

KML & indoorOSM

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KML

0. OGC – Open Geospatial Consortium

The screenshot shows the OGC website with the logo and tagline "Making location count." at the top. A navigation bar contains links: Home, Standards, Programs, Participate, OGC Blog, Events, About OGC, and Member Login. On the left, a list of domains includes Aviation, Built Environment & 3D, Business Intelligence, Defense & Intelligence, Geosciences & Environment, Government & Spatial Data Infrastructure, Mobile Internet & Location Services, Emergency Response & Disaster Management, Sensor Webs, and University & Research. Two dropdown menus are open. The first, under "Standards", lists various standards with a blue arrow pointing to "KML". The second, under "Participate", lists a series of services.

OGC Making location count.

Home Standards Programs Participate OGC Blog Events About OGC Member Login

Geospatial and location standards for:

- Aviation
- Built Environment & 3D
- Business Intelligence
- Defense & Intelligence
- Geosciences & Environment
- Government & Spatial Data Infrastructure
- Mobile Internet & Location Services
- Emergency Response & Disaster Management
- Sensor Webs
- University & Research

Standards

- 3dP
- ARML2.0
- Cat: ebRIM App Profile: Earth Observation Products
- Catalogue Service
- CDB
- CityGML
- Coordinate Transformation
- Filter Encoding
- GML in JPEG 2000
- GeoAPI
- GeoPackage
- GeoSciML
- GeoSPARQL
- Geography Markup Language
- GeoRSS
- Geospatial eXtensible Access Control Markup Language (GeoXACML)
- Geospatial User Feedback (GUF)
- GroundwaterML
- i3s
- IndoorGML
- KML
- LandInfrastructureGML
- Location Services (OpenLS)
- Moving Features
- NetCDF

Participate

- Observations and Measurements
- Open GeoSMS
- OpenMI
- OpenSearch Geo
- Ordering Services Framework for Earth Observation Products
- OWS Context
- PubSub
- PUCK
- SWE Common Data Model
- SWE Service Model
- Sensor Model Language
- Sensor Observation Service
- Sensor Planning Service
- SensorThings
- Simple Features
- Simple Features CORBA
- Simple Features OLE/COM
- Simple Features SQL
- Styled Layer Descriptor
- Symbology Encoding
- Table Joining Service
- TimeseriesML (tsml)
- WaterML
- Web Coverage Processing Service
- Web Coverage Service
- Web Feature Service
- Web Map Context
- Web Map Service
- Web Map Tile Service
- Web Processing Service
- Web Service Common
- WKT CRS

1. Introduction

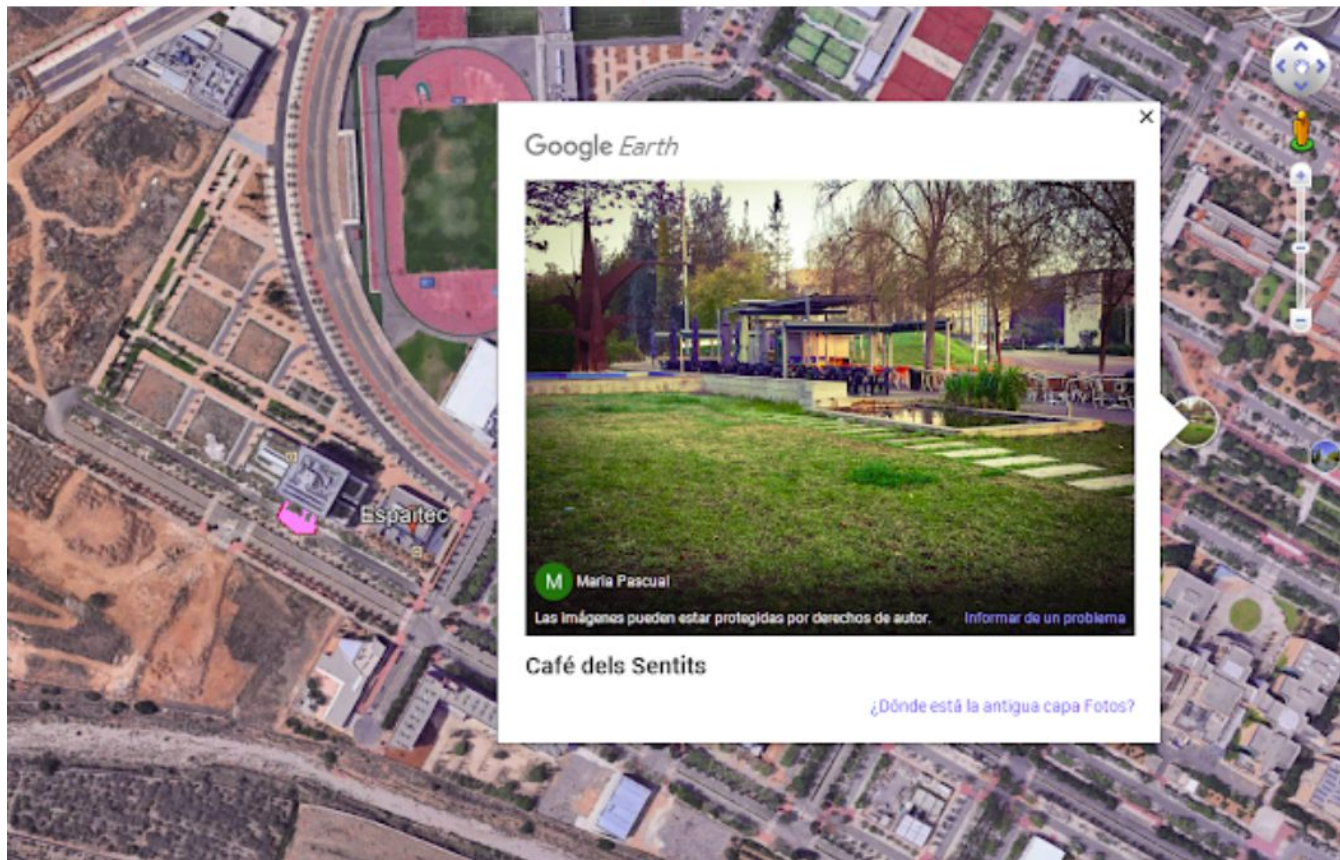
- KML expresses geographical annotation and visualization on maps.



