Tampere University
Faculty of Built Environment

MANUFACTURING goes URBAN

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Re-thinking the ‘making’ in the context of the changing industrial landscape in Tampere

Faculty of Built Environment
Master’s Thesis
Sustainable Architecture

October 2020

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Master’s Thesis in Architecture
Sustainable Architecture Programme
October 2020

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I would like to express my sincere appreciation to my supervisors, Sofie Pelsmakers and Jenni Poutanen for their continued inspiration, advice and support throughout the thesis process and previous Master's degree courses. Special thanks to my wonderful family and my dear friends, Xavier and Natalia, for their unconditional support on my way to the architectural profession.

With Gratitude,

Elvira L.

27/10/2020

Abstract

Faculty of Built Environment

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Manufacturing goes Urban: Re-thinking 'making' in the context of the changing industrial landscape of Tampere

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This thesis investigates a new urbanized form of manufacturing as a response to de-industrialization. The proposed *urban manufacturing hub* typology is enabled with down-scaling and diversification of 'making' spaces. It offers sustainable development of a post-industrial area with a maintained place identity and contributes to a variety of local economies and an engaged society. Ultimately, in the thesis proposal ´making´ is the link between the past and the present of industrial heritage, as well as between citizens and emerging creative communities.

The work started with a search for the way in which 'making' could be presented in cities, the thesis has resulted in a formulation of an *urban manufacturing concept* and a transformation proposal for the 20th century machine halls of Lokomo factory in a changing district of Tampere, the Finnish city known for its manufacturing heritage. The proposal suggests re-industrialization of the large-scale factory to small-scale ´factories´ run by individual ´makers´. The suggested typology, the urban manufacturing hub, is seen as a form able to set synergetic relationships between the city and 'making' activities.

The idea of the localisation of production in a city is explained by a shift from factory production to distributed ´home-based´ manufacturing, ranging from crafts to more recent 3D printing technologies. Down-scaling 'making' would, indeed, allow manufacturing to be kept in the city. But more importantly, it means democratisation of making activities with more affordable tools for citizens offering expression by creating or changing physical objects and their environment. Finding this aspect, the key in urban manufacturing, the study cases with active engagement of citizens in making and with makers includes Fiskars village (FI), Godsbanen (DK), Granby workshop (UK) and Ishinomaki Lab (JP.) These cases are important not necessarily for their novelty in production, but for the impact on the existing environment through 'making'.

Thus, the idea of community- and place-making ability of urban manufacturing has been realised through the factory transformation, and the author's search for architectural solutions to create breeding grounds for small-scale making and turn ´making´ to a central communal activity. The project of the urban manufacturing hub is targeted to encourage and support individual makers and to attract local community to the creation process.

Key words: transformation, industrial heritage, re-use, re-industrialization, urban manufacturing

The originality of this thesis has been checked using the Turnitin OriginalityCheck service.

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I. Introduction

Nowadays throughout cities we can face de-industrialization and active transformations of post-industrial architecture. 'Making' becomes a distant activity for a city, while the developing post-industrial areas are at risk to lose the link with the past after the loss of the initial function.

Advocates of the re-industrialization idea offer an alternative vision: manufacturing should stay in the urban settings, but its' form should be re-viewed. With re-industrialization, or even a new industrial revolution [10], we are expecting a shift and a changed organisational pattern: from centralised factory production to distributed ´home-based´ manufacturing [3]. This shift is explained with several factors caused by two main reasons. One is the re-cent development of the digitally based additive manufacturing, 3D printing. Second is a possible renaissance in craftsmanship among 'makers' stimulated with an increased demand on sustainably produced, durable goods among conscious societies [9]. These two polar ways of 'making' mean smaller scale of the tools and machines and production in smaller quantities, which allow its localization in a city and democratisation of 'making' activity.

It is not the first metamorphosis that is happening to the manufactur-ing. In fact, manufacturing has had a long relation to cities. Manufacturing has evolved in many forms and has been taking place in various contexts. Jane Jacobs has described its evolution and previous transition from home-based craft manufacturing to factory mass production before the 1960s [8], which is explained wider in the Chapter 2. These metamorphoses give us the notion of a changing role of manufacturing throughout its existence and its connection to the cities growth and being initially 'city work'.

The interest of this work lays in the relation between manufacturing and cit-ies and raises from the belief that ur-ban manufacturing is resulting not only in products, but in a positive impact on urban spaces and therefore, on local com-munities, and in reverse, dependency of urban manufacturing on urban spaces and people.

In order to confirm and concretise this assumption the study cases, that include Fiskars village (FI), Godsbanen (DK), Granby workshop (UK) and Ish-inomaki Lab (JP), are reviewed through the lenses of 'People' and 'Place' in chapter 2. The cases are examples of active engagement between citizens and makers (e.g. through DIY and renovation projects), makers' collaborations, and direct effect of 'making' activities to the closest physical environment (e.g. public space activation, maintenance and renovation of the buildings). To find out how a synergetic relation of manufacturing and a city could be supported with planning and architectural tools depending on the context, the following typologies were highlighted and described: *a cluster, a hub and an integrated workshop.*

Tampere, a Finnish city known for its manufacturing heritage, is developing fast and the last manufacturing areas of the city, such as Hiedanranta, Nekala and Hatanpää, are experiencing gradual de-industrialization. Based on the previous findings the idea of re-industrialization through urban manufacturing has been realised with the transformation proposal for the 20th century machine halls of Lokomo factory in Hatanpää into an urban manufacturing hub.

Chapter 3 focuses on the area and factory metamorphoses in the past and those expected to happen by 2040 according to the city masterplan [12]. Built in suburban context in 1916 the factory had opportunities to grow significantly during the 20th century, until it became a no-access 'gap' in the city fabric. The oldest halls, which have cultural value, are hidden and has no connection to the urban fabric. The situation is going to change with the masterplan realisation: most of the industrial sheds will be demolished to give away for a new dense development around the factory halls. A new meaningful use and lacking identity for the building, that has a potential to be a magnet for the city visitors and a gathering place for the future local community, should be found.

In chapter 4 the proposal of the former machine halls' reuse for urban manufacturing is presented. Urban manufacturing is always place-specific, in the context of new Hatanpää-Viinikka area the urban manufacturing hub has a wider potential of becoming a cultural community centre. The programme responds on the needs of the future professional community, residents and visitors, yet keeping 'making' as a central communal activity and the link between the past and the present of industrial heritage.

The suggested and previously highlighted architectural tools, that could support local 'making', have been implemented in specific design solutions. One of such is the visitor path that offers to a visitor gradual exploration of local 'making' and direct encounters with the local community and individual 'makers'. Working spaces are organised in clusters and linked to the shared community workshops, therefore offering affordable spaces for starting artists in an inspiring and collaborative space. Informal spaces are planned to gather visitors and 'makers' and to host various events, such as design markets, craft workshops and DIY down-top initiatives. Finally, with a platform for ideas and affordable tools to 'make' and improve the closest physical environment 'makers' and locals would be able to continue transformations of the building and the area on their own. This is how urban manufacturing hub can contribute to socially and economically sustainable cities of the future.

... keeping 'making' as a central communal activity and the link between the past and the present of industrial heritage.

Chapter II. Arguments for urban manufacturing

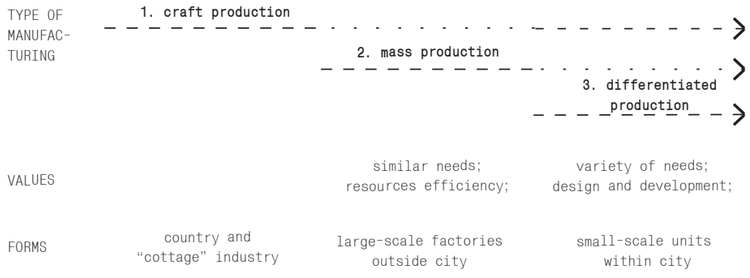


Figure 1.Scheme of manufacturing types over time based on Jane Jacobs classification

2.1 Brief overview of city-manufacturing relation

The term ‘manufacturing’ can be misleading. Initially coming from the Latin ‘manu factum’ or ‘to make by hand’, nowadays it comes with the association of large factories and production lines. Throughout its history manufacturing has taken place in a variety of circumstances and contexts, from factories to spare rooms in houses [3].

Formerly being city work, manufacturing has shaped the most urban areas by attracting people to move and settle by factories in towns and cities. Later ‘making’ was disconnected from the cities during the switch to the mass production. Manufacturing has rapidly been moving to the outskirts and countries. As the process was simplified and the goods amounts have grown, the new main criteria were efficiency and possibility of extension. They have made the connection of manufacturing with the city problematic. Empty industrial buildings have been left behind, in the cities [8].

Since then mass production has been replaced with ‘differentiated production’ in many sectors. An increased variety of citizens’ needs has led to a higher amount of jobs in design and development, and according to Jane Jacobs we could expect returning of manufacturing in the form of small-scale units to the city [8] and celebrate the diversity of functions soon after 1960s again. However, with the globalisation in the beginning of the 21st century in many cases the design and development have been separated from the manufacturing processes due to the lack of affordable spaces and cheaper work forces on the outskirts.

The advocates of ´Industry 4.0´, the fourth industrial revolution [10] are predicting re-industrialization of the cities again, but now for different reasons. The recent development of the digitally based additive manufacturing, 3D printing, and a possible renaissance in craftsmanship among ‘makers’ stimulated with an increased demand on sustainably produced, durable goods among conscious societies [9], will allow down-scaling of ‘making’ and its return to the cities. These new relevant ways of manufacturing allows us also to talk about the process of ´making´ democratisation. Being no longer dependant on factories, ´making´ will be soon affordable for all urban residents. In fact, we already can see grounds for it. Non-profit organisations like FabLab or ´makers´ spaces included in public building programmes (e.g. libraries, community centres, universities) makes machines and tools more affordable and offer platforms to gain necessary skills, while fundraising platforms help urban ´makers´ find necessary resources for their start-ups.

Knowing the preexisting relation of cities with manufacturing, we could assume that urban manufacturing would change not only the way we produce, but also the physical environment around it. To understand how cities and local communities would benefit from democratisation of ‘making’ activity and which form the new urban manufacturing will take four cases were studied and are presented on the following pages.

Study cases: urban manufacturing

Figure 2. Nikari workshop

Figure 3. Nikari workshop

Fiskars Village, FI

A former steel foundry village founded in 1649 is known for its local crafts, art and design nowadays. In spite of a skeleton manufacturing company relocation in the 1980s, the village has remained alive and nearly self-sufficient thanks to its former and new residents, individual craftsmen and artists, forming a professional community and represented by the cooperative Onoma. Most of the old village buildings were transformed for creative 'making' and attract approx. 120 000 visitors annually with the history and ongoing activities [11].

Makers: craftsmen, designers and artists from Finland and abroad

'Making' spaces: private workshops, open/isolated home-based ateliers and studios, showrooms, design residency offered by ONOMA

Affected physical environment: old post-industrial buildings (metal foundry, workshops)

Product examples: wooden furniture, ceramics, candles, art pieces etc.

Figure 4. Wood workshop at Godsbanen

Figure 5. Godsbanen

GODSBANEN by 3XN Architects, Aarhus, DK

A transformation of an old freight train station buildings into the Cultural Production Centre. The centre offers to improve their cultural skills for Aarhus citizens and to realize projects in the field of design, art and culture for the professional community. The majority of the spaces are targeted on 'making' and include various community workshops for DIY projects and rentable rooms for makers or artists, it also has an exhibition space and an event space for the related activities, such as design market. Nowadays the centre is a venue and an attractive public space [5].

Makers: residents, up-coming and professional artists

'Making' spaces: open workshops, project rooms for makers or artists

Affected physical environment: halls of an old freight train station and open space around

Product examples: not specified

Fig. 2 Inside the Nikari Workshop, Finland [Photo]. Superfolk. Accessed 10.04.2020. Retrieved from: https://www.superfolk.com/stories/2019/8/22/guide-to-nikari-workshop
Fig. 3 Inside the Nikari Workshop, Finland [Photo]. Superfolk. Accessed 10.04.2020. Retrieved from: https://www.superfolk.com/stories/2019/8/22/guide-to-nikari-workshop
Fig. 4 C. Jessen. Wood workshop [Photo]. Accessed 19.10.2020. Retrieved from: http://godsbanen.dk/godsbanens-aabne-vaerksteder/trae/
Fig. 5 3XN Architects. Railyards Cultural Centre [Photo]. Accessed 19.10.2020. Retrieved from: https://3xn.com/project/railyards-cultural-centre

Figure 6. A renovated house at Granby

Figure 7. Granby ceramic workshop

GRANBY WORKSHOP by Assemble, Liverpool, UK

An architectural ceramic workshop established as part of the Granby Four Streets neighbourhood, a project of the same designer team. Thanks to the tools and product created in the workshop the designers and the future tenants were able to renovate the abandoned houses into their future homes. Later on the workshop has continued its work on a bigger scale and presented its products on the market making the area known. However, the business remains strongly community orientated - operating and contributes by creating the workplaces and participating in the ongoing local renovations [1].

Makers: architects, designers and artists with local residents

'Making' spaces: a ceramic workshop, an outdoor space

Affected physical environment: renovated houses and public spaces, such as the workshop and a green house, on Granby residential streets

Product examples: architectural ceramics including bathroom tiles, door handles and fireplaces etc.

Figure 8. Process of creation hand-made Ishinomaki Lab furniture

Figure 9.Workshop with a local community

Ishinomaki Laboratory, Ishinomaki, JP

A public workshop founded in 2011 with the designers initiative to overcome the tsunami by the Great East Japan Earthquake consequences and support the local community. With the wood workshop tools local residents and the designers together were able to restore and renovate local shops and other small-scale business spaces – as well as create spaces to reimagine the future of Ishinomaki city. Today Ishinomaki Laboratory label launches the products beyond the local community, collaborates with international makers, for instance through the initiative "Made in Local", and many more [7].

