

FUTURE HEALTHCARE FACILITIES

EVOLUTION OF TYPOLOGIES & NEEDS



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historic stages of development



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Pilgerherberge
+ Armenhaus



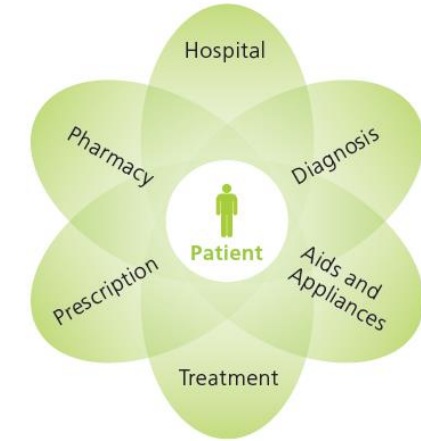
Forschung
+ Entwicklung



Nobelpreisträger
CT (Godfrey N. Hounsfield, 1972)

MRT (Paul C. Lauterbur /
Peter Mansfield, 2003)
Röntgen (Wilhelm
Conrad Röntgen, 1901)

Technische
Entwicklung



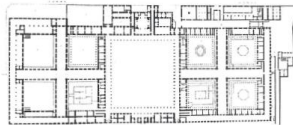
Healing
Architecture

Hospital

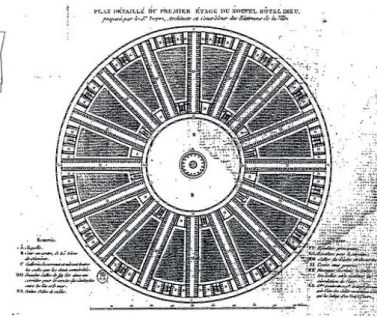
1789 – Begriffe
Krankenhaus / Lazarett / Hospital

Spezialisierung
Kinder / Frauen / Krankheit

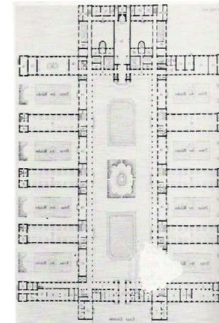
CT/MRT/Röntgen



Filarete
Ospedale Maggiore
→1440



Hôtel-Dieu, Paris, 1774
Petit und B. Poyet



Hôtel-Lariboisière,
M.P.Gauthier
→1839 -1854



Pavillonkrankenhaus nach
Plänen von
Curschmann, Hamburg
→1885-1888



Megastrukturen 70er Jahre,
Universitätsklinik Aachen
→1971-1985

evolution of building-typologies

1890...1960...1975...1990...2010 ... what's next ?



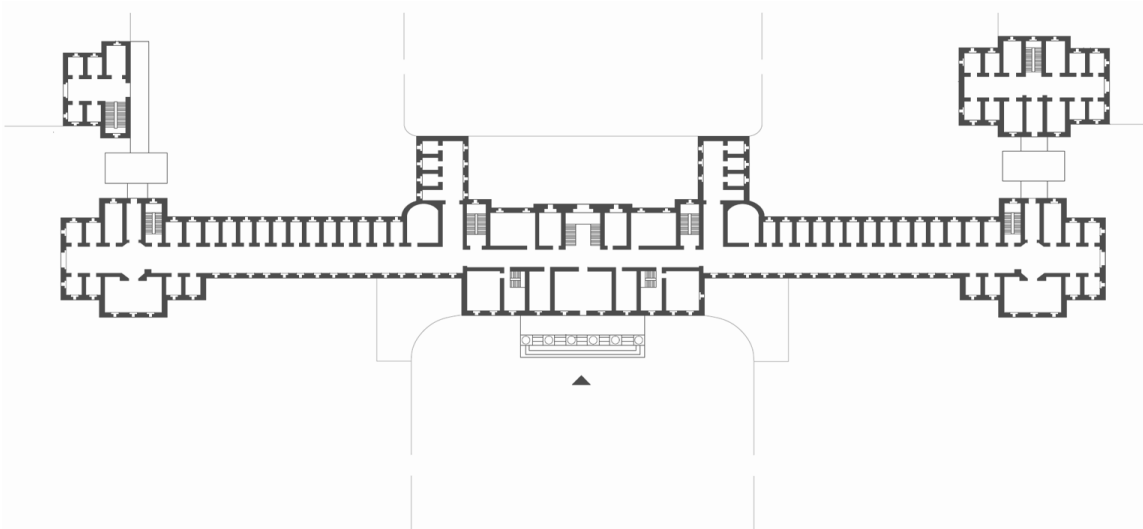
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Hospitals of the 18th and 19th centuries:

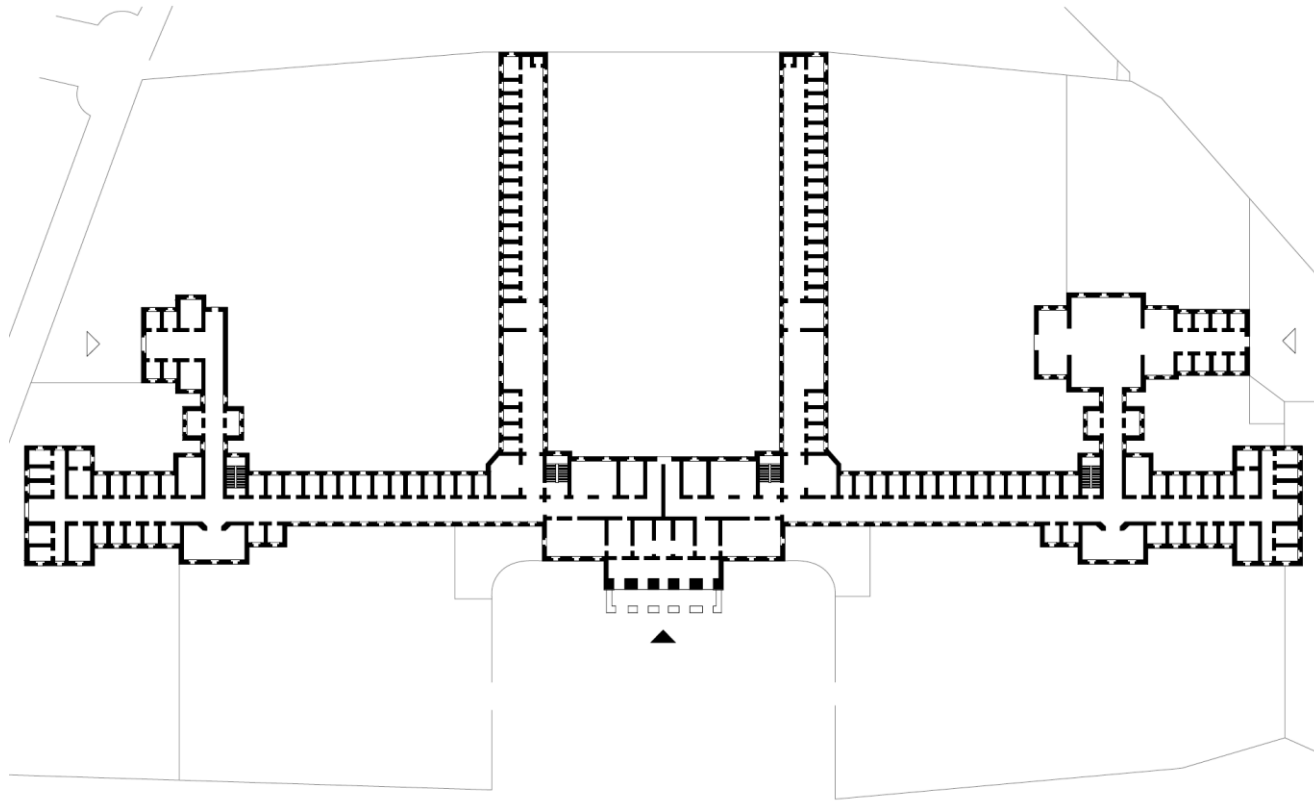
Collection centre for people with an unclear chance of survival
Care was in the foreground – diagnostics were just invented

Strategy: gathering of patients in **shared rooms**



evolution of building-typologies

1890...1960...1975...1990...2010 ... what's next ?



Hospitals of the 18th and 19th centuries:

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Strategy: gathering of patients in **shared rooms**

Expansion of the care areas in particular
Separation largely by gender

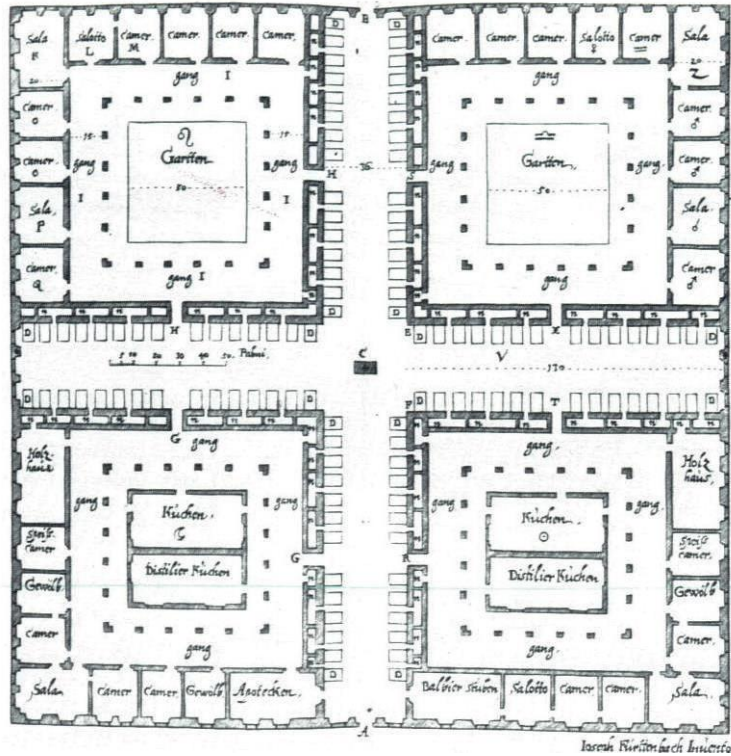
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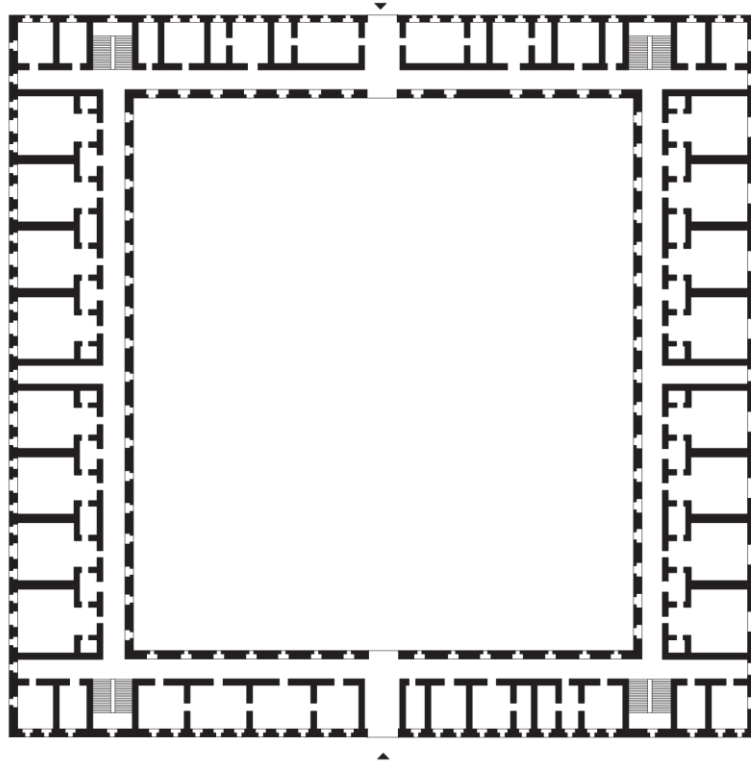
Hospitals of the 18th and 19th centuries:

Collection centre for people with an unclear chance of survival
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Strategy: gathering of patients in **ventilation halls**

evolution of building-typologies

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Strategie: gathering of patients in **shared rooms**

evolution of building-typologies

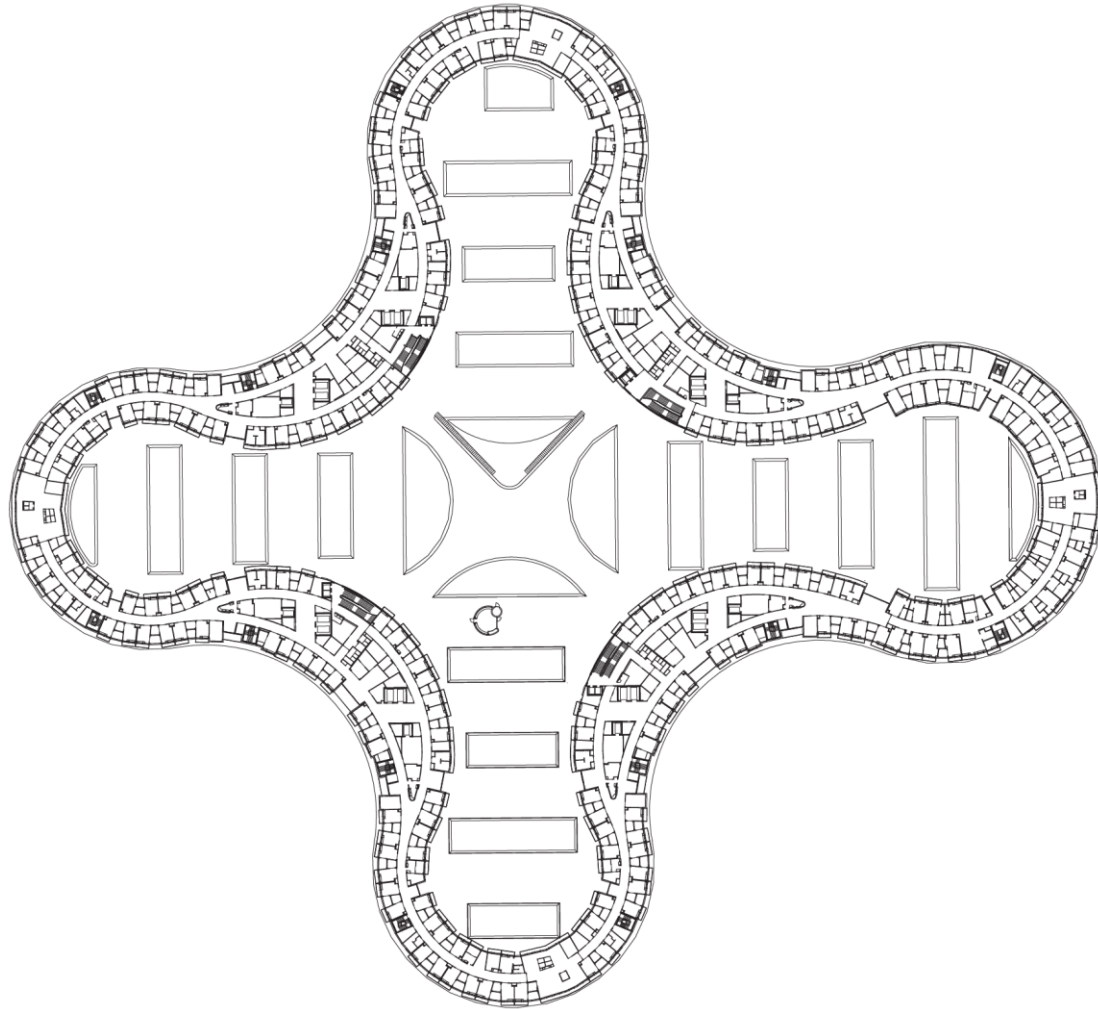
Draft layout | New North Zealand Hospital 2013-2014

Arch. Herzog & deMeuron



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Typological transformation

Overlay of flexible care structures
with highly functional socket functions

Landscape reference and living environments

evolution of building-typologies

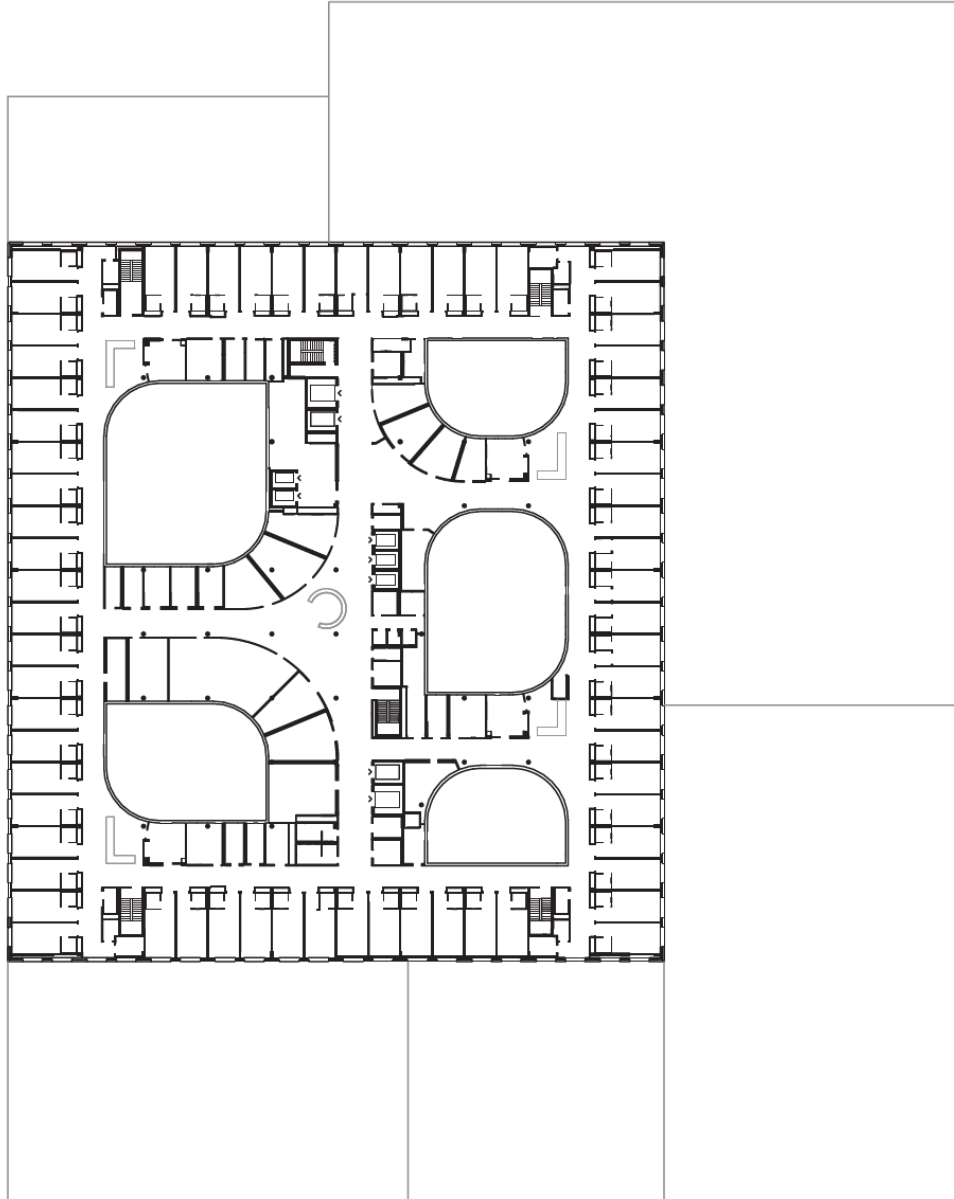
Kantonsspital Baden, CH – ward levels 3-5 2016

Arch. Nickl & Partner



Nickl & Partner

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Typological transformation

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Landscape reference and living environments

evolution of building-typologies

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Klinikum Altona Arch: Kallmorgen & Partner

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institution for people with an unclear chance of survival
Clear focus on care – diagnostics were just invented

Hospitals since the 1960s:

Milestone: Klinikum Altona: new objectivity reaches the hospital
The pane as a clearly structured structure - but rigidly zoned
Expansion and renovation impossible!

Strategy: Concentration of bed capacities in high-rise building

evolution of building-typologies

1890...1960...1975...1990...2010 ... what's next ?



Klinikum Aachen Arch: Weber+Brand

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Hospitals since the 1970s:

Milestone: Klinikum Aachen as a radical machine:
Milestone: Klinikum Grosshadern (LMU)
Pure functionalism - radically short distances (but rigid)
Renovation impossible !

Strategy: Concentration of bed capacities
Maximum functionality: The "machine"

„Magistrale“ as a development "spine"
of very large clinics (>1,200 beds)

evolution of building-typologies

1890...1960...1975...1990...2010 ... what's next ?



Klinikum Großhadern Arch: Schwethelm/Schlempp/Eichberg

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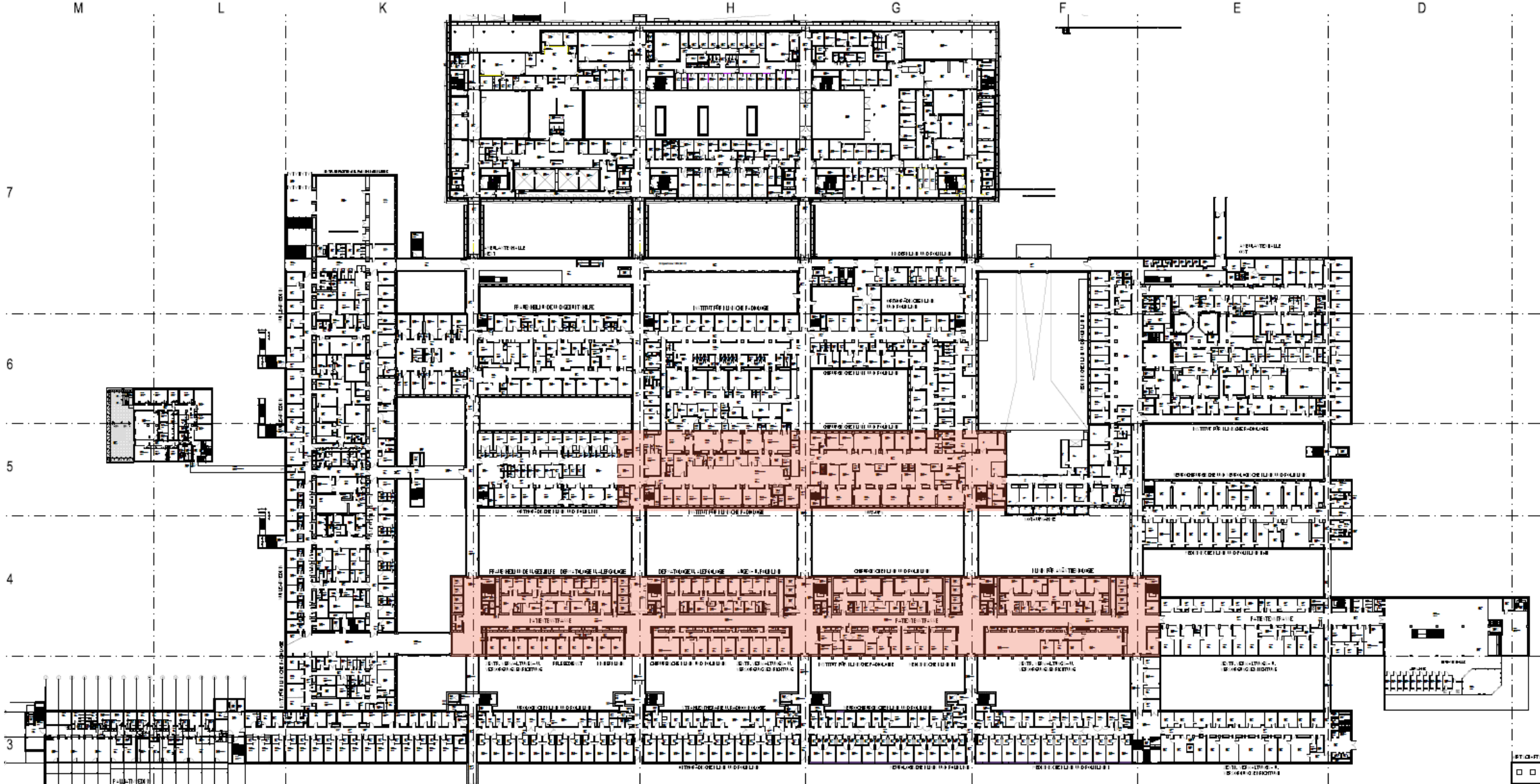
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evolution of building-typologies

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Klinikum Großhadern Arch: Schwethelm/Schlepp/Eichberg

evolution of building-typologies

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MKK Klinikum Minden Arch: TMK Architekten / HDR

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Hospitals in the mid-1990s:

“Magistrale” as a clear form of organization and development –
linearly expandable – but endless?

