Challenge Based Innovation A^3 2023-24

White Paper

Team **The DesignSeers** Present

Food for Thought

Shaping the future of food in NYC

Abstract

The United Nations' **Sustainable Development Goal 12 (SDG 12)** aims to ensure sustainable consumption and production patterns by reducing waste, promoting sustainable practices like eco-friendly design and procurement, efficient resource management, and proper handling of chemicals and waste. Achieving SDG 12 requires multi-stakeholder collaboration - businesses adopting sustainable supply chains, consumers making informed decisions, and governments implementing policies that incentivize resource efficiency, end fossil fuel subsidies and mandate corporate sustainability reporting.

The proposed "**Food for Thought**" initiative directly addresses SDG 12 in New York City's food system through an integrated three-pronged approach. Interactive education centers will re-evaluate the human-food relationship and promote wholesome choices via sense-based activities, storytelling and AR/VR experiences. Partnerships with vertical farms supply subsidized, locally-grown produce to lower-income communities, enabled by government incentives expanding vertical farm operations. HYLIGHT scanning technology integrated into vertical farms optimizes crop productivity by monitoring nutrient levels, water stress and disease through farmer expertise and a shared best practices database. Simultaneously educating on sustainable consumption, ensuring affordable access to fresh food, and enhancing sustainable production aligns this initiative with SDG 12's goals. It confronts barriers to healthy eating while transforming urban food consumption and production patterns, modeling replicable sustainable change nationwide.

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The DesignSeers

SHIVANI PATEL

MS Human Centered Design,
Pace University

Her curiosity and love for the question 'why something is the way it is' led her to a career in UX. Simultaneously, she has a knack for finding joy in the simple things. You'll often find her humming songs, admiring nature, or gazing up at the sky in awe and thinking 'wow/ seriously, universe?'

SAUMYA ROY

MS Human Centered Design,
Pace University

When the world paused in 2020, she pivoted from engineering to UX, looking for something to ignite her passion. She's the master of organization and has an eye for the smallest details. In her free time, she is on a quest through NYC for the perfect cup of coffee.

SALONI PASAD

MS Human Centered Design,
Pace University

With a background in Communication Design, she combines her passions for design, psychology, and technology within the field of UX. She is fascinated by understanding people and uses design to foster empathy. Outside of work, she enjoys making art and photographing the world around her.

SANKALP RAUT

MS Human Centered Design,
Pace University

A UX wizard with a twist, his architectural background adds a unique touch to his designs. When not crafting digital experiences, he fixes gadgets or embarks on epic gaming adventures. Always on the lookout for the latest design trends, he's all about pushing boundaries and delivering exceptional results

Introduction

The Challenge Based Innovation (CBI) A3 project is an initiative by Design Factory Melbourne that focuses on developing innovative solutions by combining technologies from CERN (the European Organization for Nuclear Research) and ATTRACT, an innovation project funded by the European Union. The objective of this project was to explore problem areas aligned with the United Nations' Sustainable Development Goal 12 (UN SDG 12), which targets sustainable consumption and production patterns. The goal was to design an outcome that addresses a specific problem at the local level of each participating Design Factory. Since the NYC Design Factory, of which our team is a part, is based in New York City, USA, our target was to identify the problem and define a design solution centered around New York City.

The problem we identified was the high dependency on and consumption of ultra-processed food by the citizens of NYC. The fast-paced lifestyle of New Yorkers combined with the convenience and affordability of ultra-processed food has led to a rise in the consumption of ultra-processed food. This problem statement aligns with the SDG 12 goals of responsible consumption, where the target is to eat healthy food and add a responsibility for the well-being of the citizens of NYC.

The research indicates that **73%** of the food consumed daily by US citizens is ultra-processed [1], and our target is to reduce the dependency by educating the citizens of NYC and targeting behavior change.

Problem Space

A research article titled "Food Additives in Ultra-Processed Packaged Foods: An Examination of US Household Grocery Store Purchases" by Dunford et al. [2023] revealed a concerning trend -Between 2001 and 2019, the proportion of food products purchased by US households that contained additives increased from 49.6% to 59.5%. The negative health perception of industrially processed food, which now represents over 60% of the energy intake in the US population, is reinforced by the growing number of studies linking ultra-processed food (UPF) intake to adverse health outcomes.

What are ultra-processed foods?

Ultraprocessed foods are **ready-to-eat or ready-to-heat** industrial formulations made mainly with ingredients refined or extracted from foods and contain additives but little to no whole foods.

NOVA classification, categorises foods according to the type, intensity, and purpose of food processing.

Nova 1:
Unprocessed or minimally processed foods

Nova 2:
Processed culinary ingredients

Nova 3:
Processed foods

Figure: Nova 4 Food Types

Nova 4:
Ultra-processed foods - Food that has undergone intense industrial physical, chemical, or biological processes (eg, hydrogenation, preprocessing by frying) or that contains industrial substances not usually found in domestic kitchens (eg. hydrogenated oils, or modified starches), cosmetic additives (eg, dyes, artificial sweeteners), or flavouring agents. [Touier et al. 2023]

Examples include carbonated soft drinks, chocolate and energy bars, instant noodles, dehydrated soups, fish and chicken nuggets, powdered or "fortified" meals, and meat substitutes containing substances such as protein isolates or additives that modify colour and flavours.

Health Implications

Ultra-Processed Foods (UPFs) are typically high in added sugar, trans-fat, sodium, and refined starch and low in fiber, protein, vitamins, and minerals.

Those with the highest consumption have been shown to have higher risks:

TYPE 2
DIABETES

CANCER

OBESITY

DEPRESSION

HYPERTENSION

It is important to recognize that food processing, in general, serves many crucial purposes, including improving shelf stability, facilitating energy extraction, enhancing microbiological safety, reducing costs, and optimizing functional and taste properties.

However, there is now consistent and substantial evidence demonstrating the health harms associated with the high consumption of ultra-processed foods.

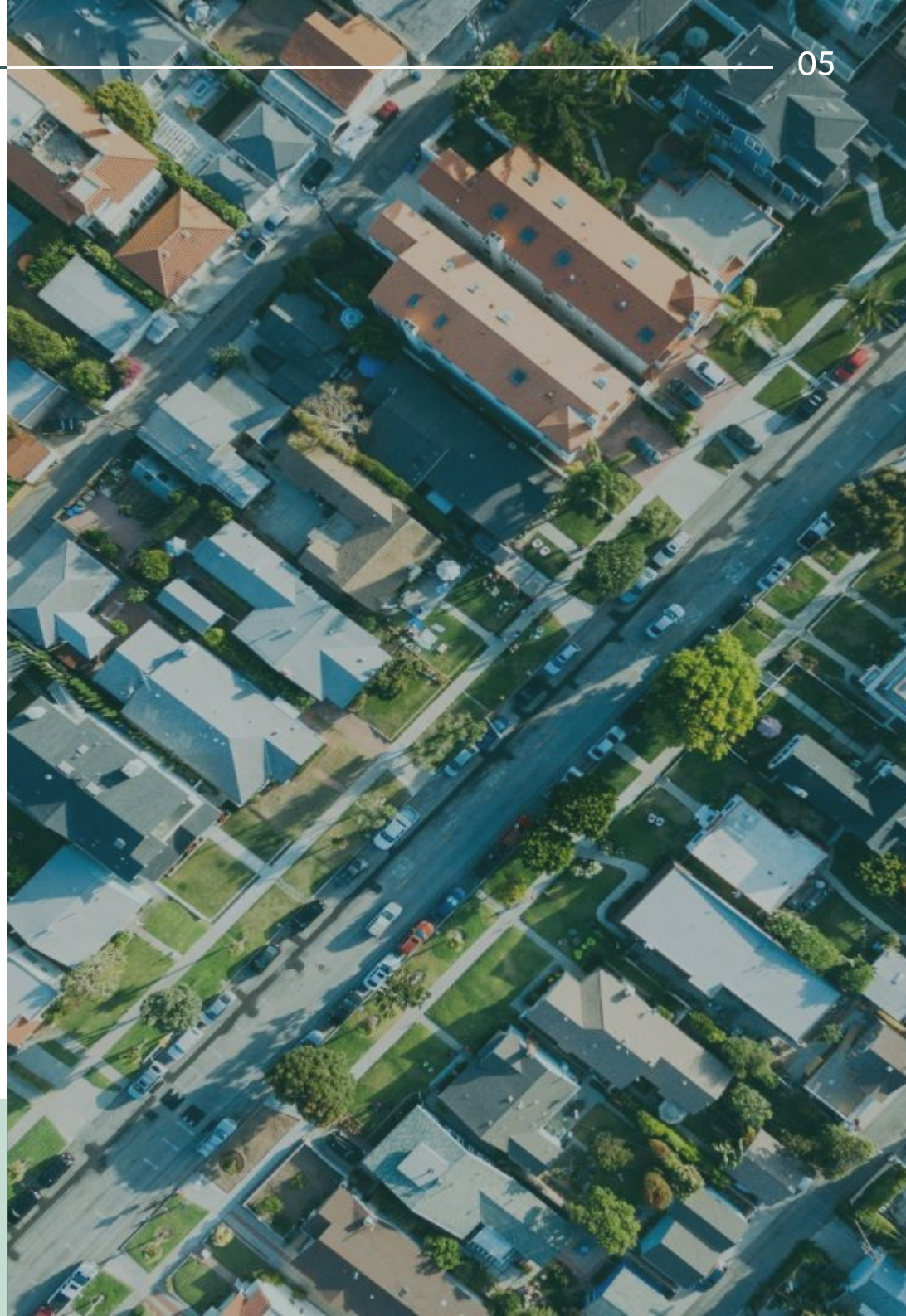
To effectively address the alarming rates of ultra-processed food (UPF) consumption and its associated health consequences, it is imperative to understand the underlying factors at play.

