

world
feed
center

Visitor Experience

WORLD FOOD CENTER
100% SCHEMATIC REVIEW

July 2021

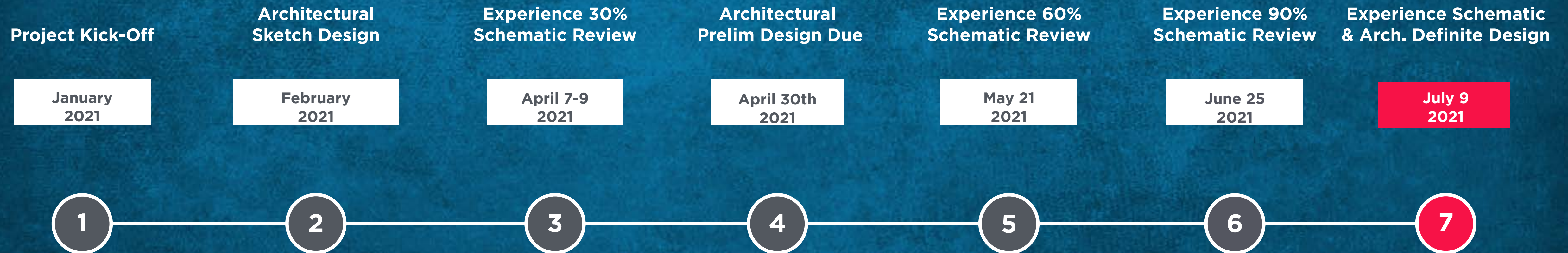


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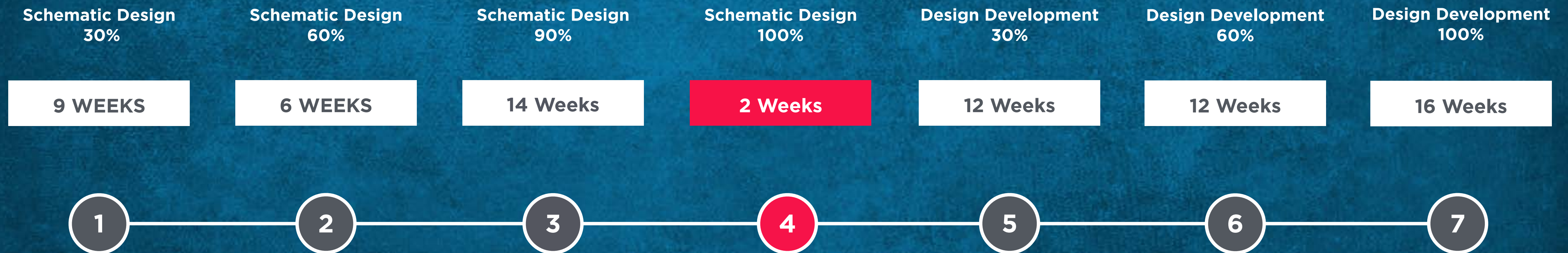
SURELY, I SAID, KNOWLEDGE IS THE
FOOD OF THE SOUL.

SOCRATES

SCHEMATIC SCHEDULE

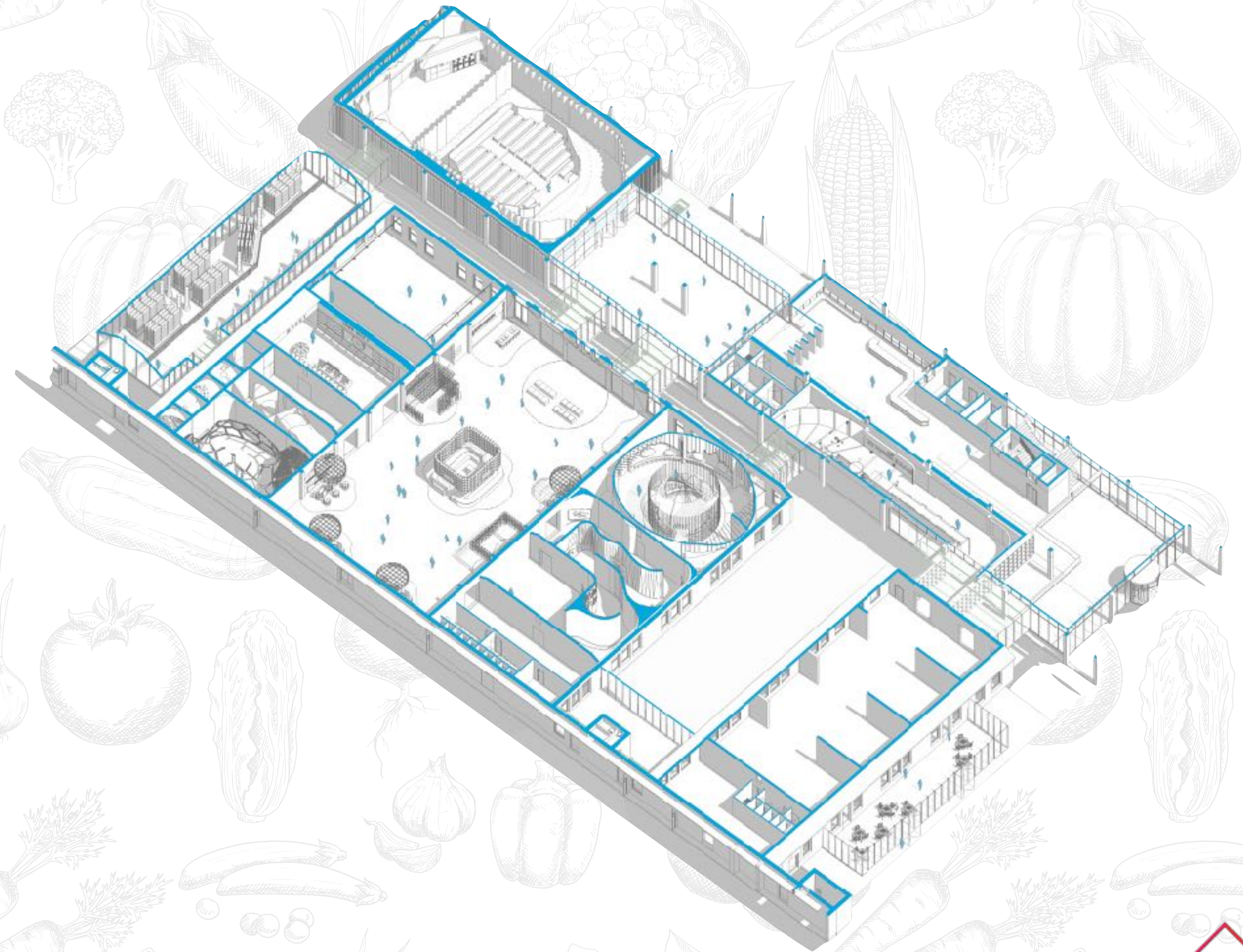


EXPERIENCE DESIGN SCHEDULE



BRC'S FOCUS

- Due to the challenges of mis-aligned schedules between Kraaijvanger and BRC at the outset of the phase, BRC has adjusted our typical design process in order to best work with our partners in completing all necessary work by the end of Design Development.
- At the start of this schematic phase, the approved concept and master plan required large-scale changes when: a) the attraction was moved to another section of the military building, b) work on the design of the new building was in very early (and fluid) stages (so there were no base building drawings), and c) content from the NGOs and other partners that had not been included in the approved concept and master plan had to be integrated into a new plan.
- In order to adapt to the changes, schematic has been refocused on working in partnership with Kraaijvanger on layouts and planning, developing new guest story beats for the developing plans, renderings, and high-level narrative changes.
- A reminder that **schematic Design is NOT about detailed content development**. We have been creating a living file of detailed content notes from the teams and committees associated with the project, and will begin implanting those notes and collaborating with those teams in the next phase of design. During that time, the BRC team will have numerous writers and researchers engaged on the project. That work will include, in partnership with WFC's digital content team, assistance in development of overall digital strategy for the experience. In Schematic Design, content is only developed to the point that it will aid in informing technical choices for the facility. That is the work you will see in this Schematic package.



U.N. 2030

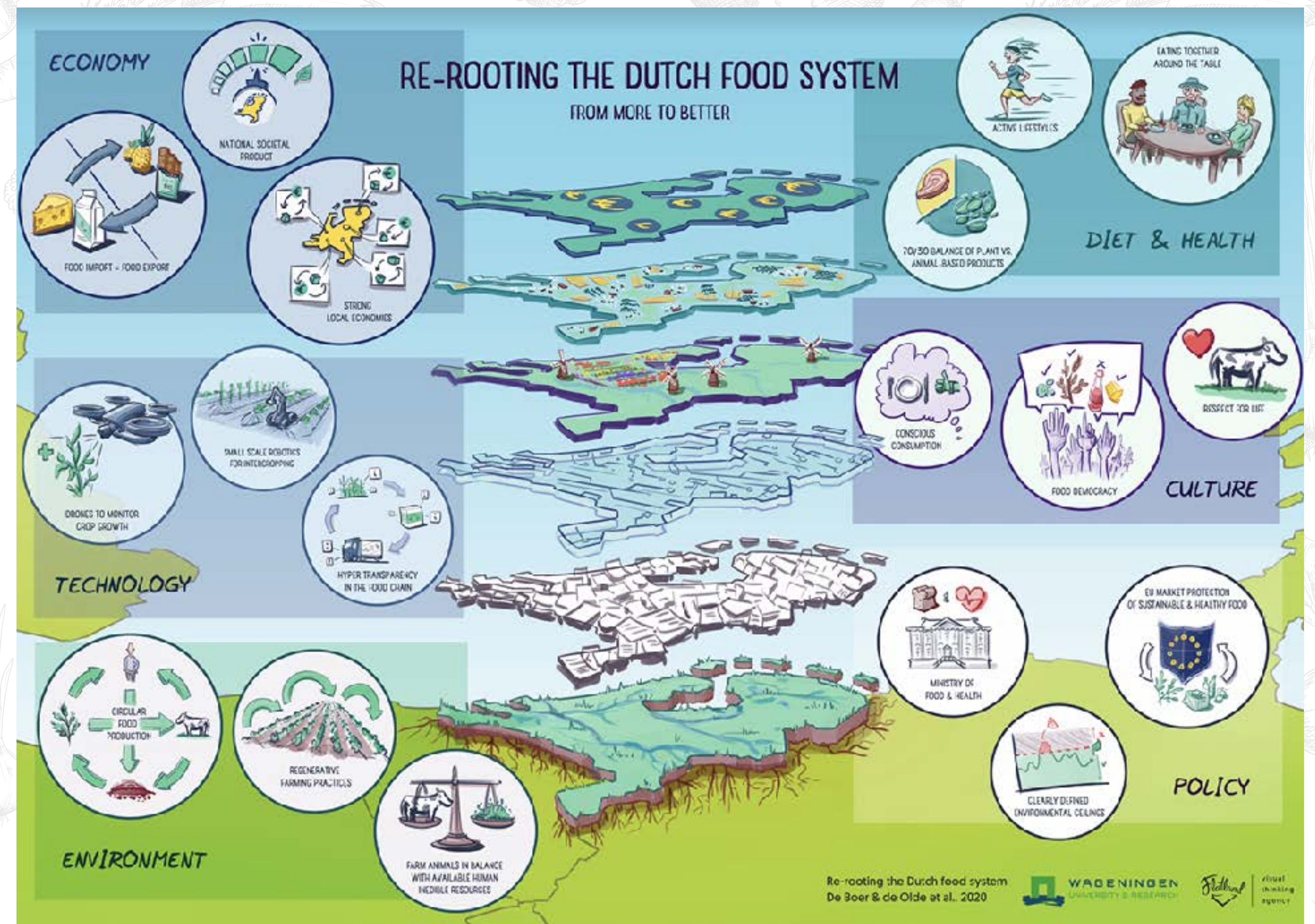
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STANDARDS

VISION FOR 2050

This Vision for 2050 is developed by scientists from Wageningen University and Research; representatives from three recently established farmer organizations (Toekomstboeren, Caring Farmers, and de Nieuwe Boerenfamilie); and environmental NGOs including the Foundation for Nature and Environment and the Centre for Agriculture and Environment and the Dutch Association of Biodynamic Agriculture.



AUDIENCE AND OBJECTIVES

WHO IS IT FOR?

WFC target audiences:

- Families, primarily those with children ages 8-16, including multi-generational families.
- Primary Schools
- Secondary and higher school students.
- Local, regional, and national business groups and delegations
- International delegations visiting Wageningen University and/or Agricultural & Food companies.



AUDIENCE AND OBJECTIVES

OBJECTIVES

Visitors will emerge from the World Food Center empowered to help create a healthier, sustainable, and tastier future for themselves and their families, the Netherlands, and the world.

We will achieve this by immersing guests in fun, authentic, story-driven educational experiences that highlight the Netherlands' leading role in global food production and research, food security and safety, and the health of humankind and our planet.

Indicators of success will include:

WFC is a sustainable business in its own right.

Increased support for science, research, innovation, environmental, and educational programs (governmental, NGOs, and private industry), as well as for traditional farming and agriculture to address the many food- and nutrition-related challenges facing our planet;

An increased tendency to pursue education and training in fields related to nutrition and food cultivation, production, preparation, and distribution;

Increased trust in the Netherlands' industry and key role in a high-quality, safe, and secure food chain;

Increased recognition of the Netherlands as a model of effective and sustainable industry practices for other businesses, regions, and countries;



OBJECTIVES

- An increased tendency for guests to take positive steps toward living a healthy and pleasurable life, reducing food waste, and creating a more sustainable future by taking responsibility for their own actions and those of their families;
- An increased tendency to seek and support economic and environmental sustainability;
- An increased understanding of the entire food value chain;
- Strong sales of memberships and season passes, reflecting repeat visitation from area residents;
- Strong participation in World Food Center programs and products, including events, restaurants, workshops, multi-part classes, and merchandise;
- Increased engagement of community partners (businesses, schools, families, organizations, etc.), including robust sponsorship and donor support programs;
- Top-rated guest satisfaction reviews expressed by word-of-mouth, as well as continued engagement and enthusiastic advocacy expressed on digital and social platforms.



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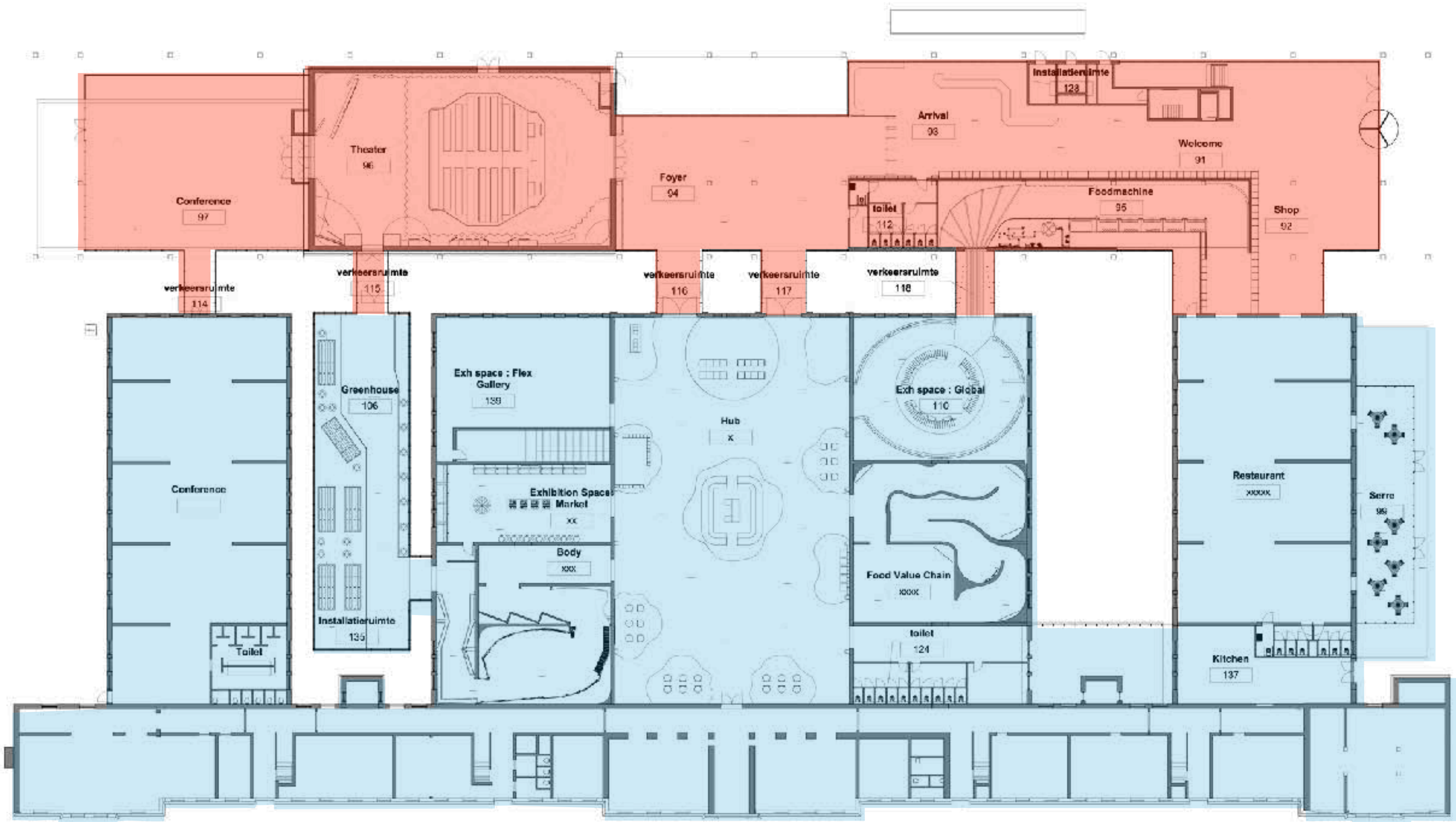
WE FEED EACH OTHER



OVERALL EXPERIENCE PLAN

LEGEND

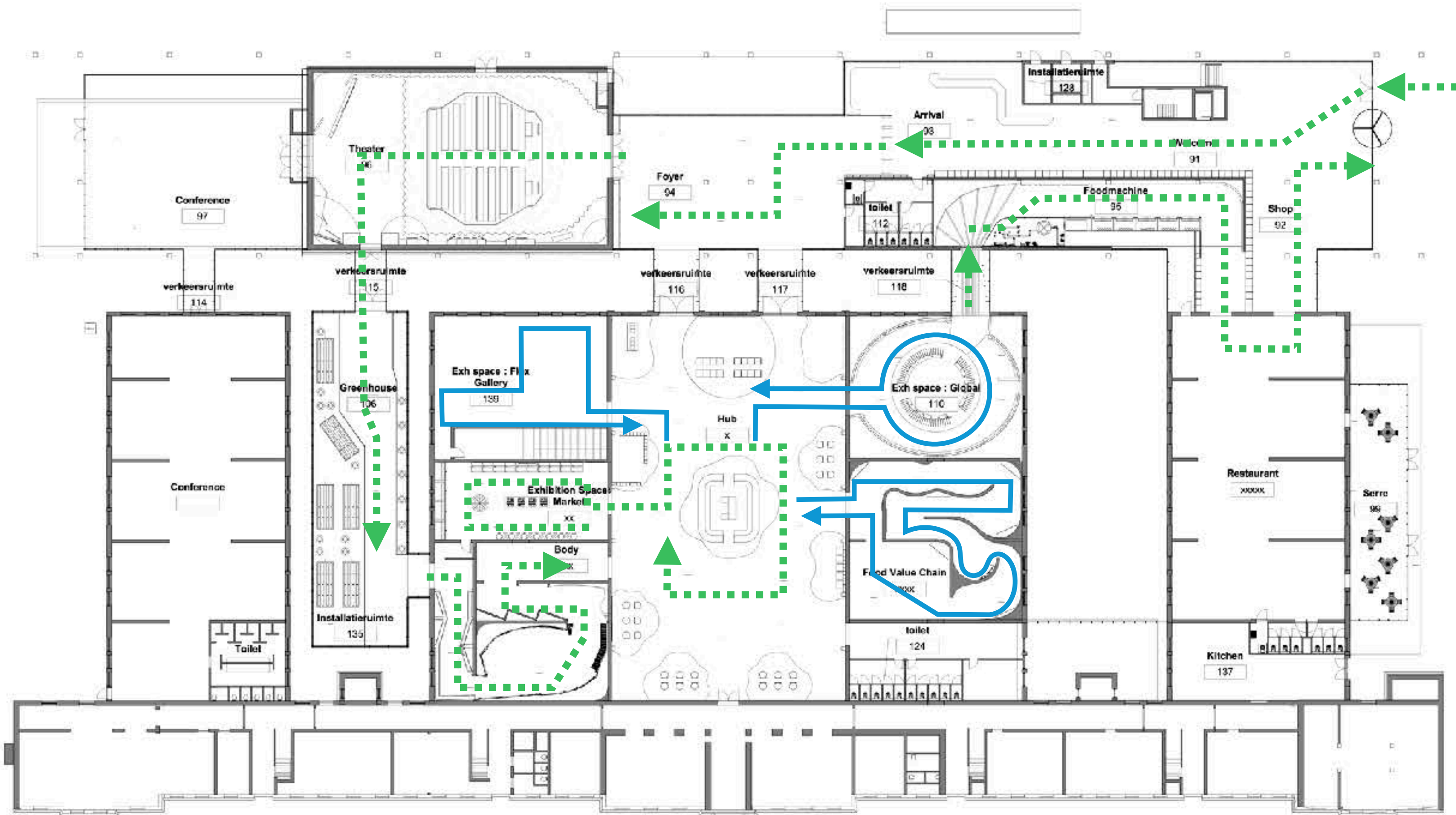
- New Building
- Existing Building (Military Building)



OVERALL EXPERIENCE PLAN - GUEST PATH

LEGEND

- Primary Visitor Flow
- Secondary Visitor Flow



OVERALL EXPERIENCE PLAN - ZONE LAYOUT

LEGEND

- BRC
- Facility
- By Others

Zone 1 - Lobby & Welcome Portal

Zone 2 - Ticketing & Experience Entry

Zone 3- Signature Theatre Queue

Zone 4 - Signature Theatre

Zone 5 - Greenhouse

Zone 6 - Your Food, Your Body

Zone 7 - The Hub - The Regional Story

Zone 8 - The Market

Zone 9 - The Food Value Chain

Zone 10 - Flex Gallery

Zone 11 - The Global Story

Zone 12 - The Food Machine

Zone 13 - Restaurant

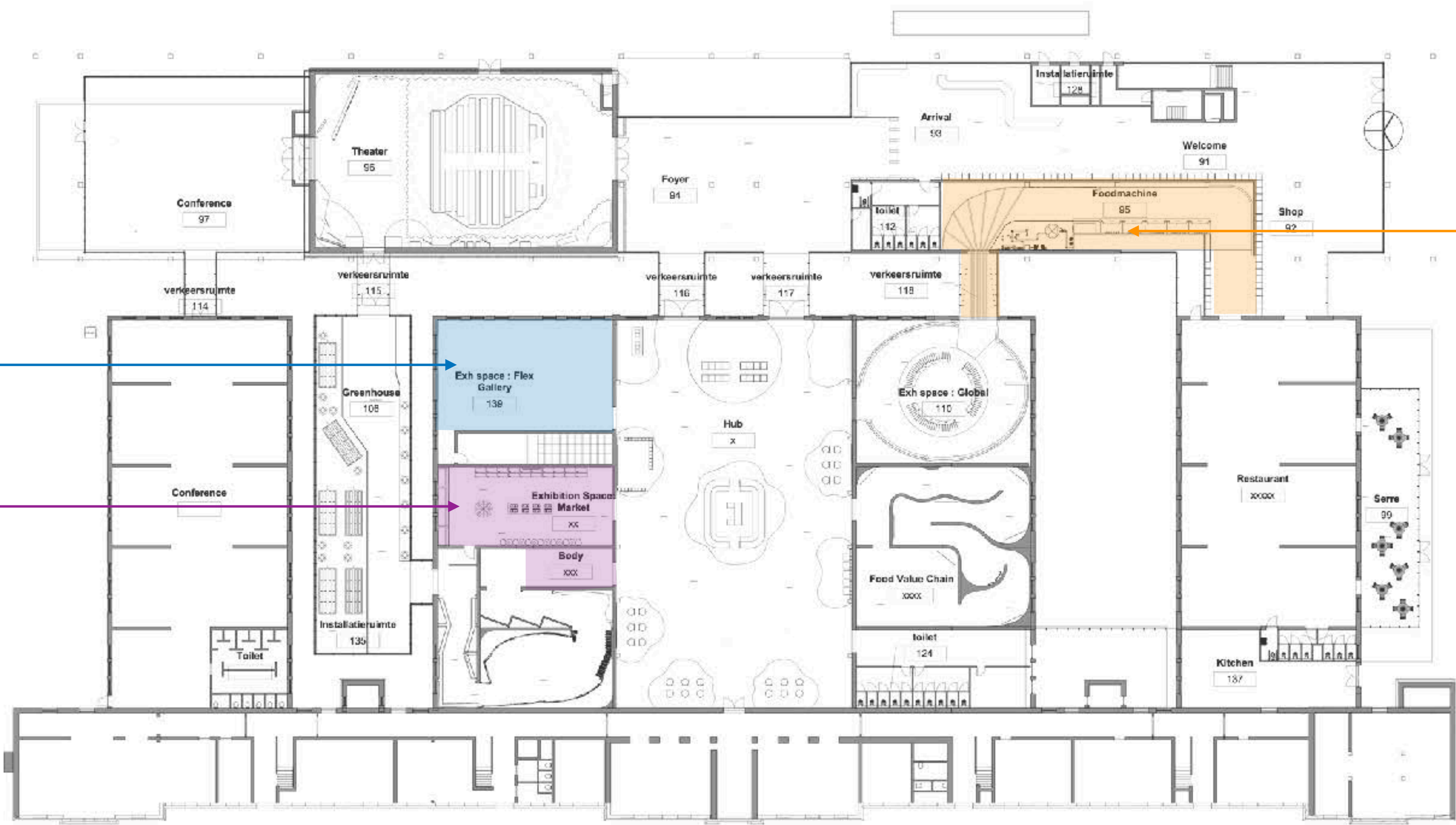
Zone 14 - Retail

Zone 15 - EER & Storage

Zone 16 - Restrooms



OVERALL EXPERIENCE PLAN - UPDATE

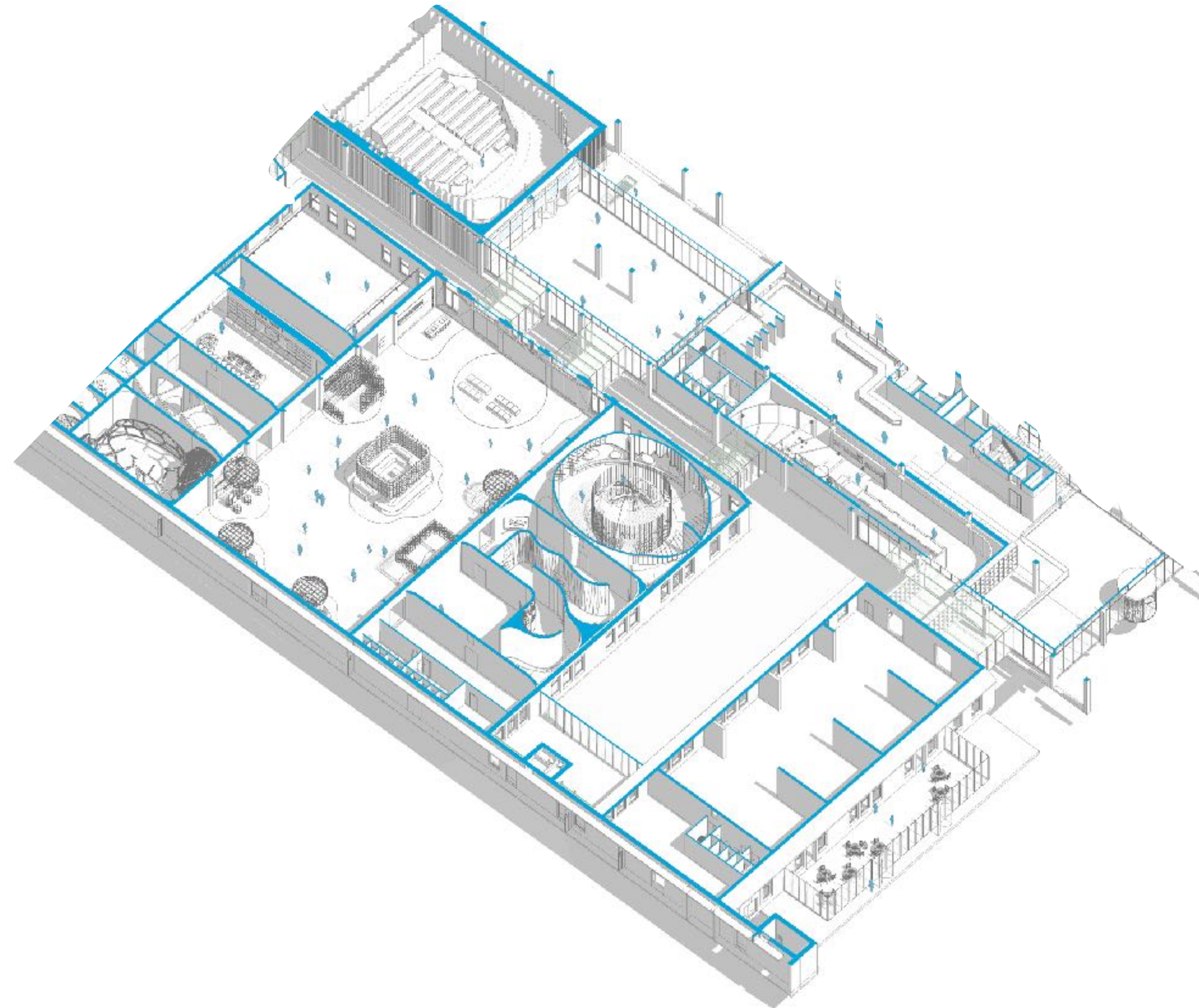


Flex Gallery and
EER Rearranged

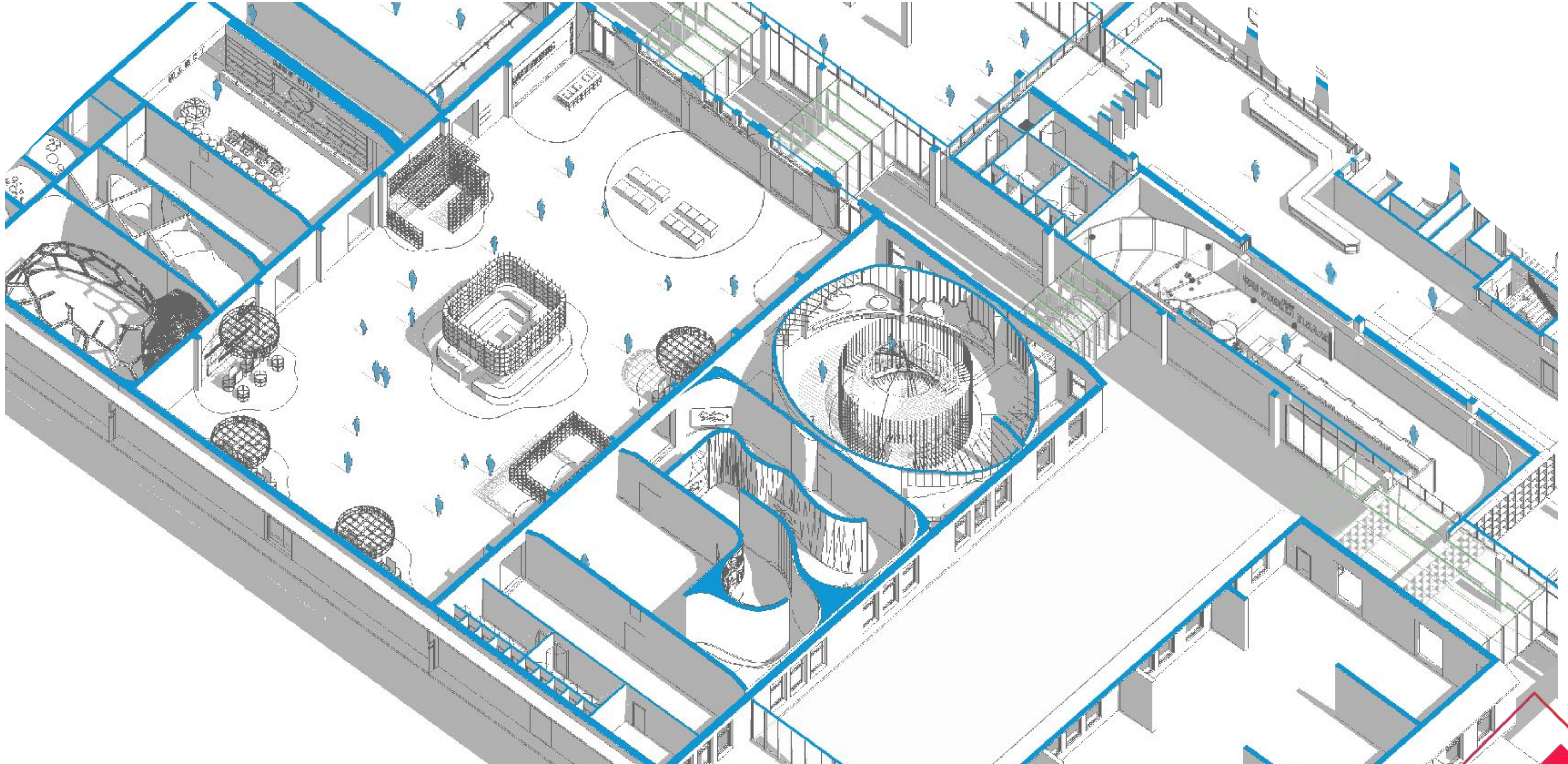
Adjusted Exit/Entry
of Body and Market

Reconfiguration of
Reduced Food Machine

OVERALL EXPERIENCE PLAN



OVERALL EXPERIENCE PLAN



ZONE 1

ENTRANCE LOBBY & WELCOME PORTAL

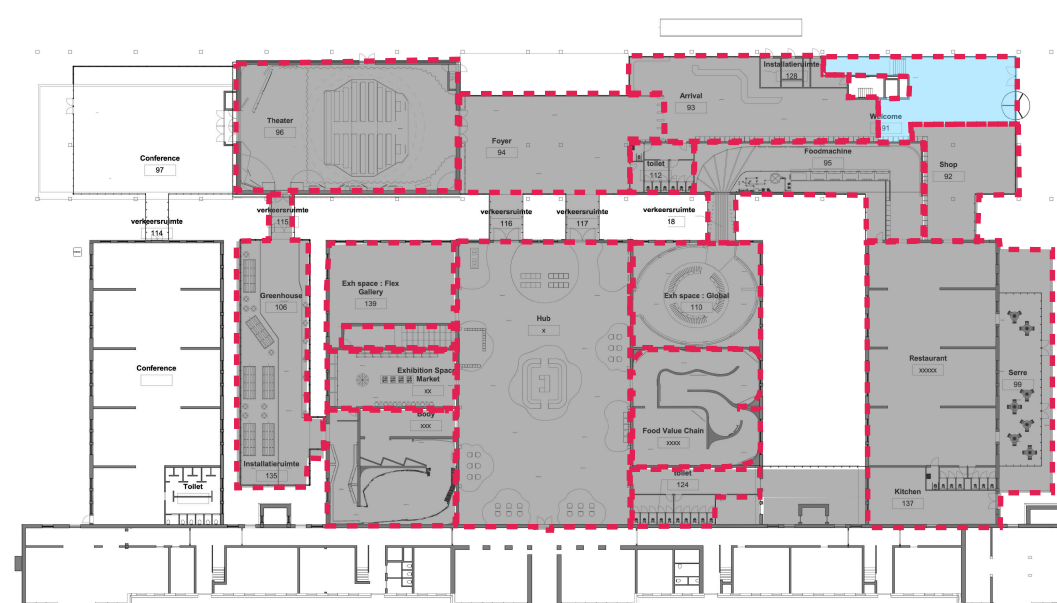
ZONE 1: ENTRANCE LOBBY & WELCOME PORTAL

LEGEND

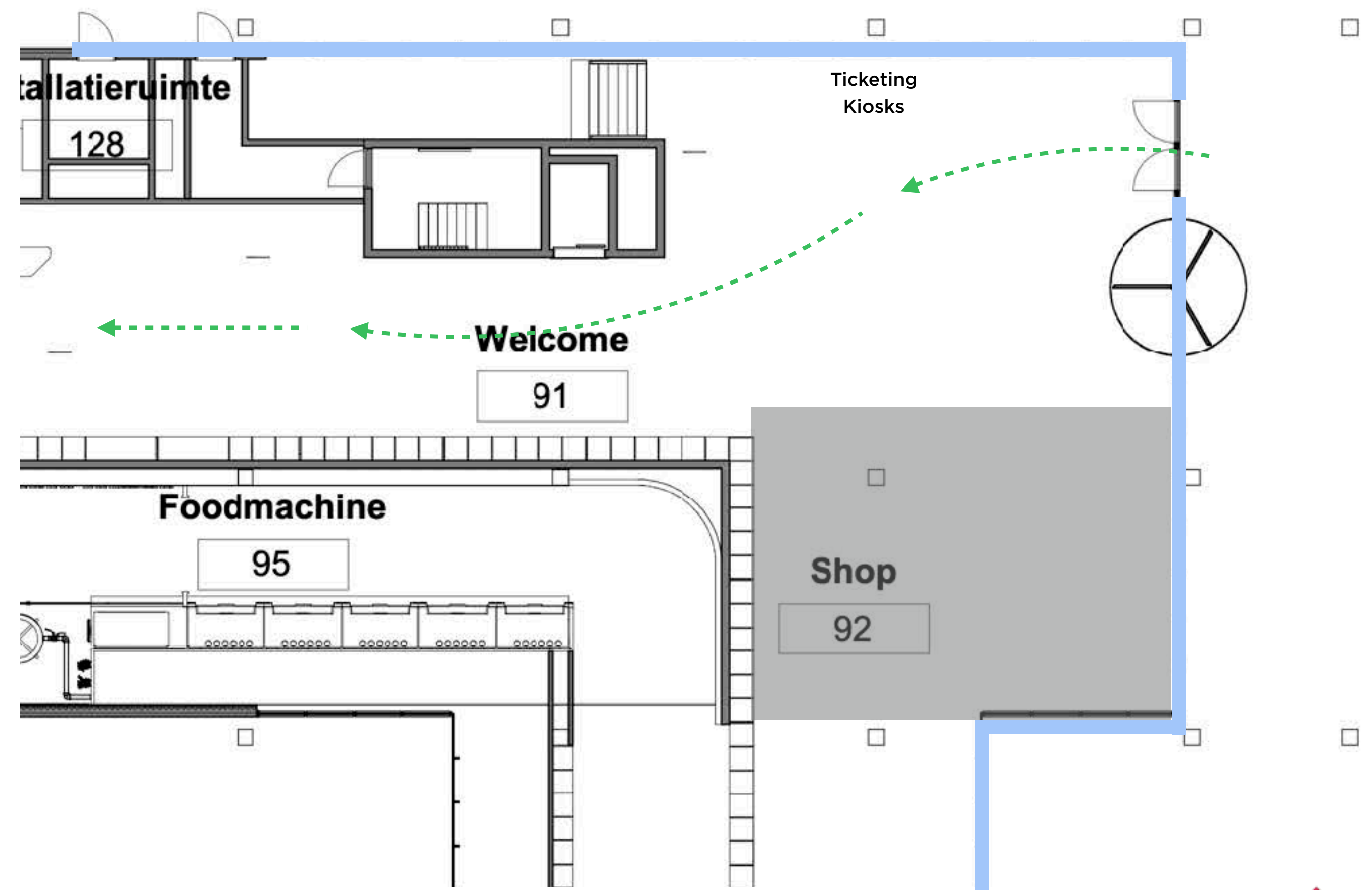
 Glass

Size - 230m² (2,475ft²)

Capacity - 115



Key Plan



ZONE 1

ENTRANCE LOBBY & WELCOME PORTAL

Entrance Lobby

Guests enter the World Food Center lobby. It's warm, welcoming, and defined by several playful elements that embrace the soaring height of the room and give clues about the playful experience inside. Here, guests can purchase tickets from kiosks, shop in the store, grab a bite at the restaurant, head upstairs to coat check or the rooftop garden, check in at the VIP counter, or make their way through the entry portal into ticketing.

Welcome Portal

This first portal above the entrance into ticketing and the experience is the first promise we make to guests entering the WFC experience. It is designed to directly pull guests inside, evoking a sense of fun and hinting at the experience to come. Utilizing the architecture of the new building with oversized graphics of the WFC logo, guests are drawn inward through the building and towards ticketing and the Experience Entry. As they travel, they see shadows of movement behind the wall, promising something tantalizing and exciting at the conclusion of their journey.

WORLD FOOD CENTER | Schematic Review 100%



ZONE 1

ENTRANCE LOBBY & WELCOME PORTAL

Takeaway Message

This is promising. I think it's going to be fun!

Emotional Journey Pathway

Conveys a sense of fun and hints at the experience to come.

Fun Factors

Bright, welcoming design with colorful elements and oversized graphics of the WFC logo convey a sense of fun. Shadows of guests enjoying their concluding experience at the Food Machine creates anticipation for the journey ahead.





ZONE 1 ENTRANCE LOBBY & WELCOME PORTAL

ZONE 2

TICKETING & EXPERIENCE ENTRY

ZONE 2: TICKETING & EXPERIENCE ENTRY

LEGEND

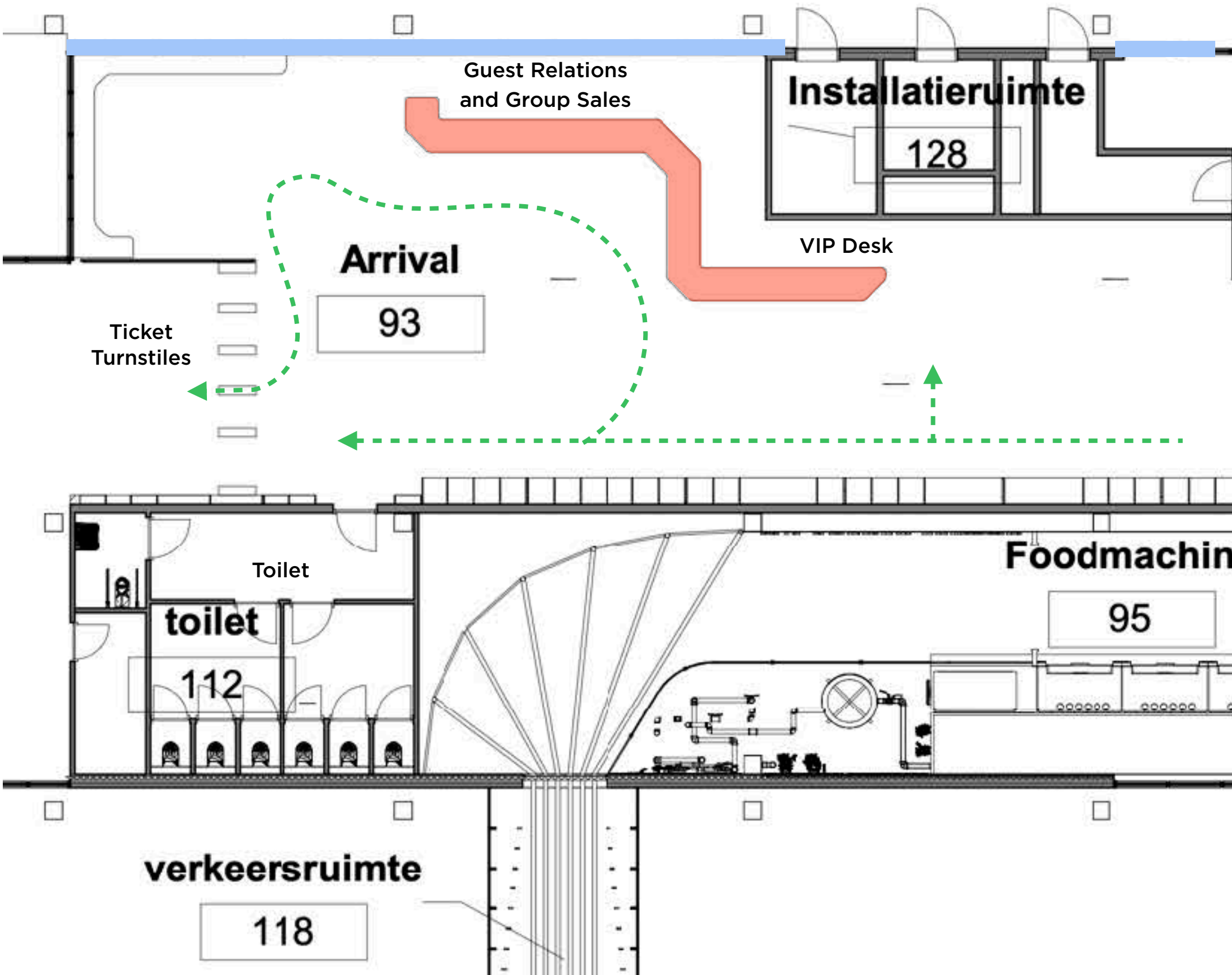
- Glass
- Welcome Desk
- Ticketing Kiosks (by others)
- Ticket Turnstiles (by others)

Size - 170m² (1,829²)

Capacity - 85



Key Plan



ZONE 2

TICKETING & EXPERIENCE ENTRY

Ticketing

In this area guests can queue for tickets or head straight through the ticketing turnstiles to start their journey. This zone also contains a small ticket counter for guests who require further assistance.

Experience Entry

Located at the ticket turnstiles, this is where our journey really begins. Here, guests are greeted by a host who scans their ticket and hands them their Seed Saver badge. Guests then enter the queue area for the next signature show.

(Note: we are currently analyzing the most effective technology for the Seed Saver badges and the personalization of the experience. This decision will be made in the next phase of design. While the Seed Saver badge may use RFID, we are looking for other options that offer the same flexibility and viability of user experience while not utilizing a chip that is disposable but not biodegradable. Whatever the final choice, all EU guidelines will be followed in its utilization.)



