OSM2World

Project Introduction
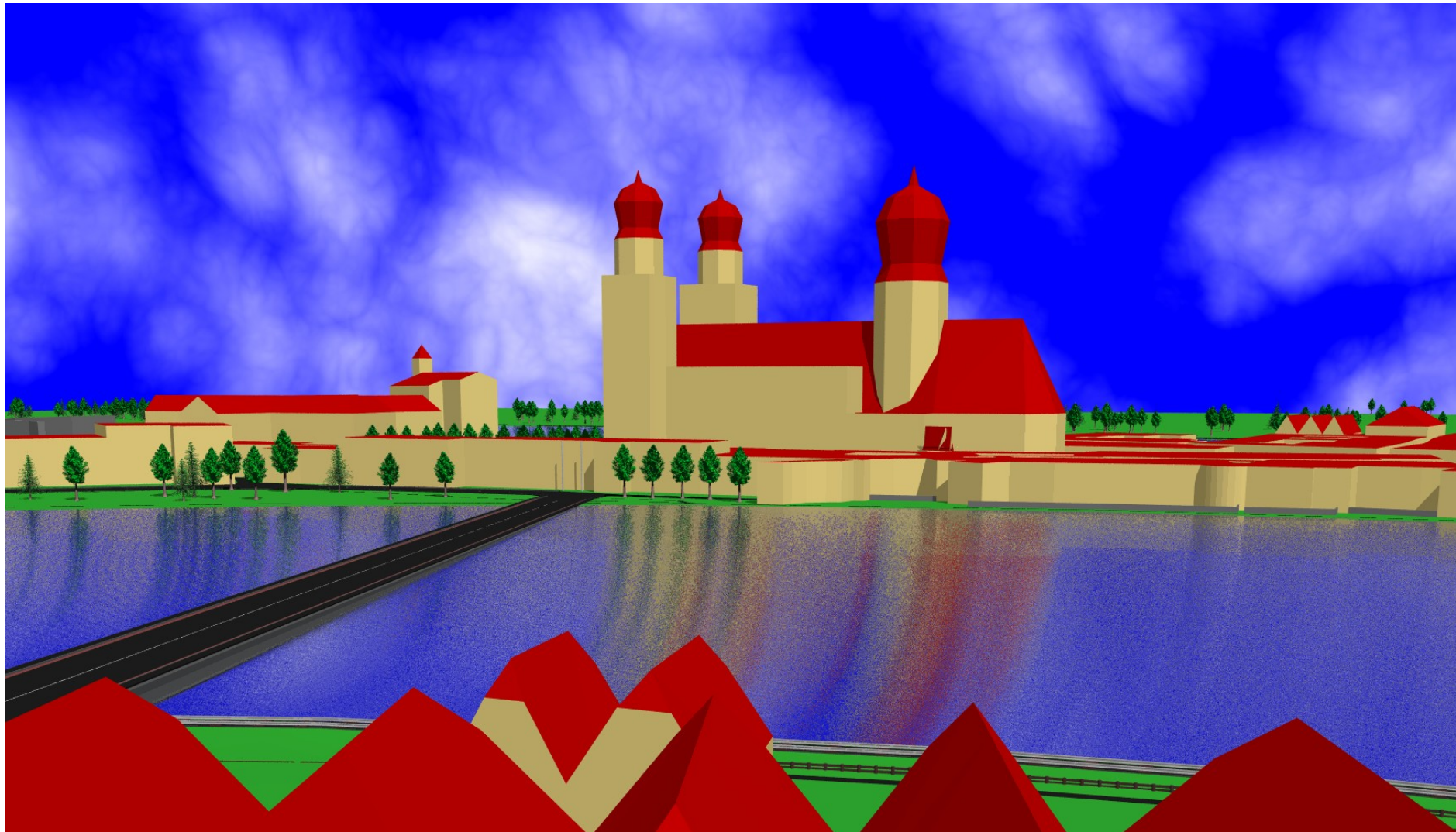## 2nd 3D Workshop Garching

Tordanik
(Tobias Knerr)

