

# Gårdshubben

**EXPLORING A NEW WAY  
OF DISTRIBUTING LOCAL  
FOOD TO CITYDWELLERS**

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# ABSTRACT

My master's thesis project is an exploration of how a new distribution model could be implemented in a Swedish local food chain in order to make local food accessible and attractive to a larger group of people.

The interest in local food is increasing rapidly in Sweden. Farmers are turning directly to consumers for increased profit and less pressure from the industry. At the same time consumers are looking to buy food directly from local farmers in an effort to feel secure that the food they consume is high quality and produced using organic farming methods. With the development of the internet and e-commerce a myriad of new initiatives have appeared to facilitate the trade of local food in a way that's fair for farmers and consumers alike. However the local food chains are still not adapted to work on the big scale it would take to meet the demand from Swedish city dwellers.

The thesis focuses on a user-centered design process, examining the needs and desires of farmers and consumers part of local food chains. Interviews and observations have been conducted of farmers and consumers participating in local food chains. The project has also been approached from a system level where several areas of design such as product-, service- and business design were touched upon.

The identified design opportunity/direction for the development of future local food chains is the adaptation of an emerging distribution model used by supermarket chains called "click & collect", in order to make more efficient use of resources while keeping the fairness seen in small local food chains. The result is a concept exploring how such a distribution model would look like in a local food chain context.

Gårdshubben (*The farm hub*) a service that enables consumers in Swedish cities to pre-order food online directly from local farmers. The food is later delivered by the farmers themselves to refrigerated lockers located in clusters on public places around the city. Consumers are then notified and free to pick it up at their convenience.

## LOCAL FOOD: DEFINITION

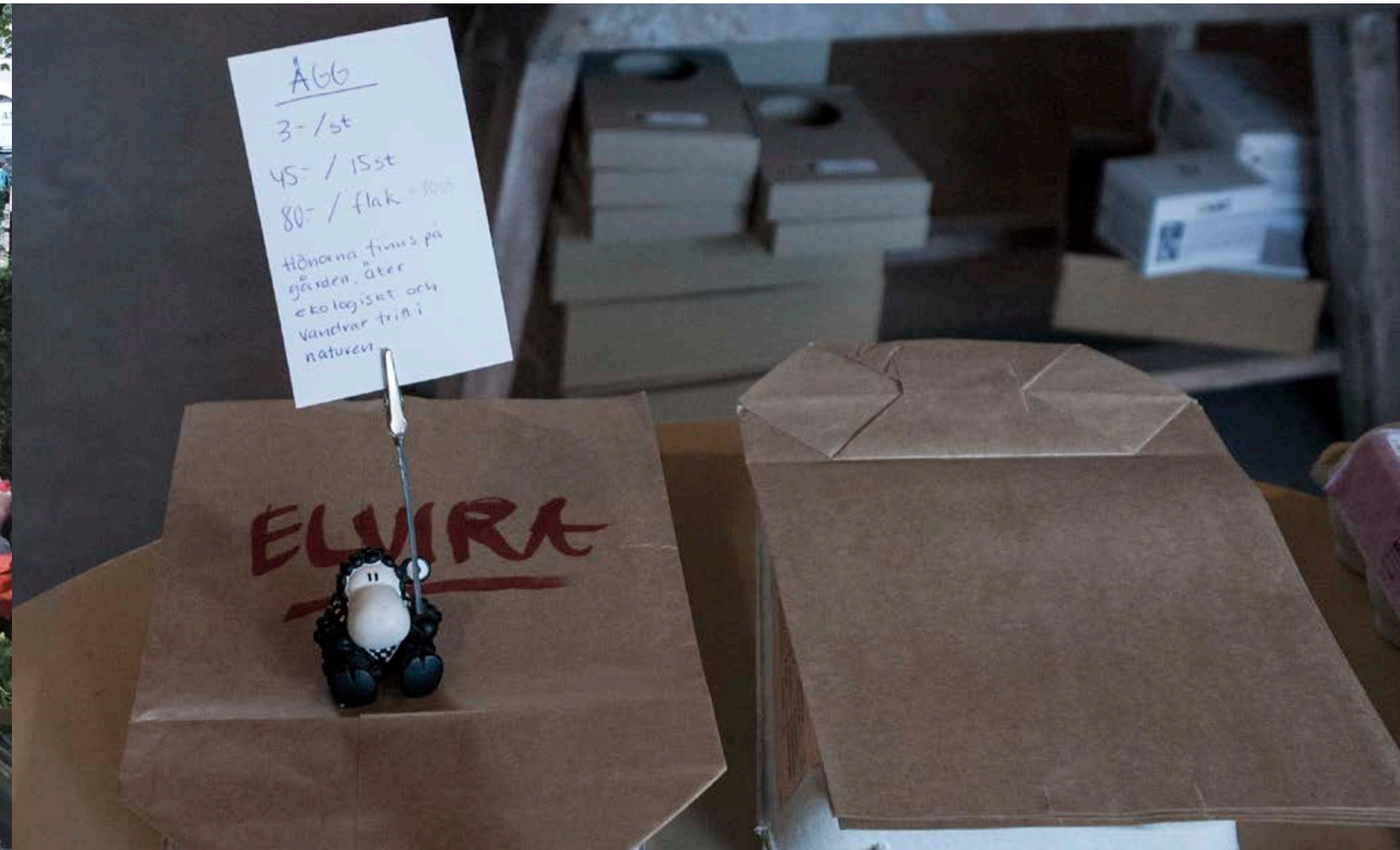


Local food can have different meanings. The distance between where a food is produced and where it's consumed is usually part of the definition even though the maximum distance allowed varies depending on who you ask. It's also often implied that local food is ecologically produced i.e organic food although this doesn't have to be the case. What I find even more interesting than geographical proximity is the close relationships between the actors that often shape local food chains. It can be described like this (Dunne et al., 2010):

"Local food represents an alternative to the global food model, a model which often sees food traveling long distances before it reaches the consumer. A local food network involves relationships between food producers, distributors, retailers, and consumers in a particular place where they work together to increase food security and ensure economic, ecological and social sustainability of a community"

Since it's more about the relationships between people in the local food chains I have loosely defined local food as food produced within a couple of hours drive so that it's possible for consumers and farmers to meet in person, for example when consumers visit a farm or when farmers drive into the city to sell their food at the farmers market etc.

## ORGANIC FOOD: DEFINITION



Organic food is the product of organic farming: a practice which aims to reduce harm on animals, the environment, the people working on the farm and the people consuming the food produced on the farm. This is normally achieved through minimizing synthetic pesticides and chemical fertilizers and letting animals live in a way that is most natural to them.

Foods sold to consumers as organic are commonly certified to ensure the consumer that the food indeed is produced using organic farming practices. There are different standards for these certifications all over the world so it doesn't make sense to create an exact definition of organic food. As I will explain later, consumers are increasingly buying directly from farmers that aren't certified but practice organic farming methods. Farmers and consumers make such close relationships that certifications are unnecessary. The image above, for example, shows a handwritten

note saying that the production is organic, and since consumers trust the farmers this is often enough.

For this reason I define organic food as any food which has been produced according to organic farming practices, regardless if the food is certified or not.

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- Torsten Laxvik, Cattle farmer, Jämtland, Sweden
- Mats Ådahl, Consumer, Stockholm, Sweden.
- Göran Göransson, Hvilands Lantbruksskola, Åkarp, Sweden .
- Consumers at KBHFF, Copenhagen, Denmark.
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- Märta Gunnarsson, Farmer, Resta gård, Örsundsbro, Sweden.
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- Organowood

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# INTRODUCTION

## PERSONAL INTEREST

“I saw this project as an opportunity to deepen my knowledge in food production and food chains in order to prepare myself for future food related projects.”

I've had a strong interest in food and cooking for many years. From being mostly interested in the eating experience, my focus has in recent years shifted to the origins of food – where, how and by whom it's been produced – and the effect those factors have on the health of humans, animals and the environment.

In recent years I have changed my food consumption to include more and more organic, swedish and locally produced food, simply because I want the highest quality and have found out that locally produced food gives you just that and at a price that is the best value for money. I was curious to see what would happen if I applied my design skills on this topic I am so passionate about.

Another reason for choosing this topic was that I would like to work with design in food related projects some time in the future.

From previous experience I know that questions about food often start with how the food has been produced and distributed and how important it is to have knowledge about how the economy and politics of food systems work. I saw this project as an opportunity to deepen my knowledge about food production and food chains in order to prepare myself for future food related projects.

## DEMARCATIONS

### Why I won't discuss why local and organic food make sense

In this project I have chosen to design for farmers and consumers that aspire to be part of local food chains where the food has been produced on small and medium scale farms using organic farming practices. By designing for this scenario I'm supporting this type of food production and that has been my intention.

The discussion about the most desirable/ideal/sustainable food production is of course an important one, especially for a project like this, but the purpose of this documentation has not been to present science and argumentation for a certain type of food production since that would have taken focus away from the actual project. Rather the focus has been on presenting my exploration and observation of Swedish local food chains and showing the concept that resulted from the insights and opportunities I found.

I will, however, state my opinion on what we should and shouldn't eat and how we should produce our food now and in the future, by refering to Michael Pollan's "The Omnivore's Dilemma: A Natural History of Four Meals" (Pollan, 2006) and his next book "In Defense of Food: An Eater's Manifesto" (Pollan, 2008) and "Defending Beef: The Case for Sustainable Meat Production" (Niman, n.d.) by Nicolette Hahn Niman. I also very much believe in Joel Salatin's farming methods for handling of livestock e.g. rotational grazing, and how he use technology in the form of electric mobile fences to create efficiency in otherwise traditional farming practises. A swedish equivalent to Joel Salatin is Magnus Nyman Lindö, who builds his own mobile pig huts at his farm Källunda Gård. I believe these people (amongst others) and what they push for are closer to a sustainable agriculture than we have ever been.



Joel Salatin and his mobile chicken hut (Wikipedia, 2009)



Magnus Nyman Lindö's mobile pig hut at his farm Källunda Gård



# BACKGROUND

## HISTORICAL BACKGROUND

Since 1945 after WWII, when the mechanization of Swedish agriculture took off, the development has moved toward a more industrialized large scale food production. As Iréne A Flygare and Maths Isacson explain in the book "Jordbruket i välfärdssamhället" 1945 - 2000 (Flygare and Isacson, 2003) it's a development with many contributing factors:

"The Swedish post world war agriculture follows, for the western world, a typical pattern. Population growth, economic growth, technological and scientific development and changes in consumption has forced farmers to rationalize their production. Global competition and over-production have threatened their future in the profession"

Reading Flygare and Isacson's review of this period, it is apparent that the value we as a society put on food and food production has decreased during the seven decades since the end of WWII, which in effect has created a unfavorable situation for Swedish farmers. In the light of this development, there's no wonder that farmers constantly have found themselves unhappy with their situation. Judging by the frequent debate articles in newspapers where farmers complain, it's clear that this also is the case today.

