GSAPP Work Samples

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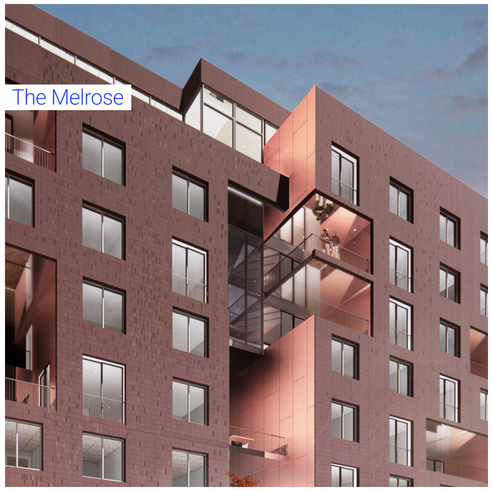
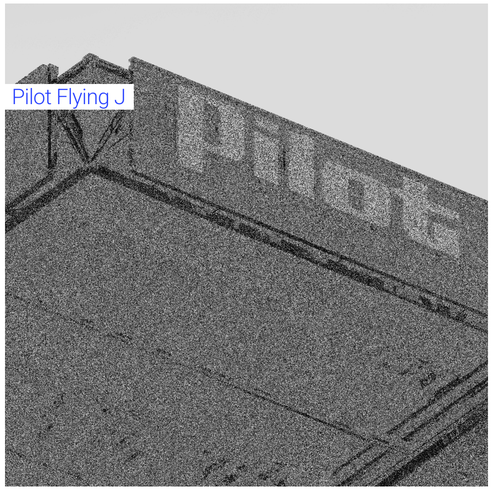
162 Melani St
Hilo, HI 96720

Contents

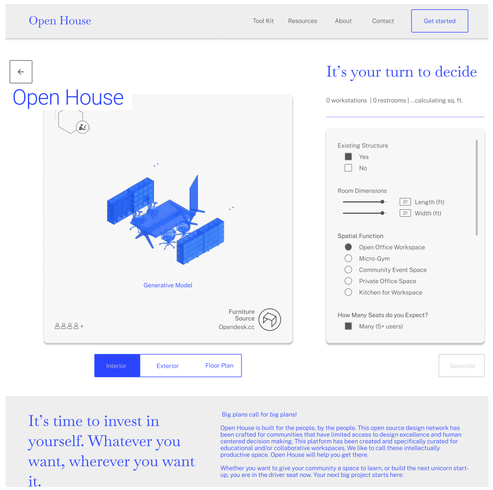
JMK

Architecture + Design

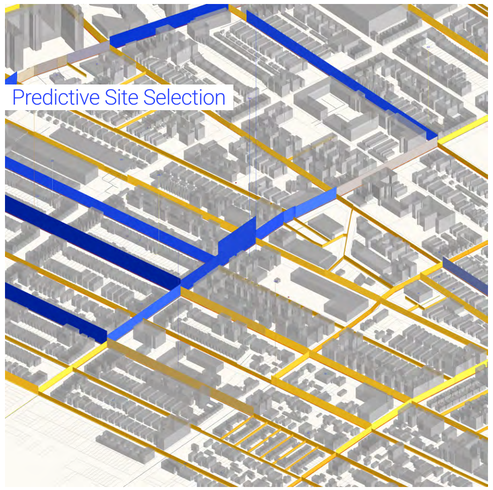

The Melrose

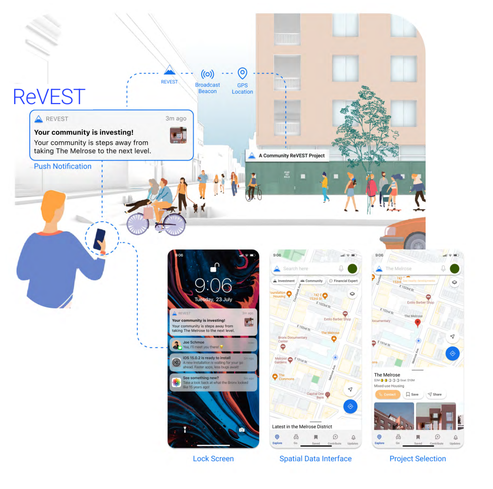

Pilot Flying J

Technology + Strategies



Open House


Predictive Site Selection



ReVEST

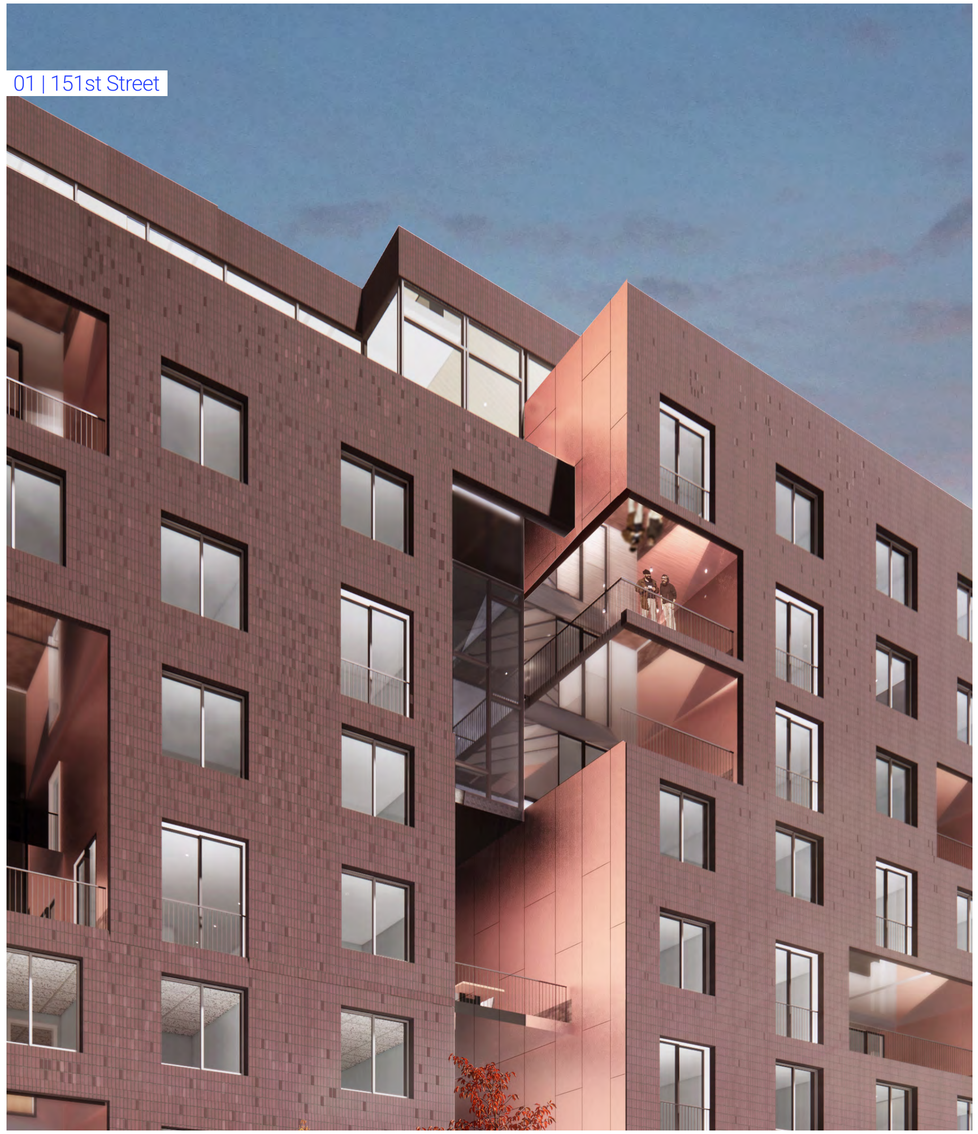

Building a Digital Twin

Skills:
BIM
Productization
Grasshopper

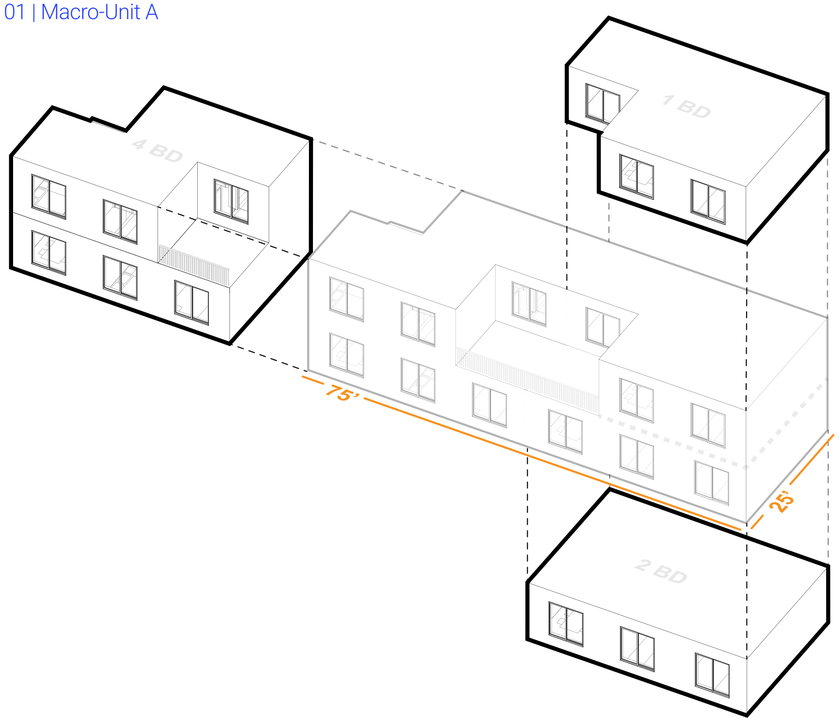
Industry: Architecture + Design
Partner: Jennah Jones
Role: Architectural Designer
Year: Fall 2021

Details:
Borrowing the idea of standardization from the product world, we designed the architectural deployment using a micro-grid strategy.

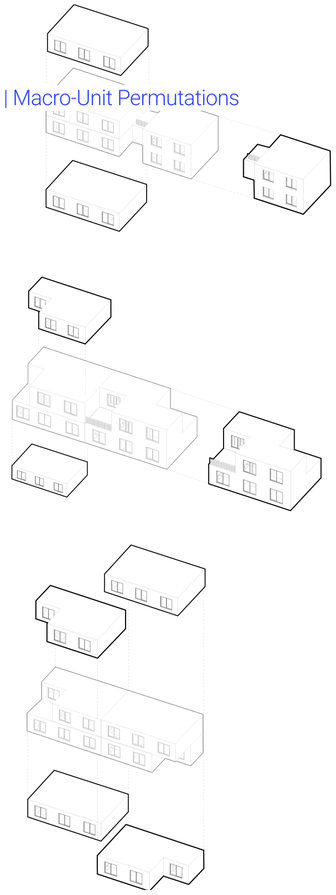
This process of standardization allowed ease of aggregation with rules of deployment. For example, we distilled a units livable space into a micro-grid of 12 feet and 6 inches. Furthermore, paired bedroom types created what we called, a macro-unit. By doing this, all units were able to stack and adjoin with relative ease in an efficient timeline.