1. Introduction

- KML expresses geographical annotation and visualization on maps.

16:03:05 20/2/2018



1. Introduction

- KML expresses geographical **annotation** and **visualization on maps**:
 - Annotate the Earth
 - Specify icons and labels to identify locations on the surface of the planet
 - Create different camera positions to define unique views for KML features
 - Define image overlays to attach to the ground or screen
 - Define styles to specify KML feature appearance
 - Write HTML descriptions of KML features, including hyperlinks and embedded images
 - Organize KML features into hierarchies
 - Locate and update retrieved KML documents from local or remote network locations
 - Define the location and orientation of textured 3D objects

- [Point](#)
- [LineString](#)
- [LinearRing](#)
- [Polygon](#)
- [MultiGeometry](#)
- [Model](#)

indoorOSM

0. OSM – Open Street Maps

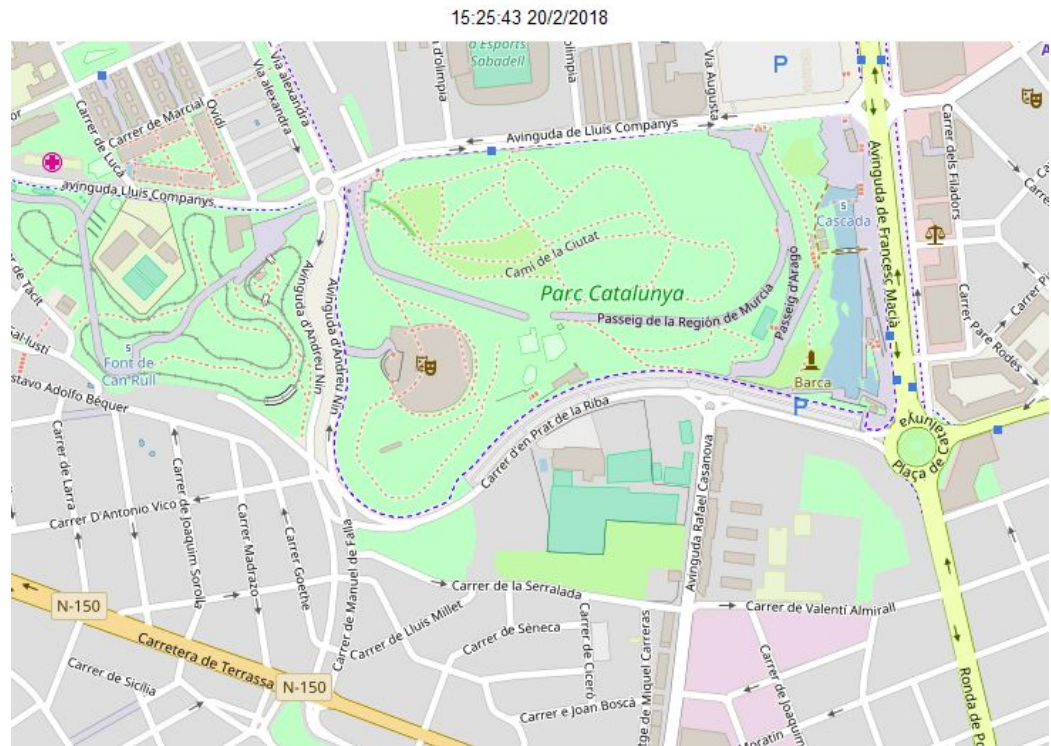
15:17:09 20/2/2018

The screenshot displays the OpenStreetMap web application. At the top, there's a navigation bar with the OpenStreetMap logo, a search bar, and links for 'Modificació', 'Historial', and 'Exporta'. On the right, there are links for 'Traces de GPS', 'Diaris d'usuari', 'Drets d'autor', 'Ajuda', 'Informació', 'Inicia sessió', and 'Registre'. A left sidebar contains a welcome message in Catalan, a description of OSM as a free map project, and links to 'Aprèn-ne més' and 'Comença a cartografiar'. Below this is a banner for 'FOSS4G - IT 2018' in Rome, February 19-22. The main area shows a map of the Barcelona region, including areas like Sabadell, Terrassa, and Badalona. The map features various road types, green spaces, and numerous orange triangle markers. A scale bar (5 km / 3 mi) is visible in the bottom left corner. The bottom right corner of the map area contains the text '© Col·laboradors d'OpenStreetMap' and 'Feu un donatiu'.

