



digitaal samenwerken in de Gebouwde Omgeving

A Clash Between Three Worlds: BIM, Geo and Legislation

Integration of BIM and GEO for Digital Permit Checks and Registration

**GEOBIM CONFERENCE 2023
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Speakers

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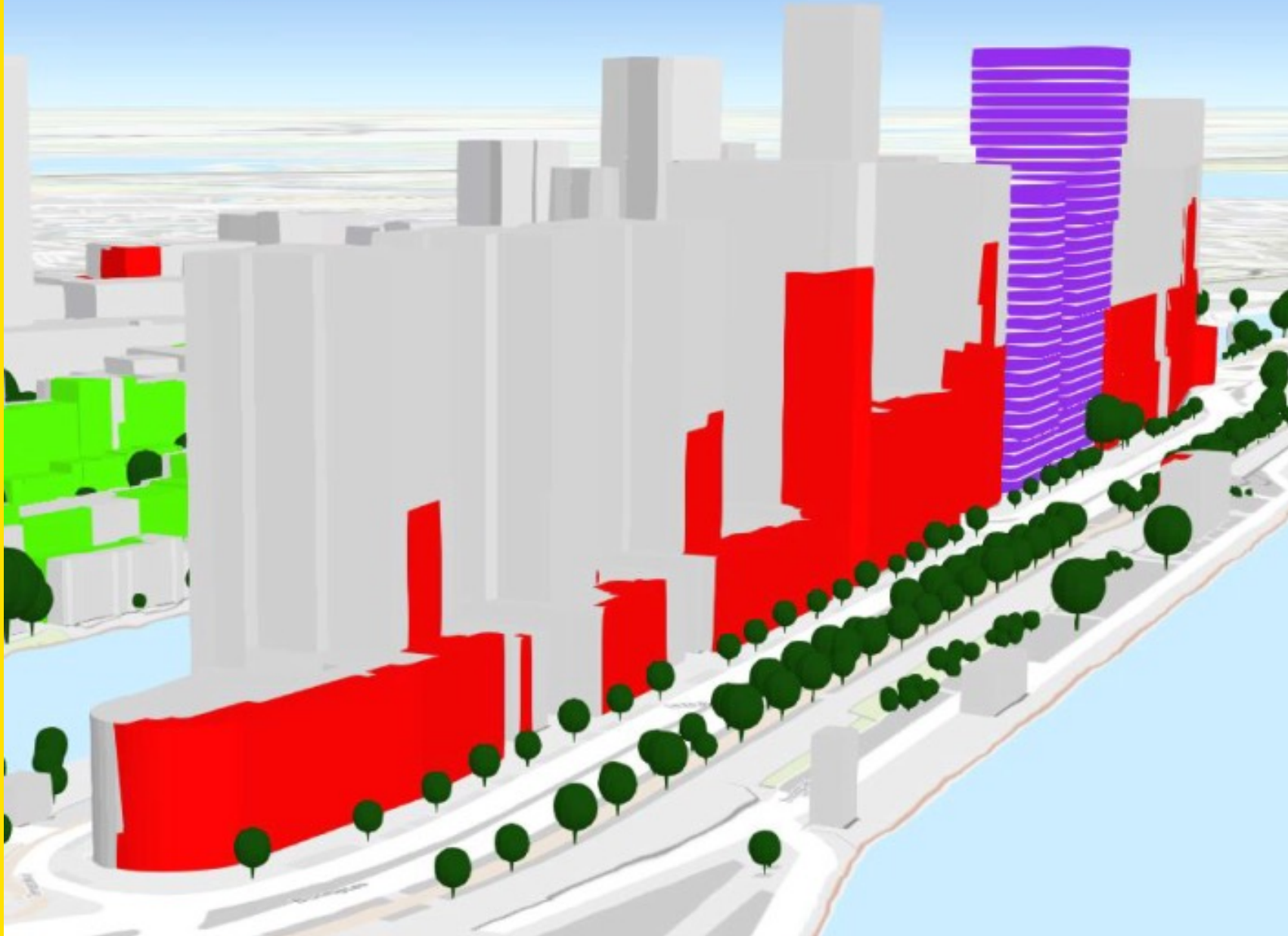
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Digital Building Permit

