

# TEMPORARY / PERMANENT

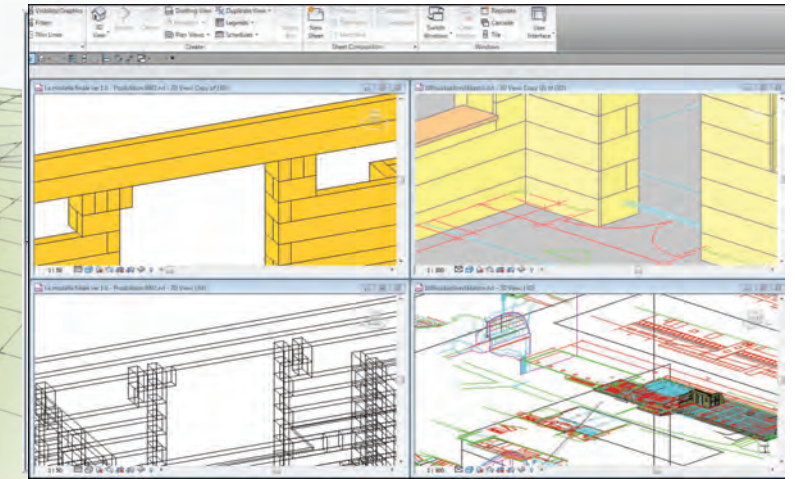
## DIGITAL PRODUCTION FOR SUSTAINABLE SOLUTIONS

### 1. CONCEPT

This project aims to create a modular, flexible, adaptable and functional housing solution for both short and long term living situations. The goal is to create a structural system that integrates the use of glue-laminated wood with digital design and production methods to achieve a sustainable housing solution that can easily be assembled/disassembled on site.