OpenStreetMap is a free, editable map of the whole world that is being built by volunteers largely from scratch and released with an open-content license.

0. OSM Map creation

- Maps are created from:
 - Other maps
 - Ortophotos
 - GPS



0. OSM Map creation

• Tagging system

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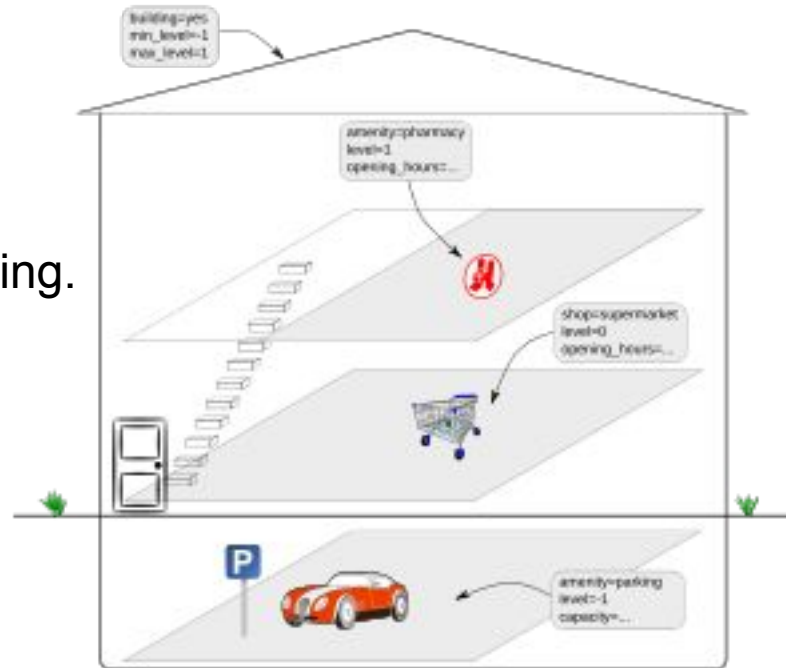
| | | | | | |
|---------|------------------|--|--|--|--|
| amenity | brothel | | An establishment specifically dedicated to prostitution | | |
| amenity | casino | | A gambling venue with at least one table game(e.g. roulette, blackjack) that takes bets on sporting and other events at agreed upon odds. | | |
| amenity | cinema | | A place where films are shown (US: movie theater) | | |
| amenity | community_centre | | A place mostly used for local events, festivities and group activities; including special interest and special age groups. . | | |
| amenity | fountain | | A fountain for cultural / decorational / recreational purposes. | | |
| amenity | gambling | | A place for gambling, not being a <code>shop=bookmaker</code> , <code>shop=lottery</code> , <code>amenity=casino</code> , or <code>leisure=adult_gaming_centre</code> . Games that are covered by this definition include bingo and pachinko. | | |
| amenity | nightclub | | A place to drink and dance (nightclub). The German word is "Disco" or "Discothek". Please don't confuse this with the German "Nachtklub" which is most likely <code>amenity=stripclub</code> . | | |
| amenity | planetarium | | A planetarium. | | |
| amenity | social_centre | | A place for free and not-for-profit activities. | | |

