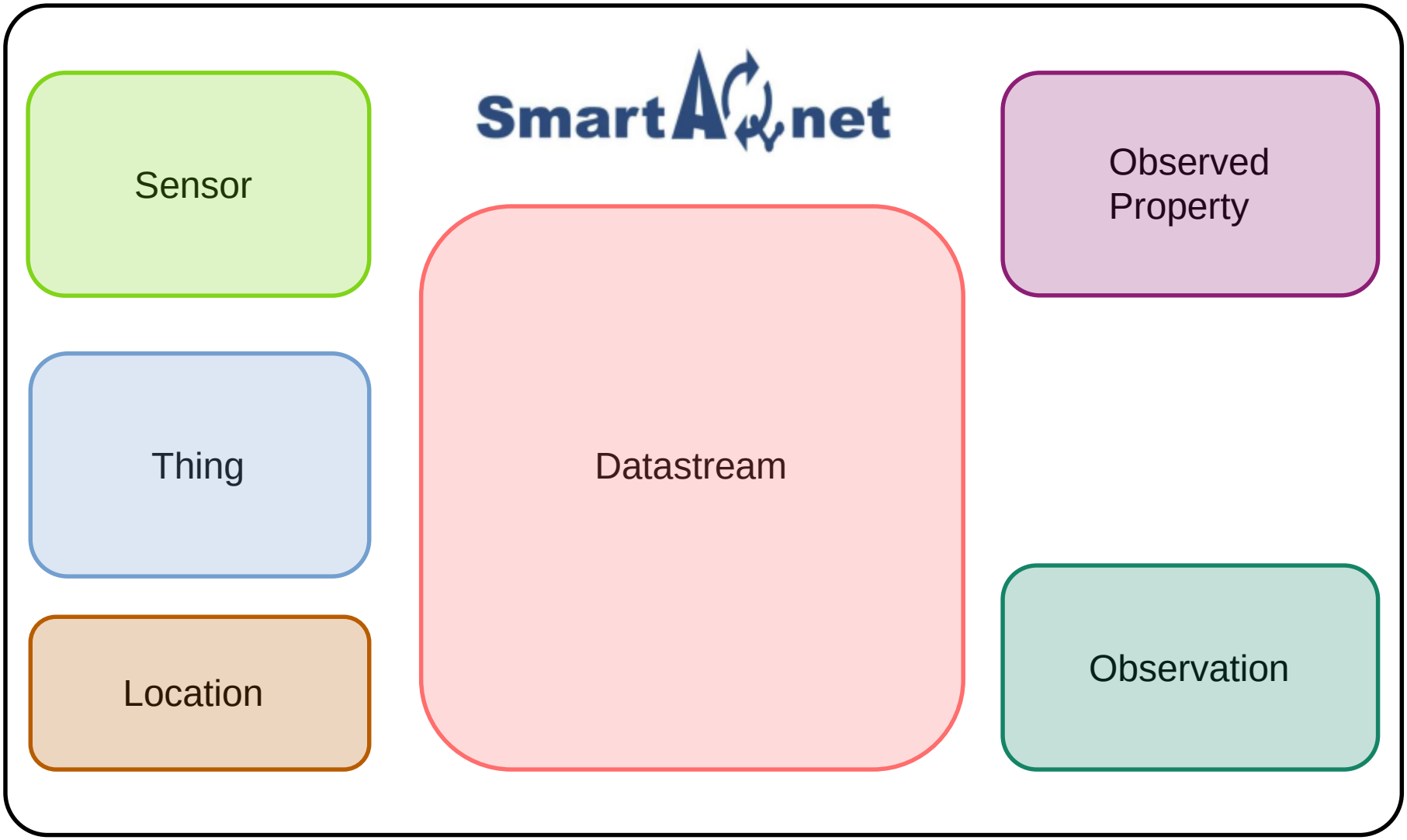
Karlsruhe Institute of Technology

Technology for Pervasive Computing

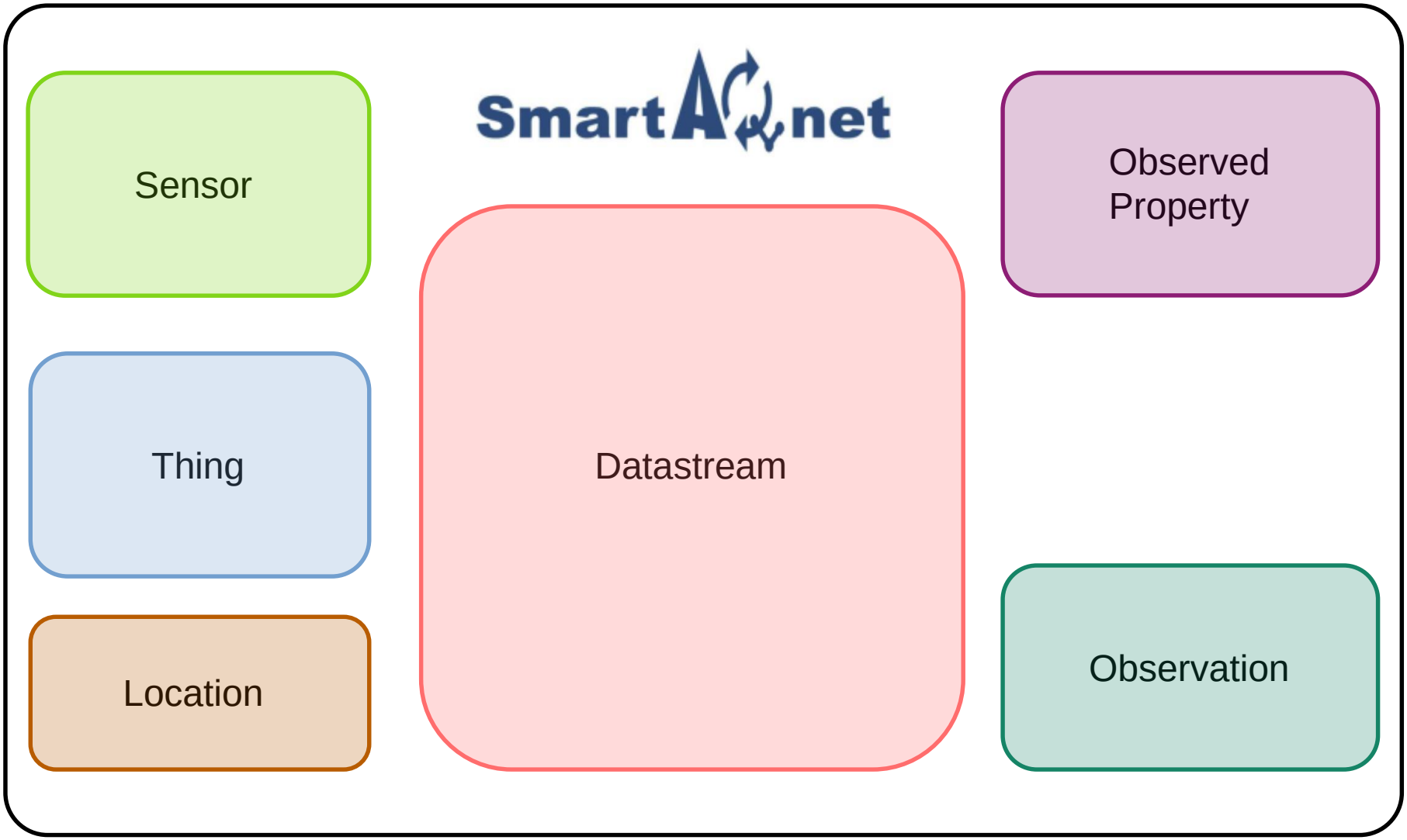
Modelling the SmartAQnet Database

CHAIR FOR PERVASIVE COMPUTER SYSTEMS, INSTITUTE OF TELEMATICS, DEPARTMENT OF COMPUTER SCIENCE

SAQN Database Modelling