ZONE 2

TICKETING & EXPERIENCE ENTRY

Takeaway Message

I like how clear and easy this is.

Emotional Journey Pathway

Builds anticipation for what's to come.

Fun Factors

Novelty and design of Seed Saver badge. Teasing glimpse of shadows as guests experience the Food Machine behind opaque glass.

Seed Saver Badge

Guests are greeted by a host who scans their ticket and hands them their Seed Saver badge.





ZONE 2 TICKETING & EXPERIENCE ENTRY

ZONE 3

SIGNATURE

THEATRE QUEUE

ZONE 3: SIGNATURE THEATRE QUEUE

LEGEND

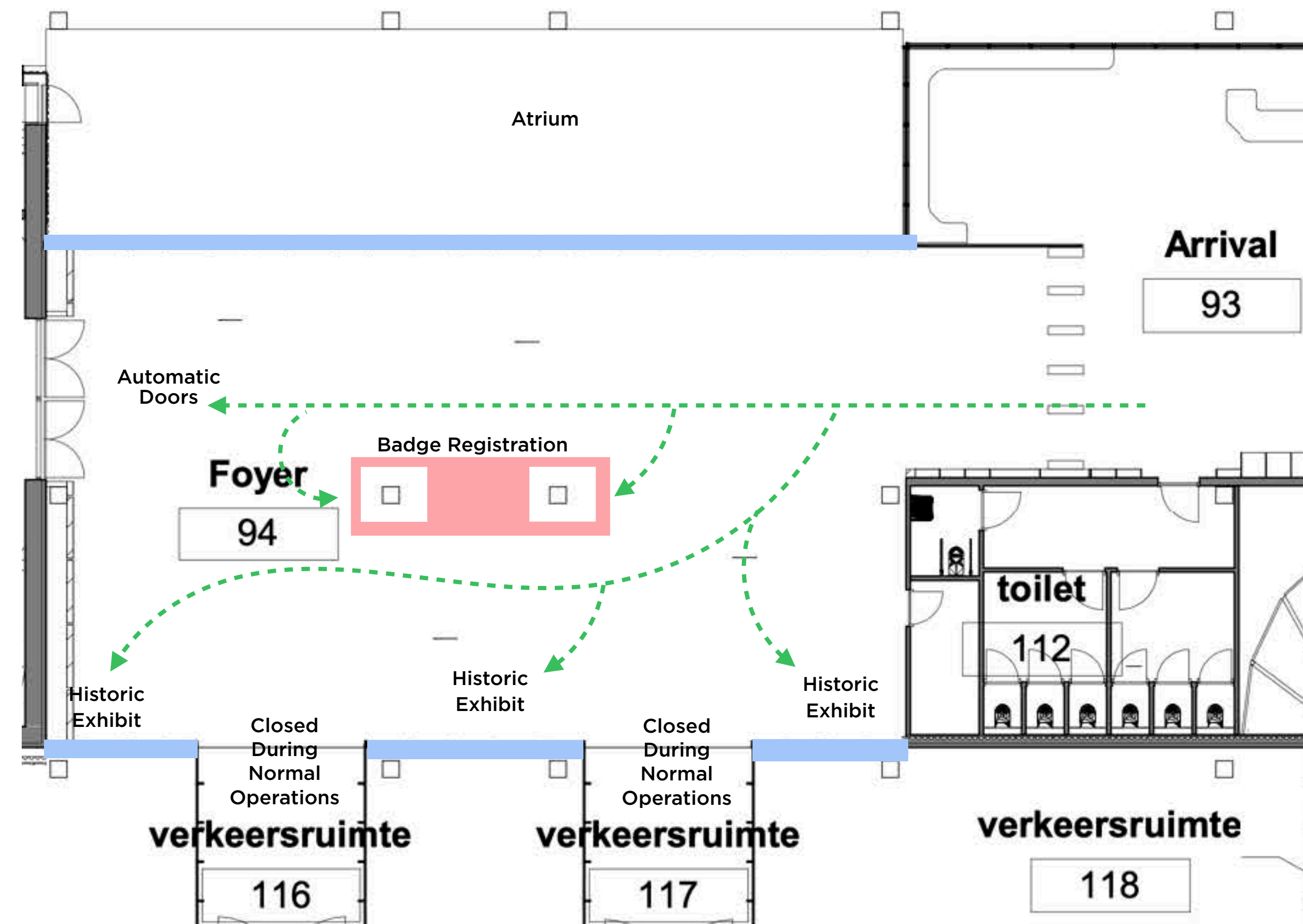
- Glass
- Badge Registration

Size - 200m² (2,152ft²)

Capacity - 100



Key Plan



ZONE 3

SIGNATURE THEATRE QUEUE

The on-site guest experience begins in earnest in the Queue area, an open, glassed-in space with views of the outdoors and the exterior wall of the old military building.

A Historic Site

Along the glass wall facing the Military Building façade, there is an exhibit on reader rails with photographs and graphic signage telling the story of the historic building's prior use as a barracks for Dutch soldiers and how it became the experiential heart of the Netherlands' Food Valley today.



ZONE 3

SIGNATURE THEATRE QUEUE

The Seed Saver Badge

While guests wait to enter the Theatre, they can scan their Seed Saver badges at several kiosks, “opt in,” and input their name and digital contact information to access the personalization technology. (Some guests may have completed this online from home.)

While “opting in” enables guests to be sent a takeaway collection of their specific interests, guests who choose not to will have no lesser quality of an experience. They can find a link to additional information printed on their Seed Saver badges as part of the overall Digital Extension Strategy that is central to the WFC experience and will be developed in the next phase of design with the WFC Digital Content & Strategy team.



SIGNATURE THEATRE QUEUE

An enticing, neon graphic mural spans the wall to the Theatre. The design and bold color of the art reinforce the theme, “We Feed Each Other,” through an animated seed growing into a plant, and previews the exciting experience to come.



PLEASE SEE VIDEO FILE 1

ZONE 3

SIGNATURE THEATRE QUEUE

Takeaway Message

A.) The site of the World Food Center has been important to the region and the country since its early use as a home for Dutch troops. It continues to play a vital role, now as the heart of Food Valley.

B.) I appreciate the option to specify how personalized I want today's visit to be.

C.) This looks fun!

UN SDGs

Innovation & Infrastructure, Sustainable Cities & Communities

Fun Factors

Fun graphic, neon mural visually sets the theme, "We feed each other." Seed Saver badge opt in and collection activities launch guest engagement in form of a game.

Seed Saver Badge

Registration & Historic Favorites

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ZONE 3 SIGNATURE THEATRE QUEUE

ZONE 4

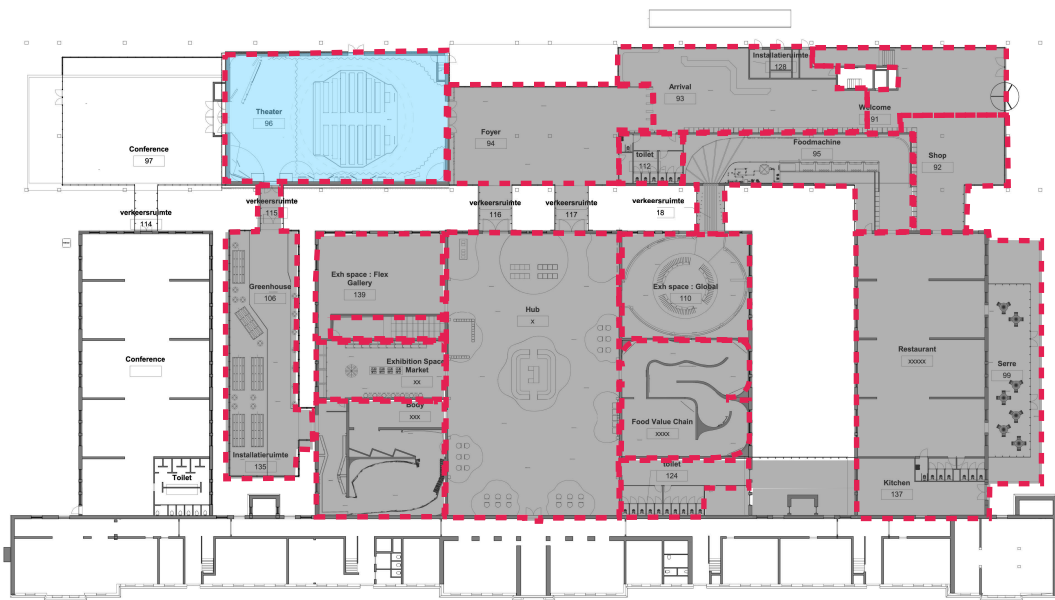
SIGNATURE THEATRE

Zone 4 Signature Theatre

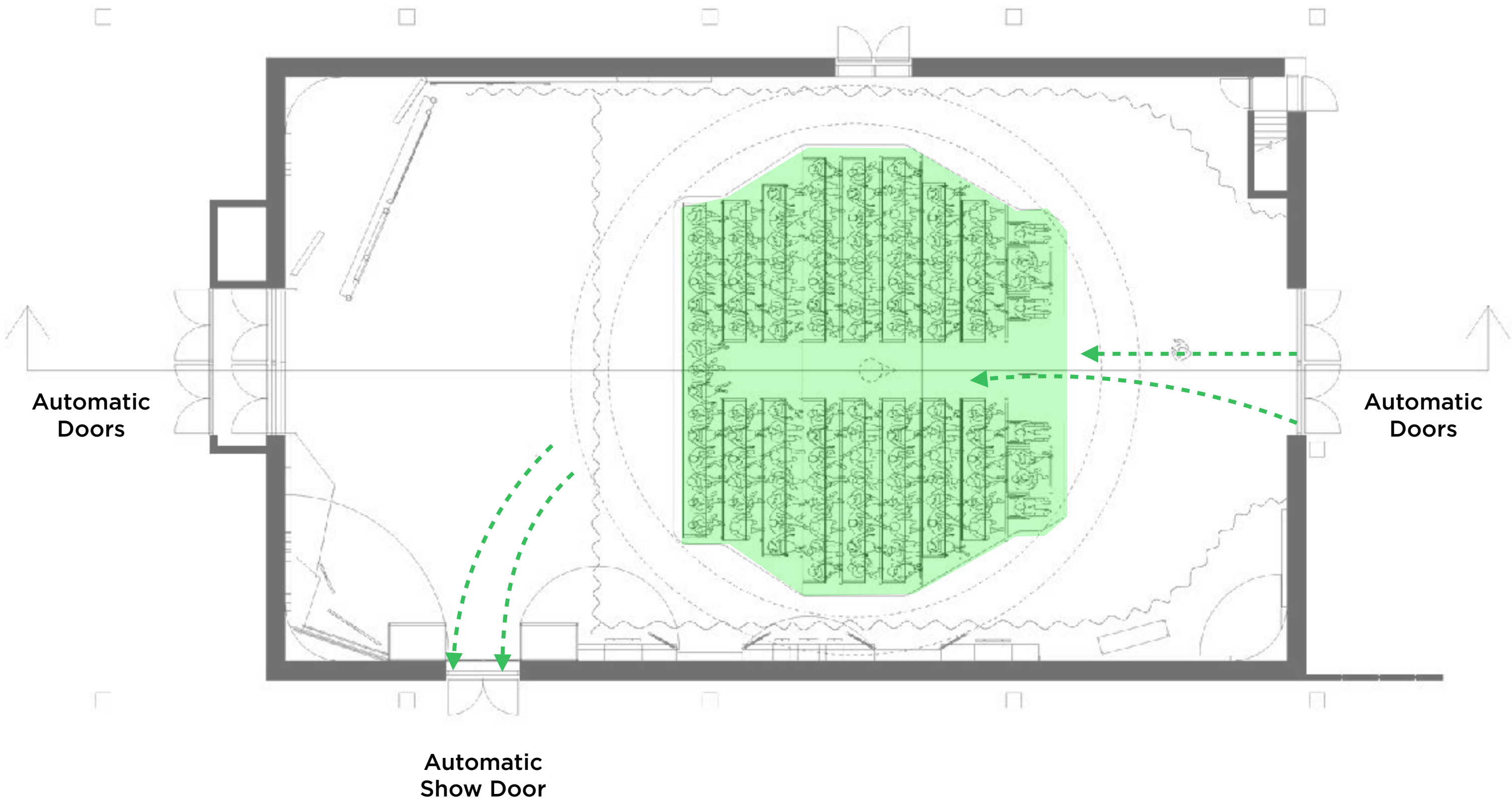
LEGEND

- - - Performance Area
- • • Drape

Size - 380m² (4,089ft²)
Capacity - 123



Key Plan

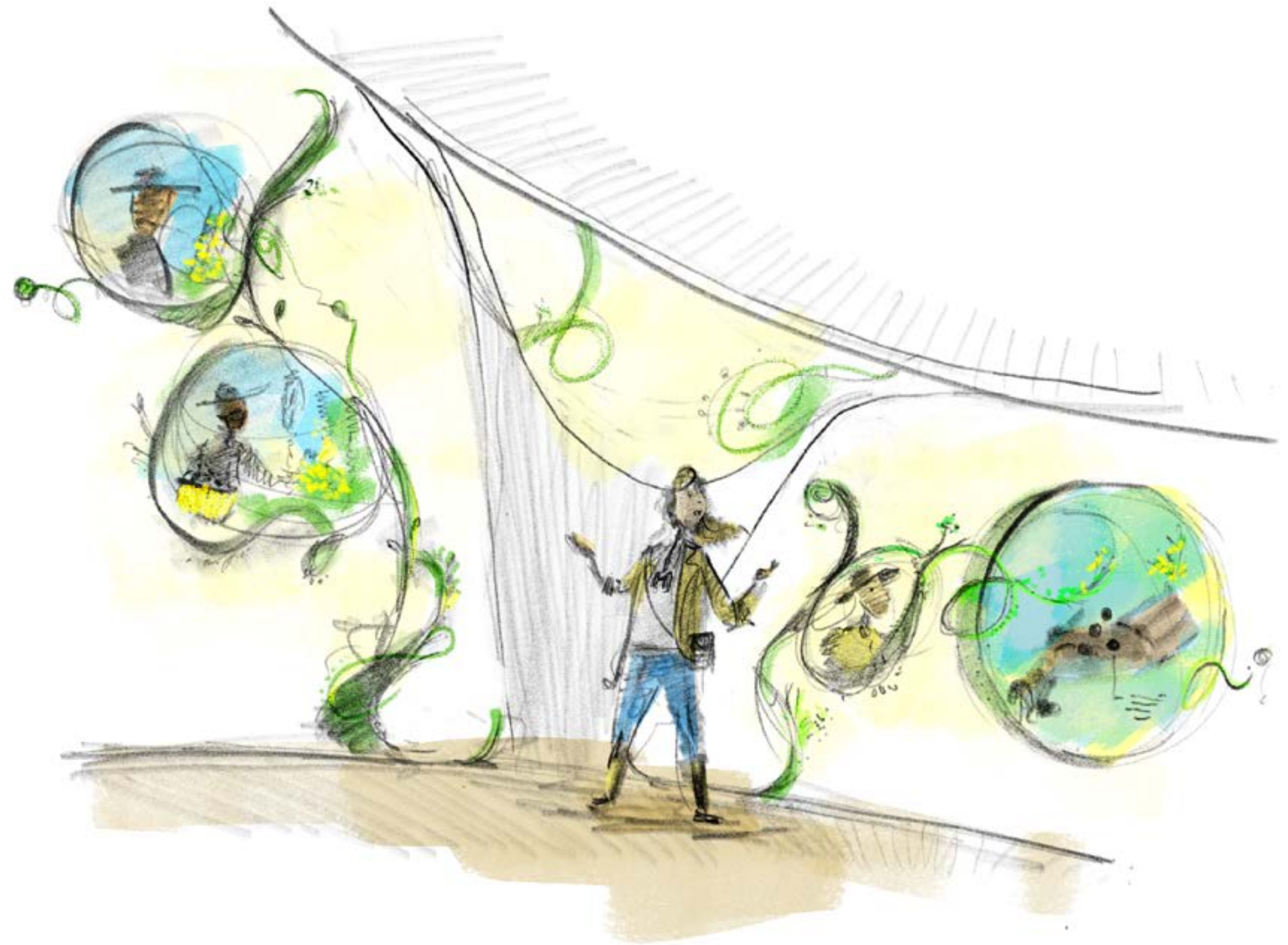


ZONE 4

SIGNATURE THEATRE

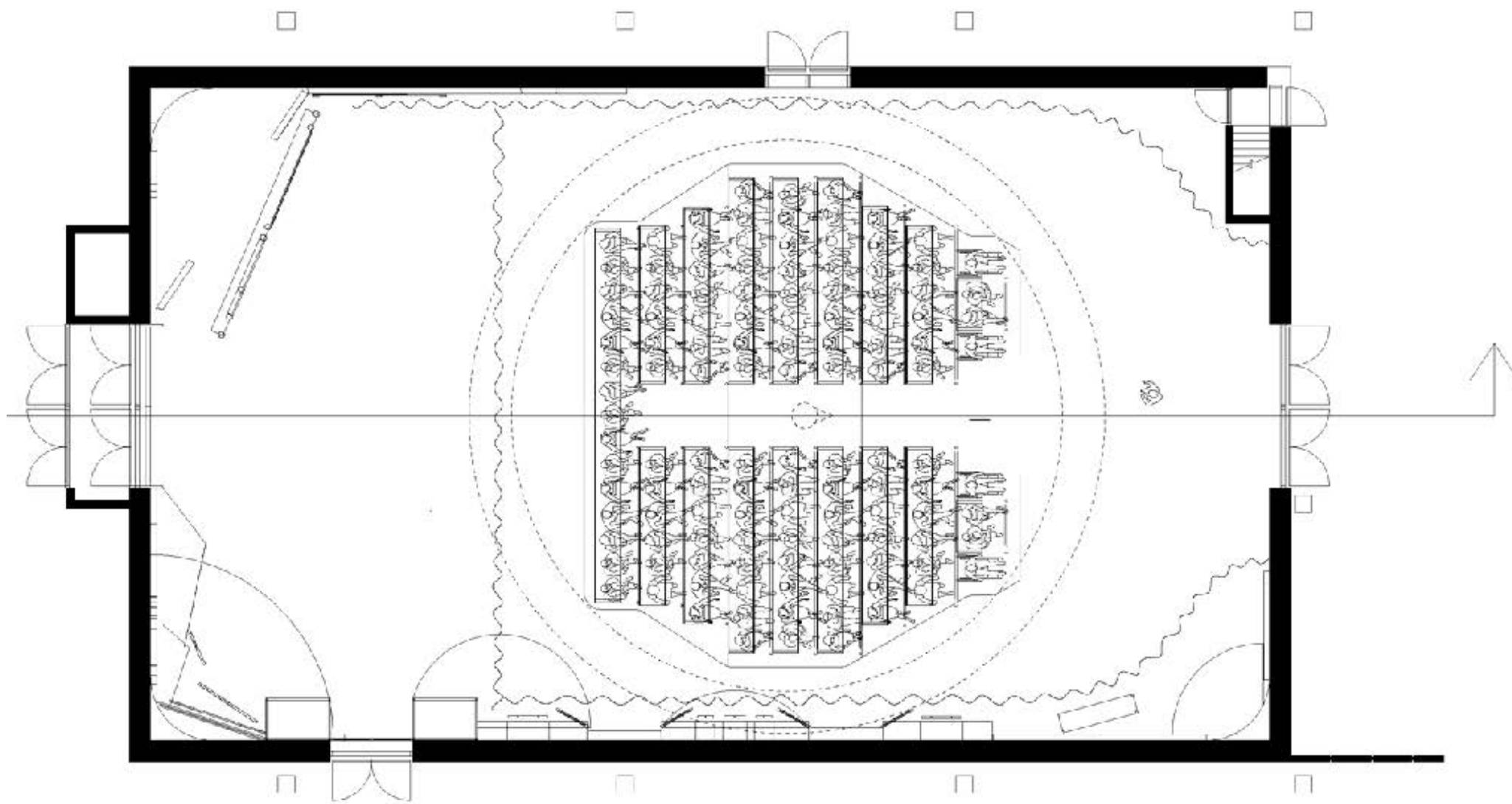
Introduction

This exciting, emotionally engaging theatrical show literally pulls guests into the WFC theme, “We feed each other.” A compelling story, a cast of appealing characters, and memorable music introduce some of the people, projects, and challenges guests will encounter throughout their WFC experience.



PLEASE SEE VIDEO FILE 2

Zone 4 Signature Theatre



We enter the theatre and take our seats. It's a snug proscenium space, with curtains draping the walls on each side. Directly in front of us is a wall with a large cinema screen that is framed with plant life.

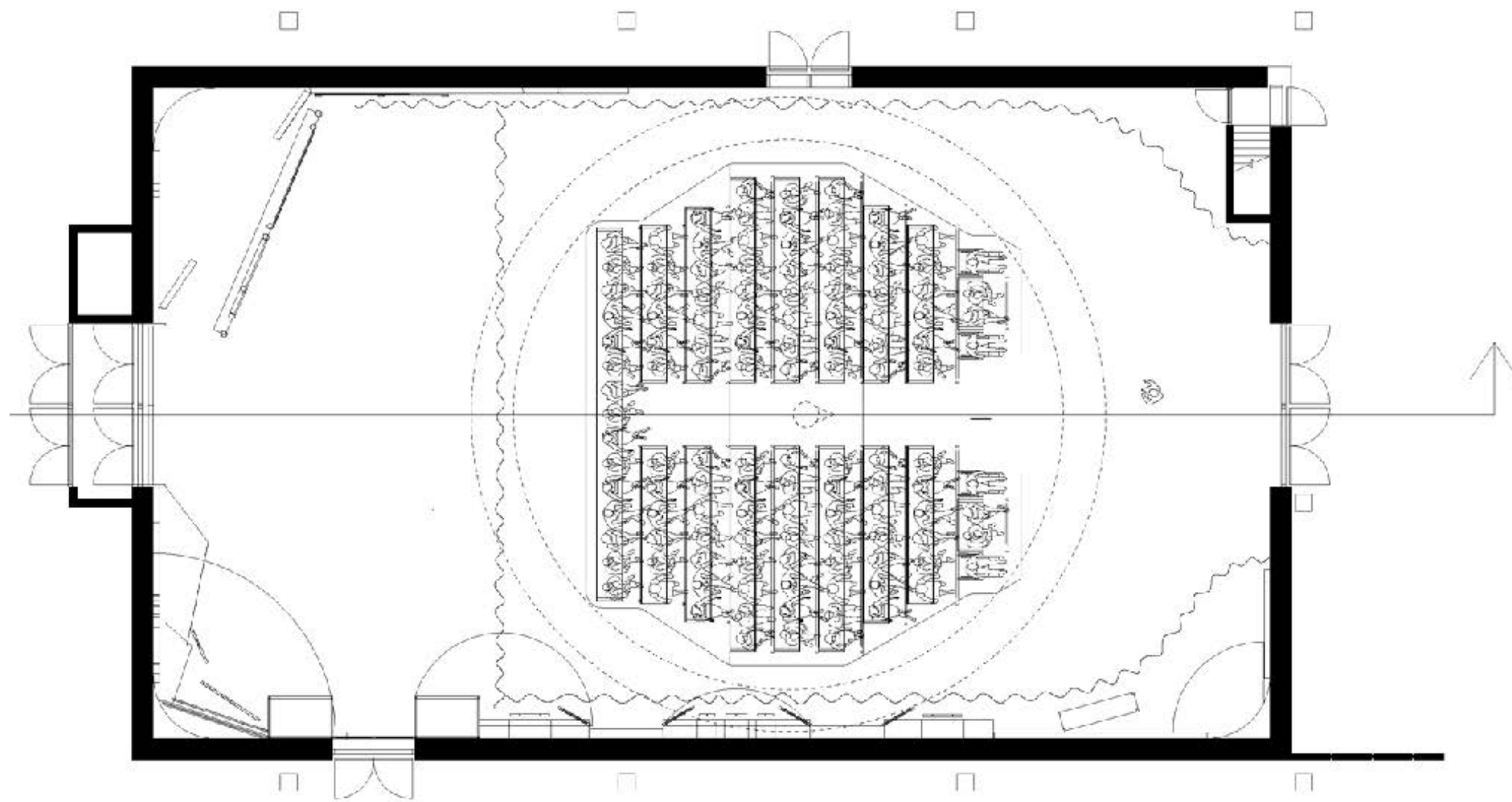
The sound of a clock ticking begins as a young woman/man, our narrator, emerges at the entrance doors, looks around, and then PULLS UP A PANEL from the floor. The opening glows, and on the back of the trap door is a countdown clock to the year 2050.



The narrator then asks if someone from the audience would like to help them.

She picks a child from the crowd and brings them to the floor portal with her. She explains that, together, they are going to plant a seed that could change the world. She hands the young guest a seed, and they plant it in the "dirt" inside the portal and close the lid together.

Zone 4 Signature Theatre

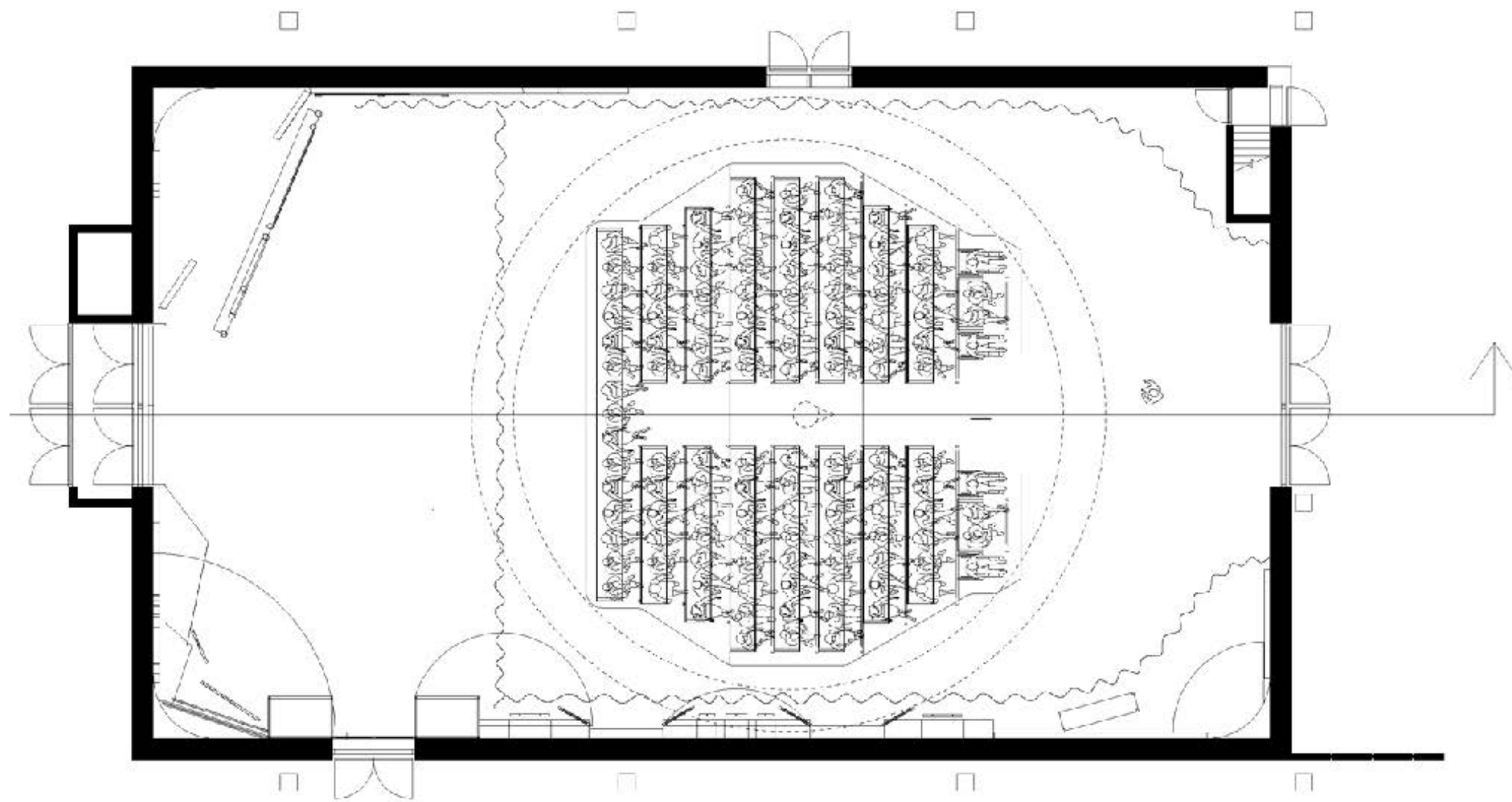


The narrator takes the young guest back to their seat, and when she turns around the SEED HAS STARTED TO GROW. Lighted vines extend from the floor portal and start to reach for the ceiling. As the lighted vines surround the screen, projection comes to life, revealing the World Food Center challenge: “Hoe voeden we de wereld tegen 2050?” (How will we feed the world by 2050?)



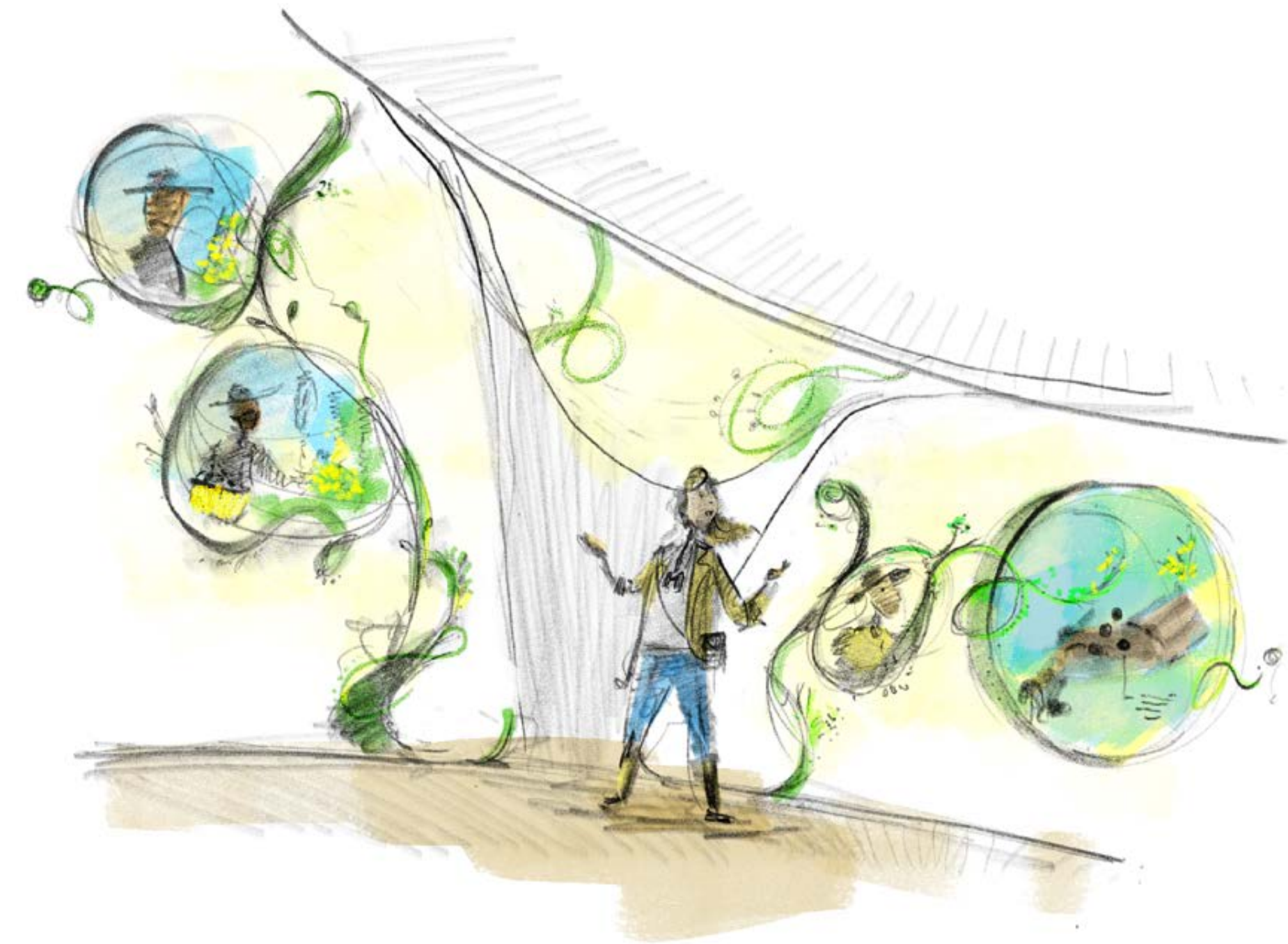
Music begins to play from the screen, and then spreads to fill the entire room. In the style of traditional Dutch pop music, the WFC-custom composition includes appealing strains of guitar... a little piano...

Zone 4 Signature Theatre



The narrator looks to the audience, a big smile on her/his face, and then breaks into song. The narrator explains the challenge: in less than 30 years, at least 2 billion more people will need housing, jobs, and food.

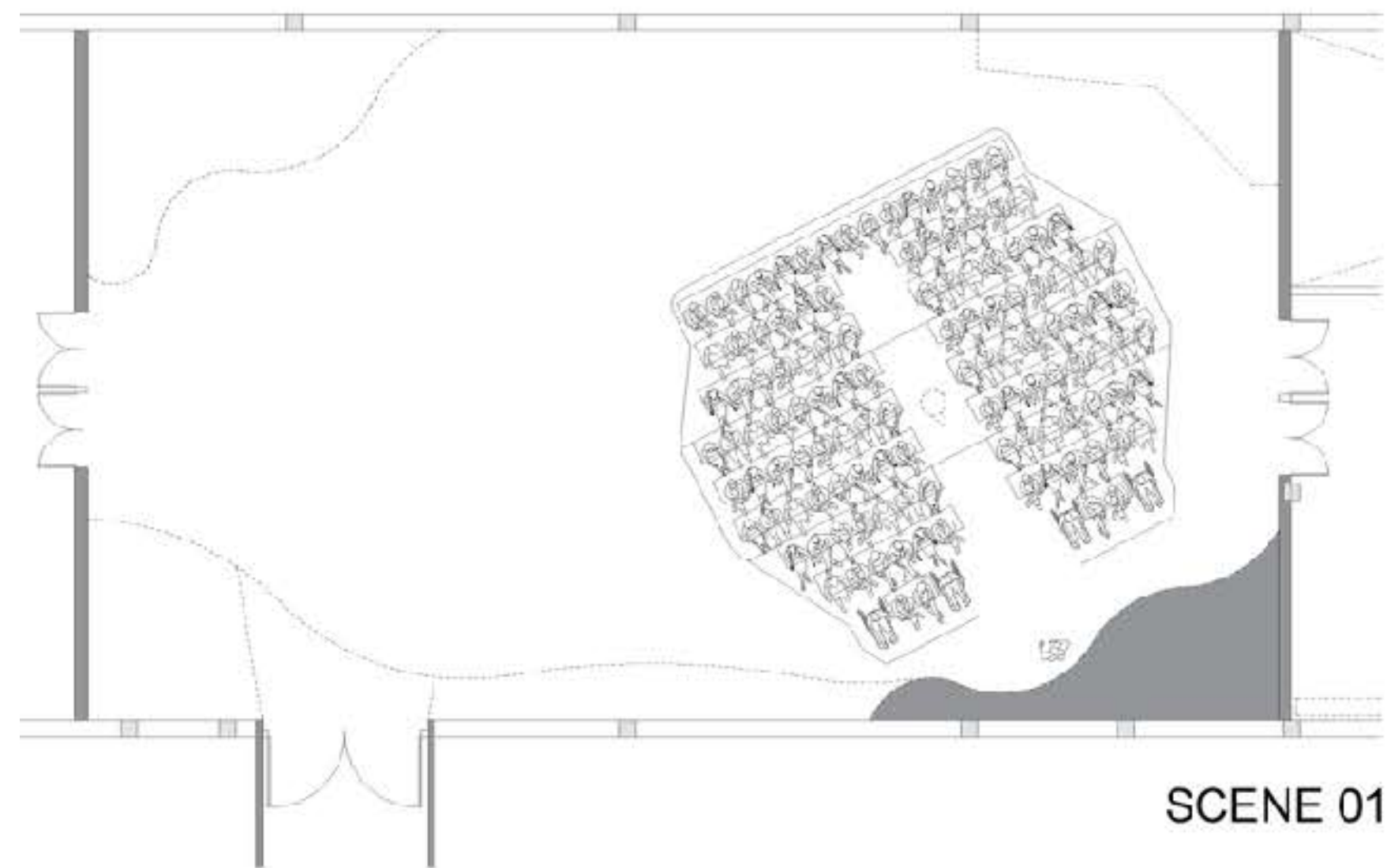
Faced with the inevitable reduction of land and water, we've got to figure out how to create a sustainable, affordable, reliable, and high-quality food system to meet these growing demands and help heal our planet in the process.



The narrator then invites us to come along with her/him. Together, we follow the newly-planted vine to visit three different places around the globe, each addressing this challenge.

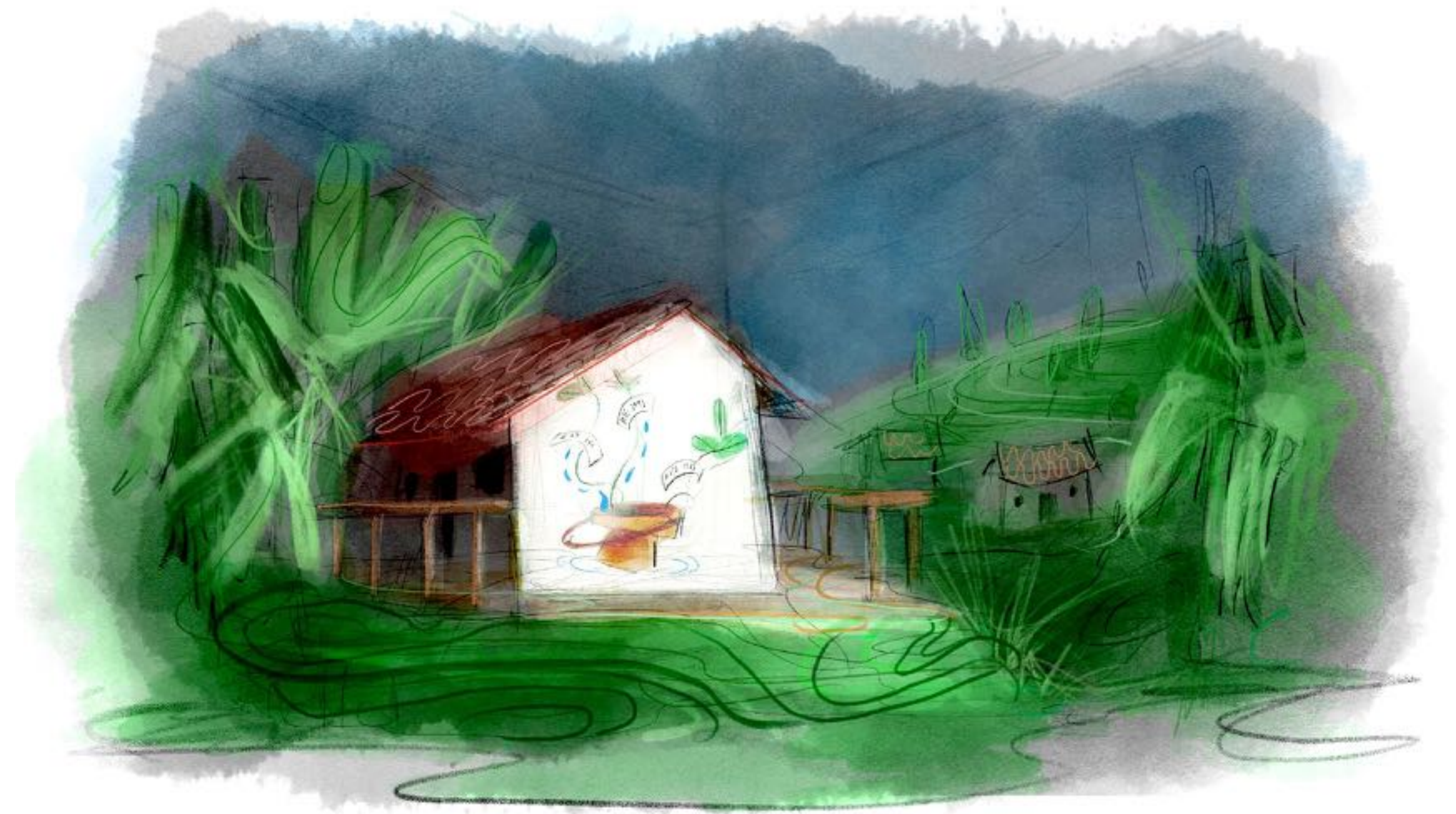
As the music continues, the theatre transforms. The curtain on one side slides away and, much to our surprise, our seating platform literally moves with the narrator to the first vignette.

Zone 4 Signature Theatre



The seats stop at a small, stylized village in Rwanda, a core country of the N2Africa project.* And as they do, the music transforms into Rwandan pop like “Ibishyimbo.”*

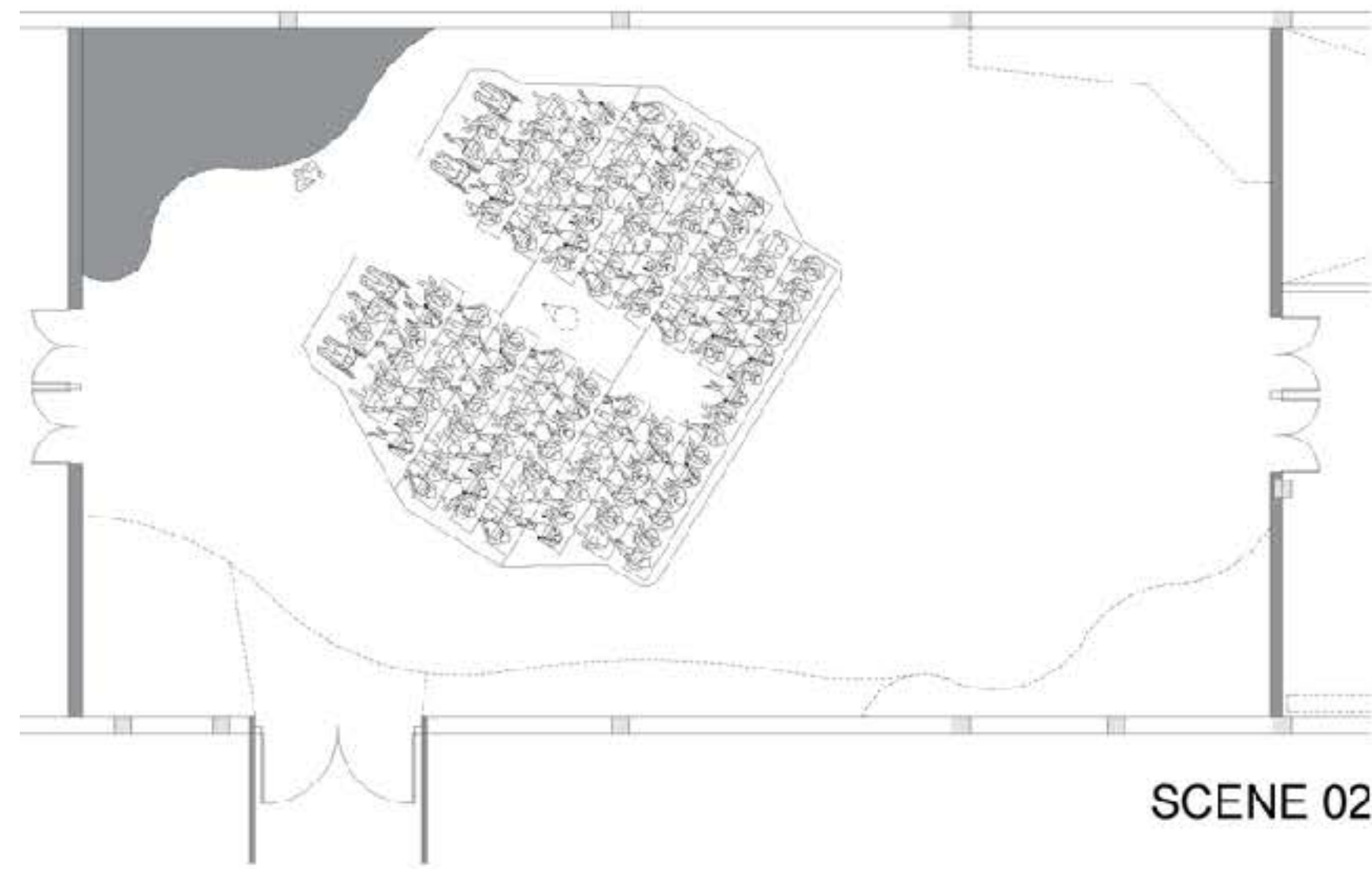
The story is projected onto a physical set piece (the side of a small house or maybe the side of a cow). Utilizing an animation style that incorporates real-life fabric and paper textures with realistic media elements that appear inside the vignette, this scene focuses on a smallholder farming community improving their soil and their health through nitrogen-fixing, high-iron, high-protein legume crops.



As we follow their work through technology and hands-on trial studies, the community welcomes us to “join” a few of their cultural and food traditions. The narrator briefly pokes her arm behind the “screen,” and her arm reappears in animation to take some food.

The scene ends in celebration, as one of the farmers PLANTS A SEED and a large fabric bean stalk extends from the projection surface, growing in front of us, up towards the ceiling.

Zone 4 Signature Theatre



Our narrator hops out of the scene as the seating platform now spins around and moves to another part of the theatre. The music transforms again, now into the style of Colombian Cumbia music.

We're in the mountains of Columbia. We come upon a set that playfully represents a traditional Colombian coffee farm. The narrator sings about how climate change has threatened the cultivation of a world-favorite crop – Colombian coffee.

We meet a Columbian family (again, in the same playful animation style) who shares a bit of their culture and food traditions, and their pride in the coffee they grow.