Strategy: Extensibility was the measure of all things
(lessons learned from the typologies of the 1970s)

evolution of building-typologies

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Universitätsklinikum Frankfurt/M. Arch: Nickl & Partner

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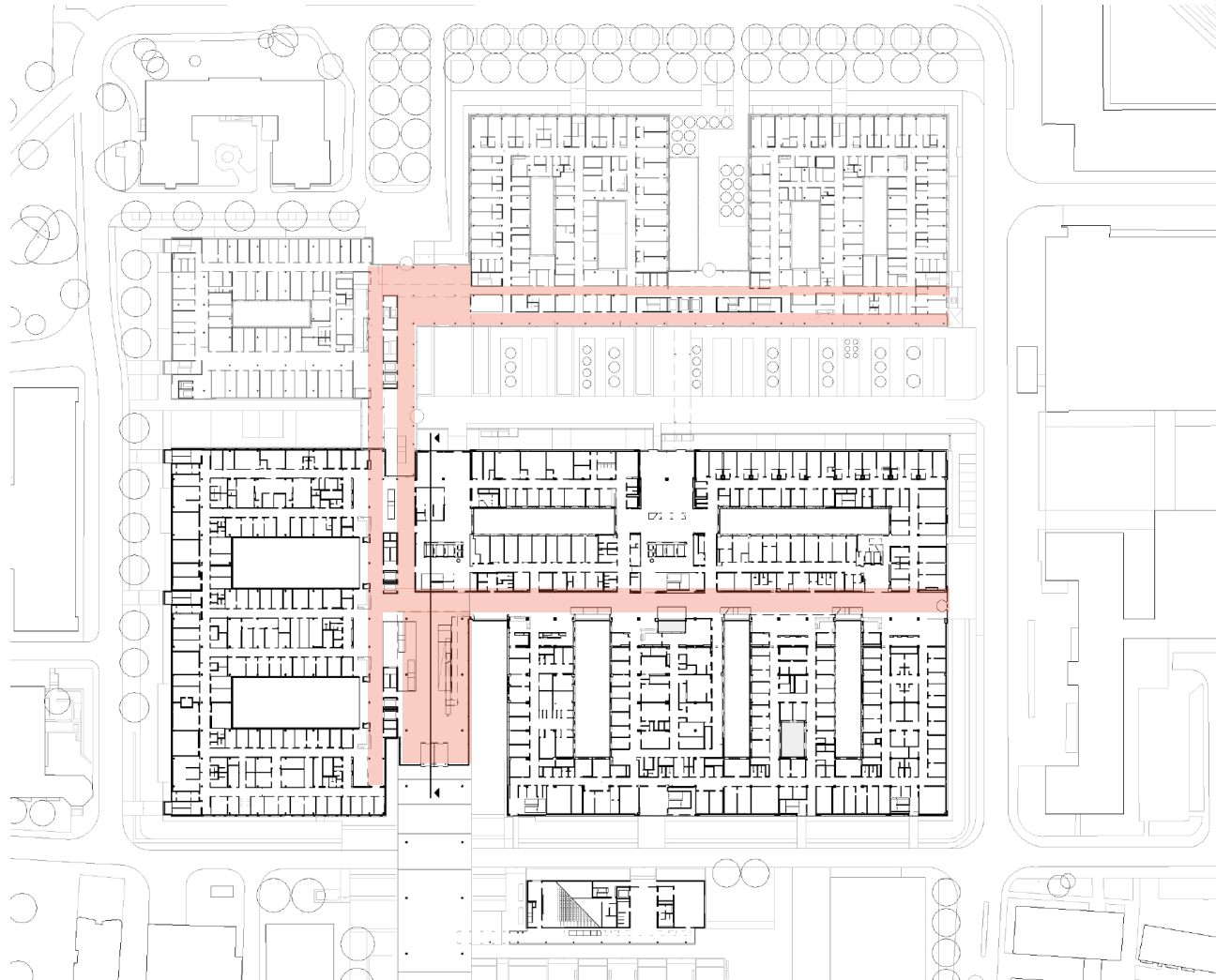
evolution of building-typologies

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Universitätsklinikum Frankfurt/M. Arch: Nickl & Partner

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evolution of building-typologies

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Typologies: End of the „spine“ layout ?

Typologies: adaptable and efficient layout

Future needs and requirements

*„We have been talking about adaptability for a while now,
but what can be considered efficient – and successful ?“*

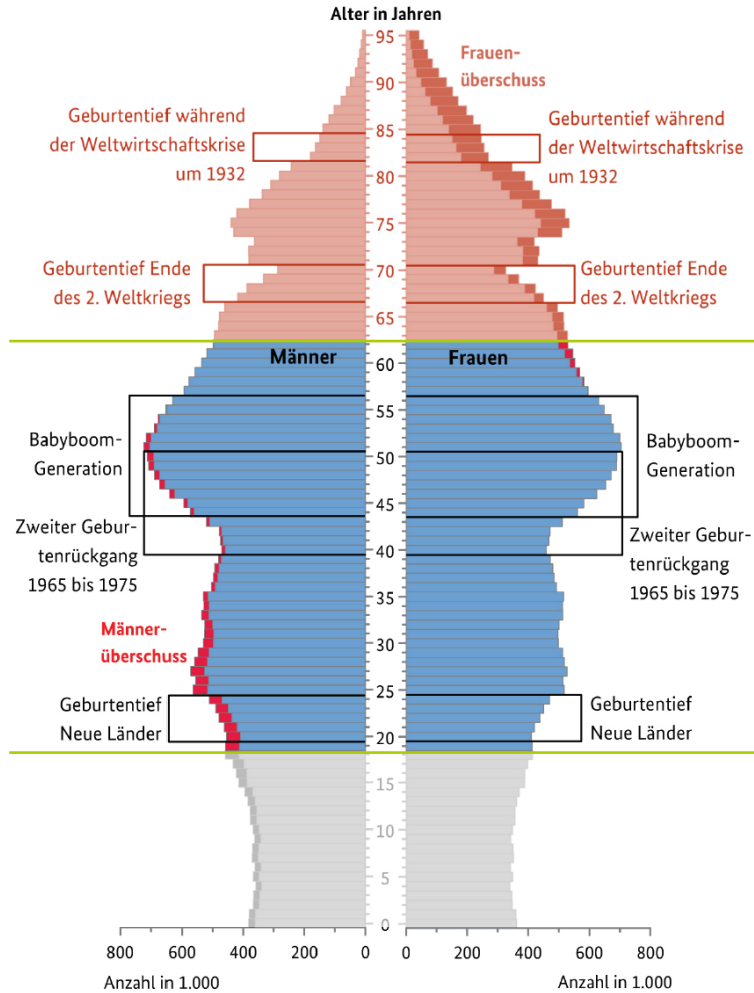
growth and change

demographic impact



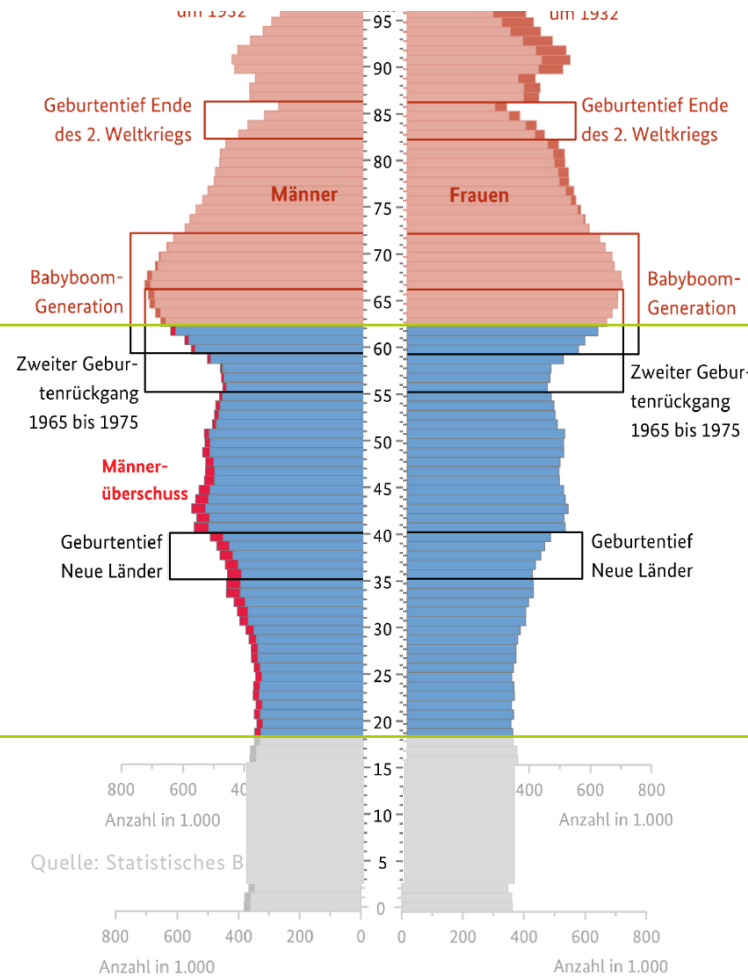
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aging distribution (Germany) - by demographic incidents (2015)



Quelle: Statistisches Bundesamt

simplified projection (Germany) +15 years (2030)



patient focus
staffing focus & potential

Comparative age pyramid:

Fewer people (staff) will need to take care of aging generation 65+

evolution of building-typologies

1890...1960...1975...1990...2010 ... what's next ?

Relevance of outpatient care and home-care (2010 ff.)

Functional areas are growing

They need to be better networked and expanded capacitively

Nursing areas are concentrated

The inpatient care of the future will hardly grow,
but rather condense: ICU / IMC / HighCare

Multidisciplinarity

Nursing areas must be flexibly transformed:

Interdisciplinarity

The pandemic taught us to create definable areas

„spine“ structure + connected pavilions

UKE Chirurgie (Hamburg, Eppendorf)



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Universitätsklinikum Eppendorf (design-competition 2004)

„spine“ structure + connected pavilions

UKE Chirurgie (Hamburg/Germany)



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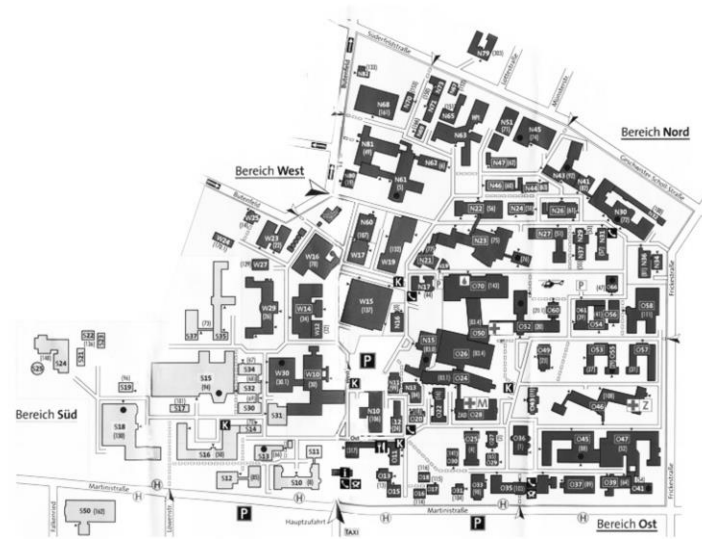
„spine“ structure + connected pavilions

UKE Chirurgie (Hamburg/Germany)



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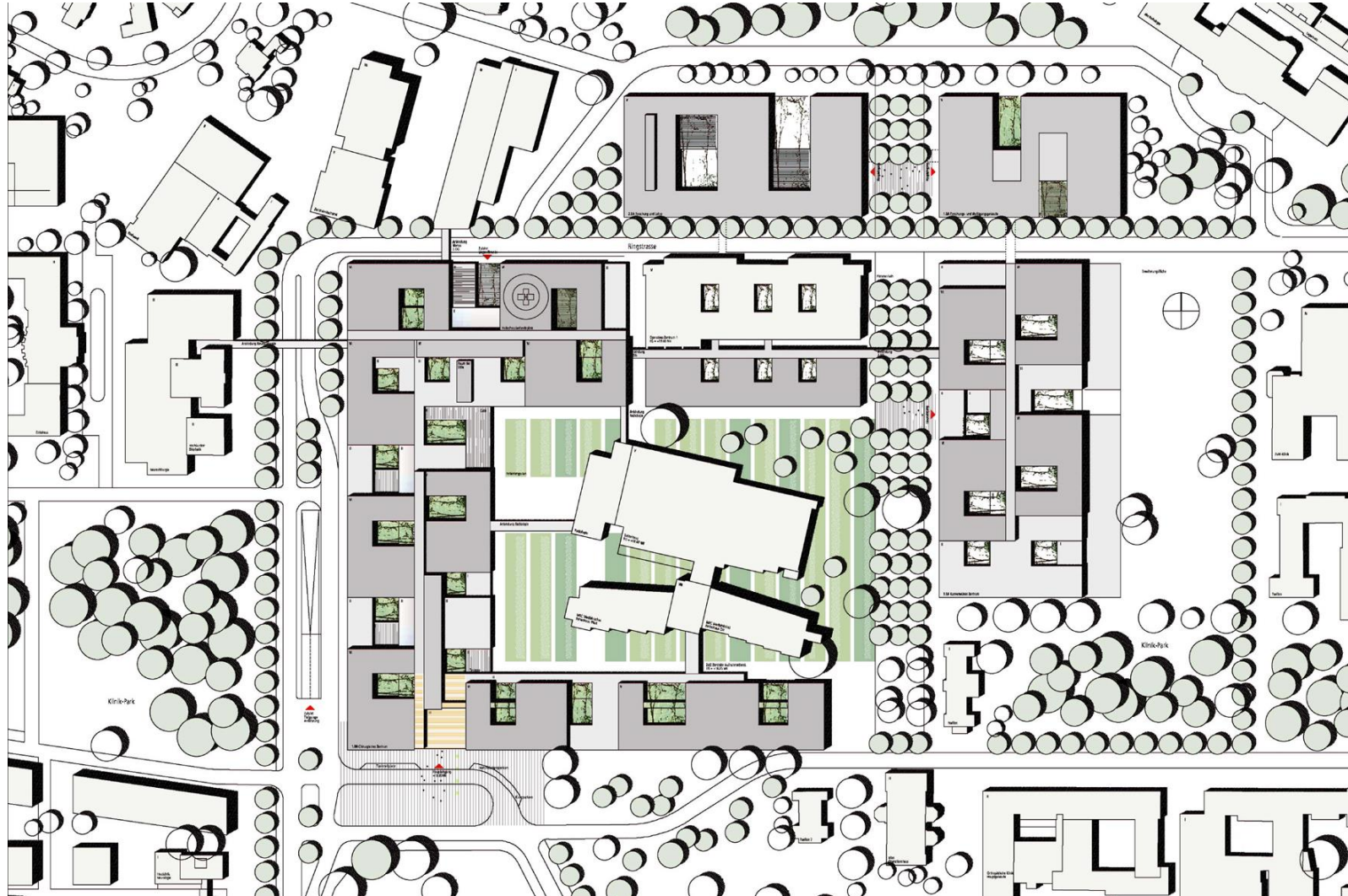
„spine“ structure + connected pavilions

