

Kiertotalot-innovation challenge

Operating model to reuse primary structures from buildings

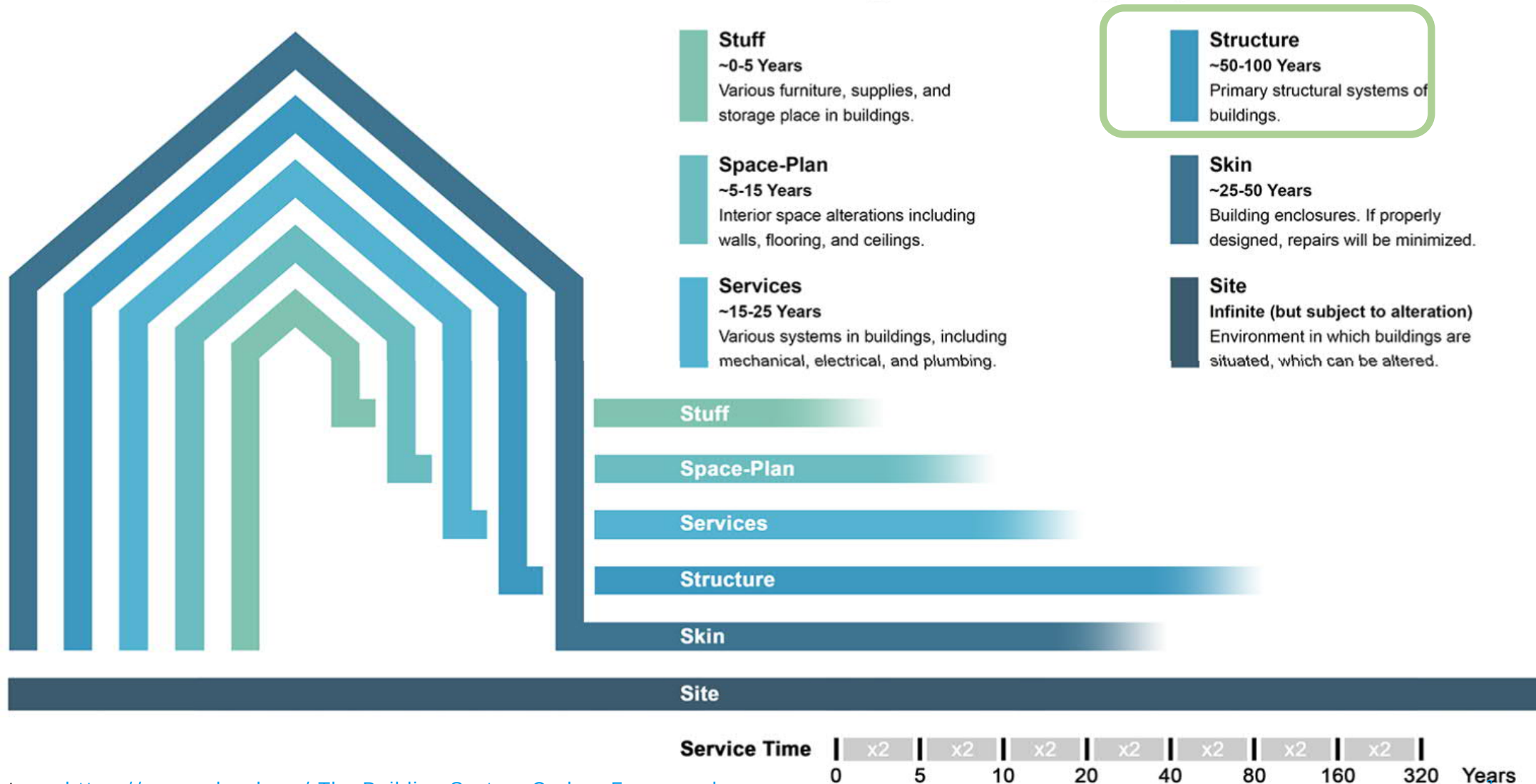
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Demo day 21.11.2025