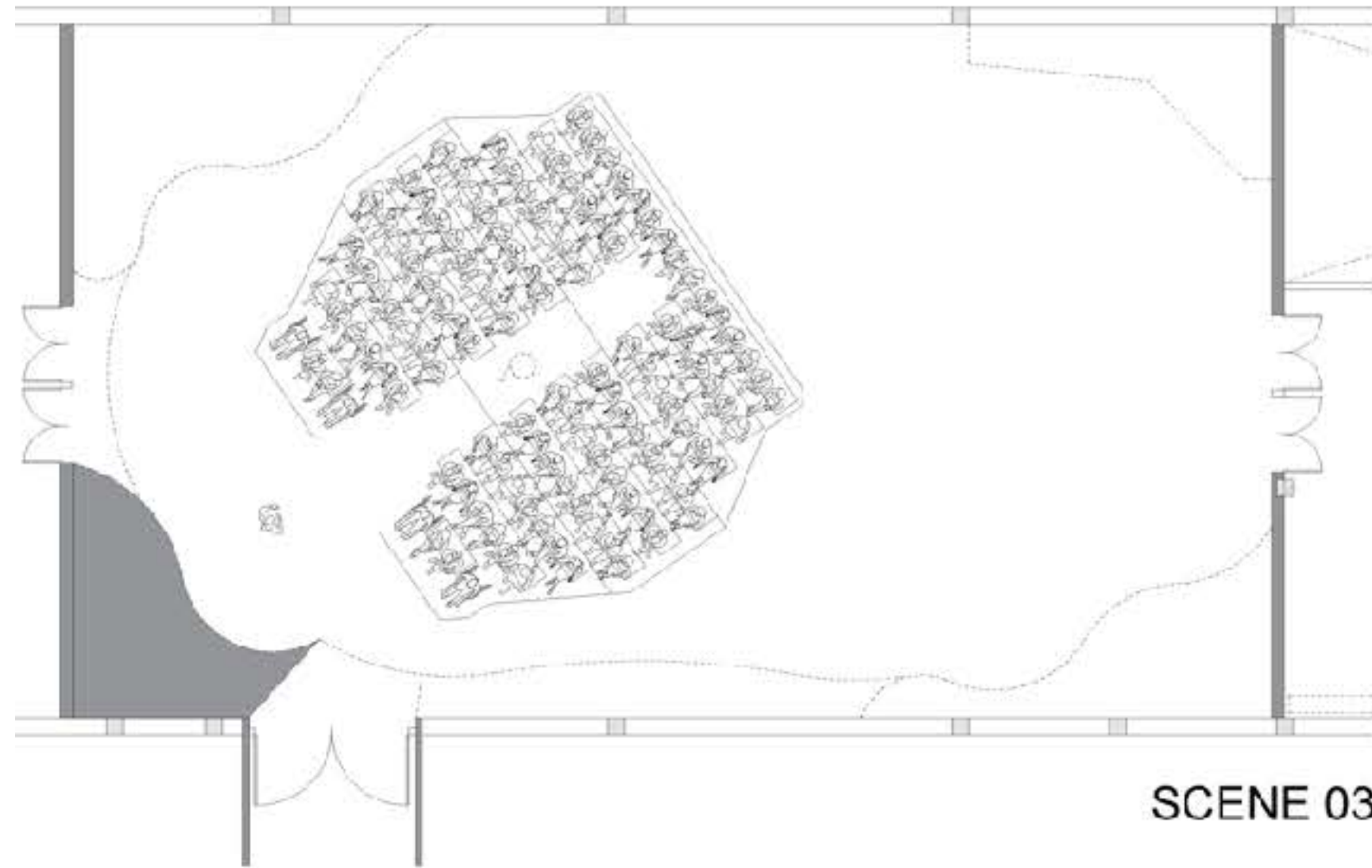
WORLD FOOD CENTER | Schematic Review 100%



Worried about the increasing threats to their land and livelihood, they have joined other coffee-growing families and public, private, and civil organizations to develop a climate adaptation model.

All together, they are working to reduce production losses from climate hazards while also lowering the impact of their coffee production on the environment.* As the scene ends, the narrator walks behind one of the coffee farm's buildings and appears as a fully animated character. She PLANTS A SEED with one of the family members in the animation, and then walks across the set and out of the scene on the other side, now fully human again, following a vine that has grown from the seed.

Zone 4 Signature Theatre



As the music returns to the style of soaring traditional Dutch pop music, the seating platform spins and moves to the third stop – a farm in Food Valley. We see a big, “paperized” cutout of a cluster of greenhouses. The buildings (also created in the same playful, paper-cutout style) are layered with LCD monitors throughout; characters appear in these monitors.

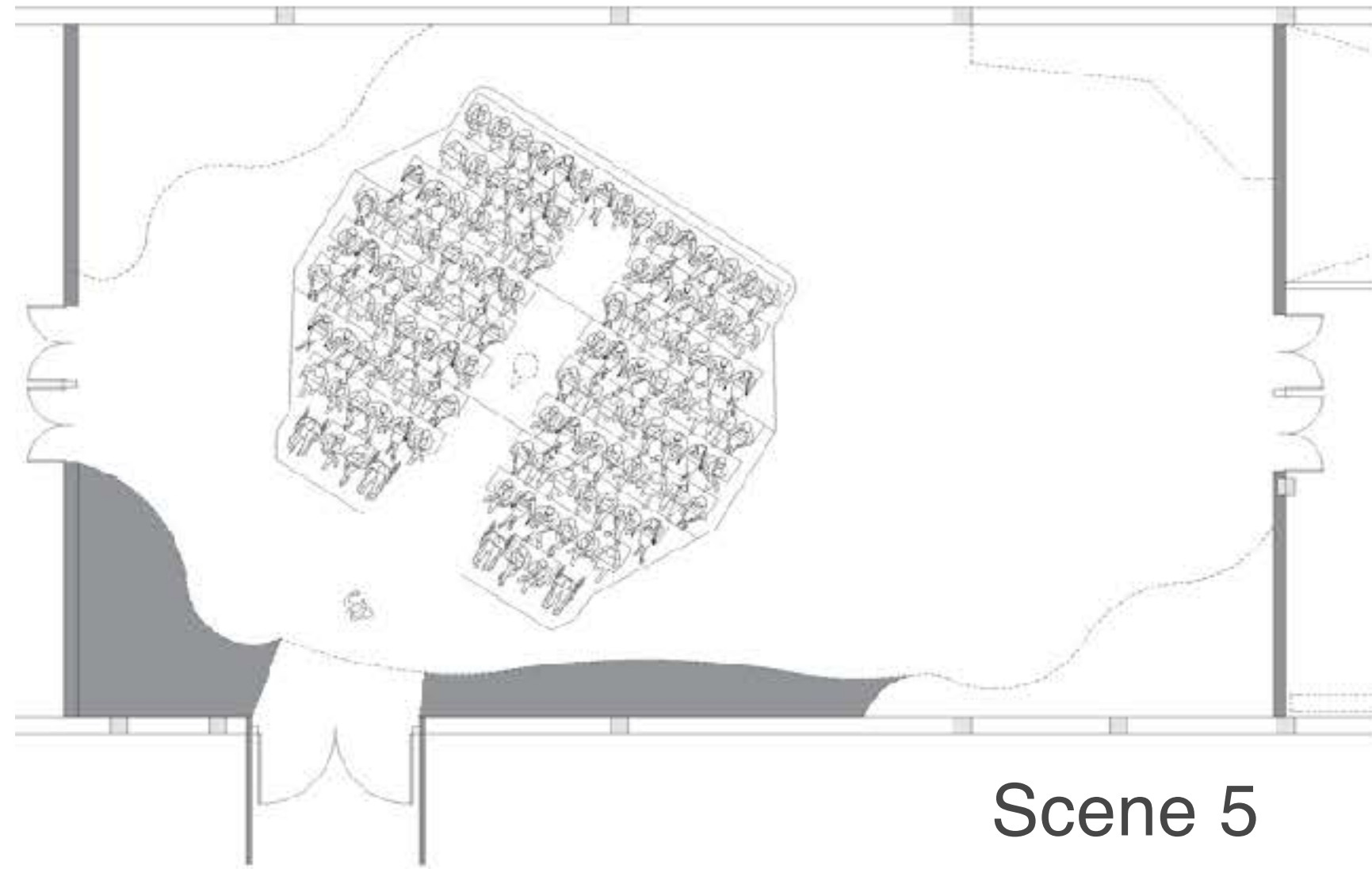
The narrator sings about food waste, and the huge role it currently plays on climate change around the world. She/he steps into the scene and becomes a fully-animated character, which she will remain as for the rest of the show.



She/he is joined (in animation) by a group of farmers and scientists. They sing about the research and innovation taking place on this farm, and the broader goal of zero hunger with zero carbon footprint in 2050.*

As the scene ends, they all PLANT A SEED together, watching it grow as the seating platform moves one last time, revealing a large, playful interpretation of the old military building exterior façade.

Zone 4 Signature Theatre



The vine that was planted at the start of the show grows along these animated buildings, where our characters' faces are projected, singing along with the narrator.

They sing about the World Food Center and the exciting role it plays in seeking solutions to the 2050 challenge. It serves as the "heart" of Food Valley.



As fruit and vegetables begin to grow on all the plant life, the fantastical greenhouse doors open and light pours through. It's reminiscent of the light that flowed from the portal in the floor when the first seed was planted...

As the lights come up the animated narrator gestures for us all to walk across the stage, through the now-open doors, and into the greenhouse that will be the first step of our journey through the World Food Center.



Zone 4 Signature Theatre

ZONE 4

SIGNATURE THEATRE

Takeaway Message

We're facing a big challenge to sustainably feed everyone in the world by 2050. It's going to take all of us doing our part. The World Food Center is at the heart of these efforts. This is a place of innovation, joyful optimism, and caring people doing amazing things!

Emotional Journey Pathway

Builds emotional connection and opens guests' hearts to receive WFC messages.

Fun Factors

The imaginative set design, animation style, and use of media, coupled with the moving platform, welcome guests into the story, much like entering a fantastical pop-up storybook. The lively WFC-custom music includes a catchy vocal refrain that guests will remember and encounter again during their visit. Guests walk out of the theatre feeling like the World Food Center is full of magical surprises, with stories that connect emotionally in a surprising way.



ZONE 4

SIGNATURE THEATRE

UN SDGs

Touches on almost all, including No Poverty, Zero Hunger, Good Health & Well-Being, Quality Education, Clean Water & Sanitation, Affordable & Clean Energy, Decent Work & Economic Growth, Innovation & Infrastructure, Reduced Inequalities, Sustainable Cities & Communities, Responsible Consumption, Climate Action, Life on Land, Partnerships for the Goals.



ZONE 4

SIGNATURE THEATRE

Note:

The African and South American stories are included here as examples. As we develop the show further during the next phase of Design, we will consult the Content Team to select two real-world communities participating in real initiatives, focusing on the longevity of these stories as well as their power to engage the audience and convey the WFC theme.

Links to examples used in the story beats

www.n2Africa.org

[lbishyimbo -www.youtube.com/watch?v=fo6449Rd3l0](https://www.youtube.com/watch?v=fo6449Rd3l0)

Columbia Project https://www.wur.nl/upload_mm/f/7/b/212f0bfd-926d-4c53-ada4-b54893c26f59_8412104028_CCM_CC_brochure_Colombia_EN_LR%20%28002%29.pdf

Food Valley Project <https://www.wur.nl/en/Research-Results/Themes/theme-biobased-economy/Waste-as-raw-material.htm>





ZONE 4 SIGNATURE THEATRE

ZONE 5

THE GREENHOUSE

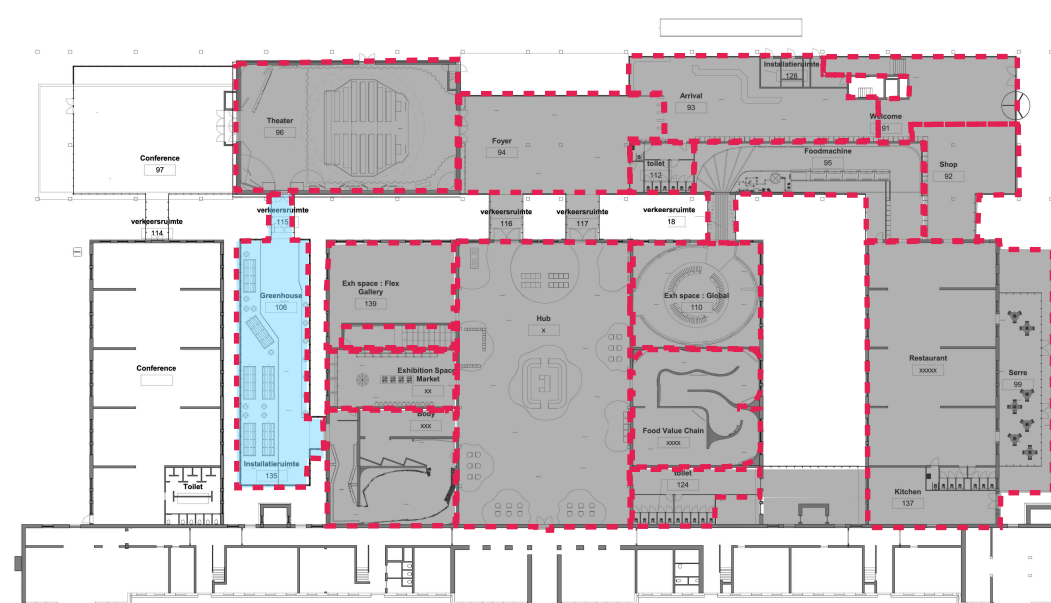
ZONE 5: THE GREENHOUSE

LEGEND

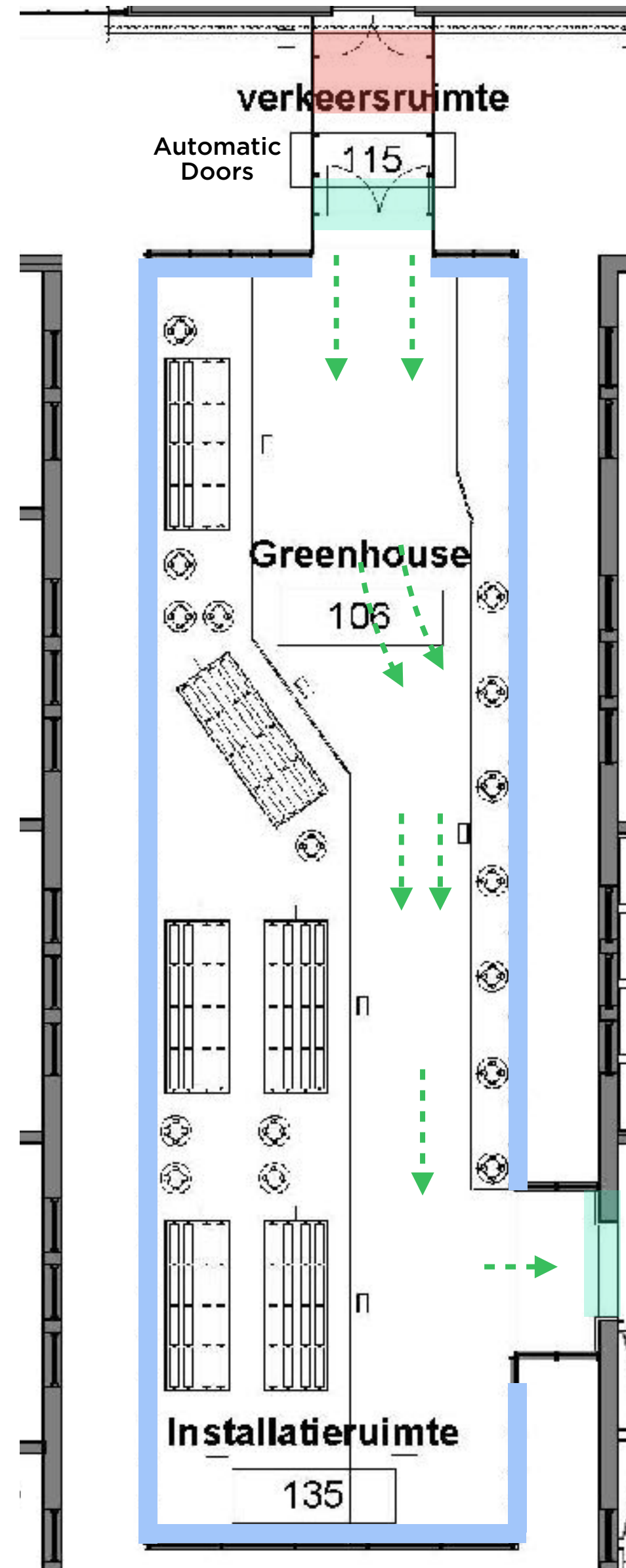
- Glass
- Non-Emergency Show doors
- Standard Glass Facility Doors

Size - 105m² (1,130ft²)

Capacity - 53



Key Plan



ZONE 5

THE GREENHOUSE

Adventures in Vertical Farming

Guests exit the Theatre to find themselves in the real-life embodiment of a vertical farm that recalls the stylized and animated plant life that grew around them in the show they just experienced.

The Living Lab

This climate-controlled greenhouse represents the genuine, innovative, sustainable agriculture under constant research and development here in the Netherlands. With a host who can answer questions and guide guests towards the first experience zone, the greenhouse serves as a beautiful living installation that is also a highly-efficient “laboratory” equipped with 24-hour grow lights and other markers of high-yield farming.



THE GREENHOUSE

Grown Right Here

Highlighted with colorful graphics to explain what guests are seeing, within guests' line of sight and reach are hydroponic crops such as baby lettuces, rocket, and cherry tomatoes, all staggered so guests can observe the various stages of growth, and track the crop cycle from soil to table. Crops beyond guests' reach are permanent installations to help ease operational responsibilities and costs.

Farm to Table Before Your Eyes

All planting is driven by actual WFC operations with input from an expert consultant. After cultivation, the crops are used in the restaurant or elsewhere in the World Food Center (at the discretion of the operator).





ZONE 5: THE GREENHOUSE

ZONE 5

THE GREENHOUSE

Takeaway Message

Wow, this is innovative, sustainable, and beautiful! I wonder what's next?

Emotional Journey Pathway

Opens the senses to help full-sensory exploration, deepen emotional engagement.

Fun Factors

Miniature varieties of vegetables and fruit create a fun sense of scale. The transition from the Theatre into a living embodiment of the last story beat creates an emotional impact that connects guests physically to the story they are now a part of.



ZONE 5

THE GREENHOUSE

UN SDGs

Zero Hunger, Good Health & Well-Being, Clean Water & Sanitation, Affordable & Clean Energy, Innovation & Infrastructure, Sustainable Cities & Communities, Climate Action, Life on Land.

Seed Saver Badge

Can connect guests to their home's climate zone, begin adding to their flavor profile, learn about the seasonal crops, and collect information about the growing and gardening.





ZONE 5: THE GREENHOUSE

ZONE 6

YOUR FOOD, YOUR BODY

ZONE 6: YOUR FOOD, YOUR BODY

LEGEND

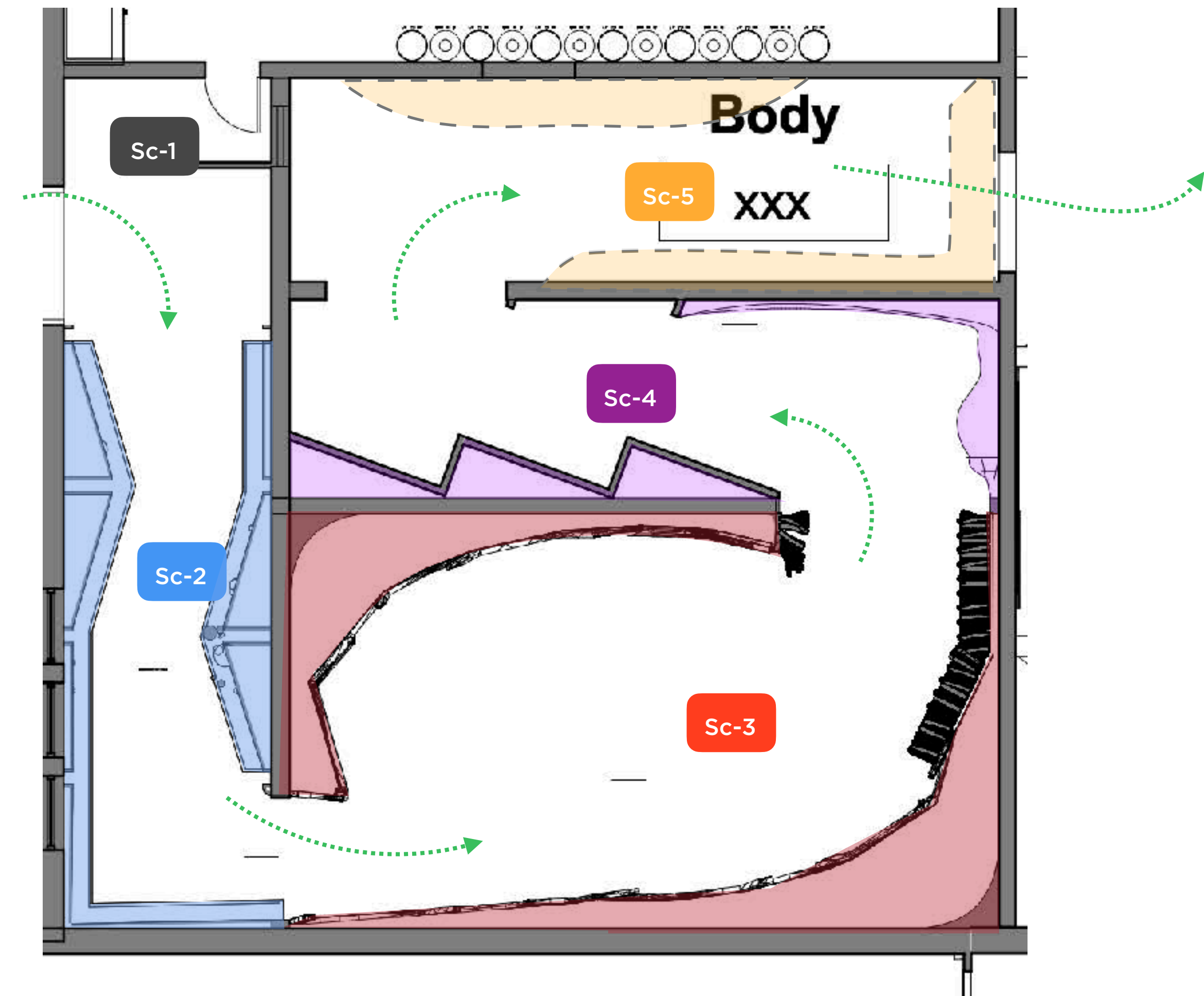
- Sc-1** Scene 1 - Entry
- Sc-2** Scene 2 - Smell
- Sc-3** Scene 3 - Taste
- Sc-4** Scene 4 - Food For Health
- Sc-5** Scene 5 - You are what you Eat

Size - 114m² (1,227ft²)

Capacity - 57



Key Plan



ZONE 6

YOUR FOOD, YOUR BODY

Introduction

By this point, guests have been introduced to the 2050 challenge in a surprising and delightful way in the Theatre and walked through a sensory example of part of the solution in the Greenhouse. The WFC Experience premise is that rather than being daunted by the 2050 challenge, we must approach it together, with creativity, inspiration, experimentation, perseverance, and a sense of joy in the many possibilities for our shared future.

In this Zone, guests experience a creative – and fun – journey of how food affects your body in an imaginatively rendered, playful, linear walk-through experience. Fantastically visualized exhibit pieces are accompanied by media and sensory elements where guests connect what they eat with corresponding physical and/or sensory processes in order to create a baseline of personalized knowledge for them before exploring the larger, global issues in the other areas of the WFC.



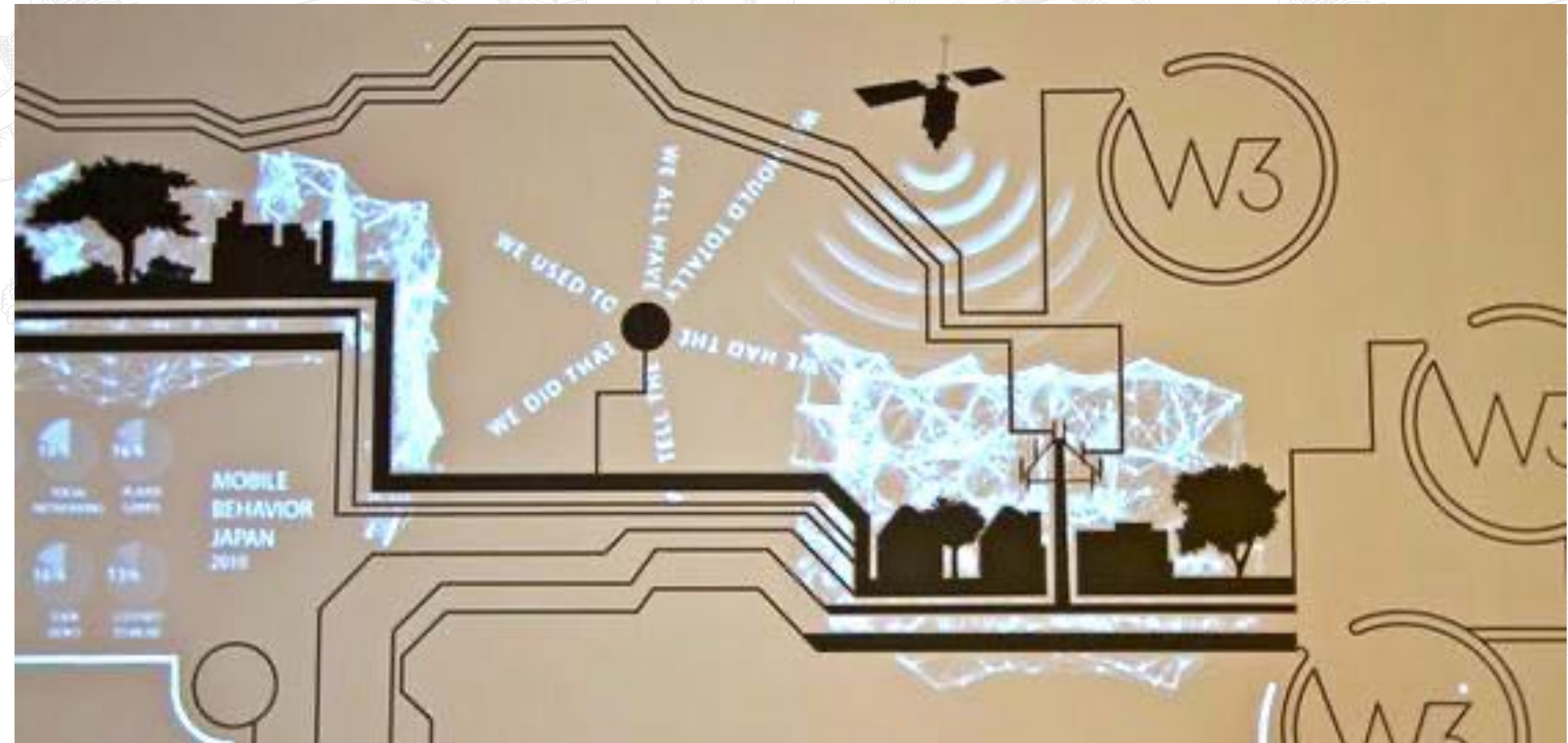
ZONE 6

YOUR FOOD, YOUR BODY

Introduction Continued

These encounters in Your Food, Your Body are brief and impressionistic to pique guests' curiosity and keep them moving through the space; they can dive more deeply into these subjects through activities in the upcoming Hub and adjacent Zones or research them in-depth online through the flexible digital portal designed in conjunction with the WFC Experience.

This portal can be personalized after their WFC visit with the aid of the information that has been collected on their visit by the Seed Saver badge.



ZONE 6

YOUR FOOD, YOUR BODY

Scene 1 - Entry

Food affects us in so many ways. We use it to mark momentous life events, express our creativity, demonstrate our love. It also gives us energy, builds our muscles, and keeps us healthy. When we have enough to share, it brings us joy.

Food feeds the soul as much as it feeds the body.

As guests enter Scene 1, a bold, playful graphic image sets the stage for their journey. It visually conveys how food impacts each of us, with an emphasis on the joy, connection, and fun it brings to our lives.





Zone 6 Your Food, Your Body

YOUR FOOD, YOUR BODY

Scene 2.a - Smell

As we enter Scene 2, colorful graphics convey this incredible message: smell evokes joy and memories, calling to mind our favorite family dishes and traditions. (Each area of Scene 2 conveys this message through a fun, colorful image and a brief, straight-forward description on a graphic wall. 1 or 2 areas include media to display changing images.)

This graphic treatment shows that when we smell something, for reasons we don't completely understand, the information goes straight to the olfactory cortex, which is nestled right next to the hippocampus - where memories are shaped. Many neuroscientists say that explains why smell can evoke such powerful memories.



YOUR FOOD, YOUR BODY

Scene 2.b - Smell Continued

The second set of graphics explains that one of the most incredible elements of smell is how personal it is. We all smell the world differently. Because only around half of the odor receptors are common to all people, we don't perceive smell the same way. And smell is believed to be responsible for at least 70% of flavor, so if you think something tastes good, it's more smell than taste that is driving that feeling.

Scene 2.c - Smell Continued

As we keep walking, we're offered a challenge of sorts. What do you smell? And what memories come up for you with the 3 smells you're about to experience? We enter a winding series of 3 chambers, each filled with a familiar scent.

This first scent area contains the clean scent of celery or fresh herbs.



YOUR FOOD, YOUR BODY

Scene 2.d - Smell Continued

We continue to the second scent area with the bright, sharp scent of durian, strong aged cheese, or another “love-or-hate,” controversial food.

Scene 2.e - Smell Continued

Continuing to the third scent area, we breathe in the wonderful scent of baking bread, evoking home, hearth, and love.

The smell chambers connect us emotionally to the knowledge that food connects us, the smell of food is essential to memory and joy (and sometimes disgust), and that flavor is driven as much by smell as it is by taste.





Zone 6 Your Food, Your Body

ZONE 6

YOUR FOOD, YOUR BODY

Scene 3 - Taste

The Tasting Room is where we visually experience the act of tasting, and how different our responses to different flavors can be. Food is about more than health and sustainability. It's also about pleasure, sensuality, and fun!

Amidst imaginative set pieces of the various components of the mouth, guests encounter monitors displaying the faces of people from each of the six global zones: Africa, Asia, Europe, North America, South America, and Oceania.

Our animated characters from the Theatre show narrate the action as they introduce some of the key facts about taste: the tongue is a muscle unlike any other in the body, it is coated with over 10,000 taste receptors, and they regenerate more than any other cells in the body – they're replaced every 10 days! Our mouths actually have more pain receptors than taste receptors, so when you eat something spicy your brain interprets it as your mouth being burned!



ZONE 6

YOUR FOOD, YOUR BODY

Scene 3 - Taste Continued

The children and adults on the screens respond to different tastes, including salty, sweet, sour, bitter, and umami. (These tastes will reappear later in the WFC guest experience, connecting to other areas such as the Food Machine and the Demonstration Kitchen.)

Their authentic responses clearly demonstrate the personal and cultural aspects of flavor; for example, while a Thai child might happily lick her lips after a bite of fish-sauce enhanced noodles (umami), a child from Australia might reject it altogether.

Their reactions also play out in the room: when our animated guide says, “Let’s try this spicy pepper from Nigeria!,” the room turns red, some tasters love it, some can’t stand it, and one person blows smoke out of their mouth into the room.



YOUR FOOD, YOUR BODY

Scene 3 - Taste Continued

One of the characters in the room shares that the tongue isn't the only place we have taste receptors. They're also in the roof of the mouth, lower down the throat, in the gut, the heart, and they've even been found in the testicles!

The tasters – children and adults alike – react with shock to that little fact. When they try bitter dark chocolate, the various reactions include one person sneezing (water droplets) into the room, and our animated guide explains that a genetic quirk causes some people to sneeze when they eat chocolate.

The message is that our taste receptors work with our sense of smell and our brain to convey pleasure (ideally), distaste, or any number of other sensations. Texture or mouthfeel also play a big part in how we feel about a food. And taste (alongside smell) is what makes food so much fun!





Zone 6 Your Food, Your Body

ZONE 6

YOUR FOOD, YOUR BODY

Scene 4 - Food For Health

In Scene 4, guests find themselves in an artistic interpretation of their body's core in an area that serves as a quick walk-through transition between Taste and a slightly deeper dive into the nutrients their body needs in the following scene.

As guests make their way through the short transition space, there's a moment of childish joy as they're reminded how the foods we eat can impact the sounds that come out of our bodies! A grumbling stomach. Burps. Farts. Guests hear them all as the foods eaten in the Taste area proceed through the digestive system where food is broken down and its macro- and micronutrients are utilized. It's a fun, "musical" push towards the next scene.





Zone 6 Your Food, Your Body

“

TELL ME WHAT YOU EAT, AND
I WILL TELL YOU WHAT YOU ARE

JEAN ANTHELME BRILLAT-SAVARIN

YOUR FOOD, YOUR BODY

Scene 5.a - We Are What We Eat (Nutrition) Continued

How do we use the proteins, carbohydrates, fats, vitamins, and minerals we eat? How do we absorb the nutrients we need?

This scene puts guests inside the construction zone that is their body, giving them a fun, easily-understandable introduction to nutrients found in foods inside the Wheel of Five and how they meet our bodies' needs.



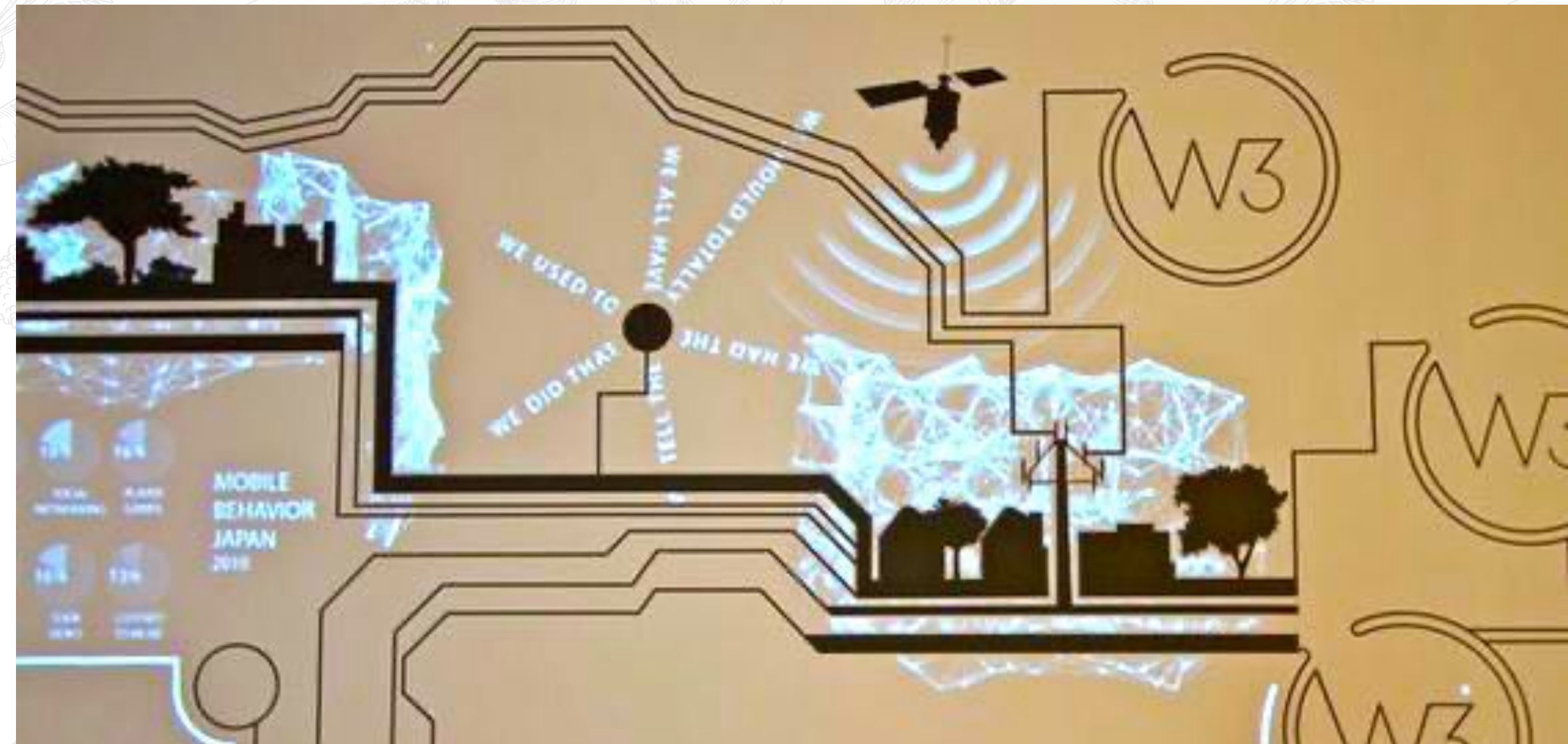
ZONE 6

YOUR FOOD, YOUR BODY

Scene 5.a - We Are What We Eat (Nutrition)

Here, guests encounter artistic interpretations of the essential roles macro- and micronutrients play in our bodies, connecting them to the corresponding physical functions. Told in the graphic style of a working construction zone, this scene shows how our bodies use the food we eat to build muscle, brain tissue, and energy. It also connects those foods to specific section(s) of the Wheel of Five, which guests encounter more fully in the Market.

Protein (the building block) – Found throughout our bodies, which are perpetually under construction, protein is frequently called the body's building blocks. It builds and repairs muscle, bone, skin, hair, and virtually every other body part or tissue. It helps fight infection and our bodies use extra protein for energy.



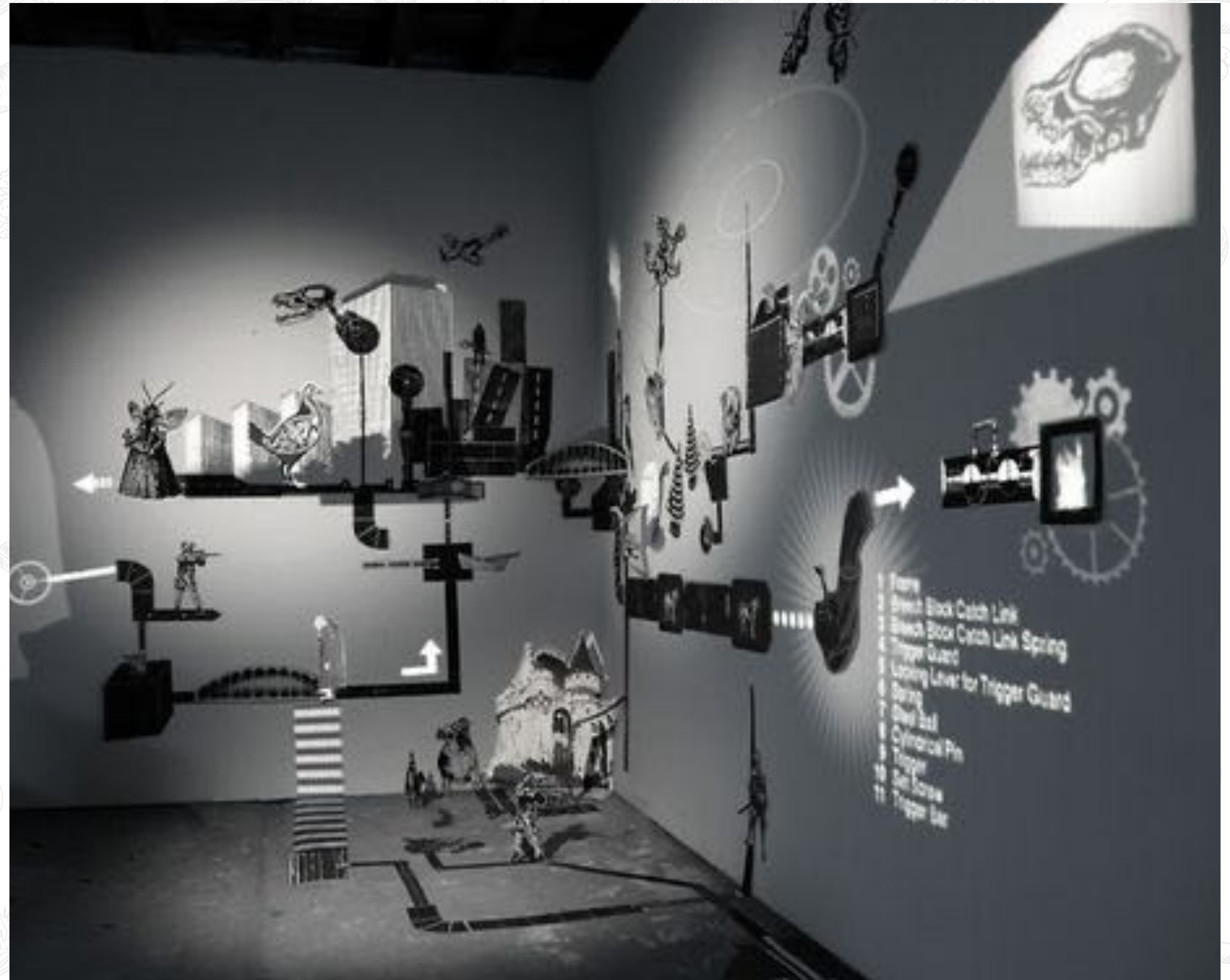
YOUR FOOD, YOUR BODY

Scene 5.b - We Are What We Eat (Nutrition)

Carbohydrates (our primary fuel source)- As our main source of energy, carbohydrates are found in several sections of the Wheel of Five. (Sugary and refined carbohydrates exist outside of the Wheel.) Carbohydrates provide our bodies with glucose, which is converted to energy used to support bodily functions and physical activity, keeping us running well and playing in tune. Healthy sources of carbohydrates also supply some much-needed fiber.

Scene 5.c - We Are What We Eat (Nutrition)

Fats (maintaining a well-oiled machine) - Healthy fats found within the Wheel of Five are necessary and beneficial to health. They supply energy and help our bodies absorb certain vitamins. While essential fatty acids help us function, our bodies cannot make them; we must consume them to keep ourselves running smoothly.



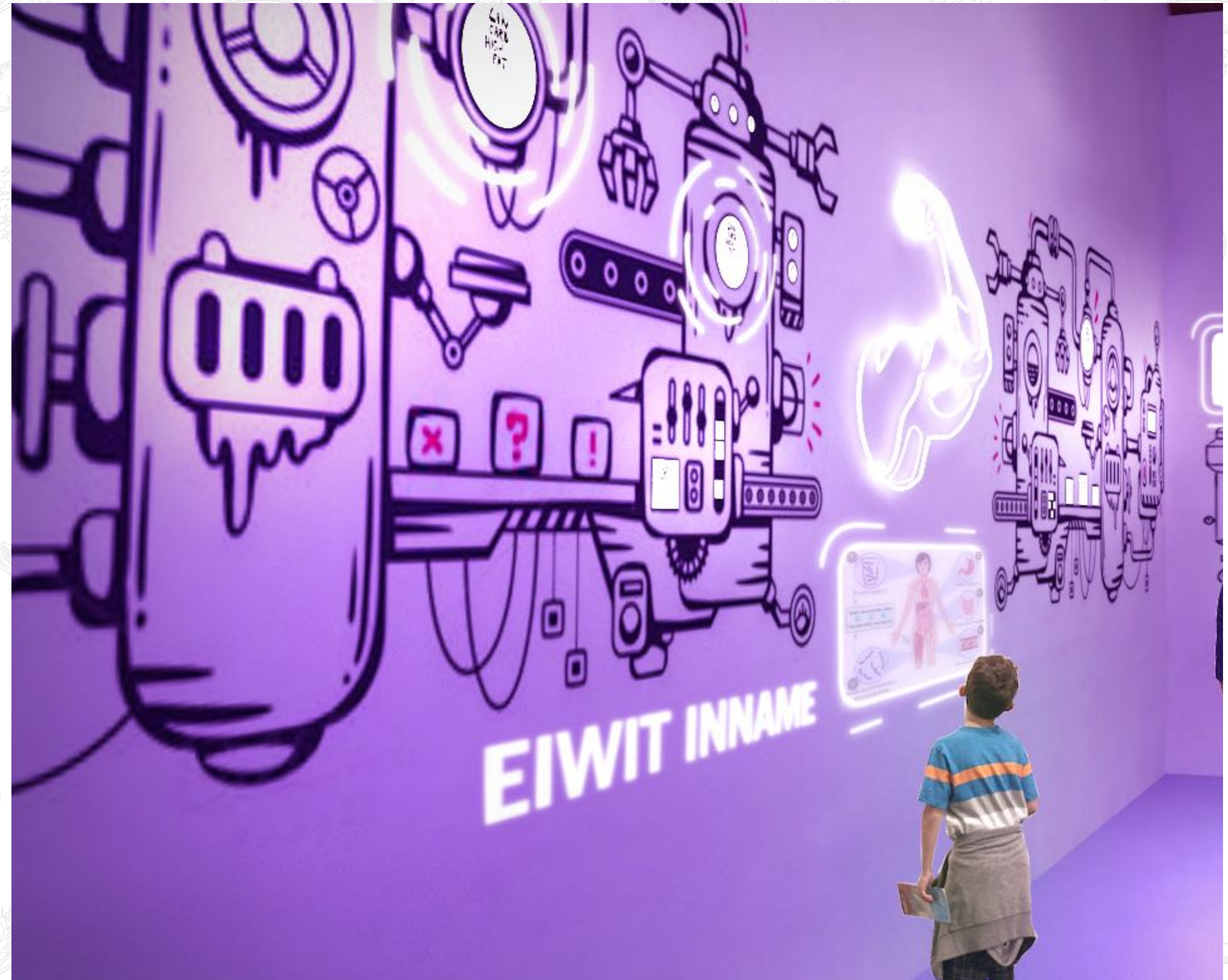
YOUR FOOD, YOUR BODY

Scene 5.d - We Are What We Eat (Nutrition)

Micronutrients (keeping everything functioning optimally)- Many Wheel of Five foods supply vitamins and minerals required by our bodies for a range of normal functions. Since our bodies cannot produce these micronutrients, we must eat a variety of foods to supply them for us to be a “picture of health.”