01 | 151st Street

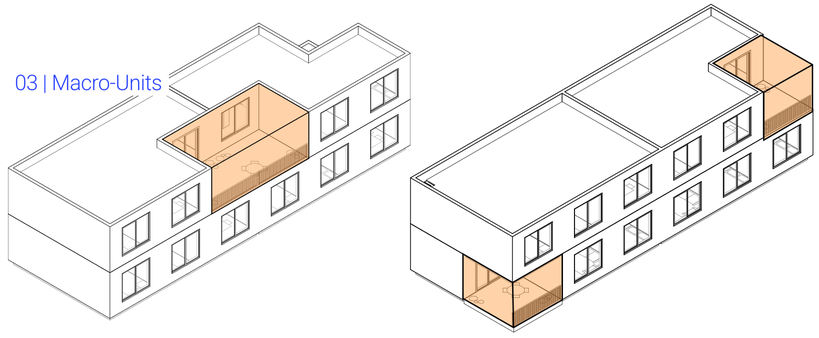
01 | Macro-Unit A



02 | Macro-Unit Permutations

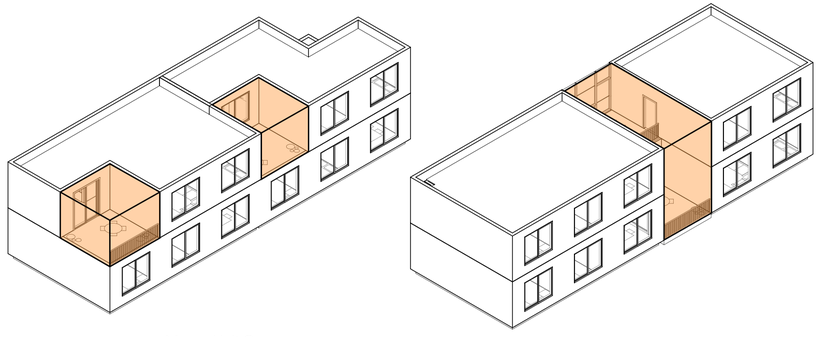


03 | Macro-Units



Macro-Unit A

Macro-Unit B

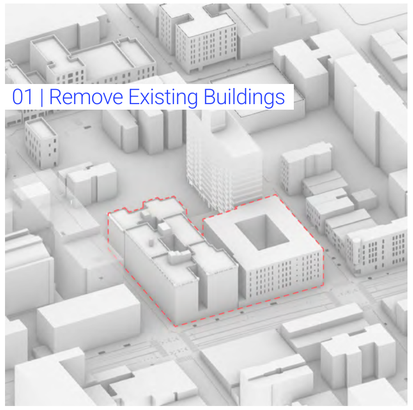


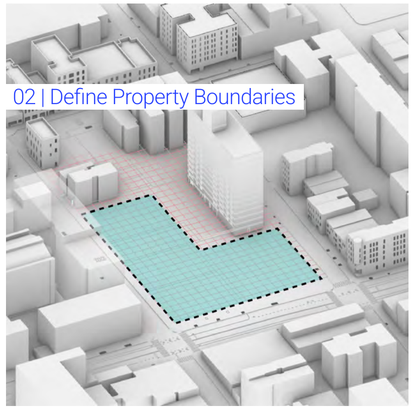
Macro-Unit C

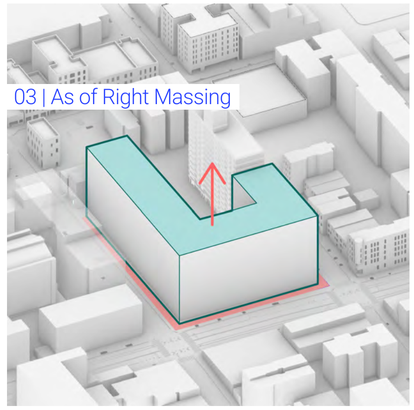
Macro-Unit D

Macro-Unit Configurations

BIM | Architecture + Design | Grasshopper

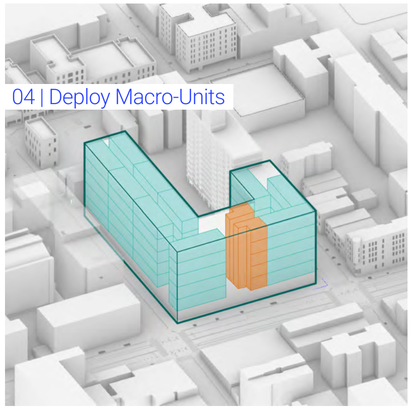


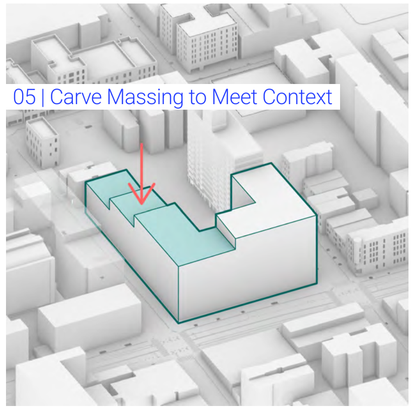


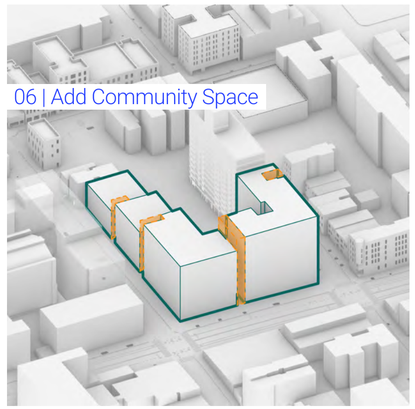


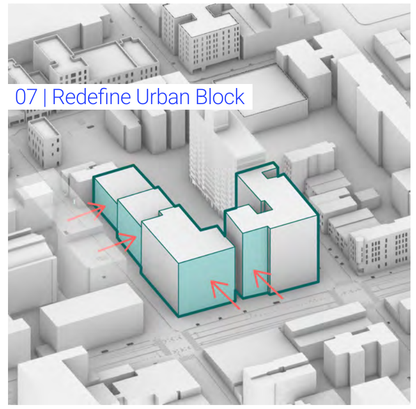
Text:
Our aggregation strategy took guidance from our persona, emphasizing communal space and allowed for a varied aggregate pattern.

Within the macro-unit, we prioritized shared communal spaces to foster neighbor relation. In our project at large, we created community channels where a multifaceted program strategy can be deployed. Whether it be a rentable a hot desk office, communal exterior patio, or clubhouse lounge, community forward program spaces permeate through the façade.





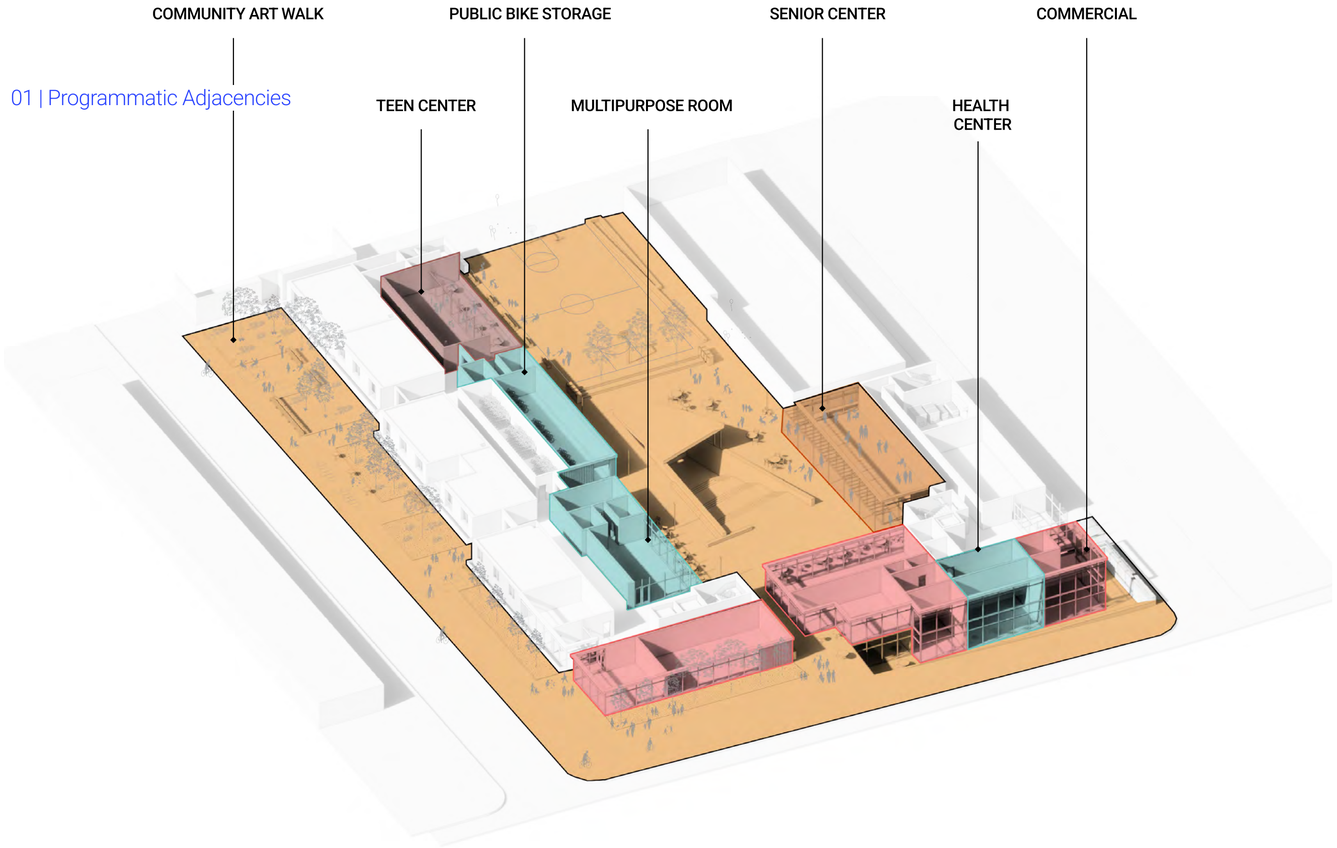




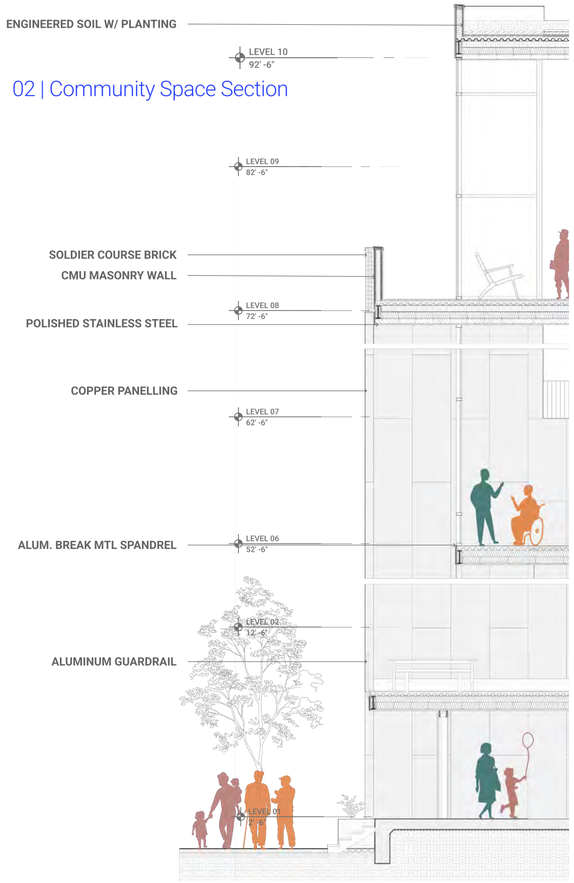
Site Development + Product Deployment

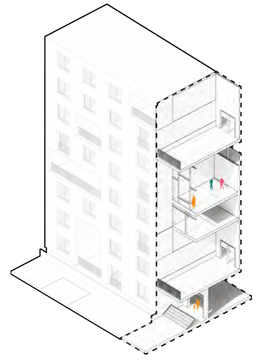
BIM | Architecture + Design | Grasshopper

01 | Programmatic Adjacencies



02 | Community Space Section

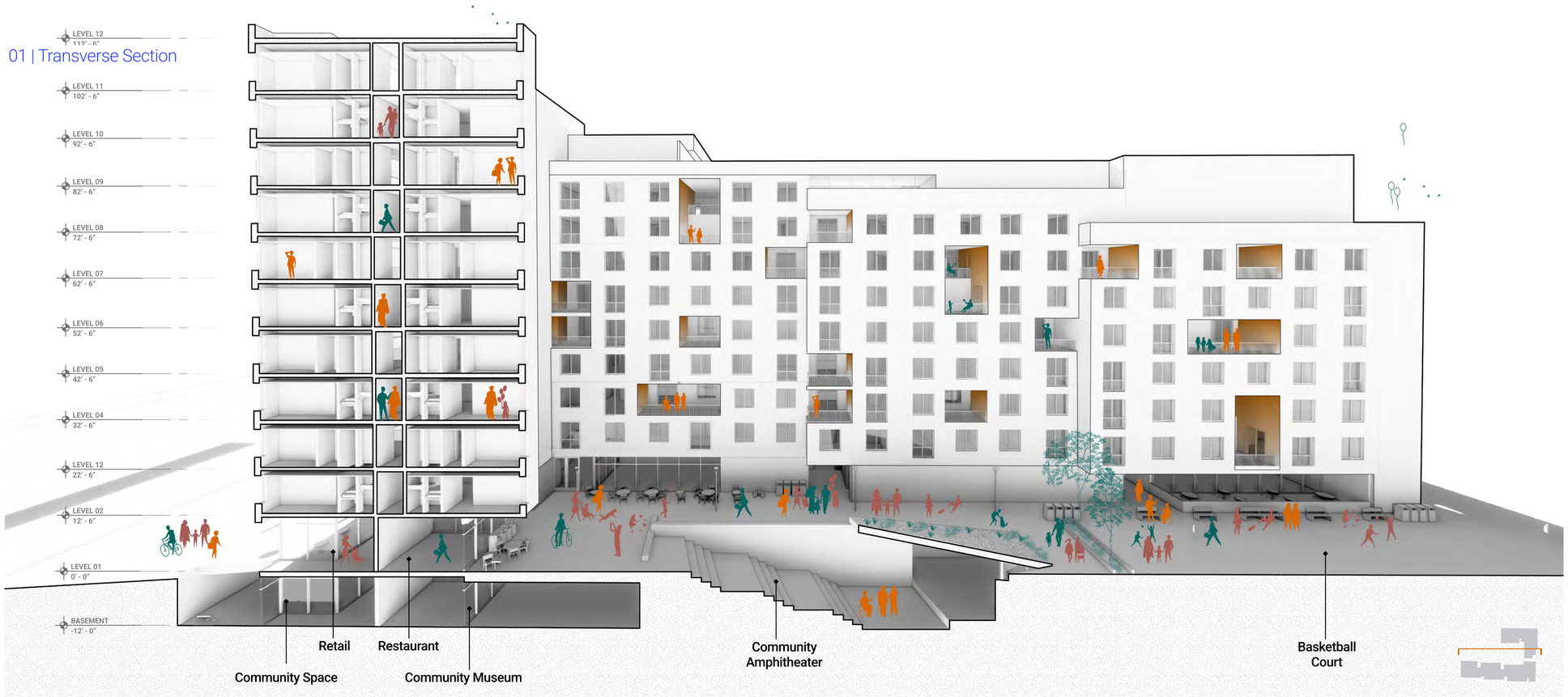




Horizontal Programs

BIM | Architecture + Design | Grasshopper

01 | Transverse Section



Vertical Programs

BIM | Architecture + Design | Grasshopper

01 | Community Space + Private Balconies

02 | Senior Center + Childcare Facility

Interlocking Programs

BIM | Architecture + Design | Grasshopper

Skills:

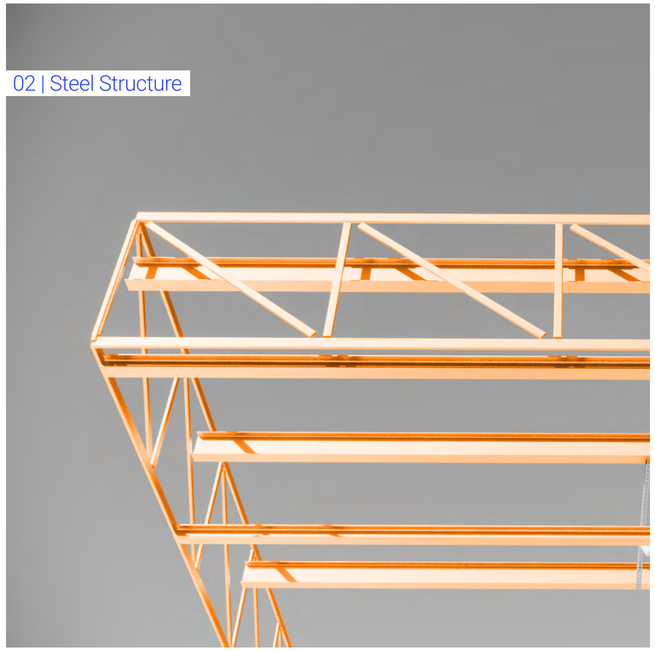
BIM
Architecture + Design
Service Design

Industry: Architecture + Design
Partner: Marcus Chan
Role: Architectural Designer
Year: Spring 2023

Details:
Borrowing the idea of standardization from the product world, we designed the architectural deployment using a micro-grid strategy.

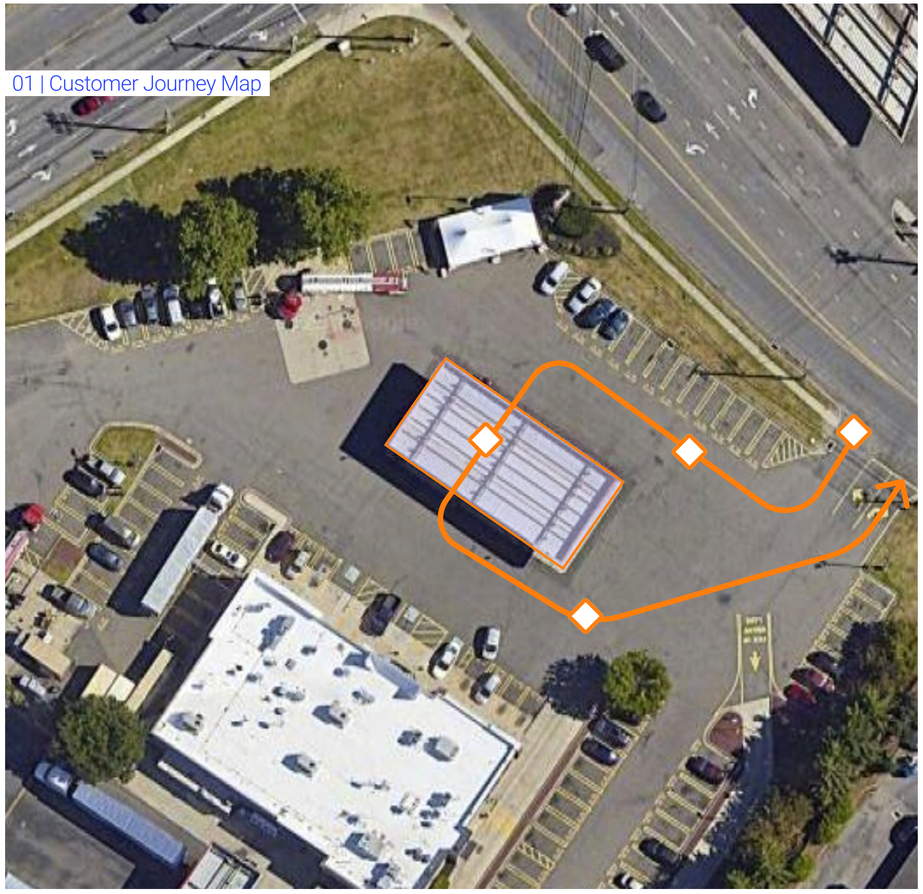
This process of standardization allowed ease of aggregation with rules of deployment. For example, we distilled a units livable space into a micro-grid of 12 feet and 6 inches. Furthermore, paired bedroom types created what we called, a macro-unit. By doing this, all units were able to stack and adjoin with relative ease in an efficient timeline.

01 | Canopy Detail



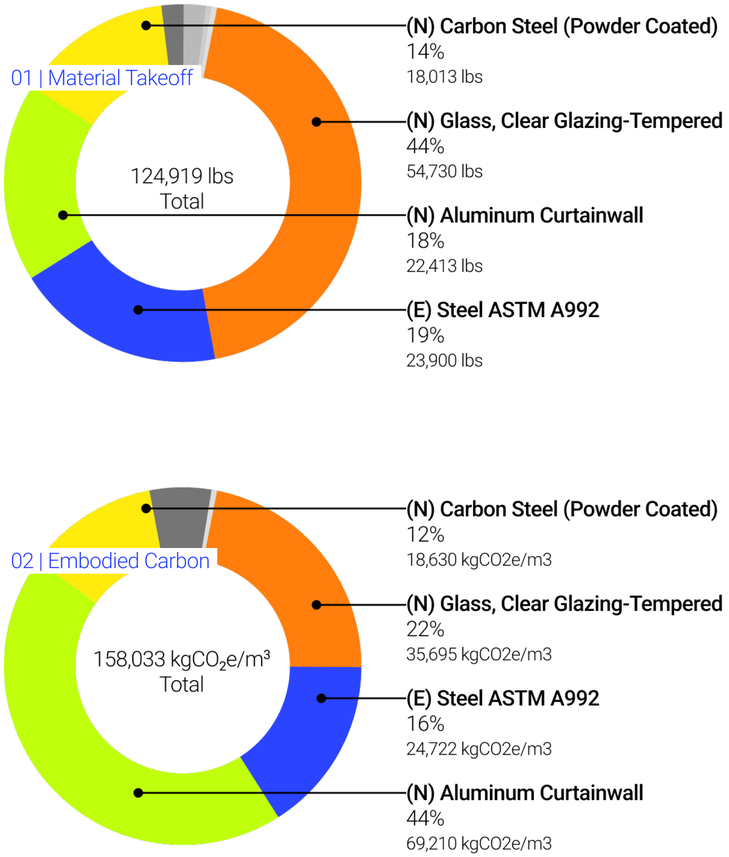
Utilizing Existing Assets

BIM | Architecture + Design | Service Design



Customer Journey

BIM | Architecture + Design | Service Design

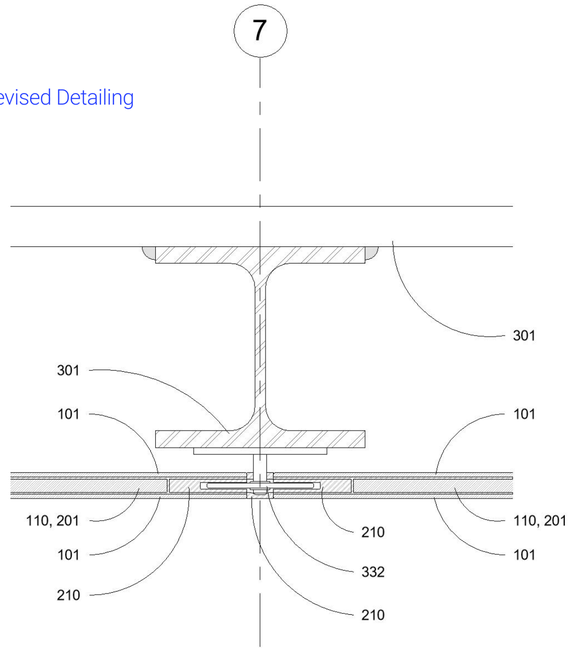


Text:
Reutilizing the existing structure, this canopy elevates the customer journey of a typical gas station. Retrofitting the I.T. systems for behavioral tracking, the newly glazed materials allow infrared and optical sensing for offline data collection.

We don't retrofit this structure without our due diligence. We understand the new materials applied have their own negative impacts, such as embodied carbon.

Canopy + Impacts

01 | Revised Detailing



02 | Canopy During the Day

Revised Canopy

BIM | Architecture + Design | Service Design

01 | Canopy at Night

Revised Canopy

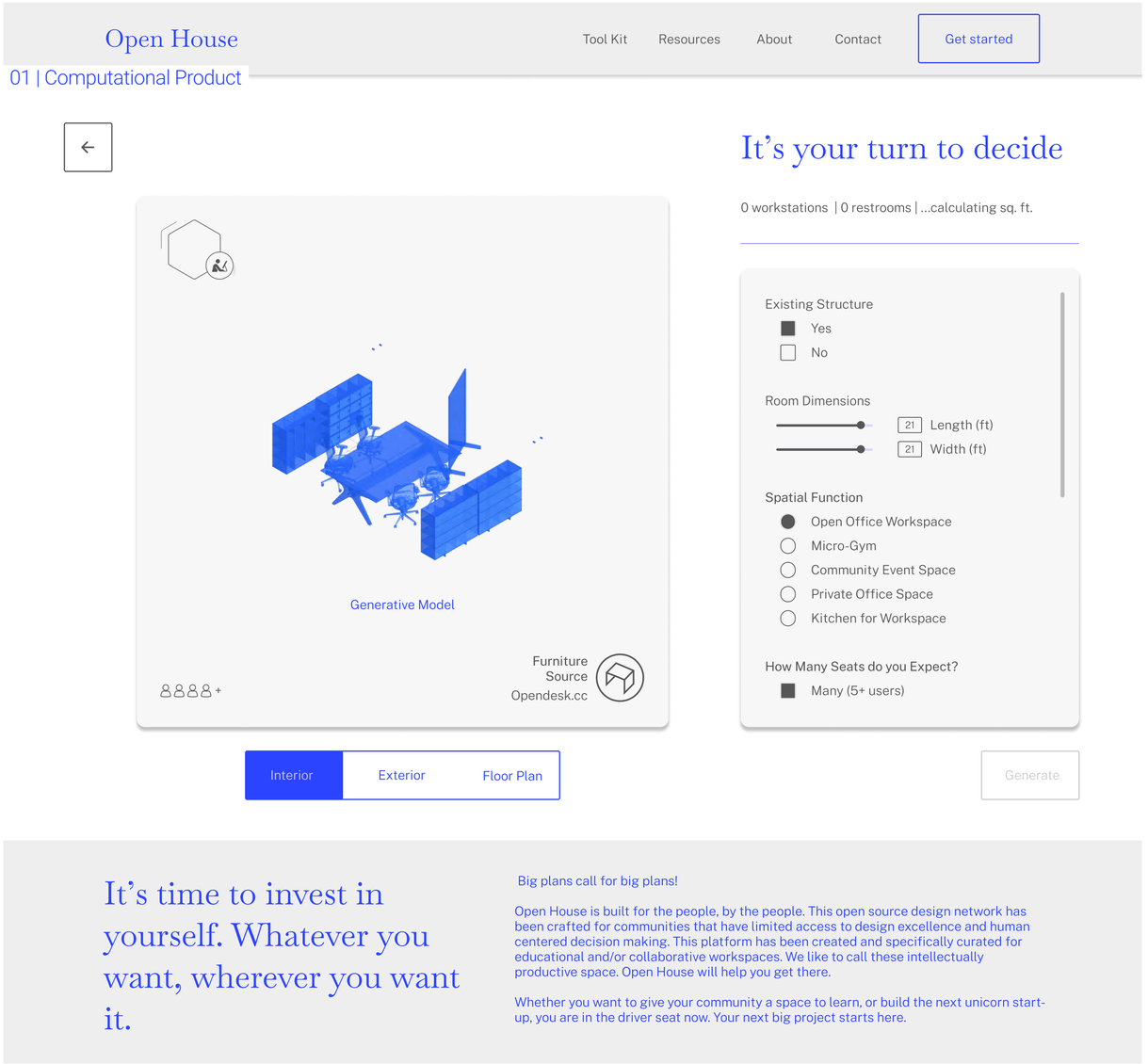
BIM | Architecture + Design | Service Design

Skills:
Computational Design Architecture + Design Open Source

Industry: Design + Technology
Type: Affordable Housing
Role: Design Technologist
Years: Spring 2022

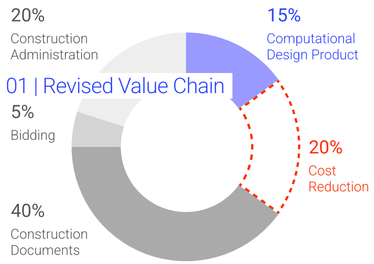
Details:
Architectural design solutions have been a series of bespoke strategies valued mainly on a fixed-rate business model.