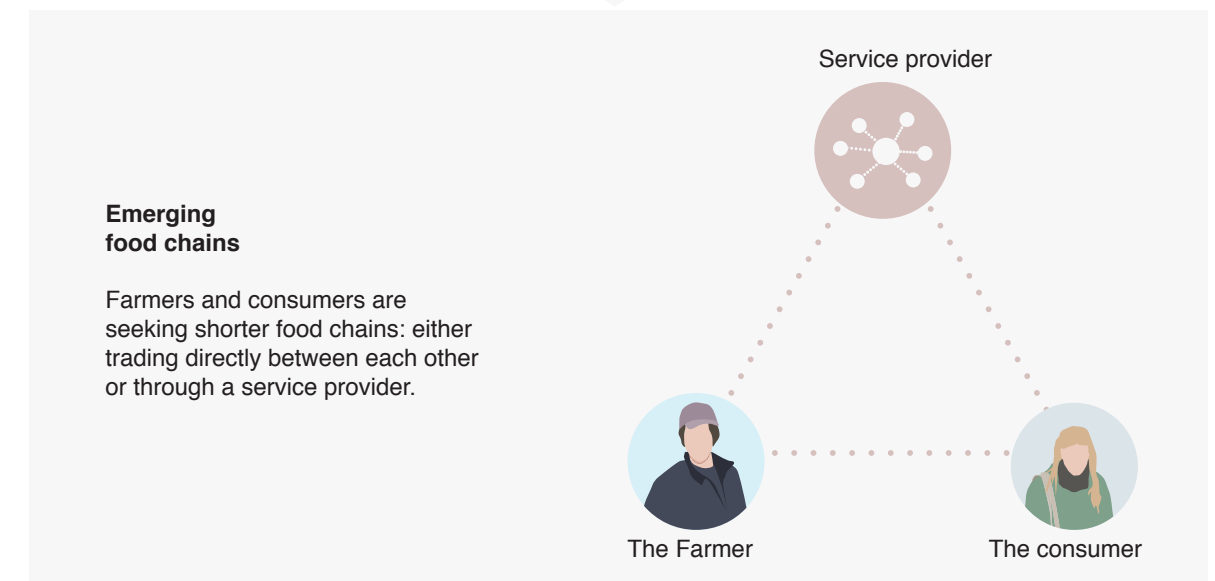
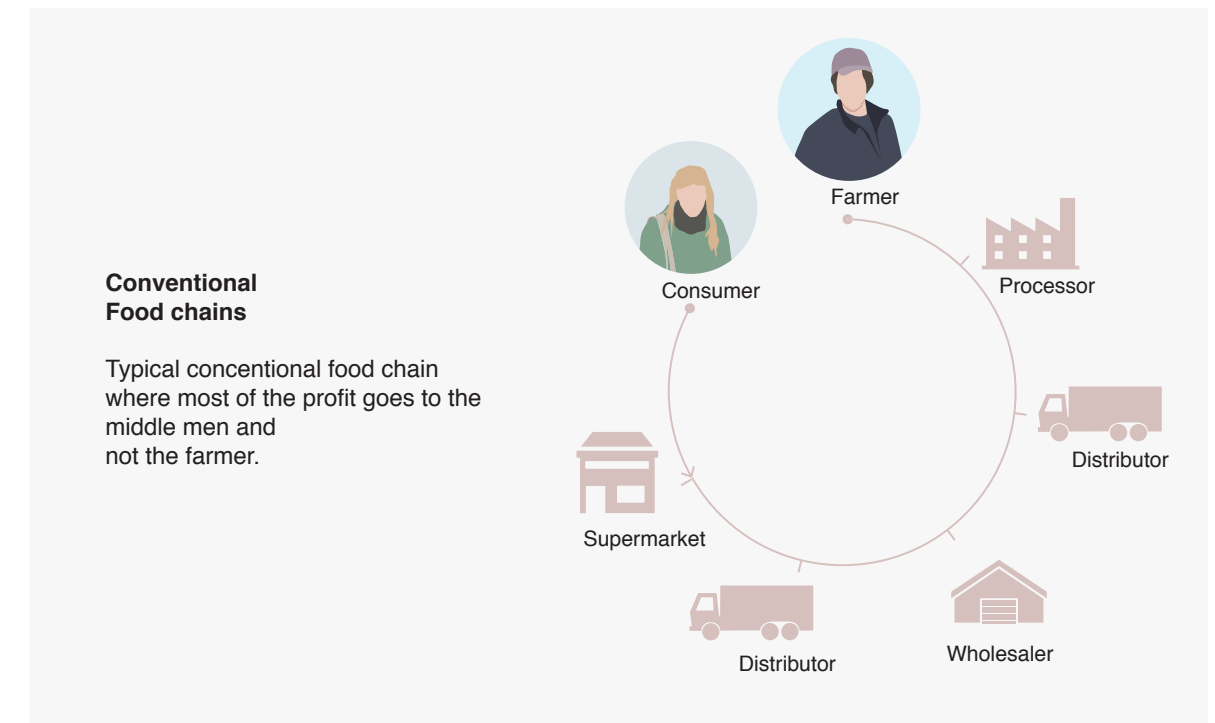
A recent article in newspaper Expressen (West, 2015), written by dairy farmer Paulina West, is typical for many of the sentiments expressed by farmers in recent years. She writes:

"We farmers are on our knees. Profitability is at the bottom and we are worried constantly... We get reduction on top of reduction of the price of milk, which today is lower than it was thirty years ago... Each day one farmer quits and now the situation is so unsustainable that I fear it will escalate if nothing changes. We have to get paid for our food. Now we don't. We can't make ends meet. To see the retail chain's own brands increasingly fill up the shelves in the supermarket is like a punch in the stomach. Cheaper food is being imported. We in Sweden have the most strict regulations on animal welfare in the world, plus other regulations we need to relate to, which means our milk is more expensive to produce than milk in other countries. Still we're supposed to compete on the market with those products at those prices"

**"We farmers are on our knees. Profitability is at the bottom and we are worried constantly"**

Dairy farmer Paulina West (West, 2015)

## A PARADIGM SHIFT



## CHANGING FARMERS

### How farmers are looking to sell directly to consumers

Despite many discouraging stories I have encountered like the one above, I think there is call for optimism. It seems we are in the middle of a shift of attitudes amongst farmers. Just over the course of this project several debate articles by farmers have been published where the author argues that farmers need to take matters in their own hands if they want to change their situation. An example is an article by Adam Arnesson (Arnesson, 2015), organic sheep farmer and food entrepreneur, who argued (also in Expressen, affected by Paulina's article) that farmers need to stop complain and instead start to sell directly to consumers if they want a fair pay, instead of relying on big corporations and the government coming to the rescue:

"I'm tired of hearing that we aren't getting paid for our fantastic products, that someone has to do something. That someone often is the government or that dairy corporation where oneself is a member, and something is not seldom some form of subsidy. If someone refuses to pay for what you want to sell them the reasonable measure ought to be selling to someone who wants to pay and then make sure to charge them, not getting paid. There are more and more examples of farms that sell their milk directly

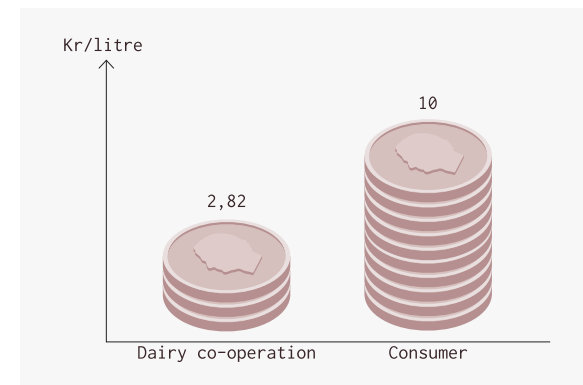
to consumers. Over and over people state that they would pay more for the milk if only there was an opportunity. Make sure to give them that opportunity!"

And many farmers are doing just that. Farmers have commonly sold part of their production directly to customers passing by their farm in the past, this is nothing new. But the ways in which the foods are sold - that's what's new. An example of that is the story about Kåhøgs farm, told by Petter Berndalen (Berndalen, 2015), and how they in april this year bought two machines for self service of milk by customers. The machines work like a vending machine and already they sell up to 1000 litre/day directly to consumers for 10kr/litre which should be compared to the 2,82kr/litre they get when they sell to Arla, Swedens largest dairy co-operation.

Even though this example still is an exception rather than the rule I believe this is a trend that will only get stronger. Seeing these alternatives compared it's easy to see the potential for farmers in selling directly to consumers. The question that arises is why this trend hasn't started sooner? Why now?



Customers serving themselves from the milk vending machine at Kåhøgs farm (Berndalen, 2015)



Number of Kr/litre Kåhøgs farm makes by selling to Arla vs directly to consumers.

## CHANGING CONSUMERS

### The rising consumer interest in local and organic food

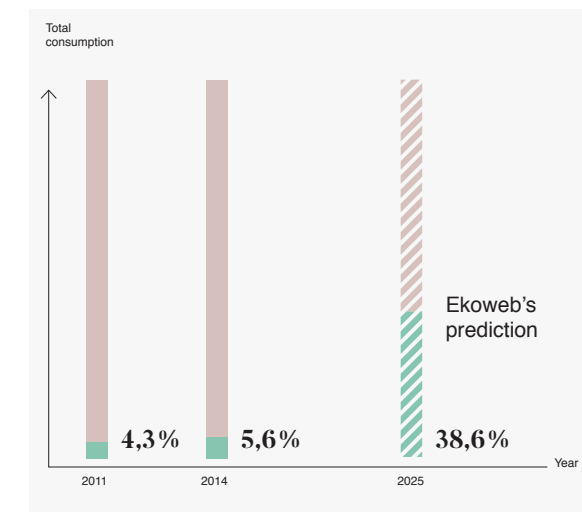
Swedish consumers are increasingly aspiring to eat local and organic food according to a study (Sverige - det nya matlandet, 2014) produced on behalf of the governmental organization of agriculture in Sweden: Jordbruksverket. The study reports a clear trend from 2011 to 2014 regarding people's food habits:

- Significantly more people choose food they know is produced with consideration for animals and the environment.
- Significantly more people choose Swedish locally produced food and Swedish organic food.
- Significantly more people believe that local (Swedish) animals are treated better.
- Significantly more people are paying more for foods produced in Sweden.

Similar tendency can be found in a study by Ekoweb (Ekologisk livsmedelsmarknad, 2014), which states that the amount of organic food sold in Sweden increased by 38% from 2013 to 2014. This has to be considered a strong trend but it still only makes up a small part of the total food consumption (an increase from 3,8% in 2013 to 5,6 % in 2014). Ekoweb.nu predicts that if the trend continues the amount will have risen to 38,6% by 2025.

To my knowledge no study has been done where the amount of both locally produced and organic food consumed in Sweden has been measured, but a guess would be that the percentage is a lot smaller than the 5,6 % that organic makes up. Even though the consumer interest in local and organic food is all time high, the amount of consumed food that is organic and locally produced is still a drop in the ocean compared to the overall consumption. What is the reason for this gap between what people aspire to do and what they actually do? My intuition tells me it's partly that there simply isn't enough of this food available and partly that there isn't yet a food chain optimized for consumption of this type of food.

If the trend continues, which I believe it will, it means there is not only a necessity to produce more organic food in Sweden to meet the increasing consumer demand. It also means a challenge in developing food chains and business models that are beneficial and convenient for consumers and farmers alike that can be scaled in order to reach a large number of people.



## DESIGN INTENT AND OBJECTIVES

My intention for the project was to take a human centered design approach to local food - going out in the field, talk to people and observe them in their environment - in order to discover a design opportunity.

Food chains are complex and I felt I didn't know enough about the topic to be able to focus my investigation on a specific part of a food chain e.g. production, distribution, packaging, selling, storing. My approach was therefore to first investigate local food chains from a system level and then zoom in on different actors (farmers, consumers, entrepreneurs, experts etc.) in order to understand their reality.

Since the project scope was rather broad I didn't want to decide on a specific type of outcome for the project but rather investigate the topic with an open mind to see where it led me. I was open to the possibility that the project could result in various things (a product, a service, a graphic design, a business idea etc.), but I hoped I would find an opportunity to design a physical product. Although this was my aim was, I was also open to a combination of several of the above.

To kick off the project I visited Magnus Nyman Lidö at Källunda Gård - an organic farm in the north of Skåne, Sweden - to learn from an expert and get first hand experience of what a work day in the life of a Swedish farmer might look like (Nyman Lidö, 2015). I chose Magnus because of I had heard he was forward thinking innovative. I also knew from experience that the pork he produced was of high quality.

Magnus told me about the difficulties of being a farmer in Sweden today: the pressure from the industry and the low profit from selling the food through the conventional food chain where most of the money goes to the retailers. I decided I would design for the benefit of farmers as much as the consumers.

Being a consumer, I had also experienced difficulties, or rather inconveniences. Buying local food had proved demanding of time, work and planning. I had also made the observation that local food was increasingly popular in theory but didn't seem to be that big a part of people's consumption in reality. Considering how positive my own experience of local food had been, this seemed like a contradiction that I wanted to understand.

The insights that came from the visit to Magnus's farm and my own experiences and observations led me to raise a couple of questions:

- **What would an ideal local food chain be from the farmers' point of view?**
- **What type of local food chain would be ideal from the consumer's point of view?**
- **What local food chain/service would be attractive and beneficial enough for both consumers and farmers to work on a large scale?**

The following objectives were developed from the questions above:

- **Understand the industrial food production in Sweden and what has been driving the development**
- **Understand the rising interest in local and organic food**
- **Understand the local food movement and which trends are driving it forward**
- **Investigate Swedish local organic food chains and find out what drives them**
- **Get to know the actors of local food chains: Learn about their needs and aspirations and what's important to them.**

**What local food chain or service would be attractive and beneficial enough for both consumers and farmers to work on a large scale?**

## PROJECT CONTEXT

The interview with Magnus Nyman Lidö at Källunda Gård gave some additional insights:

### Food production calls for local solutions

Food production solutions are depending on different factors such as: geography, climate, socio-economics etc. and what works in one country might not work in another. According to Magnus, even the conditions in one village compare to the next one can be different enough to call for two unique solutions.

