

CHEK DIGITAL BUILDING PERMIT

3rd of May 2023

Change toolkit for Digital Building Permit (CHEK)

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The project

The concept

The CHEK toolkit

'Change toolkit for digital building permit' (CHEK)

Horizon Europe HORIZON-CL4-2021-TWIN-TRANSITION-01-10. G.A. 101058559

Approximate budget: 5.000.000 € - 3 years (October 2022-September 2025)

19 European partners, strongly related to the [European network for Digital Building Permits](#)



Research



Software



Design



Construction



Municipalities



Standardization



@ChekDbp <https://chekdbp.eu>

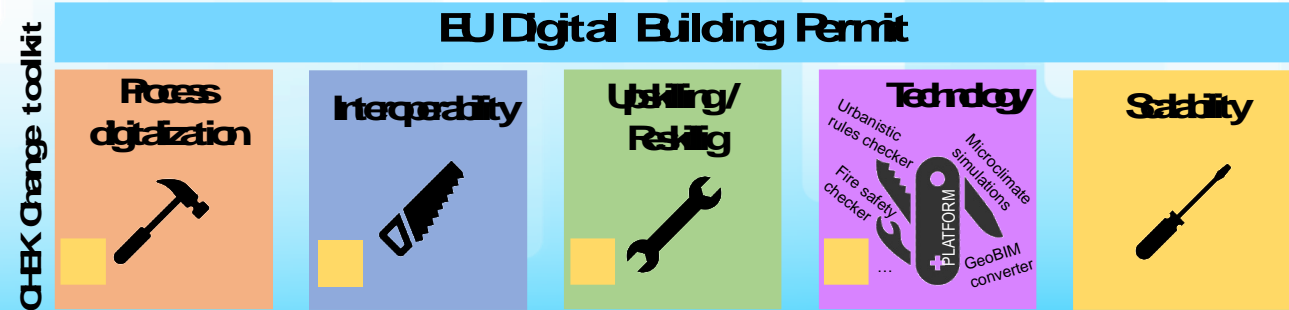
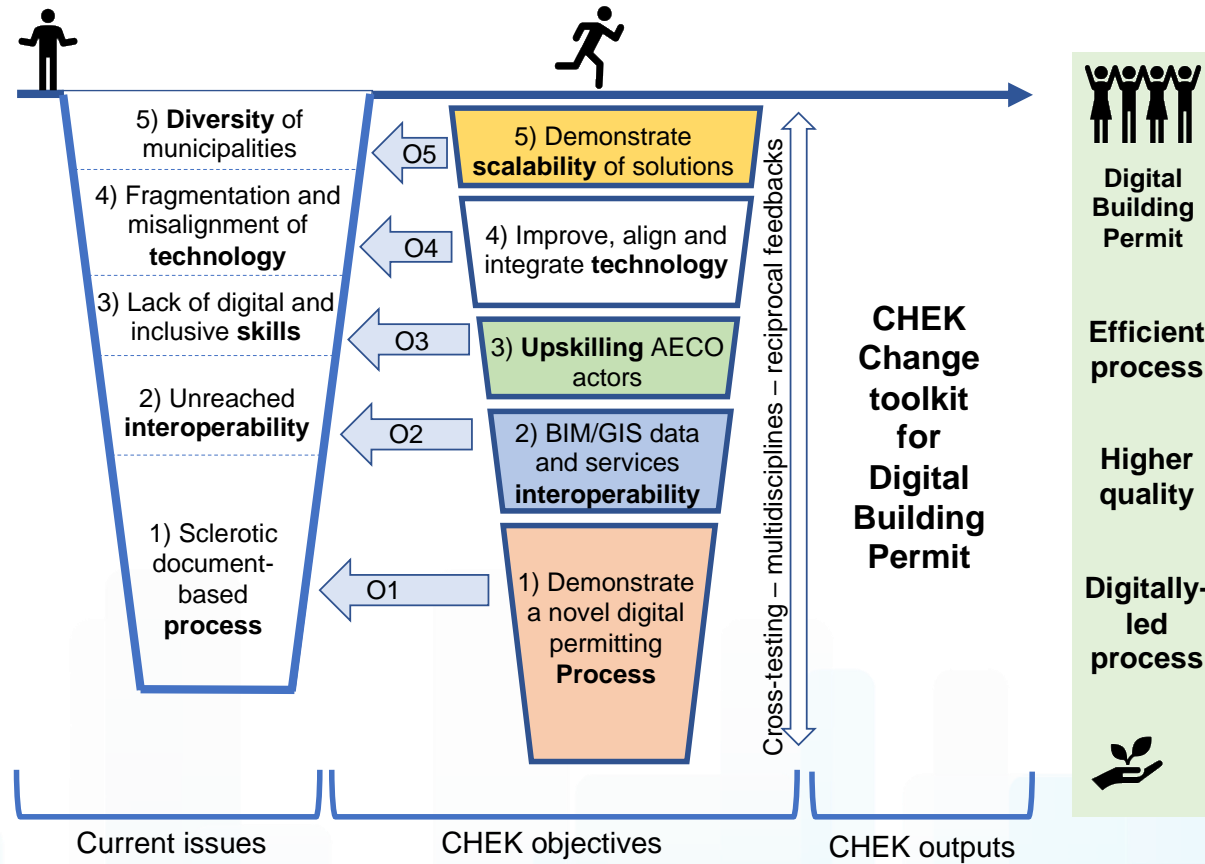




