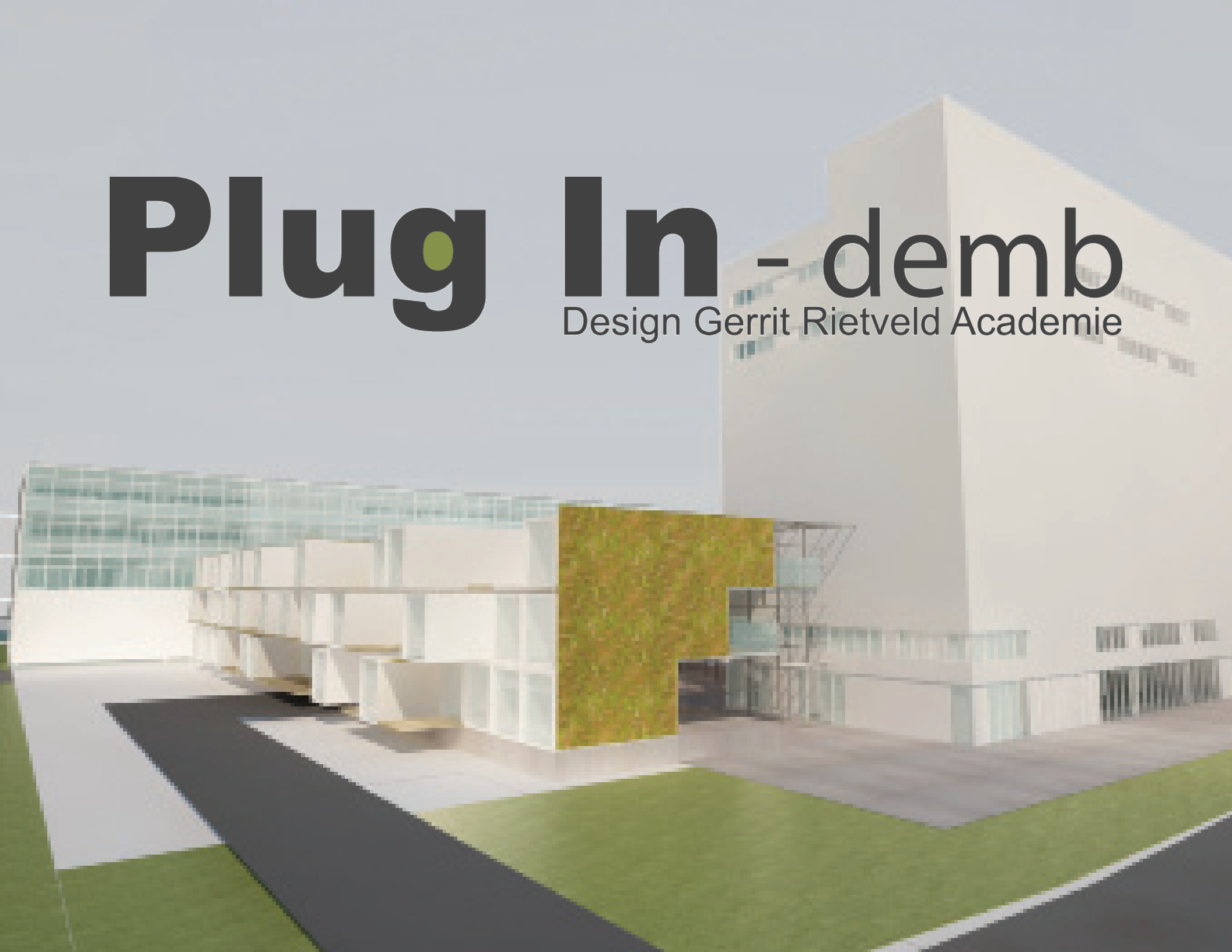


Plug In - demb

Design Gerrit Rietveld Academie

TABLE OF CONTENT

Plug In - demb

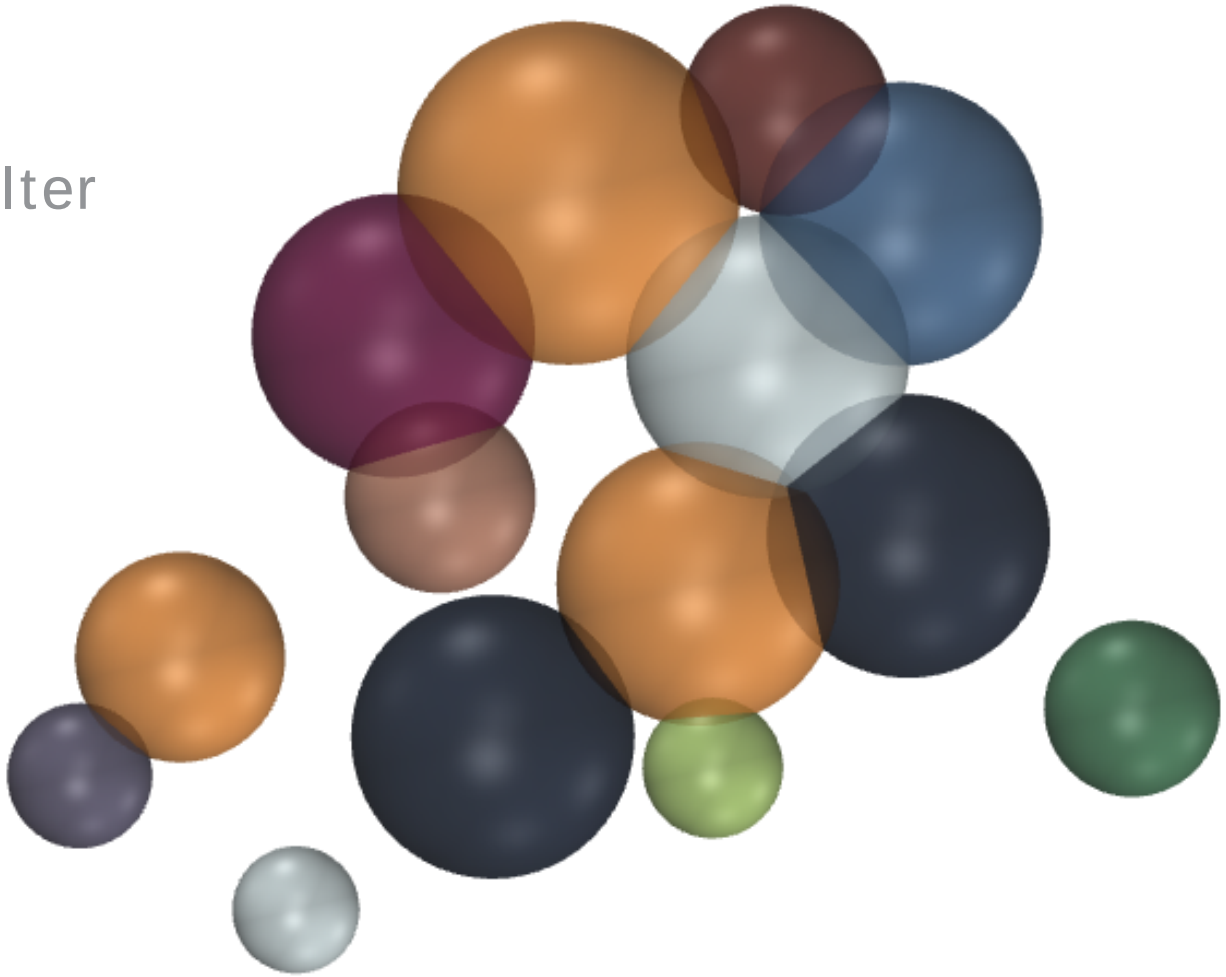
VISION

Plug In - demb

NESTING

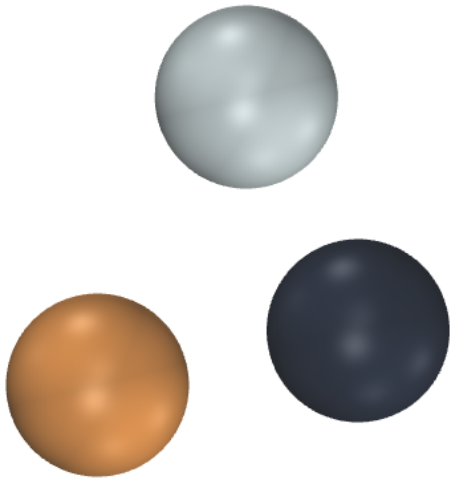
=> connecting

=> provide shelter

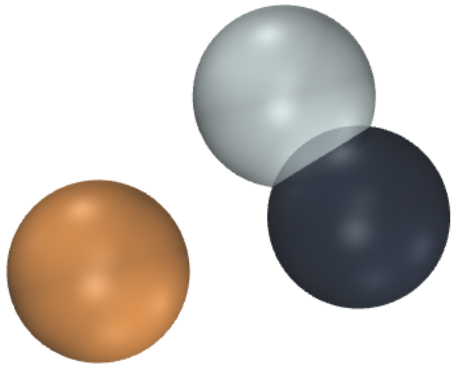


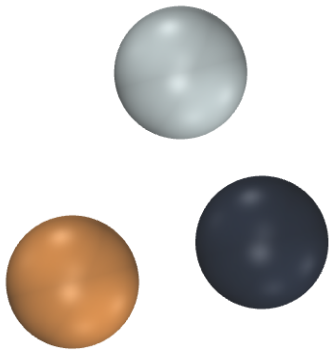
CONCEPT

NICHE forming

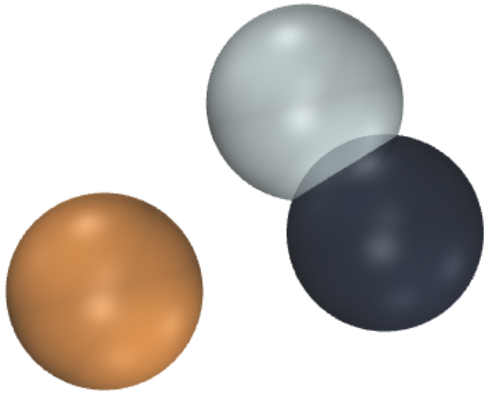


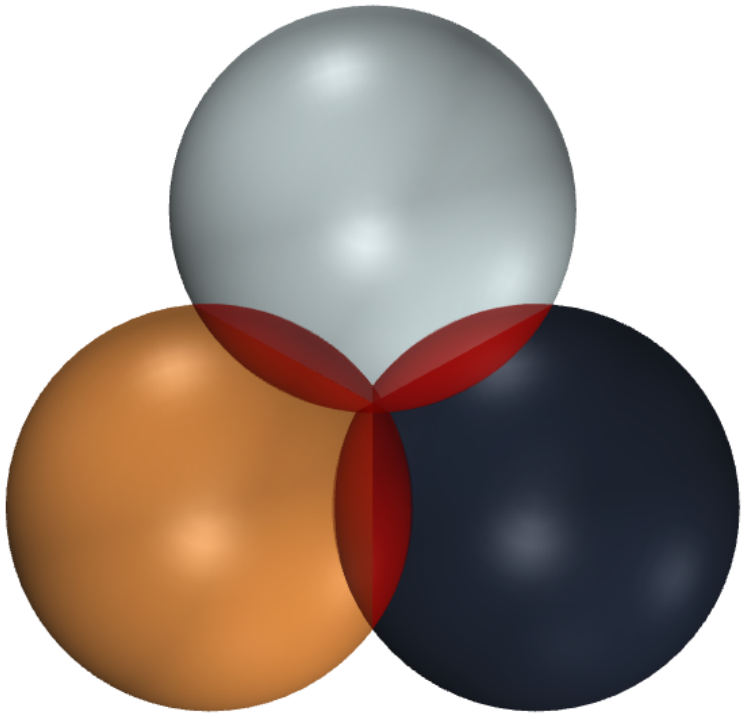
create potential for both
coherence & adhesion





