

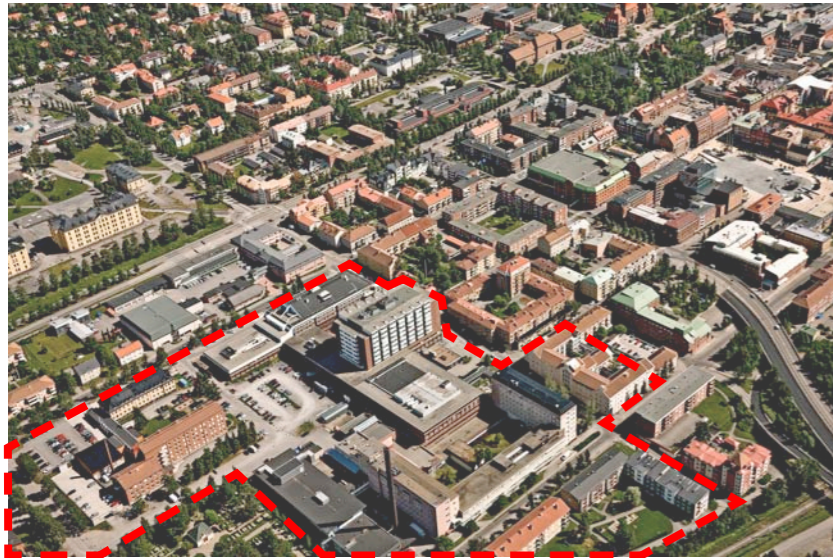
# Ryggrad

Zhen LI  
Hongyin LIU





# BACKGROUND



The county of Jämtland has around 126 000 inhabitants and occupying 50 000 square kilometers. Östersund is the only city in Jämtland.

The current Östersund hospital has an area about 100 000 square metres and the building year ranges from 1950s-1980s. Meanwhile it is also one of the study center for Umeå University's medical school.

Since the hospital has been kept rebuild and expand for several times, the lack of master plan has caused several problems.

- eg.
- Way finding is extremely hard inside hospital
  - Large width of building makes interior lack of daylight
  - The old column system can not adapt to the modern demand

Yet according to the county council, there is no plan to move it to a new site in 50 years.

Based on our communication with client, there are several main wishes they want to approved in our proposal.

- Easy way finding
- Better working environment
- Separated flows
- Single patient room
- New emergency Unit
- Optimizing for Imaging department
- Extension of out-patient department
- Better waiting environment for patients
- A close located patient hotel
- Extension of parking

## Future Hospital: Extension & Reduction

The future change for the hospital is hard to predict. With the help of robot and internet, the time spent in hospital can be reduce a lot. On the other side, the need of including more educational and public functions, the requirement of single-patient room can add a lot of footprint to it.

Thus the construction of hospital need to be considered in a more flexible way. An independent technical intense unit allows the hospital area changes in a big arrange.





# CONTEXT

## Traffic Condition

The existing site has a easy access through both public and private transportation.

Two bus stops are located in the east side of the site on Kyrkgatan and the main pedestrain road Storgatan end directly in front of the site.

On the west side of the side, next to the existing residential area, there is a railway pathing through.

## City Grid

The city has a really nice chessboard grid with a mix of building block and greenery since it was built. Up to now, most part of it still can keep this pattern and follow the human scale.

But here from the drawing, the hospital looks really jumped out, the massive block is not cooperate with the city grid and also blocks the greenery in the north part.

## View and Section

The site is located on a slope for around 5% towards west and has a really nice view. On the west side, it can see the lake as well as Mallbyn and on the East side also has the chance to see the greenery.

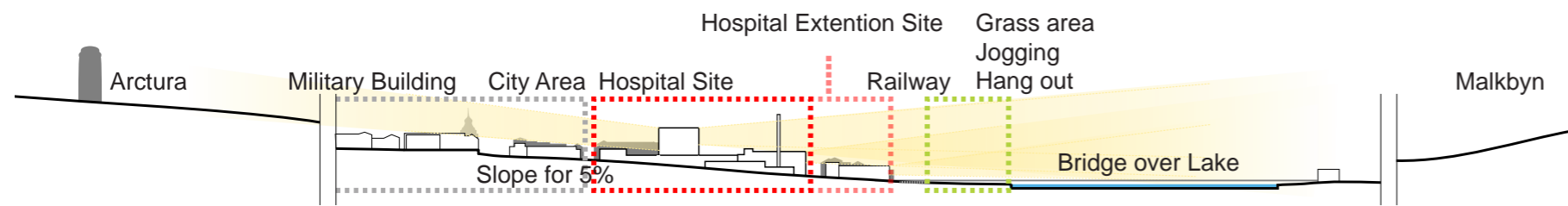
## Skyline

Most of the city's buildings are low rise, except few of the landmarks eg. the City Hall and the newly build canteen Arctura. From the drawing we can see that the existing hospital is already quite obvious in the city's skyline, and we are intend to keep the height without any new break up of it.



Vehical traffic  
Pedestrian road  
Railway

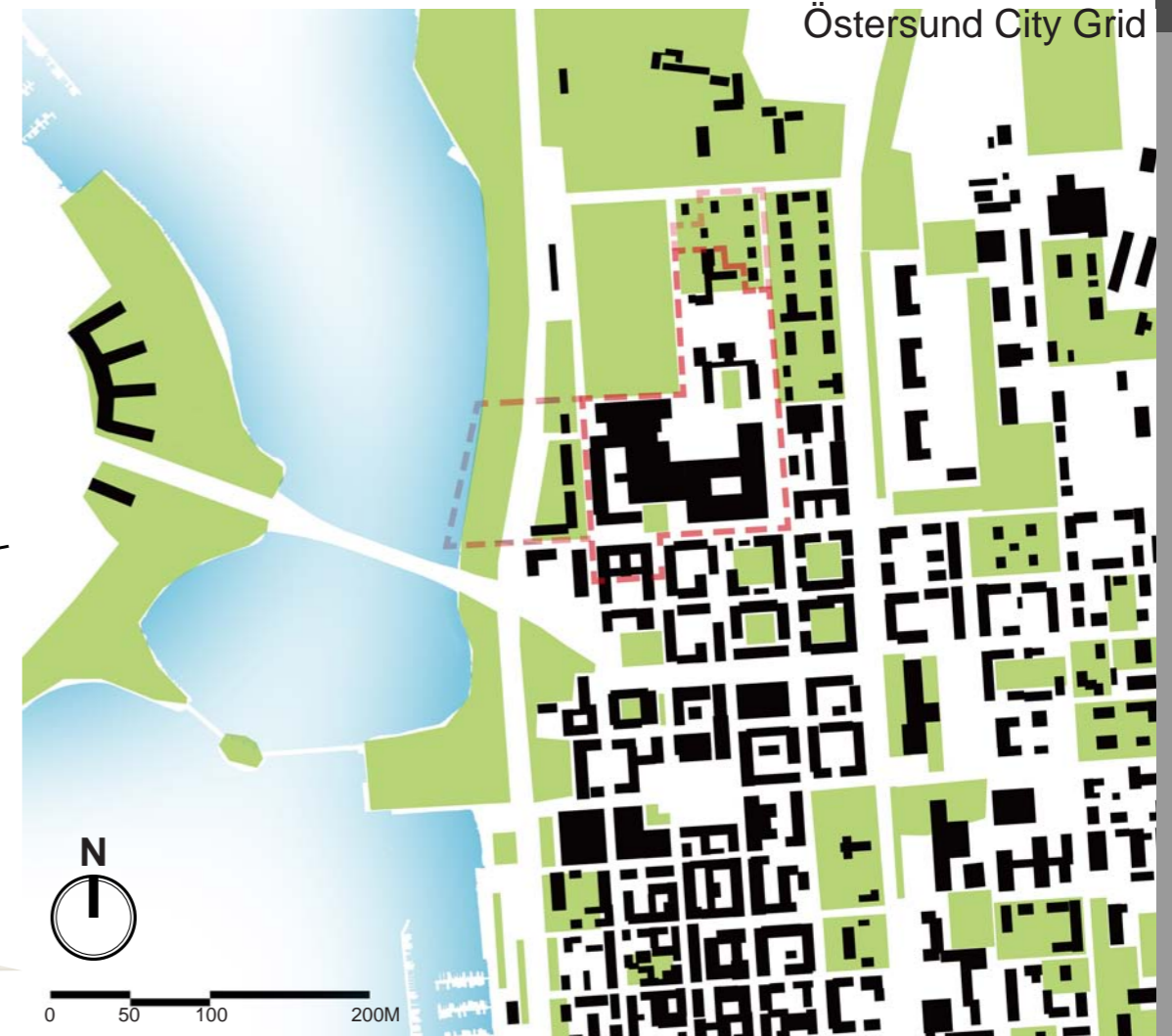
Östersund Traffic Condition



Östersund Section (East-West)



Östersund Skyline



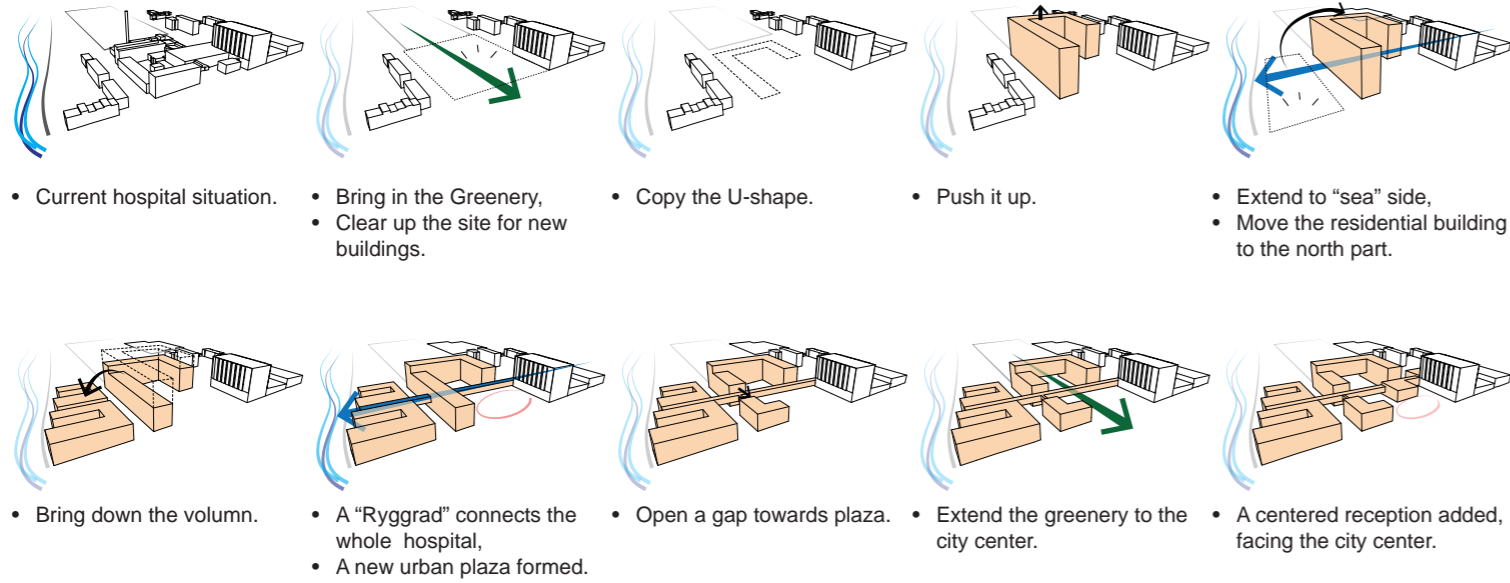
Östersund City Grid



0 50 100 200M



# CONCEPTS



Following the concept, A new urban plaza had been formed in front of the reception, facing to the main pedestrain road. The plaza help to break the volume of the building and bring the greenery into the city.