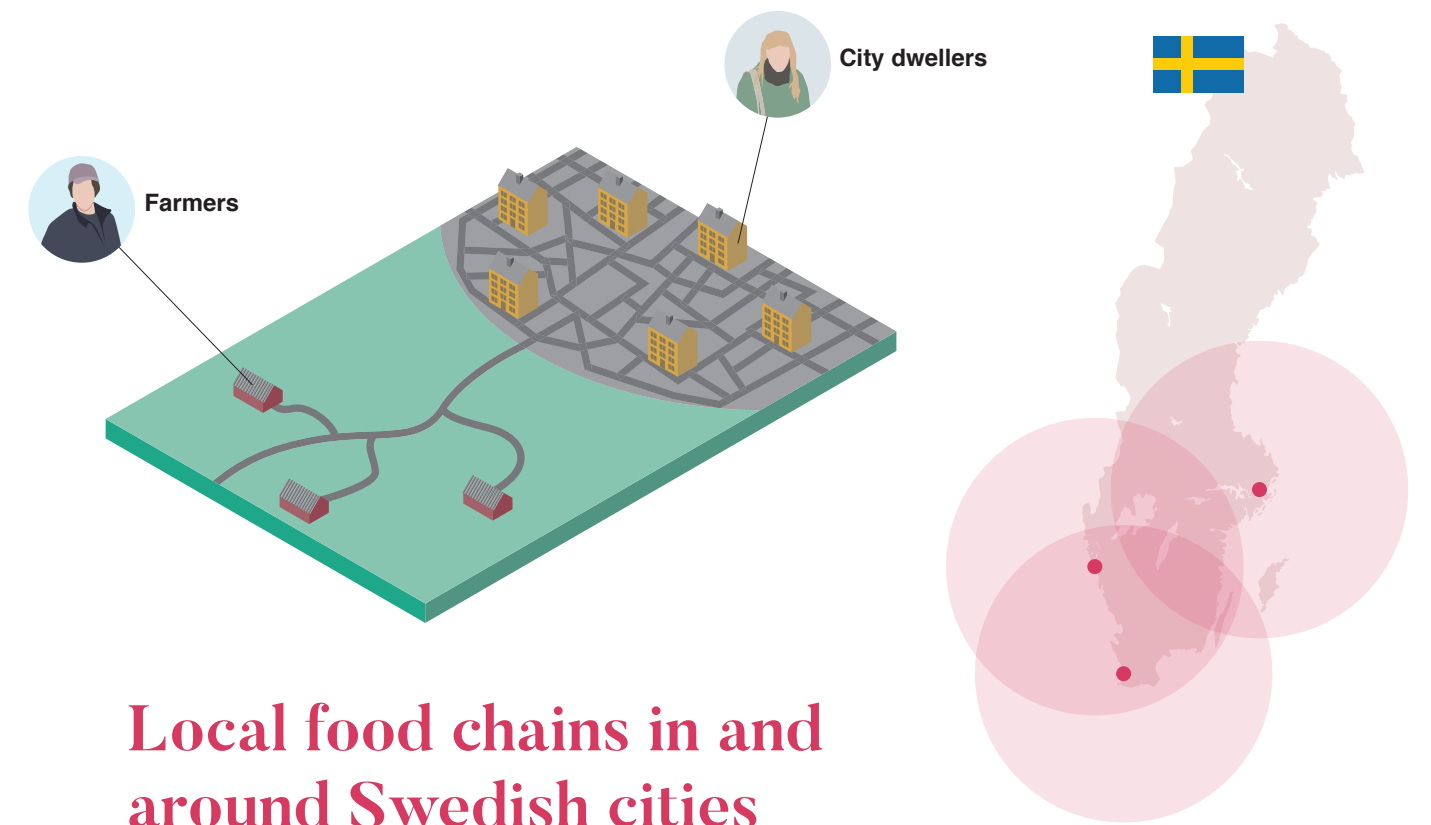
### People you design for should be as close as possible

To really understand people it's important to visit them and observe them in their everyday life, so the closer these people are to you the easier it will be to conduct the research.

### The trend of local food is strongest in cities

Magnus told me that the majority of his customers were people living in Malmö, which is the nearest city. According to him, the people living in the area are not that interested. This didn't come as a surprise since my feeling is that trends like these often originate in cities.

**Taking these insights into consideration I decided to design for the people forming local food chains in and around Swedish cities: the city dwellers hungry for local and organic food and the farmers located close to the cities.**



**Local food chains in and around Swedish cities**



## METHOD

## SECONDARY RESEARCH METHODS

To get a basic understanding of local and organic food and food production I relied on scientific papers, articles and reports I found online.

To get an overview over local food chains and find out what's going on in the forefront I scanned popular media articles and blogs after examples. My initial idea was to mostly research Swedish local food chains, however I quickly discovered, that other countries have more evolved local food chains and should therefor be studied in order to learn and be inspired. For this research I observed the web sites of different food services in USA, UK, France and Germany.

## PRIMARY RESEARCH METHODS

The primary research mainly consisted of interviews and observations with different actors in Swedish local food chains that was conducted in and outside of Malmö and Stockholm. The exception was a trip to Copenhagen, Denmark to visit the Consumer Co-op KBHFF.

For each interview and observation I got new insights so my strategy was to go back and forth between different types of actors in order to move forward.

## STRATEGY

After the initial secondary phase of research about different local food chains I mapped out the different local food chains, including both traditional ones and emerging ones.

Some of them I visited to do interviews and observations and some I investigated remotely through telephone interviews. Others (e.g. in other countries) I just read articles about. I also tried to take part myself in as many food chains and different services as possible in my day to day food consumption.

### FARMERS



Märta Gunnarsson, Farmer, Resta gård,



Johan Callmer, Potato Farmer, Gessie potatis



Magnus Nyman Lindö, Farmer, Källunda Gård, Källunda, Sweden.



Tommy Gustavsson, farmer, Ångaholms Gård, Lönsboda, Sweden.



Karin Janson, Tvetalund Lantbruk, Köping, Sweden.

### SERVICE PROVIDERS



Anna Lynam, founder Min Farm.

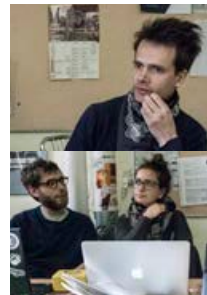
### CONSUMERS



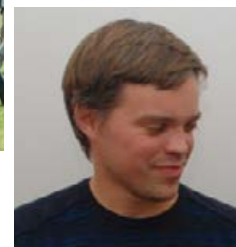
Min Farm customer



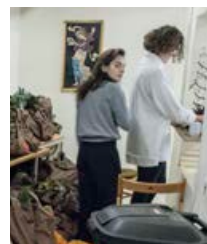
Petter Hanberger, founder of Min Farm.



Staff at KBHFF, consumer co-operation

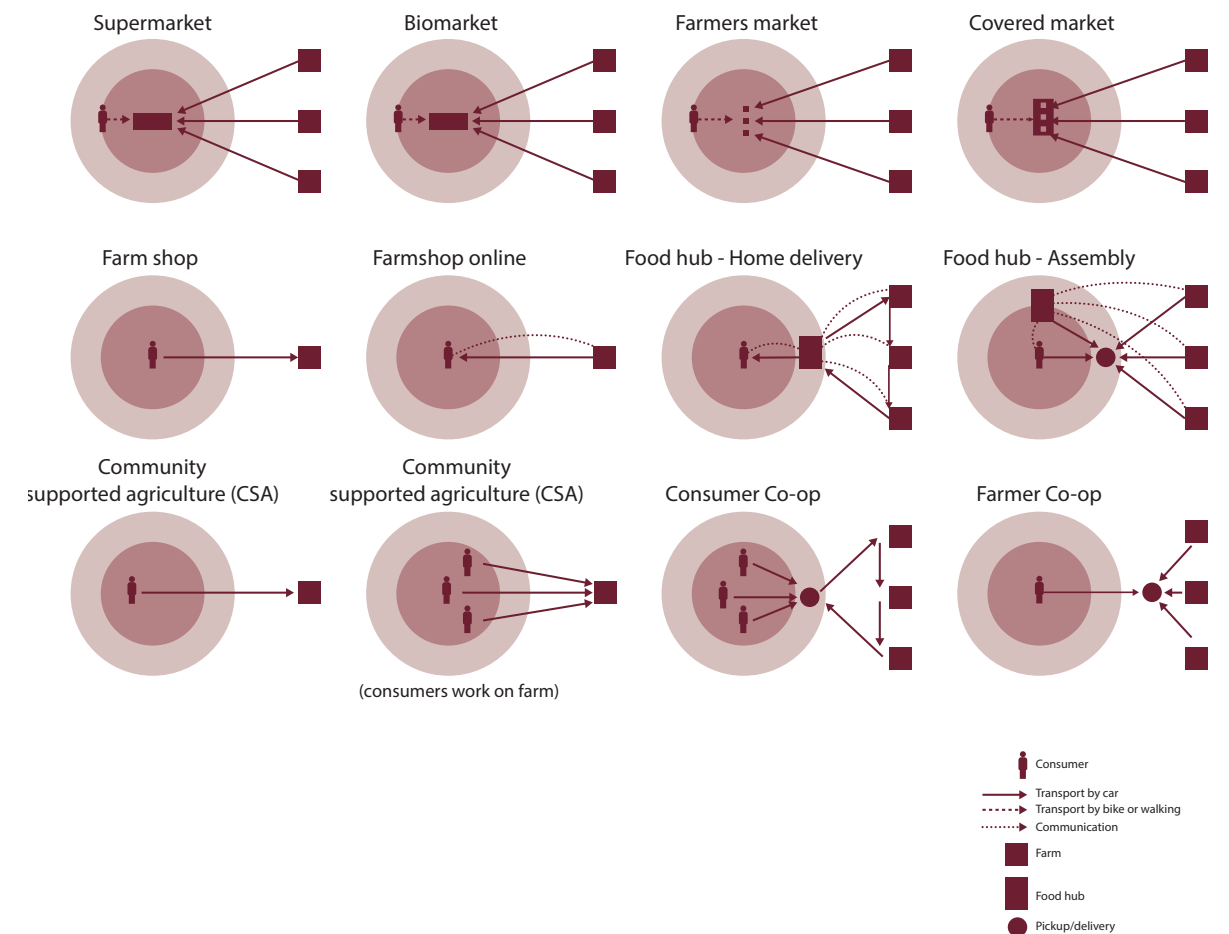


Mats Ådahl, Stockholm.



Consumers at KBHFF, Copenhagen, Denmark.

Some of the people I talked to





# RESEARCH

# THE LOCAL FOOD MOVEMENT

## LOCAL FOOD CHAINS AND THE INTERNET

The advancement of Internet and e-commerce has affected all trade of food. To shop food online has become increasingly popular. People can sit in the comfort of their home and order a bag of groceries, often including recipes, that gets delivered to their doorstep. Local food chains has also become increasingly internet driven which has made it possible for consumers and farmers to connect directly with each other in ways that was not possible before. With services and applications constantly becoming cheaper and better nowadays, it's relatively easy for people to set up a site where consumers can order food. Single farms can find new markets by having an online farm shop. Online farm shops also help farmers who have formed co-operatives and sell their food under one brand. The opposite, where consumers go together in co-operatives to buy food from farmers, has also increased thanks to this development.

These initiatives are all great: they push the movement forward by exploring new ways of trading local food; they inspire others to join or to take own initiatives; and of course they improve the lives of the people that are part of them. The down side is that they are not adaptable to grow to a large scale it seems. A reason for this is that co-operatives all demand volunteer work from their members outside of their regular job. This explains why they aren't interested in big scale since simply wouldn't be manageable. An example was the consumer co-operative KBHFF I visited, where the staff said that the current member number of a couple of thousands was enough for they are doing: providing themselves and their friends with high quality organic vegetables.

It's clear that local food initiatives driven by consumers or farmers are a good thing, but it would need to emerge large number of co-operatives in order to provide local food to all the consumers that are interested. I think it's more probable that businesses will be the solution to this, since growth is in the nature of a business.

The last ten years or so a new type of business has emerged. One that enables consumers to buy food directly from local farmers; but on a large scale. The great thing about these new businesses, except that they are passionate about food, is that they are driven by creating business which is fair for both farmers and consumers. These businesses fall under the category food hubs and are almost like online farmers markets that are managed by a 3rd party.

## FOOD HUBS

According to the USDA (Regional Food Hub Resource Guide, 2012), a food hub is a "business or organization that actively manages the aggregation, distribution, and marketing of course-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand.", but as I will explain later, food hubs manage aggregation and distribution in different ways.

The food hub makes money by taking a percentage from the farmers' profit. How much varies but it's usually around 10-30% depending on how involved the hub is in the distribution, but the percentage is often lower than most other business models which is an evidence of the fairness that food hubs practice.

### Benefits/motivations for consumers

- Get high quality fresh organic food
- The food is relatively affordable
- Know that the food is produced by organic farming practices
- Support the farmer and swedish food production
- Secure unique foods that there aren't enough of to go around

### Benefits/motivations for farmer

- Get Increased profit
- Receive less pressure
- Are in control of production
- Get appreciation from consumers

## HOW DO FOOD HUBS WORK?

A food hub works in general like this:

### 1. Pre-order online

Consumers choose between available locations and delivery date, and place order for their chosen foods.

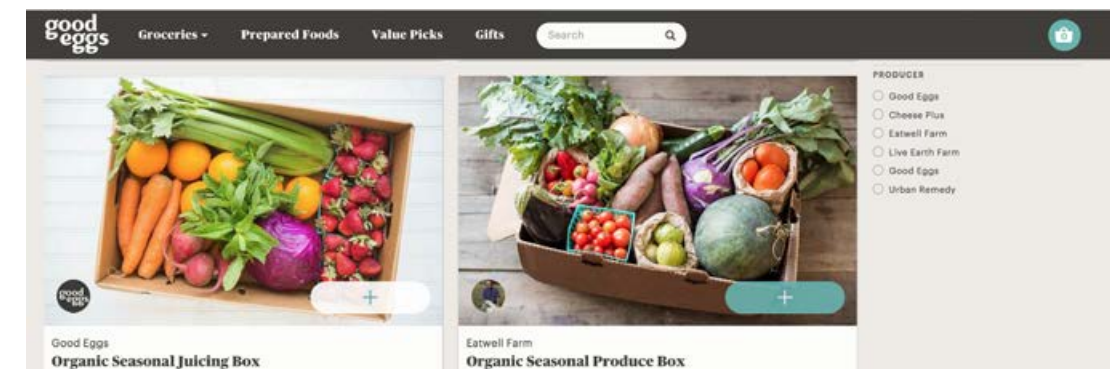
### 2. Production

There is usually a last order date for a certain delivery date. After that the farmer receives the final order and can produce the food so its ready for delivery in time.

