

CROSSING BOUNDARIES TO ACHIEVE DISRUPTIVE INNOVATION

Romano Del Nord

With the permission of:

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OBIETTIVO

Sviluppo di **processi e progetti innovativi** con i quali attuare un programma di "community hospitals" mediante un "sistema costruttivo industrializzato" tale da **comprimere costi e tempi** di realizzazione delle opere

CONCORRENTI

108 concorrenti provenienti da tutto il mondo



FASI DI SELEZIONE

I°

18 gruppi selezionati

II°

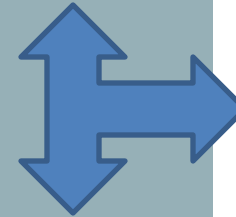
9 gruppi semifinalisti

III°

3 gruppi finalisti

DIALOGO

3 gruppi finalisti
(8 mesi per approfondire la proposta sviluppando un dialogo con la committenza)



- Flessibilità documentata del sistema
 - Basso impatto ambientale e sostenibilità
 - Economicità conseguibili nel ciclo di vita
 - Efficienza operativa



- Sofisticazione tecnologica delle soluzioni quale riflesso delle più avanzate potenzialità dell'elettronica e dell'automazione
- Concertazione consapevole della soluzione mediante simulazione comparata di costi e prestazioni tra opzioni alternative

2011 >

> 2013



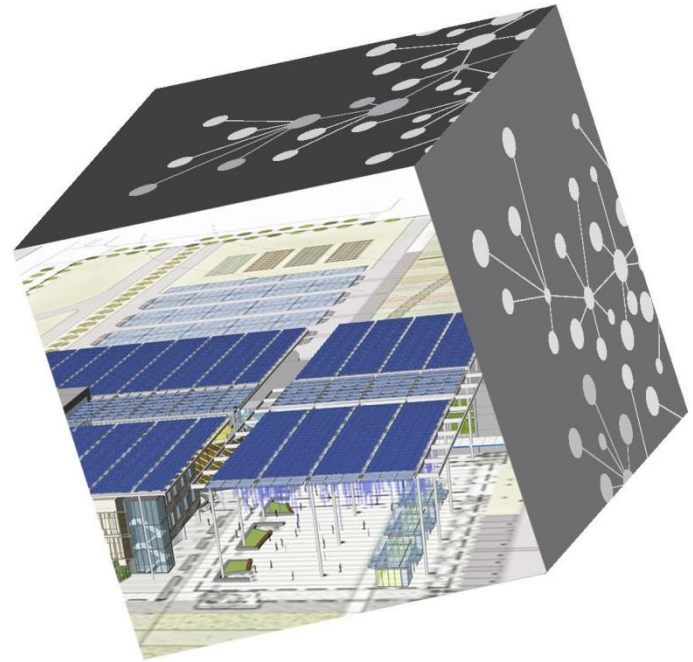
farmers market

KAISER PERMANENTE

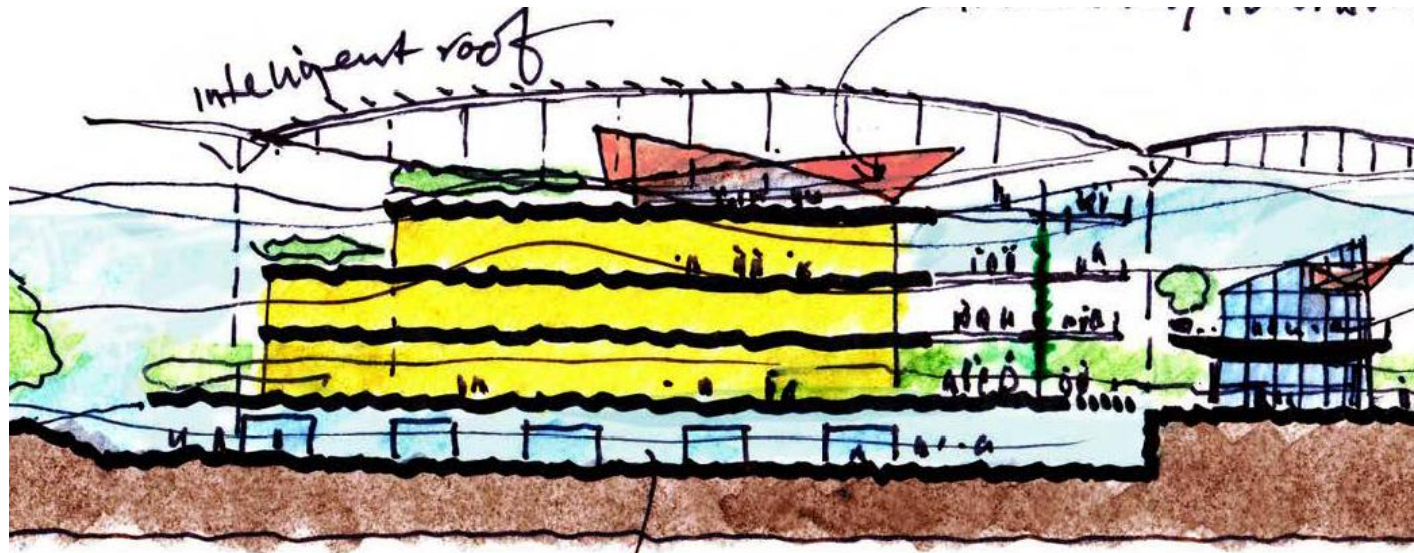
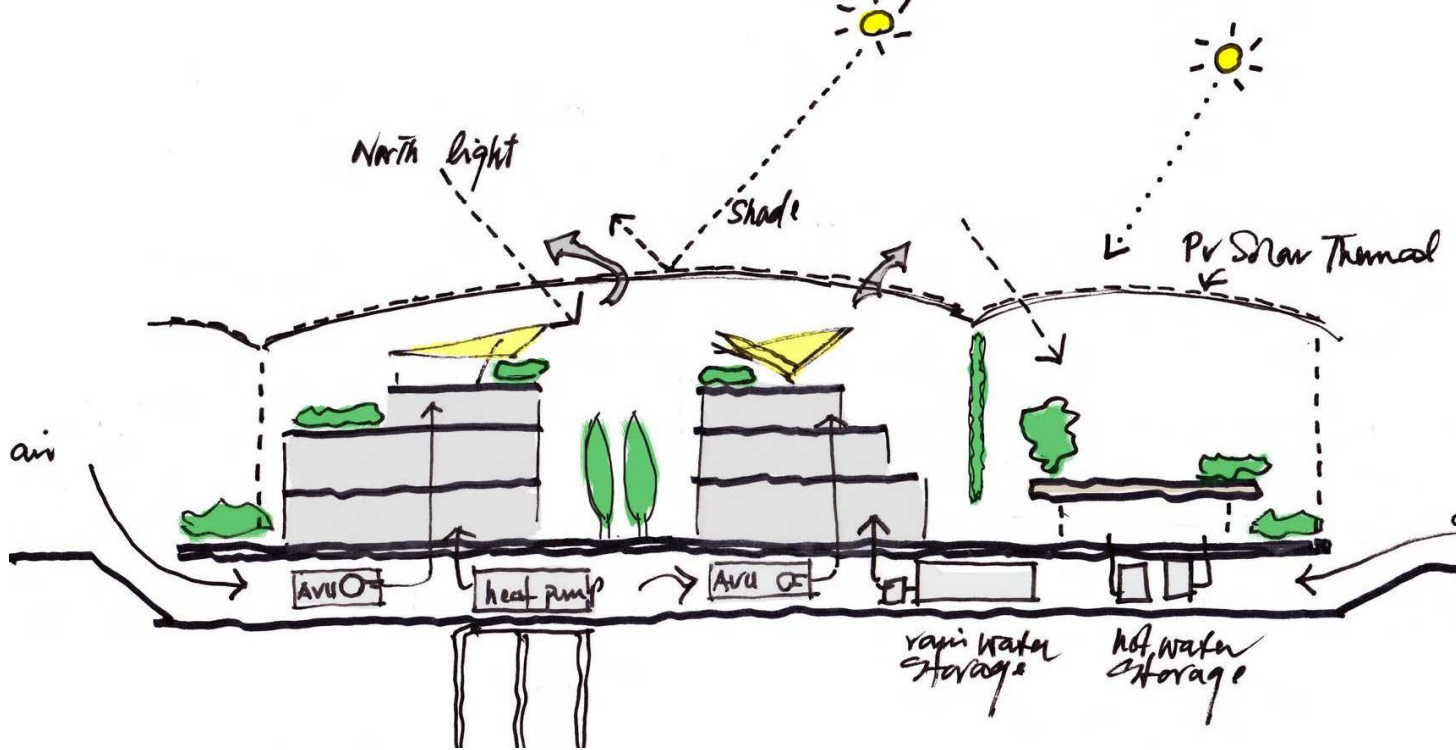
thrive

