Medical cities as autonomous independent regions

ABOUT US

Nickl & Partner Architekten AG was founded in 1979 by Professor Hans Nickl. As one of Germany‘s leading architectural firms, the design business operates worldwide and is based in Munich, Germany. In 2015, Nick & Partners was established in China, Beijing as a subsidiary of Nick & Partners Architectural Design Consulting Co.,Ltd

The practice covers the design of hospitals, research laboratories, offices and other buildings as well as urban planning and implementation work. The company is a European leader in the planning of medical school projects, general hospital projects and research laboratories and teaching and research projects. The firm employs around 200 people came from Europe and Asia.

We work on medical school and hospital projects, research, teaching and laboratory projects, retirement and rehabilitation projects, and urban planning projects. Large-scale international project experience: University of Düsseldorf, Germany; St. Petersburg Multifunctional Medical Center, Russia; Frankfurt University Hospital, Germany; Beijing Centre for Disease Control and Prevention, China; Shenzhen No. 2 Children's Hospital, etc.

SERVICE FIELDS

01

CONSULTING

02

DESIGN

03

GENERAL PLANNING

04

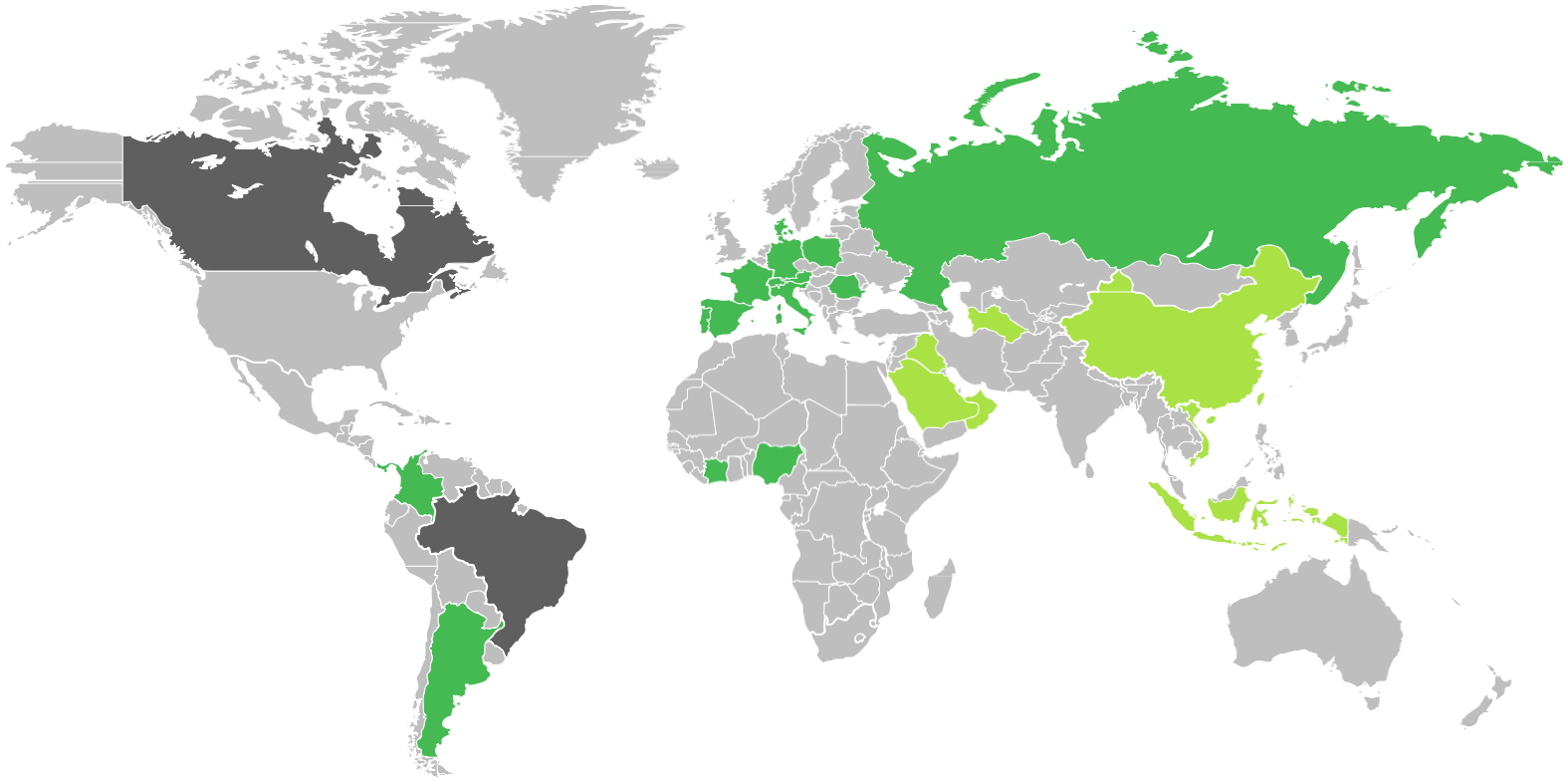
MEDICAL CONCEPT

05

SITE SUPERVISION AND MANAGMENT

Nickl & Partner

INTERNATIONAL EXPERIENCES



SUSTAINABILITY

All our medical and research projects in Germany meet the requirements of the **German Green Building DGNB**

Energy efficiency of over **40%** Minimizing hospital operating costs

I

The firm has a professional building climate design team that works with the most professional engineering teams to ensure that the technology is at the forefront through university research projects.

II

Member of the German DGNB
Keep up to date with the latest DGNB and LEED certification enquiries

III

Expertise in accreditation and education

Leading research institute and standard setter for green hospitals in Germany

IV

Innovative means of energy saving
Pre-design intervention

DGNB®
Deutsche Gesellschaft für Nachhaltiges Bauen e.V.
German Sustainable Building Council

U.S. GREEN BUILDING COUNCIL
LEED GOLD
USGBC

TEAMS

Mr. Herionimus Nickl
CEO

Born in Munich, Germany in 1978, from the University of Erfurt, Germany in 2003. In 2008 he obtained an MBA in International Medical Health Management from the Frankfurt School of Finance.

Has 15 years of experience in medical architecture projects and 10 years of experience in China.

His international projects include Shenzhen No.2 Children‘s Hospital, Xi’an International Rehabilitation Centre, St.

Petersburg Medical Center in Russia and the Beijing Centre for Disease Control and Prevention, etc.

Prof. Christine Nickl-Weller
Founder

After graduating with a degree in architecture from the Technical University of Munich, Christine Nickl-Weller joined the Munich-based architecture team of Nickl & Partner in 1989 and became Chief Executive Officer of the corporation in 2008. In 2004, she was appointed Professor at the Technical University of Berlin and holds the only university chair for the design of hospitals and health care buildings in Germany.

Prof. Hans Nickl
Founder

Prof. Hans Nickl studied architecture at the TU Munich. In 1979 he founded his own architectural firm and in 1989, together with his wife, Prof. Christine Nickl-Weller, the architectural association Nickl & Partner, whose chairman he is today.

Hans Nickl was appointed professor for the field of “constructive design” at the FH Erfurt in 1992 and taught from 2004 to 2017 as a guest in the field of “designing hospitals and healthcare buildings” at the Technical University of Berlin.

Mr. Magnus Nickl
CEO

Contents

Planning tasks

Teaching:

- **Future-oriented teaching and training:**
  - Student education with teaching laboratories and independent
  - research laboratories
  - Specialist training for all Russian military doctors
  - Continuing education and recertification

Research:

- **Future-oriented special research with the latest technology**
  - Small and large animal research
  - State of the art imaging
  - Military special research

Clinical care:

- **Maximum care provider with a special focus on emergency care and traumatology**
  - Medical care for all military personnel
  - Provision for mass casualties

Guiding principles of the Medical City

- Is open and welcoming
- Is patient and employee friendly
- Structurally meets medical leadership requirements
- Has interdisciplinary topic centers
- Networks clinical care, research and teaching
- Bundles central tasks
- Has an efficient operational and treatment structure
- Deploys staff efficiently
- Has reduced operating and maintenance costs
- Enables capacity expansion in teaching, research and clinical care

Guiding principles of security of supply

- Self-sufficient infrastructure including energy and water supply
- Underground emergency structures in the event of a crisis
- Fail-safe communication structures
- Networking the cities with one another
- Integration into the international & national disaster networks
- Standardization of the systemic core areas
- Regional and demographic standard adaptation

Guiding principles core areas

- Autonomous special use zone
- Clinic including underground emergency structures
- Campus research & teaching
- Medical industrial area
- Living quarters
- Local supply area including shopping mall
- Infrastructure center

