CalBEM 2023

Toward Convergent Human-Building Adaptability

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TECHNION Israel Institute of Technology

IPL Intelligent Place Lab

Short BIO

Architecture *BSc + MSc + PhD*
2003-2009 + 2011-2018

Computer Science *Postdoc*
2018-2019

Entrepreneurship *Postdoc*
2019-2021

Assistant Professor
2021 - Ongoing


Post Interventional Unit Rooms 316 - 325


Post Interventional Unit Rooms 316 - 325

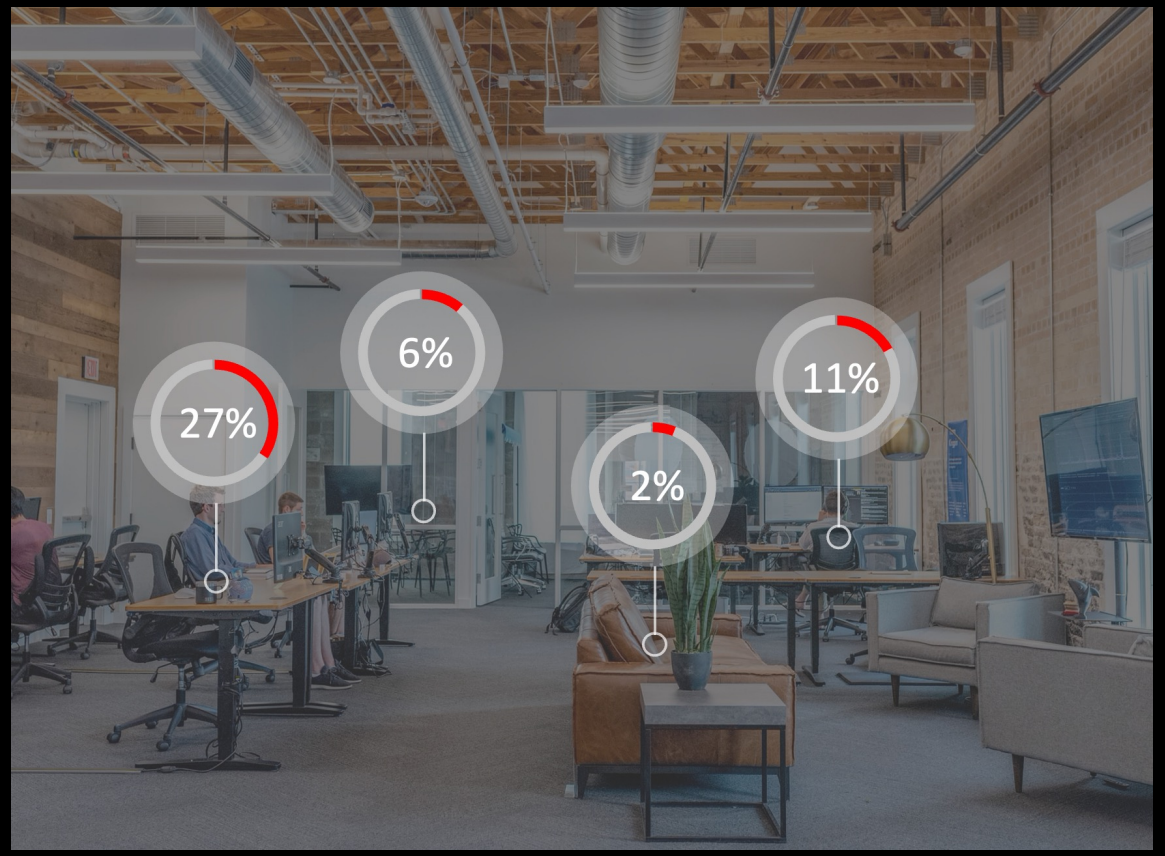

Post Interventional Unit Rooms 316 - 325
Cath Lab

Sharon Architects & Ranni Ziss Architects, 2007

