BIM for Deconstruction Management

Pedagogical Process Applied to the Belgian Pavilion in OSAKA

Dr. Mohamed-Anis GALLAS
Digital Theories and Practices in Architecture Lab
Faculty of Architecture and Urban Planning
University of Mons

08/05/2025

Context

Context

Construction and deconstruction impact

Environmental Impact of Construction

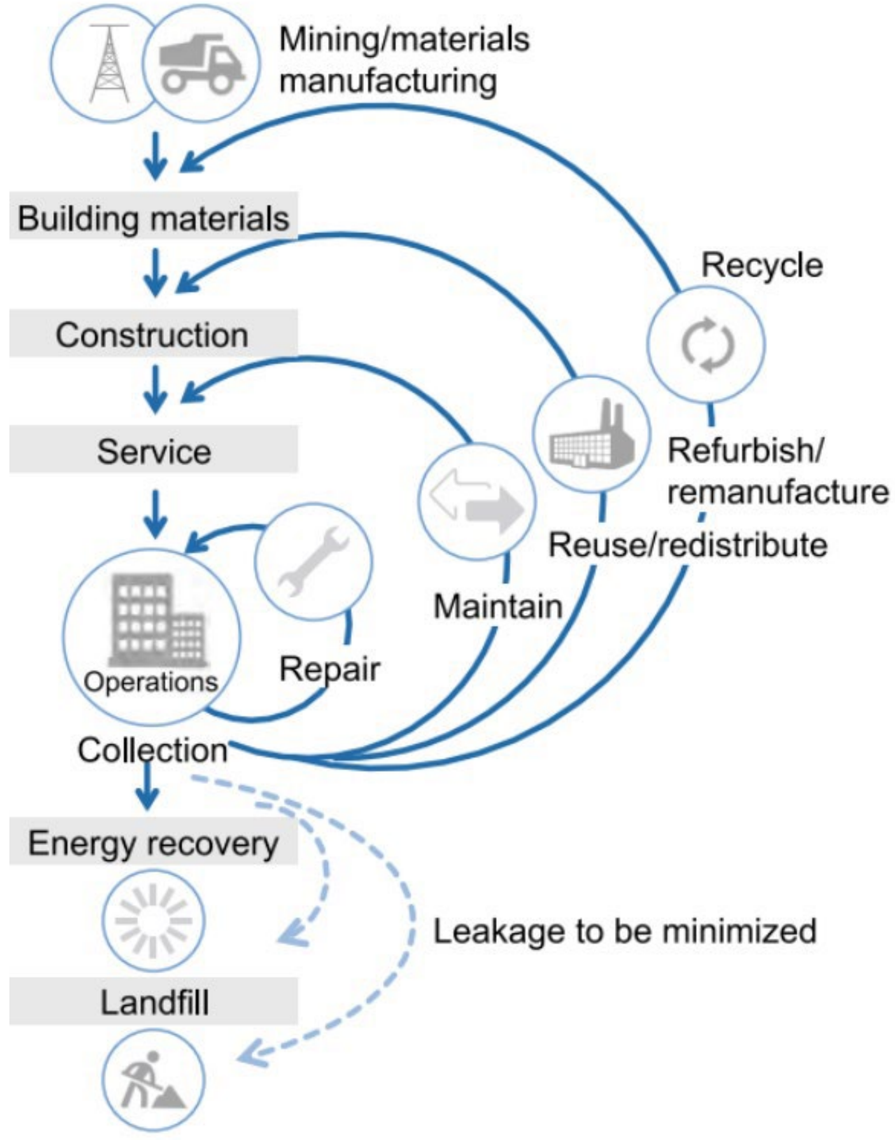
- The construction sector one of the largest waste contributors

Growth of Construction and Demolition Waste (CDW)

- Nearly 40% of the EU's total waste
- Expected to double between 2020 and 2050 due to increasing demolition and renovation activities

Challenges and Opportunities in CDW Management

- Most CDW is currently handled through low-value methods like backfilling
- Better implementation of reuse, preparation for reuse, and high-quality recycling



World Economic Forum, 2016

Context

Construction and Demolition Waste Management Barriers (CDW)

Technological Barriers

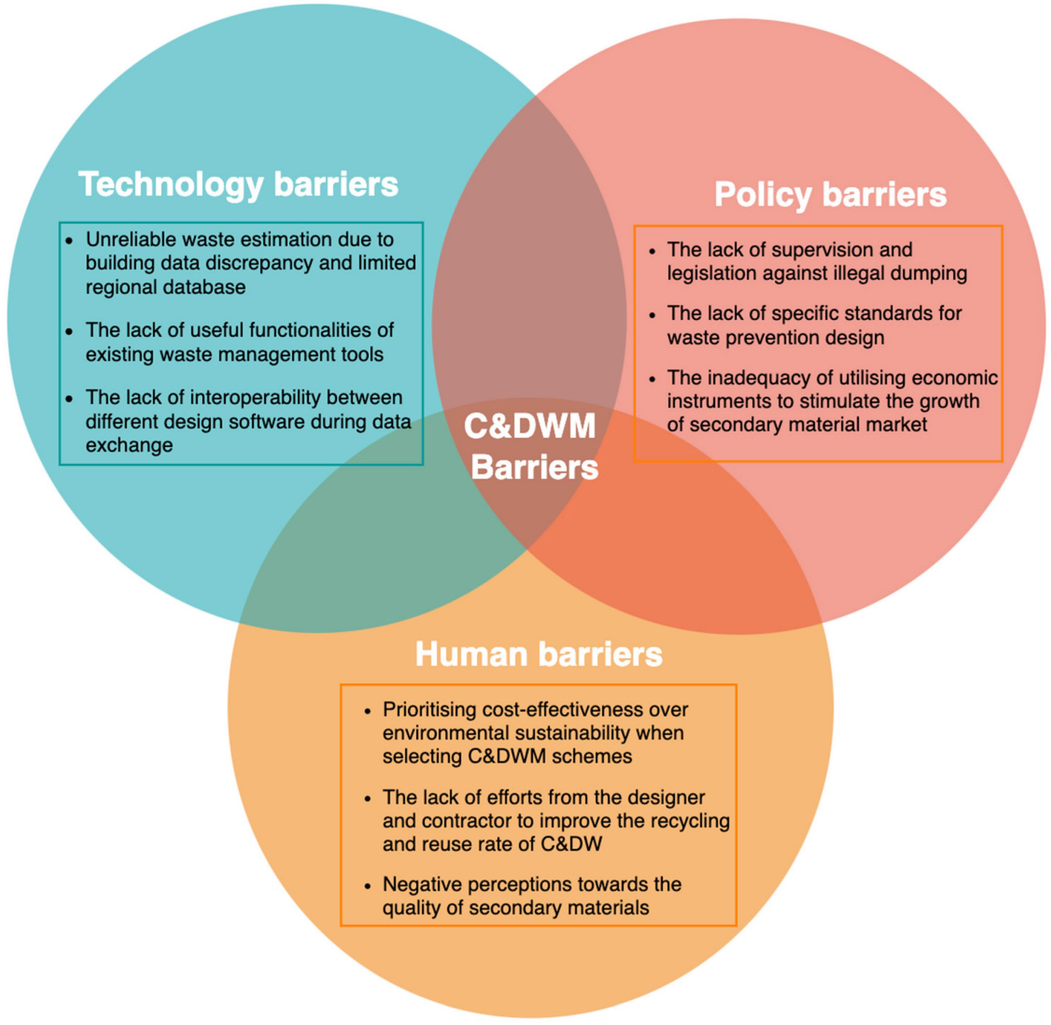
- Low adoption of digital and advanced technologies (e.g., limited BIM use)
- Lack of accurate data and up-to-date building documentation
- Limited capabilities in current waste estimation and planning tools

Policy Barriers

- Lack of unified national guidelines for CDW reuse and recycling
- Weak integration of CDW criteria in sustainability certifications

Human Barriers

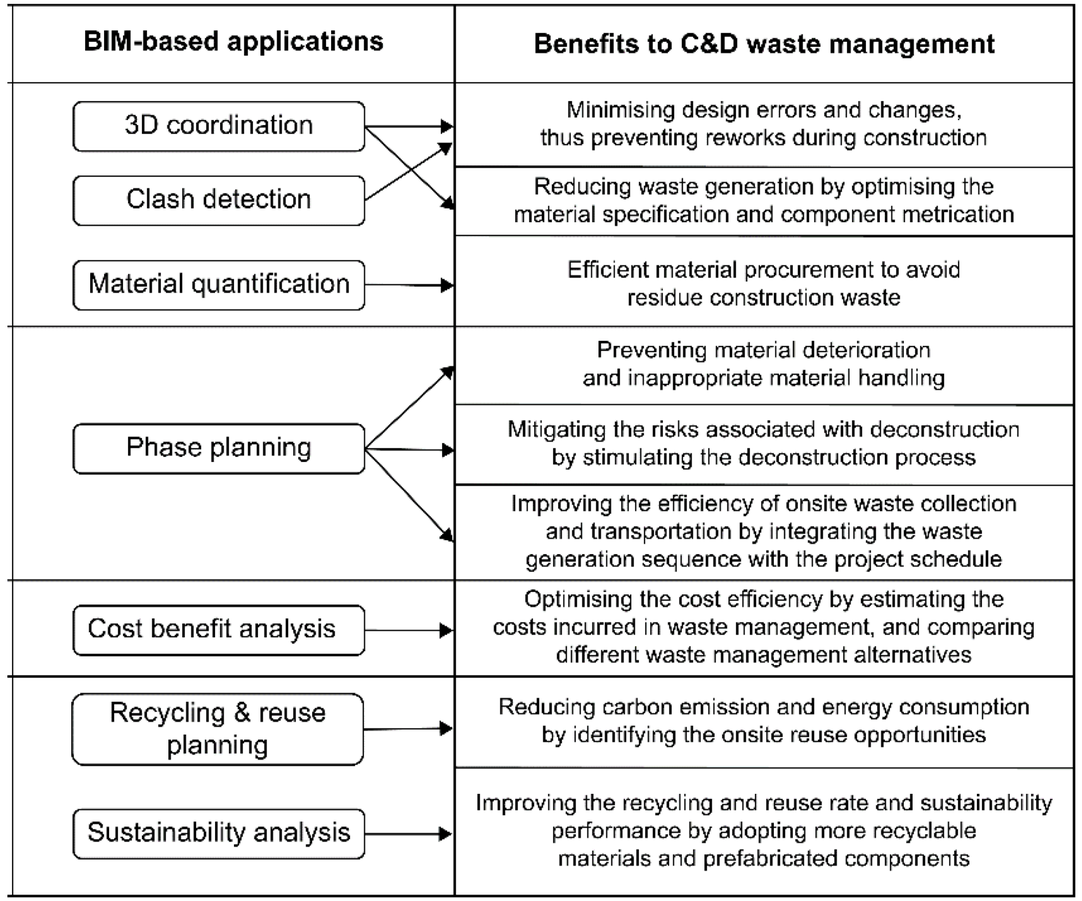
- Low awareness and commitment from stakeholders
- Negative perceptions of recycled materials' quality
- Lack of training and education on sustainable waste management practices



Context

BIM as a solution ?

- The capacity to coordinate project phases, to involve multiple stakeholders, and handle complex data flows
- The availability of models originally designed for different use cases
- The ability to assist decision-making activities



Context

BIM limits

- BIM = Black Box
- BIM approach = Construction needs ≠ CDWM needs
- BIM process implementation = Considered complex by both professional and educational stakeholders (who are not specialized in the field)

Context

Challenges

- Enhancing Construction and Demolition Waste Management (CDWM) through BIM
- Exploring BIM practices to support CDWM strategies
- Turn BIM strategies into tangible outcomes

Step 0
Use Case

Use Case

The Belgian pavilion at Expo 2025 Osaka

- Temporary pavilion designed with an integrated deconstruction intent from the early design phase

- A construction system specifically selected to facilitate disassembly and material recovery

- A need for a decision-support methodology to manage the building’s life cycle

- Digital data is available, no BIM-based workflow or strategic implementation has been established

CARRE 7 / BEYOND LIMITS / ONE DESIGNS / PIRNAY / POLY-TECH/BelExpo

Use Case

Pedagogical Context

- BIM and collaborative architectural design course (2 ECTS), Faculty of Architecture and Urban Planning, University of Mons

- Master's level architecture students (62) / 6 teams

- Students with a background in modeling approaches and familiarity with reuse and circular design principles

BIMPossible team

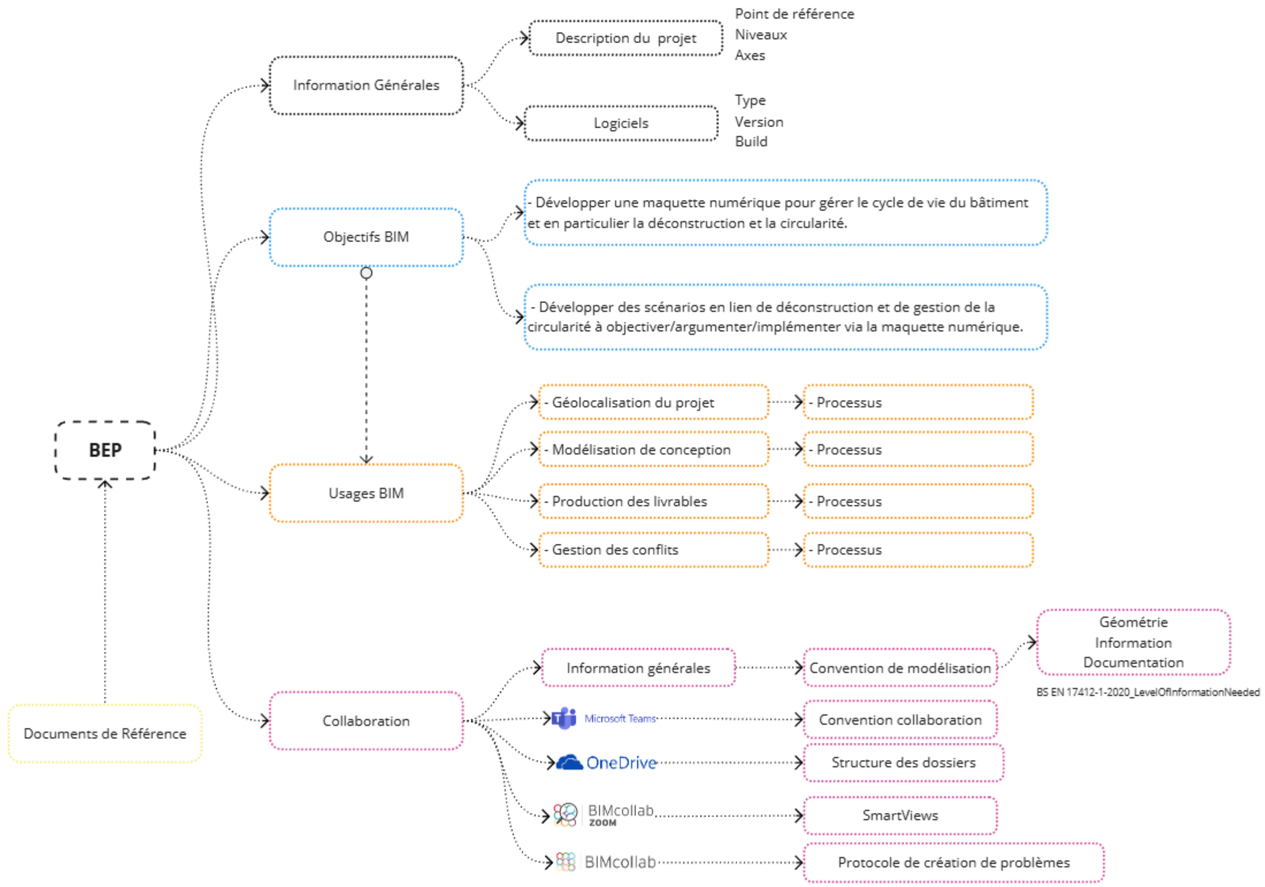
Use Case

Inputs

- A Raw digital data associated with the project's architectural and engineering components

- A basic structure of a BIM Execution Plan

- Tools (MIRO, BIMCOLLAB and BIMCOLLAB Zoom, Revit, Archicad, BIMCloud for Archicad…)



Basic structure of the BIM Execution Plan (BEP)

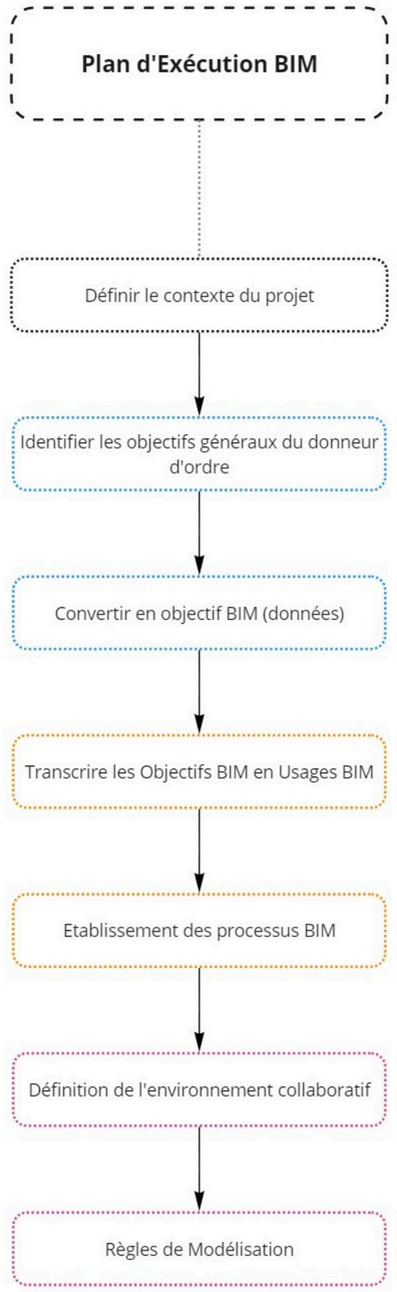
Use Case

BIM objectives

Develop a BIM-based methodology aimed at meeting two clearly defined objectives :

1. Develop a BIM-based methodology for lifecycle management, including deconstruction and circular economy

2. Develop scenarios related to deconstruction and circularity management, to be justified, analyzed, and implemented through the digital model



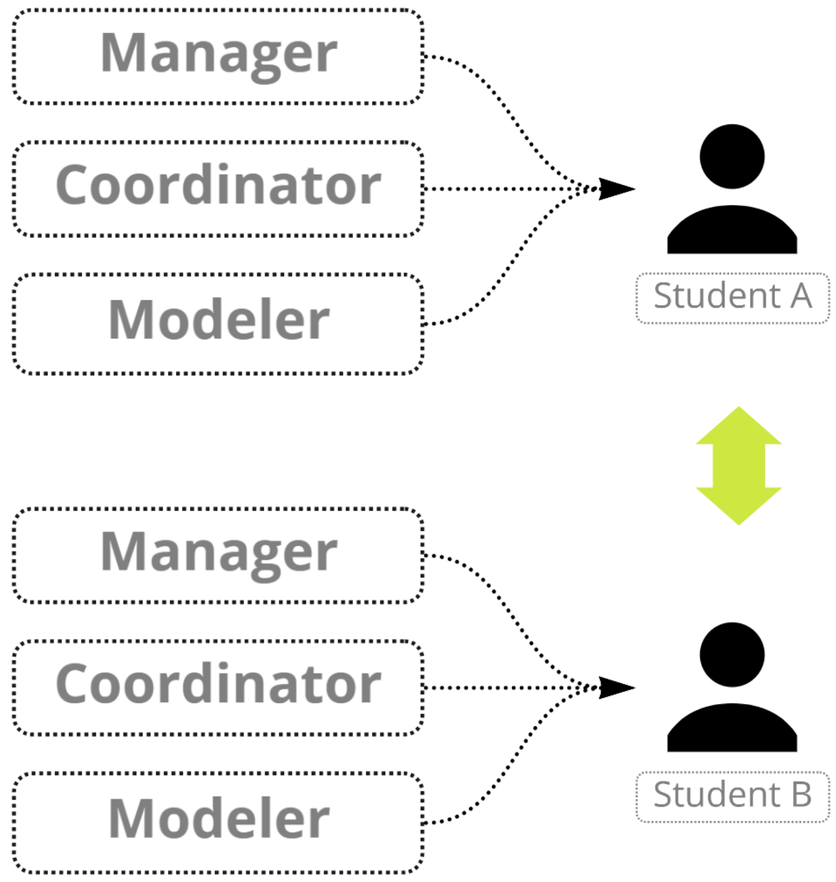
Development process of the BIM Execution Plan (BEP)

Step 1
Make BIM reliable

Make BIM reliable

Introduce students to BIM practices

- Integrate and structure data (of various types) within digital models (DMs)
- Create and link DMs in IFC format
- Explore IFC-format DMs using intelligent data querying tools
- Collaboratively build a federated DM
- Develop more concrete roles within collaborative DM creation processes in response to specific BIM objectives

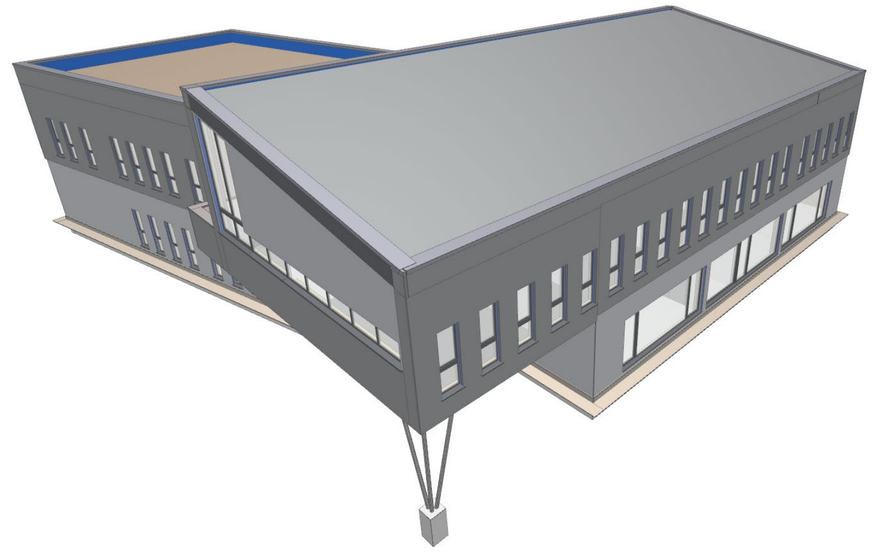


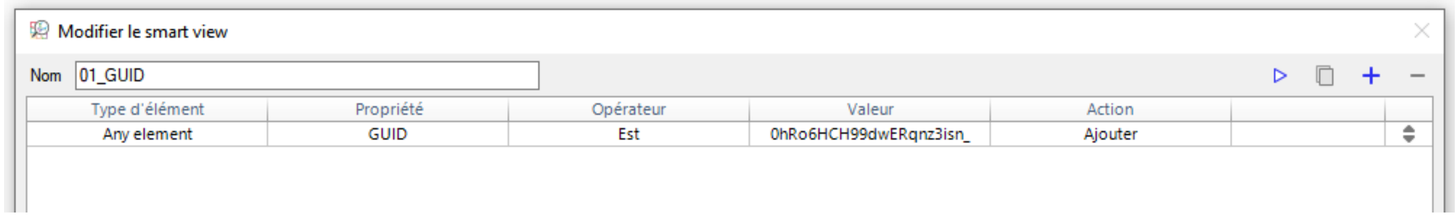
Make BIM reliable

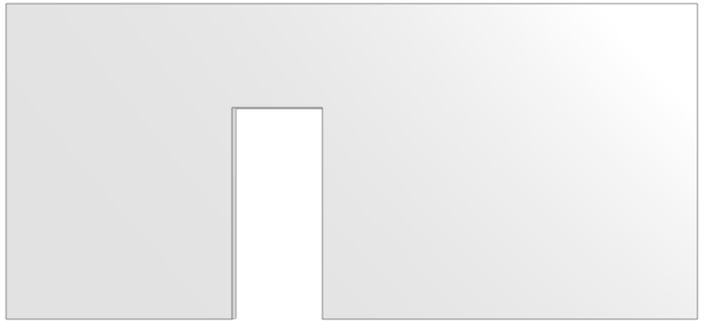
Using gameplay as an exploration tool

Implementation of a "data search" game to explore data querying and visualization within IFC-format digital models

You need to find the wall with the GUID '0hRo6HCH99dwERqnz3isn_'.
In the *Name* parameter, you will find the instruction for the next step of the data search.