Contents

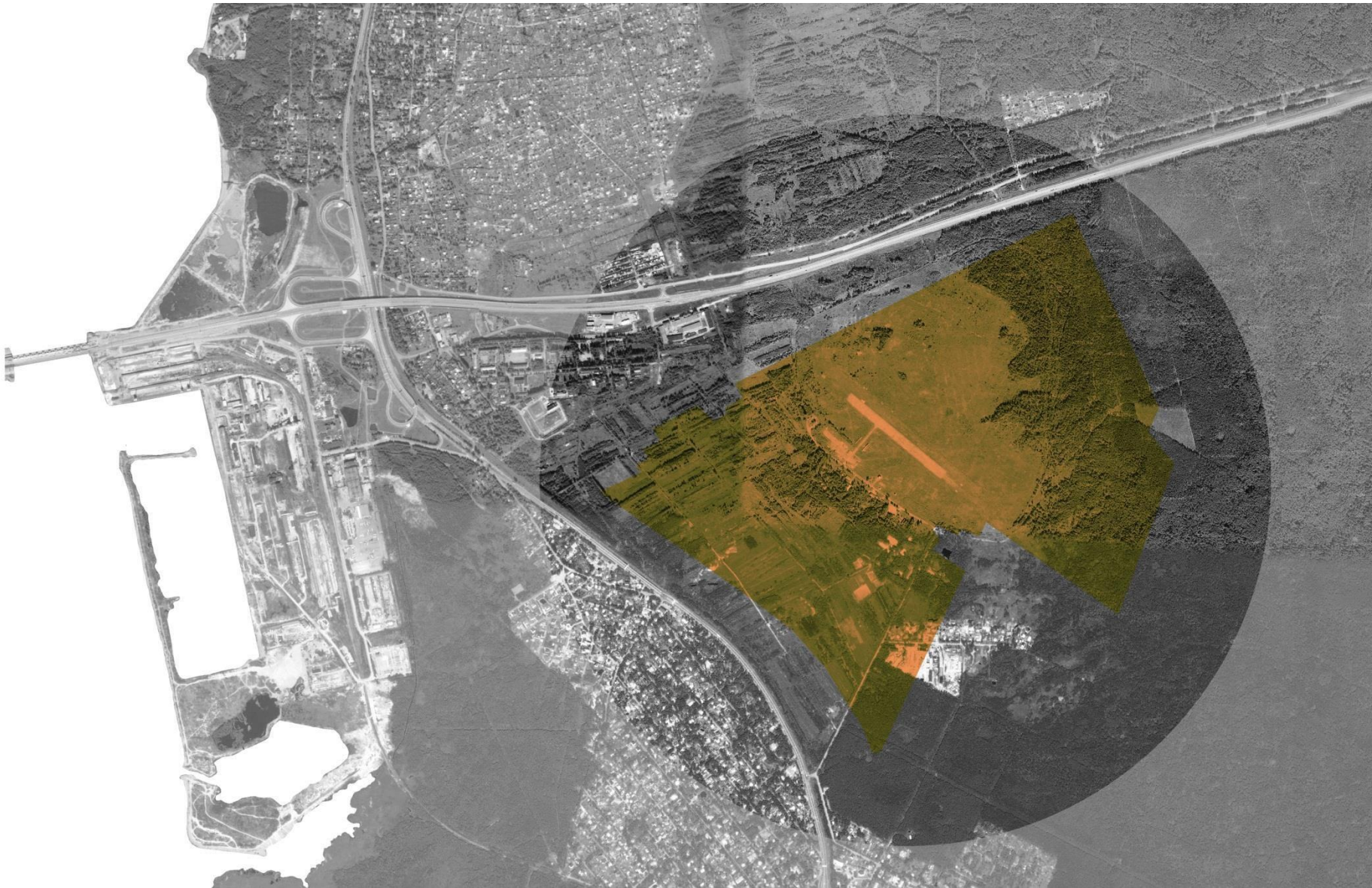
Master plan

Nickl & Partner

Starting Position Gorskaya <> Downtown

Conclusion

New planning on the Gorskaya property

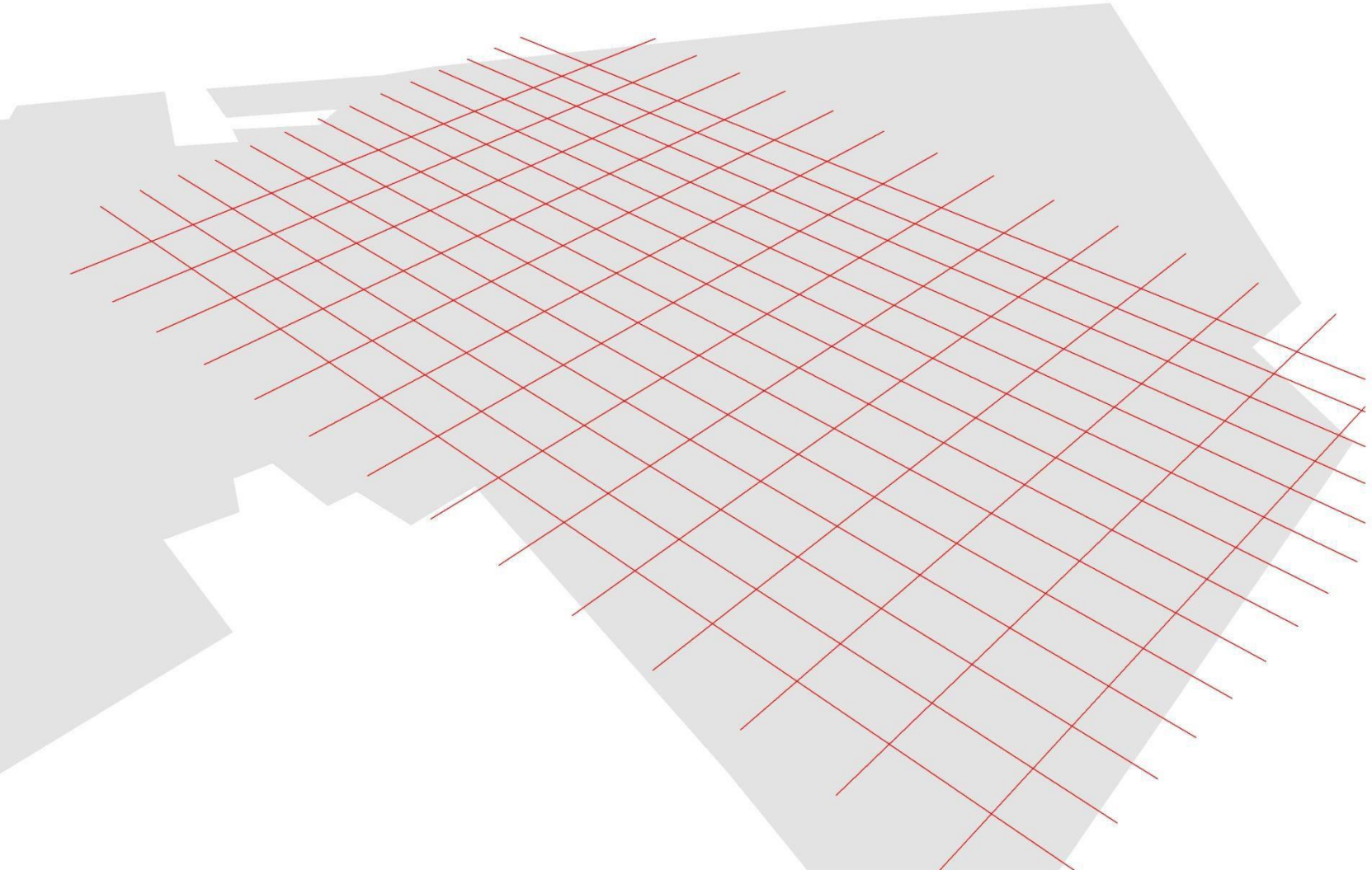


Master plan

Nickl & Partner

Master plan historical grid Vasilievsky Island

Master plan Grid applied to Gorskaya



Master plan Use Cluster

Master plan Clinic and care center

Diagnostics & Therapy

Maintenance

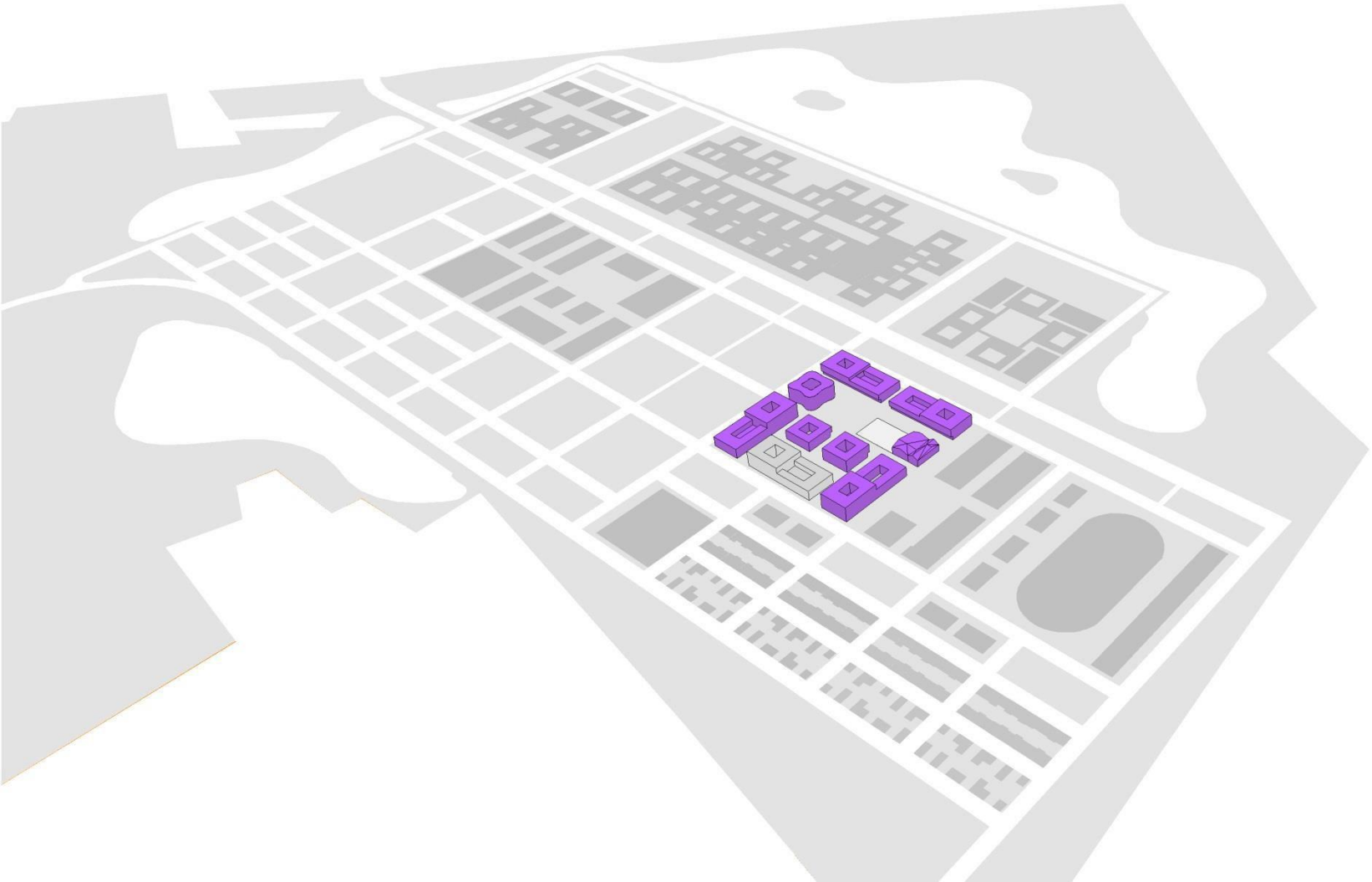
Care

Master plan Research & Teaching

Research & Teaching

Master plan Living

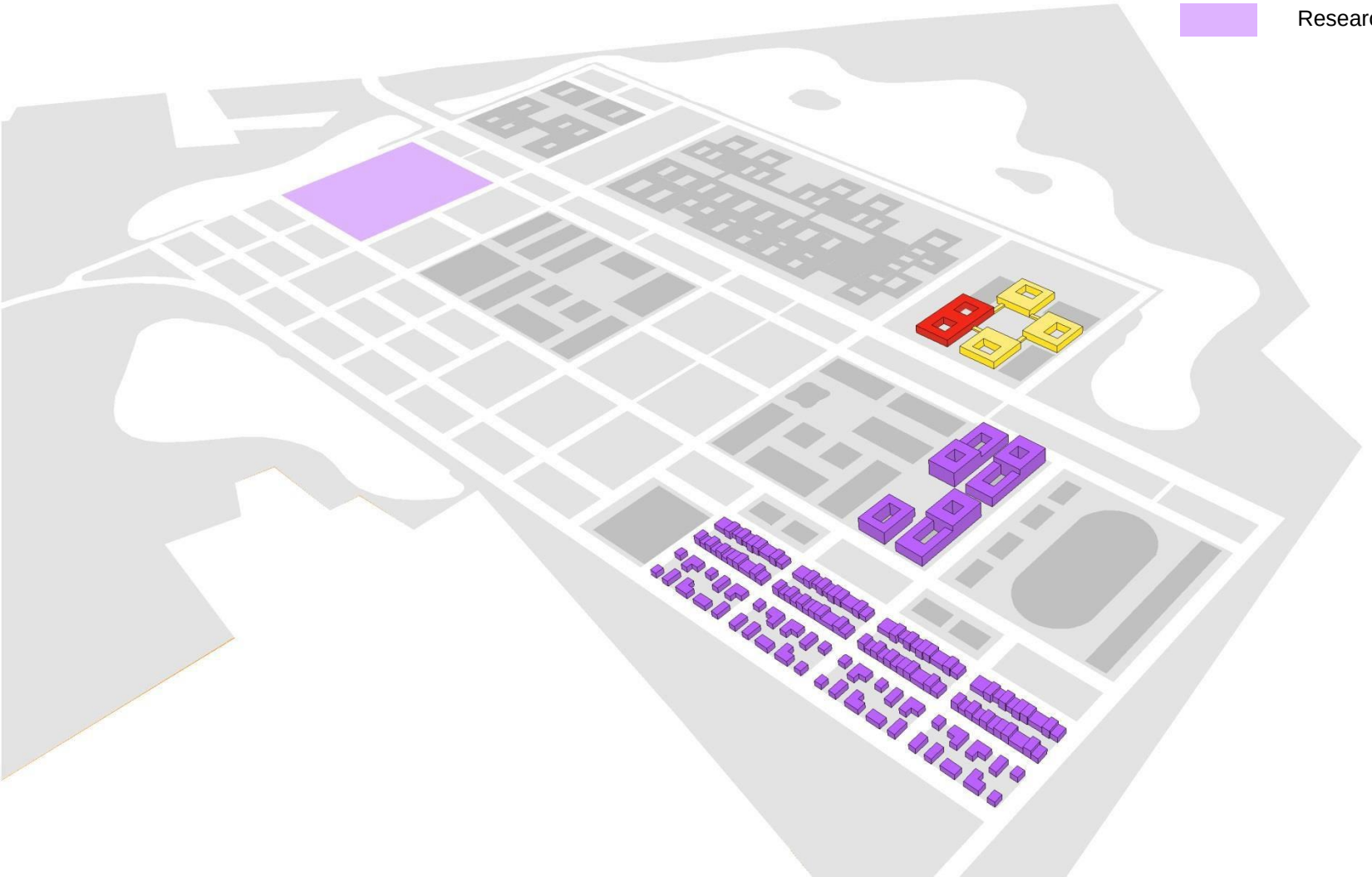
Living & local supply



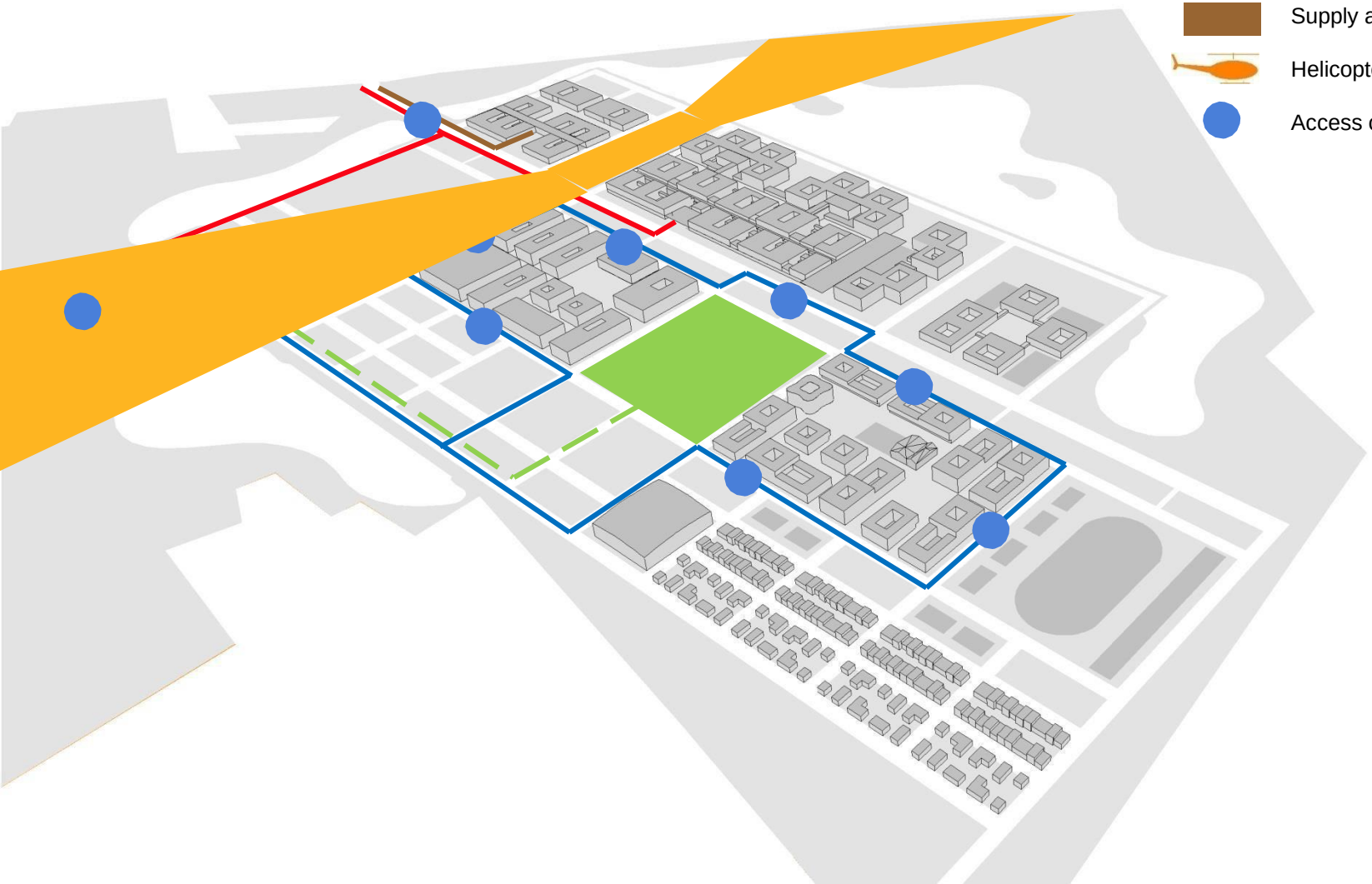
Master plan Sport

Sport

Master plan Expansion Options



Master plan Development



Master plan Light as a guidance system