A spine cross the whole building working as the main traffic connection to join the whole hospital.

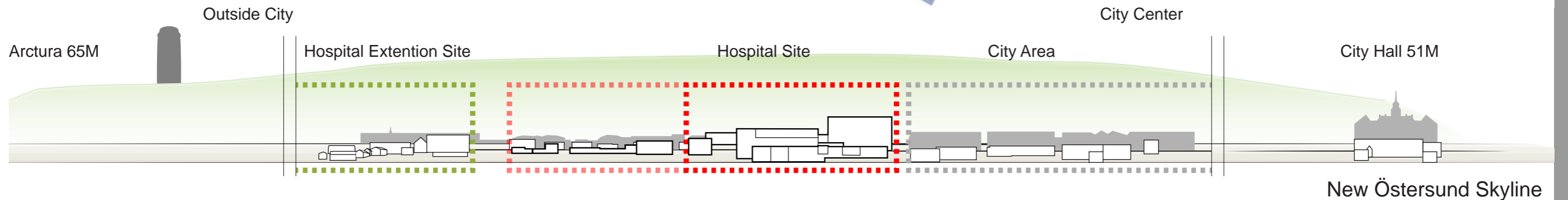
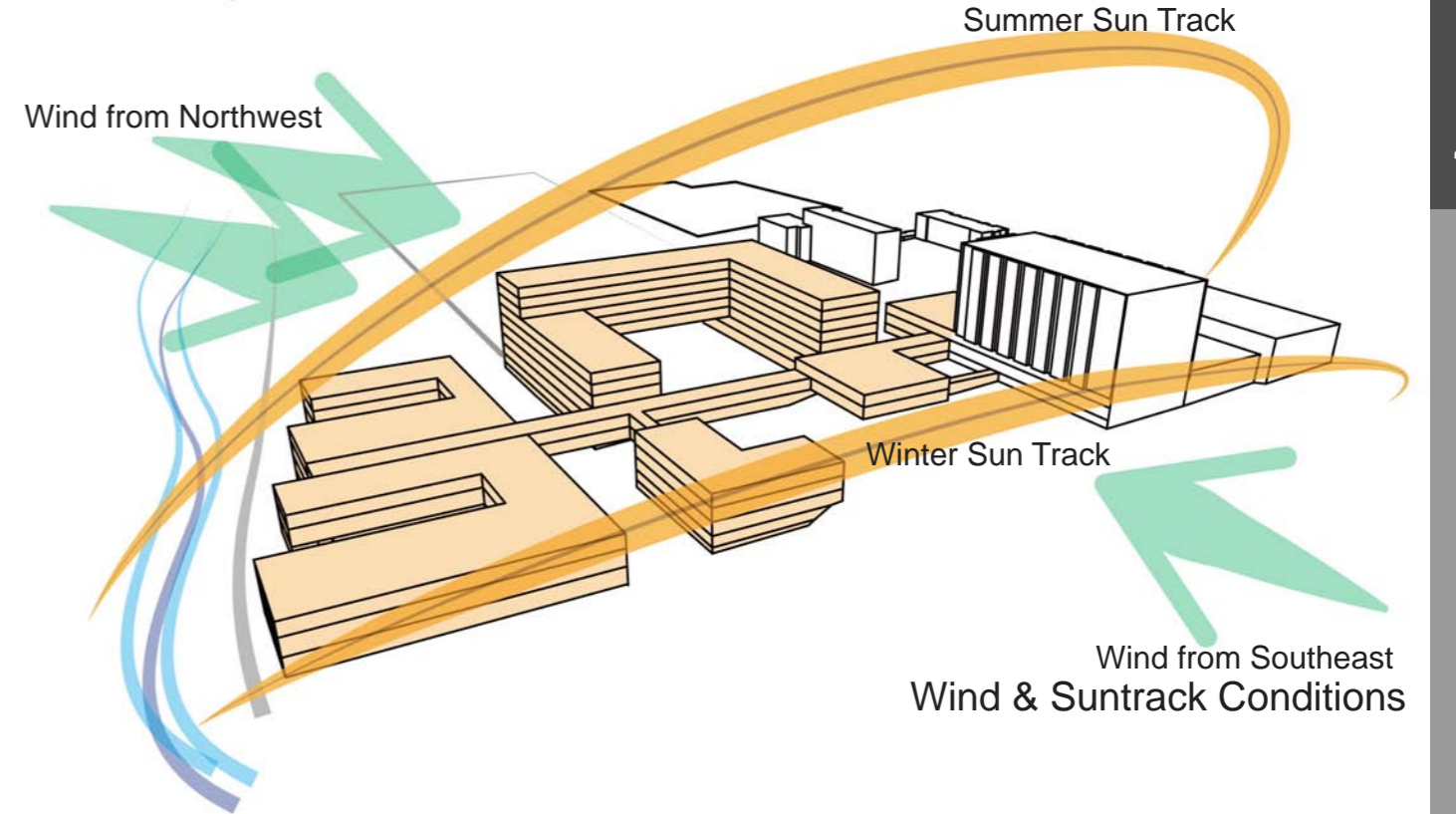
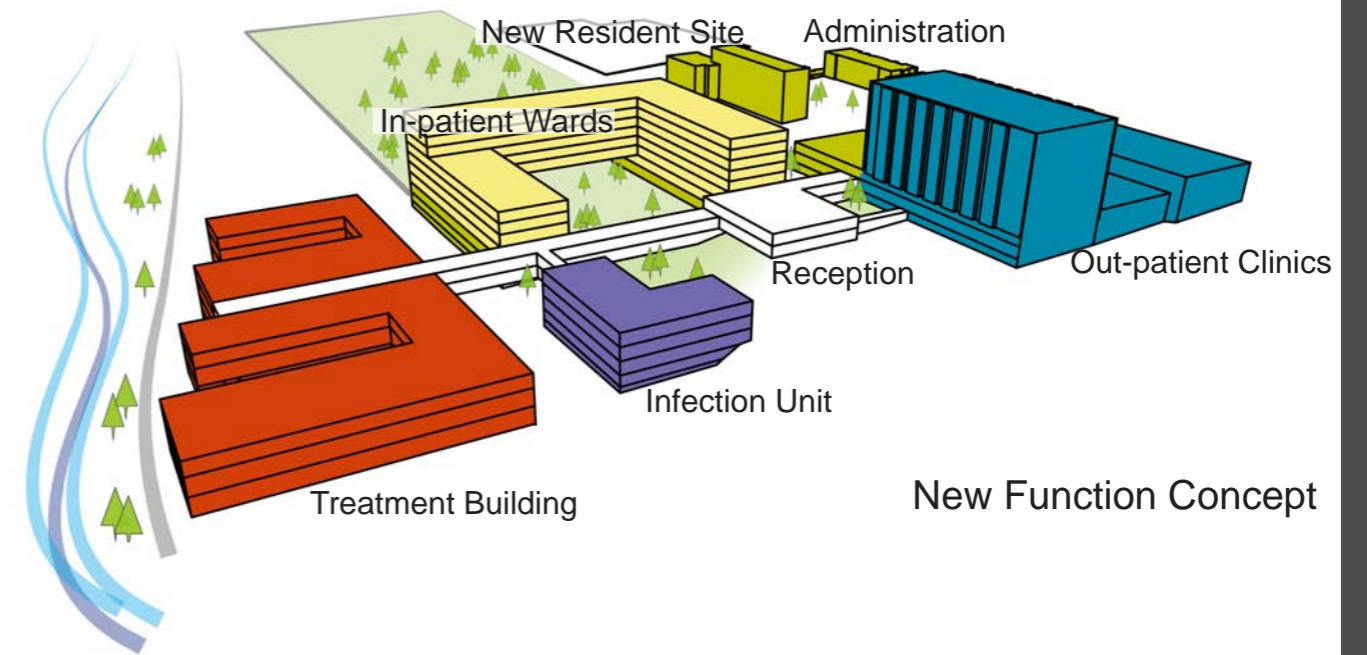
The existing residential building have been move to the north of the site and the area is used for the new treatment building. As a contunious result, the helipad is now able to put directly on the top of the treatment building.

Taking advantage of the terrain, the new ward block is been able to offer nice view for all the patient rooms.

A winter garden is placed in the treatment building, to help improve interior enviroment.

## BULLETS

- URBAN PLAZA
- TAKE IN GREENERY
- SPINE (WEST-EAST)
- NEW RESIDENTIAL SIT
- HELIPAD ON TOP
- GOOD VIEWS IN WARC
- WINTER GARDEN





# SITE PLAN

A new constructed reception had been located in the center of the hospital, accompanied with a new urban square.

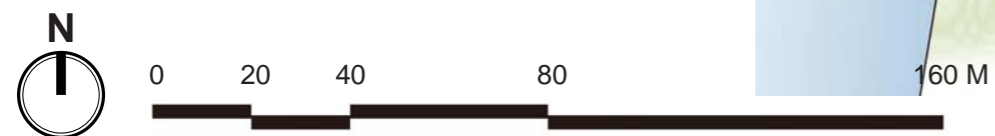
Landscape is used to reshape the terrain. Slopes following contours encourage physical movements through the whole square. Big steps facing Fältjägargränd help leading people from the main walking street (Storgatan) to the entrance.

Parking is placed underground, offering an easy access to the building and help reduce hard surface pavements.

Main Figure  
 Existing area: 50 000 sqm  
 Newly construction area: 50 000 sqm  
 Demolish area: 40 000 sqm