NICHE interface
gained knowledge and experience





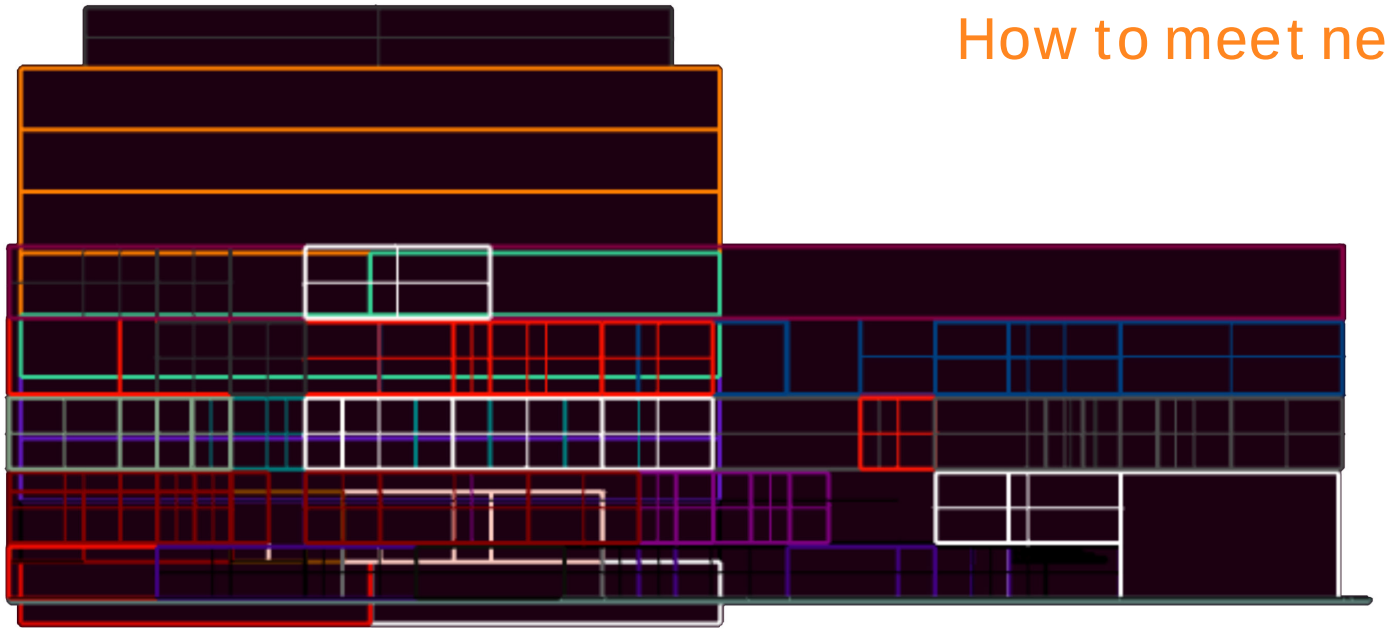
changes over time

depending on the route
the student takes

‘All buildings are predictions, and all predictions are wrong.’
Steward Brand

Benthem Crouwel as example for unmet needs not long ago

How to meet needs?



PLUG IN – demb

Resilience; a strategy for future proof engineering?

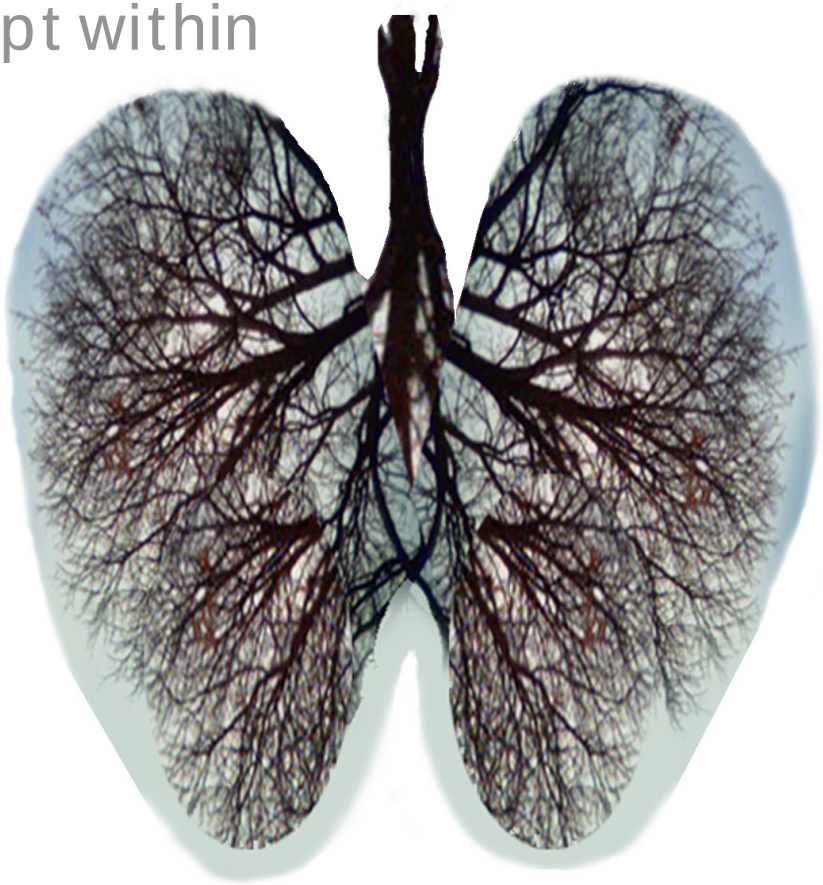
Our concept is based on a strategy of resilience. Awareness arose that the specifications for the additional space to be built are based on assumptions and predictions made for the future.

These assumptions and predictions are under influence of the political, economical, sociocultural and even technological developments. It was Steward Brand who noted ***'all buildings are predictions, and all predictions are wrong'*** (How Buildings Learn, 2001). Therefore it might not be the most logical to build the 3500 m2 directly as specified, but instead build a minimal critical structure with adaptive capacity.

In our concept it is a structure that holds the possibility to make extensions by means of plug-ins (e.g. Le Corbusier; unite d'habitation). In case more volume is required plug-ins can be added to the structure. The plug-ins can be customized and linked to each other to fit the needs. Another scenario is that the demand for space decreases. When this happens the plugins can be removed and the volume can shrink to the minimal critical threshold. This minimum critical threshold will accommodate all the basic needs.

The designed structure forms a physical connector between the two existing buildings and functions itself as a hub and meeting place. It is designed to fit as much sustainable features as possible; ranging from green facade to grey water circuit (recycled water for flushing toilets), a waste disposal and recycle area. All of these components are laid out to have an as small as possible carbon footprint. For the structure itself it is possible to dismantle and recycle the (steel) parts, except for the concrete foundation.

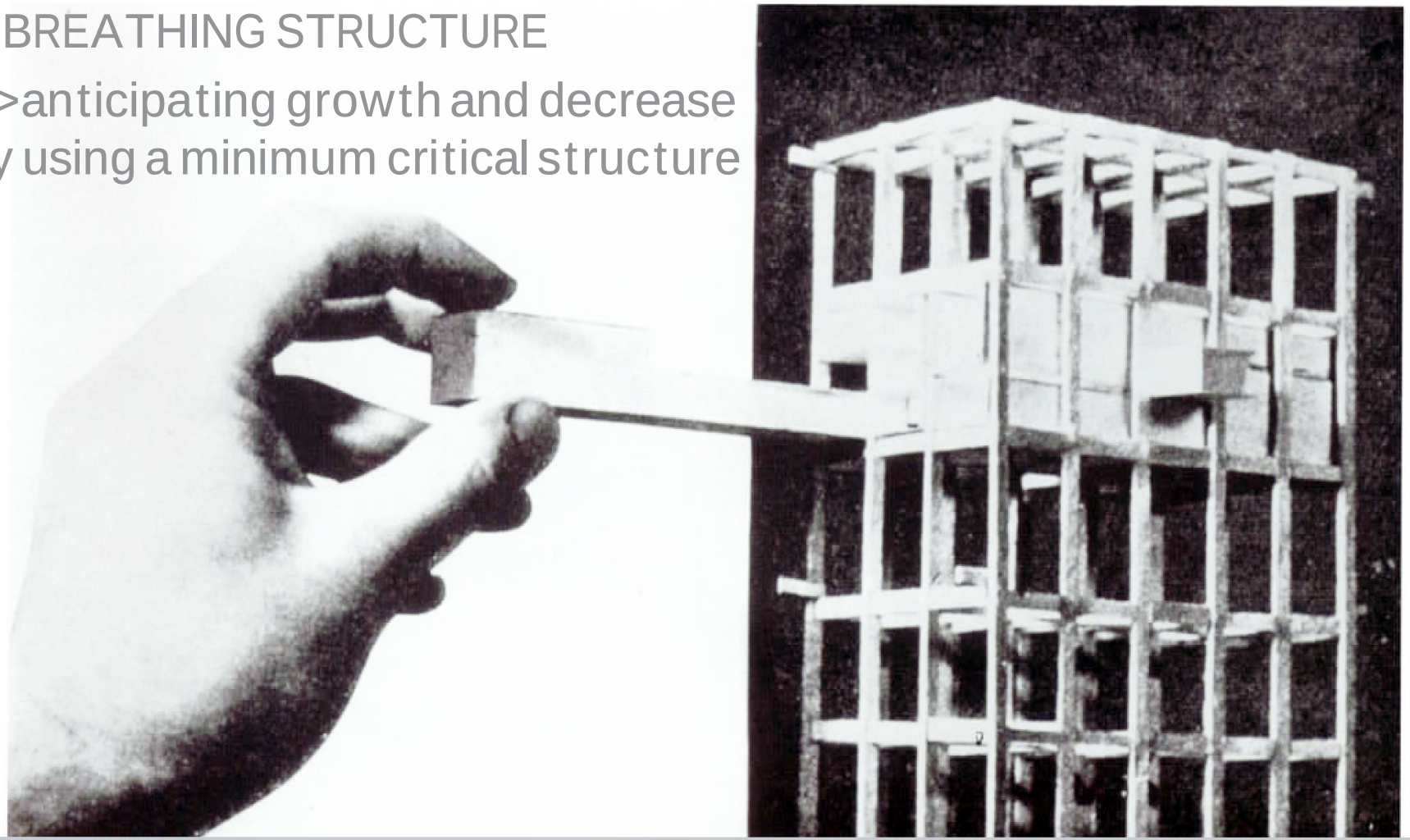
Resilience is the capacity of a system to continually change and adapt within critical thresholds.



