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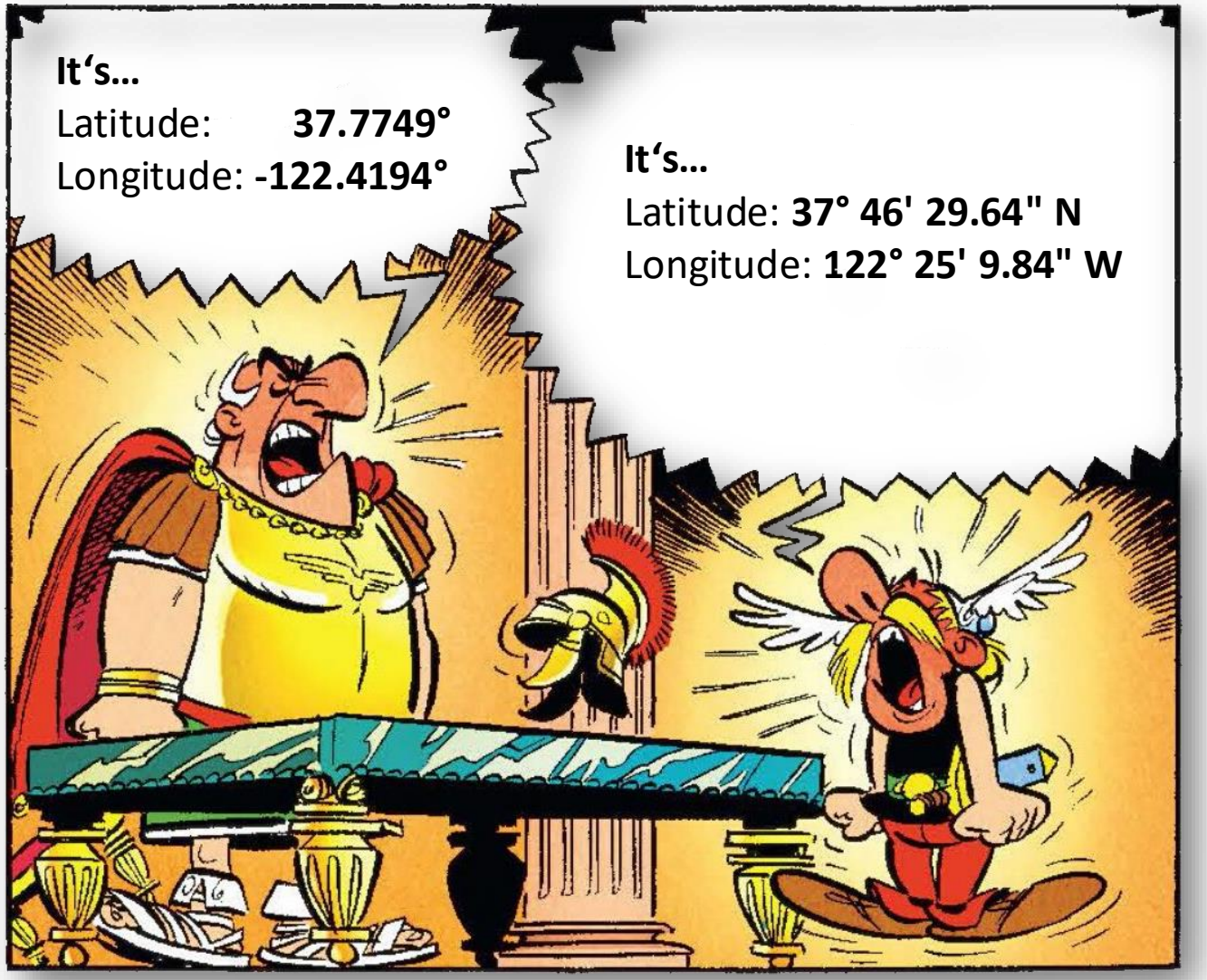
Presence Information Data Format Location Object (PIDF-LO)

EENA Webinar
September 10th 2024

Clash of Formats



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The Good, the Bad and the Ugly

- Good Data Formats…
  - Address a specific problem
  - Standardized & Specific
  - Open (everybody can implement & integrate)
  - Flexible and Extensible in a standardized way
  - Do not reinvent the wheel