UKE Chirurgie (Hamburg/Germany)



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„spine“ structure + connected pavilions

UKE Chirurgie (Hamburg/Germany)



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„radial“ typology

UKE Herzzentrum (Hamburg/Germany)



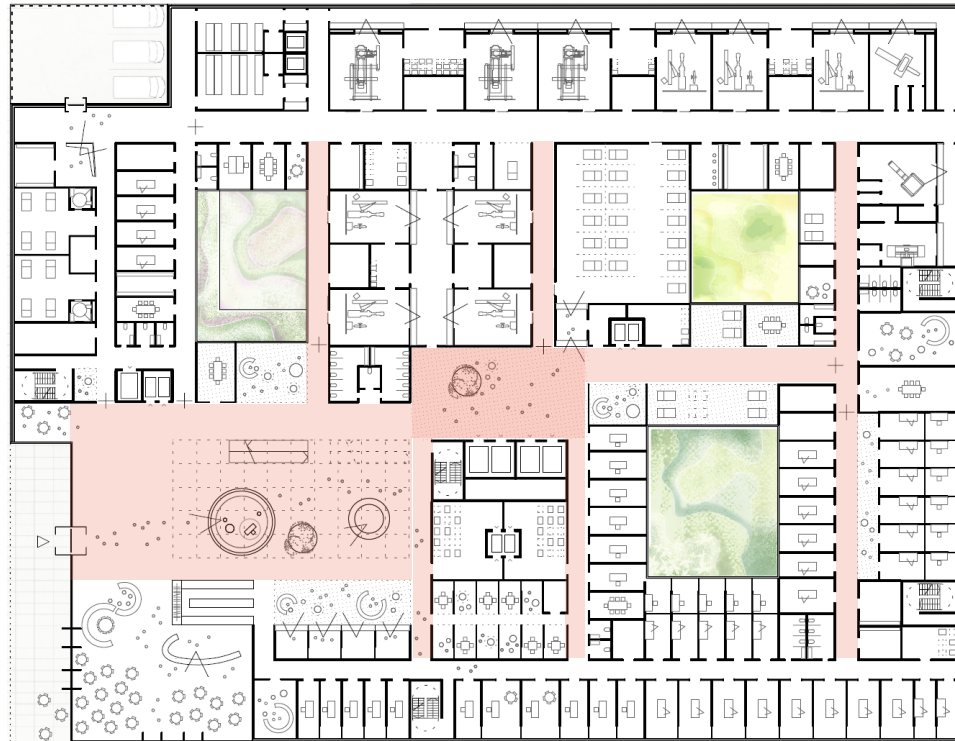
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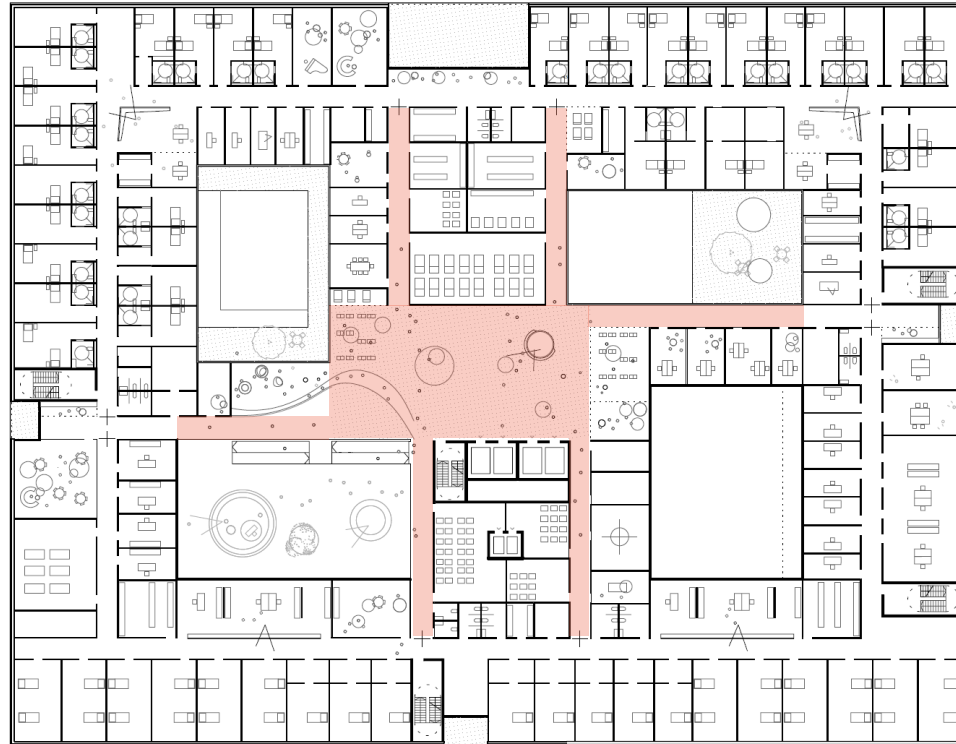
„radial“ typology

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„radial“ typology

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„radial“ typology

Klinik Favoriten (ehm. KFJ) Vienna/Austria



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Klinik Favoriten, Vienna (design-competition 2008)

„radial“ typology

Klinik Favoriten (ehm. KFJ) Vienna/Austria



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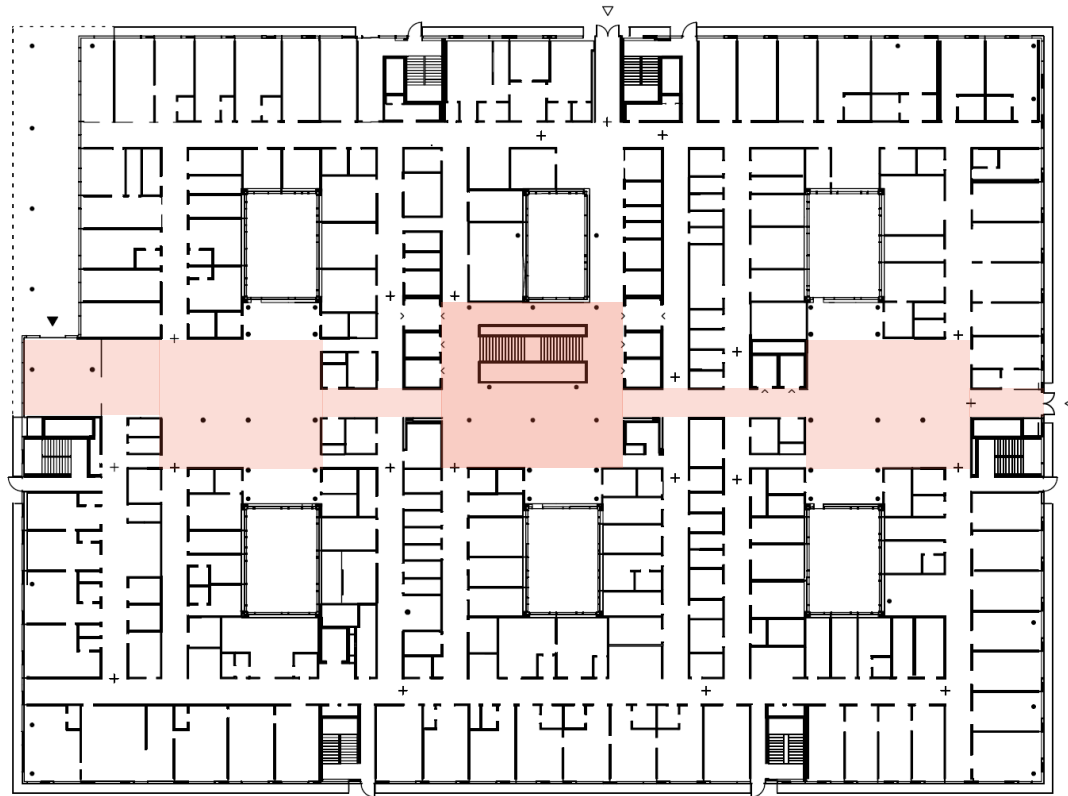


„radial“ typology

Klinik Favoriten (ehm. KFJ) Vienna/Austria



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„radial“ typology

Klinik Favoriten (ehm. KFJ) Vienna/Austria



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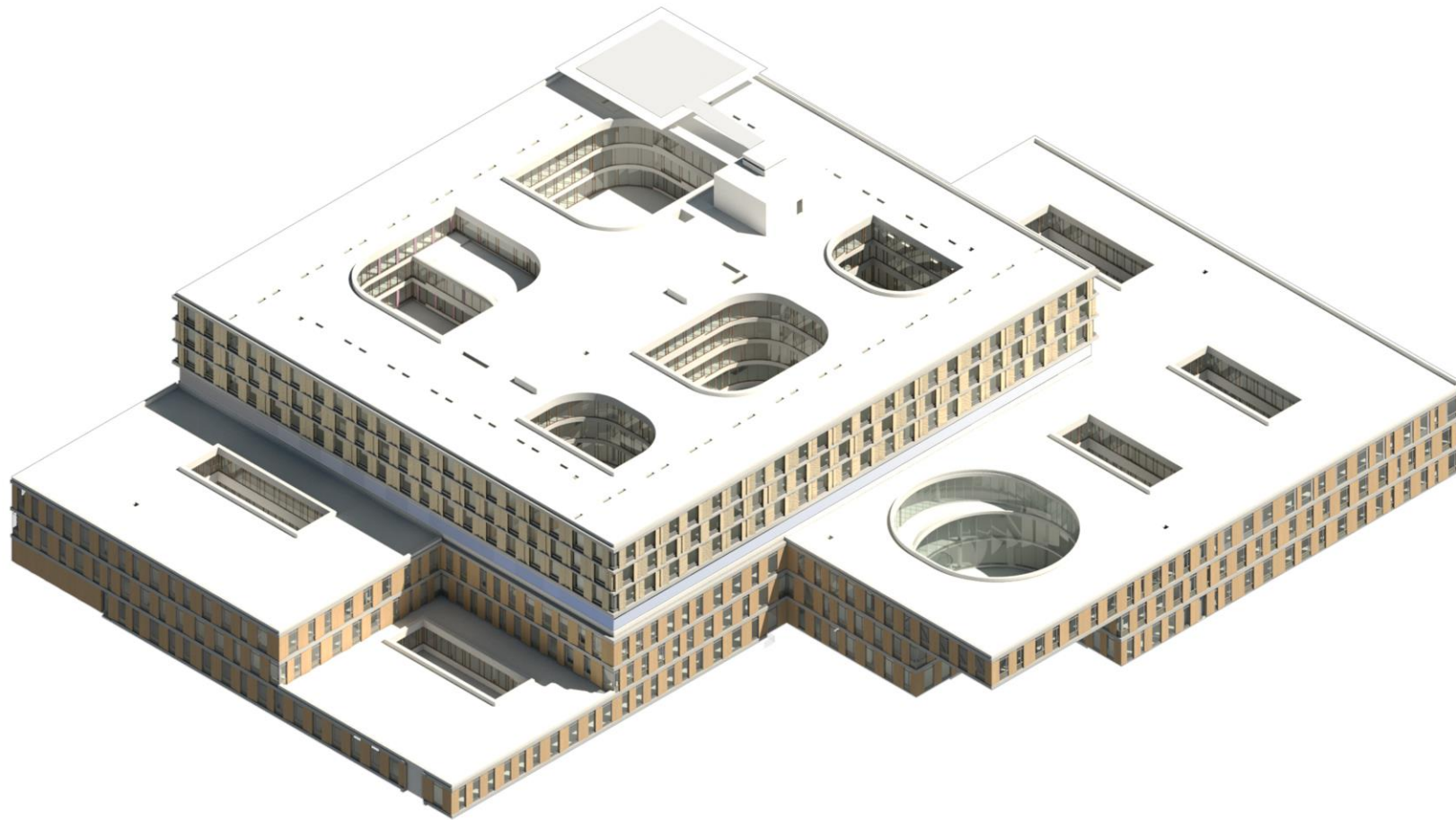




