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S | P

 **sweett**

ARCHITYPE



- Background
- Project Consortium
- Concept
- The vision for RAPIER
- Alpha prototype
- Demonstration
- On the horizon
- Invitation to try software & provide feedback

COME AND FIND OUT HOW RAPIER WILL HELP YOU REVOLUTIONISE YOUR BUILDING DESIGNS!

RAPIER is a unique new software tool that rapidly produces cost, energy, and carbon lifecycle analysis of new build projects from early concept stage. Capturing the combined expertise of four industry leaders in sustainability, RAPIER provides immediate results, graphic clarity, depth of information, and ease of use.

Gain new insight into the impact of your design decisions immediately with this cloud-based software that runs in your web browser and mobile device.

Optimise key decisions earlier and be ahead of the game.

Come and demo the software at one of our afternoon sessions on Tuesday 20th March, 29-30 South Gallery, Excel, or join us for our main presentation at 4.30pm, with drinks afterwards.

REGISTER HERE



A new generation collaborative optioneering tool for Architects, Engineers, Cost Consultants, Developers and Investors.

   **ARCHITYPE**

- 2 year R&D project (£937k)
April 2010 – April 2012
- 46% funded by the Technology Strategy Board (TSB)
- “Design & decision tools for ‘low impact’ buildings” focusing on new build early stage / concept design



- **BDSP Consulting Engineers**

MEP & Environmental Engineers



- **Sweett Group**

Cost & Project Management Consultancy



- **Architype**

Architects & Sustainability Specialists



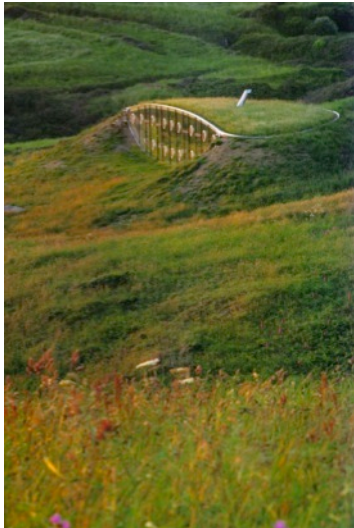
- **greenspaceLive**

The Green Building Internet Company

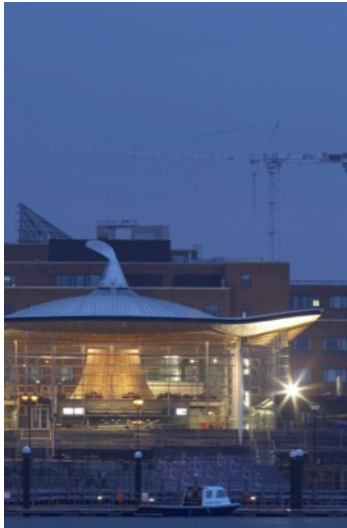


International engineering and environmental consultancy

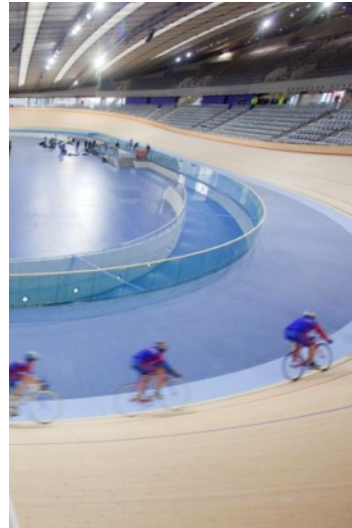
- BDSP Engineering
- BDSP Environmental
- BDSP Simulation
- BDSP Lighting



House in Wales
Pembrokeshire, UK



**National Assembly
for Wales**



**London 2012
Olympic Velodrome**



Bocconi University
Milan, Italy



Central Market
Abu Dhabi, UAE

Sweett Group provides clients with global expertise coupled with local sector knowledge including:

- Cost Management
- Programme and Project Management
- Strategic Advisory
- Property Development Services



London Eye
£15m – Capsule refurb



Hong Kong Police HQ
HK\$2.2m



Melbourne Law Courts
Aus\$108m



Titanic Quarter
£90m



CMA Tower
Riyadh

Architype Ltd is an awarding winning and regularly published Architectural practice, with:

- Projects ranging from £100K to £17million
- Offices in Hereford & London
- Recognised expertise in sustainable design
- Strong collaborative & consultation ethos
- At forefront of low energy buildings research



West Office - Barn
Ecological refurb



UEA – NRP Centre
Negative carbon building



Bushbury Primary
Passivhaus school



Genesis SCA&T
Sustainable construction



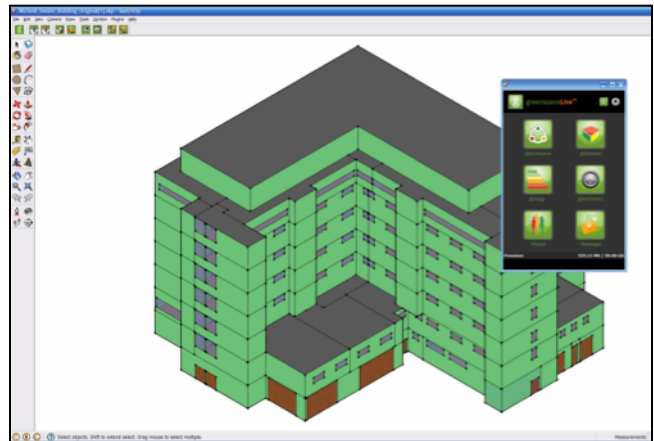
York House
Low energy complex

Energy and low carbon software spin-out from the University of the Highlands and Islands:

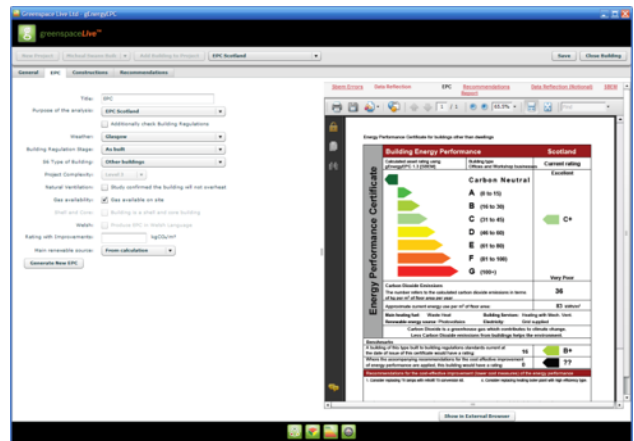
- 5 year R&D programme
- 3 year partnership with Green Building Studio until acquired by Autodesk
- First energy analysis plugin for Google SketchUp
- Global business partnerships and users



gWorkspace
collaboration and sharing
messaging and alerts

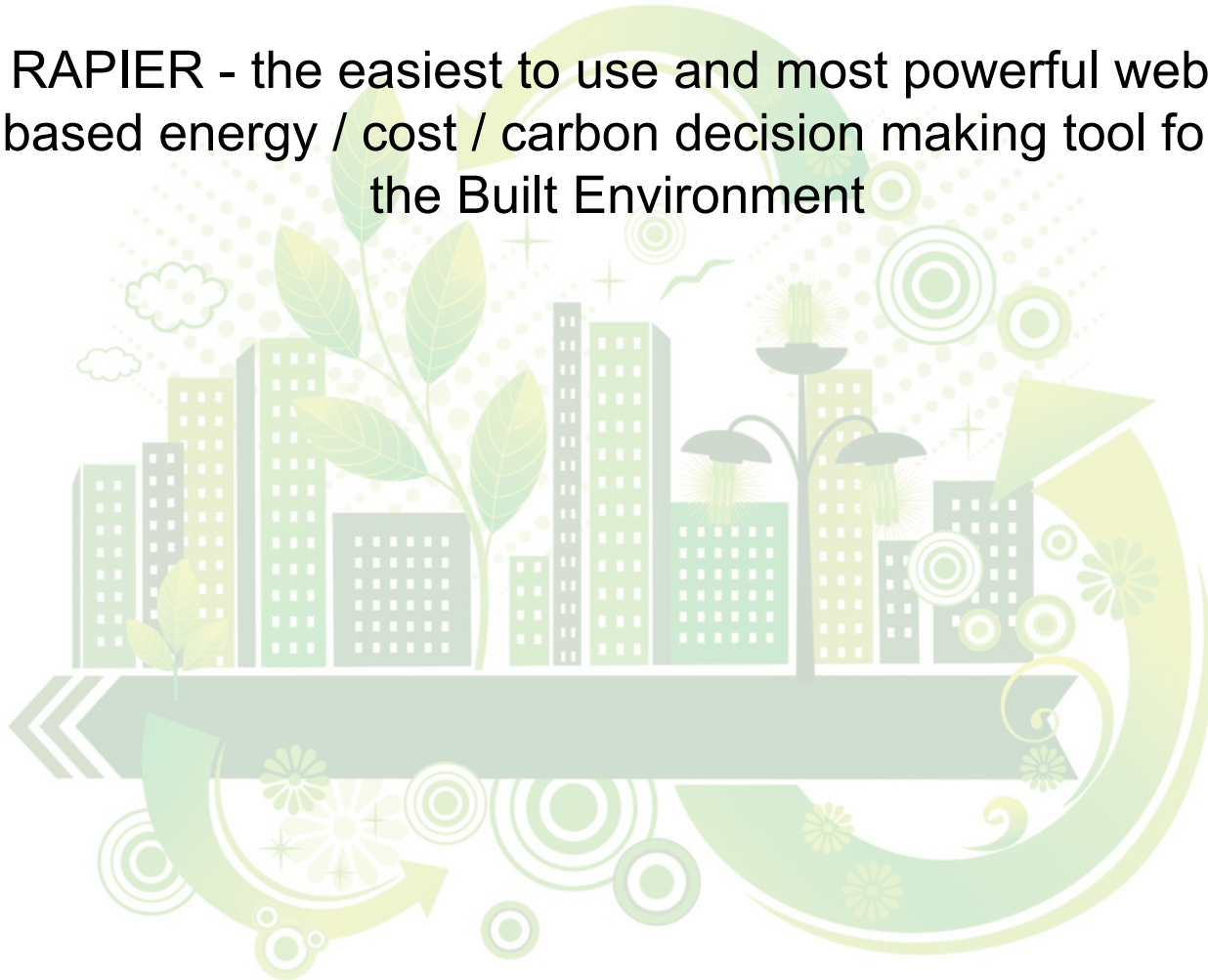


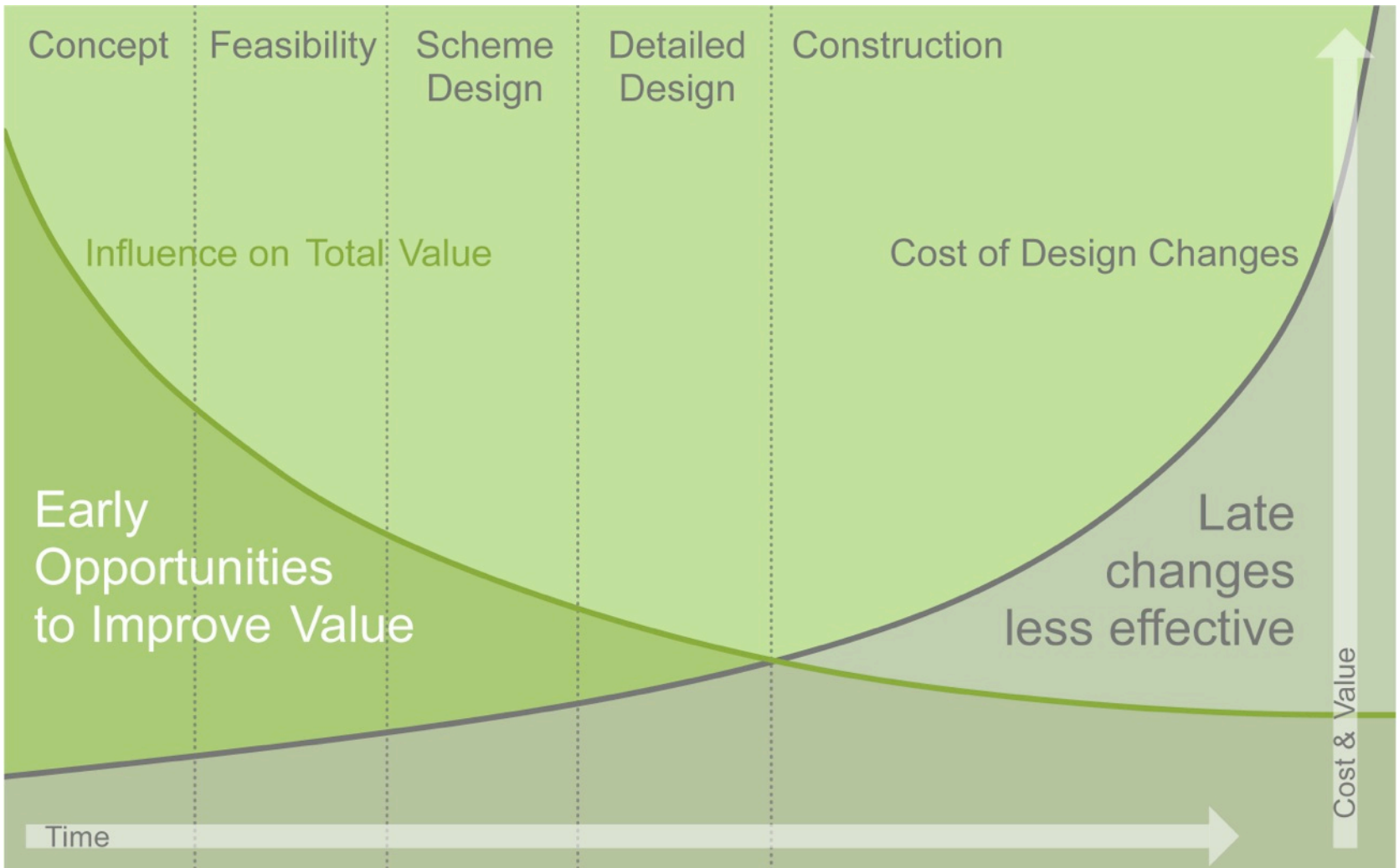
gModeller
Automatic attribution of SketchUp faces to
generate gXML spaces, surfaces etc...