“Selfie Israel” 2 : 300%
Hila Alroy, TV Channel 10, 2016

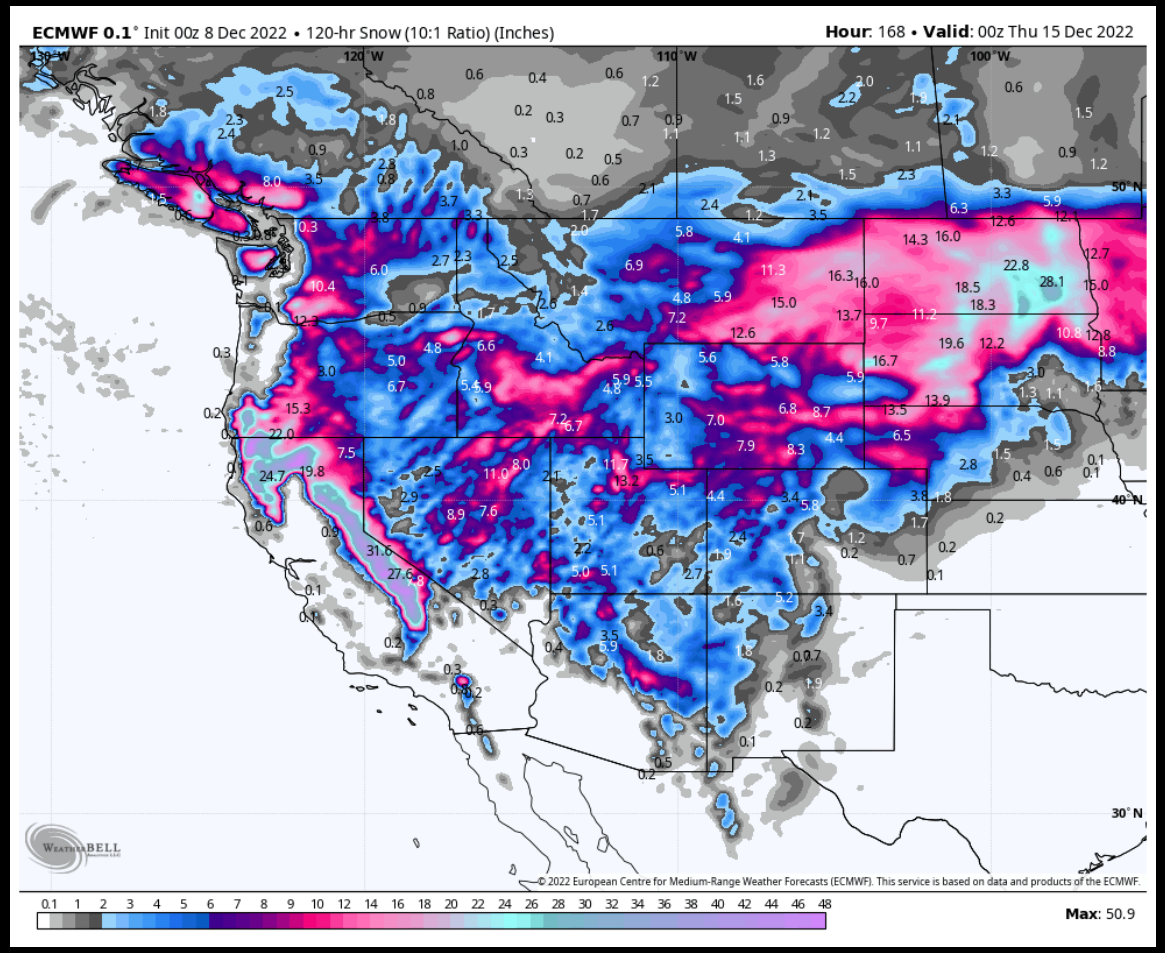
Occupancy fluctuations in workplaces

Work-from-everywhere



Work-from-office

Operational disruptions in transportation facilities

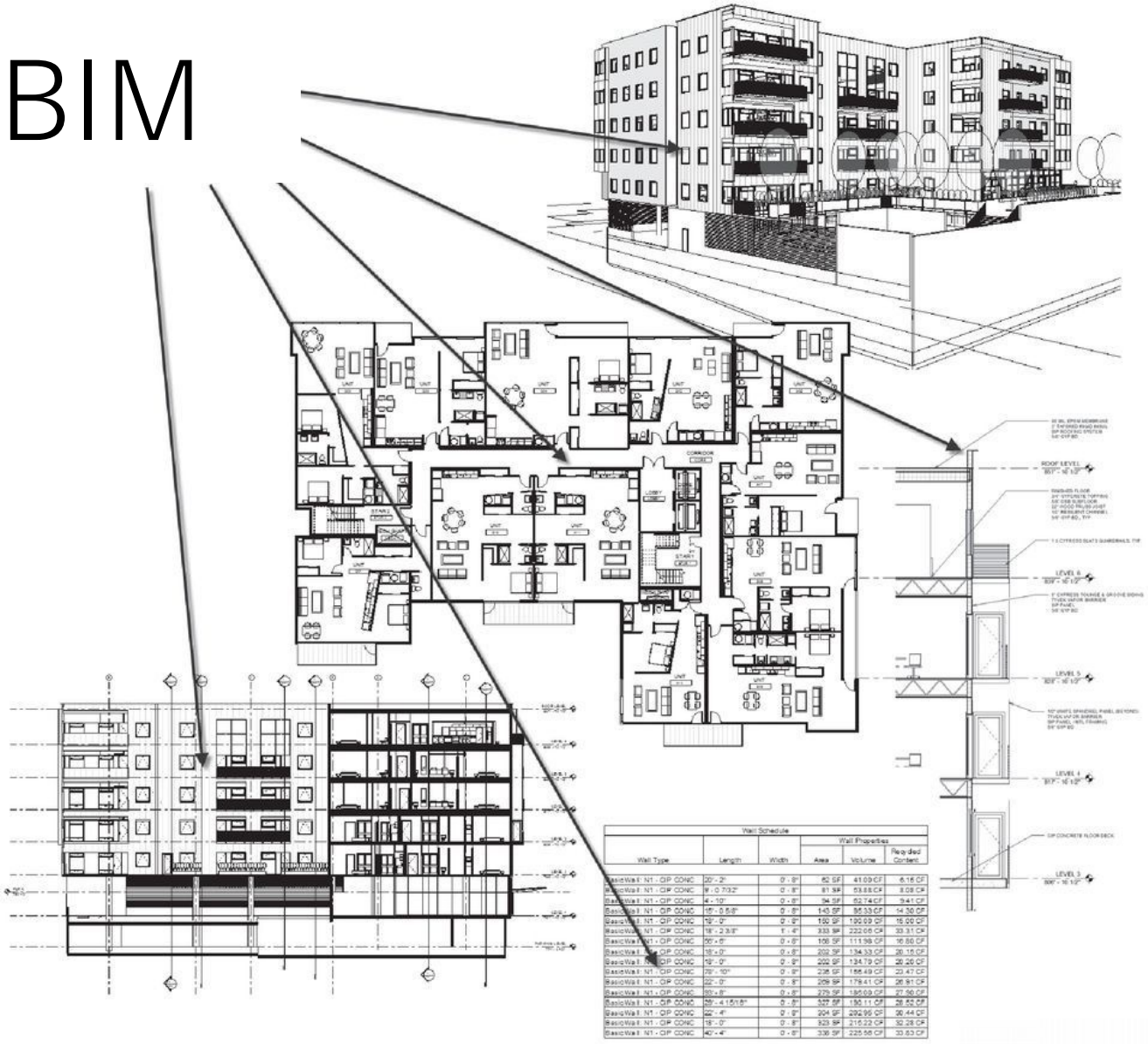


Extreme climate events

Operational disruptions in airports

How can we design environments that meet **ever-changing people's needs**?

BIM



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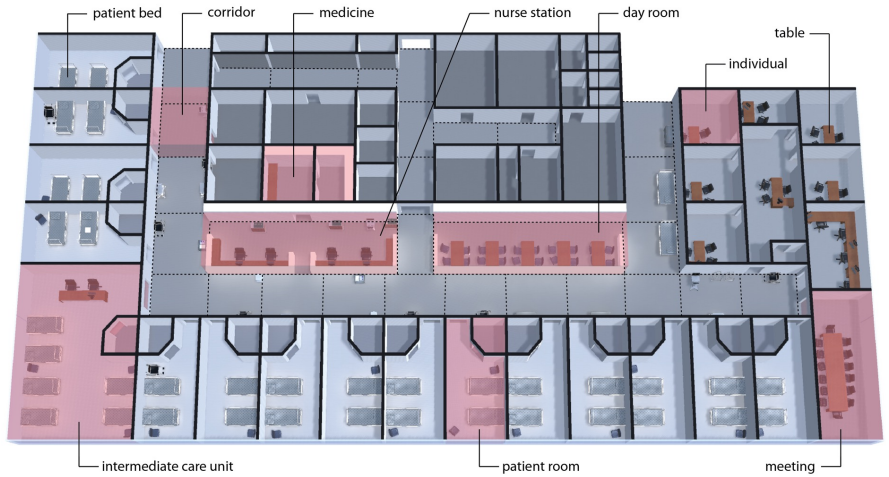
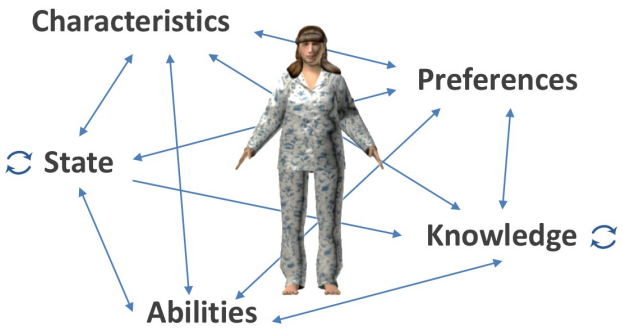
Multi-Agent system components