Custom systems can lead to opaque client pricing where the budget can inflate, scheduling can run over, and project profitability is hard to anticipate. As Yale University professor Phil Bernstein suggests, we can change this business model from selling time to selling outcomes/results. In this spirit, I propose hosting computational architecture products on an online marketplace.



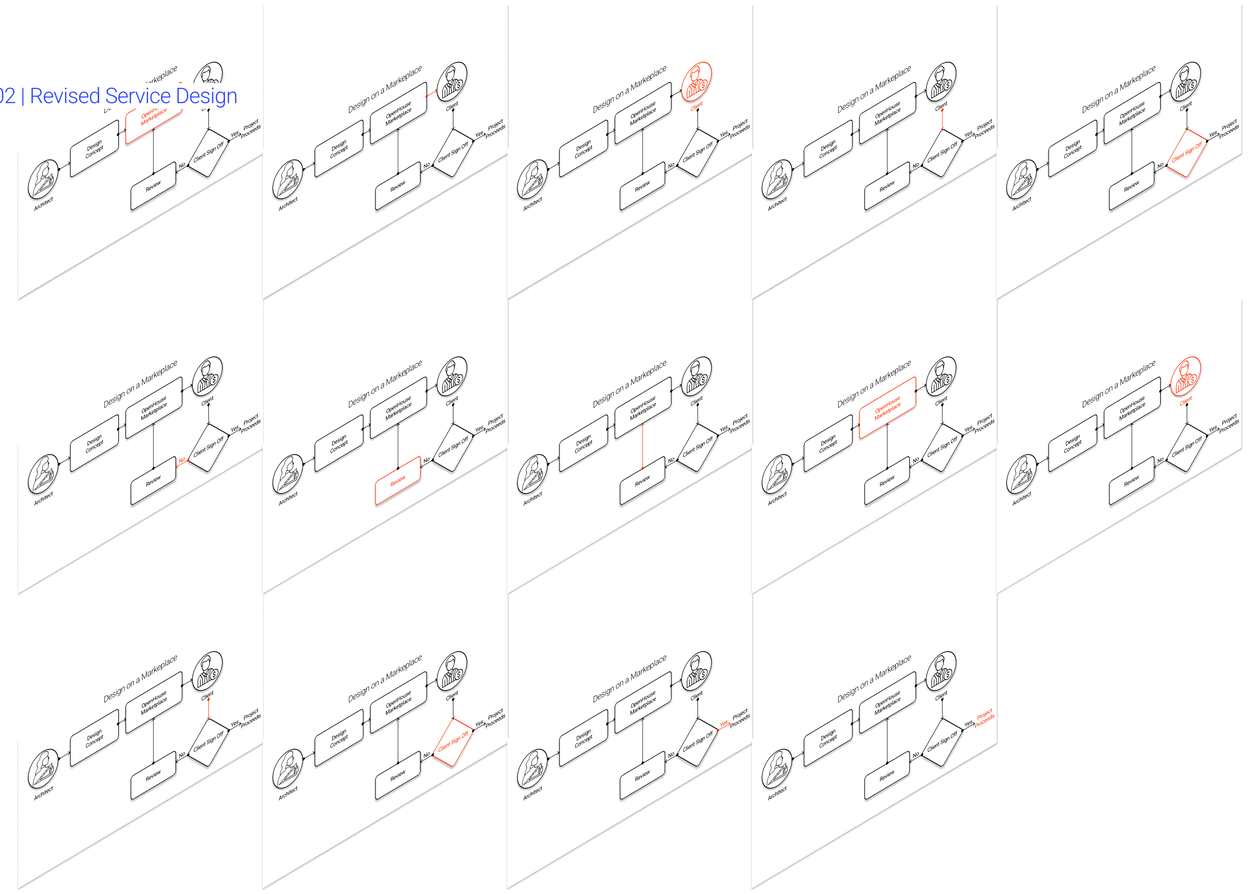
Open House

JMK



A computational product has the potential to reduce the design fee by 20%.

02 | Revised Service Design



Text:
Enter OpenHouse — a spatial marketplace.

OpenHouse hosts computational products developed by designers on an online marketplace. Focused on automating the Schematic Design and Design Development phases, this strategy can lower design service fees, reduce project timelines, and assist buyers in finding sellers. OpenHouse attempts to change the architectural deliverable towards a value of the intellectual property rather than labor.

Value Proposition

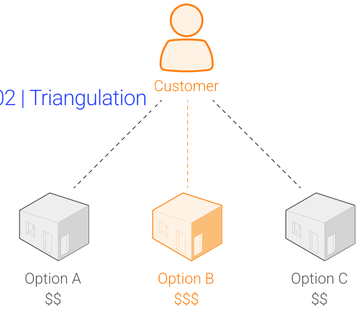
Computational Design | Architecture + Design | Open Source

Technology + Strategies

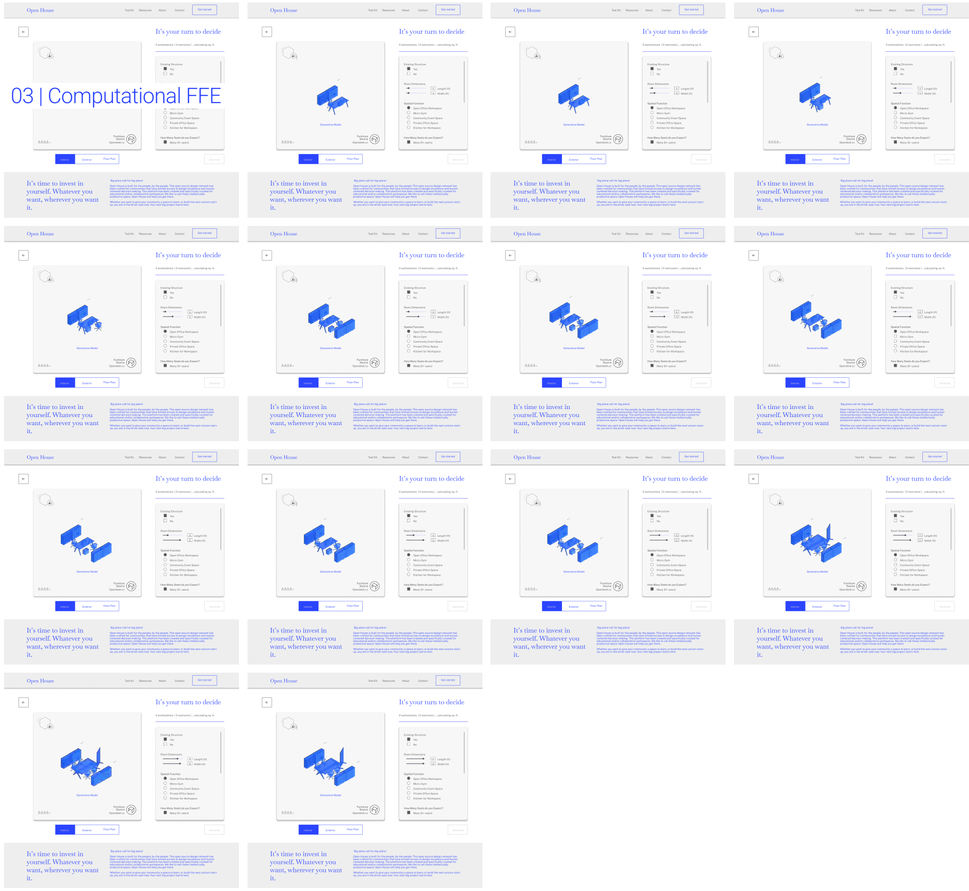
Text:
According to Mckinsey, marketplaces rang up half of the global online sales; moreover, Google states over 60% of consumer shopping start online.

Once a marketplace's network effect takes hold, the customer can price spatial solutions against one another and select their best value.
Aligning online shopping with the increasing demand for remodeling, particularly with younger households, OpenHouse could provide small-scale architectural renovation design solutions.

Shoppers go online first in over 60% of shopping occasions. (Source: ThinkwithGoogle)



Before COVID-19, marketplaces rang up half of global online sales—$2 trillion on the top 100 sites. (Source: Mckinsey)



Marketplace + Triangulation

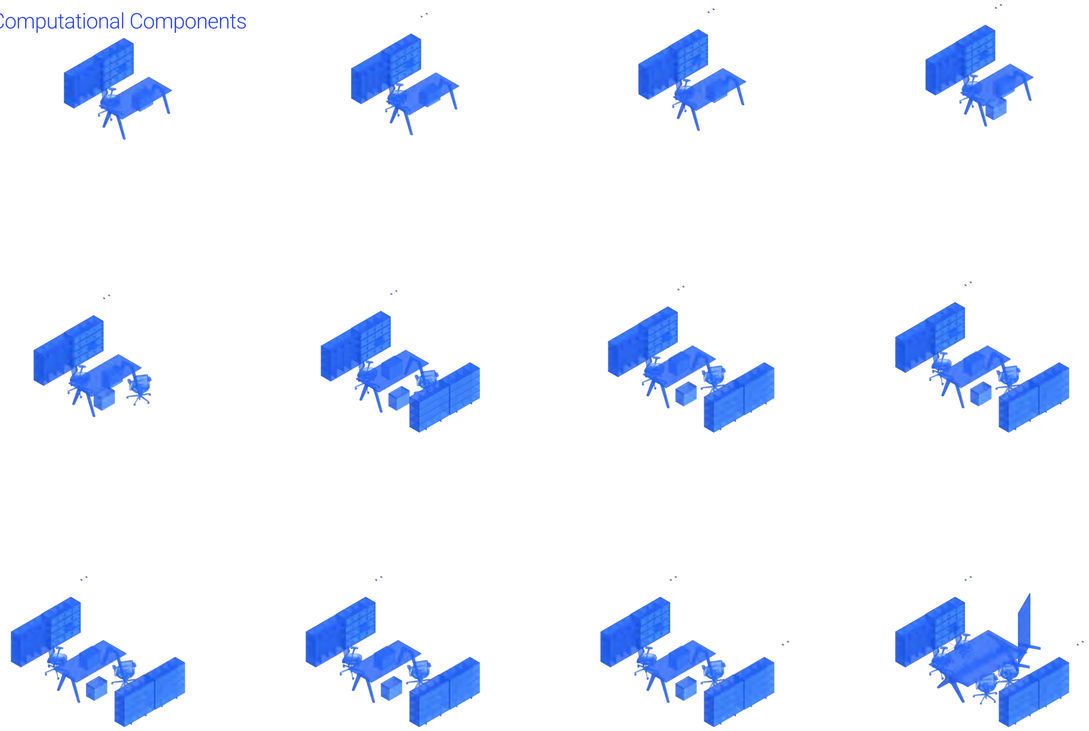
Computational Design | Architecture + Design | Open Source