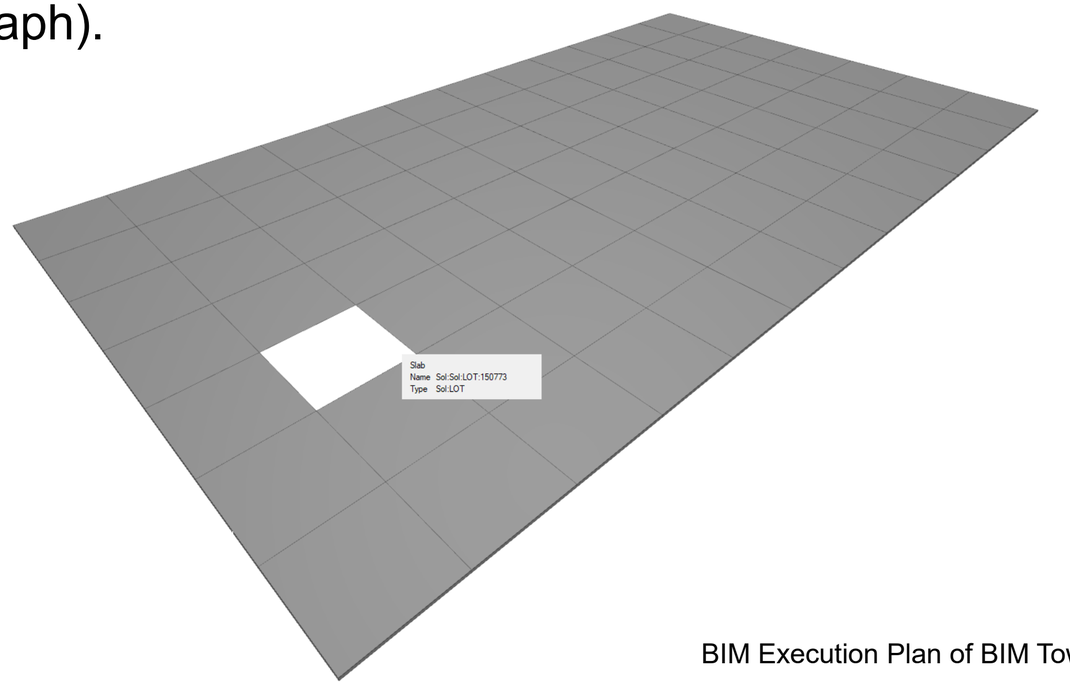
Propriété	Valeur
Model	CLICK_Int
Prefix	
Name	Trouver la porte avec la property Tag: "196090", la consigne suivant sera dans la property "Name"
Phase	Etat du projet
Type	MUR_INT_10_MM
Type Name	MUR_INT_10_MM
Description	
Material Name	Plaque de mur de gypse, Plaque de mur de gypse, Montant métallique, Plaque de mur de gypse, Plaque de mur d...
Layer	I-WALL-____-OTLN
Is External	False
Load Bearing	False
IFC Element	IfcWallStandardCase
Predefined Type	STANDARD
Tag	156661
GUID	0hRo6HCH99dwERqnz3isn_

Make BIM reliable

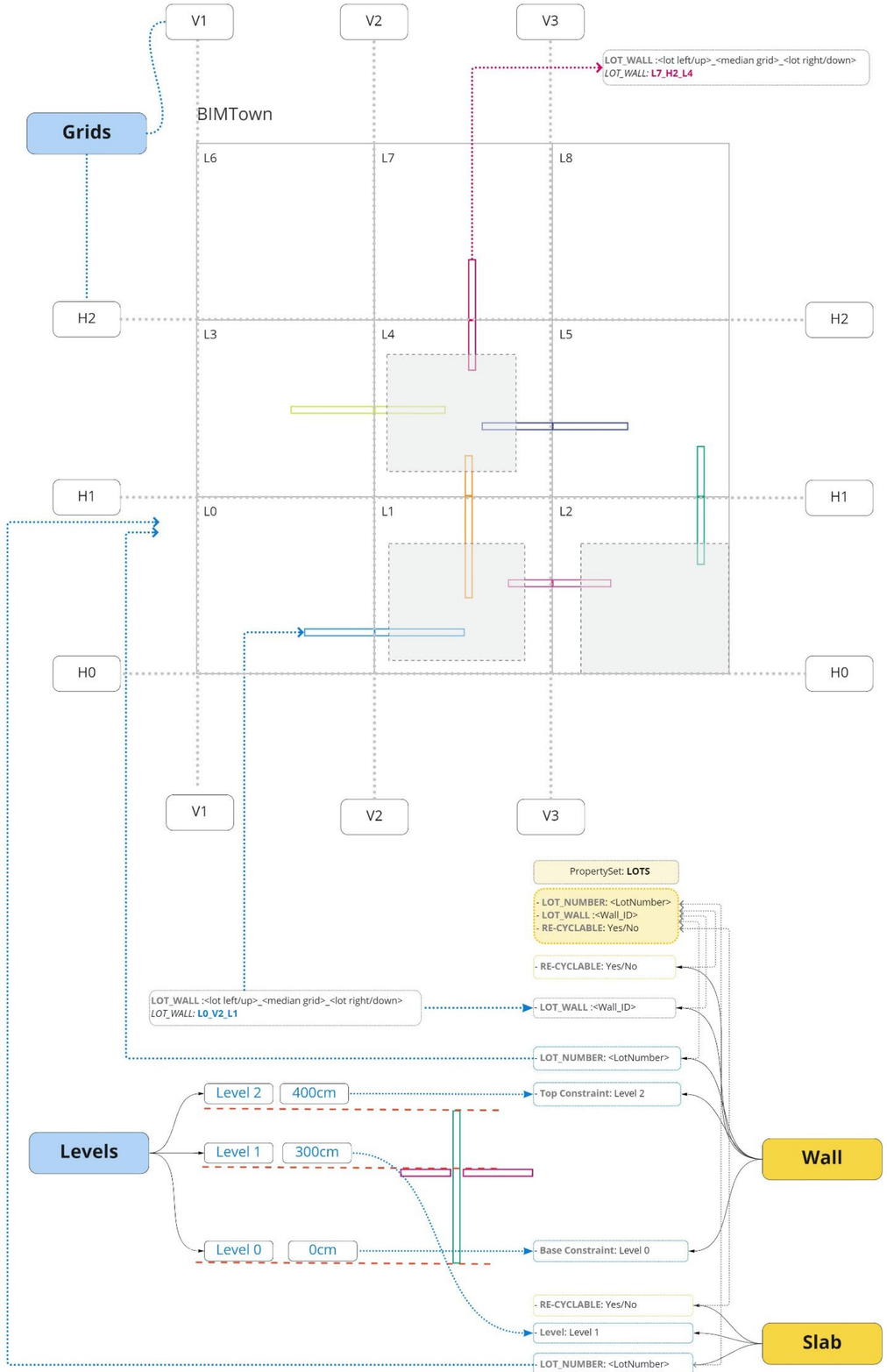
Making BIM workflows more accessible

- Developing the 'BIM_Town' game as a tool to simulate urban planning within a rule-based fictional environment.

- The modeling and data organization rules are presented in the form of a simplified BEP* (shared graph).



BIM Execution Plan of BIM Town

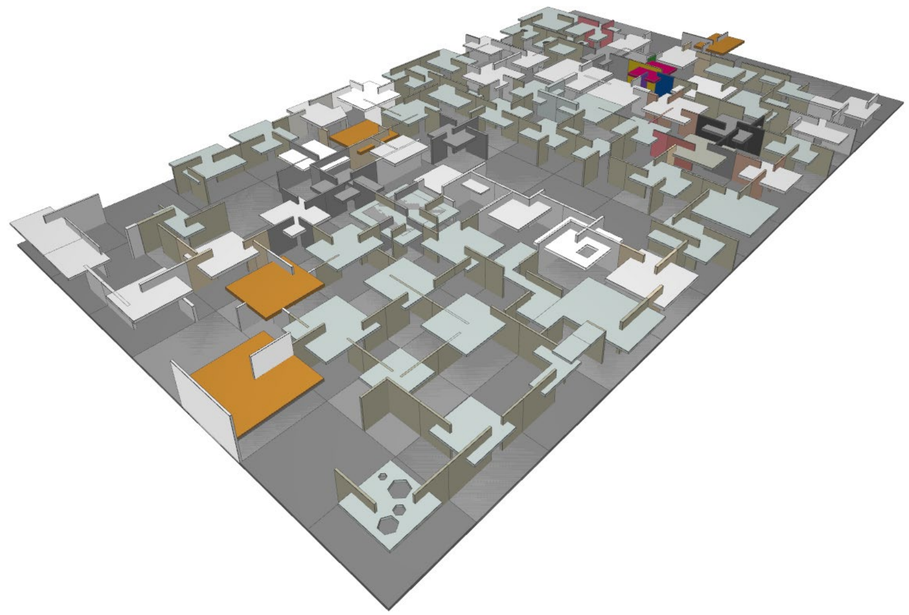


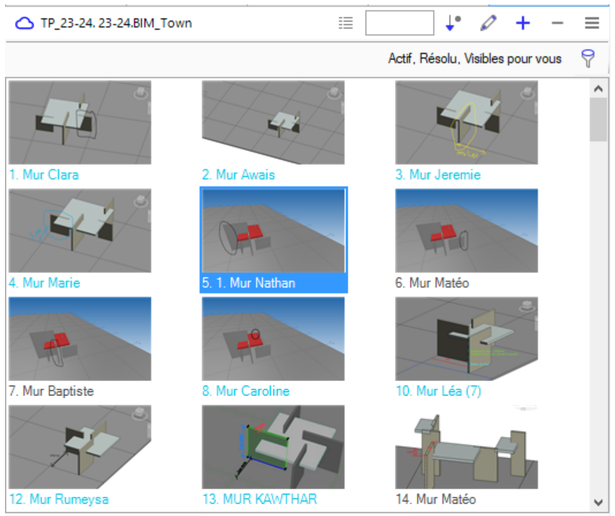
Make BIM reliable

A simplified implementation of a BIM protocol for educational purposes

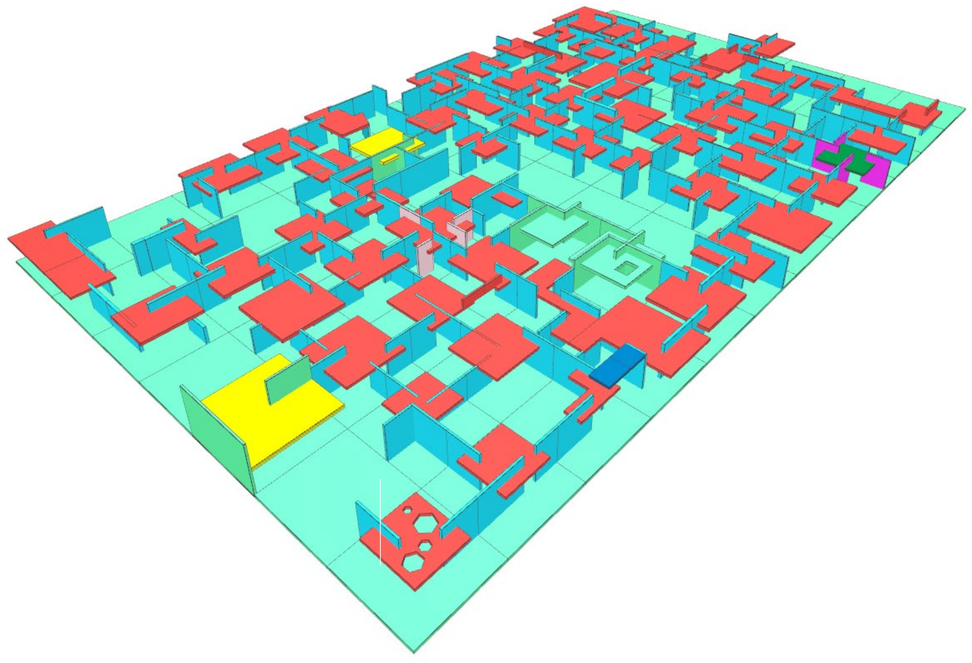
- Students must follow simplified rules to co-construct the urban environment:

- Share created models based on a common grid (shared IFC)
- Verify the quality and reliability of models and data (self-check using smartviews)
- Manage issues through a BCF platform (BIMCOLLAB)





Name	#	Couleur
1er étage	3	
Level 0	67	
LEVEL 0	1	
Level 1	63	
LEVEL 1	1	
Level 2	20	
LEVEL 2	1	
Niveau 0	1	
Niveau 1	1	
Niveau 2	1	
Rez-de-chaussée	4	
Toiture	1	



Make BIM reliable

Results

- Assimilation of fundamental practices that characterize BIM processes (~~Black BOX~~)

- Experimentation with (simple) concepts related to BIM (BEP, BCF, IFC)

- Consideration of the importance of organization in the co-construction of digital models (DM)

- Development of good collaborative practices

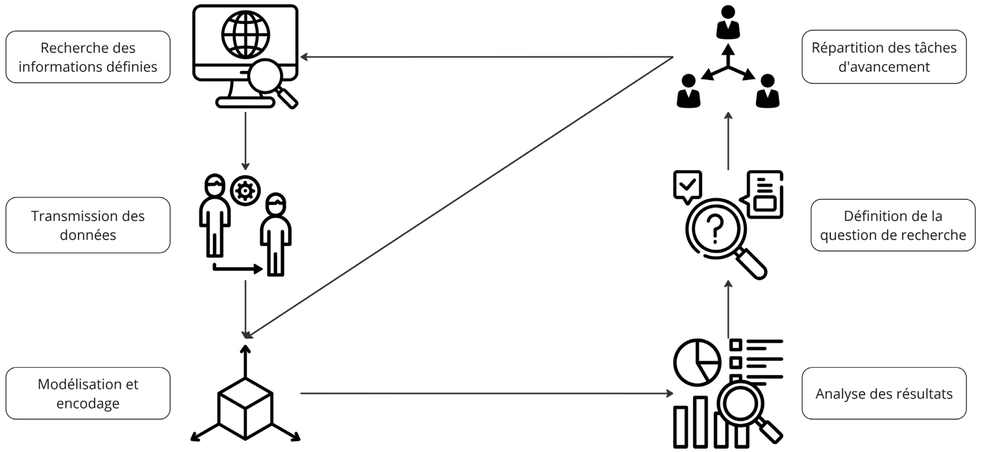
- Consideration of the impact of data reliability in the collaborative construction of DMs

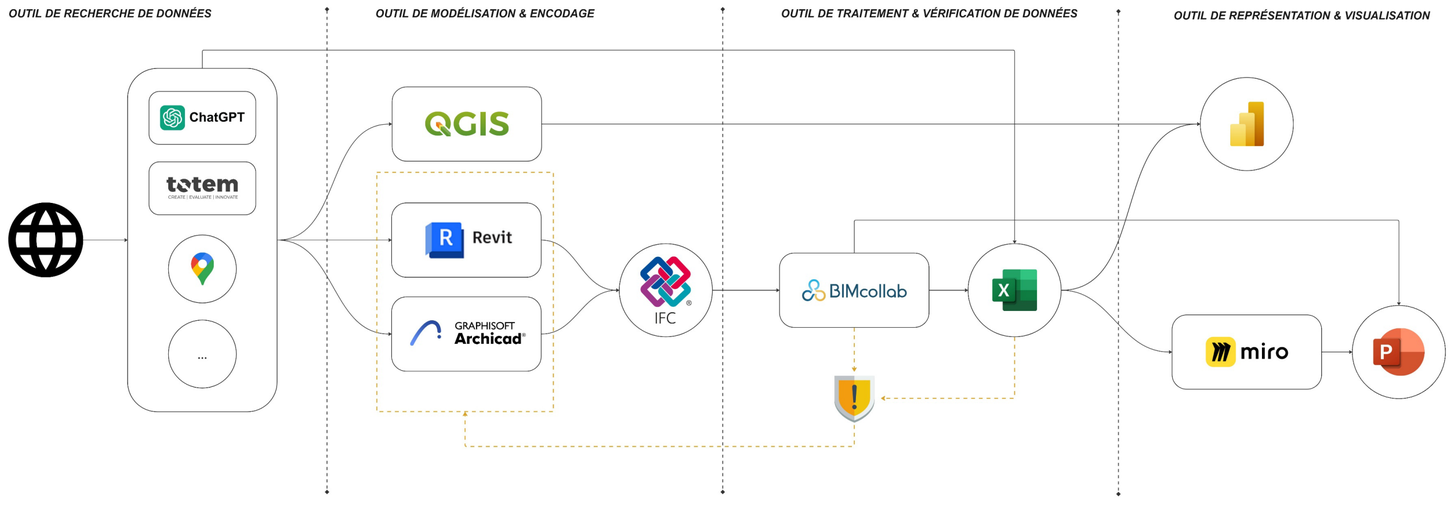
Step 2
BIM Processes to Manage Deconstruction, Reuse, and Circularity

BIM for Deconstruction, Reuse, and Circularity

1. Create teams with roles designed based on the objectives of the experiment (BEP)

- Six groups of 10 students working as teams
- Role assignment among team members
- Selection of working, collaborative, and communication tools
- Global mapping of the project's stages and intended outcome.

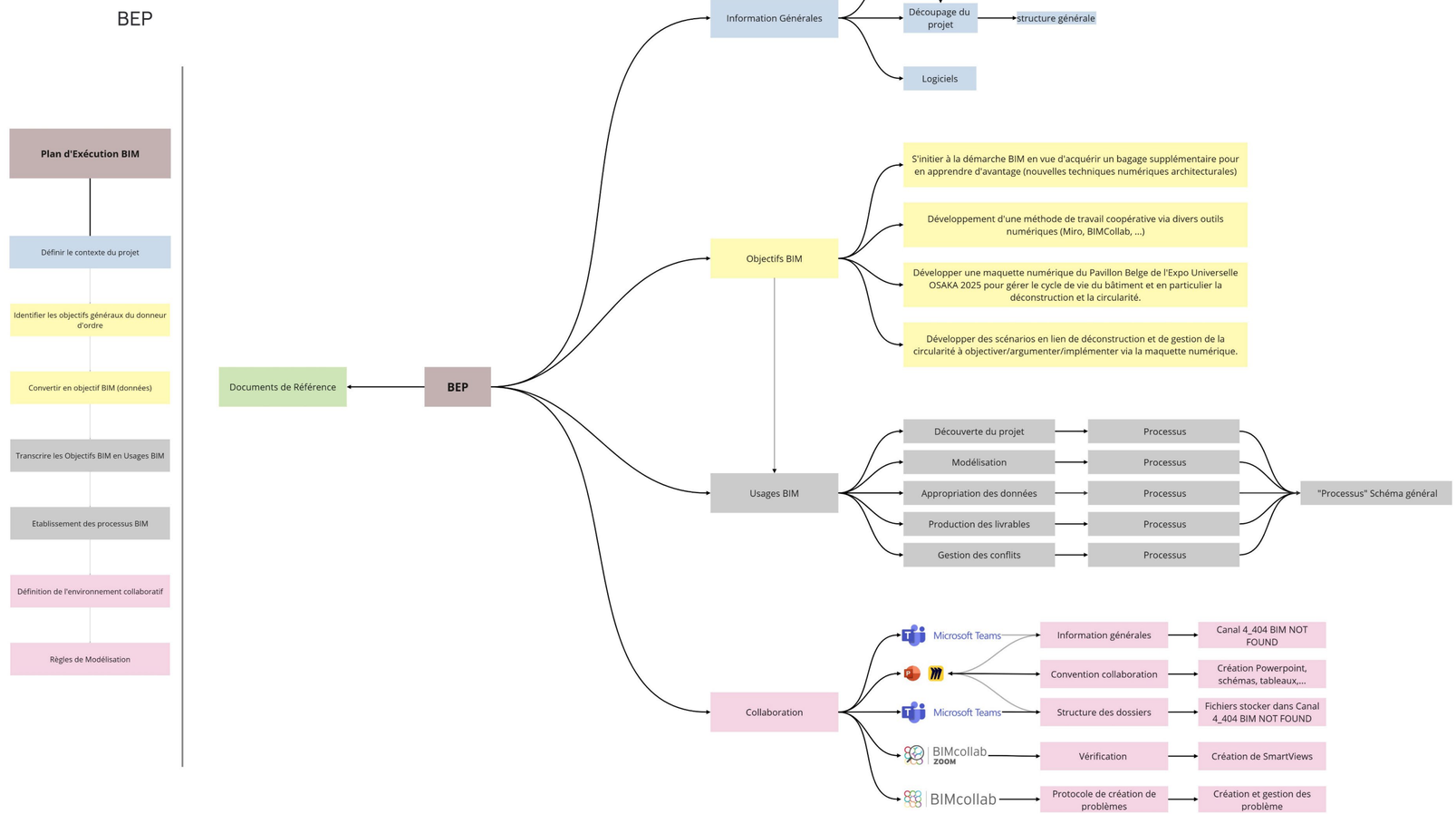




BIM Burton

BIM for Deconstruction, Reuse, and Circularity

1. Create teams with roles designed based on the objectives of the experiment (BEP)



404 BIM Not Found

BIM for Deconstruction, Reuse, and Circularity

2. Developing insights into circularity, reuse, and deconstruction challenges

Protocols	Projets results	Tools

BIM for Deconstruction, Reuse, and Circularity

3. Knowledge development for the deployment and use cases of BIM workflows applied to deconstruction, reuse, and circularity purposes

Wall

Summary	Location	Material	Clashes	Pset_Quantity...	Pset_Reinforc...	Pset_WallCo...

Propriété	Valeur
ExtendToStructure	False
IsExternal	True
LoadBearing	False
Reference	21.20.E1 _ Briques de parement façades rues
ThermalTransmitt...	6

Former VDS-Food site
(Drees&Sommer)

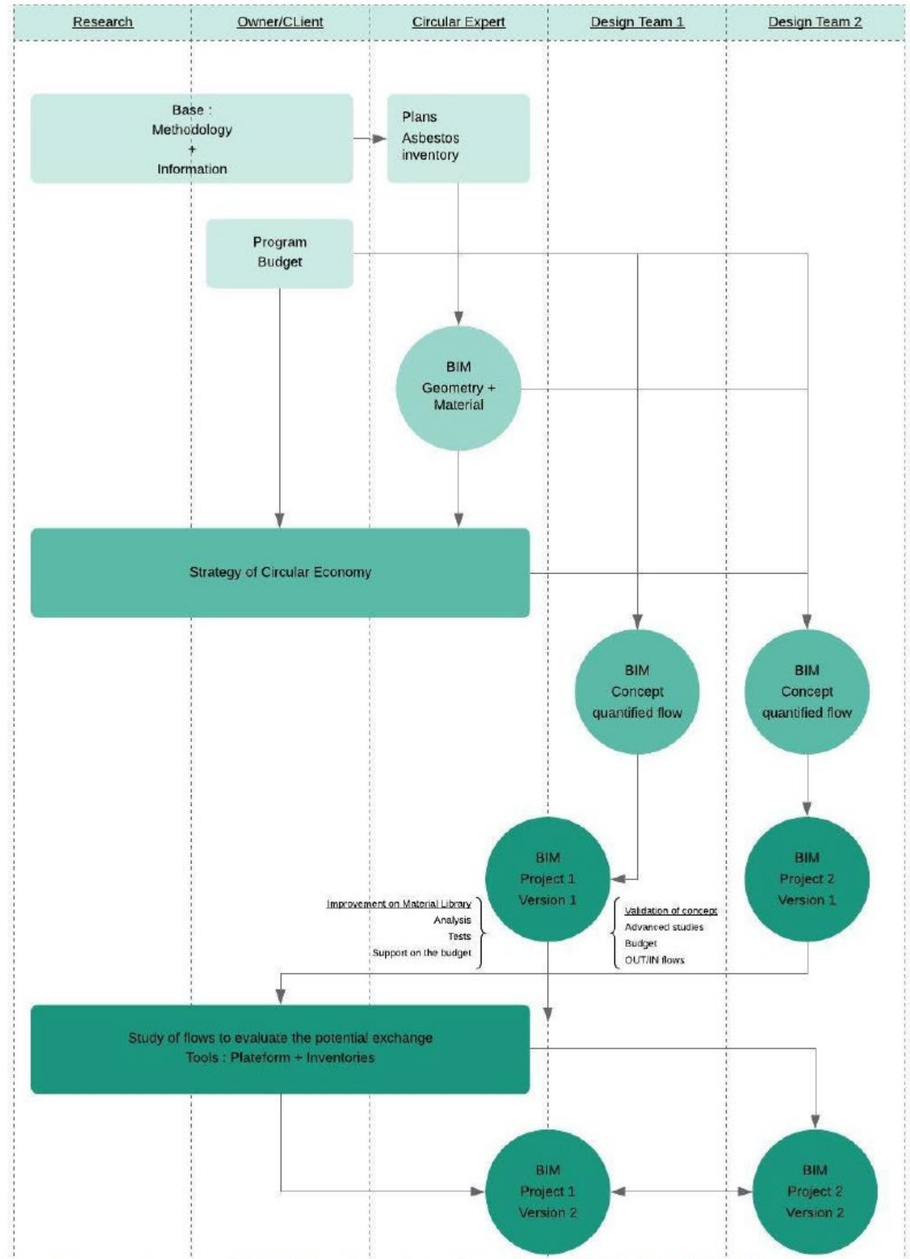
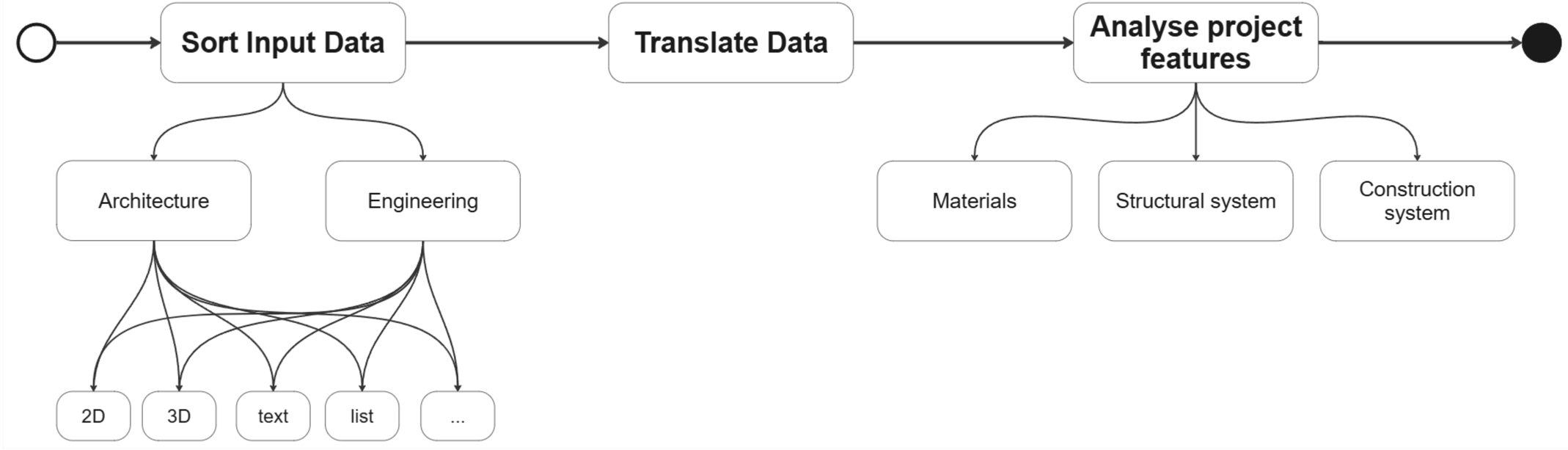


Figure : Etape par étape proposé à la SAU pour les prochaines étapes (source : Victor Ooghe, BATir, ULB)

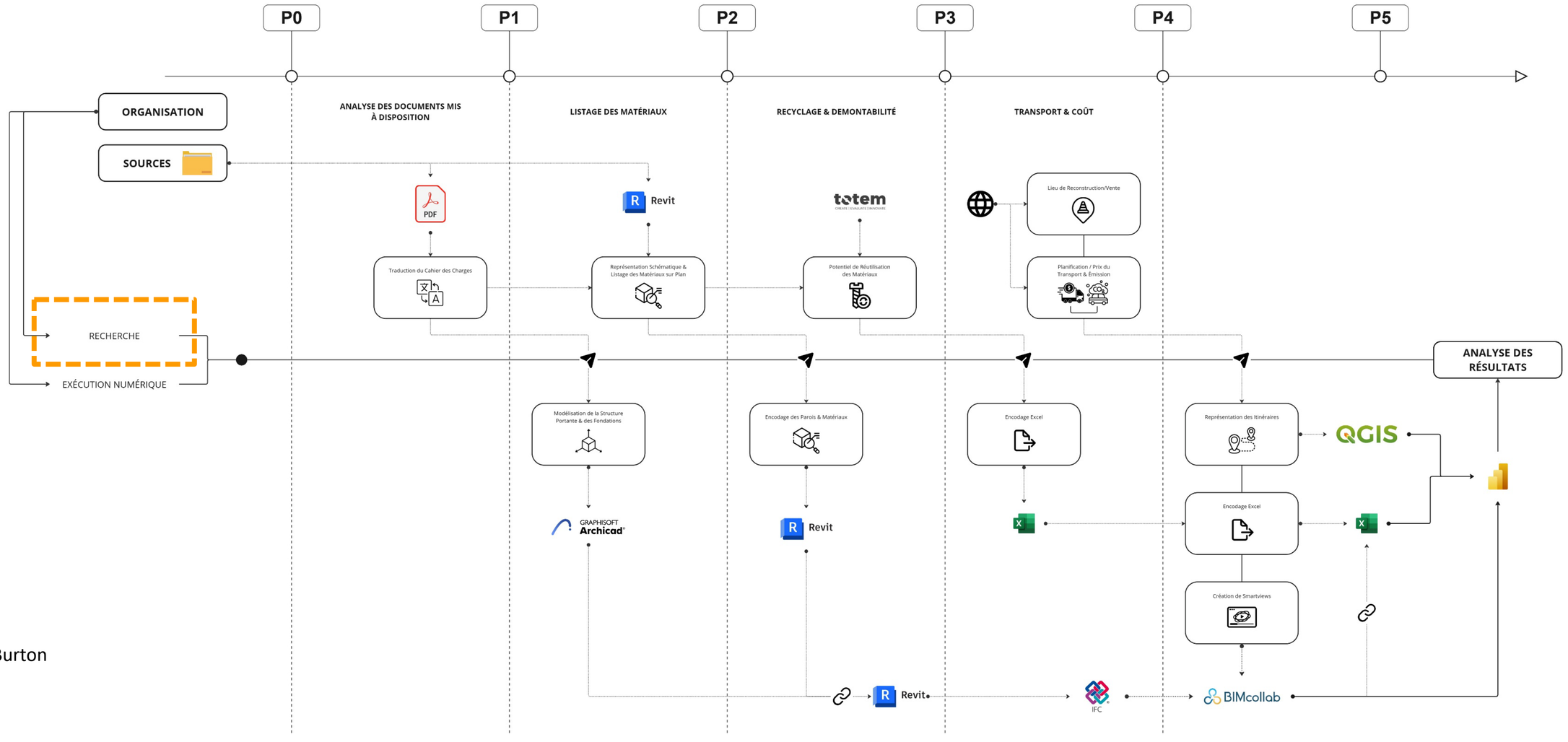
BIM for Deconstruction, Reuse, and Circularity