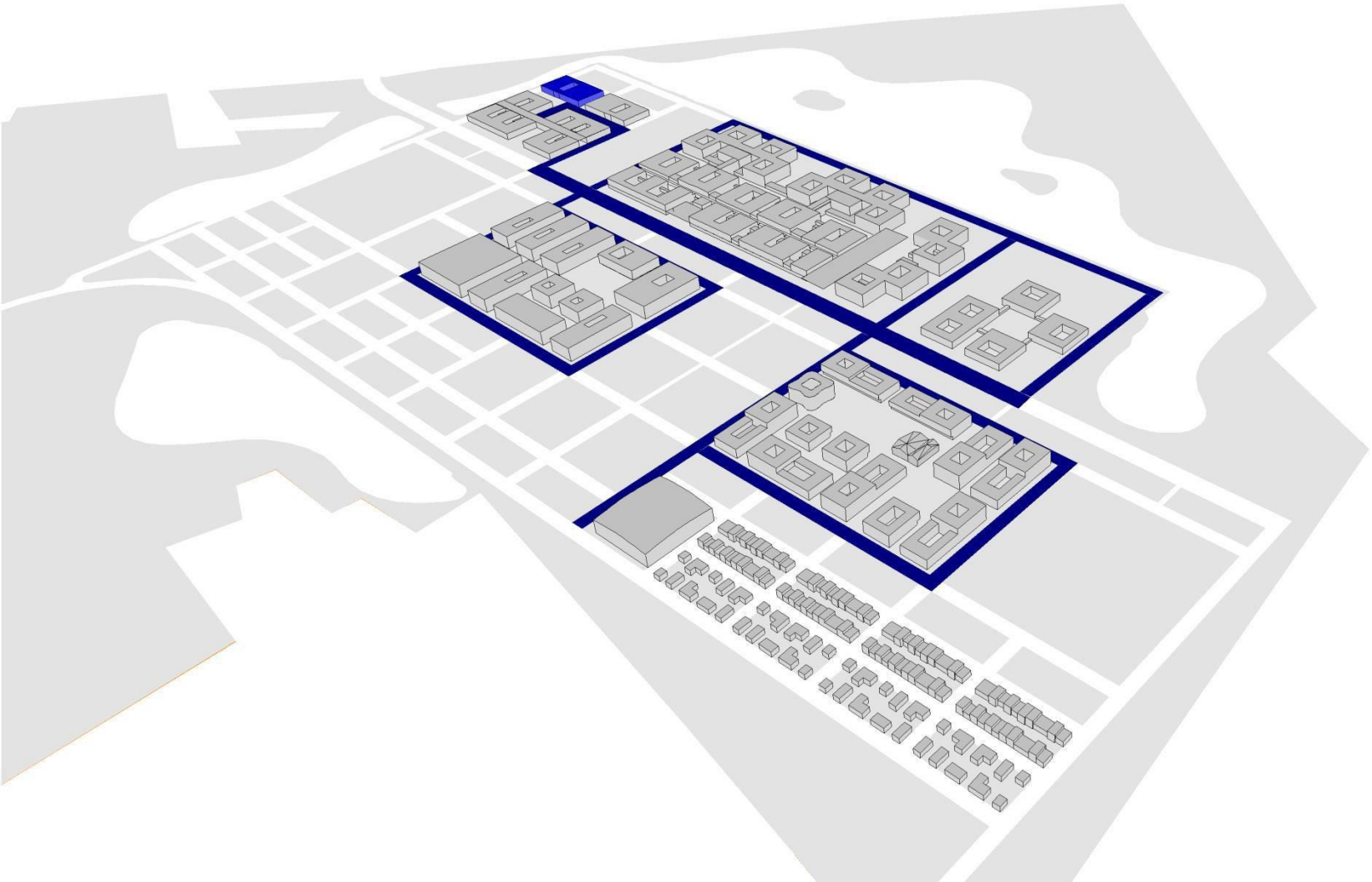
Masterplan Water areas

Masterplan Water areas

Masterplan Technical infrastructure

Supply center

Driverless transport system



Master plan Logistics

Logistic center

Underground delivery

Master plan Location map

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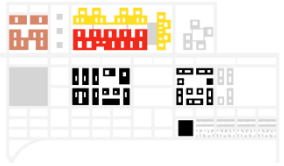
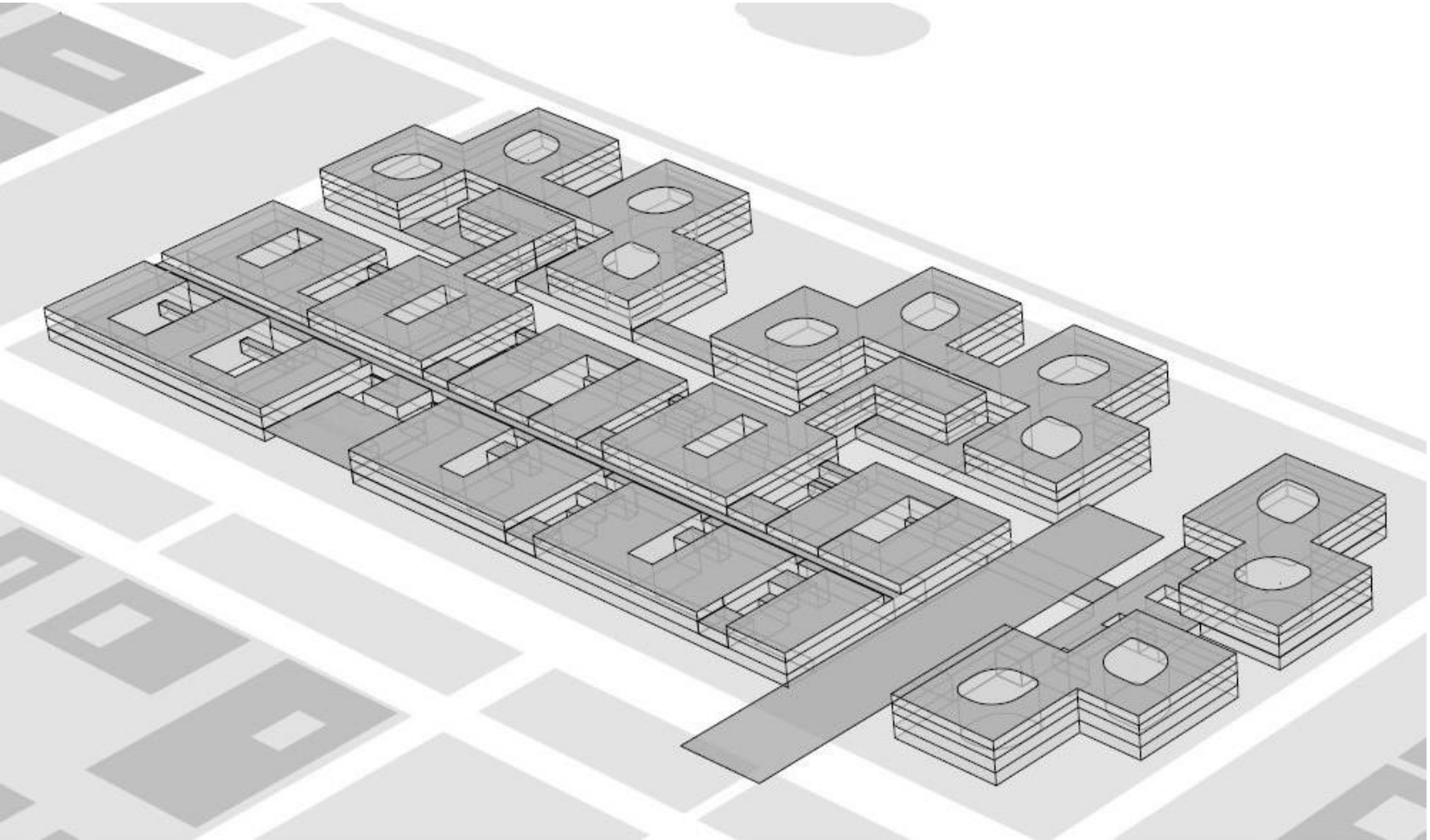
Clinical care

Clinical care

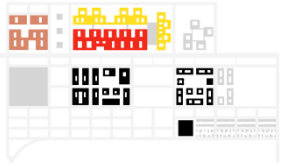
Clinical care

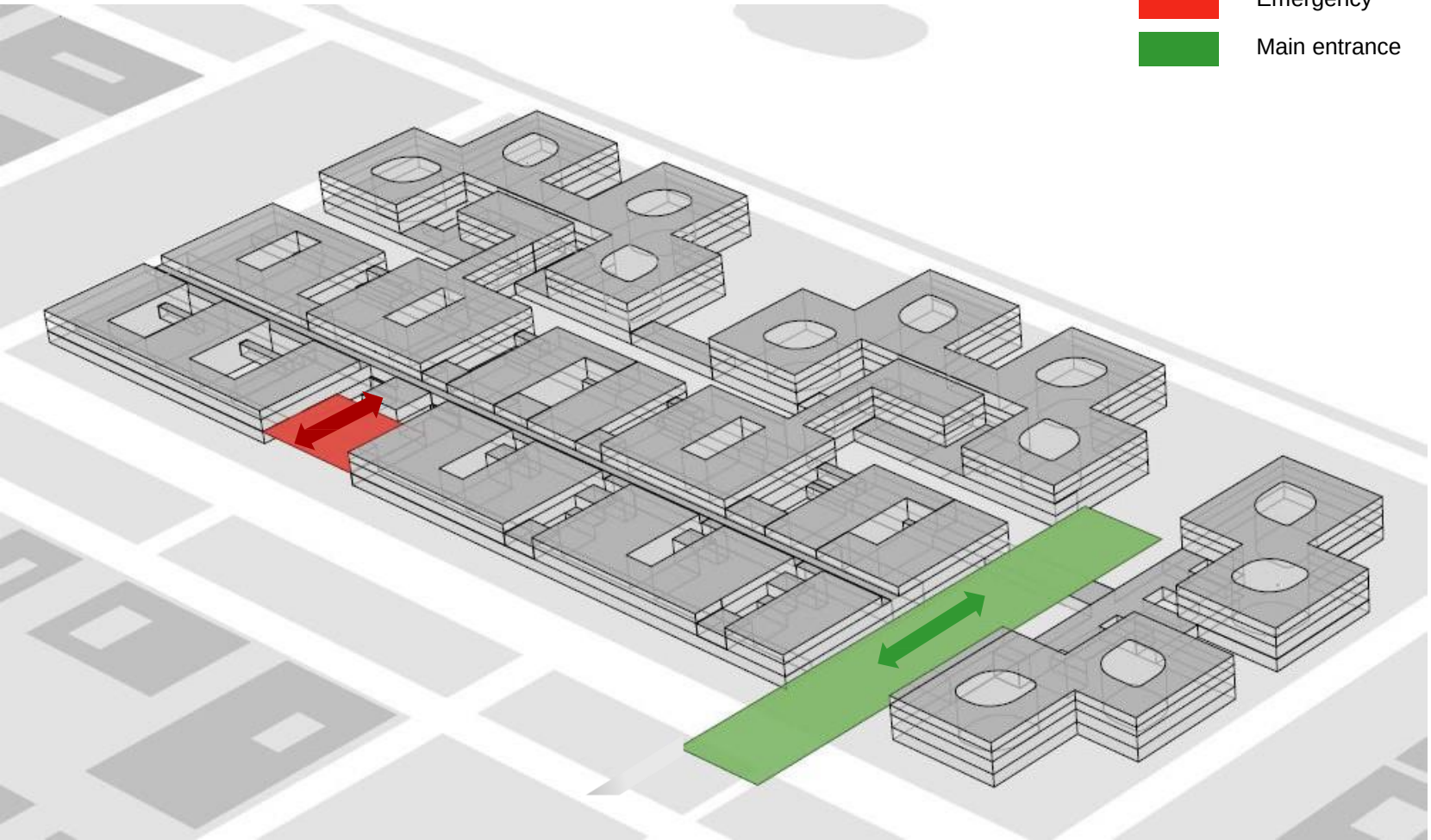




Clinical care

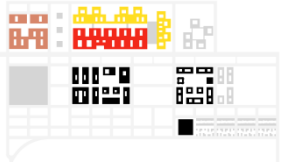
External development

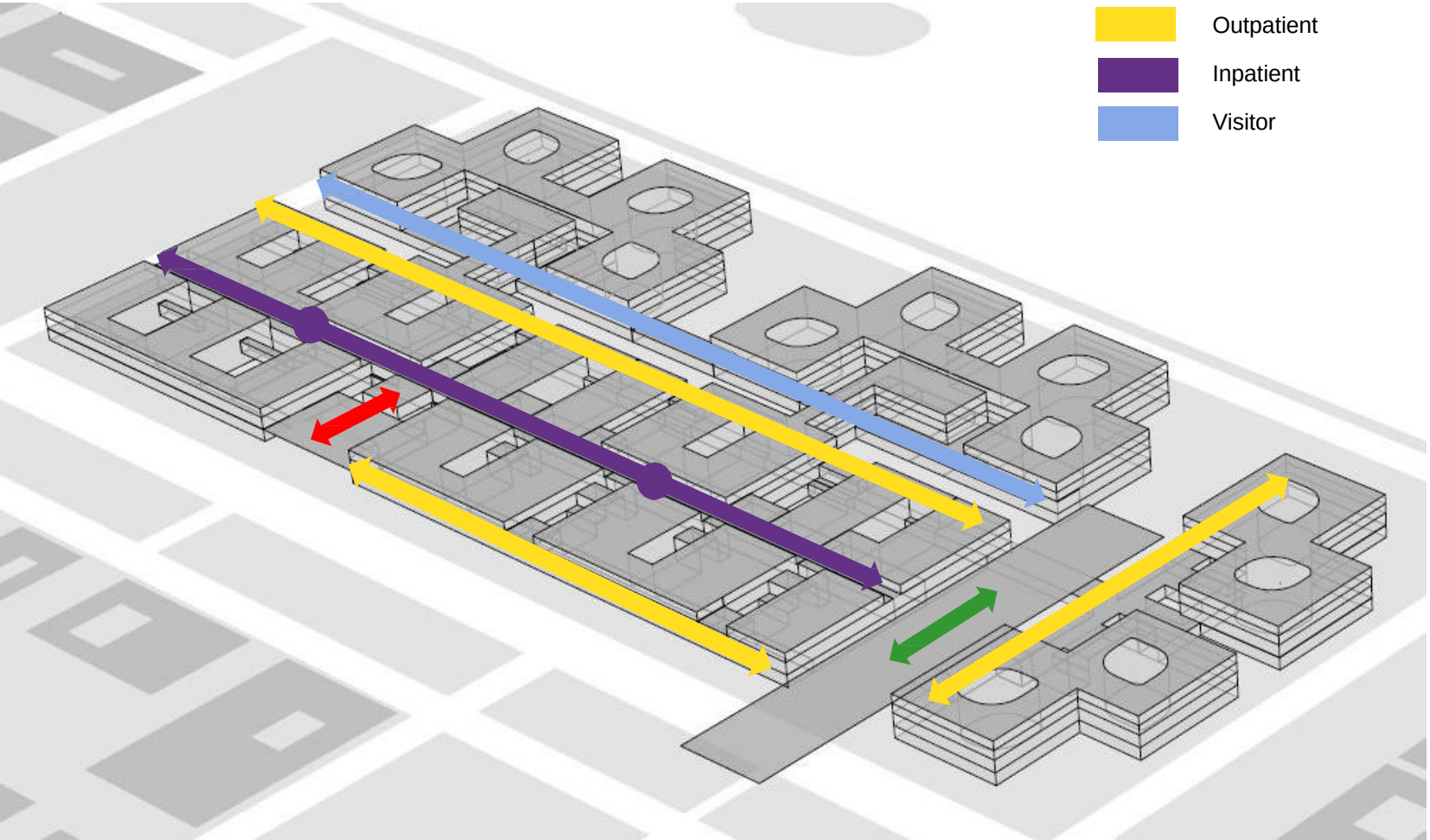




Clinical care

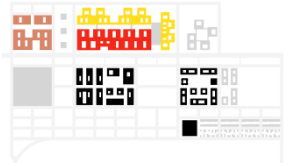
Separation of patients and visitor flows