Scene 5.e - We Are What We Eat (Nutrition)

Nutrition for specific life phases or situations – Our nutritional needs shift over our lifetimes to meet the special requirements of childhood, pregnancy, elder years, illness, and intense athletic training. This area visually “dials in” special circumstances and conveys special dietary needs. It also begins to address how, if we eat beyond our nutritional needs, it can lead to issues like obesity and diabetes.





Zone 6 Your Food, Your Body

ZONE 6

YOUR FOOD, YOUR BODY

Takeaway Message

What I eat really makes a difference to my health and how I feel. Presented this way, it doesn't seem too complicated. I can try a few of these things.

Emotional Journey Pathway

Continuing to open the senses, open the mind through personal/individual connection.

Fun Factors

Eye-catching graphic treatments, fun media, unexpected scents and sounds, and short messaging bites keep guests' playful energy and interest up.

UN SDGs

Good Health & Well-Being.

Seed Saver Badge

Guests can dive more deeply into these subjects online after their WFC visit with the aid of their Seed Saver badge and the work of the Digital Strategy team.



ZONE 7

THE HUB

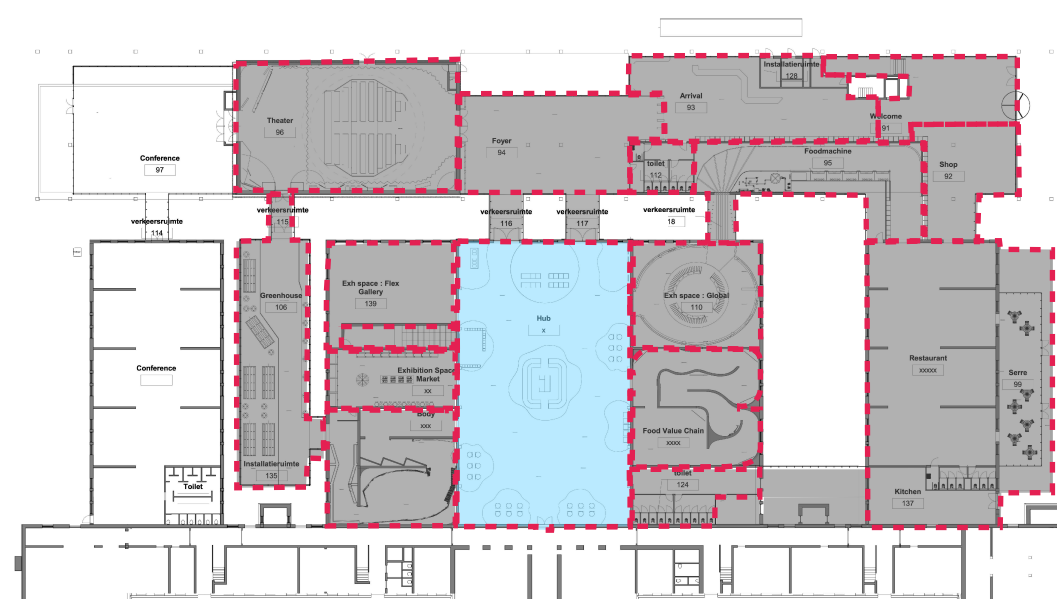
ZONE 7: THE HUB

LEGEND

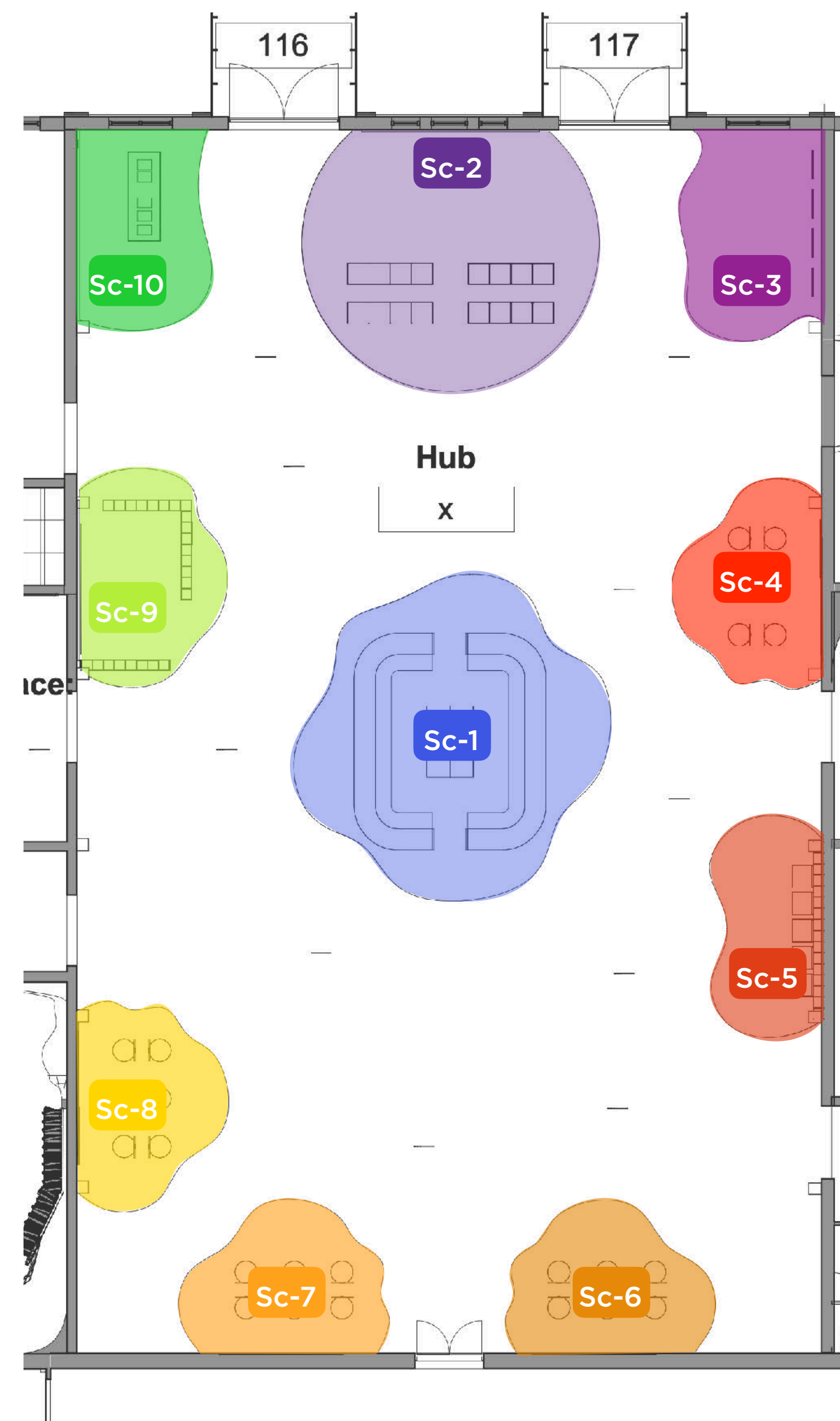
- Sc-1** Scene 1 - Demonstration Kitchen
- Sc-2** Scene 2 - Town Hall
- Sc-3** Scene 3 - Be the Change
- Sc-4** Scene 4 - Pixel Perfect: Farming for the Future
- Sc-5** Scene 5 - Taking Root: The Miracle of Seeds
- Sc-6** Scene 6 - Food Facts & Fables
- Sc-7** Scene 7 - Dutch Delights: Yesterday, Today, & Tomorrow
- Sc-8** Scene 8 - Exercise is Essential
- Sc-9** Scene 9 - Innovators of Food Valley
- Sc-10** Scene 10 - Unlocking the Future of Food

Size - 430m² (4,627ft²)

Capacity - 215



Key Plan





Zone 7 The Hub



Zone 7 The Hub

ZONE 7

THE HUB

Introduction

Guests exit Your Food, Your Body into the heart of the WFC, the Hub.

Here we focus on the regional story with global implications: how the Netherlands is seeking solutions to the 2050 challenge. Every exhibit and activity (indeed, every experience throughout the World Food Center Experience) is built on a strong scientific foundation, even when presented emotionally and in unexpected ways.

Exhibits and activities in the Hub showcase Food Valley's people behind the ground-to-ground process, research projects, and promising initiatives. These stories inspire guests with possible ways for them to act toward a sustainable and healthy food system for everyone.

The Hub also provides a focused look into the Netherlands' innovative research, agricultural practices, and industrial processes for visiting groups and international delegations with limited time.



ZONE 7

THE HUB

Scene 1 - Demonstration Kitchen

The idea of a sustainable and healthy food system is conveyed by the beautiful design elements evoking forms and materials found in nature. This lively space is grounded by a central Demonstration Kitchen featuring a wide range of programs, demonstrations, and tasting opportunities (driving repeat attendance for local guests).

Here, in a series of short shows and cooking demonstrations that are programmed throughout the day (and can be streamed online through an integrated camera package), guests find delicious ways to taste outside their current comfort foods, exploring the exciting possibilities of new protein sources, old but new fermentation techniques that create new flavors and improve gut health, fighting food waste by using ALL of a plant or sustainably-raised animal, and harnessing the medicinal properties of mushrooms and other foods.

In addition to serving the local audience, this area also has a robotic camera package to allow WFC the opportunity to build a virtual audience and host live cooking segments.



THE HUB

Scene 2 - Town Hall

The Hub also features a Town Hall space that hosts both live and pre-recorded conversations (on a series of integrated screens) between leading experts on specific food-related topics, focusing on the latest findings, as well as current dilemmas and controversies. Together, the Demonstration Kitchen and the Town Hall activate the space, filling it with energy and excitement throughout the day.

While the schedule of programs allows for a wide range of audiences throughout the day/week/month/year (children of all ages to adults, general public to academic to governmental, domestic to international, etc.), all programming in the Town Hall addresses elements of one central question: How are we going to solve the 2050 challenge so we can sustainably nourish each other? The format ranges from lively debates between food sector researchers and/or innovators to game shows geared toward schoolchildren or the general public.



ZONE 7

THE HUB

Scene 2 - Town Hall Continued

Possible topics include:

- The politics of the 2050 challenge and whether or not it's simply politics and distribution that are the biggest challenges.
- The health debate between caloric and non-caloric sweeteners, root causes and how to address obesity, food vs. vitamin supplements, the sustainability of animal-based proteins, “busting” food fables through scientific facts.
- The ethics of different types of packaging, the GMO debate, protecting our pollinators, the organic food movement vs. mechanized large-scale agriculture, global food aid vs. food assistance.
- The political complexity of the global food chain, animal welfare, animal emissions, and the future of 3D-printed food.



THE HUB

Exhibits and Activities

Hub exhibits and activities entice guests to explore various topics, several of which were introduced in Your Food, Your Body. They also find inspiration and explore tangible ways they can play a role in meeting the WFC challenge.

Scene 3 - Be the Change

A station where guests can research challenges that affect them personally, including nutrition, obesity, home gardening, water conservation, food waste, and aspects of climate change. Here, they discover how our personal choices make a difference and find how Dutch individuals are addressing these topics.

Using their Seed Saver badges, guests can collect common-sense recommendations, pledge specific actions, and sign up for encouraging tips and links to new information after their WFC visit, as well as WFC events and exhibits on topics that interest them.



THE HUB

Scene 4 - Pixel Perfect: Farming for the Future

In this exhibit, guests discover how applying human ingenuity to traditional natural processes is creating a more promising future. Here, they explore how researchers at campus Almkerk are experimenting with intensive crop-planting systems and innovations in pixel farming that tap into nature's wisdom regarding natural plant partners, biodiversity, and pest control. Guests also see the exciting research into robotics and other machines to create a healthy, efficient, and sustainable farming system combining the best of nature and humankind.

Scene 5 - Taking Root: The Miracle of Seeds

In this exhibit, guests “visit” the lab of a Food Valley botanist/ researcher (on-screen), who takes them through the miracle of a plant's life. A large-scale digital microscope allows guests to witness the time-lapse germination of a seed (with a large projection surface above so the experience can be shared with a wider group). The researcher guides guests through the rest of the life cycle via time-lapse video through growth, harvest, and preparing for the next crop.



THE HUB

Scene 6 - Food Facts & Fables

An interactive, self-testing station presents Food Facts & Fables, where guests discover the truth or myth behind various claims (often made by food bloggers and online influencers) and are supplied with facts to counteract falsehoods. These include “a calorie is a calorie,” “restricted diets are essential for health,” and conspiracy theories like “our enemies will force us to eat bugs!”

*Note: this content will be selected in collaboration with the WFC content team and additional stakeholders.



ZONE 7

THE HUB

Scene 7 - Dutch Delights: Yesterday, Today, & Tomorrow

In this exhibit area, guests discover stories behind traditionally-produced Dutch foods, how they are grown and processed today, and what that production might look like in the not-too-distant future.

*Note: these profile subjects will be selected in collaboration with the WFC content team and additional stakeholders.



ZONE 7

THE HUB

Scene 8 - Exercise is Essential

Guests explore the essential role exercise plays in overall health and wellbeing. An interactive testing ground of physical activities (running, jumping, kicking a ball, etc.) educates them on the necessity of physical activity to sustain general health, energy, strength, stamina, mental agility, focus, and better sleep. In another area, guests see how much energy traditional hunter-gatherers burned in an average day vs. the average day of today's averages from around the globe. Guests can also attempt some of those traditional ways of getting food, like jumping for a piece of fruit that seems just beyond their reach and chasing an animal across the savannah (using digital tracking and interactive treadmills).

Note: Taking into consideration current research that indicates the relationship between diet and exercise is not a mathematical equation, this Scene presents exercise/physical activity as an essential element of a healthy life, not as a way to “burn off” calories consumed.



THE HUB

Scene 9 - Innovators of Food Valley

In an exhibit area focused on Food Valley's innovative farmers, manufacturers, and food technologists, mini-documentary profiles offer guests the opportunity to meet the people behind the Netherlands' innovative ground-to-ground food process.

*Note: these profile subjects will be selected in collaboration with the WFC content team and additional stakeholders.

Scene 10 - Unlocking the Future of Food

In this exhibit area, the research work of Wageningen University and Food Valley's NGOs and independent research organizations are highlighted, including profiles of professors, food start-ups, founders, and research scientists.

*Note: these profile subjects will be selected in collaboration with the WFC content team and additional stakeholders.



THE HUB

Takeaway Message

I'm really impressed with the Netherlands' people and their food system. There's a lot to think about and some simple ways I can do my part. I can't believe I ate insect ice cream... and loved it!

Emotional Journey Pathway

Continuing to build a personal connection to WFC community; exploring new, mind-broadening possibilities.

Fun Factors

The Demonstration Kitchen generates lots of fun activity and tastes; there is good-natured fun and humor conveyed by the individuals featured in the various Exhibits & Activities; "Exercise is Essential" invites guests to participate in fun physical activities, even pretending to be a traditional hunter-gatherer and discovering it's really hard work!



ZONE 7

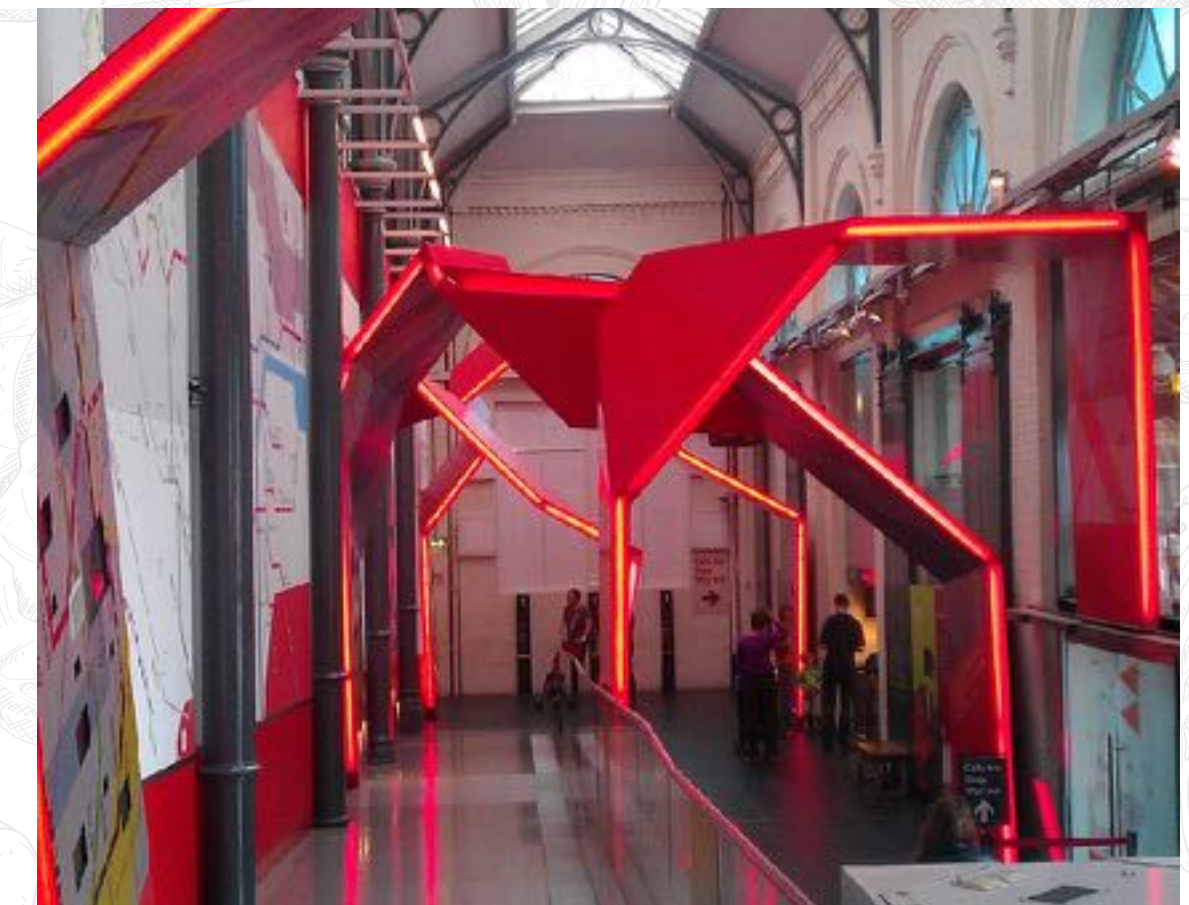
THE HUB

UN SDGs

No Poverty, Zero Hunger, Good Health & Well-Being, Quality Education, Clean Water & Sanitation, Affordable & Clean Energy, Decent Work & Economic Growth, Innovation & Infrastructure, Reduced Inequalities, Sustainable Cities & Communities, Responsible Consumption, Climate Action, Life Below Water, Life on Land, Partnerships for the Goals.

Seed Saver Badge

Guests continue to build personal collection. They can connect to their home's climate zone and seasonal crops, and receive information on how to eat seasonally.



ZONE 8

THE MARKET

ZONE 8: THE MARKET

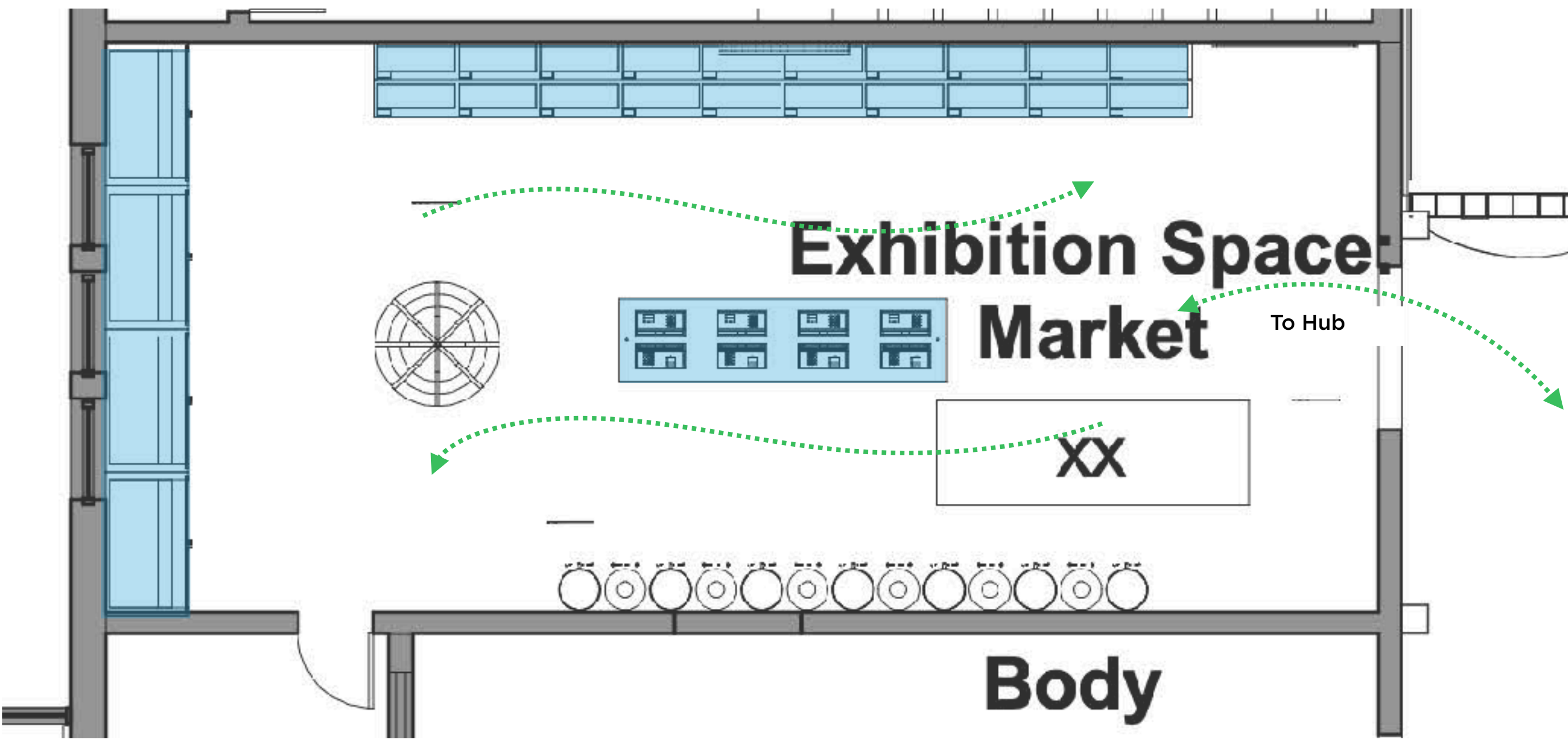
LEGEND

Market Interactive

Size - 82m² (883ft²)
Capacity - 41



Key Plan



ZONE 8

THE MARKET

Introduction

Accessible from the adjacent Hub, this high-energy space gives guests the opportunity to begin putting what they are learning at the World Food Center into practice. Using sound, light, and surprising interactions, the Market reinforces the WFC messages and conveys how to use the Wheel of Five in a fun, unexpected, and memorable way.





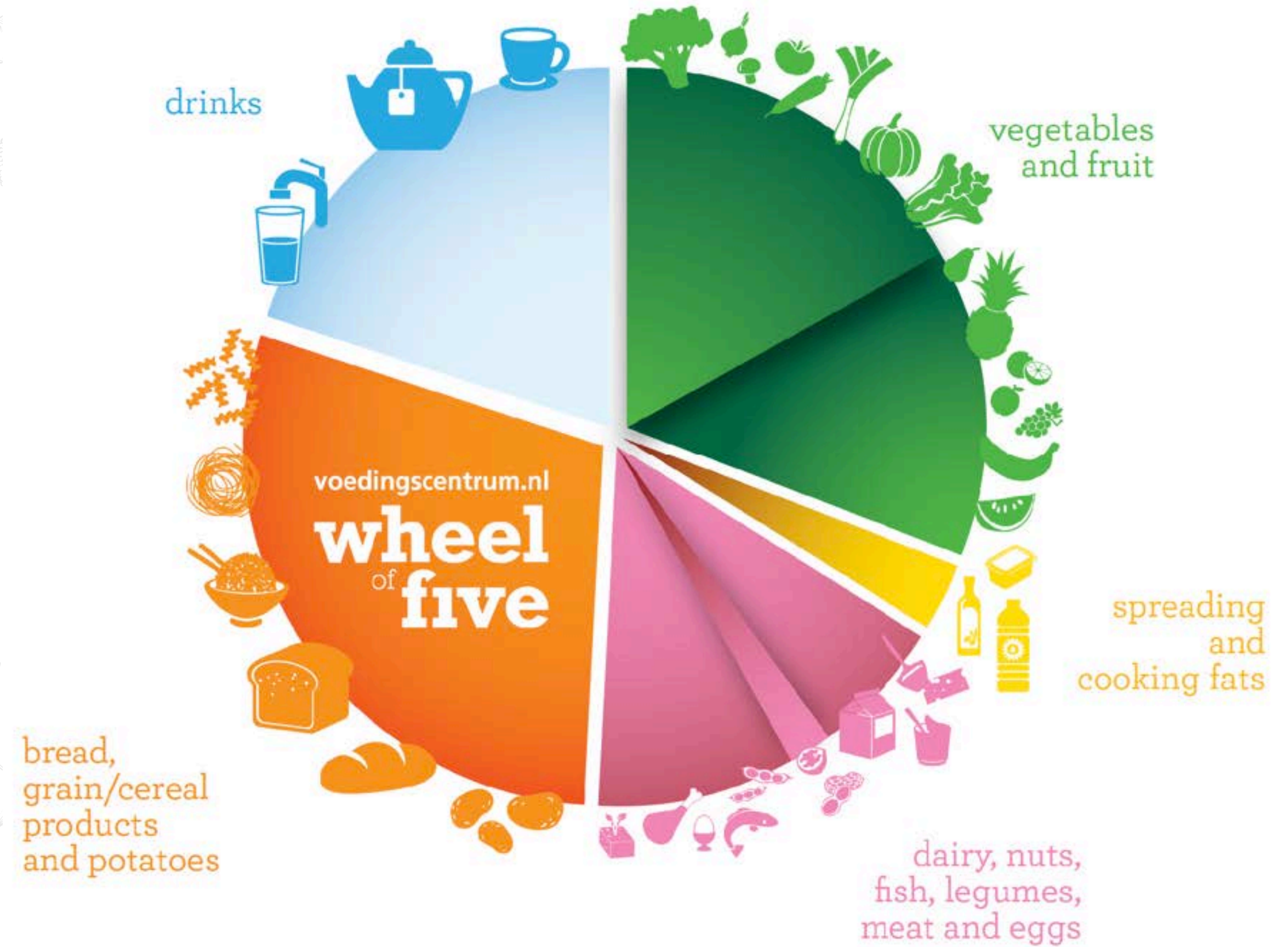
Zone 8 The Market

THE MARKET

Scene 1 - The Wheel of Five

The focal point of the Market area is a large, animated Wheel of Five on one wall. Shelving to the left and right of the wheel contains items representing foods inside and outside the Wheel's categories.

When guests (children and adults alike) select a food from the shelves using their Seed Saver badge technology, the Wheel responds to their choices with beeps and chimes and bits of information that appear in the space above and around their choices and beneath the Wheel.



THE MARKET

Scene 1 - The Wheel of Five Continued

Guests can select and receive information for foods both inside and outside the Wheel:

Inside the Wheel – Representing the ideal place to be, this area is populated with many delicious foods within the Wheel’s five categories: vegetables and fruits; bread, grain/cereal products (especially whole grain), and potatoes; protein-rich dairy, nuts, fish, legumes, meat, and eggs; healthy cooking and spreading fats; and sufficient fluids such as water, tea, and coffee.

Outside the Wheel – Representing a place best visited on a very limited basis, this outer area includes foods that are not life-sustaining and could potentially have an adverse effect on health if over indulged. It is populated with sweets and manufactured snacks, especially products containing excessive amounts of salt, sugar, trans fatty acids, saturated fats, or too little fiber.





Zone 8 The Market

THE MARKET

Scene 1 - The Wheel of Five Continued

Interacting with the Wheel conveys to guests how their food choices matter. Taking in too much energy, particularly the less complex and simpler carbohydrates, can lead to obesity, and eating a nutrient-poor diet can lead to undernutrition and illness. Each day, people make about 200 food choices mainly driven by impulses. We frequently encounter foods that are intensely marketed, attractively packaged and displayed, and sold in aroma-enhanced environments to encourage impulse purchases.

As kids (and kids at heart) go to check out and scan their purchases at the register, their “receipt” gives them their “purchase total” measured in nutritional value instead of Euros. Guests are celebrated for their wise choices and alerted to how the clever marketing of nutrient-poor foods can undermine their best intentions to consume a healthy diet. They’ll see the effects their choices will have on their bodies (information they can take home, and also access via the website and their Seed Saver badge).



THE MARKET

Scene 1 - The Wheel of Five Continued

In the Market, guests discover they can enjoy a healthy balance of foods from inside the Wheel lightly “seasoned” with treats from outside the Wheel. Rather than presenting specific numbers and percentages, the quick blink is non-threatening, accessible, and fun to play. It communicates that incorporating the Wheel of Five into your life is a matter of paying attention to healthy portion sizes and determining if foods outside the Wheel can be enjoyed a few times daily or weekly. Balancing our diet with a variety of foods from inside the Wheel of Five can help transport us to a life of vitality while decreasing our risk of obesity, undernutrition, and a host of diseases such as diabetes and heart disease.



KIES MIJ !

UITCHECKEN



THE MARKET

Scene 2 - Shop so you Don't Drop!

While children shop, parents can keep an eye from adjacent interactive stations that allow them to dive more deeply into the Wheel of Five and explore tips on meal planning, reading food labels, how to avoid unhealthy impulse purchases, cooking, the obesity epidemic and how to address it at home, and global recipe collecting, all focused on how people can incorporate nutrition, wellness, flavor, sustainability, and conscientious participation in our food systems into everyday life.



THE MARKET

Takeaway Message

My food choices really matter for my health and our food systems. Making good choices can even be fun. I feel more prepared for my next shopping trip, and I can't wait to try out this recipe!

Emotional Journey Pathway

Engaging in memorable activities, building connection to the WFC mission through personal/family choices.

Fun Factors

The Market presents the Wheel of Five and healthy choices through game-like challenges that pique guests' interest and participation while presenting essential information in a surprising, accessible, and entertaining way.



ZONE 8

THE MARKET

UN SDGs

Good Health & Well-Being, Quality Education, Responsible Consumption.

Seed Saver Badge

Kids and adults use their badges to trigger activities and collect the food that they would like to “check out” at the register. They can also gather additional input into taste profiles, which will be used at the end of their visit for personalization with the Food Machine and can be accessed at home through the WFC website.



ZONE 9

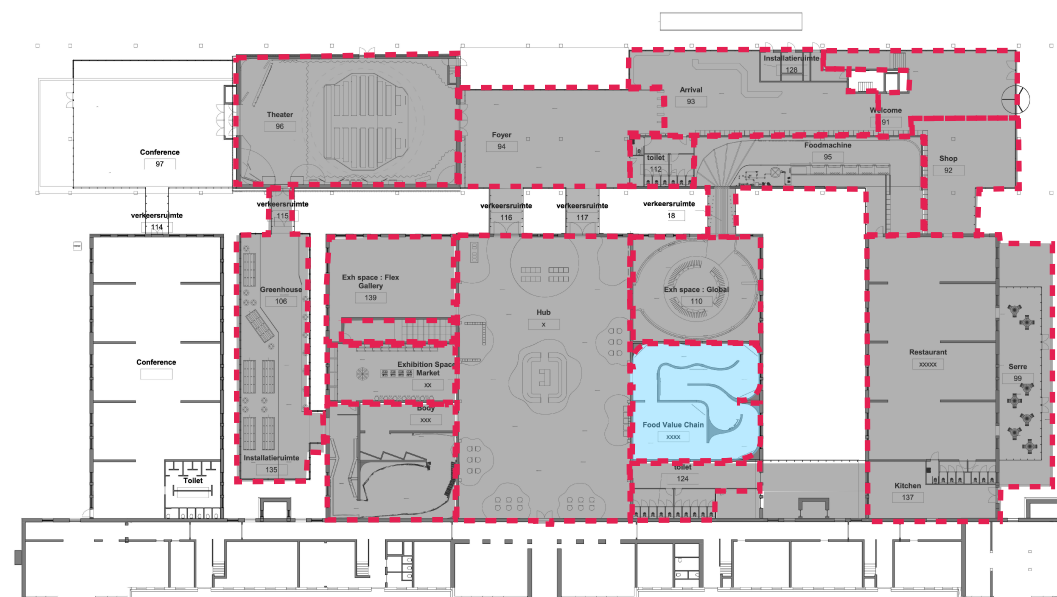
FROM GROUND TO GROUND
THE FOOD VALUE CHAIN

ZONE 9: FROM GROUND TO GROUND / THE FOOD VALUE CHAIN

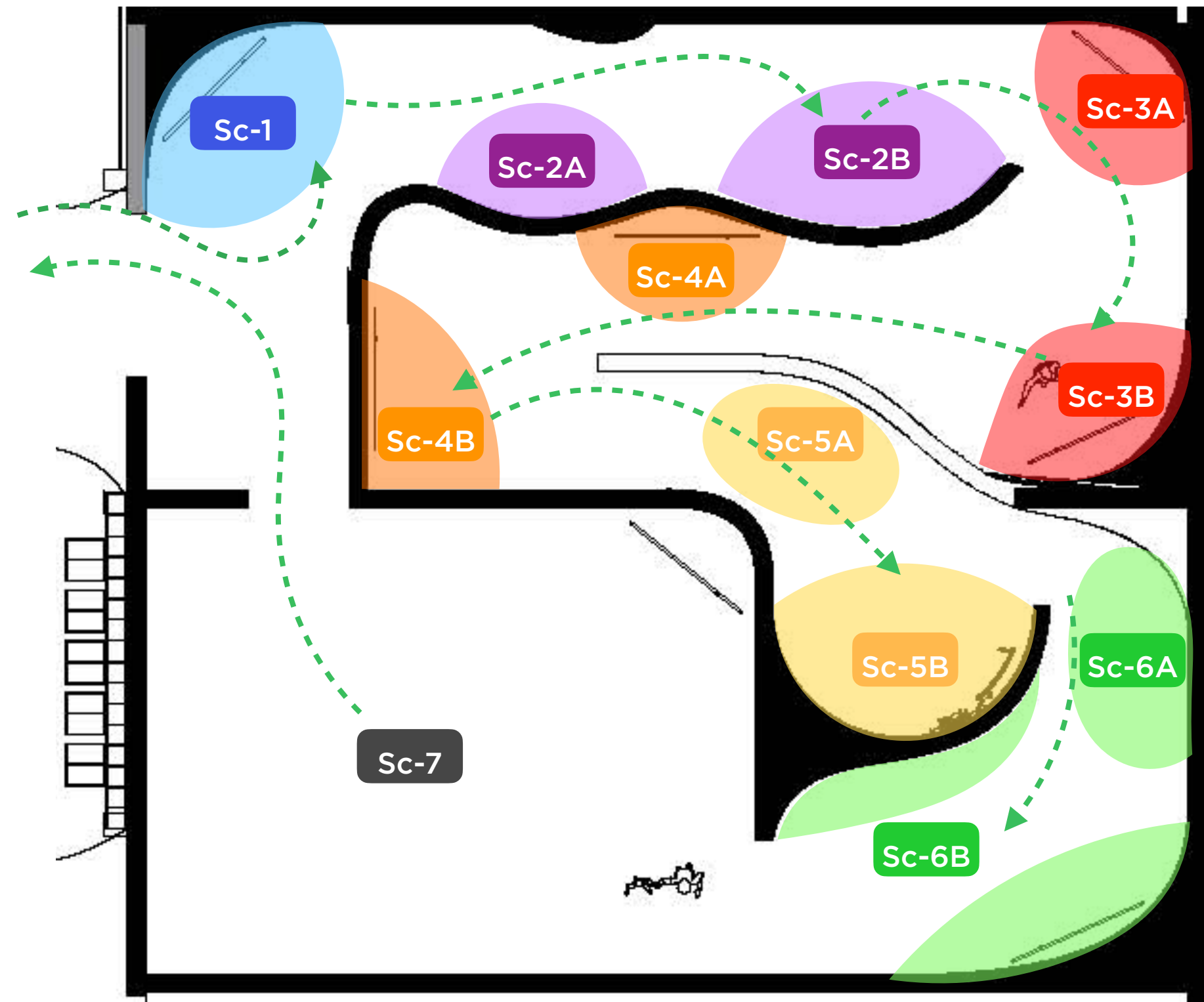
LEGEND

- Sc-1** In the Beginning
- Sc-2A** Eat or Be Eaten
- Sc-2B** Meet Mankind
- Sc-3A** Fire!
- Sc-3B** Agriculture & Community
- Sc-4A** Breaking the Ice
- Sc-4B** Dawn of Civilization
- Sc-5A** Full Steam Ahead
- Sc-5B** The Industrial Revolution
- Sc-6A** Hidden in Shadow
- Sc-6B** Hope for the Future
- Sc-7** Where Are We Going?

Size - 120m² (1291ft²)



Key Plan



THE FOOD VALUE CHAIN

Introduction

This engaging, interactive, sensory experience zone takes guests through the entire food value chain, from its early history to the sustainable direction it must shift to, focusing on the people who make it work:

- Producers, who research, develop, farm, ranch, and trade food commodities
- Processors, who harvest, butcher, process (primary and value added), manufacture, and market food products
- Distributors, who market and sell (wholesale and retail) food
- Consumers, who shop for, purchase, and consume food
- Governments, NGOs, and Regulators, who monitor and regulate the entire food value chain from producer to consumer



THE FOOD VALUE CHAIN

The Four Questions Of the Food Value Chain

Their stories are divided into four overarching questions:

- How did we get here? (Human development from amoeba to establishment of agricultural communities)
- What was it before? (Agricultural development to Industrialization)
- What is it now? (Industrialization through today's Food Value Chain)
- Where are we going? (How we can meet the 2050 Challenge by reimagining the Food Value Chain and helping to heal our planet)



THE FOOD VALUE CHAIN

The Four Questions Of the Food Value Chain Continued

The first three questions are presented in a series of short, interactive pods that host individual scenes, as guests experience a lively (looping), walking, chapterized animated show told via projection and sound on walls with dimensional objects partially embedded on the “projection” area.

Throughout, our animated guide/narrator hops from object to object – or scene to scene – to help tell the story: it's a living time-lapse overview of humankind's development, our relationship with food, the establishment of a Food Value Chain system to feed our communities and a growing global population, and the effects that system has had on the earth.

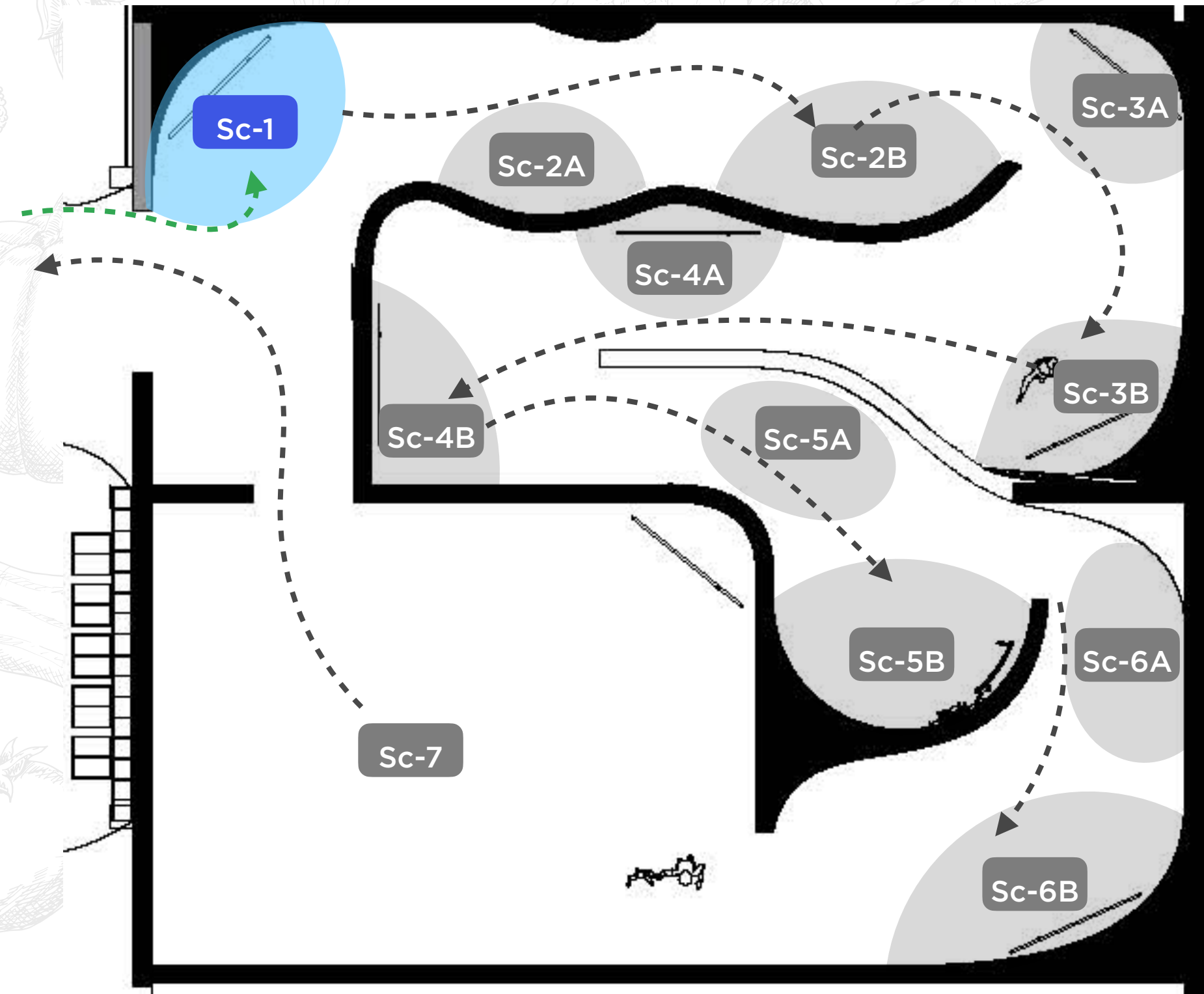


THE FOOD VALUE CHAIN

SCENE 1: In the Beginning

In the time before there were Homo sapiens, food drove evolutionary change. Amoebic animals fed on vegetal matter or dead animals, filtering nutrients out of the water in which they lived.

Animals such as worms, fish, and crabs began to appear. As they developed limbs, fins, and eyes...



THE FOOD VALUE CHAIN

SCENE 2a: Eat or be Eaten (Transition)

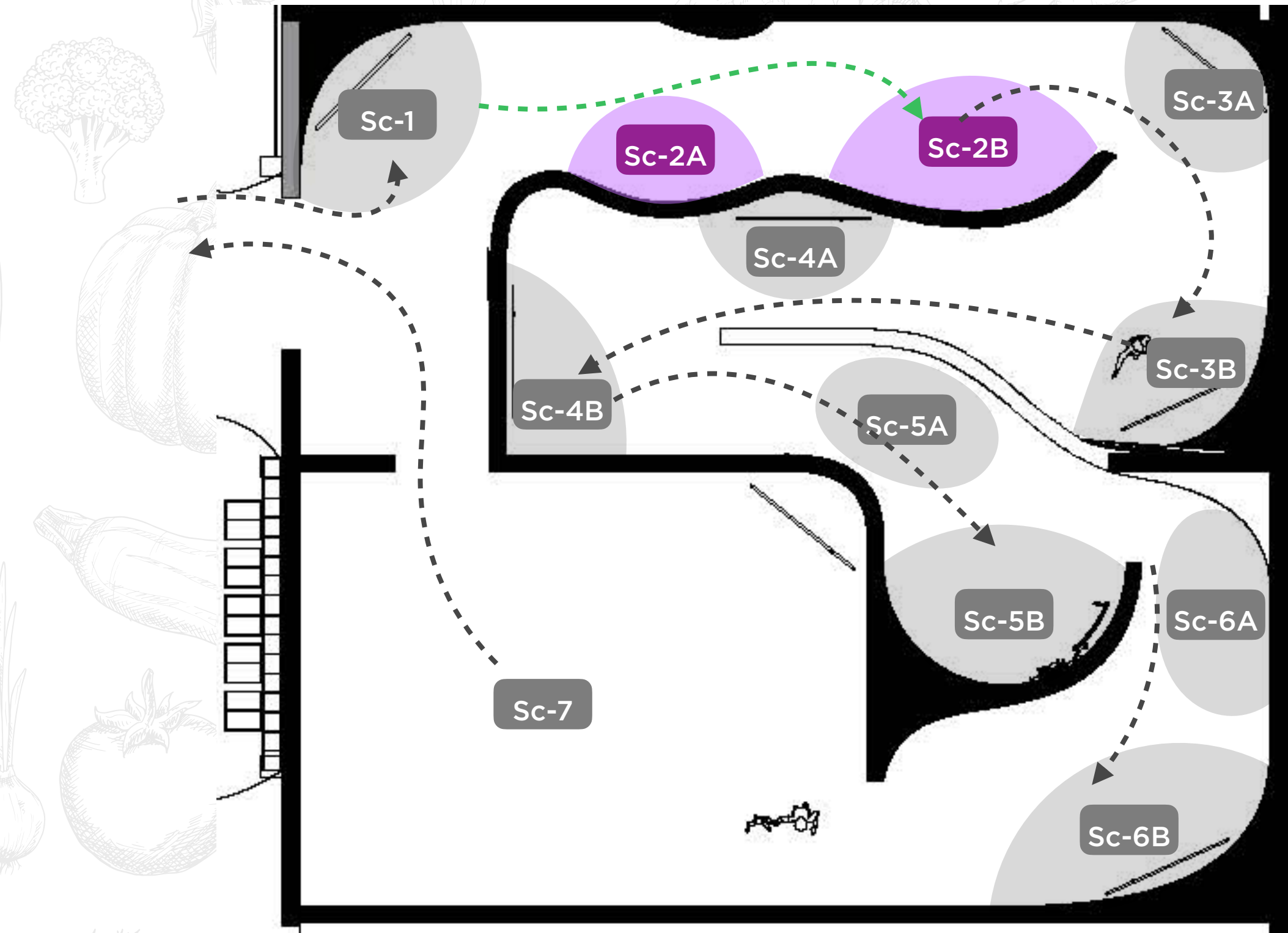
... some moved onto the land and began to interact with each other – it was eat or be eaten.

