Using Building Information Modelling and the quantity extraction possibilities for achieving Sustainability.

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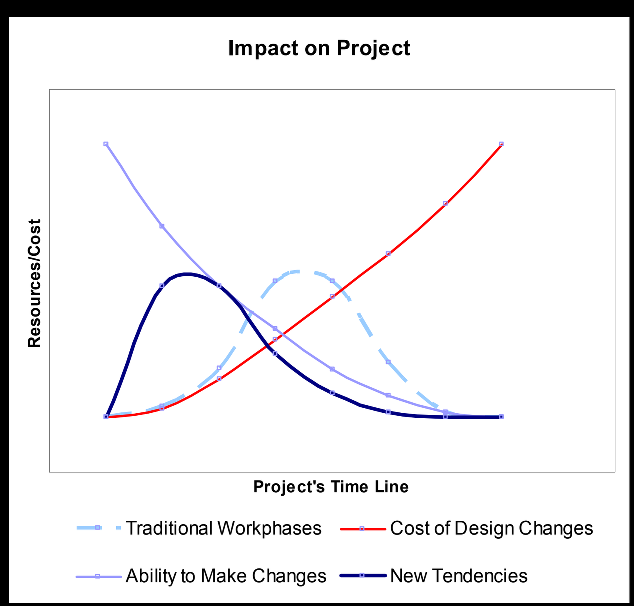
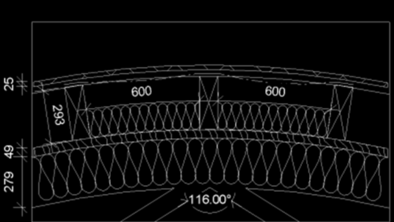
Building Information Modelling and the tracking of direct Economical Implications for Green Awareness embodied in Materials to archive Sustainability in early Design.



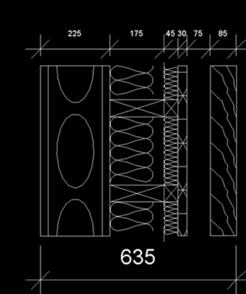
McLeamy Curve

Through Building Information Modeling decisions can be taken earlier with the gains from overview and quantifying schedules.
In the design process – decisions through information gained at the earliest is cheaper and less time consuming to implement through the first phases in building design.
We now finally begin to see the strength being adopted by major players on the market.

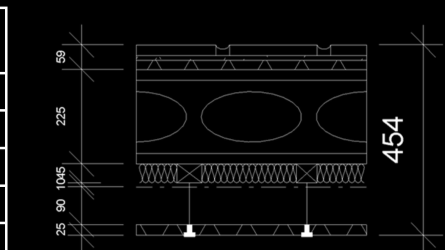
Roof	Volume m3	Price £/m3	Co2/m3
Bithumen felt	49.83 m3	69 £	912 kg
Plywood	337 m3	87 £	527 kg
Sheep Wool	141 m3	18 £	25 kg
Plasterboard	8.74 m3	70£	134,4 kg
Total	775 m2	189k £	95k kg CO2



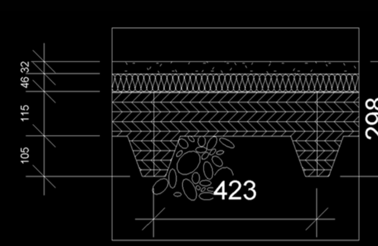
Walls	Volume m3	Price £/m3	Co2/m3
Lime Stone	40,7 m3	1200 £	450 kg
Sheep Wool	285 m3	18 £	25 kg
Concrete	342 m3	50 £	381 kg
Plasterboard	16 m3	70 £	134,4 kg
Total	408 m2	546k £	158k kg CO2

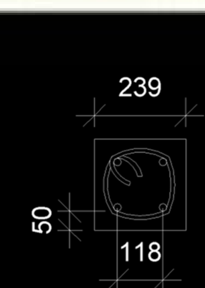


Partition	Volume m3	Price £/m2	Co2/m3
Concrete	742 m3	50£	381,6 kg
Hardwood	62 m3	112 £	241 kg
Sheep Wool	124 m3	18 £	25 kg
Plaster	79,2 m3	77 £	135 kg
Total	2475m2	637k £	312k kg CO2