Our research was concentrated on **low-income neighborhoods**, as these areas have been disproportionately impacted by the negative effects of high UPF intake.

Individuals from lower socioeconomic backgrounds often face significant barriers like cost, time, and lack of nearby grocery stores, to accessing and affording nutrient-dense, fresh foods. This coupled with the ubiquity of inexpensive, heavily marketed UPFs, can create a behaviour pattern of unhealthy dietary choices.

In low-income communities, the pervasive availability and normalization of UPFs, coupled with the barriers to accessing and preparing fresh foods, can reinforce negative attitudes and lack of control over dietary choices

This understanding led us to identify underlying factors of high consumption of UPFs in these neighborhoods of NYC.



Factors driving New York City's reliance on UPFs

These 4 factors [1, 2] have become a challenge to overcome and have become the important factors affecting the health of the citizens in the long term and may lead to a rise in **chronic diseases, increased healthcare expenditures, and a strain on the healthcare system.**

AFFORDABILITY

- Ultra-processed foods tend to be relatively inexpensive compared to fresh produce.
- The high cost of fresh, nutritious options presents an additional burden on already tight budgets, making these alternatives seem out of reach.

CONVENIENCE

- New Yorkers' fast-paced lifestyles necessitate convenient food options, which ultra-processed foods provide through extended shelf-life and portability.
- Ready-to-eat or heat-and-eat ultra-processed meals significantly reduce food preparation time.

ACCESSIBILITY

- Fast-food restaurants and chains offering ready-to-eat ultra-processed meals are concentrated in lower-income New York City neighborhoods.
- The pervasiveness and density of this ultra-processed food environment normalize and promote its consumption.

MARKETING INFLUENCE

- Major food companies employ aggressive marketing tactics to heavily promote and distribute their ultra-processed brands.
- Such aggressive promotion normalizes and encourages overconsumption of ultra-processed foods.

Imagine a scenario in **2030** where consumption of ultra processed foods becomes more common and its health implications are ignored.

How might we encourage New York City residents to **re-evaluate their relationship** with food while also providing **access to fresh and affordable options**?

Introducing

Food for Thought

Shaping the future of food in NYC

A **three-part system** designed to encourage NYC residents to **re-evaluate** their relationship with food.

The core of the system is an **interactive food experience center** with citywide pop-up locations.

The second component provides support to vertical farms through government tax breaks to **supply affordable produce** to low-income residents.

The third component employs **HYLIGHT** scanning technology to improve crop health and farm productivity.

The COM-B Model of Behavior Change

The COM-B model of behavior change [Michie et al. 2011] suggests that for an individual to engage in a specific behavior (B) at any given time, three essential components must be present.

> First, the person must possess the physical and psychological **capabilities (C)** required to perform the behavior.
>
> Second, the individual must have the **opportunity (O)** or favorable circumstances that enable the manifestation of the behavior.
>
> Finally, the person must have the **motivation (M)** or the desire and need to exhibit the behavior at that particular moment.

To address the four identified underlying factors, focusing on behavior change and improving accessibility plays a crucial role.

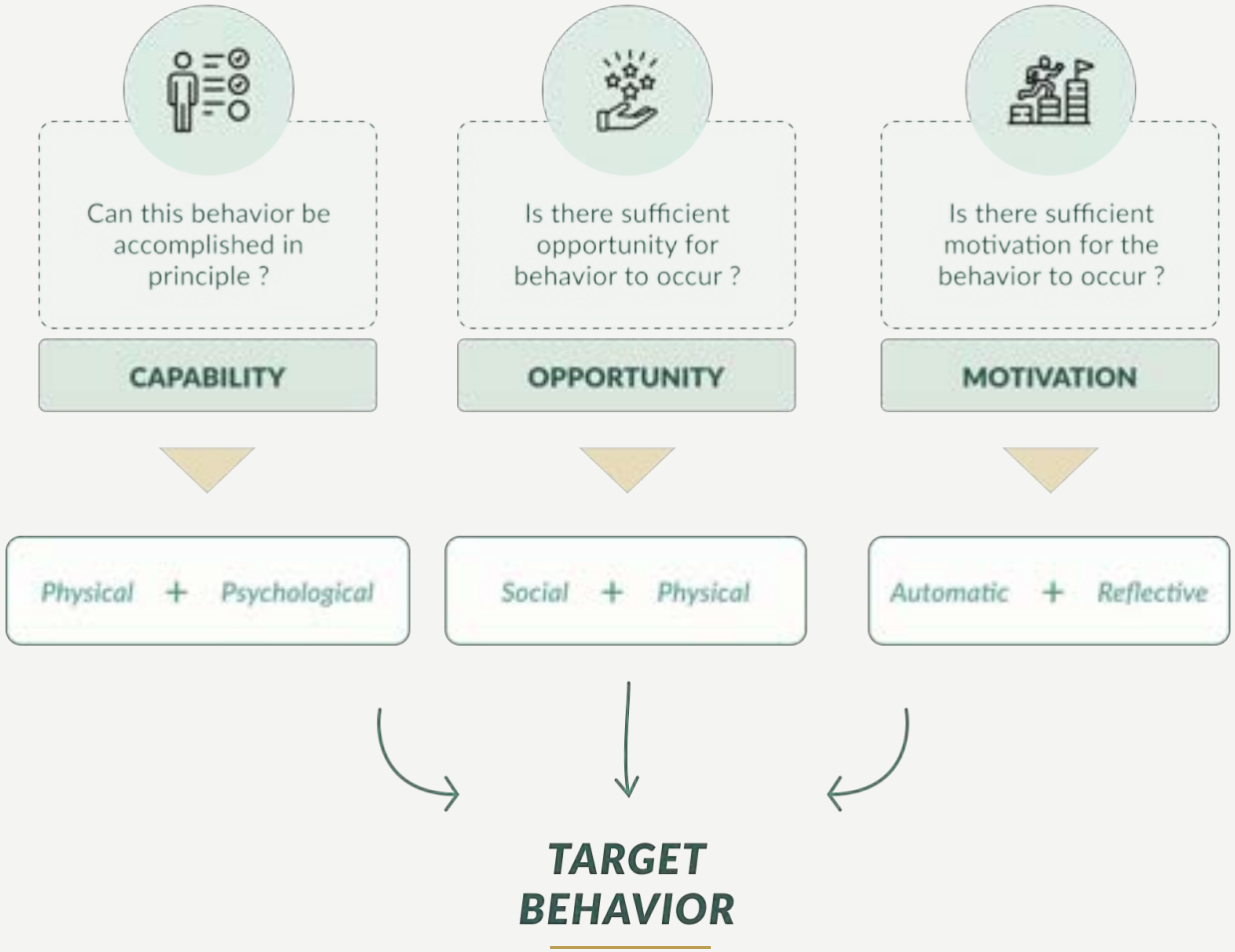


Figure : The COM-B Model for Behavior Change - The Decision Lab

The COM-B (Capability, Opportunity, Motivation-Behavior) model provides a comprehensive framework for understanding behavior and designing effective solution.