SAQN Database Modelling



SAQN Database Modelling: Locations

Name: Vincenz-Prießnitz-Str.1, Karlsruhe

Description: A street with little traffic

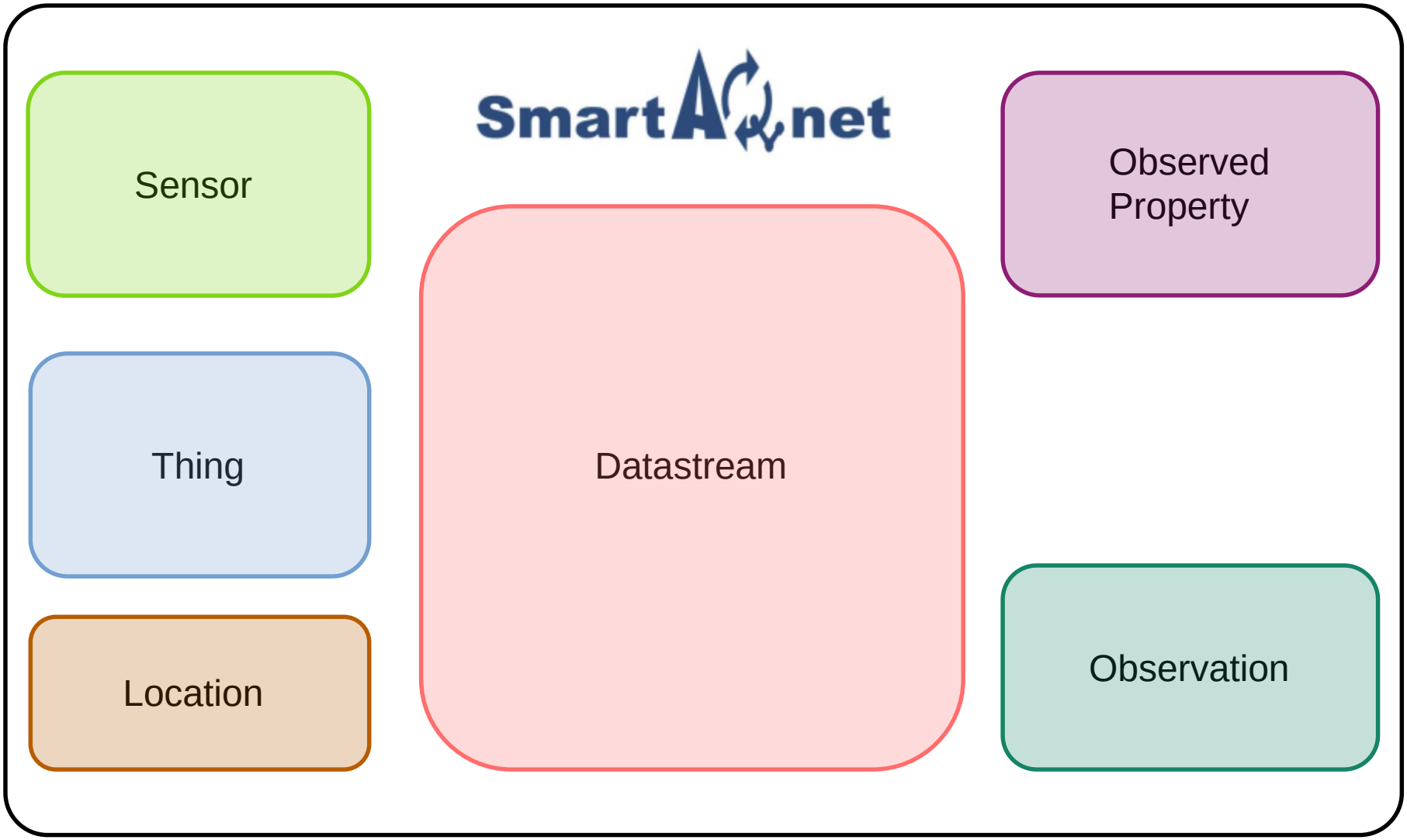
encodingType: application/vnd.geo+json

location:

type: Point
coordinates: [8.424171,49.01303]