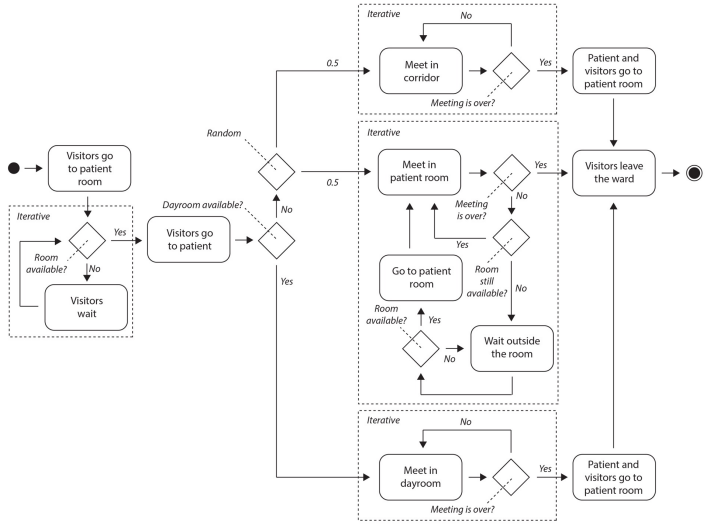
Spaces



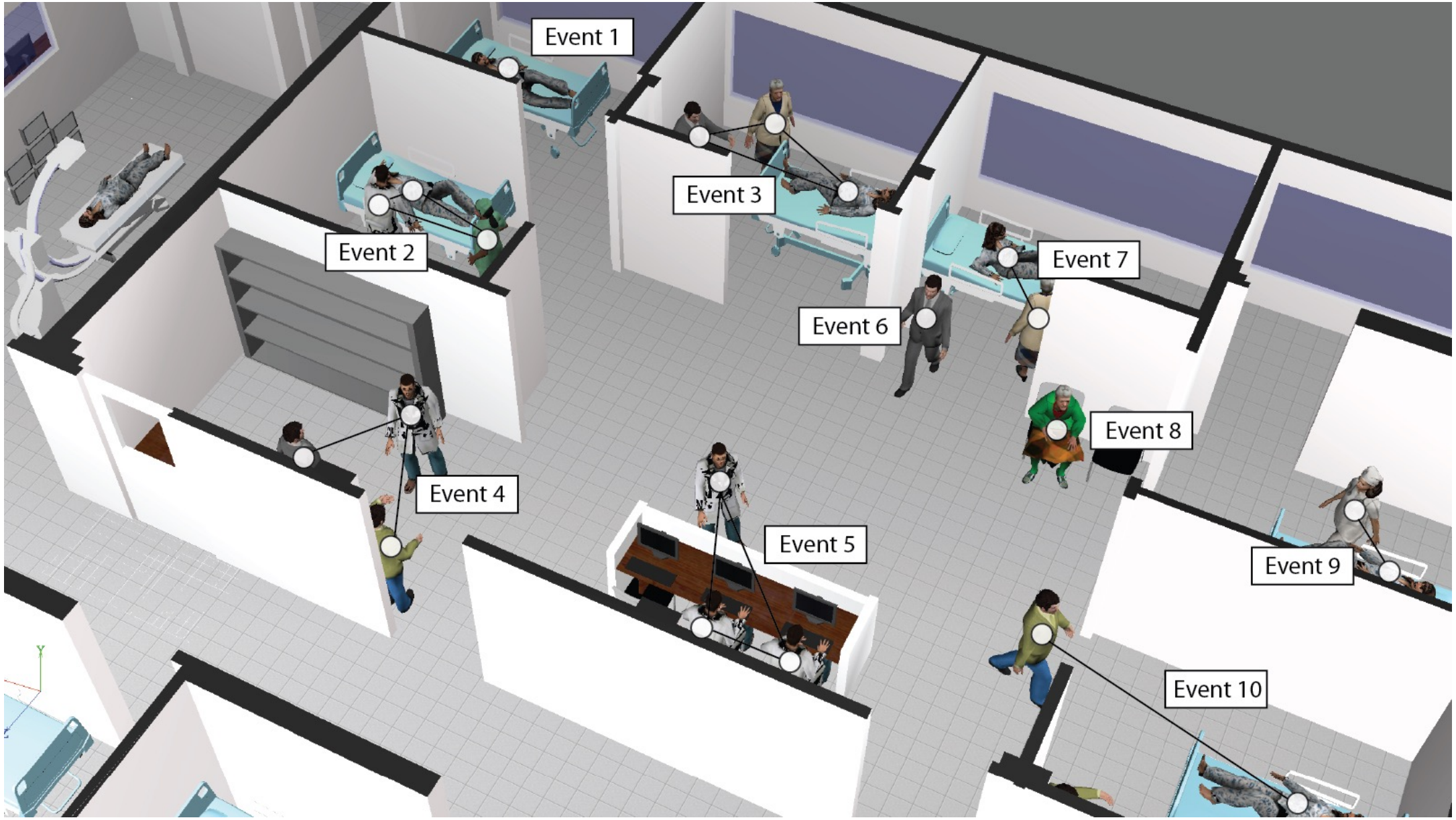
People



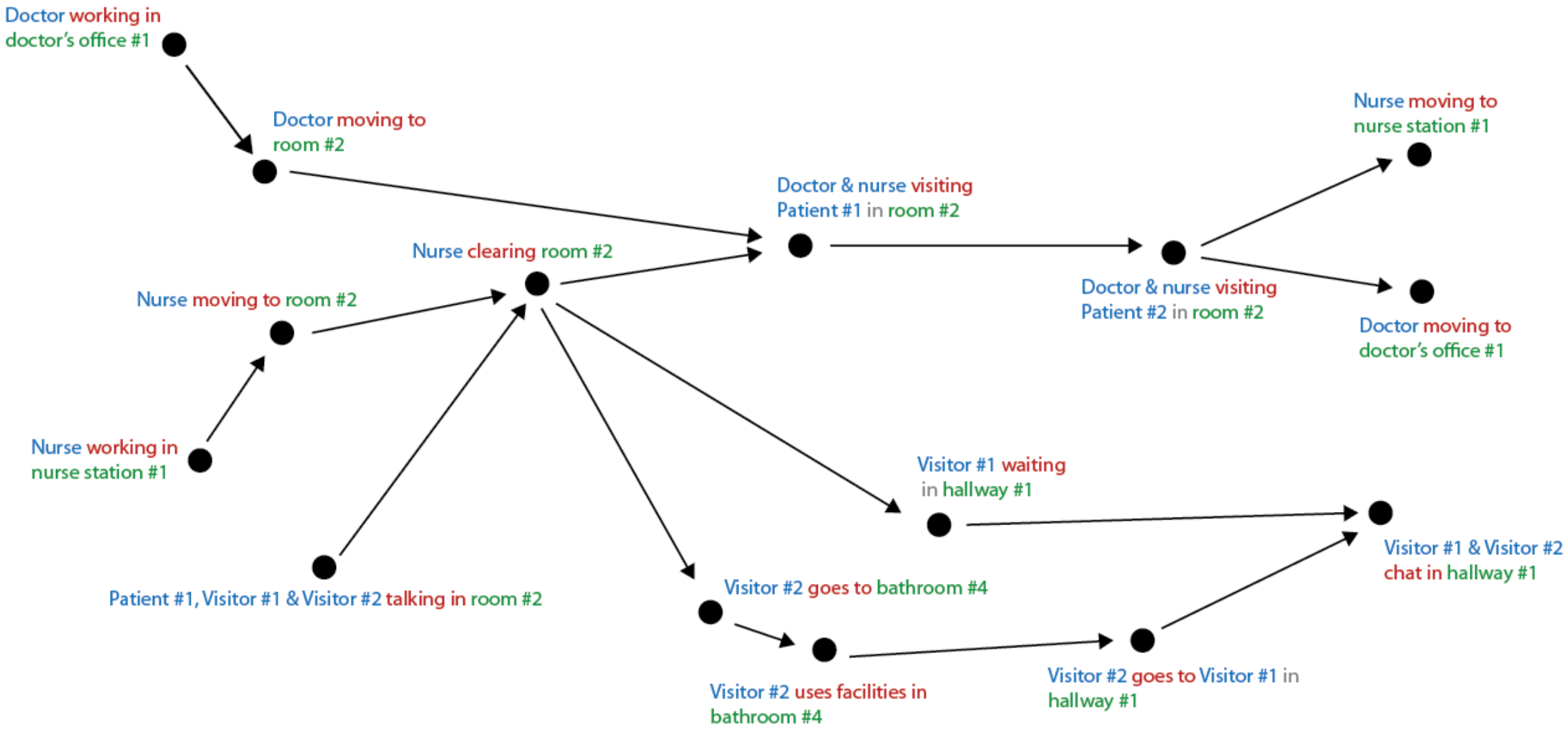
Activities

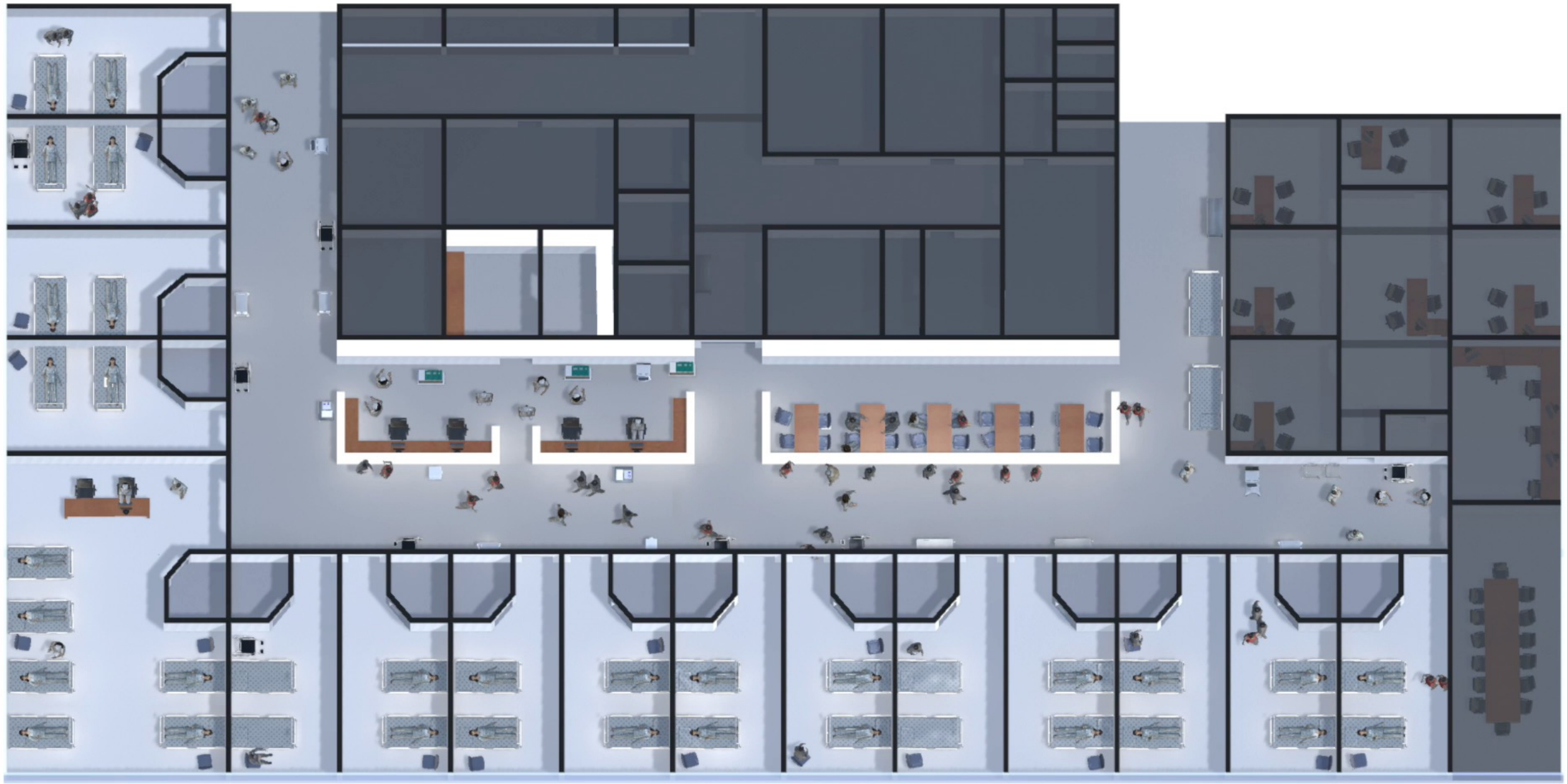


Multi-Agent Events