Part 1: *RECONNECTION*

Building capability (C) involves equipping individuals with the necessary knowledge, skills, and resources to engage in the desired behavior change.

> The first part, **Reconnection**, reaches people to raise awareness about the high consumption of ultra-processed foods (UPFs) and promote healthier eating habits.

To initiate our 'Reconnection' campaign, we bring the message directly to communities through “Community Based Pop - Up Locations” across NYC.

These temporary installations, carefully designed with input from nutritionists, behavioral scientists, and community outreach workers, provide an interactive experience to educate and inspire people to rethink their relationship with ultra-processed foods.

COMMUNITY BASED POP - UP LOCATIONS

The pop-ups are designed to meet people in their own environments, making information and resources more **accessible and reducing barriers** to participation.

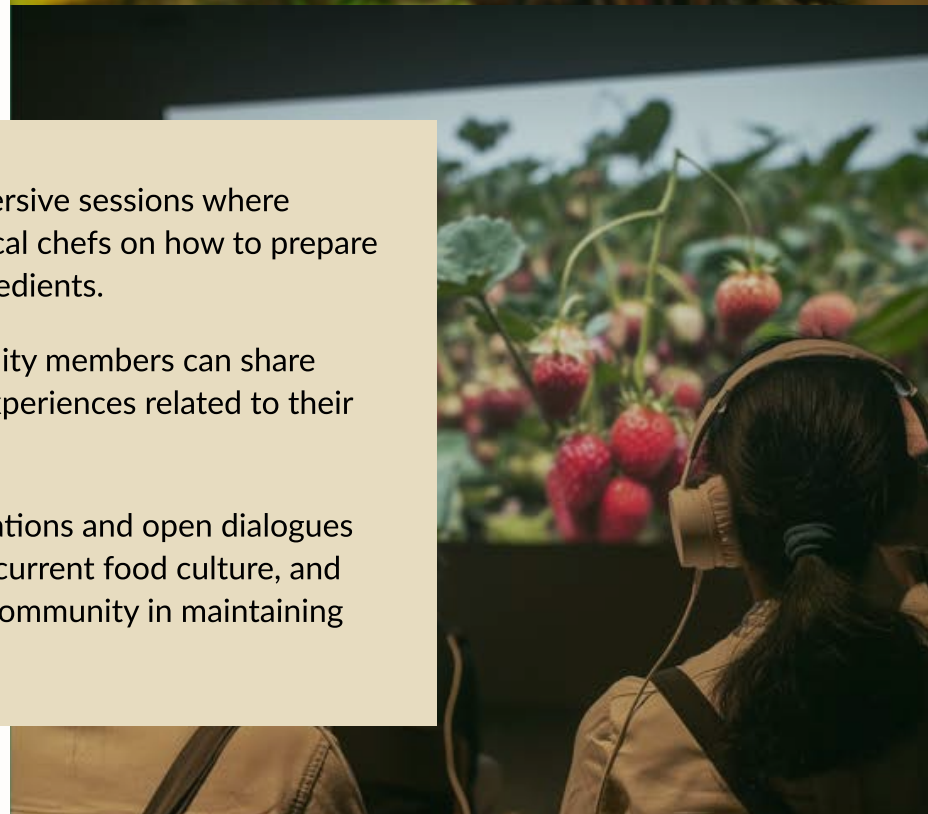
> Reaching individuals in their own neighborhoods and communities allows for a more personal, relatable, and culturally-relevant approach tailored to the specific needs and backgrounds of each community to create a more profound and enduring effect.

These pop-up locations feature various activities to encourage visitors to explore healthier alternatives within the rich tapestry of their culinary heritage.

This aims to trigger behavior change by enhancing :

1. Individuals' belief in their ability to prepare healthy meals
2. Reigniting the emotional and cultural significance of food
3. Encouraging open conversations about the food they consume.

- **Cooking Workshops:** Hands-on, immersive sessions where participants can learn directly from local chefs on how to prepare meals using fresh, locally sourced ingredients.
- **Storytelling sessions:** Where community members can share personal anecdotes, memories, and experiences related to their cultural food heritage.
- **Discussion Sessions:** Guided conversations and open dialogues surrounding healthy eating practices, current food culture, and the unique challenges faced by each community in maintaining a balanced diet.



Designing interventions to effectively change dietary behavior is a complex and multifaceted process that necessitates a comprehensive approach.
It involves identifying and prioritizing all potential mediating variables, defining the specific types of behavioral changes required, and subsequently **implementing evidence-based strategies to facilitate these changes.**

In the context of our community-based initiative, the pop-up locations will also serve as platforms for observing and documenting visitors' experiences, perceptions, and impacts surrounding food-related issues.

This ethnographic approach will provide critical insights to inform further research and continuous improvement of the pop-up experiences, ultimately laying the foundation for the development of a dedicated **experience center.**

EXPERIENCE CENTER

With the same aim, the experience center will feature familiar activities from the pop-up locations along with interactive installations and AR/VR experiences.