Technology + Strategies

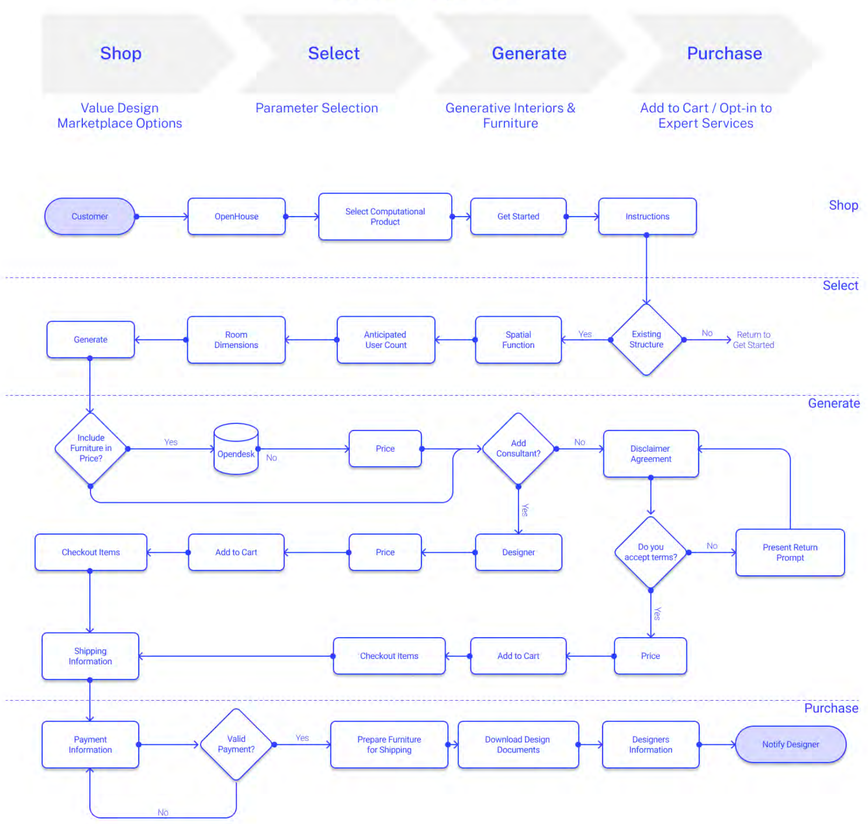
Open House

JMK

01 | Computational Components



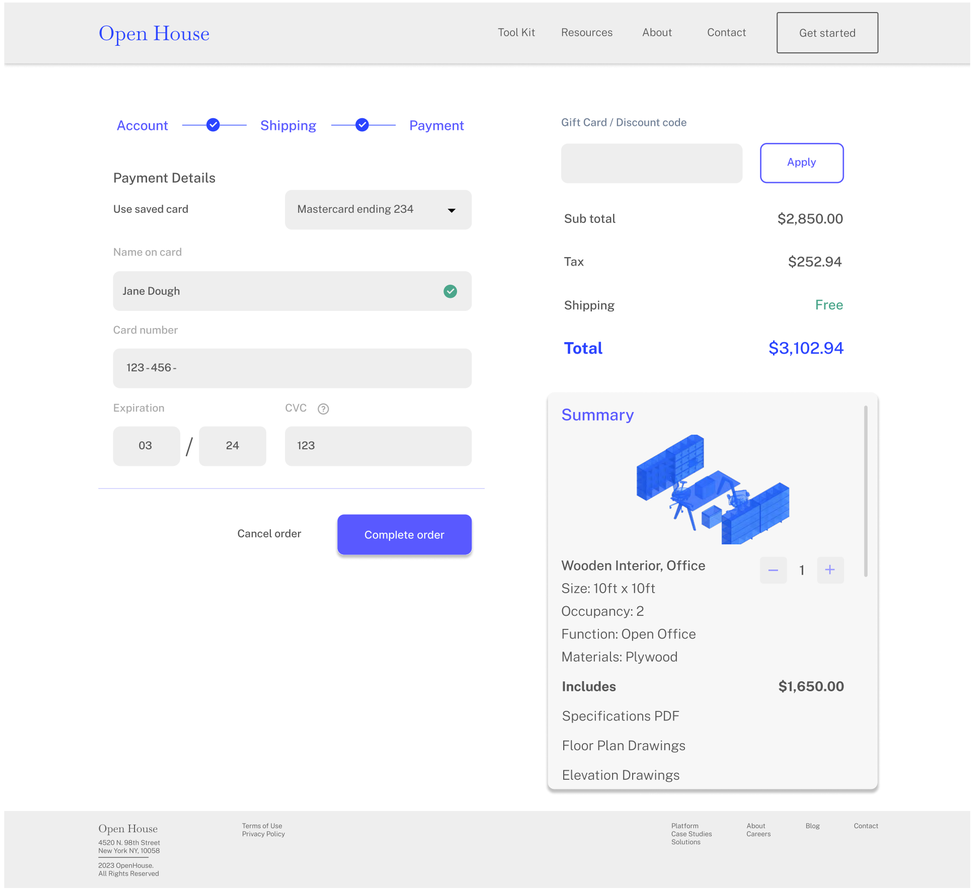
Customer Experience

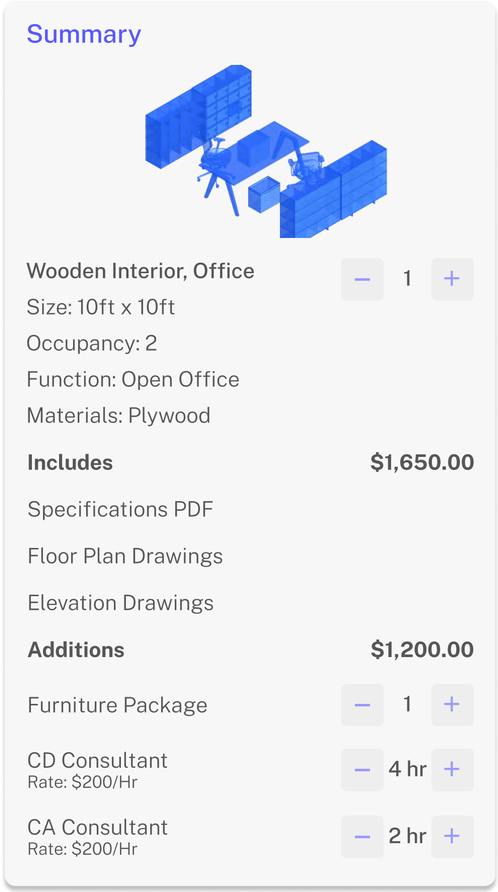


Service Design Components

Computational Design | Architecture + Design | Open Source

Technology + Strategies





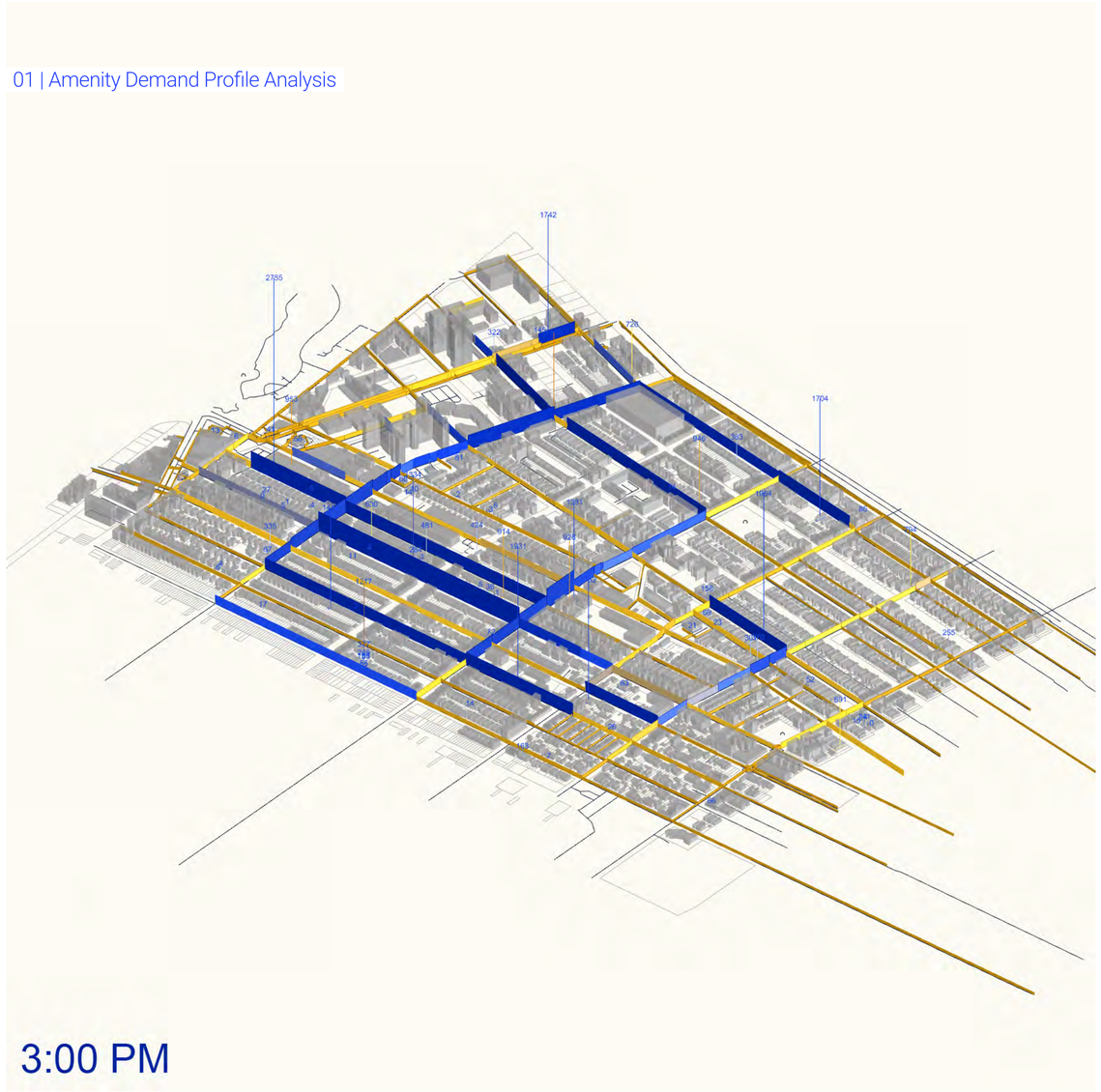
Bill of Materials + Checkout UI

Skills:
Computational Design
Spatial Data
Simulation

Industry: Technology + Strategies
Type : Research
Role: Design Technologist
Years: Spring 2022

Details:
Our goal is to simulate the population of the Crown Heights locale, their movement patterns in the neighborhood and amenity locations/gaps in order to identify a potential market location for a new dog care facility and run. Among other strategies, we will be prioritizing amenity demand profiles, agent based simulation, and choice to inform our network analysis and identify a suitable site location.

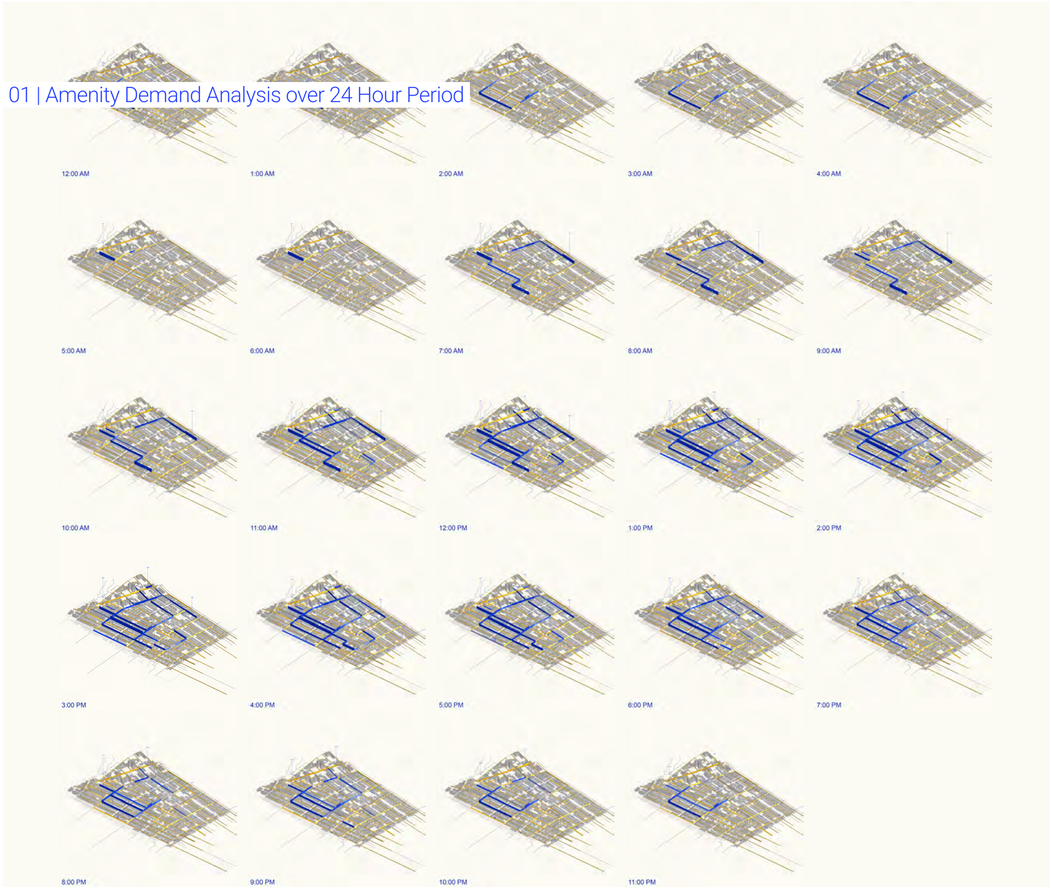
01 | Amenity Demand Profile Analysis



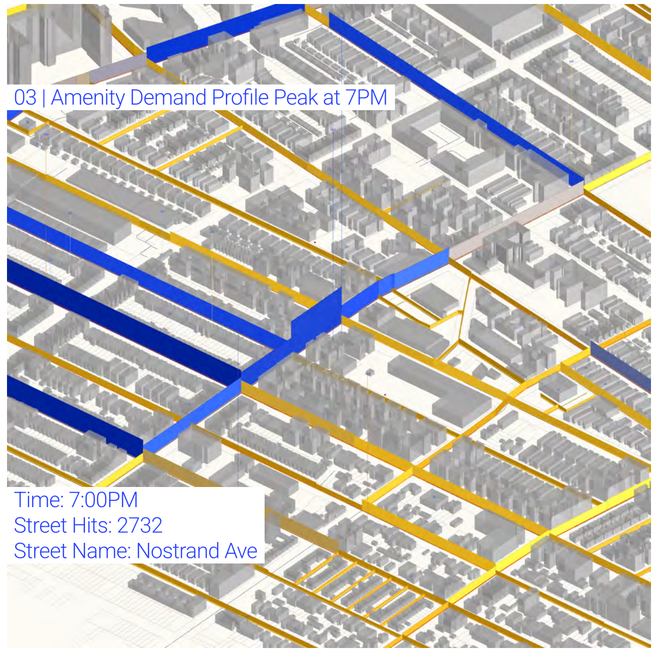
Predictive Site Selection

JMK

Text:
To begin our analysis, we acquired the residential and commercial floor area data and assigned this tract's population and household with dogs proportionally to the buildings in our analysis. A 24-hour weekday activity demand profile simulation reveals two street network locations within Crown Heights have the highest use at the times most people would take their dogs out for walks, 7am and 6pm. These result were met with skepticism as they were weighted with standard procedures with no facilities given weights outside the analysis boundary or specified amenities.