Multi-Agent Narratives





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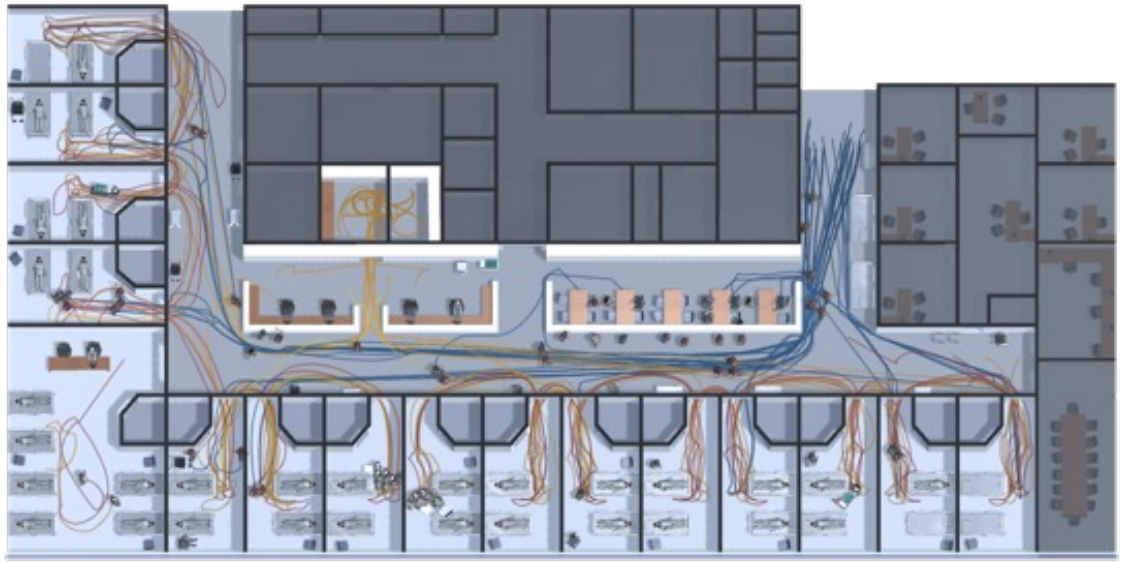
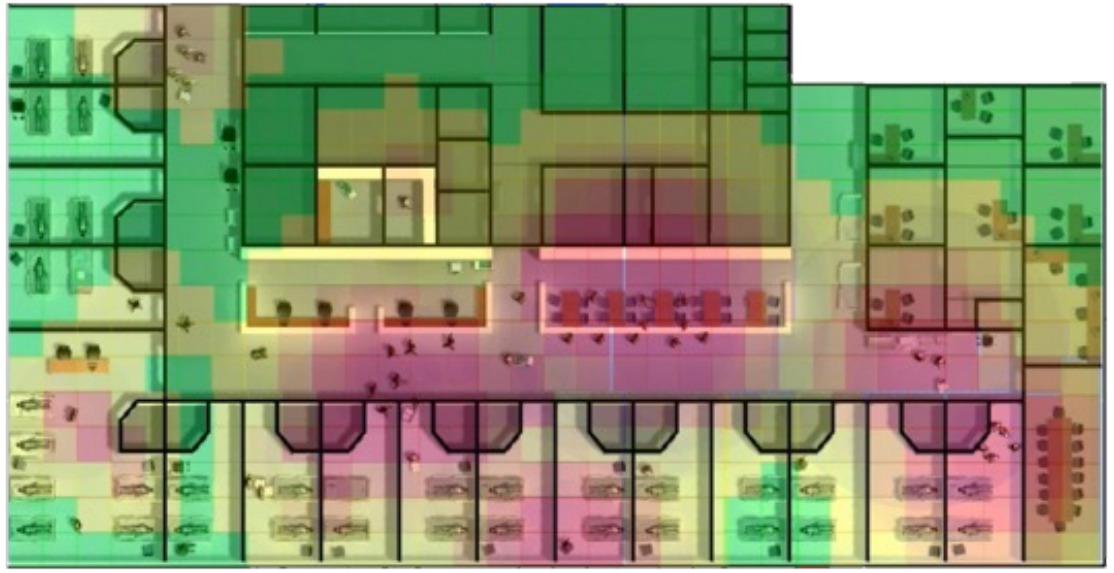
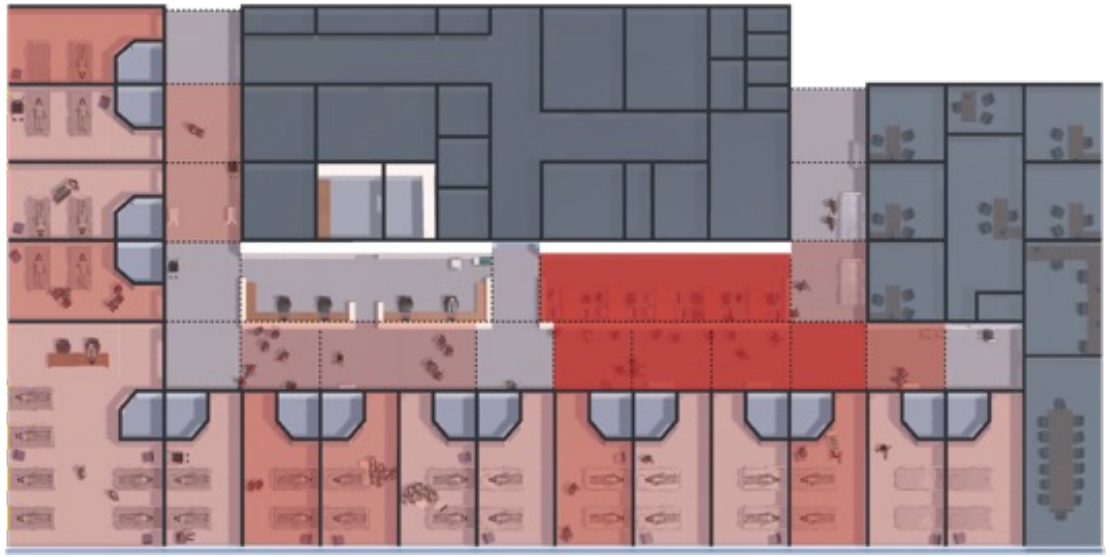
Optimize **building design**