Kantonspital Baden (CH) (design-competition 2016)

„radial“ typology

KSB Kantonspital Baden (CH)



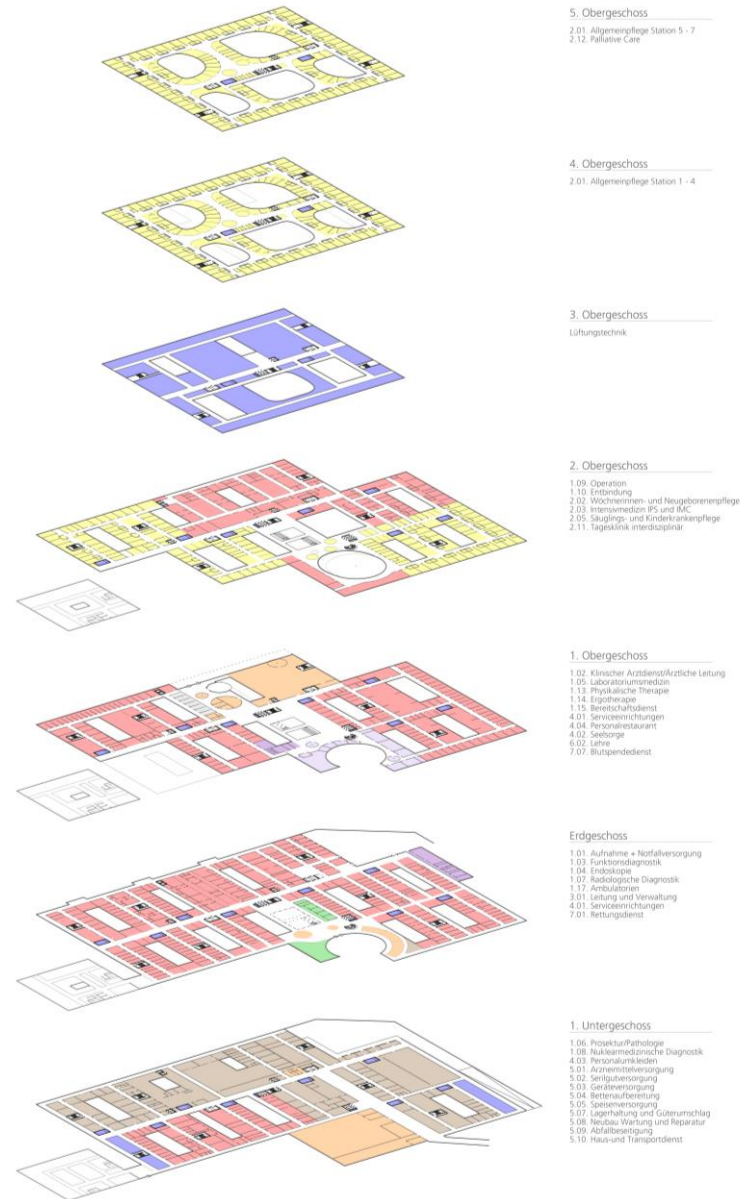
„radial“ typology

KSB Kantonsspital Baden (CH)



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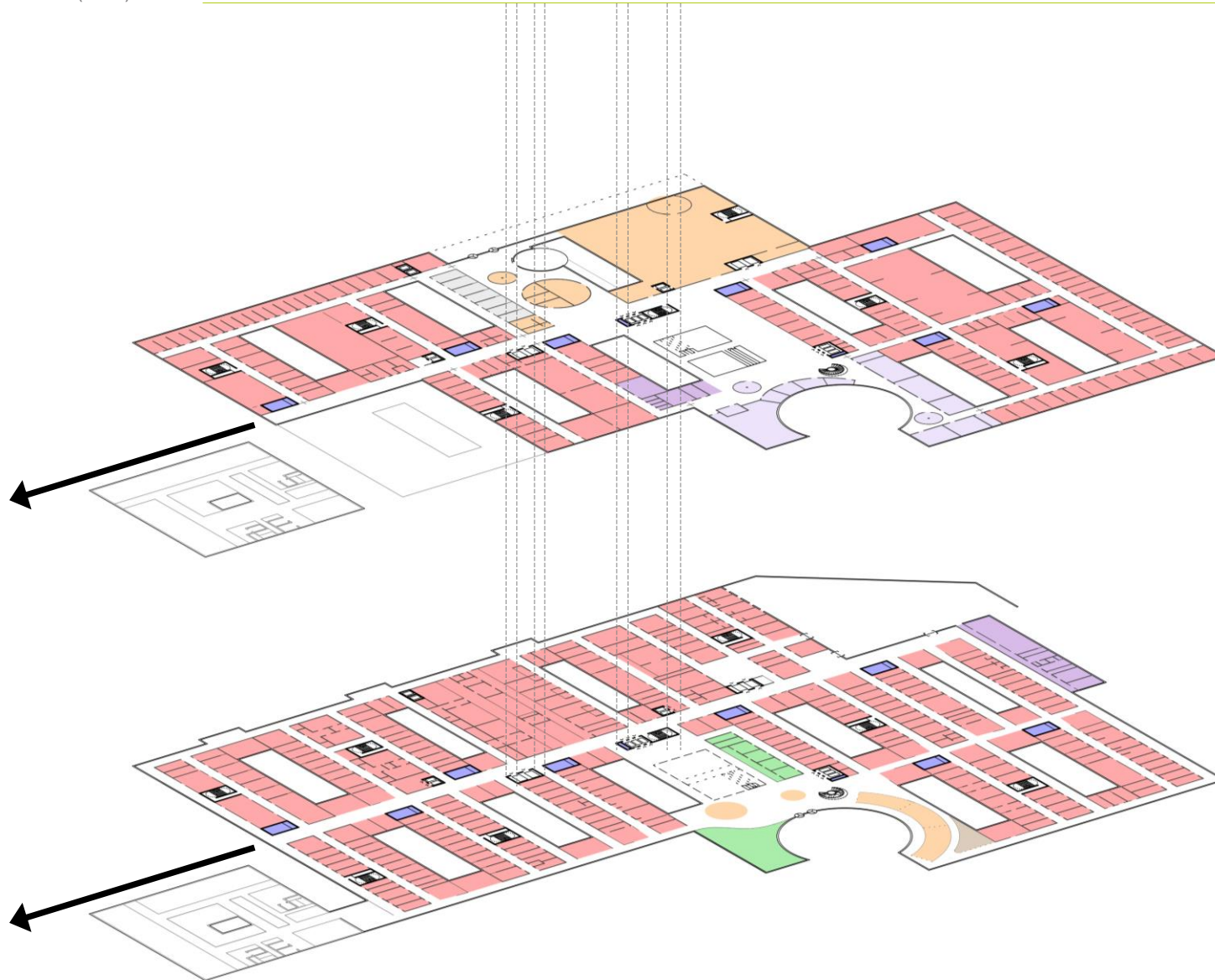
„radial“ typology

KSB Kantonsspital Baden (CH)



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1. Obergeschoss

- 1.02. Klinischer Arztendienst/Ärztliche Leitung
- 1.05. Laboratoriumsmedizin
- 1.13. Physikalische Therapie
- 1.14. Ergotherapie
- 1.15. Bereitschaftsdienst
- 4.01. Serviceeinrichtungen
- 4.04. Personalrestaurant
- 4.02. Seelsorge
- 6.02. Lehre
- 7.07. Blutspendedienst

Erdgeschoss

- 1.01. Aufnahme + Notfallversorgung
- 1.03. Funktionsdiagnostik
- 1.04. Endoskopie
- 1.07. Radiologische Diagnostik
- 1.17. Ambulatorien
- 3.01. Leitung und Verwaltung
- 4.01. Serviceeinrichtungen
- 7.01. Rettungsdienst

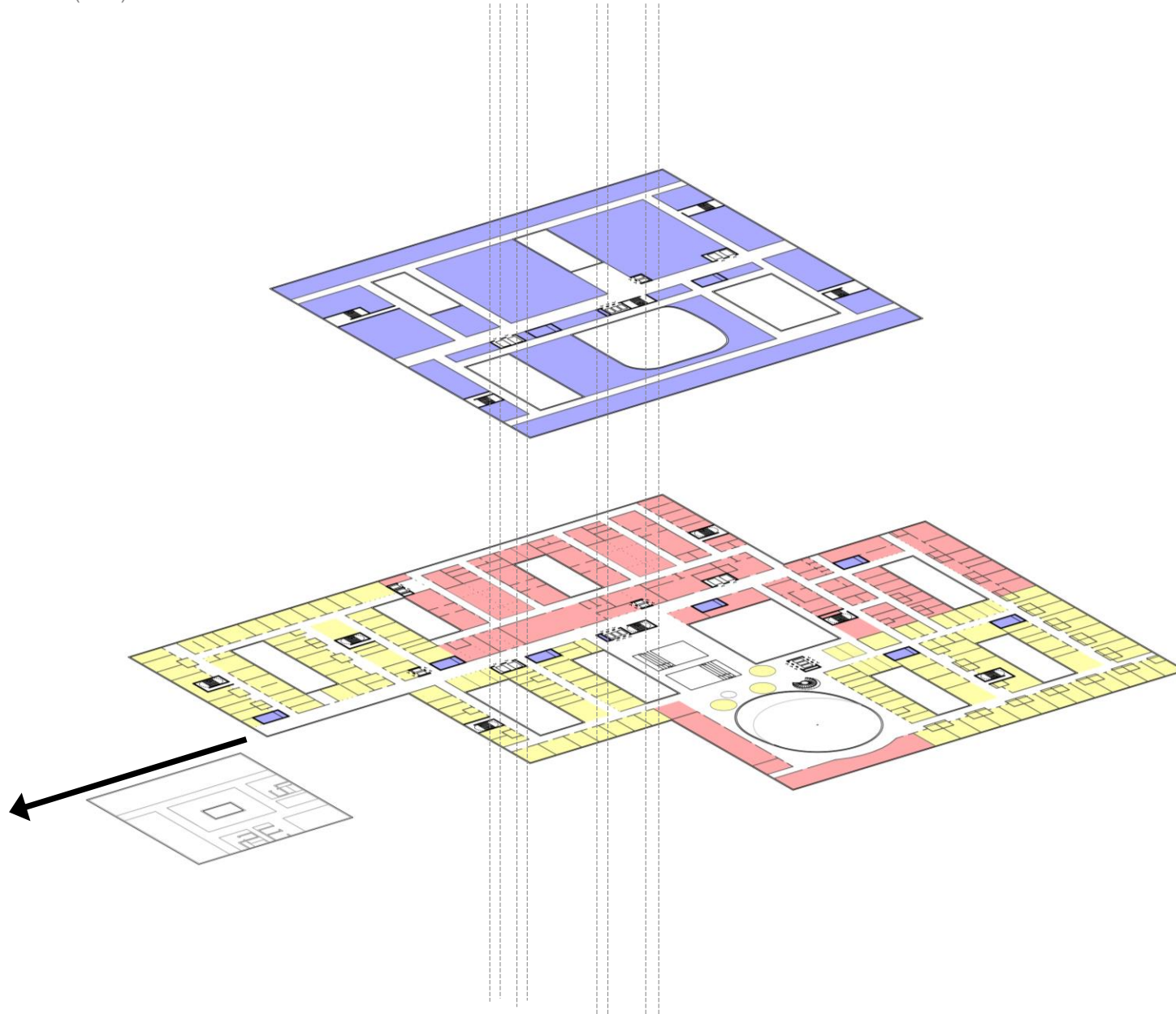
„radial“ typology

KSB Kantonspital Baden (CH)



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3. Obergeschoss

Lüftungstechnik

2. Obergeschoss

- 1.09. Operation
- 1.10. Entbindung
- 2.02. Wöchnerinnen- und Neugeborenenpflege
- 2.03. Intensivmedizin IPS und IMC
- 2.05. Säuglings- und Kinderkrankenpflege
- 2.11. Tagesklinik interdisziplinär