This adaptable system allows for being built into and around it's surrounding location and infrastructure. It can be either "plugged in" to an existing grid (electricity, water, sewage etc.) or function as a stand alone, off-grid unit, with additional support systems added.

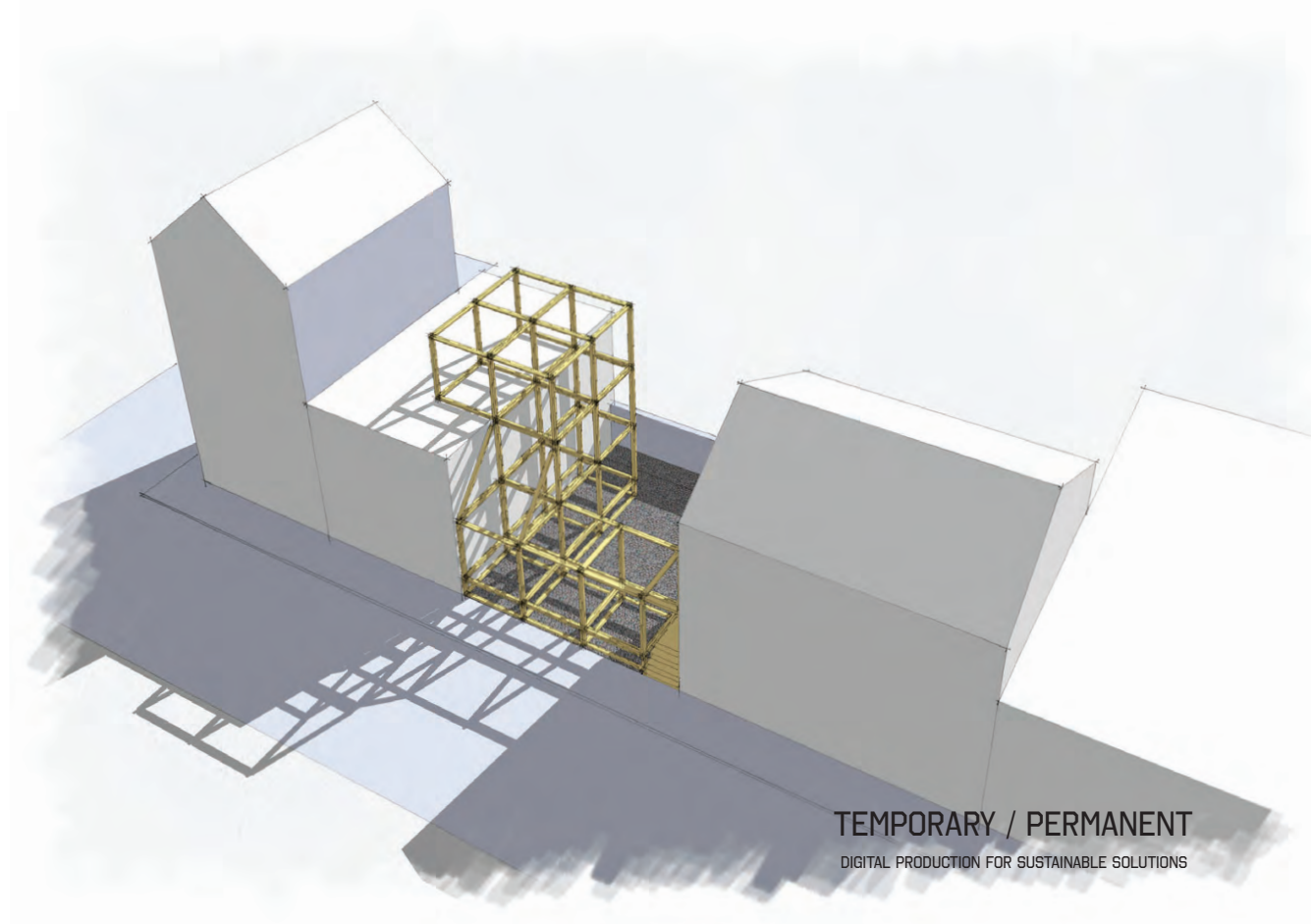
A 3D Scanning of the location makes it possible to adjust the structure to any kind of terrain, in nature or in a city. The purpose of using this method is to reduce the cost for altering the location before building.