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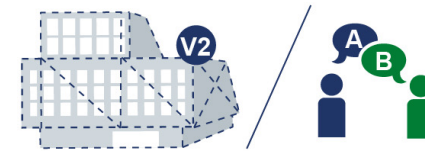
Added value 3D in the permit process



1. Project developer places 3D Construction Information Model in 3d environment, made digitally available by the municipality.



2. Detection of conflicts between the Construction Information Model, substrate and regulations.



3. Adjustments and/or consultation

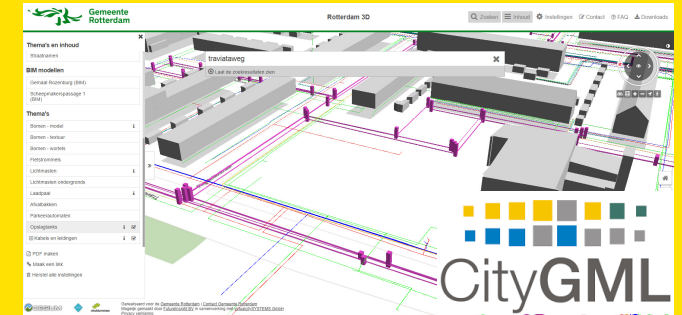
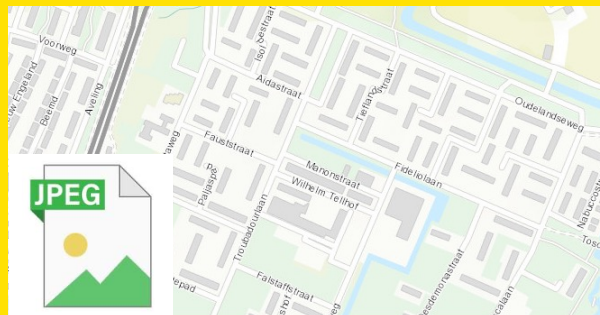


4. Appropriate design

Building



City



Legislation



RO-BBL-WS Model

```

bb:Toilet
rdf:type owl:Class ;
rdf:type sh:NodeShape ;
rdfs:label "Toilet" ;
rdfs:subClassOf bb:Verblifruimte ;
sh:rule [
  rdf:type sh:SPARQLRule ;
  sh:construct ""
    CONSTRUCT {
      $this bb:oppervlak ?oppervlak .
    }
    WHERE {
      $this bb:breedte ?breedte .
      $this bb:diepte ?diepte .
      BIND (?breedte * ?diepte AS
        ?oppervlak) .
    }
  ] ;