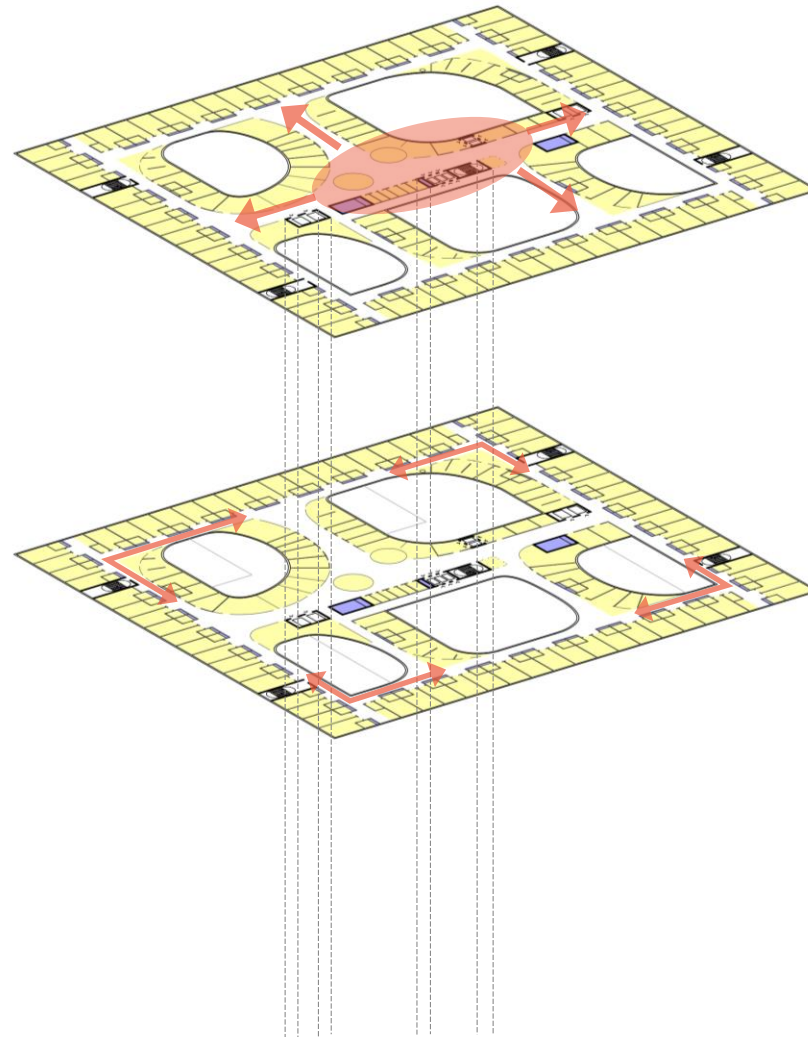
„radial“ typology

KSB Kantonspital Baden (CH)



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5. Obergeschoss

- 2.01. Allgemeinpflege Station 5 - 7
- 2.12. Palliative Care

4. Obergeschoss

- 2.01. Allgemeinpflege Station 1 - 4

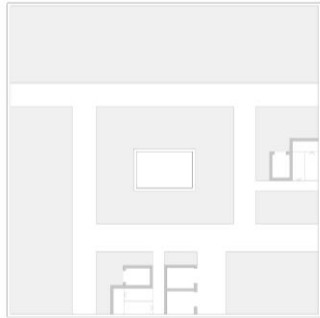
„radial“ typology

KSB Kantonsspital Baden (CH)



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„radial“ typology

KSB Kantonsspital Baden (CH)



Klinikum Altona

(design-competition 2019)

„radial“ typology

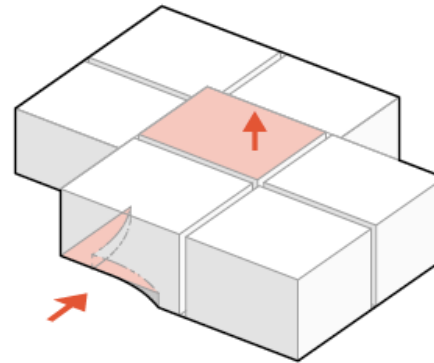
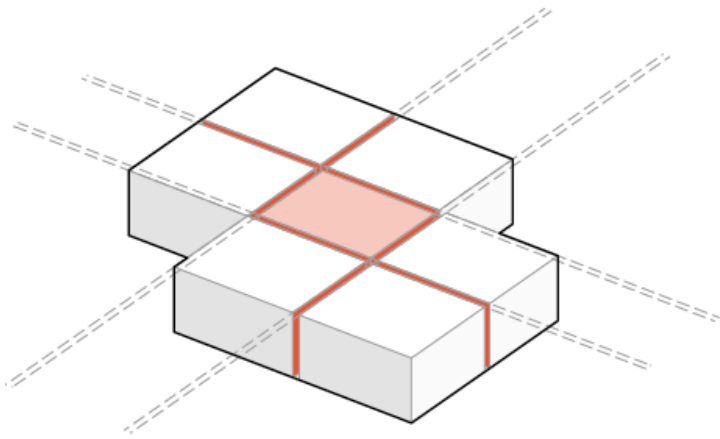
Klinikum Altona – Hamburg/Germany

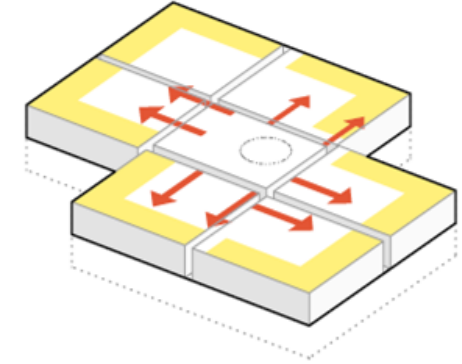
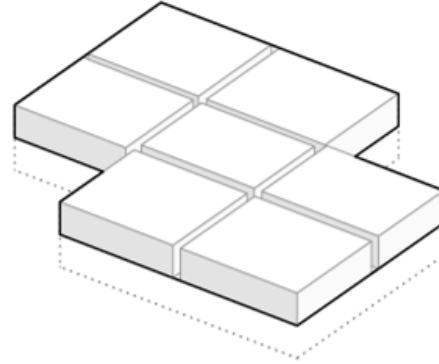
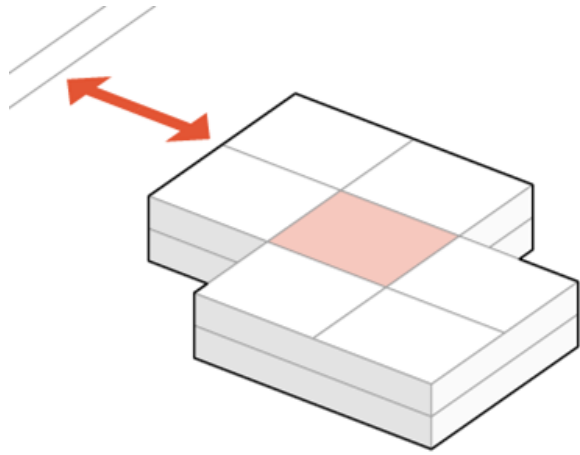


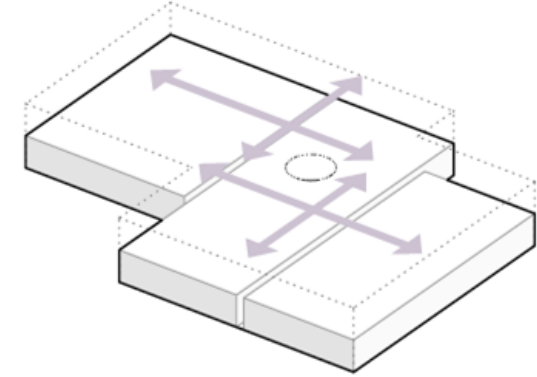
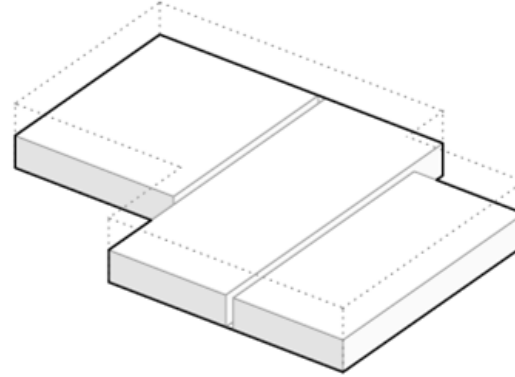
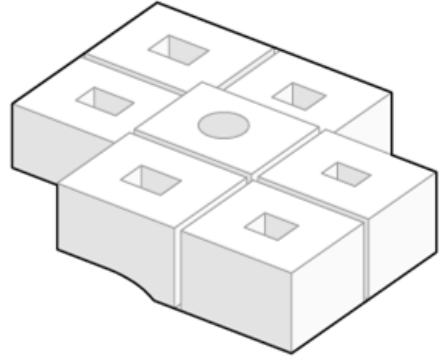
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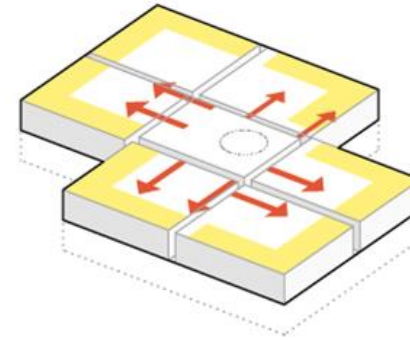
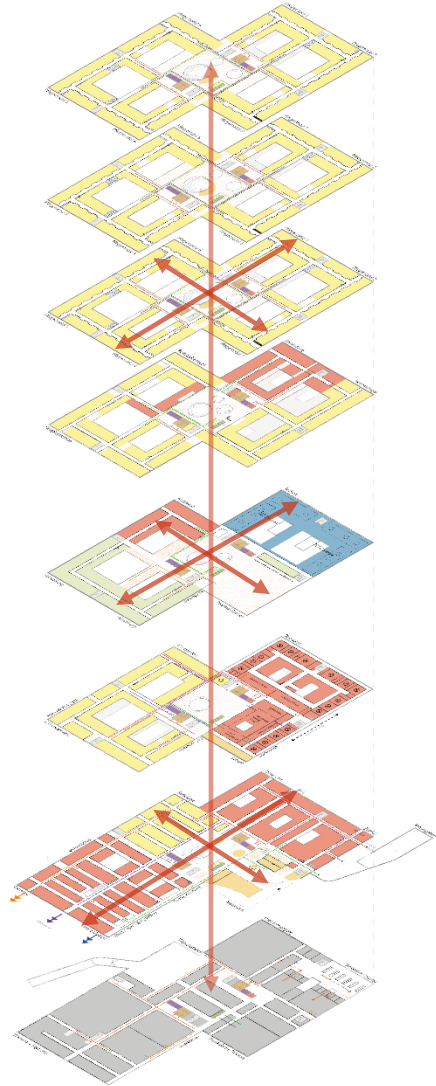
Klinikum Altona – Hamburg/Germany











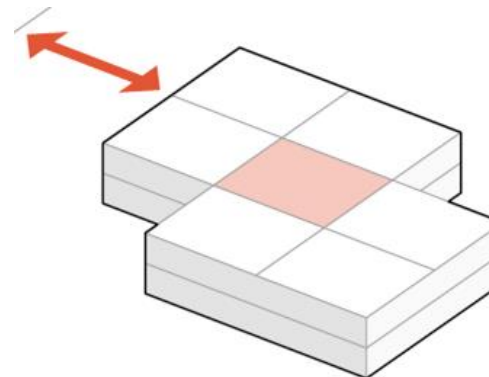
compact makro-typology

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radial accessibility
(efficient traffic)

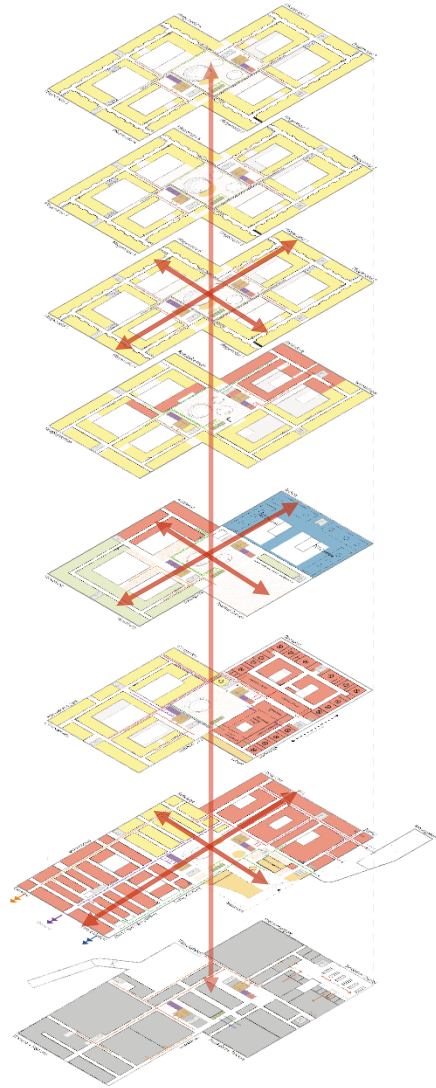
Annular connectivity
(floating-potential)