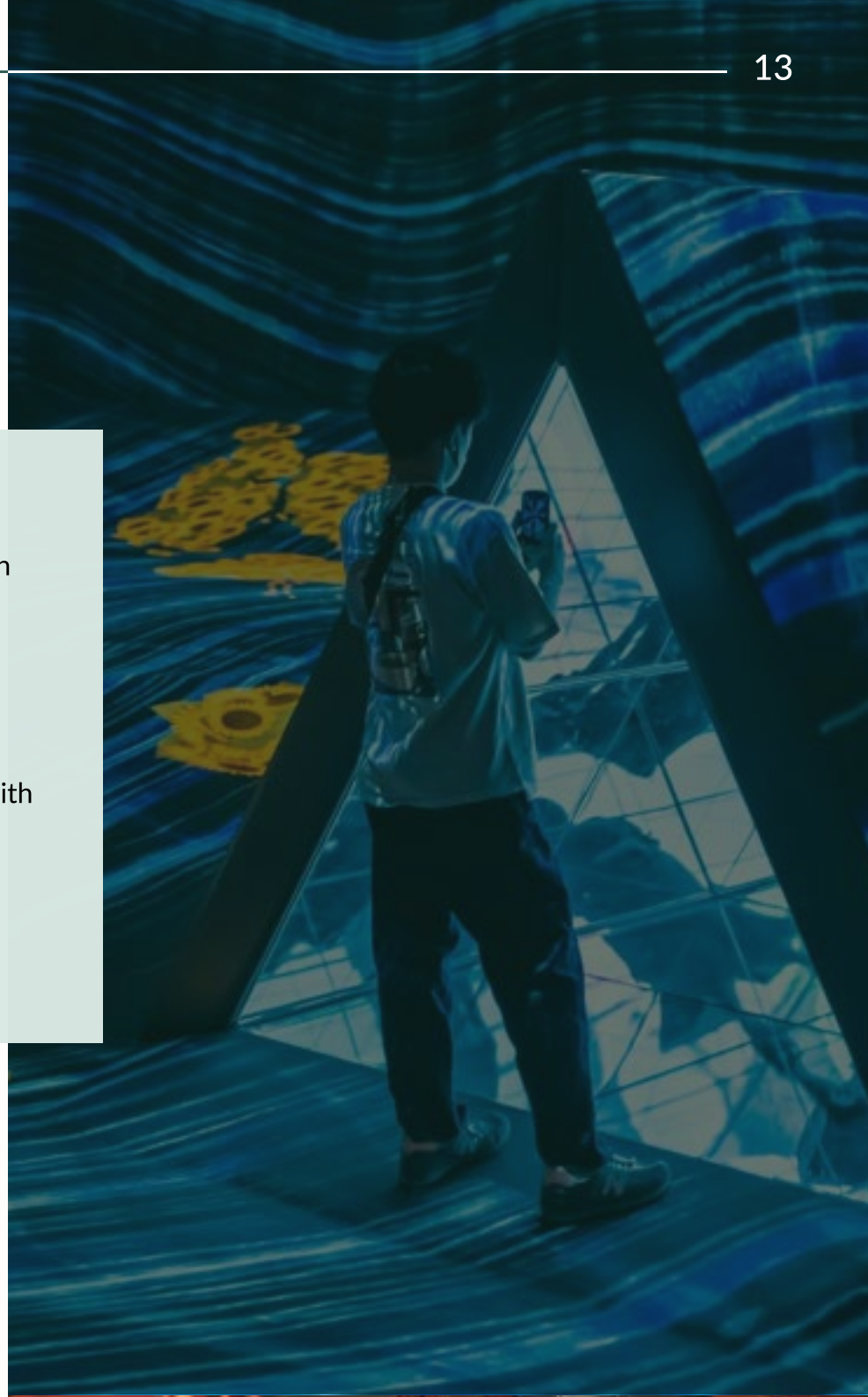
- **Interactive Installations:**

1. Introducing visitors to different foods and their effects on the human body through engaging displays and simulations.
2. Gamified simulations that illustrate the long-term consequences of selected dietary choices.

- **AR/VR experiences:**

1. Immersive AR/VR narratives that explore New York City's journey with ultra-processed foods and, shedding light on the roles of marketing, affordability, and convenience in influencing dietary choices.
2. Interactive label reading activities that empower visitors to critically analyze the composition of packaged foods.

> This aims to illustrate the process of industrially manufactured foods and make future consequences feel more tangible to motivate modified behaviours in the present and dig into **"Whys"** of our food choices to understand it better.



Furthermore, the experience center will feature a working vertical farm, providing visitors with hands-on opportunities to engage with food and production methods along with a **research center**, where collaborative efforts will be undertaken to optimize vertical farming technologies and enhance the overall visitor experience.

> The overarching goal of the experience center is to inspire and facilitate gradual changes in dietary patterns by encouraging visitors to make incremental shifts by replacing ultra-processed food options in their daily meals with fresh, wholesome produce whenever possible.

Ultimately, cultivating a culture of mindful eating and inspiring a shift towards a healthier and more wholesome dietary pattern.

Part 2: *ACCESSIBILITY*

Building opportunity (O) involves equipping individuals with the necessary physical and social environment that enables the desired behavior change.

> The second part, **Accessibility**, strengthens the local food system, and increase access to fresh, healthy produce for the citizen of the NYC.

Making food accessible to all the groups of the city by making it affordable and convenient to buy from will enhance the capability of individuals to adopt healthier dietary patterns. We want to empower the citizen of NYC by providing them an opportunity to chose a healthier option and better life.

COLLABORATING WITH EXISTING VERTICAL FARMS IN THE CITY

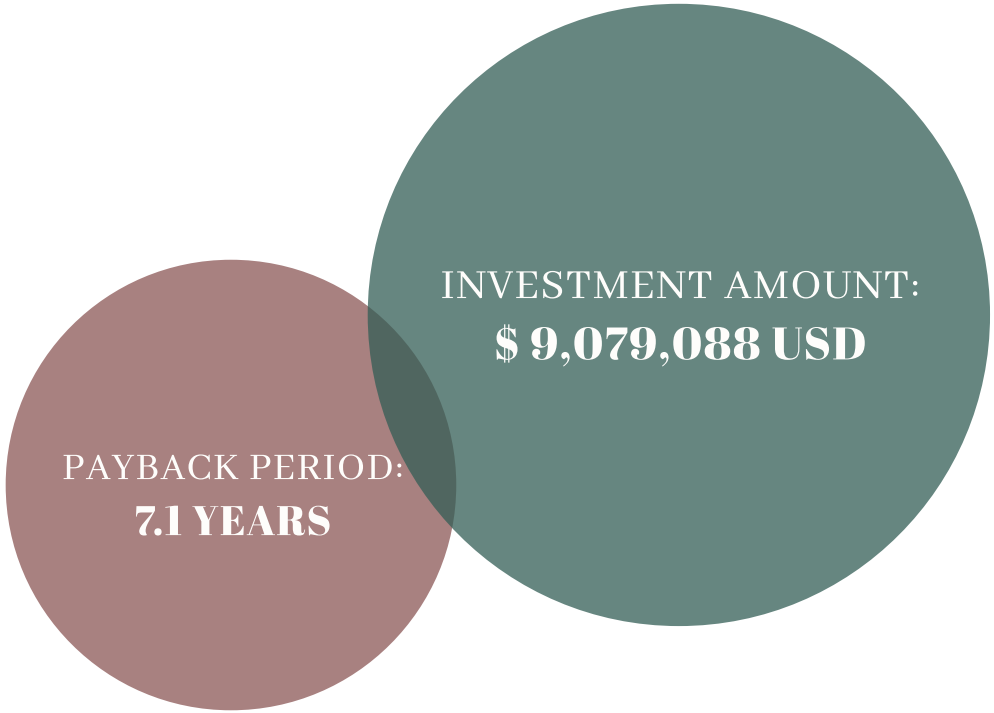
How Did We Reach This Decision?

To make food truly affordable, it's crucial to address the cost of goods sold (COGS) - the direct costs associated with producing the goods, including raw materials, labor, and other production expenses. High COGS can squeeze profit margins, often leading to increased consumer prices. Additionally, delivery costs, though often overlooked, significantly impact food pricing as they represent the expenses of transporting goods from producers to retailers or consumers.

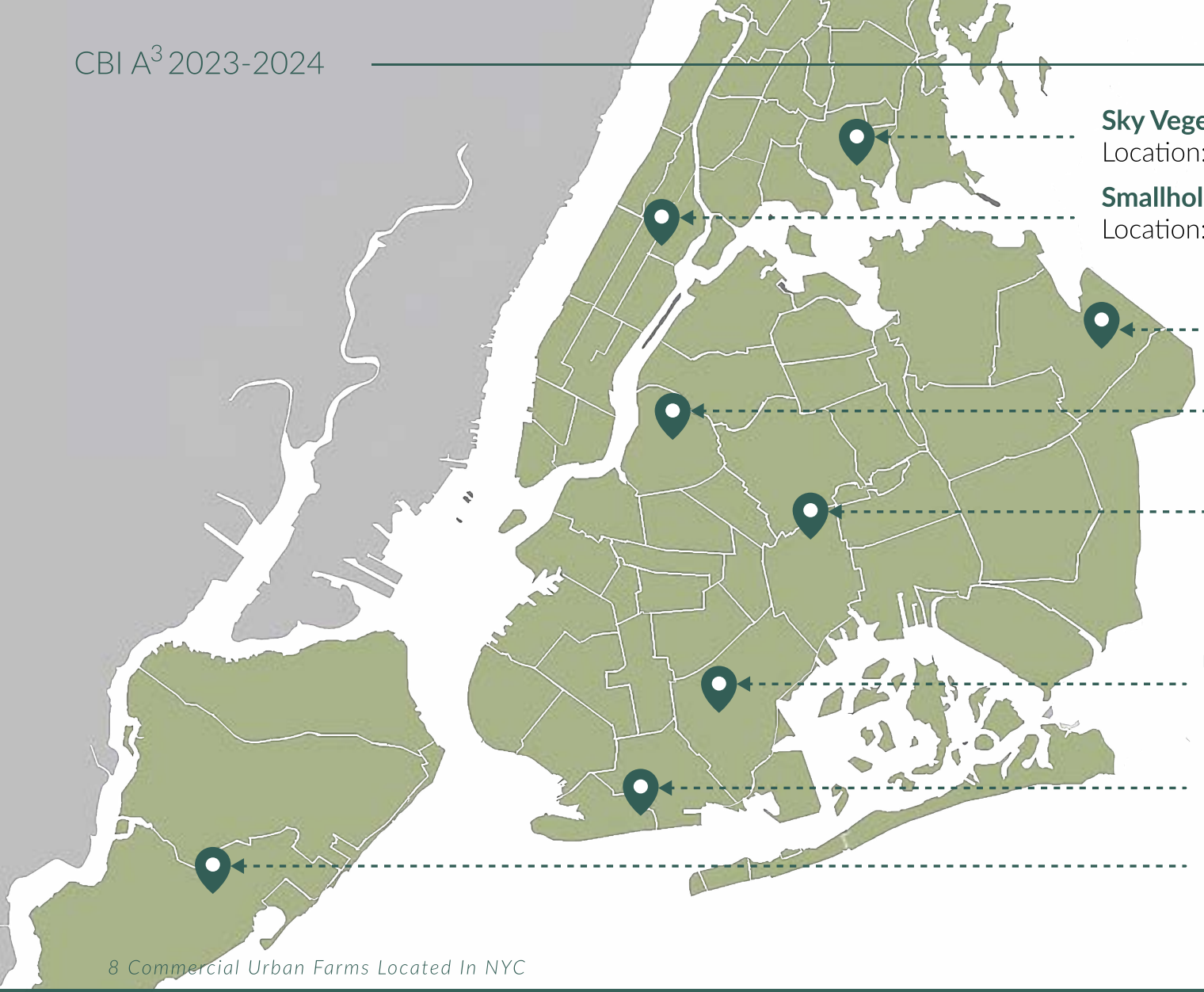
Now, one way is to cut down the cost is to bring farms closer to cities, and a controlled environment like vertical farms will allow us to grow fresh produce all season.