RESILIENCE

A BREATHING STRUCTURE

=>anticipating growth and decrease
by using a minimum critical structure



RESILIENT ACCOMMODATION

Plug In - demb

Plug In - demb

RESILIENT ACCOMMODATION

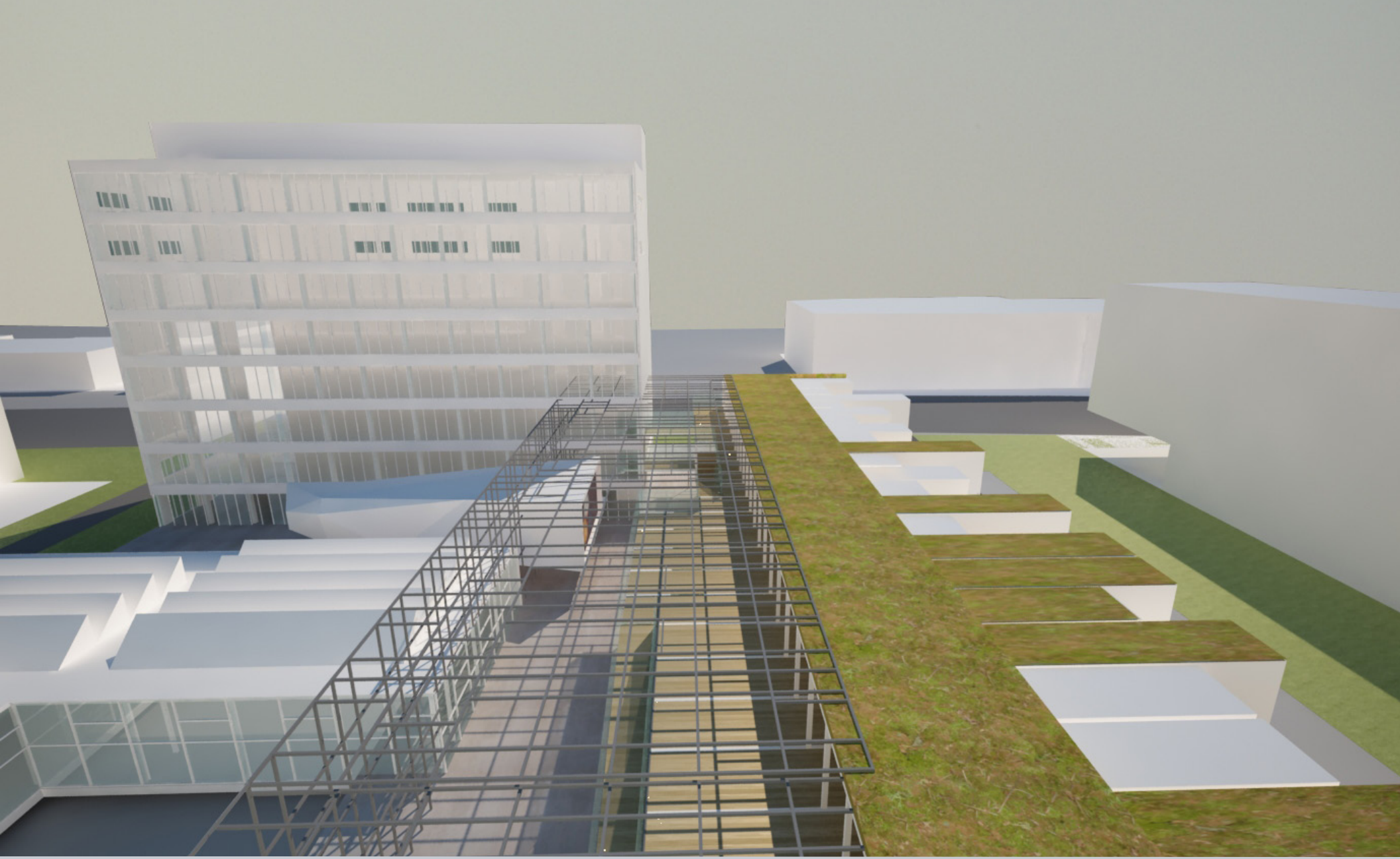
Plug In - demb

URBAN DEVELOPMENT

Plug In - demb

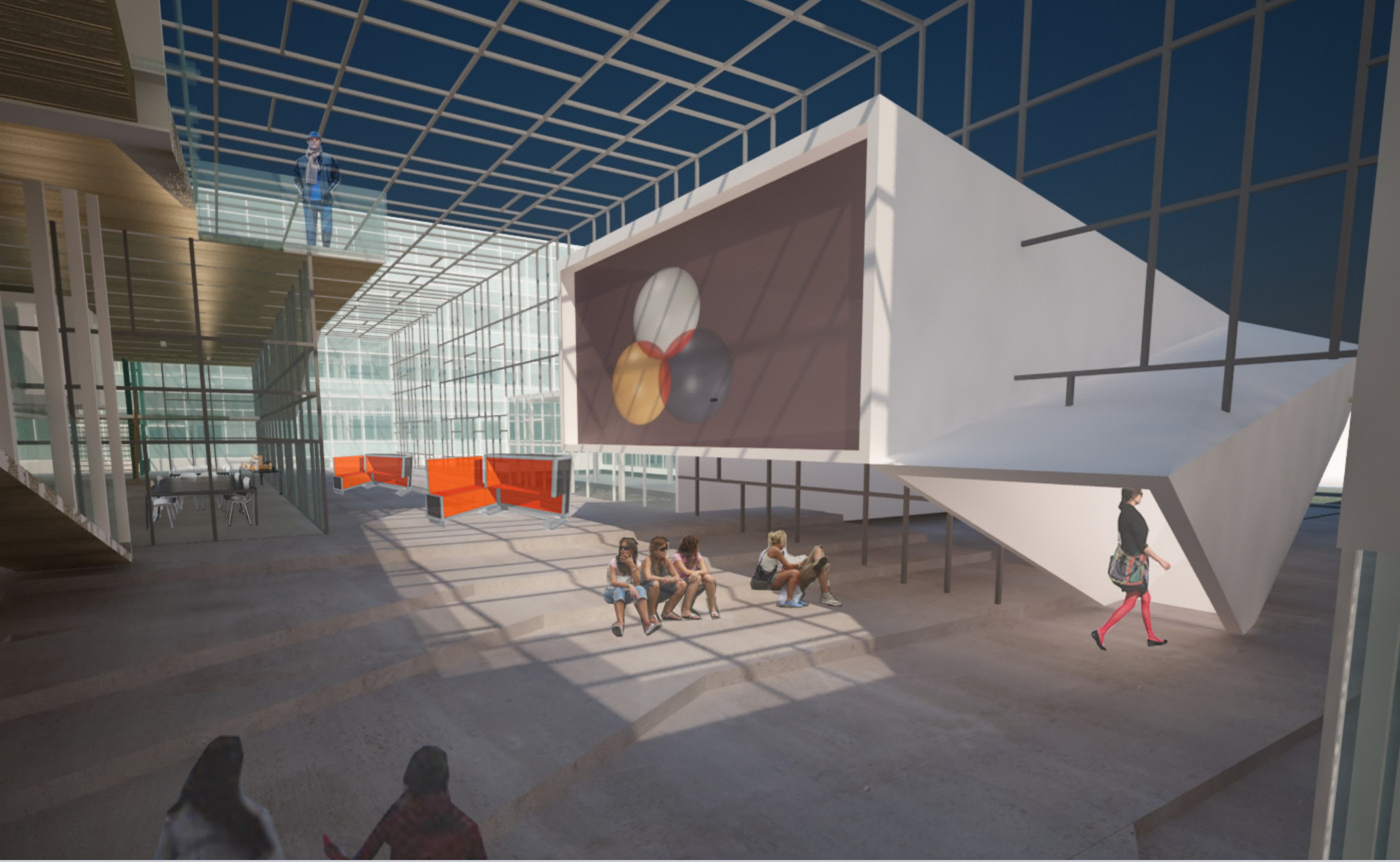
URBAN DEVELOPMENT

Plug In - demb



CHARACTER

Plug In - demb



CHARACTER

Plug In - demb

FUNCTIONALITY

Plug In - demb

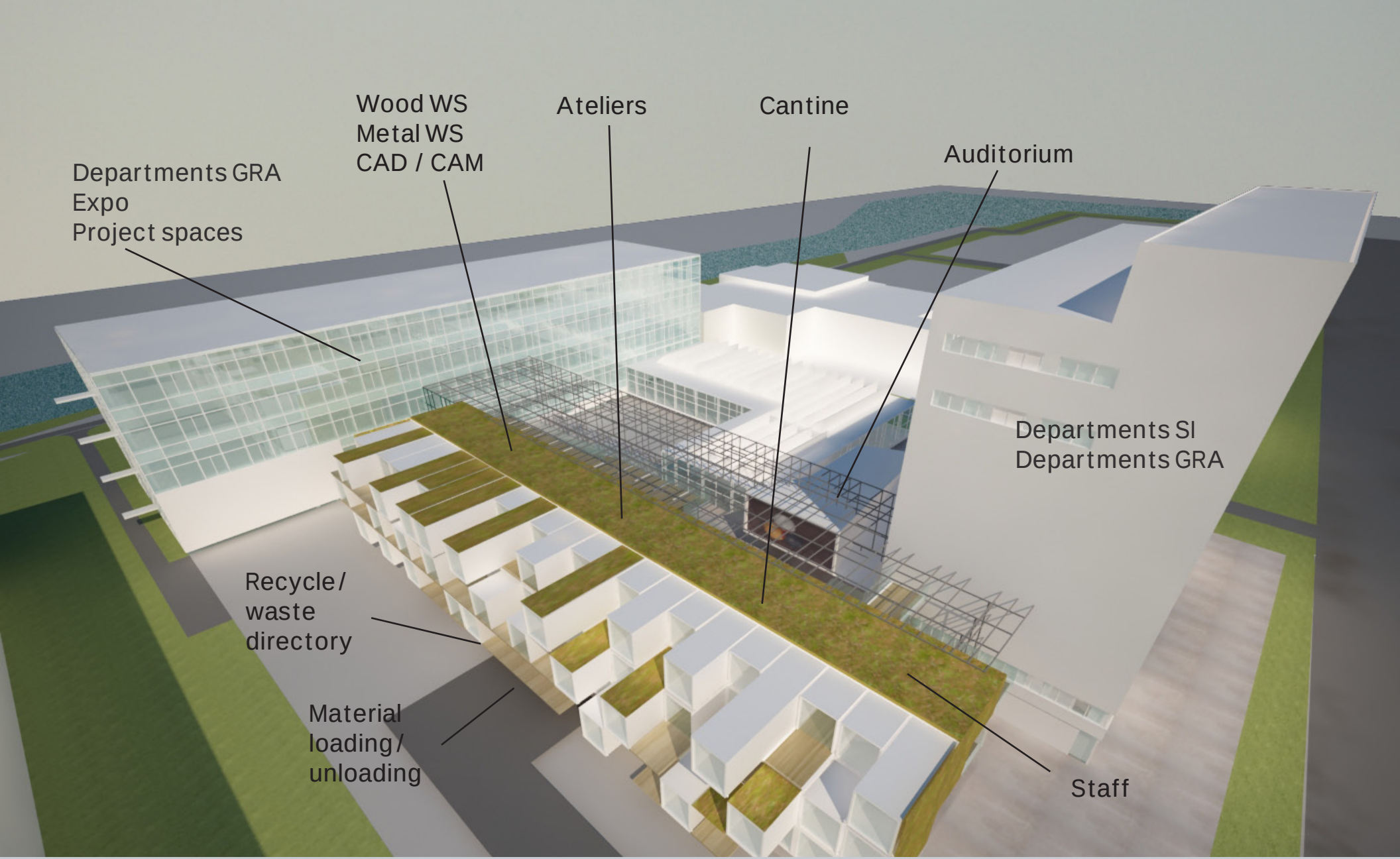
CROSSDOCK:
Loading and unloading
Waste / recycling directory