Makers: architects, designers and artists with local residents

'Making' spaces: a wood workshop, an outdoor space

Affected physical environment: renovated local shops and other small-scale business spaces, activated public spaces (e.g. an outdoor cinema)

Product examples: DIY and designers hand-made furniture

Fig. 6 Assemble [(2013). Granby Four Streets [Illustration] Accessed 19.10.2020. Retrieved from: https://assemblestudio.co.uk/projects/granby-four-streets-2
Fig. 7 Assemble [(2015). Granby workshop [Illustration] Accessed 19.10.2020. Retrieved from: https://assemblestudio.co.uk/projects/granby-workshop
Fig. 8 Ishinomaki Laboratory (2015). Ishinomaki Laboratory: Design For A Good Cause [Photo]. Accessed 06.09.2020. Retrieved from https://www.indesignlive.sg/articles/in-review/ishinomaki-laboratory-design-for-a-good-cause
Fig. 9 Ishinomaki Laboratory (2015). Made in local [Photo]. Accessed 06.09.2020. Retrieved from https://ishinomaki-lab.org/news/news/made-in-local/

2.2 Urban Manufacturing and People

Figure 10. Granby Workshop Products

2.2.1 Makers communities

Socially sustainable cities are defined by diversity and inclusivity. However, on the way to these goals economical factors (e.g. high rent and low accessibility to the resources) can be barriers for certain activities. Professional communities can help individual ‘makers’ and local entrepreneurs to sustain [6]. Design district in London, Sunset Park in New York or Werkstadt Zürich are examples of emerging communities of city ‘makers’ that were formed to reserve the place for ‘making’, experiments and creativity within the cities regardless constantly increasing rent. Communities may also grow around shared workshop spaces to decrease needed space for each maker or to simplify ways for starting ‘makers’.

Apart from the shared facilities, part of services needed for all ‘makers’ can also be shared by a community with entrepreneurial mindset. These can be organization of common events targeted on ‘makers’ and local residents or promotion of makers products on the market through the common exhibition and retail spaces. We can see such forms of support, for instance, in Cooperative of Artisans, Designers and Artists of Fiskars Village, ONOMA [11].

A network of like-minded professionals and especially their colocation set long-term collaborations and exchange of knowledge and skills. These collaborations can be born from spontaneous ideas in informal situations between makers from different fields [11].

2.2.2 Encounters

‘Urban manufacturing’ should be introduced to the cities and its residents again, it should be ’conspicuous’ and connected to the public life to let the new social engagement to happen. Encounters between makers and other citizens in everyday life would enrich experiences of being in the public spaces of the city and set an essential reciprocal recognition [2].

Social encounters between a designer and a maker, a consumer and a designer, a consumer and a maker, are irreplaceable by digital forms, which again advocates for ‘making’ location within the city fabric.

Indirect ‘Making’ encounters happen facing the process of locally made products (e.g. in ‘transparent factories’). Raising awareness of the origin of things and creating an emotional connection with the local culture among citizens, sometimes ‘making’ is sort of spectacle attracting visitors (e.g. glass-blowing process in the factory in Iittala).

2.2.3 Makers and Citizens

What can be seen from Ishinomaki Lab and Granby Workshop cases is that local makers, who are better aware of the city and citizens’ needs, can come up with effective ideas of co-production. For the new or recovering local communities having one common and simple goal that can be realised

Fig. 10 Granby Workshop (2019). Granby Workshop recycles waste sludge from clay industries to make earthen tableware [Photo] Accessed 19.10.2020. Retrieved from: https://www.dezeen.com/2019/09/22/granby-workshop-recycled-clay-tableware/

by themselves mean setting connections to their physical environment and with each other leading to a sustainable neighbourhood. Such participations in case of also further locally available tools and professionals are setting the grounds for down-top developments of urban areas.

Finally, making spaces open for citizens would significantly contribute to inclusivity of cities, for instance, by offering resources to the entrepreneurs to set local business or by helping people who struggle finding a job or being integrated to a community to gain necessary skills [6].

Figure 11. Granby Workshop Makers

Figure 12. Workshop with a local community

Fig.11 Calton, G. (2017). Work in progress: Sumuyya Khader and Anna Johnston of Granby Workshop with Lewis Jones of Assemble. Accessed 06.09.2020. Retrieved from https://www.theguardian.com/lifeandstyle/2017/sep/10/feat-of-clay-regeneration-project-that-brought-liverpool-street-to-life
Fig.12 Ishinomaki Laboratory (2015). Ishinomaki Laboratory: Design For A Good Cause [Photo]. Accessed 06.09.2020. Retrieved from https://www.indesignlive.sg/articles/in-review/ishinomaki-laboratory-design-for-a-good-cause

2.3 Urban Manufacturing and Place: in search of a typology

How could the mentioned above conditions of urban manufacturing be supported with the architectural tools and planning? Which architectural typology or space organisation way would meet the needs of ‘makers’ and residents in the best way?

Some of the vital urban conditions for urban manufacturing include:

1. Urban intensification, suggesting ‘making’ space to be in the mixed-use area;

2. Good transitions between functions, concerning the need of diverse affordable and visible spaces in cities to be reserved for ‘making’;

3. Shared spaces enabling urban manufacturing, that are needed to set the conditions for new ‘makers’ to start their business and for the existing professional communities to adapt and create innovative solutions through the collaboration [6].

However, urban manufacturing is always local and place-specific. Therefore, the conditions and especially organization of ‘making’ itself should respond on opportunities and threats of each context individually.

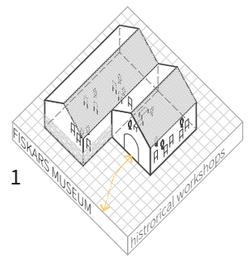
The selected case studies represent different settings, such as low-density rural environment (Fiskars Village), high-density city environment (Godsbanen) and the areas in transition affected by economic and natural disaster circumstances (Granby Workshop and Ishinomaki Lab). Looking at each case in relation to the context, at least three different typologies could be highlighted: a cluster, a hub and an integrated workshop (see page 14).

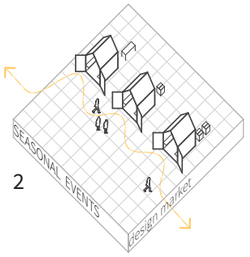
Each of the cases, apart from working spaces, include informal spaces open for public (e.g. a cafe, a gallery space, a co-working, a greenhouse etc.). These spaces allow engagement and informal communication that are critical for building relationships, sharing ideas and exchanging with the news [6].

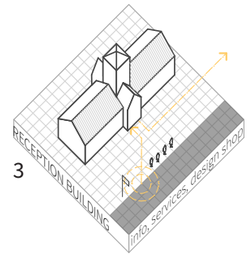
The cases show that ‘urban manufacturing’ take various forms that need diverse working spaces: from a spot in a shared workshop to a private studio, that can be isolated or open to the visitors. A variety of informal and ‘making’ spaces can be seen on the example of Fiskars Village (fig. 13.)

Informal spaces open for public allowing engagment and informal communication are critical for building relationships, sharing ideas and exchnaging with the news.

‘Urban manufacturing’ take various forms that need diverse working spaces...







Fiskars Village Typologies connected to the ‘making’:

1. Museums and galleries: permanent and temporary exhibitions exposing local artists works
2. An outdoor public space: changing seasonal activities for locals and visitors
3. Cooperative’s ‘reception’ building: visitors info, a design shop and an office
4. A workshop with public programme
5. An open artist’s studio + home
6. An isolated home-based studio

‘MAKING’ SPACES:

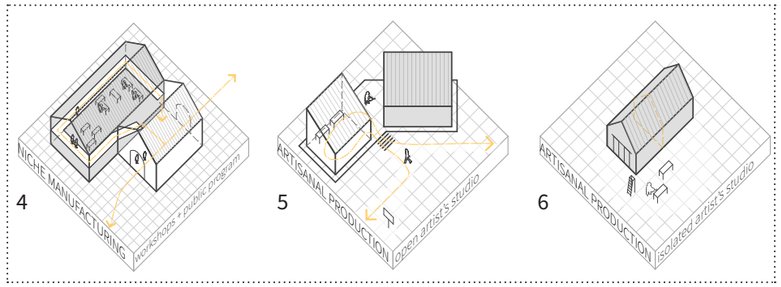


Figure 13. Schematic map of Fiskars Village

1. Cluster:

based on Fiskars Village

'Making' units are concentrated on one territory and their activities are inter-connected, but there is a small amount of shared facilities.

'Makers' benefit from physical proximity with like-minded professionals leading to natural communication, skills exchange and collaborations [11]. Cluster organisation is also a good solution for 'makers' in a low-density area as the space can be enough affordable to have own working space, while the concentration of similar activities creates a higher flow of visitors even for a remote location.

2. Hub:

based on Godsbanen

concentration of 'making' units around a common core with shared facilities.

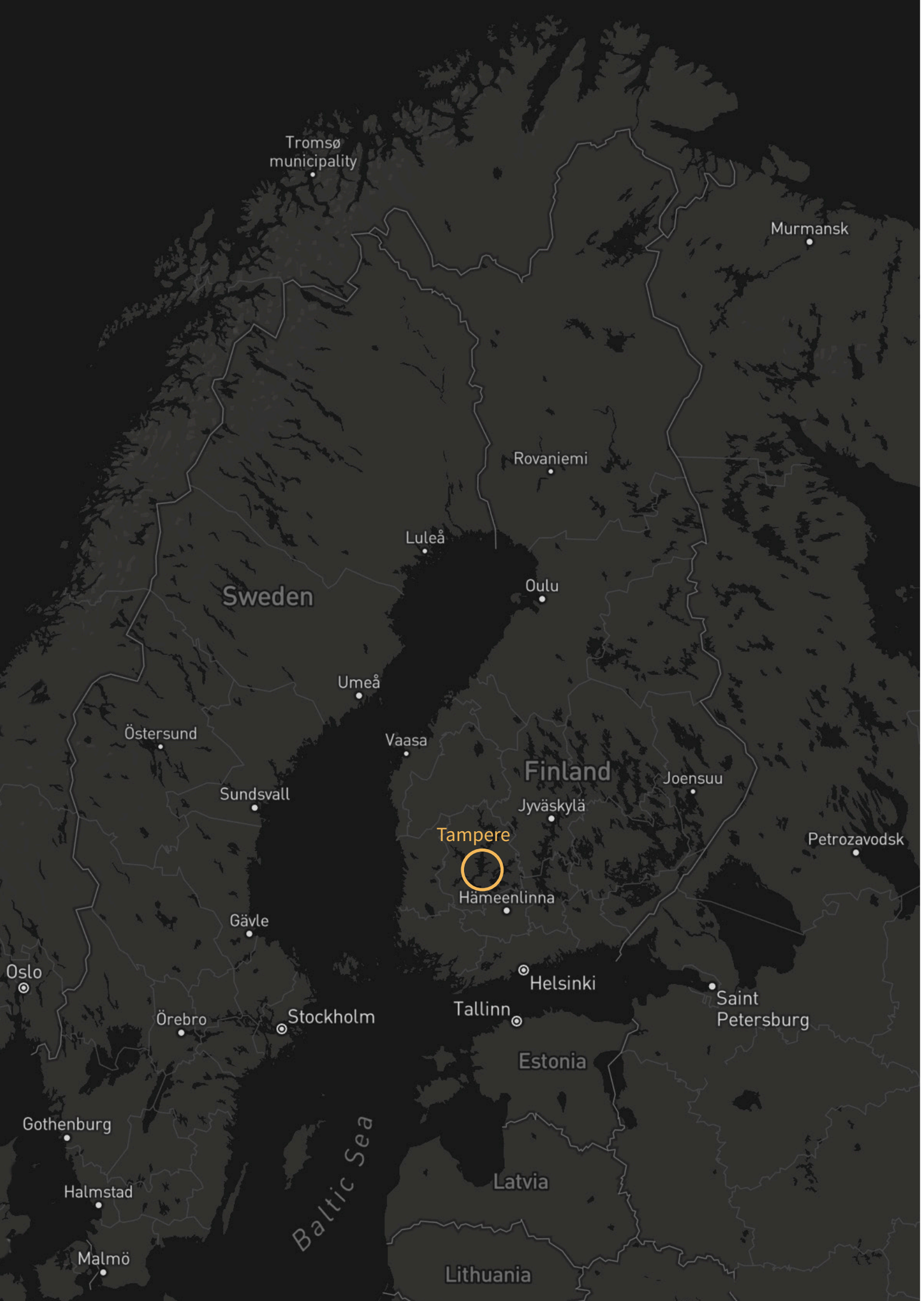
In the conditions of urban area with high-density the hub meets the issue of affordability by providing shared facilities and tools and thus decreasing the needed area and tools for each maker. Active public programme plays key role for the flows of people and attraction of local residents.

3. Integrated workshop:

based on Granby Workshop and Ishinomaki Lab

Initially set interaction with the local communities allows the 'makers' space to be integrated to the existing city fabric without conflicting situations. the workshops should be adapted to the reduced size of available spaces and the activities are limited due to possible noise and dust, but they benefit significantly by facing the streets and being able to expose 'makers' work.

Chapter III. Project Context



In Finland there is a city called Tampere. The city that is known as the largest inland centre in the Nordic countries as well as for its industrial heritage.

Nowadays these transformed buildings attract a creative class, but there is nothing to do with manufacturing.

Could a former industrial building be transformed into an urban manufacturing hub instead?

Yes! Let Tampere manufacturing go Urban!