But, to set up a vertical farm in New York City, an investment of **$9 million** is required, covering land value, farm technology, working capital, labor, and farming software machinery. This cost excludes daily expenses like water consumption, electricity, transportation, and wages. With an estiamated production of 100,000 lbs of fresh food per month, the recovery period (when the farm becomes profitable) is estimated to be 7.1 years, assuming optimal conditions.

However, to meet the fresh food needs of NYC's 8.3 million residents, approximately 8 vertical farms would be necessary. The additional burden on the already-stressed NYC government budget makes this solution unfeasible.



* *Area Of 8000sq.Mt; Produce 100000 Lb/Month Estimated By ifarm vertical farm calculator.*



Sky Vegetables
Location: Morrisania, the Bronx

Smallhold
Location: Manhattan

Brooklyn Grange
Location: Sunset Park, Brooklyn;

Square Roots
Location: Williamsburg, Brooklyn;

Gotham Greens
Location: Jamaica, Queens;

Upward Farms
Location: East Williamsburg, Brooklyn

Eagle Street Rooftop Farm
Location: Greenpoint, Brooklyn

Rabbit's Garden
Location: Urby Apartments, Stapleton, Staten Island

8 Commercial Urban Farms Located In NYC

While establishing new large-scale vertical farms in New York City presents significant challenges, collaborating with the city's existing vertical farms by leveraging existing government initiatives and programs, we aim to overcome the barriers of high costs and limited accessibility, ensuring fresh, affordable produce reaches all communities.

Food for Thought

By partnering with the government initiative FRESH, existing vertical farms in New York City will receive financial benefits such as reductions in building taxes, land taxes, sales taxes, mortgage recording taxes to expand their operations and increase their output.

SNAP is a federal program that provides food assistance for nearly 1.8 million low-income New Yorkers. This program will help SNAP Card Holders make healthier choices without financial barriers.

> This makes it possible to streamline efforts, maximize the impact of available resources, and strengthen the operations and infrastructure of current vertical farms, ultimately ensuring a consistent supply of fresh produce year round and making it affordable.

Part 3: *PRODUCTIVITY*

The third part, **Productivity**, uses **HYLIGHT scanning technology** for crop health monitoring for increased production in vertical farms.

DEEP TECHNOLOGY

ATTRACT Technology

Hylight, an ATTRACT Technology, is a microscope (in its current form) that helps doctors at In Vitro Fertilization (IVF) clinics choose the embryo that is most likely to result in a successful pregnancy, in a fast and safe way, thus improving success rate of IVF procedures.

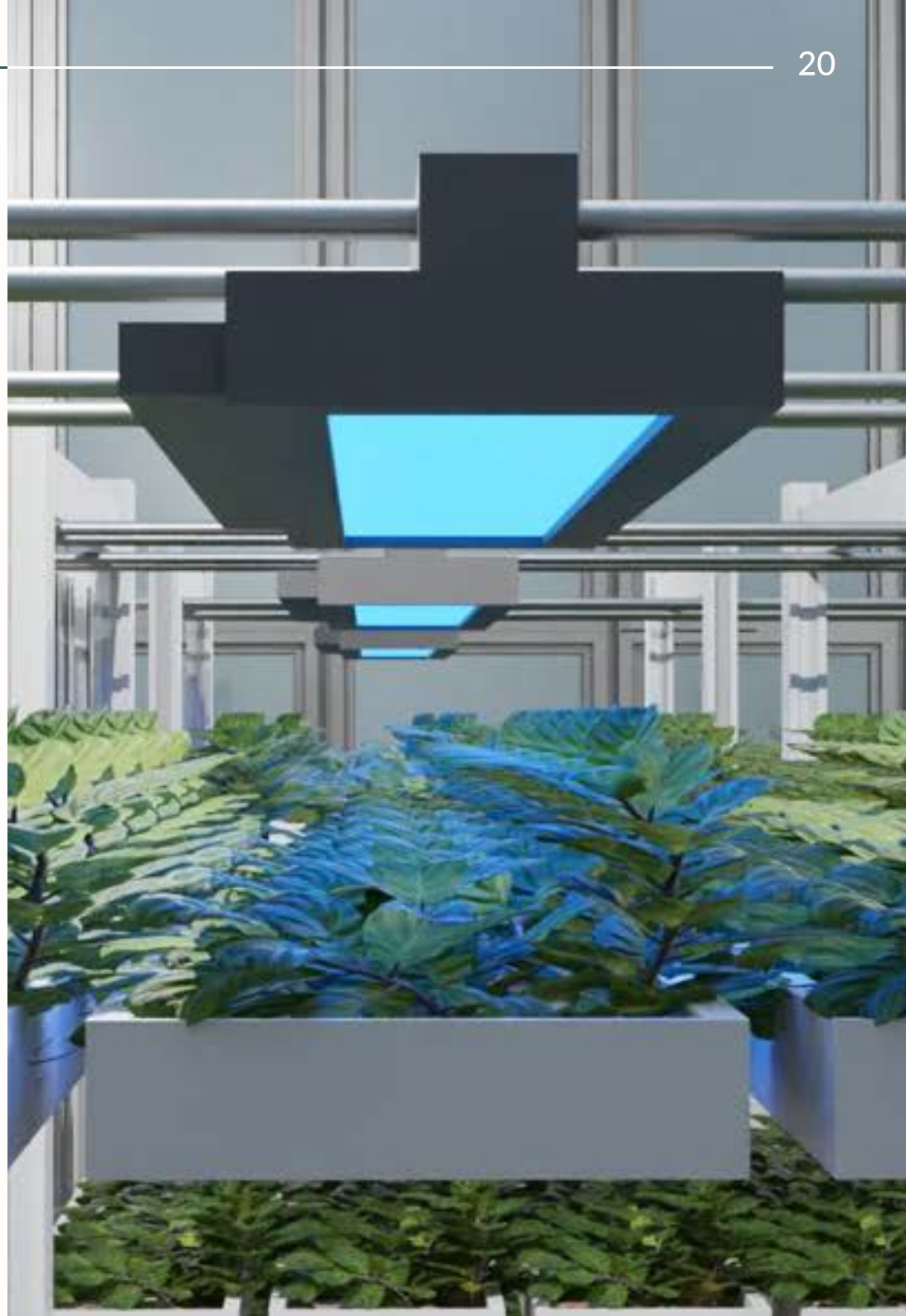
Food for Thought utilizes ATTRACT's Hylight Scannning technology by integrating it into an automated scanner and combining its hyperspectral analysis with AI to increase crop production in existing vertical farms.