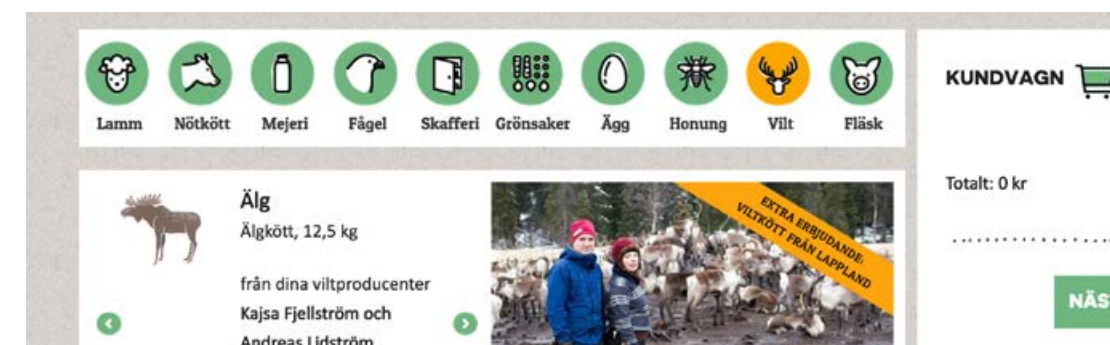
### 3. Distribution

On the agreed upon delivery date the food is delivered either to a place where consumers pick it up or to people's homes.

Administration like payments, orders, communication, notifications etc. is handled running by the company.



American food hub Good Eggs



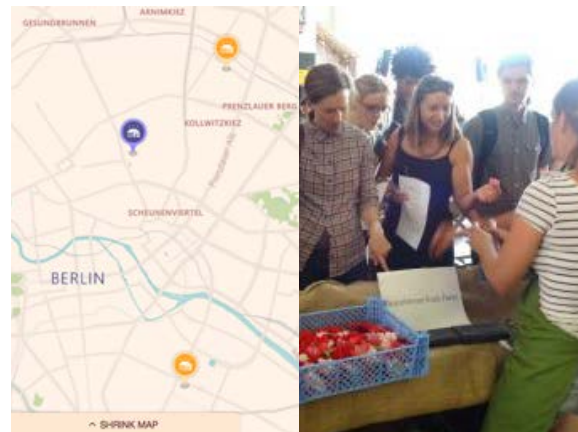
Swedish food hub Min Farm

## FOOD HUB DISTRIBUTION MODELS

Food hubs operate in different ways. Most apparent is the difference in aggregation and distribution. Two extremes can be sensed in regards to these factors: **The assembly** could be seen as letting farmers and consumers do as much as possible on their own,

### 1. The assembly aka multiple pick-up points

One type of distribution model is one I call "The assembly" (inspired after the food hub "The food assembly"). The hub acts merely as a co-ordinator of distribution and never actually touch the food. Instead they arrange an assembly where farmers and consumers meet to exchange pre-ordered foods. This takes place in multiple locations around the city.



- ♥ + Pretty convenient for consumers if the pick-up points are within reach by bike or public transport
- ♥ + Efficient since everybody meet up at the same time
- ♥ + Inspiring to everybody who meet up in person
- ♥ + Synergy effects when consumers discover new farmers

- ⚡ - Not flexible for consumers since they only can pick up during a ca 2 hour window
- ⚡ - Not so efficient use of time

**No current food hub distribution model is optimal in terms of efficiency, cost, time and convenience.**

**I decided to keep looking for other distribution models.**

like a self service. **The home delivery** is doing the opposite by taking care of everything that happens after the food has been produced until it arrives at the consumer's doorstep.

### 2. The home delivery

Another type of distribution model, used by Good eggs in San Francisco for example, is the home delivery. Good Eggs pick up food from the farms, collect everything in a main storage facility. There they pack everything according to the pre-orders. The food is later delivered to people's homes



- ♥ + Little work for consumers

- ⚡ - Added costs: less profit for farmers and/or higher price for consumers
- ⚡ - No interaction between producer and consumer
- ⚡ - Doesn't inspire others

## REFRIGERATED PARCEL LOCKERS FOR GROCERY PICK-UP

The massive retail trend Click and Collect "whereby online orders are picked up from a physical location rather than being delivered to a purchaser's home, is likely to become an increasingly fundamental part of the e-commerce offer..." according to Deloitte (Click and collect booms in Europe, 2015). Big supermarket chains like Waitrose and Cole have started using click and collect offering customers to pre-order groceries from their store and later pick it up in refrigerated parcel lockers. Two benefits of this model is convenience in flexible pick-up for the consumer and avoiding the cost of home delivery.

Could the refrigerated parcel lockers in Click and Collect used by the supermarket chains be used in local food chains since they both share the same online pre-ordering model?

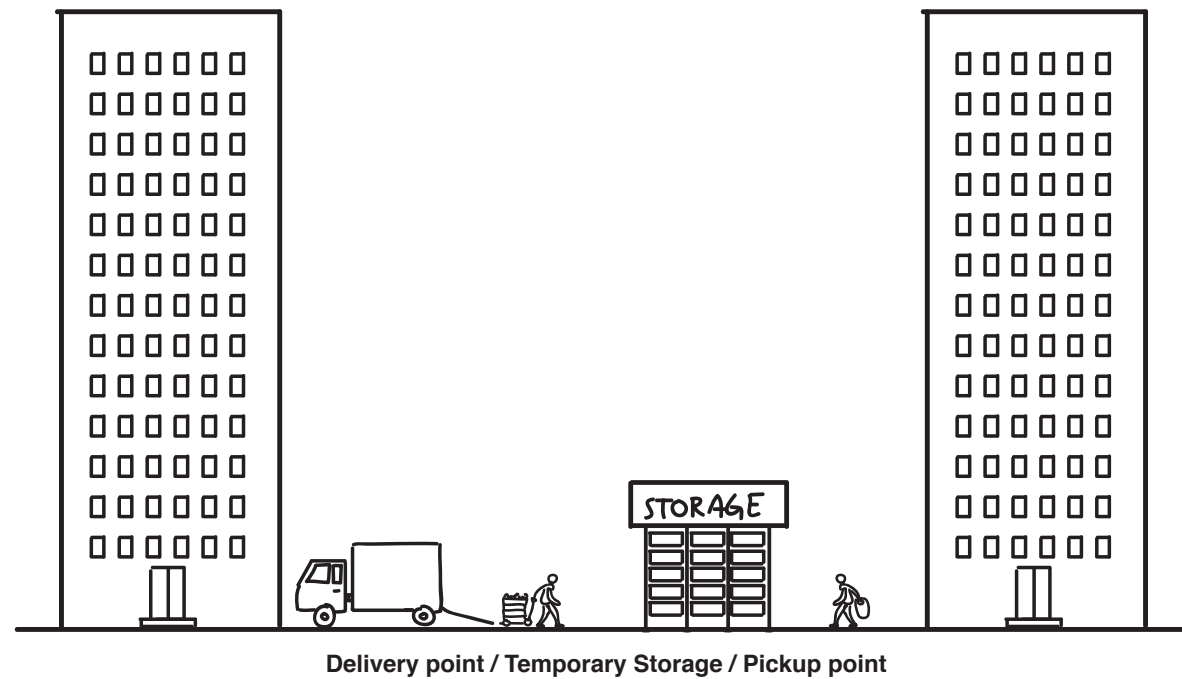


(Deloitte, 2016)





## BIG IDEA



**Using refrigerated parcel lockers as distribution model in a local food business using online pre-ordering.**

## VEGETABLE VENDING MACHINES

An existing product which has started to enter local food chains in the last years is the vending machine. In Japan vending machines with vegetables, eggs

etc. are re-filled daily by local farmers. Customers pay with cash to access the fresh food.



(Vegetable vending machine, 2014)

As Grace Buchele Mineta describes in blog post about vegetable vending machines in Tokyo:

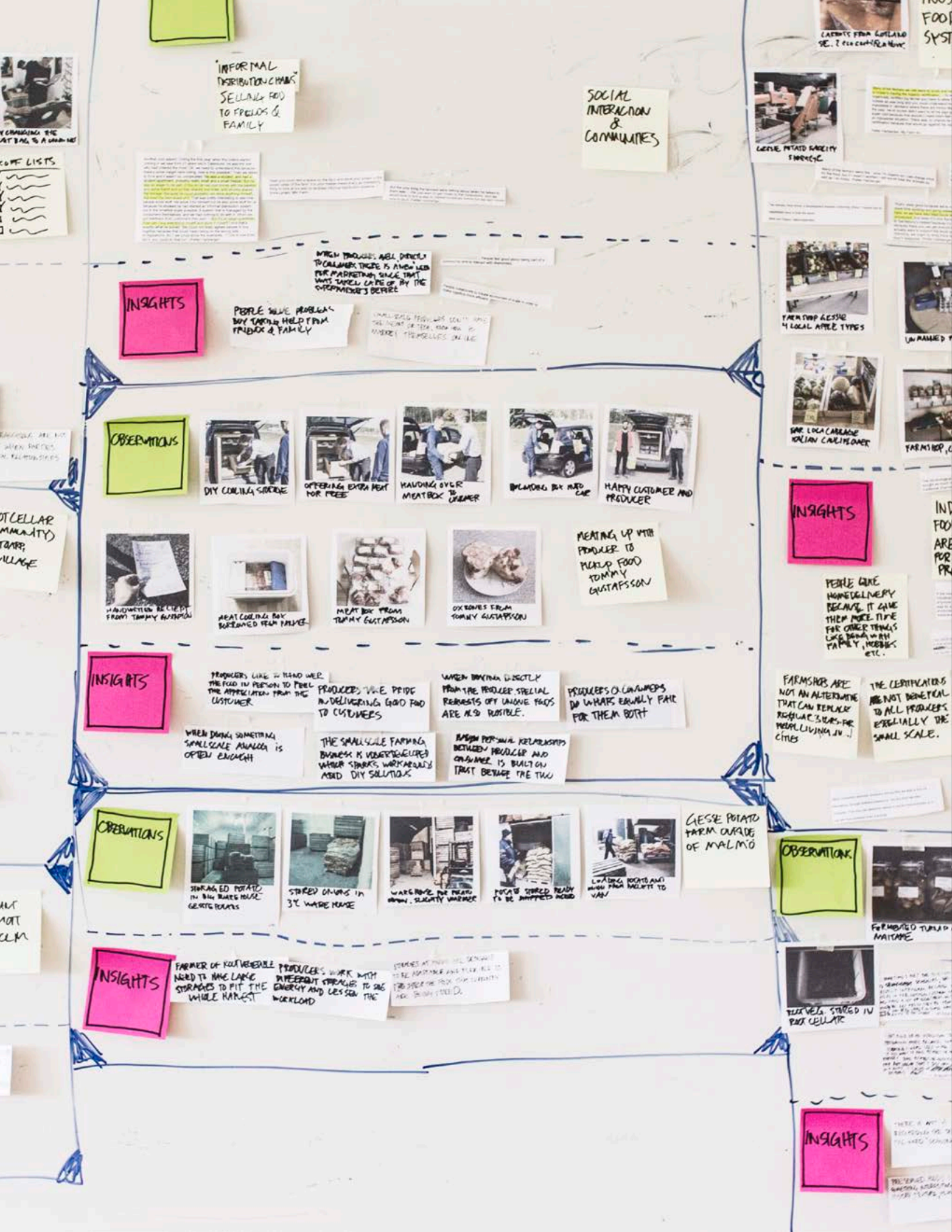
“Basically, it’s like a farmer’s market, but less time-consuming for the farmer.” (Buchele Mineta, 2014)



(Au Bout Du Champ, 2015)

Another vending machine type of service is Au Bout Du Champ in Paris where city dwellers can pre-order food online whereby the farmer then deliver to the vending machine. The customer receives a code to his/her locker and pay cash at the locker place when he/she picks up the food.

It seems that temporary storage of food in an automate, vending machine or similar product has the potential to make local food distribution more efficient and convenient.



# RESEARCH SYNTHESIS

# PROBLEM OBSERVATION

New local food chains and food services making use of technology are emerging in a rapid pace. The most promising one in terms of supporting the trade of food between city dwellers and local farmers on a big scale, is the food-hub. It seems, however, that no food-hub has yet found a distribution model optimized to work on a large scale.

One common model is “the assembly” where farmers and

consumers meet up on a public place in the city to exchange food in person. Another common model is “the home delivery” where the food-hub handles delivery from the farm to people’s homes.

The first one is not time efficient enough and the second means added costs that result in lower profit for farmers and/or higher end price for consumers.

# OPPORTUNITY

Could the “Click & Collect” distribution model be used in a local food chain in combination with the food-hub business model to create a service which is more cost efficient, flexible, and convenient for both consumers and farmers?

Could this new food chain help to scale local food in a way that

is beneficial to everyone involved?

Since farmers part of farmers markets or food-hubs currently are driving in to the city to sell/deliver, there is an opportunity to give them the option to deliver the food themselves in order to keep costs down.

# BRIEF

Design a service concept that enables Swedish city dwellers to buy food directly from local farmers. The service should be based on the same principles as the food-hub business model: an online market place where customers can pre-order food from individual local farmers.