3.1 Industrial heritage of Tampere

Figure 14. Historical industrial development alongside Tammerkoski (18-19th century)

Figure 15. Historical industrial development alongside the railtracks (19-20th century)

Figure 16. Red brick industrial architecture in Tampere (current stage)

Tampere is one of the cities that has been established and became urban thanks to manufacturing. Two probably most urban areas in the city centre are Finnlayson and Tampella, both are former factories by the riverbanks of Tammerkoski. Along with the factories entire districts were established, providing housing, churches and education facilities for the workers (fig. 14).

Nowadays, the two named factories together with the other red brick industrial facilities built alongside the river form city image and heritage of Tampere.

A former locomotive factory, Lokomo, was established later, in the beginning of the 20th century, not close to the river stream but together with the new train line connecting Tampere and Helsinki (fig. 15). The rural area known as Hatanpaa has been changed with the presence of the new factory. Besides, the area across the railway, Viinikka, planned with ¨garden-city¨ ideals was developed to provide home for the factory workers. Today it is well-known for its unity and wooden houses.

Lokomo and other industrial facilities along the railways are rather hidden and their future is unclear yet. However, they should be seen and preserved as part of the city red brick industrial heritage similarly to the development of Tammerkoski riverbanks (fig. 16). To confirm the oldest halls of the former locomotive factory are also included in Pirkanmaa's provincially valuable built cultural environments inventory list from 2016 (fig. 17).

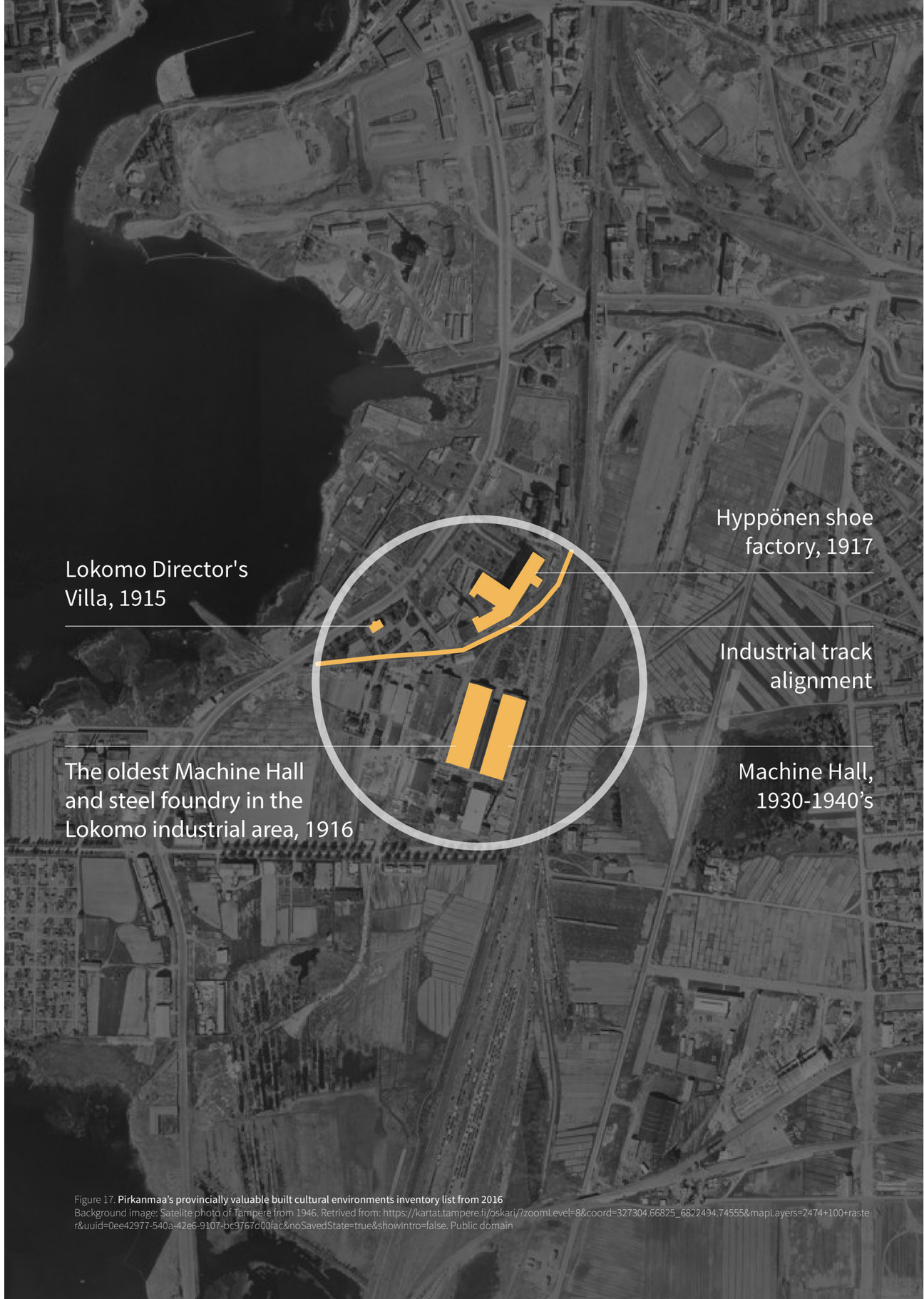


Figure 17. **Pirkanmaa's provincially valuable built cultural environments inventory list from 2016**
Background image: Satelite photo of Tampere from 1946. Retrived from: https://kartat.tampere.fi/oskari/?zoomLevel=8&coord=327304.66825_6822494.74555&mapLayers=2474+100+raster&uuid=0ee42977-540a-42e6-9107-bc9767d00fac&noSavedState=true&showIntro=false. Public domain

3.2 Area metamorphosis

Survey of Hatanpää-Viinikka

From Rural

1915

Figure 18

1910 1920´s

Lokomo Factory was founded in 1915. Viinikka wooden houses area started to expand to host factory workers.

Figure 19

1934

Figure 20

1935

Figure 21

To heavily Industrialized

1939

Figure 22

Fig.18 Map of Tampere for 1910. Julius Syrén & Co kivipaino, p. Tampereen kaupungin asema- ja aluekartta. 1910. Suomen Rautatiemuseo. Retrieved from https://finna.fi/Record/musketti_rautatie.M014:SRMK1:145. Public domain.
Fig.19 Photo of Lokomo factory area taken between 1920-1929. E.A. Bergius, v. Reprokuva Lokomon alueelta. 1920-1929. Museokeskus Vapriikki. Retrived from: https://finna.fi/Record/siiri.urn:nbn:fi-vapriikkihttp%253A%252F%252Fmuseosiiri.tampere.fi%253A8080%252FVALOKUVA%252Fcontent%252FSIR_EXEC%252Fimages%252F primary%252F20041207%252F11024061994620.jpg. Public domain.

Fig.20 Photo of Viinikka residential area of factory workers from 1934. v. Ahlmanintien puutaloja. 1934. Museokeskus Vapriikki. Retrived from: https://finna.fi/Record/siiri.urn:nbn:fi-vapriikkihttp%253A%252F%252Fmuseosiiri.tampere.fi%253A8080%252FVALOKUVA%252Fcontent%252FSIR_EXEC%252Fimages%252Fprimary%252F20030929119%252F10648246561970.jpg
Fig.21 Illustration of Lokomo factory area from 1935. Pietinen, k. Oy Lokomo Ab: N tehtaat Tampereella. 1935. Museovirasto. Retrived from: https://finna.fi/Record/museovirasto.AEFDBA430E1FF514D4AB355C51136CB9
Fig.22 Map of Tampere from 1939. 1939. Tampereen kaupungin asemakartta. Tampere: Rautatiekirjakauppa [jakaja].

Figure 24

1960s

1946

Figure 23

The factory was bought by Rauma-Repola. Locomotives production has been interrupted. The facilities have been significantly extended.

1970s

2010s

Figure 25

The master plan for the city of Tampere in 2040 was approved.

2017 densification

Figure 26

2040

The population of Hatanpää-Viinikka area will be 22 thousands. Most of industrial facilities of Lokomo will be redeveloped to host residential and office functions.

To Urban

As the area turns urban
the manufacturing activities are
expected to stop.

On the other side, it offers
possibilities for urban manufacturing
to come...

Fig.23 Satelite photo of Tampere from 1946. Retrived from: https://kartat.tampere.fi/oskari/?zoomLevel=8&coord=327304.66825_6822494.74555&mapLayers=2474+100+raster&uuid=0ee42977-540a-42e6-9107-bc9767d00fac&noSavedState=true&showIntro=false. Public domain
Fig.24 Photo of Lokomo fcatory area taken between 1960-1969. KÖNÖNEN, TERHO A: Lokomo 70 vuotta, 146 p.
Fig.25 Photo from 2010s [website]
Fig.26 Illustration from Tampere masterplan for 2040. KANTAKAUPUNGIN YLEISKAAVA 2040: Maankäytöltään muuttuvien alueiden selvitykset. Viinikka-Rautaharkko rakennetarkastelu. https://www.tampere.fi/asuminen-ja-ymparisto/kaavoitus/yleiskaavoitus/voimassa-olevat-yleiskaavat/kantakaupungin- yleiskaava-2040.html

Implementation of 2040 Masterplan

750 inhabitants

22 222 inhabitants

Figure 27. 2020 stage with the structures and buildings to be removed by 2040 are highlighted

Figure 28. 2040 stage

Figure 29. 2040 stage with the pedestrian and cyclist connections highlighted

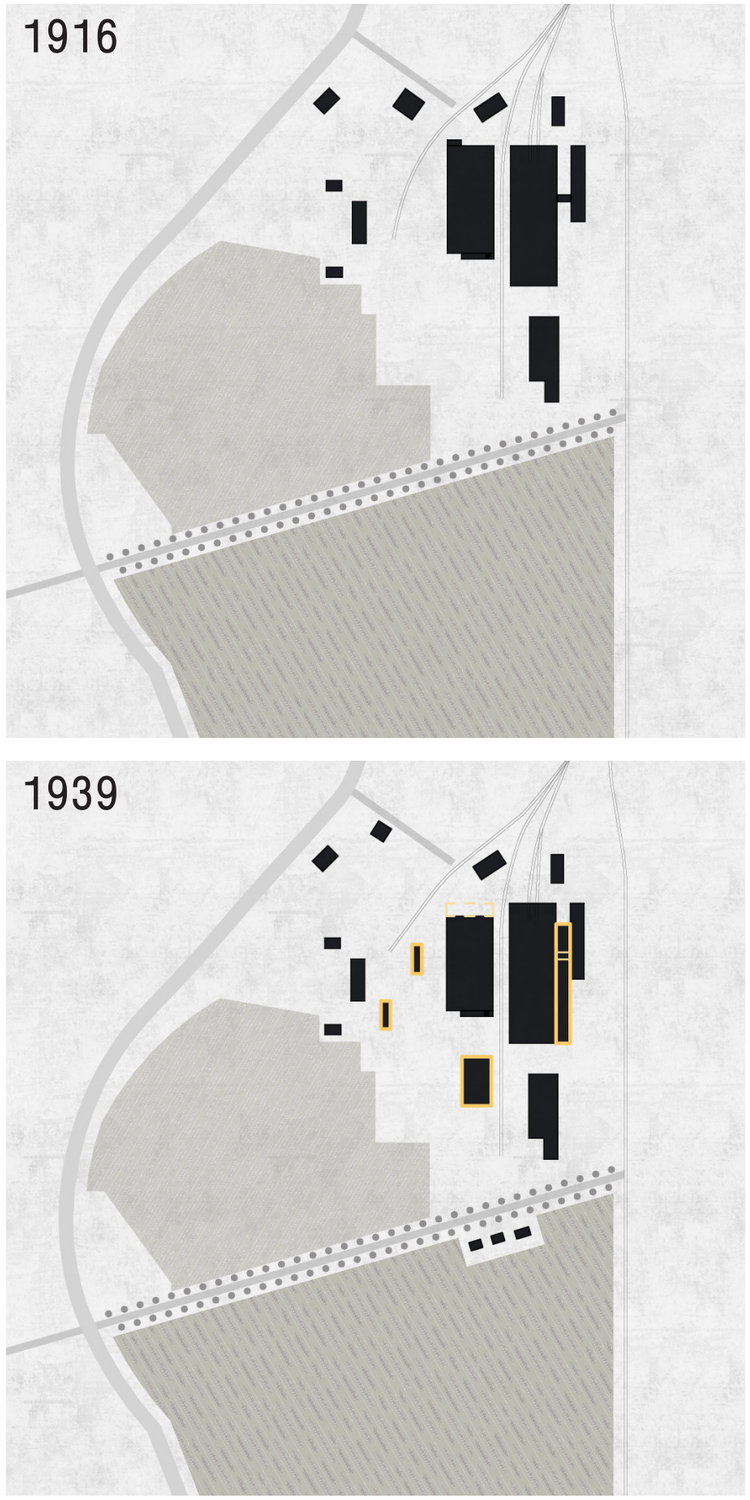
Hatanpää area is known for Tampere citizens for its green area overlooking Pyhäjärvi lake. But the area between the park and the railways is undefined and hardly accessible. The factory territory is all fenced and the neighbouring plots from the West side are mainly used as a territory of a sewage treatment plant, car parkings or occupied by the car distributors. On the East side of the factory the Marshalling yard creates a major barrier.

