

INSIST

Deliverable

D4.2.1 – Data Structures/Standart Requirements Specification

Editor:

Emine Ferraro

ITEA 3 Project 13021

Date: 01.05.2016



Document properties

Security	Confidential
Version	Final
Author	Emine Ferraro, Argedor
Pages	

History of changes

Version	Author, Institution	Changes
0.1	Emine Ferraro, Argedor	Draft Document
0.2	Çiğdem Çavdaroğlu, Koç Sistem	Other sensors
0.3	Şaziye Ersoy, Verisun	Other sensors
0.4	Emine Ferraro	Finalisation of the document

Abstract

This document describes the sensor and data types that will be used as an input on INSIST ecosystem. In this document also explains how sensor and data types will be stored and retrieved from data users.

Table of contents

Document properties 2
History of changes 2
Abstract 3
Table of contents..... 4
1. Executive Summary..... 5
2. Data Format 6

1. Executive Summary

The main purpose of this document 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 sensors such as motion detectors, light sensors, thermometers etc. Data types changes accordingly. This document will elaborate the sensor types and data types that will be used as an input on INSIST ecosystem and how they will be stored and retrieved from data users.

2. 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"}
  ...
]
```

Sensor Types (Data Type ?)	Description (Sensor Type ?)
Environmental	
Atmospheric pressure	Barometers
Humidity	Hygrometers
Temperature	Thermometers
Wind_direction	Weather vanes
Wind_speed	Anemometers
Light	

D4.2.1 – Data Structures/Standart Requirements Specification

Final

Ambient Light Chromacity)	Sensors(Ligh	Chromaticity as a counted array of float values
Light Level Lux		Illuminance level, in lux.
Light Temperature		Color temperature, in degrees Kelvin.
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.
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.
Orientation		

D4.2.1 – Data Structures/Standart Requirements Specification

Final

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.
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

D4.2.1 – Data Structures/Standart Requirements Specification

Final

BusLines Vehicle Location Info	BUS GPS Data Type: text , Data Size: Max 200 byte, Write Access Frequency: 1 min
How2Go	Shortest Public Transportation Algorhythm Data Type: text , Data Size: Max 5 k byte, Write Access Frequency: 1 min
Buses	Application Data Type: text , Data Size: Max 5 k byte, Write Access Frequency: 1 min
Bus Stops	Application Data Type: text, Data Size: Max 5 k byte, Write Access Frequency: monthly
Search Old	Application Data Type: text, Data Size: Max 5 k byte, Write Access Frequency: 1 min
Search	Application Data Type: text, Data Size: Max 5 k byte, Write Access Frequency: 1 min
Time Table	Application Data Type: text, Data Size: Max 5 k byte, Write Access Frequency: Monthly
Bus Lines Old	Application Data Type: text, Data Size: Max 5 k byte, Write Access Frequency: monthly

Table 1.2.1 ¹

¹ [https://msdn.microsoft.com/en-us/library/windows/desktop/dd318969\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/dd318969(v=vs.85).aspx)