OSM2World

- OSM2World is a converter
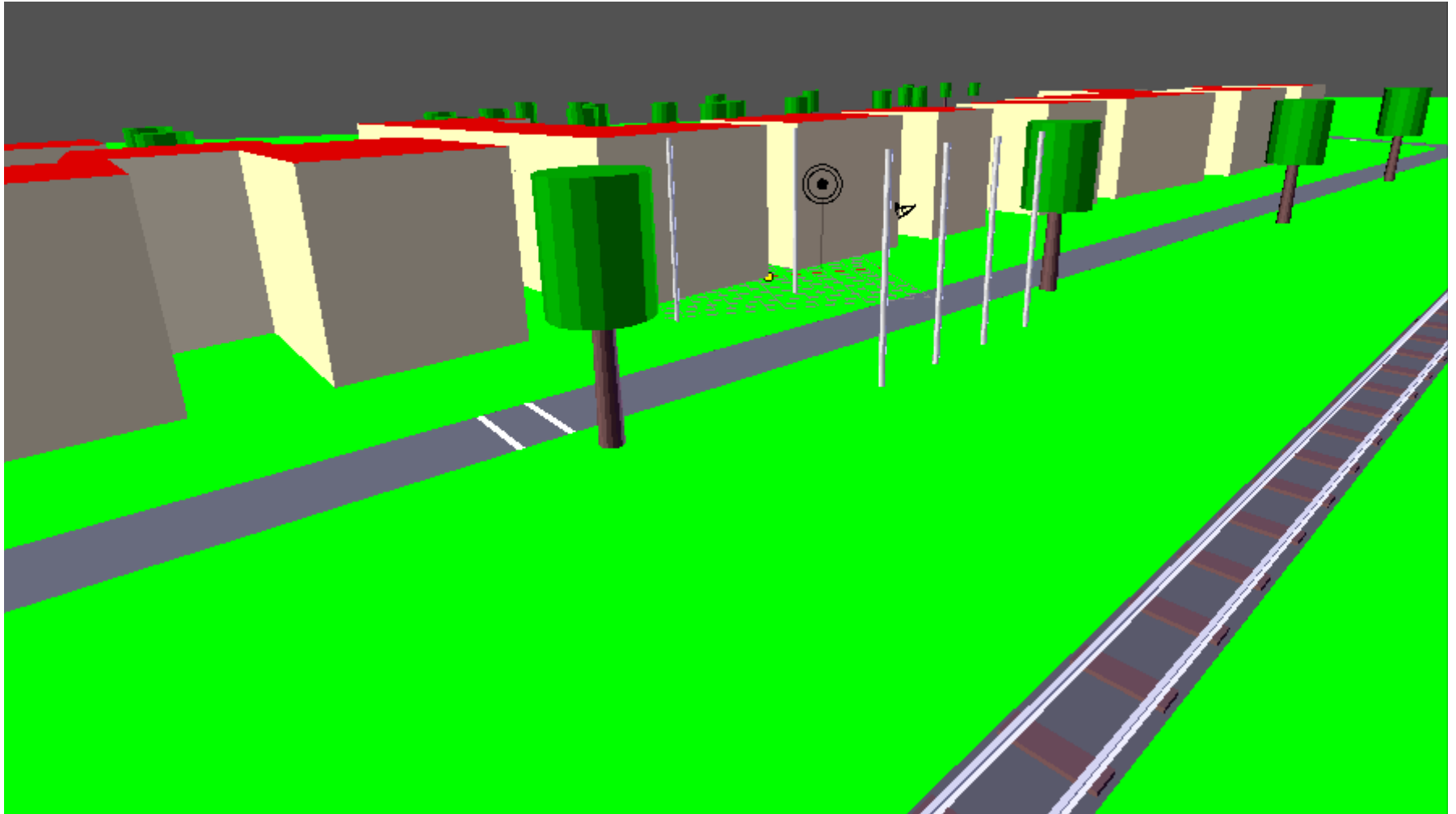- written in Java, Open Source
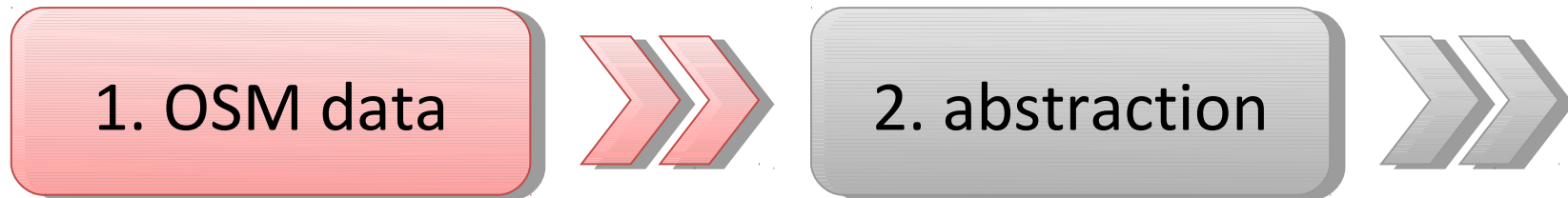- it creates 3D models from OSM data