gEnergy
Integration with energy analysis engines
SAP, EPC & Energy reports

RAPIER - the easiest to use and most powerful web based energy / cost / carbon decision making tool for the Built Environment

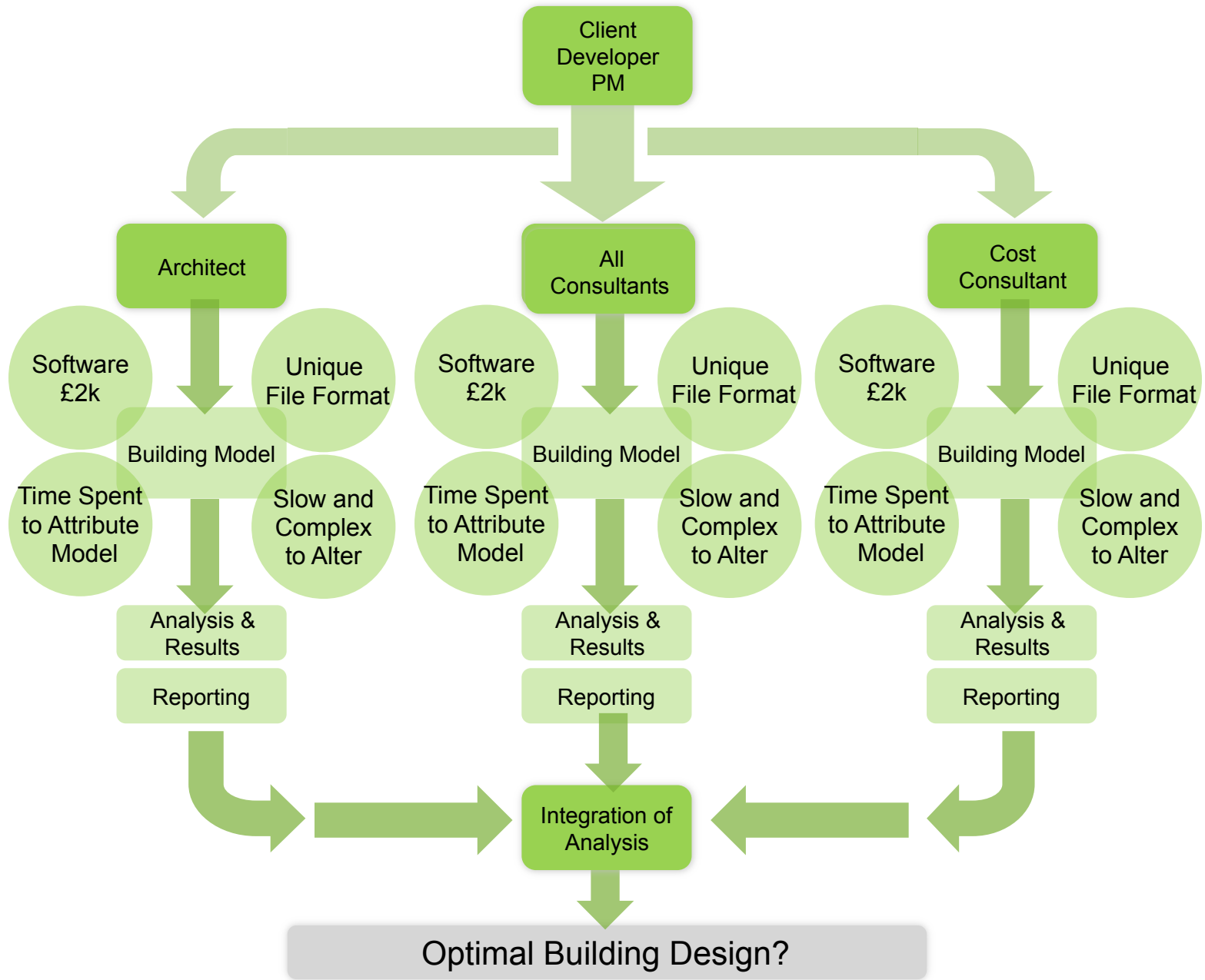


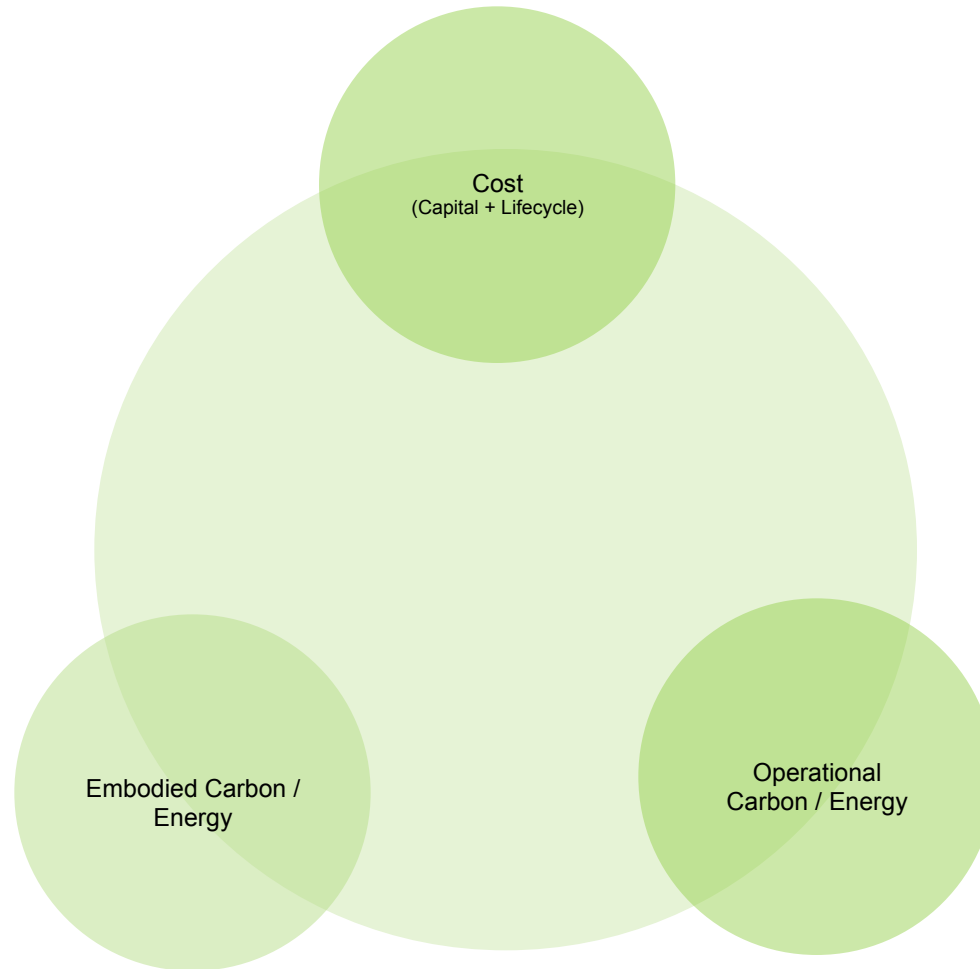


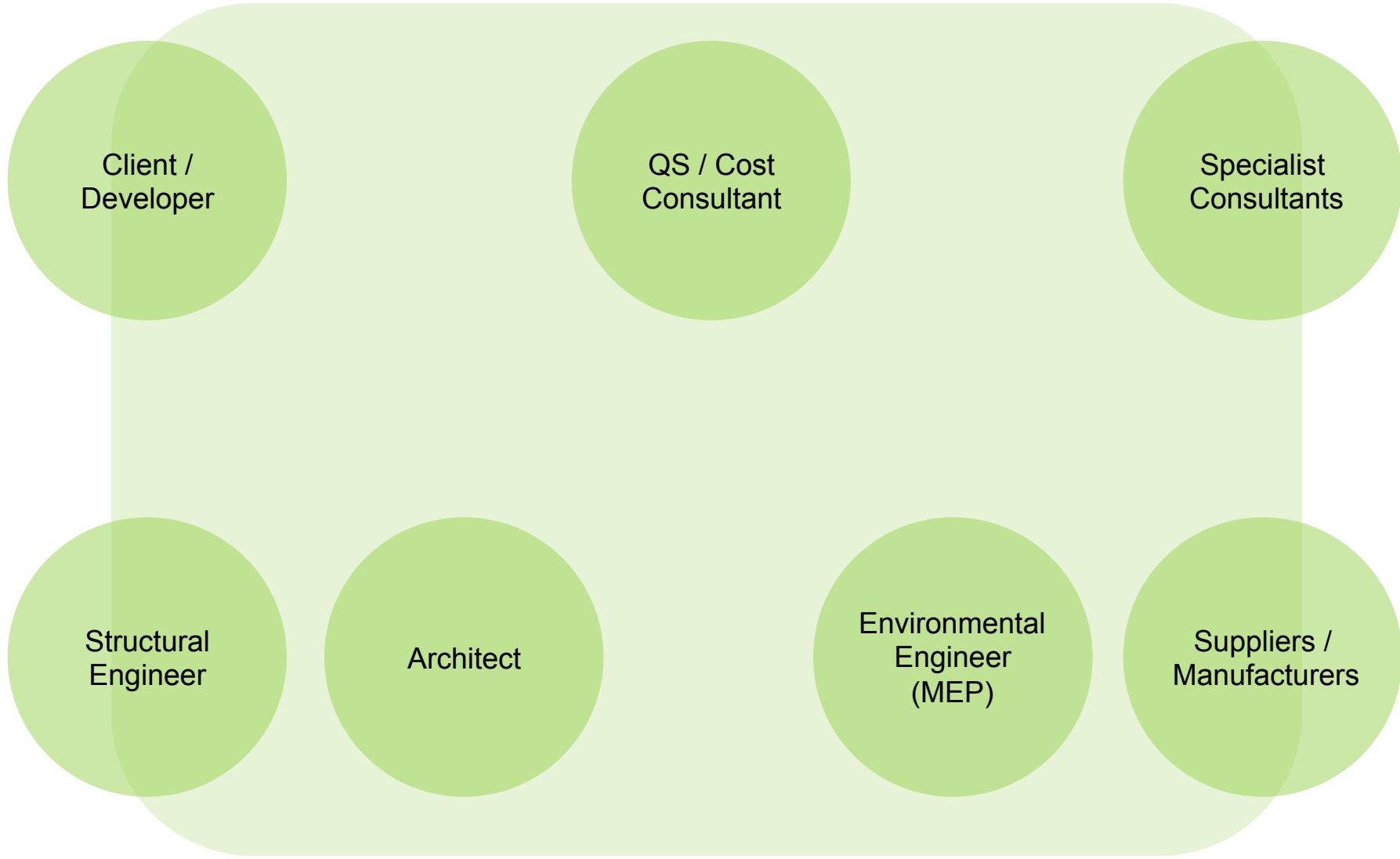
Early Design Stages

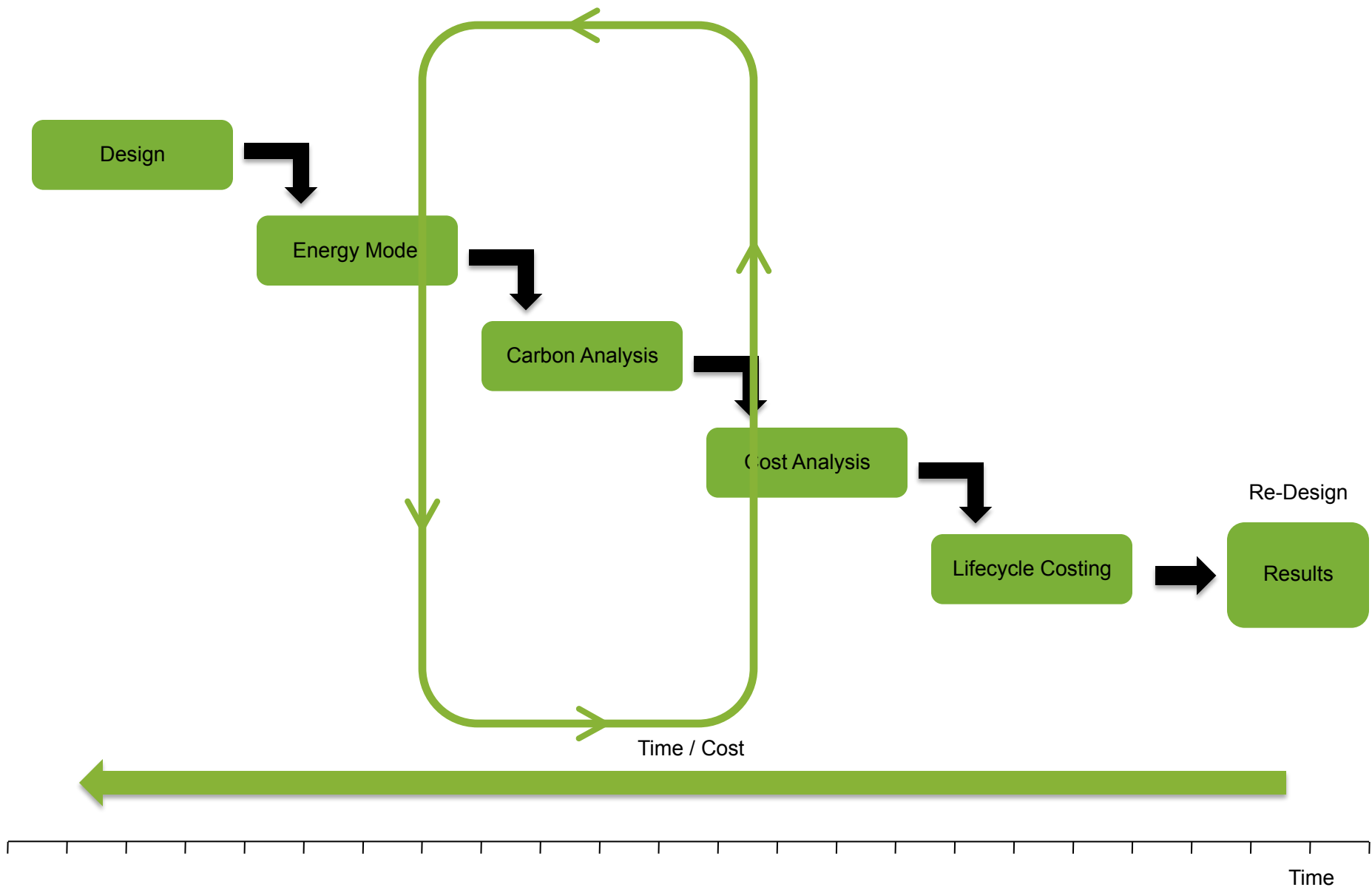
- Specialist consultants not appointed
- Limited fee & time available
- Very difficult to quickly establish:
 - Lifecycle costings (Net Present Value)
 - Operational energy & costs
 - Embodied carbon
 - Impact of location, siting & form
 - Total cost & carbon benefits to client of pursuing alternative design strategies











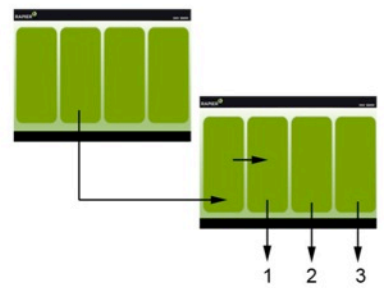
- Architect
- MEP Engineer
- Cost Consultant
- Contractor
- Client
- Developer
- Agents
- Local Authority
- Sustainability Consultant
- Manufacturer
- Academic



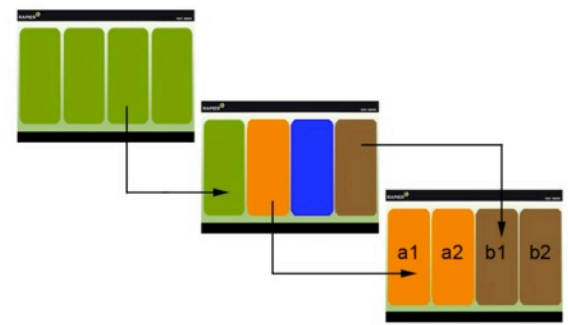
1) Building Procurer or Client, using RAPIER to set targets



2) Client or Construction Professional, using RAPIER to evaluate options at feasibility stage

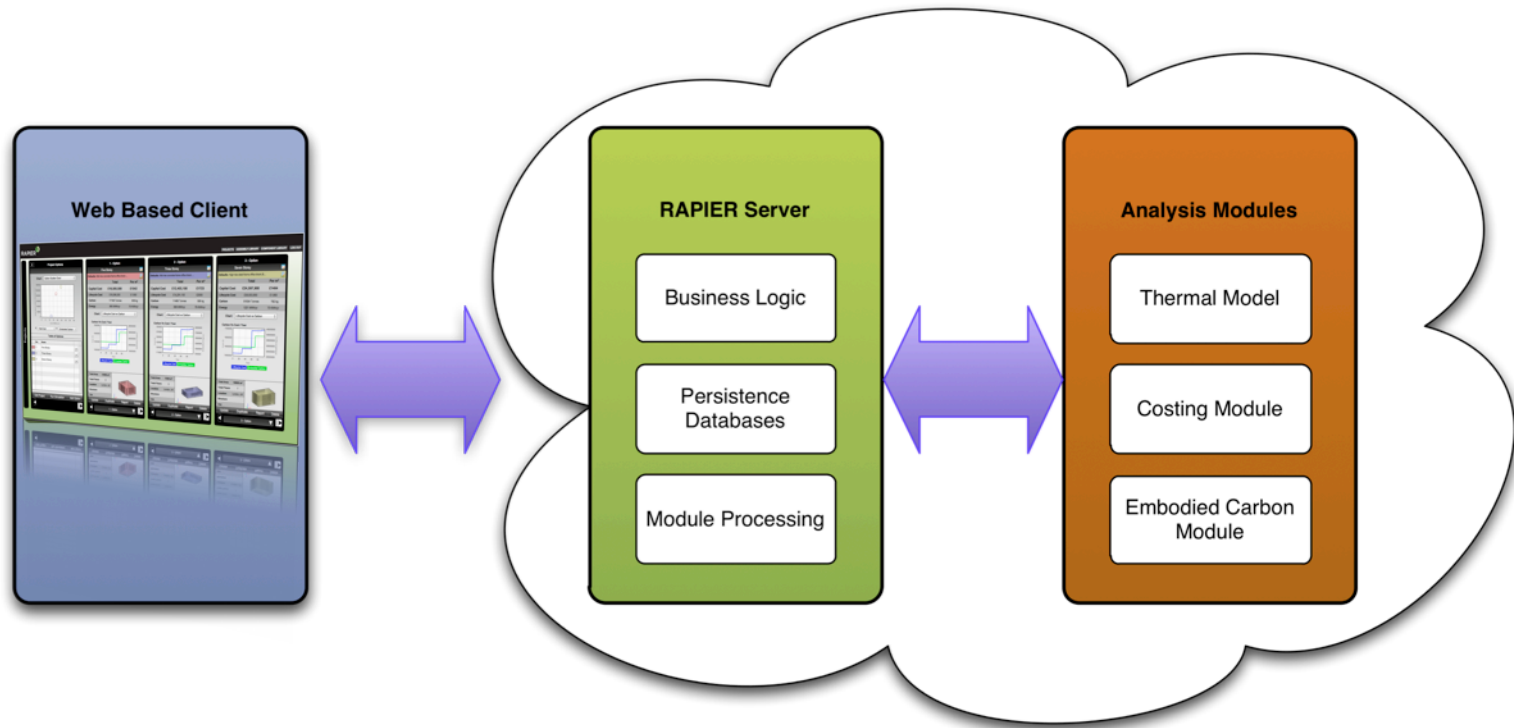


3) Construction Professional, using RAPIER to test and evaluate detailed options in terms of costs and carbon





- Web based user interface
- Device agnostic – Desktop, Mobile, Tablet
- Powerful Cloud based processing



- Detailed research and data analysis to inform Cost, Energy, Carbon & Lifecycle engines by industry leading companies
- Models based on industry standards to provide robust and compliant results

Capital & Lifecycle Cost Model