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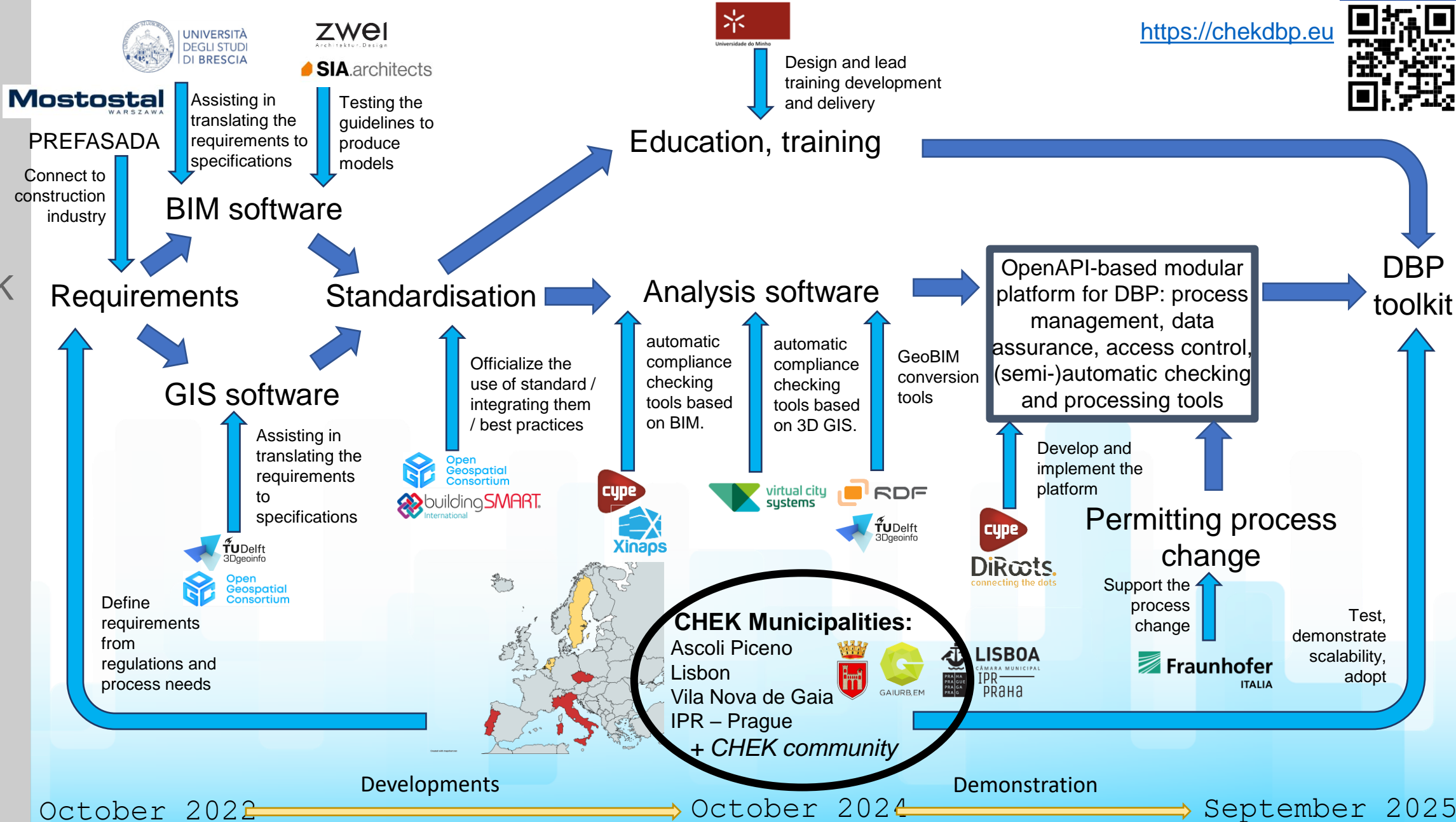
The CHEK toolkit