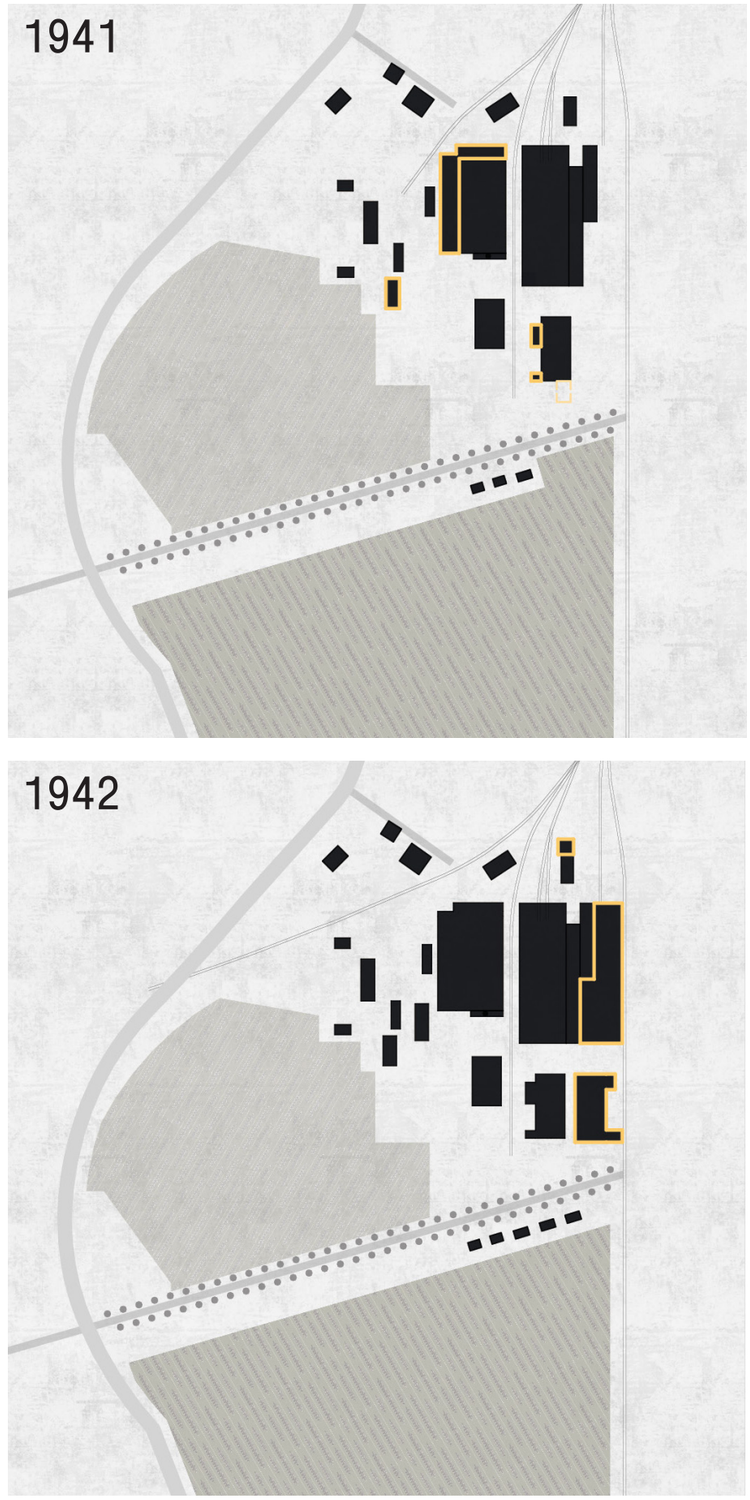
In twenty years the area expects to see significant transformations. According to Tampere Masterplan for 2040, the sewage treatment plant and the Marshalling yard are to be removed and the factory operation is to be interrupted (fig. 27), giving way for dense, mainly housing development. With the new development Hatanpää-Viinikka area will become home for more than 22 thousand people (fig. 28). The area´s connectivity will improve as the tram line from the city centre is going to be extended and more pedestrian and cycling paths will be created (fig. 29) [12].

The oldest machine halls of Lokomo are not at risk to be demolished. However, to preserve its identity a sufficient use should be found. In this work the issue is addressed by introducing an urban manufacturing centre.

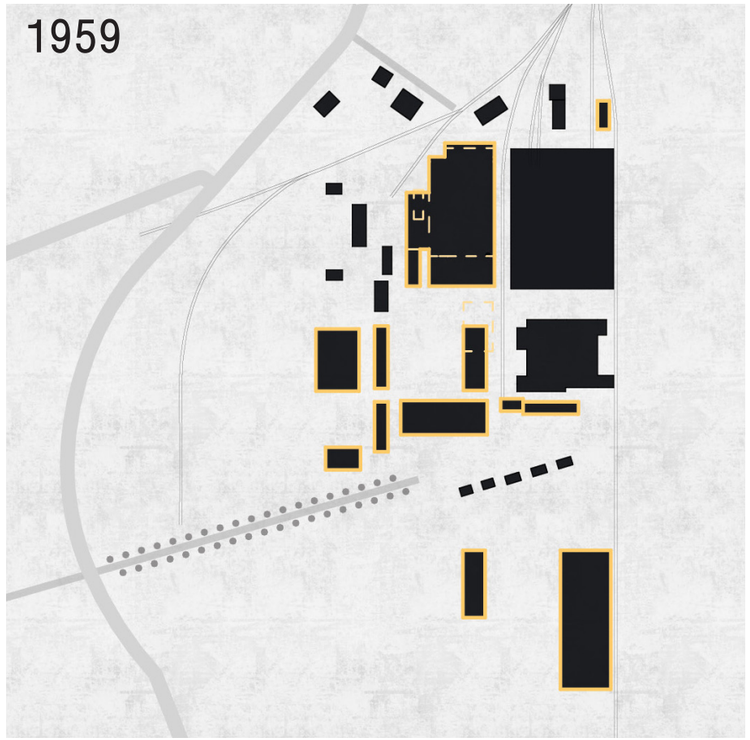
The transformations are big! The area will be dense and well-connected. And now how can the industrial identity be addressed?

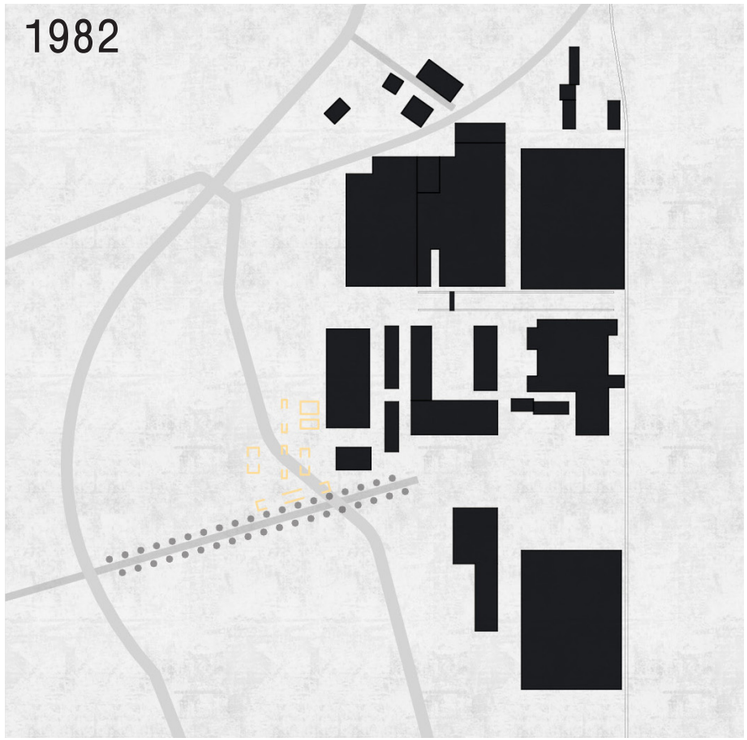
Site granularity over time

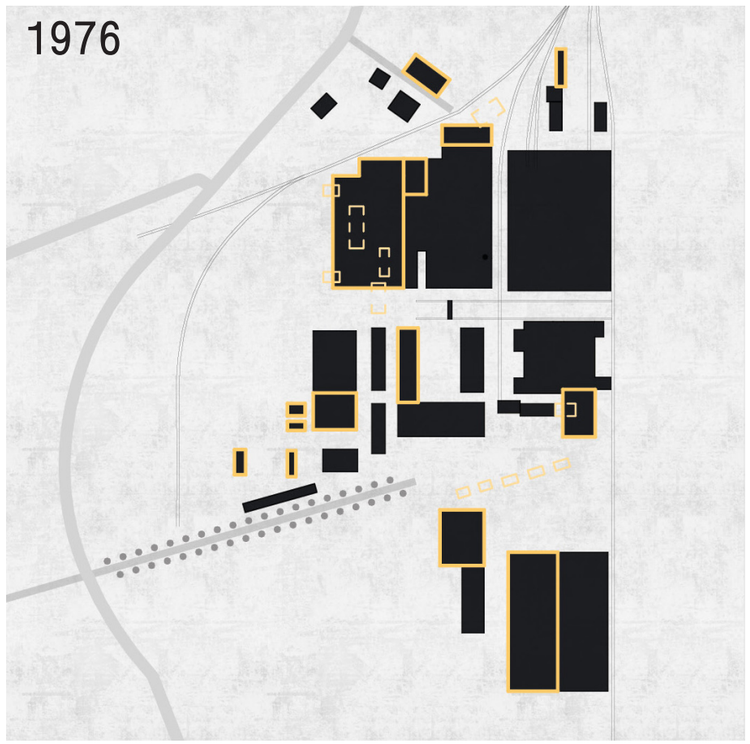


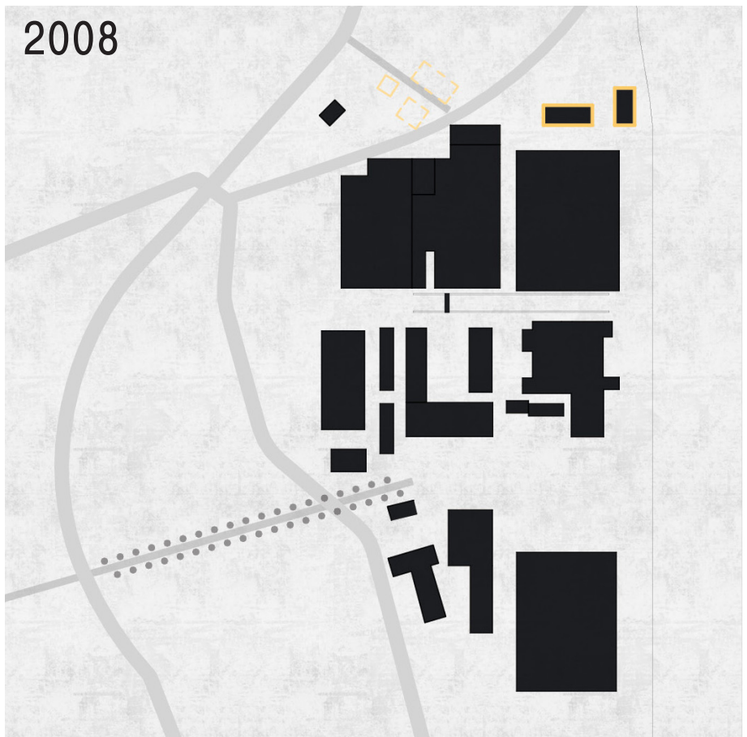


Figures 35-42: «Lokomo» site plan metamorphosis between 1916 and 2008. Based on the survey of the archived building permission drawings for Lokomonkatu, 3. 1938-2008. Retrived from https://tapsa.tampere.fi/. Public domain.


1959


1982


1976


2008

3.3 Factory metamorphosis

Survey of the oldest halls

The first hall
was built in 1916

Figure 30

1915-1916

A machine shop and an electric steel foundry was built by design of architect Lambert Petterson.

Figure 34

1942

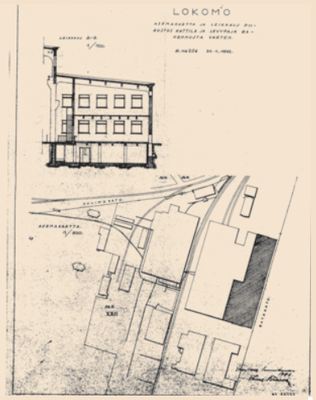


Figure 31

1981

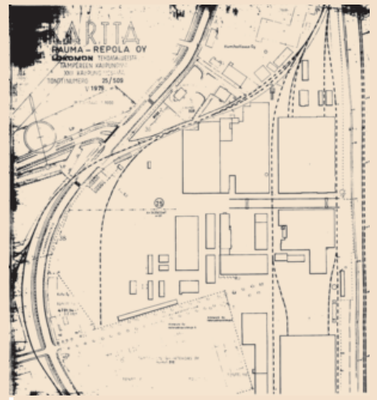


Figure 32

2016

The buildings are listed in Pirkanmaa's provincially valuable built cultural environments.

In 1940s the hall grew twice with a new machine hall attached.

In 1970s the factory has expanded significantly, but the halls haven't been changed.

Figure 33

Fig. 30 South elevation drawing of the Machine hall and Steel foundry, 1941
Fig. 31 Site plan with a marked extension, 1942
Fig. 32 South elevation drawing of the Machine hall extension, 1942
Fig. 33 Site plan, 1981
Archived building permission drawings for Lokomonkatu, 3. 1941-1981. Retrived from https://tapsa.tampere.fi/. Public domain.

Fig. 34 Photo. 1930. Retrieved from https://finna.fi . Public domain

3.4 Analysis conclusion: site

After the site survey the factory territory has been schematically divided in three zones. It allows to describe more thoroughly the conditions of each, such as potential structures to preserve, borders and neighbouring plots.

A.

- The old machine halls are protected structures and need careful interventions
- Disconnected from the main street
- Affected by the rail tracks noise and dust

B.

- Mostly consists of 1950-1960´s red brick industrial sheds and architecture, that could be freely adapted and modified for new uses
- Affected by the rail tracks noise and dust
- The neighbouring plots from the South and West sides have no strong identity and allow light industry use

C.