KAISER PERMANENTE

EVERYTHING UNDER
ONE ROOF

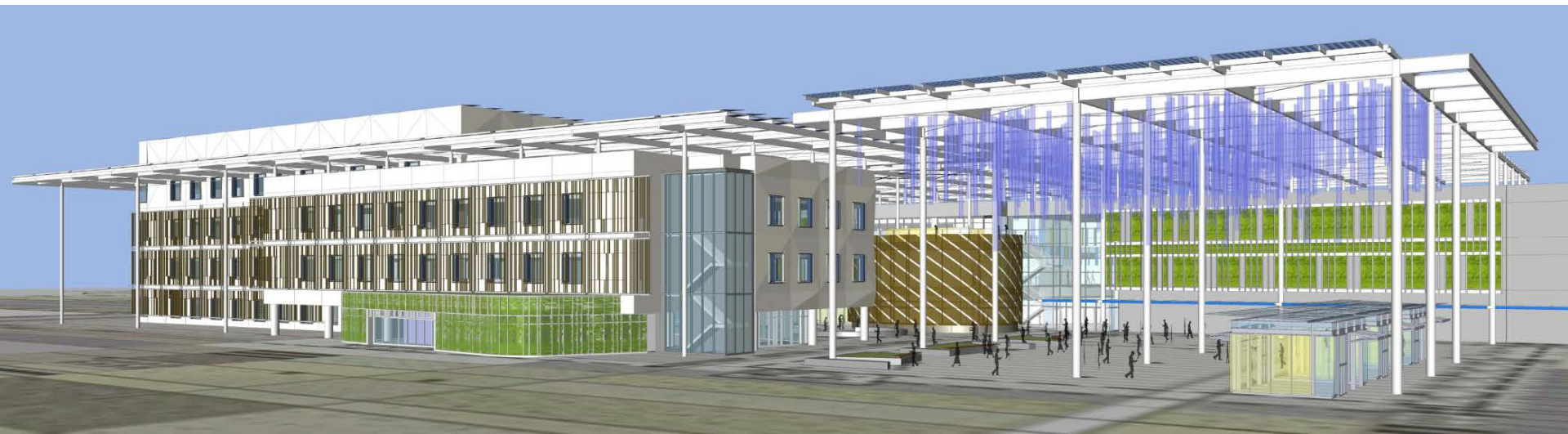


ADITAZZ





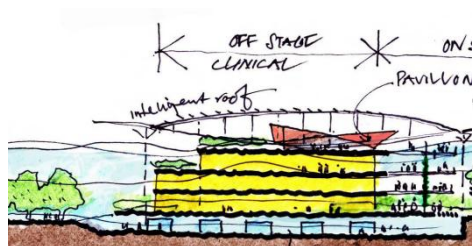
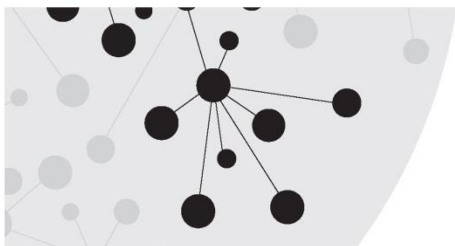
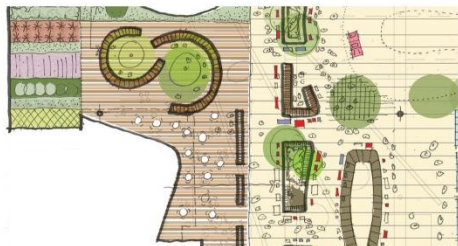
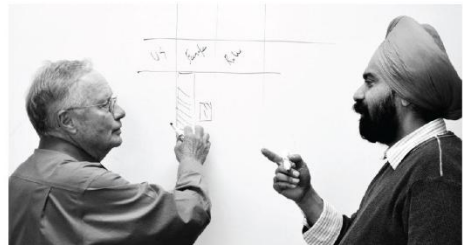
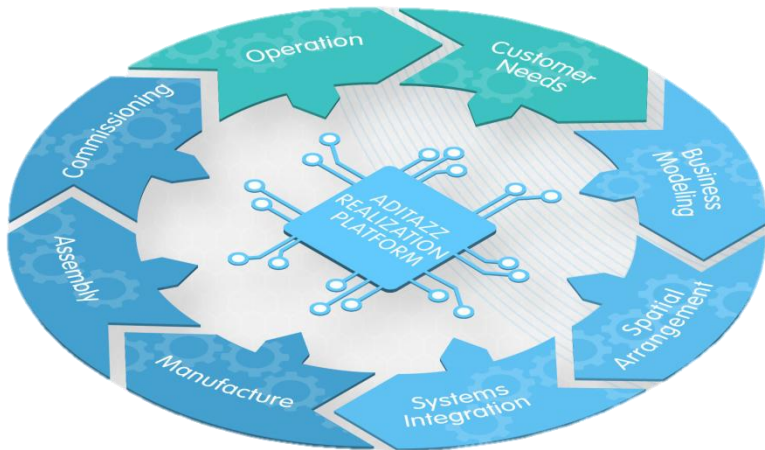
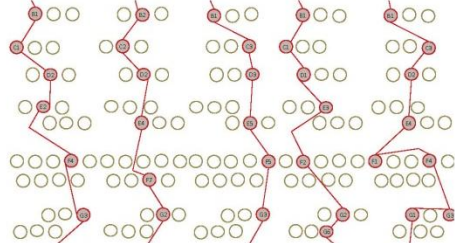
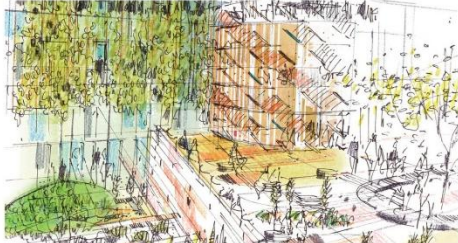






Reception

Healthcare
that keeps up
with you
Simple, comprehensive care.
An upgrade is right around
the corner.