Based on Sweet Group cost analyses of recent project data

£

Energy & Services Model

Based on BDSP Suntool rapid thermal engine

kWh

Embodied Carbon Model

Based on Architype in-house embodied carbon calculator

CO₂e

Capital Cost Model

1	Substructure		
1A	Substructure		
1A1	1	Substructure	
1A2	1A	Substructure	
1A3	1A1	1	Substructure
1A4	1A2	1A	Substructure
1A5	1A3	1A1	1 Substructure
2	1A4	1A2	1A Substructure
2A	1A5	1A3	1A1 Standard Foundations
2A1	2	1A4	1A2 Special Foundations
2B	2A	1A5	1A3 Lowest Floor Bed/Slab
2B1	2A1	2	1A4 Basement Excavation
2C	2B	2A	1A5 Basement Retaining Walls
2C1	2B1	2A1	2 Superstructure
2C2	2C	2B	2A Frame
2C3	2C1	2B1	2A1 Frame
2C4	2C2	2C	2B Upper Floors
2C5	2C3	2C1	2B1 Upper Floors
2D	2C4	2C2	2C Roof
2D1	2C5	2C3	2C1 Roof Structure
2D2	2D	2C4	2C2 Roof Coverings
2D3	2D1	2C5	2C3 Roof Drainage
2E	2D2	2D	2C4 Rooflights and Openings
2E1	2D3	2D1	2C5 Roof Features
2E2	2E	2D2	2D Stairs
2E3	2E1	2D3	2D1 Stair Structure
2E4	2E2	2E	2D2 Stair Finishes
2E5	2E3	2E1	2D3 Stair Balustrades and Handrails
2F	2E4	2E2	2E External Walls
2F1	2E5	2E3	2E1 External Enclosing Walls
2F2	2F	2E4	2E2 External Wall Finishes
2G	2F1	2E5	2E3 Solar/Rain Screening
2G1	2F2	2F	2E4 Basement Walls
2G2	2G	2F1	2E5 Façade Access
2G3	2G1	2F2	2F Windows and External Doors
2G4	2G2	2G	2F1 External Windows
2G3	2G1	2F2	2F2 External Doors
2G4	2G2	2G	2G Internal Walls and Partitions
2G3	2G1	2G1	2G1 Internal Walls / Partitions
2G4	2G2	2G2	2G2 Balustrades and Handrails
	2G3	2G3	2G3 Moveable Room Dividers
	2G4	2G4	2G4 Cubicles



Cost metrics:

- Floor Area
- Volume
- Façade area
- Basement volume



Context:

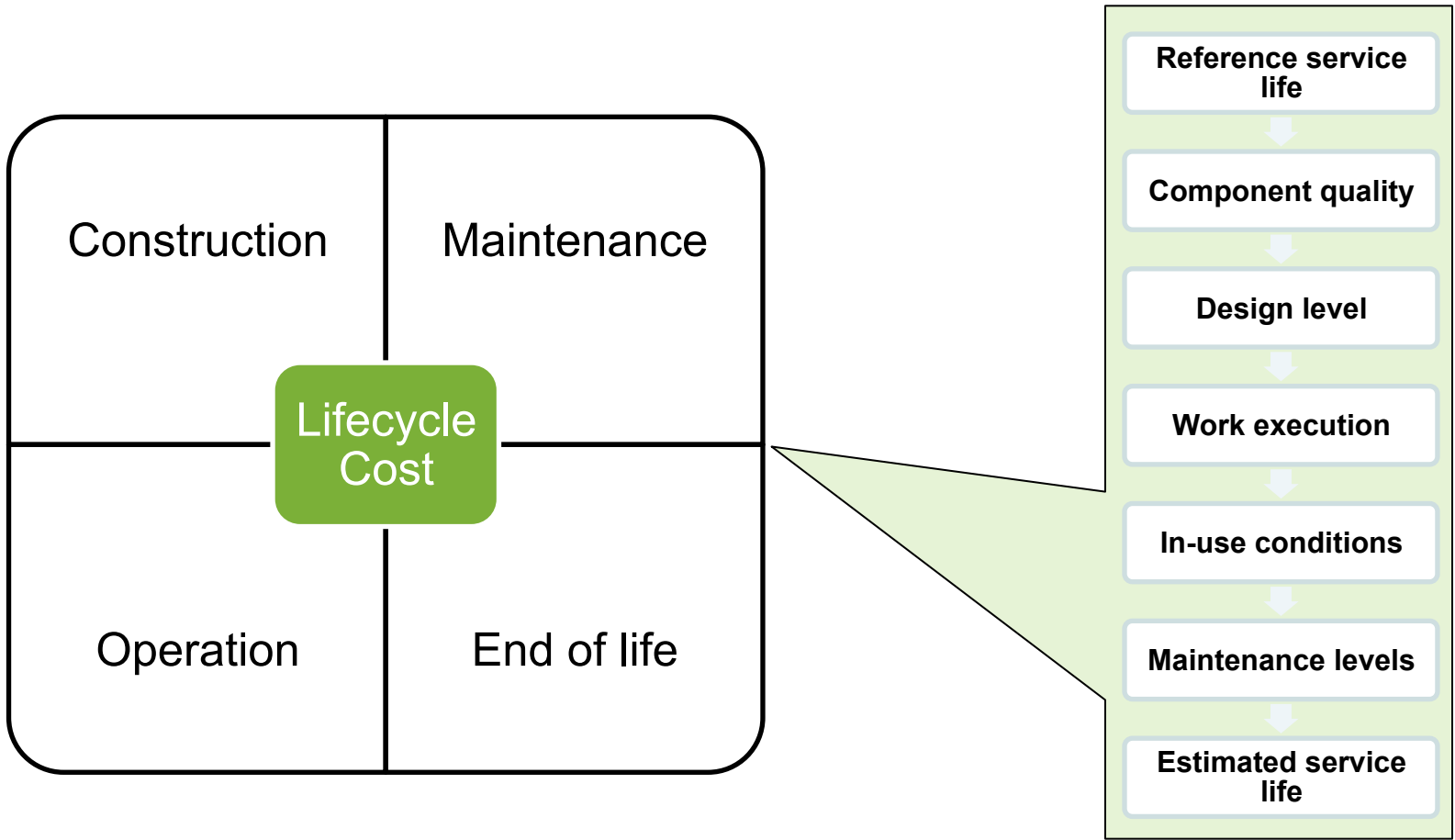
- Quality
- Site Constraints
- Usage



RAPIER MODEL

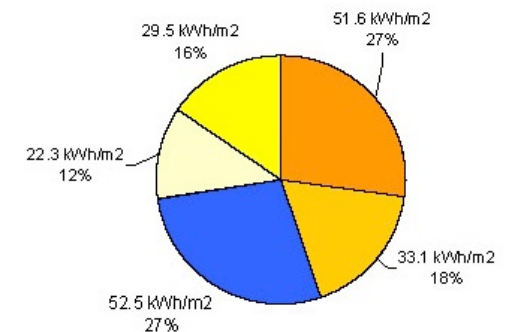
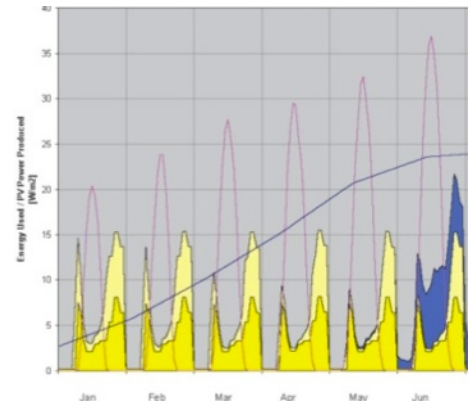
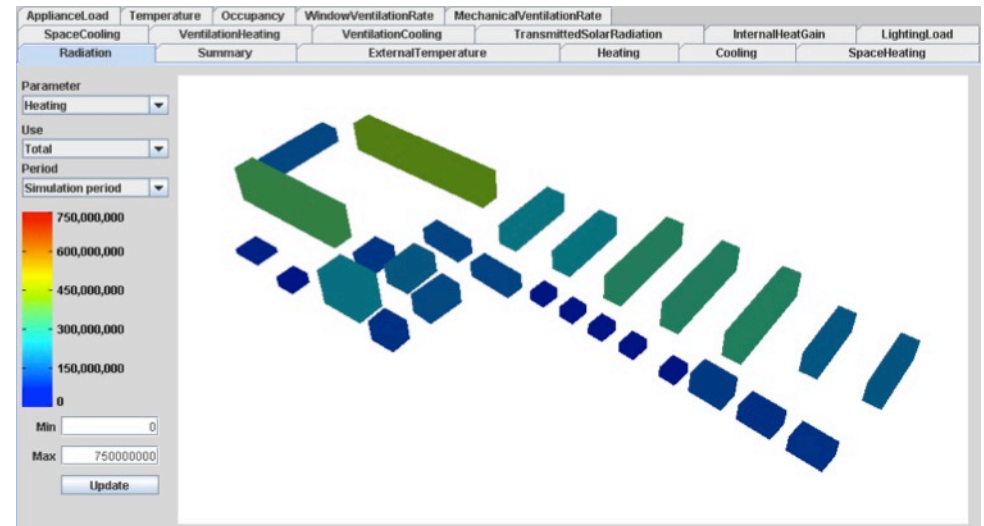
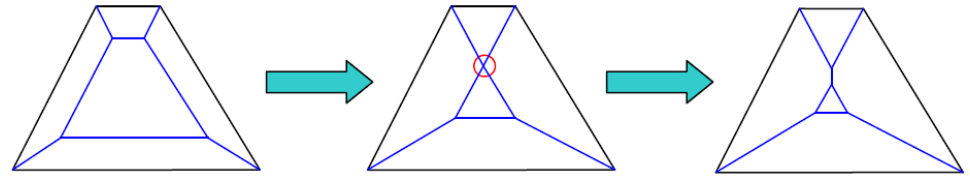
1	Substructure
1A	Substructure
1A1	Standard Foundations
1A2	Special Foundations
1A3	Lowest Floor Bed/Slab
1A4	Basement Excavation
1A5	Basement Retaining Walls
2	Superstructure
2A	Frame
2A1	Frame
2B	Upper Floors
2B1	Upper Floors
2C	Roof
2C1	Roof Structure

Lifecycle Cost Projection



SUNTool

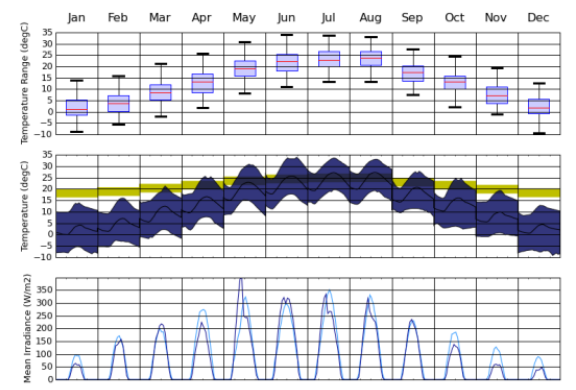
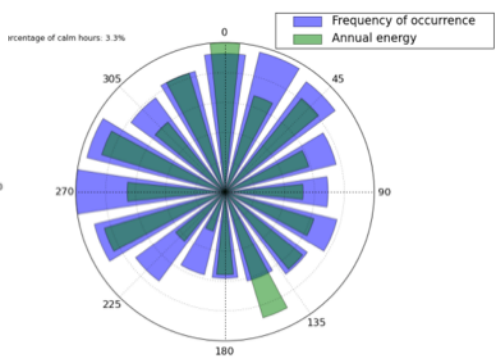
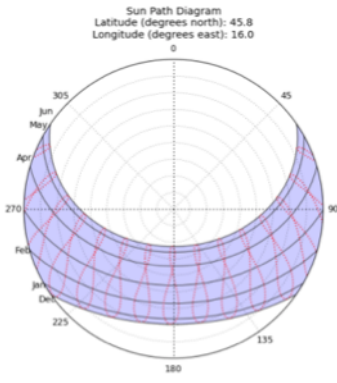
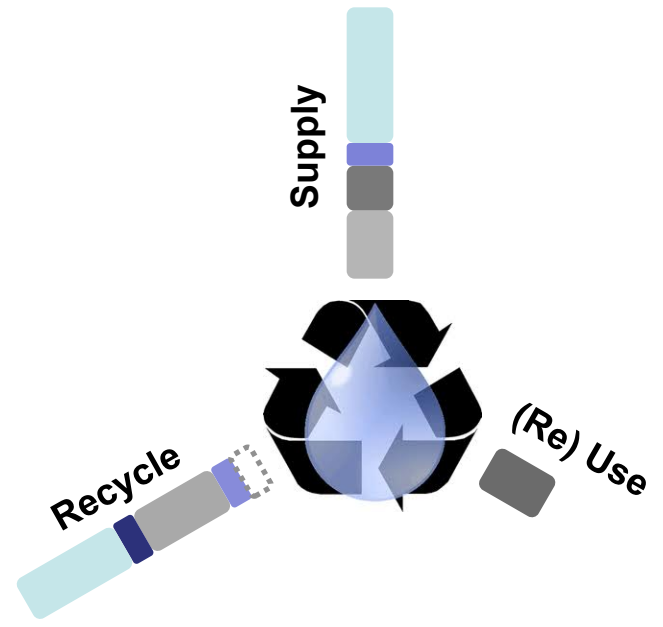
- Development and extension of existing model (SUNtool)
- Fast solving modeller returning detailed and accurate results in seconds
- Automatic (implicit) zoning
- Hourly or sub-hourly time steps
- Plant & equipment sizing
- Supports gbXML model geometry and constructions
- Validated results



Specialised Engines

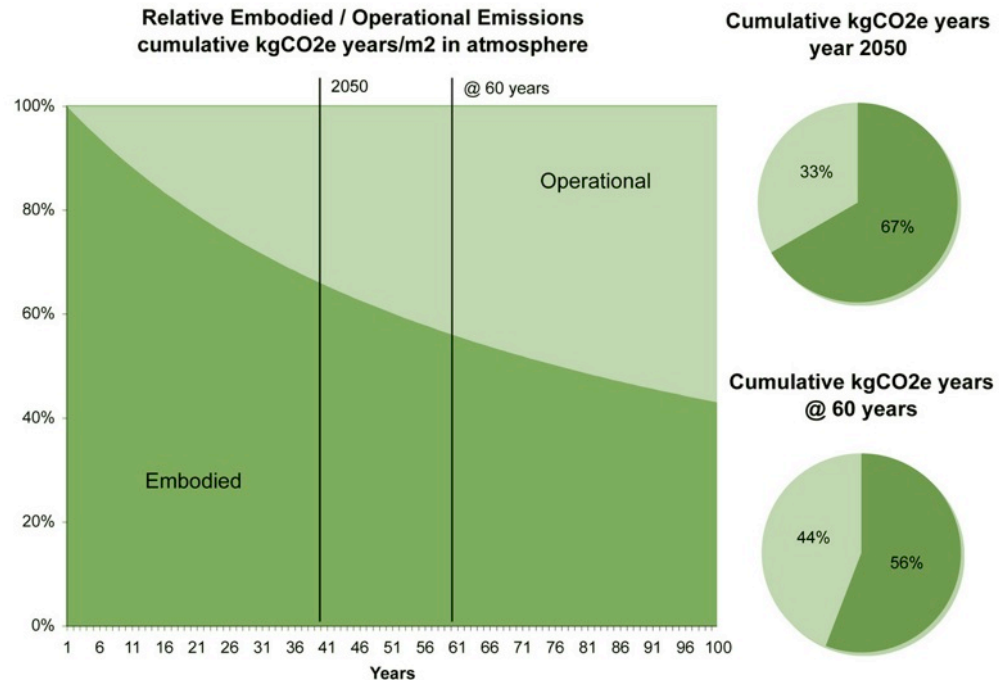
Engines developed to provide early stage accurate guidance for:

- Water services
- Plant room sizing
- HVAC services optimiser
- Lift quantifier
- Climate analysis tool