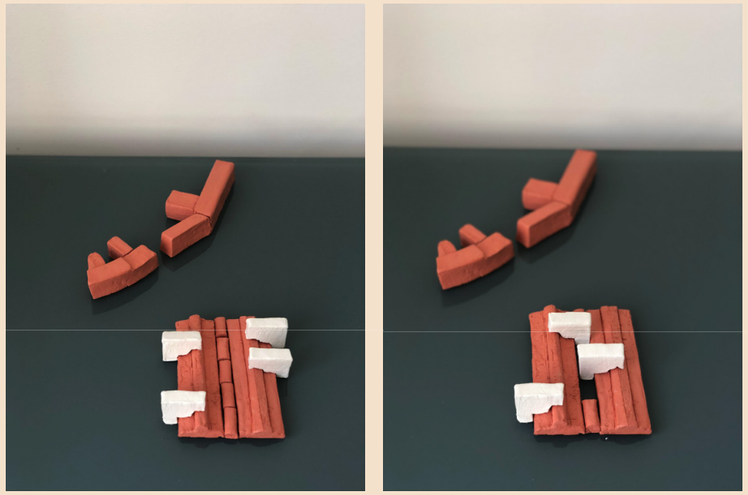
- Currently occupied with a parking and a large 1980´s shed, which can be demolished, this zone allows free interpretation
- Facing the street with the future tram line
- The plot across the street is planned for housing

Site metamorphosis analysis has shown that throughout the time three typologies have been presented in the area: a villa, a vertical factory and a factory hall. Currently the area is mostly presented with the halls, while only one vertical factory (former Hyppönen shoe factory) and one former Lokomo director's villa remained. These authentic typologies could be brought to the future site proposal as part of its identity.

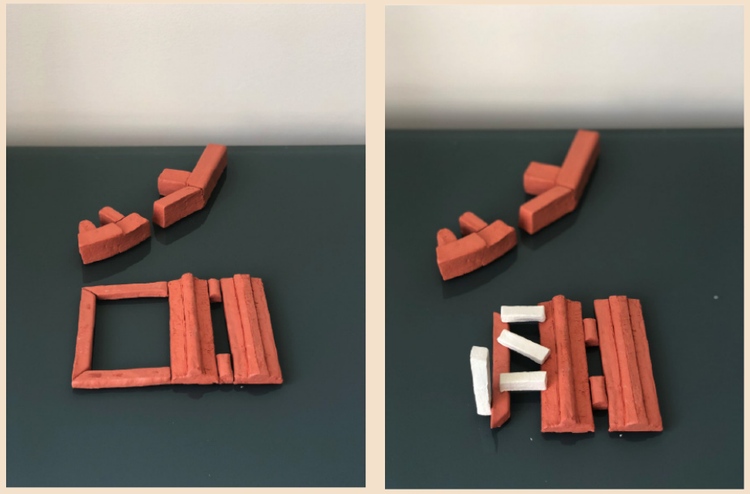
Chapter IV. Transformation Proposal

4.1 In search of a transformation strategy

Responding to the master-plan:
With densification?



Or with growth limitation?



Tracing the history: production tracks alingment and raising „chimneys”

Photos of the first massing studies in clay
1:1000, June 2020

Option 1.

Option 2.

Option 3

Option 4

Major pedestrian connections / shared streets

Public space

Streets

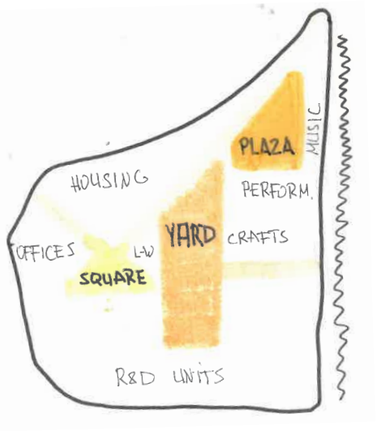
Block division study drafts

Context comes first: creating a ‘good neighbour’ instead of a ‘magnet’.

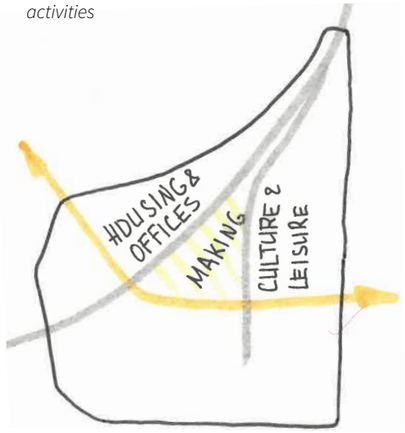
The work on the thesis proposal started from an intuitive method using massing studies. A culturally valuable building re-used to host public programme brings an immediate thought of its ‘magnet’ potential. The building should be visible from far away to all the visitors. It comes first and the rest of the area will be adapting.

But the factory building has never meant to be an outstanding architecture. It has existed as a continuation of industrial landscape, being built on top of the tracks and later reproducing the landscape around it. Setting the new connection with the changing context is crucial to make an urban manufacturing hub part of daily life and a ‘good neighbour’.’

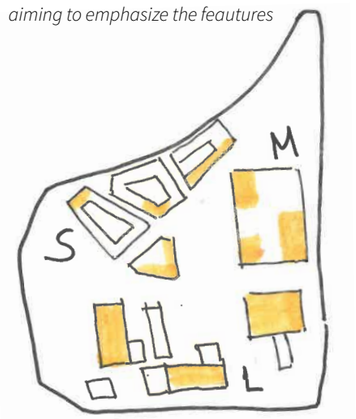
The territory of the factory will also be a subject of major transformations in the following 20 years. Therefore. before proceeding with the building transformation, the context should be re-imagined.



1. Productive public spaces connecting diverse activities



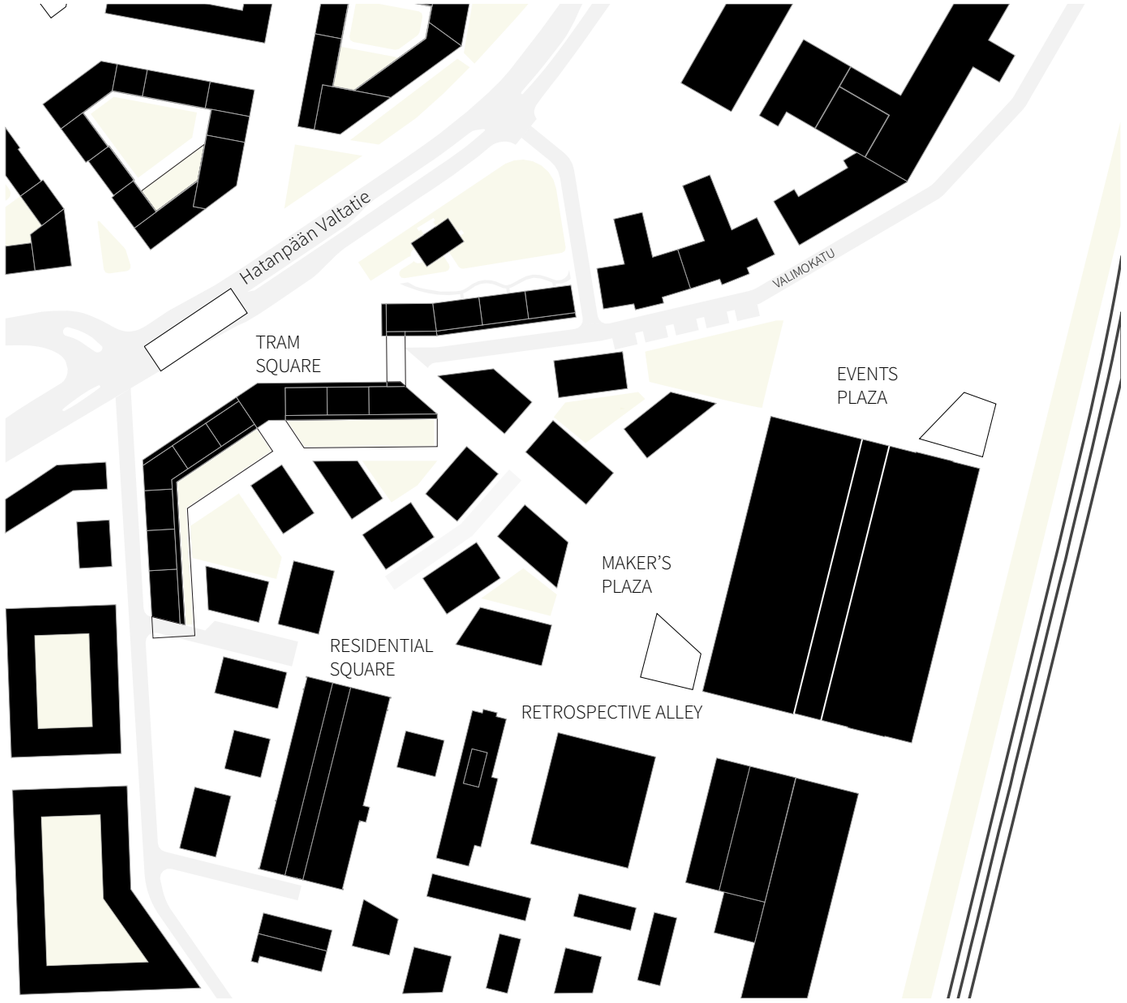
2. Division based on the historical traces aiming to emphasize the feautures



3. Integrated urban manufacturing on different scales

3 Main Urban Principles

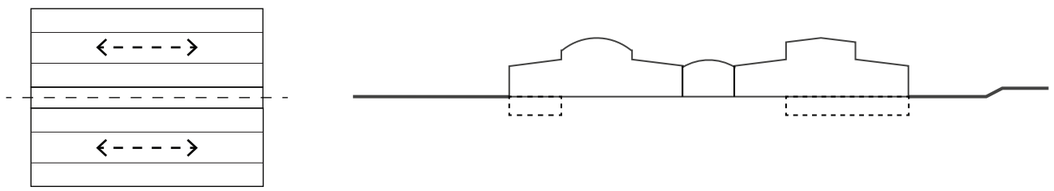
A proposed solution for pedestrian-oriented flexible environment with strong identity on the territory of Lokomo has been realised with the three main principles: 1. diverse public spaces and pedestrian-oriented streets, 2. integrated ‘making’ spaces of different kinds and 3. use of historical references, such as area division, authentic typologies (a villa, a vertical factory and a factory hall) and main communal activity - manufacturing. Three main typologies highlighted in the analysis resulted in vertical hybrid blocks repeating the track alignment, free-standing urban villas and re-used halls with public programme.



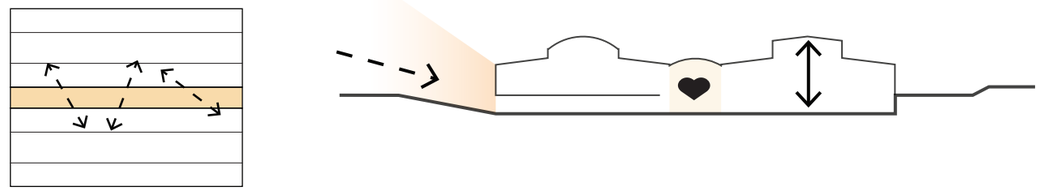
Granularity scheme

4.2 Old Machine Halls transformation

FROM



TO



Industrial manufacturing: efficient, repetetive and monotonous

Urban manufacturing: collaborative, diverse and transparent

ARCHITECTURAL CONCEPT

The proposal of the physical transformation of the building is followed by personal interpretation of the transition between former and modern ways of manufacturing. Unlike the manufacturing that happened in the past, linear and monotonous, urban manufacturing is based on exchange and can happen in multiple ways.

The division between two halls is kept to offer different spatial and programmatic experiences, but an addition in-between becomes a ¨meeting¨ place. The main alteration is done to the existing basement level. A generous underground connection between the two halls and the outdoor offers a new spatial experience to the building. The underground is extended towards the outdoor to create a welcoming gesture and set the new relations with the context. Placing the opening to the outdoor from the side emphasises a shift of the main axes.

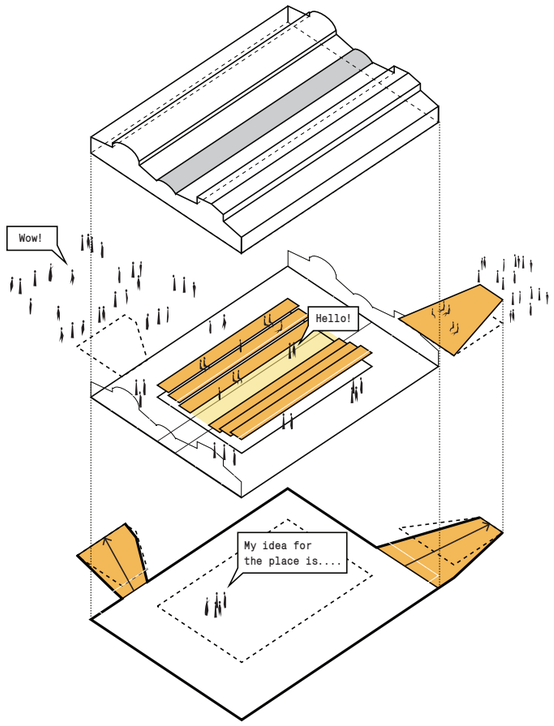
«skin»

+

urban gestures
and halls
connection through
the landscape
alterations

+

«open plan»



Activating the building
by setting the new relation
to the context.

TRANSFORMATION STRATEGY

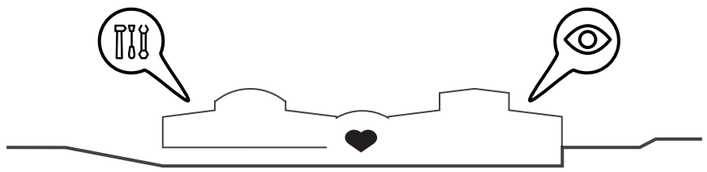
The proposed transformations are done on three levels: ¨Skin¨, ¨Landscape¨ and ¨plan¨:

The ¨**Skin**¨ of the buildings, its facade walls and roofs are mainly renovated to its original appearance. However, to increase the daylight conditions the roof in the central span is replaced with glass. The skylights of the halls are modified.