4. Input data collection, translating, sorting, and evaluation from architectural and engineering teams



BIM for Deconstruction, Reuse, and Circularity

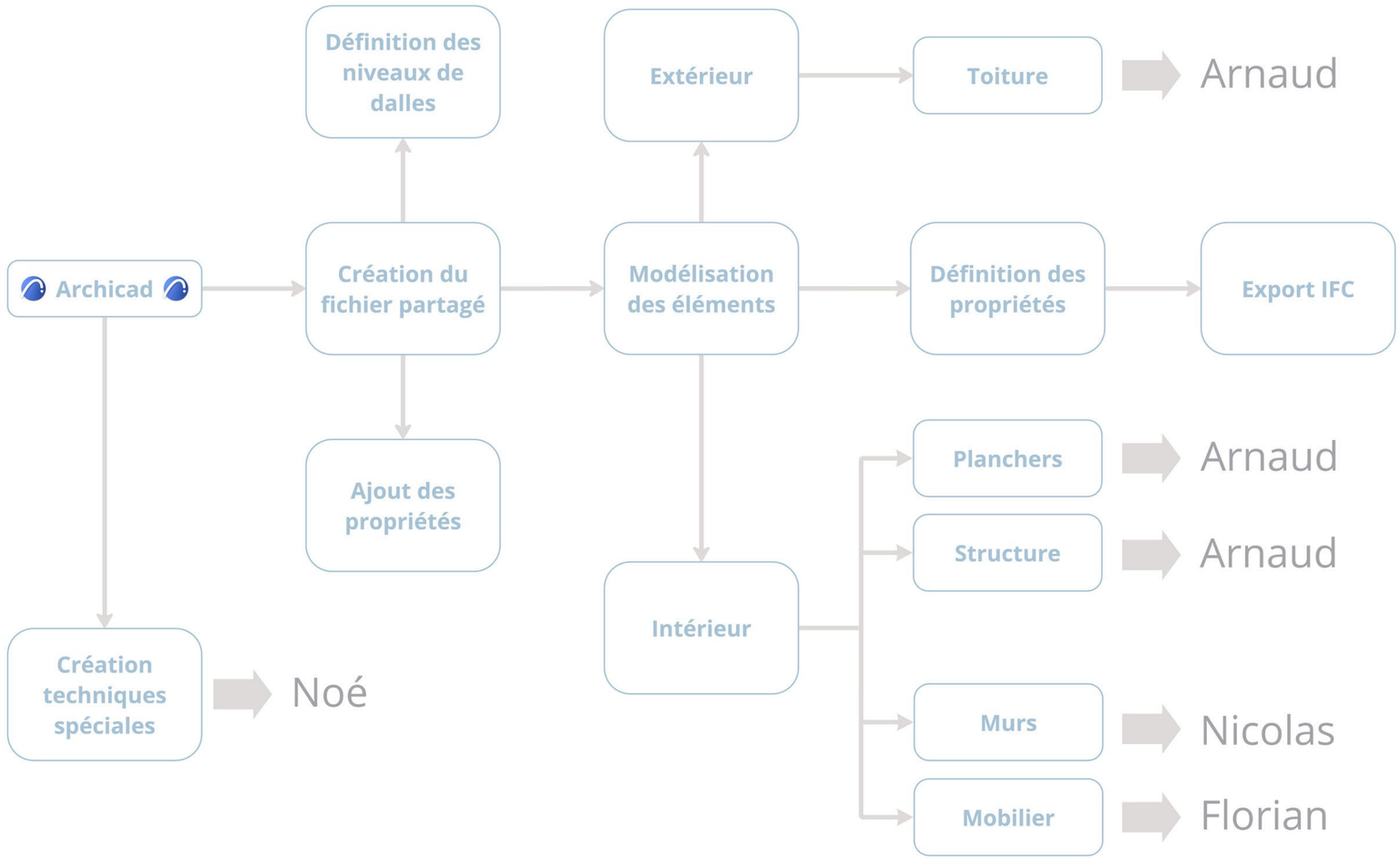
5. Organization of collaboration and information exchange, with a clear distribution of roles and tasks



BIM Burton

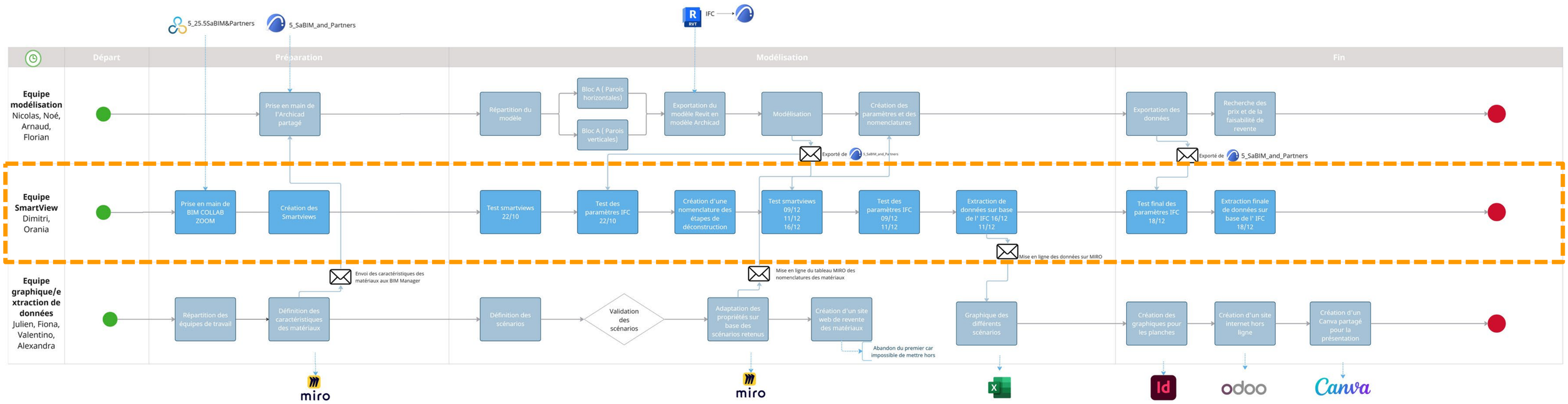
BIM for Deconstruction, Reuse, and Circularity

6. Management of modeling workflows and model exploitation



BIM for Deconstruction, Reuse, and Circularity

6. Management of modeling workflows and model exploitation



SaBIM & Partners

Step 3
Analysis of scenarios

Analysis of scenarios

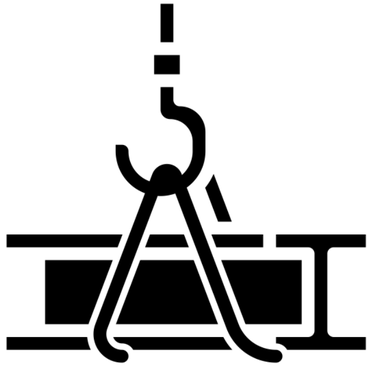
Broad view of the main topics

Topic 1	Topic 2	Topic 3	Topic 4
Transport	Deconstruction phases	Designing through deconstruction	Economic management
BIMBurton	BIMPossible	404 Not Found	SaBIM and Partners
		BIM Gees	BIMention

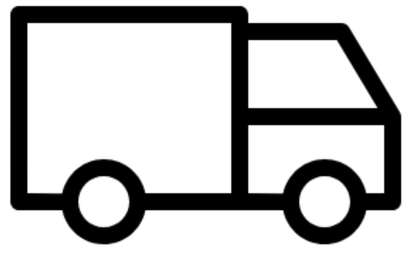
Analysis of scenarios

Topic 1 : Transport

How to manage different pre-exploitation scenarios for deconstructed materials across various sites by using a BIM-based approach ?



MATERIALS



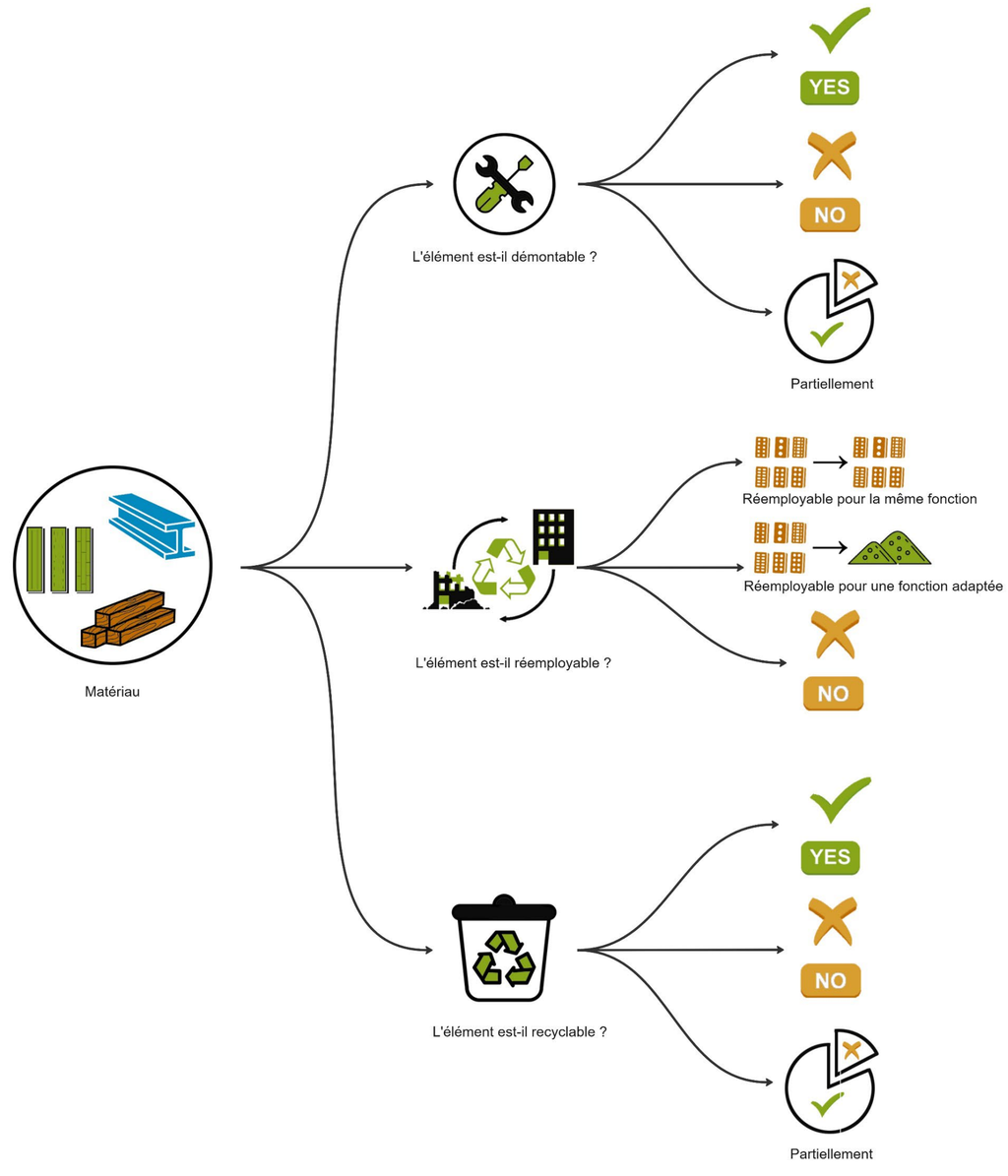
TRANSPORT

Analysis of scenarios

Topic 1 : Transport

Identify and categorize materials

Dismountable? Reusable? Recyclable?



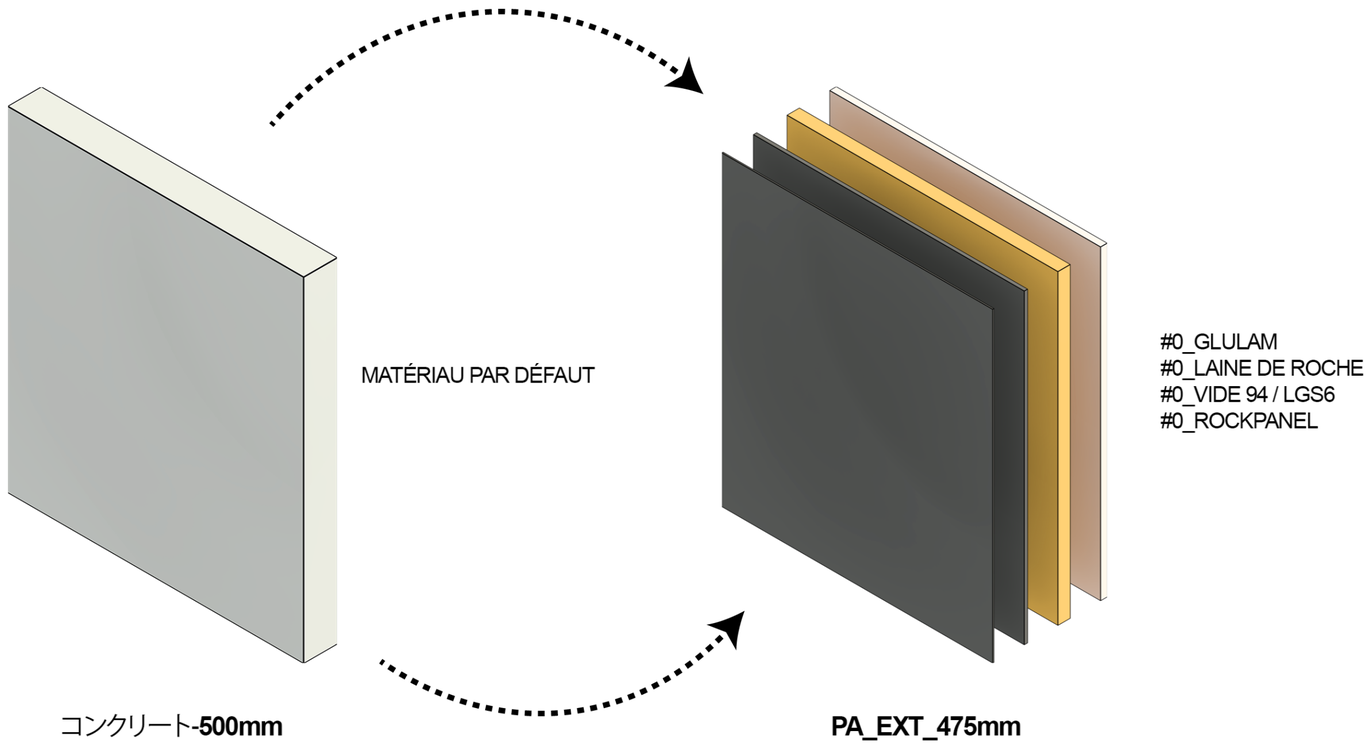
BIM Burton

Analysis of scenarios

Topic 1 : Transport

Identify and categorize materials

Layers?

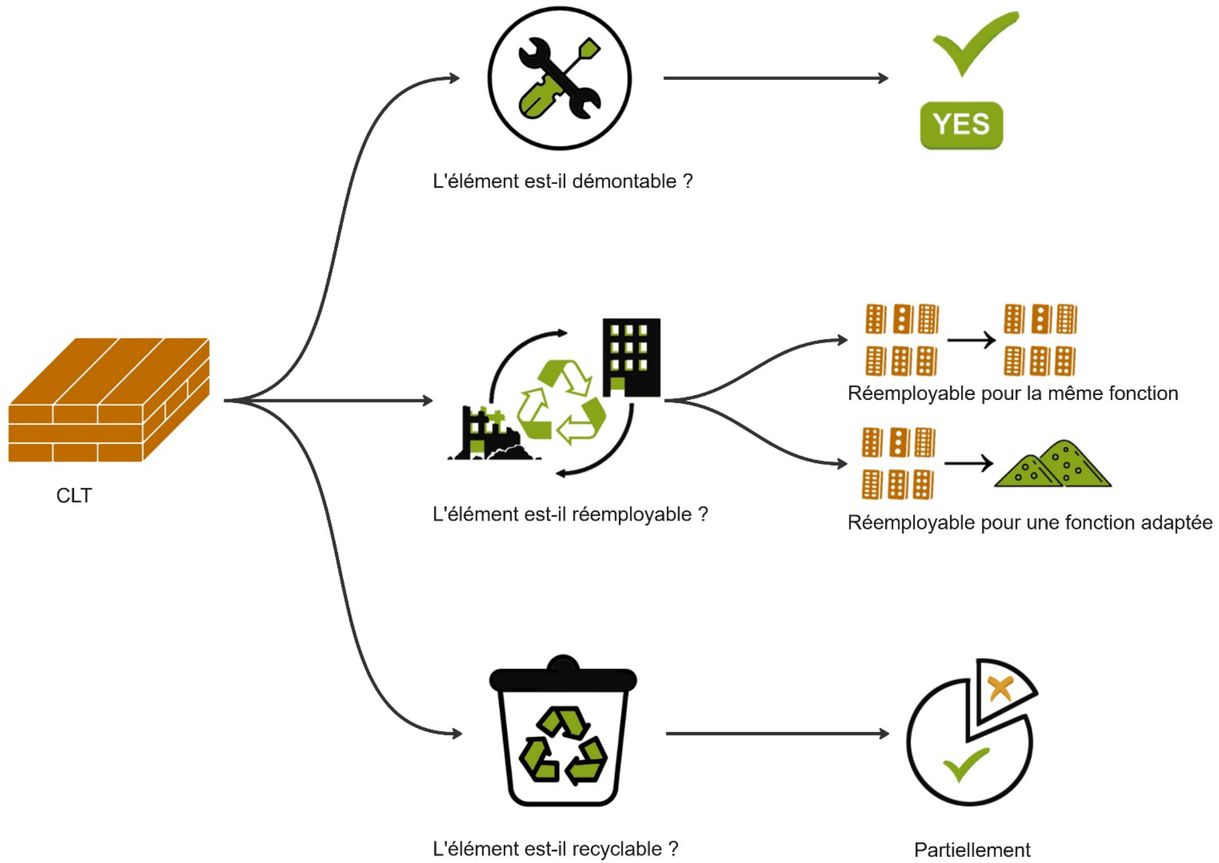


Analysis of scenarios

Topic 1 : Transport

Identify and categorize materials

CLT?

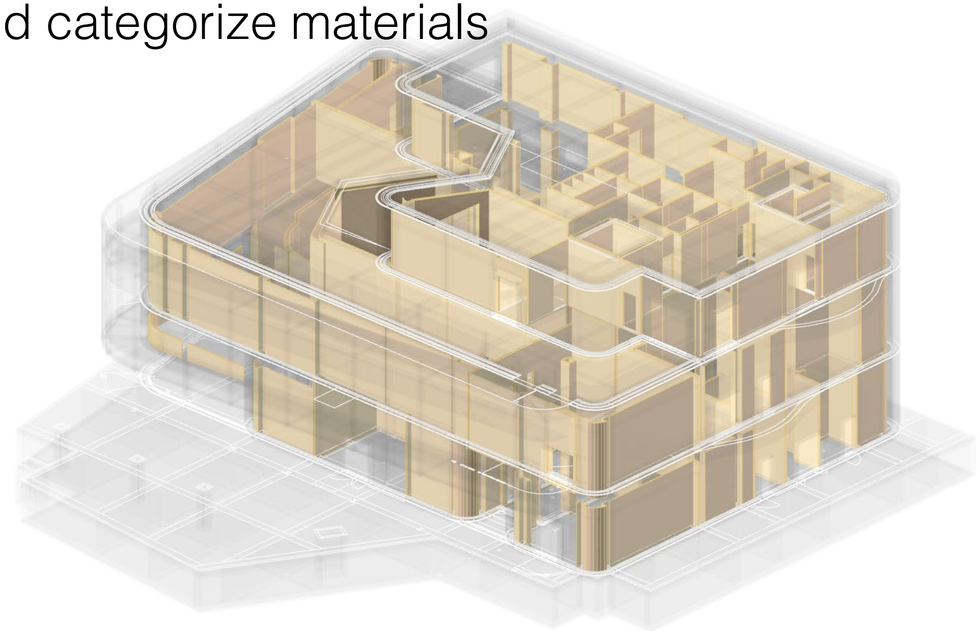


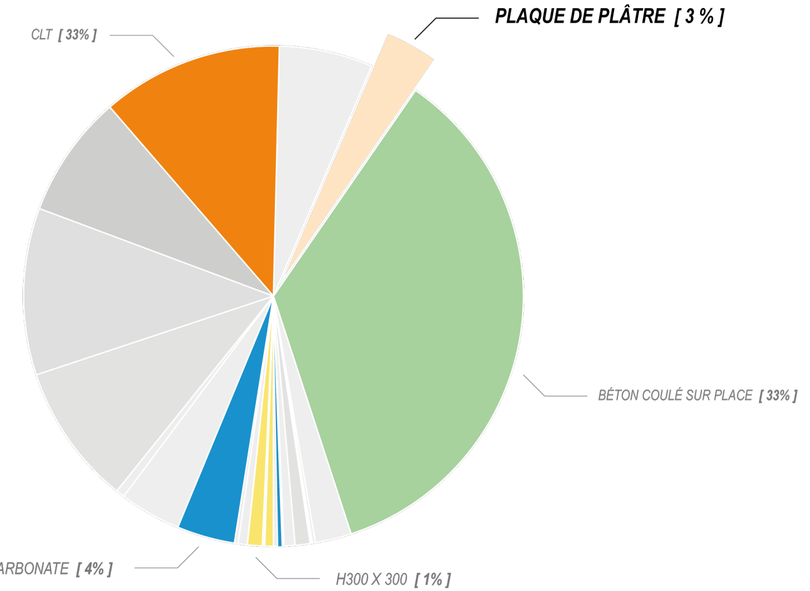
BIM Burton

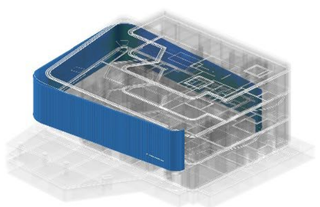
Analysis of scenarios

Topic 1 : Transport

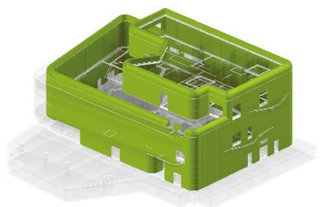
Identify and categorize materials



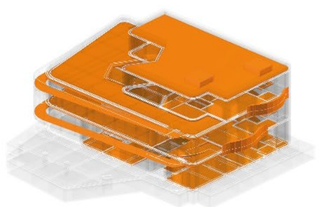




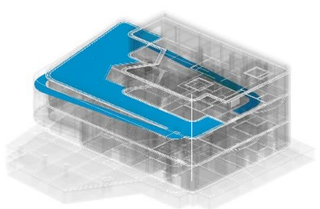
Polycarbonate



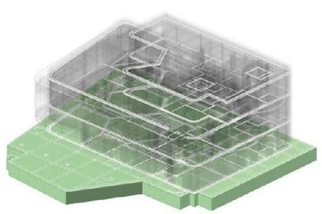
Rockpanel



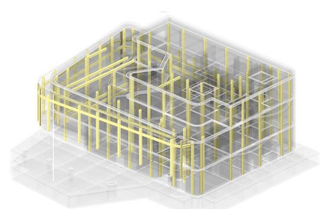
CLT



Pierre Bleue

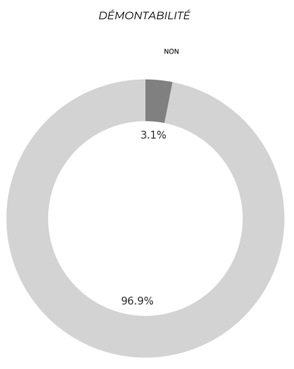


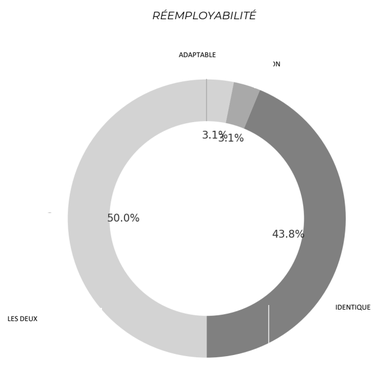
Béton Coulé Sur Place

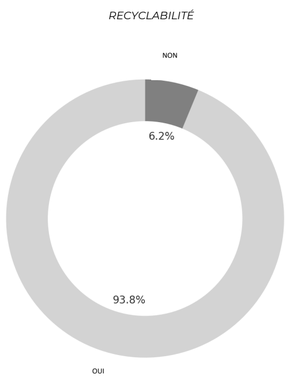


H300

BIM Burton



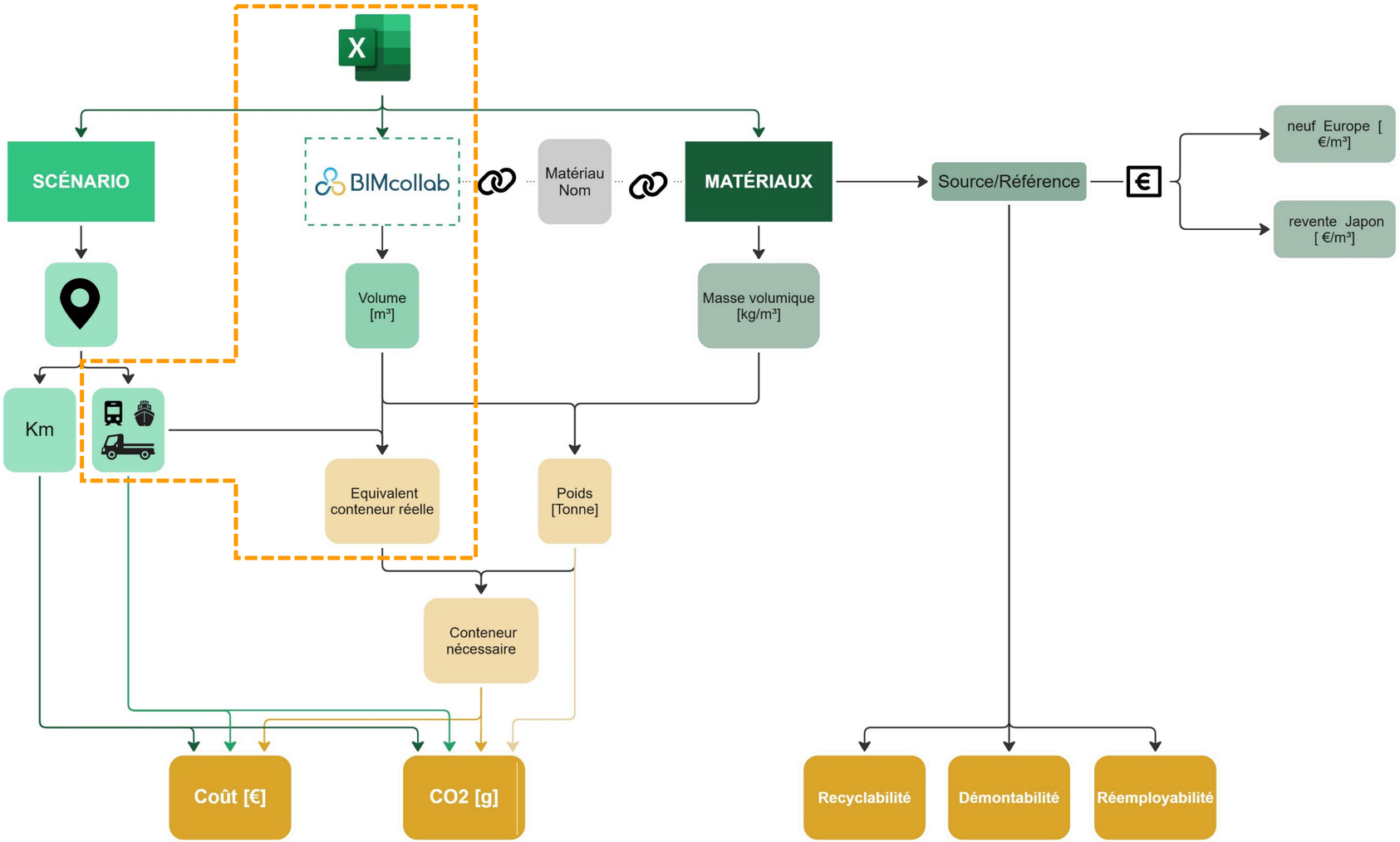




Analysis of scenarios

Topic 1 : Transport

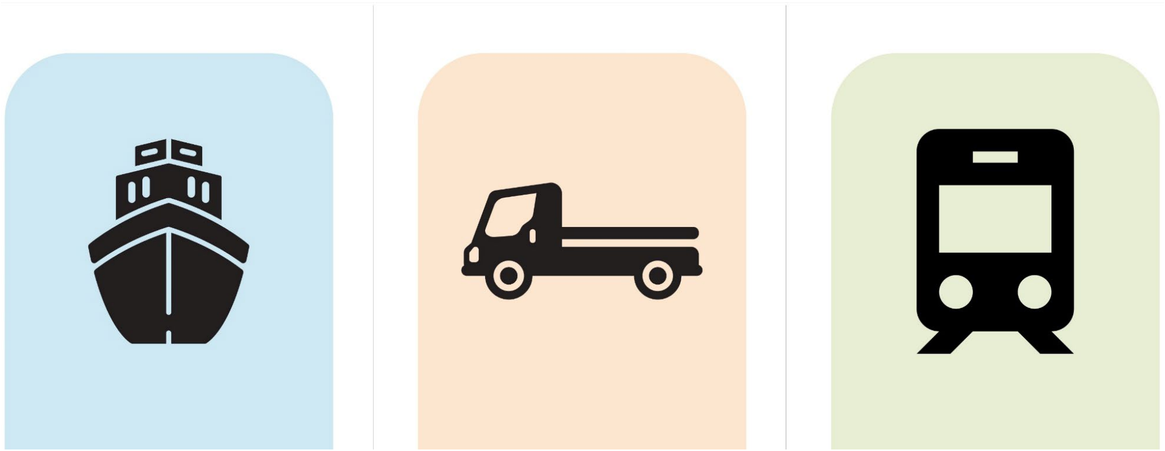
Link model data, transport data, and use cases