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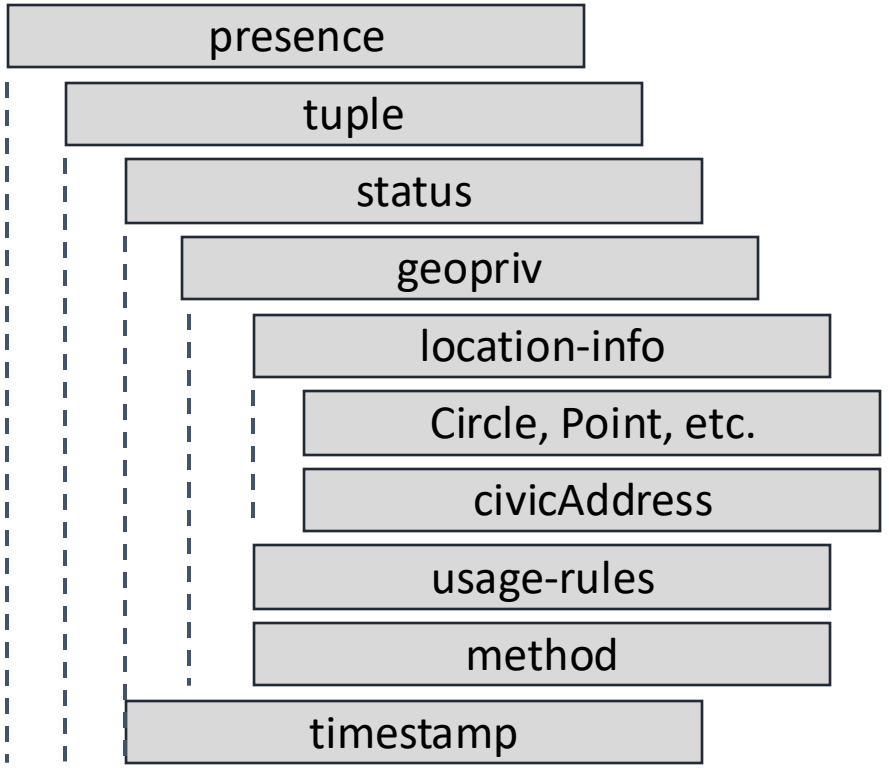
Presence Information Data Format (PIDF) - Location Information (LO)

- *Presence Information Data Format (PIDF)*
  - RFC 3863 (https://datatracker.ietf.org/doc/rfc3863/)
  - Messenger Background
  - Status: Away, DnD, Online, etc.
  - SIP Notify / Subscribe / Presence Package
- *Location Information*
  - RFC 4119 (https://datatracker.ietf.org/doc/html/rfc4119)
  - PIDF Extension with Location Information
  - Geography Markup Languange (GML) for Geodetic Locations



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Representation of Location Information

Civic

Representation in form of an address

```
<civicAddress xml:lang="en">
    <country>BE</country>
    <A1>Brussels</A1>
    <A2>Brussels</A2>
    <RD>Avenue de la Toison d’Or</RD>
    <HNO>79</HNO>
</civicAddress>
```

Geodetic

Representation as a geographical shape (Point, Circle, Polygon, Arcband, etc.)

```
<Circle srsName="urn:ogc:def:crs:EPSG::4326">
    <pos>42.5463 -73.2512</pos>
    <radius uom="urn:ogc:def:uom:EPSG::9001">
        850.24
    </radius>
</Circle>
```

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Example

```
<presence entity="pres:ggdo3pqqdmyinjdzx"
xmlns="urn:ietf:params:xml:ns:pidf"
xmlns:con="urn:ietf:params:xml:ns:geopriv:conf">
    <tuple id="gg3ocu85wch07hkhw">
      <status>
        <geopriv xmlns="urn:ietf:params:xml:ns:pidf:geopriv10">
          <location-info>
            <gs:Circle srsName="urn:ogc:def:crs:EPSG::4326"
            xmlns:gml="http://www.opengis.net/gml"
            xmlns:gs="http://www.opengis.net/pidflo/1.0">
              <gml:pos>48.207098 15.630319</gml:pos>
              <gs:radius
              uom="urn:ogc:def:uom:EPSG::9001">10.0</gs:radius>
            </gs:Circle>
```

Entity whose presence the document describes (unlinkable pseudonyms)

Identifier of the tuple

Geodetic Circle Location with Coordinate Reference System (WGS84)

Coordinates (Latitude Longitude)