The entrance opening, a lifted plaza above an auditorium and terraced floor inside the building have form of ¨**Landscape**¨ alterations. They are accurately done to change the spatial qualities and yet can be clearly distinguished from the building.

Urban manufacturing requires space for experiments and various scenarios. Thus the main floor space is connected to the street and can be divided or extended in many ways, the existing structure of the building itself sets modularity for the ¨**open plan**.¨

Now local «makers», residents and visitors come to Lokomo...



TO WORK TO WATCH

TO SHARE

USERS AND PROGRAMME

The urban manufacturing centre programme was expanded in response to the context. The building would obtain an additional meaning of a cultural community centre as it can be an anchor for the **new local community** and has an interest for the city **visitors**. Urban manufacturing abilities to bring citizens together and form a ground for skills, knowledge and resources exchange were described in chapter II. The new cultural community centre is built around urban manufacturing activities. However, they can also function independently and have different functioning hours.

Working spaces are mainly used by professionals from creative fields, **¨makers¨**, such as craftsmen, artists and designers. Private working spaces take the form of long-term rental units: their division and size can be changed within the modules depending on the use. The units can be separated for individual work, but ¨makers¨ would benefit more from organising clusters allowing productive collaboration.

Young ¨makers¨ would be able to start their practice from renting a spot or a desk in the shared making space. They would especially benefit from the shared workshop area with the necessary tools and materials.

Cultural spaces offer to the visitors an opportunity to learn about the history of Lokomo factory by visiting the permanent exhibition. While in the temporal exhibition spaces the ¨makers¨ can expose their works.

WORKING SPACES	m²	COMMUNITY SPACES	m²	CULTURAL SPACES	m²
Workshop: - wood and metal 1750 m² - plaster (casting) studio 202 m² - photo studio 202m² - CNC and laser cutter machines 126 m² - robotic hand 202m²	2480	Community workshop: - free-access e.g. textile, ceramic	375	Pop-up lobby (multifunctional space for events and exhibitions)	1200
Workshop staff	220	Craft classes / project spaces	900	Permanent Exhibition (-1F)	1354
Materials storage	135	Community cafe: - kitchen - bar - herbs patio	560	Temporal Exhibition (GF)	1548
Recycling room	90	Co-working	504	Performance spaces	478
Loading	90	Meeting rooms	206	Auditorium	693
Shared making spaces (desk rent)	400	Mediatheque	445	Stage	175
Private makers spaces (vary)	up to 2400	Multifunctional space	220	Backstage	186
Makers cloakrooms	220	WCs	70	Entrance Lobby	500
				Design shop	400
				Cloakroom	87
				WCs	70
				Staff rooms	152
Total:	**6035 m²**		**3280 m²**		**6843 m²**

Community spaces lay between the working and cultural spaces. The community spaces programme is based on sharing. It sets a platform for exchange between the ¨makers¨, visitors and local community through events of different scales, like craft classes, local initiatives presentations etc. On the daily basis locals come to the centre to work or study in a co-working or mediatheque, to practice their hobbies, to bring something to repair in a workshop or simply to meet with friends.

4.3 Visitors Path

The path runs around the buzzing making until bumping into it

The path has been created for the full experience of a visitor. It starts from the plaza entrance running underground to the cultural spaces, where one can face the completed works of local ¨makers¨. And from the exhibition spaces the path guides the visitor straight to the live and busy ¨making¨ followed by an informal hang-out place called ¨valley¨.

For the visitor ¨making¨ and space encountering happens in parallel. The scale of the space is growing, and intimate atmosphere is replacing with communal.

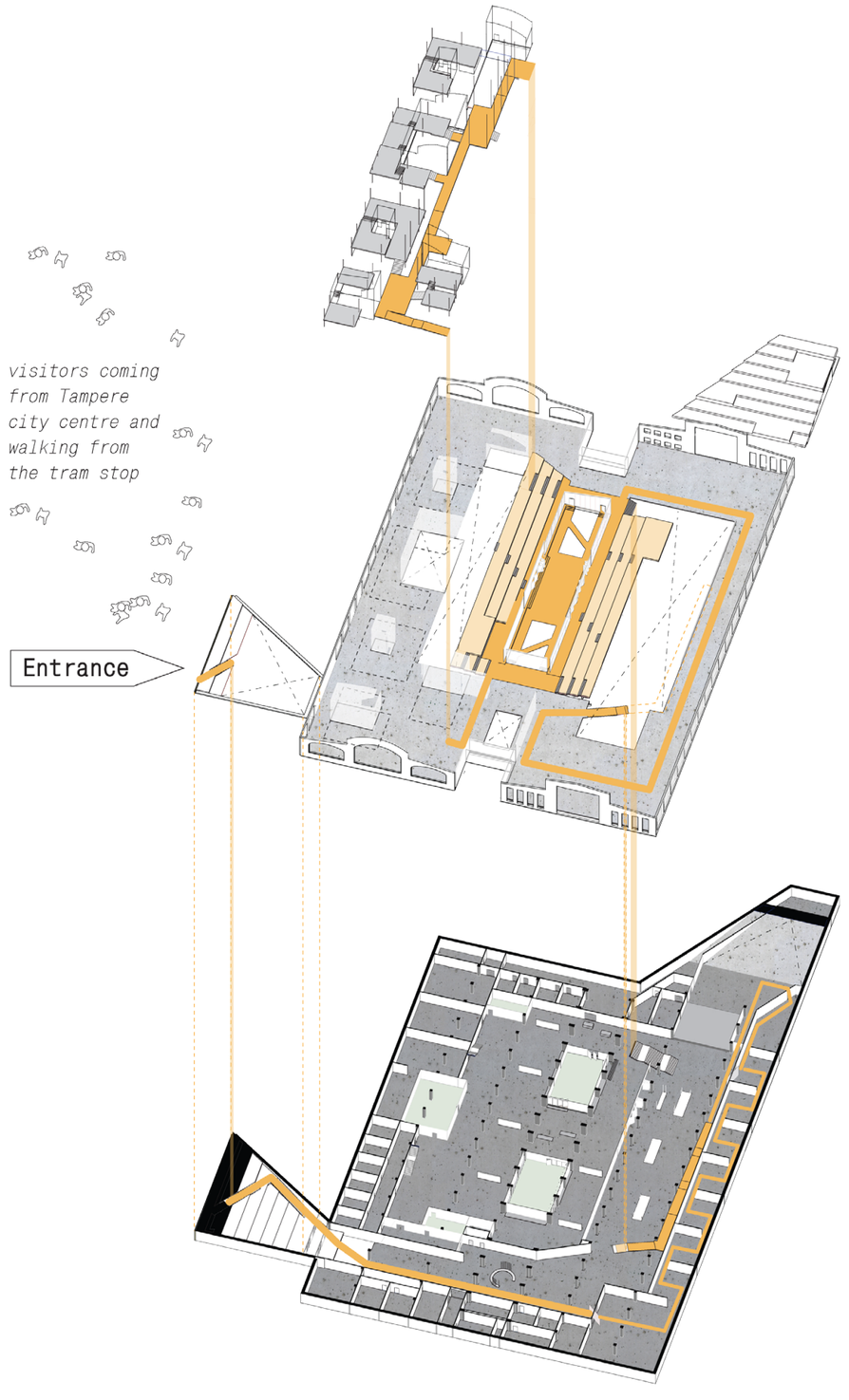
Meet the visitors closer:

a tourist

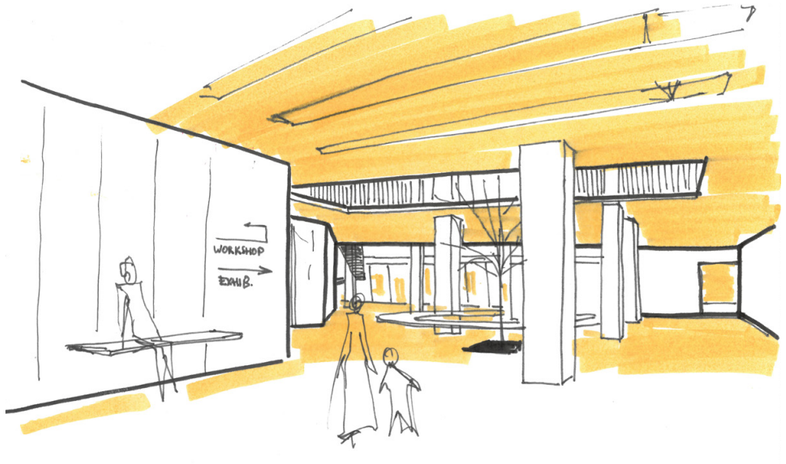
Tampere citizen

a new local
Matti, 34
recently moved to a studio apartment in Viinikkanlahti

We will follow the path with Matti...

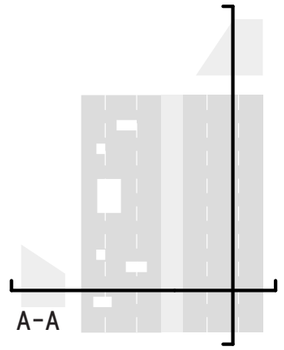


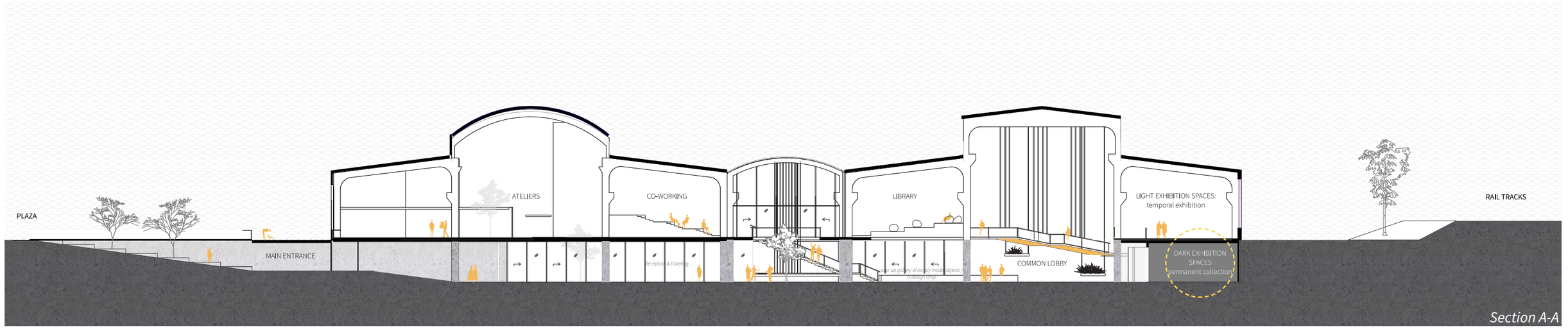
Axonometric drawing



Sketch drawing: View from the Entrance Lobby

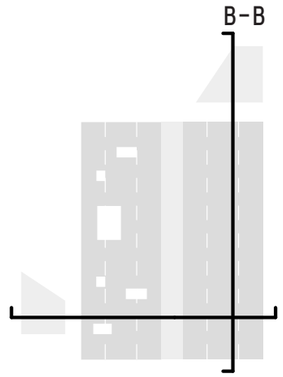
Experience of space starts from entering the building. Coming from the bright vibrant plaza outside, the visitor is stepping down to the dim and intimate lobby. There is only few objects and a tree raising to the light above. Where the light comes from?¨- the visitor would wonder. However, from the lobby (s)he goes to the exhibition spaces with no daylight: here all attention is concentrated on the history of the place…

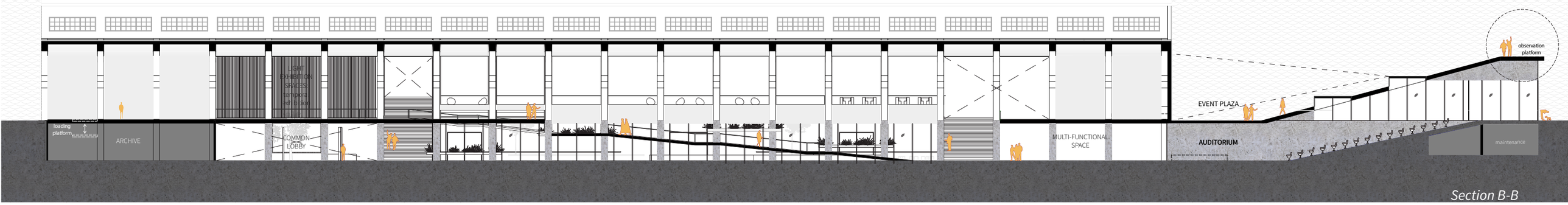




Section A-A

A spacious lobby where the visitor steps into after the exhibition rooms is the former machinery hall, left open and almost untouched. Only the hanging walkway and greenery that is taking over the concrete structure was added. The path is crossing the space diagonally, allowing the visitor to experience the former machinery hall in a new way by walking up to the street level, where the exhibition is continuing.

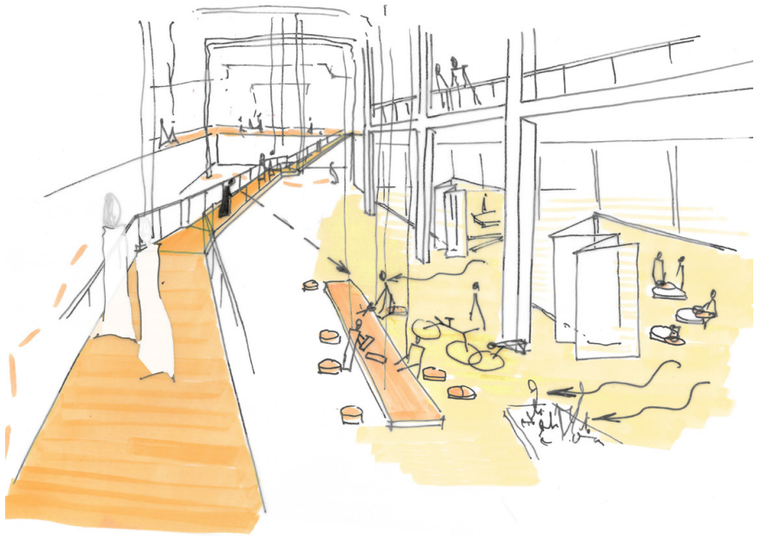




Section B-B

0 2 5 10 20

4.4 Encountering Makers and Making



Pop-up lobby is connecting cultural and communal spaces. It has an atmosphere of a public space. And therefore stimulates the first encounters between the visitors and daily users of the place ¨makers¨.