FUNCTIONALITY

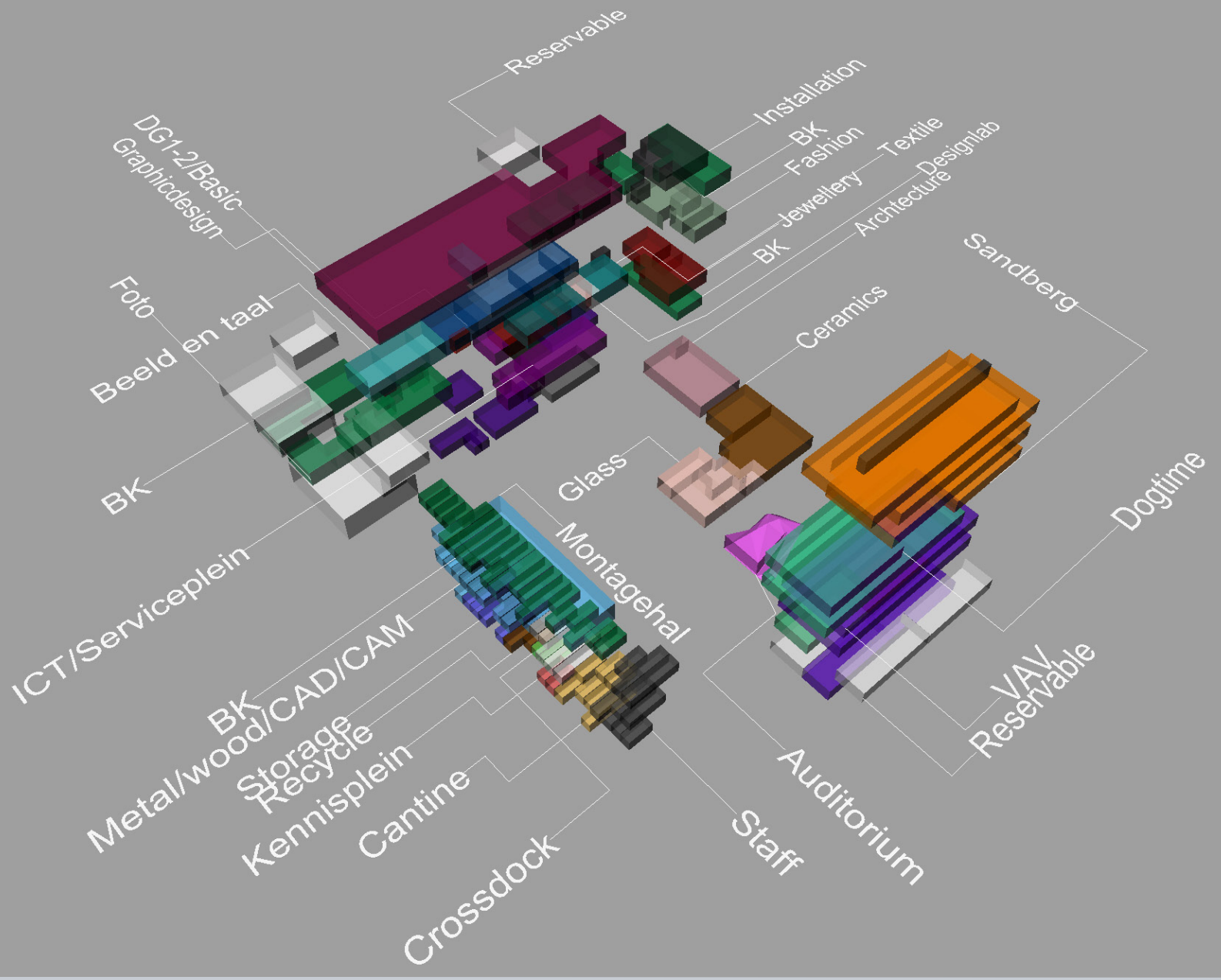
Plug In - demb

FUNCTIONALITY

Plug In - demb

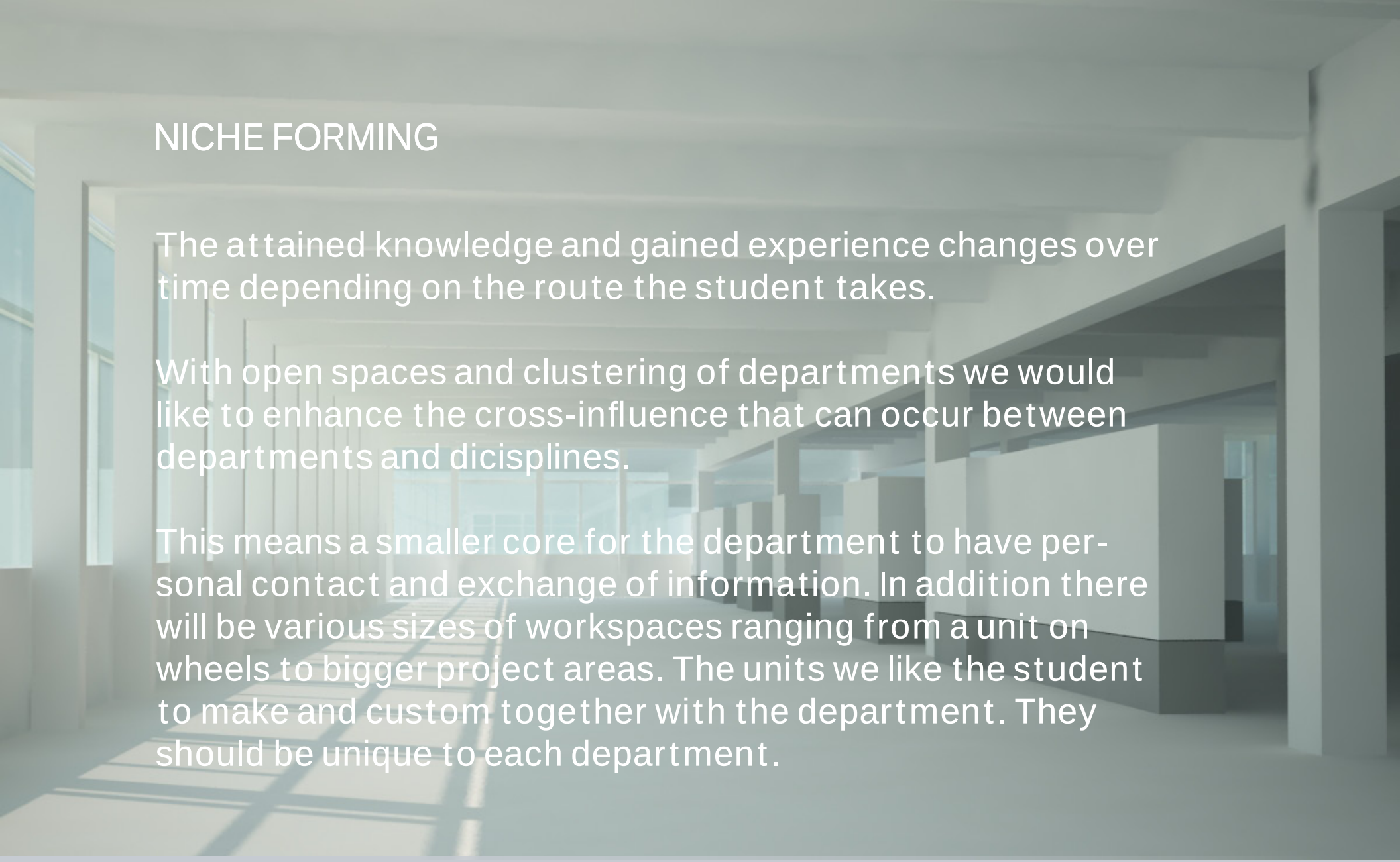


FUNCTIONALITY - new layout



FUNCTIONALITY - new layout

Plug In - demb



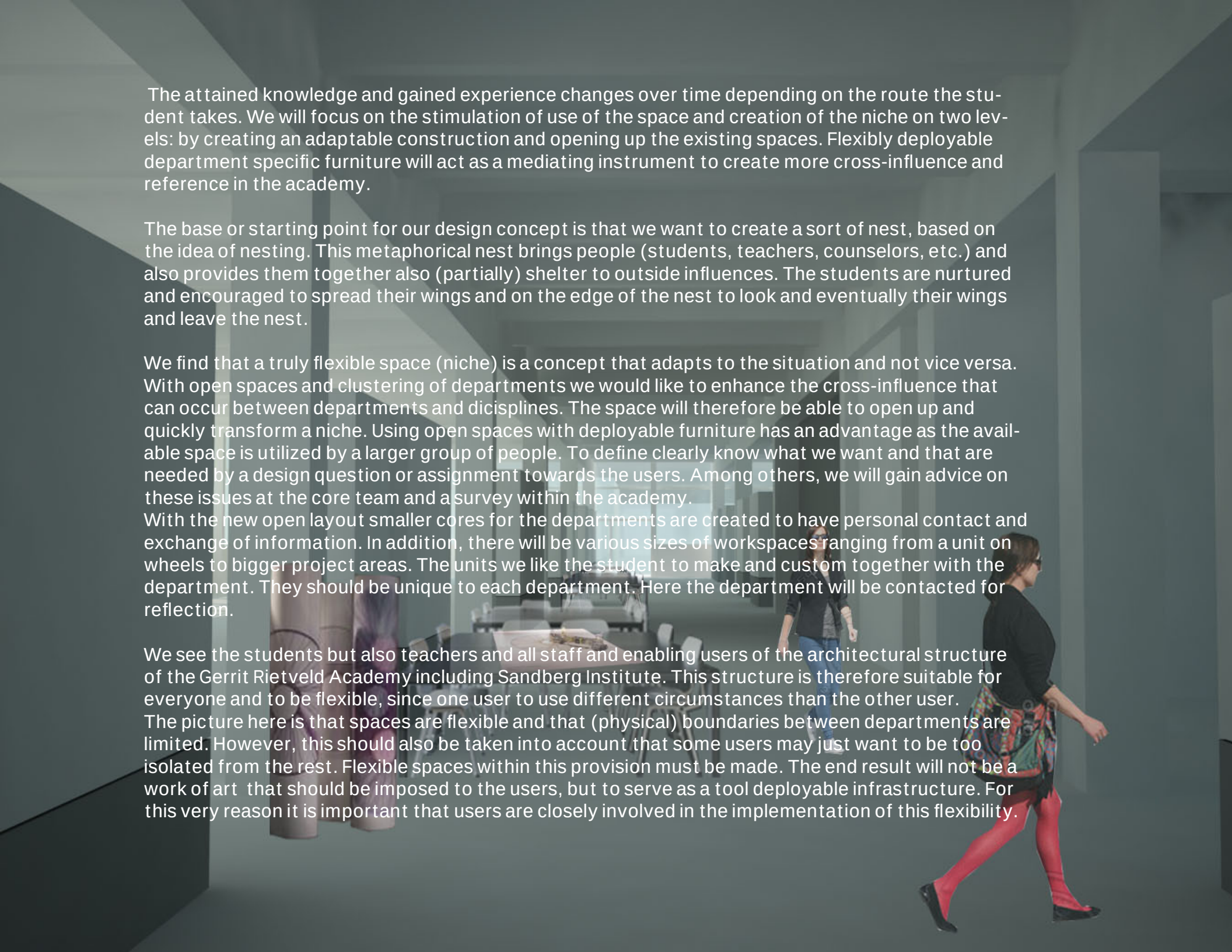
NICHE FORMING

The attained knowledge and gained experience changes over time depending on the route the student takes.

With open spaces and clustering of departments we would like to enhance the cross-influence that can occur between departments and dicisplines.

This means a smaller core for the department to have personal contact and exchange of information. In addition there will be various sizes of workspaces ranging from a unit on wheels to bigger project areas. The units we like the student to make and custom together with the department. They should be unique to each department.

FUNCTIONALITY



The attained knowledge and gained experience changes over time depending on the route the student takes. We will focus on the stimulation of use of the space and creation of the niche on two levels: by creating an adaptable construction and opening up the existing spaces. Flexibly deployable department specific furniture will act as a mediating instrument to create more cross-influence and reference in the academy.

The base or starting point for our design concept is that we want to create a sort of nest, based on the idea of nesting. This metaphorical nest brings people (students, teachers, counselors, etc.) and also provides them together also (partially) shelter to outside influences. The students are nurtured and encouraged to spread their wings and on the edge of the nest to look and eventually their wings and leave the nest.

We find that a truly flexible space (niche) is a concept that adapts to the situation and not vice versa. With open spaces and clustering of departments we would like to enhance the cross-influence that can occur between departments and dicisplines. The space will therefore be able to open up and quickly transform a niche. Using open spaces with deployable furniture has an advantage as the available space is utilized by a larger group of people. To define clearly know what we want and that are needed by a design question or assignment towards the users. Among others, we will gain advice on these issues at the core team and a survey within the academy.
With the new open layout smaller cores for the departments are created to have personal contact and exchange of information. In addition, there will be various sizes of workspaces ranging from a unit on wheels to bigger project areas. The units we like the student to make and custom together with the department. They should be unique to each department. Here the department will be contacted for reflection.