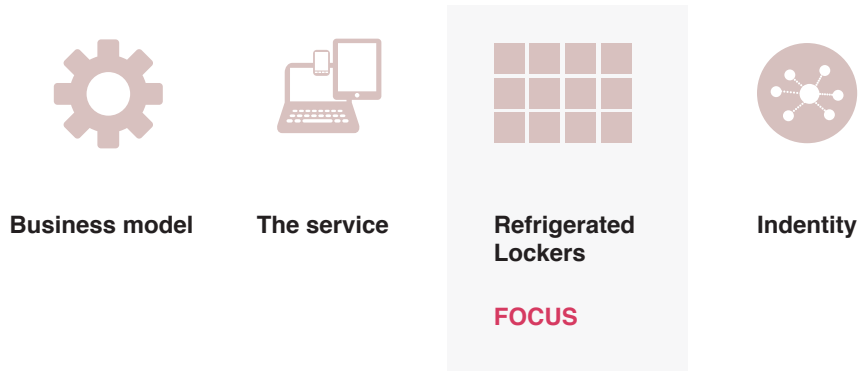
could be used by this service, and what would need to change for them to fit in this new context.

The farmers should have the possibility to deliver the food to the lockers themselves if its more profitable for them.

Explore how the refrigerated parcel lockers used in the “click & collect” distribution model

# WHAT TO DESIGN?

Focus on the lockers but touch upon the the other areas.



## KEY INSIGHTS

### Farmers need to sell in bulk

When farmer go from selling through the conventional food chains directly to consumers they try to sell in as big quantities as possible to keep the number of orders down to save cost, workload and time. Sometimes consumers are limited to a big box of vegetables or 10 kg meat. New food chains need to take this into consideration.

### The pre-order model is a game changer

The downside with the traditional market model is that it's mainly a buyers market. Petter Hanberger, founder of food hub Min Farm, explained the benefits the pre-order model had for one of their vegetable farmers:

“The nice thing was that they sold out their yield in may, and since they knew that they had coverage for everything that they had sown, they could start plan a new round right away. If you think about it, it's totally revolutionizing, it's changing everything for them. They won't have any wastage, and can plan a new round and be sure to sell it...Everybody think it's so nice with the farmers market but the farmers never know how much they are going to sell... What is not sold they are forced to throw away, because those are the rules. Bottom line, they can't sell it.”

### Flexibility and freedom of choice is key

Both farmers and consumers need flexibility to decide certain aspects themselves. The two hour window for pick-up that is common with both the assembly model and the home delivery was considered too unflexible according to some people I talked to. Farmers need more flexibility to distribute according to what works for their production on the farm.

### Time efficiency needs to be balanced against socializing and learning

Both farmers and consumers like the socializing aspect of meeting up in person. This is appreciated when it happens occasionally. Farmers get the appreciation they have missed and consumers can learn and ask questions. However this would not be optimal if the consumption was more frequent since it would take valuable time that could've been spent on farm work. Better would be if the day to day consumption was more efficient and then interrupted by the occasional social event where farmers and consumers could interact.

### Food chains need to be both more digitalized and more natural

On the one hand digital technology has shown the potential to make the new food chains more efficient why technology like internet and smartphones should be used to facilitate the trade of local food. On the other hand farmers aspire to connect to consumers and consumers aspire to connect with farmers, food and food production. For this reason it's important that consumers and farmers get to meet and interact. This can be like today, where consumers are invited to experience the farm for themself. it could also be an evening in the city when the farmers come with their food to meet consumers and socialize.

## DESIGN PRINCIPLES

From the key insights and the remaining insights I developed a set of design principles to guide the work forward.

### KNOWLEDGE AND MINDSET PRINCIPLES

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#### Show the benefits

show the benefits of consuming food this way. when changing the way you consume food it's easy to focus on the things that are less convenient, however there are several benefits to this new way of consuming food like. You get access to novel foods and rare heirloom varieties of foods that are produced by few farmers. The small scale and medium scale farmers have smaller production that often isn't enough for everybody that wants. With the pre-ordering function you can actually secure your share of these foods. You learn about what foods are in season. You get the highest quality for a good price.

#### Make it transparent

Be open with the business model and how much of the profit goes ends up at the farmer and the business. Explain how all parties are benefited through profit, food, convenience flexibility etc.

#### Let the food inspire people

The food is the essence of the food chains. The food should always be the number one selling point to attract more people to join.

### COMMUNITY AND SOCIAL INTERACTION PRINCIPLES

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#### Facilitate collaboration

Facilitate collaboration between consumers and consumers, between producers and producers, and between consumers and producers. Facilitate informal distribution chains and for people to trade among themselves.

#### Support fairness

Make the system fair for both producers and consumers. Make them share the workload and time spent.

#### Sharing knowledge

Enable and encourage people to share their knowledge about food and food production to others in an efficient way. Producers to consumers and consumers to consumers.

### CONVENIENCE AND EFFICIENCY PRINCIPLES

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#### Use technology facilitate local food trade

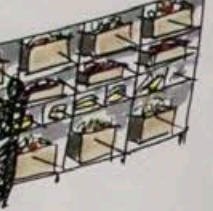
Use internet's power to connect people and create economies of scale. Use high technology when appropriate for the sake of convenience and efficiency as long as it doesn't come with less benefits for the producers and exclusion of consumers due to high price or knowledge barriers. In best case scenario it works like Uber or AirBnB where technology merely is an aid for people to connect and do business.

#### Allow flexibility in distribution and production

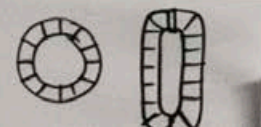
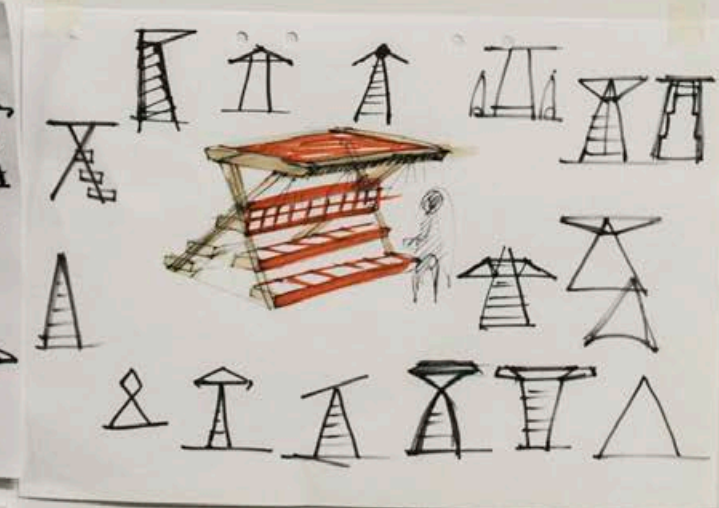
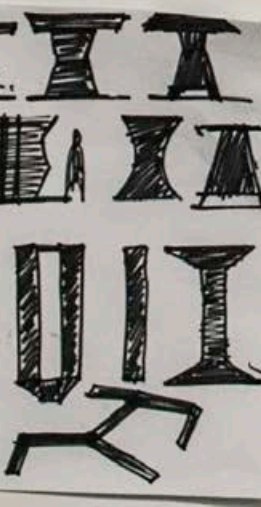
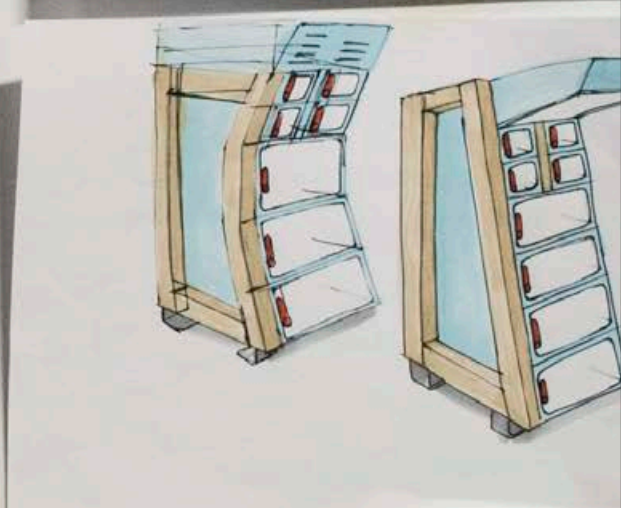
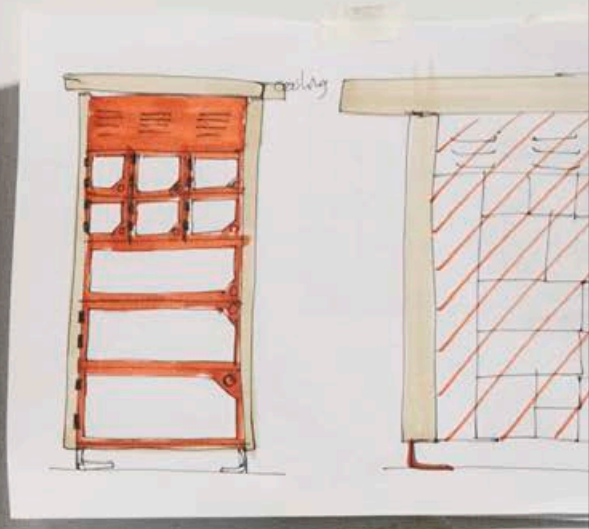
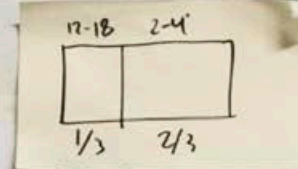
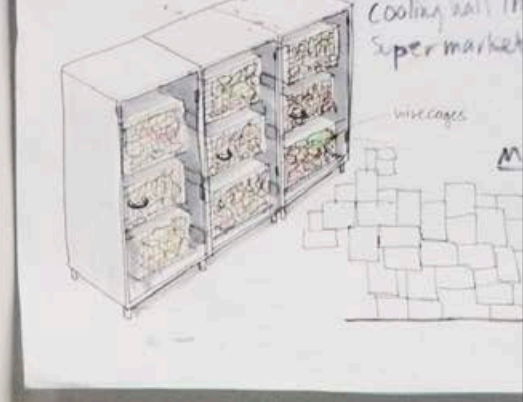
The distribution (delivery and pick-up) of the food is always a trade off between physical work, time consumption and cost/profit. Doing physical work yourself can give benefits like lower cost or added flexibility. By giving flexibility people can choose the variation that suits them the best. It can be for instance the option to choose between handling the delivery yourself or collaborating with others.

#### Give freedom of choice in food quantities

Farmers should be able to sell in bulk or such quantities so that they feel it's worth it and that not too much time and cost goes into administrating and packing orders. On the same time consumers should have the choice between different quantities to suit their preferences.



FOR THE HUB STAFF  
 - WITHSTAND SNOW, RAIN, COLD AND HEAT  
 - SHOW PEOPLE OF WHAT FOODS ARE IN SEASON AT THE MOMENT (AND ARE AVAILABLE TO BUY)  
 - ADAPT TO THE CHANGING SEASONS; DIFFERENT FOODS, DIFFERENT DEMAND  
 - INFORM PEOPLE ABOUT THE LOCAL PRODUCERS PROVIDING THE FOOD  
 - INSPIRE CONSUMERS TO TRY NEW FOODS AND EAT MORE LOCAL FOODS IN SEASON



# CONCEPT DEVELOPMENT

# SCENARIO TO DESIGN FOR



## COLLABORATION WITH THE CITY OF STOCKHOLM, LOCATED ON THE LILJEHOLMEN SQUARE



To have a tangible scenario to design for, I started ideating on how the food-hub would be implemented and how the business model would look like. One challenge that comes with using the refrigerated parcel lockers as a distribution model is the initial cost of producing the lockers and setting the whole thing up. The rent of the space where the lockers would be located is also a big cost factor that needs to be considered. It would mean a risk to launch something with such high costs that hasn't been tried before, so I asked myself: Who could benefit from being a partner in for the first version to help with funding?

Stockholm the city is already supporting local farmers by allowing farmers markets. The city has also built a roof structure intended to protect market stands on the Liljeholmen Square in Stockholm (even though

they, to my knowledge, are seldom used). It appears it's the city's ambition to support local farmers and promote a vibrant city culture. Placing the lockers on Liljeholmen square could be a good strategy for a first step to try out the business. It would make use of unused space and therefor save rent costs. It would

I think the city of Stockholm could be open to being part of exploring a new local food chain since it would mean great PR, position them as an actor in the fore-front of local chains and create value to the citizens. For this reason I chose to design for a scenario where the the lockers would be placed on the Liljeholmen square during a test period in collaboration with the city of Stockholm.

## MINIMUM VIABLE PRODUCT

Before starting ideating I needed to answer some fundamental questions. My strategy for this was to use the concept minimum viable product (MVP), commonly used in product development which refers to "...a version of new product which allows a team to collect the maximum amount of validated learning about customers with the least effort" (Ries 2009). The following questions, I reasoned, would be important in order to define the MVP:

- Which type of food would be sold and by whom?
- How much of that food would every farmer need to sell per delivery for the service to make sense financially?
- What volume would all the lockers make up in order to accomodate for the total volume of food?
- What would be the appropriate storing conditions for the food?
- What cooling technology would be needed for storing the chosen foods?
- How would the different actors (farmers, consumers, hub staff) access the lockers?