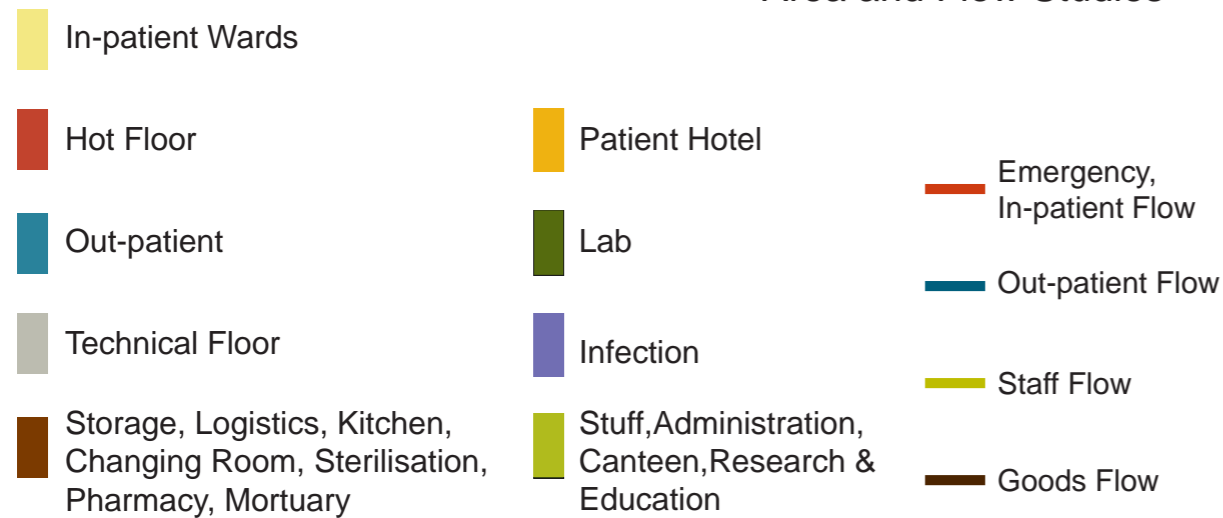
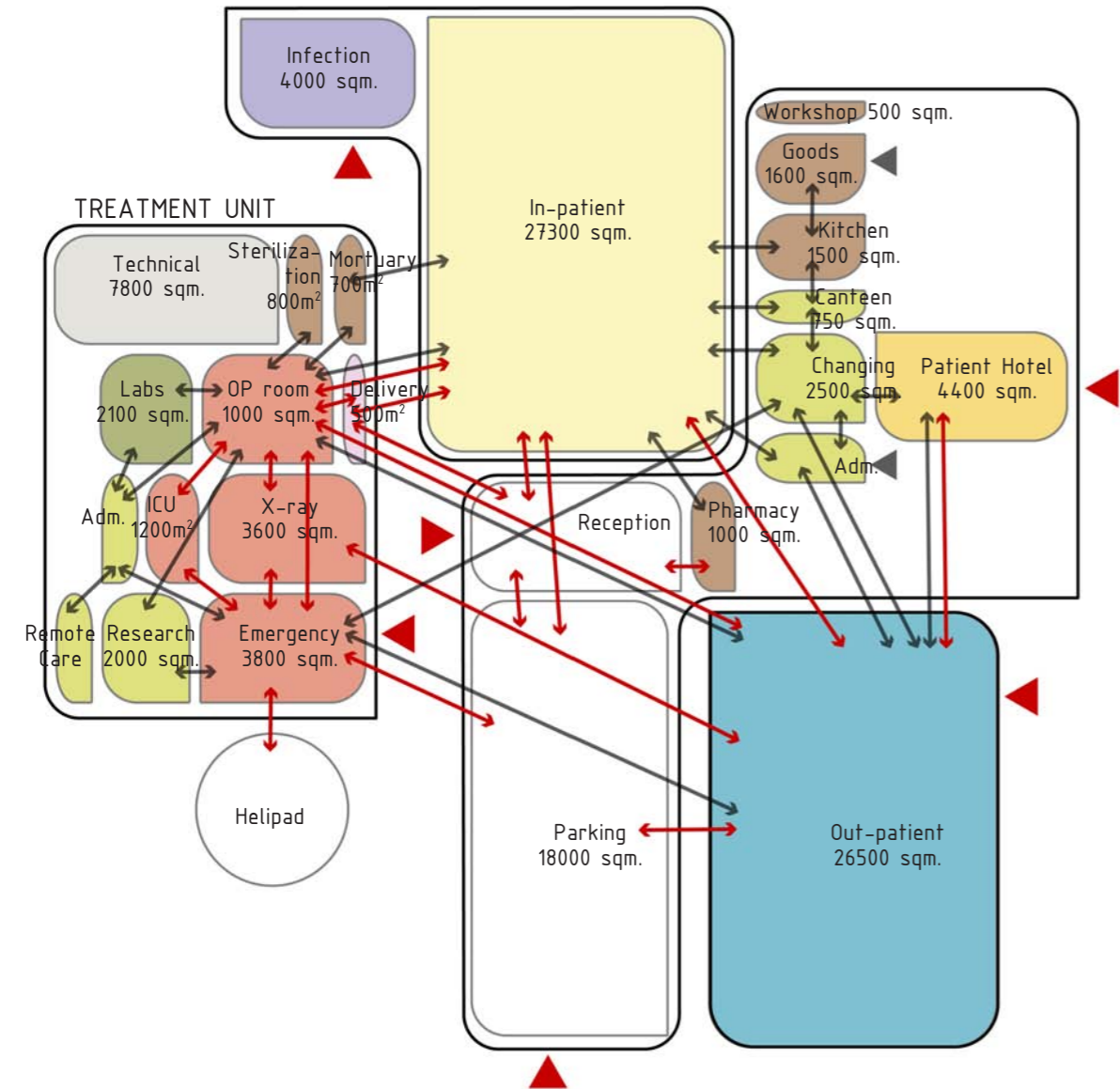
1. Urban Square
2. Out-patient Clinics
3. Reception
4. Infection Unit
5. Treatment Building
6. Spine
7. Winter Garden
8. Patient Hotel
9. Canteen
10. In-patient Wards
11. Administration
12. New Residential Site

- Emergency
- Out-patient Pedestrian
- Out-patient Vehicle
- Goods Delivery





# FUNCTION ARRANGEMENT



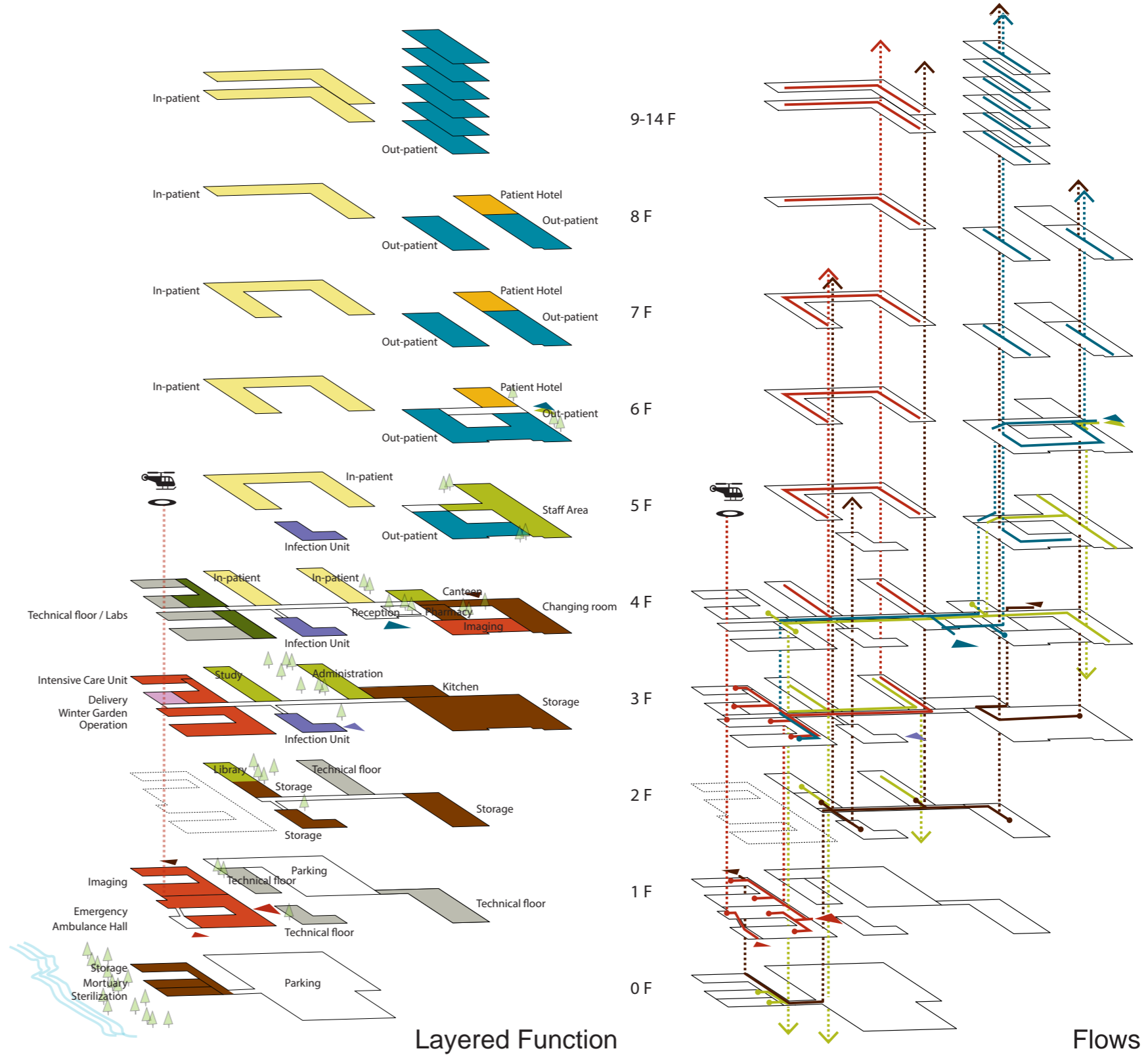
Area and Flow Studies

Instead of a compact block organization, we choose a more clustered one. In-patient wards, Out-patient clinics, infection unit and Akut Blocken are placed into different blocks. They are joined together by the spine and a centered reception.

Both wards and clinics have a direct contact to the reception while akut blocken can be reached through both spine and its own entrance.

There are 2 main vertical communication points in the spine and inside each department also have their individual transportation core.

Flows are separated. Three main flows: goods, patient-in-bed and out-patient are situated in different layers of the spine. Helipad is placed directly on the top of Akut blocken which allows an efficient transfer.