```

Eis

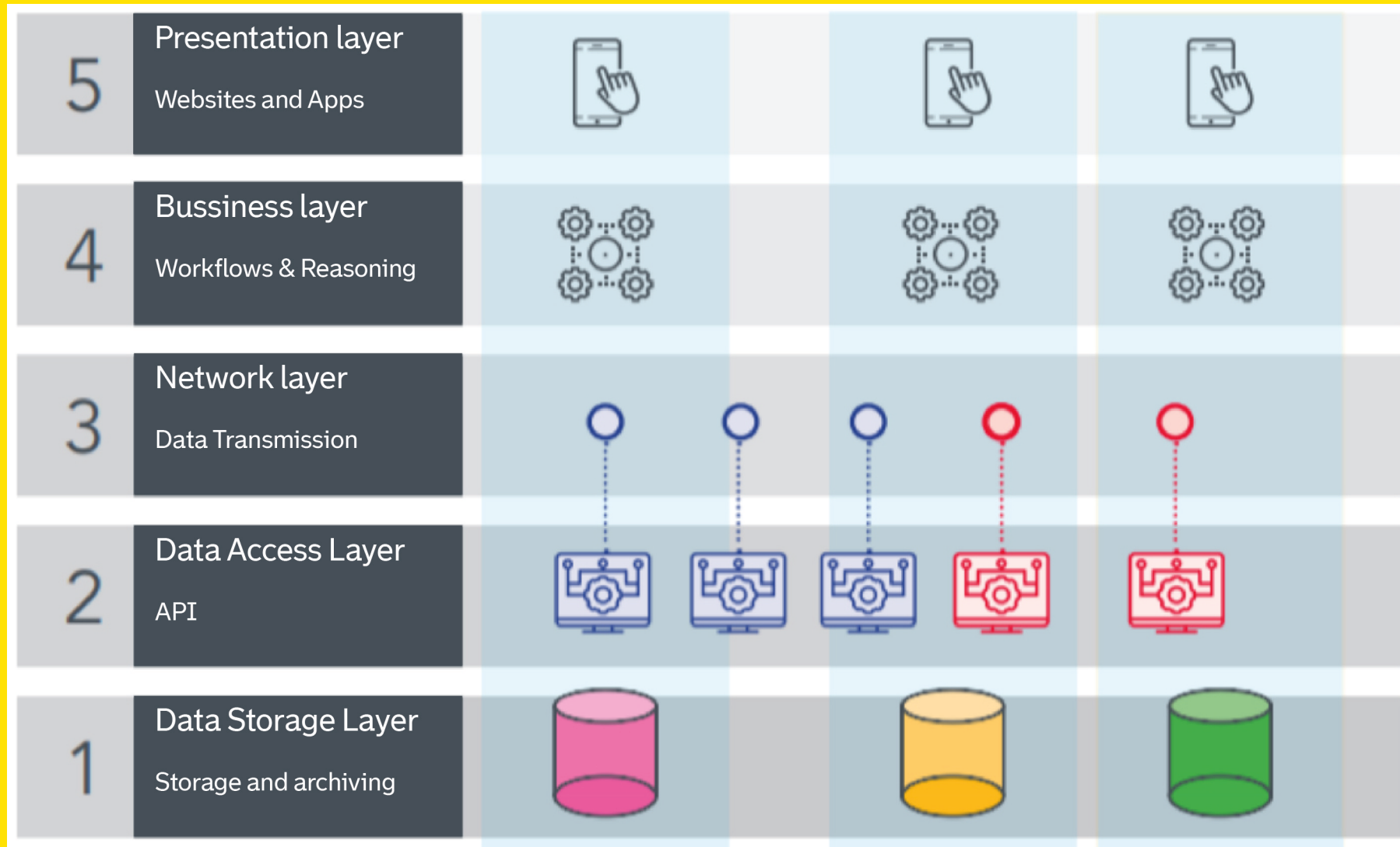
```

sh:message "Berekening wc oppervlak" ;
sh:prefixes <https://w3id.org/bouwbesluit> ;
];
sh:sparql [
  rdf:type sh:SPARQLConstraint ;
  sh:message "Mini
  sh:prefixes <https
  sh:select """"
    SELEC
    WHER
    $t
    Fil

```



Information Delivery Specification



The screenshot displays a web browser window with the URL `connectedapps.nl/projects/rotterdamvergunningen/vergunningen/`. The page title is "Rotterdam vergunningen check v1.01". The main content area is titled "Vergunning: 20415_2021-08-11_14 Woningen Traviataweg Hoogvliet GEO REF.ifc".

On the left, a sidebar for "Rotterdam" lists various checks: "Uploaded IFC", "Validatie", "Brandveiligheid", "Welstand" (highlighted), "Geluid", "Bestemmingsregels", "Constructie", and "Sparol".