01 | Amenity Demand Analysis over 24 Hour Period


03 | Amenity Demand Profile Peak at 7PM

Time: 7:00PM
Street Hits: 2732
Street Name: Nostrand Ave

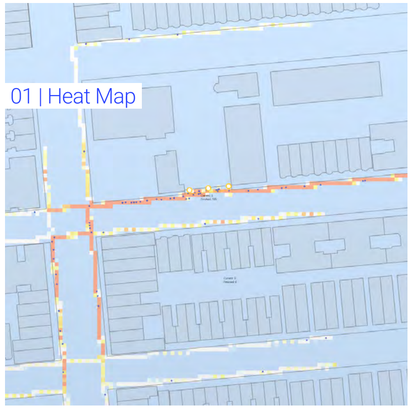
Amenity Demand Profiling

Computational Design | Simulation | Spatial Data

Technology + Strategies

Predictive Site Selection

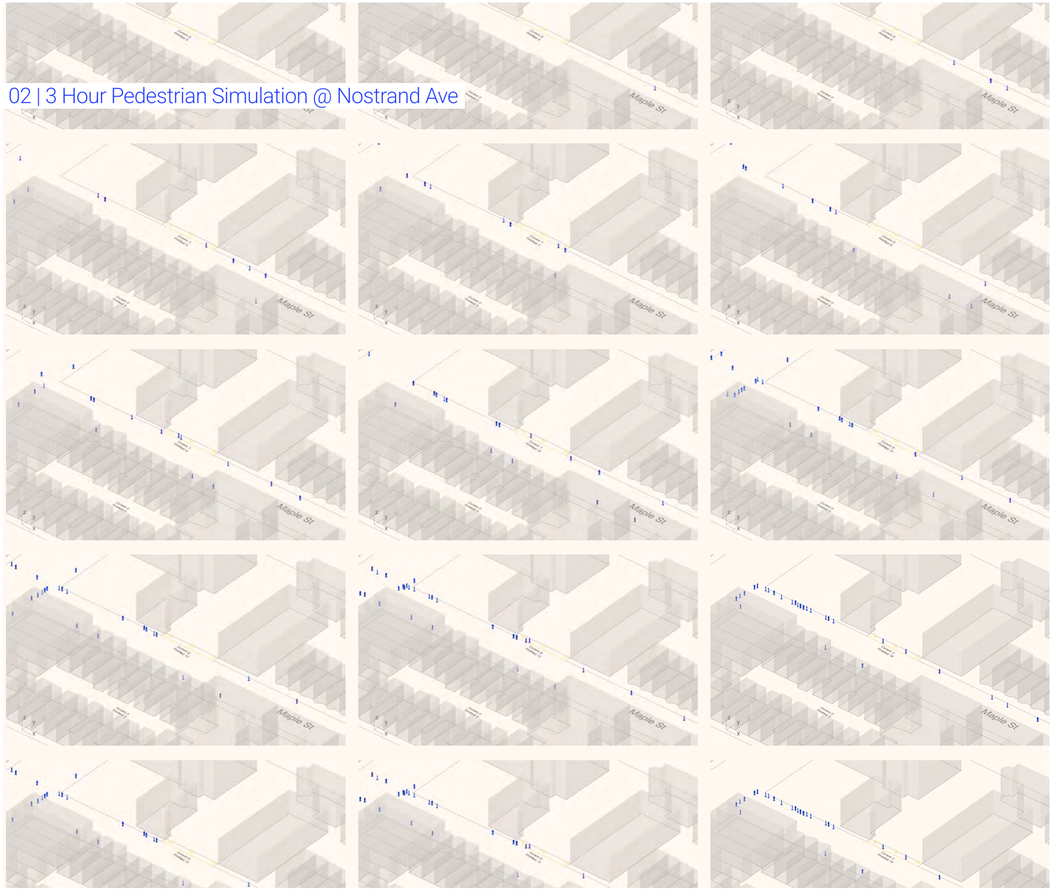
JMK



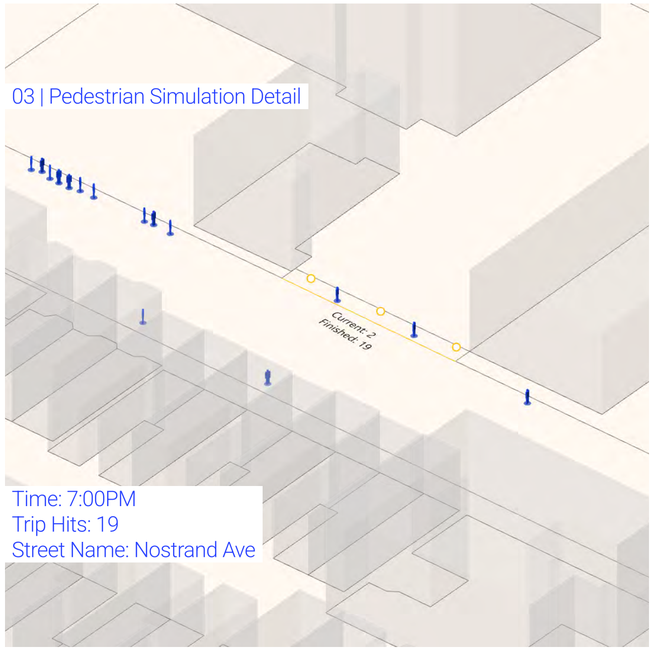
01 | Heat Map

Text:
The next step was to analyze the localized street networks for agent based movement patterns. We wanted to understand how an added amenity location may impact the pedestrian traffic of the neighborhood.

We weigh each amenity equally and generate pedestrians midblock throughout the surrounding neighborhood. Our simulation is meant to understand how human traffic flows may be impacted if new amenities are added through the neighborhood.



02 | 3 Hour Pedestrian Simulation @ Nostrand Ave



03 | Pedestrian Simulation Detail

Time: 7:00PM
Trip Hits: 19
Street Name: Nostrand Ave

Pedestrian Simulation

Computational Design | Simulation | Spatial Data

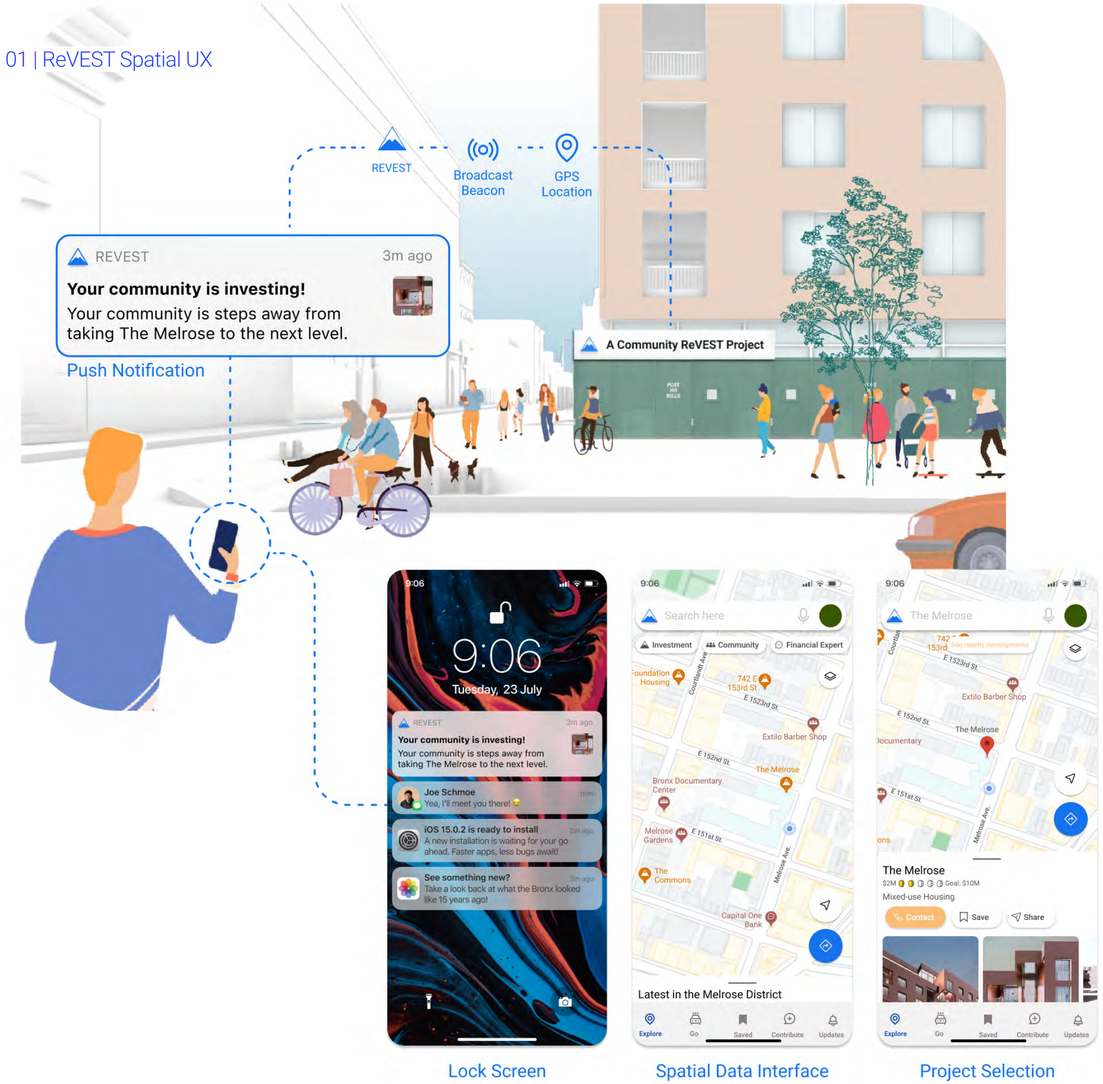
Technology + Strategies

Skills:
Service Design
Real Estate
Product Design

Industry: Technology + Strategies
Type : Research
Role: Design Technologist
Years: Fall 2021

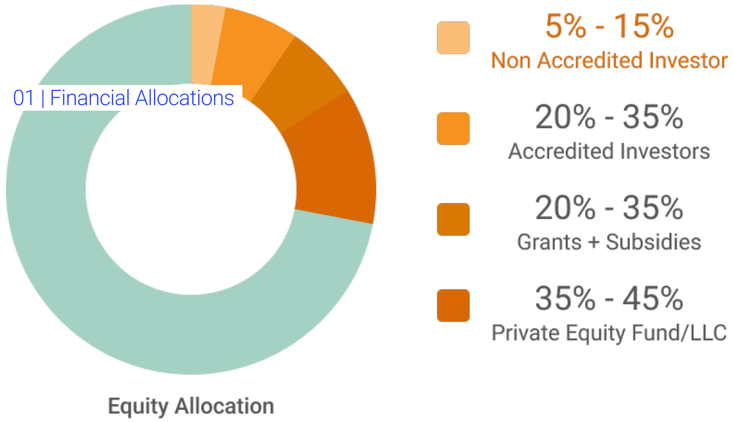
Details:
According to Harvard University, 93 percent of all multifamily units started were intended as rentals. This is the continuation of a trend observed between 2010–2019. This led us to the question, who are developers' customers? As Packy McCormick at notboring.co states, a building has two core customers: its end users (people and organizations that occupy the space) and its financial backers (real estate investors and lenders).

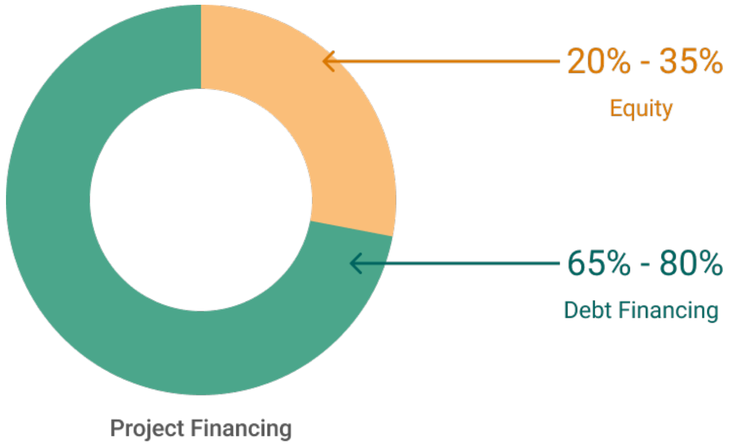
We believe mending the gap between these two customers can benefit the development process and its product. REVEST is a product system aimed to reshuffle the real estate development value chain and prioritize its end users by allowing them equity investment opportunities. In doing so, we believe this will help democratize housing development and help address the ongoing housing crisis in New York City and beyond.



Lock Screen | Spatial Data Interface | Project Selection

01 | Financial Allocations



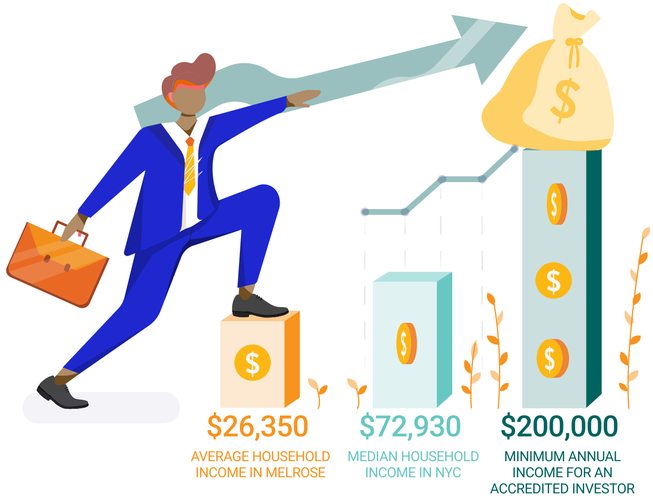


Text:
By utilizing Title III of the JOBS Act, otherwise known as Regulation CF, non-accredited investors are allowed to provide capital in exchange for project equity. To achieve this, we created a fractional share investment platform in which non-accredited investors can provide up to 15% of the allocated equity financing.