### Guide lines

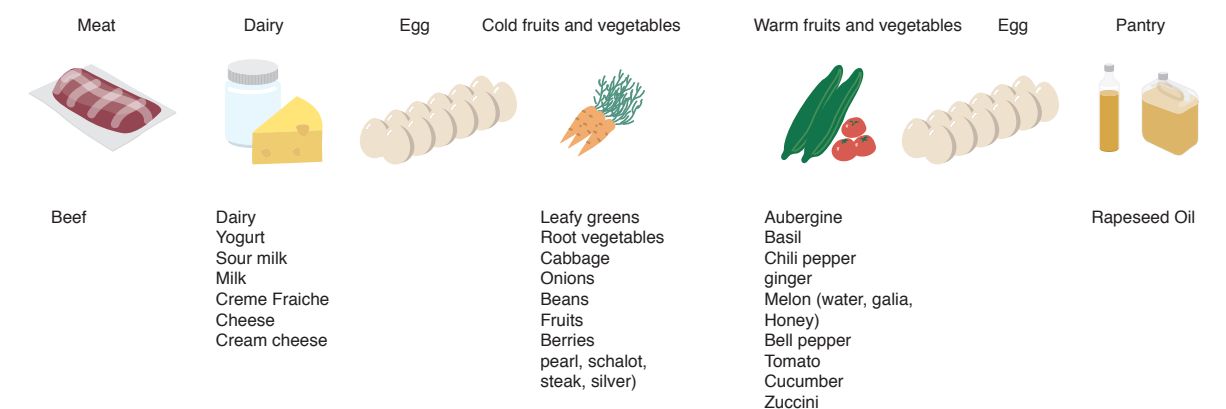
Based on the chosen scenario I developed some general guidelines:

- Feasible with current technology
- Make use of existing solutions if appropriate
- Inspiring
- Efficient use of space
- Easy maintenance and tinkering
- Preferably local production
- Low cost
- Scalable
- Low energy consumption

## TYPE OF FOODS

Ideally the hub would offer a all types of foods that are produced by local farms, but to be able to test the effectiveness of the system I believe it's enough that the most common foods groups available locally are represented. This to see to what extent someone can buy all (or close to) of their food from the hub; In other words how well it could compete with the supermarket.

To find out what food is produced around Stockholm I analyzed the website gårdsnära.se which lists farm shops based on food type or geographic location.



### Temperature zones



## STORAGE CONDITIONS

To learn about appropriate storing conditions for the chosen foods I contacted ICA, one of Sweden's biggest supermarket chains, because of their experience and expertise in handling large volumes of food, and storing the food in the store to be in perfect condition for when the customers buy them. I got some expert advice from Jesper Nyman, quality and environmental specialist at ICA central storage in Helsingborg, and he taught me the following:

- Temperature is the most important factor to consider when you store food (at least on short term like one day or less)
- The fact that many fruits and vegetables release ethylene which affects other fruits and vegetables negatively is not a problem for storage up to two days: Hence fruits and vegetables can be stored together without affecting each other negatively.

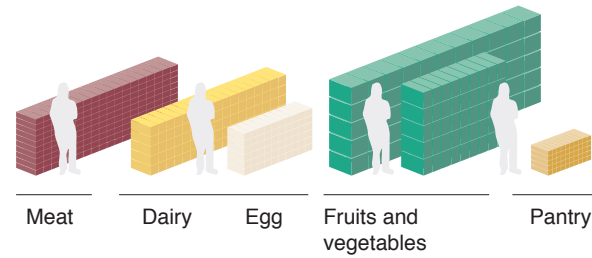
- Optimal temperatures:  
Dairy, meat, cured meats, eggs etc. should be stored in +2-4°C. "Cold fruits and vegetables" should be stored in +4°C. "Warm fruits and vegetables" should be stored in no colder than +12°C (Tomatoes, bananas and basil for instance are very sensitive to cold) but can stand up to room temperature ca +18°C. Dry foods and pantry foods should be stored in +18-20°C.

Based on my learnings I decided on two temperature zones: one at +4°C for meat, dairy, egg and "cold fruits and vegetables" and one at +18°C for "warm fruits and vegetables", eggs and pantry items.

## VOLUME NEEDED TO BE SOLD

In order to figure out the total size of the lockers I had to fix the volume of food the lockers should be able to contain. In order to do that I had to make an assessment of how much food each farmer have to sell per delivery in order for it to make sense to deliver themselves. For the hub to be truly successful the farmers should want to use the hub as their only channel for selling their products. I asked several farmers about how much they would need to sell each delivery in order to be content and not just survive. Calculations for each food type were made based on conversations with meat farmer Tommy Gustafson, vegetable farmer Märta Gunnarson, rapeseed oil producer Åsa Levén and dairy farmer Karin Janson. What follows is an example of those calculations illustrated by the way I estimated how much Karin Janson would need to sell and deliver each week.

During an interview with Karin (selling to consumers in Stockholm through food-hub Min farm), we talked about what she would want to deliver once a week to Stockholm as her only job. I had earlier this summer bought yogurt and cheese from her during a Min farm assembly. Karin told me that the work of driving, packing, loading, delivering etc. takes half a day or more in time when she delivers to Stockholm, so for it to be financially desirable she would want to sell for minimum 12000 kr each delivery which is 30kr for 0,8l



yogurt or sour milk which is what the customers at Min Farm pay today. Karin explains the way the milk production works:

"I milk everyday, so the day after a delivery I also get milk. The customer doesn't want that milk since it gets old. It's possible to pasteurize milk maximum two days before delivery day and make yogurt maybe maximum three days before delivery day. So the milk from the day after delivery until three days before delivery (three days if we count that there is one delivery day a week) must be used for something else e.g. creme cheese. So you better think more in terms of dairy packages and not just milk and yogurt".

Karin suggested selling packages of 0,8l sour milk, 0,8l yogurt and a piece of creme cheese which would mean 134 packages produced from her 400 0,8l-units of milk each week. Each package would take up a volume of ca 14x35x14 cm from which I could calculate the total volume. I asked Karin if this would work for her as her only income and she happily exclaimed: "Yes, then I could live on only doing this". This was an indication that the idea has a possibility to work.

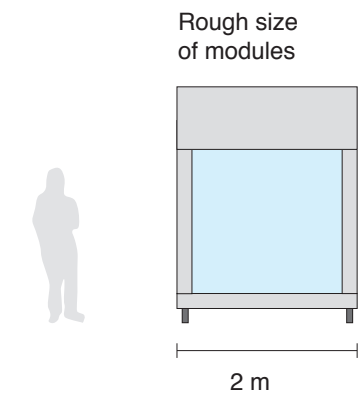
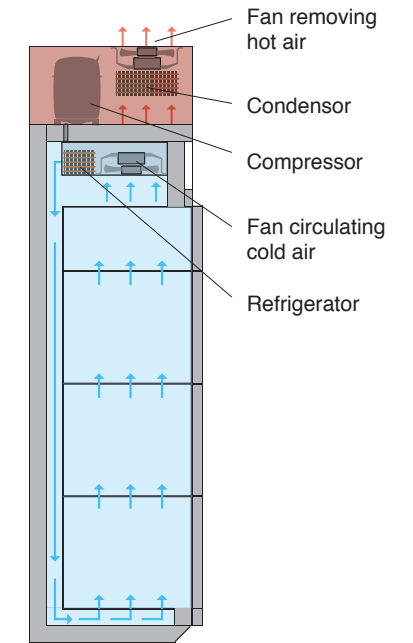


## COOLING TECHNOLOGY

To get a basic understanding of the cooling technology needed for the lockers I made a visit to Kylcity, where I got great help. Several important learnings came from the conversation with owner Leon:

- Commercial cooling solutions today are always compressor based.
- The standard way of building is in sheets of steel covering polyurethane used as insulation. The insulation should be 100-150mm when used outside to insulate from the cold in the winter and the heat in the summer.
- Commonly the whole container is connected so the air is circulating and cooling the whole space. Walls and shelves can separate the space into different compartments with own doors but the shelves need ventilation holes for the air to circulate freely. The air is usually circulated with a fan down the back of the container and find its way back up through the lockers.
- Leon recommends one module to be maximum ca 2 m wide and 0,6m deep to be manageable.

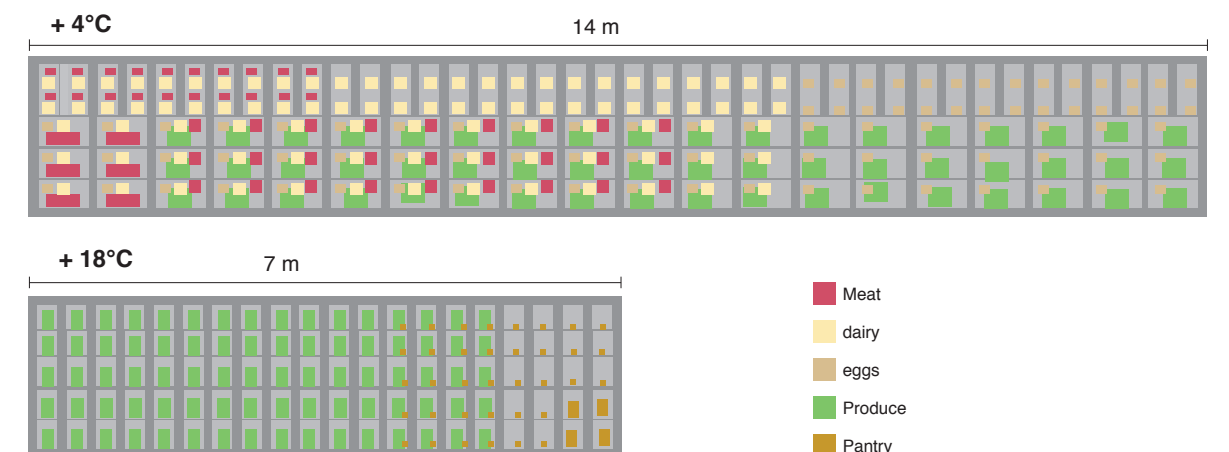
This means that each module has to have one temperature. That means different modules for different temperature zones.



## TOTAL SIZE OF STORAGE

After having answered most of the questions and estimating the height of the lockers I could also estimate a rough size for the storage in order to fit the kinds

and volumes of food the farmers needed to sell each delivery.



## LOCKER ACCESS

When researching about the “click and collect” solutions and standard parcel pickup lockers I realized that the terminal used to access the locker would not be a good fit for this concept. It could possibly work for the consumers but what convinced me to search for a different solution was the fact that the farmers would need to open maybe 100 lockers on one delivery or more and that would clearly be too tedious and time consuming if they had to return to the terminal between every locker. To inform myself about the latest in electronic lockers I contacted Hans Ahnström at ACSS Interior Solutions AB, supplier of electronic locks.

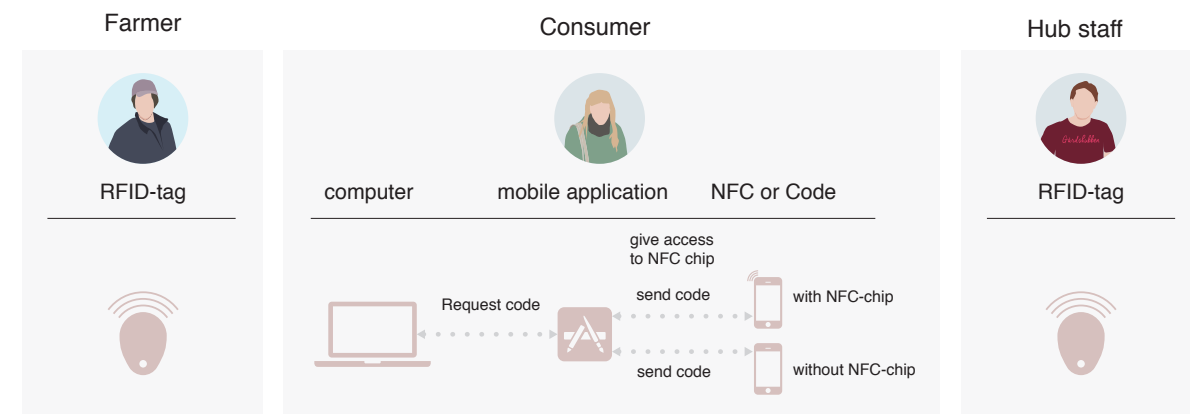
### Electronic Lockers

Today’s electronic lockers are opened mostly with either a code or with Radio Frequency Identification (RFID) using a tag or a card. Another technology that is coming strong in a near future is Near Field Communication (NFC) which is used for instance in mobile phones to pay in a store or gain access by using a chip in the phone or on a sticker. Most all new mobile phones have NFC chips but not all of them

allow 3rd-party apps to use the chip (Apple for example does not). Hans advised me to use an electronic locker which can be opened with RFID, code or NFC in case NFC becomes available on all mobile phones in the future.

### Decision to use mobile phone

Smart phone usage is increasing and although it might exclude some people I think it makes sense to use considering that a mobile application could enable the consumer to both access the lockers and also help them to navigate to their locker.



**RFID**  
With RFID the farmers can gain fast and easy access to all the lockers using a single tag each.

**NFC/Code**  
With a smartphone the consumers can gain access using a code obtained via a mobile application, or they can use the NFC chip in the future.

**RFID**  
With RFID the farmers can gain fast and easy access to all the lockers using a personal tag.

## PACKAGING

A common way for the farmers to pack food is either in traditional cooling boxes/bags or in the grey deposit crates. The crates stacked which is efficient when

packing in a van for instance. The question was how to package different orders to fit in the grey crates.



I had some initial ideas on different transparent bags that could make the food more visible but after consulting with farmer Märta Gunnarsson I decided on a brown paper bag. The paper bags are ok from an environment perspective and have a flat bottom which allows it to stand on its own when filled with food.