Not obligatory through a direct meeting, but from the walkway the visitor can now see a glimpse of a buzzing workshop. All the people below are doing different things. On the right there is a ceramic workshop, next, there is a guy trying to fix his bike, some people are discussing a project, while kids are experimenting with 3D printing…

Meet the makers closer:

In the pop-up lobby Matti sees Tove, his neighbour...

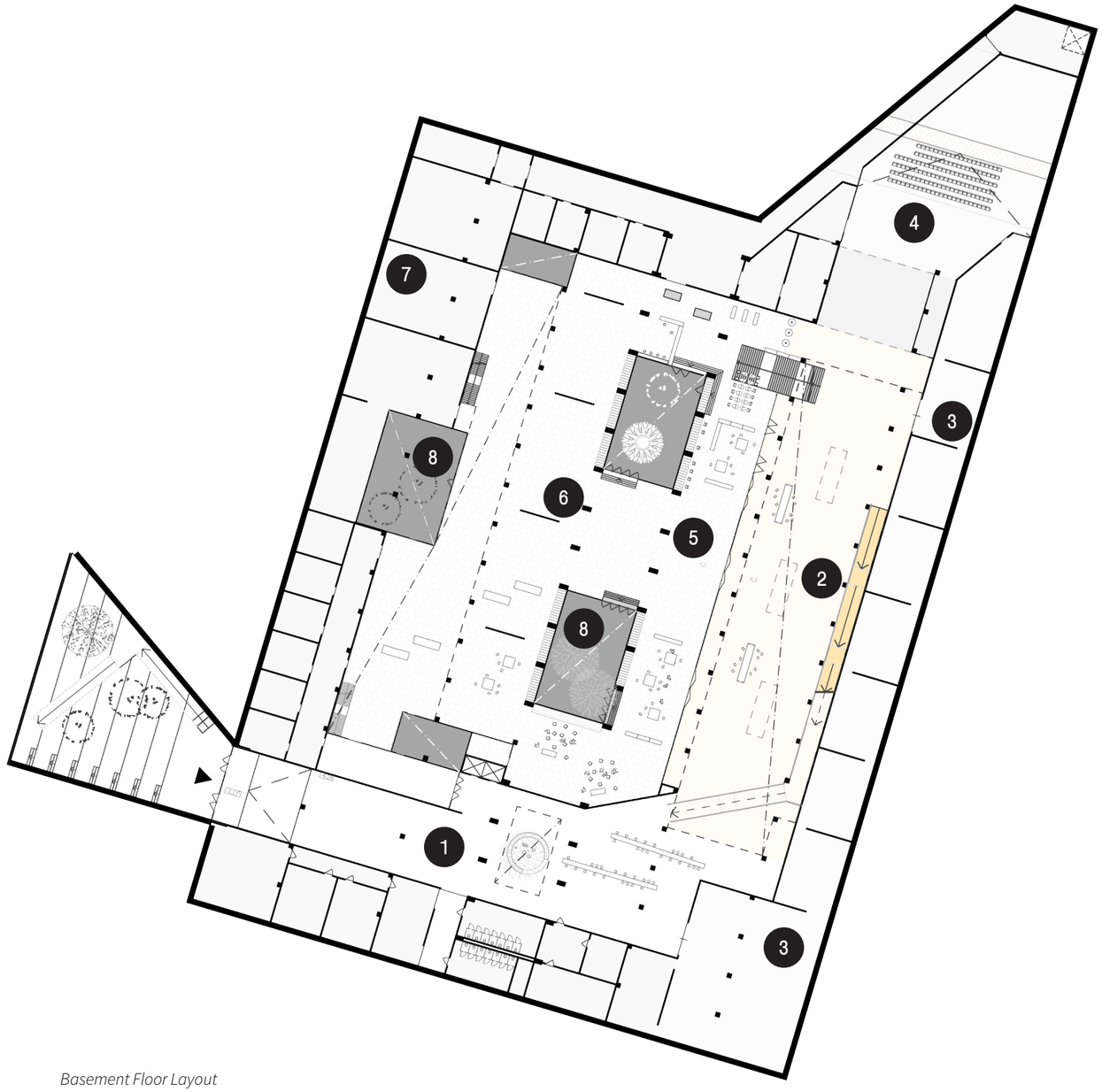
a starting maker
Tove, 29
making ceramics as a hobby with her friends on weekends

?

a craftsman

?

an artisanal maker



Basement Floor Layout

1.entrance lobby
2.pop-up lobby
3.exhibition spaces
4.learning spaces
5.craft workshop
6.limited-access workshop
7.secondary workshop spaces
8.open-roofed patio

0 2 5 10 20

At the working spaces the path goes above the busy working life happening in the workshop and studio platforms on different levels. However, some of the platforms makers decide to leave open, they are directly connected to the path. There the makers can meet their clients, have a lounge zone or use as a gallery or shop space to show and sell their works.

The visitor can walk through the path with understanding what happens in different studios and where the works he/she saw on the exhibition before were created. Besides, an interested visitor can freely step into the world of makers to meet and talk in person.

Meet the makers closer:

a starting maker
Tove, 29
making ceramics as a hobby with her friends on weekends

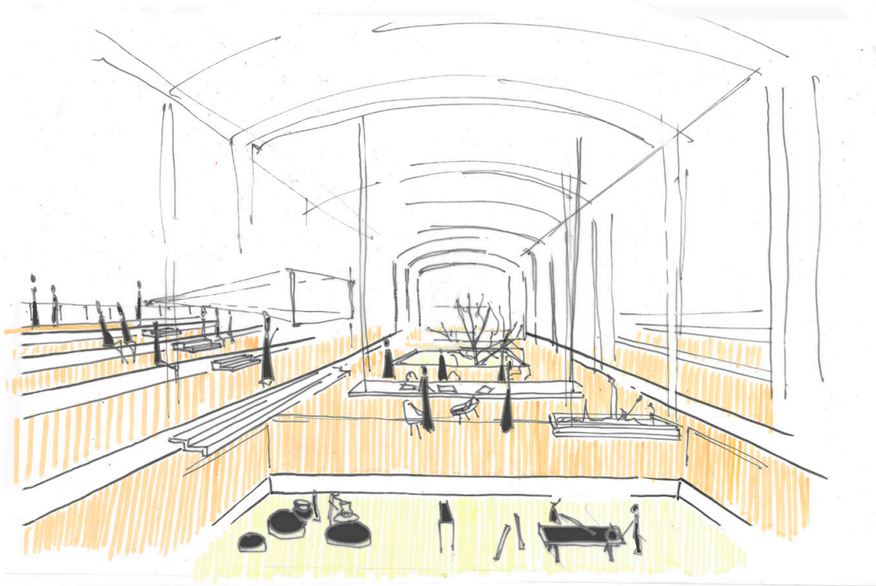
At the working spaces Matti talks to Arto, who is creating a new chair designed by Alvaro and Elisa

a craftsman
Arto, 52
a carpenter from Fiskars working on wooden furniture

artisanal makers
Alvaro, 38
Elisa, 33
an architect and a furniture designer

Ground Floor Layout

1."building-up" open space
2.studio spaces
3.open studio spaces
4.shared makers space (own desk)
5.exhibition spaces
6.community cafe
7.performance space
8."valley" patio
9.co-working, library, meeting spaces



After making the whole route the visitor would be happy to stop in an informal ¨valley¨ space to have a cup of coffee from a cafe, to read more about craftsmanship in a quiet mediatheque or to chat with friends in the patio under the trees. Overall, this space has the most communal atmosphere in the building, it is pleasant to stay.

At the ¨valley¨, the visitor would also see already familiar faces of local residents and professional makers discussing new initiative on improving the area. Luckily, the projects always welcome volunteers, so the interested visitor even can become a ¨maker¨ himself.

When everyone meets in one place:

visitors

locals and volunteers

craftsmen

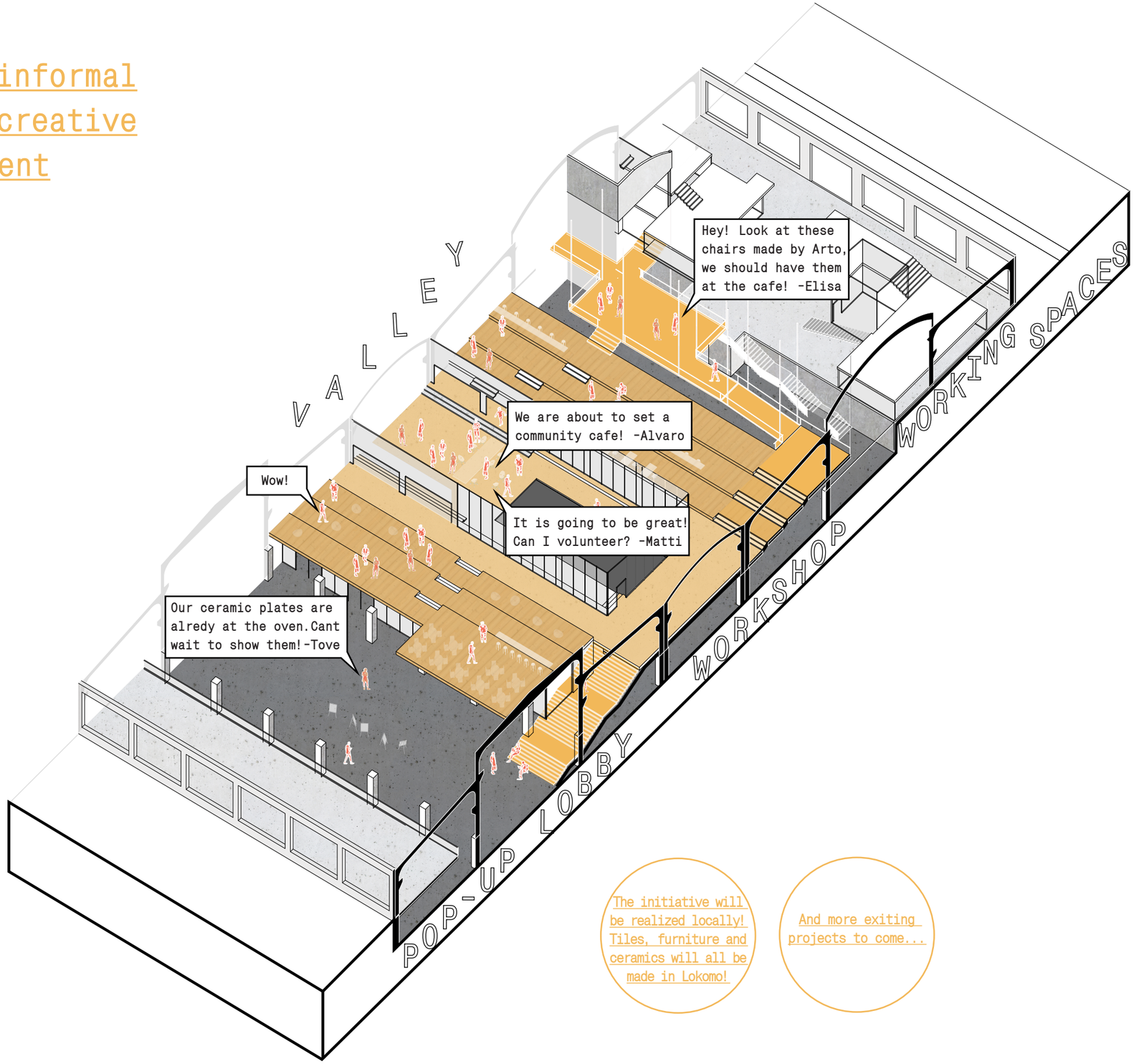
artisanal makers

New ideas are born.

Ground Floor Layout

1.”building-up” open space
2.studio spaces
3.open studio spaces
4.shared makers space (own desk)
5.exhibition spaces
6.community cafe
7.performance space
8.”valley” patio
9.co-working, library, meeting spaces

Diverse working and informal spaces together form creative collaborative environment

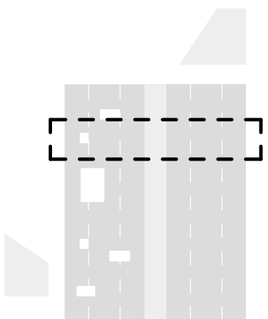


Finishing his journey Matti decides to stop at the valley. Here he again meets Tove, Arto, Alvaro and Elisa.

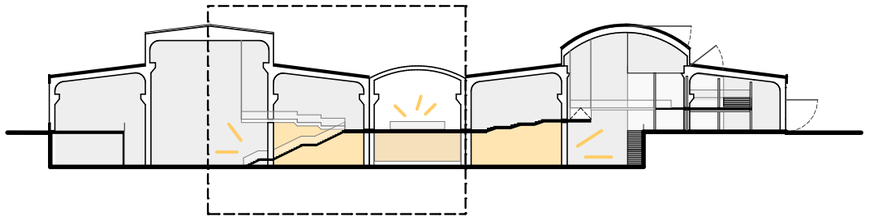
With local residents they discuss a new project: a community cafe.

The initiative will be realized locally! Tiles, furniture and ceramics will all be made in Lokomo!

And more exiting projects to come...