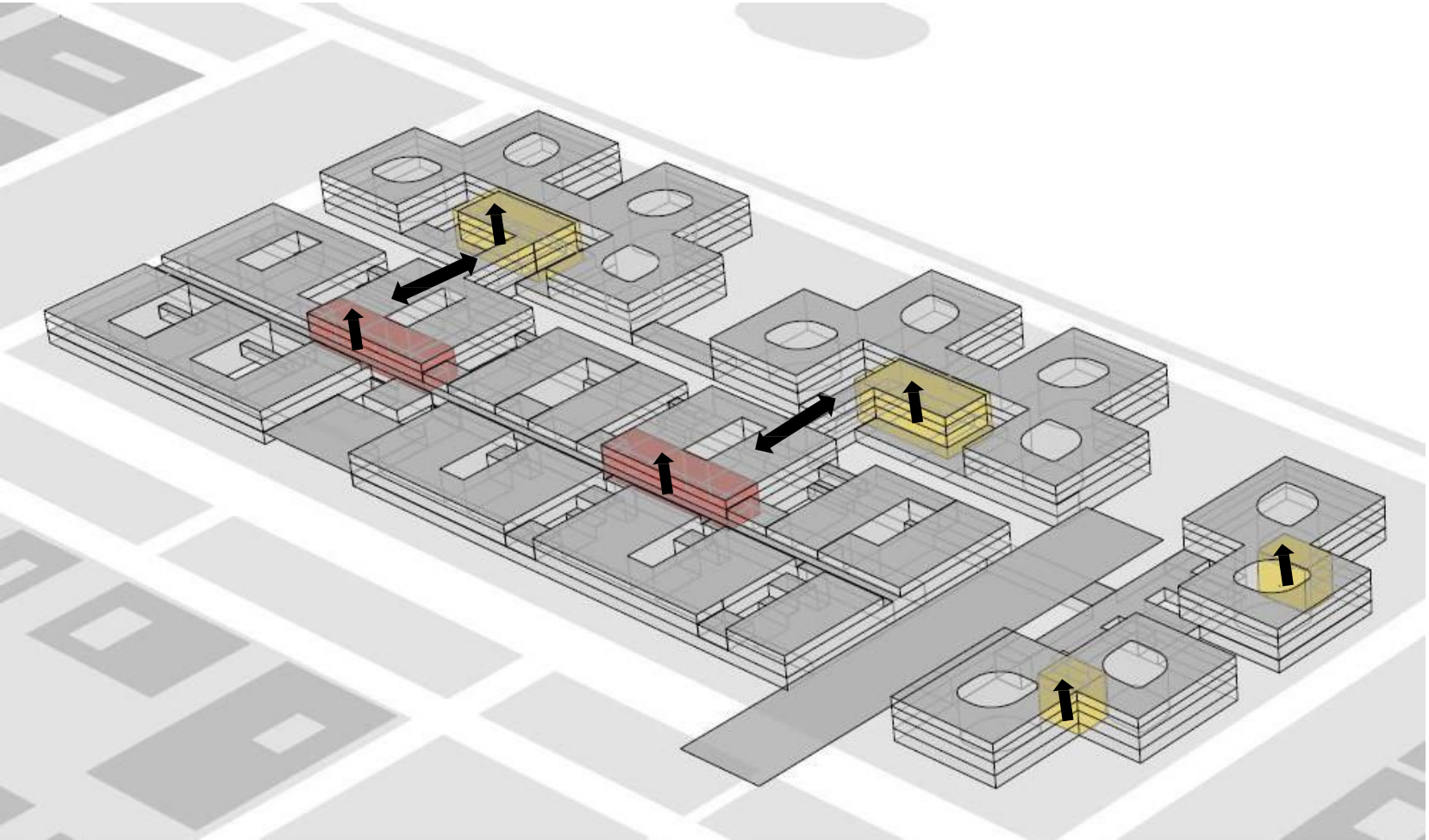




Clinical care

Bundling vertical development





Guiding principles of the new clinic

- capacity-adapted structural and medical function
- Flexible and modular structure
- Has supply priorities
- Interdisciplinary networking
- future-oriented expansion of the range of services (e.g. transplant medicine, interventional therapy, gene therapy)
- Freedom for innovative technology and therapy concepts
- Is suitable for supply in the event of a disaster
- Has needs-based provision for military-strategic tasks
- Includes a simulation center

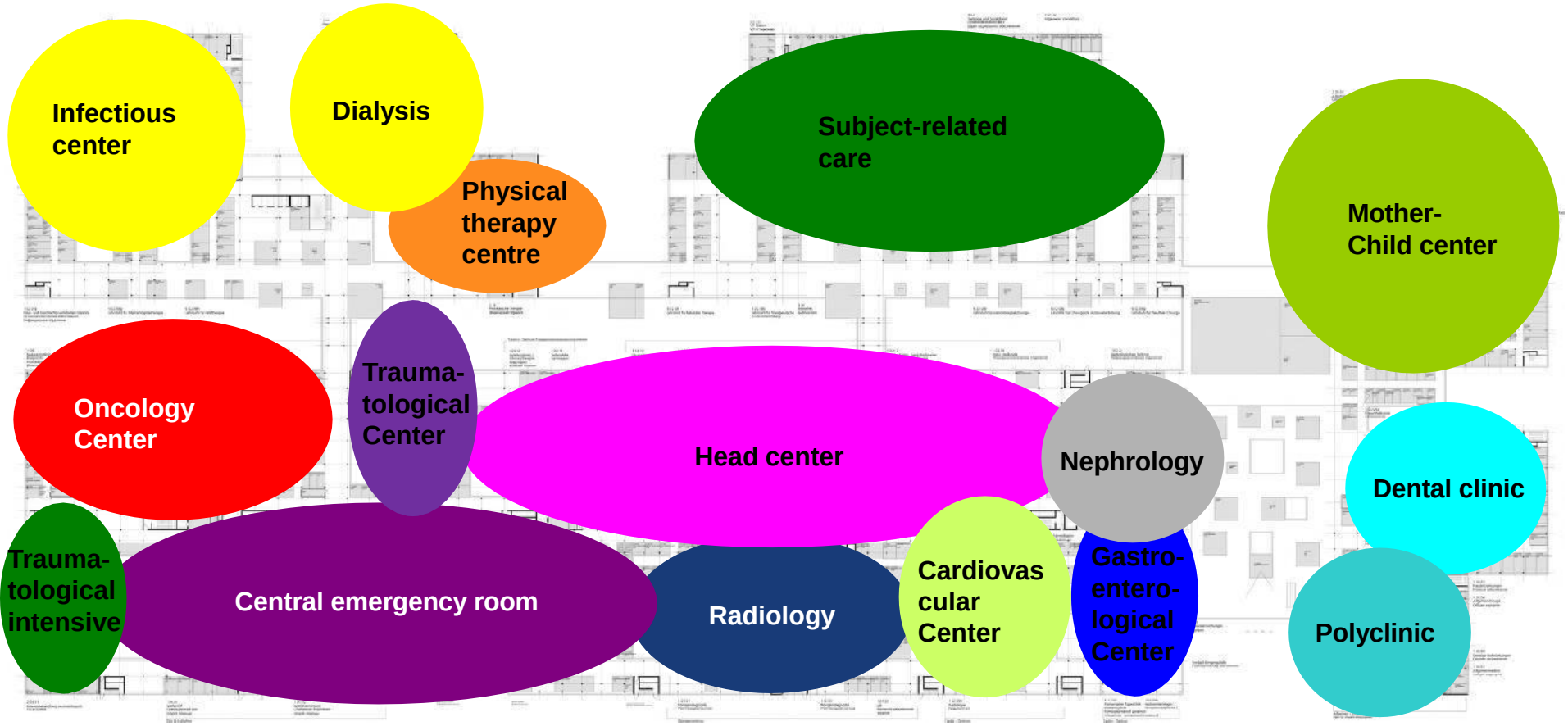
Clinical care

Number of beds

Total capacity	**1.640 Beds**
Normal care wards	1,280 beds (including 2 wards for Infections)
Intensive care and IMC	126 beds (14 beds in the area the ZNA)
Burns ward	6 beds
KMT ward	12 beds
Isolation ward	22 beds (infectious patients)
mother-child center	90 beds
Receiving station	24 beds (+ 3 rooms for patients with special protection)
Day stations	57 beds
dialysis	20 beds

Clinical care

Representation of the EG



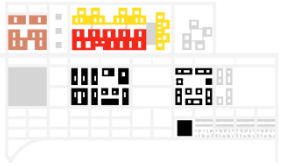
Nickl & Partner

Clinical care

Entrance hall

Clinical care

Emergency department



Clinical care

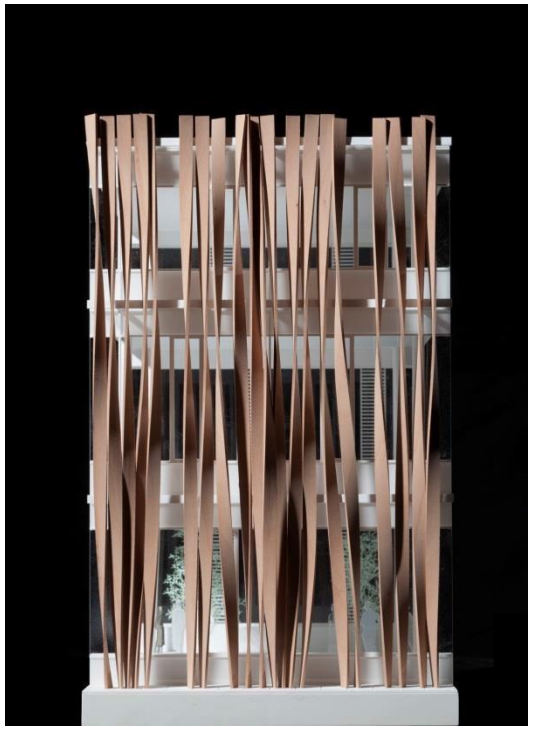
Central emergency room

Characteristics

- Central emergency room for all patients (except children and pregnant women)
- Lying sick area with 3 shock rooms and 4 intervention rooms
- Operating area with 2 operating theaters
  - Adjacent traumatological intensive care unit
- Walkable area with U / B rooms, surgery rooms, plaster room and conventional roentgen
- Separate entrance and U / B room for infectious patients

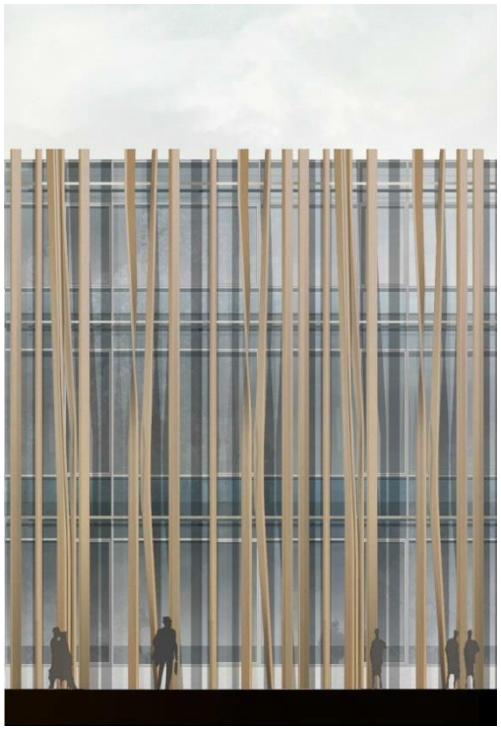
Clinical care

Central emergency room view



Facade model emergency room

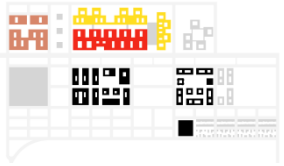
Facade model emergency room



Detailed view of the emergency room

Clinical care

Central diagnostics



Clinical care

Central diagnostics

- Radiology: conventional X-ray and angiography
- Supply and disposal
- Radiology: CT and MRI
- Monitoring area after intervention
- Cardiopulmonary and vascular center
- Center for gastroenterology and visceral surgery including day clinic

Clinical care

Central diagnostics

Characteristics

- radiology
  - 4 conventional X-ray rooms
  - 2 angiography rooms
  - 2 mammography rooms
  - 4 CT
  - 5 MRI

- Cardiopulmonary and vascular center
  - 2 rooms bronchoscopy
  - 20 examination rooms + pacemaker control

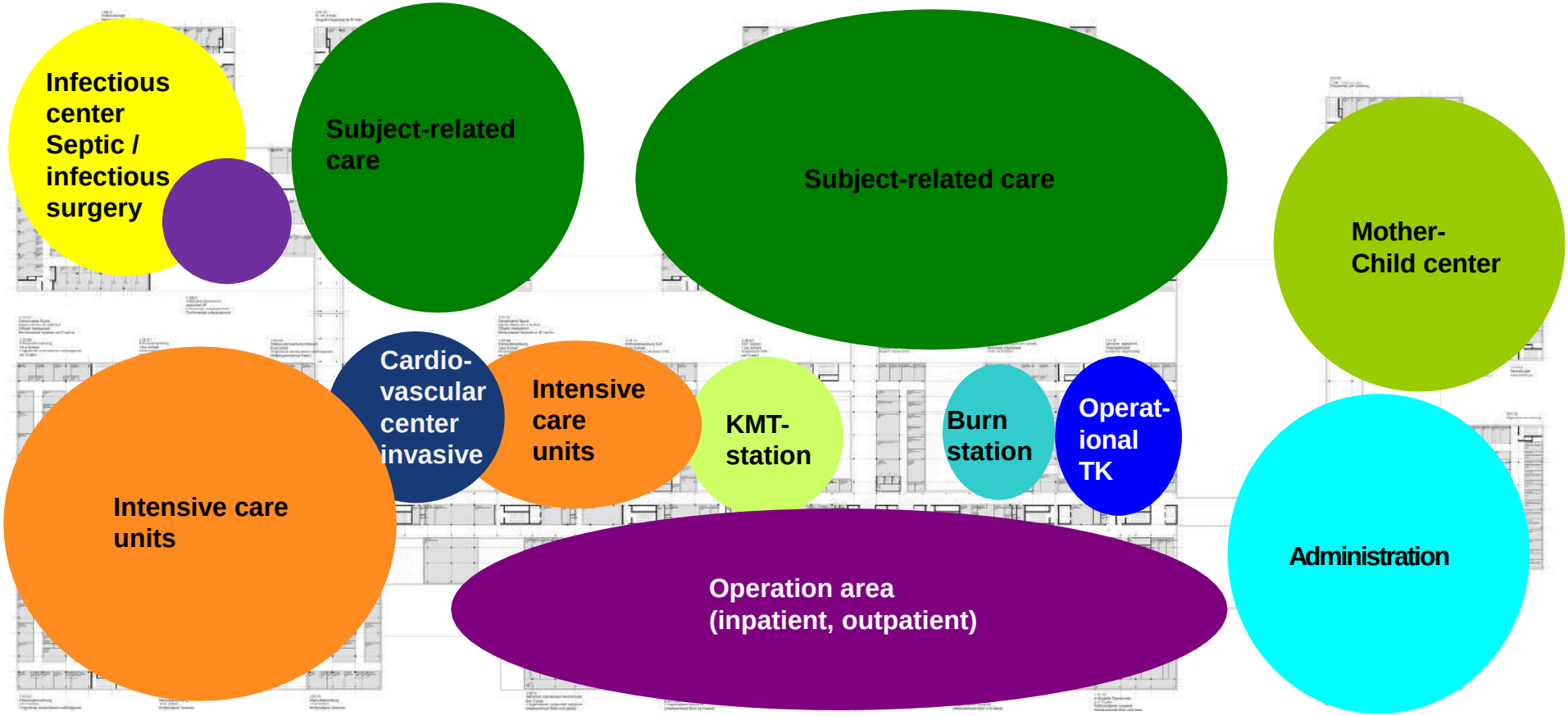
- Center for gastroenterology and visceral surgery incl. TK
  - 6 endoscopy rooms
  - 6 U / B rooms