.osm

.pbf

OSM2World

.obj

.png

.pov

OSM2World

.pov

OSM2World

.obj

OSM2World – pipeline overview

Phase 1: read OpenStreetMap data

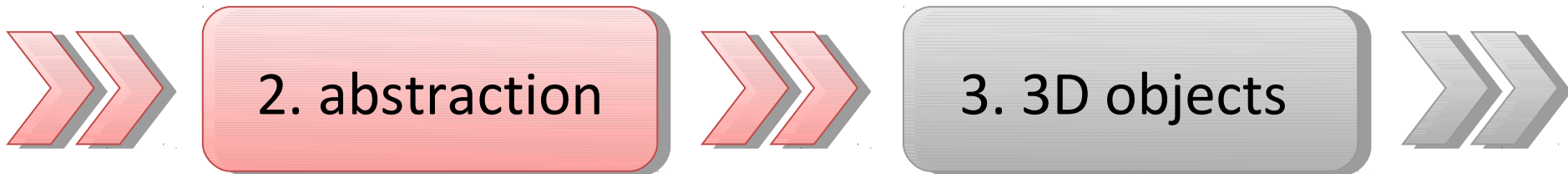| 1. OSM data | ›› | 2. abstraction | ›› |

- only existing implementation: Osmosis
- considering JOSM integration
- can be extended for additional data sources

OSM2World – pipeline overview

Phase 2: internal representation of OSM data

```
>>  [ 2. abstraction ]  >>  [ 3. 3D objects ]  >>
```

- internal representation:

  point, way segment, area (with holes)

- no support for advanced multipolygons yet

- calculation of overlaps and intersections in 2D
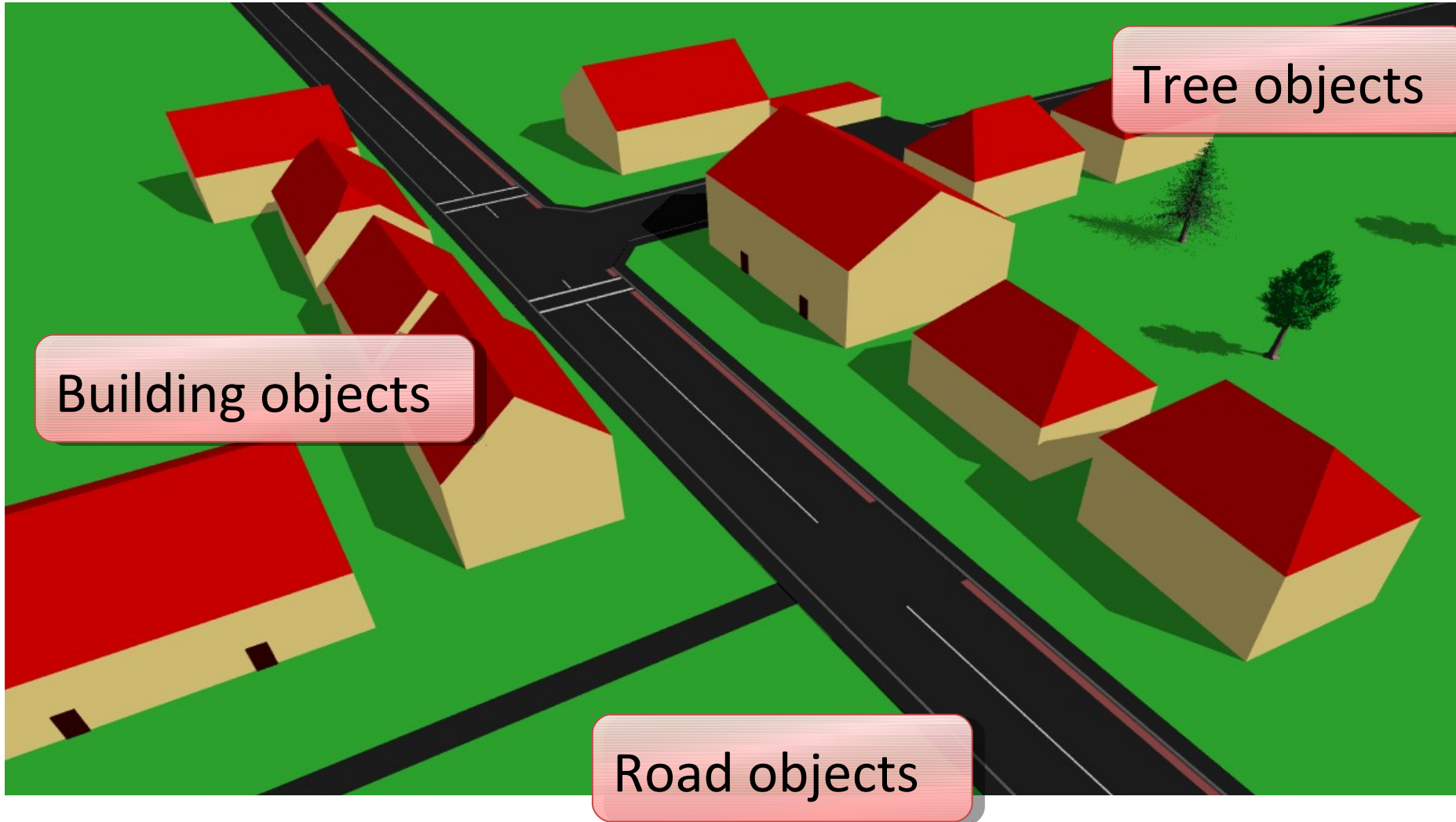 (regularly spaced grid for speedup)