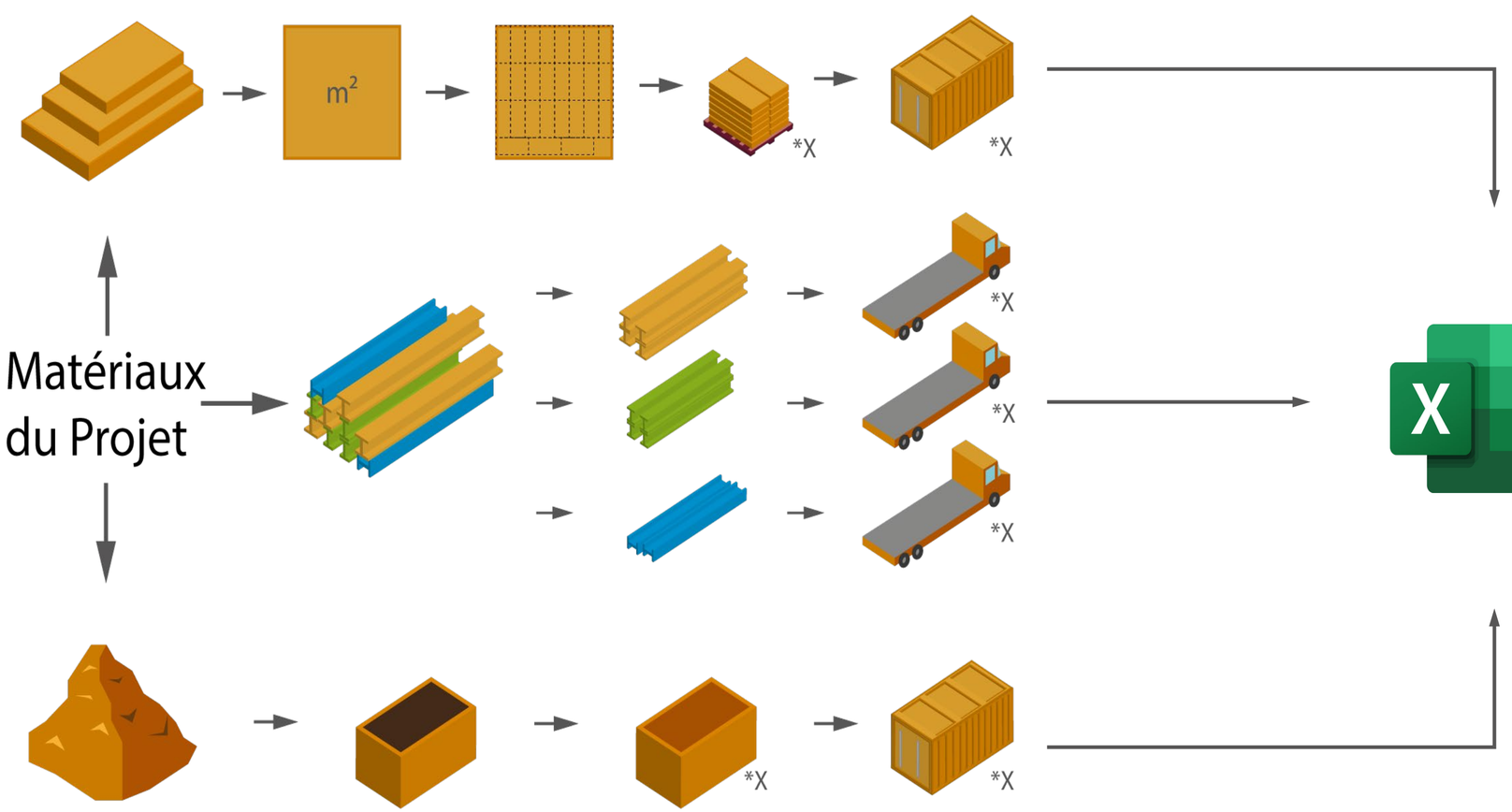


Analysis of scenarios

Topic 1 : Transport

Travel and transport choices

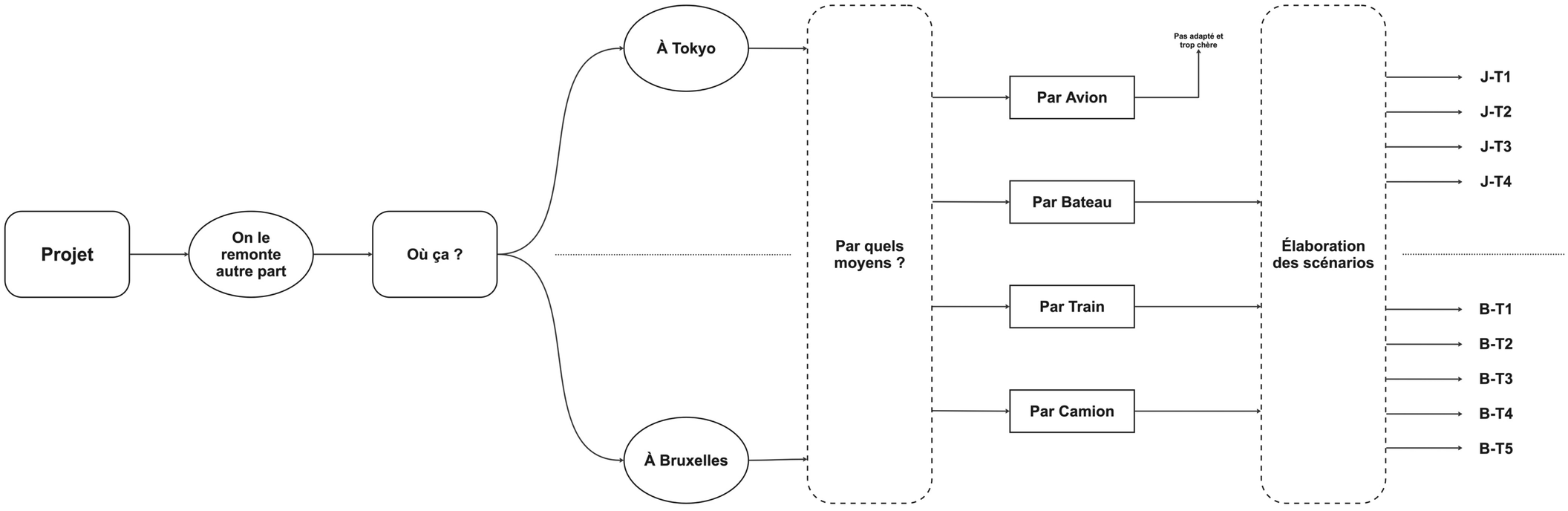




Analysis of scenarios

Topic 1 : Transport

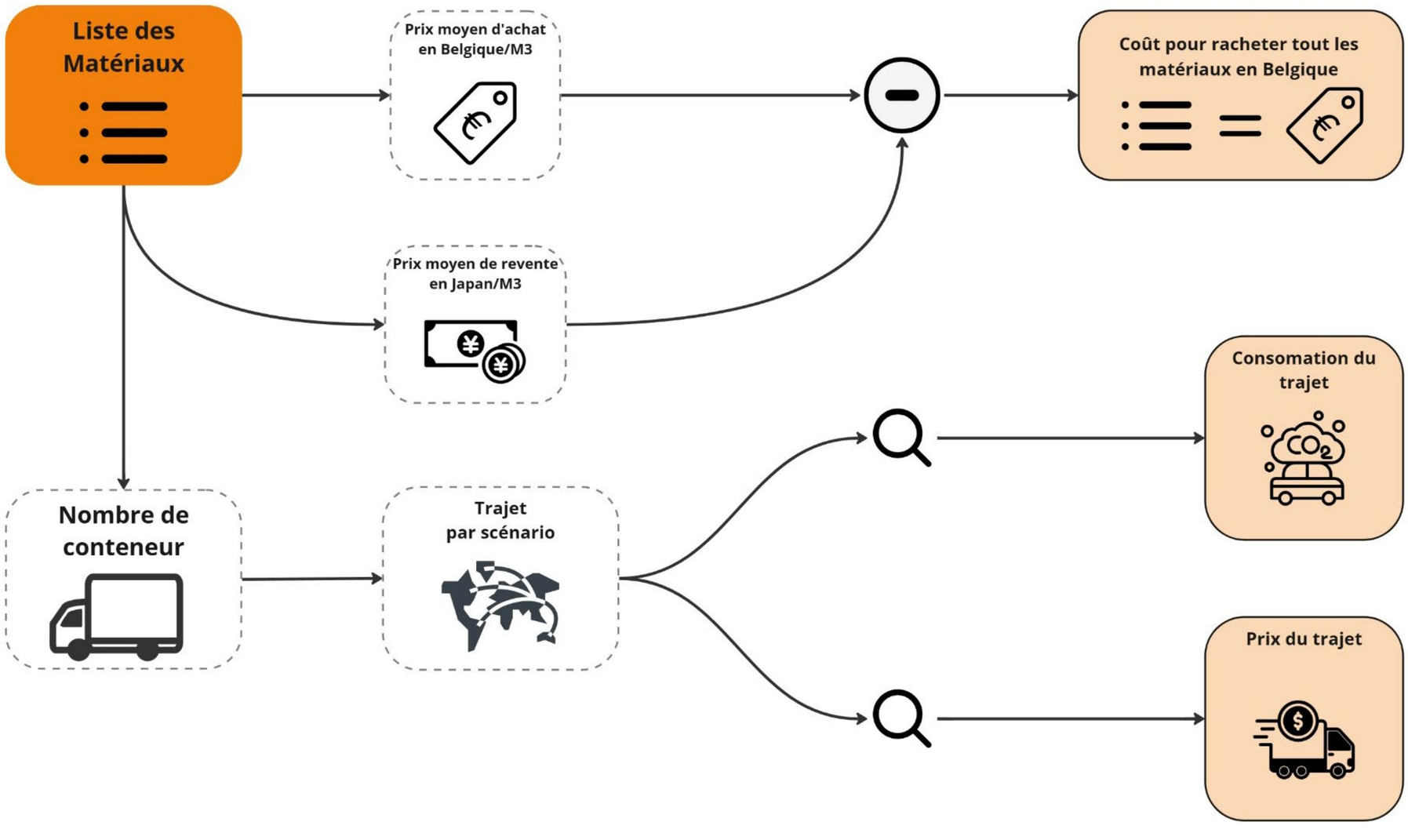
Travel and transport choices



Analysis of scenarios

Topic 1 : Transport

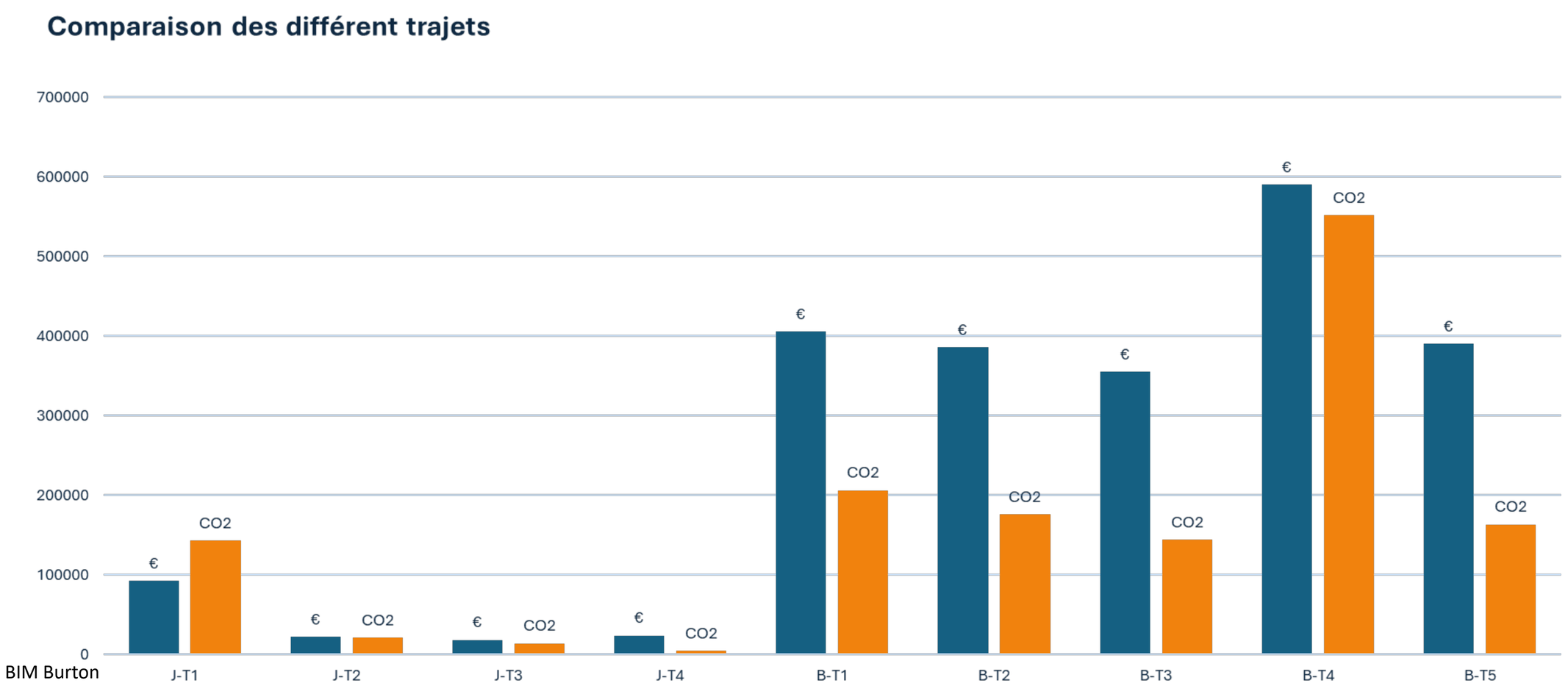
Estimating the cost of material reuse in Belgium and Japan



Analysis of scenarios

Topic 1 : Transport

Estimating the cost of material reuse in Belgium and Japan

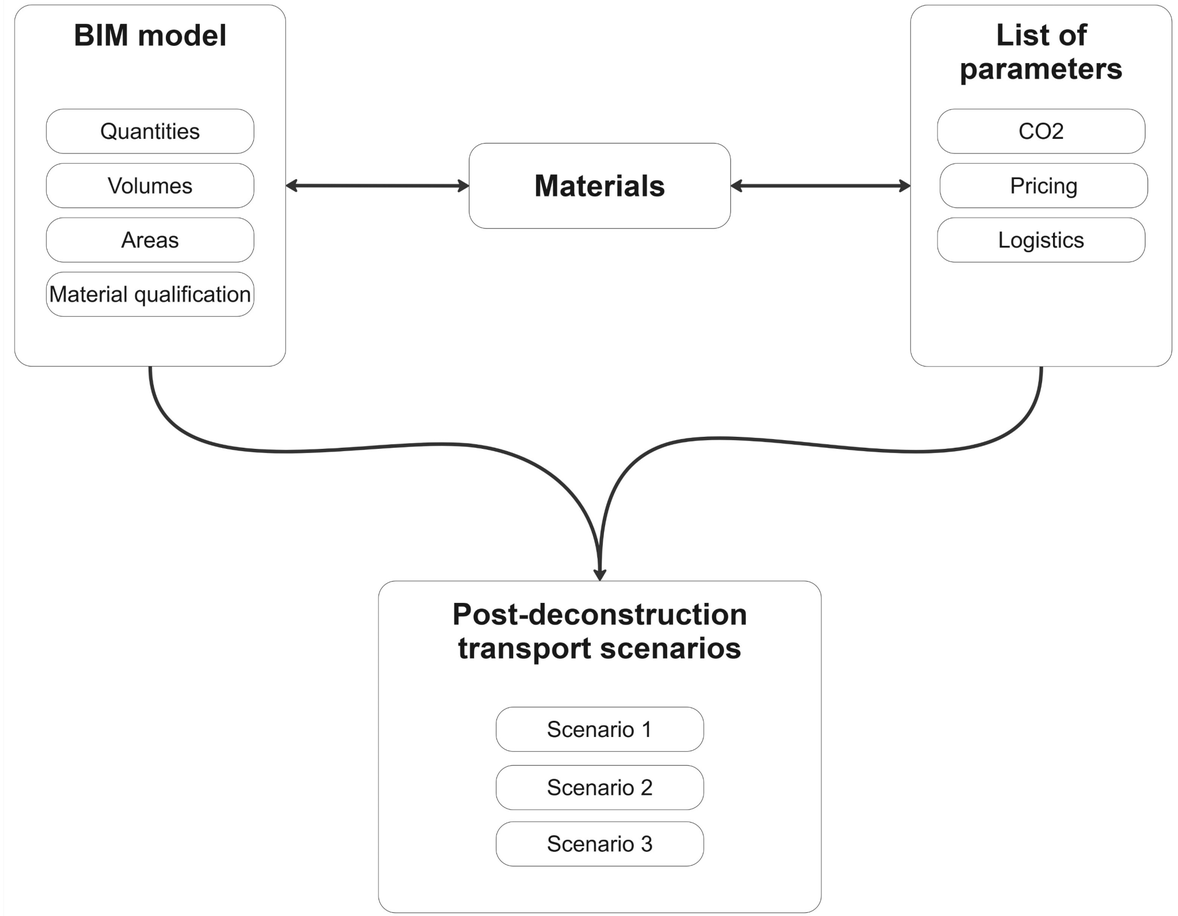


Analysis of scenarios

Topic 1 : Transport

Evaluation of results

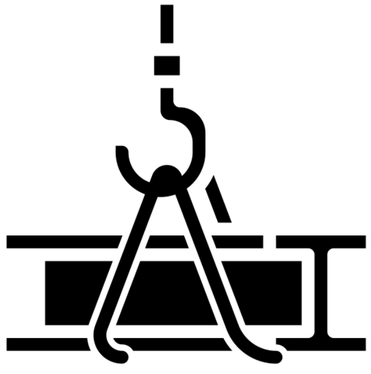
- Potential to transfer the method to other projects
- Ability to update models and exploitation data to refine or evolve scenarios
- Develop new ways to exploit BIM models



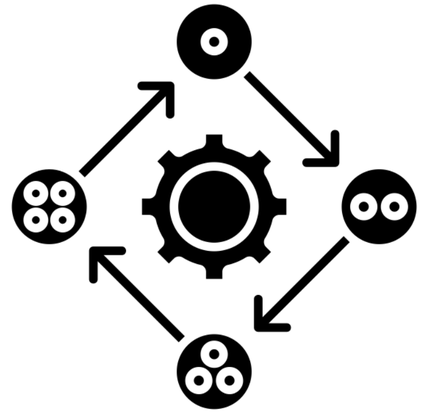
Analysis of scenarios

Topic 2 : Deconstruction phases

Manage the deconstruction phases through the qualification of building materials and equipment



MATERIALS

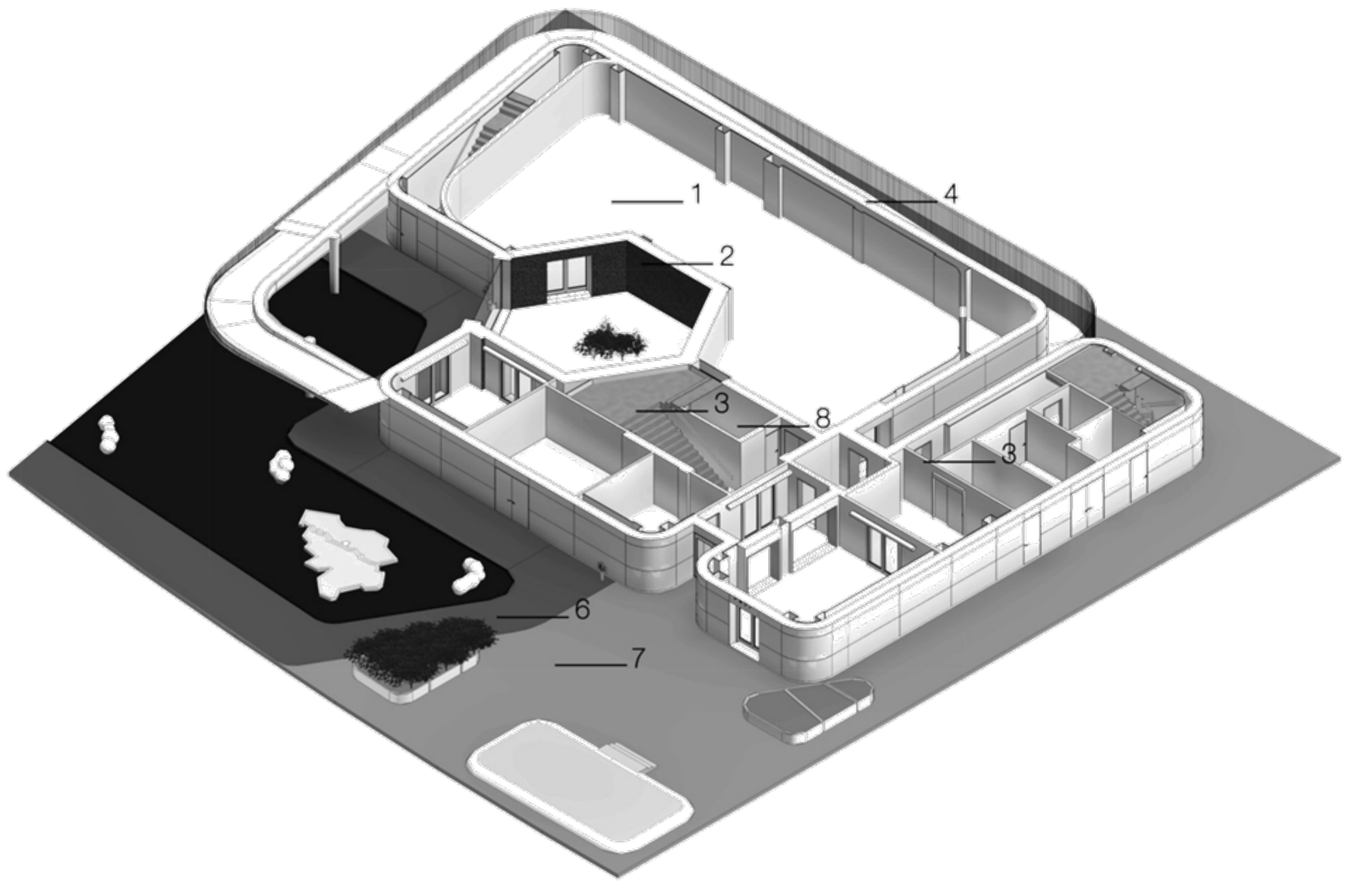


PHASES

Analysis of scenarios

Topic 2 : Deconstruction phases

Material identification



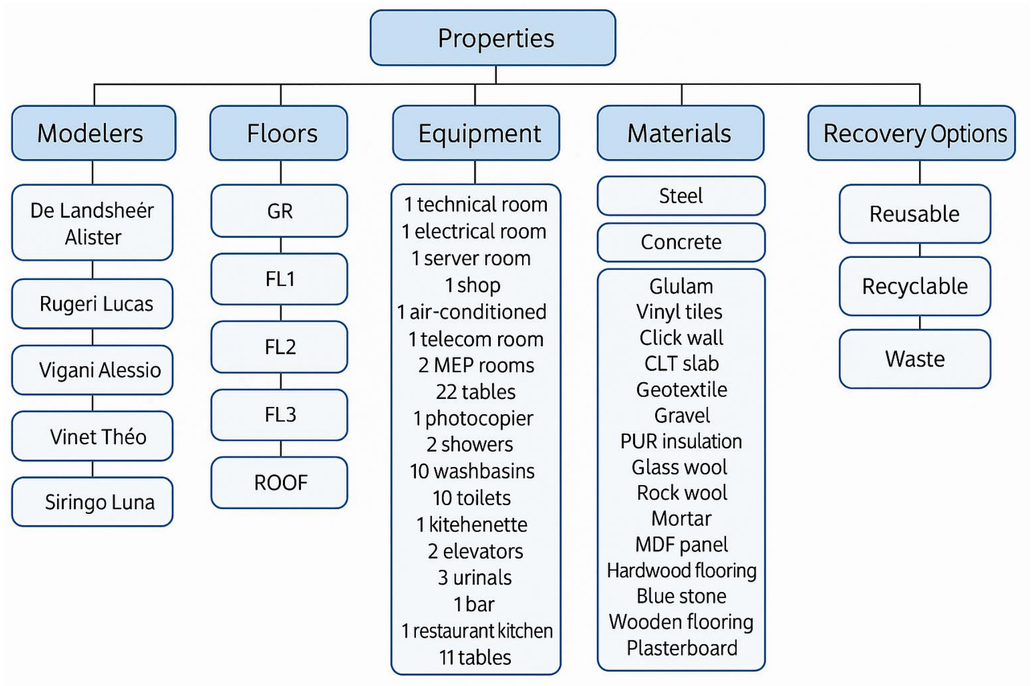
1F

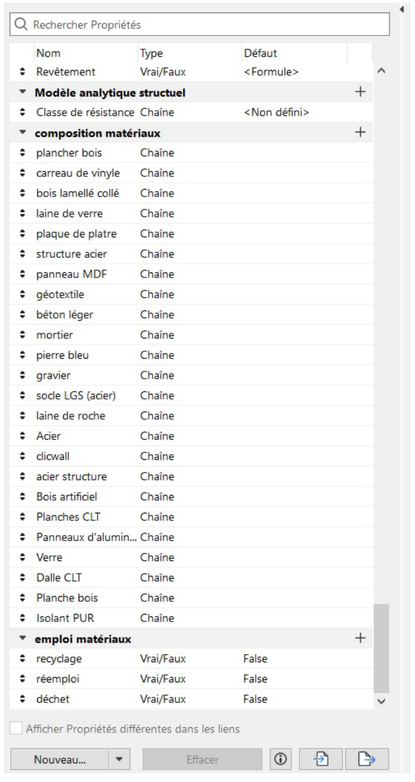
1 Sol expo : plancher bois + carreaux vinyl
2 Mur coeur : bois lamellé-collé + laine de verre + structure acier
3 Cloison : Panneau MDF + plaque de platre
4 Mur : bois lamellé-collé + laine de verre + plaque de platre
5 Escalier acier + connection PVC + main courante acier inox
6 géotextile / treillis métallique + béton + mortier
7 Pierre bleue + gravier + mortier
8 Plafond : socle LGS acier + plaque de platre