ADITAZZ **ARP** REALIZATION PLATFORM

ABOUT ADITAZZ

What is our vision?

Improved patient care through an innovative new approach to the design of the built environment.

Who are we?

We are a visionary AEC company:

We design and deliver next-gen healthcare facilities by integrating innovations in design, technology and manufacturing

(Our deliverable is a complete building - not just a design-tool, or even a design)

What is our core asset?

We have an automated platform that allows us to:

Architect

Engineer

Iterate through a multitude of design options, and optimize the design

Virtually Operate the building (with all structural, functional, financial attributes)

Manufacture and Assemble the building

We call this Aditazz Realization Platform, or ARP

The logo for ADITAZZ, featuring the company name in a bold, green, sans-serif font.

WHY HEALTHCARE

The Basic Premise

A complex and dynamic interdependency exists between the built environment and the ability to deliver healthcare effectively.

This makes Aditazz a must-have.

Several Drivers for Complexity

Interplay between Clinical and Operational processes

Interplay between Technology obsolescence cycles over the lifetime of the building

Changing demographics – and increasing focus on prevention and wellness

Evolving models of care delivery – over full Continuum-of-Care

Evolving Standards-of-care

Growing cost pressures – need to optimize resource utilization (skills, financial)

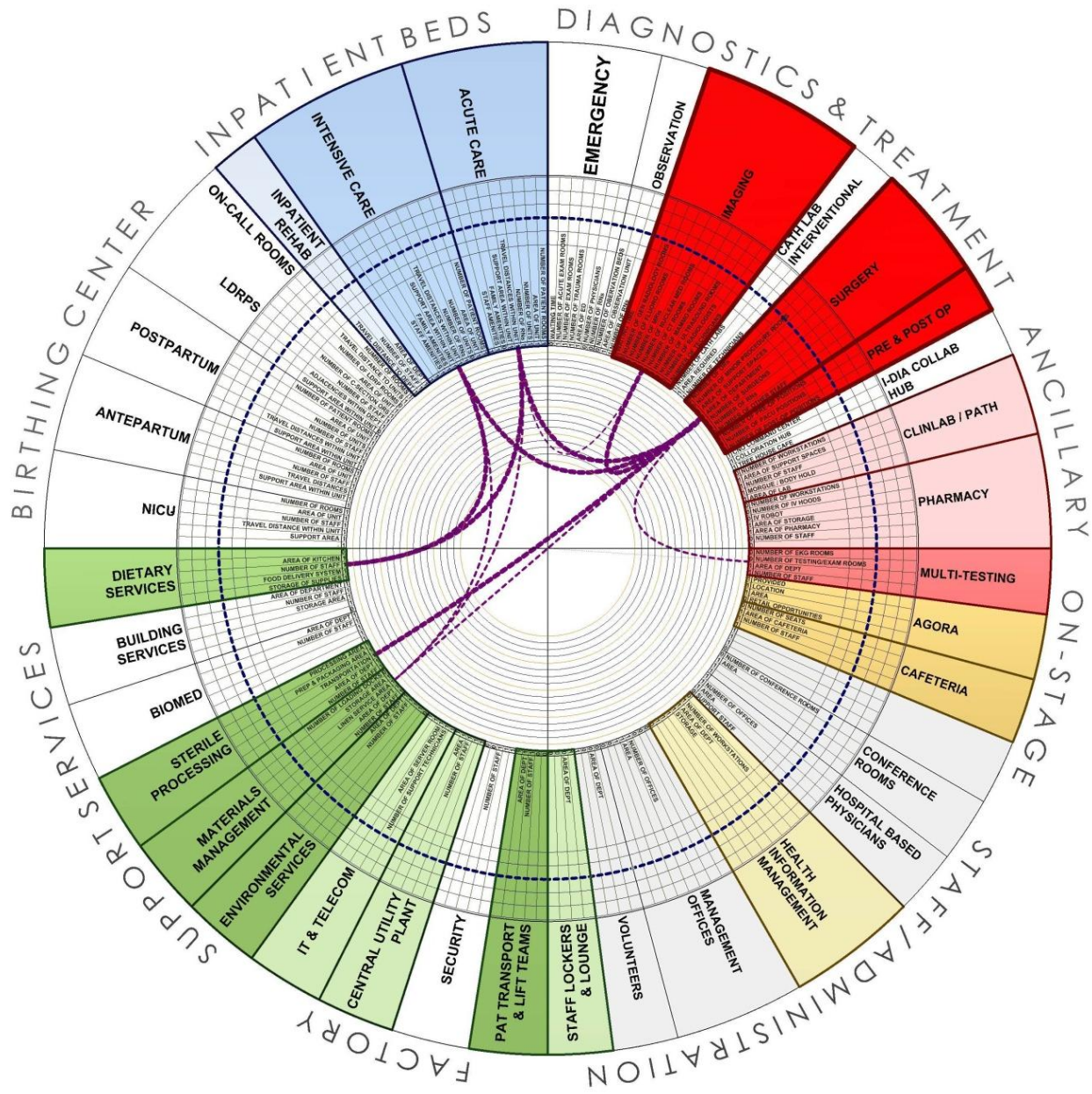
Growing emphasis on Sustainability

Why Aditazz?

The only way to address this complexity is through a platform that concurrently handles all levers and their interdependencies. That's what Aditazz does.

The logo for ADITAZZ, featuring the word "ADITAZZ" in a bold, green, sans-serif font.

COMPLEXITY IN BUILDING DESIGN



THE IMPACT OF ADITAZZ

Qualitative

Aditazz approach triggers a broad-based disruptive innovation across many dimensions

Cultural

Technological

Quality and Cost of Care Delivery

And it is Scalable....

Applicable to a full range of models - from a Multi-hospital system,
all the way across to a Clinic or MOB

Quantitative

10-30-10:

Ten percent reduction in Capital Expenditure

Thirty percent reduction in time to completion

Ten percent reduction in Operating Expenditure

ADITAZZ

A complex pattern matching problem

(best) Match (of):

human movement patterns

(to)

space patterns

COMPLEXITY IN BUILDING DESIGN

Increasingly very complex pattern matching problem

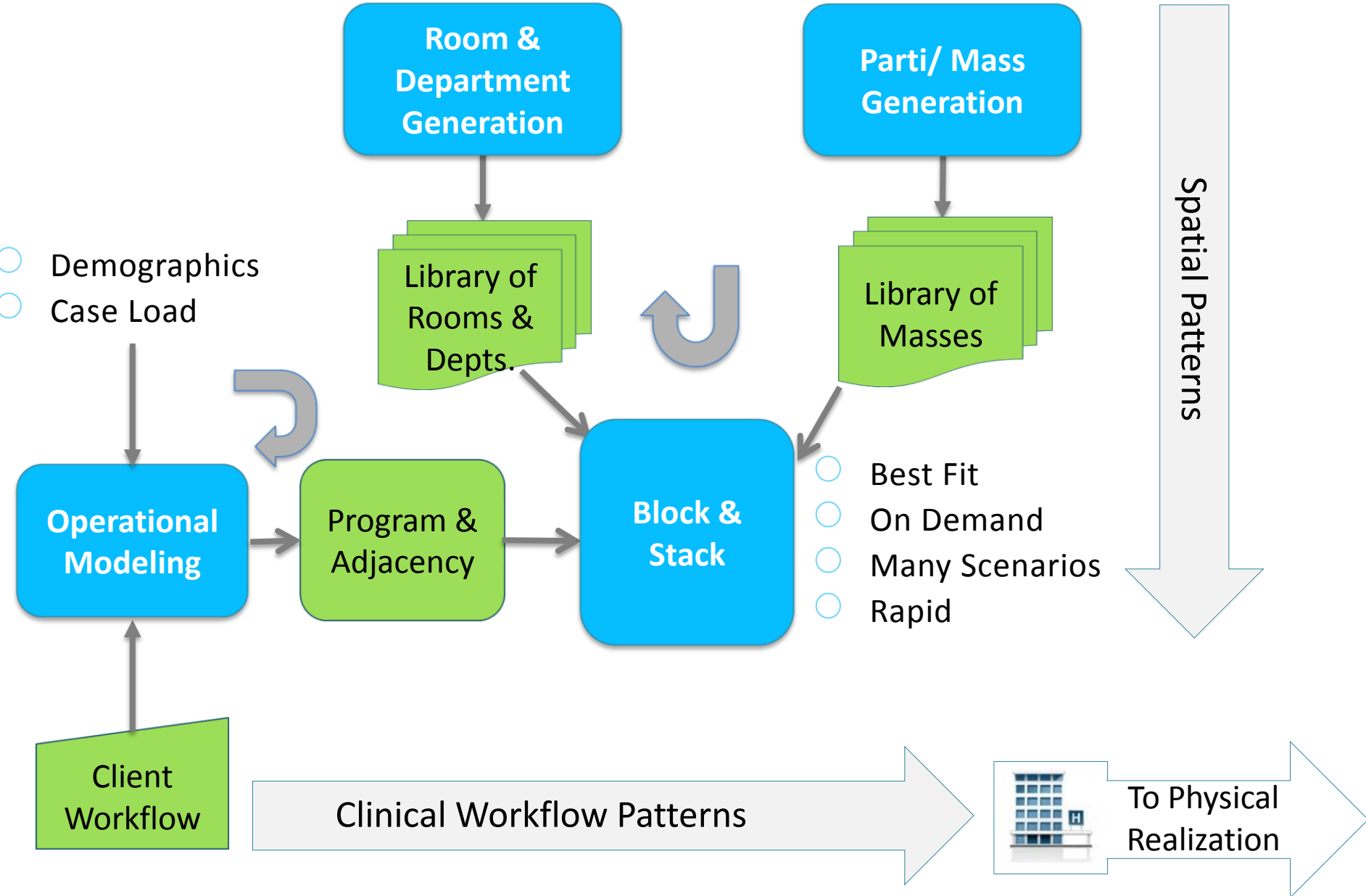
(best) Match (of) [Advanced Algorithms]

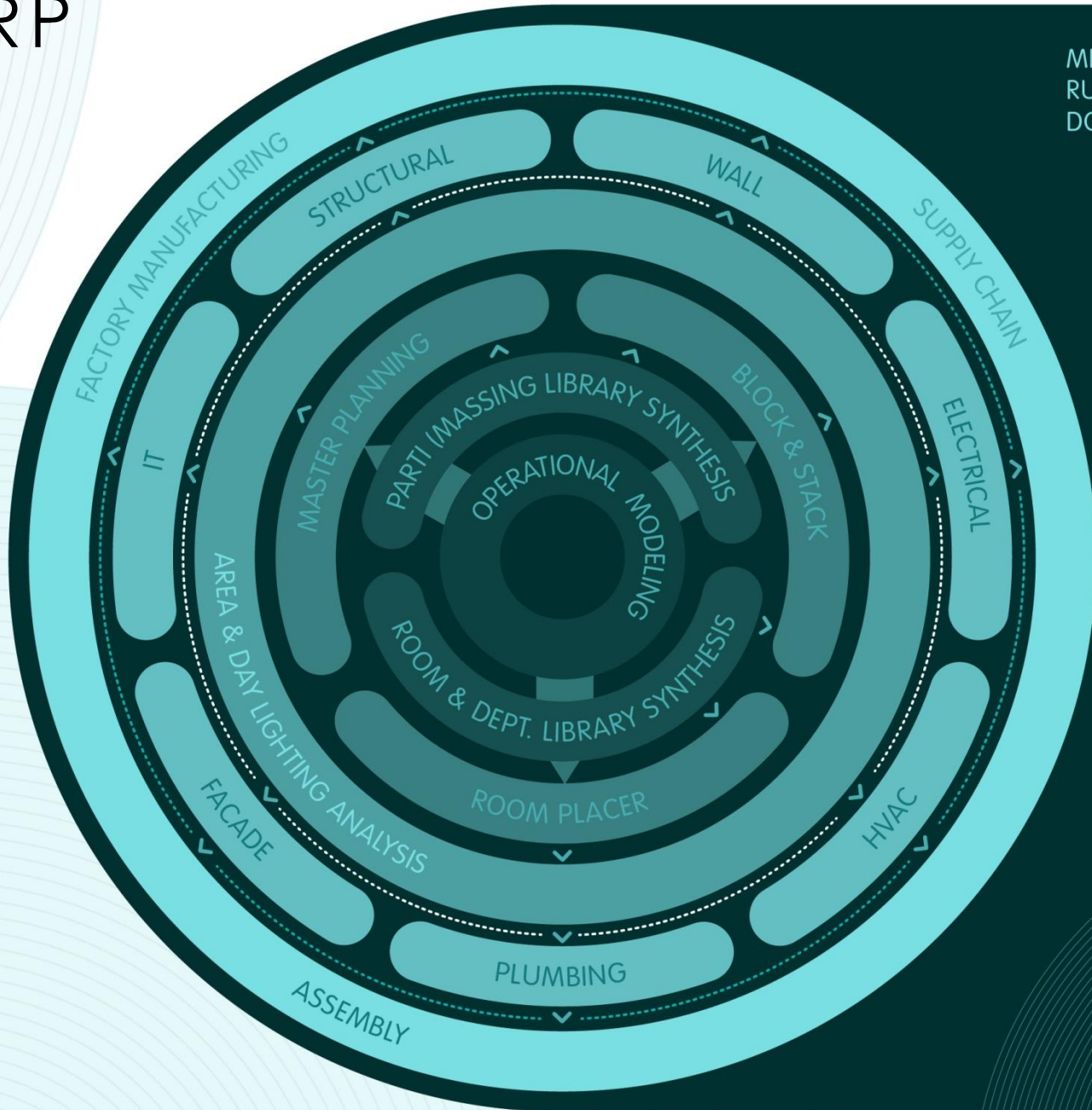
clinical care pathways

(to)