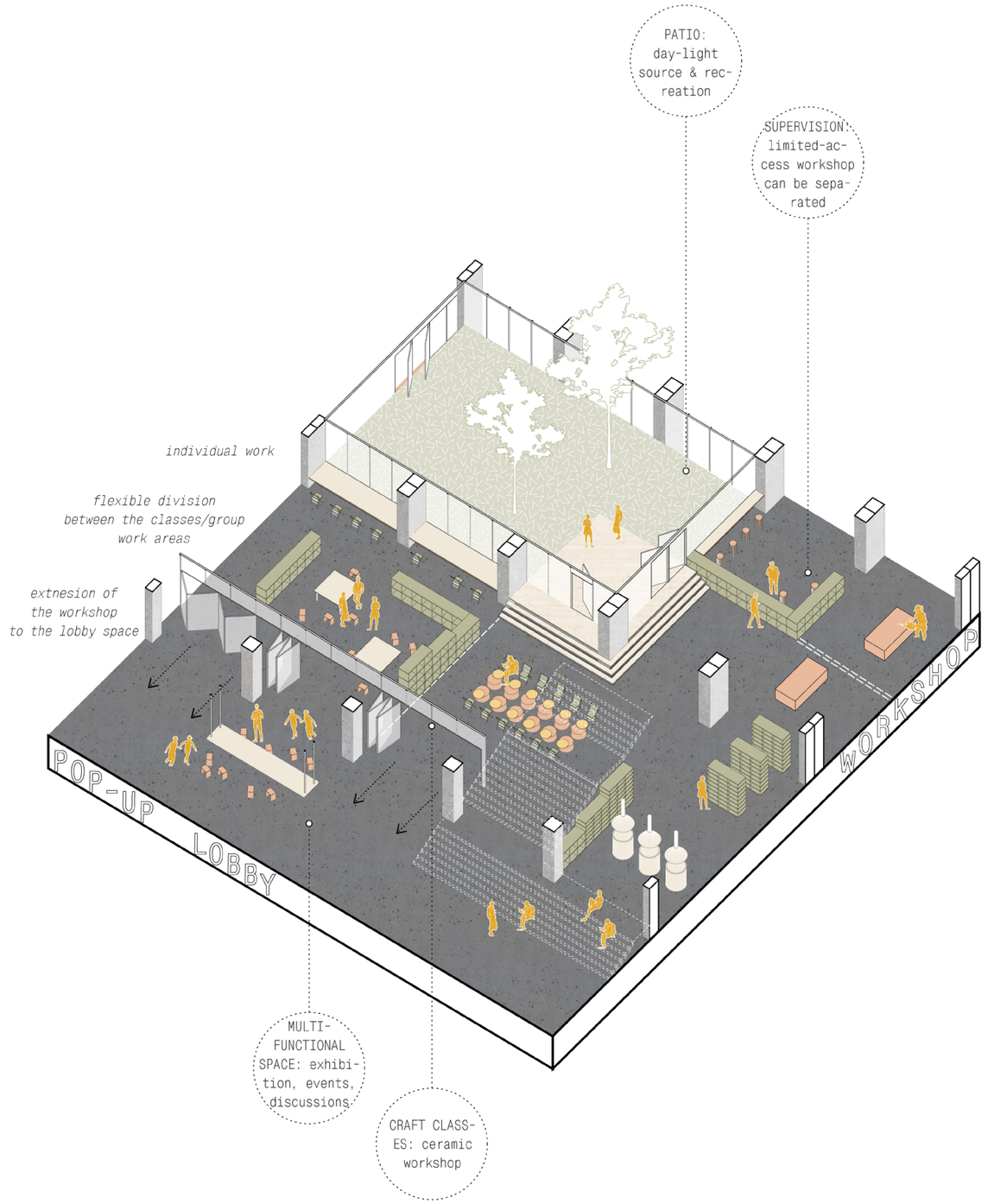
4.5 Where the making happens



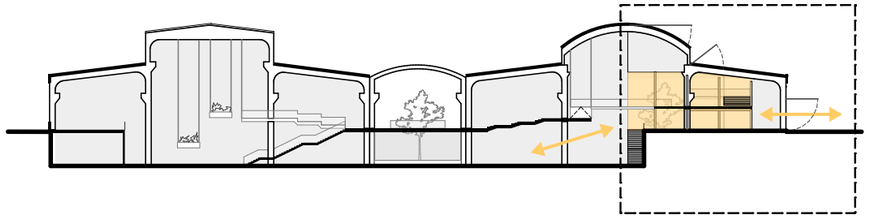
4.5.1 Community Workshop

The community workshop offers to the local residents free-access use of the work space or craft classes. Craft classes are flexible spaces clustered around two big open-roofed patios. The patios are, of course, a source of day-light, but here they also have a role of a soft separator between free-access workshops and workshops for skilled makers.

The workshop activities or related events can always be extended to the pop-up lobby, which is a multi-functional, communal space.



Perspective view from the pop-up lobby

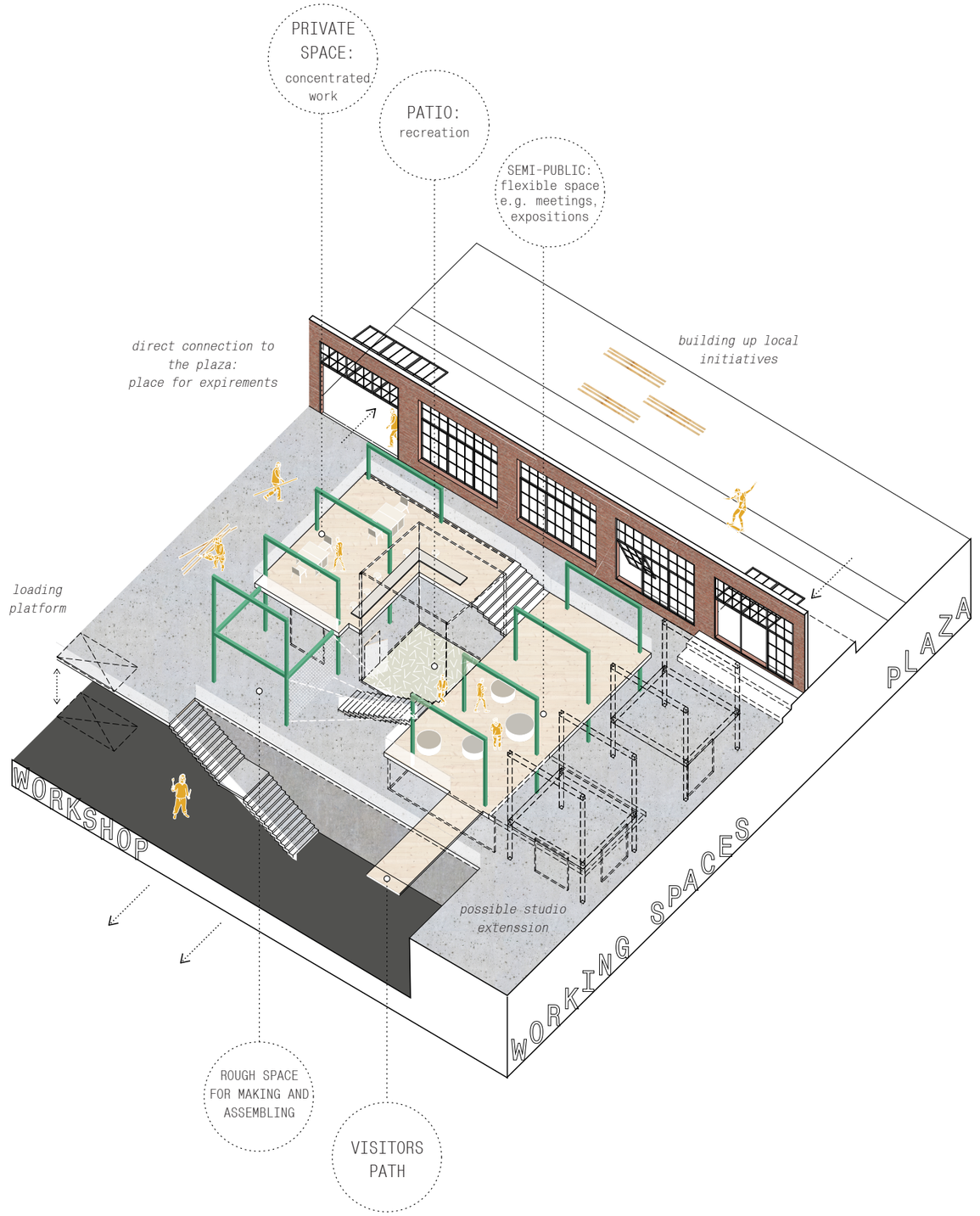


4.5.2 Studios and Ateliers

Working spaces for urban manufacturing are as flexible and collaborative as the process. The studios and ateliers are forming clusters based on similarities in work. Each cluster is sharing patio space and the semi-public platform connected to the visitors' path.

Clusters are designed to be used by teams of makers, but allowing different types of working simultaneously. The space on the street level, that can be separated or open to the free floor space between the clusters, is a ¨rough¨ space for working with wood, metal and other bulky making using machinery and tools. In the summer period it is open straight to the plaza for bigger-scale experiments. The ¨rough space¨ is connected to the shared workshop underground, so all the necessary tools and materials can also be borrowed from there.

Platforms for quiet working (e.g. office or atelier) are under the roof with the best daylight; they are separated with transparent partitions and acoustic curtains from the roughness. A flexible platform sits between the quiet working space and rough making level, so each cluster can decide either to use it as one more semi-private shared space or to open for a wider public and connect to the public route.



Perspective view from the visitors path towards the working spaces

C o n c l u s i o n s

The search of an alternative solution for sustainable development of post-industrial city areas, which would be able to preserve an authentic function, but to re-connect such areas to the city and to reshape the local economy, has shown the potential of urban manufacturing concept. Urban manufacturing has been proven to be a city activity able to make a positive local impact through the local economy, existing building environment transformation and community-making.

However, urban manufacturing presence cannot be forced, the analysis and case studies have shown that the breeding grounds for ‘making’ that can be laid by creating platforms for diverse inclusive local communities and professional ‘makers’ communities, city planning considering a place for ‘making’ in mixed-use urban areas and, finally, re-thinking an architectural typology able to meet the needs of both, locals and urban makers, in a specific place.

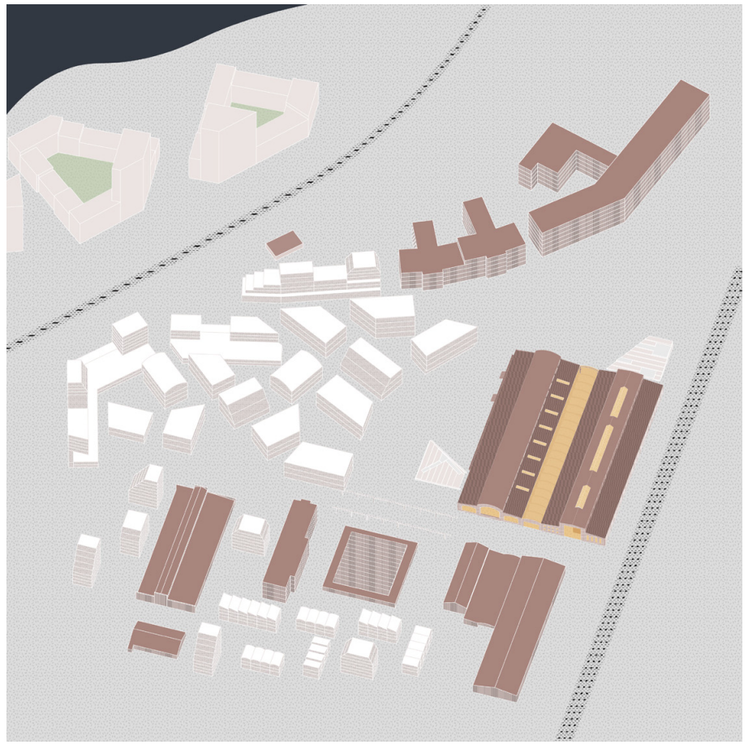
The re-use and transformation proposal for the old halls of Lokomo factory has been realised in the work considering the highlighted tools and resulted in specific design solutions. As seen an urban manufacturing hub typology was chosen as the most suitable for a future dense urban area of Hatanpää-Viinikka. As following from the analysis hub typology is characterised by a wide range of shared spaces, diverse work spaces and public programme:

1. In the project proposal the main shared space is the community workshop, which realises the idea of ´making´ as a central activity by its central location between the working spaces and public spaces, allowing exchange between the professionals and local residents.

2. Studios, ateliers and shared ‘making’ spaces offer ‘makers’ diverse conditions for work for professional and starting ‘makers’. In the design of the working spaces a variety of daily tasks and fields of makers were met by setting spaces of different kinds: ‘rough’ space for active ‘making’ and experiments, which is flexible, well-connected to the street and the workshop, and spaces for concentrated work, such as design and development, which are placed on the platforms with the best daylight conditions and overviewing ‘making’ from above. The professional working spaces form clusters around patios that share it and a flexible semi-public platform, which can be turned in extra workshop space, a pop-up shop, a gallery or a meeting room. This solution aims to solve affordability issue by sharing and to create collaborative environment by allocating ‘makers’ of similar fields.

3. The public programme, which consists of exhibition, learning and informal spaces, has been designed to attract local residents and increase a flow of visitors on a daily basis. The designed visitors path is channelling the flow of visitors in a way to create direct and indirect encounters with ‘makers’ and ‘making’ process. And the most informal «valley» space offers the best conditions for project discussions and local events that can result in down-top initiatives of an engaged community of the future area.

The described tools and solutions show how urban manufacturing can be supported through the architecture and how ‘making’ activity can be set within a neighbourhood of the post-industrial area development generating the diverse local economy and intense urban daily life of an engaged community.



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The making is ongoing.