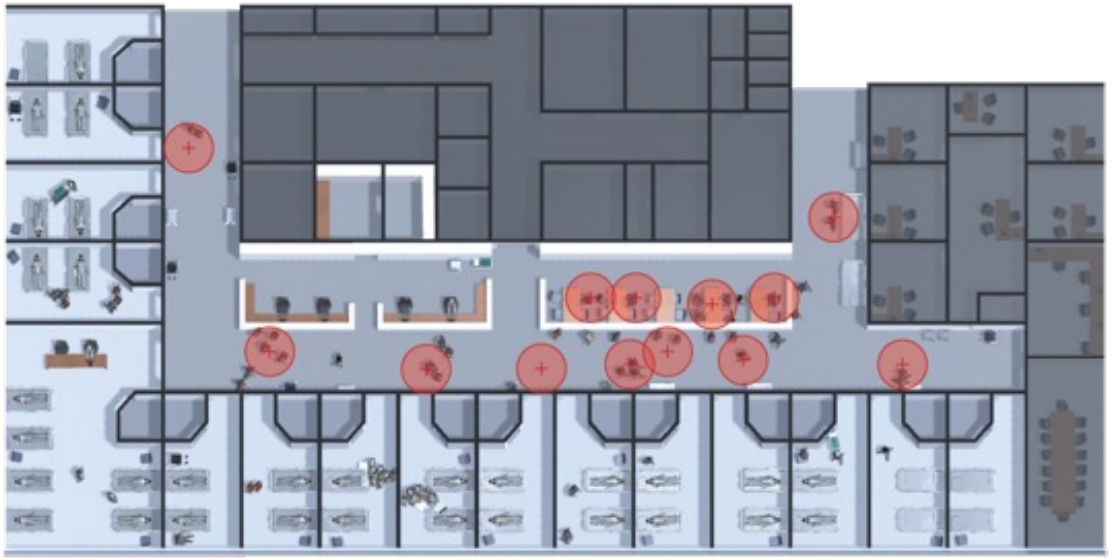
Walking Paths & Distances



Environmental Parameters



Spatial Congestion



Social Interactions

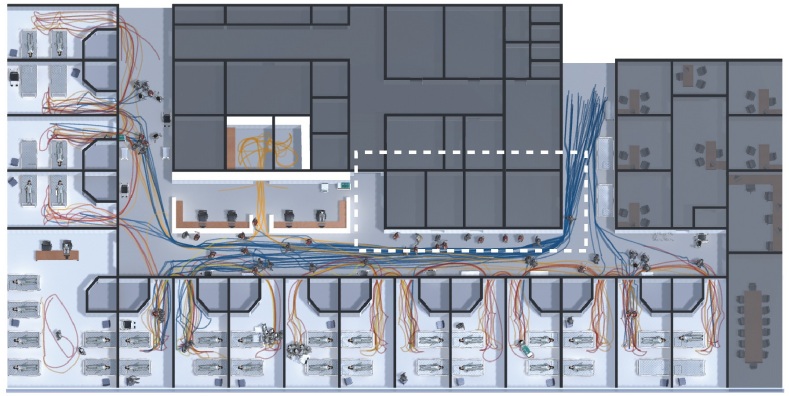
Compare Design Options

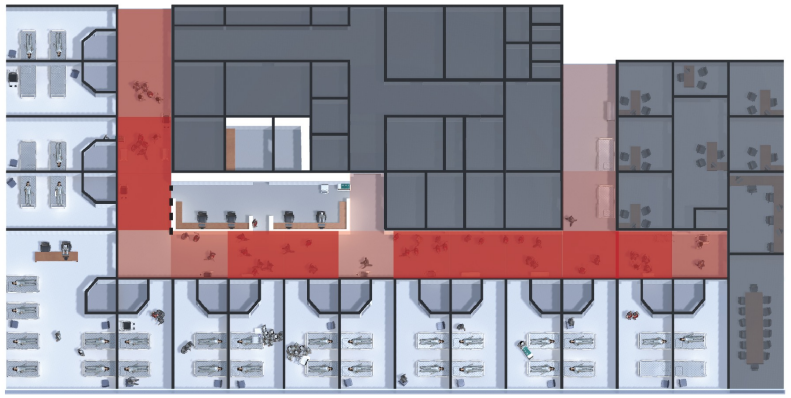
Walking Paths & Distances

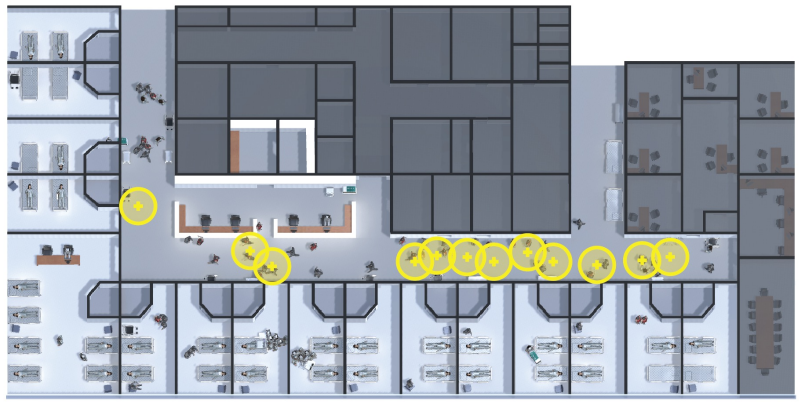
Spatial Congestion

Social Interactions

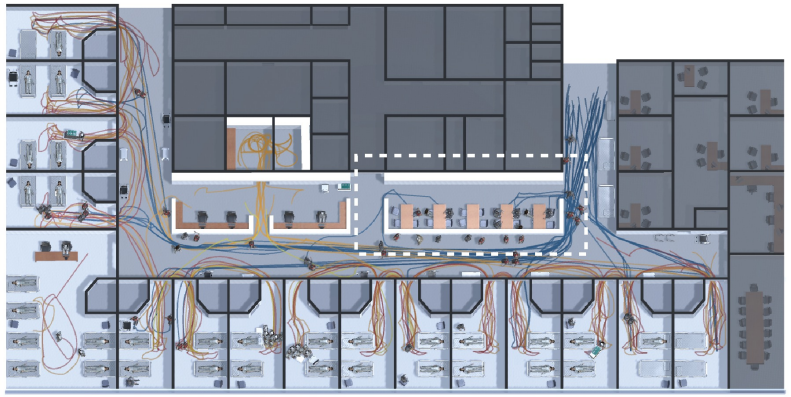
(A)