„Sandwich-level“
mechanical floor and densification



Modular room-structure
(adaptability)

„spinal“ structure of main corridors
(expandability)



TOP-5 criteria

Central access
(efficient distribution & wayfinding)

“spinal” corridor as main distributor
(Linear extensibility)

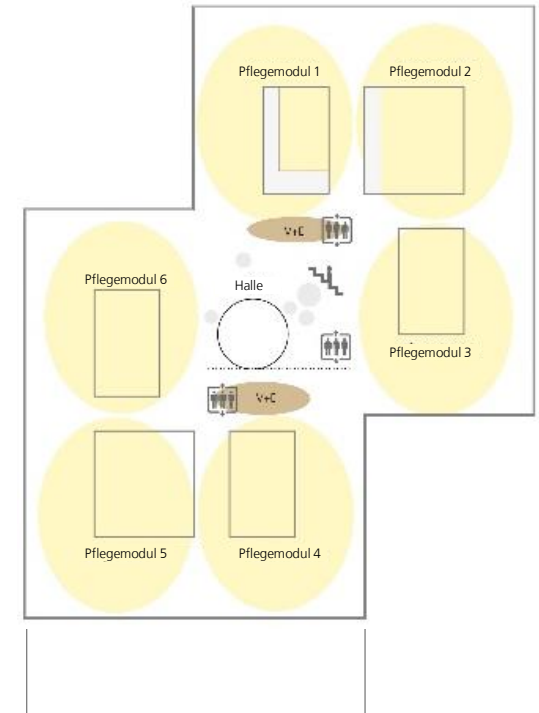
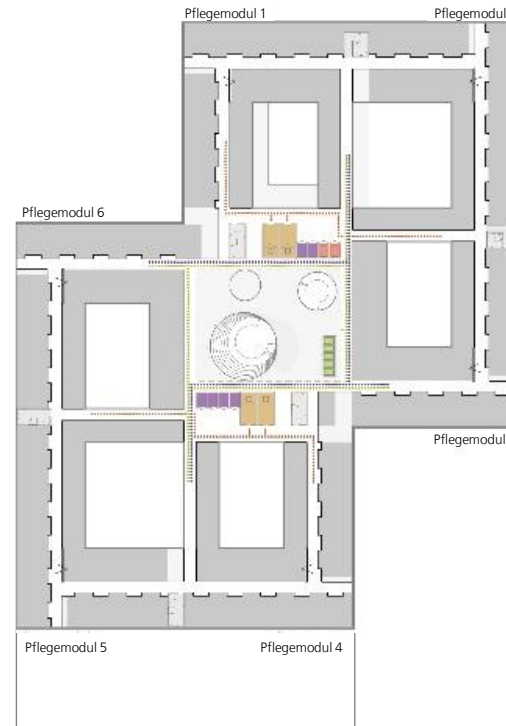
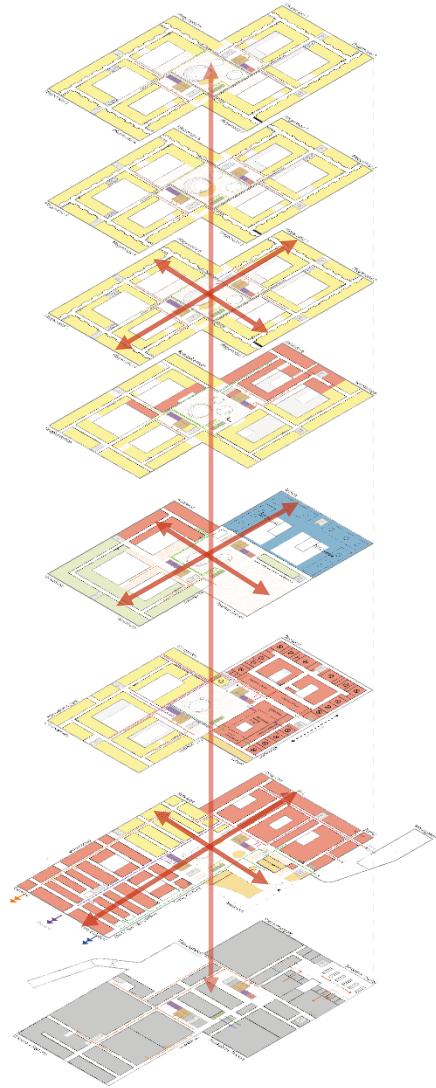
Clear path separation
Outpatient / Elective / Emergencies / Visitors

Cluster structure of the functions
Adaptability during operation

Large clearance of the functions
future-installation + cost efficiency

„radial“ typology

Klinikum Altona – Hamburg/Germany



„radial“ typology

Klinikum Altona – Hamburg/Germany



planning criteria for the future ?

Typological openness

Modular basic structure

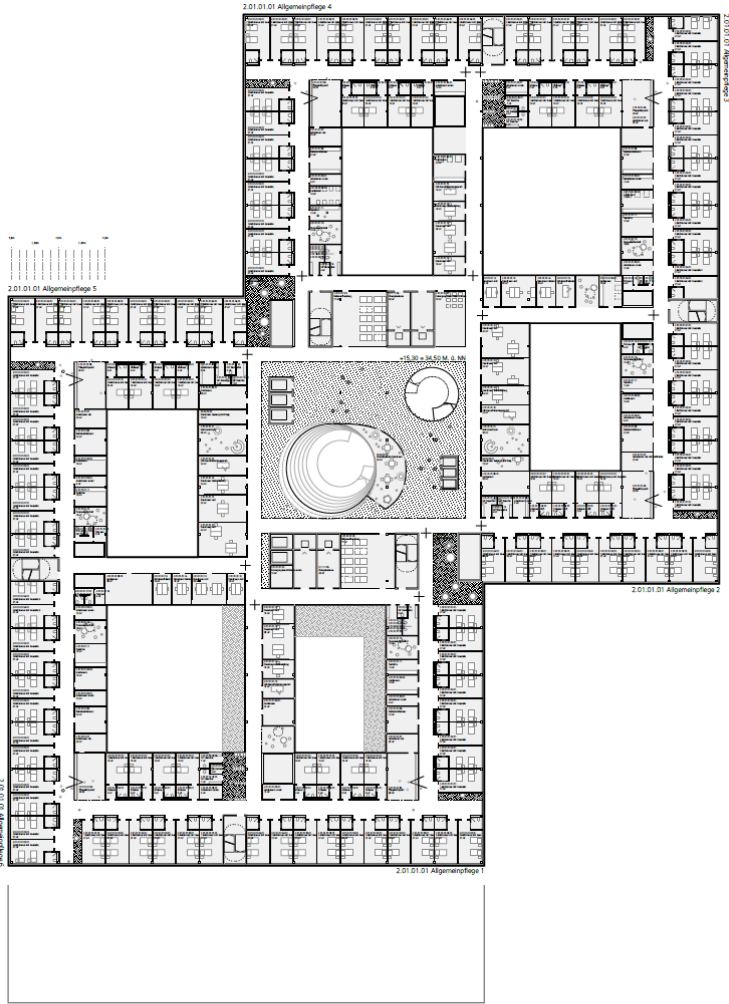
Clear measurement order

future healthcare facilities

adaptable and efficient layout



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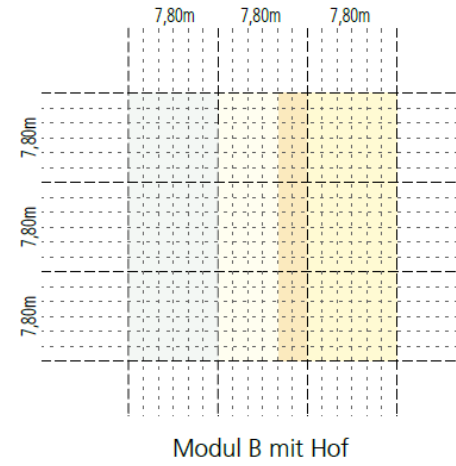
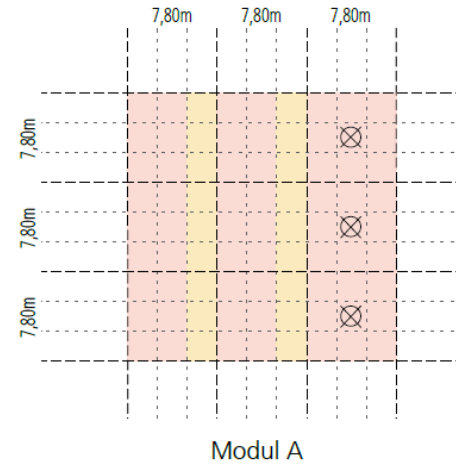
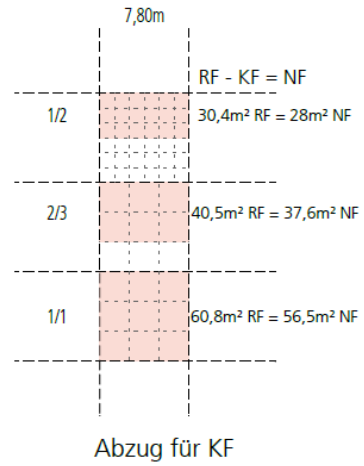
Organisation ?

future healthcare facilities

adaptable and efficient layout – universal grid

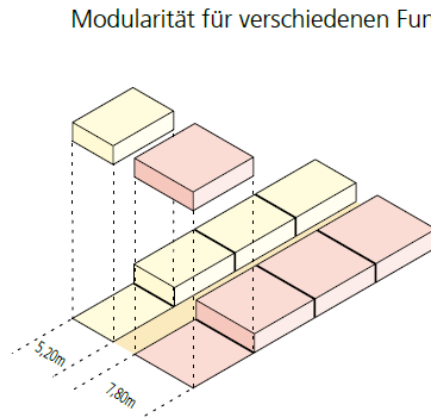


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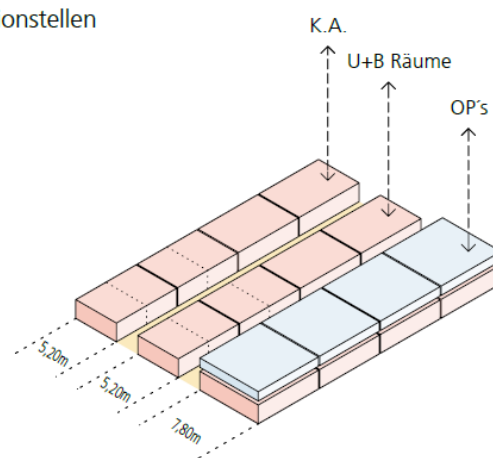


Modularity !

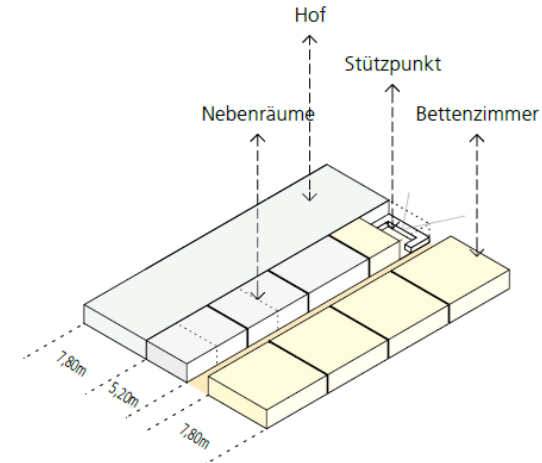
Modularität für verschiedenen Funktionstellen



Allgemeine Module



Modularität für Funktionen mit Technik



Modularität für OP-Bereich und Pflege

adaptable and efficient layout

adaptable and efficient layout



Nickl & Partner

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Klinikum Memmingen (design-competition 2021)