At the top of the main area, there are filters for "Gebouw in omgeving", "Dakhelling", and "Orientatie". Below these are dropdown menus for "omgeving" (set to "met Rotterdam3D full") and "gebouw" (set to "Gebouw").

The central 3D view, titled "Gebouw in Rotterdam 3D", shows a detailed architectural rendering of a residential building complex with multiple stories, dark roofs, and surrounding greenery. A map inset in the bottom-left corner shows the building's footprint in red on a street map, with yellow dots indicating specific points of interest or sensors.

BIM supporting the determination of addresses in The Hague



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WHY

- Legally required to hold a key register on buildings and addresses (BAG)
- The law sets criteria to determine if an object should have an address
- Grumbling colleague: The only thing I did today was counting toilets!
- Less resources available: efficiency



Deze foto van Onbekende auteur is gelicentieerd onder [CC BY-SA-NC](#)



What

- Can we use BIM and the decision tree to automatically determine the number of objects in a building that meet the criteria to get an address?
- Support of the people working in the BAG process: make their work more interesting

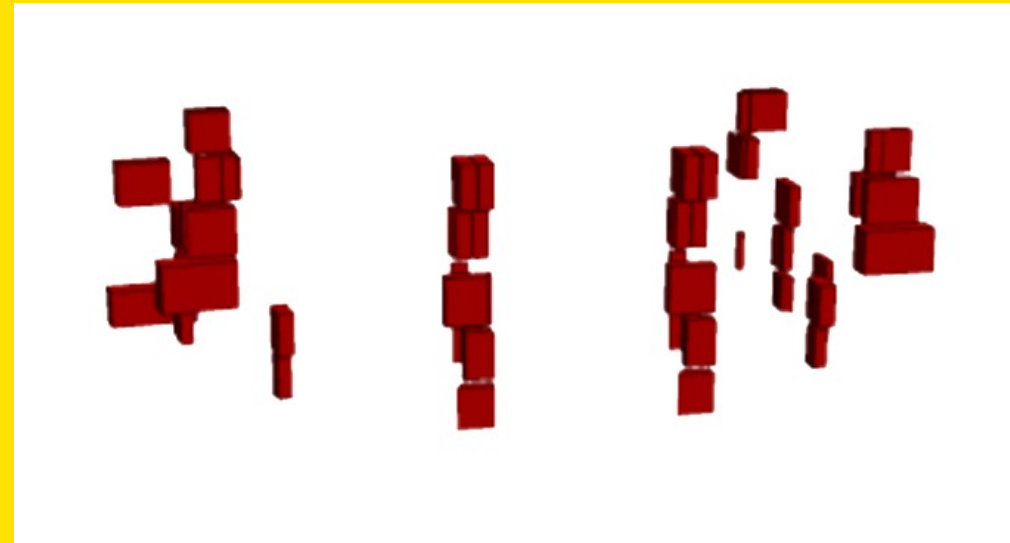
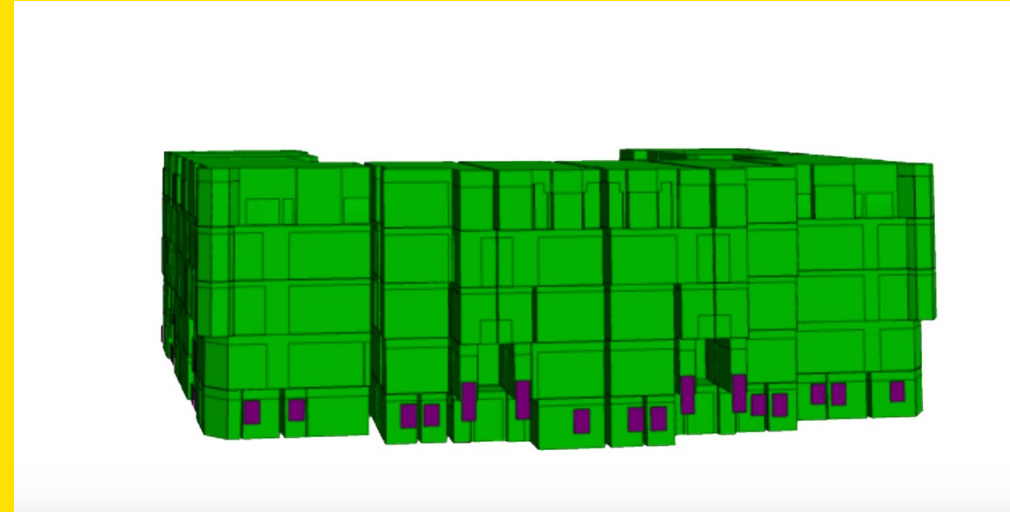
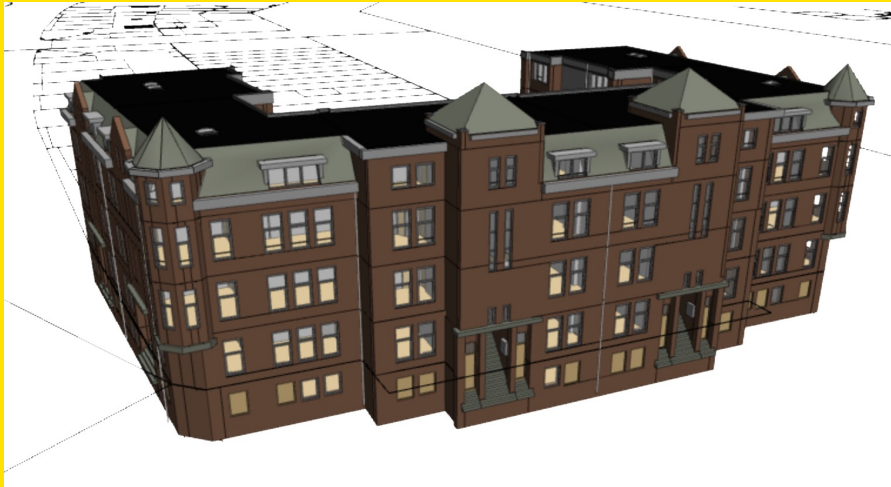