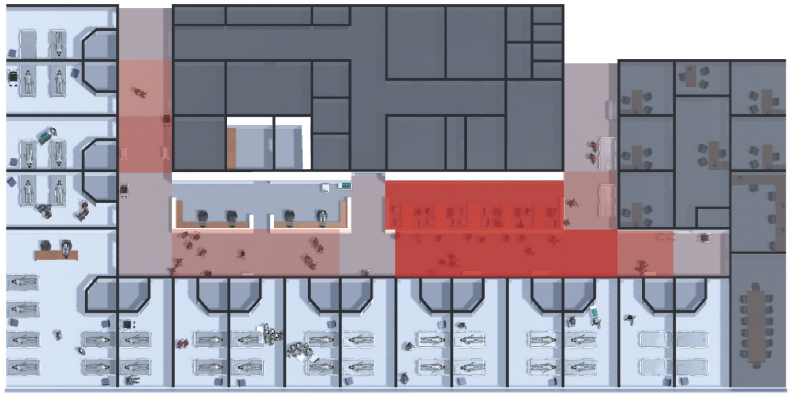






(B)





Visitor Nurse Doctor

High Mid Low

Staff-Visitor Interaction

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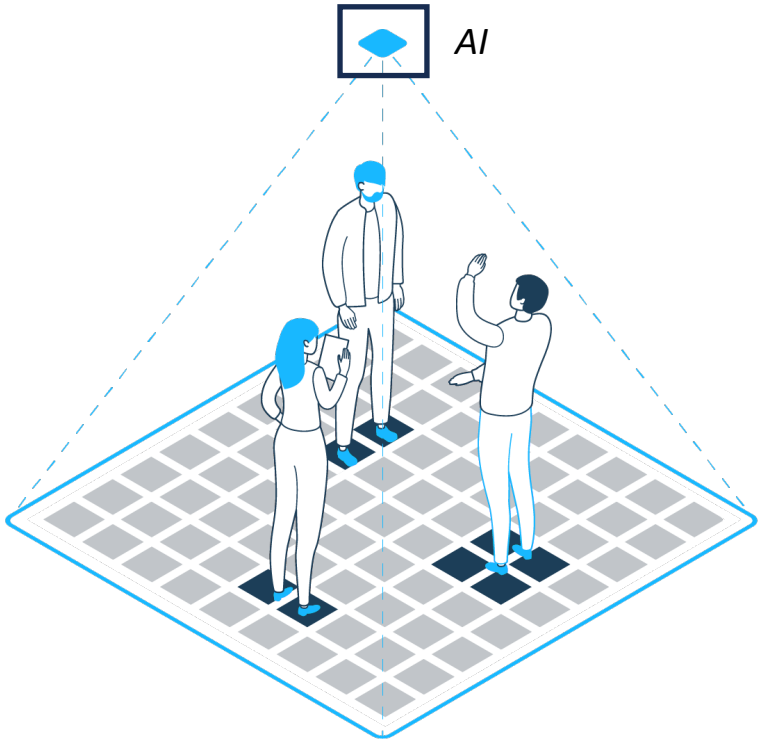
Optimize **building design**