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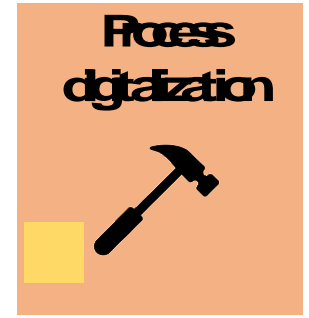
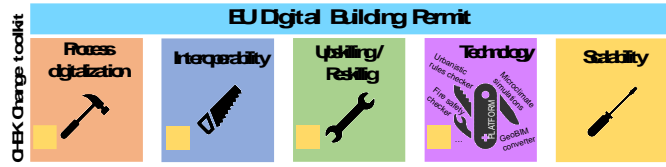
The project
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The CHEK toolkit



The project

The concept

The **CHEK** toolkit



Empowering public officers
Municipalities' process requirements

Analogue document-based process
Top-down directives

● CHEK DBP Process map

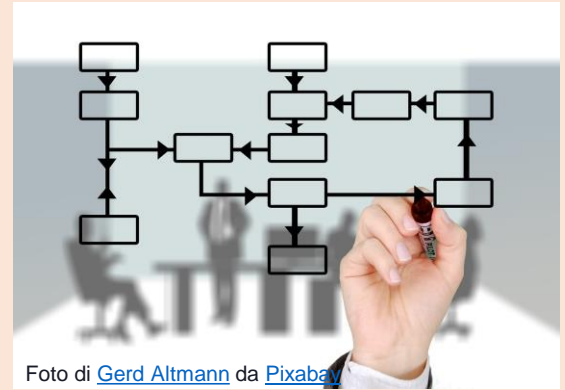


Foto di [Gerd Altmann](#) da [Pixabay](#)

● Process management platform



Foto di [Gerd Altmann](#) da [Pixabay](#)

● CHEK Change management Virtual Assistant



Foto di [Sasin Tipchai](#) da [Pixabay](#)

As-is process maps → To-be process map

<https://zenodo.org/record/7789036#.ZD-vVS8Rqx8>




March 31, 2023

Dataset Open Access

Edit

New version

120

views

108

downloads

See more details...

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European Commission

- CHEK - Change toolkit for digital building permit (101058559)

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Versions

Version 1.0

Mar 31, 2023

CHEK To-be Digital Building Permit process map

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To-be process map for digital building permit process as developed within the HORIZON EUROPE project 'Change toolkit for Digital Building Permit (CHEK) <https://chekdbp.eu>

It is described in the CHEK project deliverable D1.1.

