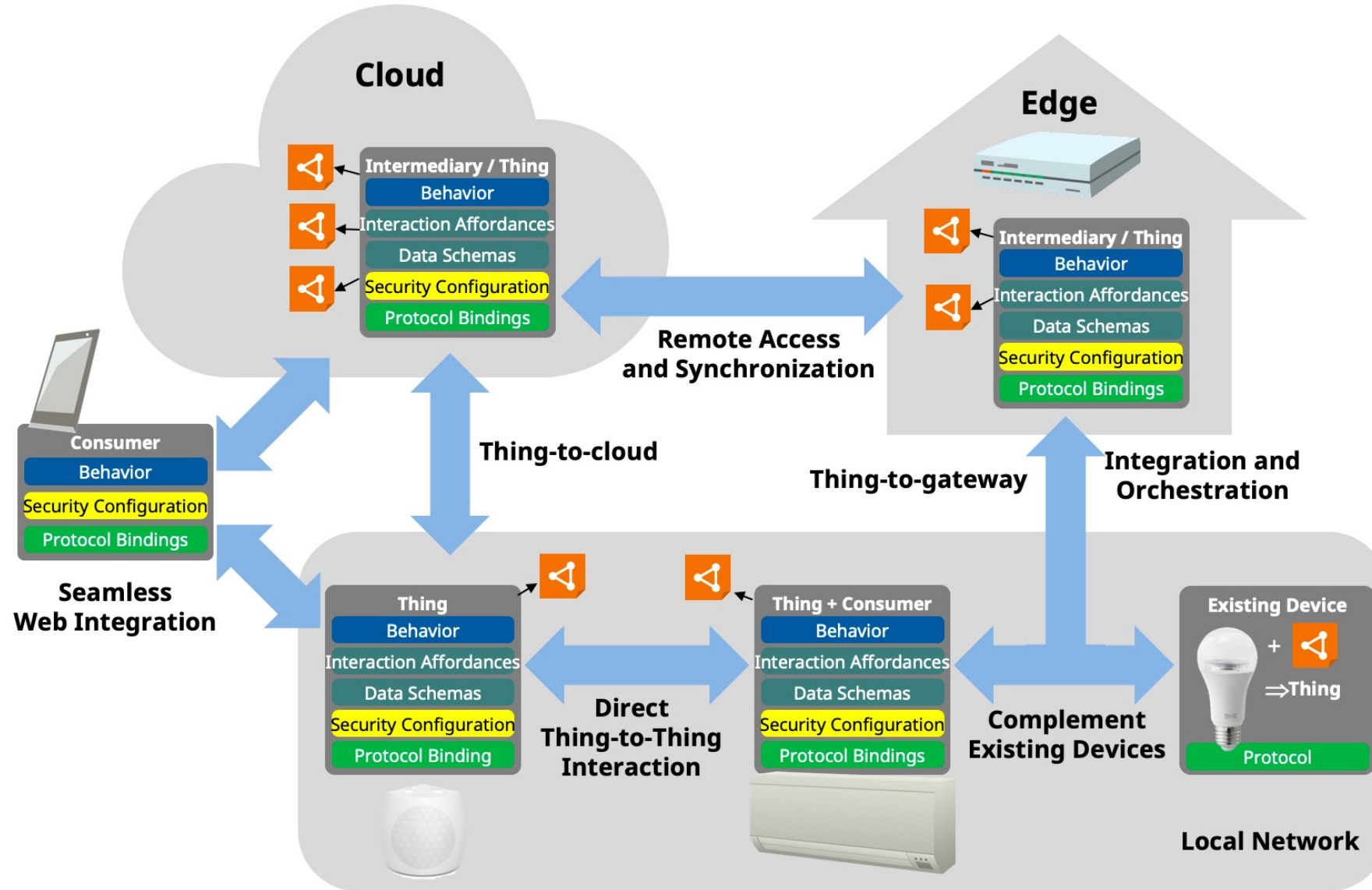
WoT Thing Descriptions

- WHAT the possible choices are
 - Properties
 - Events
 - Actions
- HOW to interact with the Thing
 - Protocol operations and options
 - Data schemas and content types
 - Security requirements