To mitigate the risk of a real estate investment, the SEC has created an investment class named the Accredited Investor. Under Rule 501 of Regulation D, an accredited investor can be summarized as a financially sophisticated entity or individual who has a reduced need for the protection provided by regulatory disclosure filing.

Although Regulation D helps mitigate risk, it also has an adverse effect by excluding individuals who do not make an annual income of $200,000 or have a total asset valuation of $1,000,000. For comparison, according to data provided by the NYU Furman Center, in 2019 the Melrose District community of the Bronx had an average household income of $26,350. A Melrose District household income becomes yet another barrier to the reality of obtaining equity in your local real estate market.

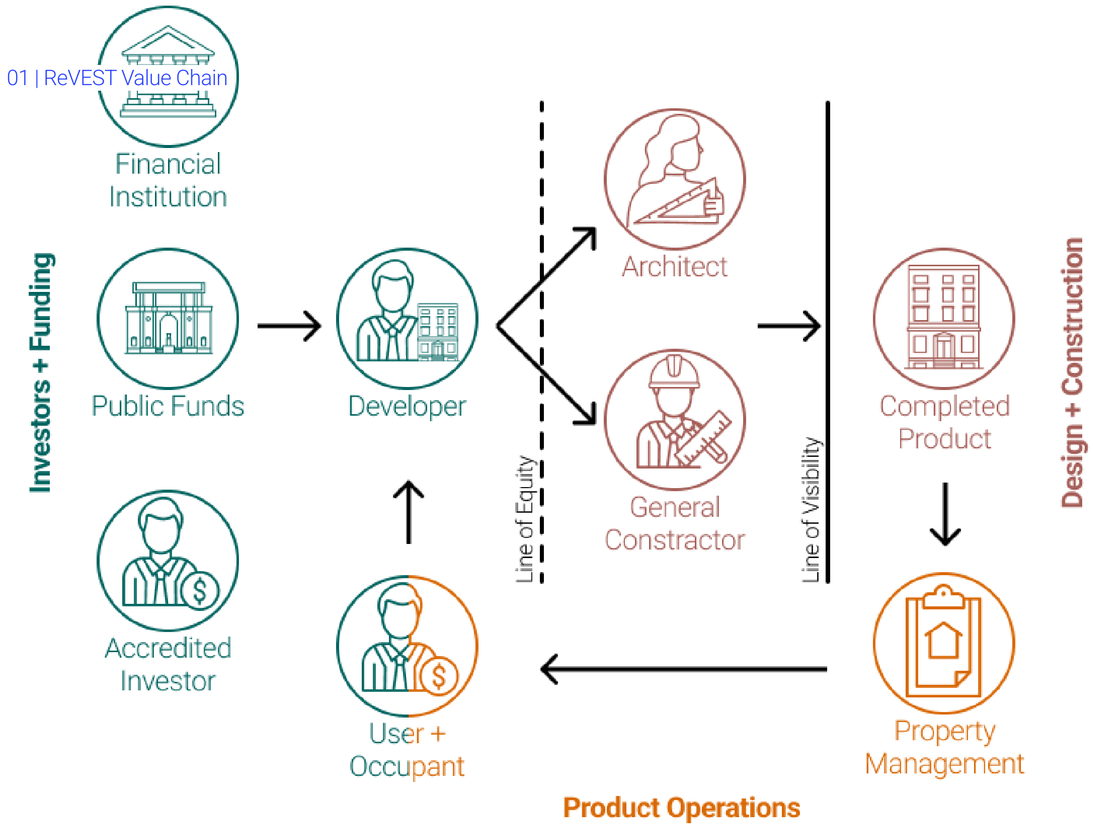
02 | Fighting an Uphill Battle



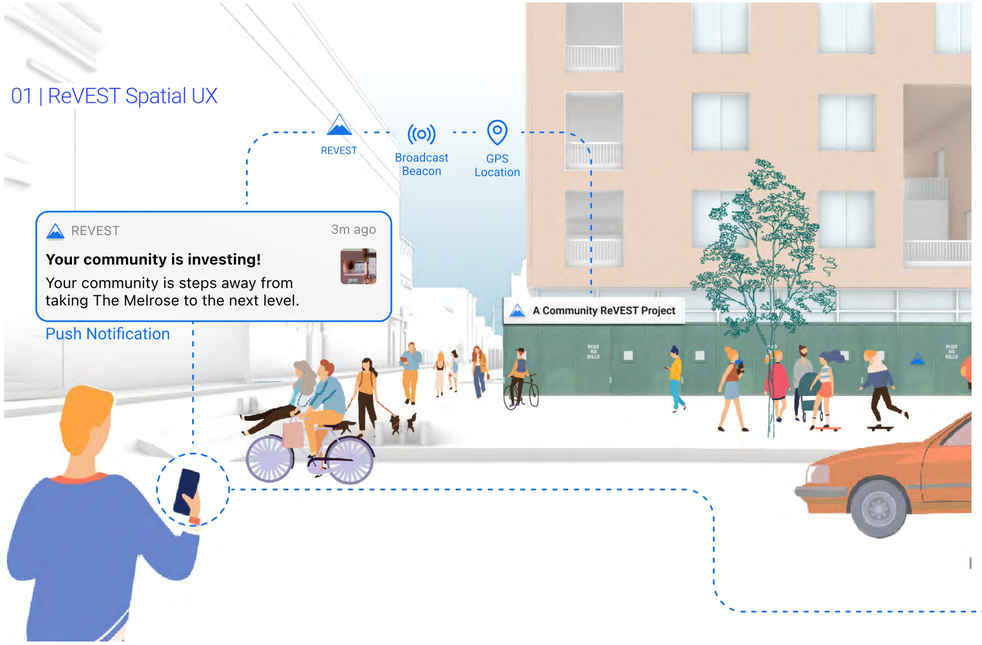
Value Proposition

Text:
For Developers: We believe if we open the investment cycle focused on a hyper-local approach, an untapped investor market of existing renters and community members will recenter the development process on its end users. Furthermore, this process may help streamline community partnering, benefit the funding gaps in a project, and close the feedback loop on operations.

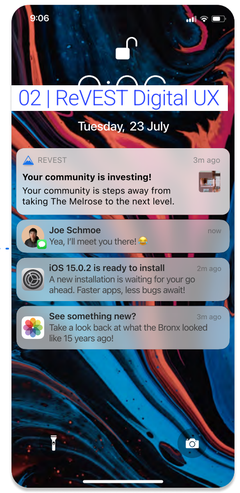
For Community Members: Through the REVEST system, the end-user rental market is now allowed to have equity in the development of their neighborhood and the operation of new real estate assets. This means, that even as the demographic of a locale may change, those who initially put in the sweat equity to create a vibrant neighborhood can share in its real estate appreciation.



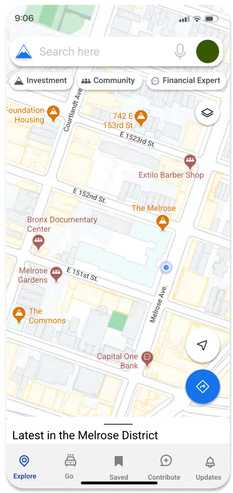
Reimagine the Value Chain



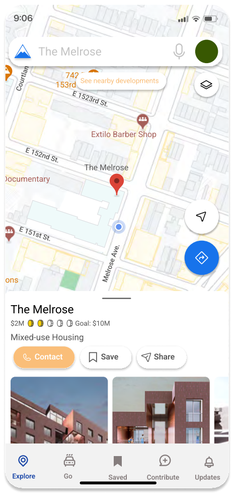
Text:
We chose to distill spatial data into common and familiar experiences. Users observe and occupy their physical environment while simultaneously investigating how their urban environment may change with future developments. Through a system hosted by the Internet of Things (IoT), we can begin to lower the barriers to real estate data by helping users visualize data through spatial means.



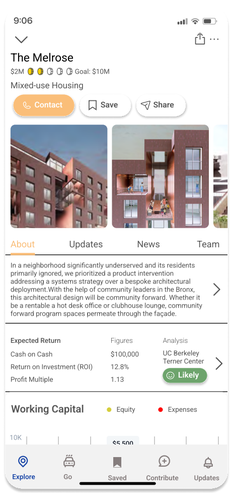
Lock Screen



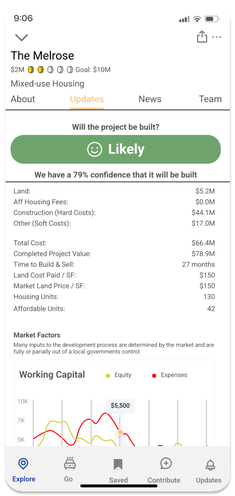
Spatial Data Interface



Project Selection



Project Details



Proforma Analysis

Spatial UX + Digital UX

Service Design | Real Estate | Product Design

Technology + Strategies

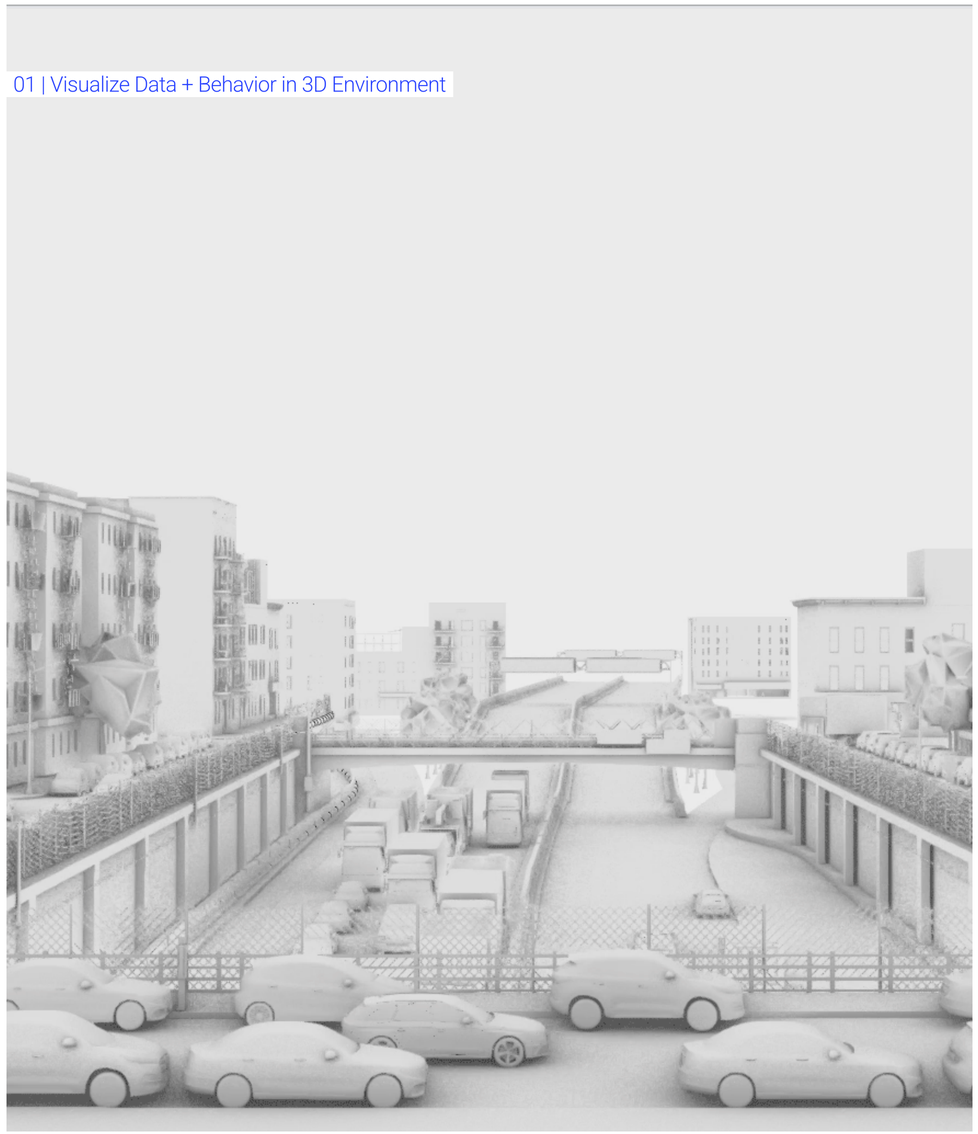
Skills:

Computer Vision
Digital Twin
Spatial Data

Industry: Technology + Strategies
Partner : Marcus Chan
Role: Design Technologist
Years: Fall 2022

Details:
This project proposes the AEC and Real Estate industries utilize new digital and computational techniques, particularly analysis using a digital twin. With this emergent tool, the AEC/Real Estate industries can merge static/dynamic datasets, simulate performance, and visually represent results for stakeholder alignment. In an industry that struggles with prototyping its product, developing digital twins can bridge gaps in risk assessment before any capital assets are distributed or developed.