This project has received funding from the European Union's Horizon Europe programme under Grant Agreement No.101058559

The file is provided in

- SVG format, open vector editable format;
- Visio format, proprietary but editable format;
- PDF format.



Interviews and input – review from:

- Ascoli Piceno (Italy) – CHEK partner
- Lisbon (Portugal) - CHEK partner
- Villa nova de Gaia (Portugal) - CHEK partner
- Prague (Czech Republic) - CHEK partner
- CHEK Community of Practice:
 - Skopje (North Macedonia) - input from Zwei studio
 - South Tyrol (Italy) - input from earlier studies
 - ...

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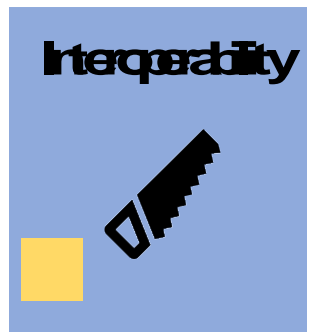
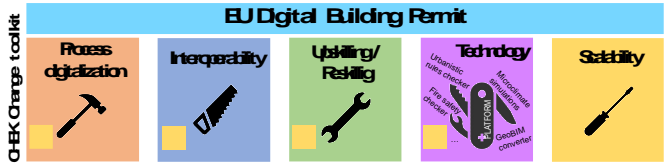
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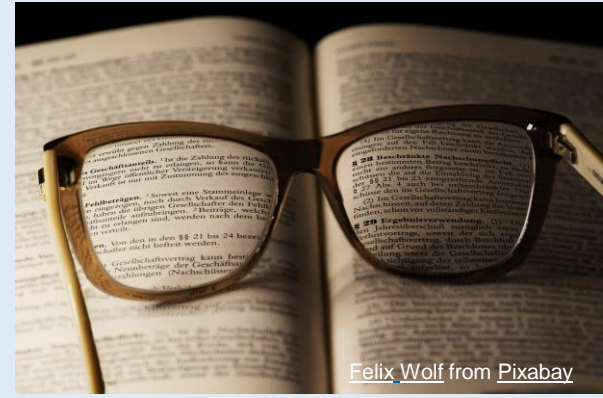


Aligning requirements
Supporting tools
(exporters, validators, converters...)



Custom/proprietary format-based solutions
Irregular use of Open standards

Regulatory Information Requirements

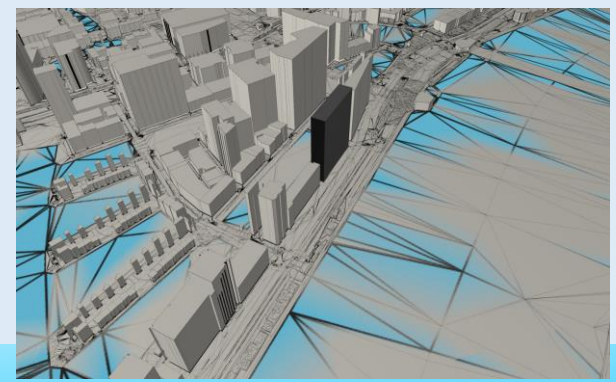


Felix Wolf from Pixabay

- Machine readable regulations
- BIM (CHEK IFC) and 3D GIS (CHEK CityGML) specs



GeoBIM converters



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Interpretation and formalisation of regulations

Categorize types of verification found in building codes (Types of rule);