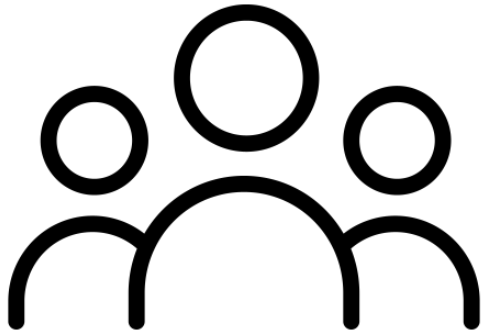
*Smart **humans***

Optimize **building operations**

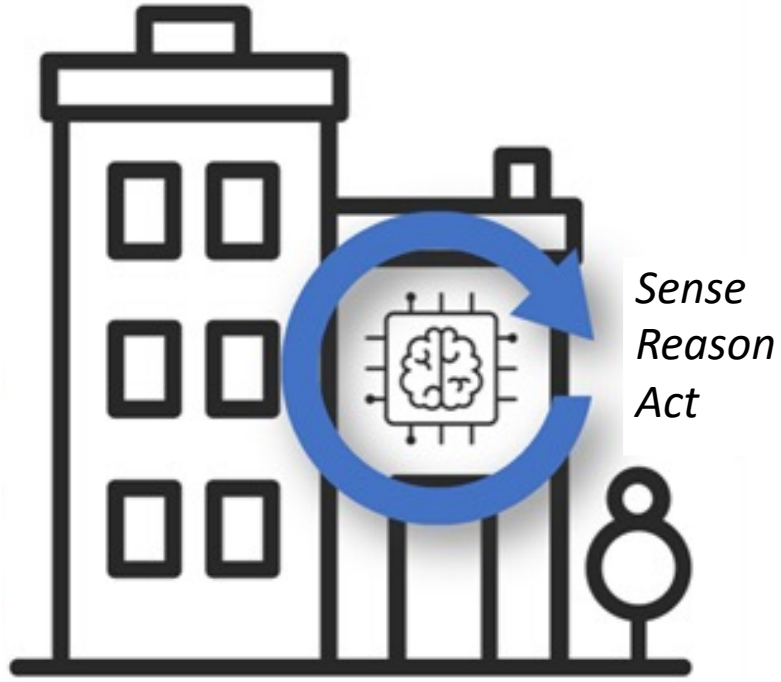


*Smart **buildings***

Human-**Building** Interaction



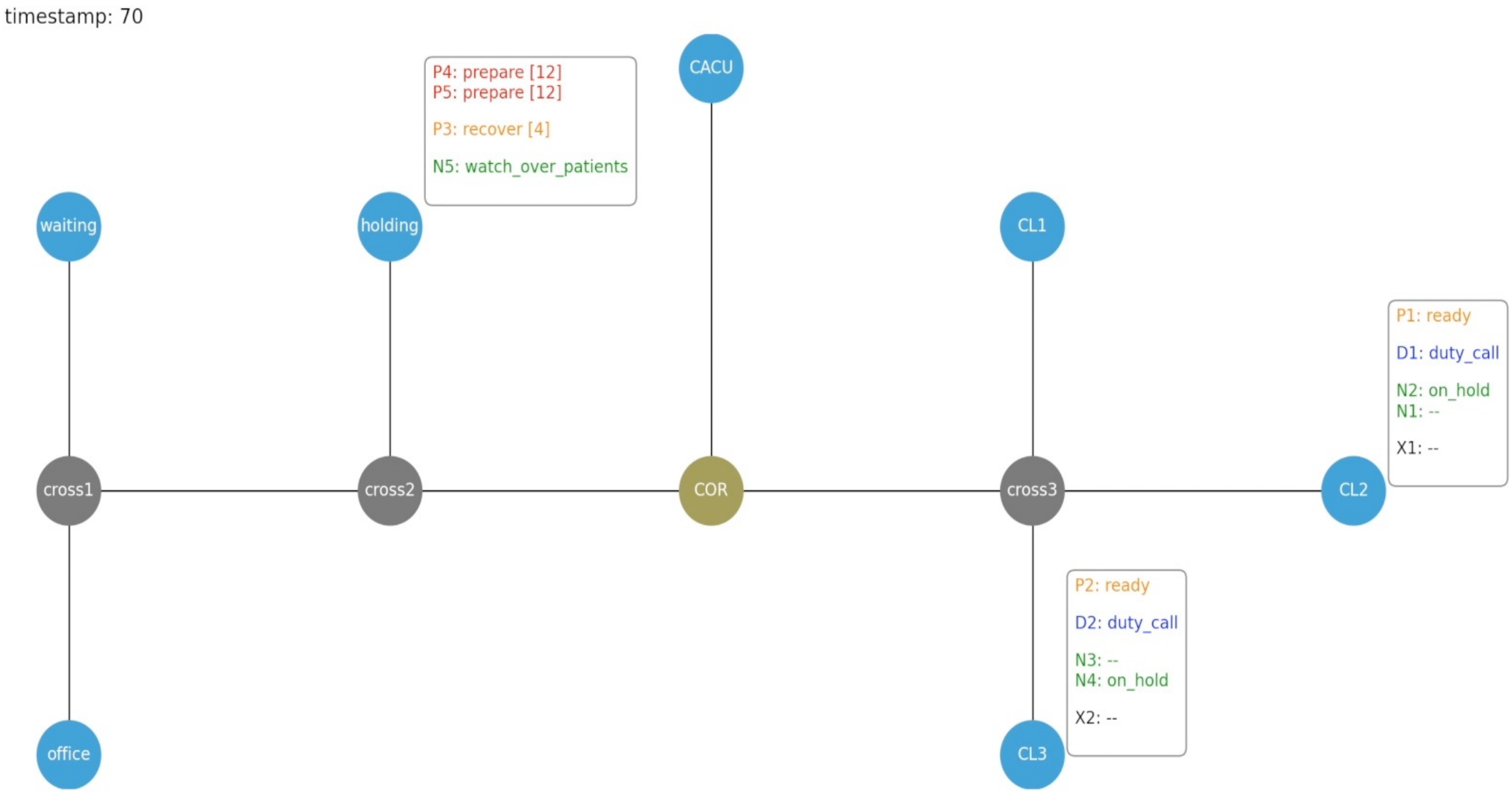
Interact
Adapt



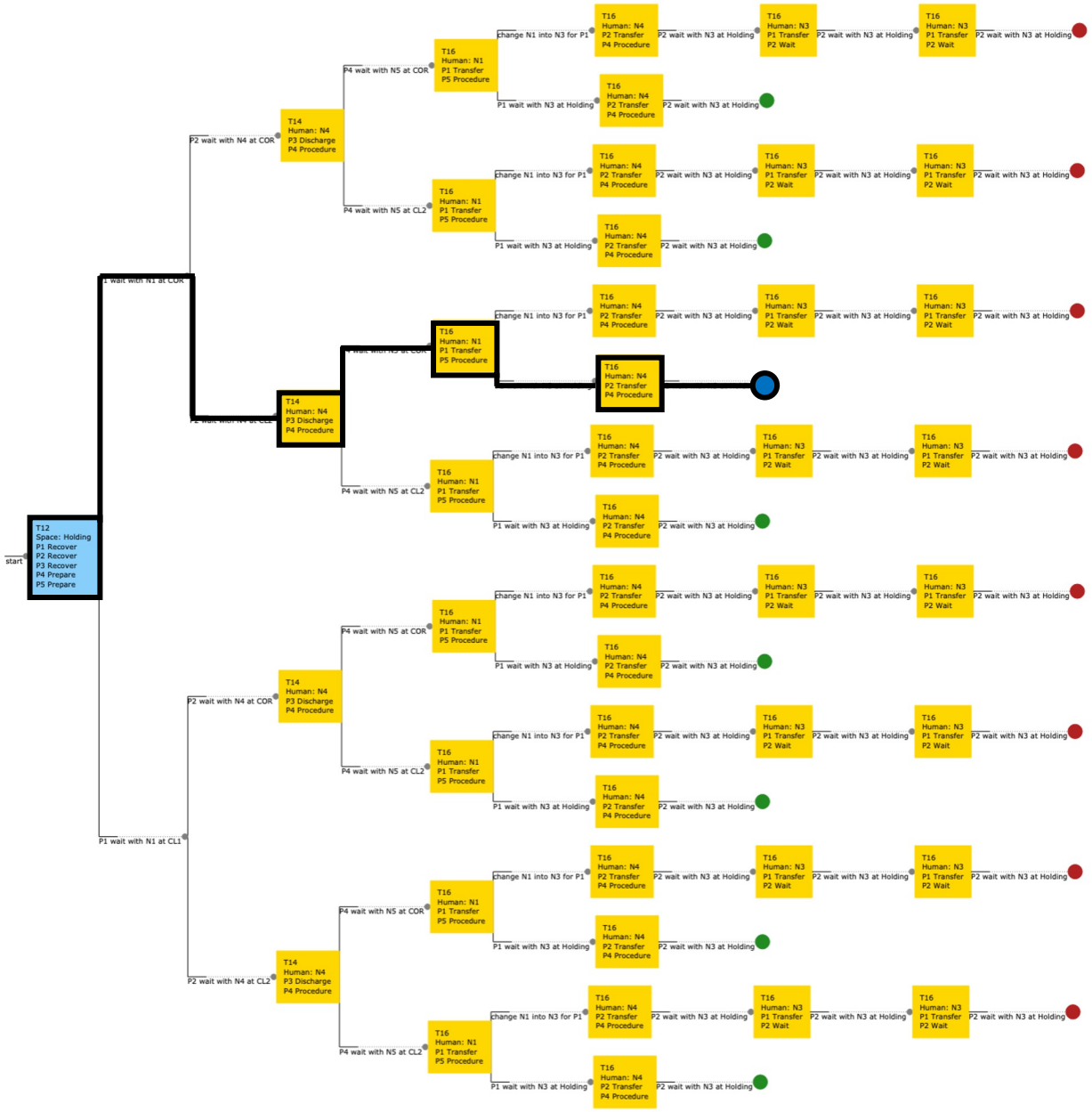
Occupants' needs, goals, profiles

Intelligent Built Environment

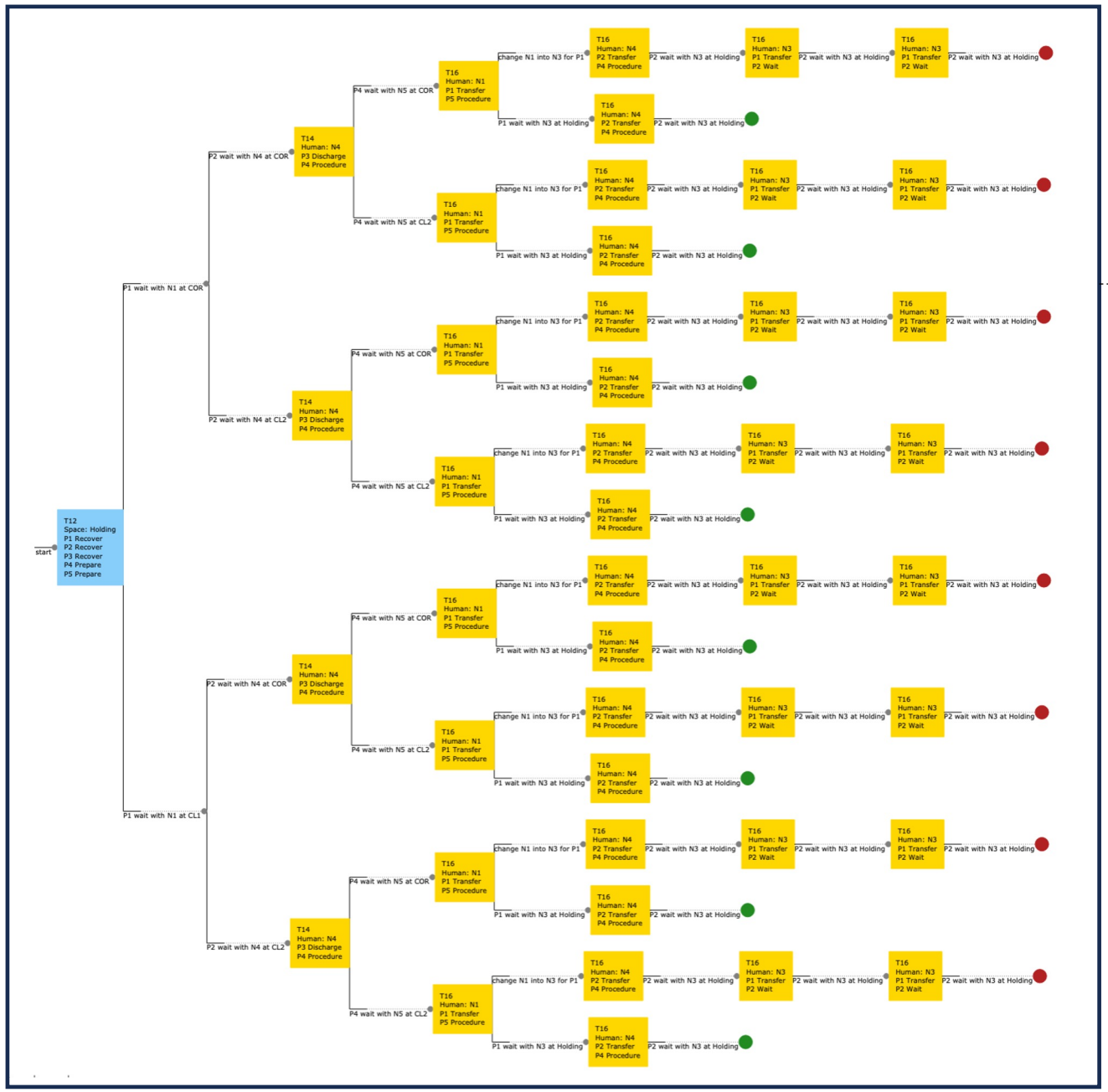
Simulating resource allocation strategies

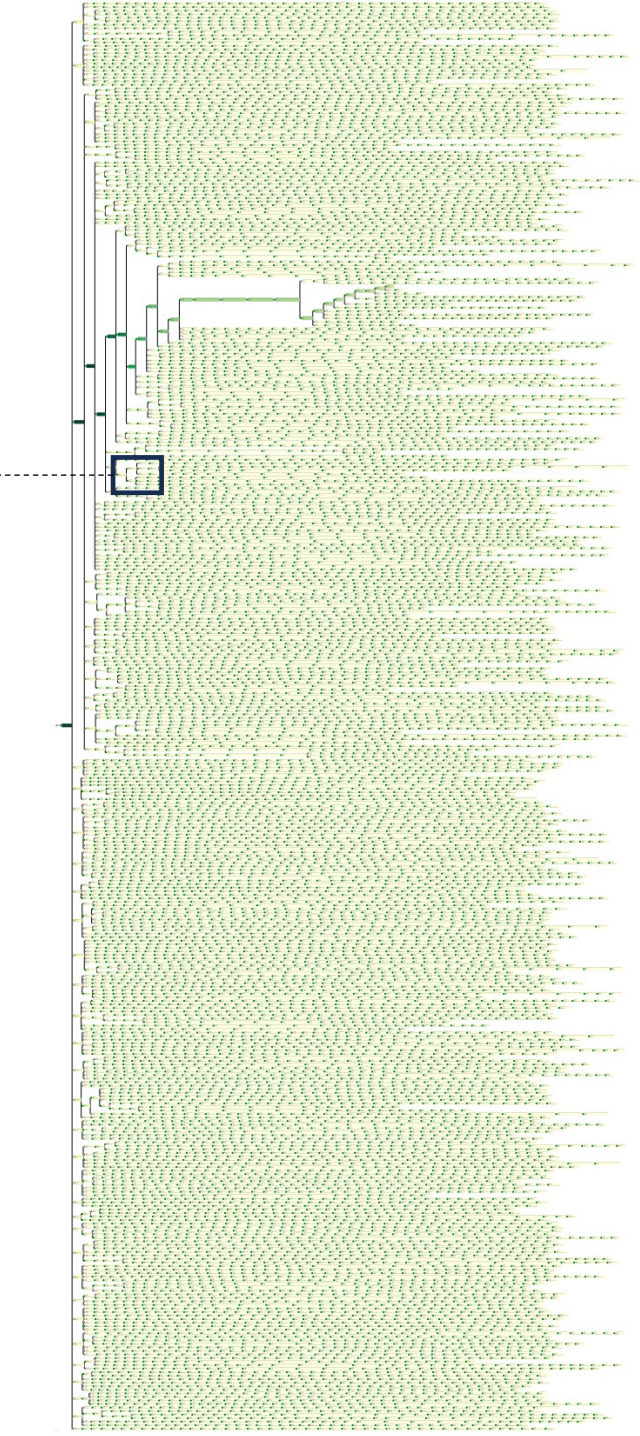


Optimizing resource management



Optimizing resource management