## IDEATION AND PROTOTYPING

The ideation on the lockers was done by going back and forth between hand sketching, CAD (to keep track of measurements) and prototyping.

From the start I imagined a transparent front to show the food in order to inspire people to try it out.

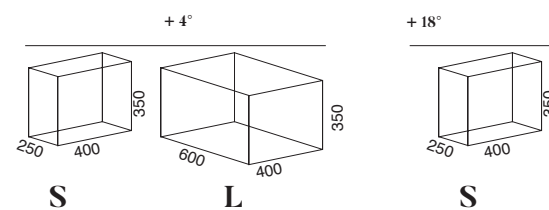


## SIZE AND ERGONOMICS

Trying out different sizes and ergonomics of the lockers in scale 1:1

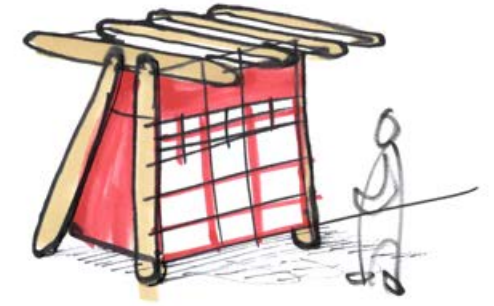


Working with the mock-up in full scale gave me the insight that the top lockers had to be smaller for ergonomic reasons.



## INSPIRATION FROM FARMS AND FOOD

The idea from the beginning was to bring visual elements from farms and farm land into the city to tell the story about where the food in the lockers come from. My main idea was to combine the refrigerated container in steel with wood. I imagined a support structure of wood almost like a hay drying rack.



## Moodboard



My inspiration for the color scheme came from typical foods like onion, beets and meat.

As wood I propose to use Organowood: a treated pine wood which is very durable and suitable for outside use.

The corrugated steel roofs often used on barns would give a interesting association to farms.

## TILTING SIDES

My initial idea was to tilt the sides to improve the viewing angle of the food common in food market displays, but also as a way to make the whole shape less intrusive in the city landscape. Realizing that it would mean a trade off between aesthetics and ergonomics I decided it could be worth to have the front slightly tilted. After trying it out on the mockup I decided on an angle of 10%.

When discussing electronic lockers with Hans Anström a potential problem came up: how to make sure the door closes when the consumer has collected the food, keeping the right temperature and not ruin the other foods. The way to obtain this this we concluded would be tilted doors that would close by gravity. The door could be held open by a magnetic lock for a brief moment allowing the customer to use both hands to collect the food.

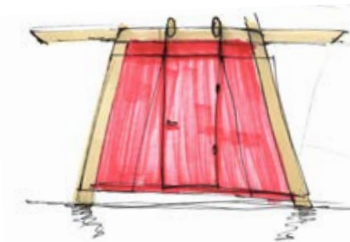
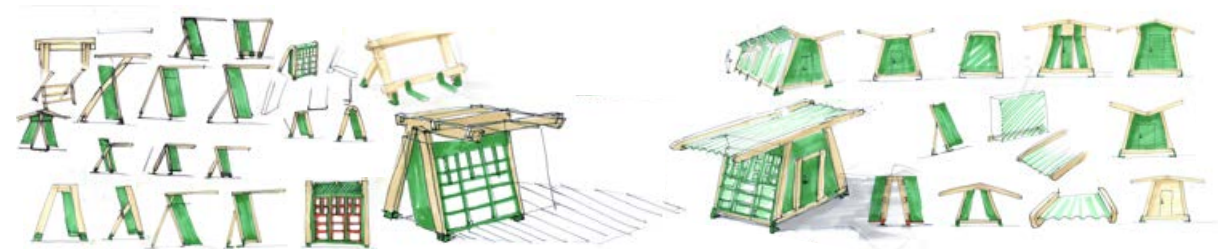


## ONE SIDE VS BACK TO BACK

The overall shape was explored with sketching and 1:10 scale models. A major question was to whether to have only one side or two sides back to back.

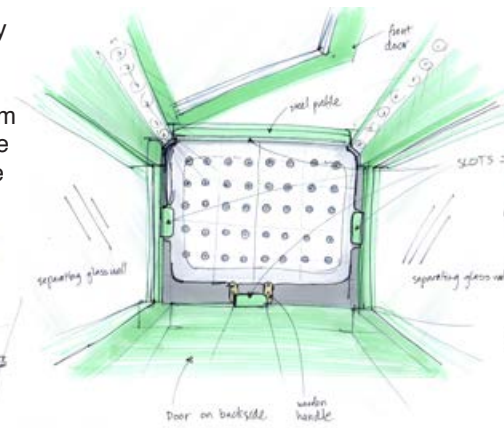
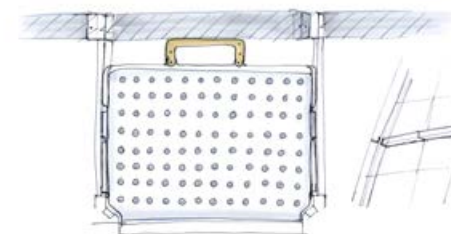
I also decided on a seemingly flat roof where the corrugated metal would still have an angle for water run-off.

I decided on the latter because of the opportunity it would give staff to do maintenance work without having to be bothered by people or rain and snow.



## INSIDE

The inside of the lockers was inspired by restaurant storage on trays that can be removed and washed. The idea was to have trays that only can be removed from the backside to prevent theft. The handle prevents the tray from moving towards the back, assuring good circulation of air.





RESULT

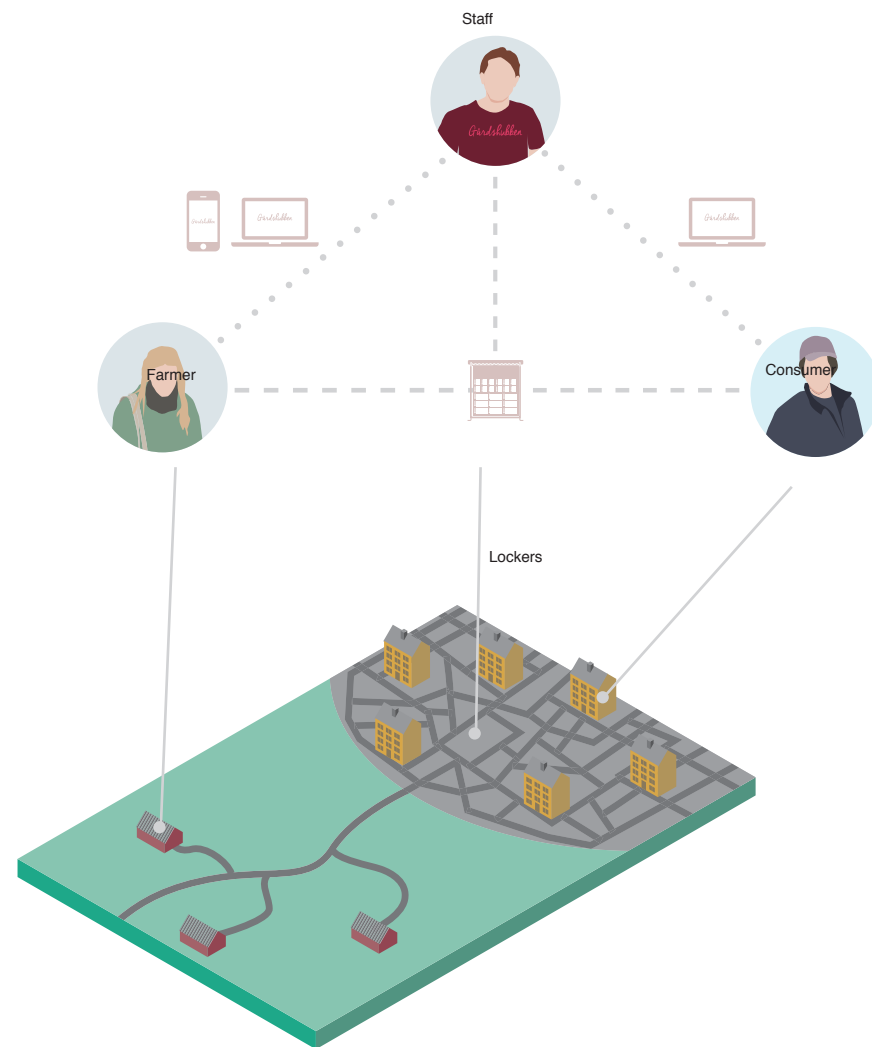
# Gårdshubben

## OVERVIEW OF CONCEPT

Gårdshubben is a concept for a food-hub that connects consumers in Swedish cities with local farmers, helping them to trade food in a new way.

Gårdshubben is a service that enables consumers to pre-order food from individual farmers. The food is delivered by the farmers to refrigerated parcel lockers placed on different locations around the city, and can later be picked up by the consumers.

This adaptation of the so called "click & collect" distribution model, popularized by the big supermarket chains, creates a food chain which makes efficient use of resources such as time and cost to the benefit and convenience of both farmers and consumers.



## MAIN PARTS OF THE SERVICE



**Website:**  
Each farmer connected to the service has a profile page telling everything there is to know about the food they produce and how it's produced. The consumer orders food and chooses a delivery date.



**Lockers:**  
A module based system of refrigerated lockers to which the food is delivered by the farmers and later picked up by the customers.



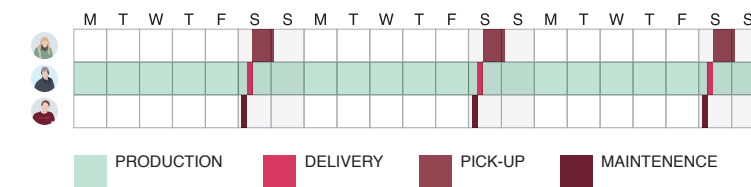
**Mobile application:**  
The app gives the user the possibility to access the lockers either by using the NFC-chip or by requesting a code.

## ORDER/PRODUCTION SCHEDULE

Delivery and pick-up is once week since that is the appropriate time required to produce the food on demand after the final order has come in.

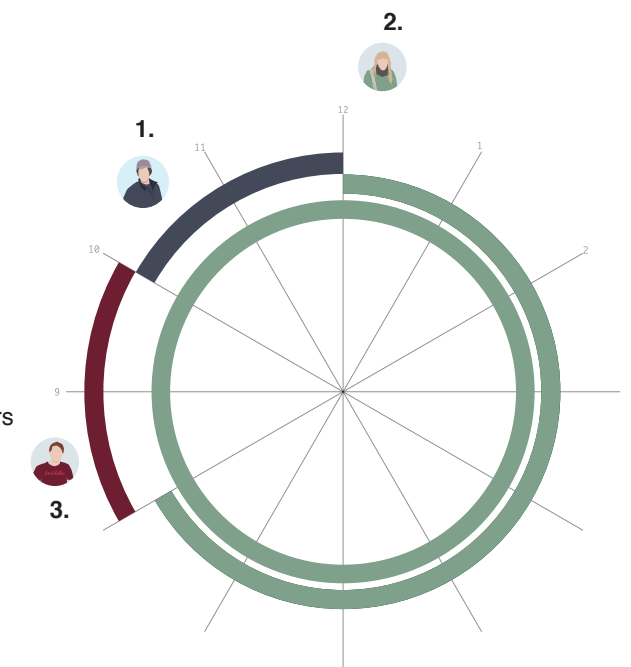
consumers will be able to receive food every day but farmers can produce and deliver in the pace that works best for them.

In the future there could be sets of farmers that has delivery on the other days of the week. That way the



## DELIVERY DAY SCHEDULE

- 1. Delivery by farmer (10-12 am)**  
The farmers can deliver efficiently without being bothered while people are at work.
- 2. Pick-up by consumer (12 am - 12 pm - 08 am)**  
Consumers have the flexibility to pick-up their order anytime between lunch and the next morning.
- 3. Maintenance by staff (8-10 am)**  
The next morning the staff comes to clean the lockers if needed and making sure everything is fine for the next delivery.



# USER JOURNEYS

## 1. Pre-ordering

The site can be searched either by food, farmer or locker location. Consumers choose a locker location and a delivery date (earliest next week) and select foods from individual farmers who offer to deliver on that day. The system matches the consumer with a free locker (or several lockers) with space that matches the chosen food.

## Production

The farmers receive the orders as they are placed and can immediately start planning the production. One week before delivery date the slot for ordering closes and farmers start production. The farmer produces the food and packages the foods in paper bags and/or in stackable crates for easy transport.

## Delivery

On the delivery date the farmers drive to the city (individually or collaborating depending on their preferences)

to deliver the food to the lockers that are strategically placed on different locations in the city with easy access by car. The farmers access the lockers with an RFID-tag which enables efficient delivery.

## Pick-up

The consumer gets a notification via e-mail/sms/app that the food is ready to be picked up and has until the next morning to do so before the food is removed. The app shows a map over the locker to help the consumer find the locker/lockers. Once the locker/lockers are located they can be accessed with code or Near Field Communication (NFC) via the app.

## Maintenance

The next morning staff have two hours for cleaning up possible food scraps and making sure everything is working before the next delivery.

## 1. PRE-ORDERING

Lockers are assigned temporarily just like any parcel locker service. The customer will be given access on the day of delivery until the next morning. To ensure that the ordered food fits the chosen locker, food items come in certain sizes (S, M or L) that has been tested out beforehand. The locker can be filled with different sizes as long as the total volume doesn't exceed the locker size.