Example types

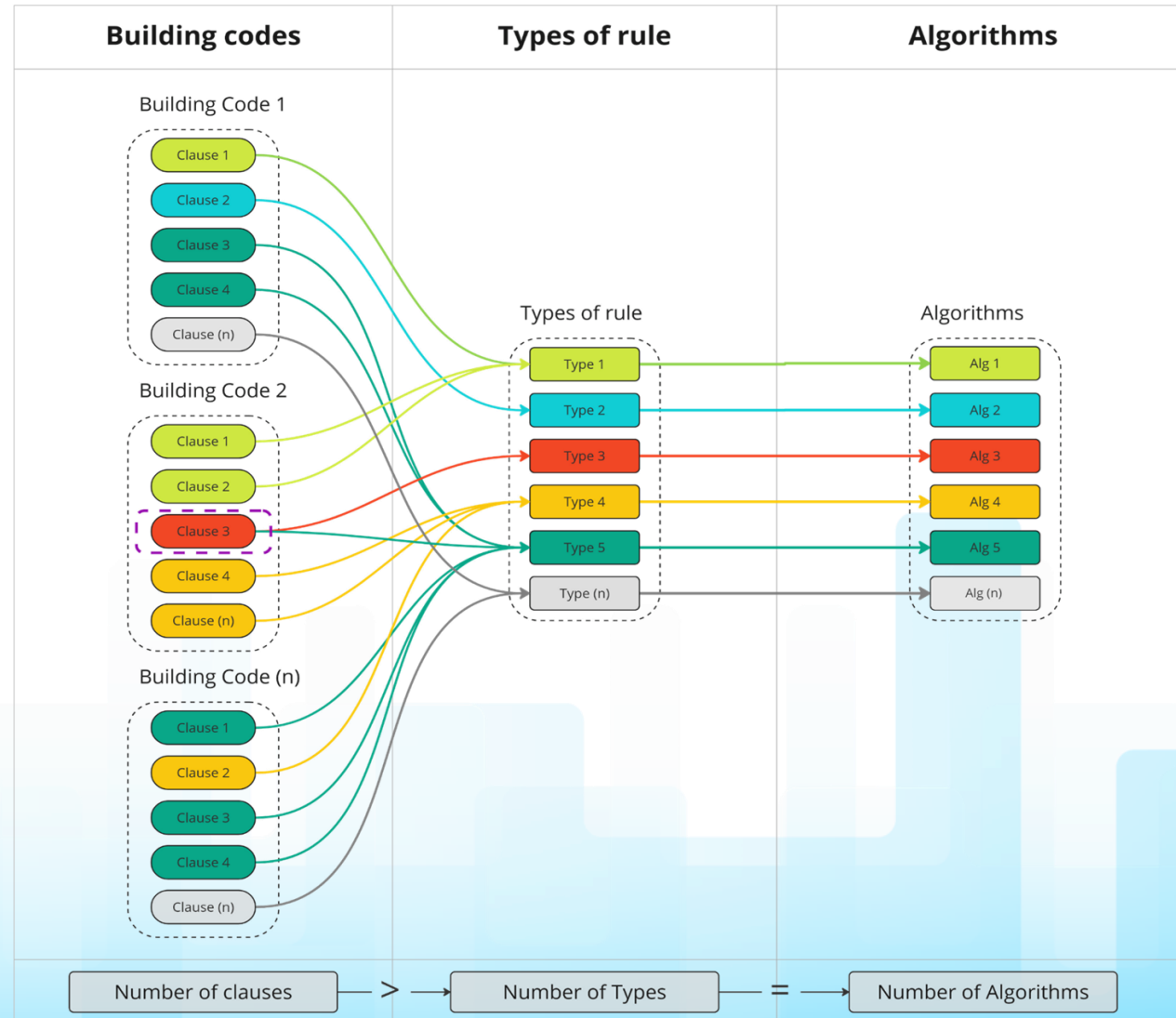
- Building height;
- Number of floors;
- Distance from surroundings;

Every type of rule will be linked to a machine-interpretable form (algorithm)

- Building blocks of machine-interpretable regulations;

Will provide

- ✓ Scalability;
- ✓ Systematized approach;