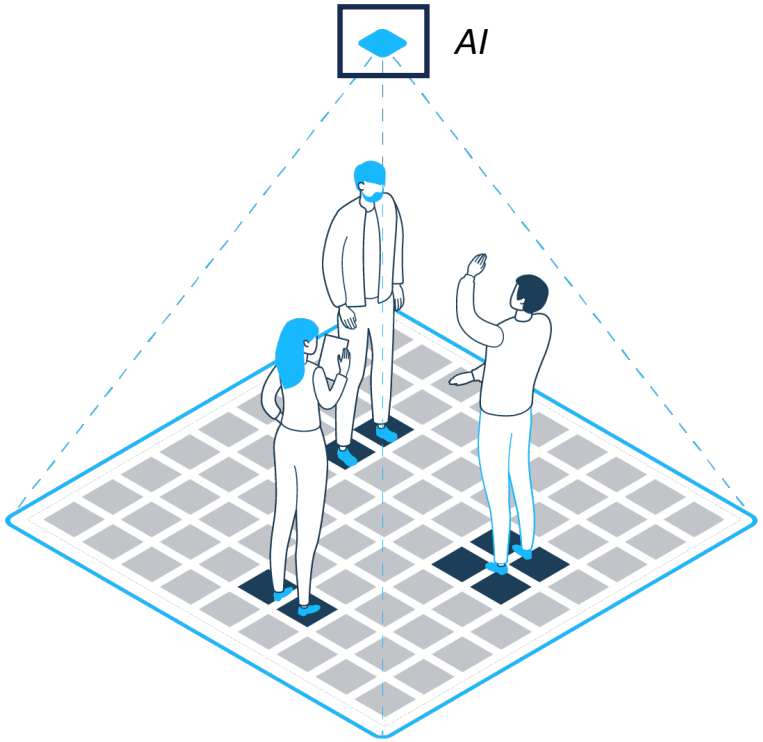
Intelligent Place Lab

Toward Human-Building Adaptability

Optimize **building design**

*Smart **humans***

Optimize **building operations**



*Smart **buildings***

Toward Human-Building Adaptability

Intelligent Place Lab

- Development of **Artificially Intelligent Systems** to inform decision-making
- Integrated focus on both facilities' **Design** and **Operations**
- Convergent goals of improving **Social** and **Environmental** sustainability

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