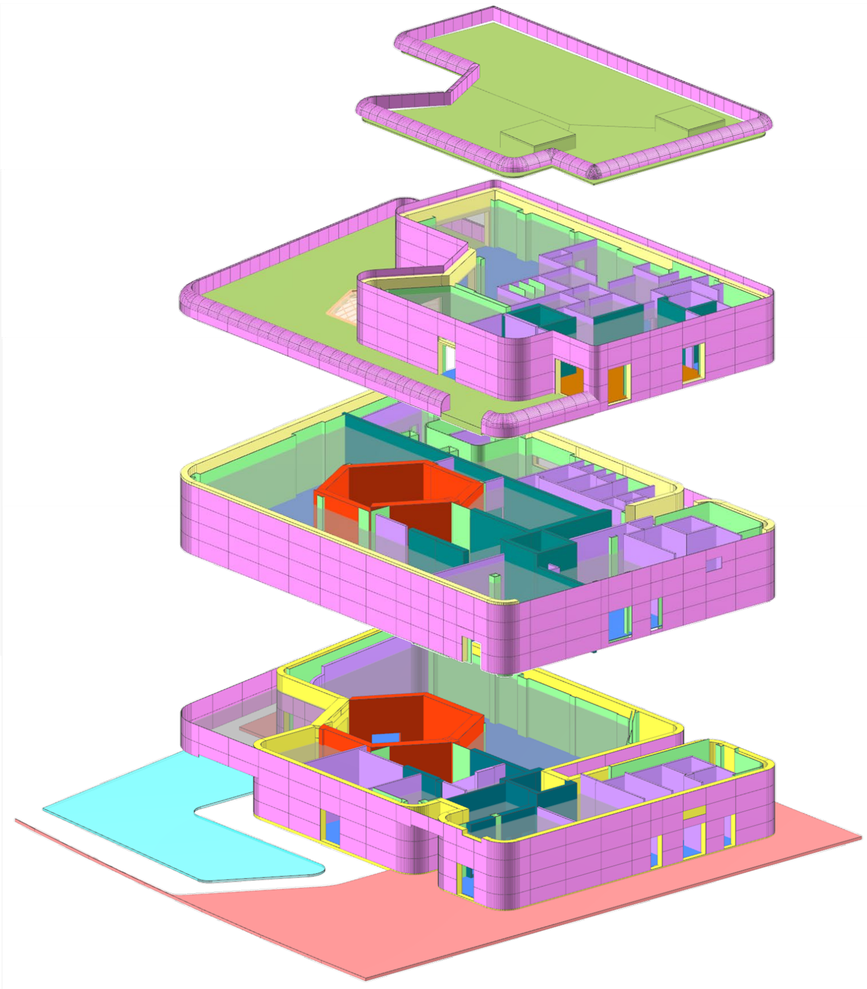
Analysis of scenarios

Topic 2 : Deconstruction phases

Material identification and property creation



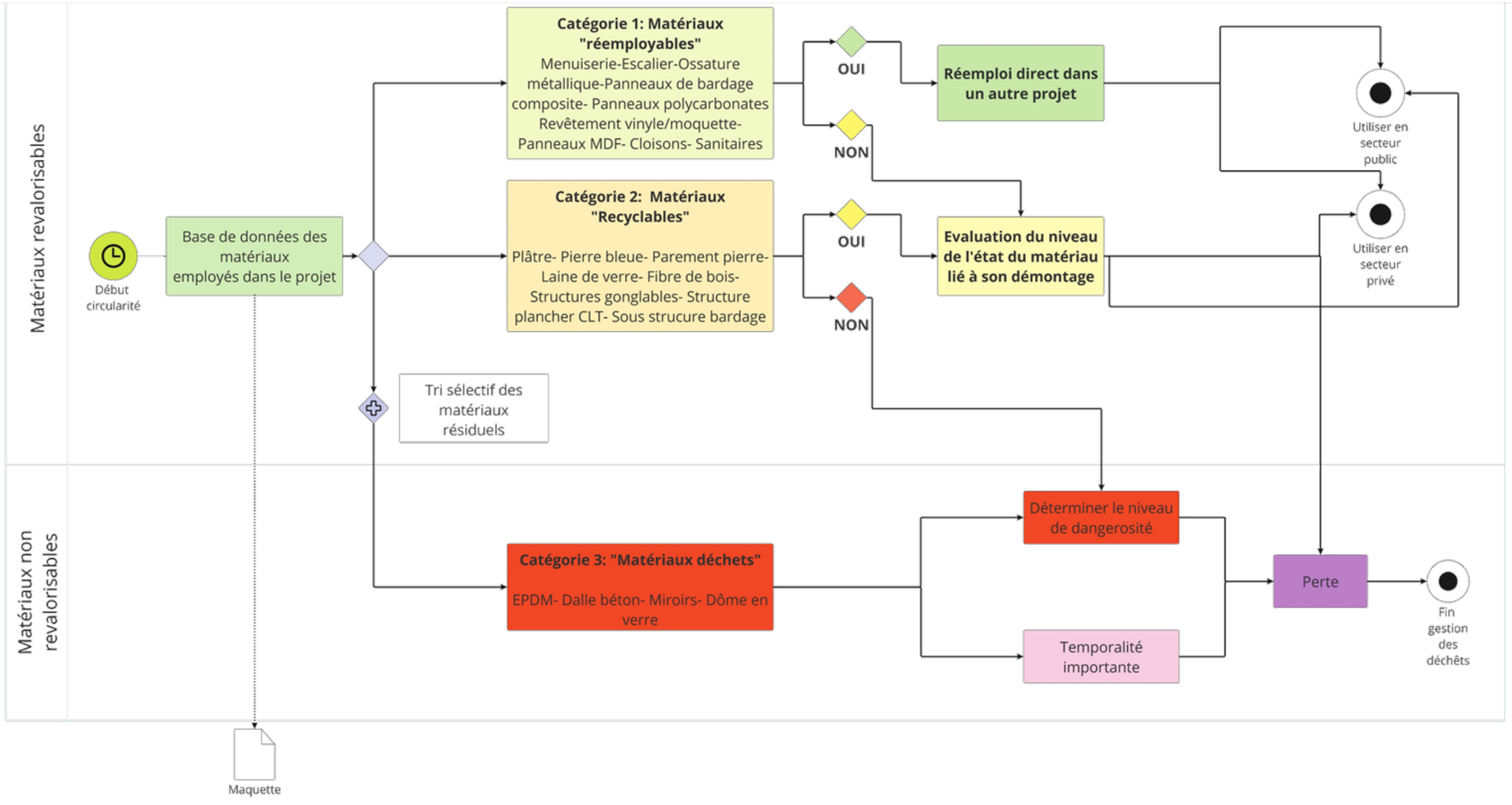




Analysis of scenarios

Topic 2 : Deconstruction phases

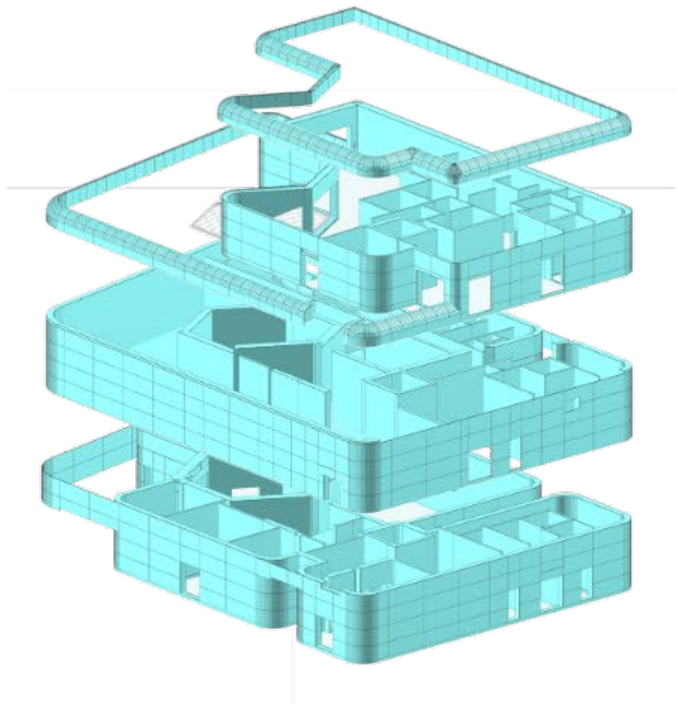
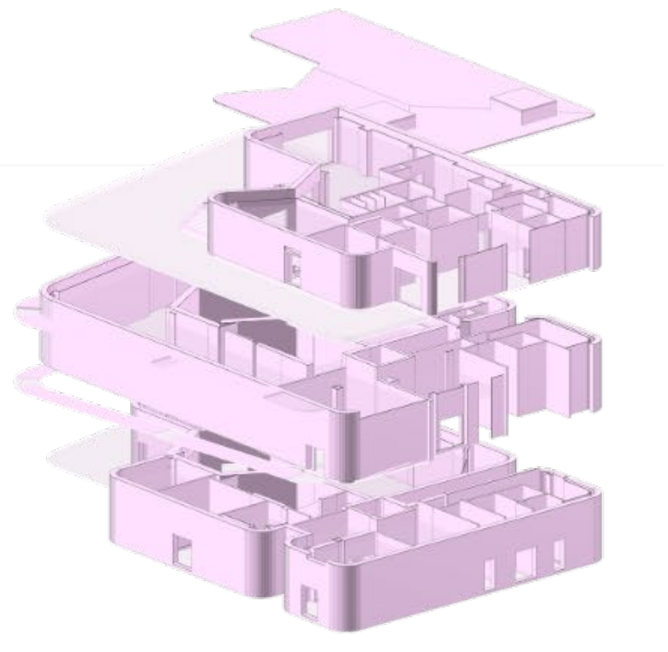
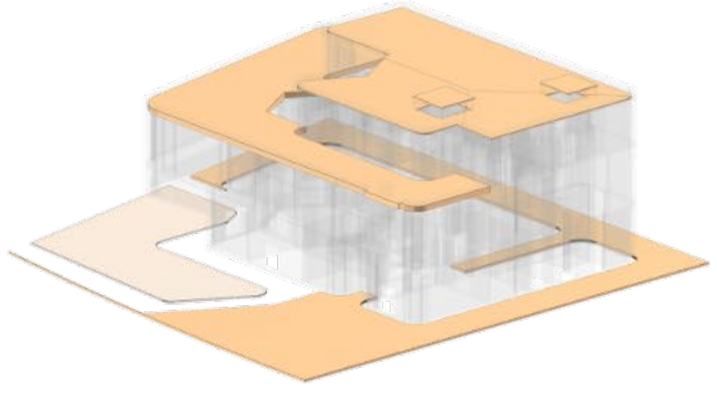
Reuse, Recycle, Waste



Analysis of scenarios

Topic 2 : Deconstruction phases

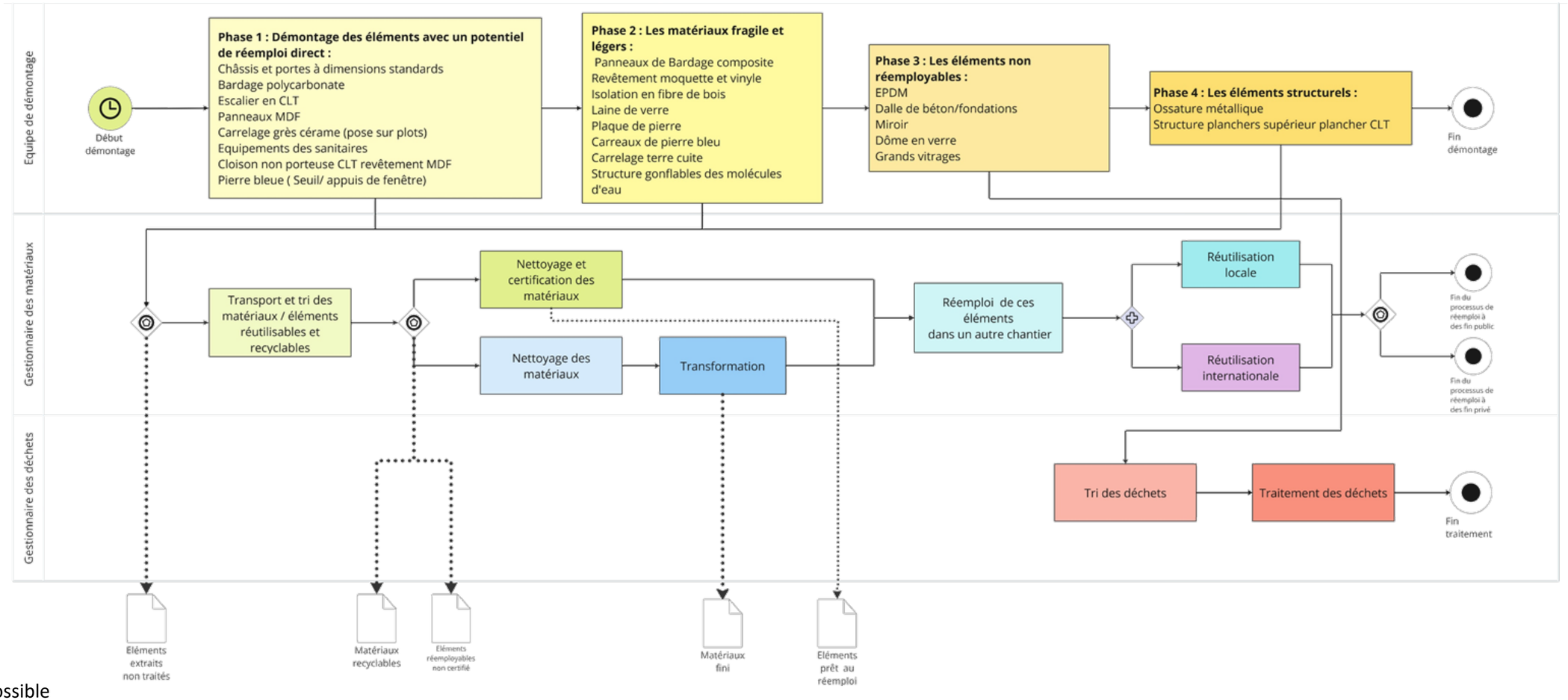
Reuse, Recycle, Waste

Reuse	Recycle	Waste
		

Analysis of scenarios

Topic 2 : Deconstruction phases

Deconstruction order based on ease of disassembly, ease of reuse, and fragility

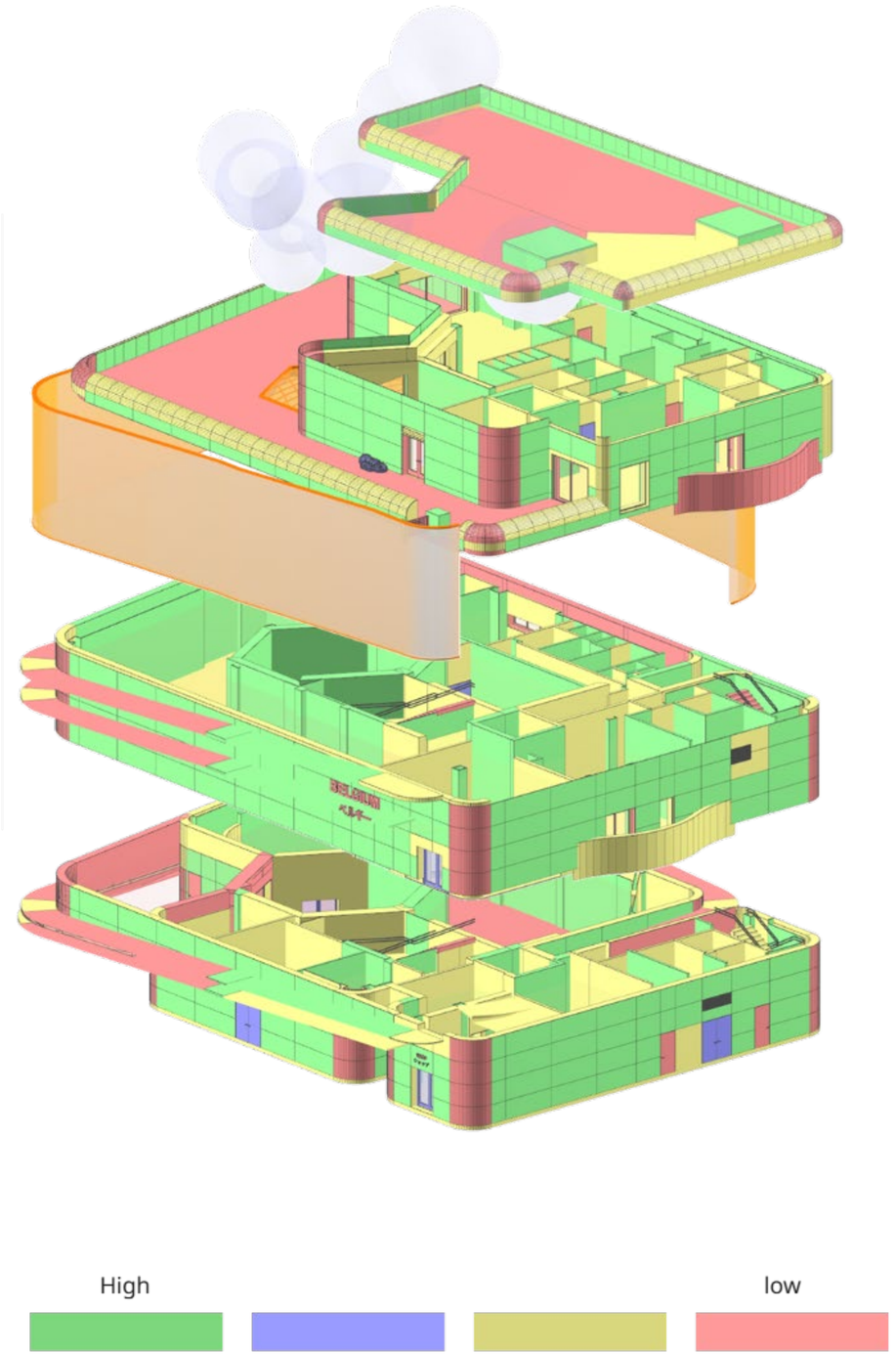


BIMPossible

Analysis of scenarios

Topic 2 : Deconstruction phases

Deconstruction priority : order based on ease of disassembly, ease of reuse, and fragility



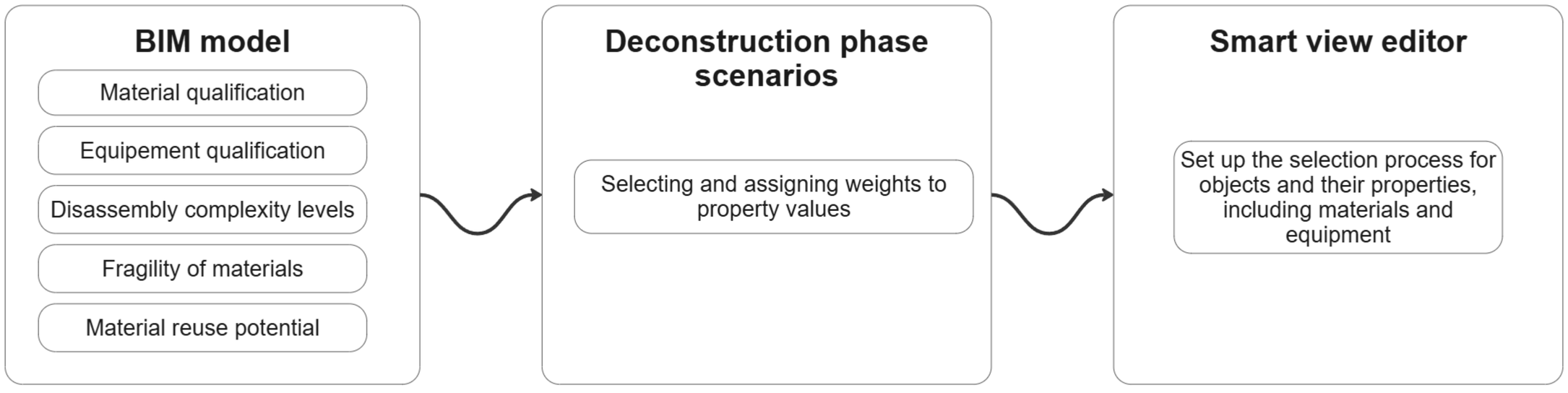
Deconstruction sequencing priority

Analysis of scenarios

Topic 2 : Deconstruction phases

Evaluation of results

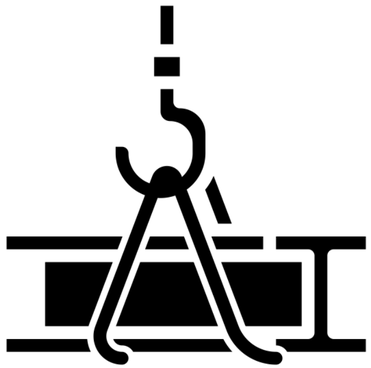
- Integration of properties for the disassembly level of objects and equipment
- Creating **data-driven scenarios** through the intersection of simple object properties
- Anticipating end-of-life of the building from the start — implementing **Design for Deconstruction** principles