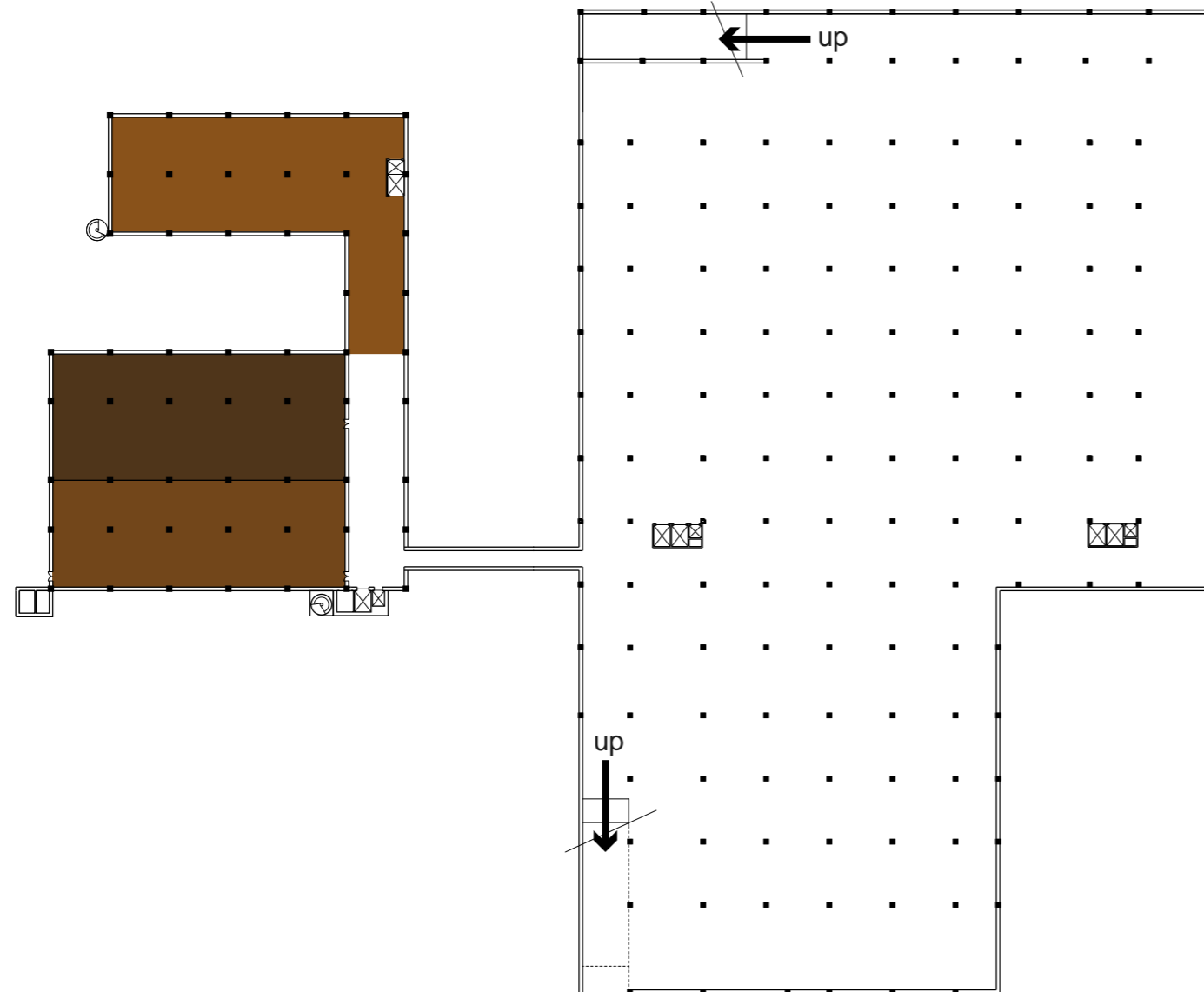


Layered Function

Flows



# PLAN FO - 1:1000

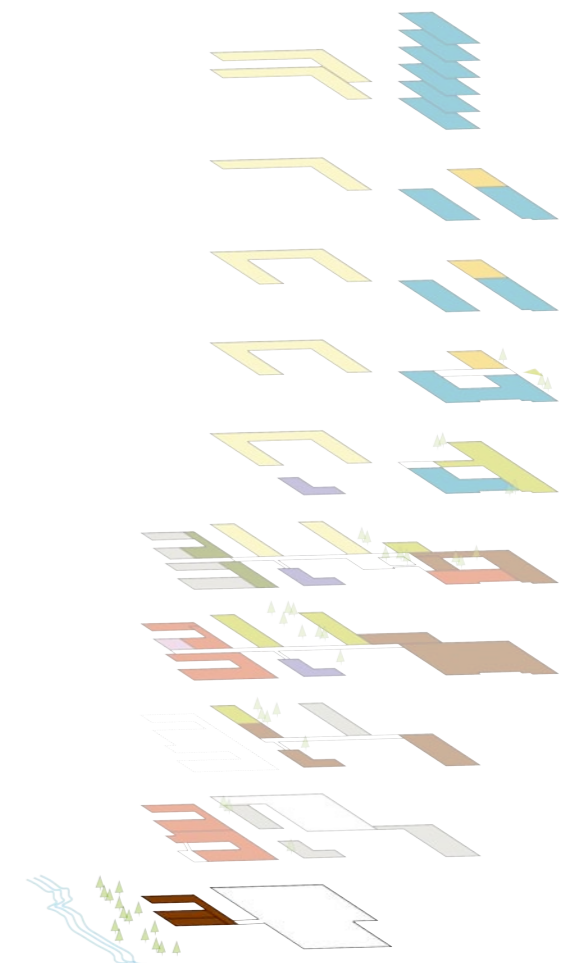


- Storage
- Mortuary
- Sterilization

According to the sloping terrain, most of the F0 is underground and using as parking area. From the 2 main vertical communication points, people can reach the spine directly.

The brown area contains support functions for Akut blocken : Sterilization, Mortuary and Storage.

A culvert connects this two blocks and also using to transfer goods.





# PLAN F1 - 1:1000

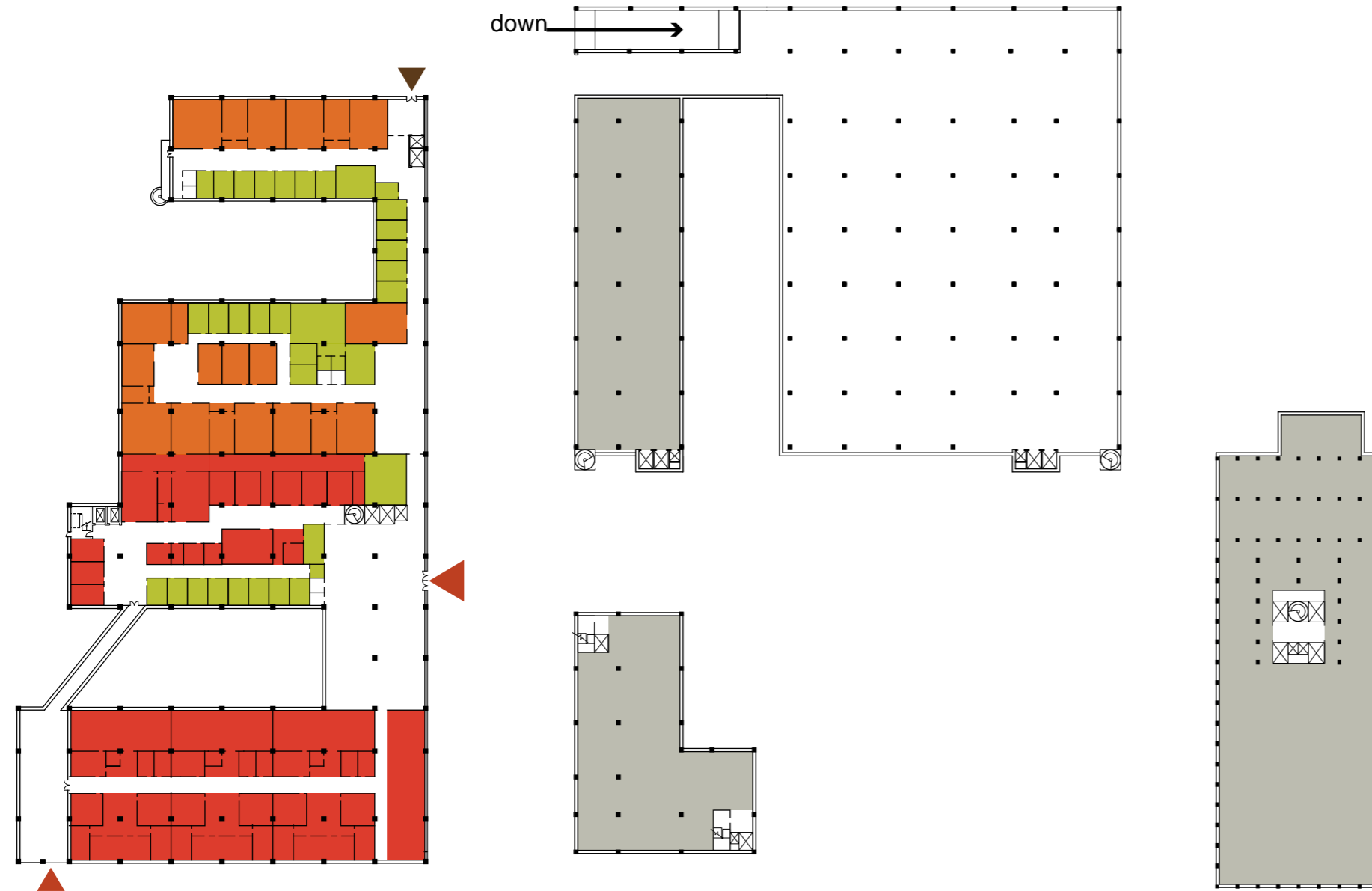
This floor also divide into two part.

In Akut Blocken, this floor contains Emergency Unit and Imaging Unit. The arrangement allows an easy access of X-Ray for truma room.

There are two entrance for the Emergency Unit. One is for patient, with an individual reception hall and another for ambulance only.

On the north part of the floor, facing the loading area, there is the entrance for goods. They are transferred directly down through elevator to the F0 cross the street and then to the rest of the building.

The rest part of this floor includes Tecnical rooms and another floor of parking.



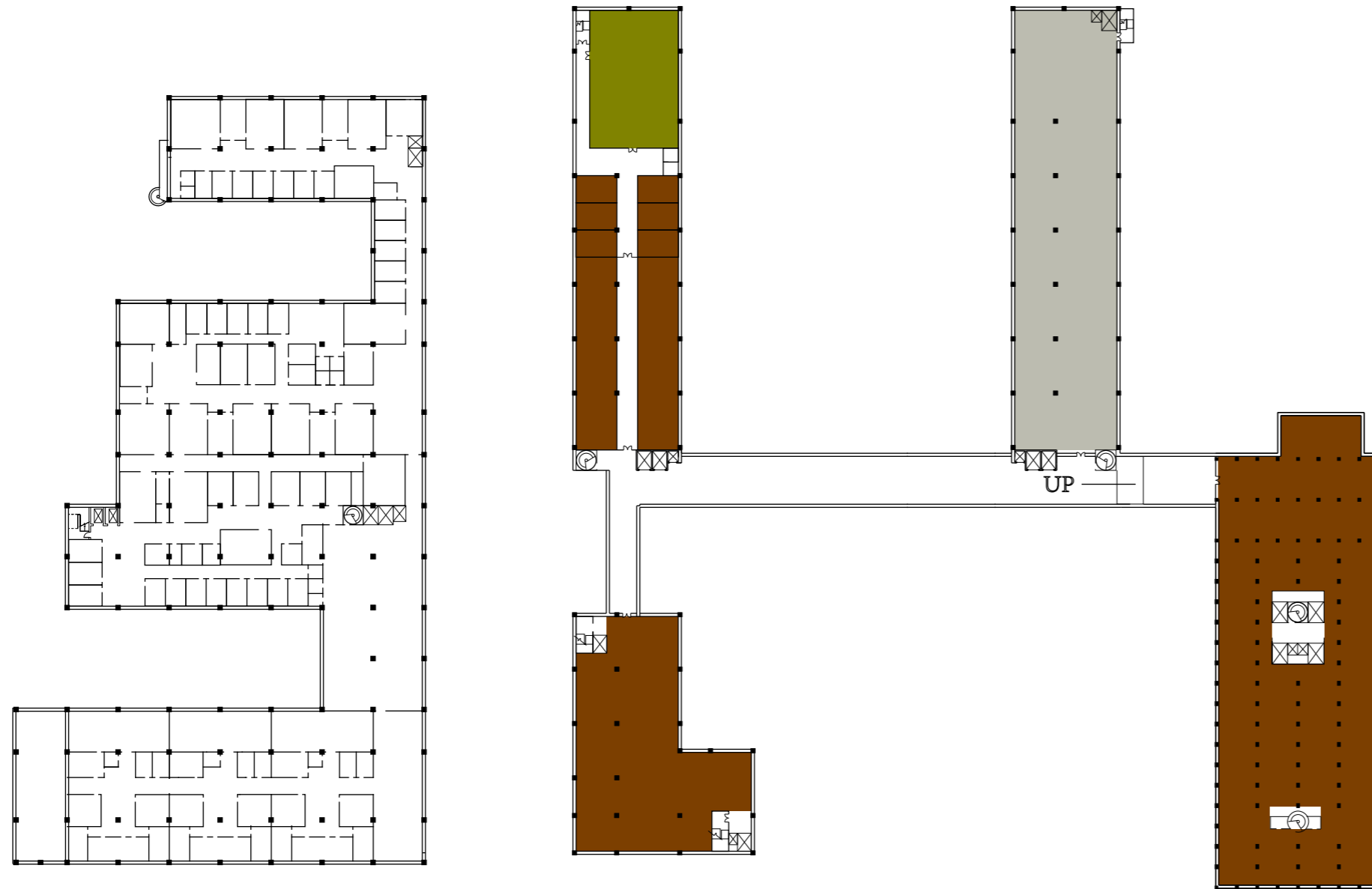


# PLAN F2 - 1:1000

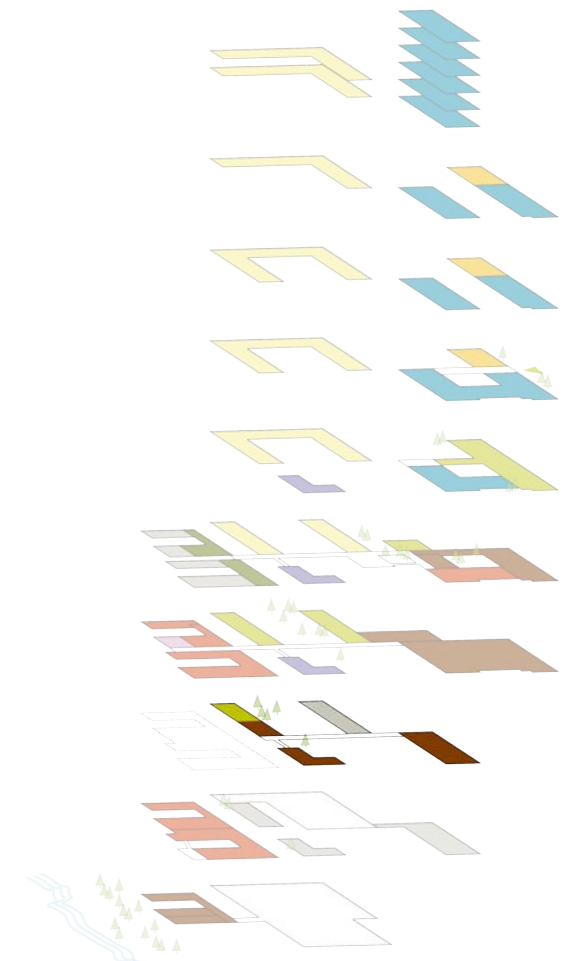
Since Akut Blocken has a higher ceiling height, it actually has no F2.