Clinical care

Central diagnostics

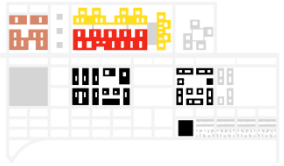
Clinical care

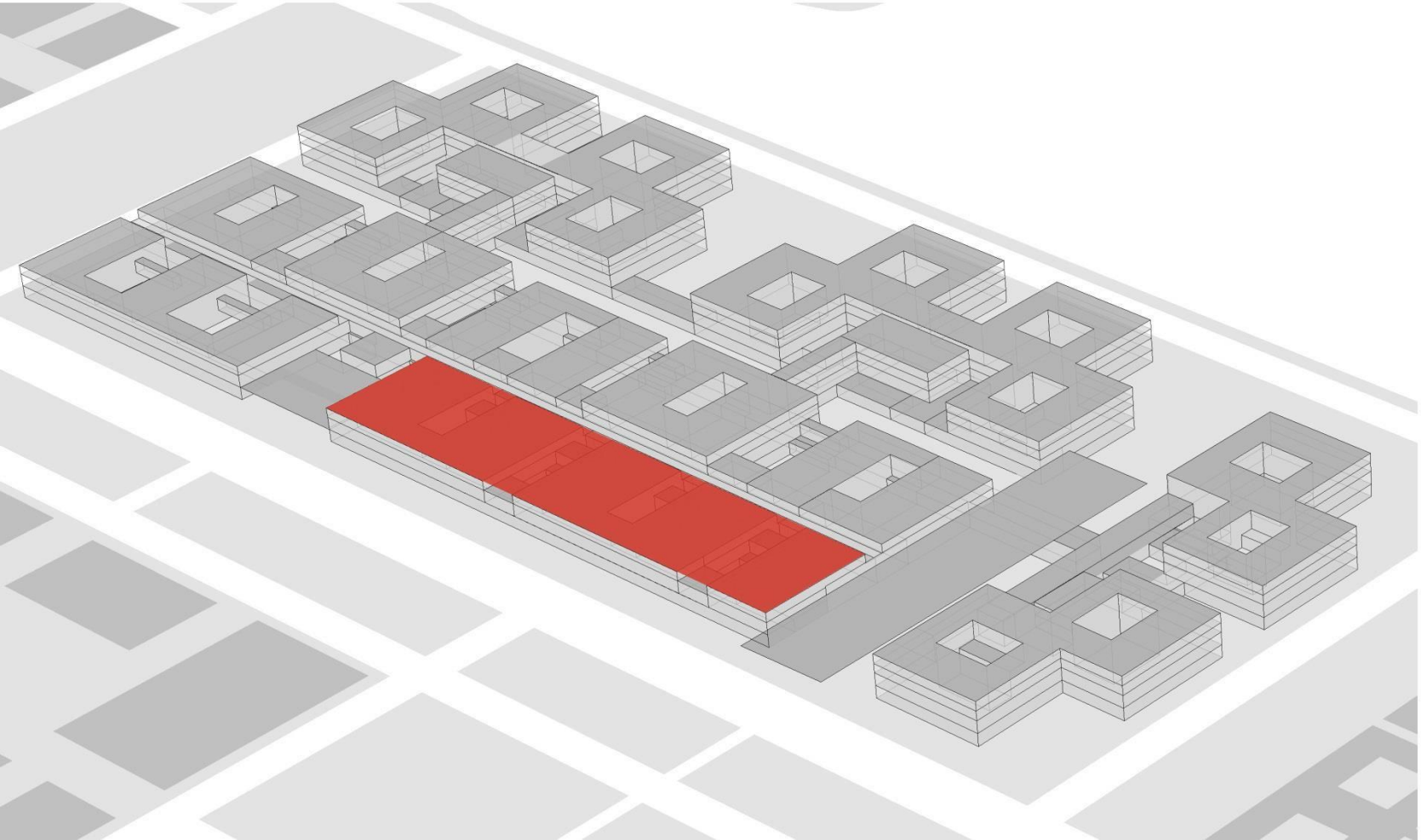
Illustration of the first floor



Clinical care

Operation area





Clinical care

Operation area

Characteristics

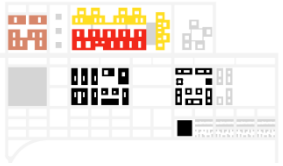
- 24 stationary operating rooms
- 4 outpatient operating theaters including a day clinic

- Further operating area
  - 2 operating rooms for septic and infectious patients
  - 2 operating theaters in the central emergency room

- **A total of 32 operating theaters in the clinic**

Clinical care

infectious area especially as isolation capacity in the event of a pandemic



Clinical care

septic and infectious area

Characteristics

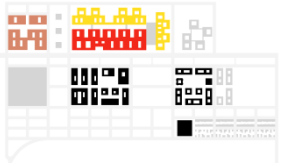
- 2 operating rooms
  - 1 operating room for infectious patients
  - 1 operating room for septic patients

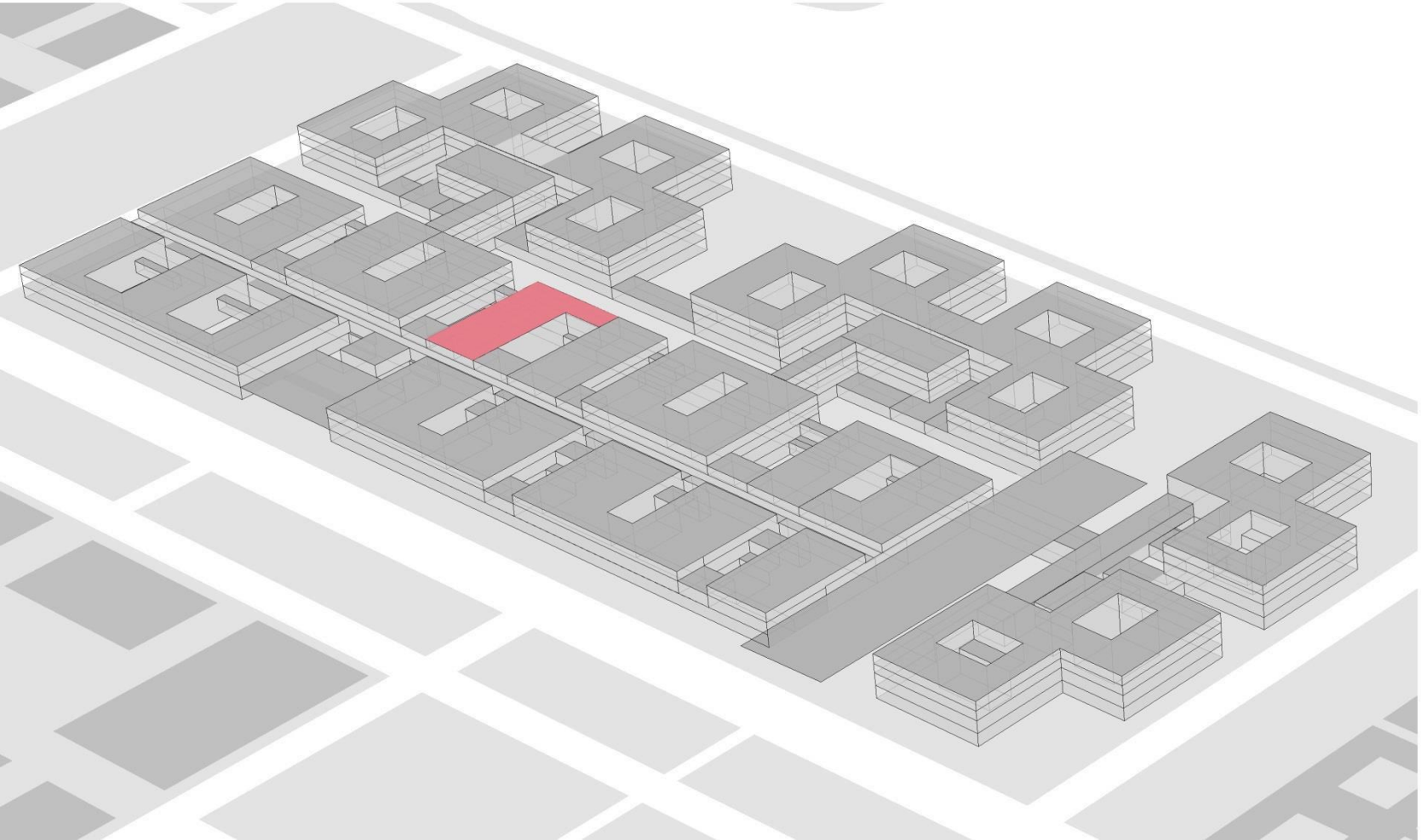
- Stations
- 1 ward with 22 single-bed rooms and locks (isolation for infectious patients)
- 2 stations for infections

- Short distances to the intensive care unit
- 1 ward with 8 single-bed rooms with lock especially for these patient groups
- More single-bed rooms locked in the other intensive care units

Clinical care

Cardiovascular center invasive





Clinical care

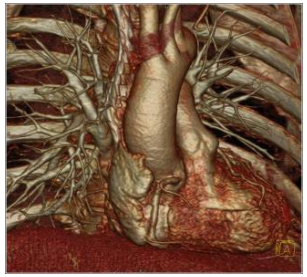
Cardiovascular center invasive

Characteristics

- Care of the patient after an intervention or procedure in the neighboring intensive care unit

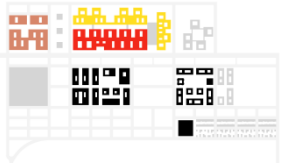
- Direct proximity to the central operating room

- 4 cardiac catheterization laboratories
- 1 special examination room (EPU)
- 1 space pacemaker implantation
- U / B rooms



