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YOUPI AND THE ANNOTATED DATA

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Ivaylo Petrov

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How the app wants its data?

- JSON-LD

```
{
    "@context": {
        "temp": {
            "@id": "http://ackl.io/iot/vocab/m3-lite#Temperature",
            "@type": "http://data.nasa.gov/qudt/owl/unit#DegreeCelsius"
        },
        "battery": {
            "@id": "http://ackl.io/iot/vocab/m3-lite#Battery",
            "@type": "http://data.nasa.gov/qudt/owl/unit#Volt"
        },
        "period": {
            "@id": "http://pending.schema.org/repeatFrequency",
            "@type": "http://data.nasa.gov/qudt/owl/unit#MinuteTime"
        },
    },
    "temp": 12,
    "battery": 3.7,
    "mode": "temp",
    "period": 10,
}
```

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But that is too verbose for LPWAN

- Too big payloads, usually we have bytes like **e1c5cafd** (in hex)

- Complicated to create/marshal

- Complicated to parse/unmarshal

- True for a number of other cases like modbus, etc.

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What is YANG

- Data modeling language
- Defined in:
    - RFC 6020
    - RFC 7950
    - RFC 8342
    - Others

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What is YOUPI

- Yang Object Universal Parsing Interface
- YANG based DSL
- Facilitates data parsing/encoding
- Facilitates adding and using of meta-information to the payload
- Could be used for generation of [Thing Description](#)

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YOUPI syntax

```
module my-device {
    namespace "http://www.acklio.com";
    ...
    typedef mode-type {
        type enumeration {
            enum btn { value 0; }
            enum temp { value 1; }
            enum light { value 2; }
            enum move { value 3; }
        }
    }
```

```
    ...
        typedef temperature {
            type decimal64 {
                fraction-digits 1;
                range "-20..102";
            }
            default "22";
            units "Celsius";
            description "Temperature type definition";
        }
    ....
    }
```

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YOUPI syntax

```
...
    leaf mode {
        type mode-type;
        default btn;
        youpi:position "0..2";
    }
    ...
    choice data {
        youpi:condition "mode";
```

```
case _temp {
    container temperature-data {
        leaf temp {
            type temperature;
            youpi:position "16..23";
        }
    }
}
...
```

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YOUPI syntax

```
...
  typedef update-frequency {
      type enumeration {
          enum 600 { value 0; }
          enum 1800 { value 1; }
          enum 7200 { value 2; }
          enum 86400 { value 3; }
      }
  }
```

```
      leaf temp {
          type temperature;
          youpi:position "16..23";
          youpi:offset "30";
          youpi:multiplier "0.5";
          youpi:fieldIndex "2";
      }

      leaf hum {
          type uint8;
          youpi:fieldIndex "1";
          youpi:position "relative LSB 0..7";
      }
  ...
```

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Next steps

- Write a draft
- Anyone wants to join?
- Identify additional types and operations to be added

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Questions and answers

THANKS YOU FOR YOUR
ATTENTION!

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