health care spatial design templates

ITERATIVE DESIGN FLOW



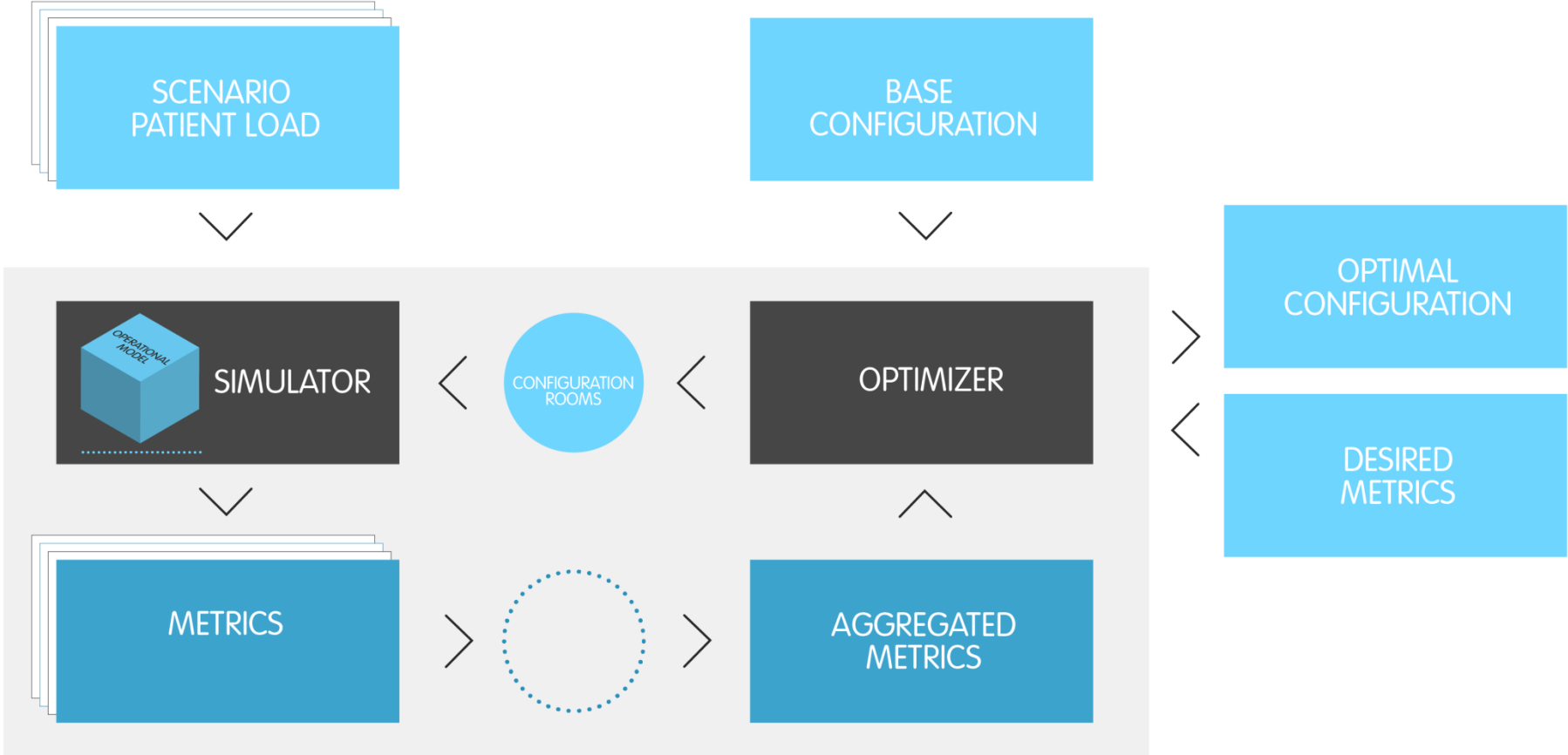


METRICS,
RULE CHECKING &
DOCUMENTATION

SPATIAL
DESIGN
COMPLETE

VIRTUAL
OPERATION
& DESIGN
COMPLETE

OPERATIONAL MODELING



OPERATIONAL MODELING



Emergency Department



Simulator | **Optimizer**

Analysis Run Name

Variations

Baseline

Improved

Total Time I II III IV V all

| | | | | | | |
|------------|--|--|--|--|--|--|
| Admitted | | | | | | |
| Discharged | | | | | | |
| Surgery | | | | | | |
| Transfer | | | | | | |
| All | | | | | | |

Time to Doctor I II III IV V all

| | | | | | | |
|------------|--|--|--|--|--|--|
| Admitted | | | | | | |
| Discharged | | | | | | |
| Surgery | | | | | | |
| Transfer | | | | | | |
| All | | | | | | |

Wasted Time I II III IV V all

| | | | | | | |
|------------|--|--|--|--|--|--|
| Admitted | | | | | | |
| Discharged | | | | | | |
| Surgery | | | | | | |
| Transfer | | | | | | |
| All | | | | | | |

Charts | **Summary** | Options | Advanced



OPERATIONAL MODELING

Scenario L3T2D25

Required Spaces

"numExams" : 5 ,
"numAcutes" : 6 ,
"numTraumas" : 2
"numObs" : 4 ,

Required Staff

"numDR" : 2 ,
"numMA" : 9 ,
"numRN" : 9 ,

Resulting Metrics

"WAIT_All_level_I" : 17 ,
"WAIT_All_level_II" : 29 ,
"WAIT_All_level_III" : 42 ,
"WAIT_All_level_IV" : 39 ,
"WAIT_All_level_V" : 16 ,
"WAIT_All" : 39 ,

"T2D_All_level_I" : 5 ,
"T2D_All_level_II" : 10 ,
"T2D_All_level_III" : 25 ,
"T2D_All_level_IV" : 33 ,
"T2D_All_level_V" : 35 ,
"T2D_All" : 31

Scenario L3T2D20

Required Spaces

"numExams" : 6 ,
"numAcutes" : 8 ,
"numTraumas" : 2
"numObs" : 4 ,

Required Staff

"numDR" : 2 ,
"numMA" : 9 ,
"numRN" : 9 ,

Resulting Metrics

"WAIT_All_level_I" : 11 ,
"WAIT_All_level_II" : 35 ,
"WAIT_All_level_III" : 36 ,
"WAIT_All_level_IV" : 35 ,
"WAIT_All_level_V" : 24 ,
"WAIT_All" : 35 ,

"T2D_All_level_I" : 5 ,
"T2D_All_level_II" : 10 ,
"T2D_All_level_III" : 20 ,
"T2D_All_level_IV" : 34 ,
"T2D_All_level_V" : 36 ,
"T2D_All" : 29

OPERATIONAL MODELING

BACK



| ESI LEVEL | T2D | WAIT |
|-----------|-----|------|
| 1 | 10 | 10 |
| 2 | 20 | 30 |
| 3 | 40 | 60 |
| 4 | 90 | 90 |
| 5 | 120 | 90 |

T2D:

Maximum allowed time (mins) from arrival to first meeting with a doctor

WAIT:

Total wait time (mins) from arrival to leaving ED department caused by lack of resources