Clinical care

Normal care



Clinical care

Intensive care

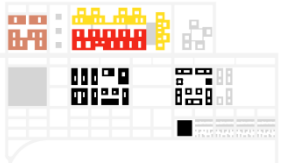
Characteristics

- 126 intensive and IMC beds
- 1- and 2-bed rooms
- 1 bed room with locks

- Additionally
  - 6 intensive care beds incineration
  - 12 beds KMT ward

Clinical care

Intensive care



Clinical care

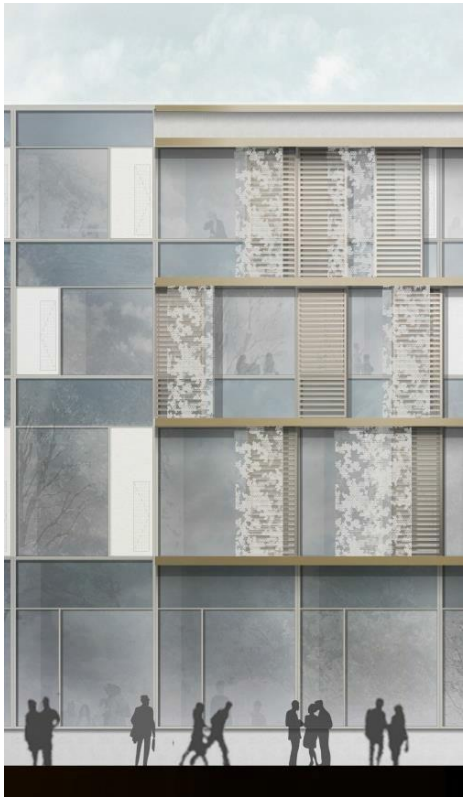
Patient room

Clinical care

Care view

Facade model care

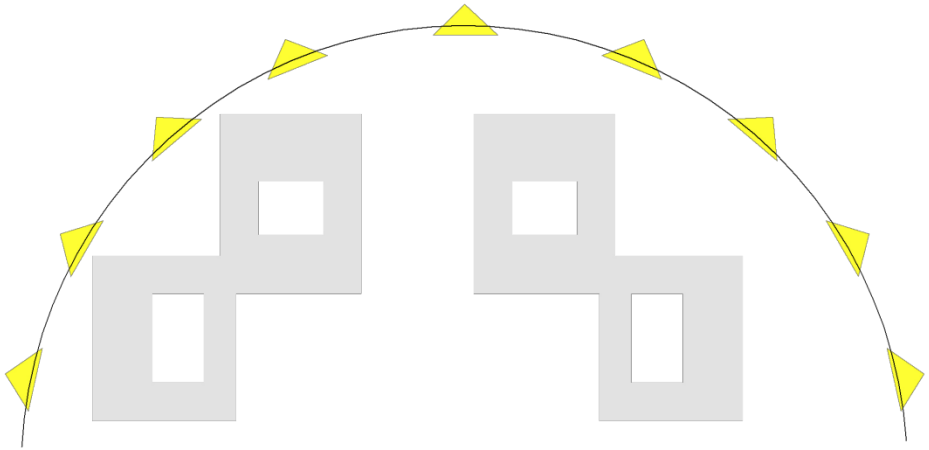
Facade model care



Care details

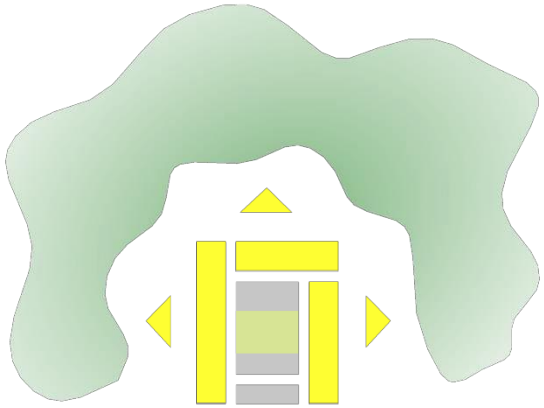
Clinical care

Care stations



Panorama

Orientation of all patient rooms outdoors and with daylight



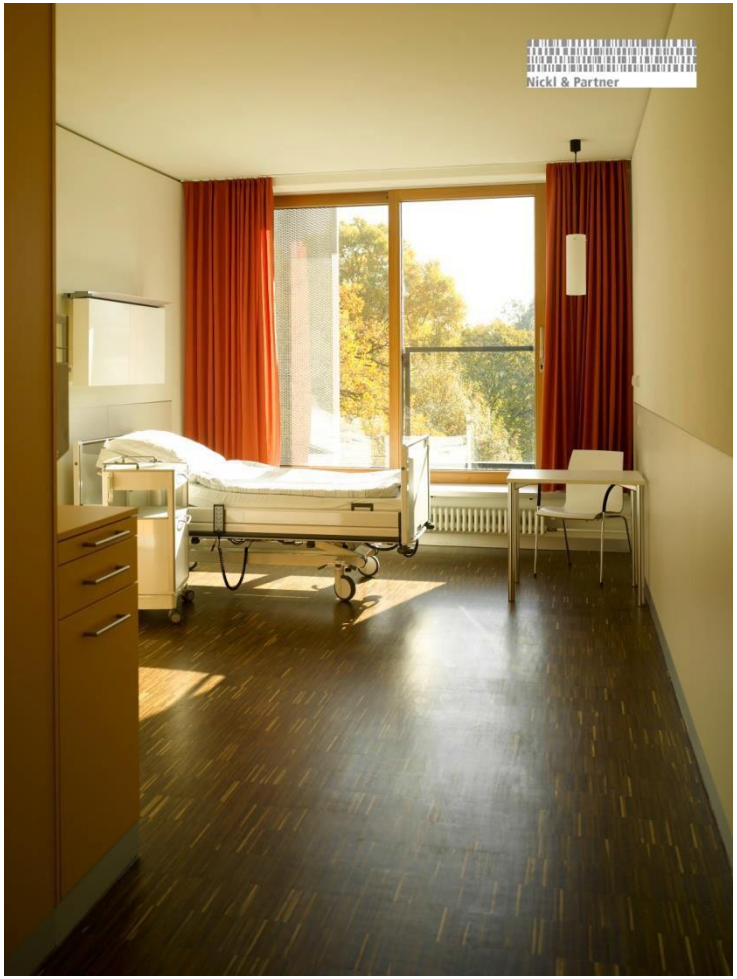
Care structure

Outward orientation

To the green space

Clinical care

Patient room normal care ward



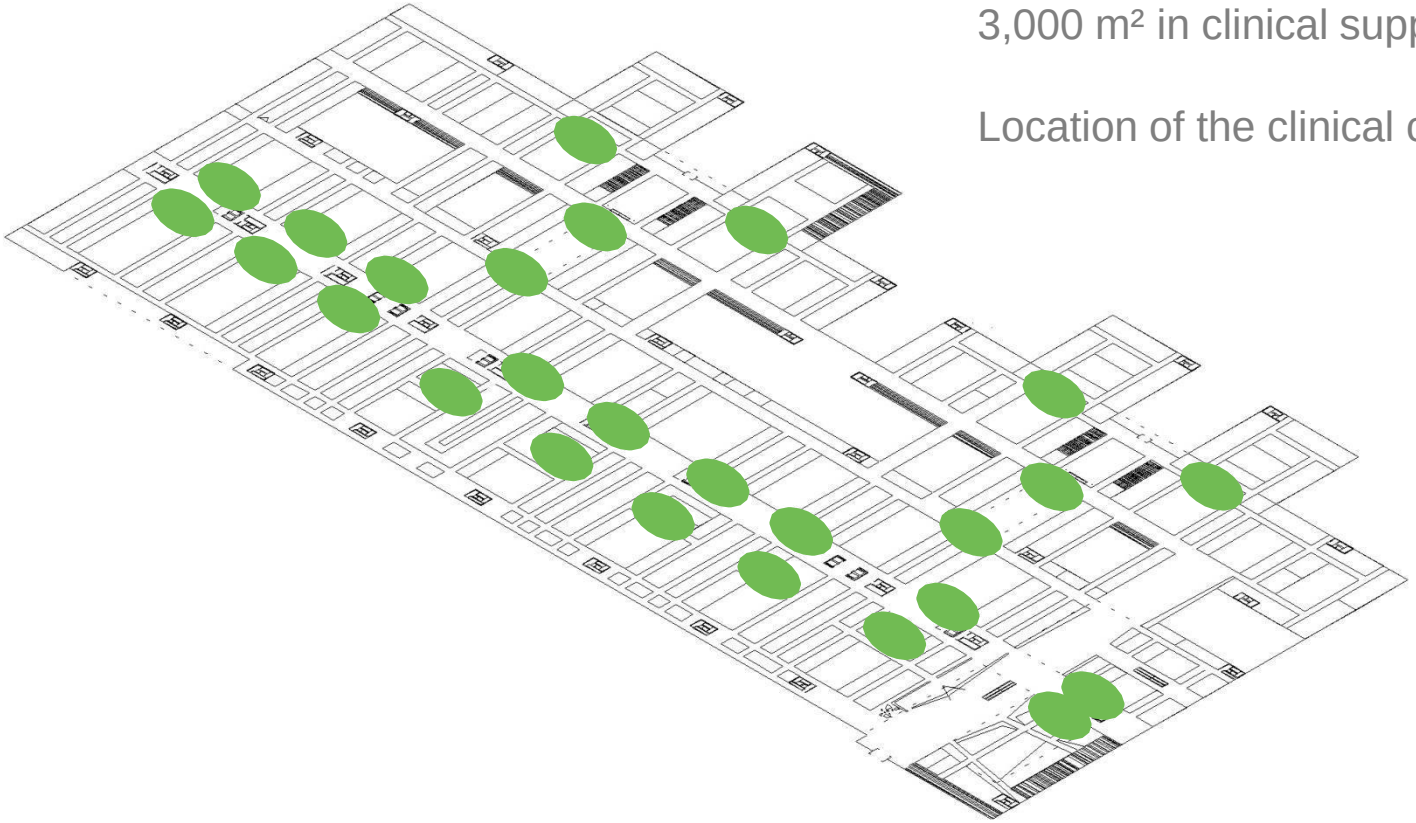
Characteristics

- 1- and 2-bed rooms
- 1-bed room with lock
- Every room with wet room

Clinical care

Base

Teaching close to the patient



3,000 m² in clinical supply

Location of the clinical chairs in the clinic

Teaching rooms
close to the patient

Teaching close to the patient

- **31 clinical chairs**
- **197 seminar and internship rooms**

- Networking of the chairs with the main focus: patient proximity
- Location in the clinical chairs in the clinic
- Profiling the chairs through patient-centered Demonstration and teaching rooms
- Office workplaces adapted to the medical-technical task

Clinical training

Training in the simulation center

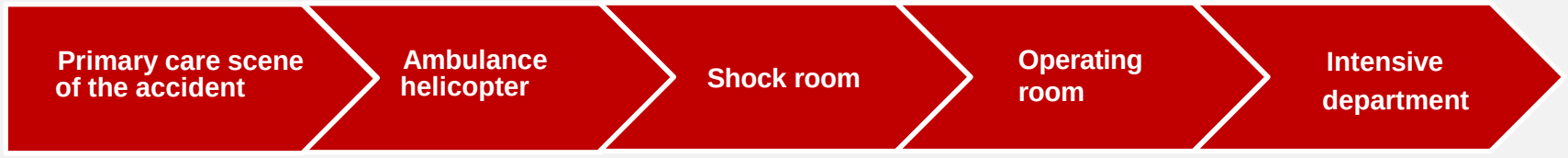
Training in the helicopter

Control room

Conception of the simulation center

Conception:

- The simulation center is a training platform for medical teams different professions in medical crisis situations of the
  - Primary medical care
  - different emergency scenarios can be modulated very realistically the care step along the acute care chain



Mass casualty

Reproaches

- Care in the outpatient and diagnostic area
- Supply in the simulation center (changeover time: 2-4 hours)
  - 6 connected operating rooms
  - Bed capacity that can be upgraded at short notice (100 beds)
  - Reserve capacity in the operating theater
  - Reserve capacity on day stations
  - Modular, isolatable care unit (30-180 beds)
  - Scalable intensive care capacity (IMC> ICU)
- Personnel recruitment from medical students, advanced training doctors and soldiers
- Warehousing in a new building environment

Conception of the simulation center

Rooms according to the medical-technical task:

- Simulation rooms: 5
- Control rooms for visual participation in the simulations: 10
- Meeting rooms (pre-debriefing): 6
- Teaching and separate practice rooms: 2
- Simulation laboratory: 1

Conception of the simulation center

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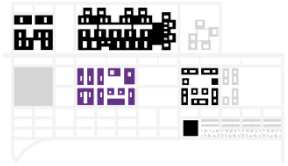
Research and Teaching

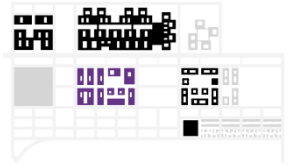
Research and Teaching

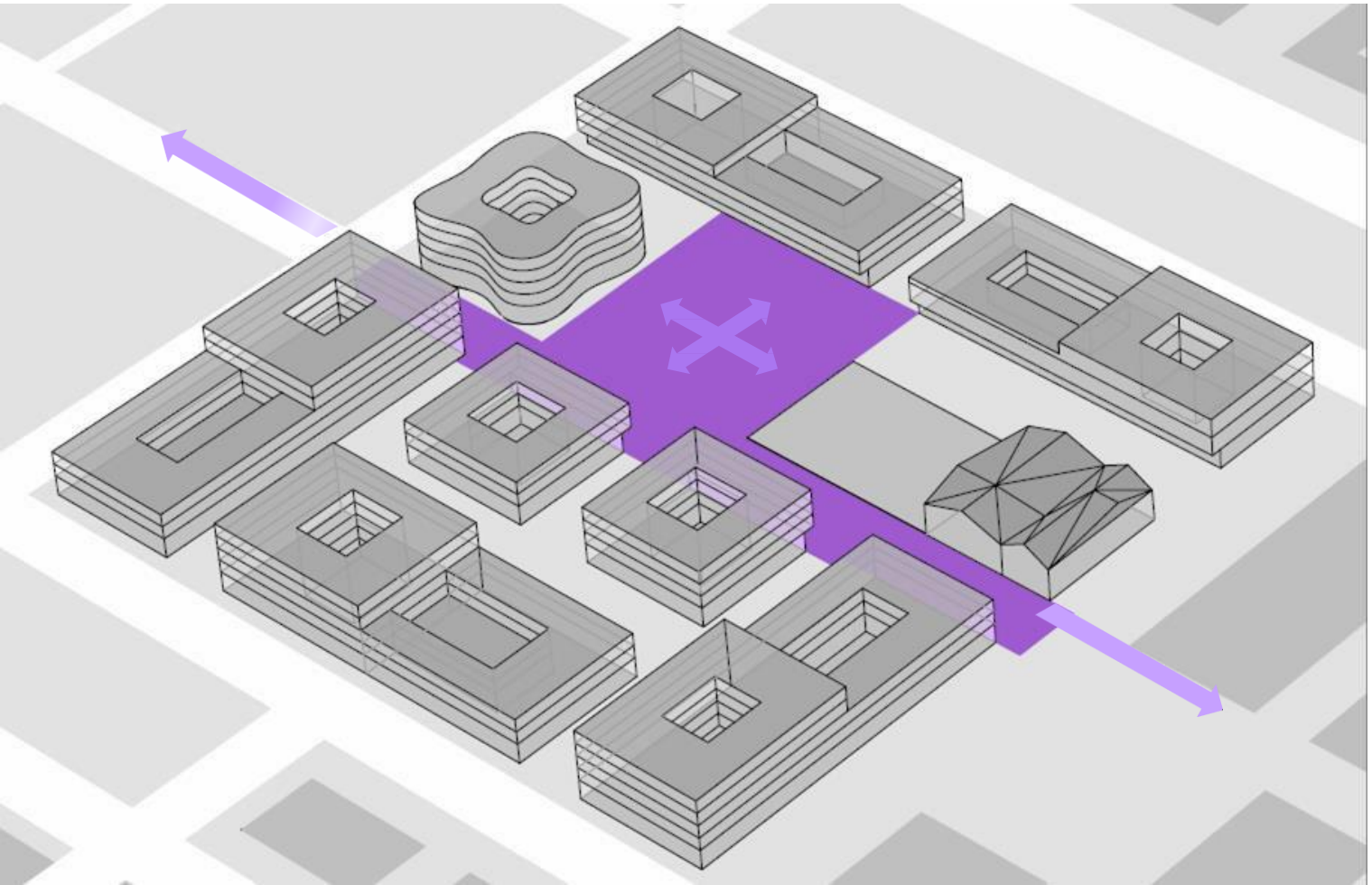
Research and Teaching



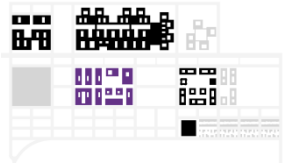
Research and Teaching

Campus structure

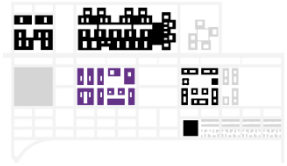




Research and Teaching Address formation



Research and Teaching



Teaching and pre-clinical research

Central research area

Training / lecture hall center

7 faculties and management of the academy

Research and Teaching Dimensioning

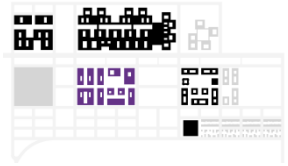
Teaching and pre-clinical research
- 28 pre-clinical chairs (including research laboratories)
- 31 clinical chairs (located in the hospital)

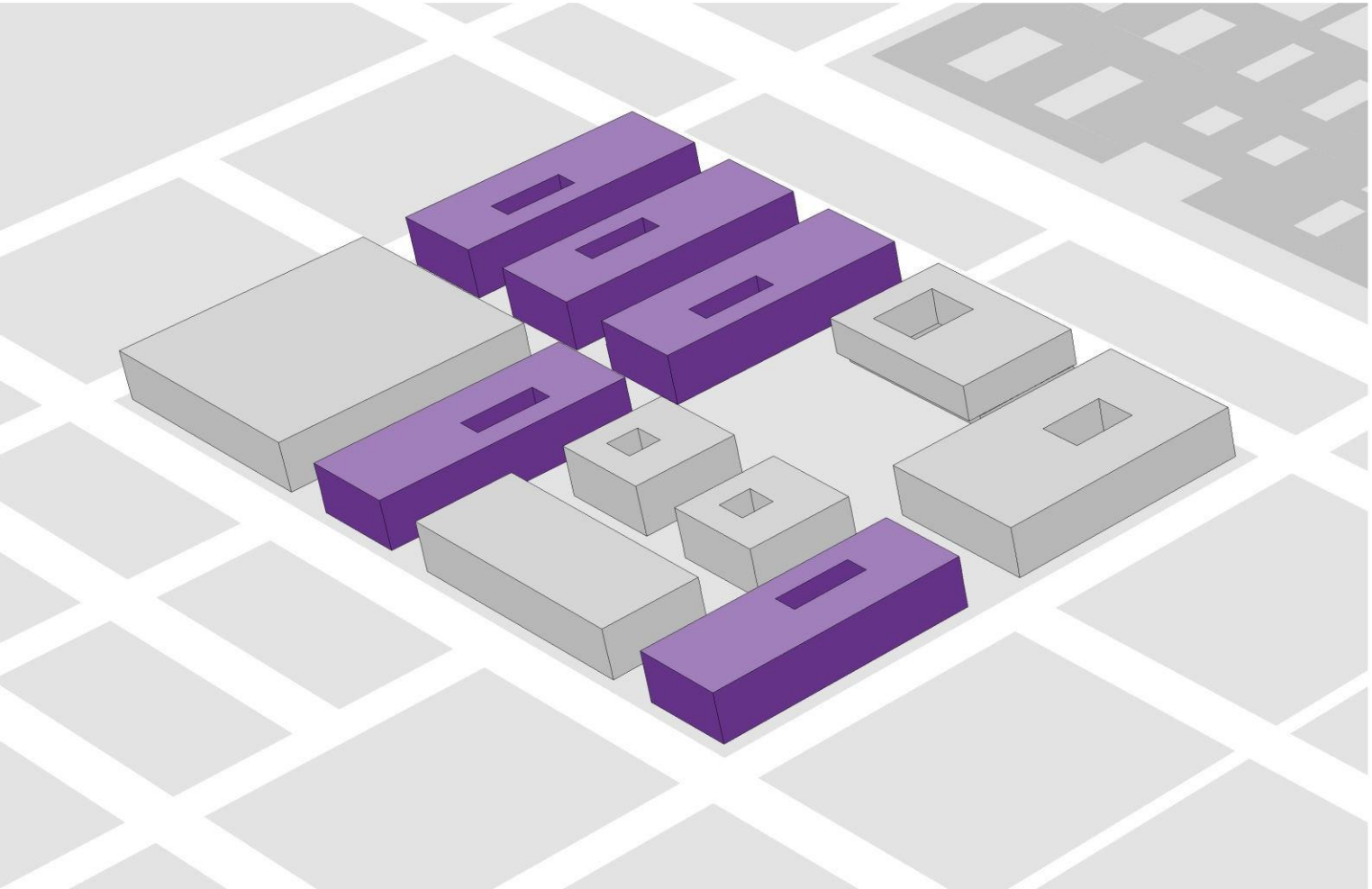
Central research area
- 5 scientific research centers including military research
- Animal research facility (large and small animal research, each with restricted areas)

Training / lecture hall center
- Central lecture hall center
- Medical college with 660 apprenticeship places ("vocational training center")

7 faculties and management of the academy

Teaching





Teaching and pre-clinical research

Teaching

Dimensioning of the 28 pre-clinical chairs and pre-clinical research

- 55 teaching laboratories
- 43 research laboratories
- 122 seminar rooms + 21 multifunctional rooms
- 675 workplaces in 269 offices
- Specifics of the individual chairs (e.g. 1 lecture hall for anatomy / pathology, 1 lecture hall for physiology)
- Supplement to centrally maintained structures

- Education of > 2,000 students
- Specialist training for all Russian military doctors
- Further training and recertification of> 1,000 Russian military doctors

Teaching Structures "pre-clinical chair"

- Each chair is represented in its range of services as a "unit“ pictured

- Each chair is individually tailored:
  - Seminar rooms for teaching at the chair
  - Laboratory rooms for teaching and research at the chair
  - Office rooms at the chair
  - Representative display areas for collections at the chair

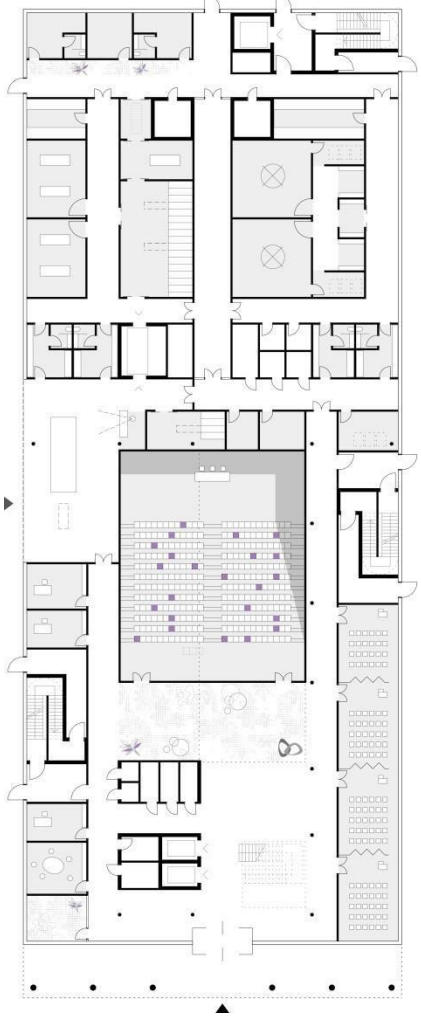
- separate chair-specific rooms (anatomy lecture hall, microscopy rooms, operating theaters on cadavers, etc.)