@iot.id: geo:49.01303,8.424171

SAQN Database Modelling



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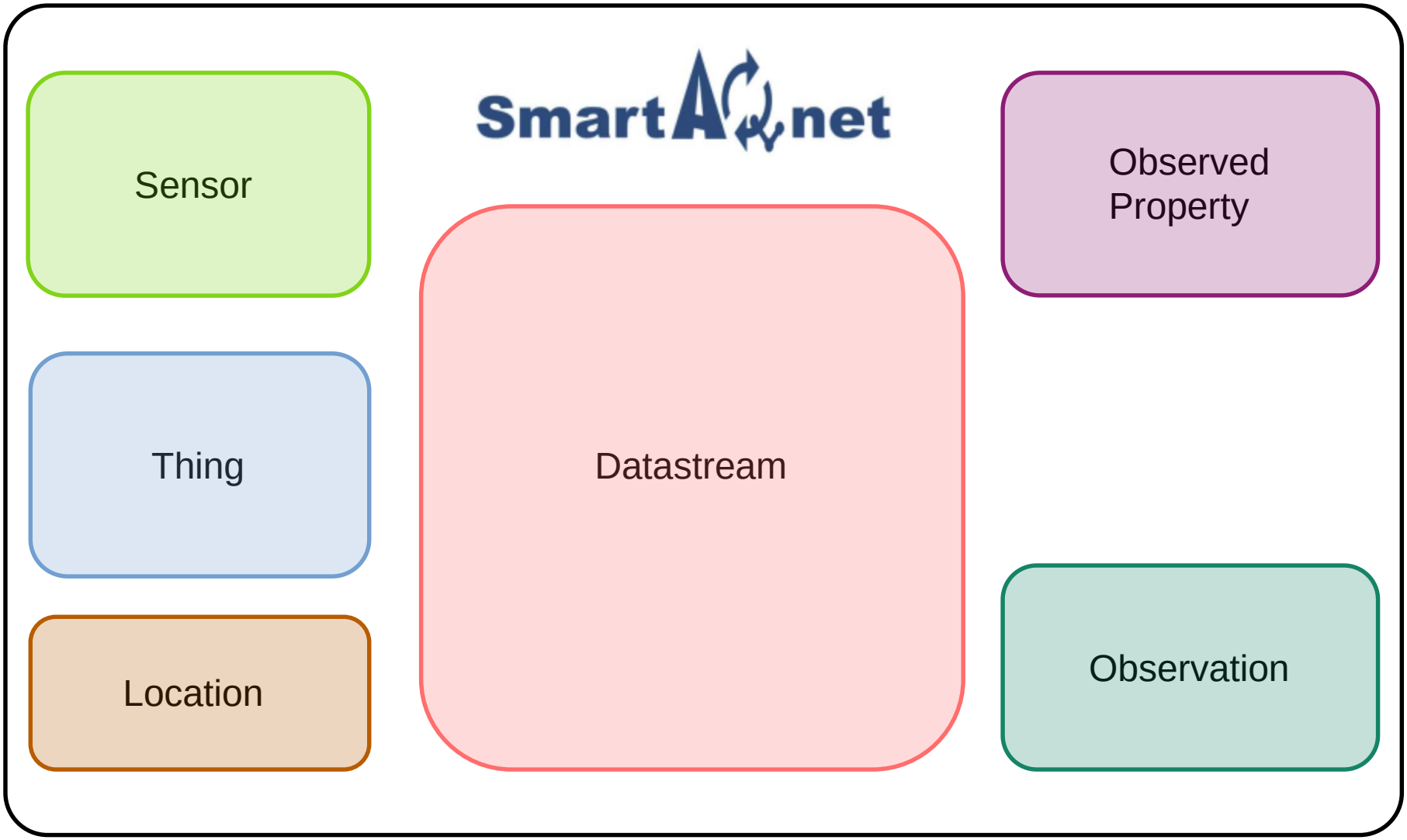


SAQN Database Modelling: Things

Name: Crowdsensor 180232

Description: A low cost node measuring particulate Matter

Properties:

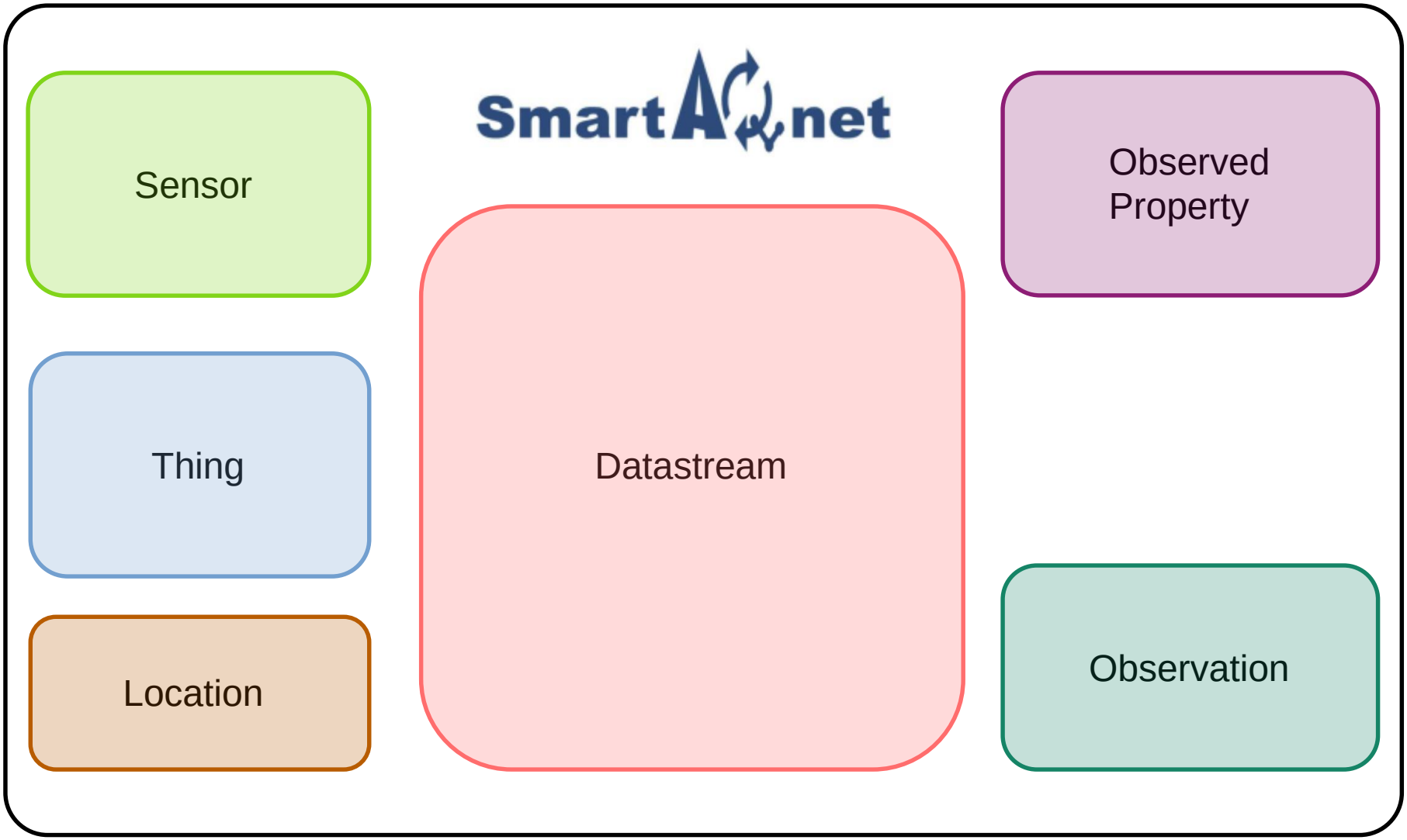
software.version: {2019-05-26T14:21:44.382Z: v0.8.5}
hardware.revision: {2019-08-01T:00:00:00.000Z: https://www.teco.edu/wp-content/grand-media/application/Anleitung_Crowdsensor_V085b.pdf}