HOW

- “Lab” experiment
- Get data by defining ILS considering the needs of the BAG process and make IFC
- Future Insight Clearly BIM
- Translate decision tree to IDS checks
- Visualize check results in Clearly BIM
- User workshop

- Link to report (in Dutch):
<https://alkem.io/t3d/challenges/3dinwinnen/opportunities/bimgeo/collaboration/card-default/aspects/bim-huisnummerbesl-1608>

Example



Conclusions

- **It's a good start:**
- Successful transformation from ILS to IDS in order to perform checks
- First iteration in translation of decision tree to checks

- **though not yet applicable in real life:**
- Criteria like “enough space to place a kitchen counter” can't easily be translated because they need a human eye
- The checks only work on specific defined IFC model
- Great effort to receive IFC models
- Software can't meet criteria yet

Shared issues

- Georeferencing of the GEO- and BIM-model
- GEO and BIM speak different languages (e.g. an IFC-building is not a BAG-Pand)
- Legislation is not specific enough for a machine and the translation towards GEO-BIM
- Software does not yet support fully the GEO-BIM interoperability
- Organisations like the municipality The Hague and Rotterdam have a GEO-team for registration and a BIM-team for development. Only the early adopters combine both worlds.
- Official information specifications of governments demands views like pdf instead of native GEO/BIM-data

Discussion

- What is the international perspective on the experiences and issues as presented?
- Can we consider the issues as stemming from the clash between three worlds: BIM, Geo and Legislation?

The broader picture

- Why are we interested in the integration of BIM and Geo
- What are reasons for The Hague to invest in these experiments?
- What are reasons for Rotterdam?
- Which additional reasons can we learn from Francesca?