Teaching View of teaching building L1

Teaching

Example teaching building L1

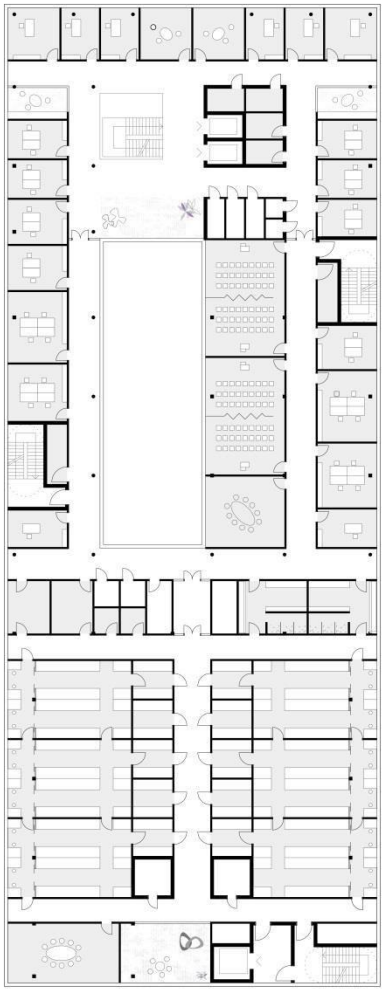
Prosecture / surgery



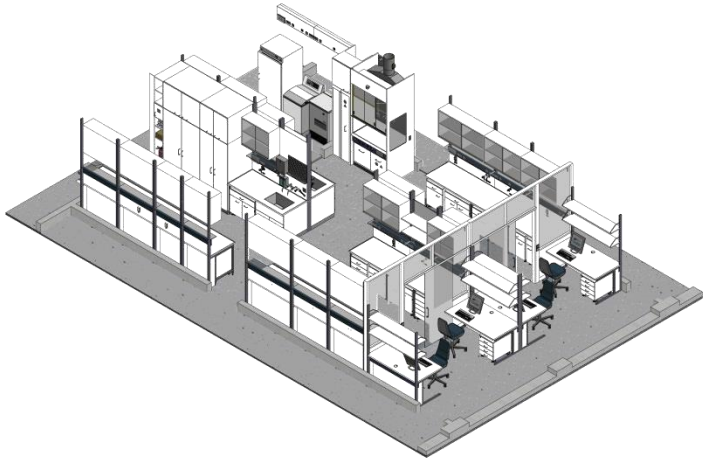
Seminar room

Teaching Building L2

Offices

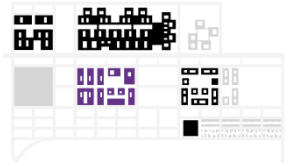


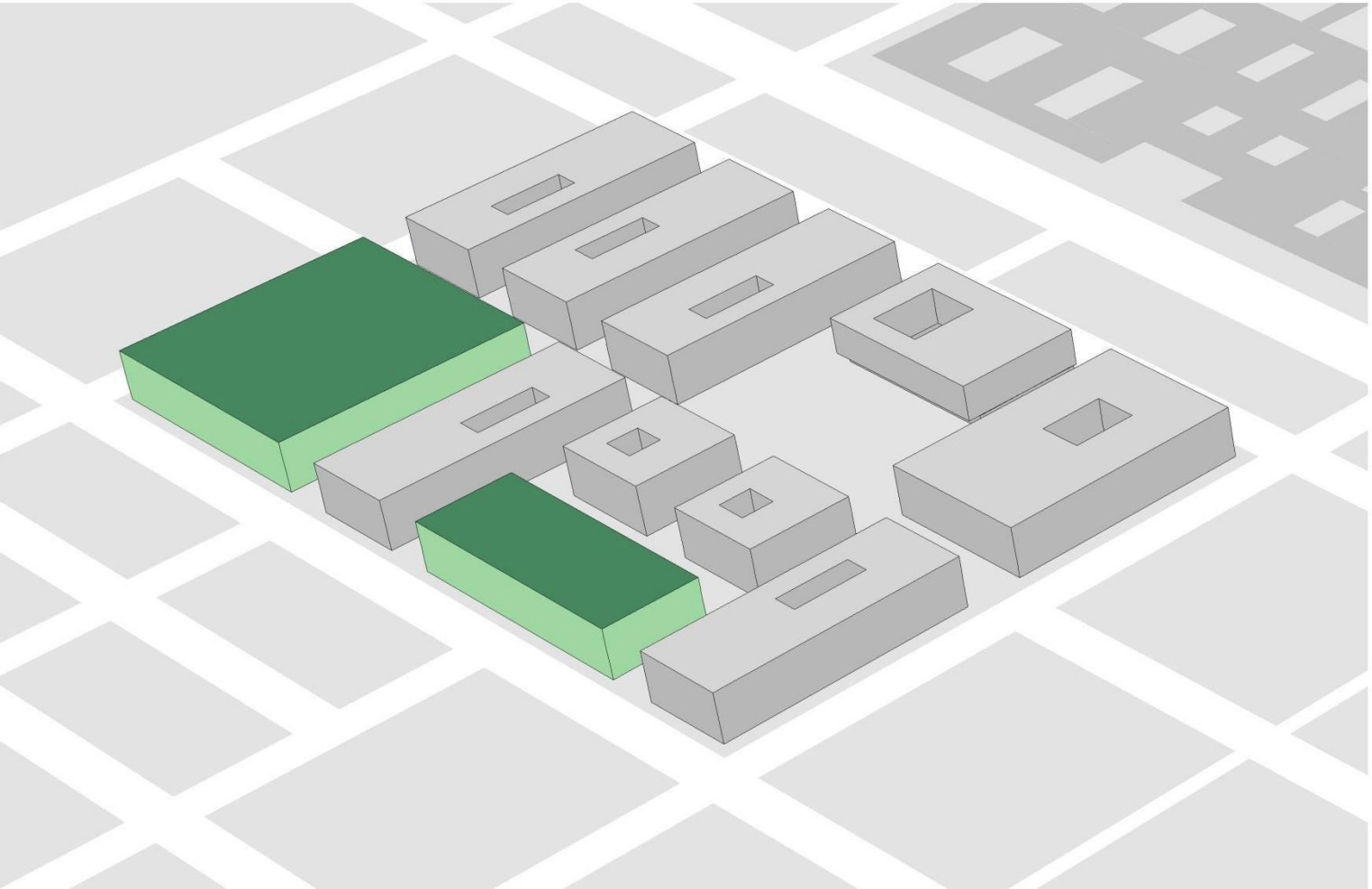
Biochemistry Chemistry



Sample laboratory

Research





Central research area

Research

Research

Dimensioning of the 5 scientific research centers

- 64 research laboratories
- 46 laboratories for the WFZ
- 18 central laboratories available for general use
- 20 meeting rooms + 3 multifunctional rooms
- 354 workplaces in 150 offices
- 232 laboratory workplaces
- Specifics of the individual scientific research center
- Supplement to centrally maintained structures

Research Dimensioning of the animal testing facility

Large animal husbandry

- 4x4 boxes for animals (surgical experiments) with animal welfare-friendly run
- 2 animal operating theaters in a hygienically "harmless" zone
- Laboratories for animal experiments
- Restricted area for large animal husbandry (infectious, chemical-radioactive) with
  - 2 separate operating theaters
  - Separate animal husbandry in the different restricted areas (each 2x2 boxes)

Research Dimensioning of the animal testing facility

Small animal husbandry

- Keeping animals in a hygienically “harmless” zone
  - Small animal surgery
  - Experimental spaces

- Restricted areas (barrier posture) with subdivision into infectious and chemically radioactive with

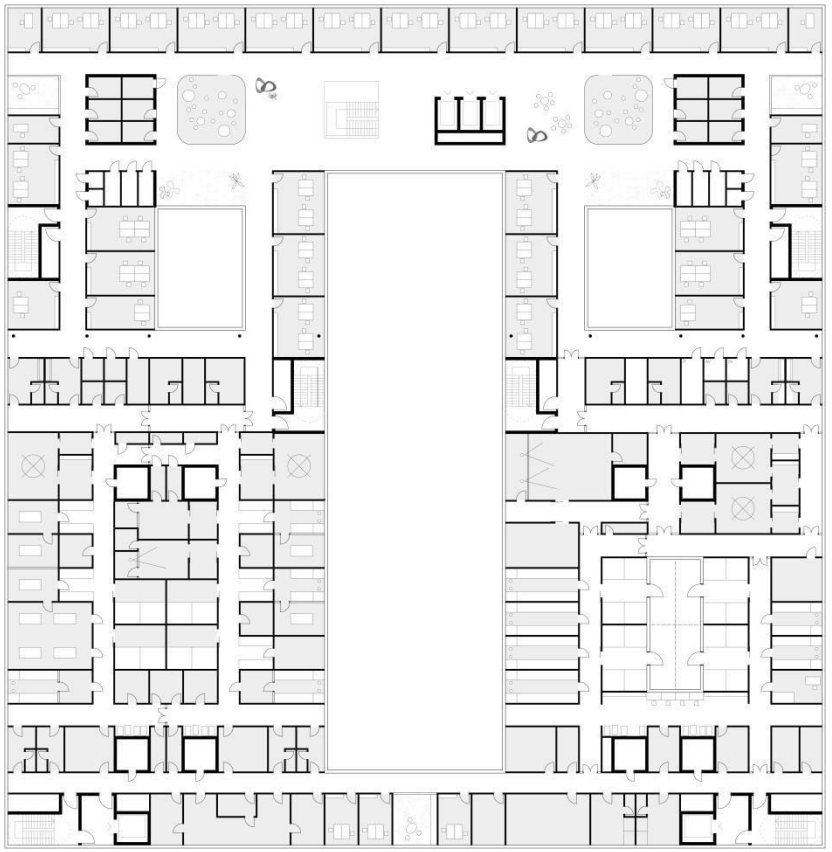
  - Small animal surgery
  - Experimental spaces

Research

Example research building F1

Meeting room

Offices



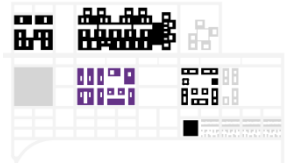
Research laboratories for small animal husbandry

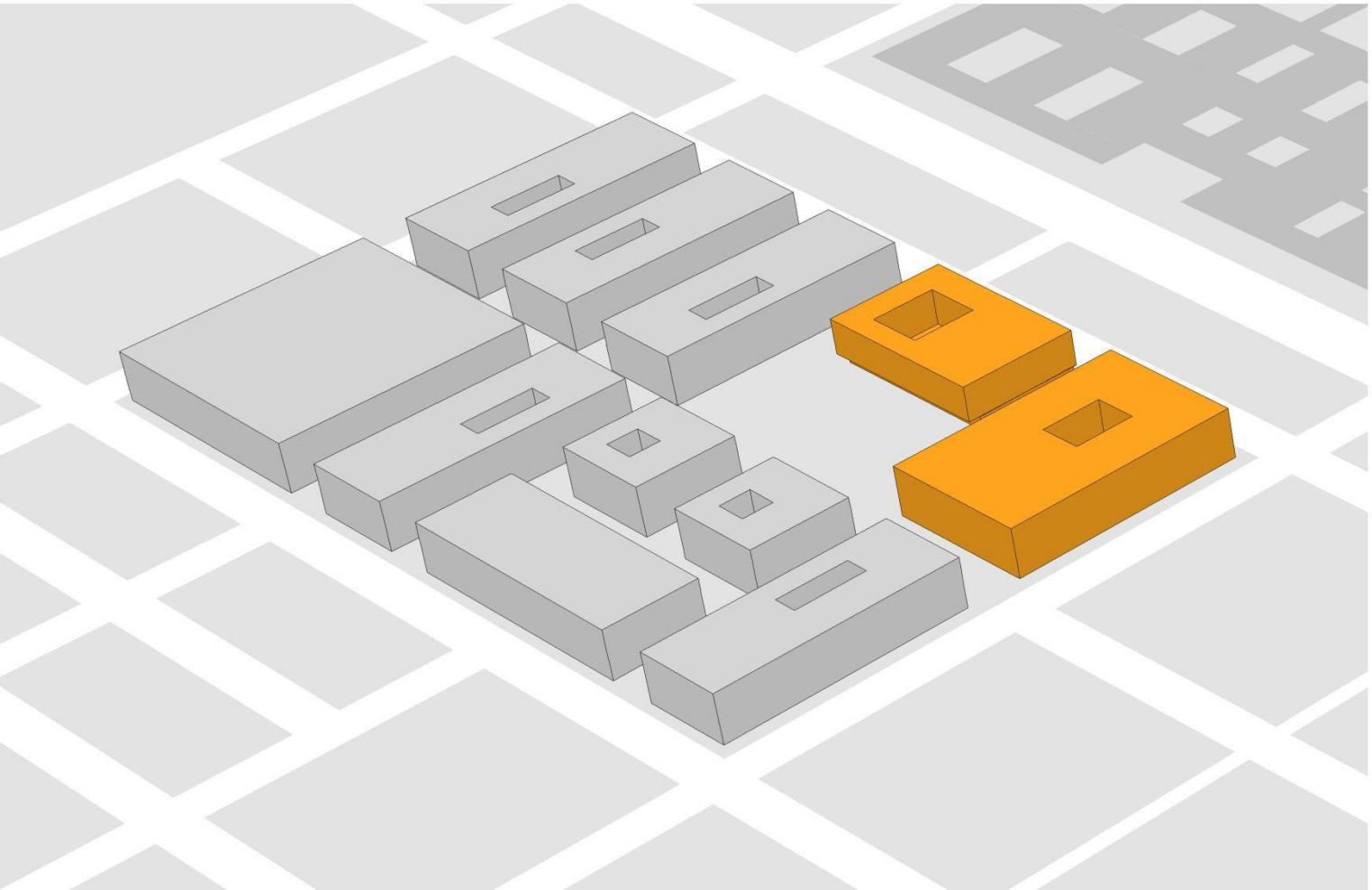
Small animal husbandry teaching laboratories