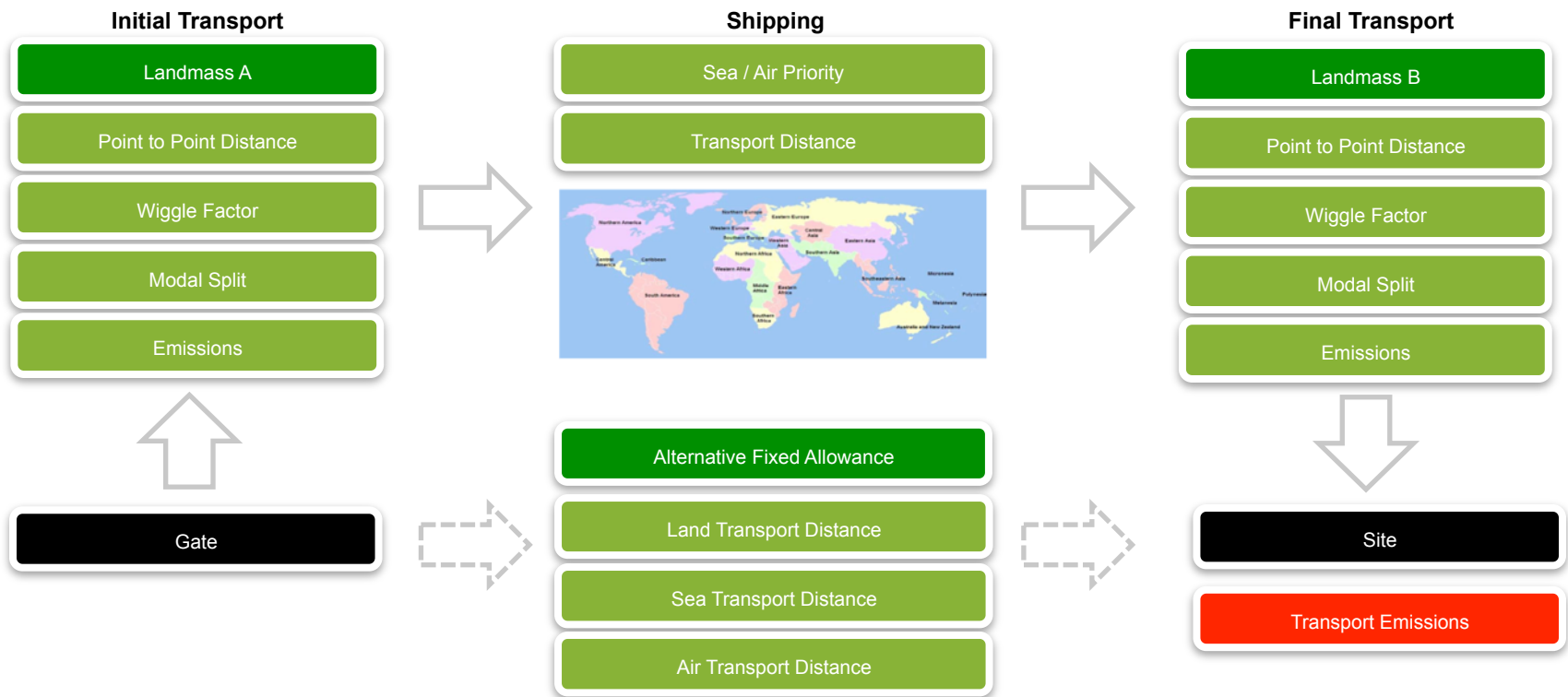
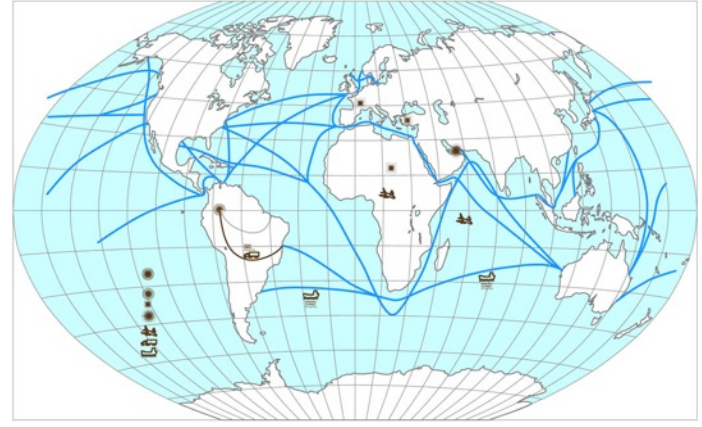
Embodied Carbon

- Model developed by Architype to support in-house research and analysis of live projects
- Rich and traceable data sources of CO₂e data from ICE v2.0, DECC & selected manufacturers
- PAS 2050 compliance
- Cradle-to-Gate and beyond: transport, construction, operation, end of life, re-use
- Carbon storage (sequestration)
- Carbon absorption (e.g. GGBS / Lime)
- Dynamic global transport model
- Customisable reporting & metrics (e.g. CO₂ tonne years)
- Transparent reporting



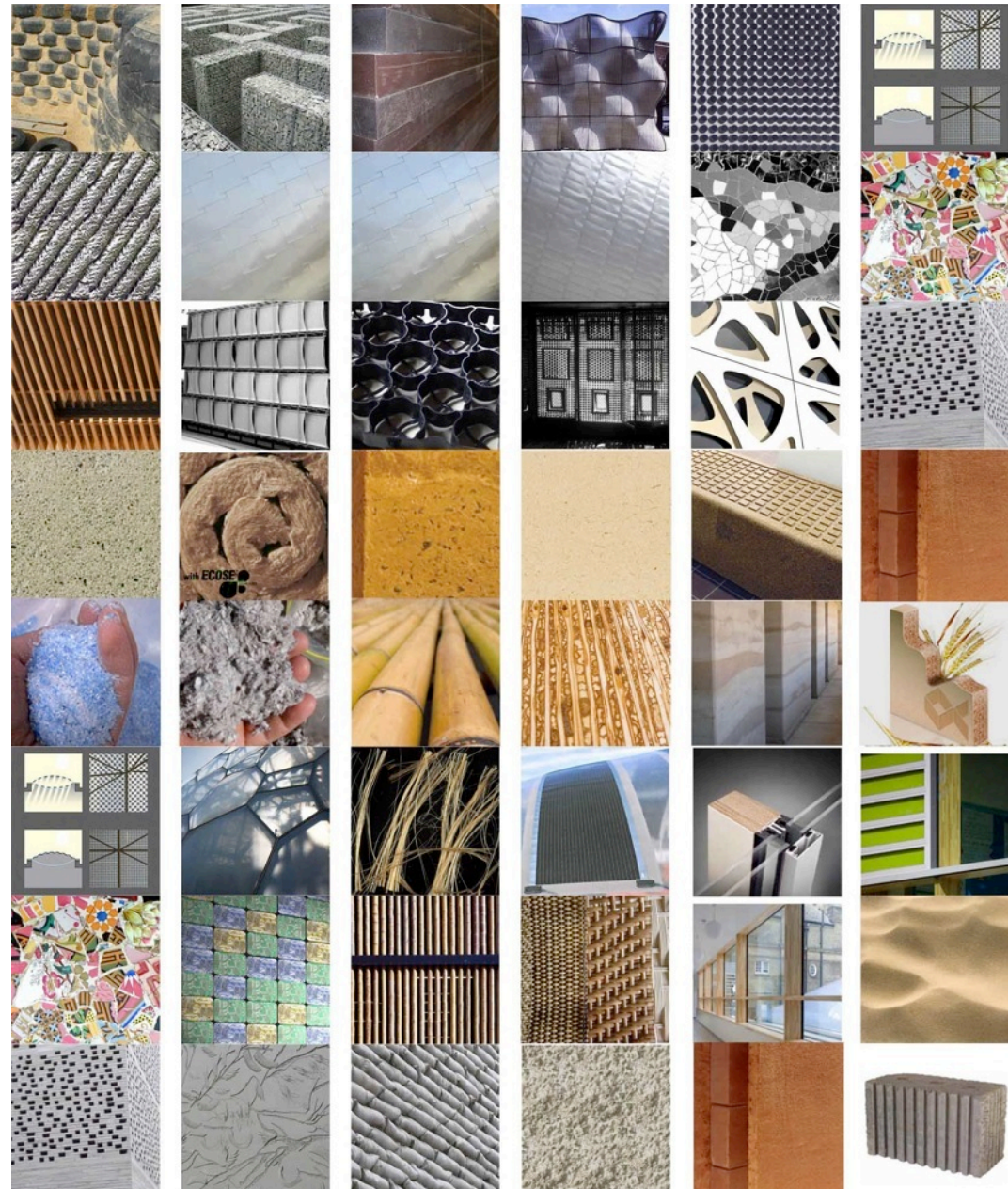
Transport

- Geo-location of manufacture to calculate minimum transport distance
- Air, sea and land based emissions split
- Port to port and land based wiggle factors to account for real world transport routes



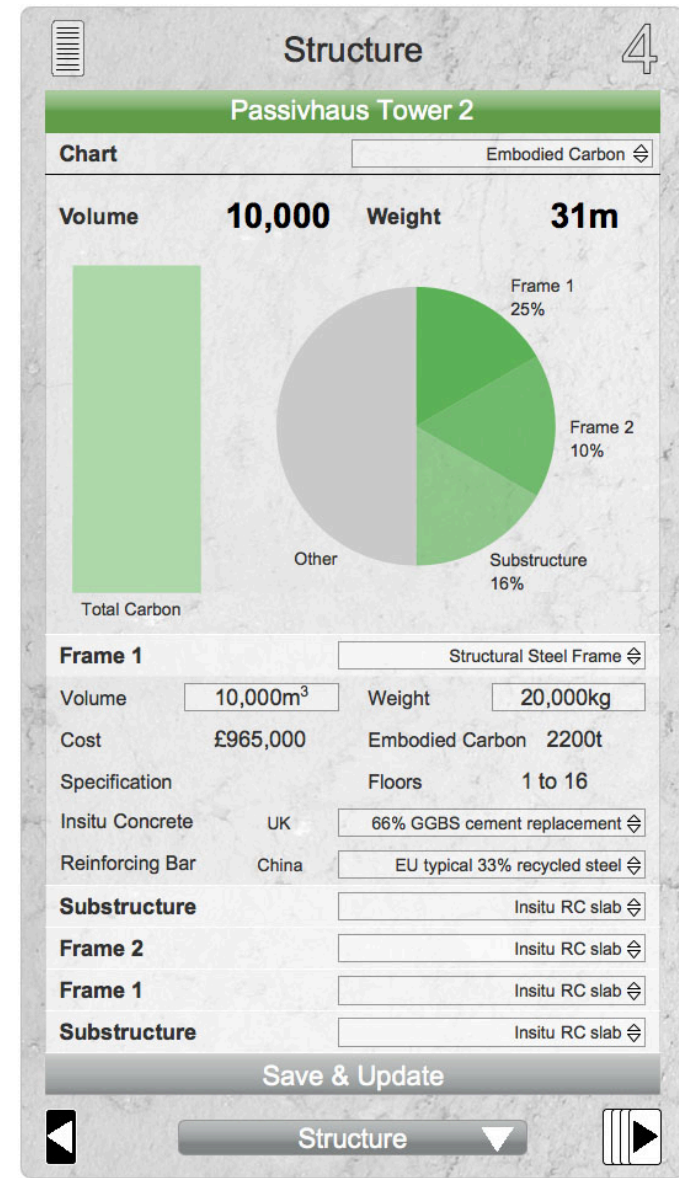
Intelligent Defaults

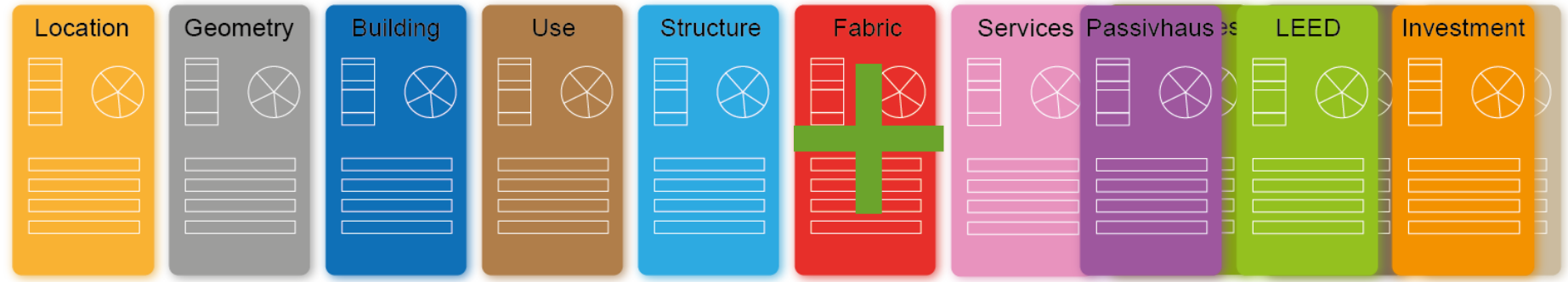
- Apply intelligent defaults to rapidly attribute a building geometry
- Support for mixed use buildings
- Customise defaults to let you make a fast start on your own projects e.g.
 - Passivhaus School
 - Supermarket
- Rich libraries of materials, constructions & strategies



Topic Cards

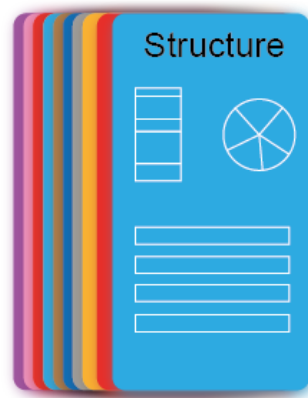
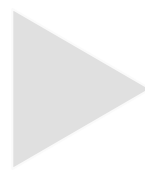
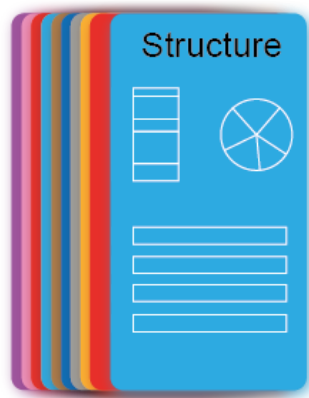
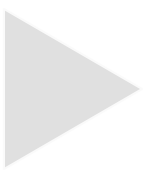
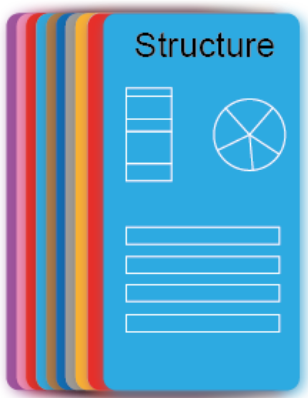
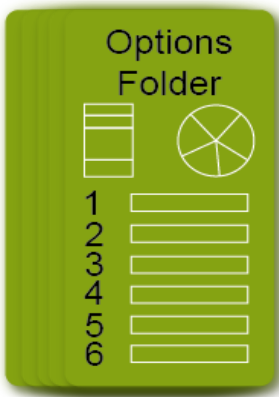
- Focused high level reporting
- Dynamically updating charts & metrics
- Critical Inputs
- A flexible intuitive workspace





