Architecture and Mobility:
Insert Catchy Title Here

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This project is a reaction towards the static nature of the built world, and seeks to empower the end-user in the housing market by developing a highly customizable non-load bearing prefabricated panel system that allows for people to design, build, own, change and move their own apartments.

It then explores the potential for it to resolve the current housing situation - both as new construction and through parasitic means (inhabiting parking garages, industrial buildings, renovation projects) - and the dynamics of user-defined living within society as a whole.

Detta projekt är en reaktion mot det byggda samhällets statiska natur, och syftar till att stärka slutanvändaren på bostadsmarknaden. Genom ett flexibelt, icke-bärande och prefabicerat panelsystem skapas möjlighet att fritt designa, flytta och löpande anpassa den egna lägenheten.

Vidare utforskas potentiella lösningar till den rådande bostadskrisen - både genom nybygge och som parasitiska strukturer (inhysta i parkeringsgarage, industrier, renoveringsobjekt) - och dynamiken som framkommer av användardefinierade bostäder i samhället som helhet.
THE PANEL SYSTEM

Instead of creating a lengthy outline, the research and design process was compiled into a large mind-map – the results of which have been simplified below – in the hope of displaying the factors that influenced the outcomes in a thorough and connected manner. The historical research largely comprised of three categories of Essentia's mobile homes: (i) Noguchi's Monodropper, (ii) Arigenm, and (iii) Tadao Ando's pampers playade design (e.g. Yoko Ono, Milan Monzy, Atelier Moly, Kei Nishio, and Shinichi Oguma). The mind-map was then used to document the steps of the design process and influencing factors such as transportation, assembly, material, and spatial arrangements.

Most mobile projects are fully prefabricated, so they exist in the form of a kit of parts to be assembled on site in a pre-designed environment. To the other extreme, the idea is to have the panels pre-assembled, yet still maintain their mobility and appeal towards a niche lifestyle. Permanent construction, on the other hand, either uses prefabrication on a scale that makes it possible to be employed by an everyday person. Or is done by hand through contractors who are highly skilled in the field, yet at a higher degree of customization.

Being on the phenomenon of the trailer home and its use as permanent housing, this paper also attempts to emulate the feeling of ownership, low entry costs and – while trailers are designed to move yet rarely actually do – there is a sense of security in the possibility of moving if deemed necessary.

Panel System Concept

Rather than eschewing a particular panel, splitting it on the horizontal plane while keeping the vertical parts identical allows you to choose how large panels you feel comfortable building with, and combinations of pieces is to allow for design freedom.

"It's in some large windows and let me do the rest!"

Ft. High School Section, Scale 1:10

Ft. Full Size Detail Section, Scale 1:10

Marketing

Since the panels are simple vertical slabs, it is possible to produce large portions at a time and then cut into size, instead of building each piece from scratch.

By having pre-set sites to base designs on, it is possible to deliver a "design package" of opaque and transparent panels (perspex/paper) allow for designing live, in full scale and on site, other than computer models and measurements via traditional means.

"I'll build it myself!"

A couple of makes and I'll do it.

Ft. this contractors to do it for me.
The panel itself is composed of a lightweight sandwich element, which is based on a small house that our studio built ourselves last semester where we used two sheets of plywood glued together with an insulative polyurethane layer, allowing us to cut it into even after it had already been assembled on site.

Components
- Ceiling piece
- Wall piece
- Joint piece
- Floor piece

Future Possibilities
- Using a low-tech approach, a portion of the wall consists of a trip cap to break the wall into the material structure, and to mount the lighting. Light pieces to seal them together, and bottom pieces treated to resist water and snow build-up.

Wall Detail Plan, Scale 1:10

Installation/Modification Detail Plan, Scale 1:10

Post-production Cut outs and inserts
- Due to fewer structural concerns and the nature of the sandwich panel, it is possible to make cuts into the base panel and install window systems as opposed to enforcing a small selection of compatible windows.

Deliver
- Once produced, the pieces can be delivered directly to the factory, be it in Sweden or overseas, to the site. And when moving from place to place it would be possible to use an ordinary moving truck to transport the apartment.
CASE STUDY: SOLLENTUNA

After developing the panel system itself, I set upon the task of finding the place for this in society, addressing the current situation of Sollentuna in its being housing scarcity and continually increasing prices. Using my hometown, the suburbs of Sollentuna to the north of the city, I have made a basic proposal of how this system could potentially be implemented.

Being able to be carried up, staircases, and due to its free-form and lightweight, rooftop houses could be established without needing lift access or crane in materials. Plenty of Million Programme housing has that possibility, which is currently utilized for store panels.

By providing a basic frame to inhabit, which is highly flexible in form, it would be possible to target the artifact spaces that no one else would develop - or fill the building to achieve a previous function to remain in place (such as the bus terminus or parking lot).

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Roof panels
Floor panels
Wall panels and joints
Bottom panels and corners
Ceiling pieces
Top cap
- Plumbing and electrical outlets are now connected in the service channel.
- Hook into the superstructure for stability and seal the top part.
- You can change your mind at the last minute when you tighten the connecting screws.
- You allow for laying out the entire apartment without measuring beforehand.
- A medium-sized panel (intended to be carried by two persons) weight approximately 200g.
- A small-sized panel (intended to be carried by one person) weight approximately 50g.