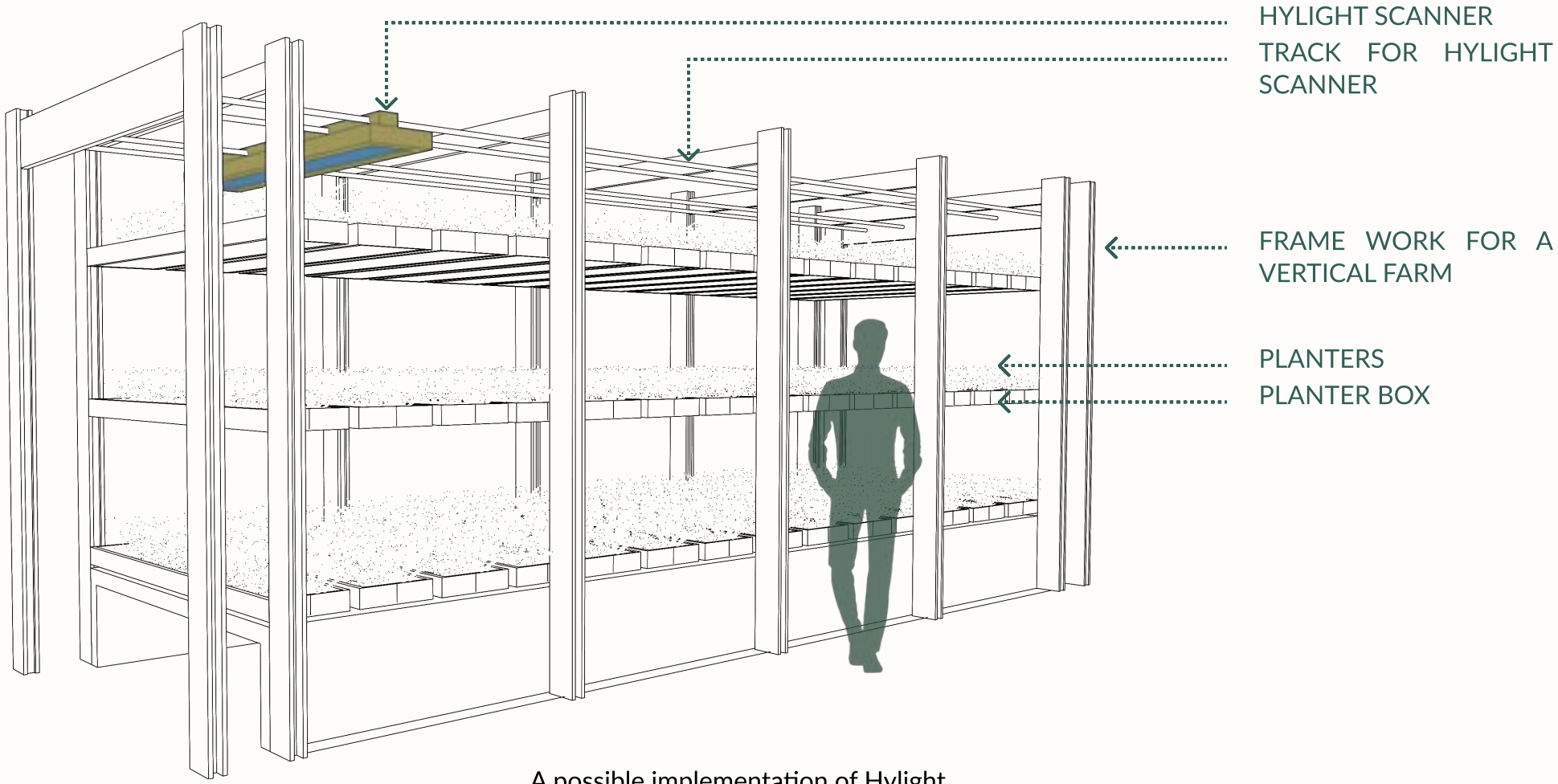
HYLIGHT IN VERTICAL FARMS

The implementation will involve training the AI system using the vast existing knowledge and expertise of seasoned farmers. By integrating their invaluable insights and experiences, the AI would be equipped to recognize and interpret the intricate nuances of crop health, enabling early detection of potential issues and facilitating timely interventions.

ASSESSMENT FACTORS

- Nutrient levels
- Water content
- Disease signature detection
- Stress indicators





A possible implementation of Hylight.

These automated scanners will travel across the rows of crop, assessing factors such as nutrient levels, water content, stress indicators and disease detection. This will help with early disease detection, timely interventions and informed decision-making, thereby increasing the overall productivity of the farm. Additionally, vertical farm owners will compile a repository of knowledge and best practices, sharing it through a citywide database to foster collaboration.

Implementation Roadmap

To implement the vision of our three-part system, we provide a detailed timeline from 2025 to 2040. The **timeline overview** (see figure to the right) outlines our plan for aligning stakeholders, defining phases, and measuring the progress towards the goal. The **implementation roadmap** (next page) offers a detailed guide, highlighting key milestones and necessary steps to ensure the successful execution of the initiative.