OSM2World – pipeline overview

Phase 3: creating 3D objects

	3. 3D objects		4. elevation	
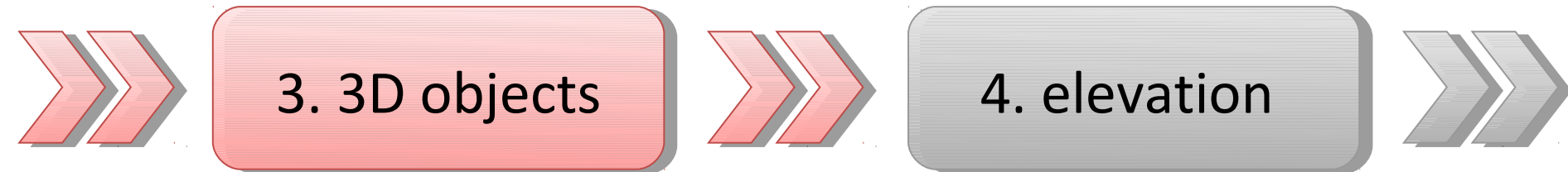
- recognize object type based on tags
- separate code for handling each object type
- calculates 3D geometry

OSM2World – pipeline overview

Tree objects
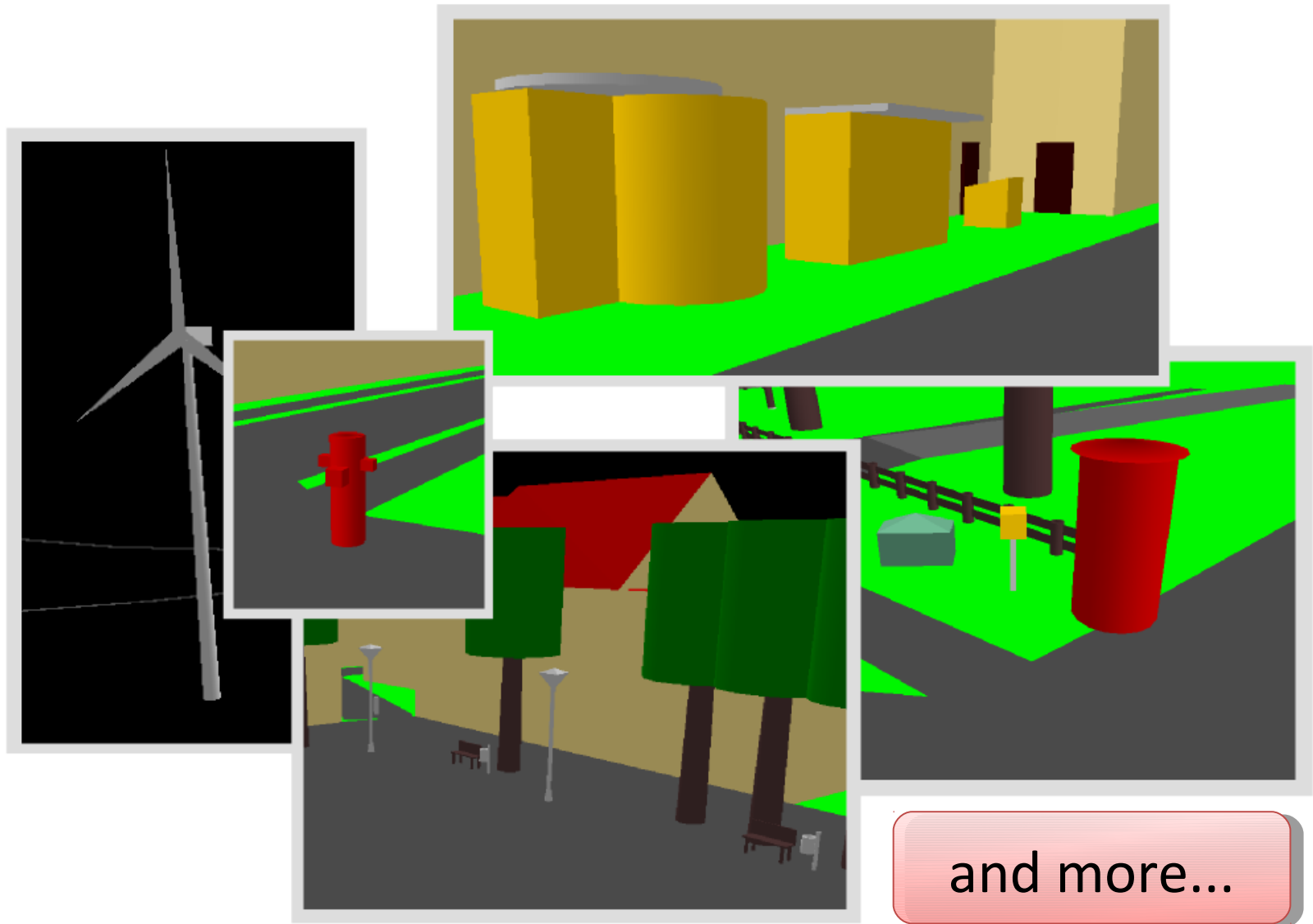
Building objects

Road objects

OSM2World – pipeline overview

Example: Building object type code deals with

- parsing of building-specific tags

- building parts

- outline extrusion

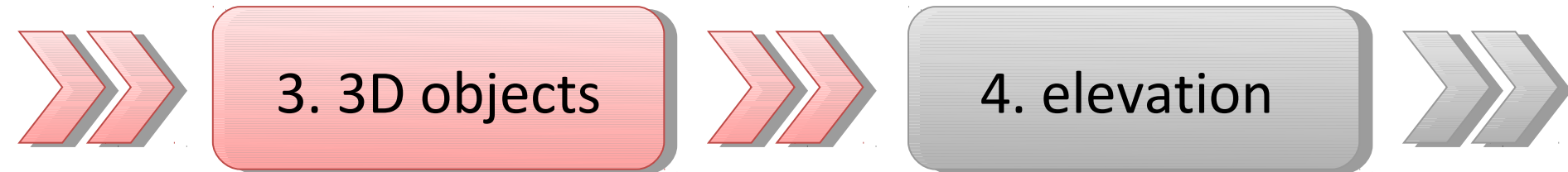- building passages

- roof shape

- entrance placement

OSM2World – pipeline overview

and more…

OSM2World – pipeline overview

Phase 3: creating 3D objects

3. 3D objects → 4. elevation →

- TODO:
  - more object types, better quality
  - style files (currently: configurable colors)