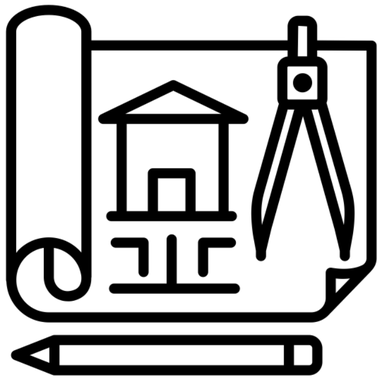
Analysis of scenarios

Topic 3 : Deconstruction for Design

Manage deconstruction for design purposes



MATERIALS

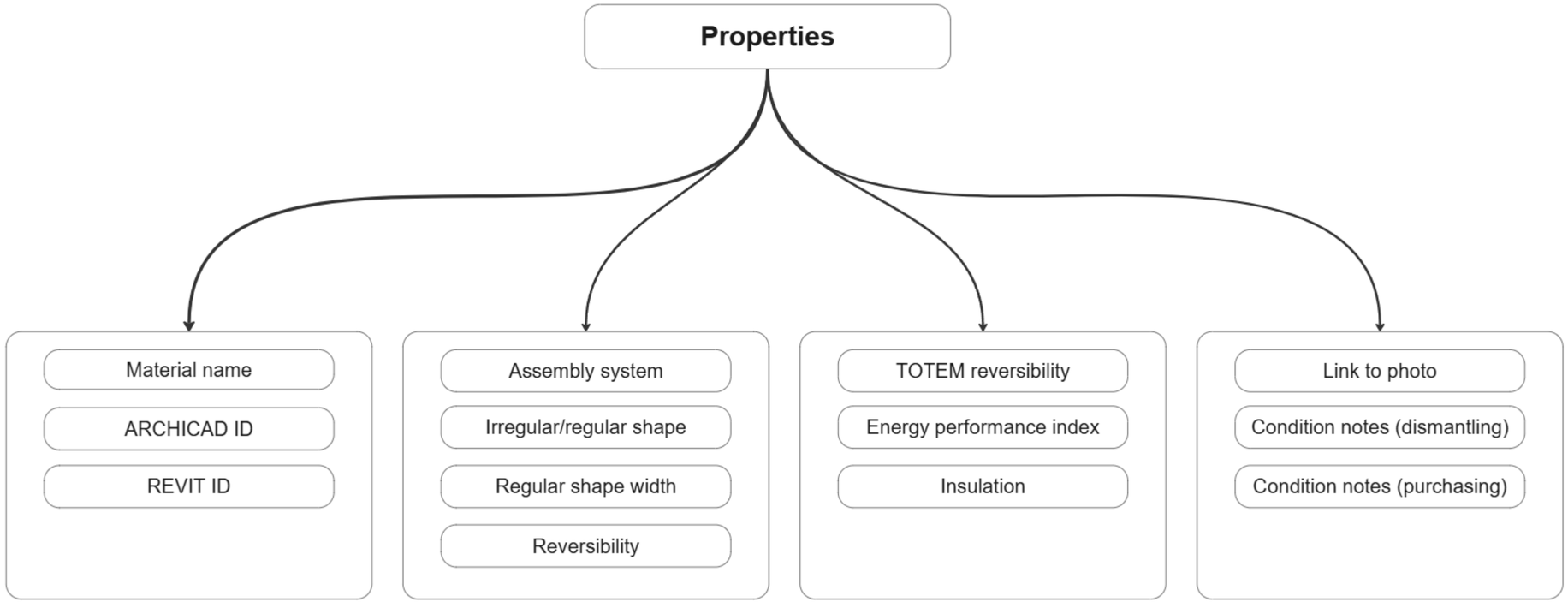


DESIGN

Analysis of scenarios

Topic 3 : Deconstruction for Design

Evolutive material properties = Create a material passport



Analysis of scenarios

Topic 3 : Deconstruction for Design

Merged IFC model

404 BIM Not Found

Analysis of scenarios

Topic 3 : Deconstruction for Design

Process

Material passport

Identification of materials present on project and their condition

Results

Reuse and circularity process implemented

Identification of the architect's needs

Use of the digital model

Smartviews

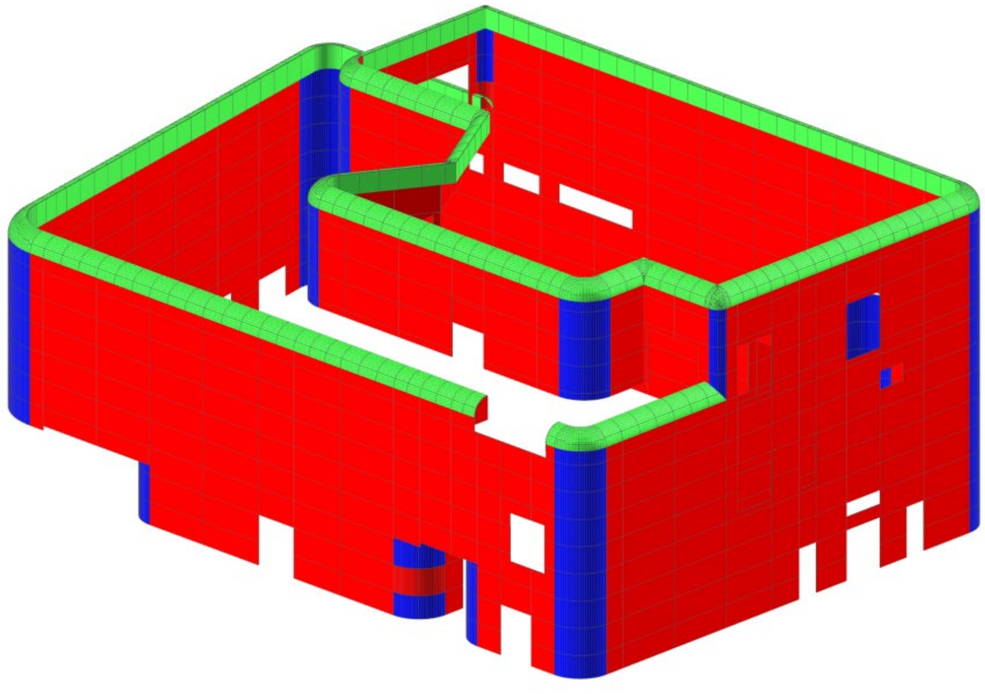
404 BIM Not Found

Analysis of scenarios

Topic 3 : Deconstruction for Design

Architect request

404 BIM Not Found

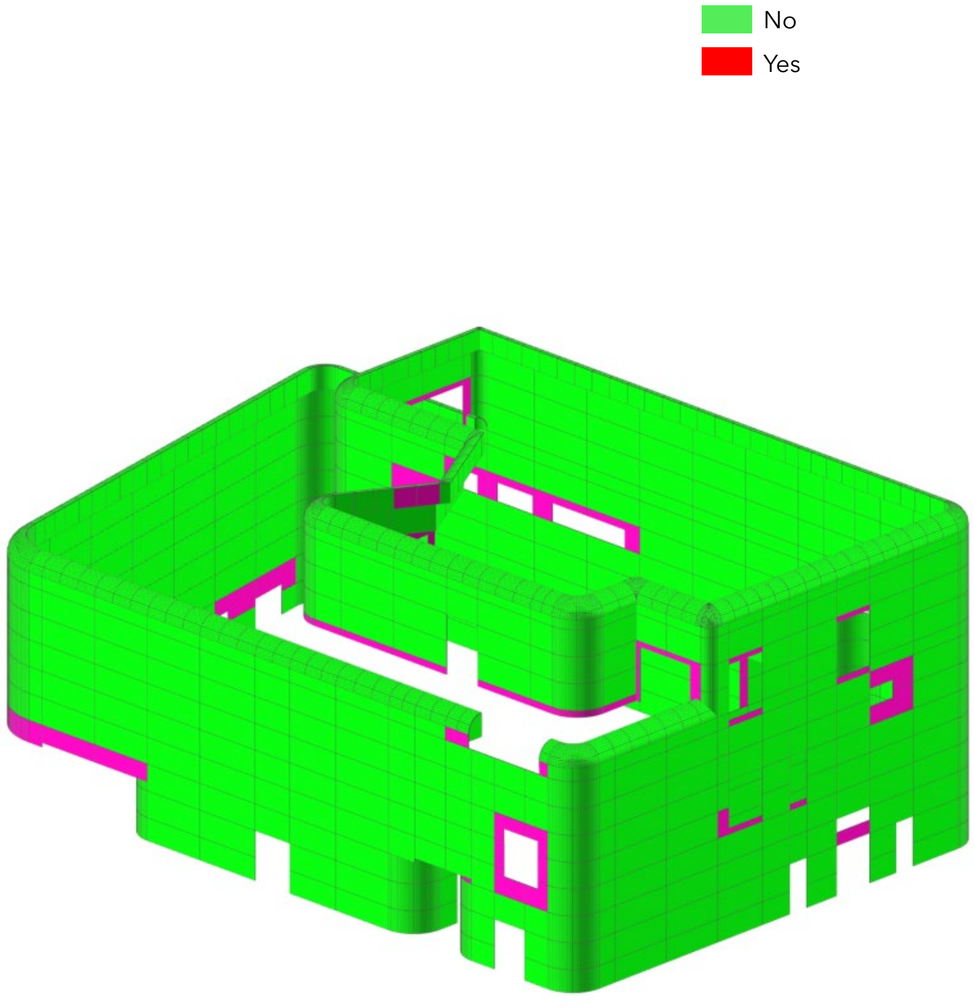


Analysis of scenarios

Topic 3 : Deconstruction for Design

Architect request

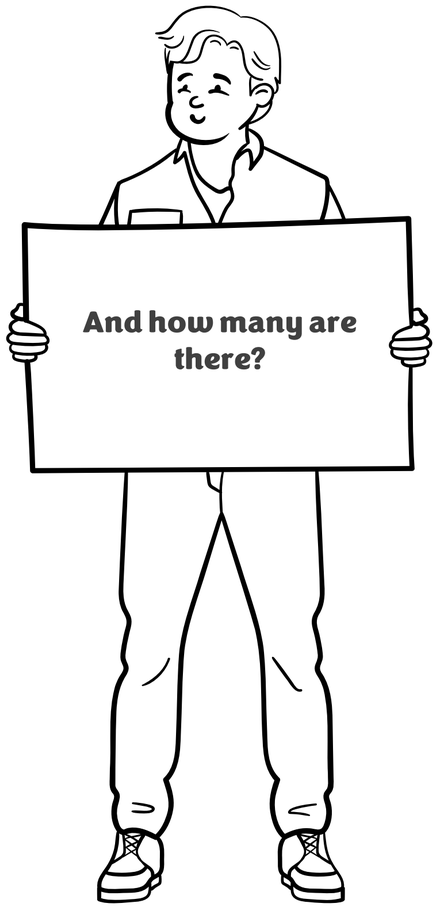
404 BIM Not Found



Analysis of scenarios

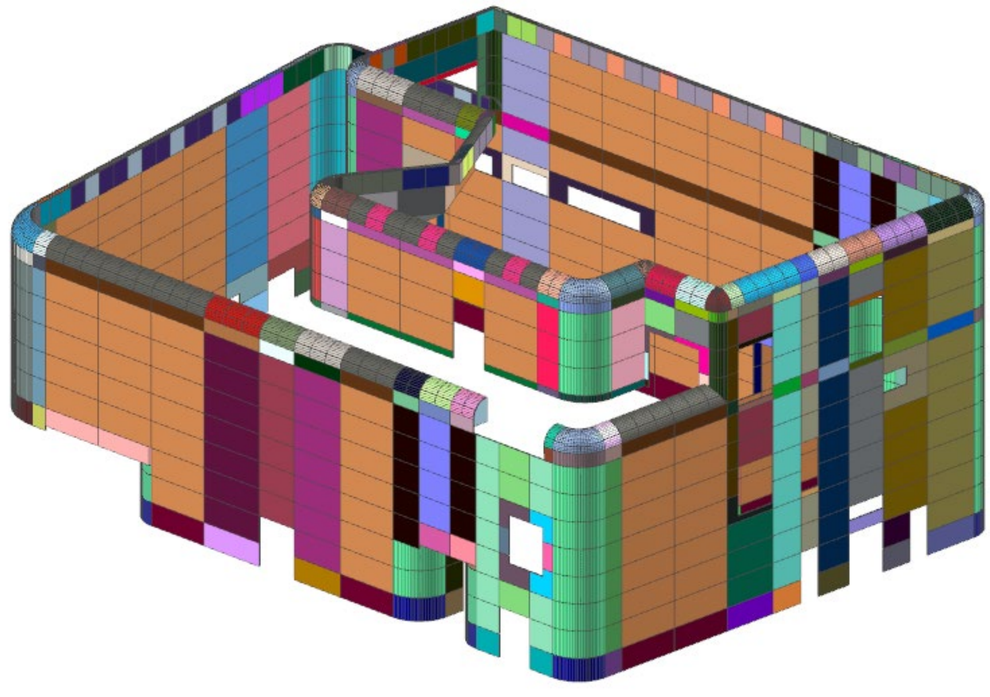
Topic 3 : Deconstruction for Design

Architect request



404 BIM Not Found

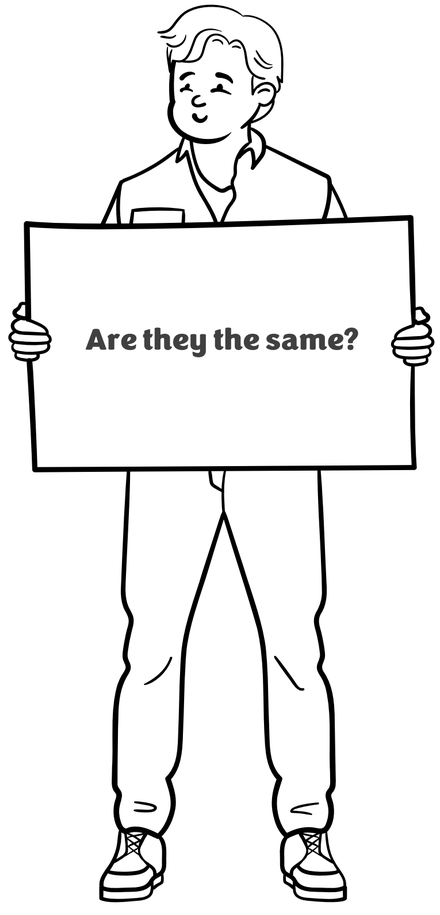
1023 Units



Analysis of scenarios

Topic 3 : Deconstruction for Design

Architect request



404 BIM Not Found

ロックパネル (t=11mm):H1200xW1988	1	
ロックパネル (t=11mm):H1200xW2000	10	
ロックパネル (t=11mm):H1200xW214	1	
ロックパネル (t=11mm):H1200xW2146.5	2	
ロックパネル (t=11mm):H1200xW2147	3	
ロックパネル (t=11mm):H1200xW2211	6	
ロックパネル (t=11mm):H1200xW2232.5	2	
ロックパネル (t=11mm):H1200xW2421	2	
ロックパネル (t=11mm):H1200xW2422	3	
ロックパネル (t=11mm):H1200xW2500	3	
ロックパネル (t=11mm):H1200xW2535	1	
ロックパネル (t=11mm):H1200xW2545	10	
ロックパネル (t=11mm):H1200xW256.5	1	
ロックパネル (t=11mm):H1200xW2564	7	
ロックパネル (t=11mm):H1200xW2655.5	3	
ロックパネル (t=11mm):H1200xW2672	10	
ロックパネル (t=11mm):H1200xW2683	10	
ロックパネル (t=11mm):H1200xW2727	9	
ロックパネル (t=11mm):H1200xW290	1	
ロックパネル (t=11mm):H1200xW2989	6	
ロックパネル (t=11mm):H1200xW3017	6	
ロックパネル (t=11mm):H1200xW3050	154	
ロックパネル (t=11mm):H1200xW307	2	
ロックパネル (t=11mm):H1200xW3195	7	
ロックパネル (t=11mm):H1200xW349	2	
ロックパネル (t=11mm):H1200xW401	1	
ロックパネル (t=11mm):H1200xW445	6	
ロックパネル (t=11mm):H1200xW460	1	
ロックパネル (t=11mm):H1200xW464	3	
ロックパネル (t=11mm):H1200xW549	1	
ロックパネル (t=11mm):H1200xW566	1	
ロックパネル (t=11mm):H1200xW598	1	
ロックパネル (t=11mm):H1200xW640	2	
ロックパネル (t=11mm):H1200xW647.5	6	
ロックパネル (t=11mm):H1200xW742	5	
ロックパネル (t=11mm):H1200xW950.5	7	
ロックパネル (t=11mm):H230xW1970	1	
ロックパネル (t=11mm):H230xW2000	1	
ロックパネル (t=11mm):H230xW2421	2	
ロックパネル (t=11mm):H250xW1000	1	
ロックパネル (t=11mm):H267xW1970	1	
ロックパネル (t=11mm):H267xW2000	1	
ロックパネル (t=11mm):H302xW1250	1	
ロックパネル (t=11mm):H302xW1535.5	1	
ロックパネル (t=11mm):H302xW1957	1	
ロックパネル (t=11mm):H302xW214	1	
ロックパネル (t=11mm):H302xW2147	1	
ロックパネル (t=11mm):H302xW2672	1	
ロックパネル (t=11mm):H302xW3050	3	
ロックパネル (t=11mm):H302xW464	1	
ロックパネル (t=11mm):H302xW598	1	
ロックパネル (t=11mm):H443xW1000	1	
ロックパネル (t=11mm):H443xW1083	1	

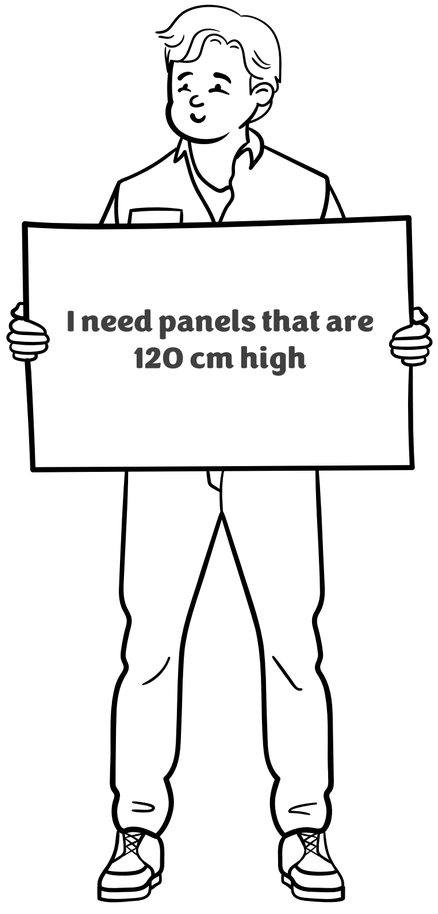
ロックパネル (t=11mm):H443xW3050	10	
ロックパネル (t=11mm):H443xW464	1	
ロックパネル (t=11mm):H443xW647.5	1	
ロックパネル (t=11mm):H582xW1970	1	
ロックパネル (t=11mm):H607xW1000	1	
ロックパネル (t=11mm):H607xW1331	1	
ロックパネル (t=11mm):H607xW1496	3	
ロックパネル (t=11mm):H607xW1619	1	
ロックパネル (t=11mm):H607xW1778	1	
ロックパネル (t=11mm):H607xW1784	2	
ロックパネル (t=11mm):H607xW1838	1	
ロックパネル (t=11mm):H607xW1879	1	
ロックパネル (t=11mm):H607xW2000	1	
ロックパネル (t=11mm):H607xW2211	1	
ロックパネル (t=11mm):H607xW2545	1	
ロックパネル (t=11mm):H607xW2564	1	
ロックパネル (t=11mm):H607xW2672	1	
ロックパネル (t=11mm):H607xW2683	1	
ロックパネル (t=11mm):H607xW2727	1	
ロックパネル (t=11mm):H607xW2989	1	
ロックパネル (t=11mm):H607xW3017	1	
ロックパネル (t=11mm):H607xW3050	17	
ロックパネル (t=11mm):H607xW3195	1	
ロックパネル (t=11mm):H607xW486	1	
ロックパネル (t=11mm):H607xW647.5	1	
ロックパネル (t=11mm):H607xW742	1	
ロックパネル (t=11mm):H443xW1250	1	
ロックパネル (t=11mm):H443xW1496	2	
ロックパネル (t=11mm):H443xW1535.5	1	
ロックパネル (t=11mm):H443xW1619	1	
ロックパネル (t=11mm):H443xW1678	1	
ロックパネル (t=11mm):H443xW1750	1	
ロックパネル (t=11mm):H443xW1778	1	
ロックパネル (t=11mm):H443xW1784	1	
ロックパネル (t=11mm):H443xW1800	1	
ロックパネル (t=11mm):H443xW1879	1	
ロックパネル (t=11mm):H443xW1957	1	
ロックパネル (t=11mm):H443xW1970	3	
ロックパネル (t=11mm):H443xW2000	1	
ロックパネル (t=11mm):H443xW2147	1	
ロックパネル (t=11mm):H443xW2421	2	
ロックパネル (t=11mm):H443xW2535	1	
ロックパネル (t=11mm):H443xW2545	1	
ロックパネル (t=11mm):H443xW2564	1	
ロックパネル (t=11mm):H443xW2672	1	
ロックパネル (t=11mm):H443xW2683	1	
ロックパネル (t=11mm):H443xW2727	1	
ロックパネル (t=11mm):H443xW3050	10	
ロックパネル (t=11mm):H443xW464	1	
ロックパネル (t=11mm):H443xW647.5	1	
ロックパネル (t=11mm):H582xW1970	1	
ロックパネル (t=11mm):H607xW1000	1	
ロックパネル (t=11mm):H607xW1331	1	

ロックパネル (t=11mm):H896xW896	2	
ロックパネル (t=11mm):H896xW935.5	2	
ロックパネル (t=11mm):H896xW981	2	
ロックパネル (t=11mm):H896xW996	2	
ロックパネル (t=11mm)_CUT:H1200xW1333	2	
ロックパネル (t=11mm)_CUT:H1200xW1750	3	
ロックパネル (t=11mm)_CUT:H1200xW1970	1	
ロックパネル (t=11mm)_CUT:H1200xW2564	2	
ロックパネル (t=11mm)_CUT:H1200xW2655.5	1	
ロックパネル (t=11mm)_CUT:H1200xW2727	1	
ロックパネル (t=11mm)_CUT:H1200xW2989	1	
ロックパネル (t=11mm)_CUT:H1200xW3017	1	
ロックパネル (t=11mm)_CUT:H1200xW3050	4	
ロックパネル (t=11mm)_CUT△:H1200xW1083	1	
ロックパネル (t=11mm)_CUT△:H1200xW1970	1	
ロックパネル (t=11mm)_CUT△:H1200xW2535	2	
ロックパネル (t=11mm)_CUT△:H1200xW3050	2	
ロックパネル (t=11mm)_CUTマ:H1200xW125	1	
ロックパネル (t=11mm)_CUTマ:H1200xW290	1	
ロックパネル (t=11mm)_endロックパネル (t=11mm)_end	2	
ロックパネル (t=6):ロックパネル (t=6)	1	
ロックパネル (t=6)_1:ロックパネル (t=6)_1	1	
ロックパネル (R=1500):ロックパネル (Alpha=100.23°)	1	
ロックパネル (R=1500):ロックパネル (Alpha=120°)	1	
ロックパネル (R=1500):ロックパネル (Alpha=90°)	4	
ロックパネル (R=1500,H=1056):ロックパネル (Alpha=100.23°)	1	
ロックパネル (t=11mm):H800xW3050	2	
ロックパネル (t=11mm):H896xW1000	1	
ロックパネル (t=11mm):H896xW1009.5	1	
ロックパネル (t=11mm):H896xW1010	9	
ロックパネル (t=11mm):H896xW1012	21	
ロックパネル (t=11mm):H896xW1083	1	
ロックパネル (t=11mm):H896xW621	2	
ロックパネル (t=11mm):H896xW710	2	
ロックパネル (t=11mm):H896xW711	1	
ロックパネル (t=11mm):H896xW744	4	
ロックパネル (t=11mm):H896xW763.8	2	
ロックパネル (t=11mm):H896xW765	1	
ロックパネル (t=11mm):H896xW802	5	
ロックパネル (t=11mm):H896xW805.5	4	
ロックパネル (t=11mm):H896xW835	2	
ロックパネル (t=11mm):H896xW840	3	
ロックパネル (t=11mm):H896xW841	2	
ロックパネル (t=11mm):H896xW843	3	
ロックパネル (t=11mm):H896xW848	1	
ロックパネル (t=11mm):H896xW849	2	
ロックパネル (t=11mm):H896xW850	2	
ロックパネル (t=11mm):H896xW871	2	
ロックパネル (t=11mm):H896xW885	4	
ロックパネル (t=11mm):H896xW886	1	
ロックパネル (t=11mm):H896xW888	2	
ロックパネル (t=11mm):H896xW889	3	

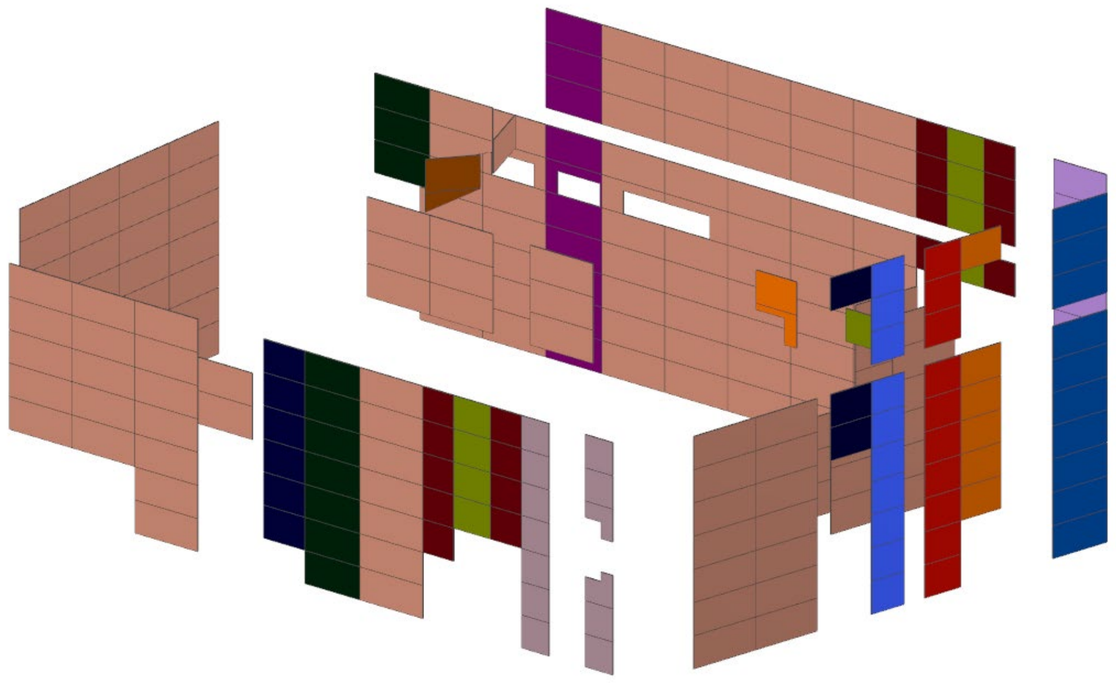
Analysis of scenarios

Topic 3 : Deconstruction for Design

Architect request



404 BIM Not Found



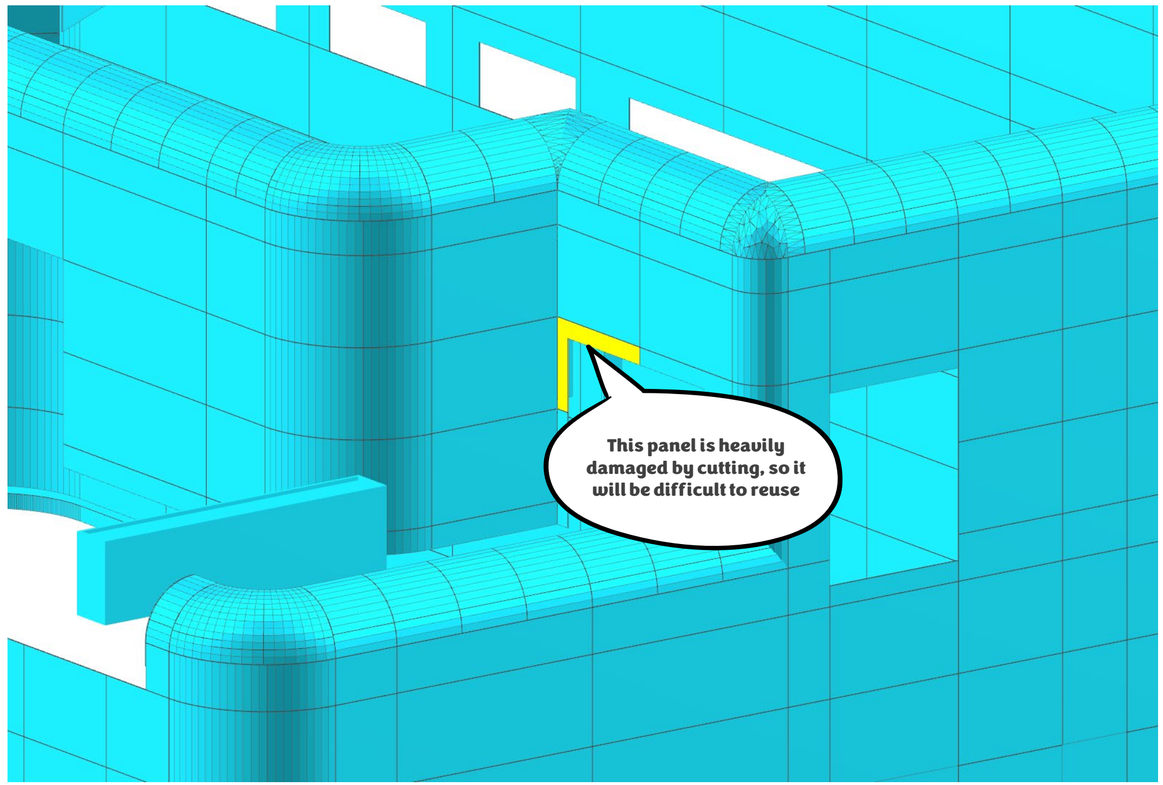
Analysis of scenarios

Topic 3 : Deconstruction for Design

Architect request

404 BIM Not Found

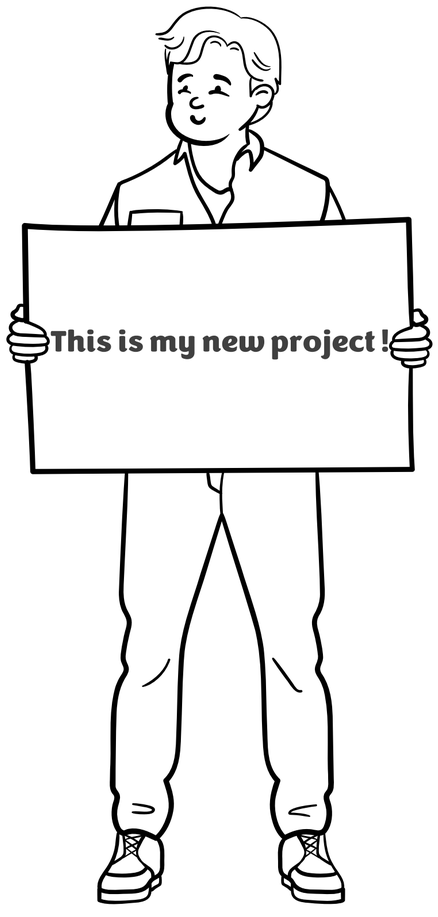
Lien vers commentaire	#	Couleur
Ce panneau est très endommagé par la découpe, il sera donc difficile à réemployer	1	
Non défini	1049	