SCENE 2b: Meet Humankind

While most animals consumed a fixed diet, our ancestors evolved distinctions from tree-dwelling apes. These hominins began to walk upright and were able to reach and forage for a wider variety of food.

As their brains grew from better nourishment, they compensated for the diversion of energy from their muscles to their brains by developing more advanced thinking processes.

The development of more flexible thumbs created capacity for toolmaking and usage. The continued nourishment of their brains over a few million years created Homo sapiens.



THE FOOD VALUE CHAIN

SCENE 3a: Fire! (Transition)

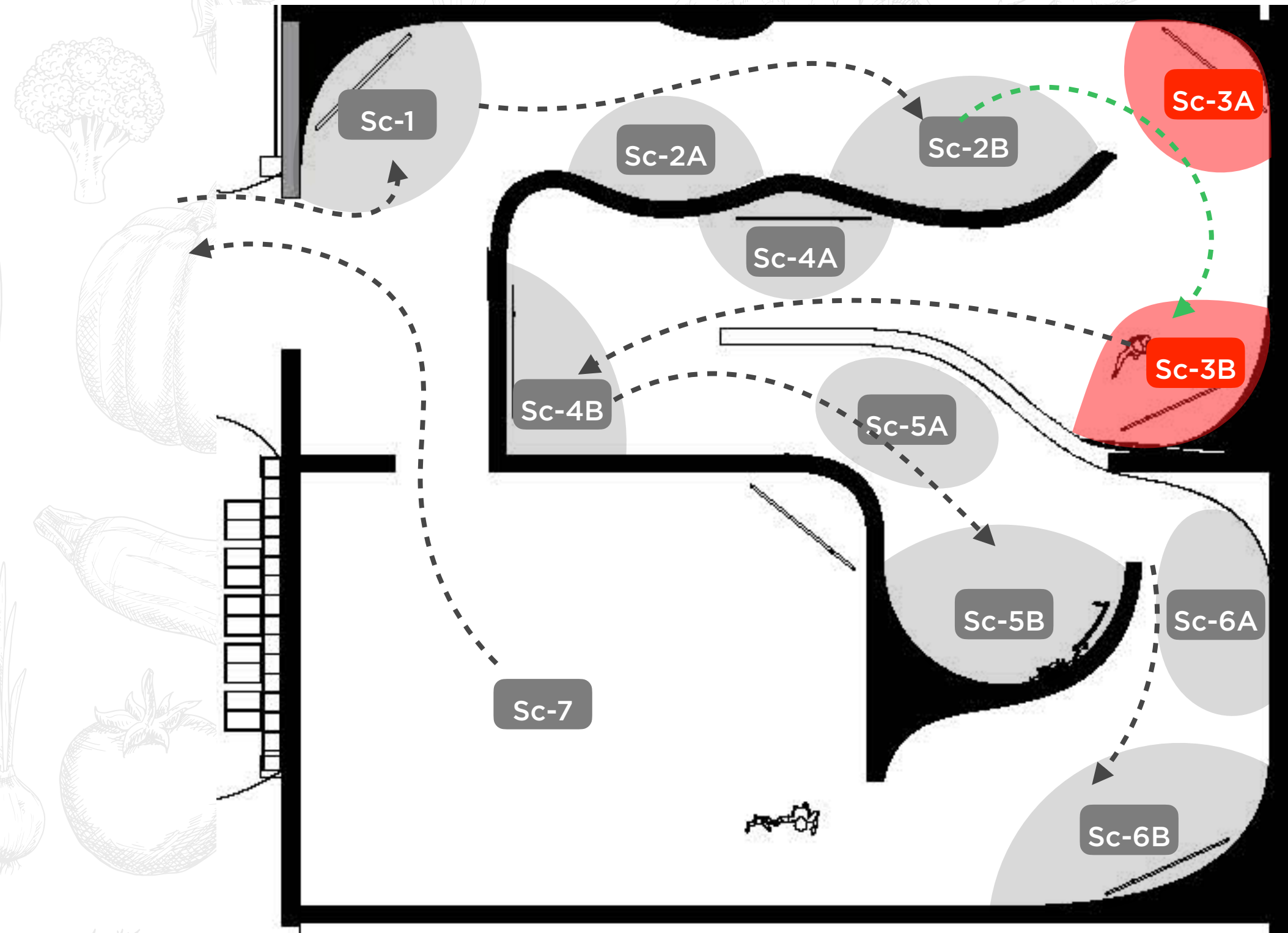
Eventually our ancestors realized they could hunt and gather more efficiently in groups, which led to social and communication systems. Their ever-developing brains led to the eventual taming of fire, which opened...

SCENE 3b: Agriculture & Community

...a new world of nutritional possibilities and led to more collaboration, dividing labor, and sharing resources.

Our ancestors observed the life cycle of plants and found ways to keep animals close by for food, milk, and breeding. Thus, over a long time and in multiple places, agriculture was invented.

This innovation marked the beginning of cooperative communities in which people intentionally cultivated plants and raised animals; invented things that altered the course of human civilization such as knives, canoes, and the wheel; and planned for the future by storing seeds, breeding animals, and ensuring they would continue to be able to do so.



THE FOOD VALUE CHAIN

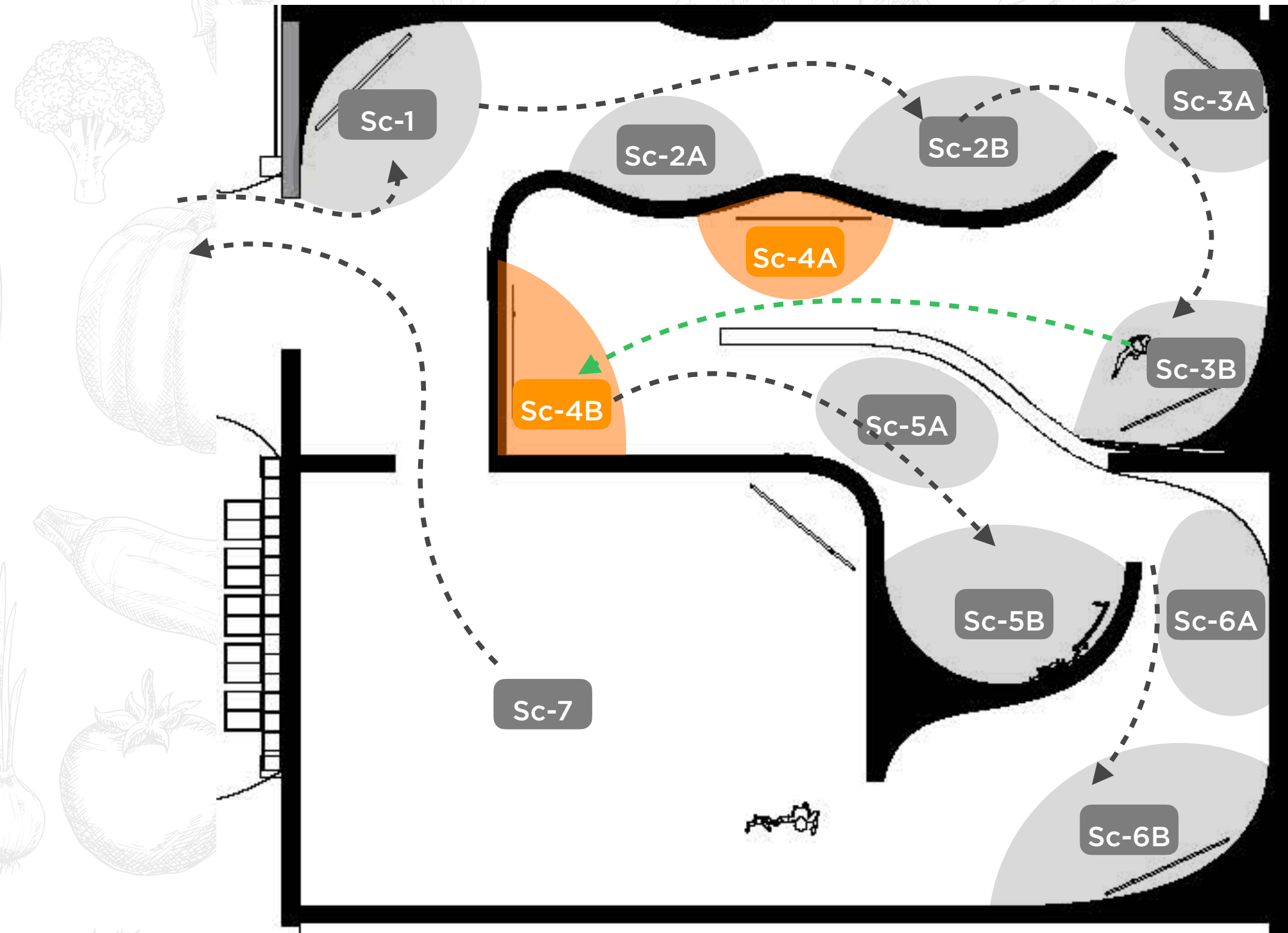
Scene 4a: Breaking the Ice (Transition)

Climate change brought a more hospitable environment supporting more humans who spread further. Agriculture increasingly edged out foraging, but hunters and gatherers remained.

Scene 4b: Dawn of Civilization

The earliest crops were wheat, followed by barley and other grains, and legumes. People began to propagate fruit and raise cattle, pigs, sheep, goats, and dogs. These efforts proved more fruitful than foraging.

Early agriculture included nomadic herding and clearing grasslands or forests through fire, then planting.

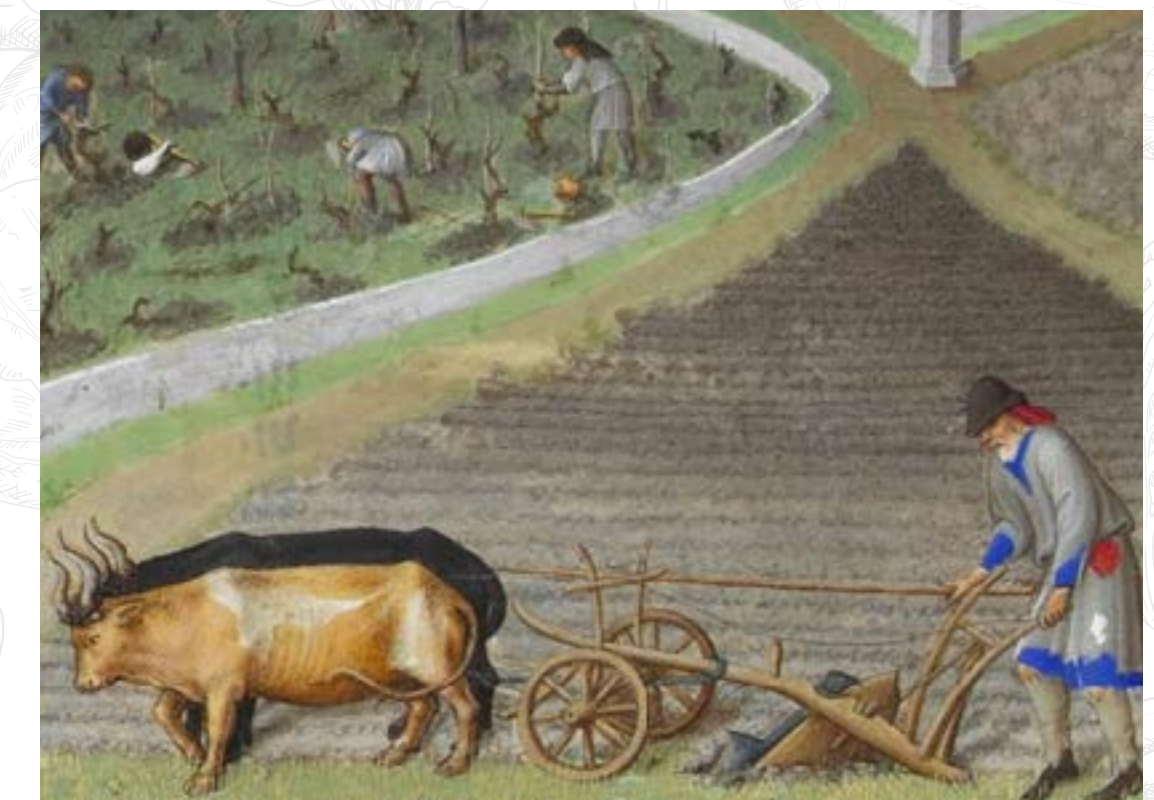


THE FOOD VALUE CHAIN

Scene 4b (cont.): Dawn of Civilization

Agriculture created civilizations – Domesticated animals became valuable, providing dairy, eggs, manure, meat, hides, and labor; families grew larger (parents no longer had to carry children from place to place), supplying more labor; communities developed cities, government, culture, writing, record-keeping.

Agriculture also brought consequences, including hard work, inequality, limited diets, depleted soil, hunger, malnutrition.



THE FOOD VALUE CHAIN

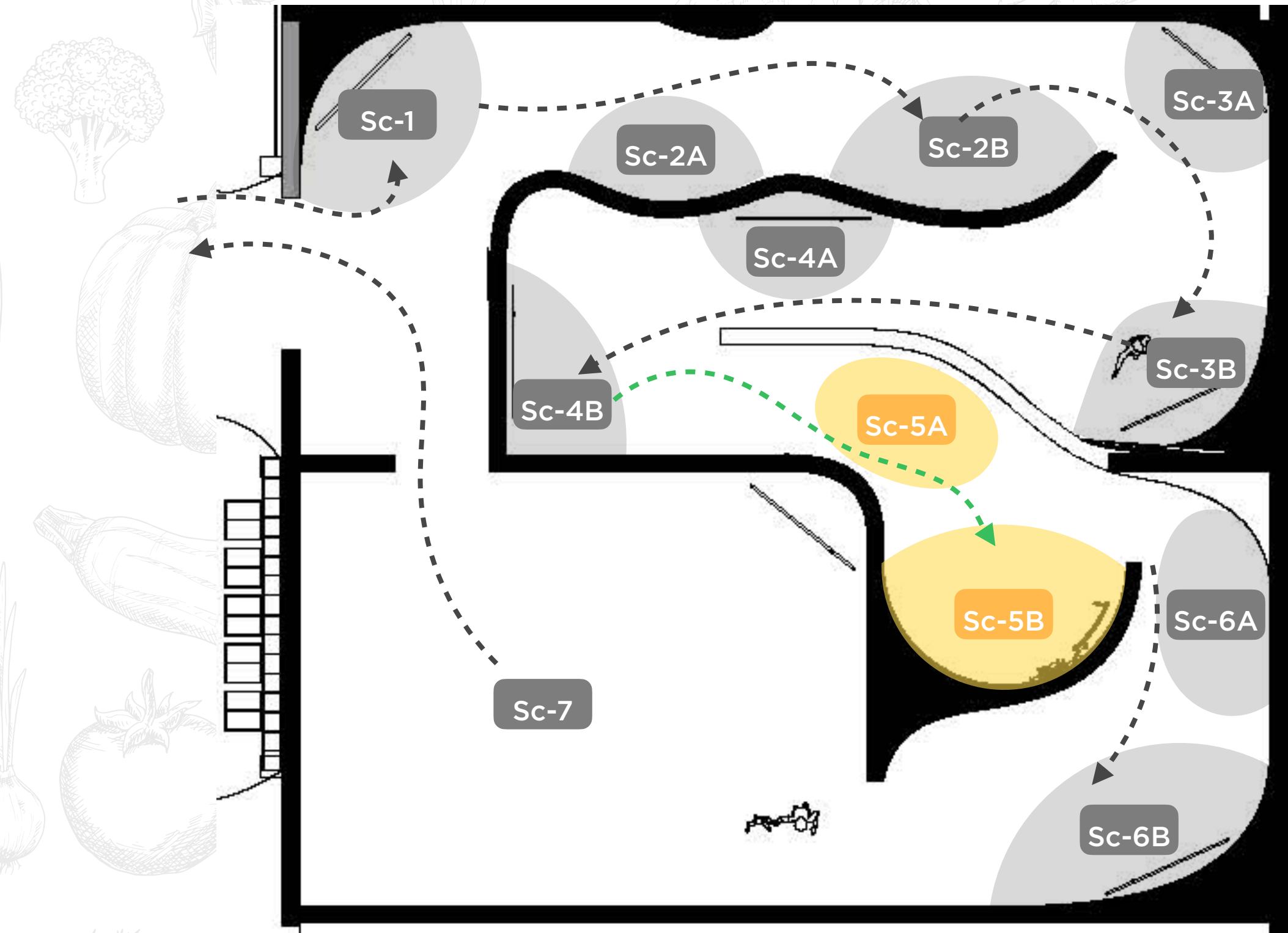
Scene 5a: Full Steam Ahead! (Transition)

Eventually, the Industrial Revolution fundamentally changed farming, beginning with the steam engine.

Scene 5b: The Industrial Revolution

Thanks to the Industrial Revolution, the 20th century saw many farms transformed by enabling large-scale production, bringing about specialized machines, standardizing processes and products, relying on managerial rather than artisanal expertise, and focusing on efficiency.

However, these advances brought about many mostly unforeseen consequences. (Transition To Dark)





Zone 9 The Food Value Chain

THE FOOD VALUE CHAIN

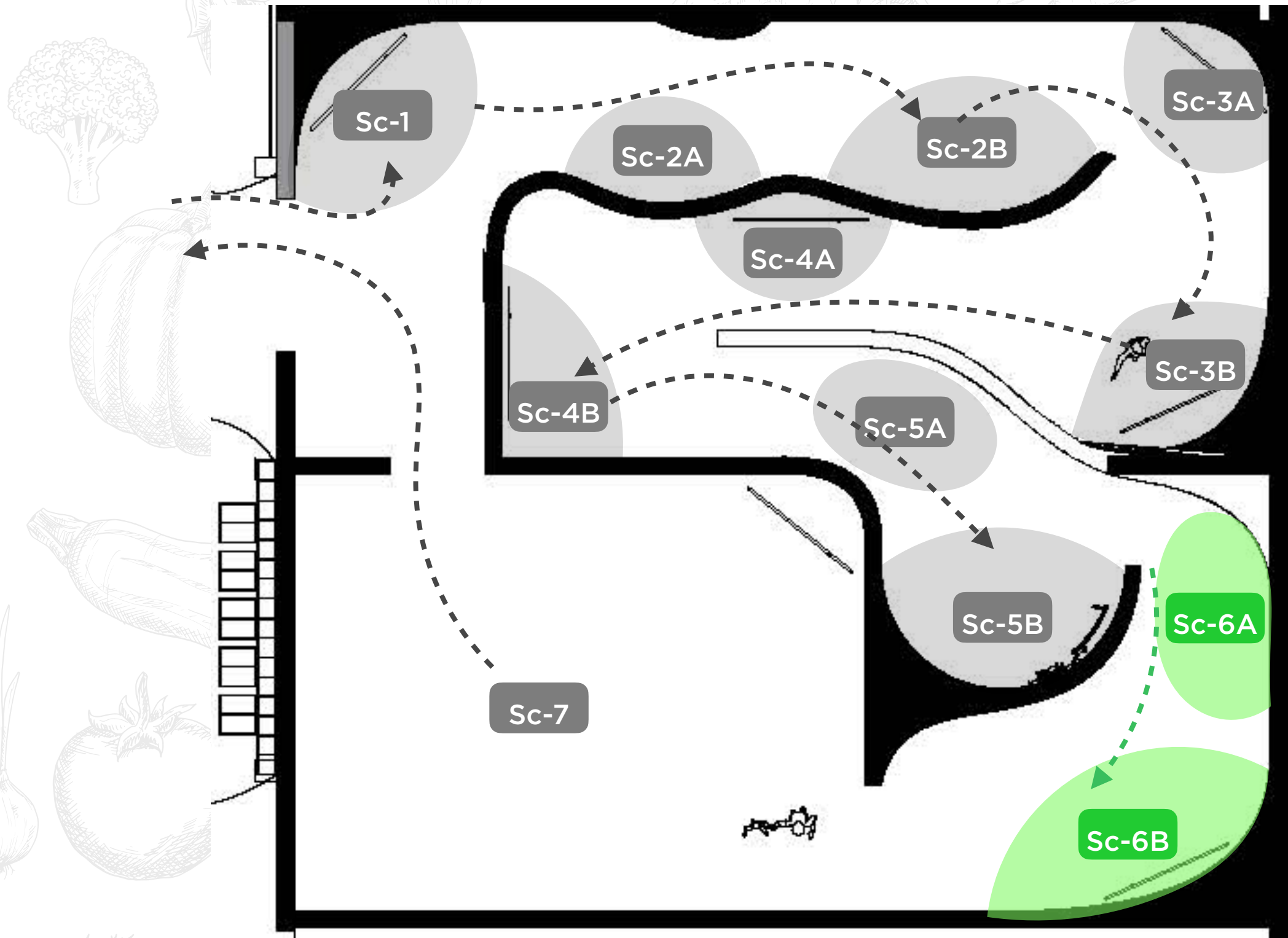
SCENE 6a: Hidden in Shadows (Transition)

The damage to our planet and her inhabitants includes nutrient-depleted soil; polluted water, soil, and air; species extermination; the obesity epidemic, malnutrition, food scarcity, and starvation; the incredible role agricultural practices and food waste play in climate change; and climate-induced production losses.

SCENE 6b: Hope for the Future

The animated timeline ends with a challenge – how can we transform the Food Value Chain into a system that’s sustainable for the planet while feeding the growing population with healthy food?

Then, our animated guide invites guests to explore the stories in the next area to discover ways they can join in this global mission.

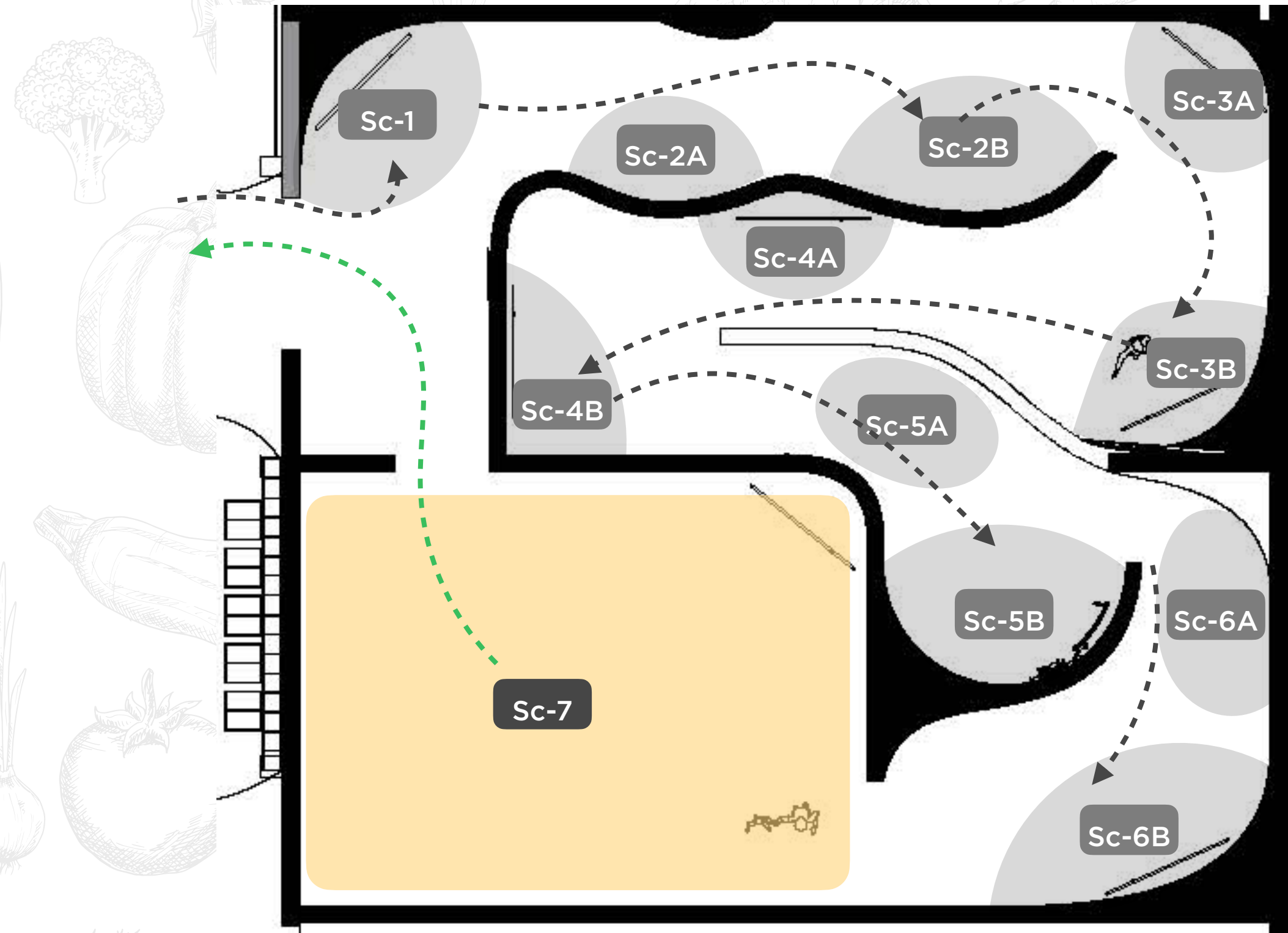


THE FOOD VALUE CHAIN

Introduction - Where Are We Going?

To answer the fourth question, guests engage in fun hands-on activities that introduce them to the people and practices helping to solve the 2050 challenge. Not only do guests meet people along today's chain, they also learn how some are re-imagining the food value chain and balancing human ingenuity with nature's potential. They also discover how their personal actions can impact the food systems we build together.

In this area, exhibits explore the journey some favorite foods make from start to your plate, as well as topics such as making more with less, the promise of regenerative farming, eliminating waste throughout the ground-to-ground process, water management, and sustainable and lab-grown protein.



THE FOOD VALUE CHAIN

Scene 7a: Where does your Chocolate Come From?

Here, through a digital travelogue that includes interviews with key people along the way, guests follow the amazing food chain journey of all the ingredients in a cup of hot chocolate. They get a sense of the many people, places, and entities behind a favorite drink, as well as that journey's potential effects on the environment and the communities it touches along the way.

Scene 7b: How to Sustain our Most Valuable Resource.

Guests explore digital re-creations of different water management and irrigation systems and how they are best utilized for different crops in different climates.

Scene 7c: What Does Your Meat Eat?

This area features an exploration of animal welfare and sustainable meat-raising, and a fun digital quiz on “What does your meat eat?”



THE FOOD VALUE CHAIN

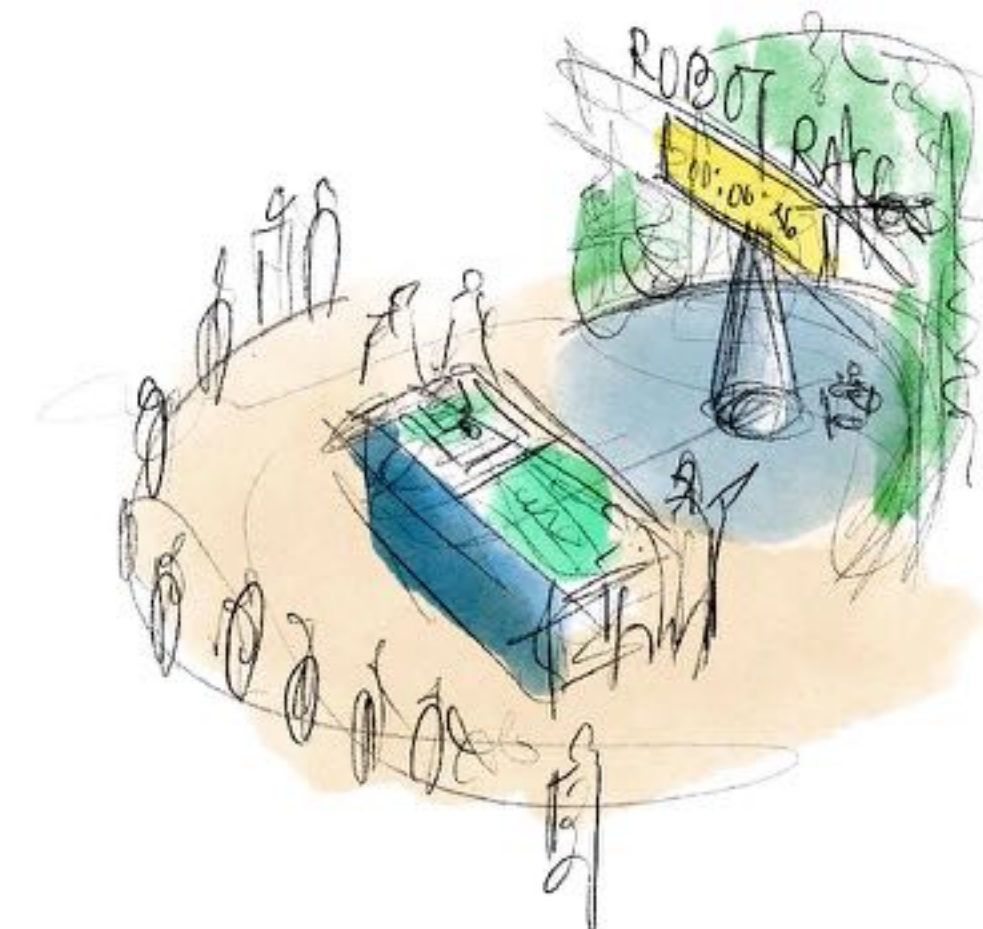
Scene 7d: Race the Robot

This simulated “race the robot” experience invites guests to harvest from a virtual bed of vegetables or fruit vines, competing against real machinery – such as robotic fruit pickers – that performs these tasks on an industrial scale.

Through graphics and filmed interviews with farmers, guests are also asked to consider the bigger picture: for example, there are certain duties robots cannot yet do, but they can be efficient and helpful in many ways. Guests learn the use of robots can have both positive and negative economic impacts on the communities in which they are utilized.

Scene 7e: Catch and Release.

This digital “Catch and Release” or “Vreemde Vissen” net game invites guests to separate endangered dolphins or fish from food fish caught in nets. It also presents information on wild-caught versus farmed seafood to empower guests to make informed decisions on the seafood they eat.



THE FOOD VALUE CHAIN

Takeaway Message

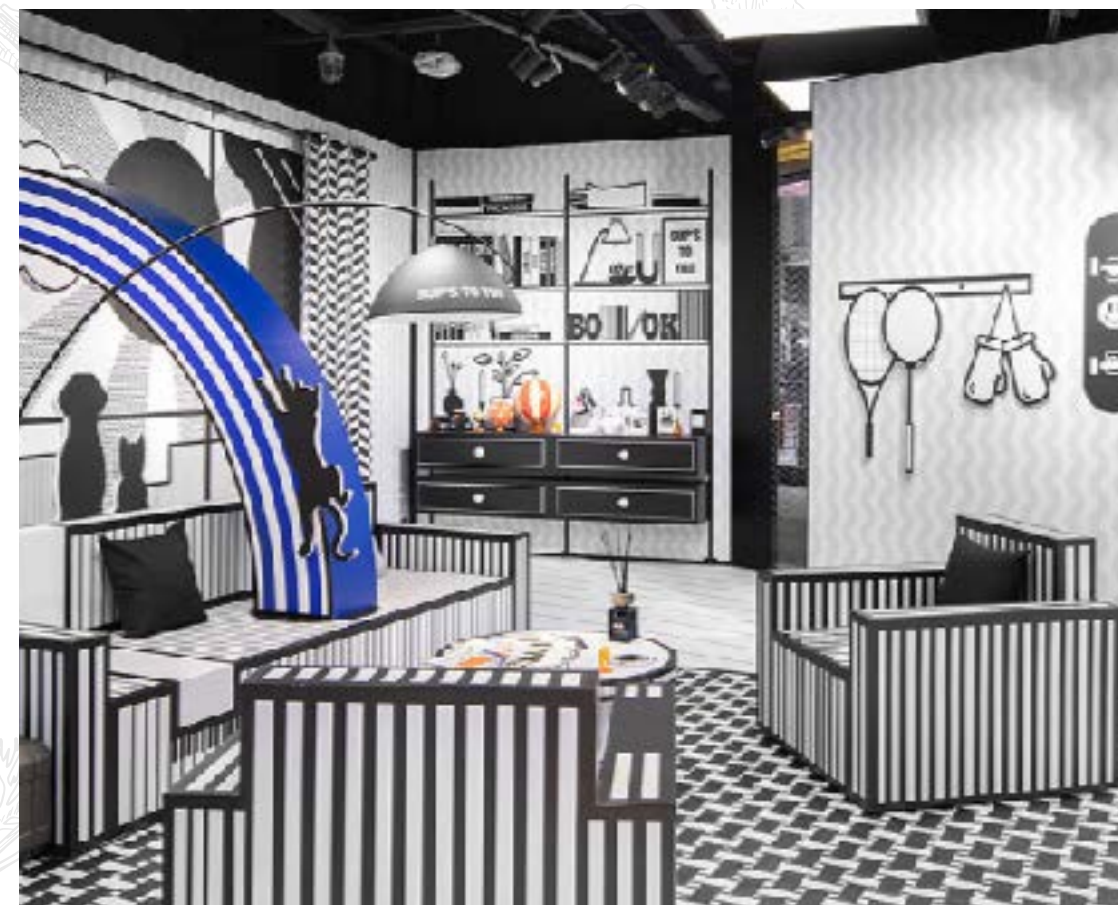
I had no idea how complex the Food Value Chain is, and how we got here! I got to meet many people who help grow, make, and get my favorite foods to me. I understand the key challenges facing our Food Value Chain. I appreciate the people who are making sure their processes are sustainable and responsible, and I'm going to do my part support them and healthy food systems

Emotional Journey Pathway

Growing from the personal outward, culminating in an empowering realization (my choices really matter to our world) and Call to Action.

Fun Factors

Ground to Ground story is told in a unique, surprising, interactive manner that encourages multiple viewings as guests hunt for “Easter eggs” and surprises they missed the first time. The interactive activities are fun, physically engaging, and allow guests to challenge themselves as they learn more about the food value chain and how their choices matter in transforming it into something sustainable for the planet.



THE FOOD VALUE CHAIN

UN SDGs

No Poverty; Zero Hunger; Good Health & Well-Being; Quality Education; Clean Water & Sanitation; Affordable & Clean Energy; Decent Work & Economic Growth; Innovation & Infrastructure; Reduced Inequalities; Sustainable Cities & Communities; Responsible Consumption; Climate Action; Life Below Water; Life on Land; Peace, Justice & Strong Institutions; Partnerships for the Goals.

Seed Saver Badge

Guests continue to build personal information collection, find ways to do their part, and can receive follow-up tips and reminders on their FVC-related choices, including connections to NGOs and global organizations working towards building a more sustainable model.





Zone 9 The Food Value Chain

ZONE 10

FLEX GALLERY

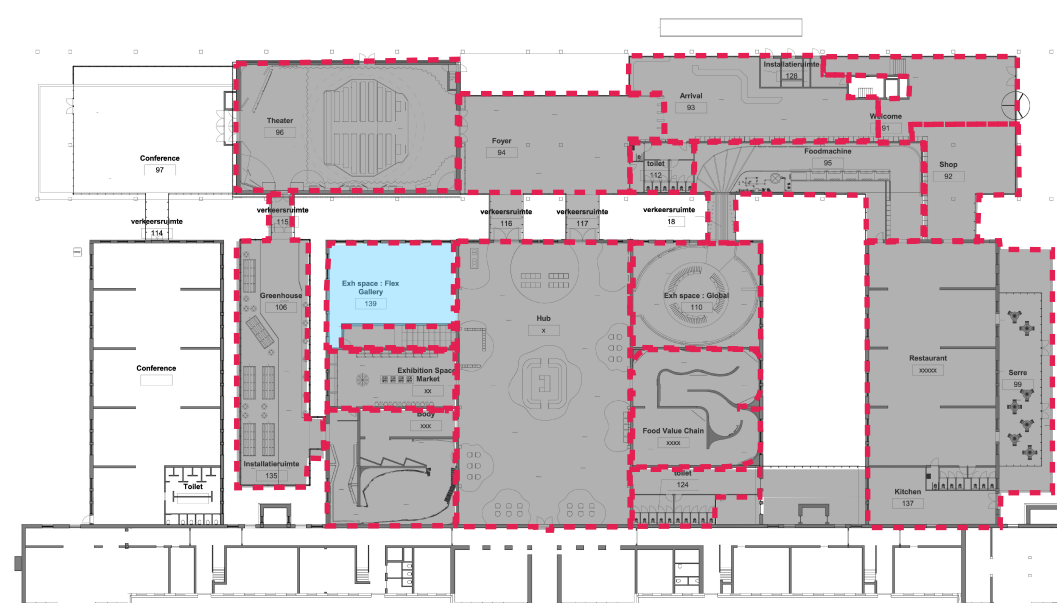
ZONE 10: FLEX GALLERY

LEGEND

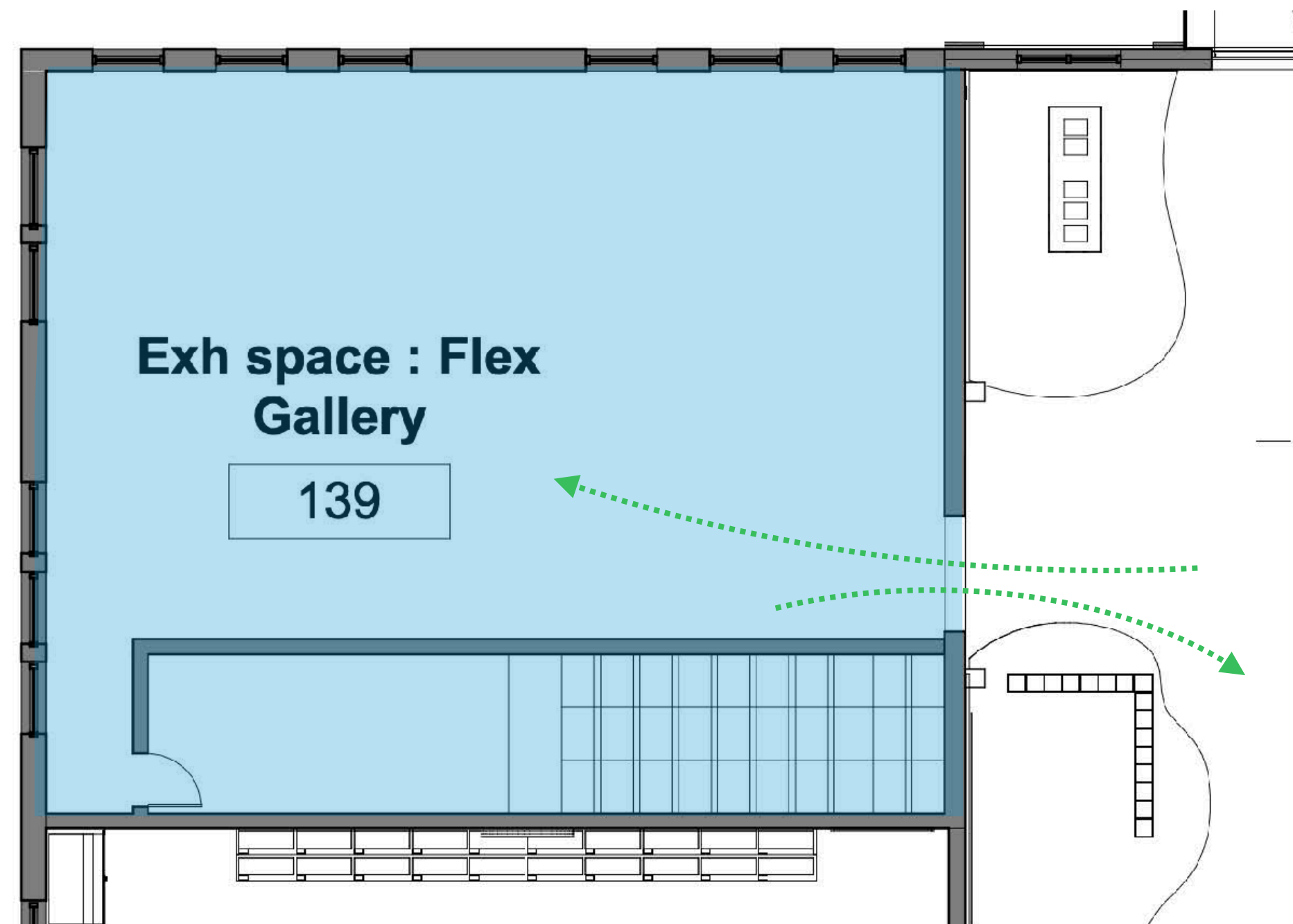
Flex Gallery

Size - 130m² (1,399ft²)

Capacity - 65



Key Plan



ZONE 10

FLEX GALLERY

The adjacent Flex Gallery extends the Hub's regional story with global implications, showcasing current projects from Food Valley's researchers and budding entrepreneurs who are innovating a sustainable future and topics focused on the behavioral/psychological side of food issues, such as the marketing of food preferences through nudging and seducing and the development of eating habits.

This gallery features the flexibility to host multiple changing exhibits each year, such as those launching through WUR's Start Hub program <https://www.starthubwageningen.nl>. Priority for the opening and Year 1 exhibits will be given to current crises, including the global obesity epidemic.

**Note: after opening, this content will be programmed by the WFC operations team, in collaboration with the WFC content team and additional stakeholders.*



ZONE 11

THE GLOBAL STORY

“

WHEN WE TRY TO PICK
OUT ANYTHING BY ITSELF,
**WE FIND IT HITCHED TO EVERYTHING
ELSE IN THE UNIVERSE.**

JOHN MUIR

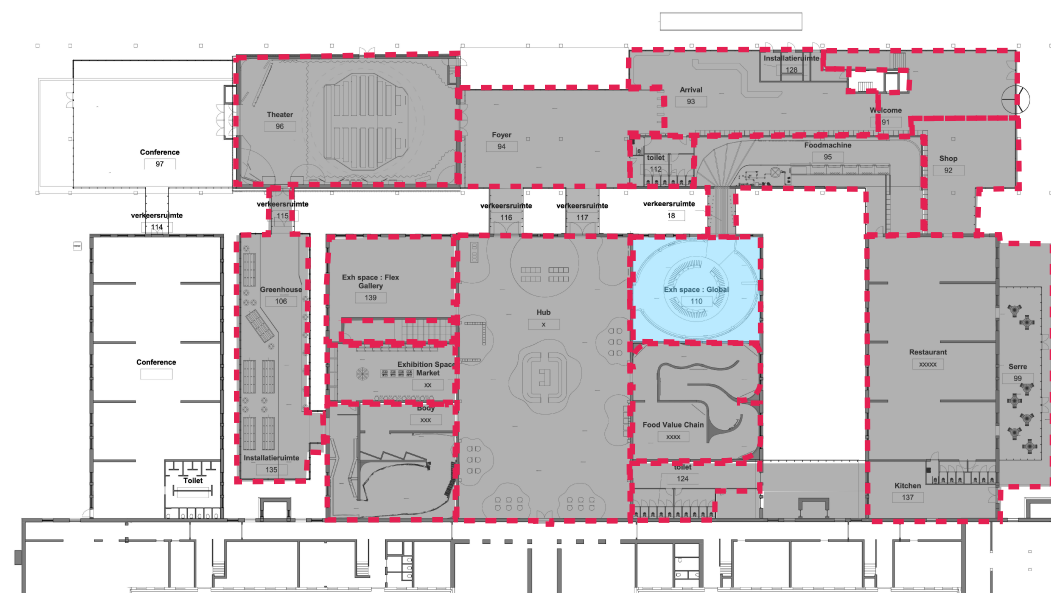
ZONE 11: THE GLOBAL STORY

LEGEND

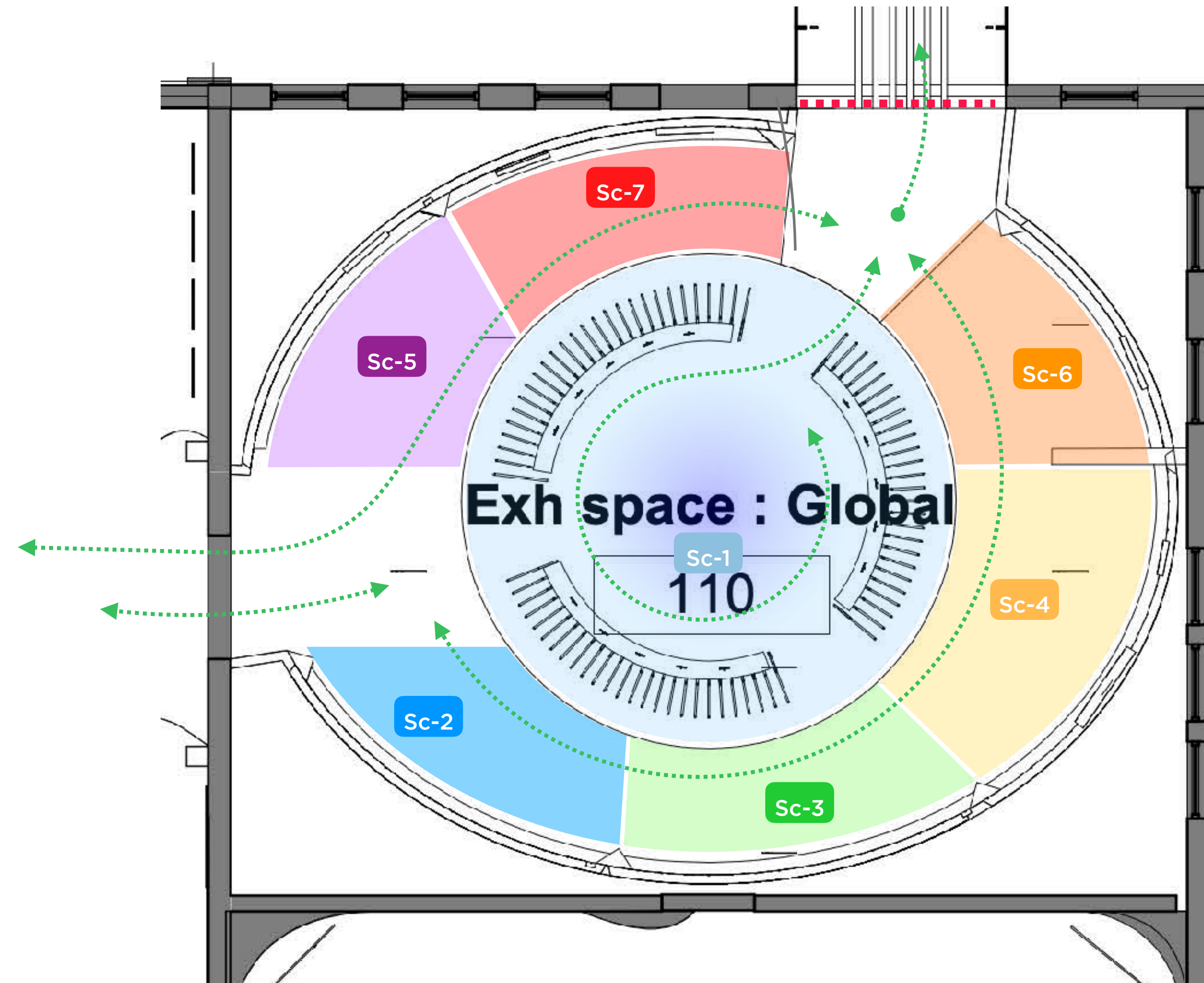
- Sc-1 Global Interactive
- Sc-2 Africa
- Sc-3 Asia
- Sc-4 Europe
- Sc-5 North America
- Sc-6 Oceania
- Sc-7 South America
- Exit Turnstiles

Size - 95m² (1,291ft²)

Capacity - 120



Key Plan



THE GLOBAL STORY

Introduction

This energy-filled zone focuses on the globe's food story and the Netherlands' leading role in it. Through a series of activities and exhibits, visitors discover groups around the world that are trying to answer the 2050 challenge to feed our planet in a healthy, safe, and sustainable way.