The structure is designed in cad where the 3D model information is integrated with the saw, where the structure is cut part by part produced with cnc-machinery.



The concept builds on the idea that temporarily or permanently vacant lots previously considered unsuitable, can be seen as an opportunity. In an urban setting, it could be an empty city lot that is waiting for construction to start or a piece of land considered too small to be economically viable with conventional construction methods.



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## 2. BASIC STRUCTURE & ASSEMBLY

The core of the system is a 3D grid that can be extended vertically and horizontally in all directions. This allows the structure to adapt its shape and size to the area where it will be constructed. Walls, floors, stairs, roofs and interiors are added to the structure in a precision fitting fashion which can be extended or altered in size depending on the needs.

In order to achieve a strong and flexible structure with natural materials, cad technology and automated cutting/milling is used in the production process. This allows for a wide range of possibilities in designing different solutions for varying spaces and demands.

The cad modeling/automatic engineering makes it possible to mass-produce technically complex joiners and hubs of natural materials. It also makes it possible to design a whole structure virtually, a model that can later be built part by part on site, to custom needs and local challenges.

Functional add-ons that are compatible with the rest of the system. Balconies, roof top greenhouses, rainwater collection systems, hydroponic systems or extra units can be added to the structure if needed, or wanted.

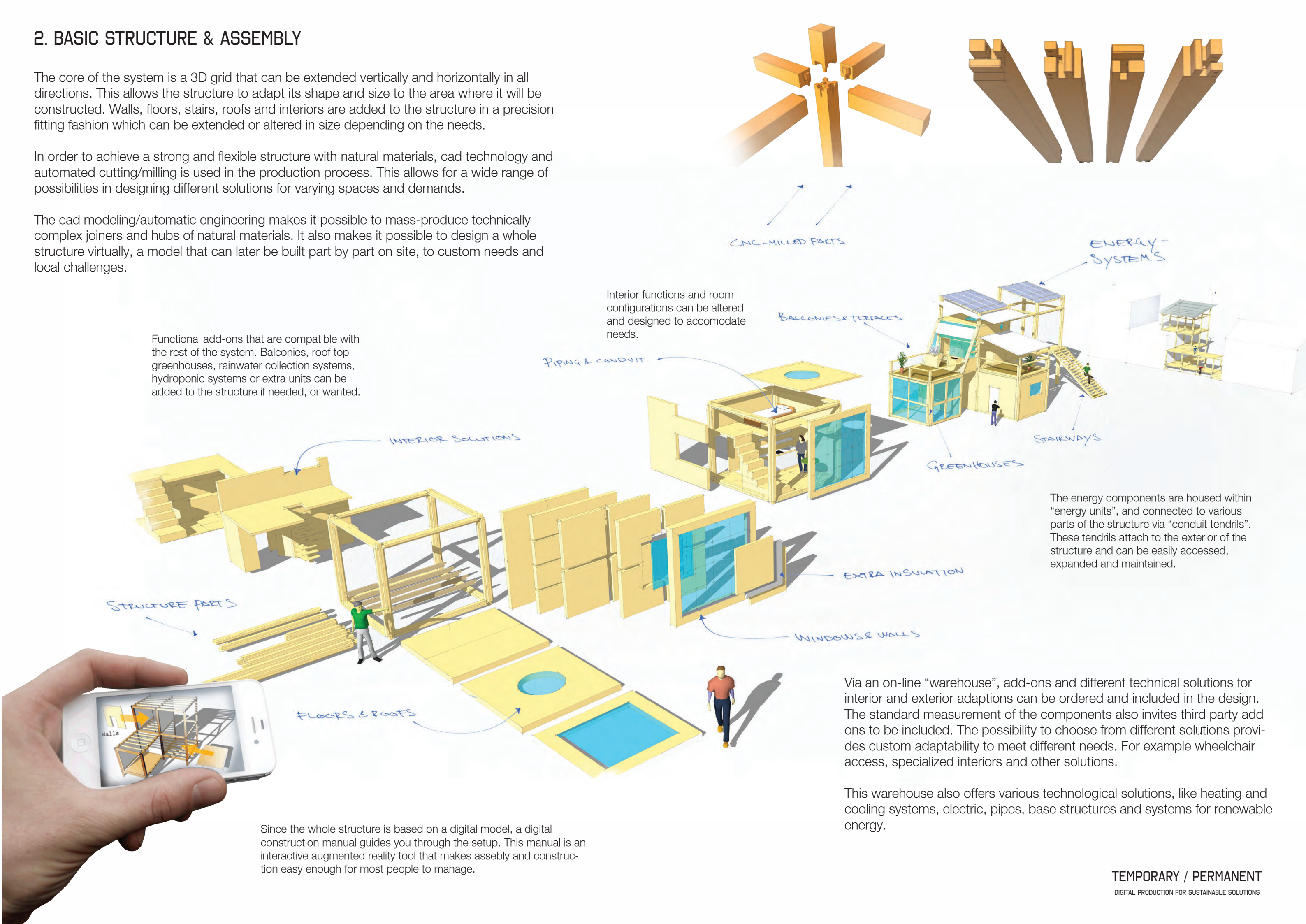
Interior functions and room configurations can be altered and designed to accomodate needs.

The energy components are housed within "energy units", and connected to various parts of the structure via "conduit tendrils". These tendrils attach to the exterior of the structure and can be easily accessed, expanded and maintained.

Via an on-line "warehouse", add-ons and different technical solutions for interior and exterior adaptations can be ordered and included in the design. The standard measurement of the components also invites third party add-ons to be included. The possibility to choose from different solutions provides custom adaptability to meet different needs. For example wheelchair access, specialized interiors and other solutions.

This warehouse also offers various technological solutions, like heating and cooling systems, electric, pipes, base structures and systems for renewable energy.

Since the whole structure is based on a digital model, a digital construction manual guides you through the setup. This manual is an interactive augmented reality tool that makes assembly and construction easy enough for most people to manage.