Total Annual Cost
Capex & Opex

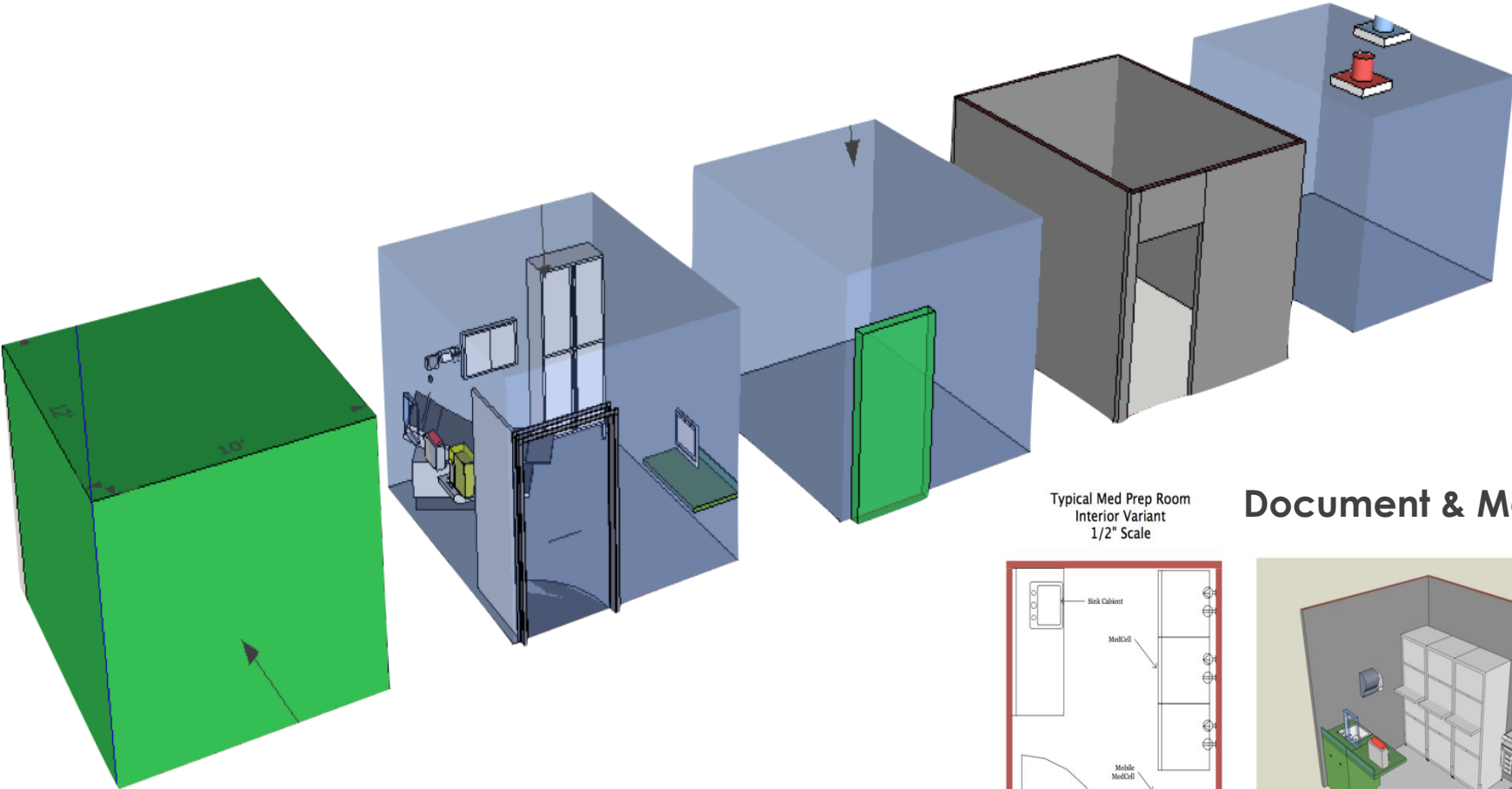
STAFF

| | |
|--------|-------|
| Doctor | \$325 |
| RN | \$110 |
| MA | \$60 |

ROOMS

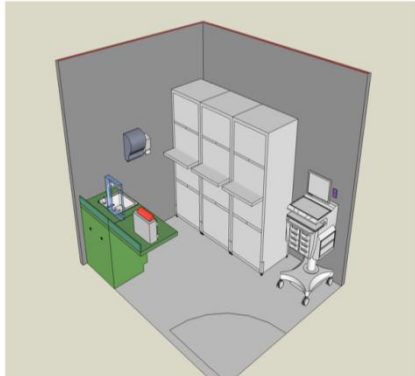
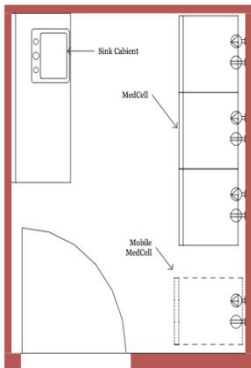
| | |
|--------|-------|
| Exam | \$30 |
| Acute | \$40 |
| Trauma | \$100 |
| Obs | \$30 |

ROOM AND DEPARTMENT LIBRARY SYNTHESIS



Typical Med Prep Room
Interior Variant
1/2" Scale


Document & Models



ROOM LIBRARIES Room editor view

BACK

Room Editor



Design Rules Solutions

Room sizes

| ft | ft | ft ² | ft ² | 1,000's | ACH | kWh |
|------|------|-----------------|-----------------|---------|-----|-------|
| 88.8 | 88.8 | 88,888 | 88,888 | 88,888 | 88 | 8,888 |
| 88.8 | 88.8 | 88,888 | 88,888 | 88,888 | 88 | 8,888 |

Violations - Acceptable for use in library

| | | | | | | |
|------|------|--------|--------|--------|----|-------|
| 88.8 | 88.8 | 88,888 | 88,888 | 88,888 | 88 | 8,888 |
|------|------|--------|--------|--------|----|-------|

Violations - Excluded from library

| | | | | | | |
|------|------|--------|--------|--------|----|-------|
| 88.8 | 88.8 | 88,888 | 88,888 | 88,888 | 88 | 8,888 |
|------|------|--------|--------|--------|----|-------|

Rule violations

This room size has no violations.

Export room sizes to CSV file

Plan view Clearances

Room Editor



Room purpose and layout

Room function: Waiting Sub-function: Eg, Pediatrics

Layout: Four sided room

Room size

Width: 12'-0" Length: 14'-0"

Clear floor area: 80 ft² Angle (-45° to 45°)