Dynamically customisable workspace

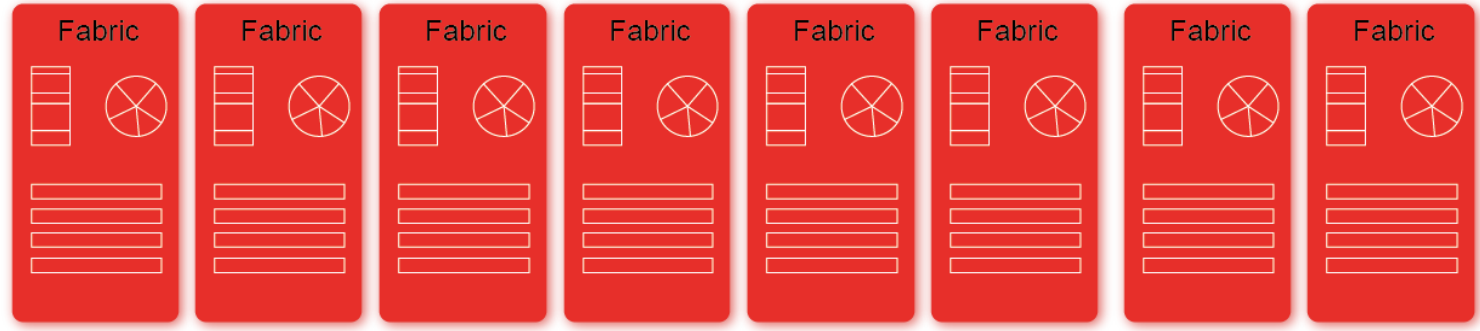
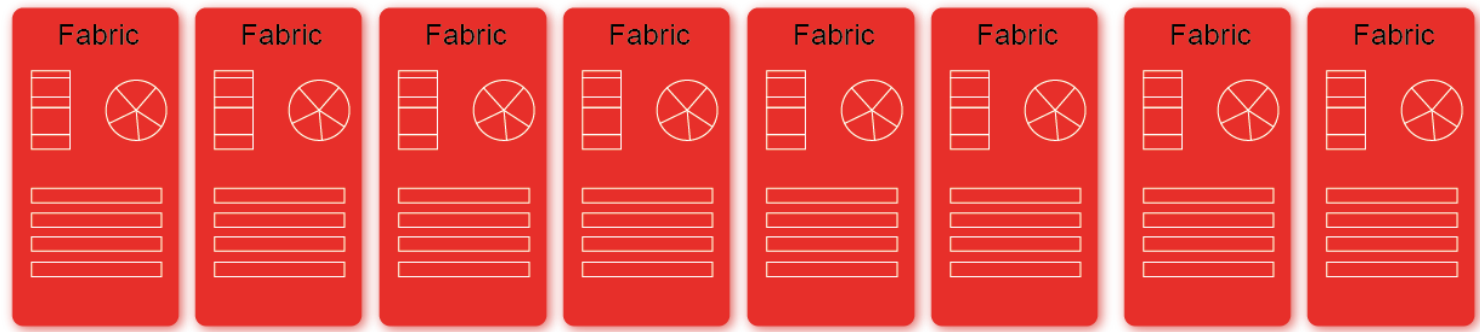
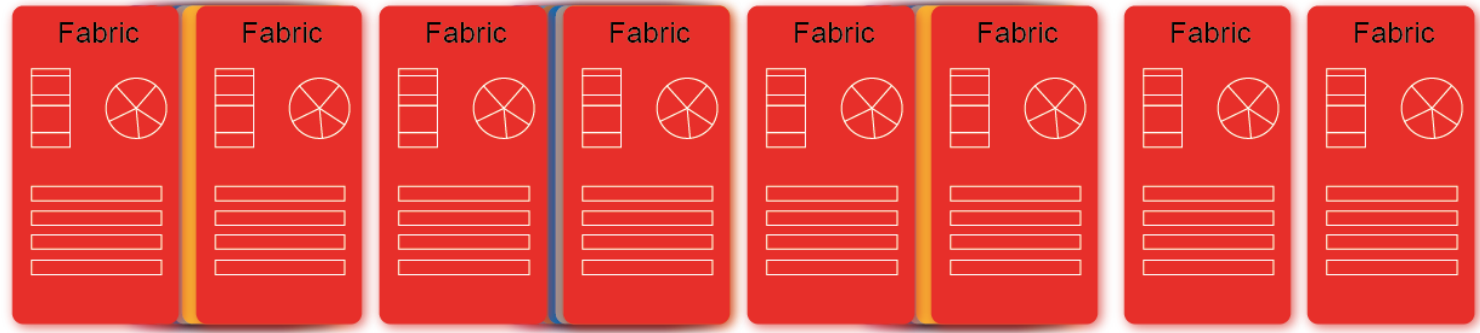
New cards extend functionality and meet specific user needs



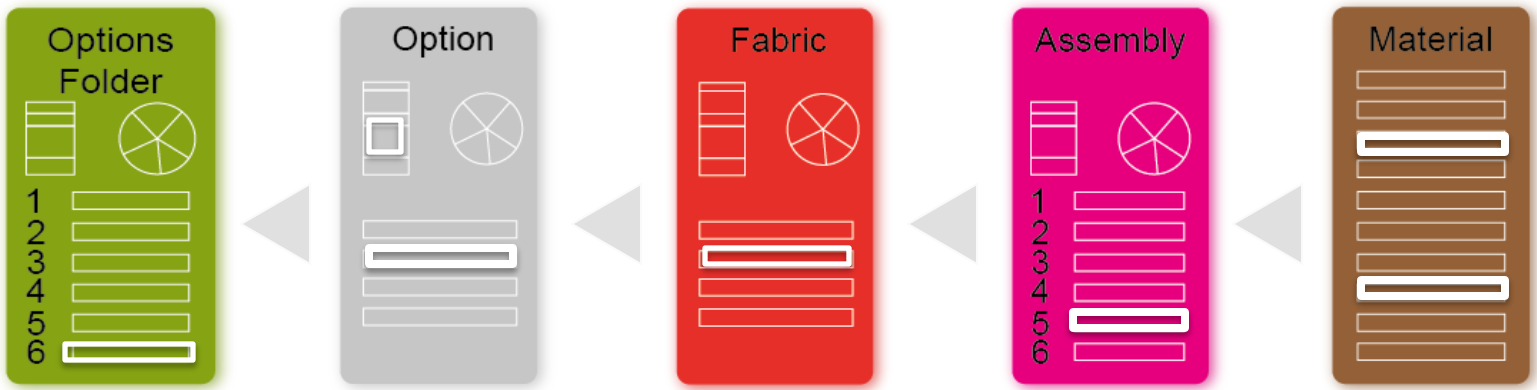


Auto-generate

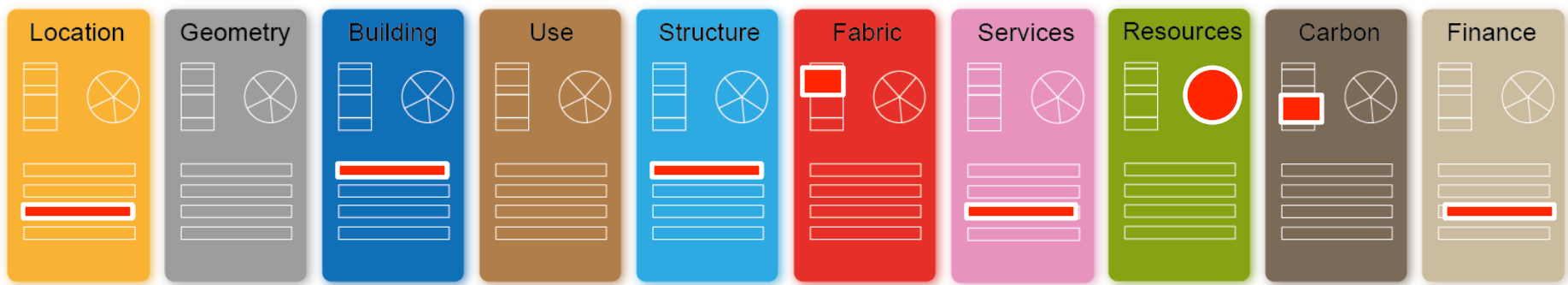
Auto-filter

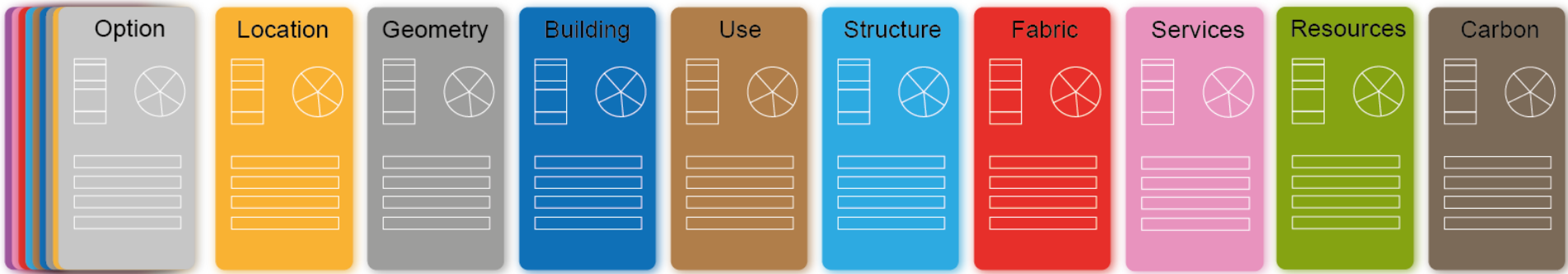


Make adjustments and see results in context

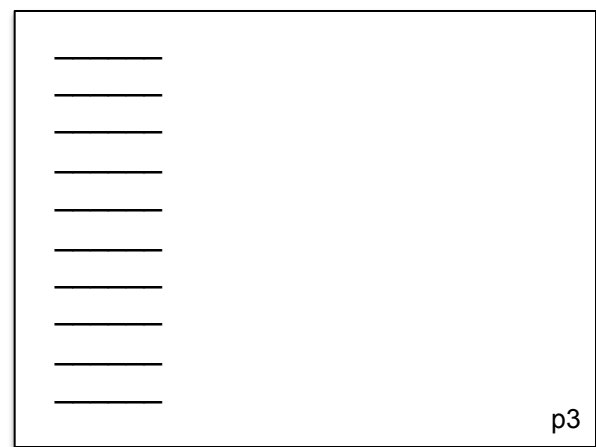
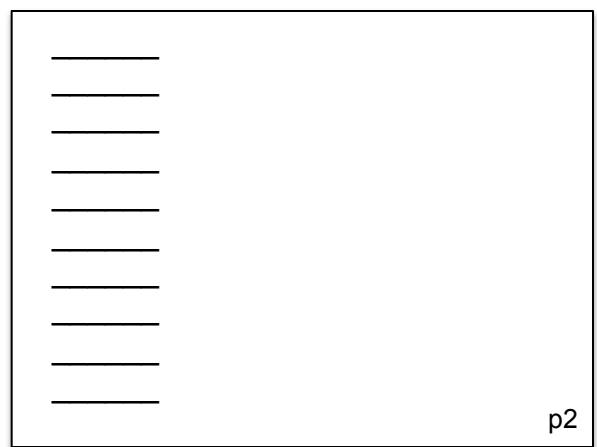
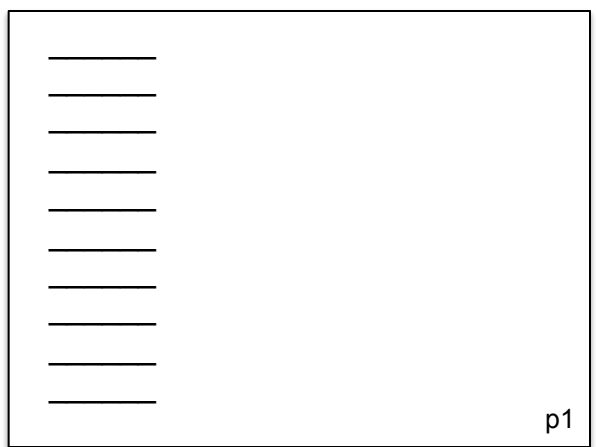