hardware.id: 180232
shortname: crowdsensor
operator.domain: teco.edu

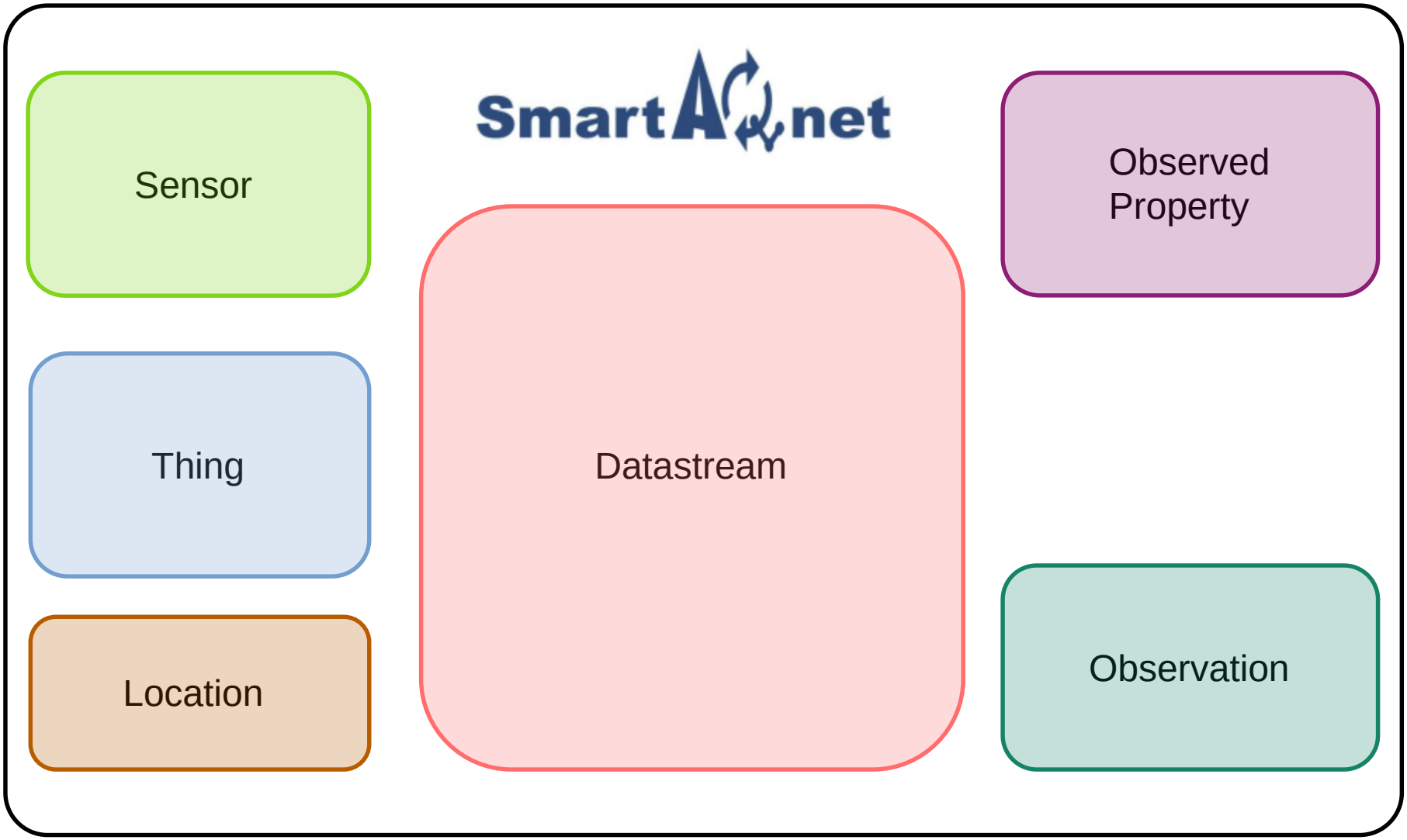
Locations: [{geo:49.01303,8.424171}]

@iot.id: saqn:t:teco.edu:crowdsensor:180232

SAQN Database Modelling



SAQN Database Modelling



SAQN Database Modelling: Sensors

Name: Nova SDS011

Description: A type of low-cost sensor measuring particulate Matter

encodingType: application/json

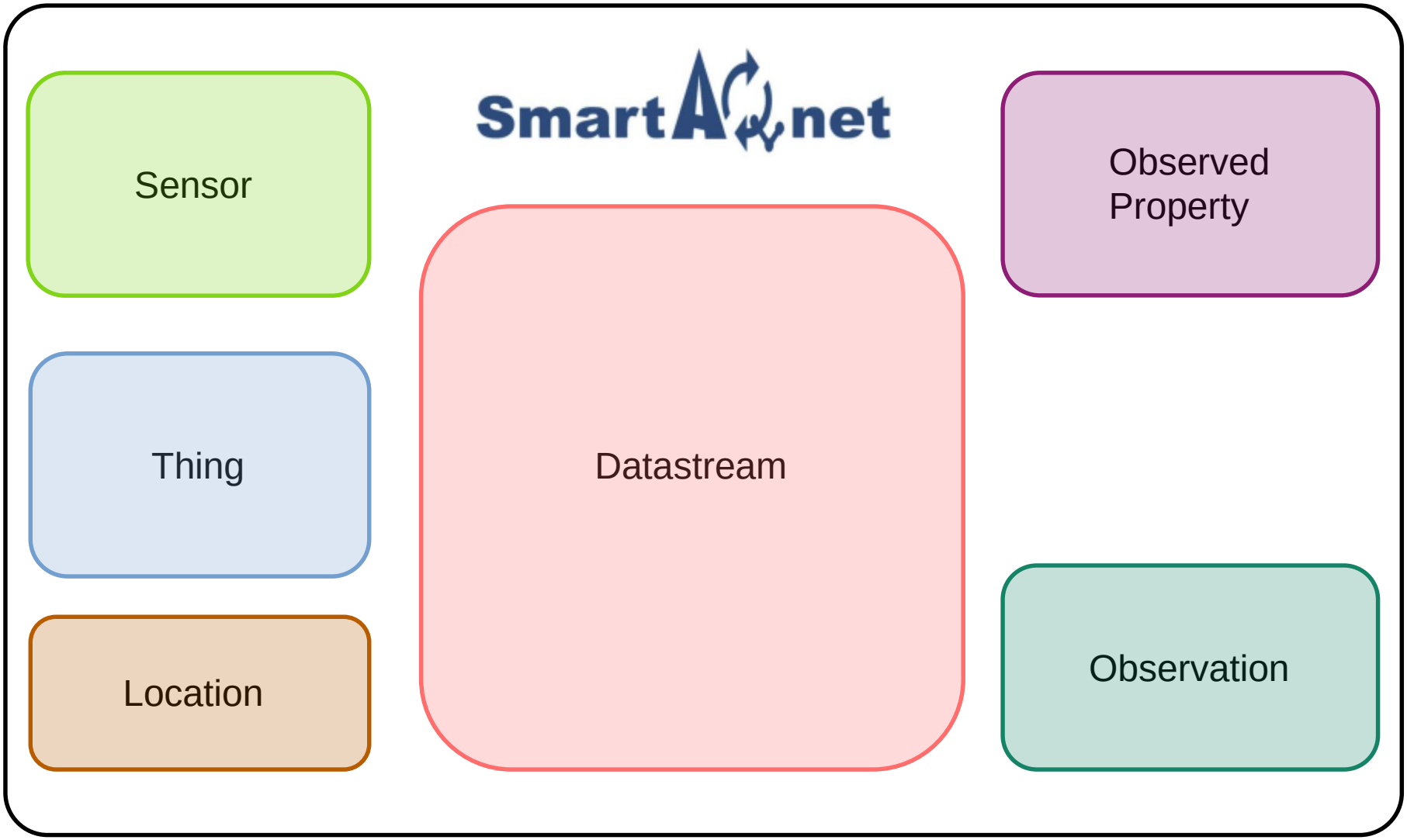
metadata:
https://api.smartaq.net/v1.0/sensors('saqn:s:inovafitness.com:sds011')/properties