### 1.1 Choose location

### 1.2 Choose a locker in S or L

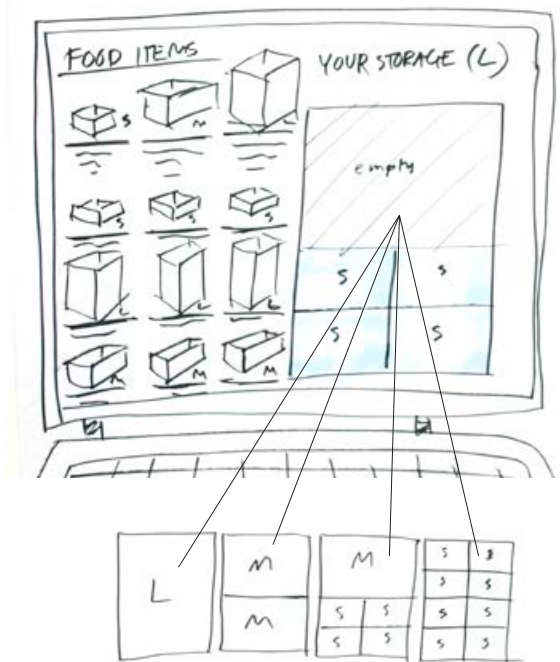


### 1.3 You are assigned a locker

Like on many sites you have a certain time, e.g. 20 min, to place the order before you have to choose again.

### 1.4 Add foods to your locker

Graphics show how space your current selected food take up and much space is left in the locker.



## 2. PRODUCTION

The production and packaging of different orders are handled by the farmers themselves.

### 3. DELIVERY

#### 3.1 Unloading

The farmer parks as close as possible to the lockers and can either carry the orders by hand or using a cart.



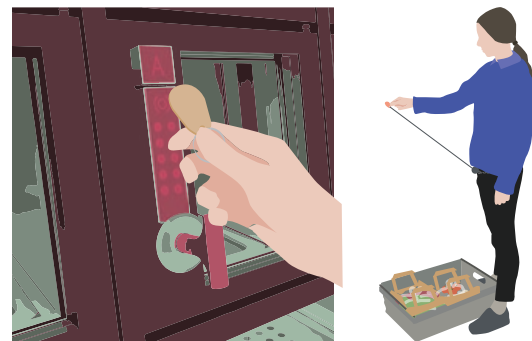
#### 3.2 Navigating the order

The farmer gets a list with the orders plus graphics showing in which lockers each order should go.



#### 3.3 Open locker

The farmer uses the tag to open the lockers.



#### 3.4 Load order



#### 3.5 Pack up and return



### 4. PICK-UP

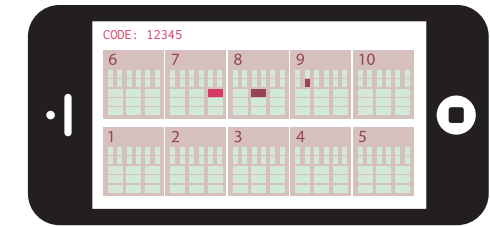
#### 4.1 Notification

The consumers are notified via the app that food is ready to be picked up.



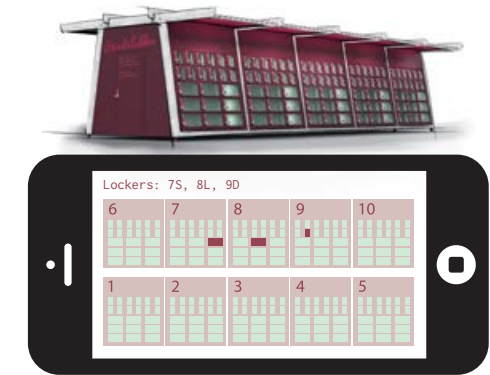
#### 4.2 Requesting code

Using the app the customer has to request a code. The same code can be used for several lockers.



#### 4.3 Navigating the lockers

The customer uses his/her smartphone to see a map showing his/her locker highlighted.



#### 4.4 Open locker



#### 4.5 Return home



## 5. MAINTENENCE

### 5.1 Entering back area

Staff can access the lockers from the backside by enter the back area using the side door.



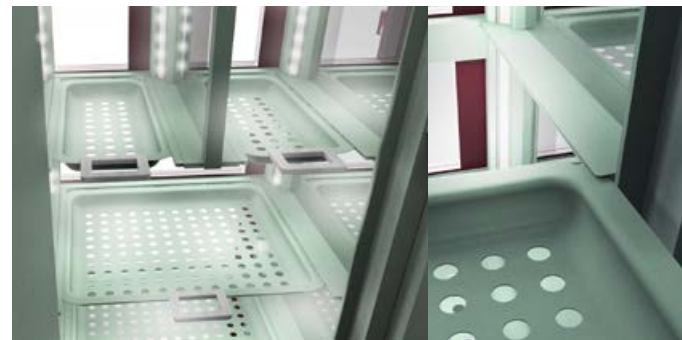
### 5.2 Open lockers

Since only staff has access to the back area the doors don't have locks.



### 5.3 Remove trays

The trays can be removed by sliding them out from the slot they rest in.



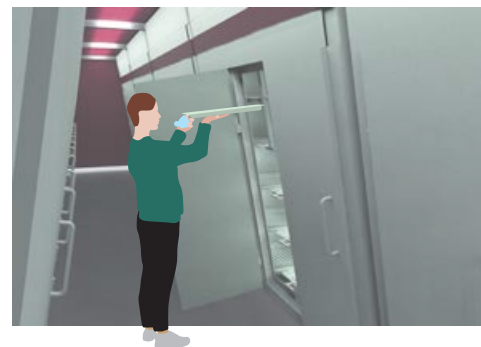
### 5.4 Clean trays

The trays can be brushed of using a cloth.



### 5.5 Return trays

The tray is slided back in its slot.



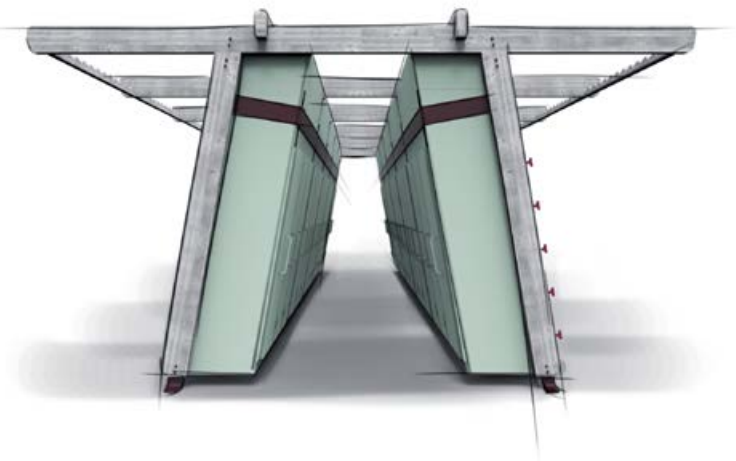
## LOCKERS

The lockers consist of a cooling container made of sheet metal and polyurethane for insulation according to industry best practices.

The locker units lockers are supported by a modular structure of durable pine wood (Organowood) and bent metal that can be assembled to support a desired number of locker units.

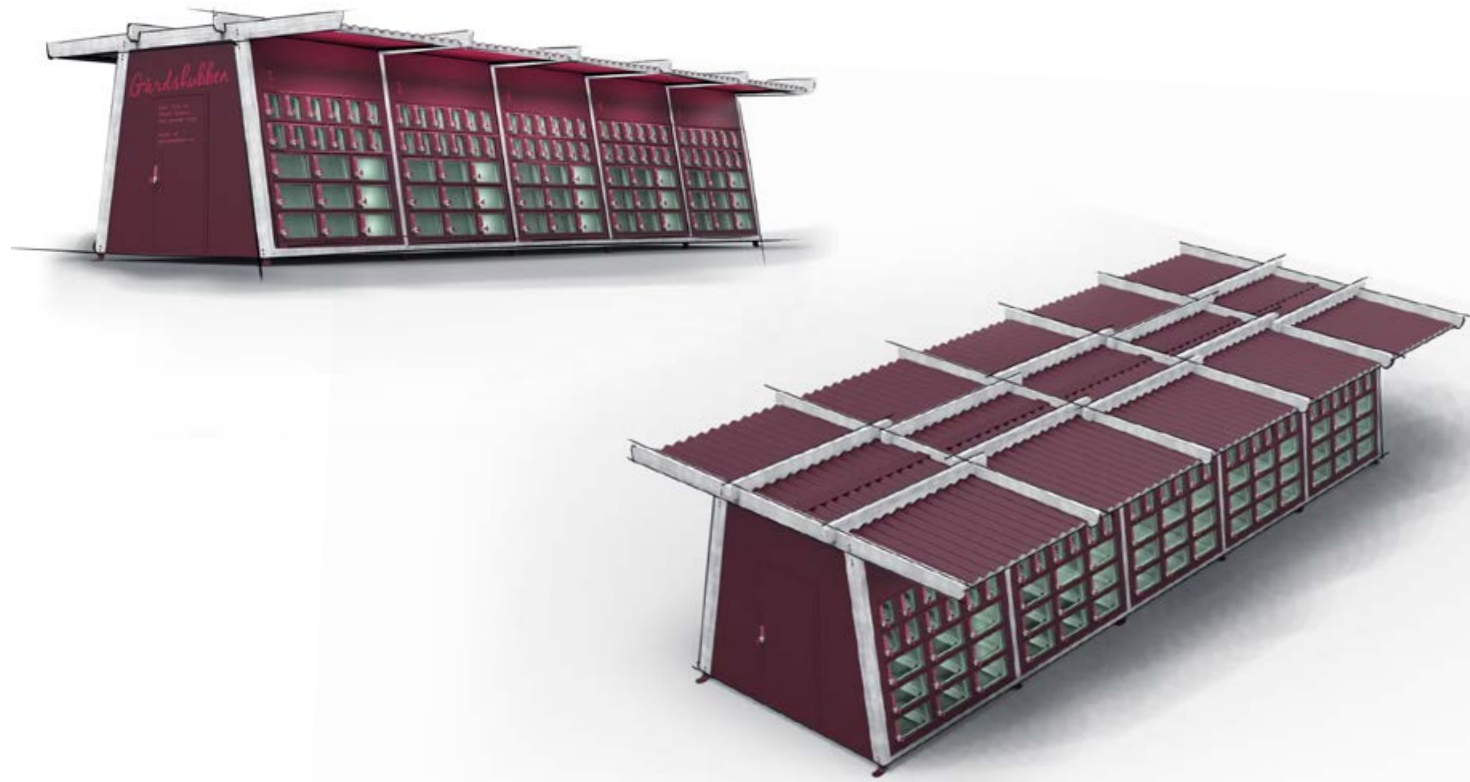


Modular support structure



The structure is covered to allow for restricted access for staff to do maintenance work and tinkering.









## DISCUSSION

### What will future local food chains look like?

My prediction is that the local food chains of the future will continue to be many and diversified. Considering the benefits for both farmers and consumers, the online pre-order model will most likely be even more popular in the future than it is today. Will this model take over or will the traditional food market model – where food is produced and then offered for sale to consumers – continue to exist to the extent it does today? Probably not, since there likely will continue to be a consumer demand for being able to see, touch and smell food before making a purchase. Is it possible to combine the two models somehow?

Regarding distribution, the models which are common today, home delivery and “the assembly”, will probably continue to be popular. However working with this project has made me convinced of the potential in finding more flexible and efficient models.

I believe future local food chains will increasingly be part of the collaborative economy that is booming now, where services like AirBnB and Uber are using technology to facilitate collaboration between people. In contrast I also believe there will be a stronger focus on nature. On the one hand people will increasingly rely on digital technology for the day to day trade of food but people will also increasingly re-connect with food and food production in real life. If it means urban farming, visiting “normal” farms on a regular basis or something else, remains to be seen.

In conclusion, I think the shift in farmer- and consumer attitudes we see now, facilitated by technology, will continue to drive development towards local food chains that are more democratic and fair and eventually will reach a large scale.

## REFLECTION

By having such a wide scope I learned a lot about business models and system thinking. However, the project became very challenging and honestly way too much to handle for one person. As a result I had to make quick decisions to move forward fast enough. In doing so I failed to realize that I had incorporated too many parts, which had the consequence that I didn't have time to work enough on the design of the different parts. If I had defined the character of the project more from the beginning and narrowed the scope I could have sought out an external collaborator which would have helped me enormously in handling this challenging subject.

Having said that, I am happy with the user centered approach leading me along unexpected paths as I got more insights from every new person I interviewed and observed. I sharpened my interview skills, practiced making sense of complex information, and truly enjoyed talking to all of them. I also believe the design opportunity I discovered has large potential. Most importantly I deepened my knowledge about food production and food chains which had been my initial aim, and for that I am really happy since it is an investment in my future career.

By doing this project I learned a lot about what kind of designer I want to be and how I want to work in the future. I have always been more drawn to team based projects, but since taking on this project it has become absolutely clear that that is how I want to work. One reason is that I love the exiting feeling from making progress together with your team. Another is that I love tackling complex problems and projects with big potential impact: projects that a team, especially an interdisciplinary one, is much more suitable to take on than a single person. Now I understand better why I took on such a difficult project.

I hope I get the chance to work in projects like this again, but then as part of a team, realizing my ideas about food.



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