Compare against targets

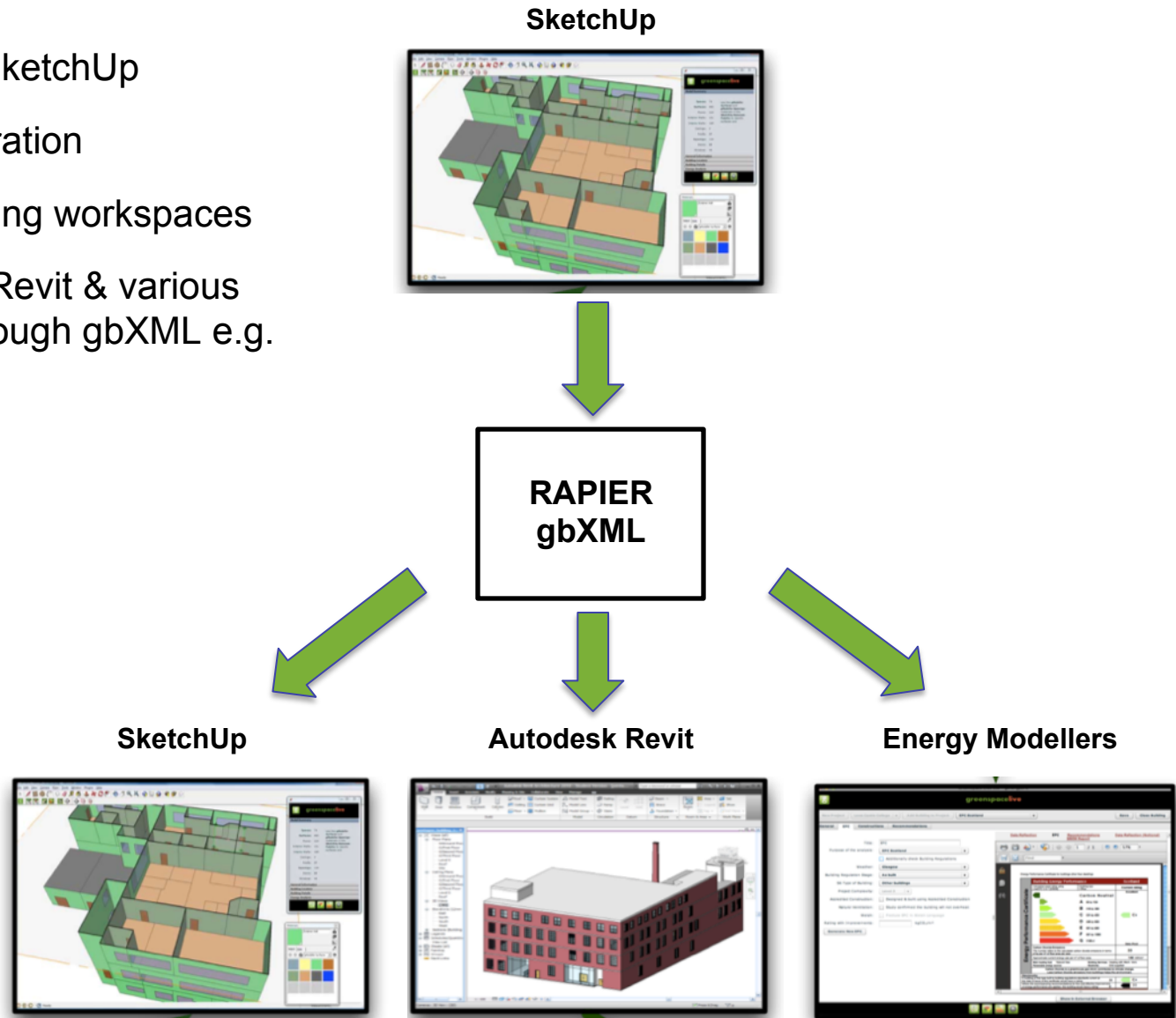




Produce customised reports that can be dynamically linked to the underlying models

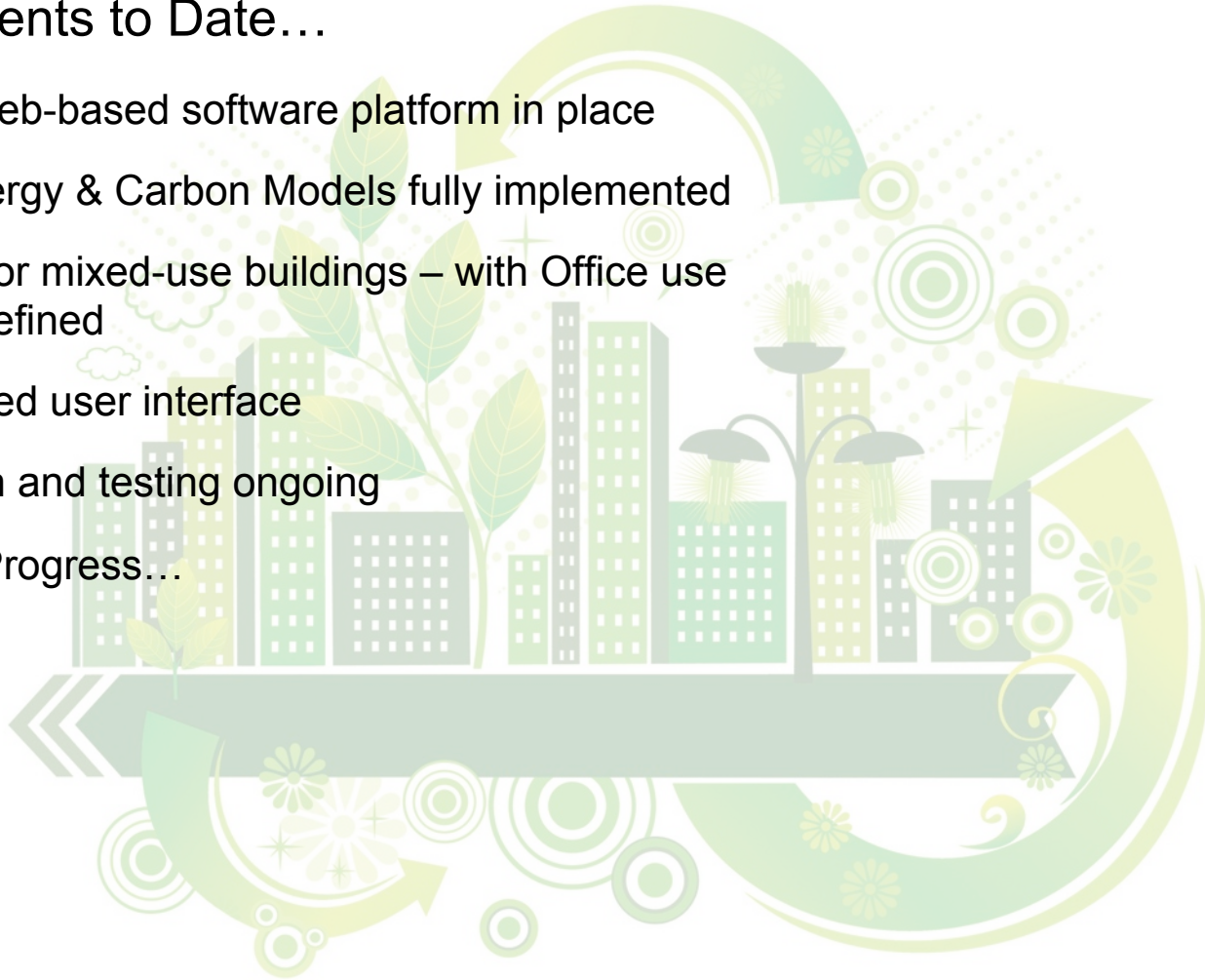


- Import models from SketchUp
- Enhancing BIM integration
- Link with Green building workspaces
- Export to SketchUp, Revit & various Energy modellers through gbXML e.g. Energy Plus



Achievements to Date...

- Robust web-based software platform in place
- Cost, Energy & Carbon Models fully implemented
- Support for mixed-use buildings – with Office use profiles defined
- Card based user interface
- Validation and testing ongoing
- Work in Progress...



← → ↻
projectrapier.com/rapierserver/rapierserver/rapier/projects
☆

Project Options

Chart: Option Scatter Chart

X: Total Cost Y: Embodied Carbon

No.	Name	
1	Baseline	>
2	Six Storey 50% Glazing	>
3	Three Storey 80% Glazing	>
4	Seven Storey 80% Glazing	>
5	Five Storey 50% Glazing	>
6	5 Storey Cross 60% Glazing	>
7	New Option	>
8	New Option	>

Edit Project
Run Simulation
Add Option

1 - Option

Baseline

Defaults: High-rise steel-frame office block (6...)

	Total	Per m ²
Capital Cost	£61,634,000	£1712
Lifecycle Cost	£78,259,300	£2,200
Embodied Carbon	18310 Tonnes	509 kg
Operational Energy	3180 MWh/yr	88 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	36000 m ²
Total Floors	10
Location	A429, Chelte...
Glazing Ratio	80%

Update
Duplicate
Report
Delete

◀ 1 - Option ▶

2 - Option

Six Storey 50% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£27,345,100	£1899
Lifecycle Cost	£33,971,400	£2,400
Embodied Carbon	1354 Tonnes	94 kg
Operational Energy	1271 MWh/yr	88 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	14400 m ²
Total Floors	6
Location	London, UK
Glazing Ratio	50%
Floor Height	4

Update
Duplicate
Report
Delete

◀ 2 - Option ▶

3 - Option

Three Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£15,739,000	£2186
Lifecycle Cost	£19,008,000	£2,600
Embodied Carbon	6960 Tonnes	967 kg
Operational Energy	735 MWh/yr	102 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	7200 m ²
Total Floors	3
Location	London, UK
Glazing Ratio	80%
Floor Height	4

Update
Duplicate
Report
Delete

◀ 3 - Option ▶

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[ASSEMBLY LIBRARY](#)
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Project Options

Chart: Option Scatter Chart

Table of Options

No.	Name
1	Baseline
2	Six Storey 50% Glazing
3	Three Storey 80% Glazing
4	Seven Storey 80% Glazing
5	Five Storey 50% Glazing
6	5 Storey Cross 60% Glazing
7	New Option
8	New Option

4 - Option

Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 kWh/yr

Chart: Lifecycle Cost vs Carbon

4 - Option

4 - Building

SEVEN STOREY 80% GLAZING

Length:
 Breadth:
 North angle:
 Floor Shape:
 Floor-Floor Height:
 Number of Floors:
 Number of Basements:
 Glazing Ratio:

Floor	Structure	Fabric	Usage
0	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
1	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
2	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
3	In-Situ Concrete frame	Compliant	Office: CAT B Cellular

4 - Building

4 - Floor 0

SEVEN STOREY 80% GLAZING

Fabric Template:
 Structure Template:
 Usage Template:
 Roof Template:

Update Floor

4 - Floor 0

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PROJECTS ASSEMBLY LIBRARY COMPONENT LIBRARY LOG OUT

4 - Option

Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 KWh/yr

Chart: Lifecycle Cost vs Carbon

Carbon Vs Cost / Year

Total Area: 10800 m²
 Total Floors: 6
 Location: London, UK
 Glazing Ratio: 80%
 Floor Height: 4

4 - Option

4 - Building

SEVEN STOREY 80% GLAZING

Length: 30
 Breadth: 60
 North angle: 0
 Floor Shape: ZShape
 Floor-Floor Height: 4
 Number of Floors: 6
 Number of Basements: 0
 Glazing Ratio: 0.8

Floor	Structure	Fabric	Usage
0	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
1	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
2	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular
3	In-Situ Concrete frame	Compliant Speculative	Office: CAT B Cellular

4 - Building

4 - Floor 0

SEVEN STOREY 80% GLAZING

Fabric Template: Compliant Speculative
 Structure Template: In-Situ Concrete frame
 Usage Template: Office: CAT B Cellular
 Roof Template: Green roof on precast concrete

Update Floor

4 - Floor 0

Attached Assemblies

Assembly Assignment - Floor 0

BCIS Code	Assembly	Attribution %
1A1		0
1A2		0
1A3	Non-FSC Timber floating floor; 100mm exp polystyrene; 250mm RC 32/40 50% GGBS concrete	100
1A4		0
1A5		0
2A1	Concrete - insitue RC 25/30 MPA, no rebar	100
2A1	Steel - re-inforcement bar, ROW 35.5% recycled	100
2B1	200mm 32/40RC slab, reinforcement ROW 35.5% recycled, screeded finish, plasterboard ceiling below	100
2B1	FSC timber floor, timber panel on rockwool, plasterboard + rockwool ceiling below	100
2C1		0
2C2		0
2C3		0
2C4		0
2D1		0

Update Attached Assemblies

PROJECTS ASSEMBLY LIBRARY COMPONENT LIBRARY LOG OUT

Project Options

Chart: Option Scatter Chart

X: Total Cost Y: Embodied Carbon

No.	Name
1	Baseline
2	Six Storey 50% Glazing
3	Three Storey 80% Glazing
4	Seven Storey 80% Glazing
5	Five Storey 50% Glazing
6	5 Storey Cross 60% Glazing
7	New Option
8	New Option