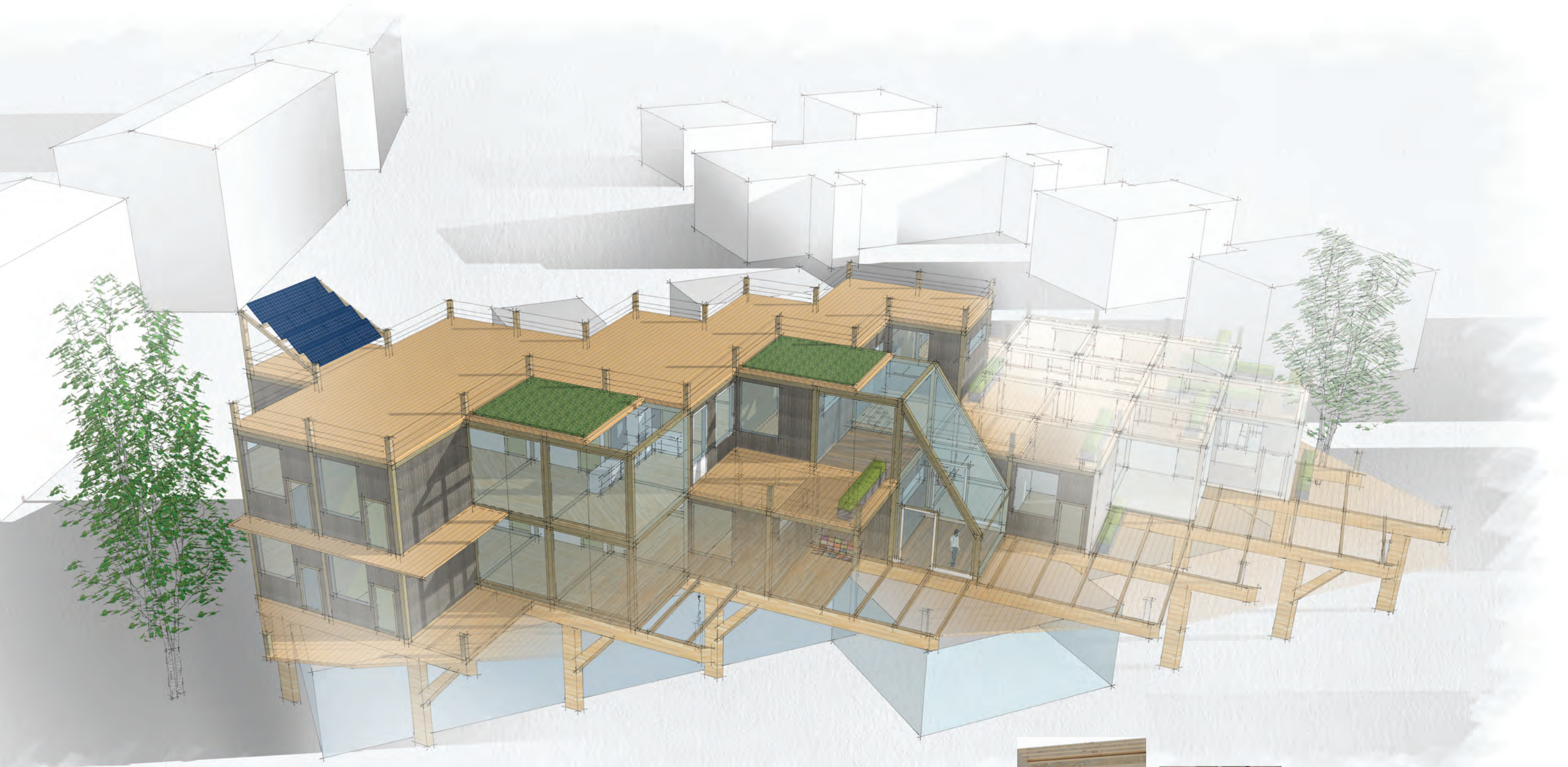




### 3. FLEXIBLE SCALE ADAPTATION

Since the components of the housing system are all designed in CAD, the blueprints for manufacturing can be shared by saw mills and production facilities around the world. This enables a global component system, where new designs and solutions can be shared and co-developed as an “open source” system.

The components will also have a second hand value, since they can be used in new constellations and structures again and again. In accordance with the structural integrity of glu-lam beams and boards, the system is accommodated for the option to build multiple floor units.



GLUELAM PILARS & FLOORBEAMS (CROSSLAMINATED TIMBER)  
CREATES A STRUCTURE & A SURFACE AT THE SAME TIME.





## 4. GAS STATION - A USER CASE

KARLSROGATAN, UPPSALA 2013



The modular concept has been applied to a project that is looking into reducing the demand for student accommodation while tackling the problem of wasted space in central locations. Here the modular basegrid is stilted on top of and around a disused gas station. In this example, we have changed the layout by retrofitting a two storey housing unit.

Due to the costs for chemical sanitation, the old station remains, but is transformed into facilities for the students and commercial actors, with a small café, storage, retail and a flexible workshop functioning as a bike repair. The aim is introduce interactions between the lower level and the modules above by creating social and physical connections.

The site represents 1000's of spaces around the world that are no longer used for a variety of reasons that are well located and on land that requires regeneration after years of pollution. Previously un-economical, the modular system is a simple solution that is either temporary or permanent.