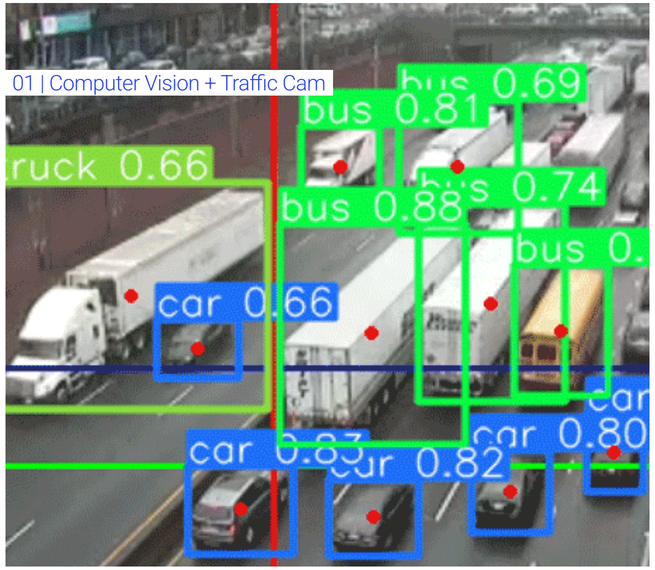
01 | Visualize Data + Behavior in 3D Environment



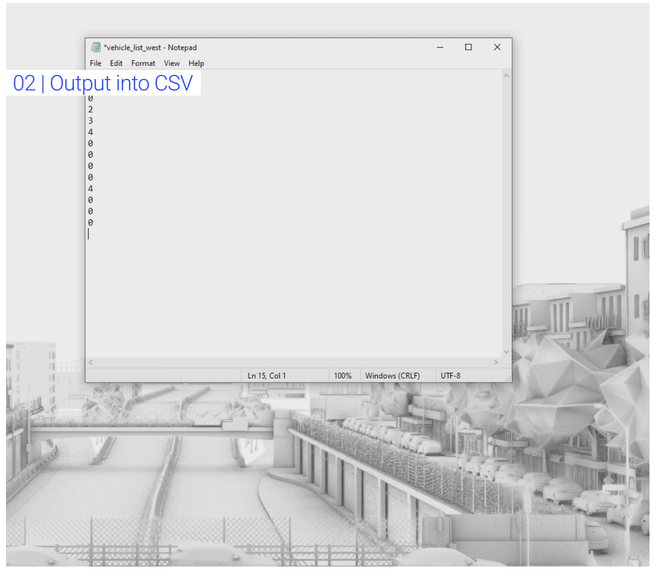
Building a Digital Twin

JMK

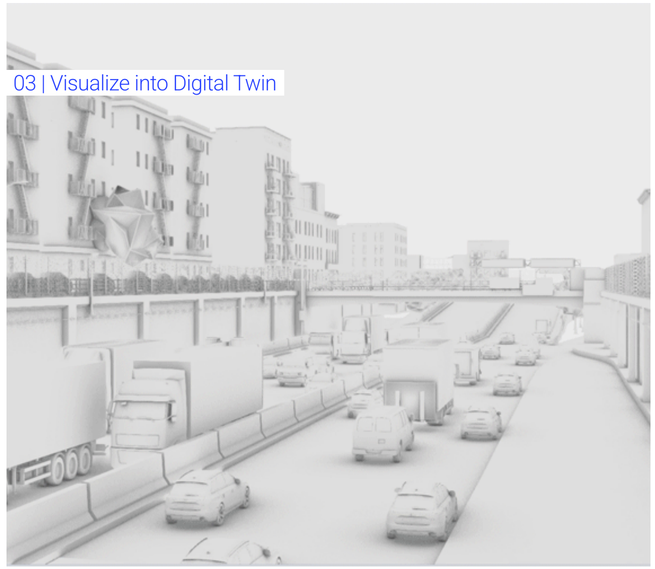
Text:
This project is founded on open-source software and publicly accessible I.T. We utilize existing I.T. infrastructure used for traffic monitoring. The live webcam feed is run through our CV script to capture and analyze reality moments after it happened.



01 | Computer Vision + Traffic Cam



02 | Output into CSV


03 | Visualize into Digital Twin

Vehicular Traffic Capture

Computer Vision | Digital Twin | Spatial Data

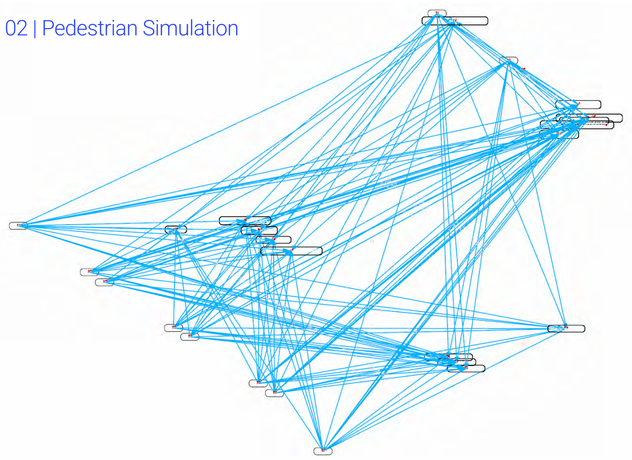
Technology + Strategies

Building a Digital Twin

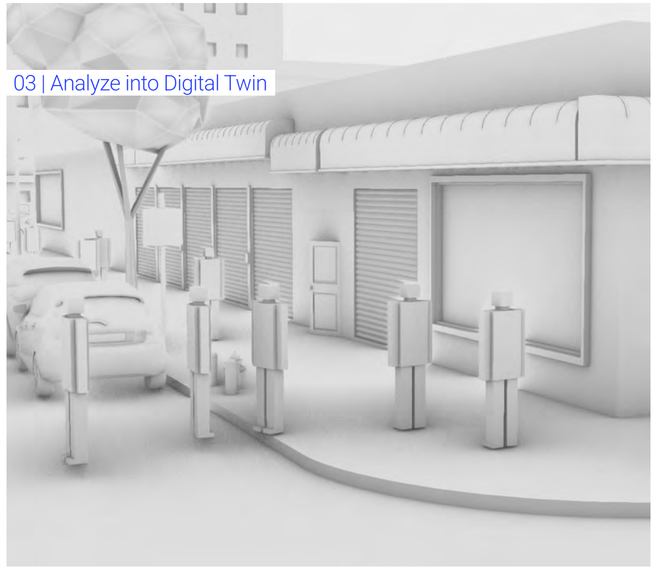
JMK

Text:
Simulations for infrastructural investments can assist value add strategies by adapting spatial strategies towards living/dynamic systems. Designing with dynamic systems can develop methods of introducing concurrent processes within existing neighborhoods and communities.

01 | Neighborhood Amenities



02 | Pedestrian Simulation



03 | Analyze into Digital Twin

Pedestrian Simulation

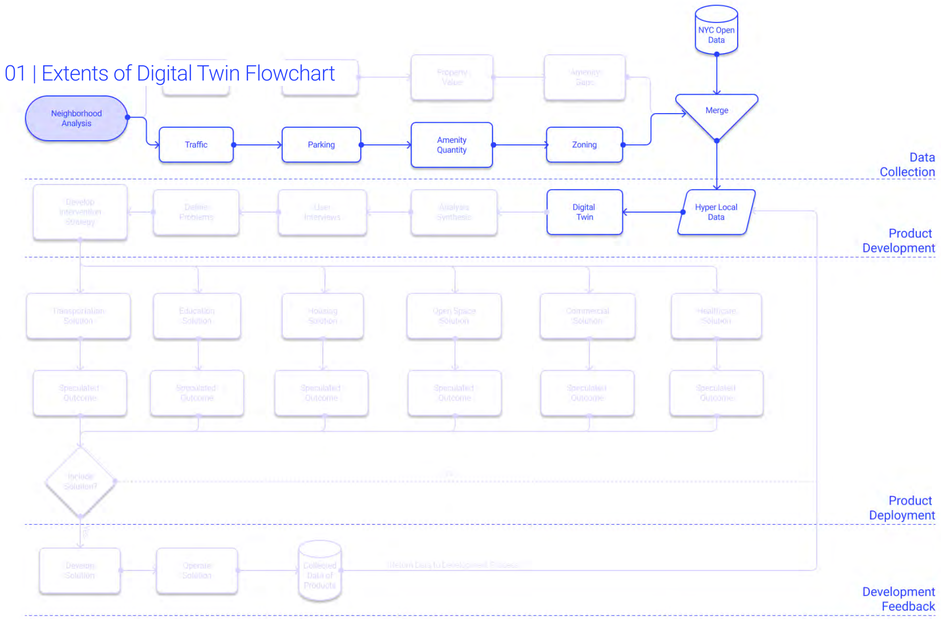
Computer Vision | Digital Twin | Spatial Data

Technology + Strategies

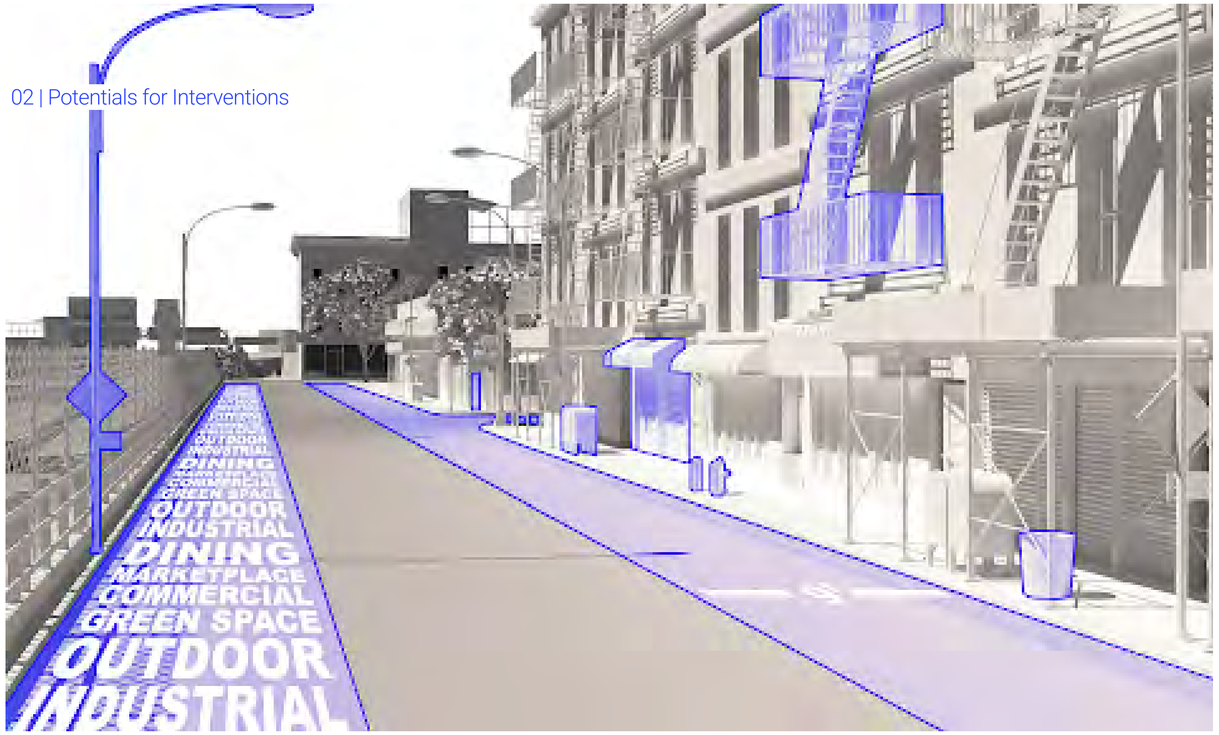
Building a Digital Twin

JMK

01 | Extents of Digital Twin Flowchart



02 | Potentials for Interventions



Flowchart + Potentials

Computer Vision | Digital Twin | Spatial Data

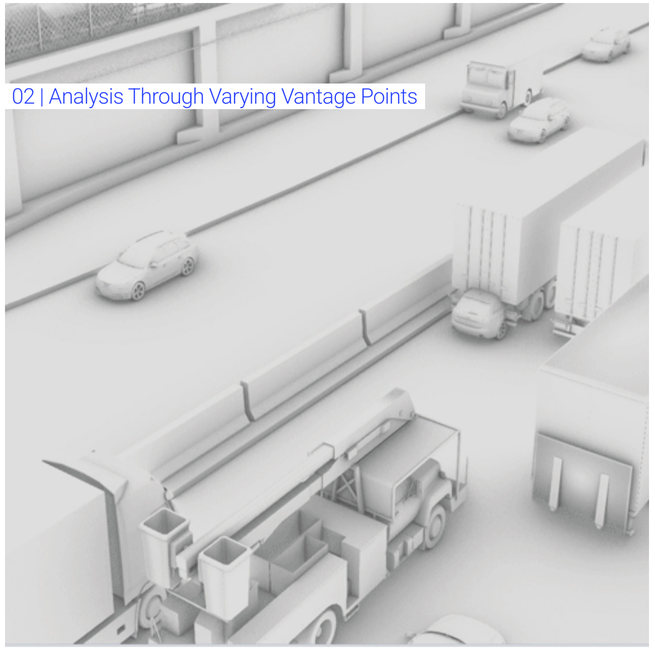
Technology + Strategies

Building a Digital Twin

JMK

Text:
Although we did not develop a fully functional digital twin, the pieces/ components we could program and operate were auspicious. We understand this as a new way of seeing time, space, and value additions. Regardless of whether venture capital investment continues, the future of urban design interventions is a dynamic digital twin for risk assessments.

01 | Visualize into Digital Twin



02 | Analysis Through Varying Vantage Points

Process Twin

Computer Vision | Digital Twin | Spatial Data

Technology + Strategies