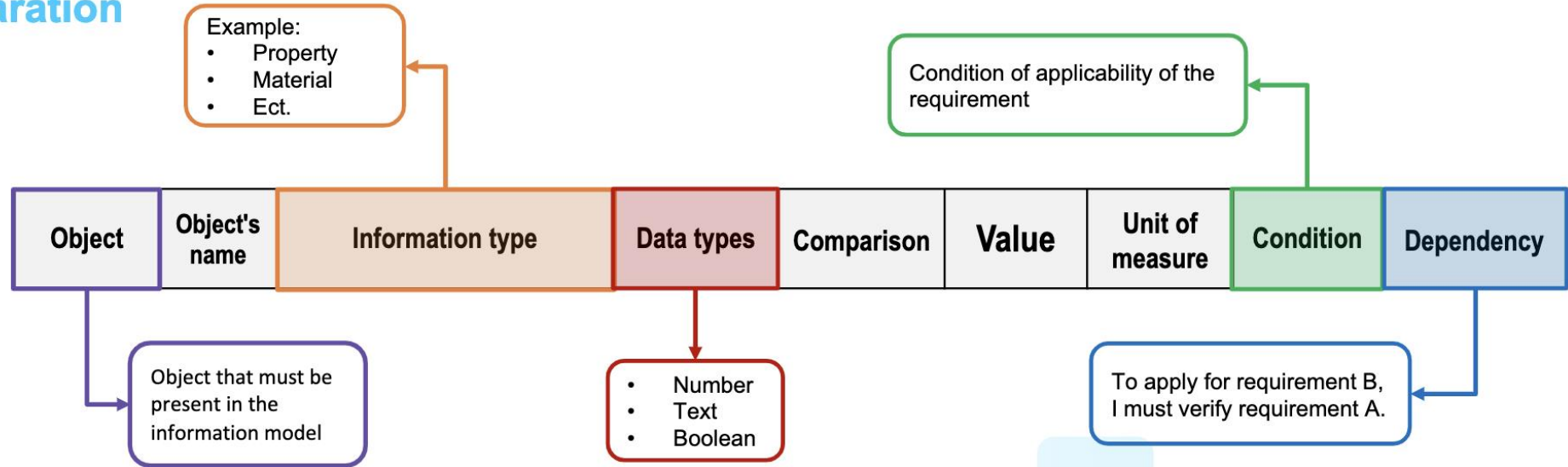
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Definition of the level of information need for rule checking and model preparation

Rule interpretation



Example: 'Bedrooms must have a minimum area of 9 m² if for one person and 14 m² if for two people'

Type of rules	Object	Object's name	Information type	Data types	Comparison	Target	Unit of measure	Restriction/ Condition	Dependency
	space	bedrooms	area	number	≥	9	m2	if for one person	/
	space	bedrooms	area	number	≥	9	m2	if for two people	/

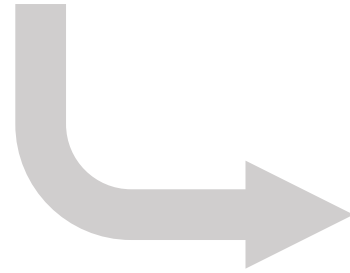
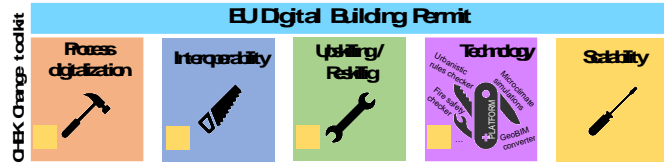
Task 2.1: Type of rules

Building unit area and compartment area: checks that determine the orientation and alignment of a building related to the site or the surrounding structures, such as roads and buildings.