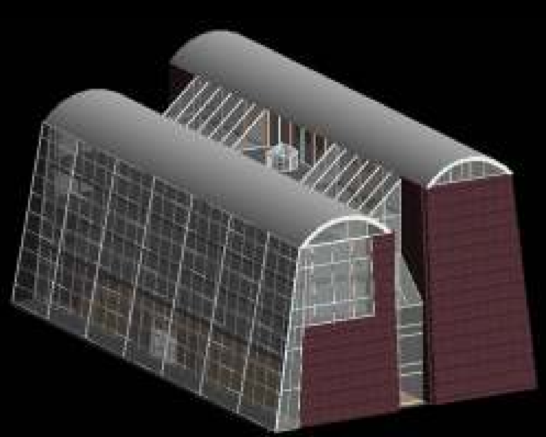


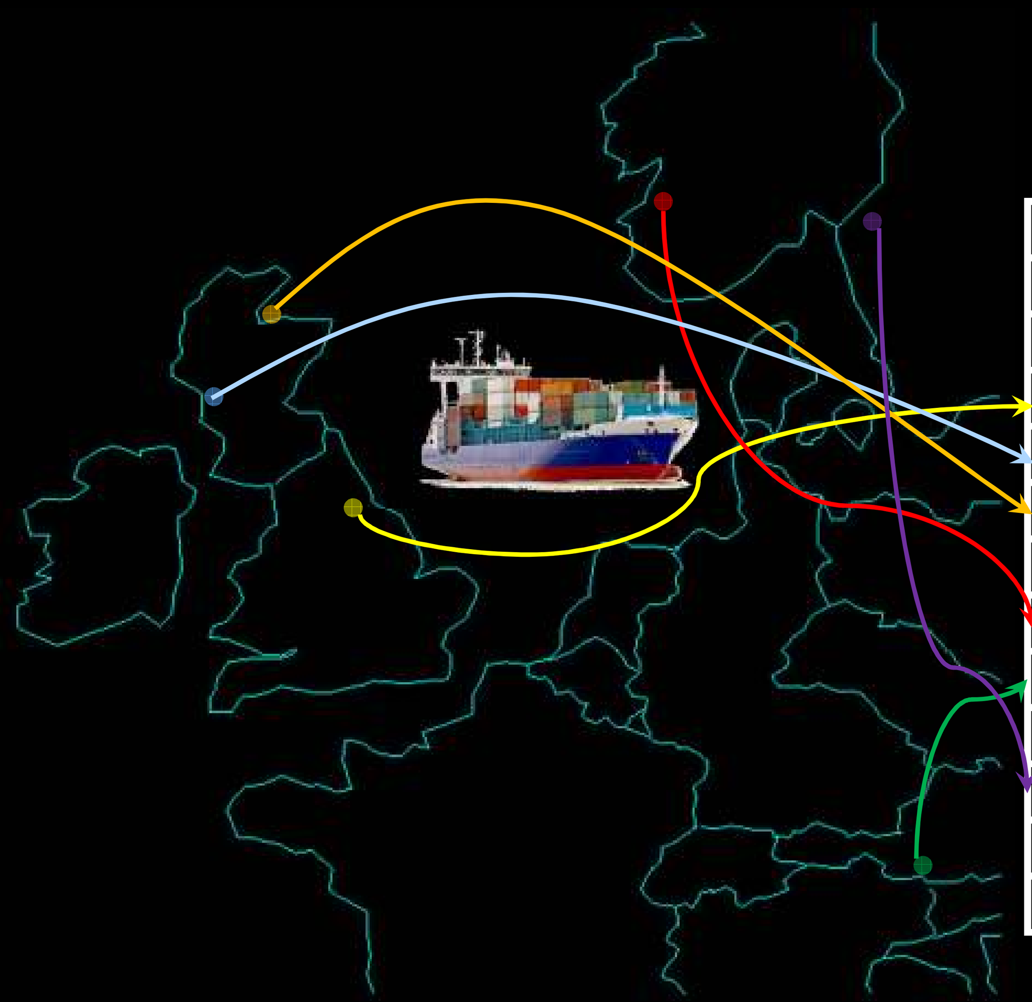
Slab – 725m2	Volume m3	Price £/m2	Co2/m3
Concrete	270 m3	30 £	381,6 kg
Sea Shells	330 m3	5 £	32 kg
Gravel	110 m3	17 £	125 kg
Total	725m2	37.7k £	129k kg CO2