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Potential application in downtown Sollentuna

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Selected Projects (Reappropriating and new construction)
SOLLENTUNA CENTRUM

Site #1 is the parking garage of Sollentuna Centrum, a recently built shopping center, where a large portion of the garage is facing towards one of the main streets. Using such a prime location on the streetscape, and the idea is to exploit the parking garage’s excesses that have been built in as an attempt to Multi-occupy the space.

As the use of parking spaces is diligently monitored; one could open negotiations with the mall owner to lease out the spaces located along the perimeter, opening up to 20% of the 1050 parking spaces for use as flexible spaces in a prime location, and then hold a dialogue to see whether this space will be required or not.

Currently, the problem resides in land ownership (is it possible to purchase the perimeter of the parking garage?) and protected tenancy, which makes temporary arrangements difficult in non-owned structures since it protects against eviction.

In the ideal case, negotiations would be opened up with the mall owner (Dias Tion Group) and negotiate the renting of a number of plots. If the parking is used, more plots can be made available if needed, as is “no need replace” status is not easily obtained, allowing people to move out at will and reclaiming those parking spaces. This will tell how relevant parking garages will be in the upcoming decades.

![Diagram of Sollentuna Centrum Parking Garage Utilization](image)

Urban perspective:
Along one of the main pathways of the city center, an array of apartments meet the otherwise blank facade. On the opposite side, newly built apartment blocks.

Parking Garage Section, Scale 1:500:
Waterworks and electricity is supplied off the mall, conveying supply lines along the entrance for delivery or, if necessary, the facades to reach lower floors or maintain pressure through gravity. The main obstacle is the 2.50 m high facade height of the garage - how then can the malls lobbies, when exiting towards a concrete wall 130 or 2.5-3.0 m away, be appreciated?

Facade perspective:
Each person is able to define their home - in terms of layout as well as individuality. In this case, an intense indoor travel has led to the use of a two-level filmbar facade, panoramic windows and white opaque roof lights and linking to remains of a school deck.

Outdoor/Indoor space allocation, connection to the public pathways is a key to the success.
SOLLENTUNA EXPO CENTER

Site #3 is the former Sollentuna Expo Center, which explores the potential to inherit buildings of industrial nature.

The existing building shell panels of the way soon may be a redressed instead of a single use and is deemed to be a potential solution where it seems to be something new and repurposing buildings, which is otherwise difficult to build, and have some regional context even if it’s being relabeled for a singular purpose. The random state of the expo center would be one such case.

Even since shutting down in 2006, the expo center has been in a state of limbo - temporarily used as an athletic center, it has also been considered for being repurposed as a tennis court, which was rejected due to costs involved. It is currently being considered for demolition, in order to establish new apartments and amenities - which is to be decided in the municipality’s master plan in 2019.

A temporary housing approach would be to approach the center, discuss, and be allowed to use the space for housing until it is finally ready for redevelopment.

A permanent solution would be to purchase the land and building shell, and since it’s considered for demolition would primarily be based on the best possible and then form a housing community of self-owned apartments (cooperatives) and a housing co-op (bonafide), with parks being rented.

Service spaces: Bicycle garages, parking spaces, laundry

- Building shell panels
- 20m2 spaces available for apartments

Current building, Upper floor
The existing structure features a ‘greenhouse’ entry hall, a large expo area with a brick structure and paneled ceiling without any windows. The roof is used as a parking area.

Proposal building, Upper floor
By providing a lightweight skeleton roof and its supporting structure on top of the parking deck, it is possible to establish upper level pockets to include with setbacks facing balconies and higher walls facing views for good daylight access from multiple directions. Partial parking remains.

Current building, Lower floor
In contrast to the height limitations of the parking garage example, the site's ceiling height of the existing building allows for the building of expansive ceiling spaces, allowing for roof decks to create multi-functional spaces and possibilities of introducing light while retaining privacy on the ground floor.

Proposal building, Lower floor
The building's ceiling is also removed to open up spaces, with most units being positioned along the perimeter. Touch screens are used for housing features (allowing for indoor parking if no access). On-site services are pulled through the building and shared amenities are added to internal spaces without window access.

Current building, Tapered
- Building's ceiling is removed to open up spaces, with most units being positioned along the perimeter. Touch screens are used for housing features (allowing for indoor parking if no access). On-site services are pulled through the building and shared amenities are added to internal spaces without window access.
TINGSVÄGEN 23
Site #3 is an attempt to measure up against regular apartment buildings by utilizing an open parking lot as a site. Uniquely, a basic concrete structure is located on a rapid traffic, allowing for a low-cost and low-risk investment into an area, and then sales or renting the habitation spaces filled by tenants moving in with their own apartments.

Rather than trying to pre-determine the typology, economic level and demand of the apartments, only ‘slots’ are provided, allowing people to use as large or small a space as desired, possess potential to expand over time, and having price and location almost being the sole factors when moving into such a structure. And the small, inhabited spaces now become available for any activities that are desired by the inhabitants: be it amendments, sports, clubs, sun-decks or dedicated dining rooms - so that the structure is able to more appealing when there are fewer inhabitants, making it attractive in its low-density stages when interest is most sought after. It is interesting to note that by providing the means to adapt, apartments might actually become more permanent rather than temporary. If you need an extra room, you can expand as long as there is space available, and if there isn’t any you still have the option to move the entire apartment to a separate floor in the same building. Notions of something temporary leading to increased permanence.
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