Radius (Unit of Measure in meters)

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Example

```
<presence entity="pres:ggdo3pqqdmyinjdzx"
xmlns="urn:ietf:params:xml:ns:pidf"
xmlns:con="urn:ietf:params:xml:ns:geopriv:conf">
    <tuple id="gg3ocu85wch07hkhw">
      <status>
        <geopriv xmlns="urn:ietf:params:xml:ns:pidf:geopriv10">
          <location-info>
            <gs:Circle srsName="urn:ogc:def:crs:EPSG::4326"
            xmlns:gml="http://www.opengis.net/gml"
            xmlns:gs="http://www.opengis.net/pidflo/1.0">
              <gml:pos>48.207098 15.630319</gml:pos>
              <gs:radius
              uom="urn:ogc:def:uom:EPSG::9001">10.0</gs:radius>
            </gs:Circle>
```

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Example

```
</gs:Circle>
<con:confidence>95</con:confidence>
</location-info>
<usage-rules>
  <retransmission-allowed>yes</retransmission-allowed>
</usage-rules>
<method>GPS</method>
</geopriv>
</status>
<timestamp>2024-09-08T12:04:19.214868+00:00</timestamp>
</tuple>
</presence>
```

Confidence Extension RFC 7459

Rules for Usage

How the Location Information was retrieved
(e.g. GPS, Triangulation, Cell, etc.)

Timestamp of this location information

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Use Cases and Scenarios

- **Important:** PIDF-LO is **not** limited to phone numbers
  - Other Applications include Location Information for Sensors, Cell Towers, IoT Devices, Alarms, etc.
- Transport
  - By Value
  - By Reference
- Context Emergency Conversations
  - PIDF-LO as part of the SIP Invite/Messages
  - PIDF-LO as part of the Location Information Service (NG112)
  - PIDF-LO as part of the interface for Mobile Network Providers

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Session Initiation Protocol (SIP) Location by Value

```
INVITE urn:service:sos SIP/2.0
Geolocation-Routing: yes
Geolocation: <cid:g4uqcc3ChRf1@esinet.com>
Content-Type: multipart/mixed; boundary=8evENpS93o5w
[SIP Headers...]

--8evENpS93o5w
Content-Type: application/pidf+xml
Content-ID: <g4uqcc3ChRf1@esinet.com>

<presence entity="pres:ggdo3pqqdmyinjdzx“>
…
</presence>
```

Determines whether the provided location can be used for routing purposes

Content Identifier where the location information is provided

Content Type and Identifier matching the Geolocation Header value

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Session Initiation Protocol (SIP) Location by Reference (1)

```
INVITE urn:service:sos SIP/2.0
Geolocation-Routing: yes
Geolocation: <https://held.lis.esinet.com/asdj82oasdf7z1>
Content-Type: multipart/mixed; boundary=8evENpS93o5w
[SIP Headers...]
```

Determines whether the provided location can be used for routing purposes

HELD URL

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Session Initiation Protocol (SIP) Location by Reference (2)

- Resolve Pointer / Retrieve Location via HELD Protocol
  - Pointer = URL provided in the Geolocation Header
- HELD = HTTP-Enabled Location Delivery
- HELD = Implemented by Location Information Service (LIS)

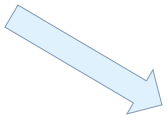
Session Initiation Protocol (SIP) Location by Reference (3)

HTTP POST https://held.lis.esinet.com/asdj82oasdf7z1

…
Geolocation: <https://held.lis.esinet.com/asdj82oasdf7z1>
[SIP Headers...]

Request Body:

```
<?xml version="1.0" ?>
<held:locationRequest xmlns:held="urn:ietf:params:xml:ns:geopriv:held">
        <held:locationType exact="true">geodetic</held:locationType>
</held:locationRequest>
```