At the center of the zone, a large, global structure represents the world coming together to meet the challenges facing everyone on our planet. Veins of LED lights emanate from this focal point, connecting the central globe to six separate areas representing Africa, Asia, Europe, North America, South America, and Oceania.



THE GLOBAL STORY

Introduction Continued

In the central globe and each continental area, guests meet the people behind collaborative projects in that part of the world. Collectively, these engaging stories represent an overview of how people are addressing various aspects of the 2050 challenge, including climate change, biodiversity, the obesity and diabetes epidemics, adjusting food production to transition from hunger to food security, healthy and safe nutrition, and a circular and bio-based economy.

These stories show how people are working to find solutions to global food challenges in order to ensure sufficient affordable, sustainable, safe, nutritious, diverse food for everyone on the planet.

*Note: all of the content in this area will be selected in collaboration with the WFC content team and additional stakeholders.



ZONE 11

THE GLOBAL STORY

Scene 1 - Global Interactive Area

In the central Global Interactive Area, topics include:

Food Inequality - Guests meet a series of families from around the world, and “pick up” the amount of food one of the families eats or wastes in a week. (The load is situated on a lever system that lets guests pick it up but still feel the weight.)

Growing nutritional energy needs – in order to more clearly understand the challenge of growing enough food for the globe, guests pedal a stationary bicycle to see how long they can keep up with the energy required to nourish the world’s population as it multiplies in real time.

Healthy Nutrition, Food Security – In a series of media-based interactives, guests are able to investigate how rapidly changing food systems have resulted in two extremes of malnutrition - undernutrition and obesity.



THE GLOBAL STORY

Scene 1 - Global Interactive Area Continued

Nature-based Solutions to Climate Change – in a media-based interactive, guests explore how forests absorb twice as much carbon as they emit each year and how that may help in solutions toward mitigating climate change.

Towards a Circular, Bio-based Economy & Climate-Positive Society – a number of digital interactives focus on stories of emerging innovations working towards a sustainable & healthy food system. One highlight is the slow food youth movement – a world-wide effort to protect biodiversity and native populations.





Zone 11 The Global Story

THE GLOBAL STORY

Scene 2 - Africa

Stories in the Africa area, told through media with supporting graphics, include:

Africa's Green Revolution – focused on the move towards a Circular, Bio-based Economy & Climate-Positive Society.

Resource Efficiency (Water & Soil) - whether nature-based solutions can contribute to food security, circularity, and climate resilience in Ghana's Food basket region.



ZONE 11

THE GLOBAL STORY

Scene 3 - Asia

Stories in the Asia area include:

Nature-based Solutions to Climate Change - how scientists are future-proofing the Mekong Delta in face of climate change & global market demands.

Water Efficiency - how scientists are helping Chinese farmers use water more efficiently.



ZONE 11

THE GLOBAL STORY

Scene 4 - Europe

Stories in the Europe area include:

Development of new, sustainable protein sources – Michelin-starred Spanish chef Angel Leon took a long look at the seagrass that grows near his home and realized that each reed had a clutch of tiny grains. Lab tests hinted at the grain's potential: it's gluten free, high in Omega-6 and 9 fatty acids, contains 50% more protein than rice per grain, and it grows without freshwater or fertilizer.

Reversing Biodiversity Loss – a look at the reduction in nitrogen deposits and how that leads to biodiversity recovery in Dutch meadows.



ZONE 11

THE GLOBAL STORY

Scene 5 - North America

Stories in the North America area include:

Alleviating Food Deserts – the story of Ron Finley (South Los Angeles’ “Gardening Gangster”), who creates farms in curbside greenbelts between the sidewalk and road to alleviate food insecurity and the lack of nutritious food in his neighborhood.

Sustainable & Alternate Protein Sources (Healthy & Safe Nutrition) - the story of animal-free dairy grown from real cow protein, but with no cows.



ZONE 11

THE GLOBAL STORY

Scene 6 - Oceania

Stories in the Oceania area include:

Nature-based Solutions to Climate Change - how adaptations to climate change have impacted Pacific fisheries and aquaculture.

Addressing Food Deserts in Australia - Mapping Australia's food deserts and the consequences they have on residents.



THE GLOBAL STORY

Scene 7 - South America

Stories in the South America area include:

Reversing Biodiversity Loss – how activists are forming an evidence-based argument to protect biodiversity in the Amazon.

Resource Efficiency (Water & Soil) - In South America there are many projects that integrate production and the conservation of biodiversity, in particular indigenous and traditional food and agriculture production systems, family farming, conservation of agro-biodiversity, management of shared resources, and protection of natural resources.



THE GLOBAL STORY

Takeaway Message

I love seeing how different – and how alike – we are to people around the world. I admire how people from all over are helping to solve the many different challenges we face, and making sure everyone has enough good, nutritious food to eat. I want to be a part of those solutions.

Emotional Journey Pathway

Embracing the WFC mission for our planet and her people.

Fun Factors

Fun interactives for hands-on comparisons between different situations around the globe, colorful set and lighting design, and media produced with a sense of fun and humor (takes its subjects seriously but not itself).



THE GLOBAL STORY

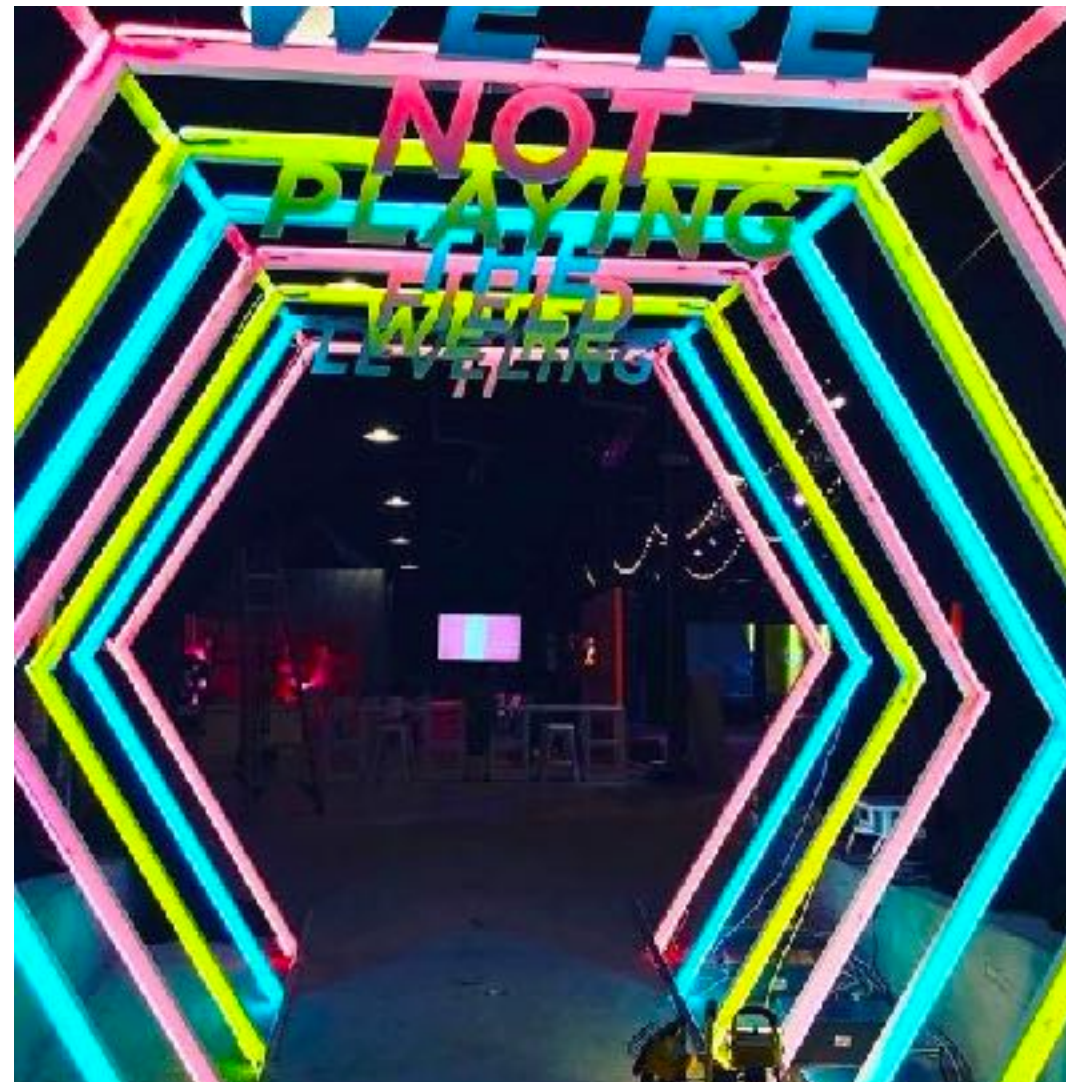
UN SDGs

No Poverty; Zero Hunger; Good Health & Well-Being; Quality Education; Clean Water & Sanitation; Affordable & Clean Energy; Decent Work & Economic Growth; Innovation & Infrastructure; Reduced Inequalities; Sustainable Cities & Communities; Responsible Consumption; Climate Action; Life Below Water; Life on Land; Peace, Justice & Strong Institutions; Partnerships for the Goals.

Seed Saver Badge

Guests can dive more deeply into the stories of families around the world and join initiatives that interest them.





Zone 11 The Global Story

ZONE 12

THE FOOD MACHINE

ZONE 12: THE FOOD MACHINE

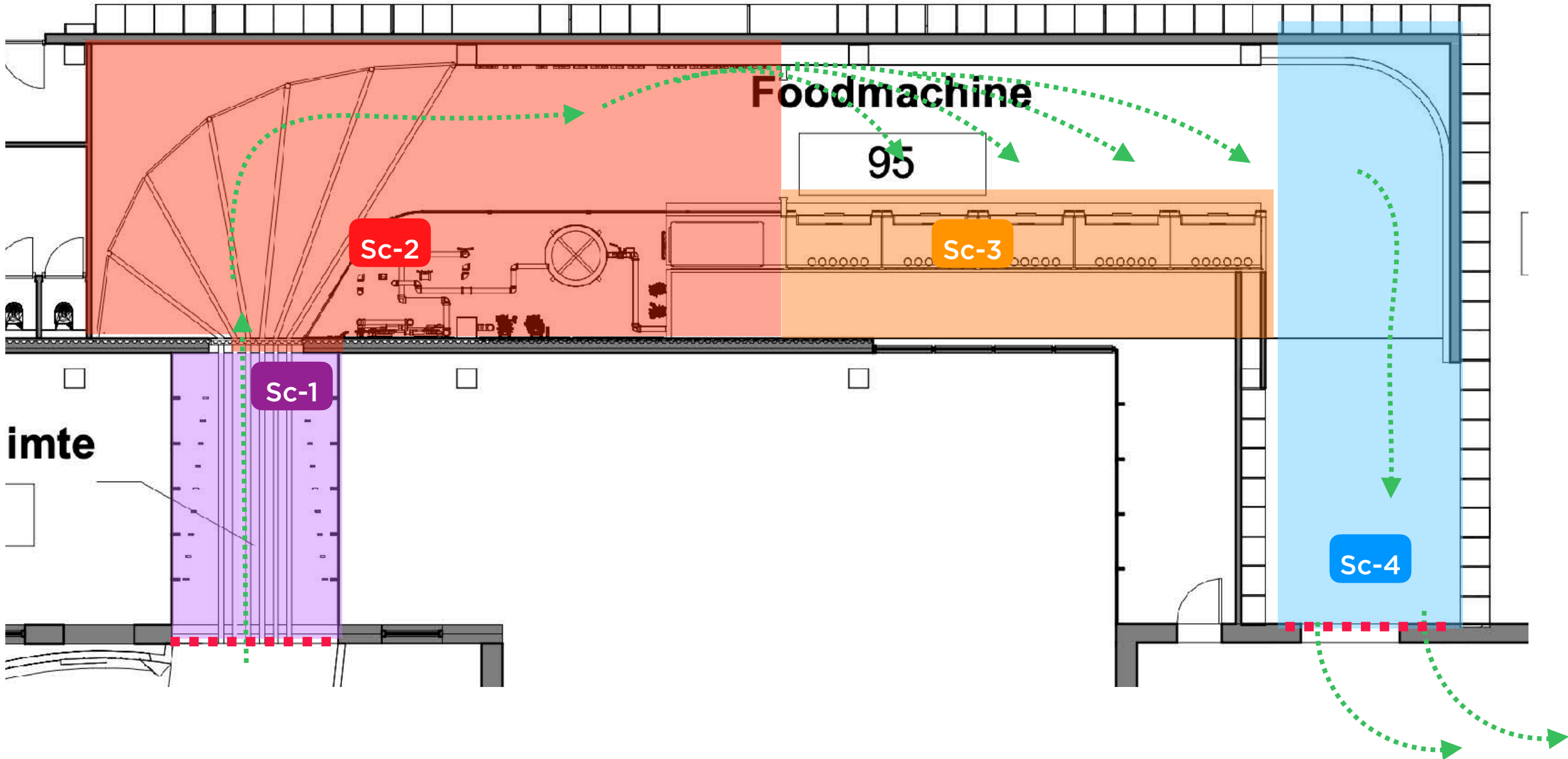
LEGEND

- Sc-1 Scene 1
- Sc-2 Scene 2
- Sc-3 Scene 3
- Sc-4 Scene 4
- Exit Turnstiles (One Way)

Size - 125m² (1,346ft²)
Capacity - 63



Key Plan



THE FOOD MACHINE

Introduction

By now, guests have experienced the ways food impacts their lives, their community, and the world. They have encountered several likeable characters from around the globe and become invested in their compelling stories. They have also been inspired by the ingenuity of others working towards a better future for everyone.

Exiting the Global Zone, guests can return to the various WFC experiences in the Hub or pass through the turnstile, where they scan their badge and proceed toward the Food Machine.

It is here that the World Food Center experience culminates in an unforgettable emotional experience of the WFC theme: We Feed Each Other.

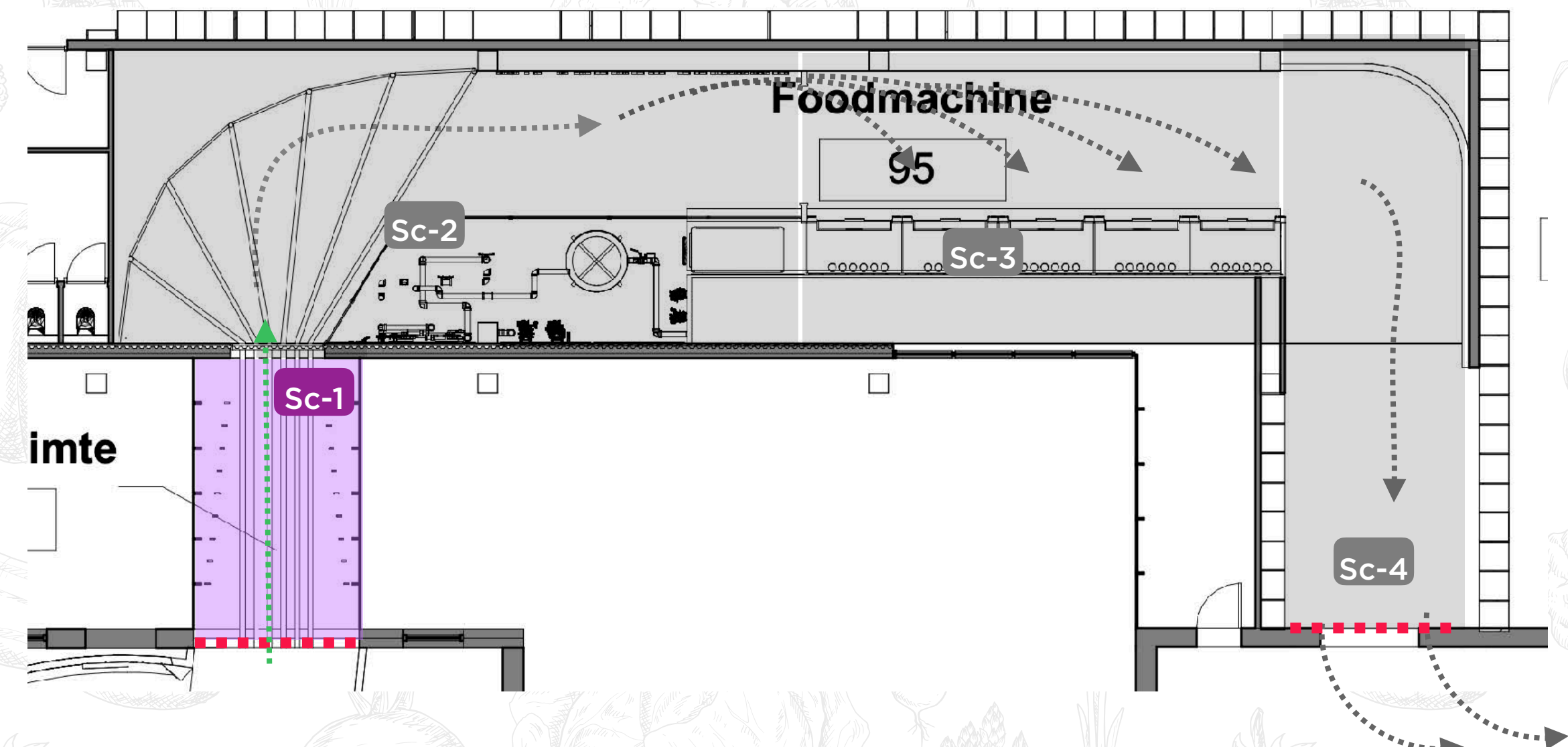


THE FOOD MACHINE

Scene 1 - The Portal

After passing through the glass connection portal between the old and new buildings, guests continue beneath a series of theatrical LED lights flowing from the Global area across the ceiling toward the Food Machine.

The lines of light represent the creative energy from around the world that is lighting the way forward. Inspired by and respectful of nature, this energy represents a union of people guided by nature's wisdom in the quest for a solution to the 2050 challenge.





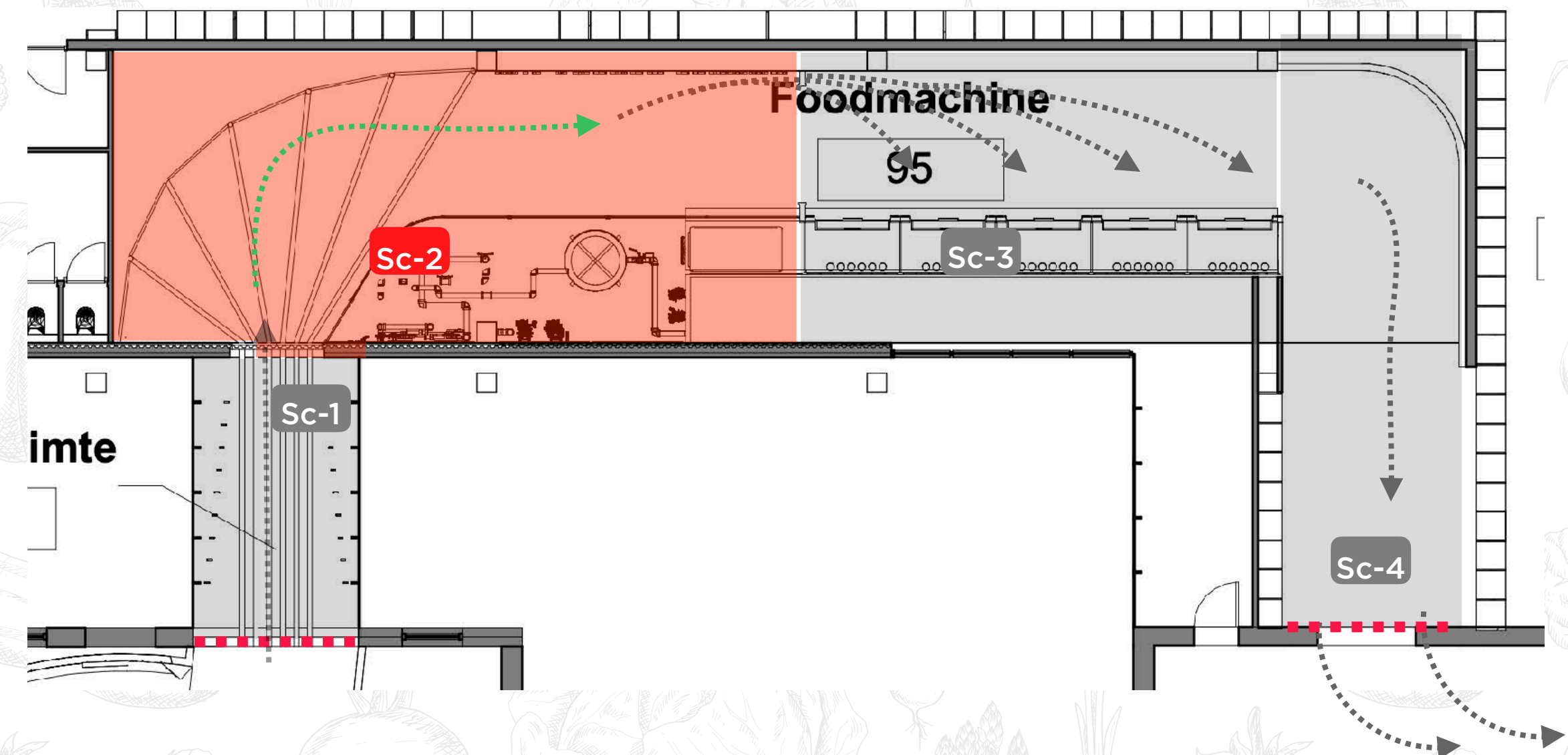
Zone 12 The Food Machine

THE FOOD MACHINE

Scene 2 - Three Parts to the Puzzle

Part 1 - People: Pulled forward by the hopeful song they first heard in the Theatre, guests encounter the actual faces of the various friends they have met throughout their World Food Center experience. Each is joyfully singing the WFC theme song surrounded by their own home environment, where they are contributing in their own unique ways to the food systems of the future.

Part 2 - Innovations: As the colored pathways reach the walls, they become mechanized pipes filled with pulsating light, traveling up into the ceiling, and over guests' heads before arriving at a large container. Here, the ideas and innovations from across the world come together to help feed the Food Machine.





Zone 12 The Food Machine

THE FOOD MACHINE

Scene 2 - Three Parts to the Puzzle

Part 3 - Food: Intertwined amongst the pipes, guests may notice hanging baskets of produce that have seemingly been harvested from across the globe. The baskets steadily move through the space, crisscrossing the greenery-covered ceiling before arriving at a large produce washtub.

There, through a clever trick of projection, the fruit appears to be dropped into the tub, washed, and then sent into the Food Machine, providing the final part in the Food Machine process, the food itself.





Zone 12 The Food Machine

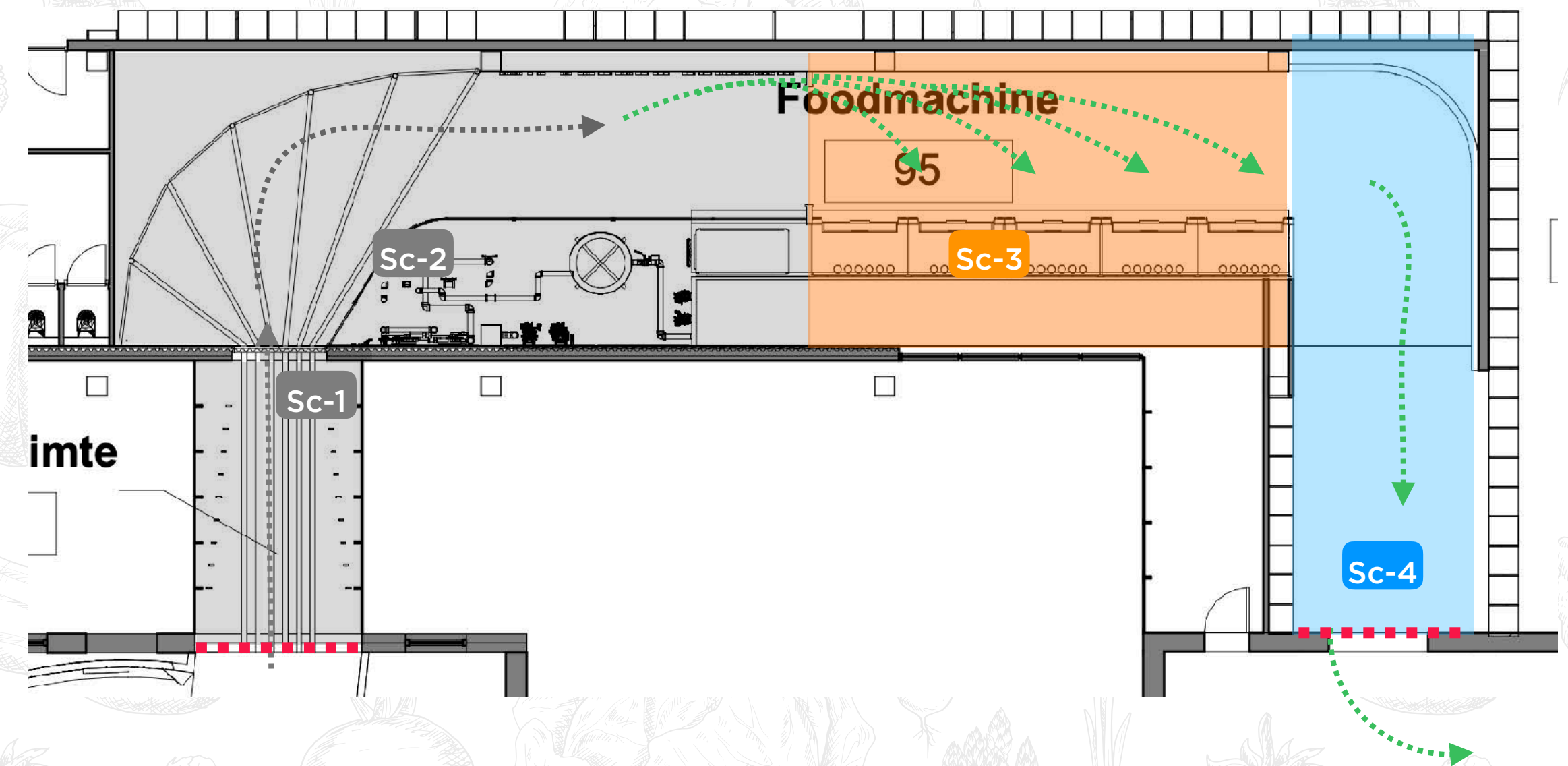
THE FOOD MACHINE

Scene 3 - The Food Machine

Passing under an archway and exiting the internal workings of the Food Machine, guests arrive at the front of the machine itself. A perfect balance of nature and human ingenuity, the Food Machine creates the bite they are about to taste. It is unlike anything they have ever seen. It is a whimsical look into a future of friends feeding friends.

As guests approach their own Kiosk and scan their badge, the corresponding section of the machine appears to wake up and begins preparing their individually curated bites. As the mechanisms of the machine appear to make each guest's personalized bites, a globe appears on the glass in front of the guest, highlighting the region of the globe and flavor profile their bite is inspired by. The machine then "delivers" their personal treats (2 per guest) based on the choices the guest has made throughout their journey.

As they have traveled through the World Food Center, the Seed Saver badge system has recorded each guest's preferences for specific flavors and global zones to determine their ideal treats, which are wrapped in edible packaging to enjoy on their own or share with a friend.



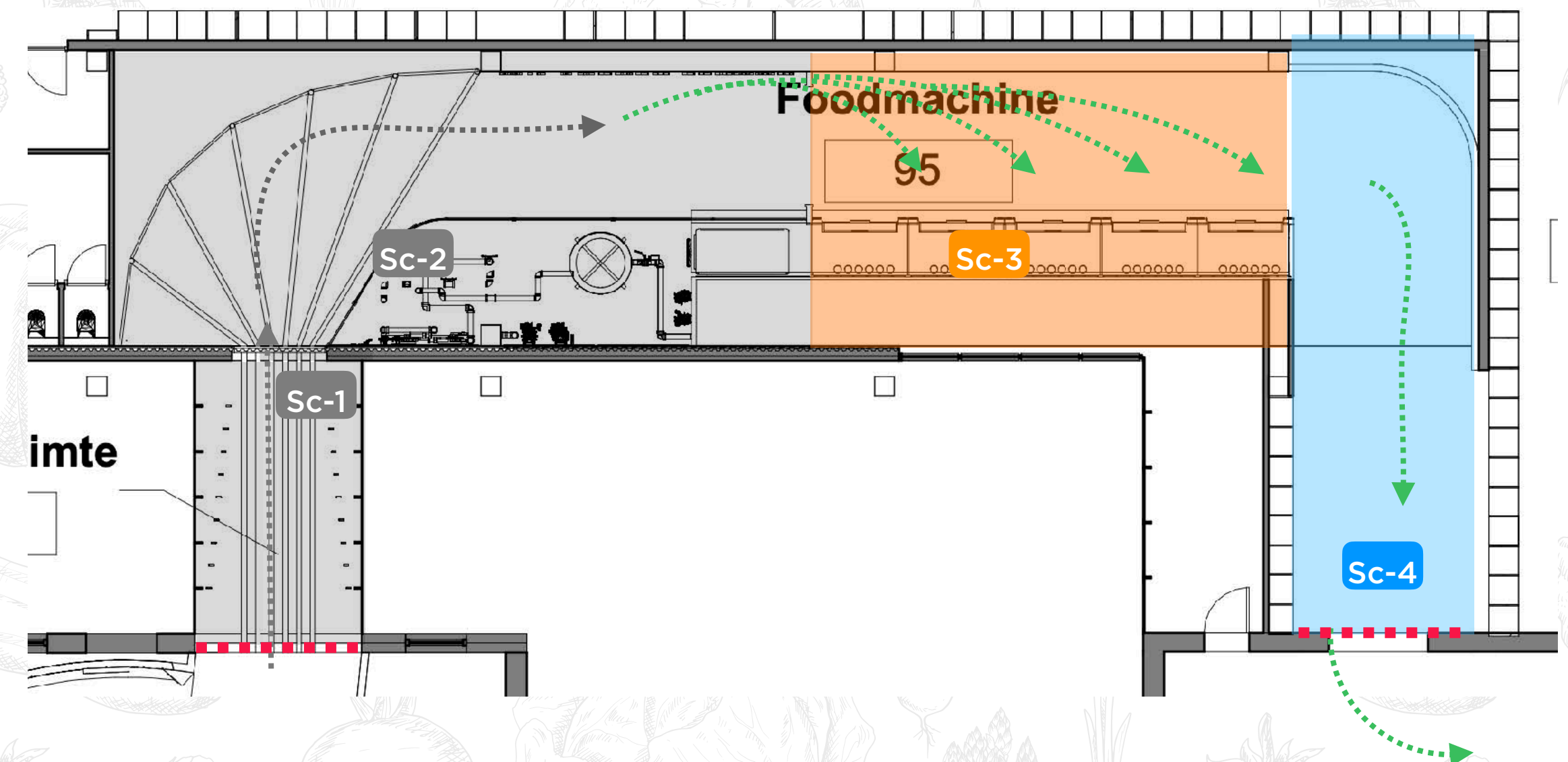


Zone 12 The Food Machine

THE FOOD MACHINE

Scene 4 - We Feed Each Other

As they enjoy their personal treats, guests are joined by images of their new global community of friends sharing the same food (appearing on another wall). In those two bites, guests deepen their connection to the WFC theme - We Feed Each Other - and to the inspiring people who have shared their creativity, food traditions, and heart-felt efforts to create a better future for all of us. They have become members of the World Food Center family.



WAT ZOU JIJ DOEN OM
DE WERELD TE VERBETEREN
IN 2050?

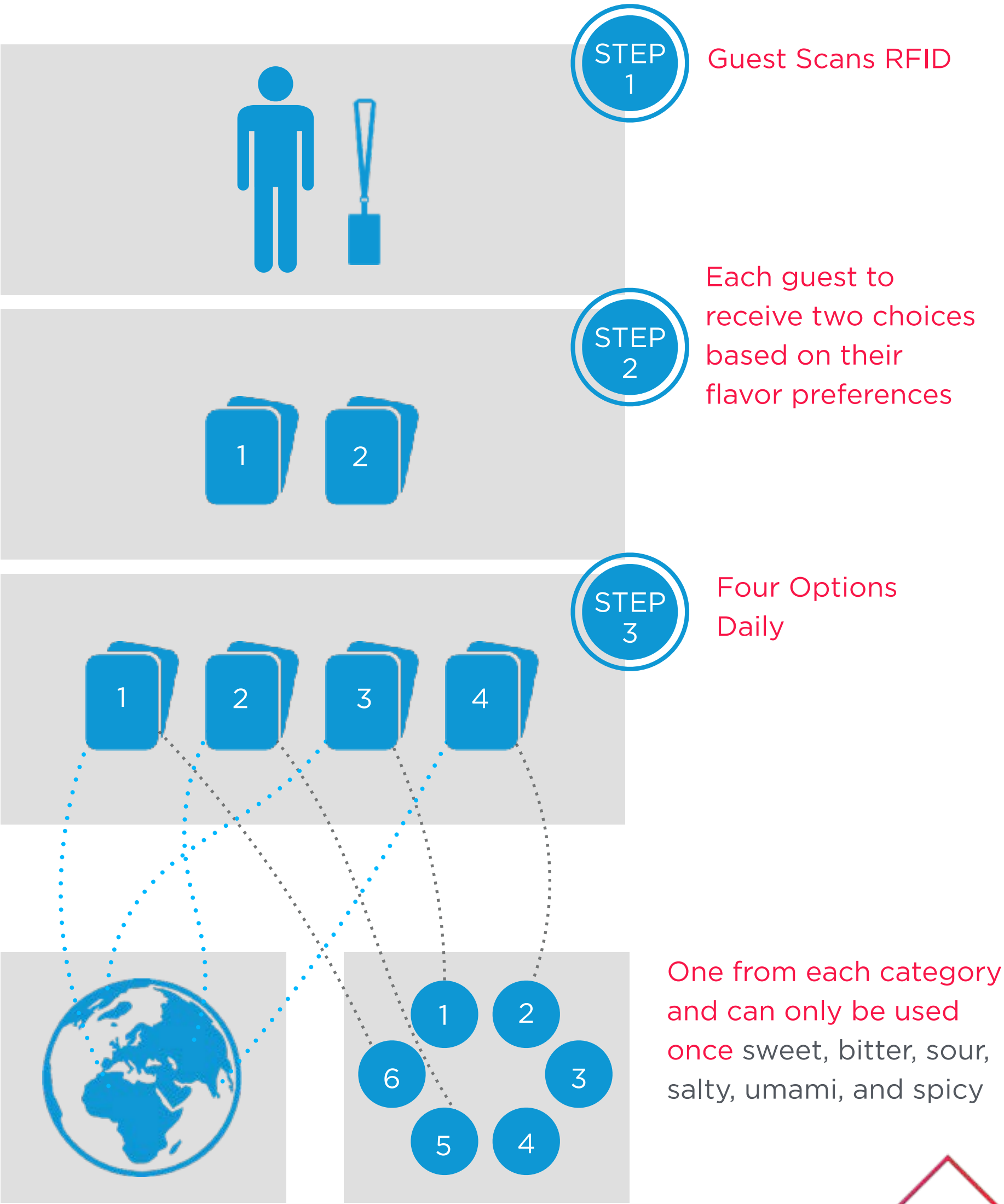
THEORY OF OPERATIONS

BRC is currently in the R&D process with a leading food and beverage vending company. Although it is very early in the process, the team is investigating the possibility that the Food Machine is actually a custom delivery device that will be designed to chill and deliver up to (2) pre-made small bites to (4) guest stations.

To align with the WFC’s story and mission and easily blend with the restaurant’s operations, the head chef will be able to change the small bites each day depending on the menu and season.

The chef can pick from 2 categories (taste and global area) for each small bite. This ensures that every serving tells a story and reaffirms the 2050 challenge. Our hope is the restaurant’s seasonal menu will carry the same themes, and perhaps even the small bites are represented in that day’s menu.

Currently, we plan to provide a series of trays that the prep kitchen can fill for the Food Machine to distribute to guests.



THE FOOD MACHINE

HODGES & DRAKE

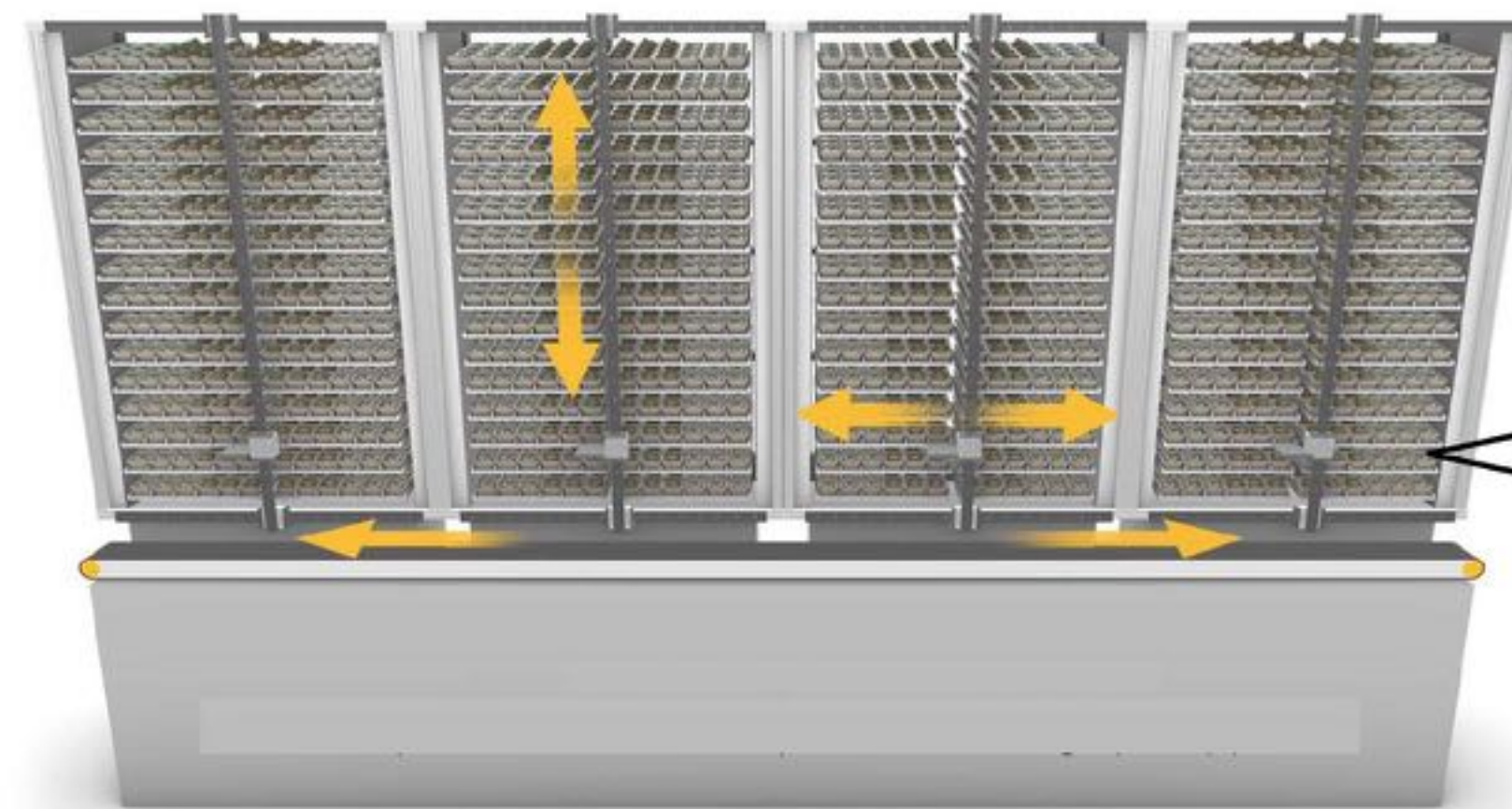
BRC has partnered with one of the world's leading industrial design consultants that specializes in the handling and dispensing of beverages and food.



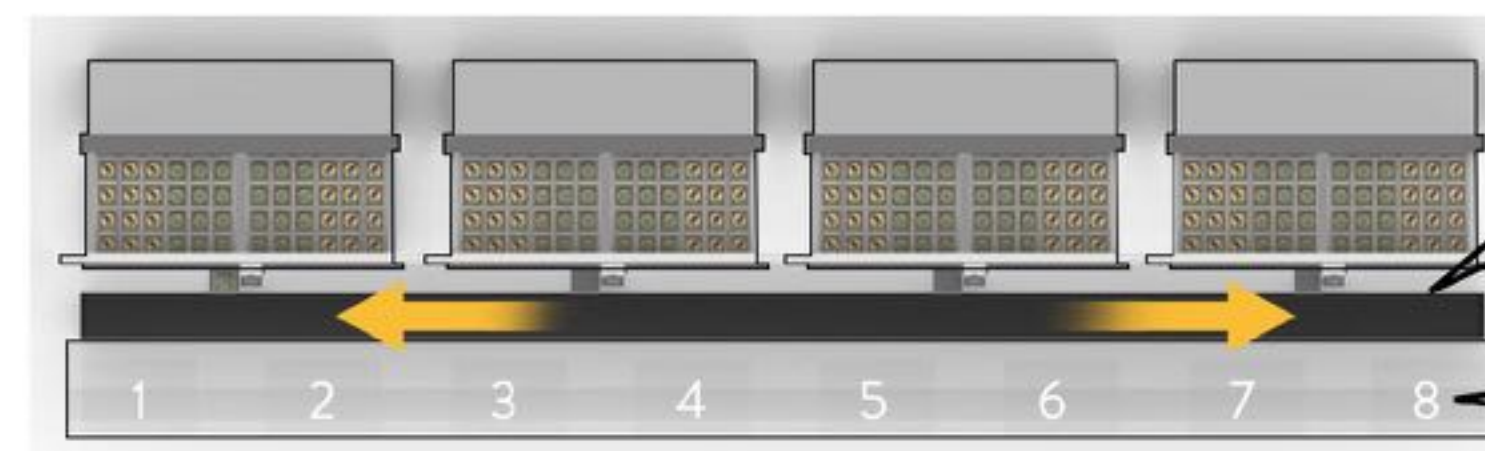
They recently have worked with BRC on a project in the UK and are currently providing advice and feasibility for this phase of the project.