We see the students but also teachers and all staff and enabling users of the architectural structure of the Gerrit Rietveld Academy including Sandberg Institute. This structure is therefore suitable for everyone and to be flexible, since one user to use different circumstances than the other user.
The picture here is that spaces are flexible and that (physical) boundaries between departments are limited. However, this should also be taken into account that some users may just want to be too isolated from the rest. Flexible spaces within this provision must be made. The end result will not be a work of art that should be imposed to the users, but to serve as a tool deployable infrastructure. For this very reason it is important that users are closely involved in the implementation of this flexibility.

FUNCTIONALITY

Plug In - demb

LOCALLY ATTUNED & LOW ENERGY PROCESS

> acquire containers locally

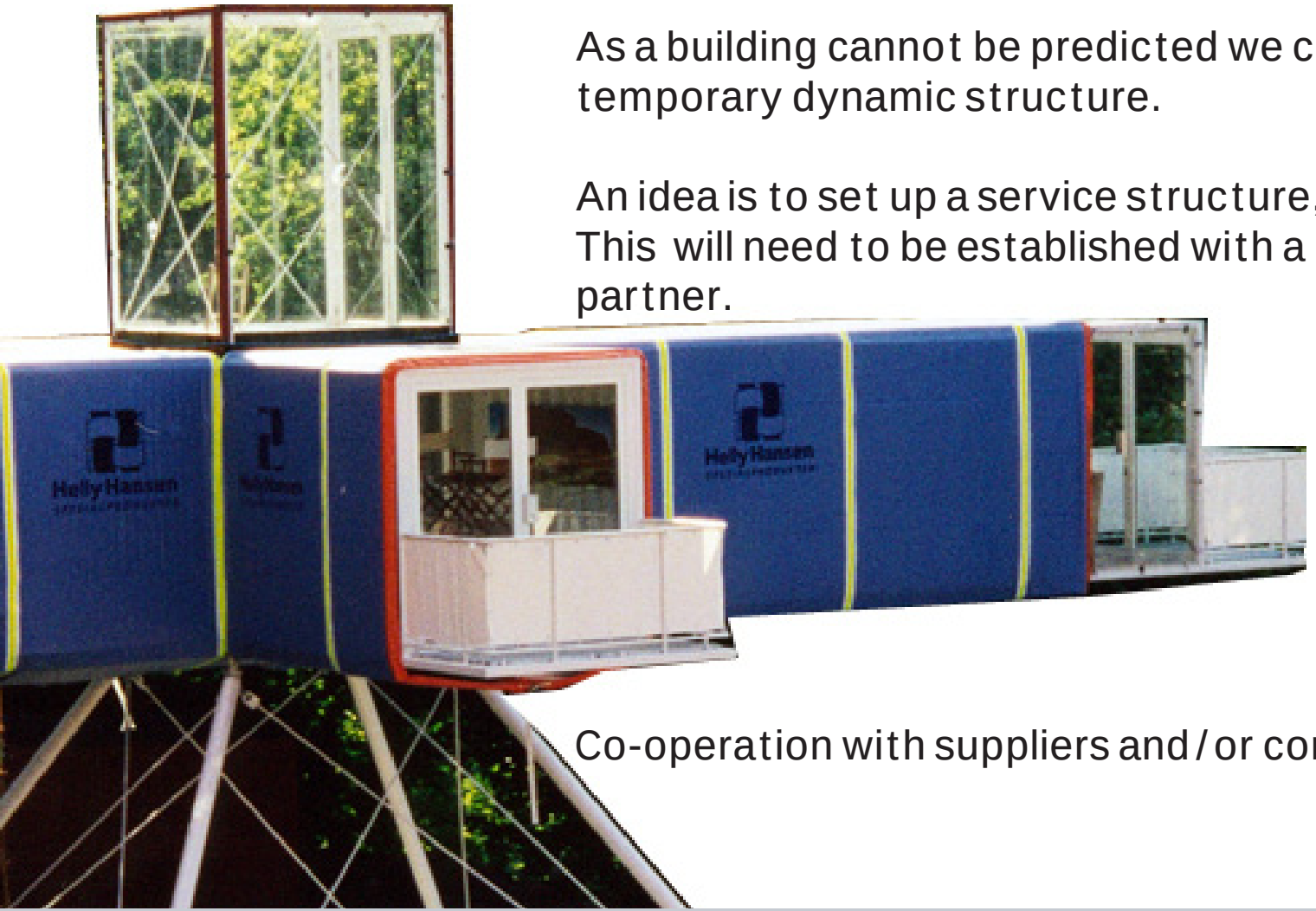
> no need to produce the structure again

SUSTAINABLE PRINCIPLE

LEASING STRUCTURE

As a building cannot be predicted we choose for a resilient temporary dynamic structure.

An idea is to set up a service structure, a lease contract. This will need to be established with a (container) leasing partner.

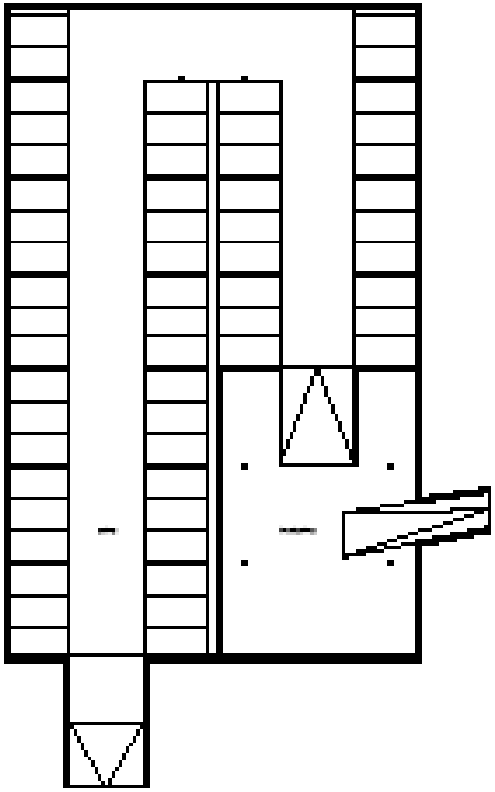


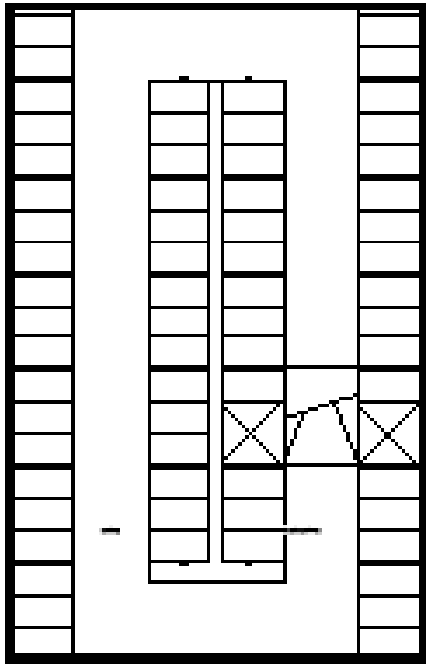
Co-operation with suppliers and/or contractors