1. OSM Goes indoor

- Maps are created from:
 - Architect plans
 - Other maps
 - Ortophotos??
 - GPS ??
- Process include:
 - Convert DWG & PDF to images
 - Georeference
 - Produce tiles

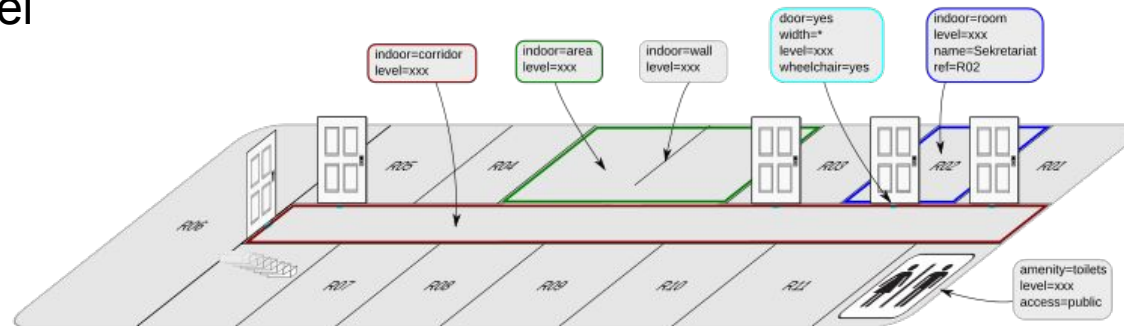
2. Simple indoor tagging

- Step 0: Building:
 - min_level
 - max_level
 - non_existent_levels
- Step 1: Simple POI mapping.
 - level=*



2. Simple indoor tagging

- Step 2: indoor elements
 - indoor:
 - room
 - area
 - wall
 - corridor
 - Level



2. Simple indoor tagging

- Step 2.5? Door node is not clear if it is defined.
 - door= (connect corridors with rooms and rooms).
- Step 3: multilevel. Duplicate the same node in several levels:
 - repeat_on=
 - Not decided how to represent stairs or escalators

| | |
|------------|--|
| Stairs | stairs =yes indoor =room or indoor =area when there are no walls. |
| Escalators | stairs =yes conveying =yes indoor =room or indoor =area when there are no walls. |
| Elevators | highway = elevator indoor =room or in special cases indoor =area when there are no walls. |

3. Tools

- OpenLevelUp
 - <https://openlevelup.net/>
 - <https://wiki.openstreetmap.org/wiki/OpenLevelUp>
 - Tool to check the result.
 - Allows to introduce the Open Street Maps features.
 - Although it has an IDIndoor option, options seem generic and are not exactly the same than in indoor tag.
 - The tool is extremelly low.
 - Filters does not work

12:08:56 20/2/2018



3. Tools

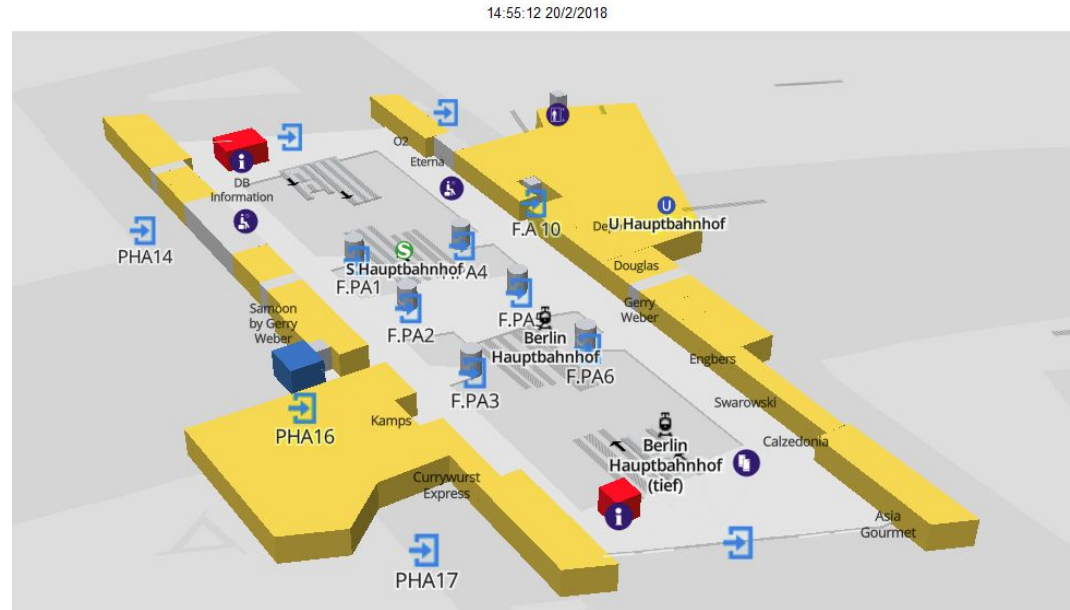
- Vespucci
 - <http://vespucci.io/>
 - Tool for getting and managing data from OSM.
 - Although indoor part is not completely developed, it can be used for testing.