Response Body:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<locationResponse
xmlns="urn:ietf:params:xml:ns:geopriv:held">
    <presence entity="pres:ggbawp2xpxd1r4r8a"
    xmlns="urn:ietf:params:xml:ns:pidf">
    …
    </presence>
</locationResponse>
```

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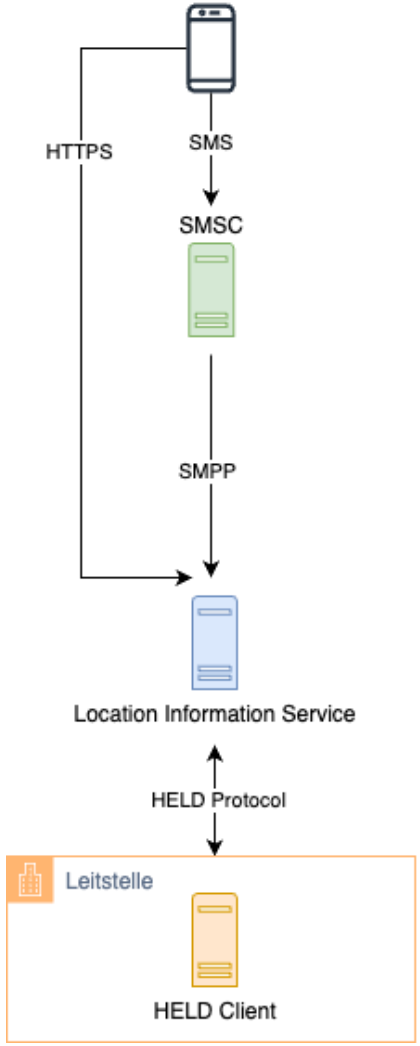
Advanced Mobile Location (AML)

- Location Information Service
  - AML Endpoint (SMS / HTTPS)
  - HELD Protocol with PIDF-LO
  - NG112 Blueprint (ETSI TS 103 479)
- PSAP
  - Single Format for Location Information



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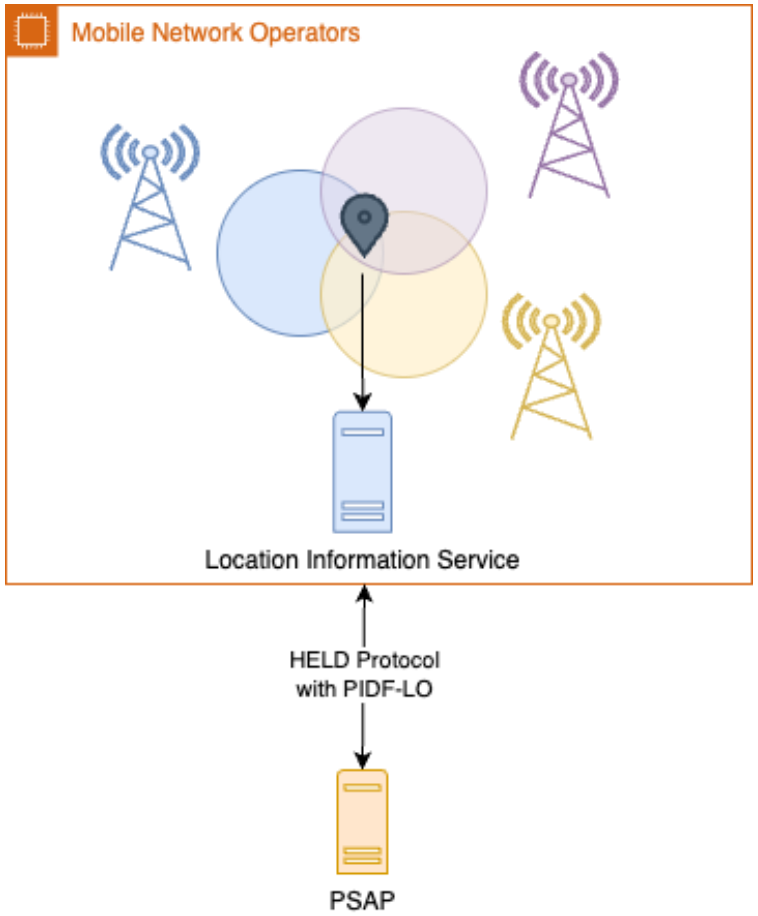
Triangulation, Cell Tower Location

- Location Information Service
  - Provided by Mobile Network Operators
  - HELD Protocol with PIDF-LO
  - Provide Location Information without a conversation
    (Triangulation, Cell Tower)
  - PIDF-LO Flexible Geometries
    - Circle, Arcband, etc.
- PSAP
  - Single Format for Location Information



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Key Takeaways

- PIDF-LO
  - Standardized Format
  - Represents Location Information
  - Geodetic and Address
  - Flexible and Extensible
- Deep Integration in NG112
  - Location Information Service
- Multiple Use Cases
  - Not limited to Phone Numbers

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