FUTURE PROOF ENGINEERING

Plug In - demb

BASEMENT

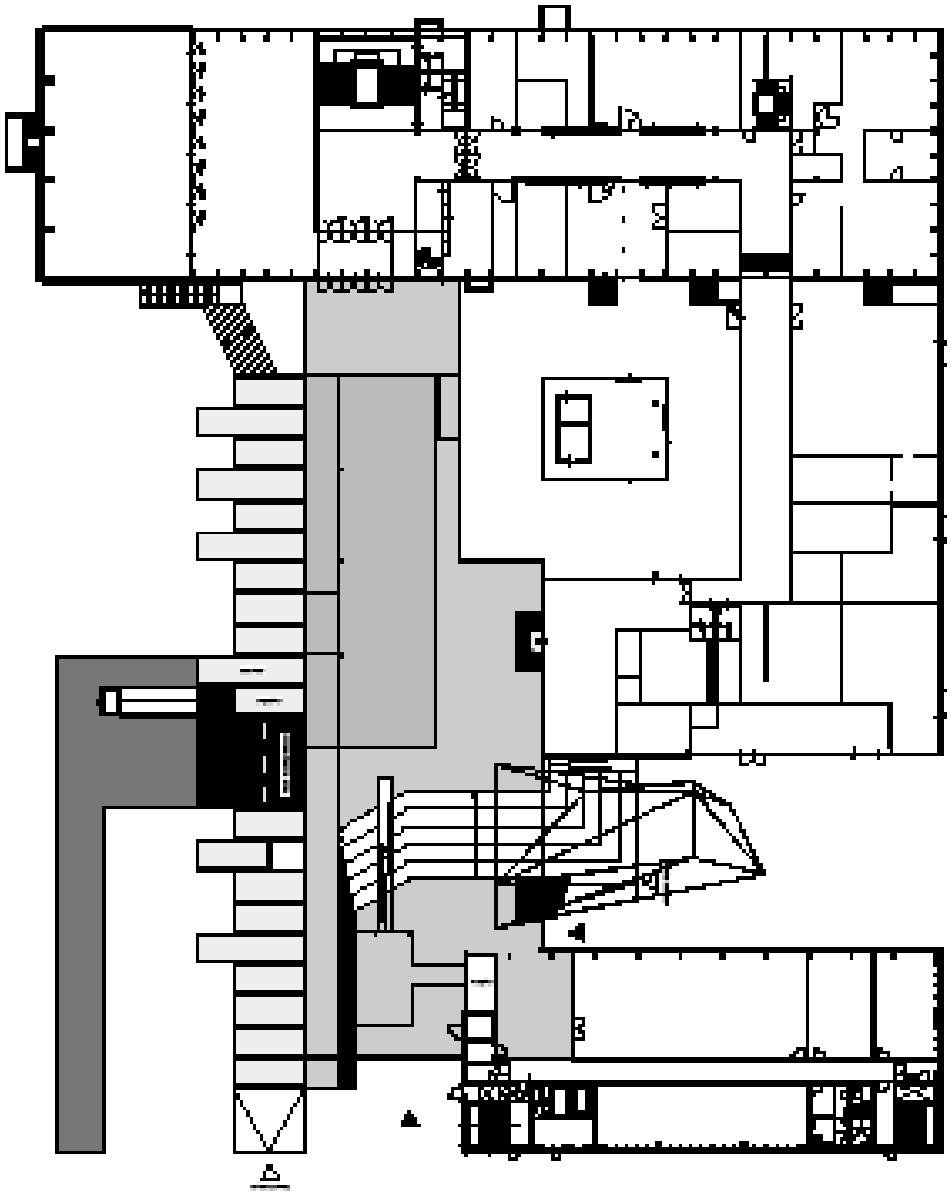




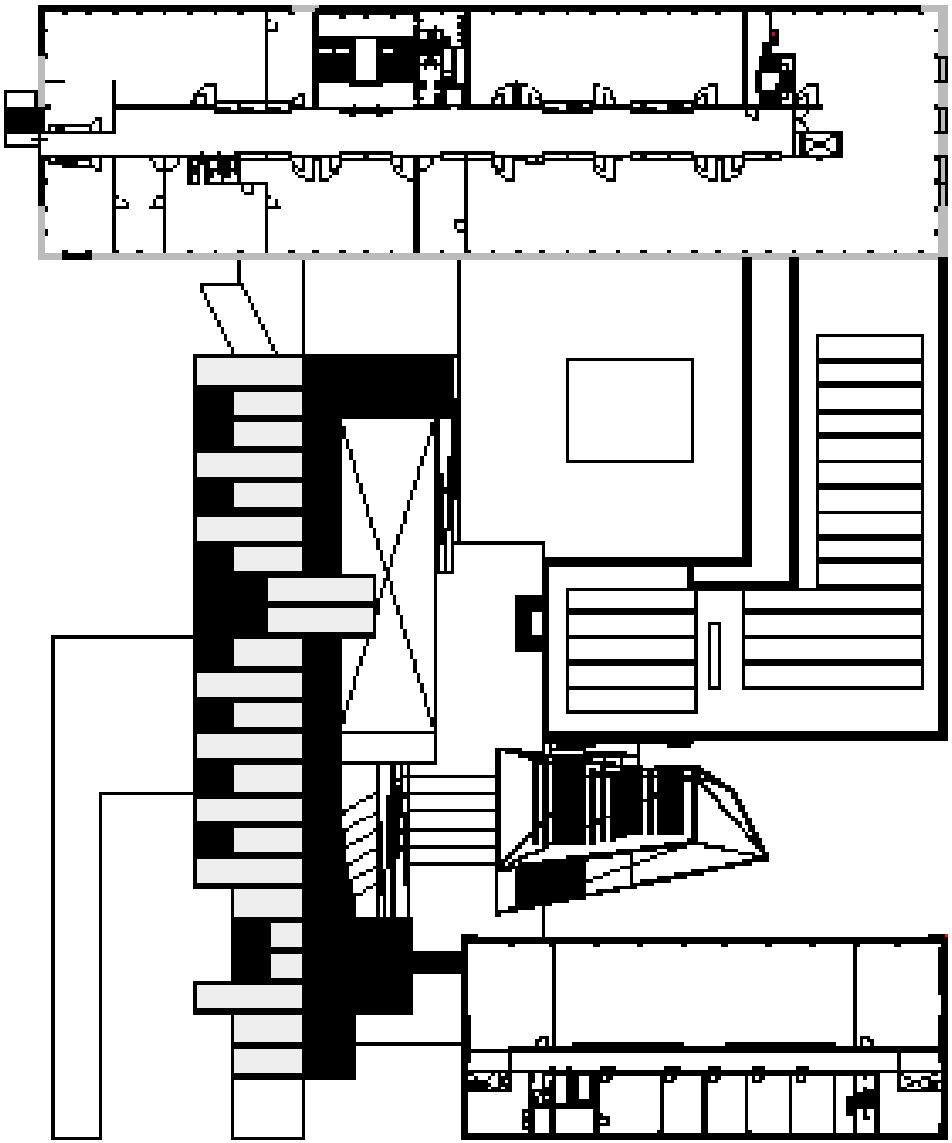
FLOORPLANS

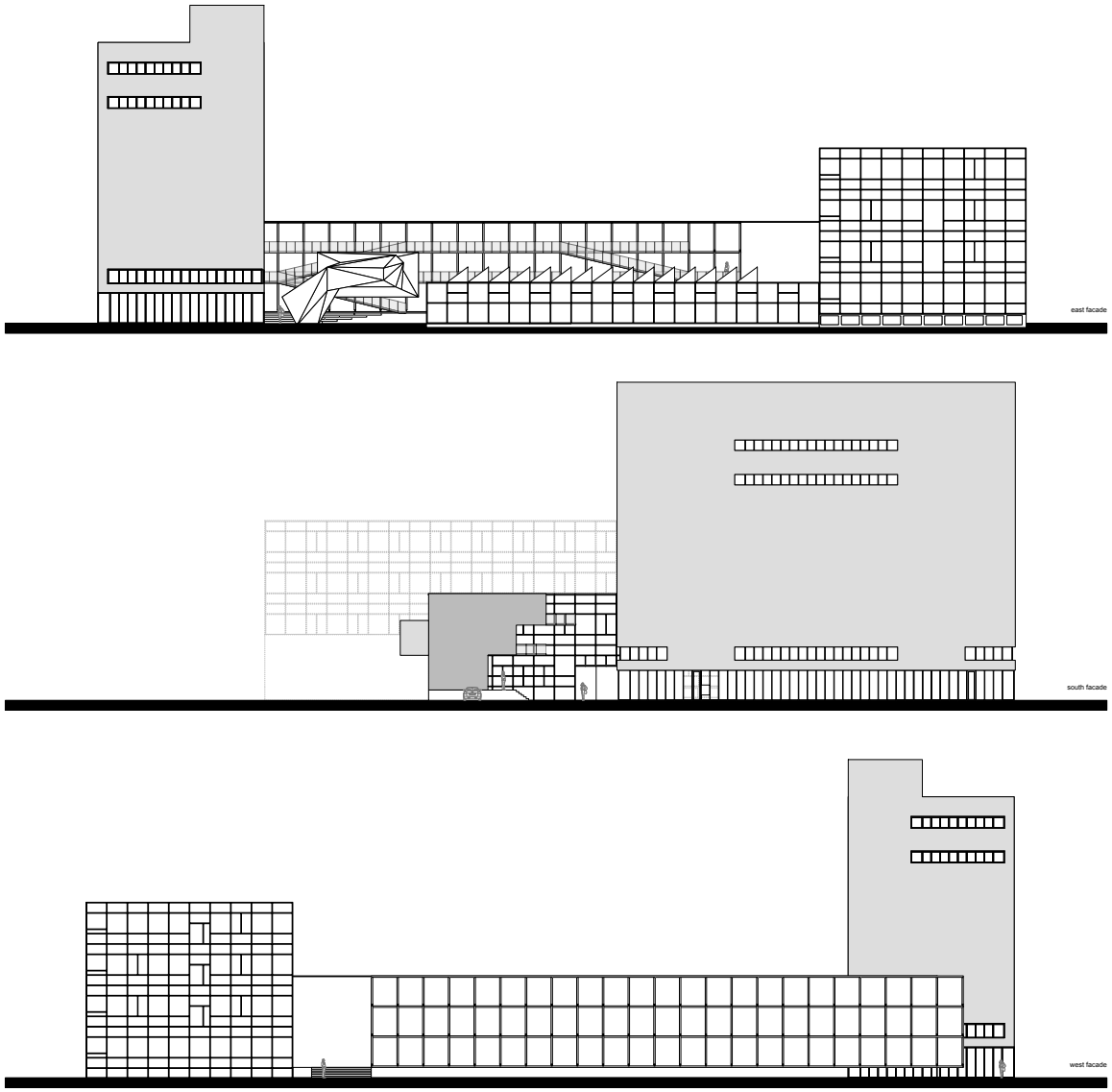
Plug In - demb

GROUND FLOOR

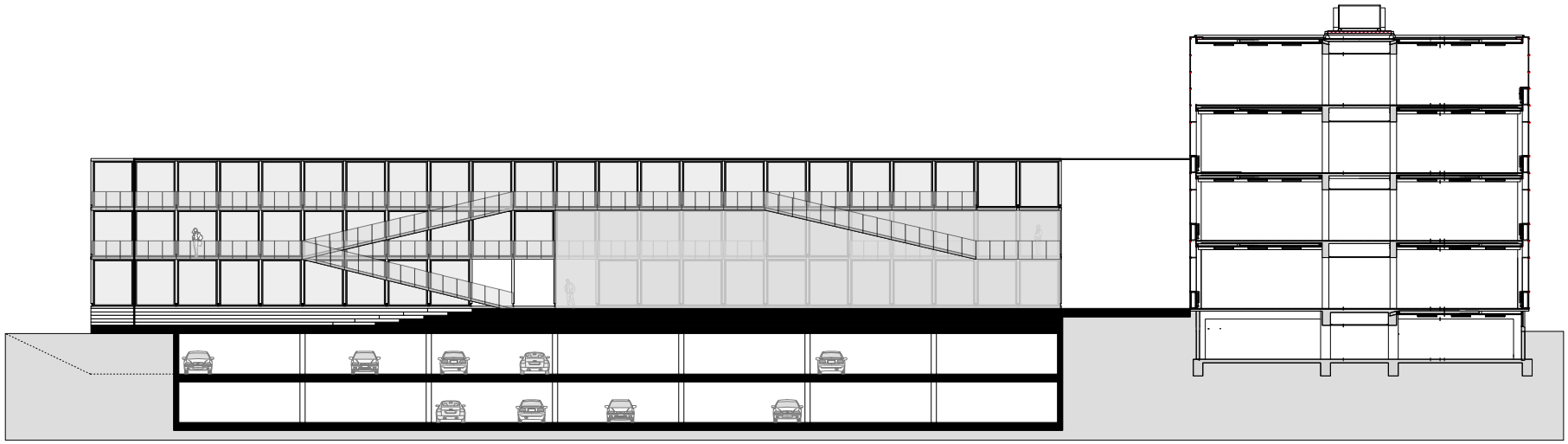


1ST FLOOR



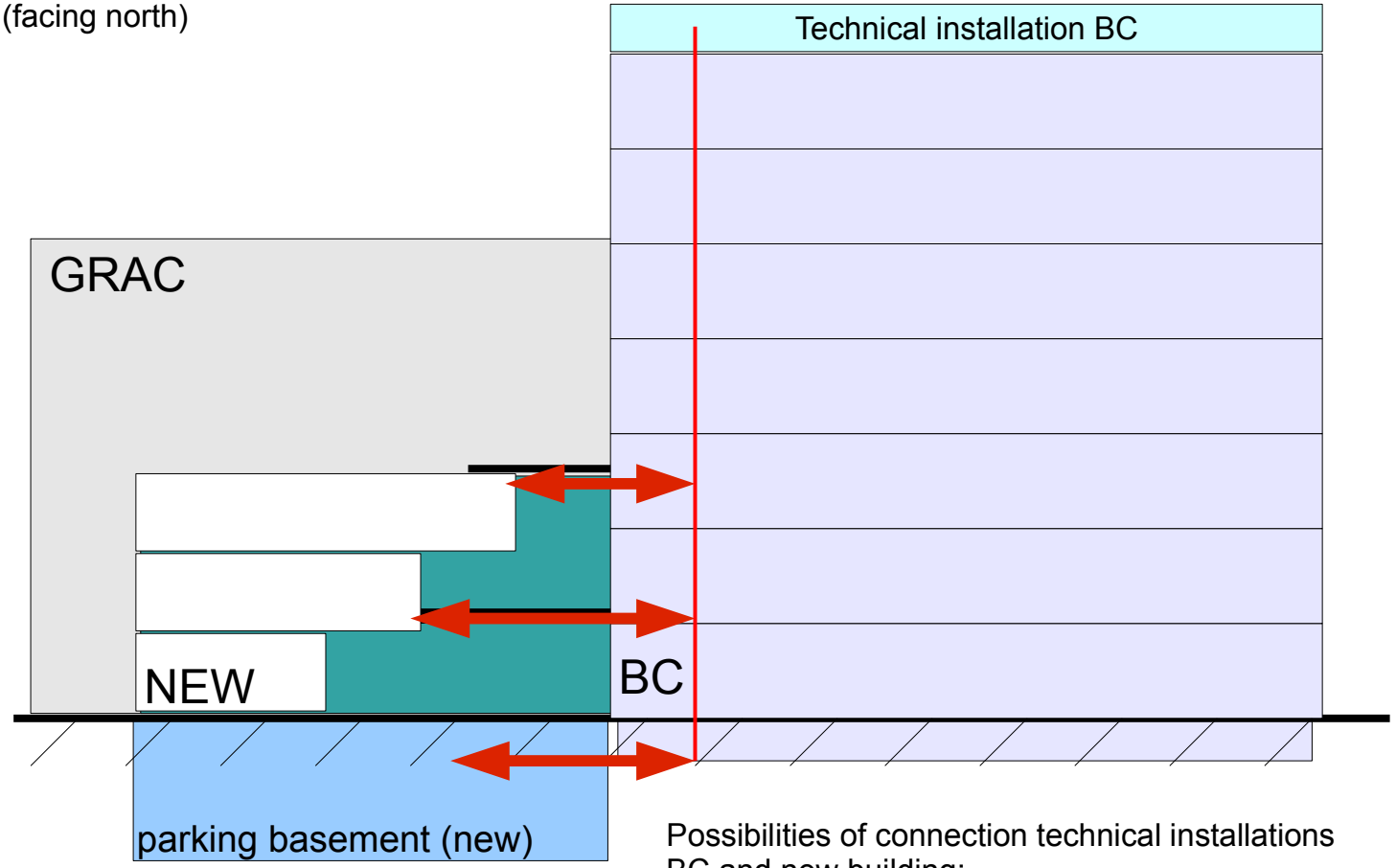


FACADES



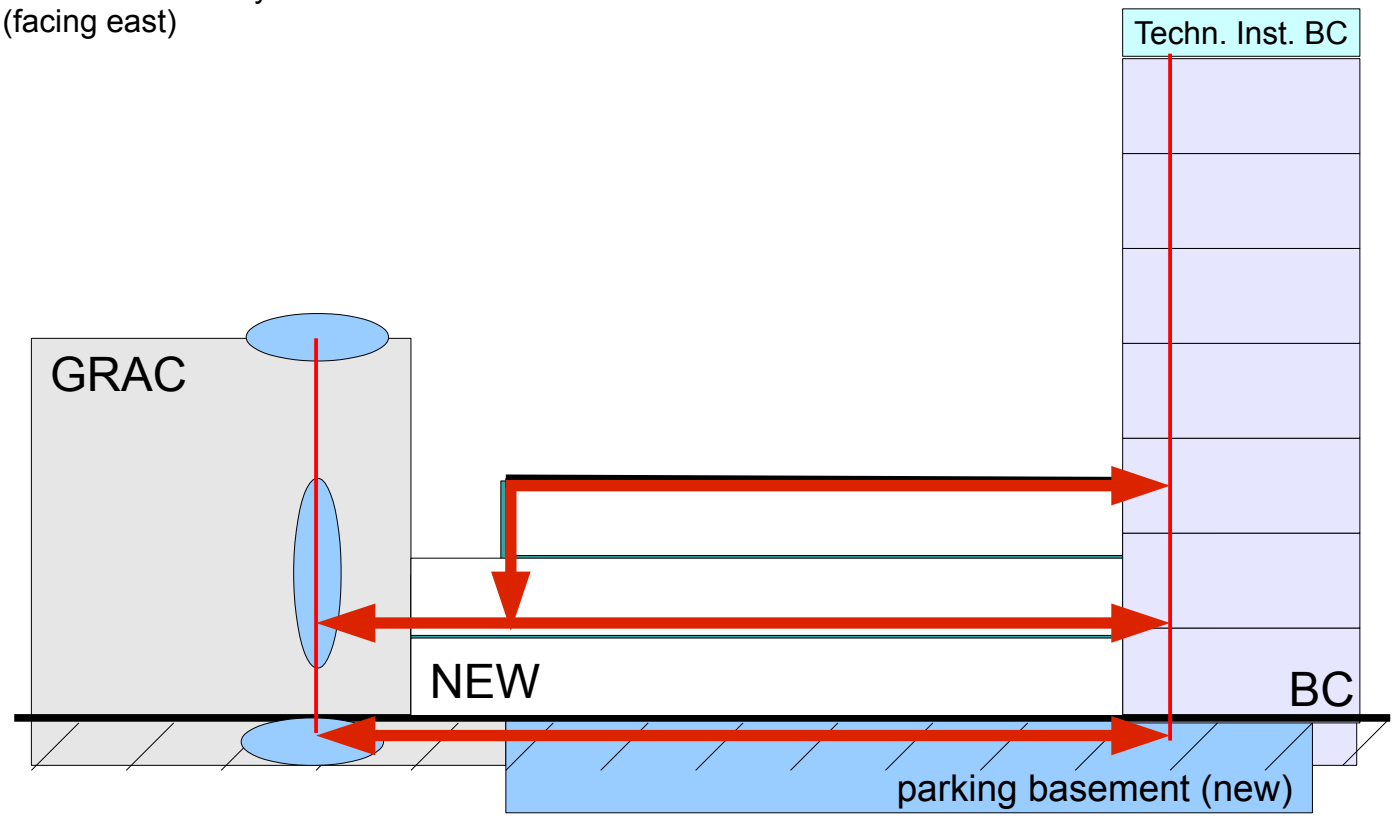
SECTION PLAN

Front view from Fred Roeskestraat
(facing north)