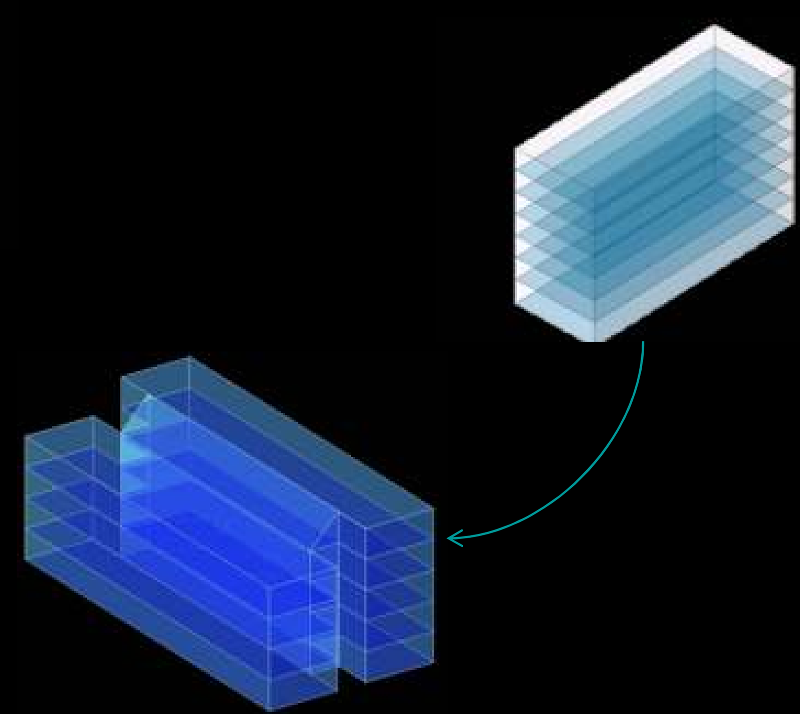




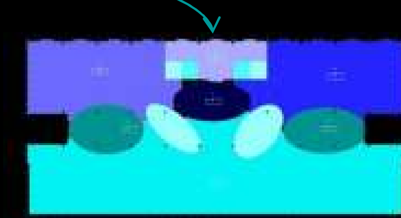
Columms	Volume m3	Price £/pce	Co2/m3
Concrete	35 m3	502 £	381,6 kg
Iron	1.8 m3	385 £	15k kg
Total	126 pices	74k £	140k kg CO2

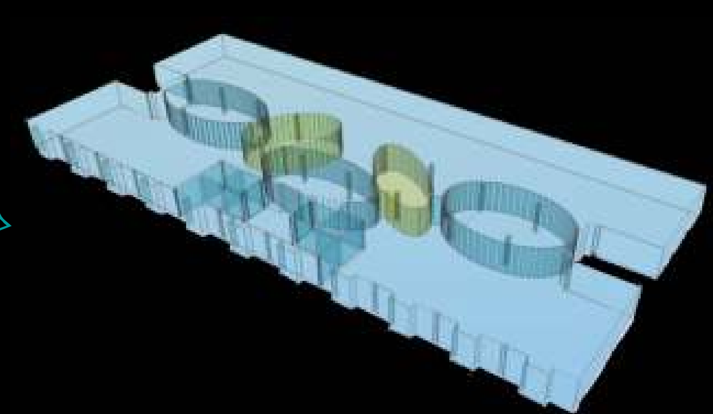






	CO2/m3	Embodied CO2	£
Glass	69 m3	147220 kg CO2	m2
Iron	17.8 m3	267000 kg CO2	m3
Concrete	1389 m3	530042 kg CO2	m3
Gravel	110 m3	13750 kg CO2	m3
Sea Shells	330 m3	10560 kg CO2	m3
Sheep Wool	550 m3	13750 kg CO2	m2
Hardwood	62 m3	15665 kg CO2	pcs
Limestone	40.7 m3	18315 kg CO2	m3
Bithumen felt	49.83 m3	45445 kg CO2	m2
Plywood	337 m3	177599 kg CO2	m
Transportation		708640 kg CO2	km/m3
Total		10287986 kg CO2	





The Architecture, Engineering and Construction (AEC) industries are being driven through legislation and by clients to improve Building performance. Commercial and residential buildings consume about 40 percent of our total energy and 70 percent of our electricity, while accounting for approximately 30 percent of greenhouse gas emissions and millions of tons of construction and demolition waste.

This enhances the need for the Life Cycle to be Cost effective for both industry and investors, and in the long run be profitable. BIM as a process and a project management, tool is being used more and more by market frontiers and this thesis will provide information on how BIM can help achieve these improvements and how to utilize the developing tools and workflows.

Through the quantity properties of drawing in 3D, it will showcase how the use of calculation optimizes and creates an overall basis for decision making and a detailed examination of existing applications as a working tool in the early design stages.

There is a need for a general and necessary concept, which could be Building Information Modelling (BIM), to achieve the correct materials and to optimize the supply route. This will improve the sustainable footprint of the building through its lifetime.

There will be focused on comparison segmented projects, between Denmark and UK. It will provide a conclusion with an exchange of knowledge, between approaches in Denmark and Scotland to BIM and their application possibilities in the early design stages.