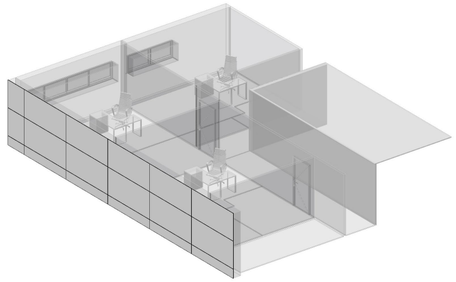
Analysis of scenarios

Topic 3 : Deconstruction for Design

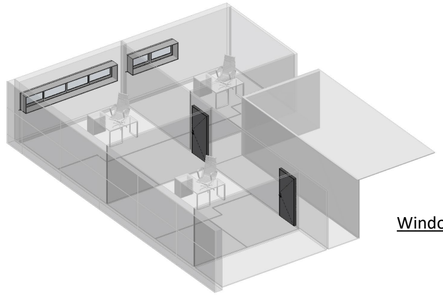
Architect request



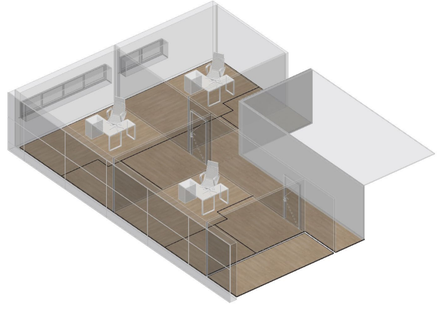
404 BIM Not Found



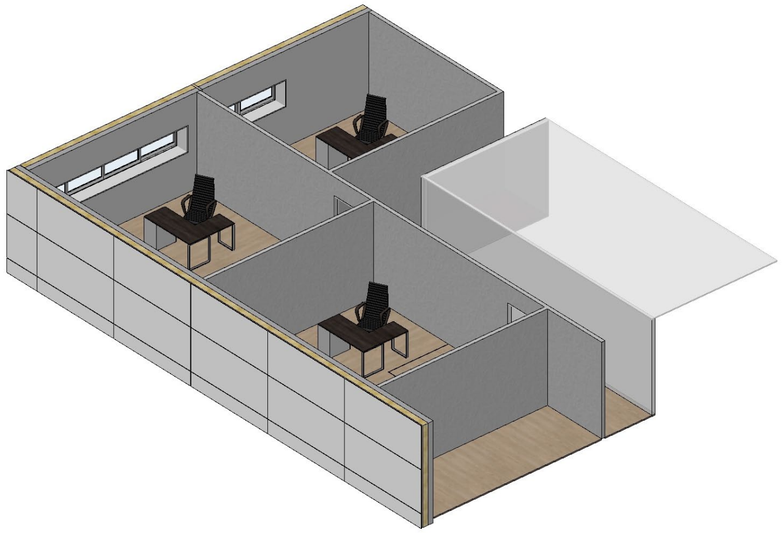
Panels



Windows and doors



Slabs

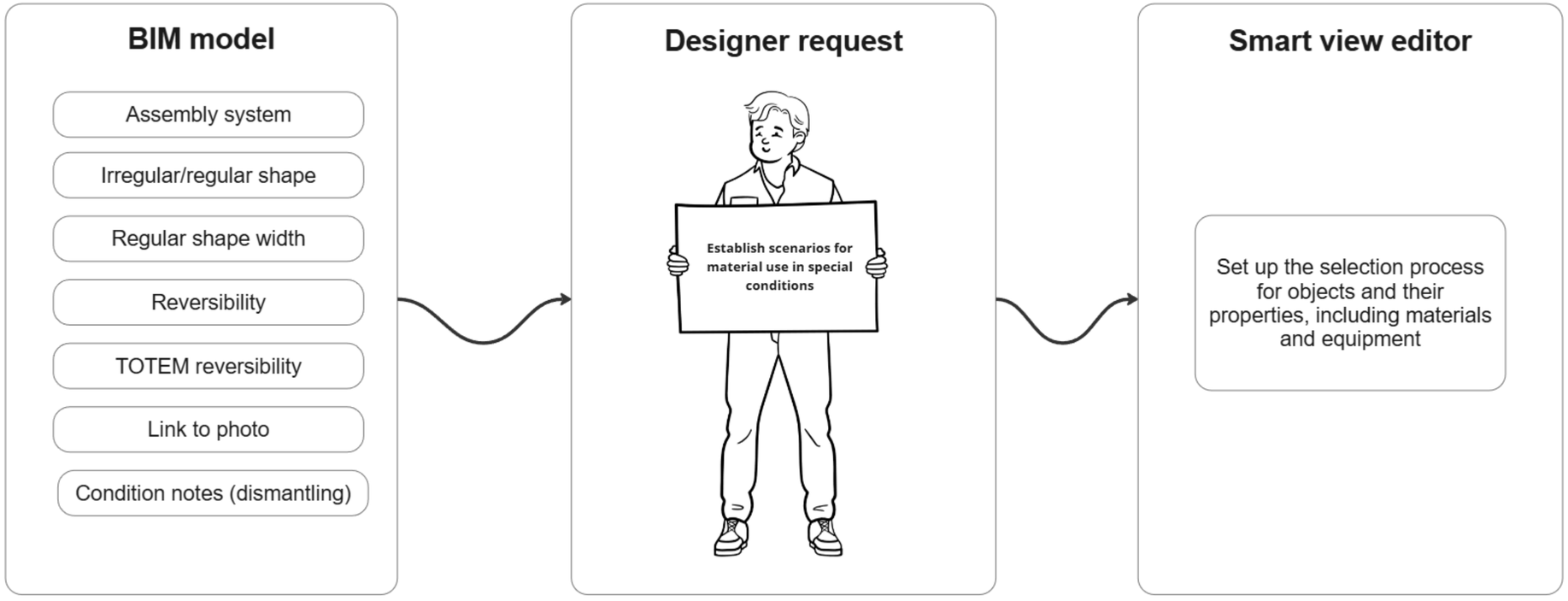


Analysis of scenarios

Topic 3 : Deconstruction for Design

Evaluation of results

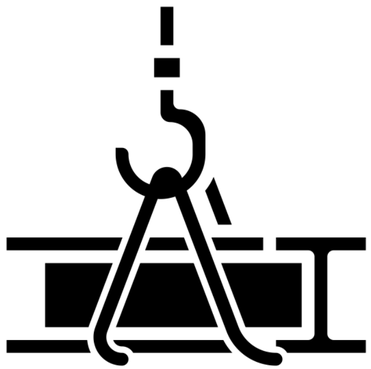
- Define material properties **to meet post-deconstruction design** requirements
- Establishing a workflow involving **third-party design contributors**



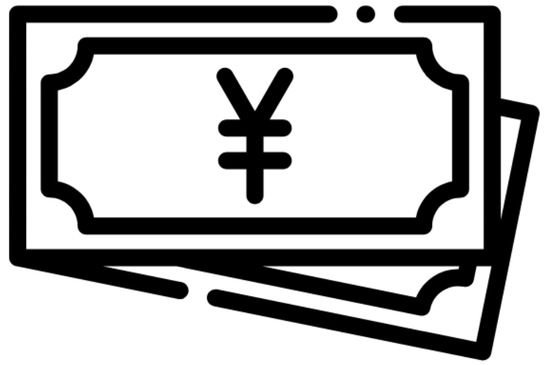
Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Manage deconstruction for economic purposes



MATERIALS

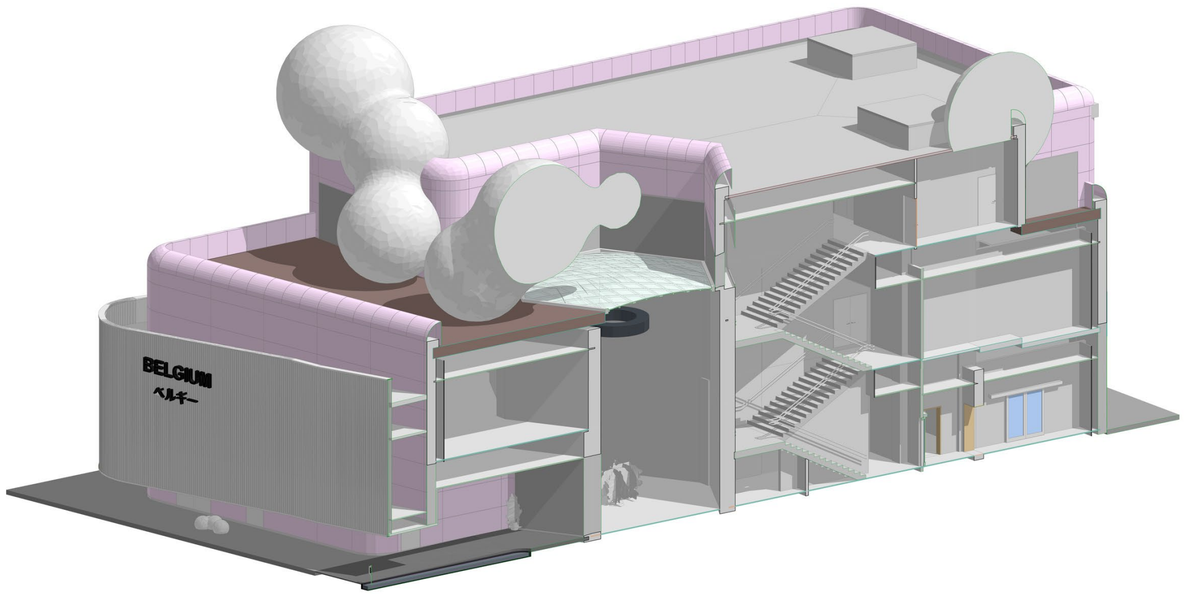


ECONOMIC VALUE

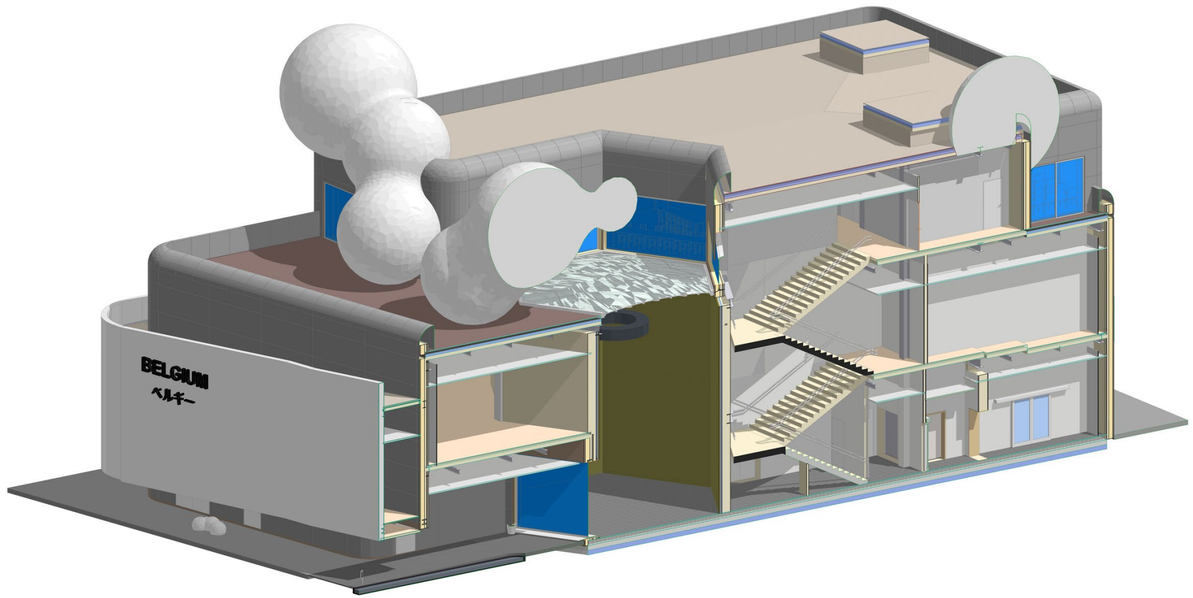
Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Enhance material granularity within the BIM model



Input IFC model



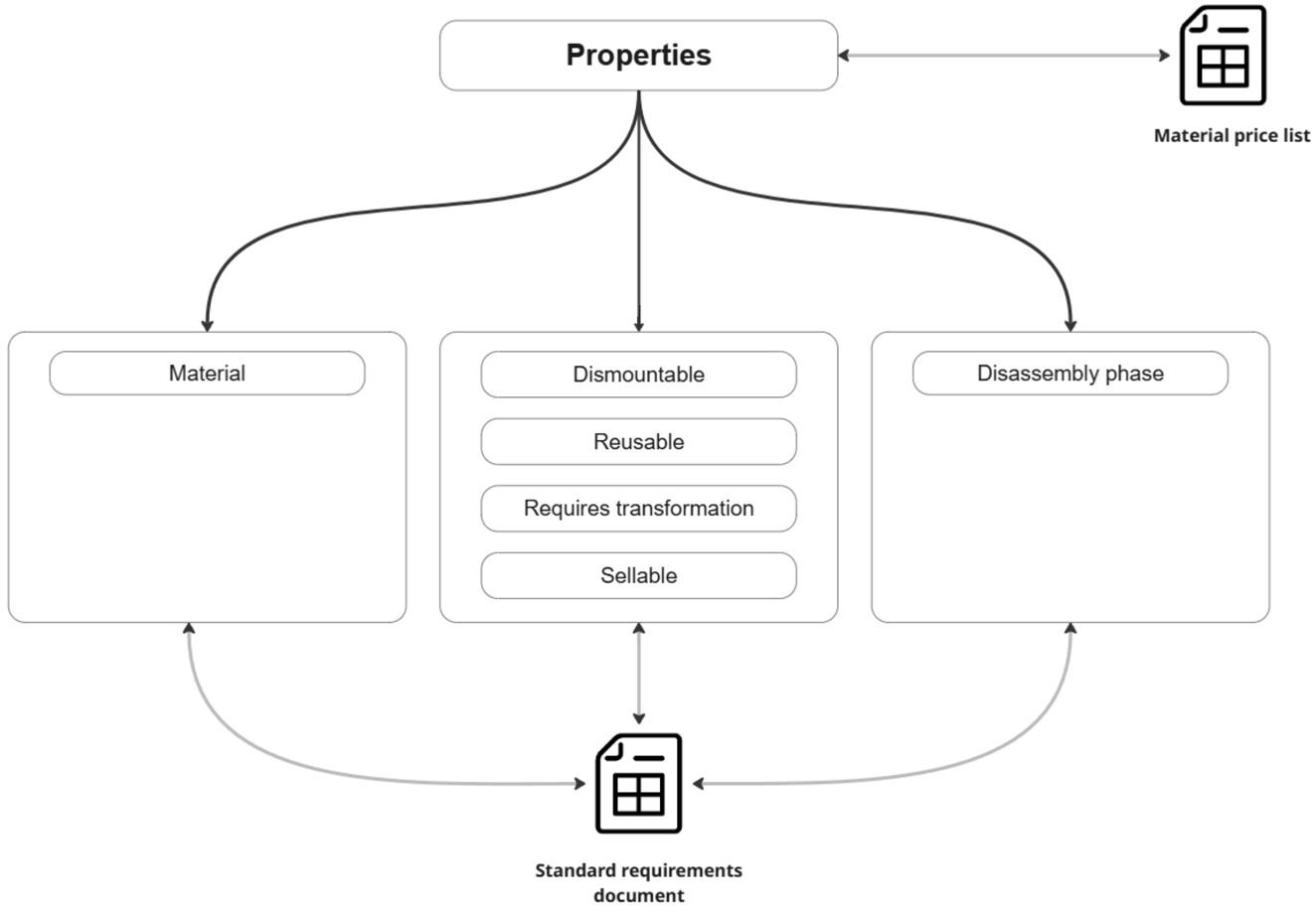
Remodeled ArchiCAD model

SaBIM & Partners

Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Streamlined set of properties to support selection matrix development



Materials	Price/u (€)
Tiles	65.00
Plywood	13.50
Decoration	
Battens	12.90
Carpentry	
CLT (15cm)	178.00
CLT (10cm)	140.00
Furniture	
Stabilized green wall (natural)	690.00
Soundproofing panel	158.33
PIR insulation roof+slab (20cm)	35.00
PIR wall insulation (10cm)	27.99
HEA 160 Post	48.48
HEA 320 Post	190.90
HEA 220 Beam	84.84
HEA 400 Beam	245.81
IPE 200 Beam	38.02
IPEA 300 Beam	148.36
Raft	79.00
Rock wool	12.50
Glass wool	3.00
Rock Panel board	104.16
Vegetal support	56.76
Vinyl	12.50
Pedestal	2.80
Metal stud	1.93

CCT-B Volumes	Common name	CCTB Reference	Ease of disassembly	Ease of reassembly	Modularity	Storability	Occurrences	Current availability	Location	Production impact	Performance requirement	FINAL SCORE
		Weighting	**0,5**	**2**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	
5	Hardware: door closers, handles, door stops, etc.	Additional or specific hardware, 93.16.2 Concrete	3	3	2	3	2	3	1	3	1	

Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Streamlined set of properties to support scenario matrix development

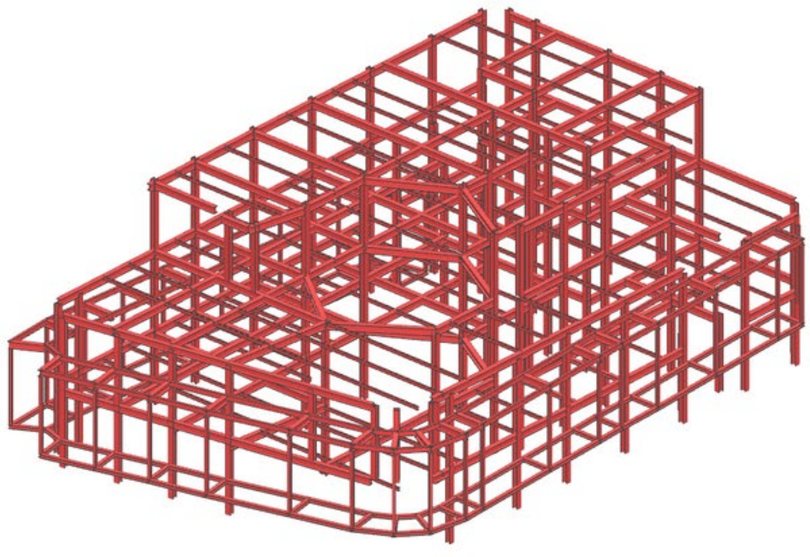
Property	Dismountable	Reusable	Requires transformation	Sellable
Scenario 1	~~Yes~~	Yes	Yes	Yes
	No	~~No~~	~~No~~	~~No~~

Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Streamlined set of properties to support selection matrix development

Property	Dismountable	Reusable	Requires transformation	Sellable
Materials for resale	Yes	Yes	~~Yes~~	Yes
	~~No~~	~~No~~	~~No~~	~~No~~

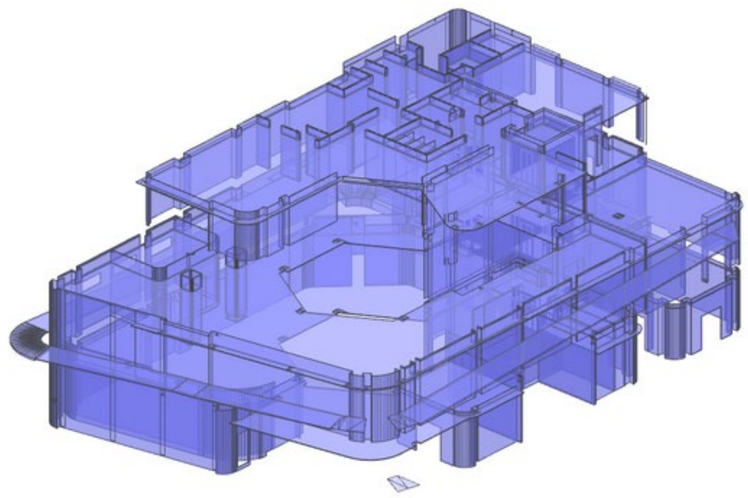


Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Streamlined set of properties to support selection matrix development

Property	Dismountable	Reusable	Requires transformation	Sellable
Materials for disposal	~~Yes~~	~~Yes~~	~~Yes~~	~~Yes~~
	No	No	No	No



SaBIM & Partners

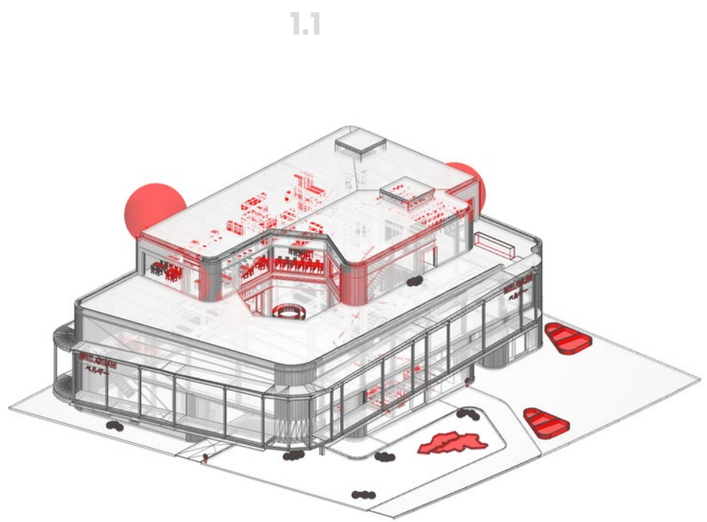
Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

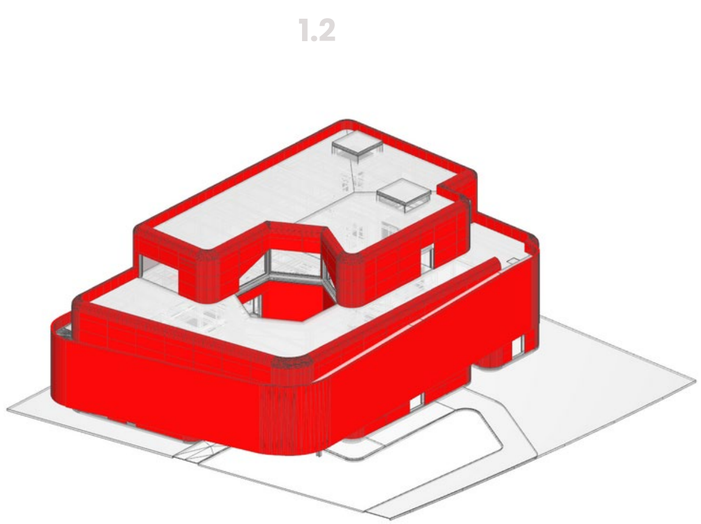
Streamlined set of properties to support phase selection development

PHASE 1

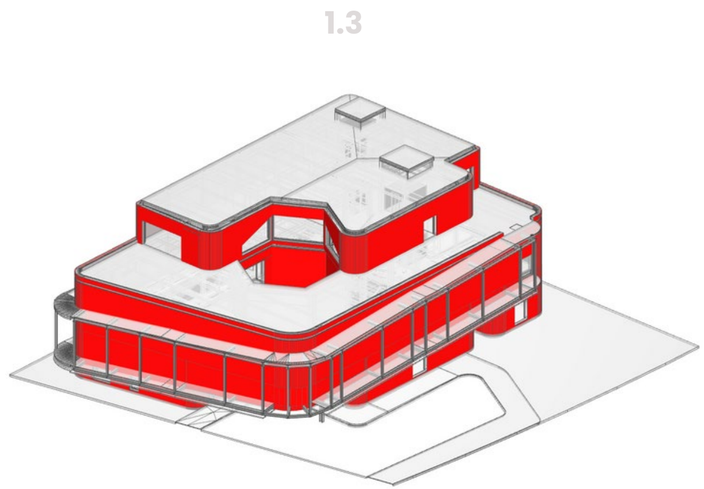
1.1



1.2



1.3

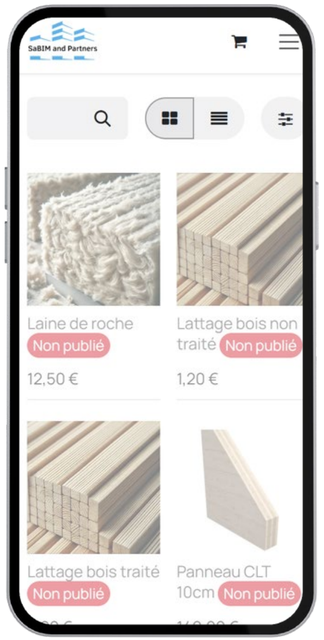


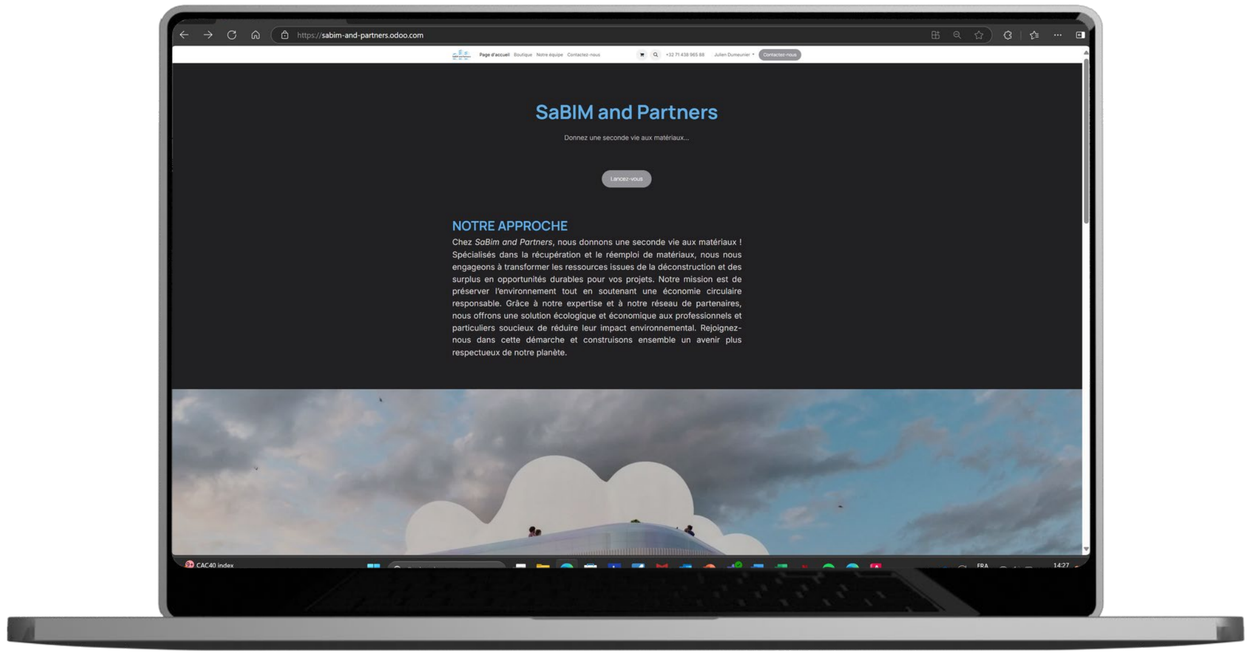
CCT-B Volumes	Common name	CCTB Reference	Ease of disassembly	Ease of reassembly	Modularity	Storability	Occurrences	Current availability	Location	Production impact	Performance requirement	FINAL SCORE
		Weighting	**0,5**	**2**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	
5	Hardware: door closers, handles, door stops, etc.	Additional or specific hardware, 93.16.2 Concrete	3	3	2	3	2	3	1	3	1	

Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Streamlined set of properties to Provide support for sales activities





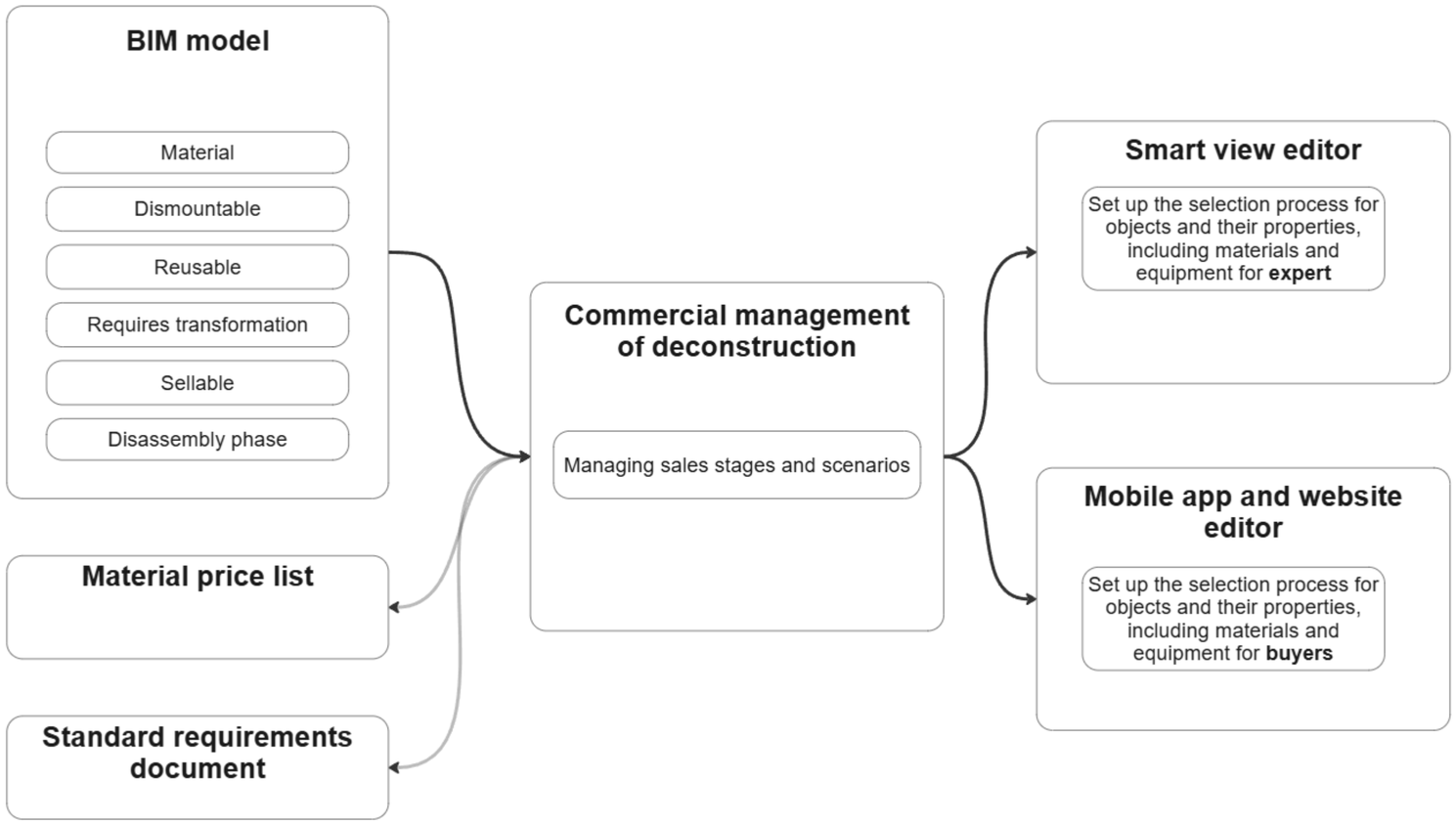
SaBIM & Partners

Analysis of scenarios

Topic 4 : Deconstruction for the Economic Value

Evaluation of results

- **Virtual on-site management** of the sale of materials and equipment



Step 4
Findings and summary

Findings and summary

Main Outcomes

- The approaches developed demonstrate, with concrete support, the contribution of BIM methods to the management of building deconstruction

- Students, as future actors and decision-makers, succeeded in materializing abstract concepts such as BIM and deconstruction workflows

- The scenarios developed highlighted the interrelations between deconstruction and four major areas: transport, time management, design processes, and economic value.

Findings and summary

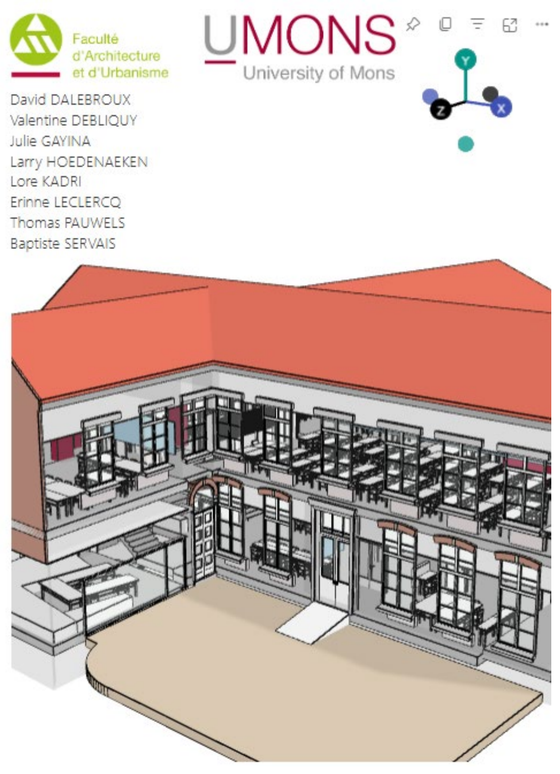
Limitations

- The implemented processes lack iterative validation to confirm their contributions

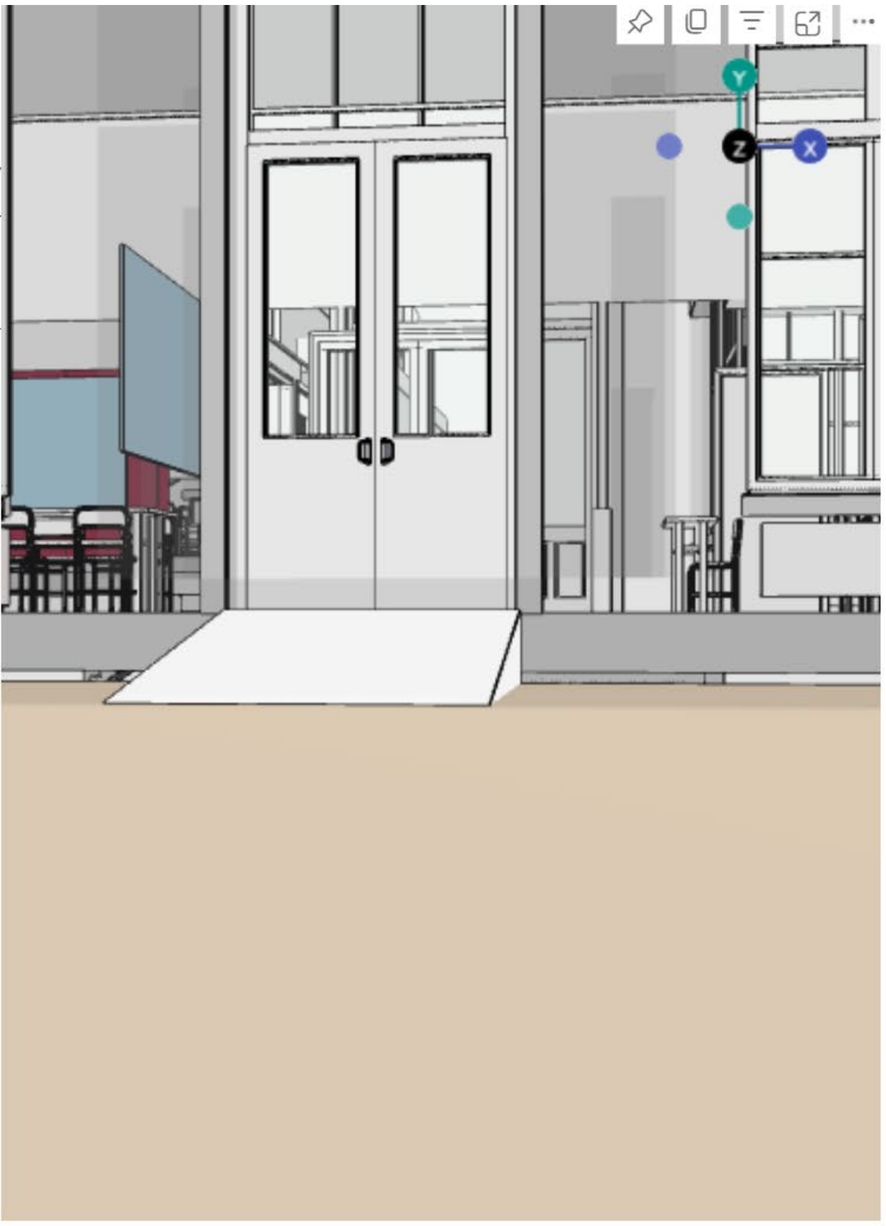
- The results lack an exploitation-oriented dimension, limiting continuity between the developed models and deconstruction management stakeholders

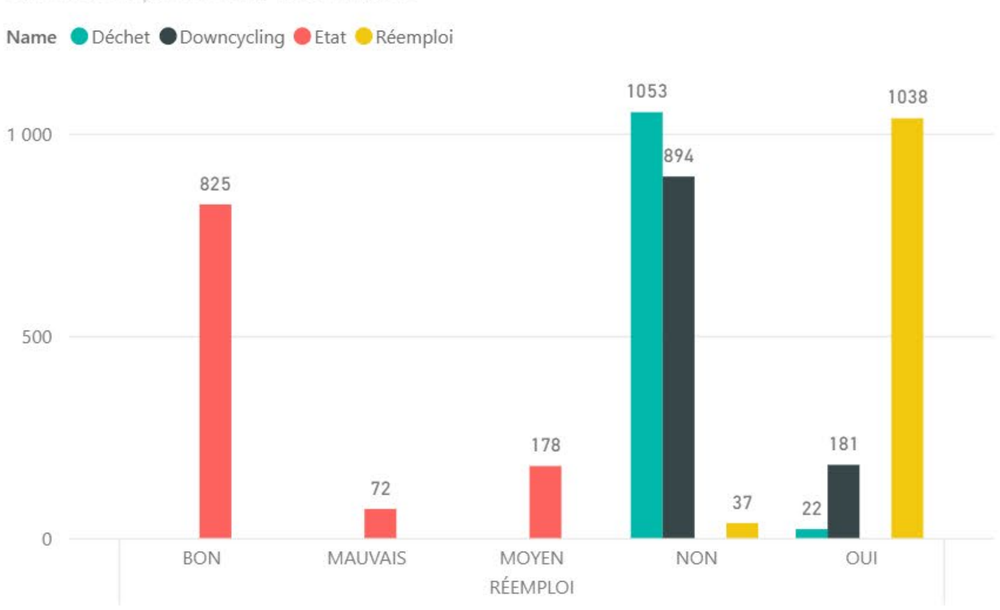
- The developed tools are primarily designed for BIM specialists, highlighting the need for more accessible interfaces tailored to non-experts requiring decision-making support

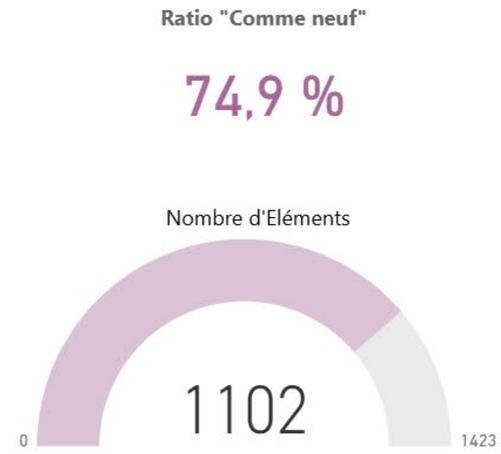
  Example : 3DBI for IFC
  IFC PowerBI plugin *(Belgian product)*



Findings and summary







Special thanks

- **BelExpo**

Arnaud Biot and his colleagues

- **Carré 7**

Cyril Rousseaux, Camille Descamps

- **Poly-Tech**

Vincent Pirnay, Pascal Simoens

- **Faculty of Architecture and Urban Planning, University of Mons**

Nawri Khamallah

Special thanks

- **Students**

BIMBurton
Blairon Yann
Pourbaix Hugo
Willem Victor
Dabouz Ka'ina
Dudkowiak Tristan
Segers Coralie
Donatiello Di Stefano Tao
Trannois Rémy
Beyls Kloé
Miloud Daouadji Mohammed

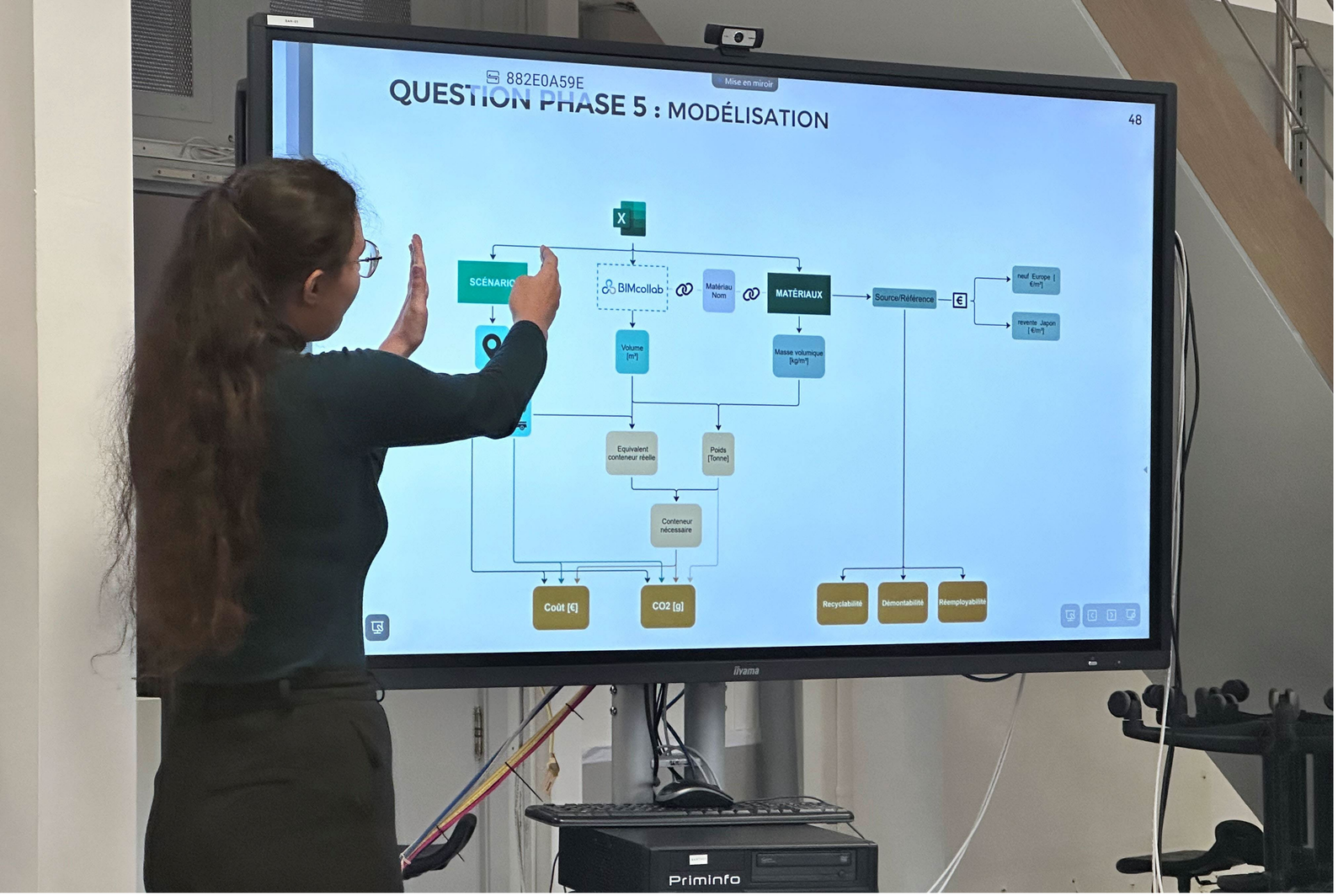
BIMPossible
Morimont Cerise
Siringo Luna
Nidriche Pierre
Urbain Daphnée
de Landsheer Alyster
Vigani Alessio
Rugeri Lucas
Vinet Théo
Parisse Sophie
Dormont Audric

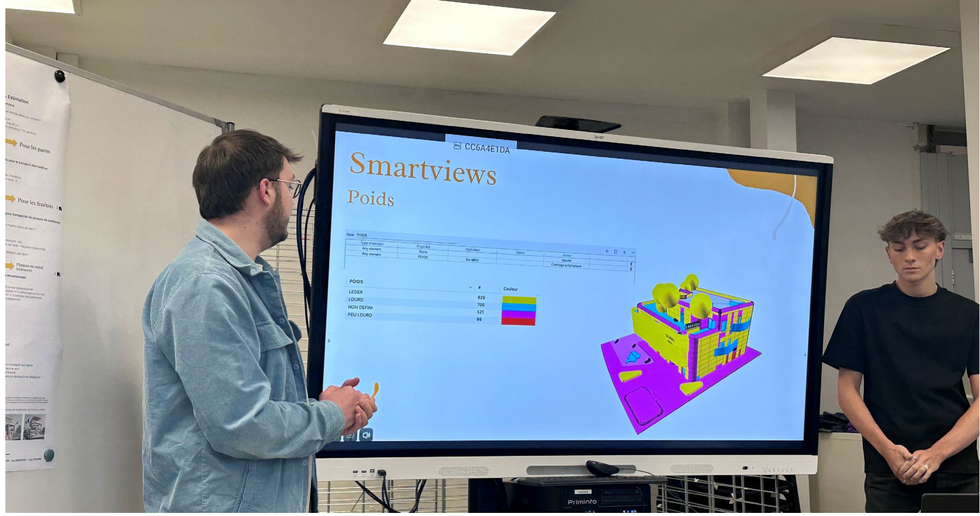
BIM Gees
Navez Vanina
Chaté Lisa
Toupin Théo
Mancuso Titiana
Sénépart Inès
Mac Callum Robin
Leclercq Florine
Di Noi Sacha
Foszcz Brice
Huet Morgane

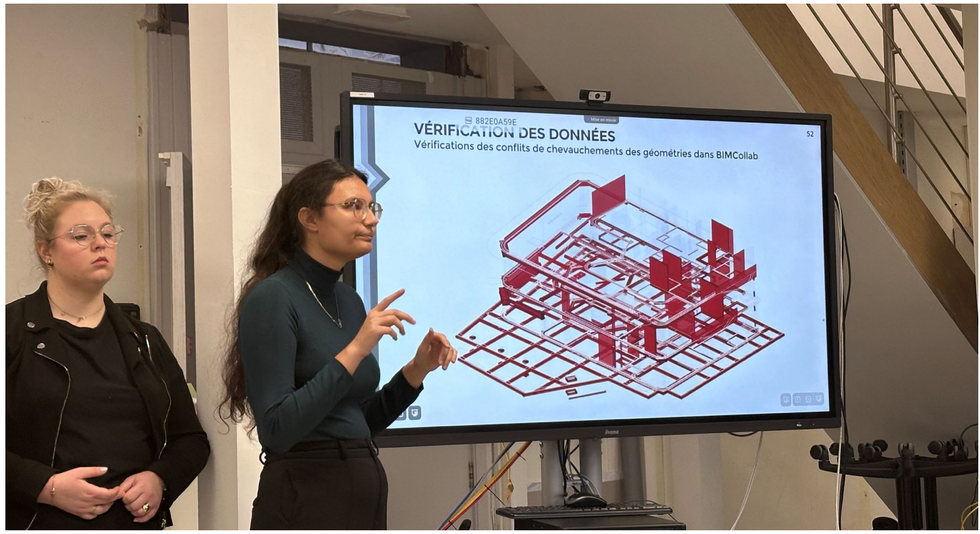
SaBIM and Partners
Mainfroid Alexandra
Osteaux Florian
Dumeunier Julien
Vullo Dimitri
Fotinis Orania
Bauwens Arnaud
Leroy Noé
Bruccoleri Valentino
Sacco Fiona

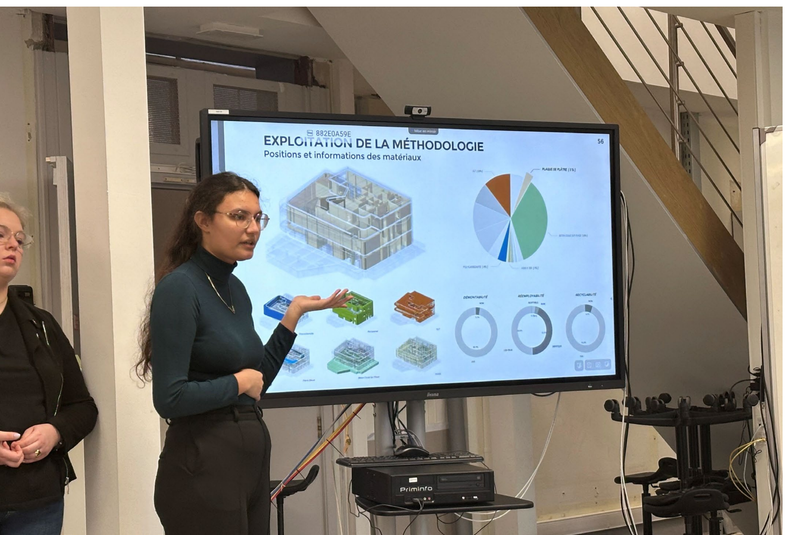
3 BIMension
Cordisco Luca
Renoirt Lyncée
Vanhoutvinck Maëlle
Dagli Miyase
Coche Louise
Alno Luna
Divinti Aleandro
Dufrane Enora
Odon Ludivine

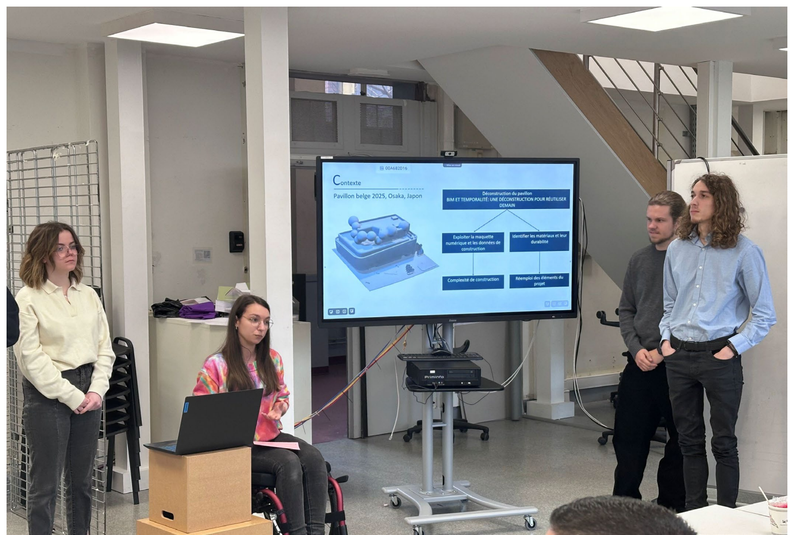
404 Not Found
Derijcke Thomas
Méaux Benjamin
Piscart Sascha
Gouvart Mathias
Becue Margaux
Demoulin Eléonore
De Baerdemaeker Sofie
Tran Thanh Vi
Dorpel Quentin
Troucas Sharon

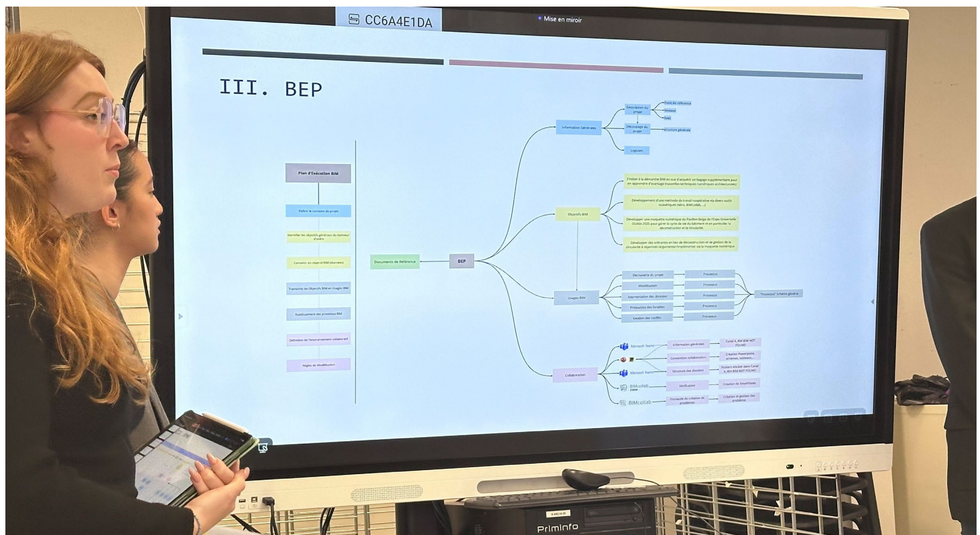

882E0A59E
Mise en miroir
QUESTION PHASE 5 : MODÉLISATION
48
SCÉNARIO
BIMcollab
Matériau Nom
MATÉRIAUX
Source/Référence
neuf Europe | €/m³]
revente Japon [€/m³]
Volume [m³]
Masse volumique [kg/m³]
Equivalent conteneur réelle
Poids [Tonne]
Conteneur nécessaire
Coût [€]
CO2 [g]
Recyclabilité
Démontabilité
Réemployabilité
Priminfo


CC6A4E1DA
Smartviews
Poids


882E0A59E
VÉRIFICATION DES DONNÉES
Vérifications des conflits de chevauchements des géométries dans BIMCollab
52


882E0A59E
EXPLOITATION DE LA MÉTHODOLOGIE
Positions et informations des matériaux
56
Priminfo


Contexte
Pavillon belge 2025, Osaka, Japon
Décarbonation du pavillon
BIM ET TEMPORALITÉ: UNE DÉCONSTRUCTION POUR RÉUTILISA DÉCHETS
Exploiter la maquette numérique et les données de construction
Identifier les matériaux et leur durabilité
Complexité de construction
Réemploi des éléments du projet


CC6A4E1DA
Mise en miroir
III. BEP
Plan d'Exécution BIM
Documents de Référence
BEP
Objectifs BIM
Usages BIM
Collaboration
Priminfo

Thank you for your attention !

ご清聴ありがとうございました。

BIM for Deconstruction Management Pedagogical Process Applied to the Belgian Pavilion in OSAKA

Dr. Mohamed-Anis GALLAS
Digital Theories and Practices in Architecture Lab
Faculty of Architecture and Urban planning
University of Mons (Belgium)