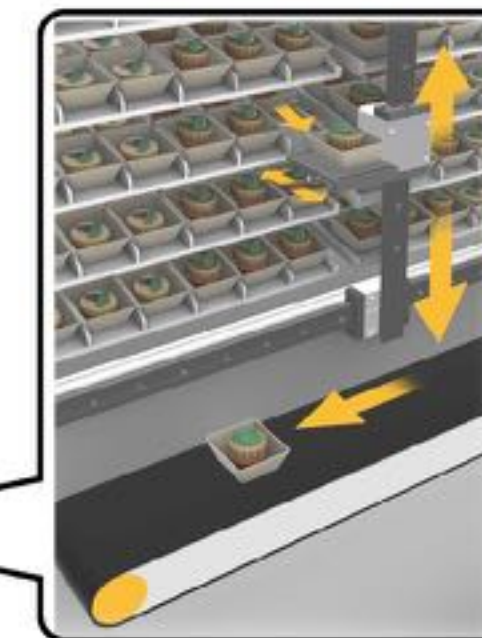
PRELIMINARY DESIGN CONCEPTS



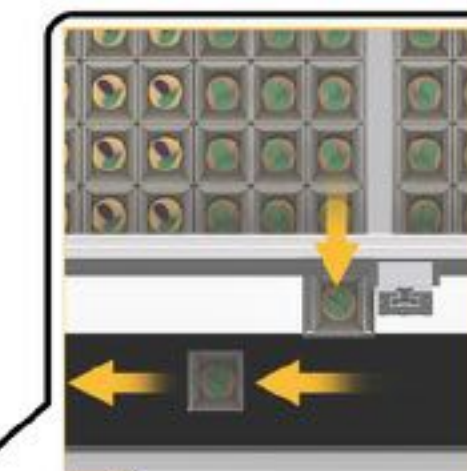
FRONT VIEW



TOP VIEW



1. Elevator collects bite & places it on the conveyor belt



2. Conveyor quickly moves dispensed bite to the correct collection point

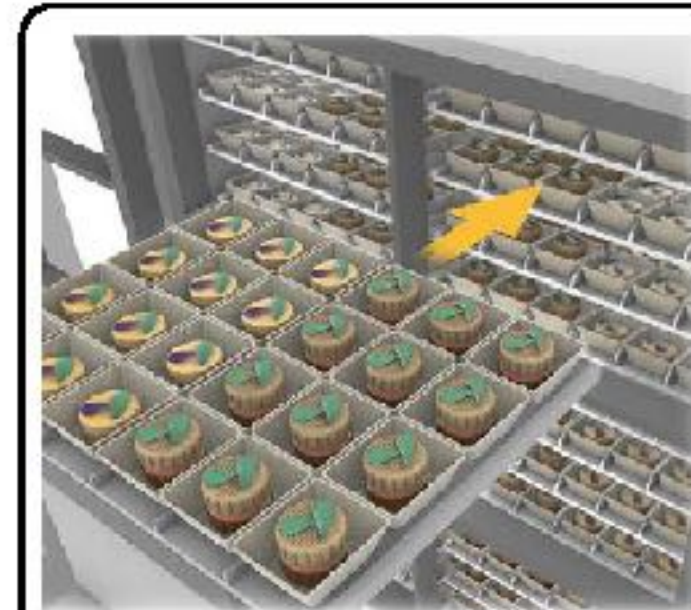


3. Solenoid pusher moves bite from conveyor belt into the correct collection point

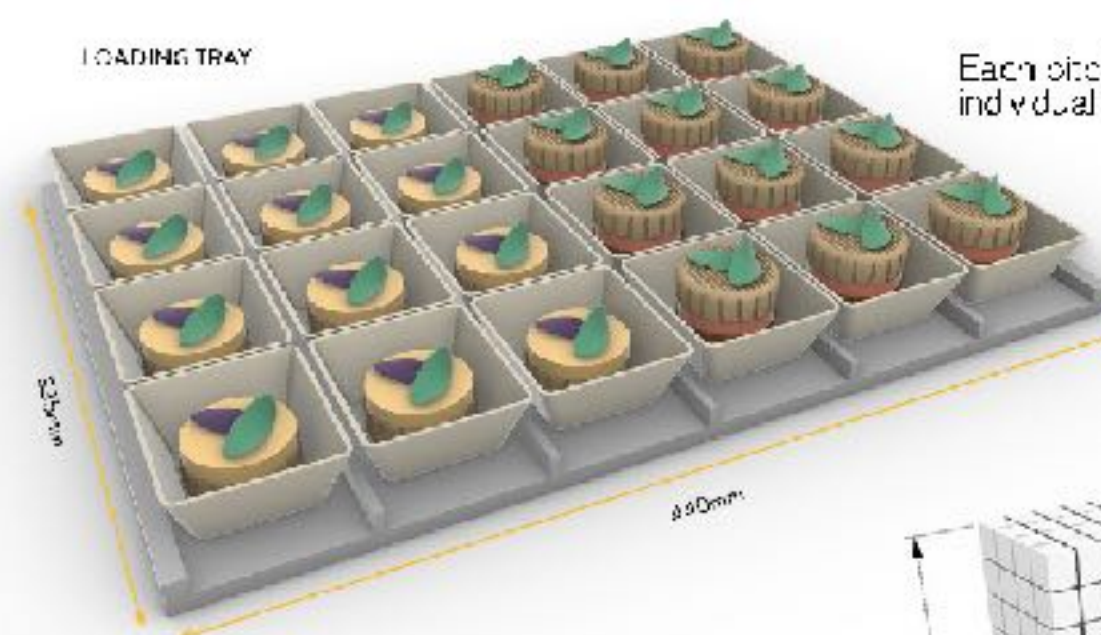
PRELIMINARY DESIGN CONCEPTS

Machine consists of 4x chilled modules.
Each module holds stock of a specific bite.
Uses first-in-first-out loading method for
automatic stock rotation

Trays of bites are loaded into rear of
machine to max misc speed & ease of
restocking

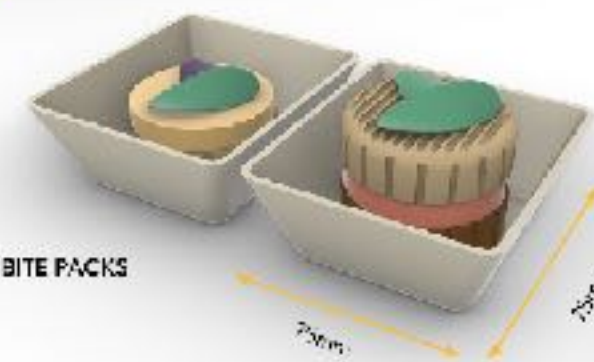


LOADING TRAY

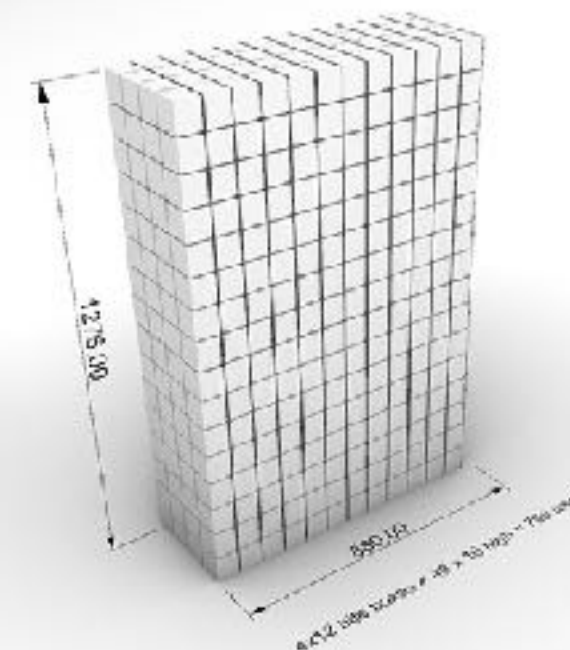


Each bite is dispensed in an edible,
individual tray to avoid any pack waste

SINGLE BITE PACKS



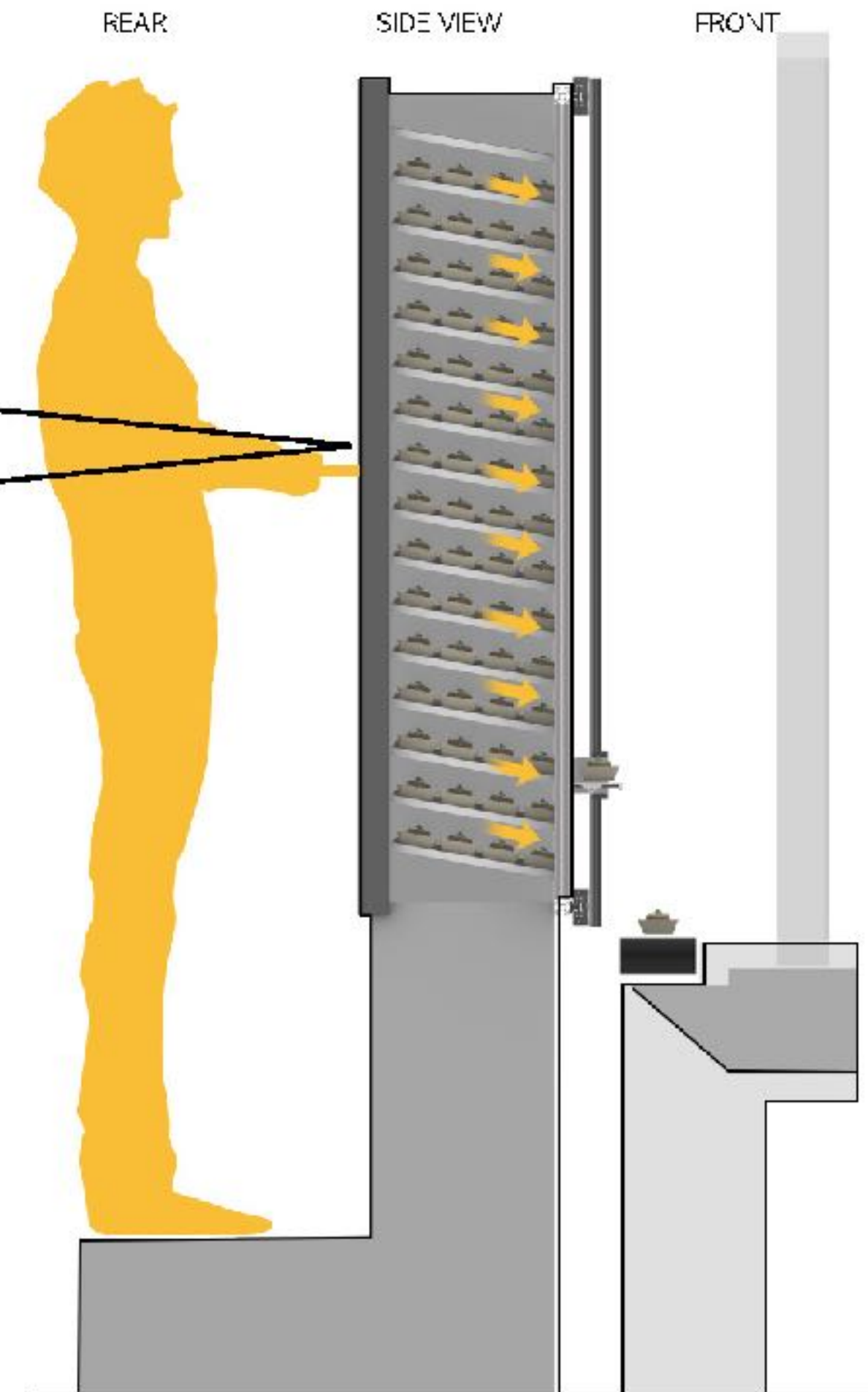
ROUGH ESTIMATES OF VOLUME



REAR

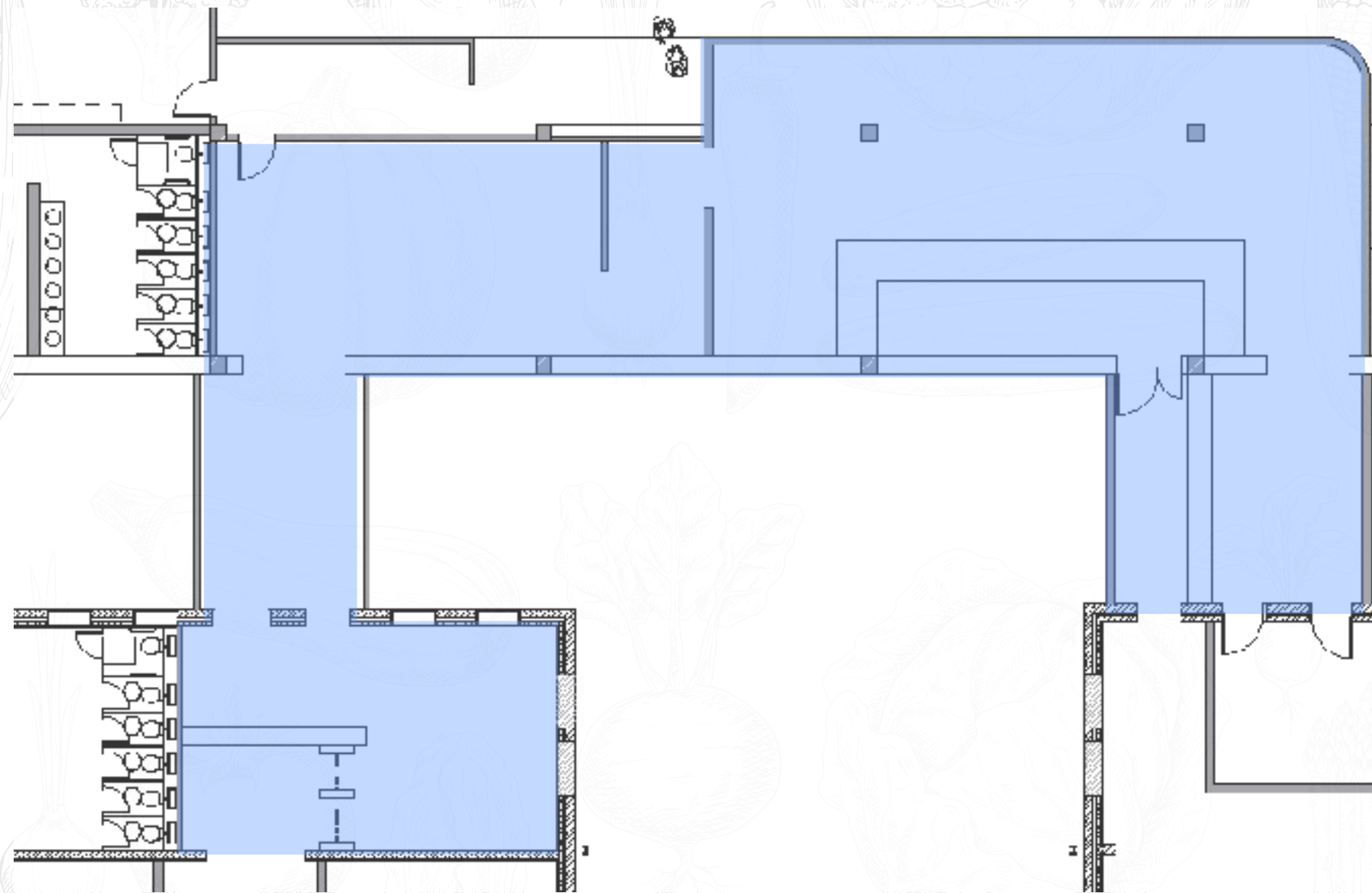
SIDE VIEW

FRONT

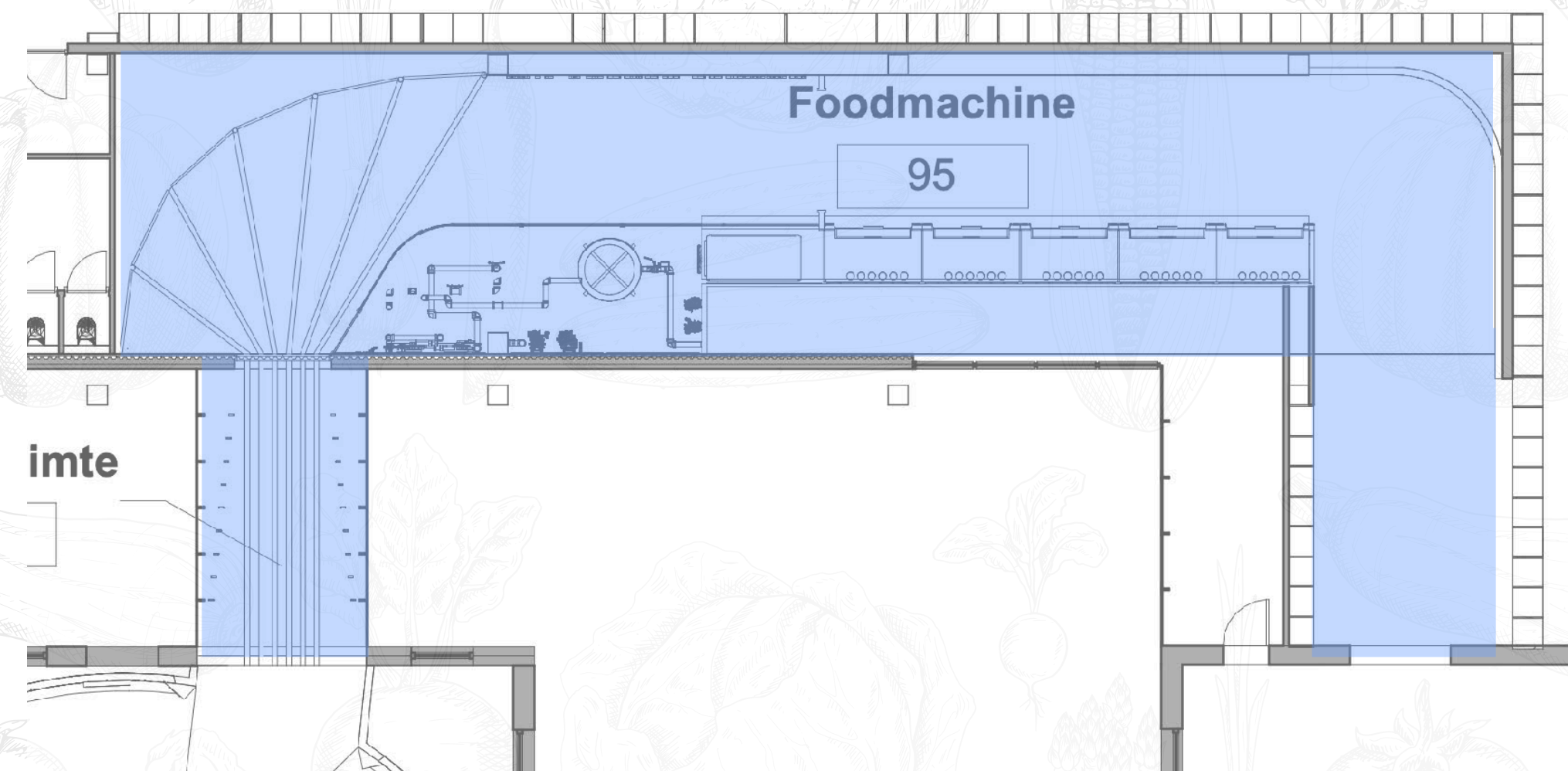


THE FOOD MACHINE

Initial Proposed Plan



Current Plan



Outstanding Issues

1. Service to food Machine
2. Food Product Preparation and Storage Logistics
3. Access Routes to New Basement Refrigeration

THE FOOD MACHINE

Takeaway Message

I'm excited about food in the future. I too can play a role in finding solutions to the global food challenges we all face, and the solutions can be fun (and delicious!). I've got to tell my friends about this. I can't wait to come back!

Emotional Journey Pathway

Deepening their connection to the WFC theme – We Feed Each Other – and to the WFC mission, guests have become members of the joyful, progressive World Food Center family.

Fun Factors

Whimsical design, colorful lighting, and the welcome strains of the fun WFC signature song heighten the sense of community and shared purpose. The return of characters – now thought of as friends – reminds guests of the fun they've had throughout the WFC experience.



ZONE 12

THE FOOD MACHINE

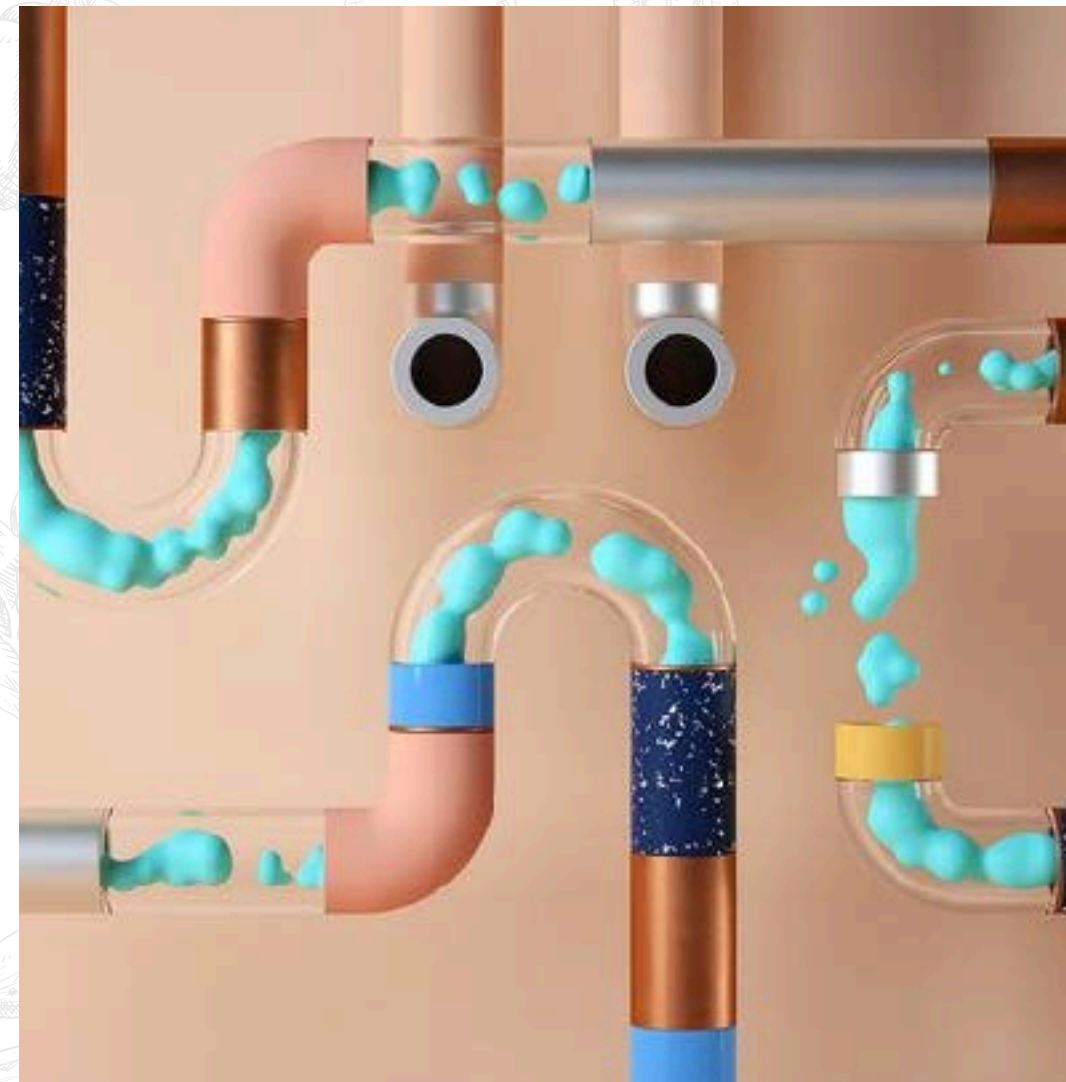
UN SDGs

Good Health & Well-Being, Innovation & Infrastructure,
Responsible Consumption.

Seed Saver Badge

Triggers the final sequence to deliver delicious treats, guests
can receive information and recipes.





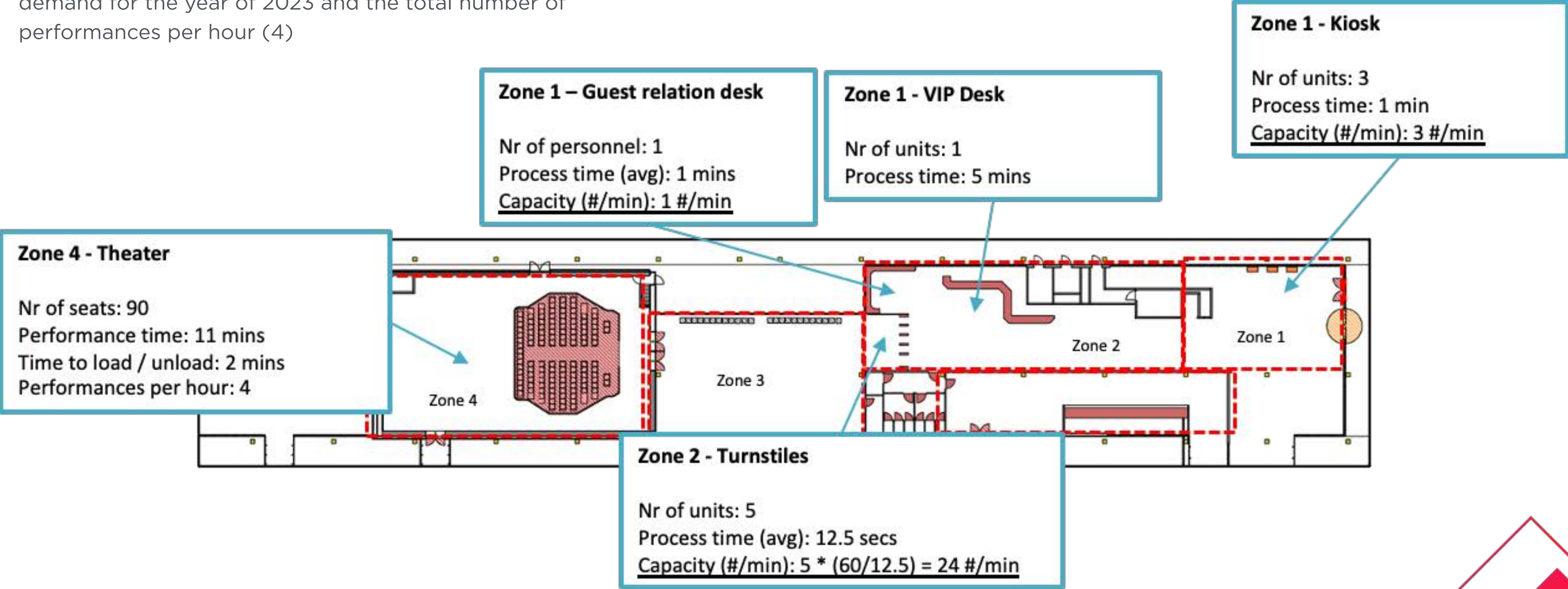
Zone 12 The Food Machine

TIMING AND OPERATIONS

THEORY OF OPERATIONS - IN DEVELOPMENT

Process Times & Visitor Behavior

Adjusted capacity of the theatre is based on LDP’s peak hour demand for the year of 2023 and the total number of performances per hour (4)



THEORY OF OPERATIONS - IN DEVELOPMENT

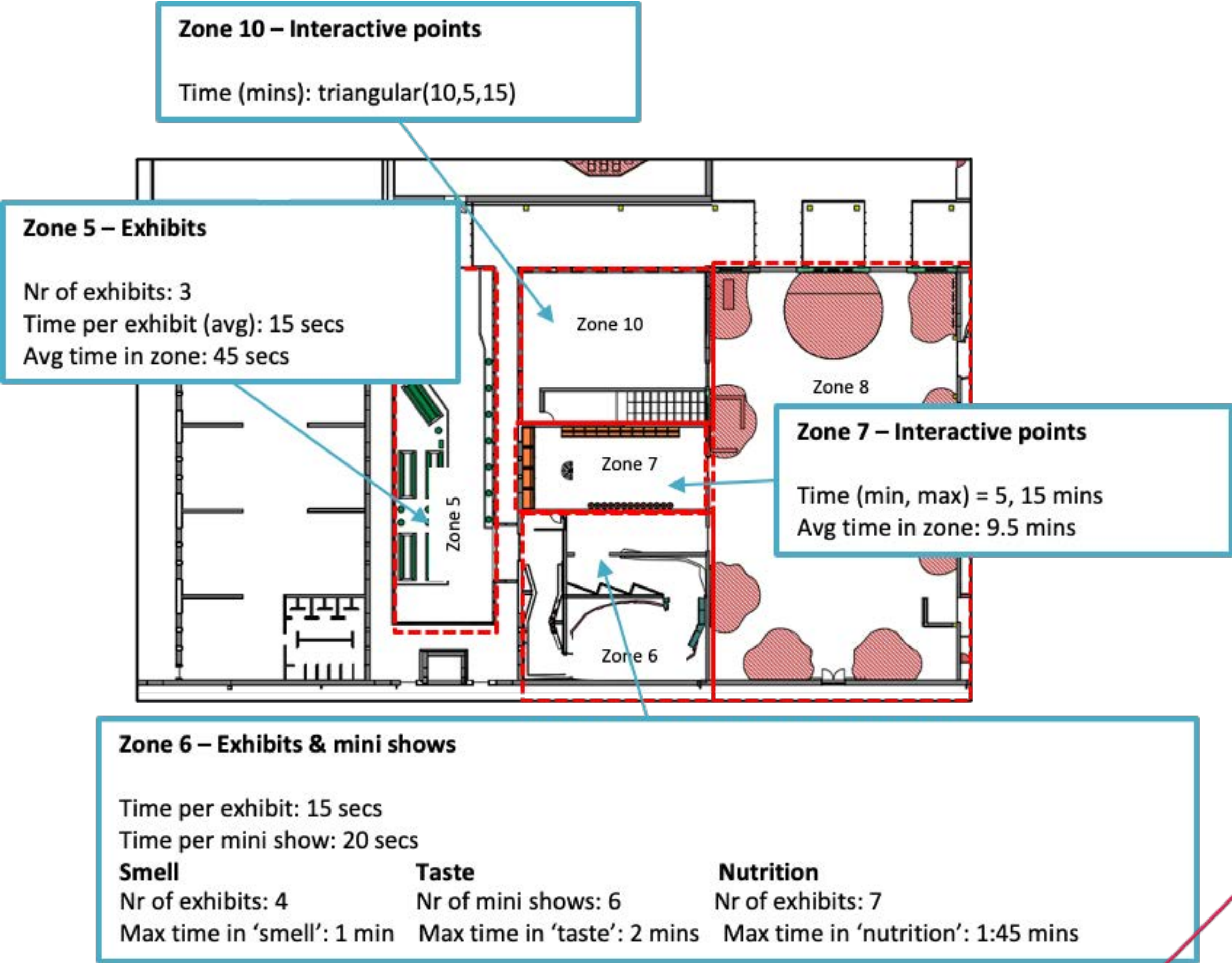
Process Times & Visitor Behavior

Zone 5 has three exhibits where visitors spend on average 15 secs per exhibit

Zone 6 has three sections, where the maximum time spent in each section is indicated

Zone 7: guests spend on average around 10 mins in this zone

Zone 10: agents spend on average 10 mins in the zone following a triangular distribution defined by triangular(mean,min,max)

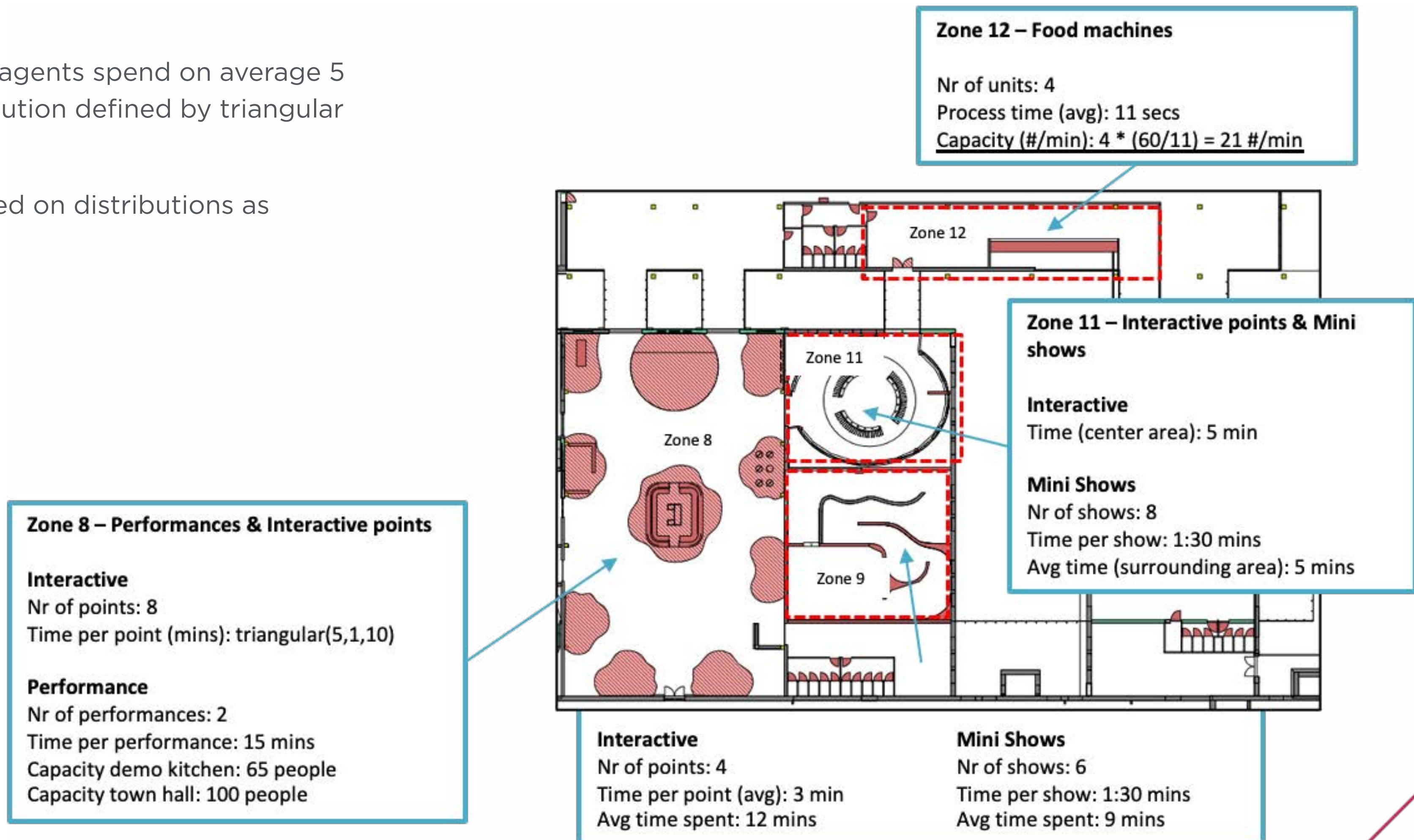


THEORY OF OPERATIONS - IN DEVELOPMENT

Process Times & Visitor Behavior

Zone 8: in each interactive point, agents spend on average 5 mins following a triangular distribution defined by triangular (mean,min,max)

Average times presented are based on distributions as presented in the following slides



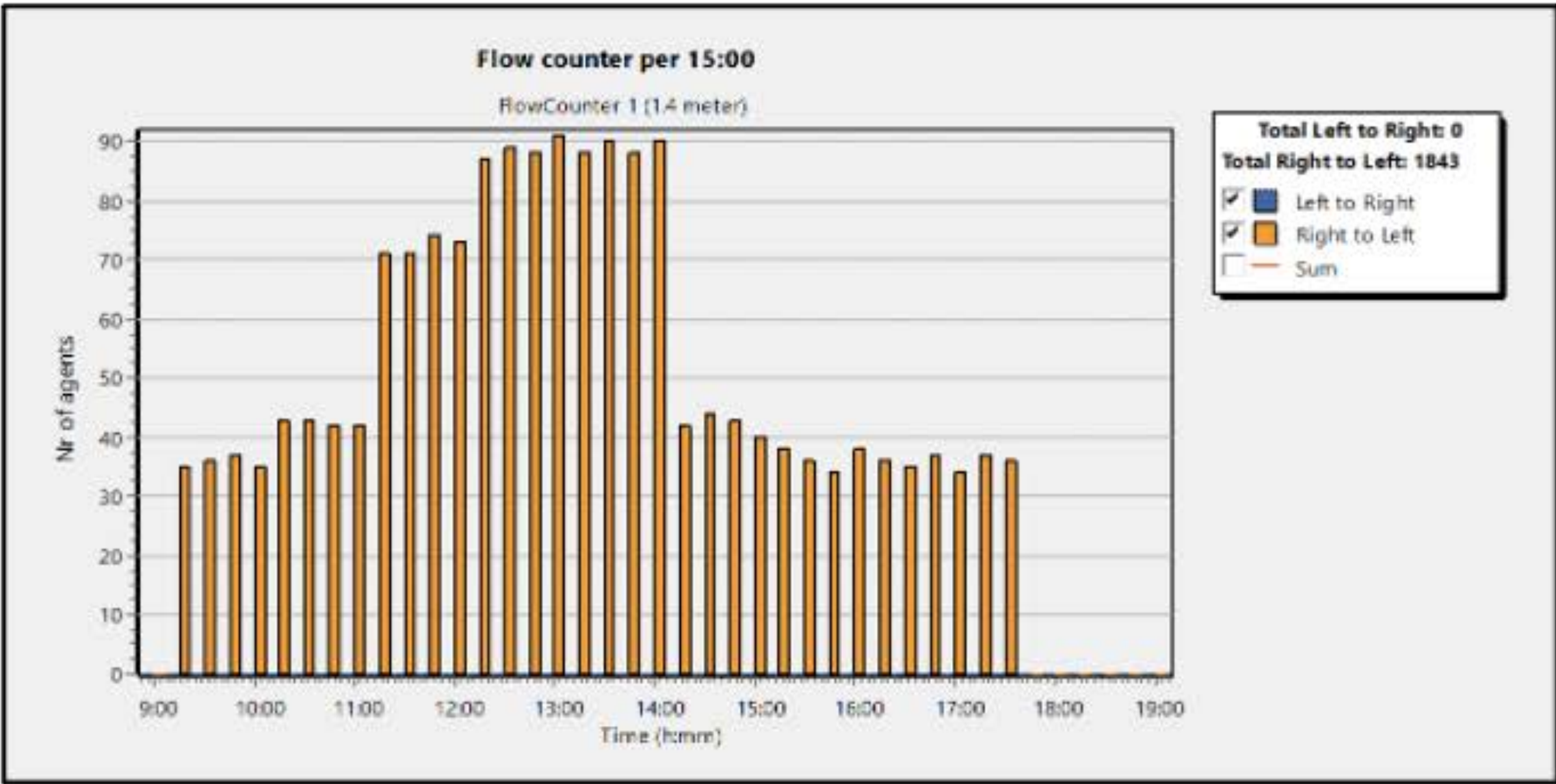
THEORY OF OPERATIONS - IN DEVELOPMENT

Demand Pattern

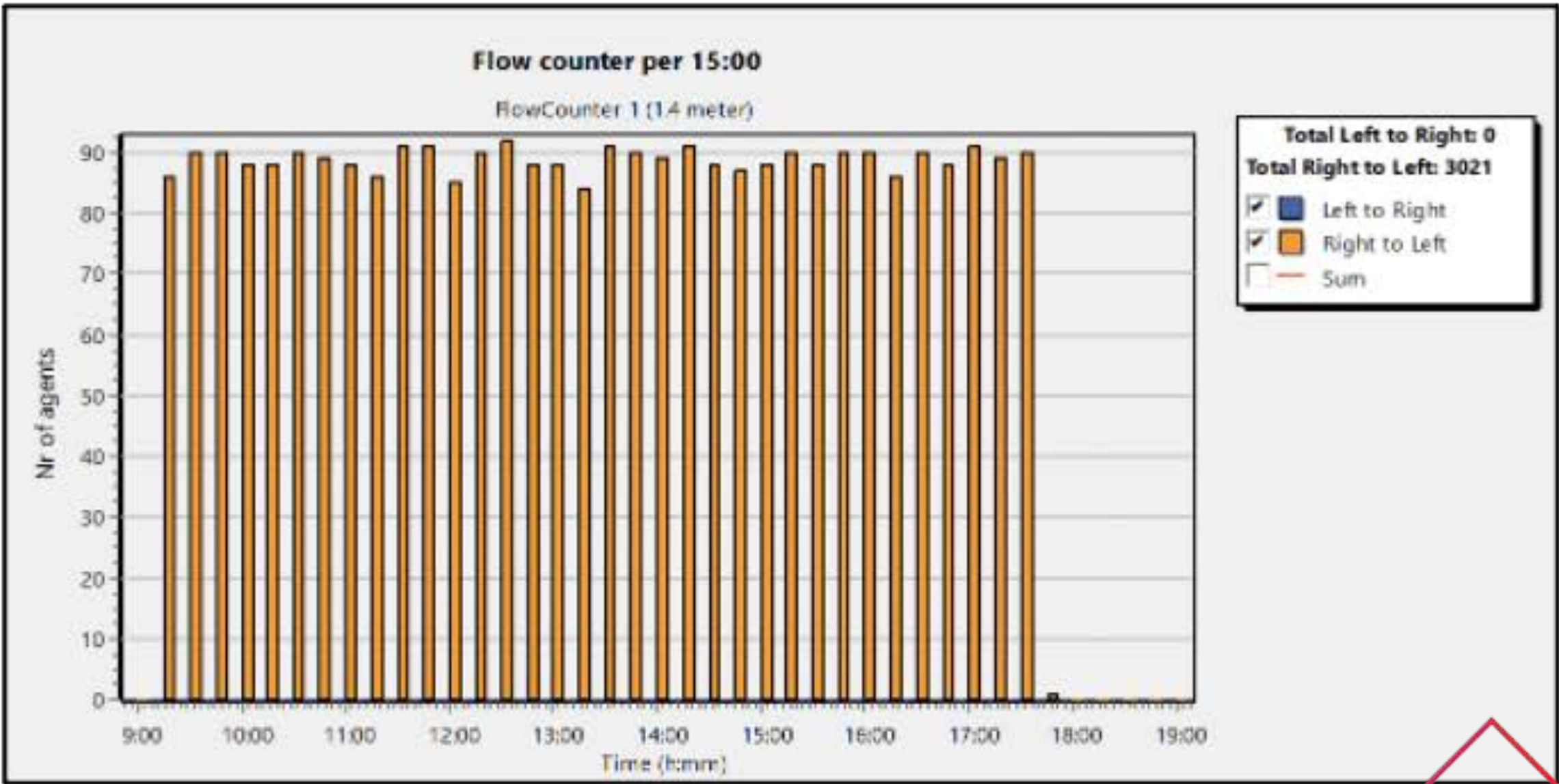
Peak hour arrival adjusted to LDP’s 2023 number which is 356 persons/h

This results in a peak 15 min arrival of around 90 persons/15 min

Inflow pattern in Standard Capacity Day



Inflow pattern in High Capacity Day



THEORY OF OPERATIONS - IN DEVELOPMENT

Demand Patter

Accessibility needs: 5% of visitors are assumed to be wheelchair visitors

Family composition

- Families of on average 2 parents with 1 child
- The share of the total visitors which are part of a family varies over the day according to the table below

Time	Percentage of visitors that are part of a family
9h - 10h	80%
10h - 11h	80%
11h - 12h	80%
12h - 13h	65%
13h - 14h	60%
14h - 15h	50%
15h - 16h	40%
16h - 17:30h	10%

THEORY OF OPERATIONS - IN DEVELOPMENT

Demand Pattern

- The table below gives an overview of the agent parameters that we are used in Pedestrian Dynamics for this project. The following agent profile settings are defined for leisure and tourist agent behavior which are based on Weidmann [1]. The second column displays the settings for wheelchairs based on Boyce international guideline [2].

Parameter	Value	Value
General settings	Visitors	Wheelchairs (including companion)
Radius	0.235 m	0.535 m
Avg. surface of agent	0.18 m2	0.90 m2
Average walking speed (min, max)	1.1 m/s (0,79 m/s, 1.353 m/s)	0.69 m/s (0,13 m/s, 1.35 m/s)

THEORY OF OPERATIONS - IN DEVELOPMENT

Visitors

- Kiosks: 40% of visitors buy tickets at the kiosks and of these 10% need assistance at the guest relations desks.
- VIP desk: 10% of visitors are VIP visitors and all stop at the VIP desk.
- Zone 5 has three exhibits where 60% of visitors stop to visit, while 40% only slow down while walking in the zone (percentages follow expected type of visitors as in Zone 6)
- Zone 6 has three sections with different demands:
 - Smell section: 30% of visitors stop at the all exhibits, 60% slow down, and 10% continue walking without slowing down
 - Taste section: 30% of visitors watch all mini shows, 30% watch 3 mini shows, 30% slow down, and 10% continue walking without slowing down.
 - Nutrition section: 30% of visitors stop at all exhibits, 60% slow down, and 10% continue walking without slowing down
- Zone 7: this zone is visited by 90% of the families only, other visitors do not enter this zone.
 - 40% of visitors spend 5 minutes in this zone, 30% spend 10 mins and 30% spend 15 mins.
- Zone 8: capacity values are defined for the demonstration kitchen and for the town hall performances.
 - Demonstration kitchen: 80% stay 15 mins, 10% stay 6 mins and 10% stay 9 mins.
 - Town hall: 70% stay 15 mins, 10% stay 6 mins and 20% stay 9 mins.
 - It is assumed that the capacity is fully utilized: as not all visitors stay for the entire performance, when some visitors leave, and there is capacity again, others enter the area to watch the performance.

THEORY OF OPERATIONS - IN DEVELOPMENT

Visitors

- Zone 9: this zone is divided into two stages – in the first stage guests watch the mini shows spending on average 9 mins in the stage, while in the second stage, which is where visitors spend most time, they interact with the interact activities.
 - 4 interactive points exit.
 - 50% of guests spend 2 mins per point, 20% spend 3.5 mins and 30% spend 5 mins per point.
 - All visitors follow the same route within the zone, so unidirectional flows are predominant.
- Zone 11: this zone is also divided into two stages, where one of the stages has 8 mini shows (1.5 mins each), the other corresponds to the interactive attractions in the center of the zone.
 - Interactive stage: visitors spend 5 mins in this area in the center.
 - Mini show stage: 20% of guests watches all 8 shows, 50% watches 2 shows and 30% watches 3 shows.
 - Visitors choose the order to perform each stage randomly.