RAMBOLL

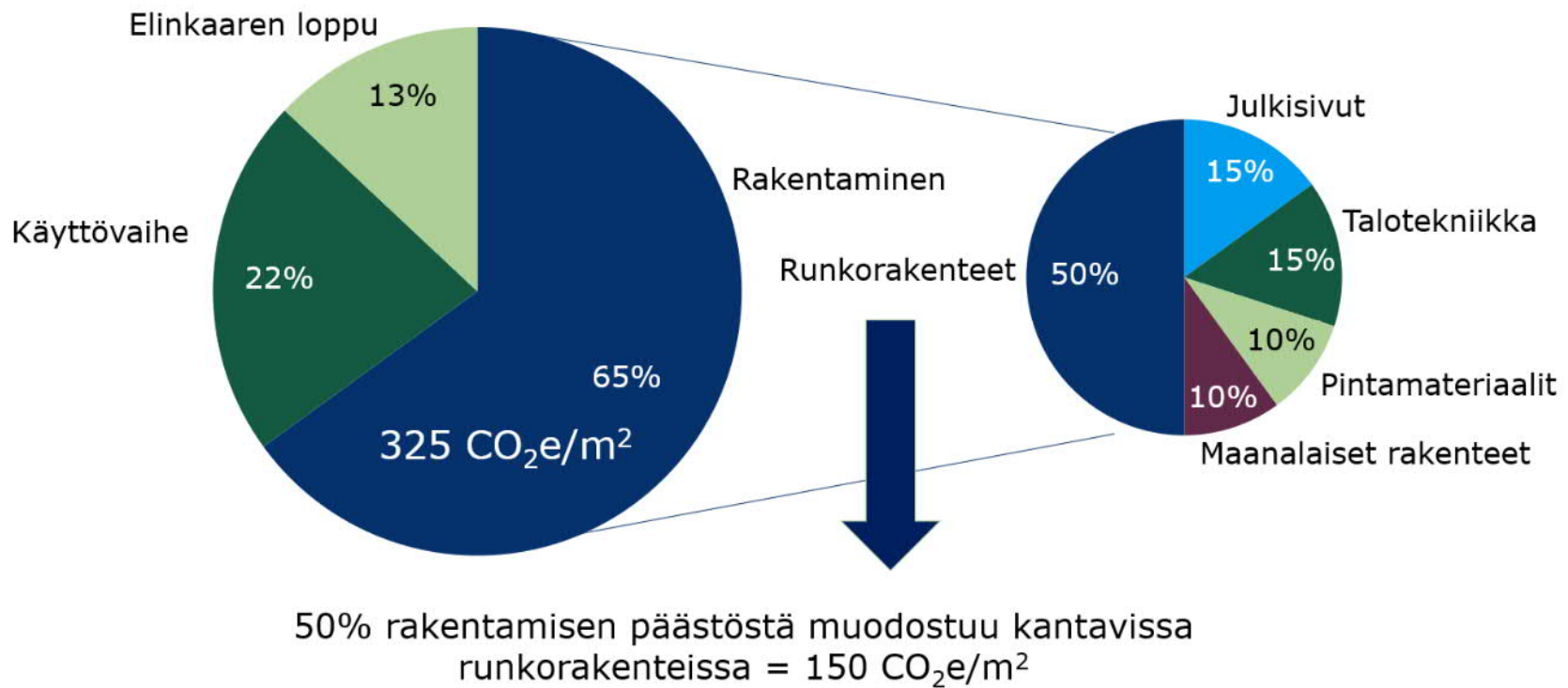
Bright ideas.
Sustainable change.