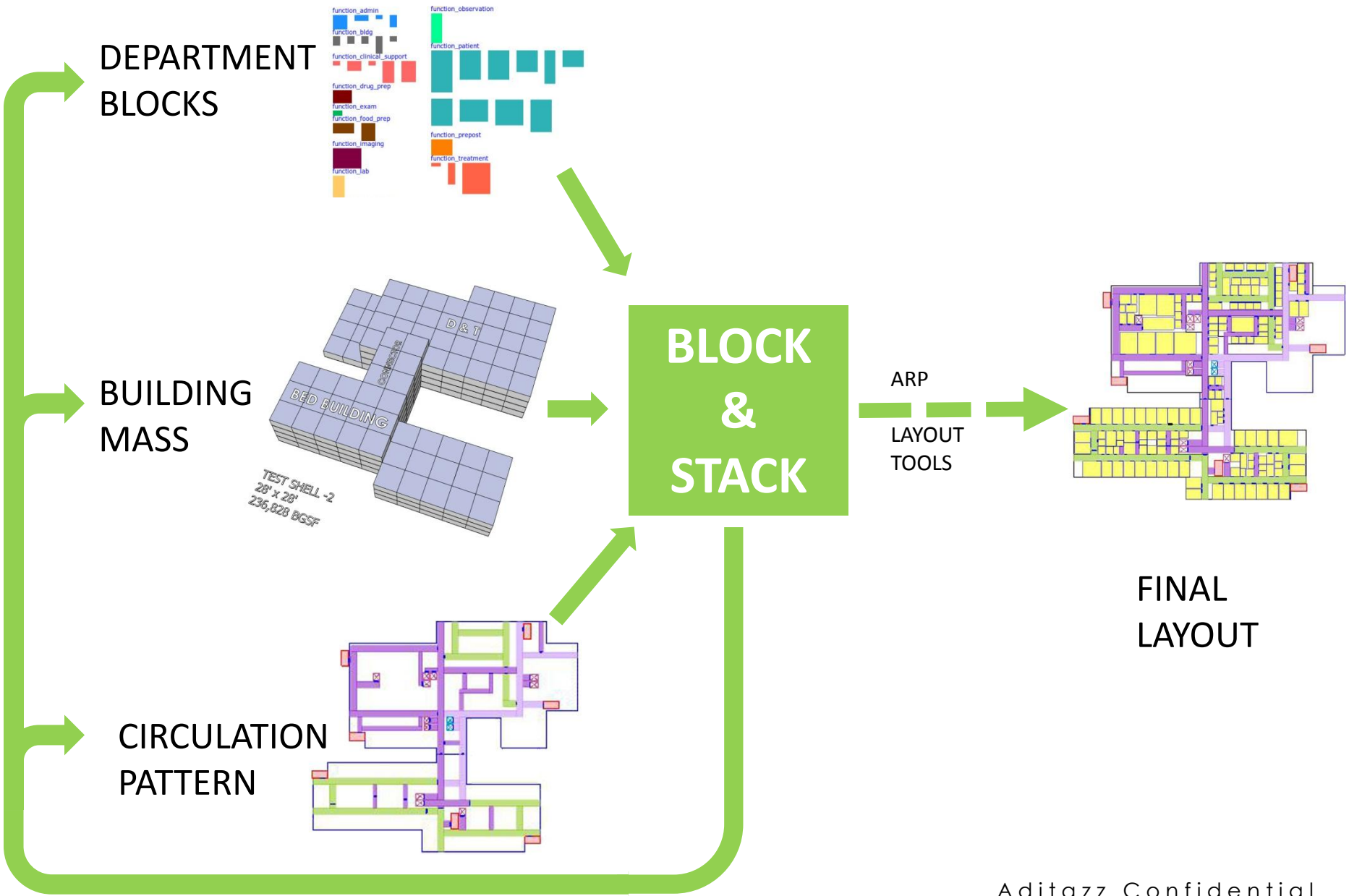
Stretch: Room may resize in the following direction(s): Up to 10%

Wall visibility

Close

Plan view Clearances

BLOCK AND STACK Aditazz Approach



BLOCK AND STACK Aditazz Approach

BACK

The screenshot displays the Aditazz Block & Stack software interface. The main window is titled "Aditazz Block & Stack - Build 689 (Apr 30 2013 4:22 pm) - site_Test_shell_BST_2_28x28". The interface includes a menu bar with options like Open, Save, Display, Zoom Fit, Zoom In, Zoom Out, Hierarchy, Space Program, Library, Properties, Reports, Checks, Constraints, Generate, Energy, Debug, Options, Write Image, and About. On the left, there is a "Library" panel with "Object type: Corridor" and a "Generate Department Blocks assignments" section showing colored horizontal bars. The central workspace shows a "Site" view with an "Adjacency Matrix" tab, displaying a multi-level site plan with levels labeled LEVEL 0, LEVEL 1, LEVEL 2, LEVEL 3, and LEVEL 4. On the right, the "Space Program" panel shows a hierarchical list of departments with corresponding colored blocks: admin, bldg, clinical support, drug_prep, emergency, prep_prep, imaging, lab, patient, prepost, and treatment. The bottom of the screen shows a taskbar with the user "sudha@thinapp" and several open windows.

ADITAZZ

BLOCK AND STACK Aditazz Approach

BACK

Distance

Travelers From To

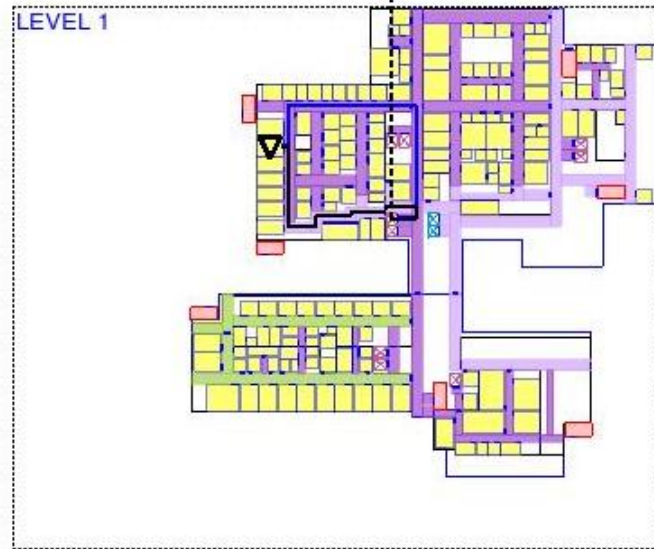
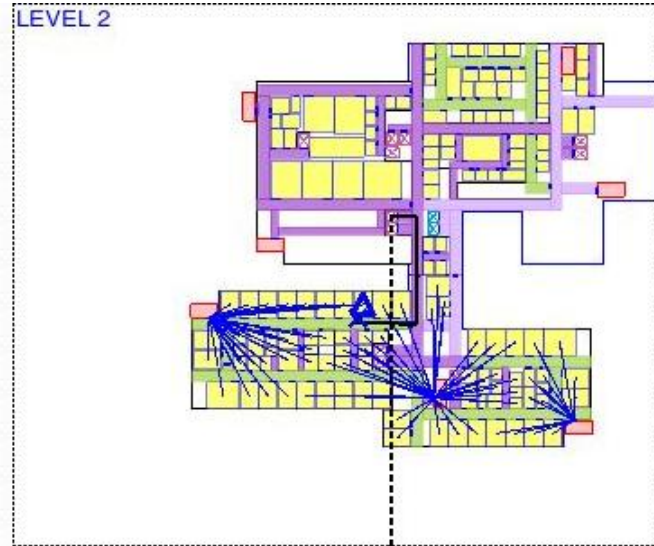
Staff Patient

Patient and Staff Visitor

Robot Large Robot

Paths: Update Add Clear

| Traveler | Distance | Time | #Turns |
|-----------|----------|------|--------|
| 1 Staff | 378 | 4:07 | 8 |
| 2 Patient | 348 | 6:08 | 12 |



Properties

Type: Door

Name: door_south

Parent: acute_exam_room_i5

X Size: 5'0"

Y Size: 0'6"