Properties:

datasheet.url:
https://web.archive.org/web/20191111144451/https://www.waterott.com/media/files_public/fwyjbmbnj/SDS01.pdf
shortname: sds011
manufacturer.domain: inovafitness.com

@iot.id: saqn:s:inovafitness.com:sds011

SAQN Database Modelling



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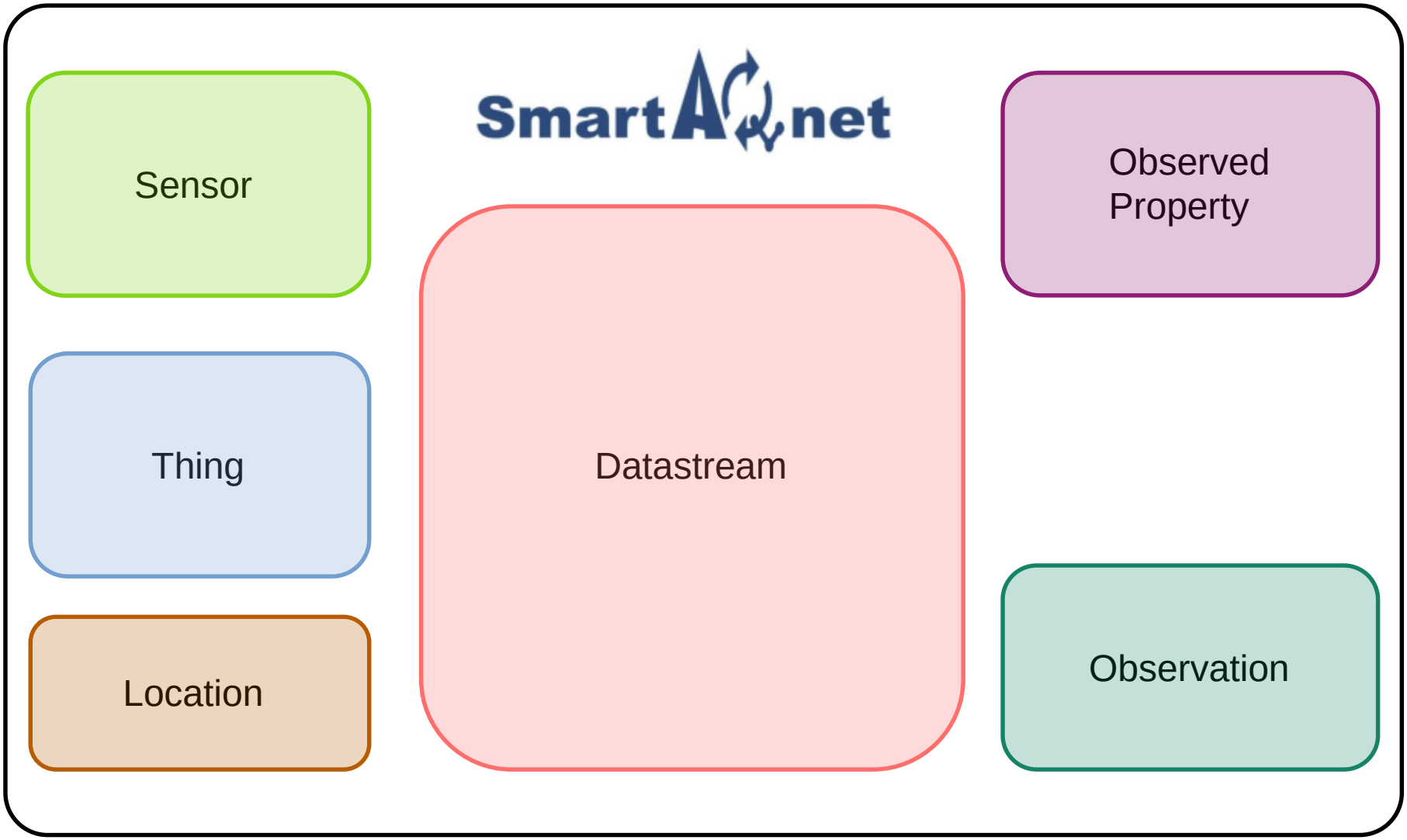


SAQN Database Modelling: Observed Properties

Name: PM10 Mass concentration

Description: Mass concentration of Particulate Matter with a diameter of equal or less than 10 micrometers in air.

Definition: http://cfconventions.org/Data/cf-standard-names/63/build/cf-standard-name-table.html#mass_concentration_of_pm10_ambient_aerosol_particles_in_air

properties:

shortname.definition: http://www.uc2-program.org/uc2_table_A1.pdf
shortname: mcpm10
conventions:

unitOfMeasurement:

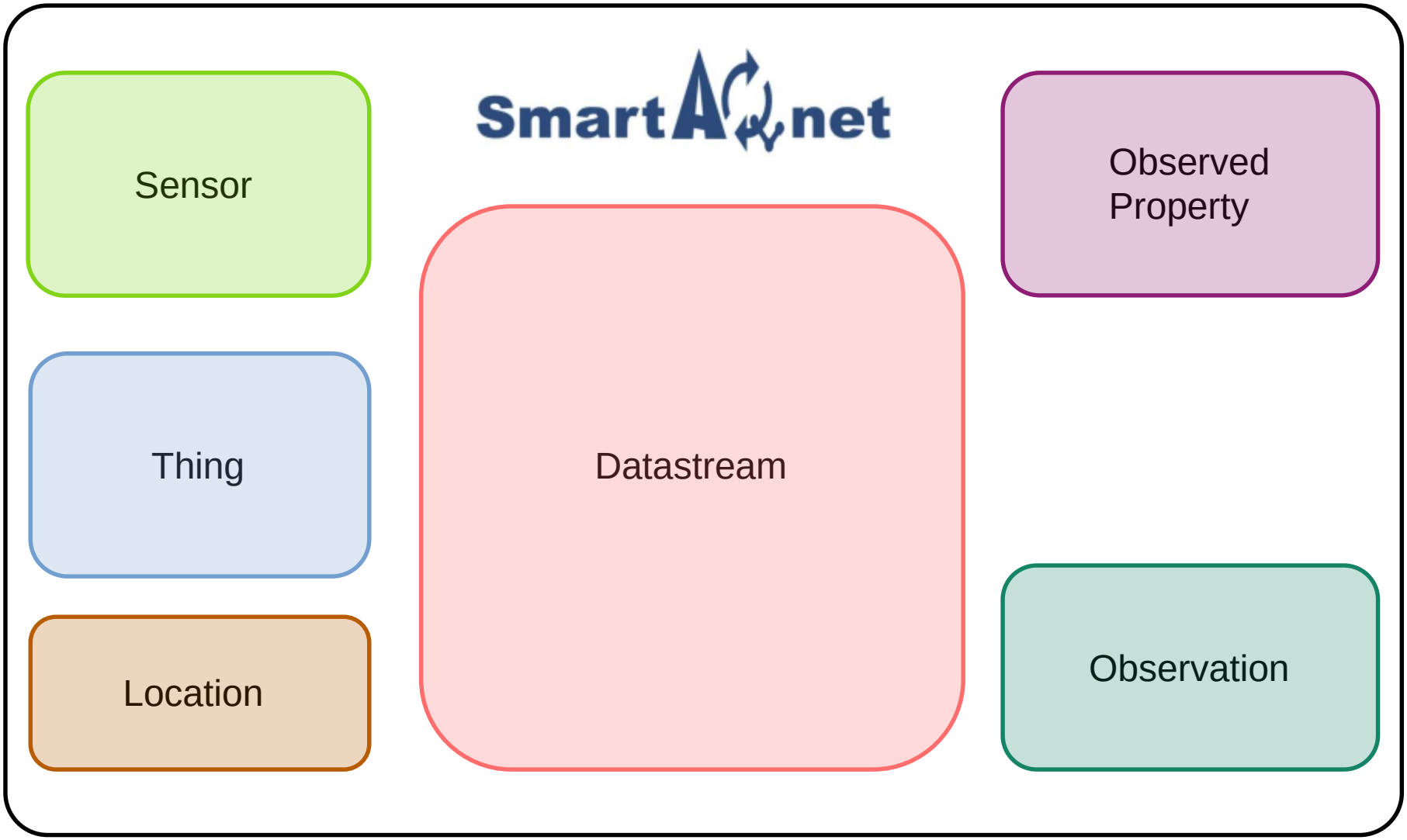
name: Microgram per Cubic Meter
symbol: ug/m3
definition: http://unitsofmeasure.org/ucum.html

fixedPoints:

0: #0f8a0f
5: #2db00c
10: #59d408
…

@iot.id: saqn:op:mcpm10

SAQN Database Modelling



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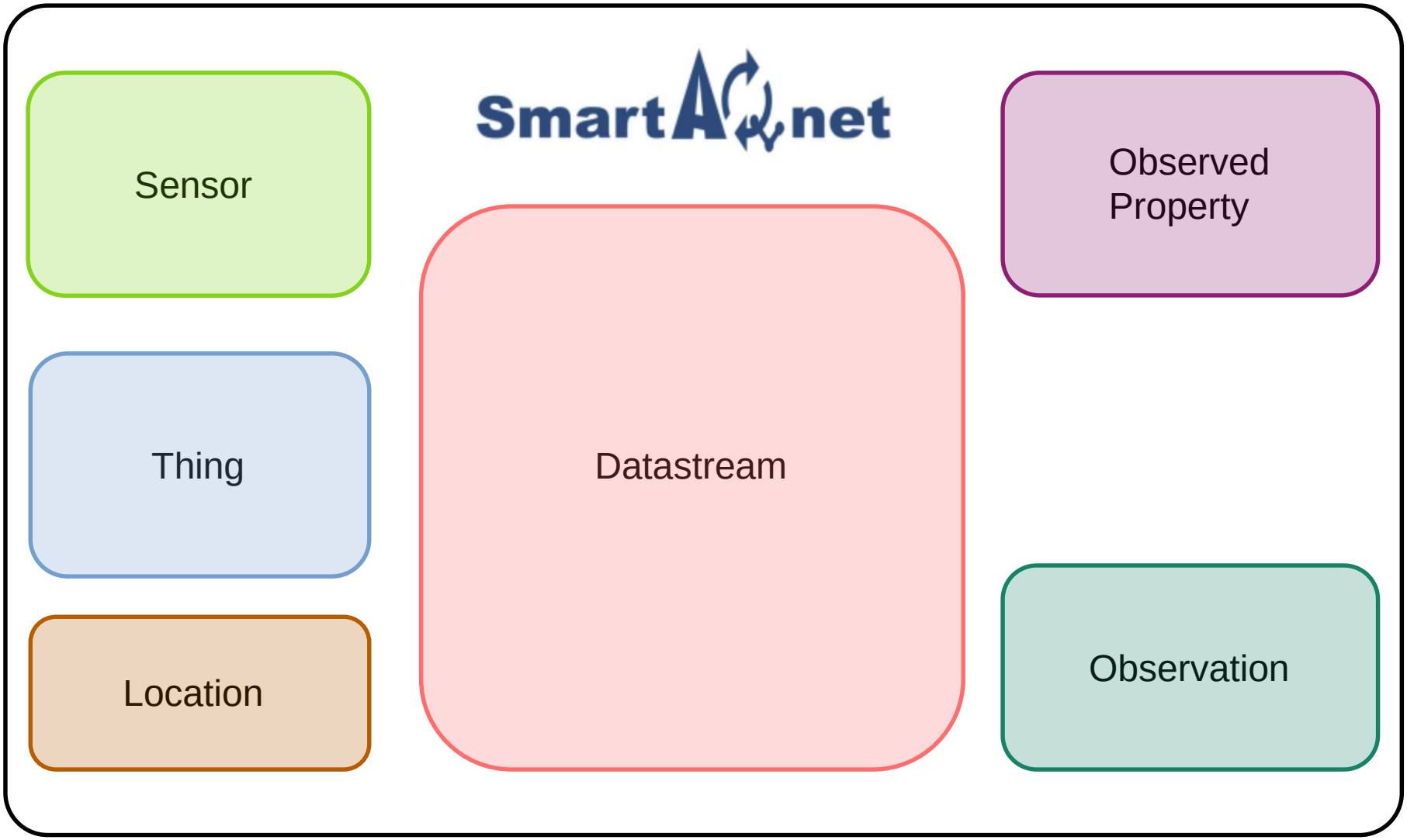