A Building's Shearing Layers



Picture: <https://www.wbcds.org/The Building System Carbon Framework>

Rungolla on merkittävin vaikutus rakentamisen CO₂-päästöihin



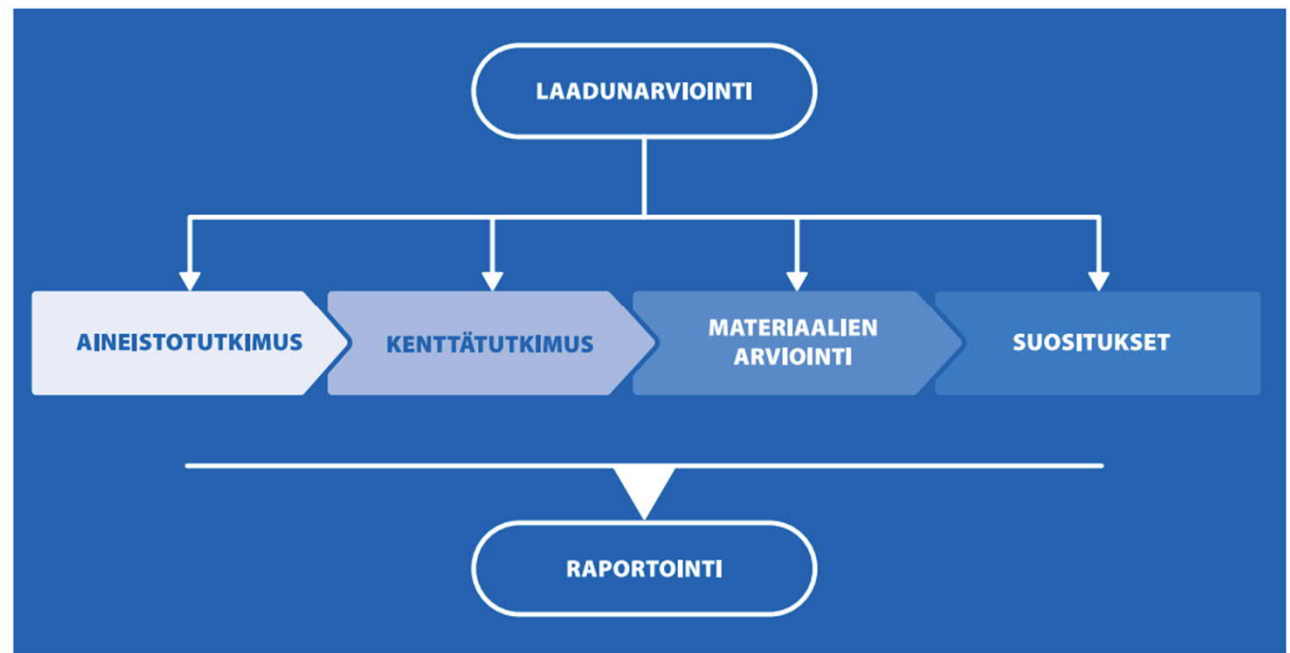
Nykyinen purkukartoitus

3 Purkukartoituksen vaiheet

Purkukartoitus sisältää haitta-ainekartoituksen ja -tutkimukset sekä purkumateriaaliselvityksen.



Tarvitaan toimintamalli ja menetelmät, jotka antavat aikaa runko-osien uudelleenkäytön valmistelulle



New operating model to enhance reuse of structural components without full deconstruction surveys

AI-automated process



Pilot projects examples:

Hotel Kuninkaantie

Kuutamo daycare centre



Pictures Google maps

Pilot projects suggestions:

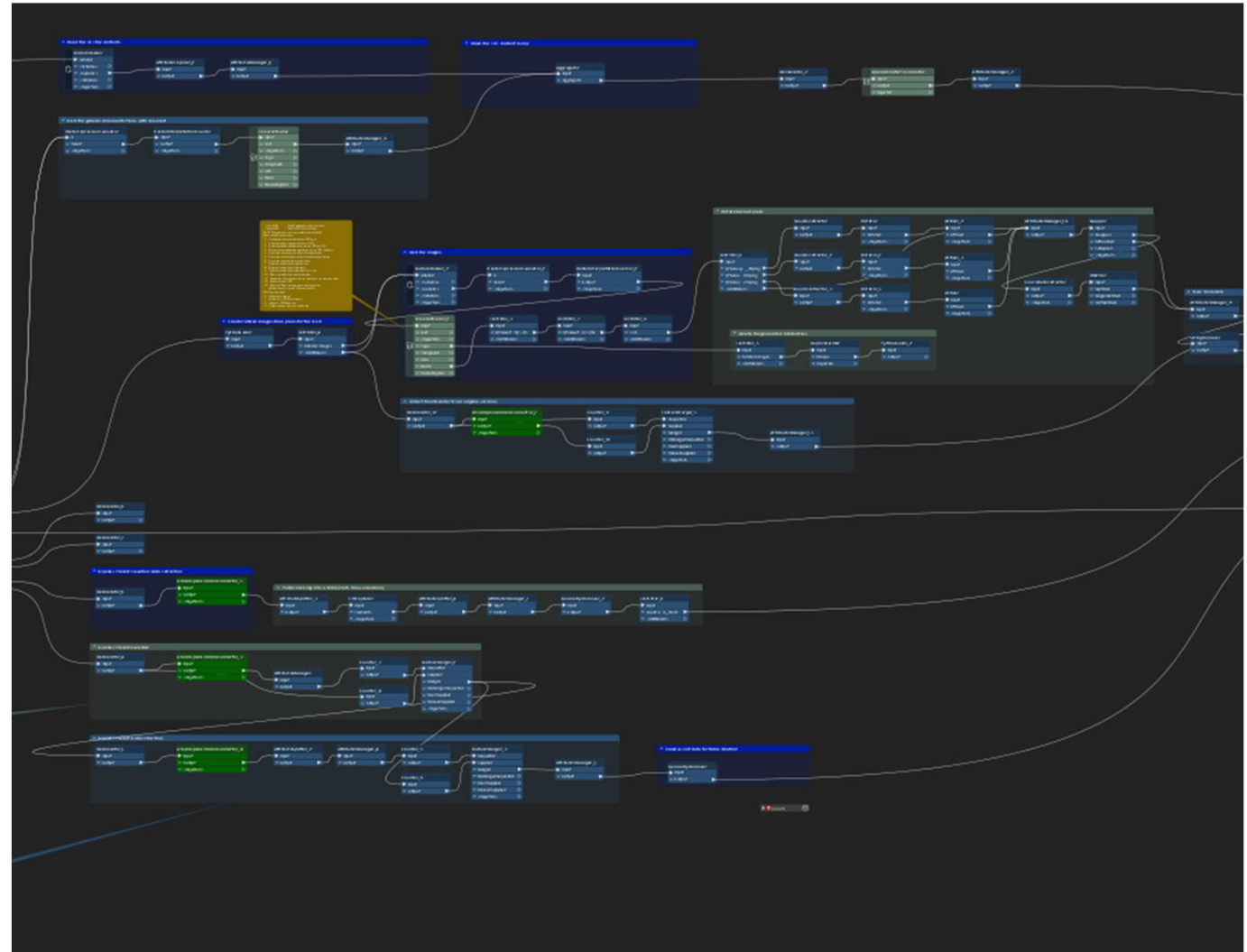
New day care for
Koivumankkaa and/or
Kuutamo

This architectural floor plan shows a room with several labeled components:

- Top Wall:** Labeled with '7' and '8' at the corners. A dimension of '4800' is indicated between these points.
- Top Wall Components:** Four yellow boxes labeled '6S', '8S', 'LS', and '9S' are positioned along the top wall.
- Left Wall:** Labeled with '7' at the bottom corner. A red box labeled 'Pa4' is located at the bottom left.
- Right Wall:** Labeled with '8' at the top corner. A dimension of '75' is indicated near the bottom right corner.
- Internal Components:**
 - An orange box labeled 'Pi1' is located near the top left corner.
 - Three green boxes labeled 'V6' are located near the top wall, with dimensions '-54', '-57', and '-58' indicated.
 - Three blue boxes labeled 'V13', 'V9', and 'V10' are located in the center of the room.
 - Two green boxes labeled 'V6' are located near the bottom wall, with a dimension of '4' indicated.
- Dimensions:**
 - A dimension of '2190' is indicated between the top and bottom walls on the left side.
 - A dimension of '4650' is indicated between the top and bottom walls on the right side.
 - A dimension of '50' is indicated near the bottom left corner.

Our 'AI' approach

- GenAI models only for selected steps.
- GenAI for the 'noisy' data.
- No fine tuning on client data.