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Multidisciplinarity

Different audiences

Open online courses

Few fragmented and partial courses
Small audiences

- DBP knowledge-base and glossary



- Practice-oriented training



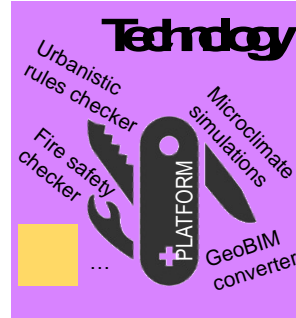
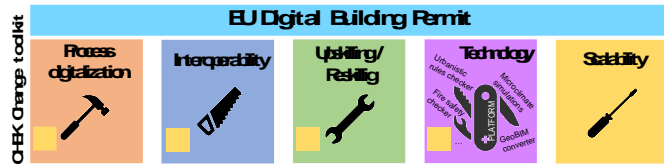
- Technical-scientific training



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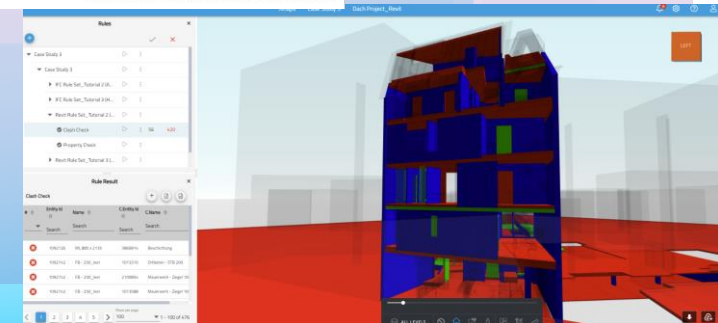
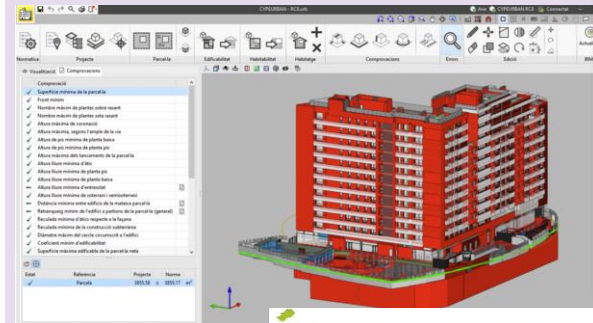
Geo+BIM

Microservices
OpenAPI
architecture

Fragmented
Desktop tools
Mainly BIM
oriented

- CityGML-based **analysis tools** and **regulations checkers** (urbanistic rules, viewshed, shadows)

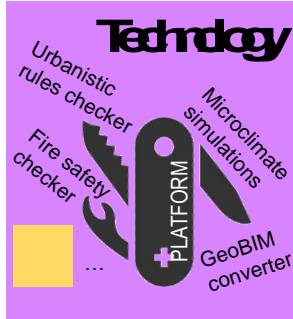
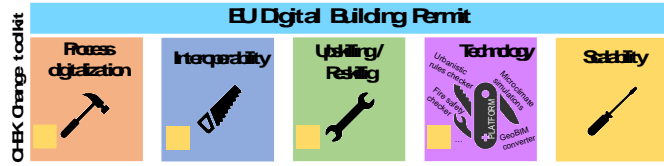
- IFC-based **analysis tools** and **regulations checkers** (urbanistic rules, building code)



