BIM for public authorities

Basic research for the standardized implementation of BIM in the building permit process

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Roadmap Italy

2019
≥ 100 Mill.

2020
≥ 50 Mill.

2021
≥ 15 Mill.

2022
Limits art. 35 DL50/2016

2023
≥ 1 Mill.

2024
works < 1 Mill.

2025

Will the public authorities increasingly request the use of BIM?

Data source: BIM Report Alto Adige 2018
methodology

phase 1: building permit research of the current as-is process
legal background research and BPMN analysis of the current building permit process research

phase 2: statistical evaluation of past building permit applications
evaluation of building permits of the last 5 years

phase 3: information requirements analysis
requirements determination for the implementation of BIM in the application process
methodology

building permit process research
[legal research & precoss analysis]

National Legislation
- Italian Consolidated Building Law (Testo Unico per l'Edilizia)
- Public Procurement Code (Decree-Law no. 50/2016)

Provincial Legislation
- Regional Planning Law (No. 13/1997)
- Public Procurement Regional Law (No. 161/2015)

Municipal Legislation
- Municipality building code
**methodology**

**evaluation of past building permit applications**

[data information flow of the data analyzed in G-Office]

**[area of investigation]**

**administrative/geographical circumstances**

- 2 large municipalities > 10,000 inhabitants
- 3 medium municipalities 3,000 - 10,000 inhabitants
- 3 small municipalities < 3,000 inhabitants

**data sets**

11,860 investigated data entries
methodology

information requirements
[source documents]

- application form for the granting of a building permit
- municipal building code (regolamento comunale edilizio)
- questionnaire of the National Statistics Institute
- regulation concerning the removal of architectural barriers
- regulation on hygiene and health standards
- KlimaHaus technical guideline for new constructions
results - building permit process research
results - evaluation of past building permit applications

Typology: top 10 distribution

- Change of destination: 2.8%
- Other interventions on the plot area: 5.5%
- Construction: 5.6%
- Demolition: 5.8%
- Conversion: 7.1%
- Other: 8.4%
- New building: 10.8%
- Extension: 11.6%
- Attention*: 15.9%
- Renovation: 17.3%

* building typology was not accurately specified, and a placeholder was used instead.
results - evaluation of past building permit applications

Duration of the building permit process:

- Small municipality: 99 days
- Medium municipality: 97 days
- Large municipality: 80 days

Presented as a variant:

- No variant: 17%
- Variant: 83%
results - information requirement definition

Redundant information requirements:

- Unique data: 80%
- Duplicate data: 20%

Unit of measurement of the information requirements:

- Meters: 26%
- Text entries: 23%
- True-false entries: 11%
- Drawings: 8%
- Generic number entries: 7%
- Square meters: 7%
- Other: 18%

Objectifiable and quantifiable information requirements:

- Objectifiable and quantifiable: 91%
- Directly objectifiable and quantifiable: 37%
discussion

building permit process research
[legal research & process analysis]

- selective implementation into the building permit process possible
- poor role of sustainability aspects
  - insufficient consideration of the requirements
  - a modest overall efficiency of the process

evaluation of past building permit applications
[GOOffice - evaluated data]

- the status quo differs significantly from the digital technical possibilities available today
- the dataset reveals a medium processing time, relatively high number of variants
- the database is incomplete - not fully representative modest data quality
- poor sustainability aspects (low number of KlimaHaus entries)
discussion

information requirement

[definition of set of parameters]

- successful definition of the information requirements
- high number of objectifiable and quantifiable items facilitate the introduction
- high number of sustainability parameters
- confirmation of requested redundant information
  - high complexity of requirements - data not available
In the meantime,
thanks for your time.

Suggestions are welcome.

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Wilkinson S 2014 Building Permits and Sustainability: A method for measuring the uptake of sustainability in the built environment over time.


Meijer F, Visscher H 2008 Building regulations from an European perspective. Delft

Municipality of Brunico 2014 Municipal Building Code (regolamento comunale edilizio del Comune di Brunico)

ISTAT 2014 Questionnaire of the National Statistics Institute (ISTAT) on the building permit ISTAT/PDC/BZ. Bolzano

Agentur für Energie Südtirol - KlimaHaus 2017 KlimaHaus technical guideline for new constructions. Bolzano


1977 Regulation on Hygiene and Health Standards Decreto del Presidente della Giunta provinciale 23 maggio 1977, n. 22
results - information requirement definition

information categories of the information requirements - top 8 distribution

- building specifications: 60.0%
- technical building systems: 9.4%
- surrounding: 4.9%
- urbanistic data: 4.0%
- energetic data: 3.8%
- location: 3.8%
- planner: 3.8%
- owner of the property: 3.8%

information categories of the information requirements - building specifications - top 8 distribution

- movement surfaces and elements: 29.1%
- sanitary facilities: 15.3%
- general area specifications: 11.6%
- openings: 9.5%
- specific structural elements: 7.9%
- graphic output, drawings: 7.9%
- parking spaces: 5.3%
- general height information: 4.2%
case study: School for Economics Bolzano

Project status: completed

BIM model creation

Remodelling of the project in BIM - based on the information requirements

Element classification
DIN 276|277[SOL/176/2.2]

code and model checking

Configuration of a Solibri ruleset based on information requirements

generic room
§ categorisation of spaces [SOL/11/4.1]
§ not allocated rooms [SOL/202/1.4]
generic room 
§ categorisation of spaces 
[SOL/11/4.1] 
§ not allocated rooms 
[SOL/202/1.4]

size of the room
§ rooms requirements [SOL/36/4.0]
§ room area rule [SOL/132/1.3]

room height
§ minimum room height [SOL/203/2.4]
§ height of floors [SOL/220/2.1]