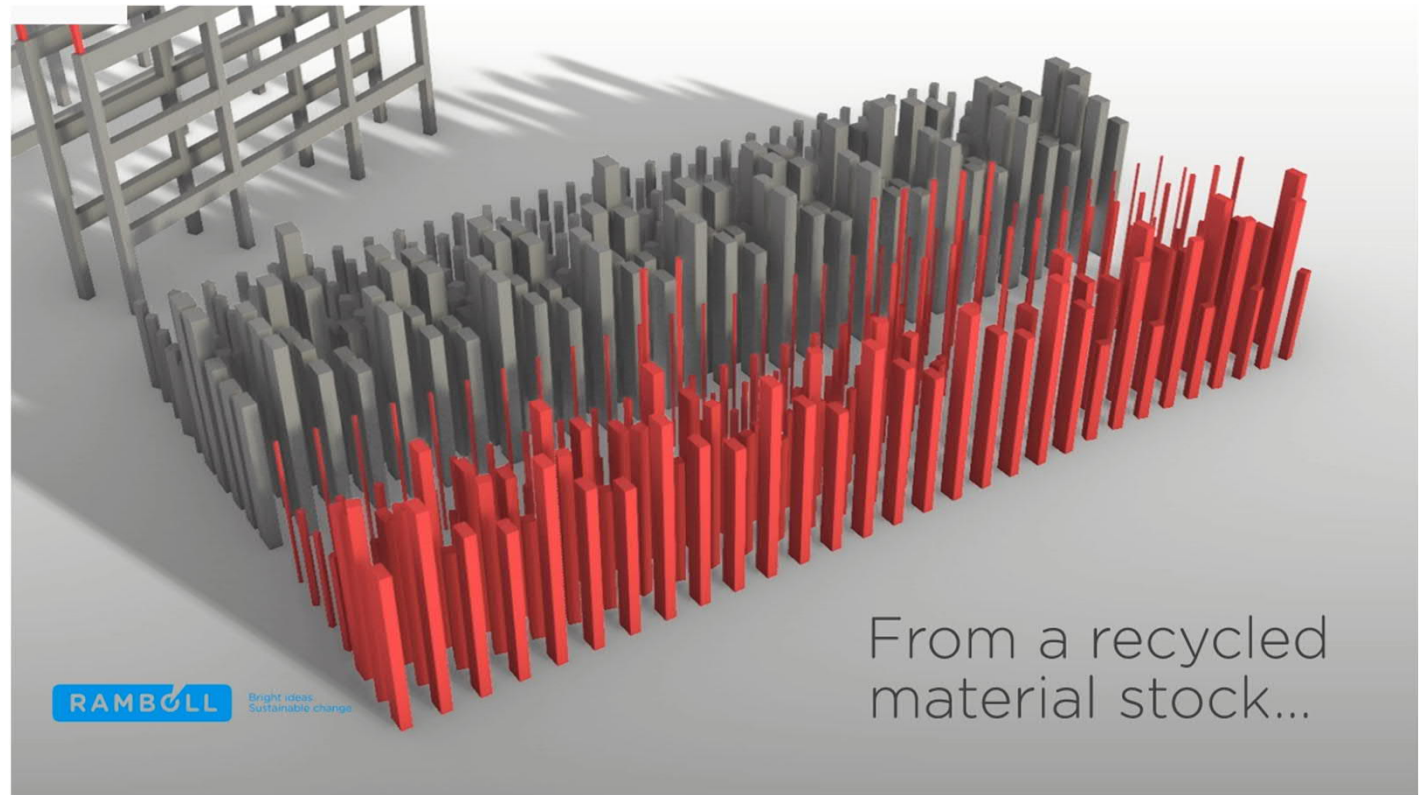


The Vision

Make building with existing materials easier, faster, and smarter than building with new.

Steps toward the goal:

1. Map existing structural components
2. Design with reclaimed materials
3. Build efficiently with what we already have



Outcomes and Future Vision

- Deliverables in project:
 - Preliminary component reuse document
 - Reuse workshop methodology with the client's design teams:
 - Build the city's reusable-components operating model.
- Next steps and vision:
 - 3D model components for direct comparison with new project models.
 - Scale to large asset portfolios
 - Reuse catalogues a standard design input for new Espoo projects.
 - Shift from one-off substitutions to systematic design with reused elements—enabling materially higher reuse rates and carbon impact