3. Tools

- Osiris
 - <http://osiris-indoor.github.io/>
 - Osiris is an Open Source server for Indoor Maps based on OSM.
 - The architecture of Osiris consists of three different elements:
 - a data layer,
 - a set of public REST web services
 - a client application.
 - The data layer persistence is relayed to MongoDB.
 - The data layer is accessed by the public REST web services
 - Process:
 - First, all spaces and access structures have to be drawn.
 - Then, every room, stair, elevator, etc. has to be tagged in order to provide its name and type.
 - Finally the resultant file is uploaded to the server and processed to be stored in a MongoDB storage.
 - API available

4. Some projects

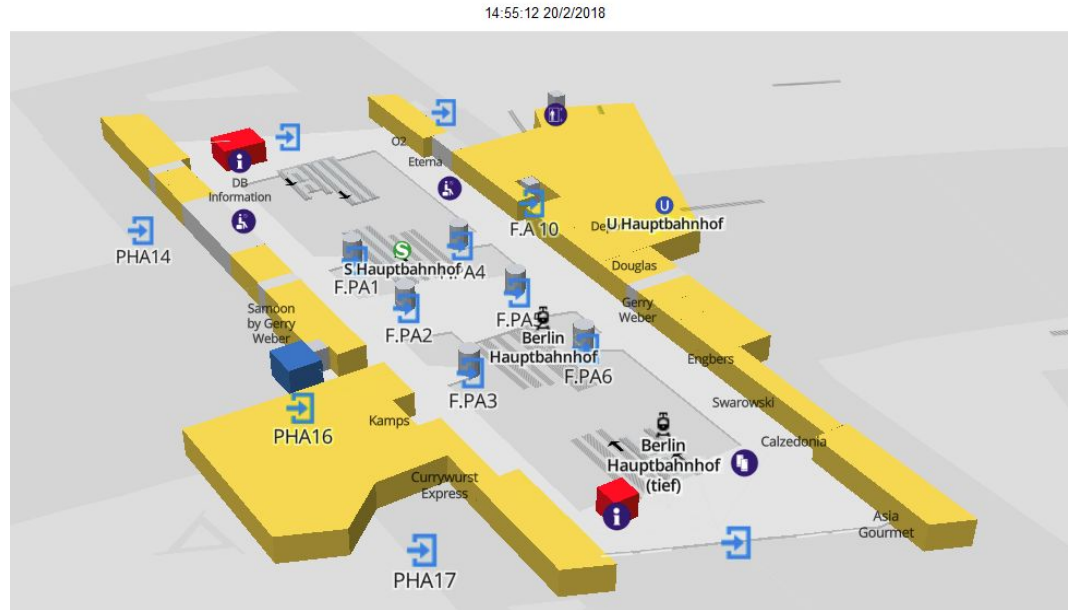
- <https://www.openstationmap.org>



- The Deutsche Bahn with Akaparis GmbH and Dynamo Project and MVV with Mentz GmbH have mapped many long distance and metro stations in the last year.

4. Some projects

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5. Pros

- Very simple data model
- Several implementations
- Many tools available
- Open source

6. Cons

- Incomplete:
 - Some tags for indoor pending to define
 - Topology for indoor pending to define
 - Routing model for indoor pending to define
- Difficult to know whether the project is alive or not.
- Difficult to know the current state

Links

- https://wiki.openstreetmap.org/wiki/Proposed_features/IndoorOSM
- <http://2016.stateofthemap.org/2016/osm-goes-indoors/>
- <http://2016.stateofthemap.org/2016/osm-goes-indoors-2/>
- <http://2016.stateofthemap.org/2016/station-indoor-routing-and-mapping-in-practice-with-openstationmap/>
- https://wiki.openstreetmap.org/wiki/Proposed_features/IndoorOSM (says it is obsoleted)
- https://wiki.openstreetmap.org/wiki/Simple_Indoor_Tagging