Access type: PATIENT_AND_STAFF

ROOM PLACER

vm_ubuntu64_11.04 (Good) [Running] - Oracle VM VirtualBox

Machine View Devices Help

Applications Places System

Welcome to ARP - Chromium

kpapp2.aditazz.com/spatial_arrangement_phases/1?sa1=1&sa2=1

Money Accounts Ref Gov Learn Personal Home IT Tech Work School Health Shopping 3D

ADITAZZ

Form & Shell Block & Stack Room Placement

General Placer SAM Dept Sim

BU ED

ED baseline

ED alternative 1

ED alternative 2

ED alternative 3

ED alternative 4

ED alternative 5

Options Charts

Number Exam Rooms
10

Number Acute Rooms
8

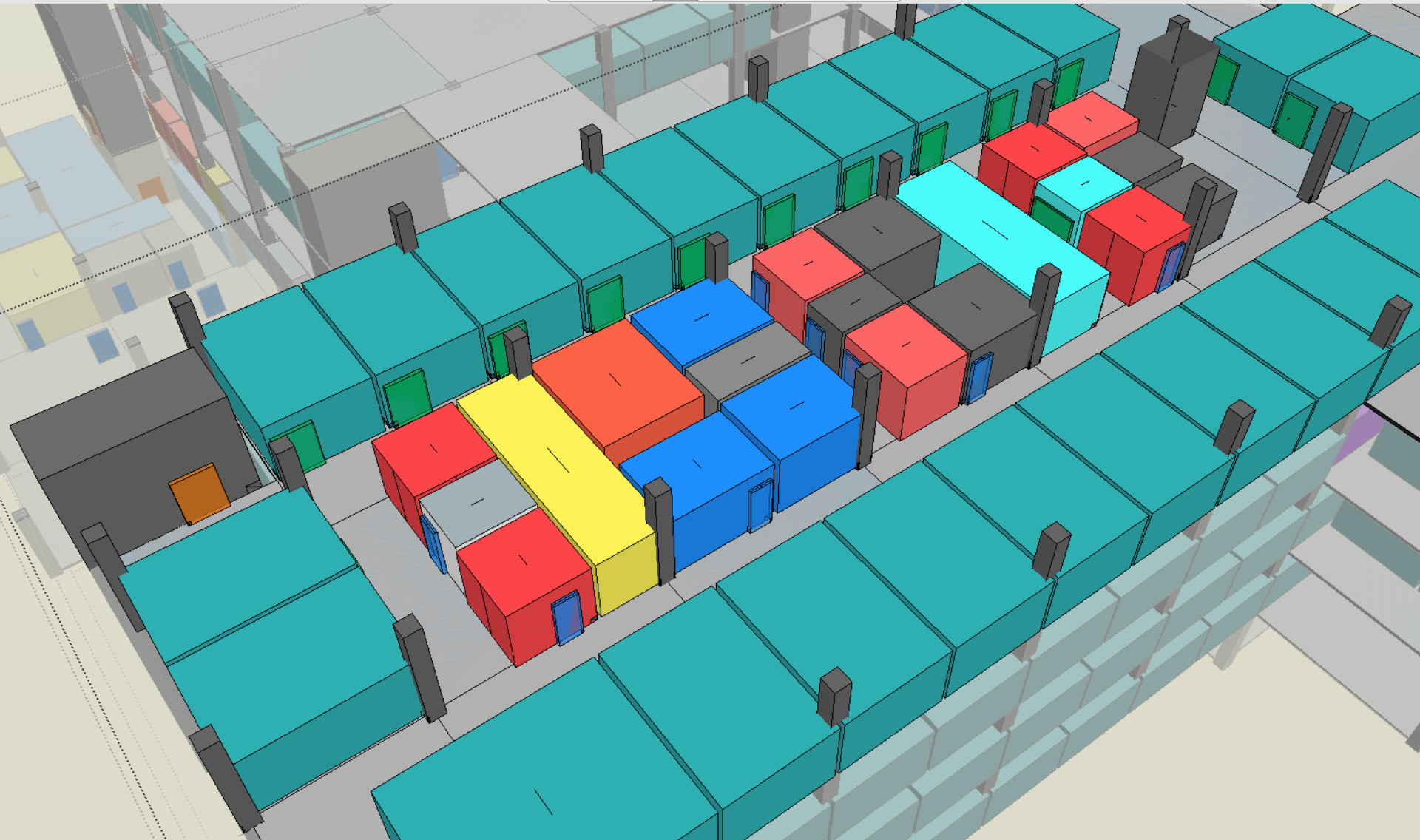
Number Triage Rooms
4

Number Obs Rooms
2

Number Trauma Rooms
2

Update

ROOMS PLACED WITH CIRCULATION PLACER



FACILITIES PLANNING TOOL

Open Save Display Zoom Fit Zoom In Zoom Out Hierarchy Space Program Stacking Diagram Cross Section Library Properties Tools About

Constraints Site Adjacency Matrix

Adjacency Assignment

| Department Blocks | Priority | Building | Storey |
|--------------------|----------|--------------------|--------|
| ANESTHESIA | | | |
| CARDIO-VASC | | | |
| cardiovasc_com... | 100 | | |
| CLIN-PHARM | | | |
| clinpharma_edw... | 80 | | |
| clinpharma_grant | 20 | | |
| clinpharma_lane | 60 | | |
| COMP-MED-OPS | | | |
| compmedops_e... | 80 | | |
| compmedops_lane | 60 | | |
| COMP-MED-VET | | | |
| DEV-BIOLOGY | | | |
| devbiology_lane | 60 | | |
| ENDO-CRINO | | | |
| GASTRO-HEPAT | | | |
| GENETICS | | | |
| genetics_commit | 100 | bldg_stanford... 2 | |
| genetics_lane | 60 | | |
| HEMOTOLOGY | | | |
| INFECT-DISEASE | | | |
| MED-OPS | | | |
| NEURO-BIOLOGY | | | |
| NEURO-SCI-SURG | | | |
| NEURO-SURG | | | |
| neurology_commit | 100 | | |
| neurosurg_edwa... | 80 | | |
| neurosurg_lane | 60 | | |
| ORTHO-LARYNG | | | |
| ORTHO-SURGERY | | | |
| orthopaedsurg_c... | 100 | | |
| PATH-OPS | | | |
| PSYCH-OPS | | | |
| RADIOLOGY | | | |
| radiology_alway | 40 | | |
| radiology_edwards | 80 | | |
| radiology_lane | 60 | | |
| SHC_RESERVE | | | |
| SHC_SURGPATH | | | |
| SOM | | | |

Clear All

Space Program

- ANESTHESIA
- CARDIO-VASC
- CLIN-PHARM
- COMP-MED-OPS
- COMP-MED-VET
- DEV-BIOLOGY
- ENDO-CRINO
- GASTRO-HEPAT
- GENETICS
- HEMOTOLOGY
- INFECT-DISEASE
- MED-OPS
- NEURO-BIOLOGY
- NEURO-SCI-SURG
- NEURO-SURG
- ORTHO-LARYNG
- ORTHO-SURGERY
- PATH-OPS
- PSYCH-OPS
- RADIOLOGY
- SHC_RESERVE
- SHC_SURGPATH
- SOM