The rest part of the building includes storages, technical rooms, part of the study rooms and a lectural hall.

Main spine for goods delivery is also in this level. Goods that has been tranferred through clurvet can reach this level through the main vertical communication point.



- Storage
- Technical Floor
- Library





# PLAN F3 - 1:1000

The F3 of Akut Blocken contains OP theater,ICU and delivery department.

The OP room served for both Emergency Unit and clinic.It is vertical connected with trama room downstaris and can also be reached by out-patients from the spine in the F4.

Spine for patient in bed is in this level also, the patient from ICU and OP theater can be transferred directly to the ward unit.

A wintergarden is placed in the end of the Spine,offering a chill-out space for staffs patients and their relatives.

The rest part of the building includes kitchen,storages, infection units' entrance and examing rooms, library,stud rooms and part of the administration rooms.





# PLAN F4 - 1:1000

This is the main entrance level, contains most of the public service. Reception, canteen, pharmacy and the spine for walking patients.

Both wards and clinics have direct connection to the reception in this level.

The spine leading downwards to the OP theater in the leftside and upwards to the sub-entrance in 6F in the rightside.

In out-patients department, this level mainly serves for Imaging.

The rest part of the building includes staff changing area, wards for infection unit, lab and technical rooms for Akut Blocken.



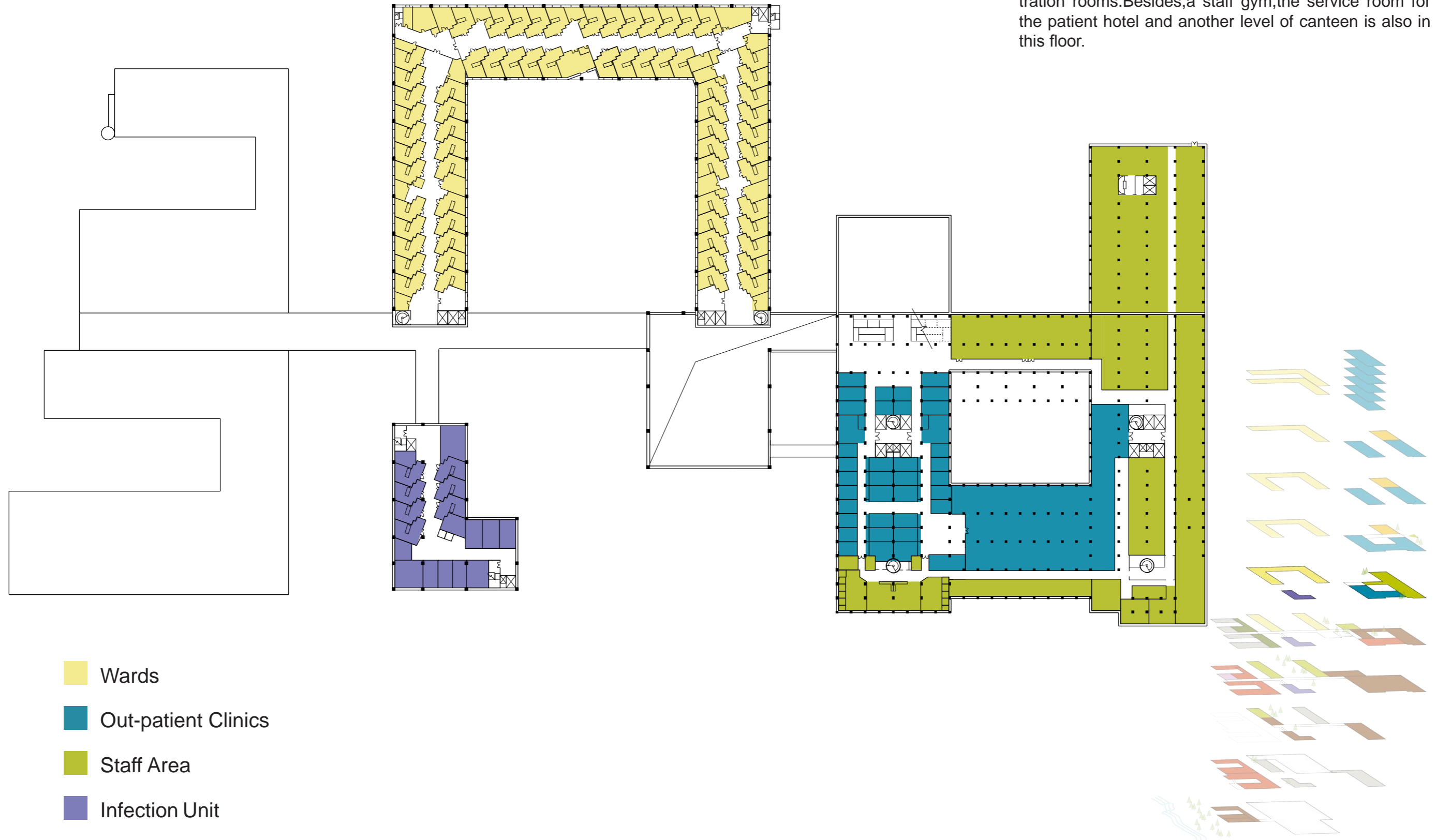


# PLAN F5 - 1:1000

When reach this level,each block becomes more independent.

Wards and infection unit block contain their own functions

The out-patient block includes both clinics and administration rooms.Besides,a staff gym,the service room for the patient hotel and another level of canteen is also in this floor.