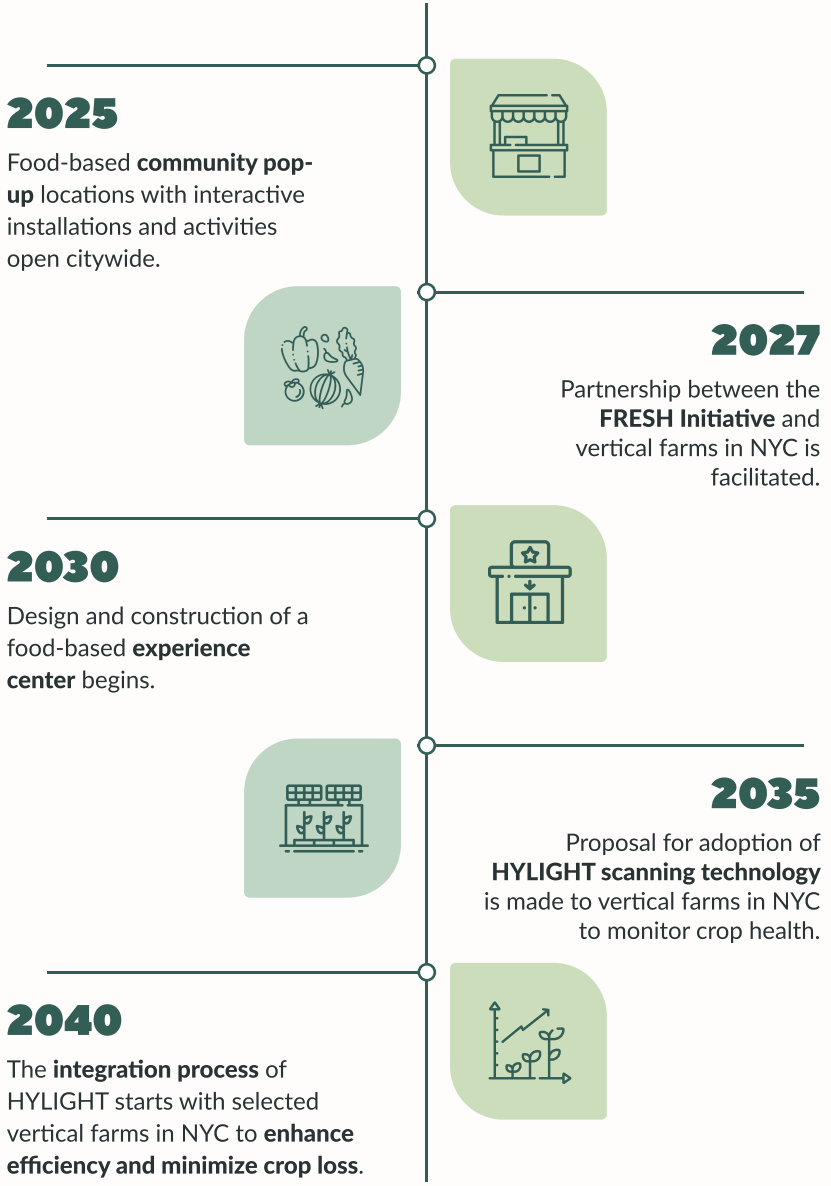


Figure : Timeline Overview

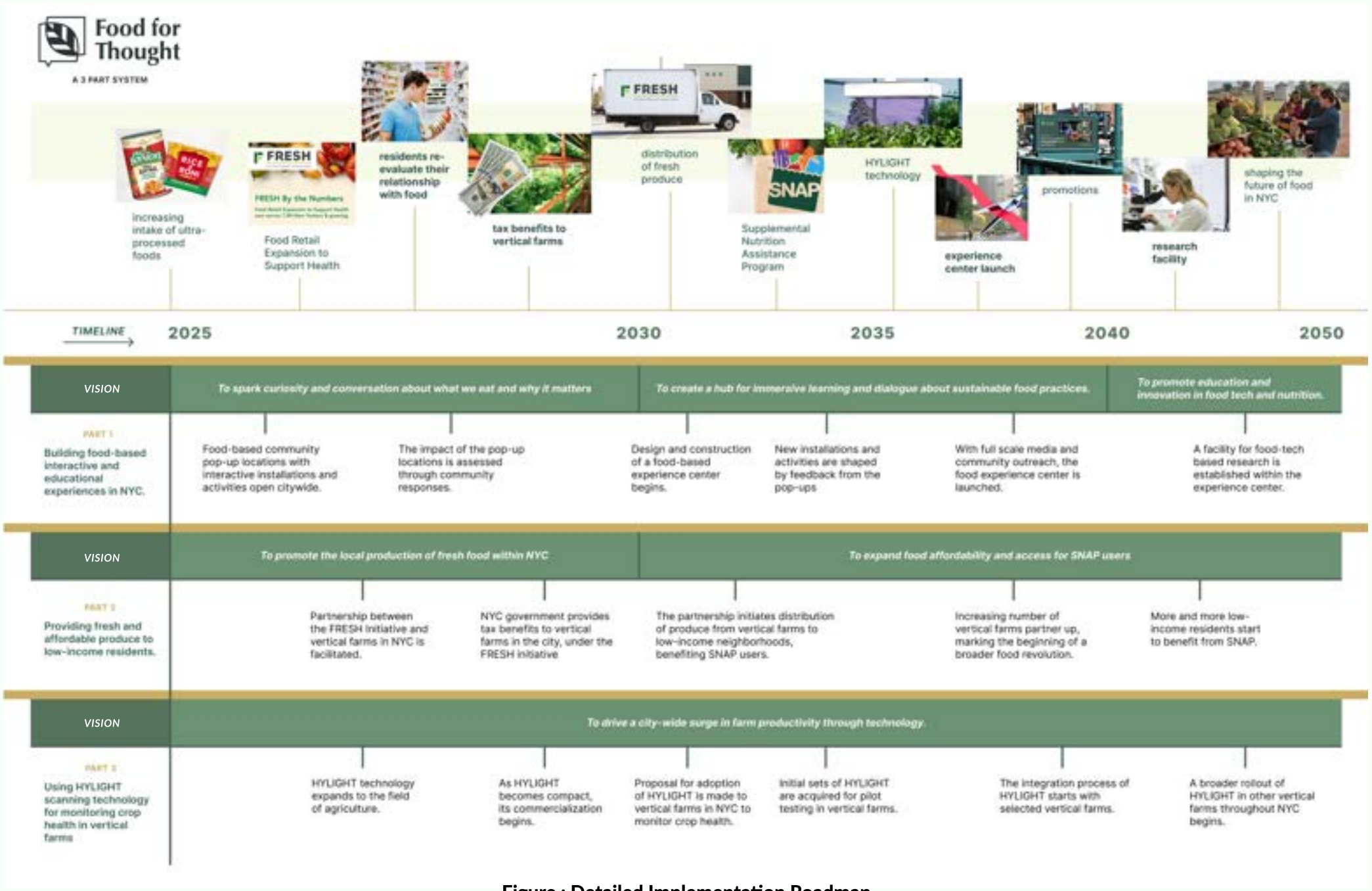


Figure : Detailed Implementation Roadmap

Stakeholders

Understanding the key stakeholders is crucial to the success of the system.

The main stakeholders involved include, but are not limited to the FRESH Initiative, farmers, and users. Identifying and engaging these stakeholders ensures that their needs and perspectives are considered, fostering collaboration and enhancing the overall impact of our project.

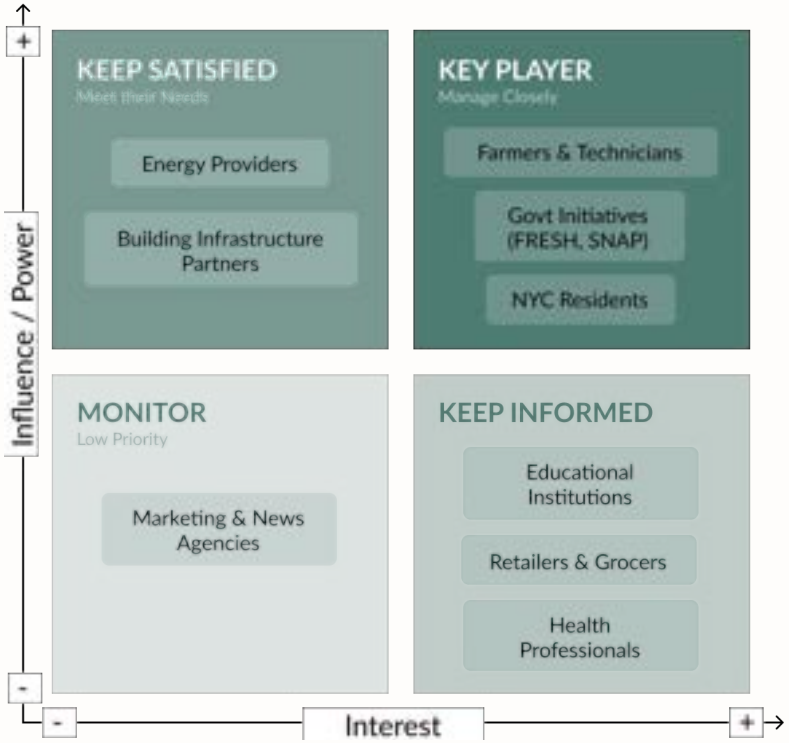


Figure : Stakeholder Mapping

Key Users

The project focuses on two primary user groups: urban professionals and residents of low-income neighborhoods. These groups were selected based on their distinct challenges and needs related to food accessibility and nutrition.

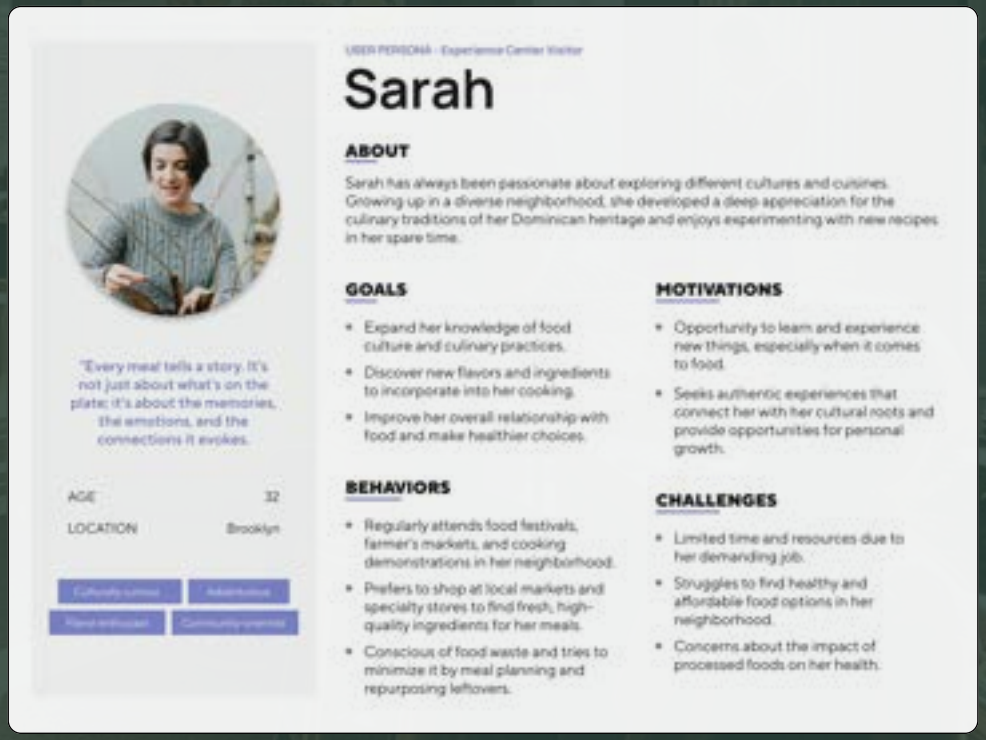


Figure : User Personas

Value Proposition

The value proposition of Food for Thought encapsulates the unique benefits and advantages we offer to our stakeholders. By focusing on key aspects such as stakeholder collaboration, accessibility and affordability, community engagement, food production, and food distribution, we aim to create a comprehensive and sustainable solution to the challenges identified.