SAQN Database Modelling: Datastreams

Name: PM10 Measurements of Crowdsensor 180232

Description: Datastream for Particulate Matter

unitOfMeasurement:

name: Microgram per Cubic Meter
symbol: ug/m3
definition: http://unitsofmeasure.org/ucum.html

Observation Type: http://www.opengis.net/def/observationType/OGC-OM/2.0/OM_Measuremen

Properties:

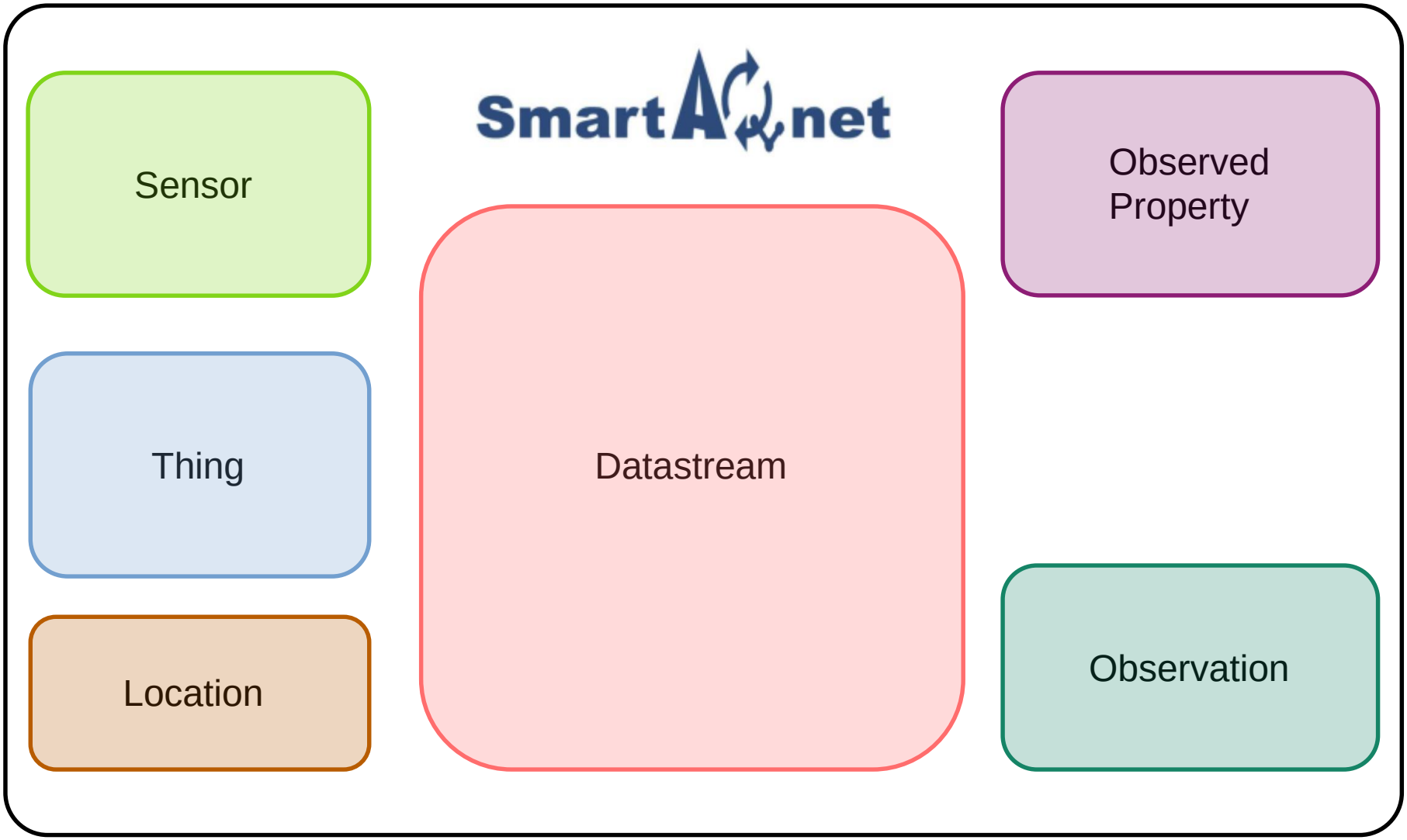
software.version: {2019-05-26T14:21:44.382Z: v0.8.5}
hardware.serial_number: 5002-6666
operator.domain: teco.edu

license:

name: CC-BY 4.0
legal_notice: „Attribution: Max Mustermann“
url: https://creativecommons.org/licenses/by/4.0/deed.de

ObservedProperty: {@iot.id: saqn:op:mcpm10}

SAQN Database Modelling



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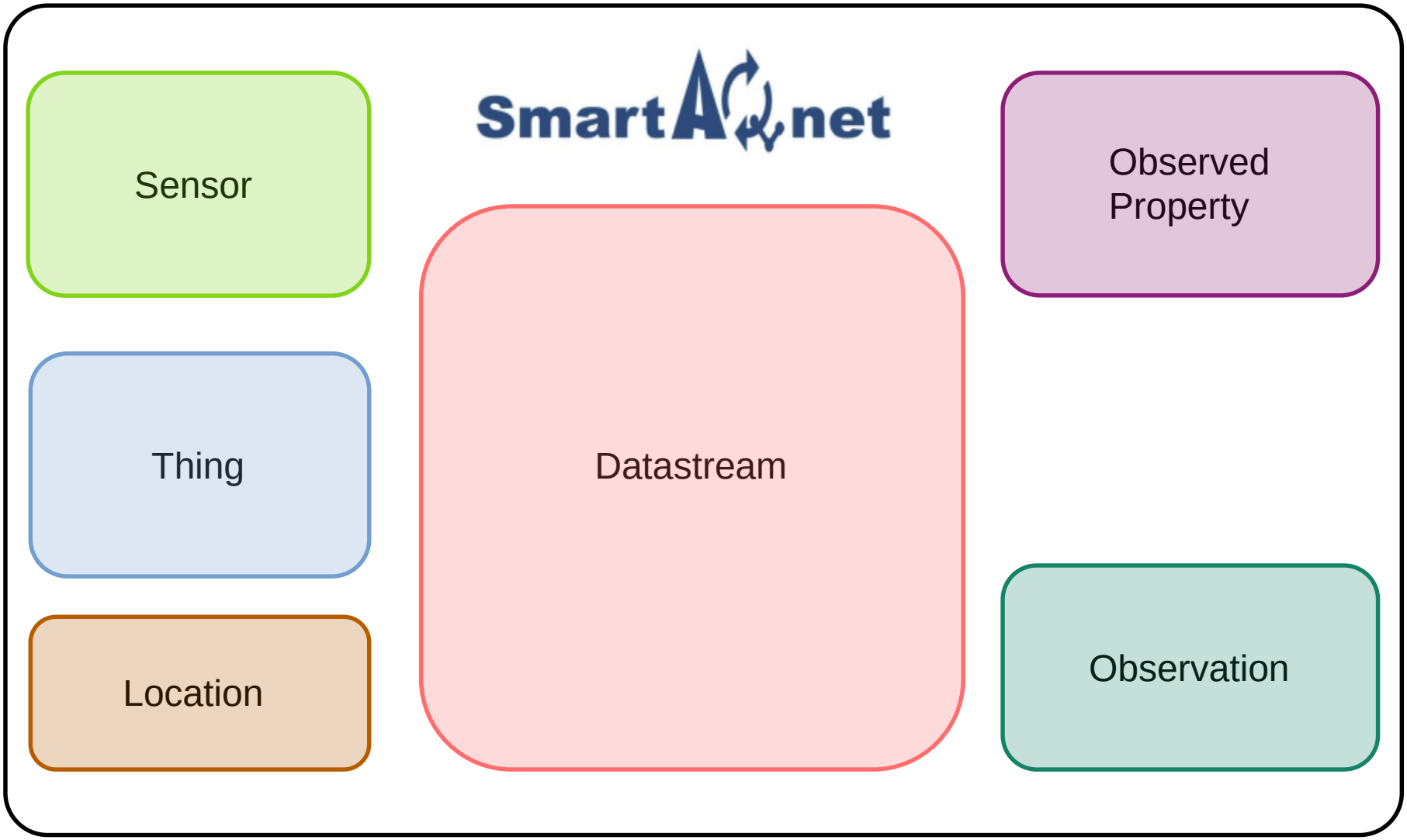