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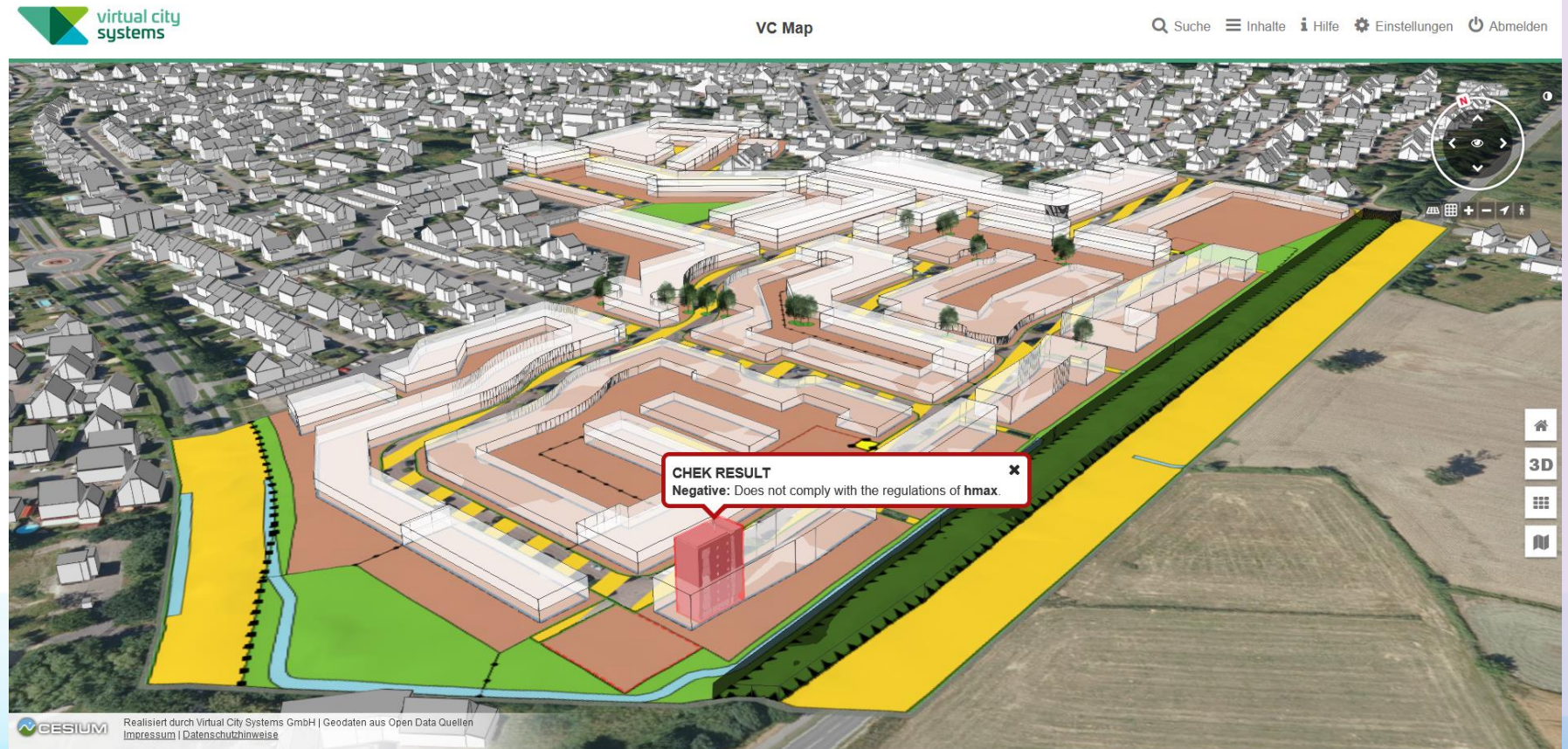


↑
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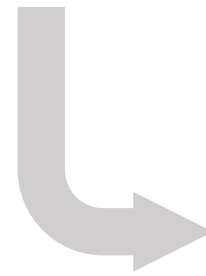
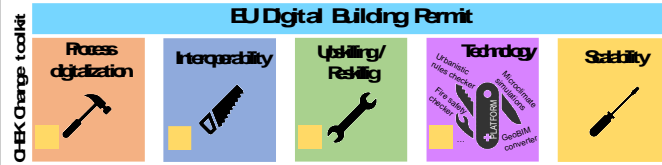
- CityGML-based analysis tools and regulations checkers (urbanistic rules, viewshed, shadows)
- IFC-based analysis tools and regulations checkers (urbanistic rules, building code)



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The CHEK toolkit



↑
CHEK
representative
Municipalities
Test,
Demonstrations
Feedback

↑
Local
requirements
Diverse
municipalities
situations



- Demonstrated scalable methodology
- Best Practice documents
- Alignment with Open standards and European frameworks (INSPIRE)
- Modular OpenAPI-based architecture



Foto di Bruno /Germany da Pixabay



CHEK community of practice:

https://chekdbp.eu/?page_id=5734



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Thank you for your attention!



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Open
Geospatial
Consortium



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