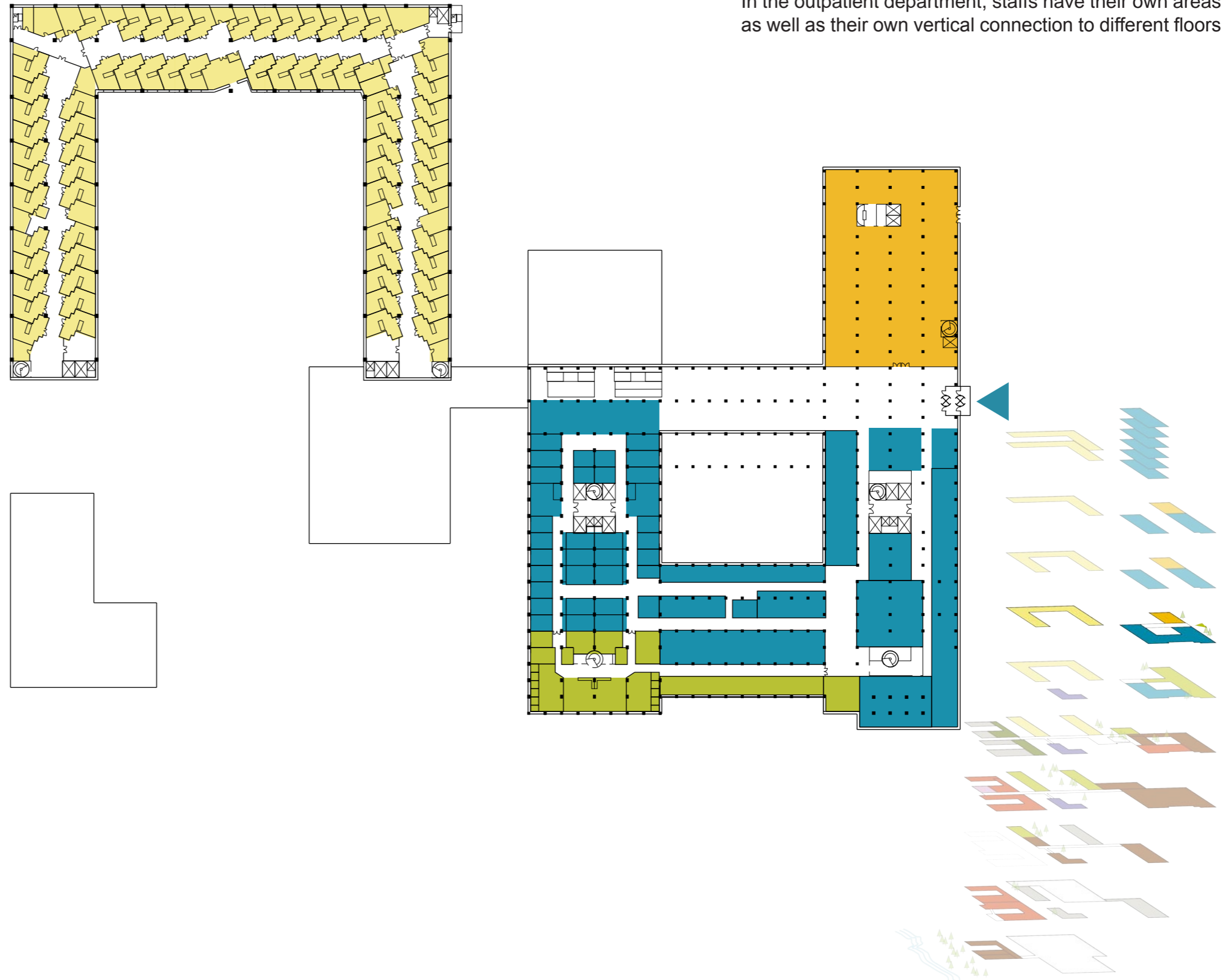


# PLAN F6 - 1:1000

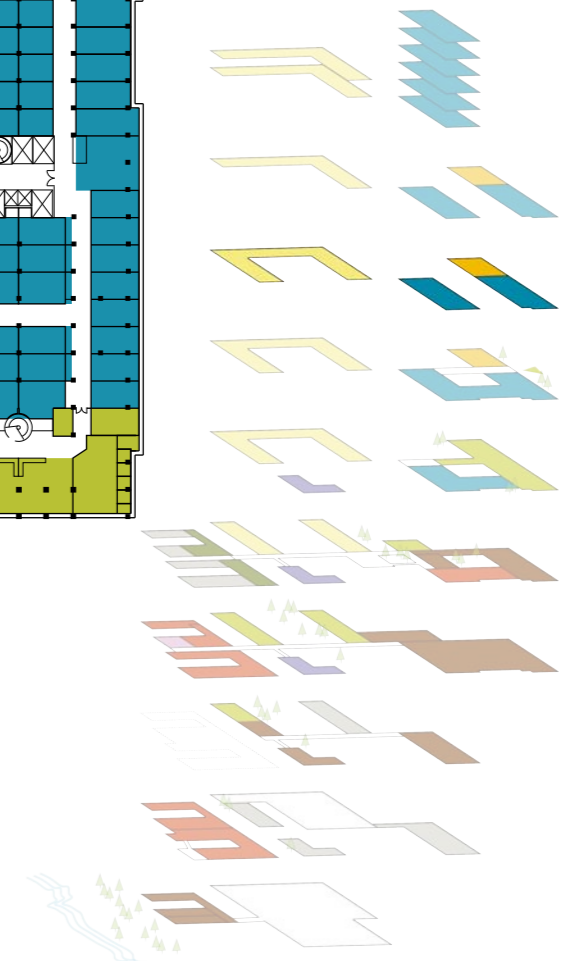
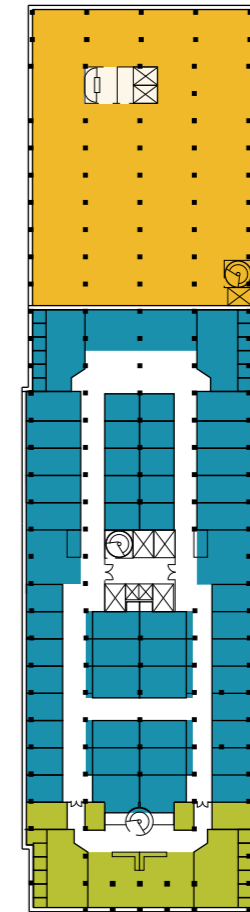
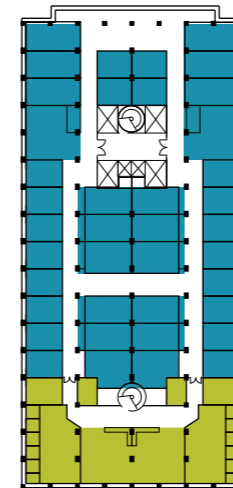
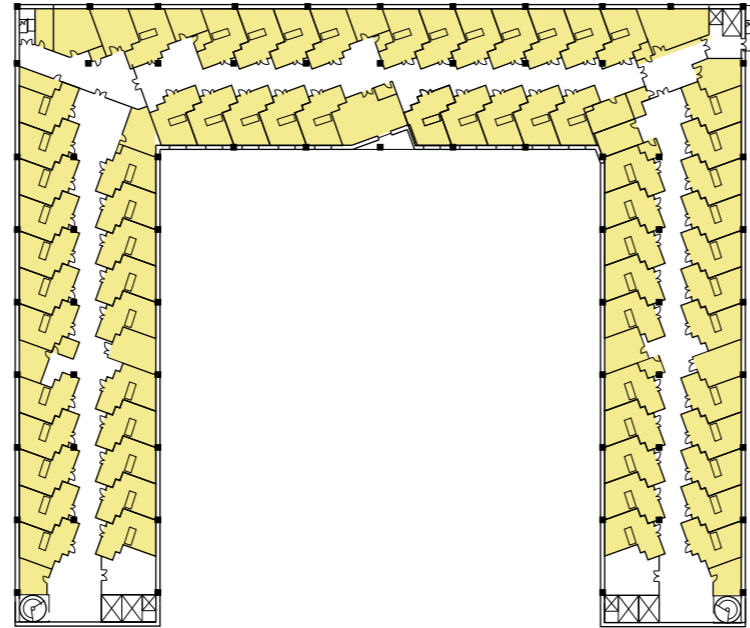
This level has the sub-entrance (existing main entrance) of the hospital.

The patient hotel is right next to the hospital. It can be entered both from the hospital and outside on the street. This location allows a convenient connection for patients.

In the outpatient department, staff have their own areas as well as their own vertical connection to different floors



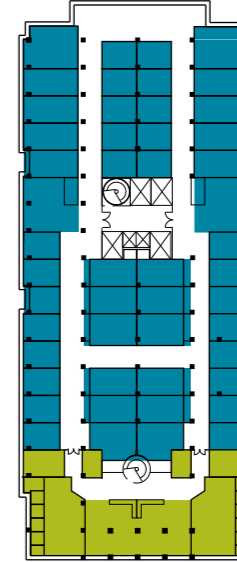
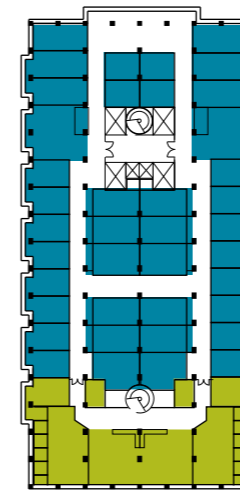
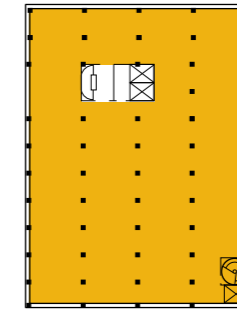
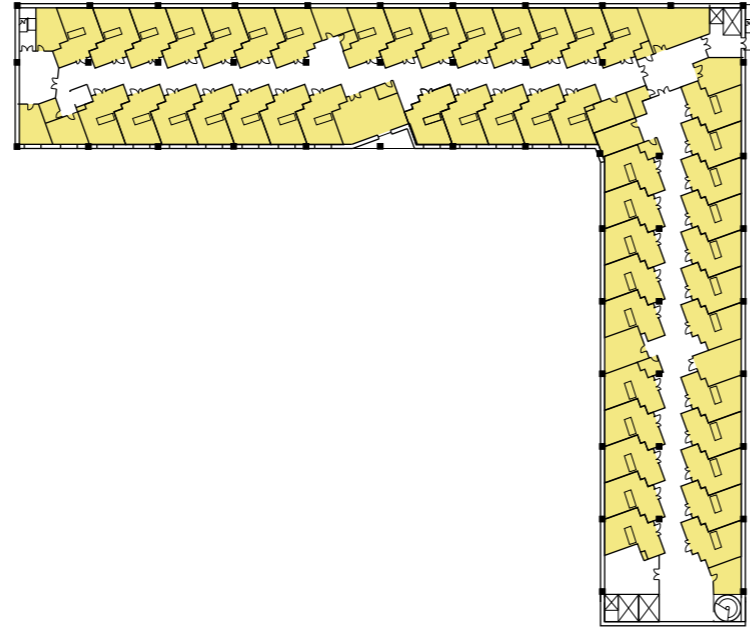
# PLAN F7 - 1:1000



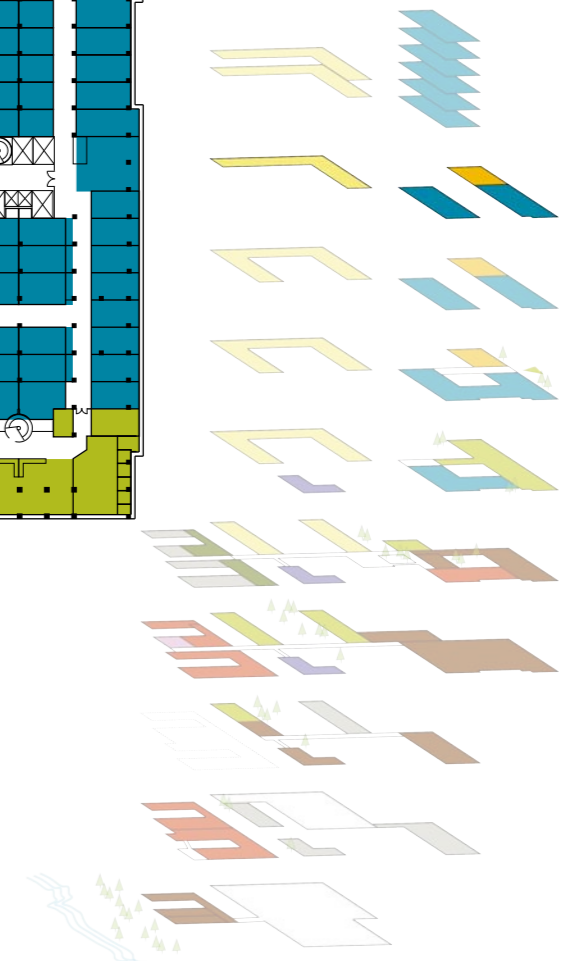
- Wards
- Out-patient Clinics
- Staff Area
- Patient Hotel



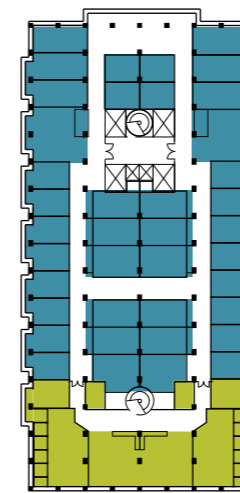
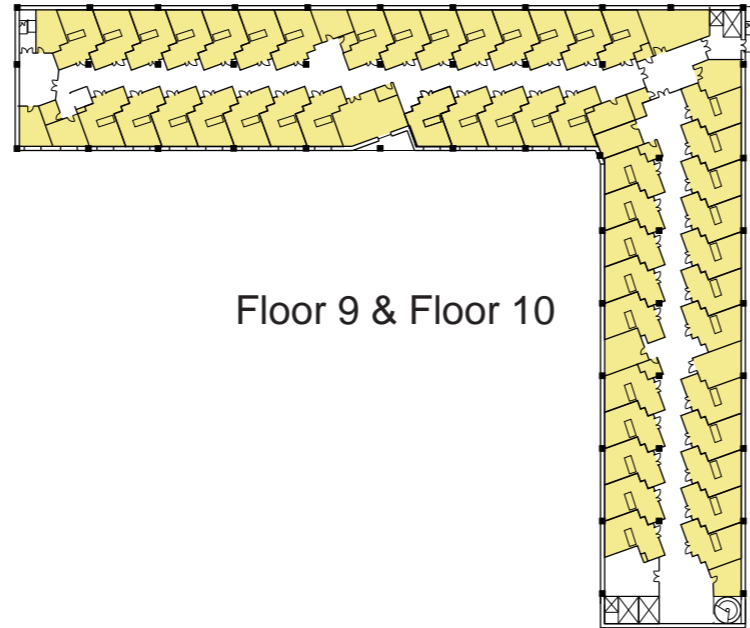
# PLAN F8 - 1:1000



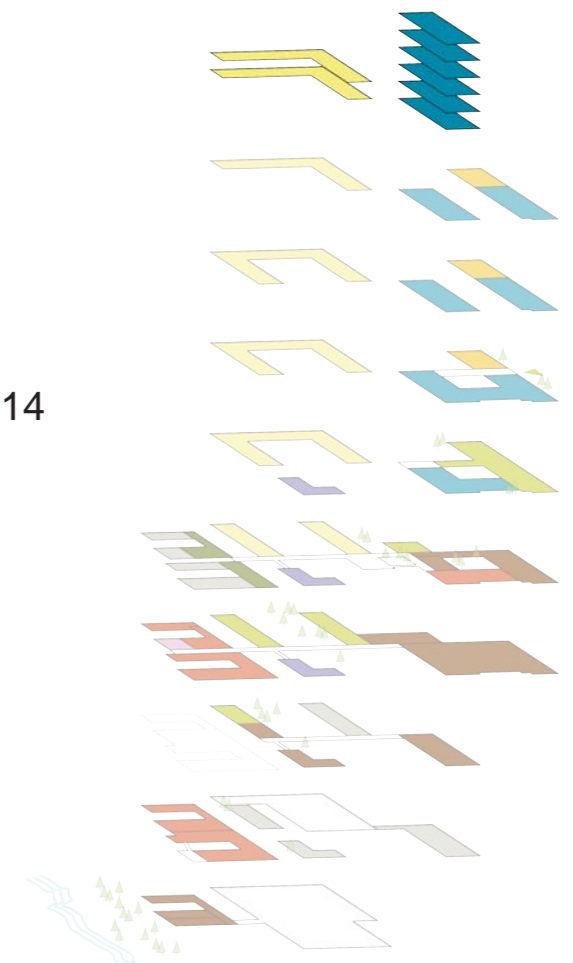
- Wards
- Out-patient Clinics
- Staff Area
- Patient Hotel



# PLAN F9 AND ABOVE - 1:1000



Floor 9 to Floor 14



- Wards
- Out-patient Clinics
- Staff Area



# SECTIONS (SPINE)

The spine crosses the whole building help to connect all the different blocks together and clarify the flow.