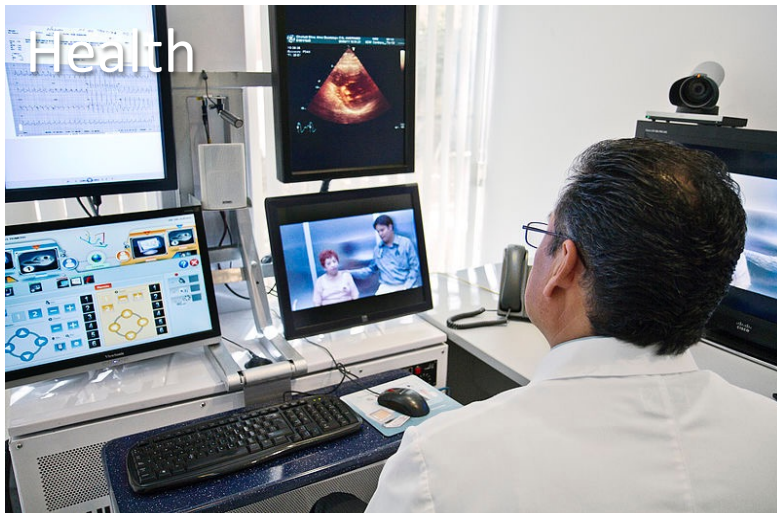


```
{
  "@context": [
    "https://www.w3.org/ns/td",
    { "iot": "http://iotschema.org/" }
  ],
  "id": "urn:dev:ops:32473-WoTLamp-1234",
  "title": "MyLEDThing",
  "description": "RGB LED torchiere",
  "@type": ["Thing", "iot:Light"],
  "securityDefinitions": [{"default": {
    "scheme": "bearer"
  }},
  "security": ["default"],
  "properties": {
    "brightness": {
      "@type": ["iot:Brightness"],
      "type": "integer",
      "minimum": 0,
      "maximum": 100,
      "forms": [ ... ]
    }
  },
  "actions": {
    "fadeIn": {
      ...
    }
  }
}
```

Usage Patterns



Smart City Use Cases



Others

- Law Enforcement
- Parking
- Accessibility
- Traffic and Logistics
- Public Transportation
- Air Quality and Weather
- Cultural Space Mgmt
- Construction Services
- Land Management
- Emergency Services
- Water Management
- Hybrid Ruralization

Contacts

<https://www.w3.org/WoT>

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Backup

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Documents and Resources

New/Updated Normative Documents in Draft Status:

- Architecture 1.1: <https://github.com/w3c/wot-architecture>
- Thing Description 1.1: <https://github.com/w3c/wot-thing-description>
- Discovery: <https://github.com/w3c/wot-discovery>
- Profiles: <https://github.com/w3c/wot-profile>

New/Updated Informative Documents in Draft Status:

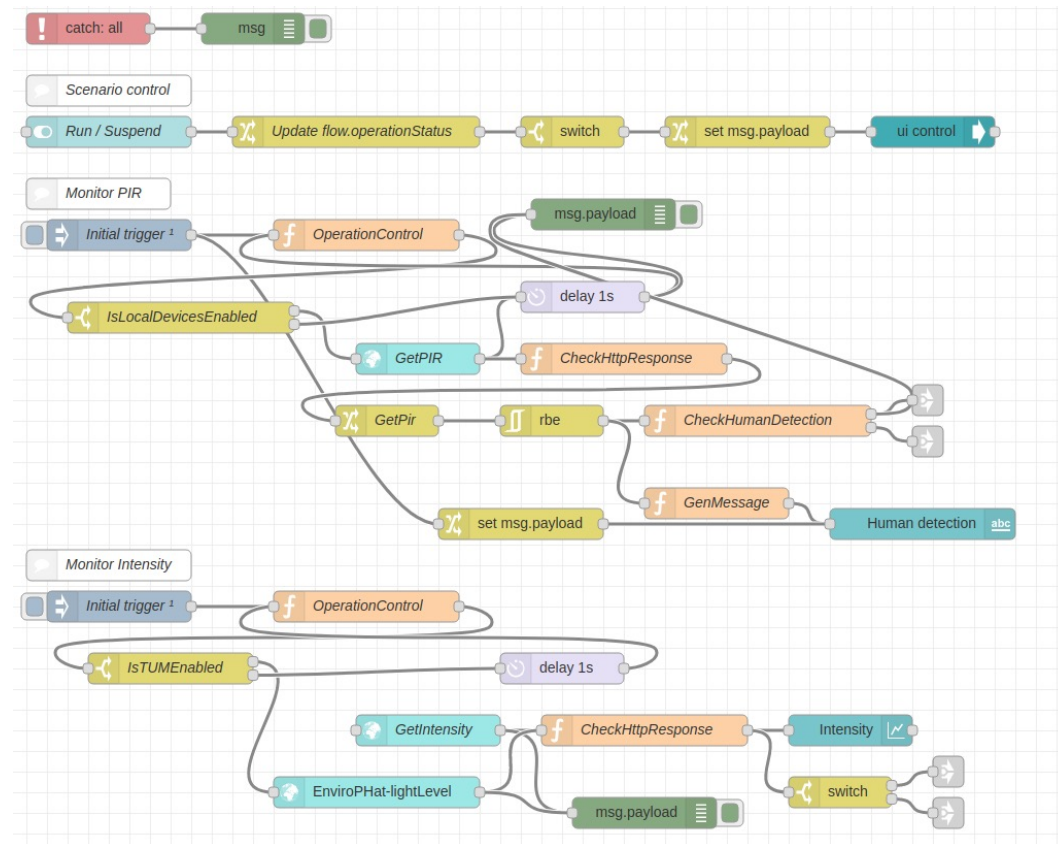
- Binding Templates: <https://github.com/w3c/wot-binding-templates>
- Scripting API: <https://github.com/w3c/wot-scripting-api>
- Use Cases and Requirements: <https://github.com/w3c/wot-usecases>

Other Resources:

- Web Site: <https://www.w3.org/WoT/>

WoT Orchestration

Node-RED/node-gen



node-wot/Scripting API

```
WoTHelpers.fetch( "coap://localhost:5683/counter" ).then( async (td) => {  
  // using await for serial execution (note 'async' in then() of fetch())  
  try {
```



```
    let thing = await WoT.consume(td);  
    console.info( "=== TD ===" );  
    console.info(td);  
    console.info( "===== " );
```

```
  // read property #1  
  let read1 = await thing.readProperty( "count" );  
  console.info( "count value is" , read1);
```

```
  // increment property #1 (without step)  
  await thing.invokeAction( "increment" );  
  let inc1 = await thing.readProperty( "count" );  
  console.info( "count value after increment #1 is" , inc1);
```

```
  // increment property #2 (with step)  
  await thing.invokeAction( "increment" , {'step' : 3});  
  let inc2 = await thing.readProperty( "count" );  
  console.info( "count value after increment #2 (with step 3) is" , inc2);
```

```
  // decrement property  
  await thing.invokeAction( "decrement" );  
  let dec1 = await thing.readProperty( "count" );  
  console.info( "count value after decrement is" , dec1);
```

```
  } catch(err) {  
    console.error( "Script error:" , err);  
  }
```

```
}).catch( (err) => { console.error( "Fetch error:" , err); });
```

Current WoT WG Charter Work Items

Architectural Requirements, Use Cases, and Vocabulary

- Understand and state requirements for new use cases, architectural patterns, and concepts.

Link Relation Types:

- Definition of specific link relation types for specific relationships.

Observe Defaults:

- For protocols such as HTTP where multiple ways to implement "observe" is possible, define a default.

Implementation View Spec:

- More fully define details of implementations.

Interoperability Profiles:

- Support plug-and-play interoperability via a profile mechanism
- Define profiles that allow for finite implementability

Thing Models:

- Define how Thing Descriptions can be defined in a modular way.

Complex Interactions:

- Document how complex interactions can be supported via hypermedia controls.

Discovery:

- Define how Things are discovered in both local and global contexts and Thing Descriptions are distributed.

Identifier Management:

- Mitigate privacy risks by defining how identifiers are managed and updated.

Security Schemes:

- Vocabulary for new security schemes supporting targeted protocols and use cases.

Thing Description Vocabulary:

- Extensions to Thing Description vocabulary definitions.

Protocol Vocabulary and Bindings:

- Extensions to protocol vocabulary definitions and protocol bindings.