„radial“ typology

Klinikum Memmingen, Germany



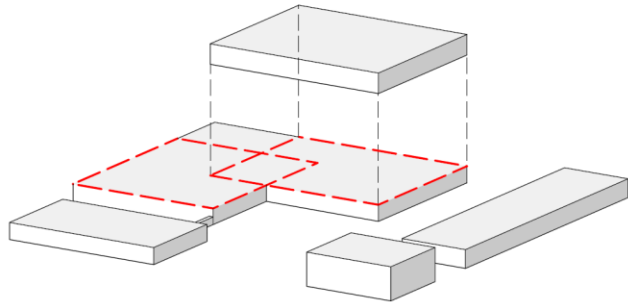
„radial“ typology

Klinikum Memmingen, Germany

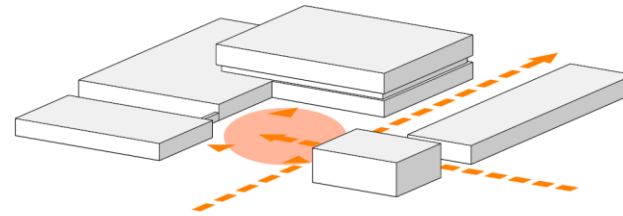


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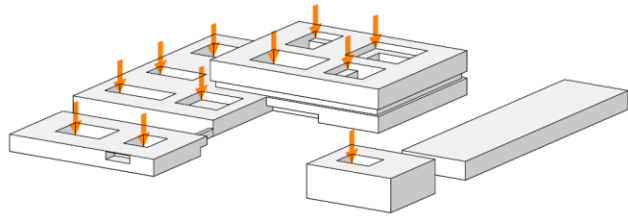
S. / 59



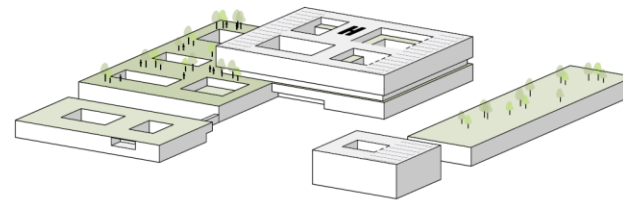
Volumenfindung



Campussituation: Achsen und Eingänge zur Campusmitte



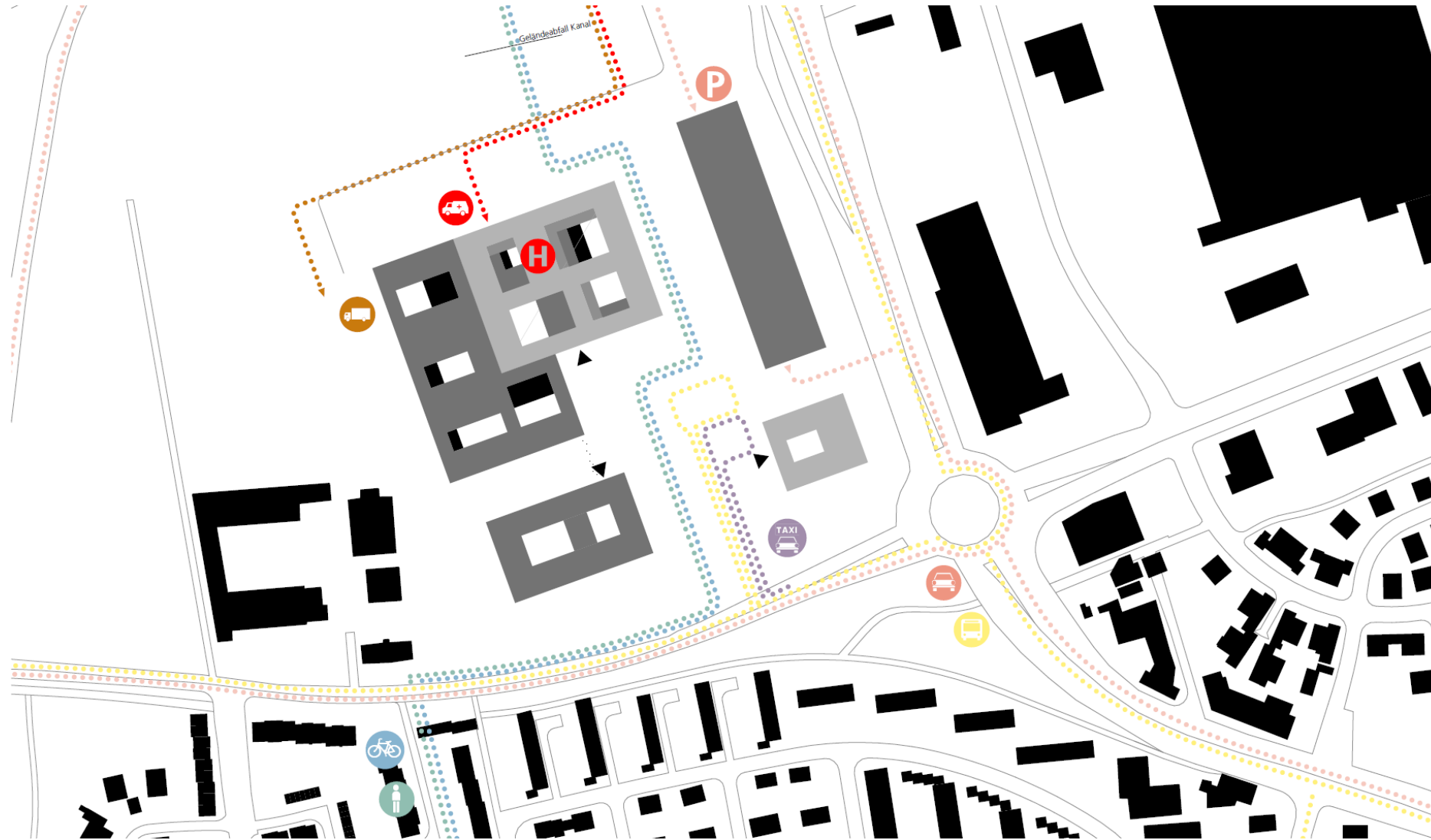
Höfe: Gliederung des Volumens



Grünräume und Photovoltaik

„radial“ typology

Klinikum Memmingen, Germany



„radial“ typology

Klinikum Memmingen, Germany



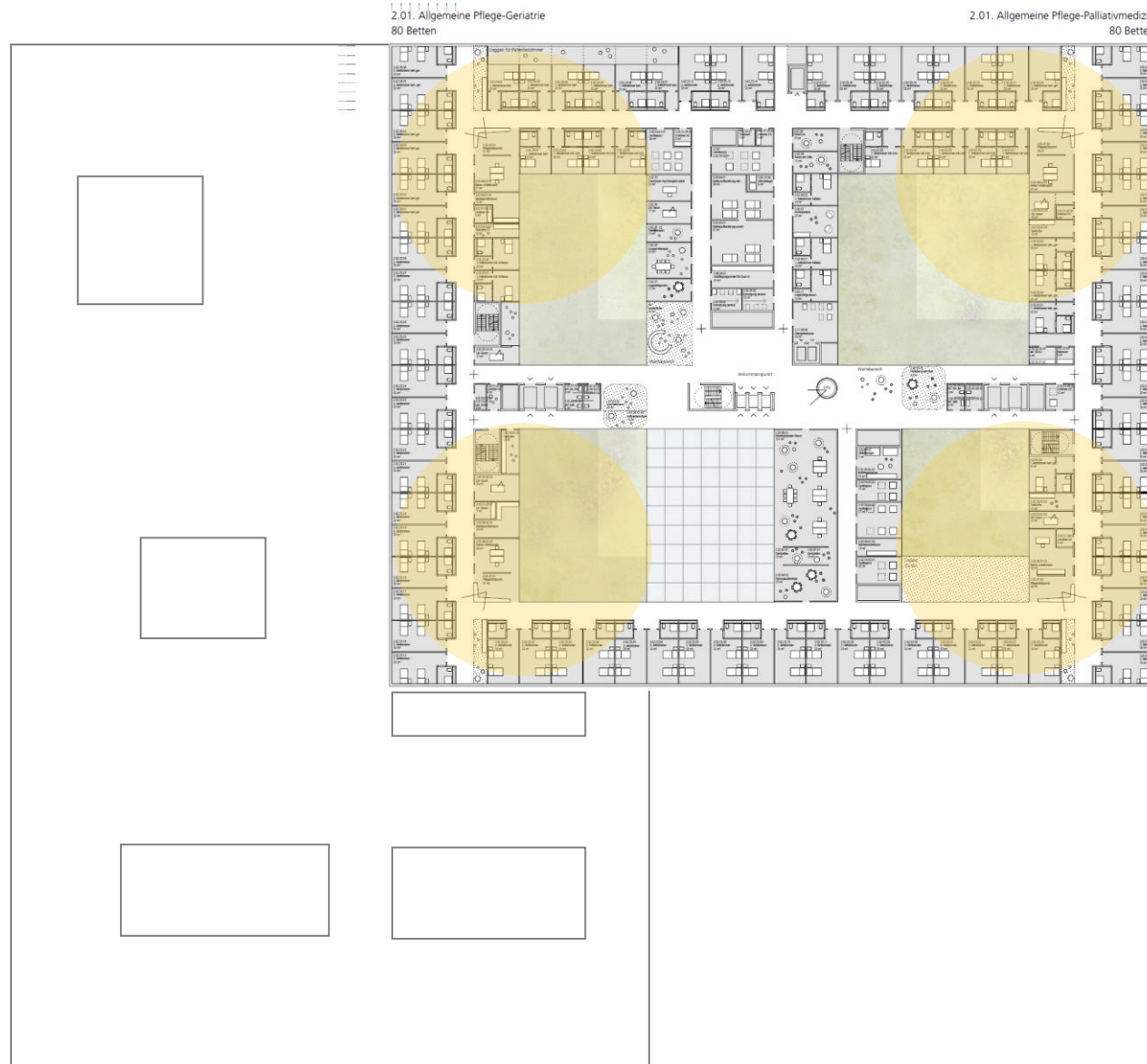
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„radial“ typology

Klinikum Memmingen, Germany



„radial“ typology

Klinikum Memmingen, Germany



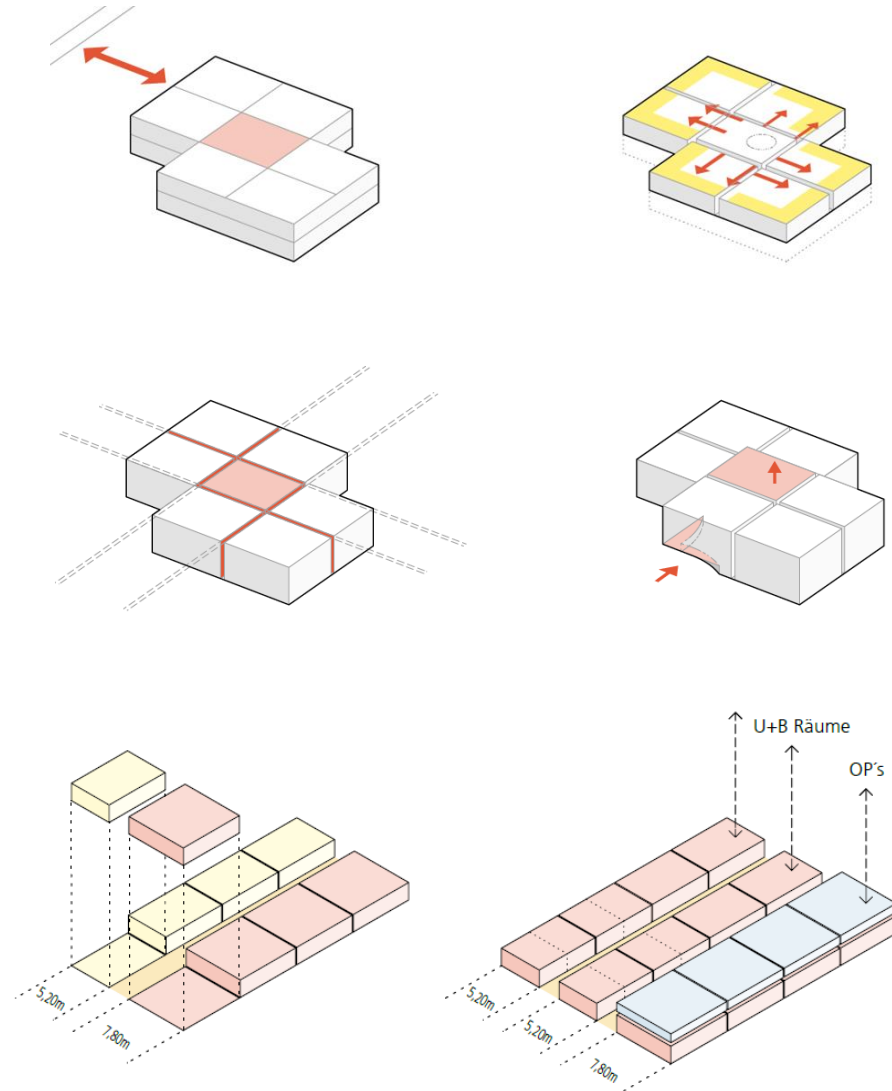
future healthcare facilities

1890...1960...1975...1990...2010 ... let's go different !



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How should hospitals be structured in the future ?

- **Linear** expandable
- **Modular** adaptable / changeable
- **Radial** connectable „floating“
- **Sectional** definable
- **Attraktive** healing environment and workplace to be

Nickl & Partner



Universitätsklinikum
Hamburg-Eppendorf

Marius APOTHEKE

URHEBERRECHTSHINWEIS

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