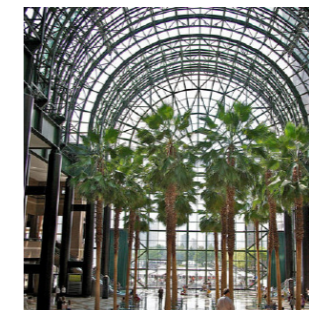
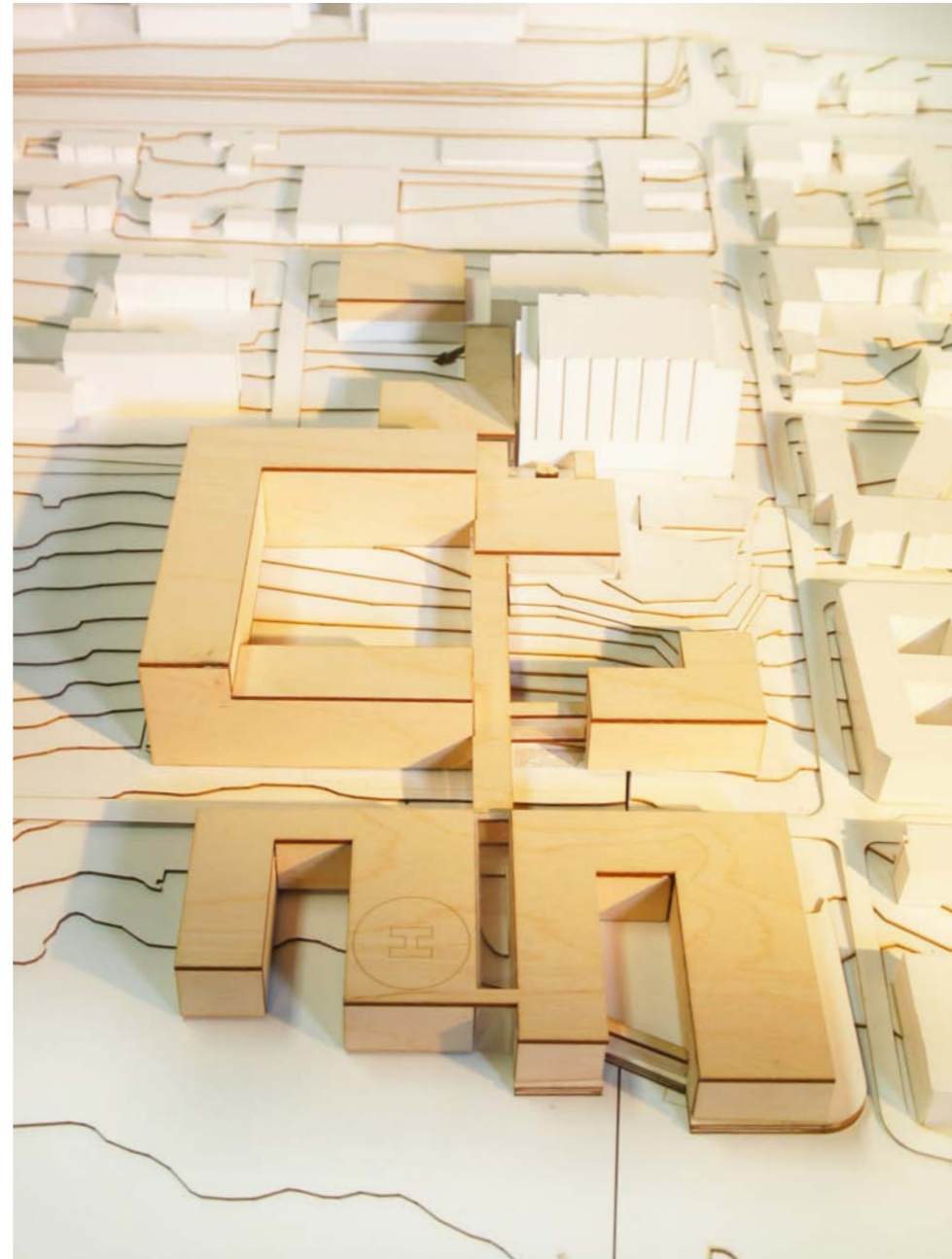
It contains 3 levels, the lowest part for goods, middle part for patient-in-bed and the upper part for walking patients.

Considered about its large scale, the long walking distance and the 9 meters width, we want to create a more rich space experience inside.

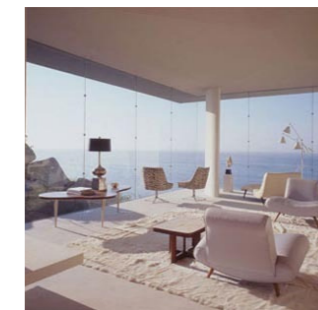
The idea is to divide the spine into 3 different themes. The upper part which is the most closed one, we give it a winter theme. Art and light installations are placed here to offer a warm and cozy feeling.

In the middle of it, where is the main waling area, we would like it to be more vivid. The summer theme brings in bright colour and facilities like beach chairs can help add leisure atmosphere in this area.

The last part inside Akut Blocken is a winter garden. We want this nature theme, the greenery can offer a peaceful feeling to help people relax, for both patients, their relatives and staffs.



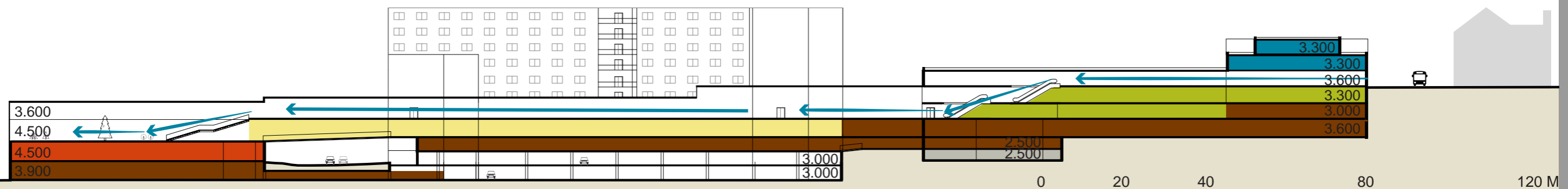
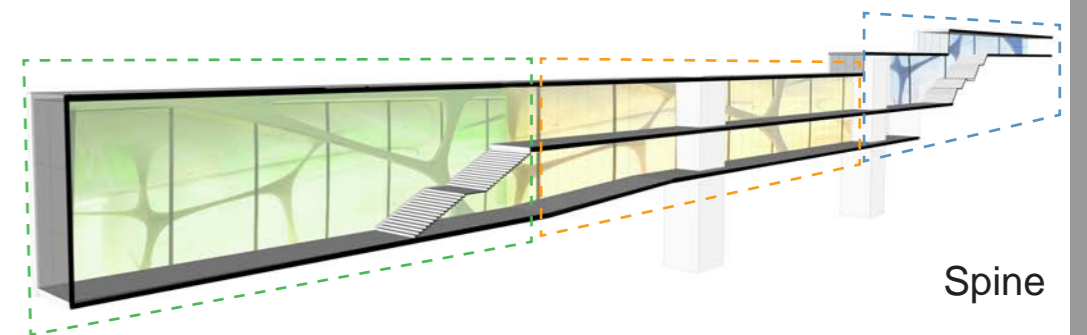
Nature Theme - Winter Garden



Summer Theme - Sunshine Zone



Winter Theme - Art & Light Installations



1-1 Section (in the Spine)



# FACADES

Most of the buildings in surrounding include the existing part have a warm-toned facades, we intend to keep this tone but with a more vivid feeling.

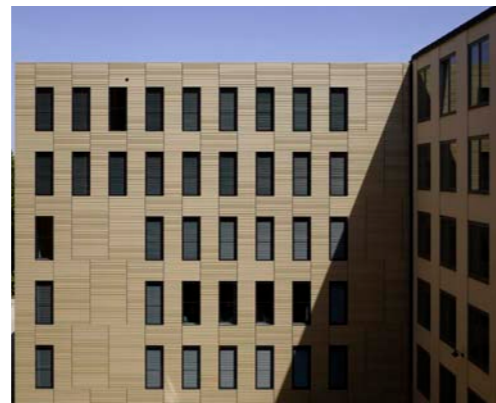
For Akut Blocken, which contains more high-tech function, fiber cement board is chosen as the surface cladding. It can offer a clean and bright appearance. Meanwhile, the material itself is easy for construction, resistance

for water and moisture and easy maintenance.

As a contrast, we would like the ward block has a more soft and warm cladding. Heat-treated timber is chosen as surface material. On one side it can still keep the woods' warm feeling, on the other side, it is more stable and durable.



Glass & Fiber Cement



Wood Facade



West Facade

0 20 40 80 120 M



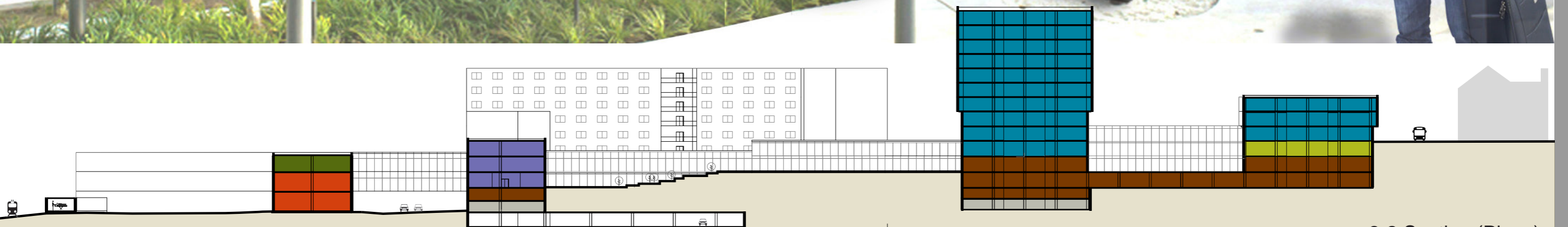
South Facade



# URBAN SQUARE



19



2-2 Section (Plaza)