Possibilities of connection technical installations BC and new building:
1) Roof level of new building
2) Bridge at 1 floor
3) Underneath ground level, via basement

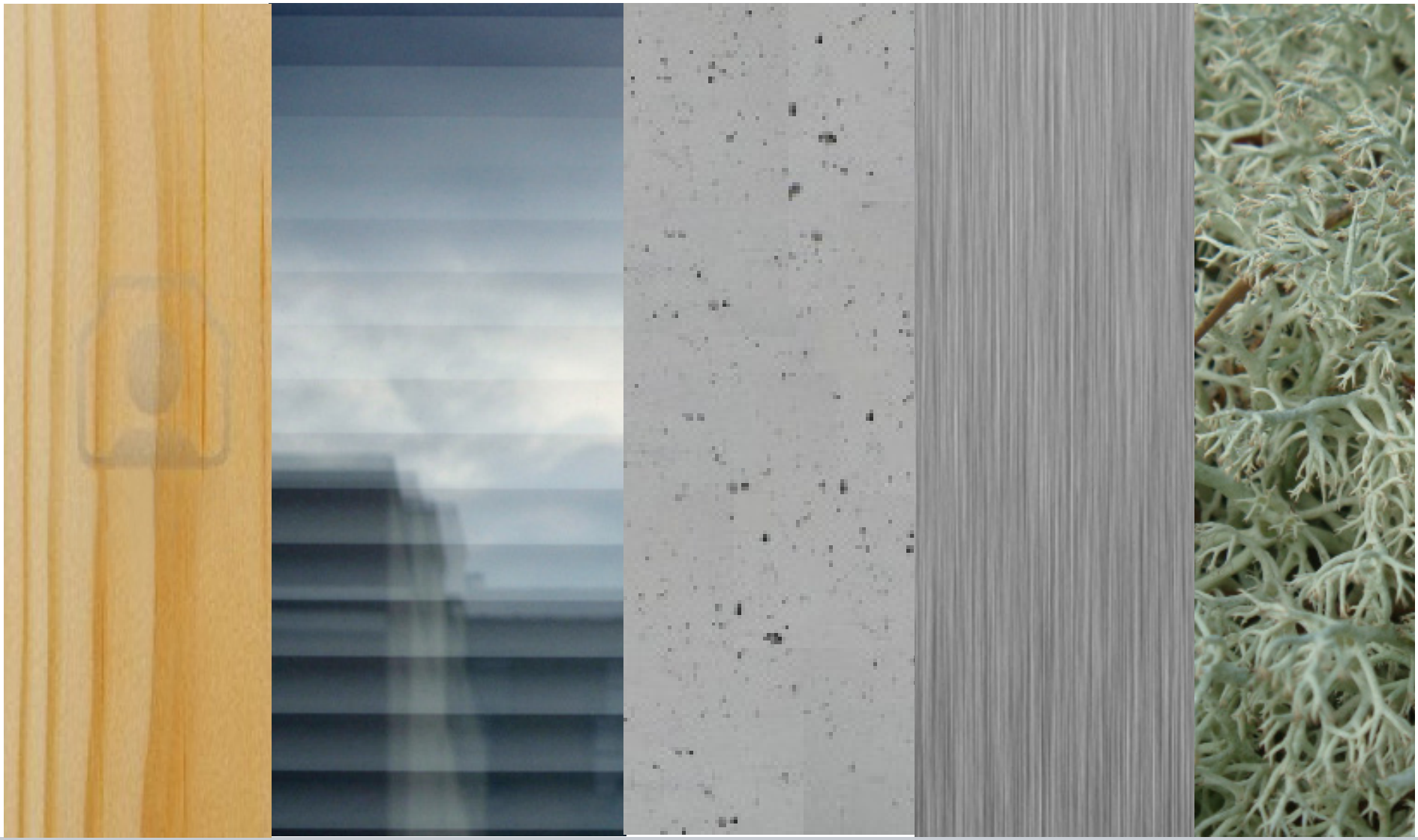
Side view from Loyens & Loeff
(facing east)



Possibilities of connection technical installations GRAC and new building:
1) Roof level of new building and 1 floor
2) 1 floor
3) Underneath ground level, via basement