Our value proposition highlights how our innovative approach not only addresses the immediate needs of our user groups but also fosters long-term positive change in the community's relationship with food. This section will delve into the specific value we bring to each stakeholder, demonstrating our commitment to improving food systems and health outcomes.

Stakeholder Collaboration

Involvement of farmers, researchers, community organizations, health professionals, and government initiatives working together to enhance food production, cultural relevance, and efficient distribution.

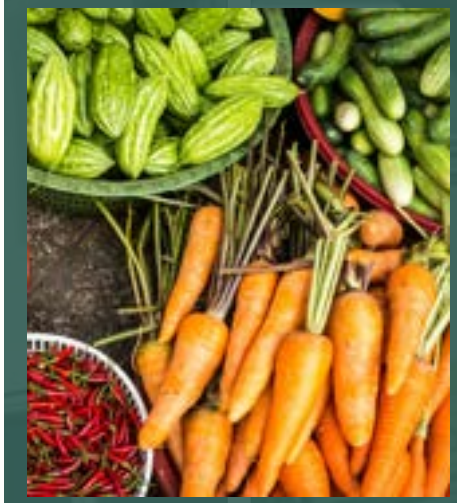
Accessibility & Affordability

Fresh food made more accessible and affordable for low-income families and underprivileged communities.

Food Distribution

- **FRESH Initiative:**

Collaborates with vertical farms to provide fresh produce to underserved communities.



Food Production

- **Vertical Farms:** Advanced technology for optimized crop production and high yield.
- **HYLIGHT Technology:** Precise crop monitoring, reducing waste and improving efficiency.

Community Engagement

- **Experience Center:** Offers educational workshops and immersive activities to improve people's relationship with food.
- **Pop-Up Events:** Events focused on local food cultures and the experience center's mission.

Food Distribution

- **Grocery Stores:**

Primary access points for the community to obtain fresh produce.

Future Implementation

EXPAND

Expand the Food Experience Centers to other major cities, adapting to local cuisines and cultural contexts.

EDUCATE

Collaborate with educational institutions to integrate food literacy programs into curricula.

ENDORSE

Foster partnerships with local farmers, producers, and distributors to strengthen the regional food supply chain.

EXPECTED IMPACT

- Reduced dependency on ultra-processed foods from the American diet.
- Improved public health outcomes, including decreased rates of obesity, type 2 diabetes, and cardiovascular diseases.
- Increased access to fresh, locally-sourced produce in underserved communities, addressing food insecurity and nutritional disparities.
- Enhanced environmental sustainability through reduced food waste and more efficient farming practices.
- Empowered communities with the knowledge and resources to make informed food choices.

CONCLUSION

Food for Thought

RECONNECTION

to re-evaluate our relationship with food

ACCESSIBILITY

to provide fresh produce at an affordable cost

PRODUCTIVITY

to increase the production of existing vertical farms

Through the interconnected strategies of reconnection, accessibility, and productivity, we strive to create a future where fresh, wholesome meals are the norm, and every individual has the means and knowledge to nourish their bodies and minds. By fostering a deeper appreciation for food, increasing access to healthy options, and empowering communities, we will build a more vibrant, sustainable, and equitable food system for generations to come.

REFERENCES

[1] Babak Ravandi et al. 2024. GroceryDB: Prevalence of processed food in grocery stores. medRxiv (April 2022). DOI:http://dx.doi.org/10.1101/2022.04.23.22274217

Mathilde Touvier et al. 2023. Ultra-processed foods and Cardiometabolic Health: Public health policies to reduce consumption cannot wait. BMJ (October 2023). DOI:http://dx.doi.org/10.1136/bmj-2023-075294

[2] Food for thought. Retrieved May 29, 2024 from https://www.bronxeats.org/food-for-thought

Elizabeth K. Dunford et al. 2023. Food additives in ultra-processed packaged foods: An examination of us household grocery store purchases. Journal of the Academy of Nutrition and Dietetics 123, 6 (January 2023). DOI:http://dx.doi.org/10.1016/j.jand.2022.11.007

Americans are eating more ultra-processed foods. (October 2021). Retrieved May 29, 2024 from https://www.nyu.edu/about/news-publications/news/2021/october/ultra-processed-foods.html

Lu Wang et al. 2021. Trends in consumption of ultraprocessed foods among US youths aged 2-19 years, 1999-2018. JAMA 326, 6 (August 2021). DOI:http://dx.doi.org/10.1001/jama.2021.10238

Bronx Population 2024. Retrieved May 29, 2024a from https://worldpopulationreview.com/boroughs/bronx-population

Susan Michie et al. 2011. The COM-B model for behavior change. Retrieved May 29, 2024 from https://thedecisionlab.com/reference-guide/organizational-behavior/the-com-b-model-for-behavior-change

Lee Ashton et al. 2019b. Effectiveness of interventions and behaviour change techniques for improving dietary intake in young adults: A systematic review and meta-analysis of RCTS. Nutrients 11, 4 (April 2019). DOI:http://dx.doi.org/10.3390/nu11040825

Retrieved May 29, 2024g from https://www.researchgate.net/publication/335515848_Social_Marketing_in_Foods_A_Review_of_Behavioural_Change_Models_of_Healthy_Eating

Lee M. Ashton et al. 2019. Effectiveness of interventions and behaviour change techniques for improving dietary intake in young adults: A systematic review and meta-analysis of RCTS. (April 2019). Retrieved May 29, 2024 from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6520715/

Promoting patient behavioral change through food choice and self-monitoring. Retrieved May 29, 2024d from https://www.rutgers.edu/news/promoting-patient-behavioral-change-through-food-choice-and-self-monitoring

Jason Fernando. Cost of goods sold (COGS) explained with methods to calculate it. Retrieved May 29, 2024 from https://www.investopedia.com/terms/c/cogs.asp

Food retail expansion to support health (fresh). Retrieved May 29, 2024b from https://www.nyc.gov/site/planning/plans/fresh2/fresh2-overview.page#:~:text=Food%20Retail%20Expansion%20to%20Support,the%20program%20launched%20in%202009.

Food retail expansion to support health (fresh). Retrieved May 29, 2024b from https://edc.nyc/program/food-retail-expansion-support-health-fresh

Supplemental Nutrition Assistance Program (SNAP). Retrieved May 29, 2024c from https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program

Cost of salad vertical farm with IFARM Calculator Tool. Retrieved May 29, 2024 from https://ifarm.fi/ifarm_calculators/leafy_greens_farm_calculator

ATTRACT Project phase 2. 2024. Attract stories: Behind the hylight project. (March 2024). Retrieved May 29, 2024 from https://phase2.attract-eu.com/attract-stories-behind-the-hylight-project/

Hylight. (May 2024). Retrieved May 29, 2024 from https://phase2.attract-eu.com/projects/hylight/

About Us. (May 2024). Retrieved May 29, 2024 from https://bowery.co/about-us/

The DesignSeers

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Food for Thought

SHIVANI PATEL
SAUMYA ROY
SALONI PASAD
SANKALP RAUT

Faculty Advisors:
ANDREEA COTORANU
LUKE CANTARELLA

PACE UNIVERSITY