Infectious restricted area for large animal husbandry

Operation Center for Large Animal Husbandry

Training / lecture hall center





Training / lecture hall center

Lecture hall center / Medical college structure and dimensions

Rooms for the training of doctors

- 6 lecture halls (including 2 in pre-clinical teaching buildings) Seating capacity: 300 seats per lecture hall variability: 2 lecture halls can be interconnected with 600 seats, 2 lecture halls can be divided into 4 lecture halls with 150 seats each

Number of seminar rooms:

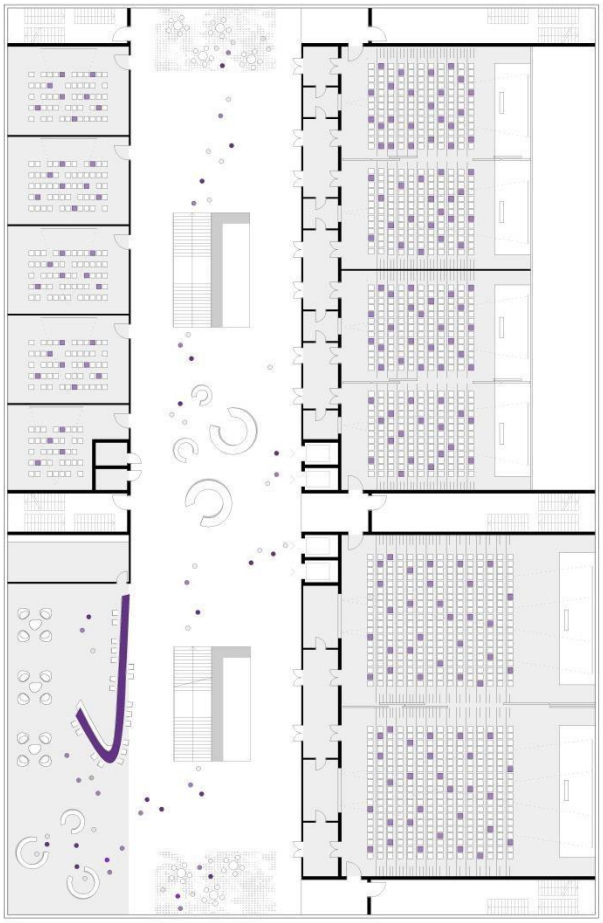
- 40 seminar rooms for groups of 15 students each to cover of regular needs
- 10 seminar rooms for groups of 30 students each for temporary additional needs, e.g. B. central training or further education

Auditorium Center / Medical College

Seminar room

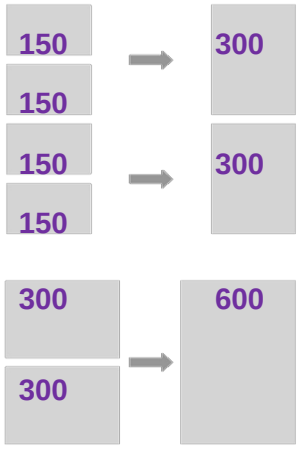
Entrance area

Seminar room



Bar

Flexible lecture hall sizes



Number of seats

Lecture hall center

Auditorium Center / Medical College

Structure and dimensioning

Other rooms

- 6 language laboratories with 15 language booths each
- 15 student work rooms with 150 places for self-study
- Reference library 2,000 m² gross with student work opportunities
- 10 offices for the management of the training center

Auditorium Center / Medical College Structure and dimensioning

Medical College

- Shared use of the rooms in the lecture hall center

- Central classrooms for training 660 trainees in 5 medical training professions
  - Basic nursing education
  - Nursing specialist nursing
  - Feldschner
  - Physiotherapy, orthopedics, etc.

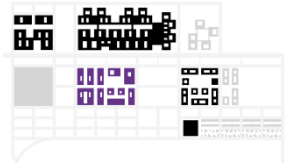
- 37 seminar and classrooms
- 5 practice rooms
- Workplaces for 35 teachers / teachers

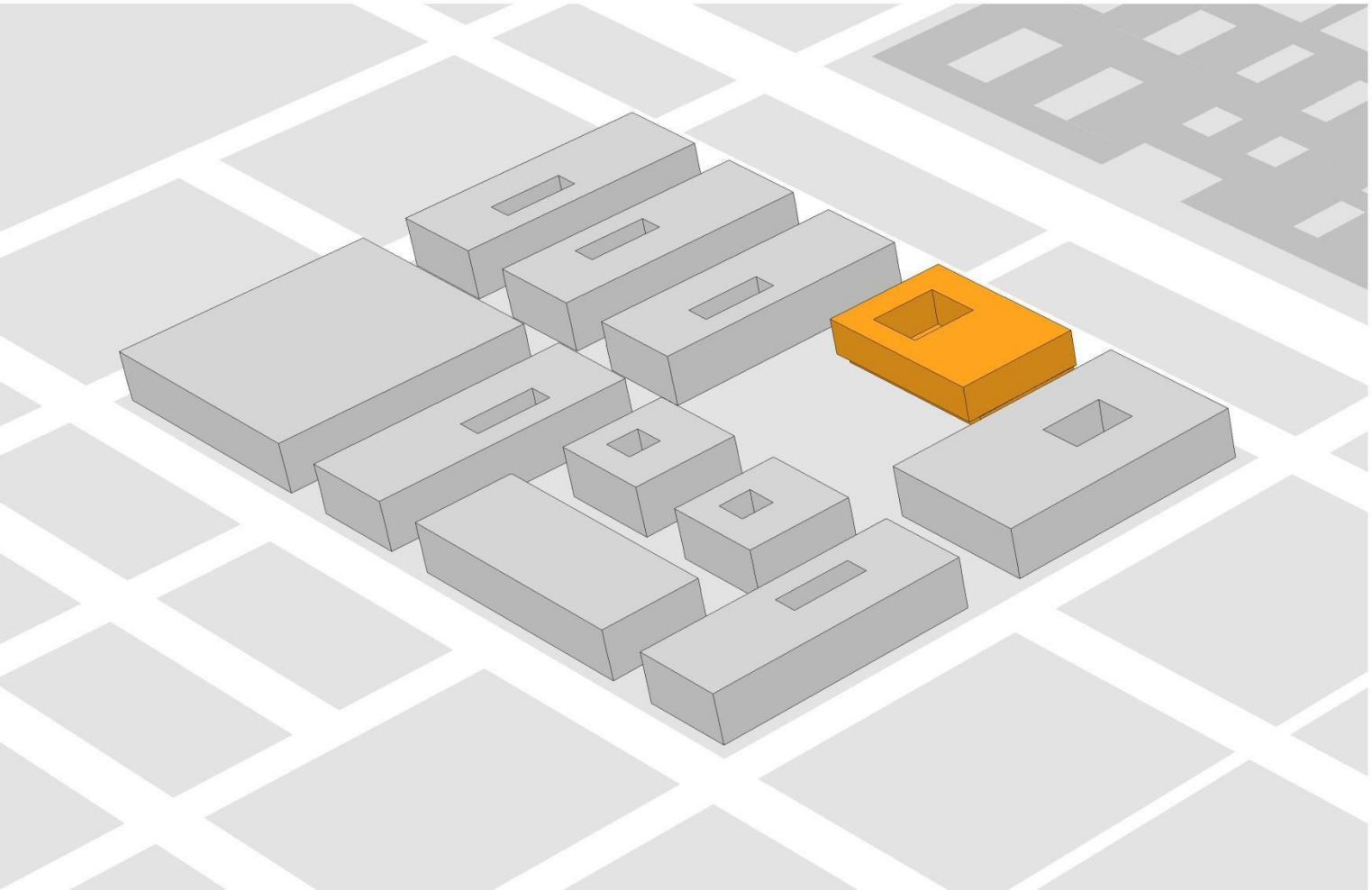
Auditorium Center / Medical College Views

Cafeteria / simulation center

Lecture hall center

Cafeteria & vocational training center

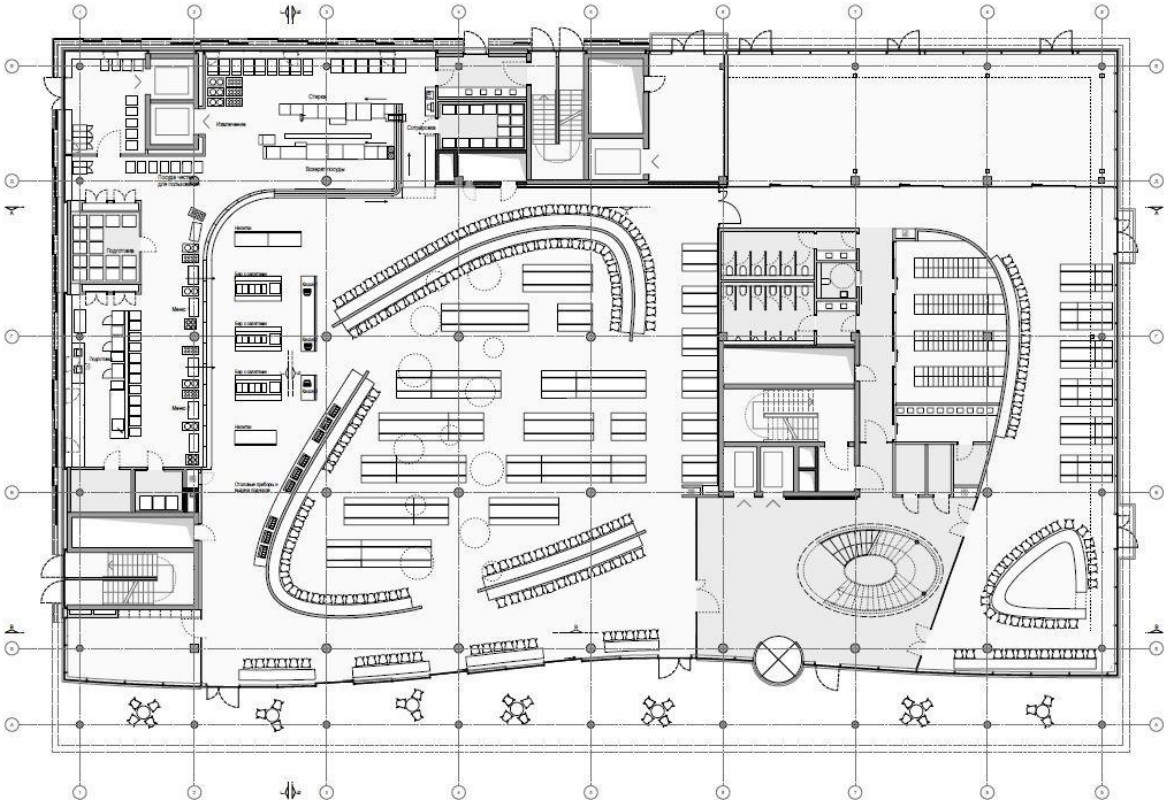




Mensa L9

Mensa

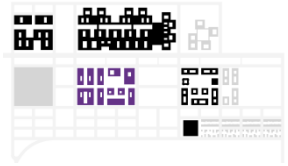
Entrance to the cafeteria
/ simulation center

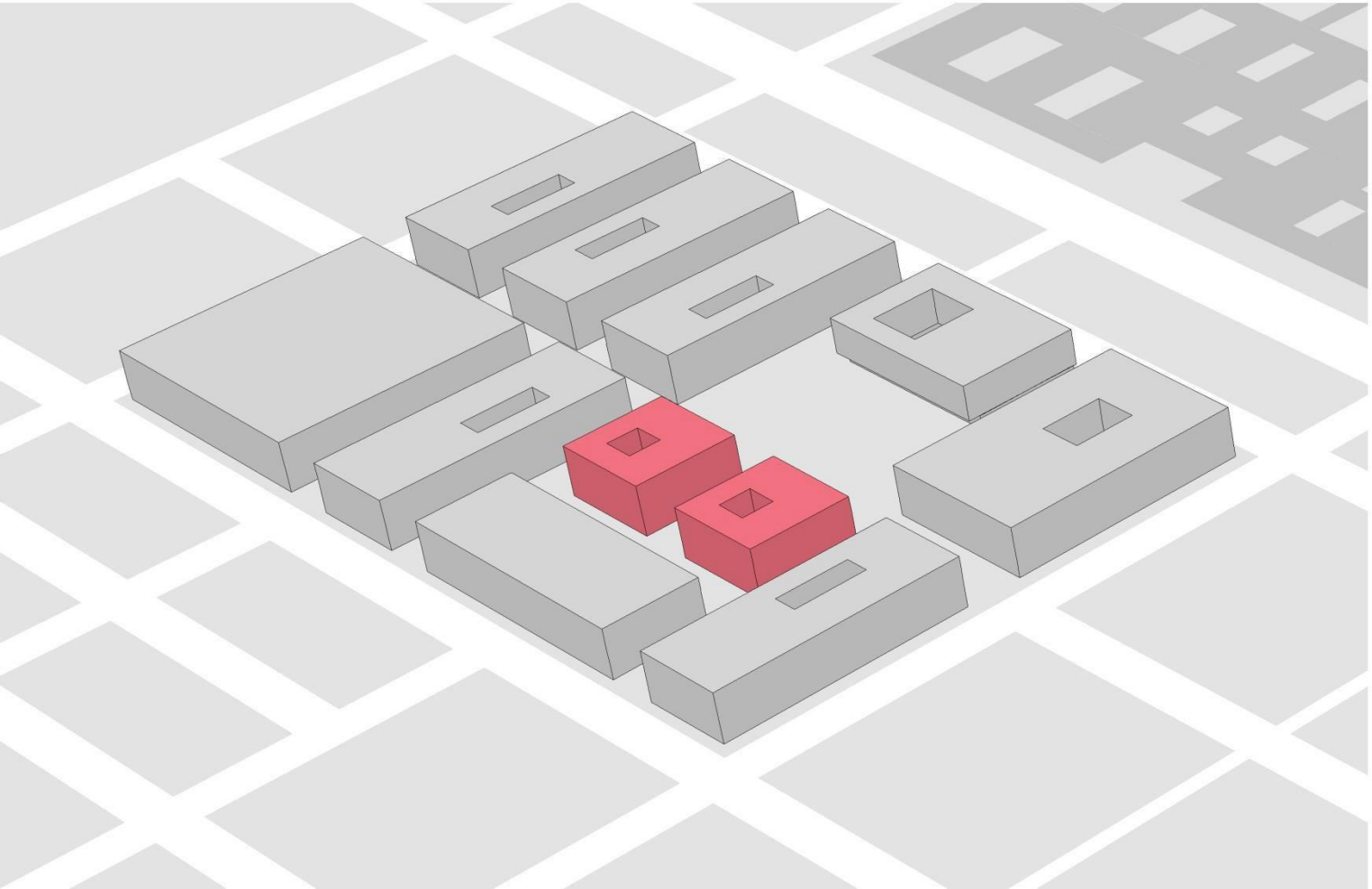


Café under the arcades

Entrance to the cafeteria /
vocational training center

Faculties and management of the academy





Building teaching L3 + L4

Faculties and management of the academy