  - read external model files
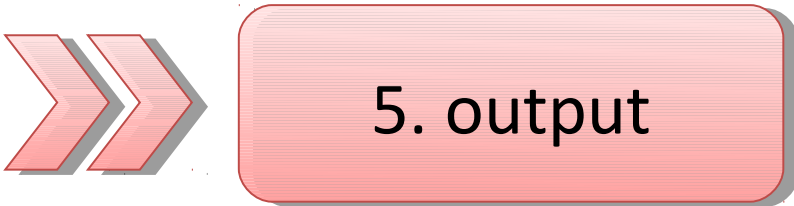
OSM2World – pipeline overview

Phase 4: elevation

4. elevation → **5. output**

- evaluate elevation-related attributes:
  bridge/tunnel, layer, incline, maxheight, ele, ...
- under construction, doesn't work reliably yet
- TODO: terrain elevation (e.g. SRTM)

OSM2World – pipeline overview

Phase 5: output 3D models

5. output

- write 3D models as .obj, .pov
- render models to .png using OpenGL
- TODO: textures, additional formats (Collada?)

OSM2World

- libraries used:
    - Osmosis
    - JOGL (OpenGL bindings)
    - JTS (geometry
- frontends
    - command line
    - graphical interface with real-time navigation
        (for debugging & experiments)
    - build into other Java programs

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osm2world.org