Edit Project Run Simulation Add Option

4 - Option

Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	10800 m ²
Total Floors	6
Location	London, UK
Glazing Ratio	80%
Floor Height	4

Update Duplicate Report Delete

4 - Option

- ▶ Building
- ▶ Location
- ▶ Energy Use
- ▶ Financial Breakdown

4 - Location

SEVEN STOREY 80% GLAZING

Location: 10 Strand, Savoy Ct, London, Greater London

Lat / Lng: 51.510000, -0.120850

Description:

Context: Urban

Cost Region: Cost Region

Climate: UK London

Map Satellite Hybrid

Save Location

Projects

PROJECTS ASSEMBLY LIBRARY COMPONENT LIBRARY LOG OUT

Project Options

Chart: Option Scatter Chart

X: Total Cost Y: Embodied Carbon

Table of Options		
No.	Name	
1	Baseline	>
2	Six Storey 50% Glazing	>
3	Three Storey 80% Glazing	>
4	Seven Storey 80% Glazing	>
5	Five Storey 50% Glazing	>
6	5 Storey Cross 60% Glazing	>
7	New Option	>
8	New Option	>

Edit Project Run Simulation Add Option

4 - Option

Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 KWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	10800 m ²
Total Floors	6
Location	London, UK
Glazing Ratio	80%
Floor Height	4

Update Duplicate Report Delete

4 - Option

Building Location Energy Use Financial Breakdown

4 - Energy Use

	Total	Per m ²
Total Energy	1131 MWh/Yr	105 KWh/Yr
Space Heating	721 MWh/Yr	67 KWh/Yr
Space Cooling	1 MWh/Yr	0 KWh/Yr
Hot Water	129 MWh/Yr	12 KWh/Yr
Lighting	189 MWh/Yr	18 KWh/Yr
Small Power	90 MWh/Yr	8 KWh/Yr
Ventilation	0 MWh/Yr	0 KWh/Yr

Chart: Heating Vs Cooling

Heating Cooling

Projects

Project Options

Chart: Option Scatter Chart

X: Total Cost Y: Embodied Carbon

No.	Name
1	Baseline
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5	Five Storey 50% Glazing
6	5 Storey Cross 60% Glazing
7	New Option
8	New Option

Edit Project Run Simulation Add Option

4 - Option
Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area 10800 m²
Total Floors 6
Location London, UK
Glazing Ratio 80%
Floor Height 4

Update Duplicate Report Delete

4 - Option

- Building ▶
- Location ▶
- Energy Use ▶
- Financial Breakdown ▶
- Embodied Carbon ▶

4 - Finance

	Total	Per m ²
Total Cost	£ 21,840,200	£ 2022
Total Lifecycle Cost	£ 26,855,200	£ 2487

Cost Break Down

1: Substructure

1A1 - Foundations	£4,053,800
1A3 - Lowest Floor	£1,351,300

2: Frame

2C1 - Flat Roof Structure	£146,000
2C2 - Flat Roof Coverings	£138,700
2C2 - Flat Roof Surface Finishes	£7,300
2C3 - Roof Drainage	£146,000
2D1 - Stairs Structure	£48,700
2D2 - Stairs Finishes	£48,700
2E1 - External Enclosing Walls	£4,216,300
2F1 - Windows	£87,800
2F2 - External Doors	£87,800
2G1 - Proprietary Partitions	£147,000
2G1 - De-mountable Partitions	£36,700

3: Wall finishes

3A1 - Insitu Finishes	£220,500
3A1 - Decorations	£110,200
3A1 - Rigid Finishes	£36,700

Projects

Project Options

Chart: Option Scatter Chart

X: Total Cost Y: Embodied Carbon

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7	New Option
8	New Option

Edit Project Run Simulation Add Option

4 - Option

Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh/yr	105 kWh/yr

Chart: Lifecycle Cost vs Carbon

Total Area	Total Floors	Location	Glazing Ratio	Floor Height
10800 m ²	6	London, UK	80%	4

Update Duplicate Report Delete

4 - Option

- Building ▶
- Location ▶
- Energy Use ▶
- Financial Breakdown ▶
- Embodied Carbon ▶

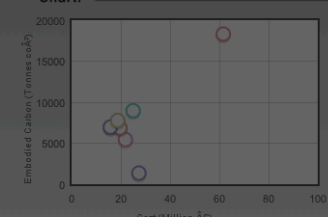
4 - Embodied Carbon

	Total	Per m ²
Embodied Carbon	5,444,600 kgCO ₂ e	504.13 kgCO ₂ e
Total Lifecycle Cost	7,561,900 kgCO ₂ e	700 kgCO ₂ e
PAS 2050 Lifecycle	7,460,800 kgCO ₂ e	690.82 kgCO ₂ e
Biogenic Carbon	34,400 kgCO ₂ e	3.19 kgCO ₂ e
Carbon Absorption	0 kgCO ₂ e	0.00 kgCO ₂ e
Travel Carbon	661,300 kgCO ₂ e	61.23 kgCO ₂ e
Travel Carbon	661,300 kg	61.23 kg

projectrapier.com/rapierserver/rapierserver/rapier/projects
PROJECTS ASSEMBLY LIBRARY COMPONENT LIBRARY LOG OUT

Project Options

Chart: Option Scatter Chart



X: Total Cost Y: Embodied Carbon

No.	Name
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5	Five Storey 50% Glazing
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7	New Option
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Edit Project Run Simulation Add Option

4 - Option

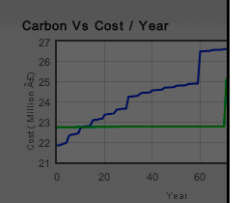
Seven Storey 80% Glazing

Defaults: Mid-rise concrete-frame office block ...

	Total	Per m ²
Capital Cost	£21,840,200	£2022
Lifecycle Cost	£26,855,200	£2,500
Embodied Carbon	5445 Tonnes	504 kg
Operational Energy	1131 MWh	

Chart: Lifecycle Cost vs Carbon

Carbon Vs Cost / Year



Total Area	Total Floors	Location	Glazing Ratio	Floor Height
10800 m ²	6	London, UK	80%	4


Update Duplicate Report Delete

4 - Option


Building Location Energy Use Financial Breakdown

4 - Embodied Carbon

	Total	Per m ²
	0 kgCO ₂ e	504.13 kgCO ₂ e
	0 kgCO ₂ e	700 kgCO ₂ e
	0 kgCO ₂ e	690.82 kgCO ₂ e
	0 kgCO ₂ e	3.19 kgCO ₂ e
	0 kgCO ₂ e	0.00 kgCO ₂ e
	0 kgCO ₂ e	61.23 kgCO ₂ e
	00 kg	61.23 kg



Checking Drawings...



PROJECTS ASSEMBLY LIBRARY COMPONENT LIBRARY LOG

Assembly Library

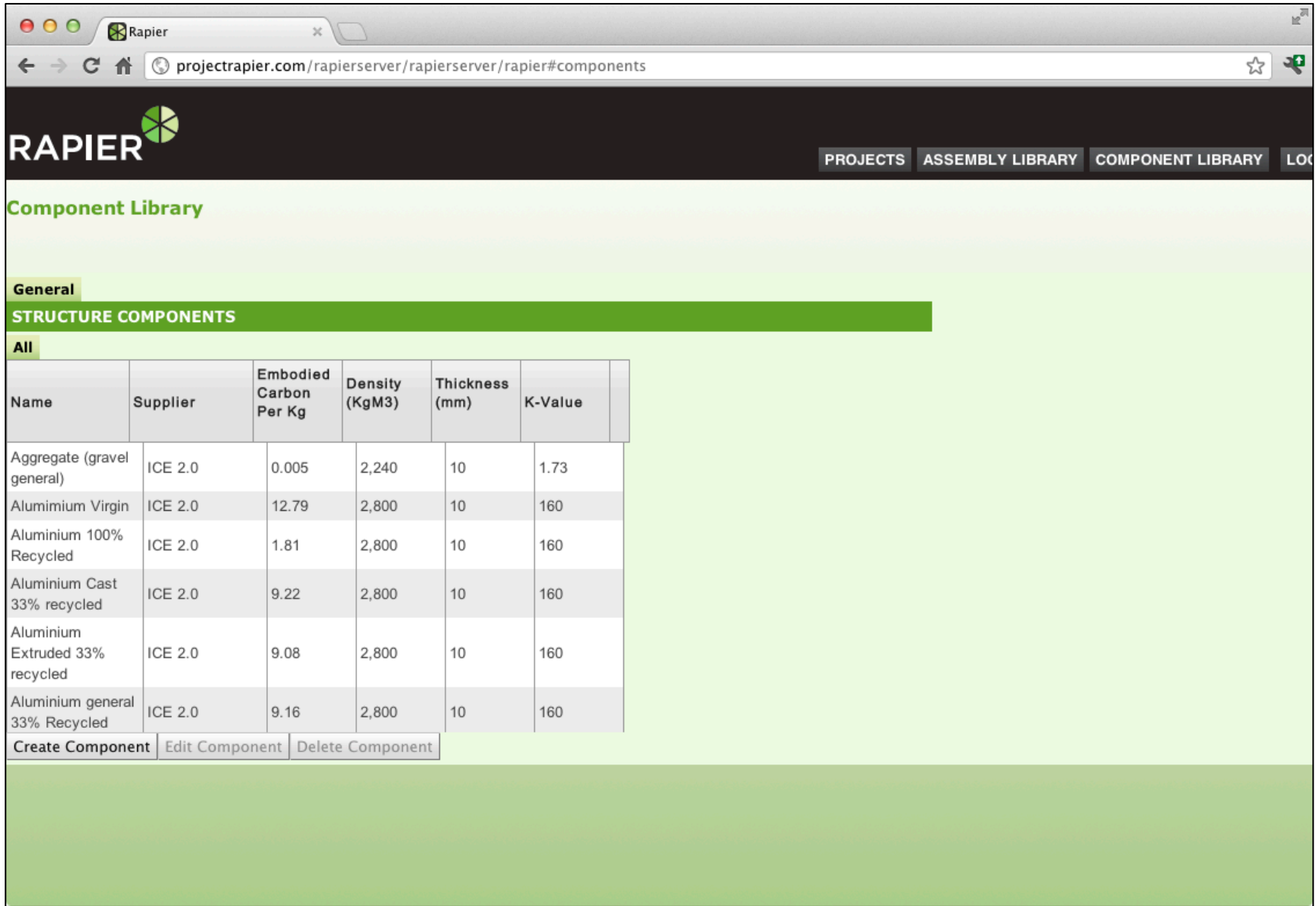
Super Structure
Sub Structure
Finishes
Fittings & Furnishings
Services
External Works

SUPERSTRUCTURE ASSEMBLIES

Frame
Floors
Roof
Stairs
External Walls
Internal Walls
External Openings
Internal Openings

Name	PAS 2050	Simple Lifecycle	Embodied Carbon	Weight	Biogenic Carbon	Carbon Absorption	Travel Carbon
435mm Brick / block cavity wall; 175 cavity with 150mm polyurethane foam; rendered one side	196.894	200.487	144.351	352.443	0	0	3.771
460mm Brick / block cavity wall; 200 cavity with 150mm polyurethane foam; rendered	212.461	216.337	155.763	354.193	0	0	3.844

Create Assembly
Edit Assembly
Delete Assembly



The screenshot shows a web browser window with the URL `projectrapier.com/rapierserver/rapierserver/rapier#components`. The page header includes the RAPIER logo and navigation tabs for **PROJECTS**, **ASSEMBLY LIBRARY**, **COMPONENT LIBRARY**, and **LOC**. The main content area is titled **Component Library** and features a **General** tab. Below the tab is a green header for **STRUCTURE COMPONENTS** and a sub-tab for **All**. A table lists various materials with their properties. At the bottom of the table are three buttons: **Create Component**, **Edit Component**, and **Delete Component**.

Name	Supplier	Embodied Carbon Per Kg	Density (KgM3)	Thickness (mm)	K-Value
Aggregate (gravel general)	ICE 2.0	0.005	2,240	10	1.73
Aluminium Virgin	ICE 2.0	12.79	2,800	10	160
Aluminium 100% Recycled	ICE 2.0	1.81	2,800	10	160
Aluminium Cast 33% recycled	ICE 2.0	9.22	2,800	10	160
Aluminium Extruded 33% recycled	ICE 2.0	9.08	2,800	10	160
Aluminium general 33% Recycled	ICE 2.0	9.16	2,800	10	160

Create Component **Edit Component** **Delete Component**

- One meeting impact
- Insight
- Productivity
- Communication and collaboration
- Optioneering
- Optimising of cost, energy & carbon



Further development, including;

- Integration with SketchUp
- Collaboration
- Support for Compliance
- Retrofit
- Multi-building developments
- Internationalisation
- Future energy, regulatory and climate scenarios



- Alpha Testing & validation
- Beta Testing
- Full Release



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