SAQN Database Modelling: Observations

phenomenonTime: 2019-07-03T04:00:01.000Z/2019-07-03T04:00:11.000Z

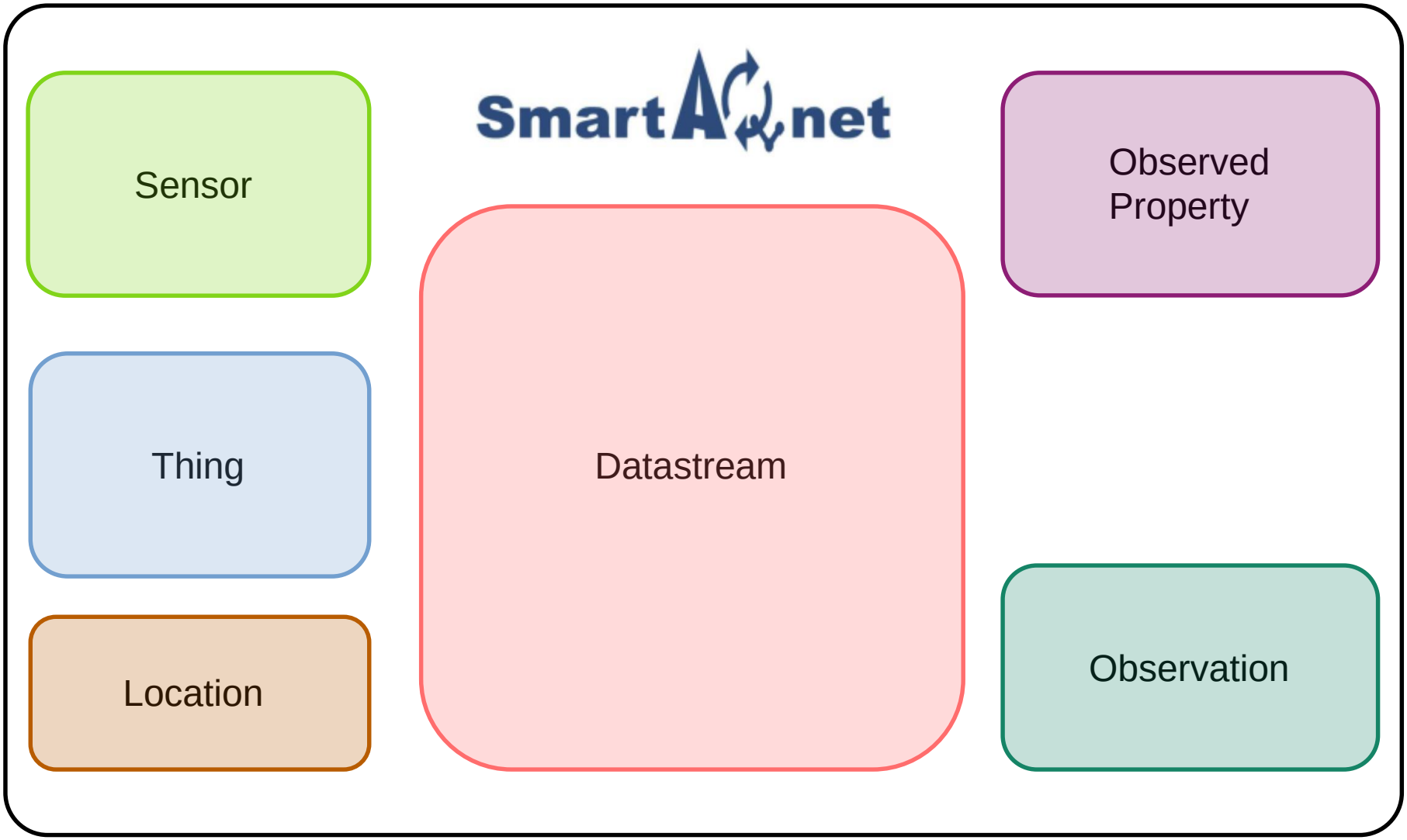
resultTime: 2019-07-03T04:00:11.000Z

result: 7.5

datastream: {@iot.id: saqn:ds:fb49f92}

@iot.id: … *auto generated* …

SAQN Database Modelling



Vielen Dank für die Aufmerksamkeit

Zur Vollständigkeit

Im Vortrag ausgelassen:

- Feature of Interest (= „Location der Messung“):

Ein Feature of Interest wird (falls nicht manuell erzeugt) für jede Observation automatisch angelegt zum Zeitpunkt der Messung, indem die aktuelle Location des Things kopiert wird.

- Historical Locations (= „Log der Locations des Things“):

Jedes Thing hat eine Liste von Historical Locations mit dem Zeitstempel, wann das Thing an dieser Location war. Diese Liste wird automatisch erzeugt, indem jedes Mal wenn die Location eines Things geändert wird, die neue Location in die Liste der Historical Locations kopiert wird (zusammen mit dem aktuellen Zeitstempel).

Dokumentation der SenorThings API mit Beispielen
http://developers.sensorup.com/docs/#sensorthingsAPISensing