Digipurku

Digital solutions for demolition of buildings

A brief summary of the project

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Digipurku quick facts

Project name: Digipurku - Digital solutions for demolition of buildings

Schedule: 1.1.2023 - 30.6.2025

Partners: Green Net Finland, Häme Univ. of Applied Sciences (HAMK), Finnish environmental school SYKLI, Metropolia Univ. of Applied Sciences

Collaboration: Senaatti-kiinteistöt, NCC Finland, City of Helsinki, Riihimäki City, Hämeenlinnan Asunnot Oy.

Regions involved: Helsinki-Uusimaa and Kanta-Häme (Finland)

Co-Funding: European Union (ERDF) and Senaatti-kiinteistöt

Project total budget: 568757€ Project number: R-00001

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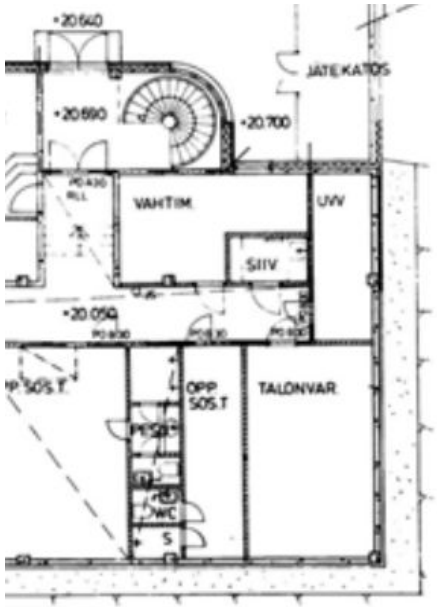
Challenge

Need: How to enable the re-use of parts of buildings?

- In Circular Construction, materials and parts of the demolished buildings shall be re-used in new buildings. This reduces the amount of Construction and Demolition Waste (CDW).
- Information of the to-be-demolished (old) buildings in Finland is often in paper-form, it might be out-of date or even missing. The information of the potentially re-usable parts (including dimensions, etc) should be available for demolition contractors, operators, designers, etc.
- We need a practical way to obtain up-to-date info in a useful digital form – e.g., Building Information Model (BIM). Digipurku is focusing on this challenge.



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The Digipurku approach

- Digital tools can enhance the circular economy allowing to reduce the amount of CDW and make the re-use of demolition materials and parts easier and quicker.
- **Digipurku** developed and took into use digital solutions aiming to effective and sustainable demolishing processes of buildings, particularly the solutions for collecting and organising data and communicating the information of the to-be-demolished buildings.
- The project developed and piloted the BIM and methods in practical pilot cases. The focus was in the publicly owned buildings. The buildings were invented, scanned, BIM created and it was provided to the owner.

The Helsinki Savonkatu educational pilot building

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The Digipurku approach, cont.

- Different methods were tested for scanning of the to-be-demolished building and for creating the subsequent Building Information Model (BIM).
- A Common Data Environment was used for storing, sharing and collaborating with the data.
- The new Finnish construction act entered into force on 1.1.2025 and it paves the way to digital solutions. The new regulation was taken into account in the project, e.g. in the guideline creation for demolition projects.

Riihimäki Old City Hall pilot

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Advantages: Enabling Circular construction

This is the focus of Digipurku:

BIM of the "old" to-be-**demolished** building incl. info of the parts

Design (BIM) of the **new building** and utilization of the re-used parts info

Removal of selected parts from the demolished building and making the parts available for re-use

Constructing the new building with re-used parts

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Conclusions: The Digipurku-project results

- The Digipurku project developed and tested digital tools which make circularity and reuse of the demolished buildings' parts and materials easier.
- Robotised laser-scanning method was developed for more effective and quicker scanning process of the building.
- A Circularity index was developed for improving the procurement and demolition contracts. (An excel template is available at the website)

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https://gnf.fi/fi/gnf/digipurku/

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Conclusions, continued

- A process description for utilizing BIM in demolished buildings was made. Four different pilot buildings were scanned and BIM:s created. The BIMs can be used by the building owners.
- Demolition guidelines for carbon emission assessment was made (in Finnish)
- An assessment of the benefits of the BIM use in building demolition projects was made (in Finnish). BIM can bring benefits, e.g., in the demolition of complex buildings and at central and tight locations.
- An active stakeholder group gathered regularly around the topic. This strengthened the collaboration and the basis for a future circular ecosystem development.

The Hämeenlinna Harakkamäki 5 residential pilot building

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Thank you for your attention

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