RECEPTION IN F4

1:200

To In-patients Wards

Canteen

Spine

To Treatment Building

Cafe

Pressbyrån

Library

Toilets

Office

Chapels

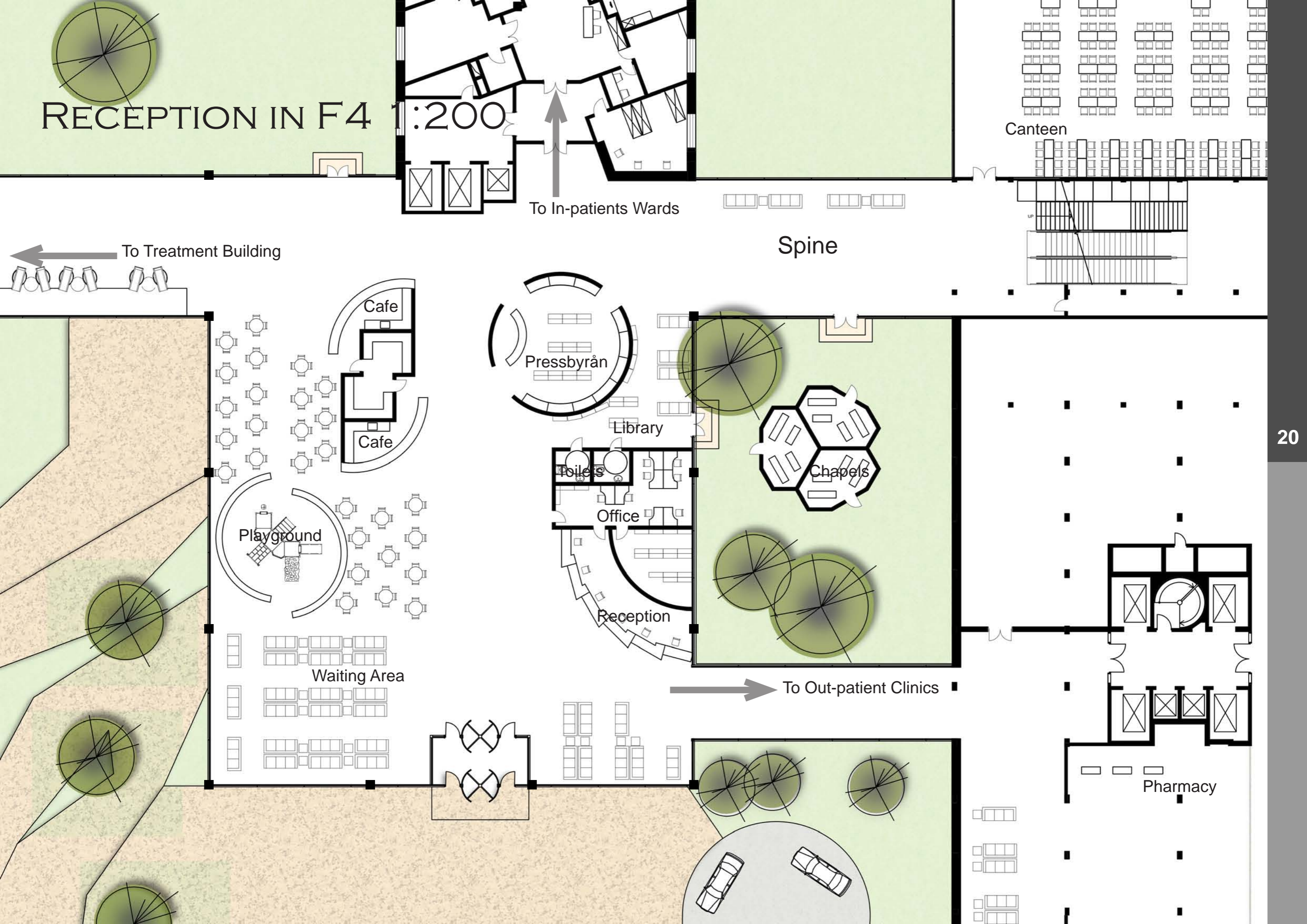
Playground

Reception

Waiting Area

To Out-patient Clinics

Pharmacy





# RECEPTION HALL

The centered reception offer most of the public facilities in the hospital, includes cafe, library, children's play area, a chapel in the curtyard and a canteen for both staffs and patients.

Main while it also helps a lot in orientation, with a connection to out-patient clinics in the east side, to in-patient ward in north side and to treatment building through the spine in west side.





# IN-PATIENT WARDS



Patient room model at the University Medical Center of Princeton at Plainsboro, US.



# IN-PATIENT WARDS 1:200 PLAN



Wards layout 1  
 2 ward unit  
 23 patient rooms for each unit

Wards layout 2  
 3 ward unit  
 23 patient rooms in horizontal unit  
 22 patient rooms in vertical unit

Wards layout 3  
 2 ward unit  
 27 patient rooms in horizontal unit  
 22 patient rooms in vertical unit

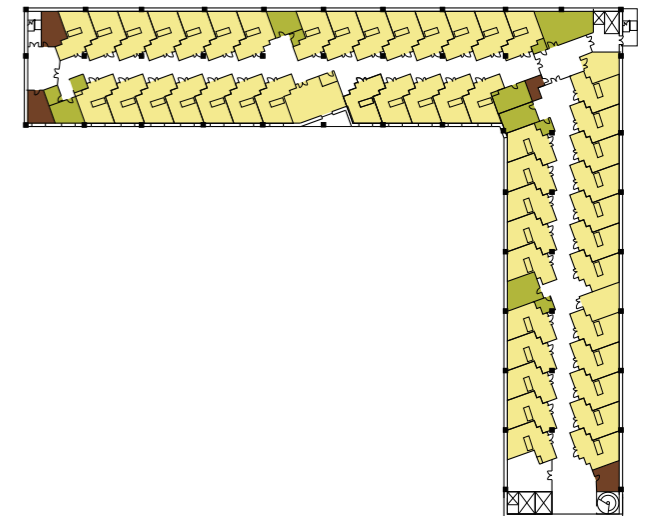
Wards Layout 1



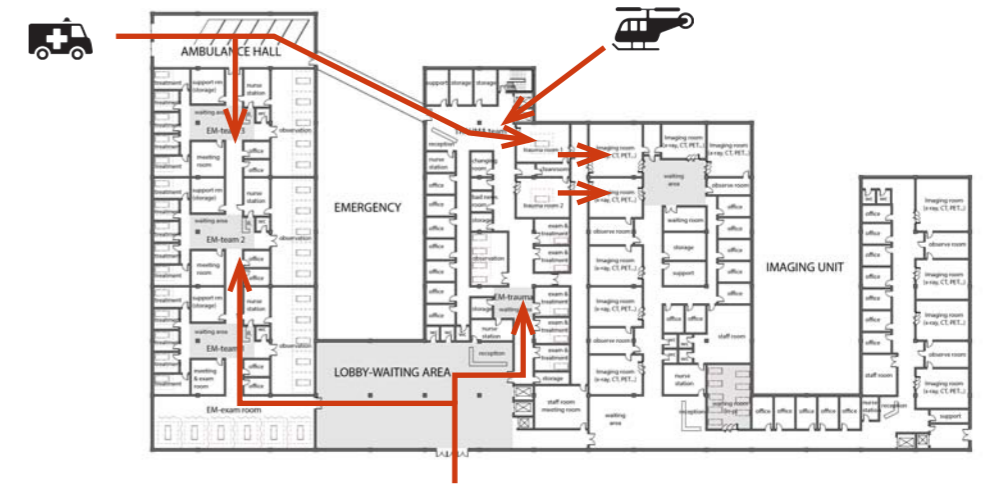
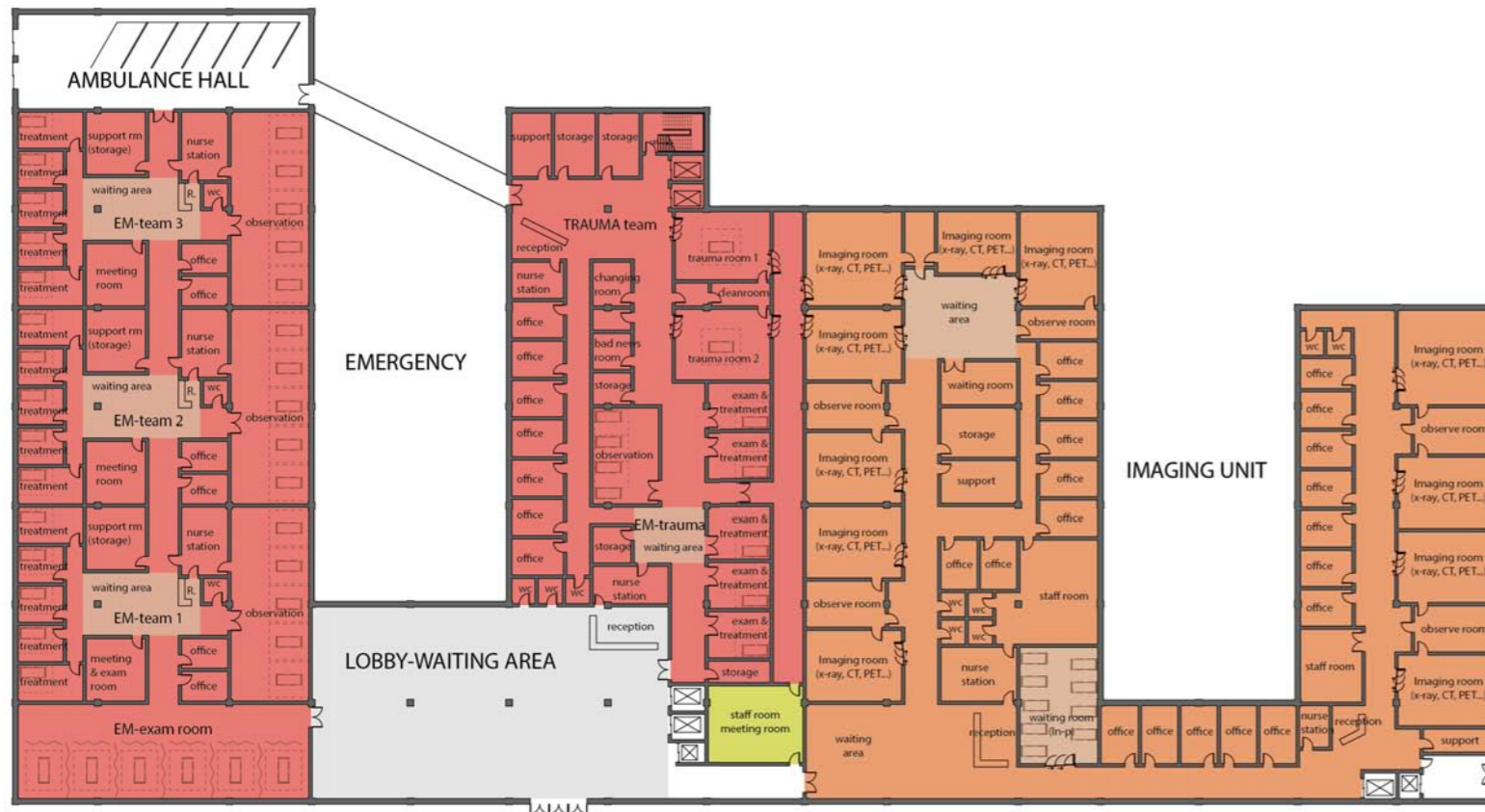
Wards Layout 2



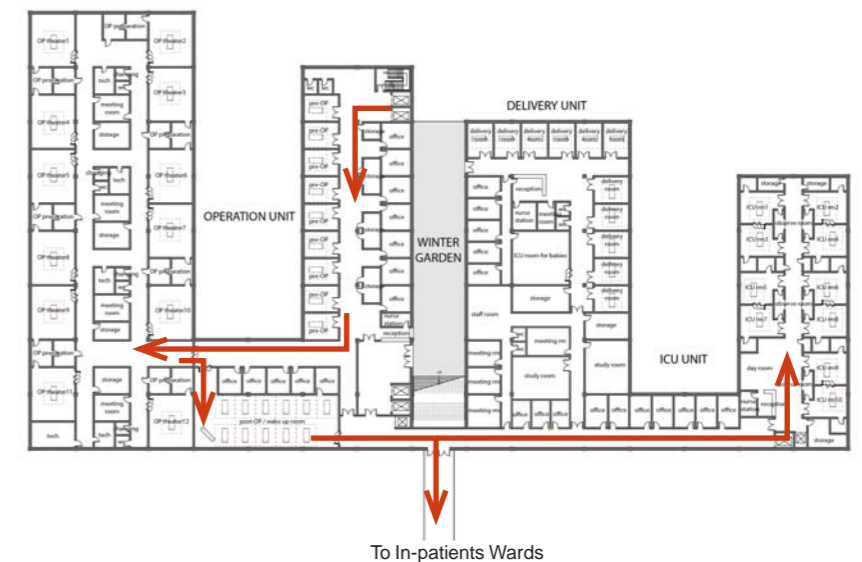
Wards Layout 3



# HOT FLOOR PLAN



Depending on how the patient come to emergency, the patients are seperated from patient on foot and patient in bed. Patient use passages in west side, if they come to hospital by ambulance or helicopters, and may directly sent into trauma rooms, which have door to door connection to X-rays.



- Operation Unit
- Emergency
- ICU Unit
- Imaging Unit
- Delivery Unit

For those who need immediate operations, the patient may also use elevators in the west to go directly into the pre-OP area to be prepared. After they wake up from operation they are send to ICU rooms or wards by corridors seperates the public and the patient in bed.



Ryggvad