*) GRAC tech.installation GRAC is spread over 3 locations

wood glass beton steel green



MATERIALIZATION

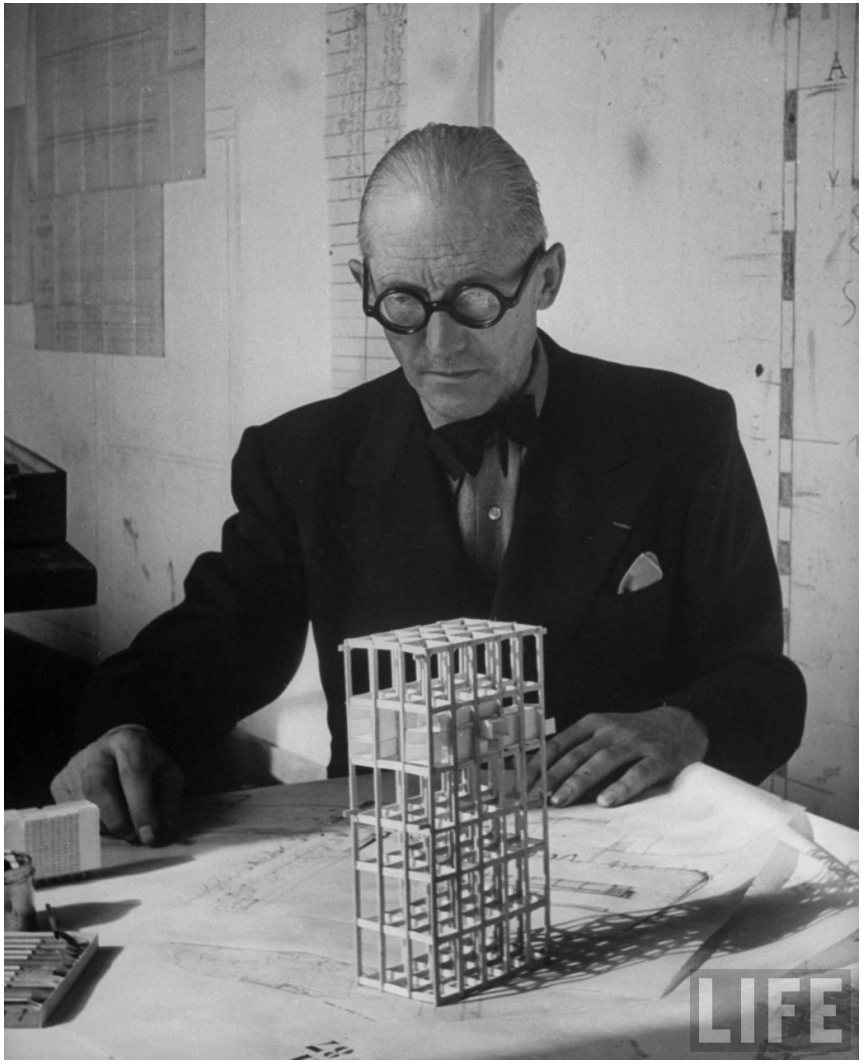
Plug In - demb

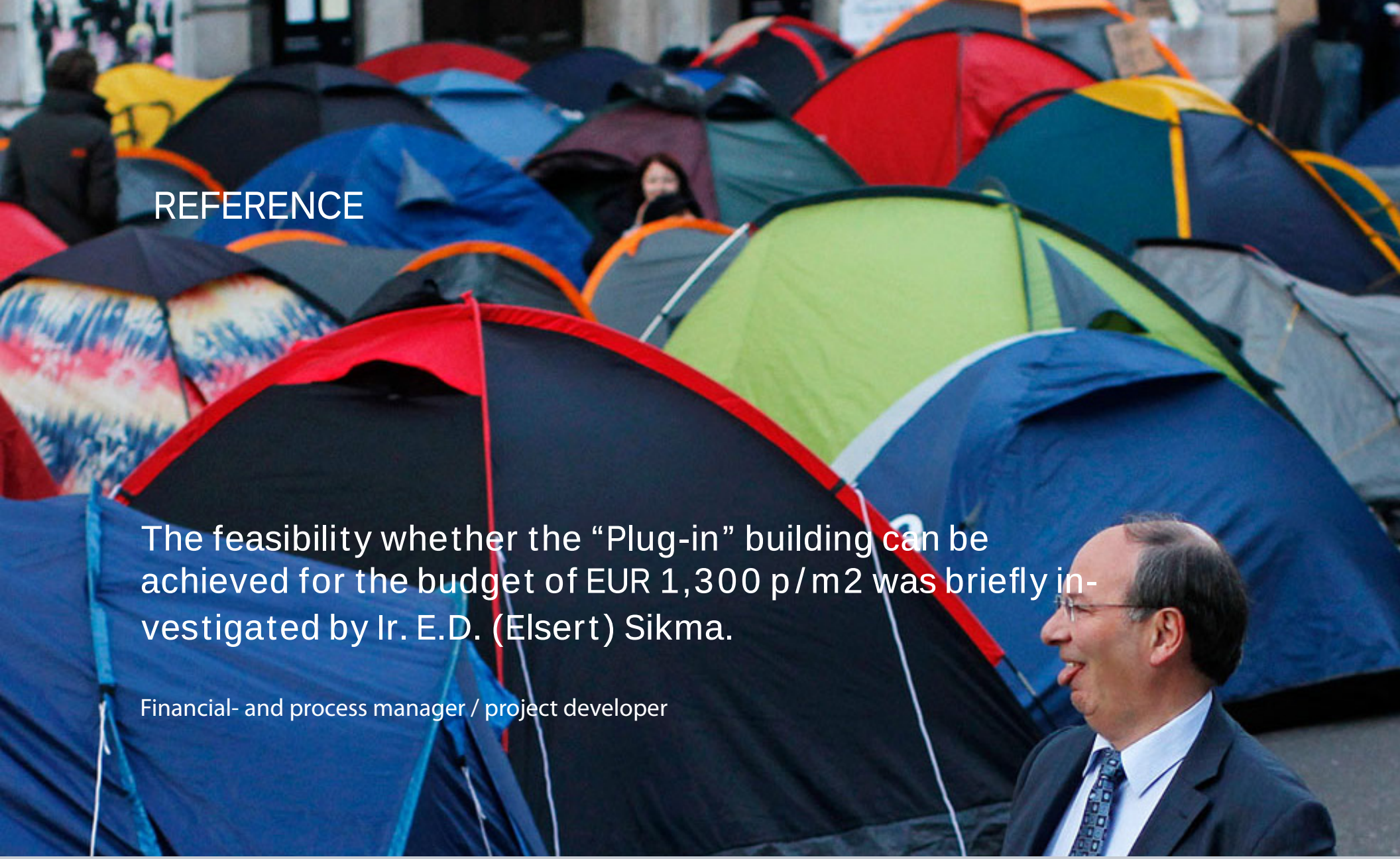
CONSTRUCTION

based on proven technology

functionality adjusts to the need

connecting element the 2 existing buildings
> more interaction and cross-influence





REFERENCE

The feasibility whether the “Plug-in” building can be achieved for the budget of EUR 1,300 p/m2 was briefly investigated by Ir. E.D. (Elsert) Sikma.

Financial- and process manager / project developer

FINANCIAL FEASIBILITY STUDY

Plug In - demb

Financial feasibility

The feasibility whether the “Plug-in” building can be achieved for the available budget of EUR 1,300 p/m2 was briefly investigated by Ir. E.D. (Elsert) Sikma. (Financial- and processmanager / project manager)

The design of the building is not yet fully developed so that the feasibility can be determined only in an outline. Important factors influencing the cost are still to be determined and/or further examined. The construction of the building and facilities for the “hanging” of the containers and the realization of the containers themselves need to be further developed.

The construction costs of a regular school building range from EUR 1,200 to EUR 1,400 p/m2 gross floor area (excluding VAT and fees of consultants, including market-based cost-tail) (source Archidat). The available budget therefore corresponds to the construction costs for similar properties. The question is whether the construction cost of the plug-in building differ from a regular school building, yet it is not expected that the design is expensive to realize.

First, the containers or an alternative form of are relatively inexpensive to acquire and rebuild. “Sea Containers” are cheap to buy second hand (only EUR 1,200). Implementation costs are low because a container can be converted on site at the workplace of a construction company. This can be carried out efficiently permitting all available equipment and tools and without external (weather) influences. The preparation and implementation will be further boosted by the standardization of the basic design of the containers, such as floor, wall and ceiling finishes, equipment, window cutouts, etc.

The cost for the basic construction of the hall with the glass facade and roof are expected in a cost comparable to a ‘standard’ construction. Additional costs may arise in the construction required by the suspension of the containers and the necessary facilities for containers to connect tightly to the building. The suspension of IPE beams is a relatively simple design and therefore easy to achieve. This may well be integrated into the structure so that the additional costs are relatively limited. Provisions for connection to the building have yet to be clarified. Again the expectation is that by finding a standard will not lead to very high costs.

Original Dutch text:

De haalbaarheid of het “Plug-in” building kan worden gerealiseerd voor het beschikbare budget van EUR 1.300 p/m2 is kort onderzocht. (Financieel- en procesmanagement van vastgoed- en gebiedsontwikkelingen).

Het ontwerp van het gebouw is nog niet volledig uitgewerkt waardoor de haalbaarheid slechts op hoofdlijnen kan worden bepaald. Belangrijke invloedfactoren op de kostprijs dienen nog te worden bepaald en/of nader te worden onderzocht. Zo is de constructie van het gebouw nog niet doorgerekend en dient de constructie en voorzieningen voor het ‘inhangen’ van de containers en de realisatie van de containers zelf nog verder te worden uitgewerkt.

De bouwkosten van een regulier onderwijsgebouw variëren tussen de EUR 1.200 tot EUR 1.400 p/m2 BVO (ex. BTW en honoraria van adviseurs, inclusief marktconforme staartkosten) (bron Archidat). Het beschikbare budget komt dus overeen met de bouwkosten voor vergelijkbare objecten. De vraag is in hoeverre de bouwkosten van het ‘plug-in’ building afwijken van een ‘regulier onderwijsgebouw’, vooralsnog is het niet de verwachting dat het ontwerp kostbaar is om te realiseren.

In de eerste plaats zijn de containers of een alternatieve vorm relatief goedkoop om te bouwen. ‘Zeecontainers’ zijn tweedehands goedkoop in aanschaf (slechts EUR 1.200). De uitvoeringskosten zijn laag doordat containers op locatie (werkplaats van een bouwbedrijf) kunnen worden omgebouwd. Dit kan dan efficiënt (met al het beschikbare materieel en gereedschappen) en zonder externe (weer)invloeden worden uitgevoerd. De uitvoeringskosten en voorbereidingskosten worden verder positief beïnvloed door de standaardisering van de basisinrichting van de containers, zoals vloer-wand en plafondafwerking, installaties, raamuitsparingen etc.

De kosten voor de basisconstructie van de hal met de glazengevel en -dak zullen naar verwachting qua kostprijs vergelijkbaar zijn met een ‘standaard’ constructie. Meerkosten in de constructie ontstaan mogelijk door het benodigde ophangsysteem van de containers en de benodigde voorzieningen om de containers goed aan het gebouw aan te sluiten. Het ophangsysteem met IPE-liggers is relatief eenvoudig vormgegeven en daardoor eenvoudig te realiseren. Dit kan mogelijk goed in de constructie worden geïntegreerd waardoor de meerkosten relatief beperkt blijven. De voorzieningen voor de aansluiting op het gebouw dienen nog nader te worden uitgewerkt. Ook hiervoor geldt de verwachting dat dat door het vinden van één standaardoplossing dit niet tot zeer hoge kosten zal leiden.

Benchmarking costs Citadel floating containers and PLUG-IN

comparing acquisition of containers and leasing of containers

Bouwdeel	lengte			Breedte			Area			Verdiepingen	Area totaal
	Module m	Aantal	**Totaal m**	Module	Aantal	**Totaal**	Module	Aantal	**Totaal**		m2
1 containergebouw	3	23	**69**	3	3	**9**	9	69	**621**	3	1863
2 voorzone	3	23	**69**	3	1	**3**	9	23	**207**	4	828
3 atrium	3	23	**69**	3	1	**3**	9	23	**207**	5	1035
											3726

Directe bouwkosten

	Parkeergarage bovengronds 3 verd				**Citadel - drijvende containers 3 verd**				**Rietveld 3 verd**			
	prijs	m2	prijs/m2	%	prijs	m2	prijs/m2	%	prijs	m2	prijs/m2	%
Fundering	€ 400,000.00	7800	€ 51.28	14%	€ 1,030,000.00	9000	€ 114.44	4%	€ 300,000.00	2500	€ 120.00	9%
Constructie	€ 1,200,000.00	7800	€ 153.85	42%	€ 7,000,000.00	9000	€ 777.78	27%	€ 1,400,000.00	2500	€ 560.00	42%
Installatie	€ 500,000.00	7800	€ 64.10	17%	€ 3,000,000.00	9000	€ 333.33	12%	€ 600,000.00	2500	€ 240.00	18%
Bouwkunde gevels/wanden	€ 0.00	7800	€ 0.00	0%	€ 11,000,000.00	9000	€ 1,222.22	42%	€ 800,000.00	2500	€ 320.00	24%
Bouwkunde algemeen	€ 780,000.00	7800	€ 100.00	27%	€ 4,000,000.00	9000	€ 444.44	15%	€ 250,000.00	2500	€ 100.00	7%
Atrium									€ 0.00	2500	€ 0.00	0%
Bouwkundige kosten	€ 2,880,000.00	7800	€ 369.23	100%	€ 26,030,000.00	9000	€ 2,892.22	100%	€ 3,350,000.00	2500	€ 1,340.00	100%
20% bijkomende kosten	€ 3,456,000.00	7800	€ 443.08		€ 31,236,000.00	9000	€ 3,470.67		€ 4,020,000.00	2500	€ 1,608.00	
Budget									€ 4,550,000.00	3500	1300	
resterend bedrag									€ 530,000.00			
optie 1 - kopen containers									€ 530,000.00	100	€ 5,300.00	per stuk
optie 2 - leasen containers									€ 530,000.00	100	xxx	per stuk

COST ESTIMATE by Thijs Huismans DVH Advies- en ingenieursbureau

Plug In - demb

The other sustainability aspects are not really creative ideas, but more sustainable options. Often this pay-back times and linked with a sufficiently short period applied (PV cells). My experience is as follows:

- Wind energy in buildings is not an option, too little pressure. Use wind / natural ventilation instead of AC systems in atrium example, it is much more effective

- Grey / black water systems are very beautiful. But is the high cost to implement, water use in schools seems relatively small and therefore less interesting.

- Waste / Recycling: This fits well with the concept of leasing.

- Heat to cold storage in the Netherlands. Expensive system, and particularly interesting for offices.

Original Dutch text

De andere duurzaamheidsaspecten zijn niet echt creatieve ideeën, maar meer duurzame opties. Vaak worden hier terugverdientijden aan gekoppeld en bij voldoende korte tijd toegepast (PV cellen). Mijn ervaring is als volgt:

- Wind energie in gebouwen is geen optie; te weinig drukverschil. Gebruik wind/natuurlijke ventilatie ipv AC systemen bijv in atrium, dat is veel effectiever

- Grijs/zwart water systemen zijn heel mooi. Echter kost dit veel geld om te implementeren; watergebruik in school lijkt mij relatief beperkt en daardoor minder interessant.

- Waste/recycling: dit past goed bij het lease concept.

- Warmte koude opslag kan in Nederland. Duur systeem en met name interessant voor kantoren.

studio kaart

van Gansewinkel

DVDV
DAVID VAN DE VELDT
ANTWERPEN

_WGNR

RE
CONCEPT

Advies- en ingenieursbureau

PARTNERS AND CONTACTS

Plug In - demb