INSIST

Deliverable

D4.2.1 – Data Structures

Editor:

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Abstract

This documents describes the sensor types and data types that will be input to INSIST ecosystem and how they will be stored and retrieved from data users.

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# Executive Summary

The main purpose of the this projects is to provide information about generic data structure, format and standards for the interoperability between the INSIST ecosystem.

The main data source in INSIST ecosystem is sensors and advertisements. Sensors varies for the purpose. There are several most sensors such as motion detectors, light sensors, thermometers etc. and data types changes accordingly. This document will elaborate the sensor types and data types that will be input to INSIST ecosystem and how they will be stored and retrieved from data users.

# Data Format

All records should be in JSON Object. When posting and retrieving multiple record using REST API, all records should (and will) be in a JSON Array.

There are some fields that is required regardless of sensor or data type. These are:

**Type**: Type of the sensor.

**Timestamp**: The timestamp that the record captured. (//Is this true?)

**Coordinate** or location (adress): //geojson

**Id** : Serial number, unique id of the sensor.

**Brand** : Brand of the sensor.

**Model** : Model of the sensor.

Example:

*[*

*{“type”:“environmental | barometer?”, ”timestamp”:”formatiburaya”, “coordinate”:”geojsonobjesiburaya”, “id”:”idornegiburaya”, “brand”:”brandornegiburaya”, “model”:”modelornegiburaya”},*

*{“type”:“environmental | barometer?”, ”timestamp”:”formatiburaya”, “coordinate”:”geojsonobjesiburaya”, “id”:”idornegiburaya”, “brand”:”brandornegiburaya”, “model”:”modelornegiburaya”}*

*...*

*]*

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| --- | --- |
| **Sensor Types | (Data Type ?)** | **Description | (Sensor Type ?)** |
| **Environmental** |  |
| Atmospheric pressure | Barometers |
| Humidity | Hygrometers |
| Temperature | Thermometers |
| Wind\_direction | Weather vanes |
| Wind\_speed | Anemometers |
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| **Light** |  |
| Ambient Light Sensors(Ligh Chromacity) | Chromaticity as a counted array of float values |
| Light Level Lux | Illuminance level, in lux. |
| Light Temperature | Color temperature, in degrees Kelvin. |
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| **Location** |  |
| Dead Reckoning | These sensors first calculate the current location and then update the current location by using motion data. |
| GPS | Global positioning system sensors. |
| Location Lookup | Lookup sensors, such as those that provide information based on the user's IP address. |
| Location Other | Fixed-location sensors, such as those that use preset, user-provided information. |
| Location Static | Triangulation sensors, such as those that determine current location based on cellular phone tower proximities. |
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| **Motion** |  |
| Accelerometers 1D | One-axis accelerometers. |
| Accelerometers 2D | Two-axis accelerometers. |
| Accelerometers 3D | Three-axis accelerometers |
| Gyrometers 1D | One-axis gyrometers. |
| Gyrometers 2D | Two-axis gyrometers |
| Gyrometers 3D | Three-axis gyrometers. |
| Motion Detectors | Motion detectors, such as those used in security systems. |
| Speedometers | Rate-of-motion sensors. |
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| **Orientation** |  |
| Aggregated Device Orientation | Specifies the current device orientation by returning a Quaternion and, in some cases, a rotation matrix. (The rotation matrix is optional.) |
| Aggregated Quadrant Orientation | Specifies the current device orientation in degrees. |
| Aggregated Simple Device Orientation | Specifies the device orientation as an enumeration. (This type specifies the device orientation using one of four general quadrants: 0 degrees, 90-degrees counter clockwise, 180-counter clockwise, and 270-degrees counter clockwise. It also indicates the face-up or face down orientation of the device.) |
| Compass 1D | One-axis compasses. |
| Compass 2D | Two-axis compasses. |
| Compass 3D | Three-axis compasses. |
| Distance 1D | One-axis distance sensors |
| Distance 2D | Two-axis distance sensors. |
| Distance 3D | Three-axis distance sensors. |
| Inclinometer 1D | One-axis inclinometers. |
| Inclinometer 2D | Two-axis inclinometers. |
| Inclinometer 3D | Three-axis inclinometers. |
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| **Other Sensors** |  |
| **Traffic Density - 1** | Video Camera  Data Type: text, Data Size: Max 200 byte, Write Access Frequency: 5 min |
| **Traffic Density – 2** | Social Media  Data Type: text, Data Size: Max 200 byte, Write Access Frequency: 60 sec |
| **Traffic Density – 3** | Traffic Density Maps  Data Type: text, Data Size: Max 200 byte, Write Access Frequency: 10 sec |
| **Traffic Density** | Application  Data Type: text, Data Size: Max 200 byte, Write Access Frequency: 5 min |
| **Event** | Social Media  Data Type: text, Data Size: Max 200 byte, Write Access Frequency: 5 min |

**Table 1.2.1 [[1]](#footnote-1)**

1. <https://msdn.microsoft.com/en-us/library/windows/desktop/dd318969(v=vs.85).aspx> [↑](#footnote-ref-1)