PLEASE SEE VIDEO FILE 3

THEORY OF OPERATIONS - IN DEVELOPMENT

Density Analysis

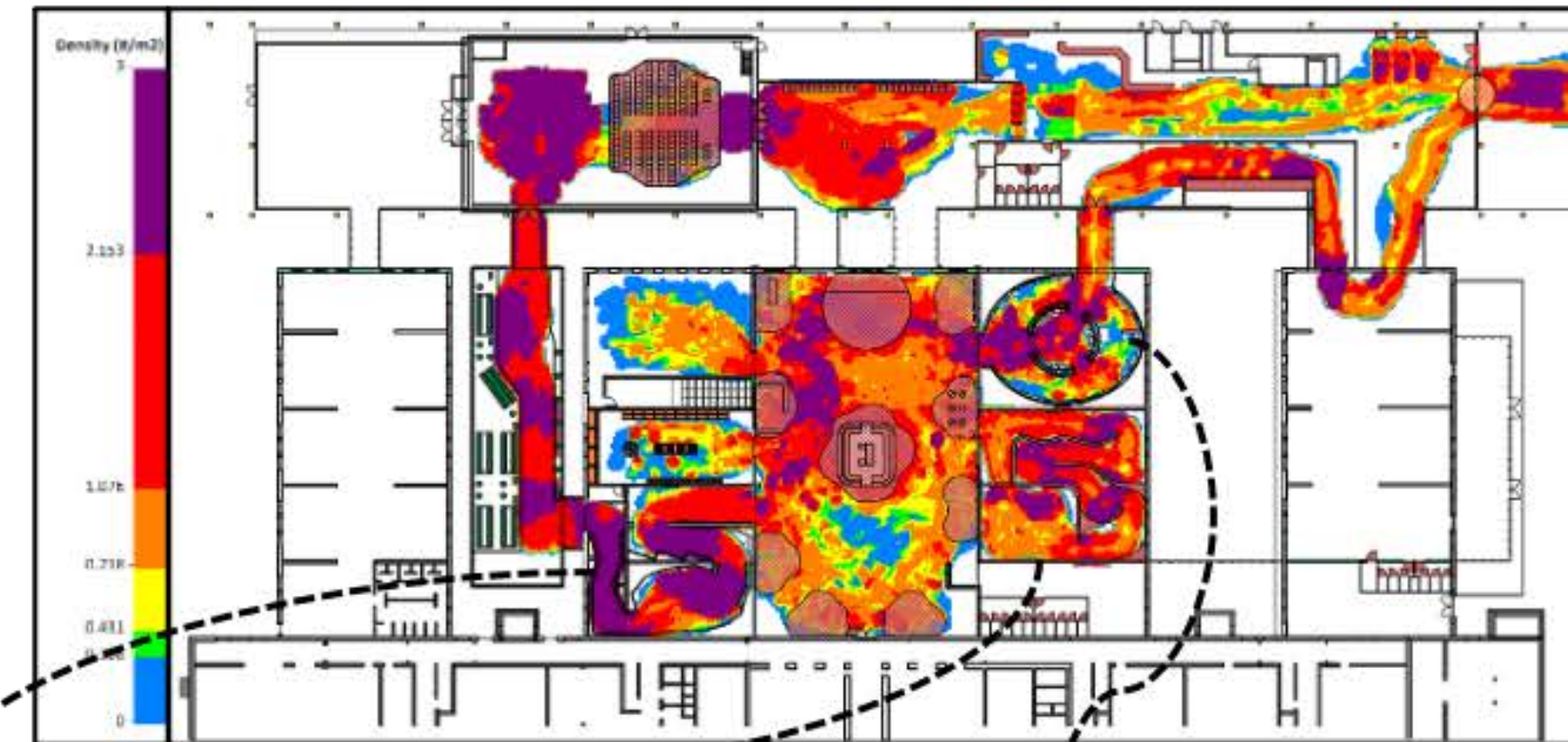
- The following slides present the results of the dynamic simulations. The results shown are explained below.
 - The Density Map illustrates the maximum densities experienced by visitors on the environment, that is, the maximum number of people per m2.
 - The Density Graph illustrates the densities over time, or the average density for every 30 second period for a pre-defined area.
 - The standards used to distinguish the different levels of crowdedness of pedestrians are shown in the table below.

<div><div><div><div></div><div>F - congested</div></div><div><div></div><div>E - very busy</div></div><div><div></div><div>D - busy</div></div><div><div></div><div>C - medium</div></div><div><div></div><div>B - few/medium</div></div><div><div></div><div>A - few</div></div><div><div></div><div>empty</div></div></div></div>	<div><div>F</div><div>E</div><div>D</div><div>C</div><div>B</div><div>A</div></div>	<div><div>> 2 person/m²</div><div>> 1.1 person/m²</div><div>> 0.718 person/m²</div><div>> 0.431 person/m²</div><div>> 0.3 person/m²</div><div>> 0 person/m²</div></div>	<div><div>< 0.5 m²/person</div><div>< 0.9 m²/person</div><div>< 1.4 m²/person</div><div>< 2.3 m²/person</div><div>< 3.3 m²/person</div><div>< ∞</div></div>
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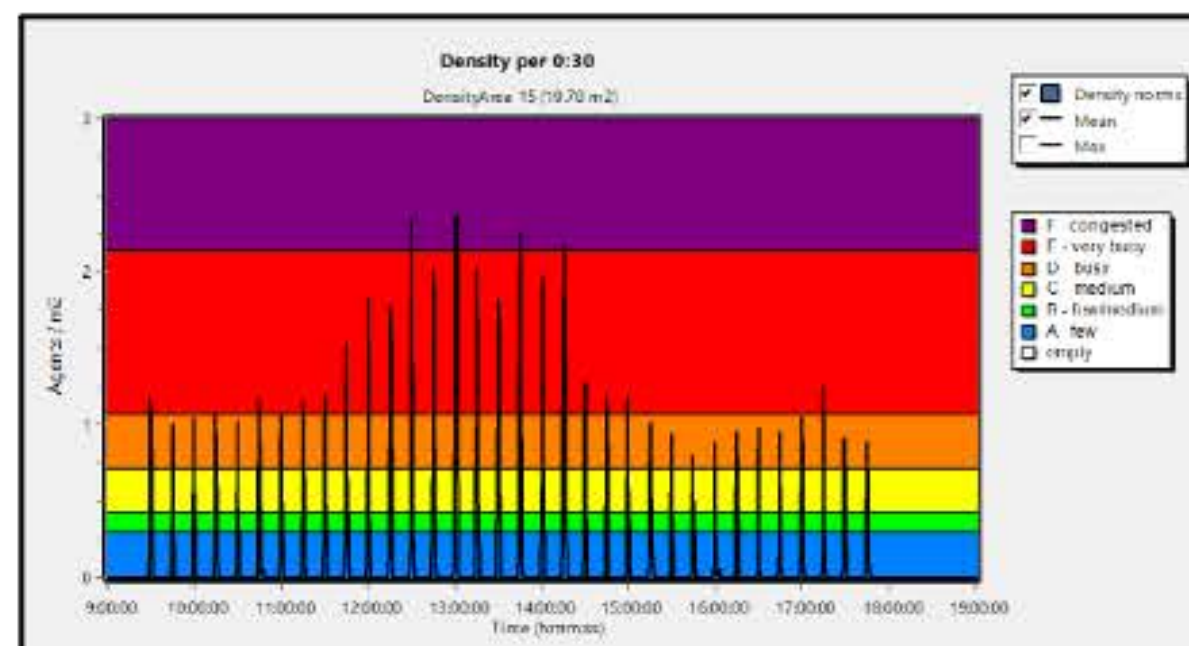
THEORY OF OPERATIONS - IN DEVELOPMENT

Demand Pattern

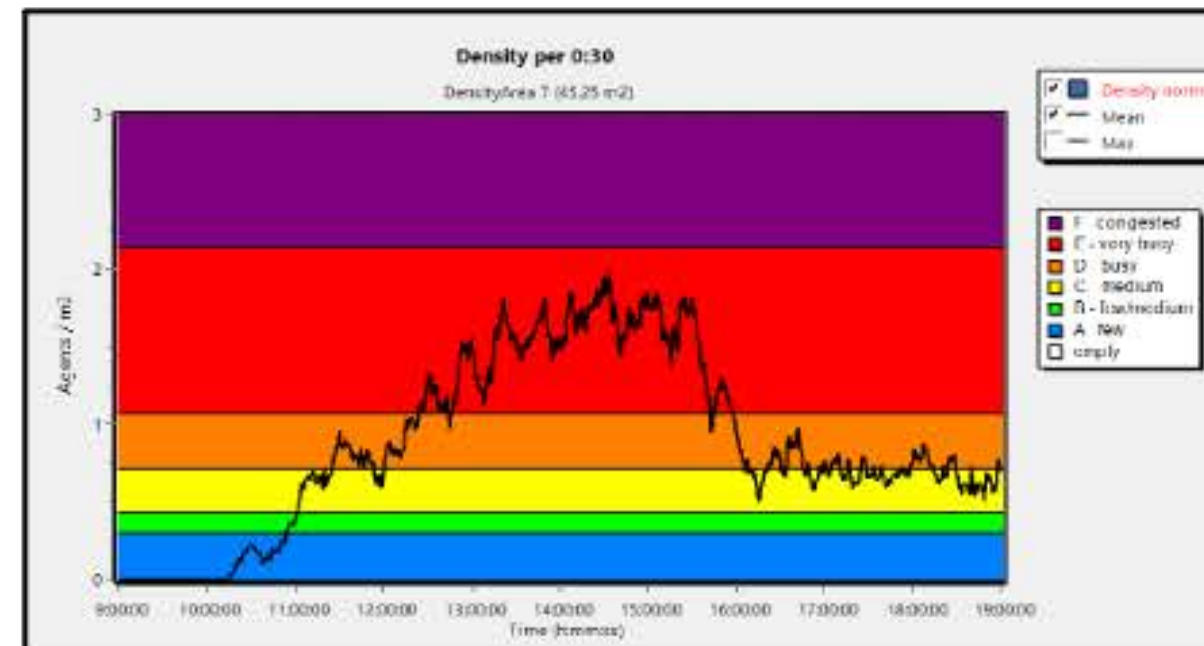
- The figure on the right shows the maximum 30 sec averaged densities that have occurred on the environment
- From this figure, the densities in Zones 6, 9 and 11 are highlighted (see graphs below)



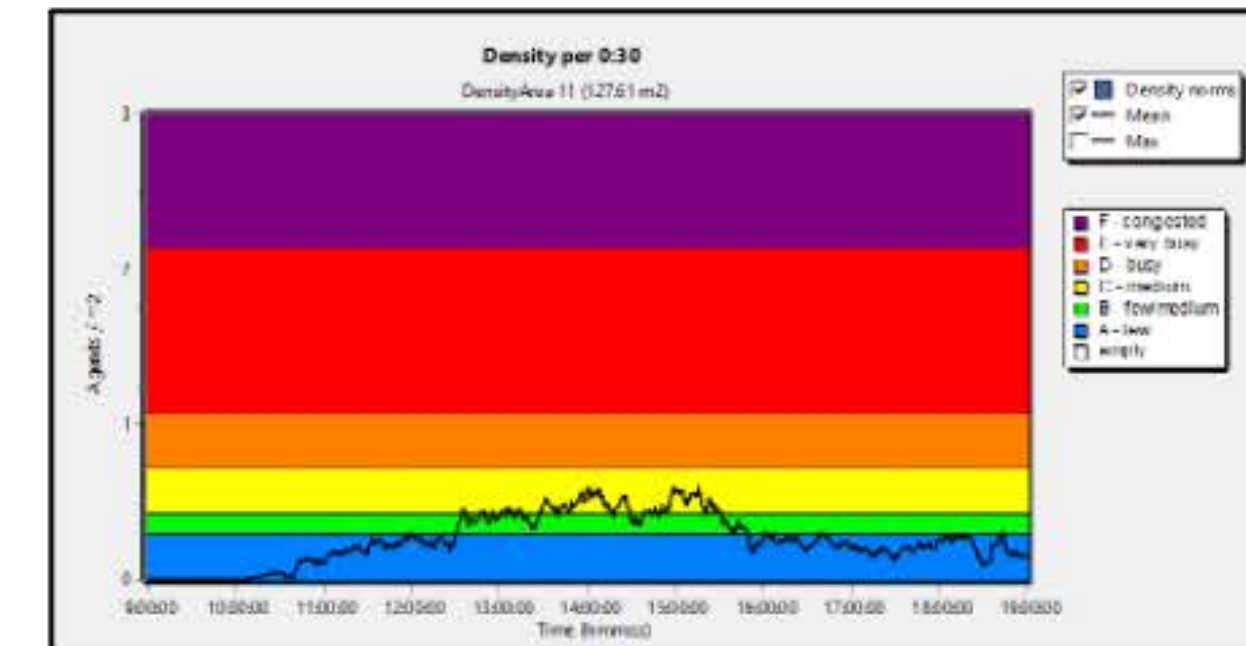
Density over time by the 'Smell' section of Zone 6



Density over time by interactive area of Zone 9



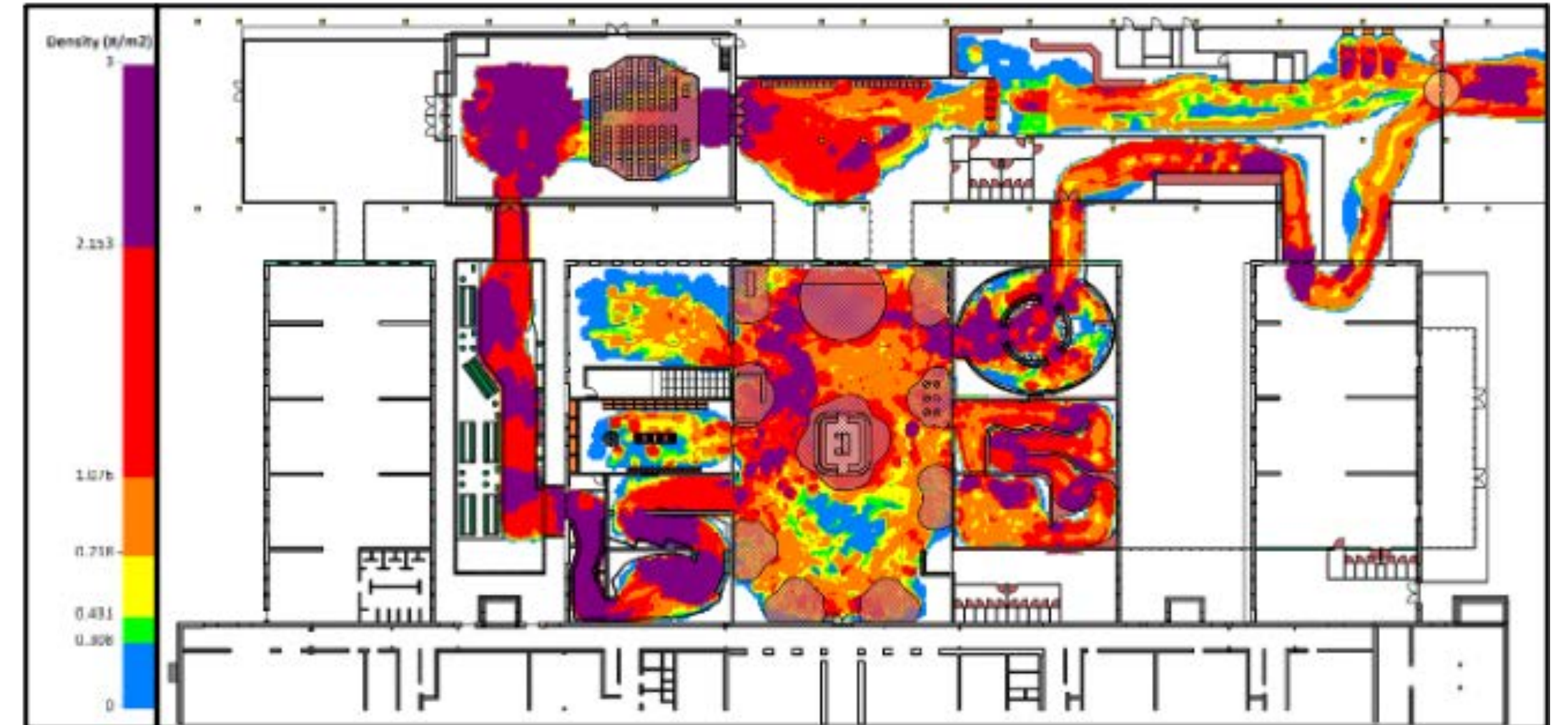
Density over time in Zone 11



THEORY OF OPERATIONS - IN DEVELOPMENT

Standard Capacity Scenario

- Zone 6: Smell section
 - The first section of this zone ('Smell section') has exhibits where visitors are expected to standstill to read. These visitors create a physical barrier and reduce the available width of the corridor, thus increasing interactions between visitors walking through.
 - Peaks of densities of around 2 persons/m² occur in that area of the zone, and the duration is approximately 30 secs each.
- Zone 9: interactive area
 - In the mini shows area densities over time are in 'busy' levels during the peak hour (> 1 person/m²).
 - In the interactive area densities of > 1,5 persons/m² occur during the peak demand hours (between 13h – 16h). This level of density might make the movement between the interactive points uneasy / uncomfortable for visitors.
- Zone 11: visitors not only perform activities in this zone but also use this as the exit route
 - The densities over time indicate that there is little interaction between visitors standing still and performing activities with the ones moving, that is, there is sufficient space in this zone for these two flows.

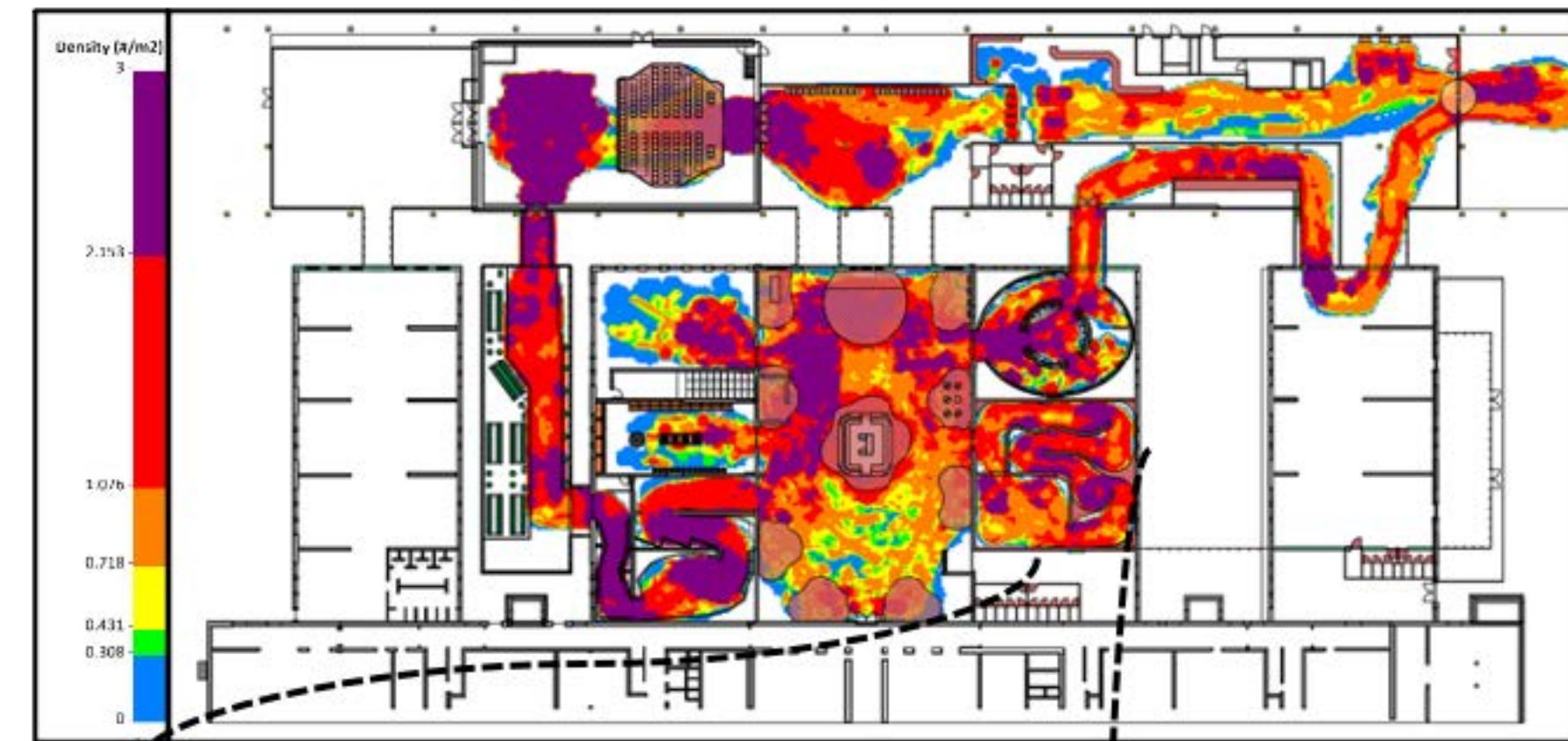


THEORY OF OPERATIONS - IN DEVELOPMENT

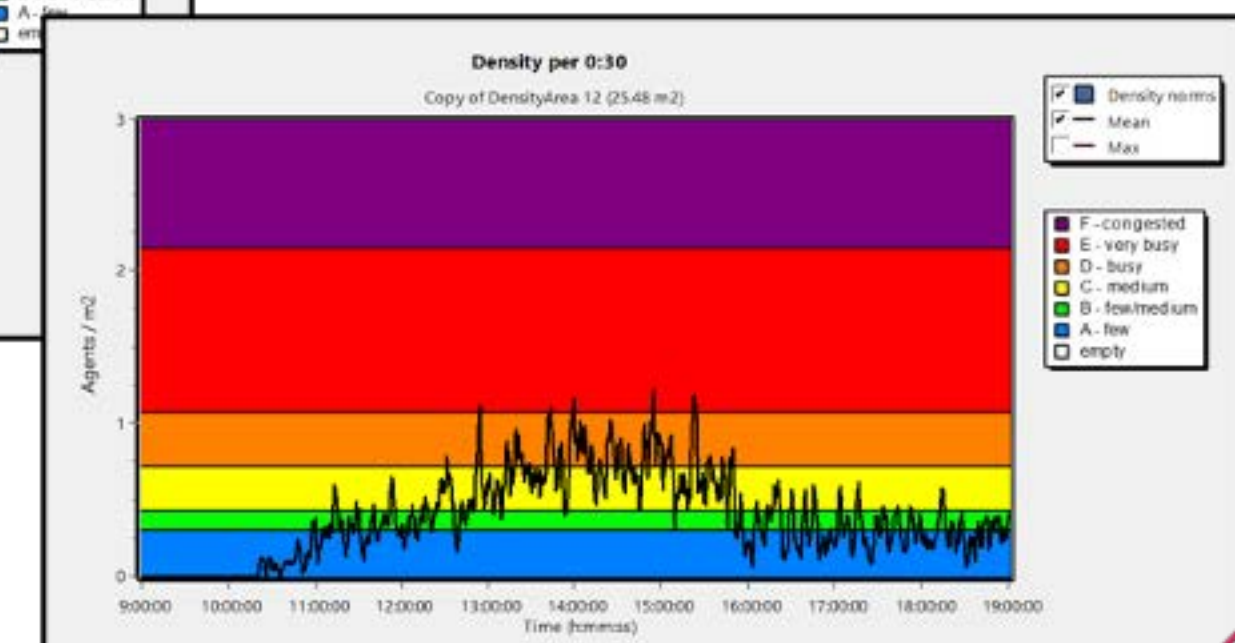
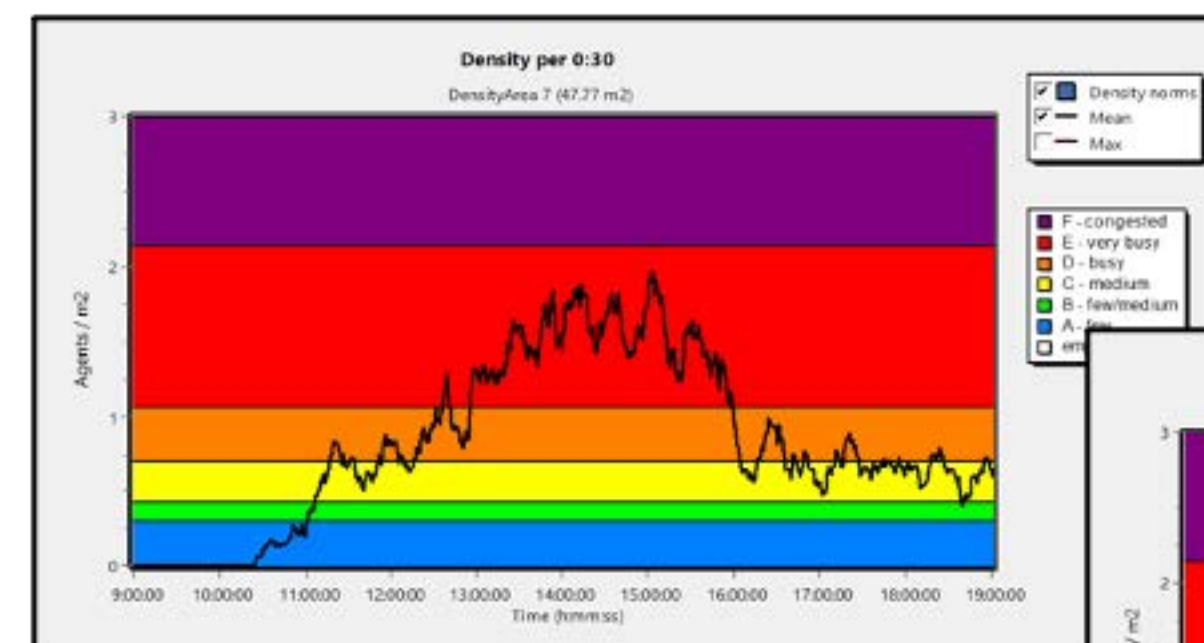
Standard Capacity Scenario

- The peak times in Zones 9, 10 and 11 occur between 1 to 1:30 hours later than the arrival peak into the experience.
- The time spent in the mini show stage of Zone 9 has been increased to 9 mins.
- However, this value does not yet balance the mini show and the interactive stages, as the average time in the interactive stage is 12 mins, hence densities of around 2 persons/m² still arise in that area.

Density map: maximum densities in the environment over the entire simulation period



Density over time by interactive area of Zone 9



THEORY OF OPERATIONS - IN DEVELOPMENT

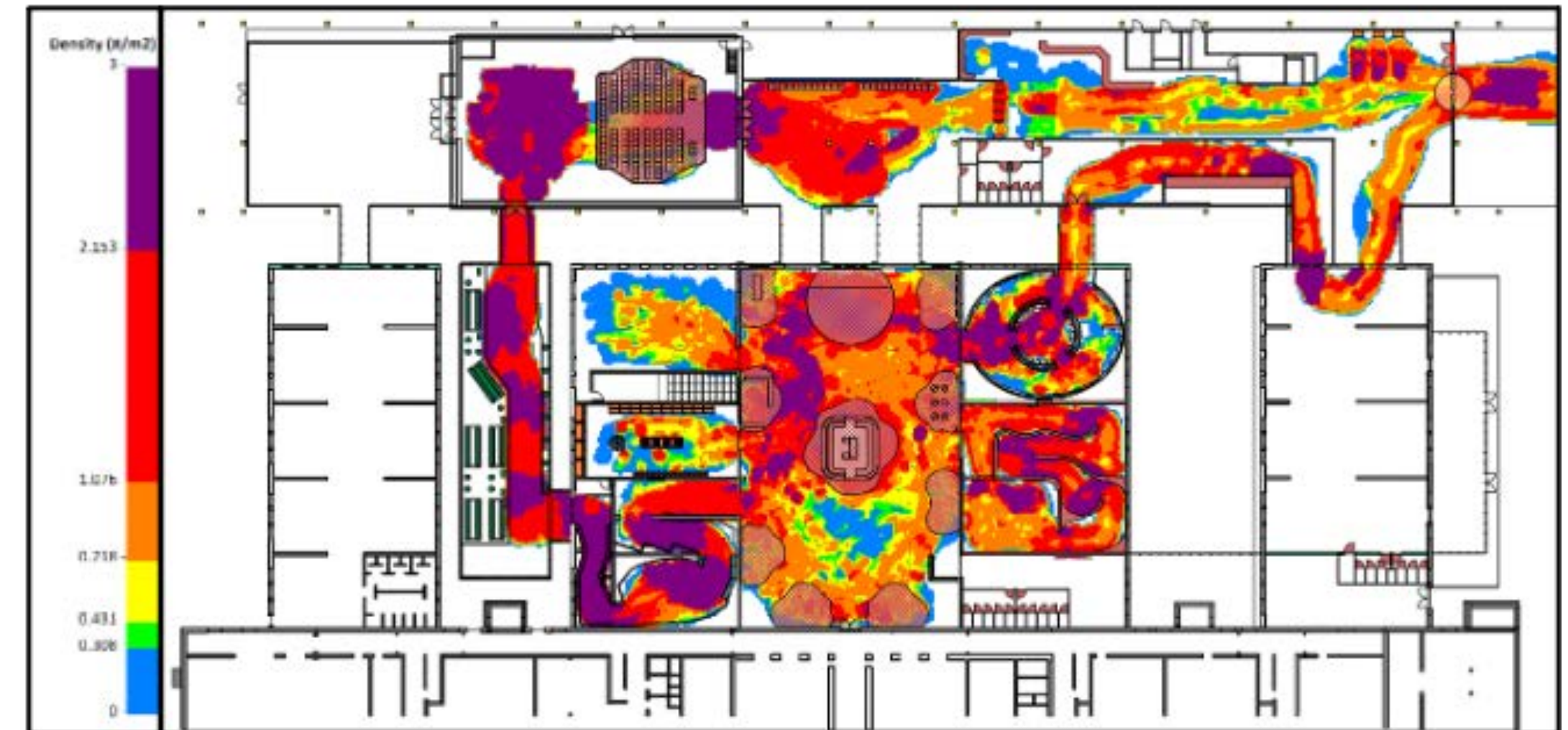
Standard Capacity Scenario

The figures below show the longest queues that occur by the kiosks, turnstiles and food machines during the simulation period

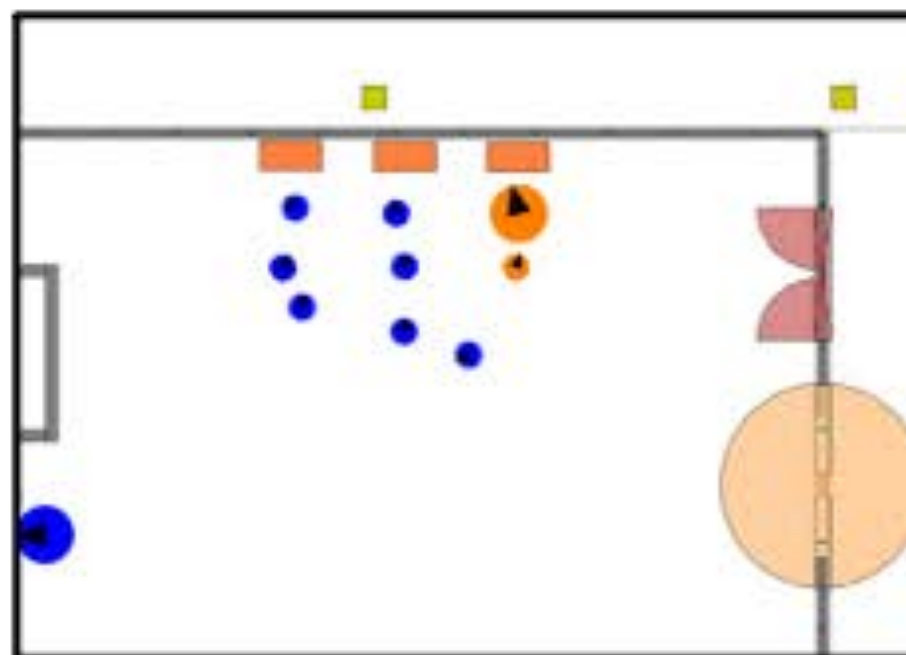
Kiosk: queues of at least 1 person per kiosk occur 10% of the time

Turnstiles: queues of 1 person per turnstile occur less than 5 times

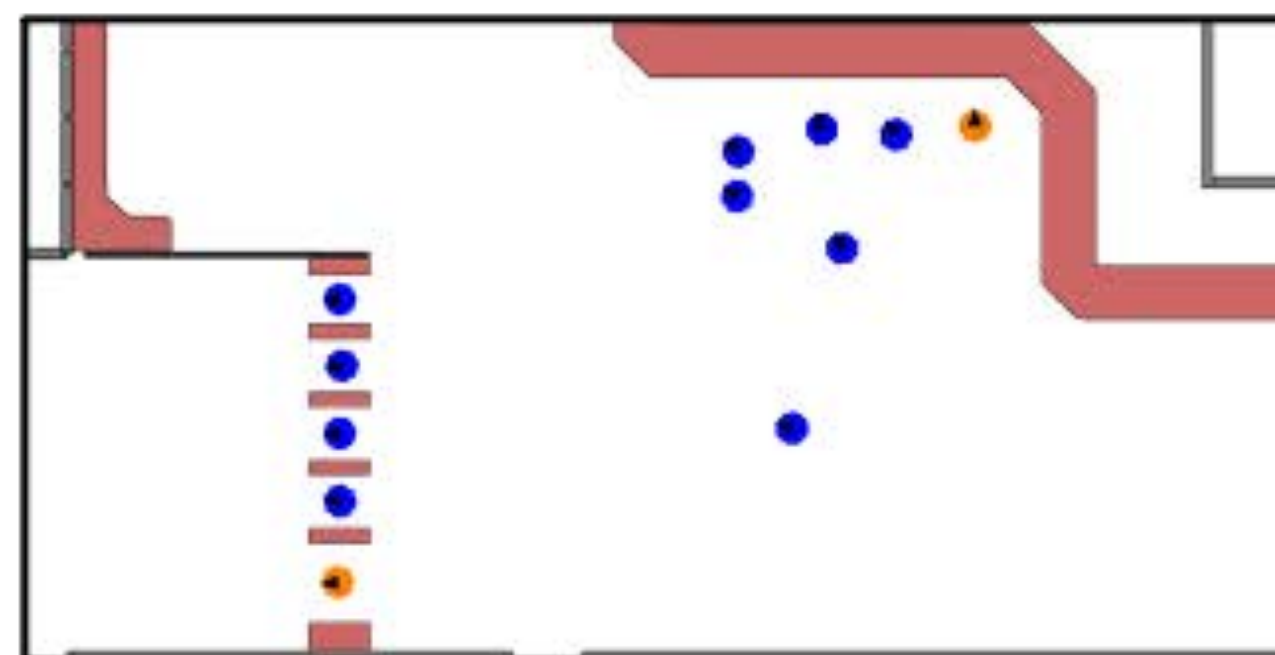
Food machines: queues of 1 person per food machine occur 1% of the time



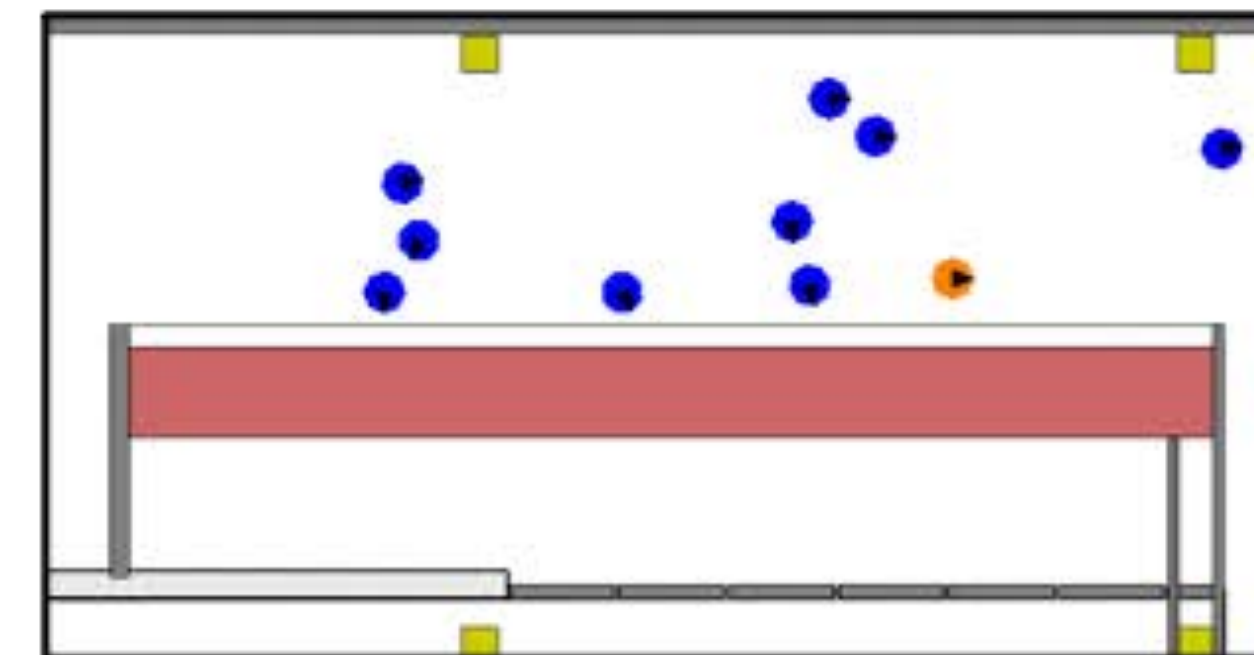
Queues by the kiosks



Queues by the turnstiles



Queues by the food machines (Zone 12)



THEORY OF OPERATIONS - IN DEVELOPMENT

Standard Capacity Scenario

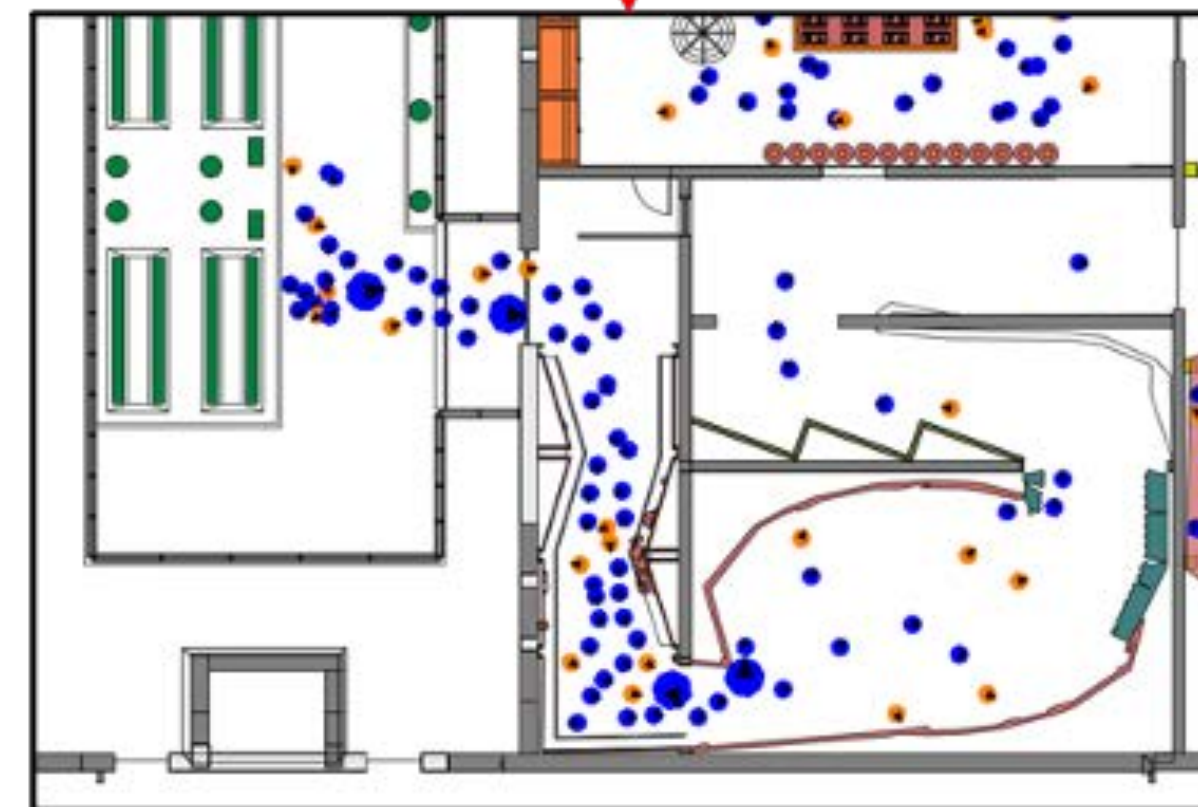
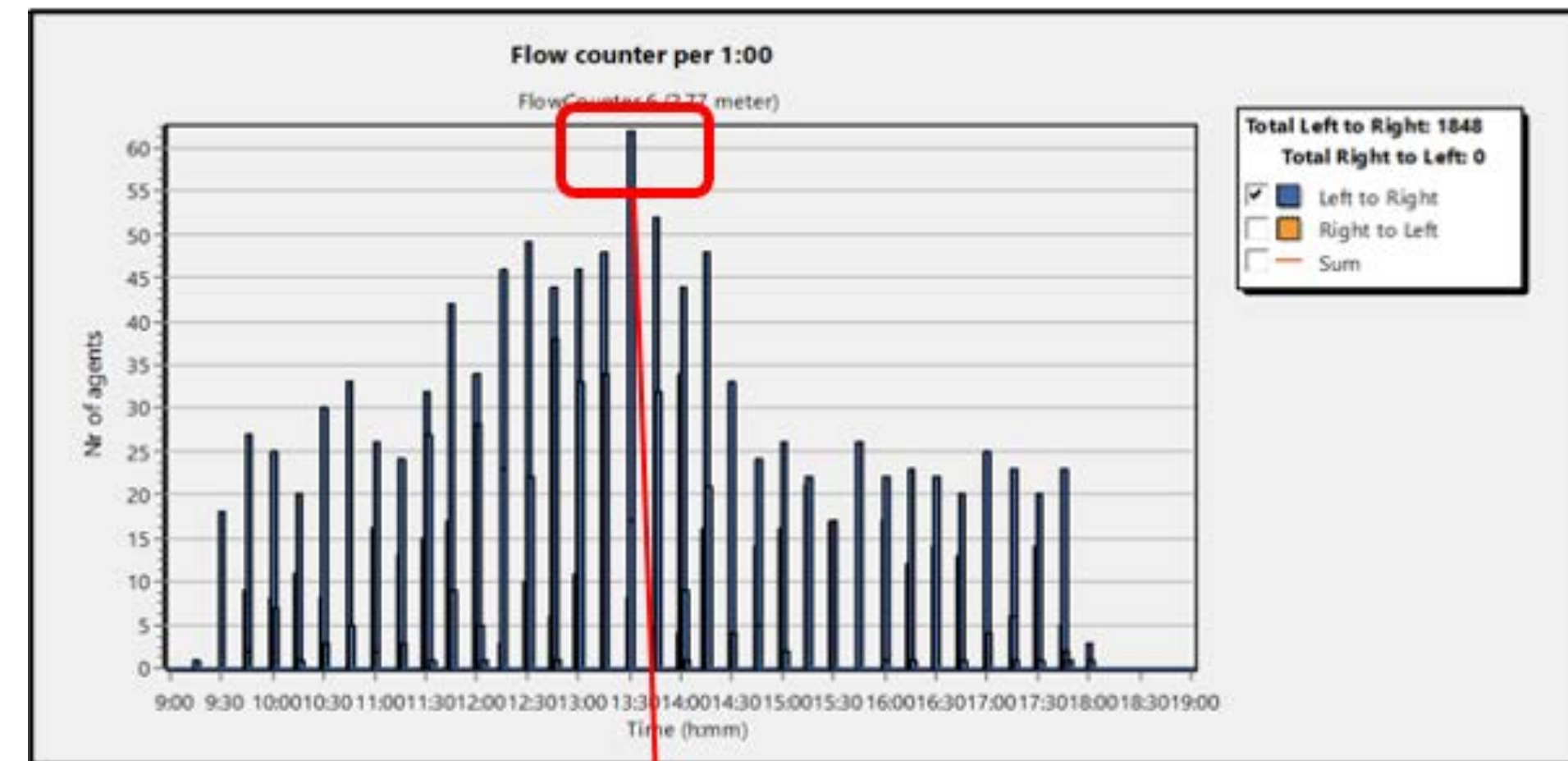
The zones where there flows interact more frequently are Zones 6, 7 and 9

The peak demand into zone 6 is reduced with the added exhibits in Zone 5, which spreads the flows out of the theater before arriving to Zone 6.

The new peak flows are between 60 - 65 persons/min, which enter the 2.5 m corridor of the smell section.

Of these 30% stop at the exhibits to read, so around 20 persons at the same time can be standing still in corridor while others try to move forward.

Hence, although peak flow is lower, the interactions between visitors who stop to read the exhibits and the ones passing through remains high, increasing overall densities as visitors standing still reduce the available width for walking.

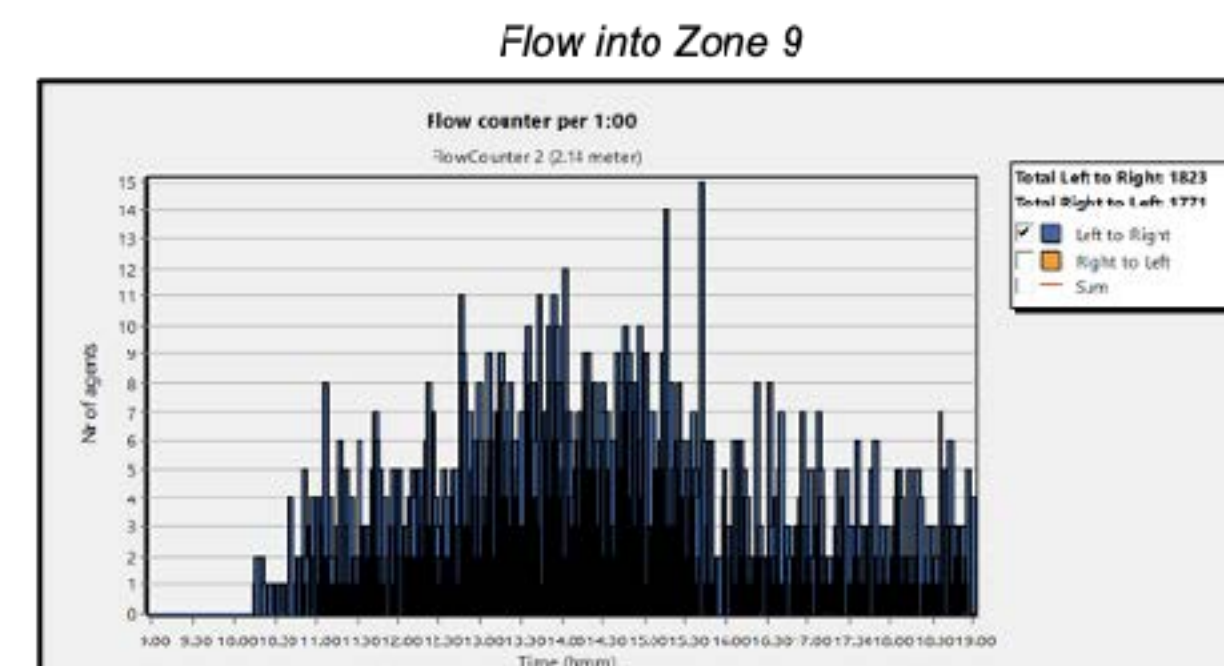
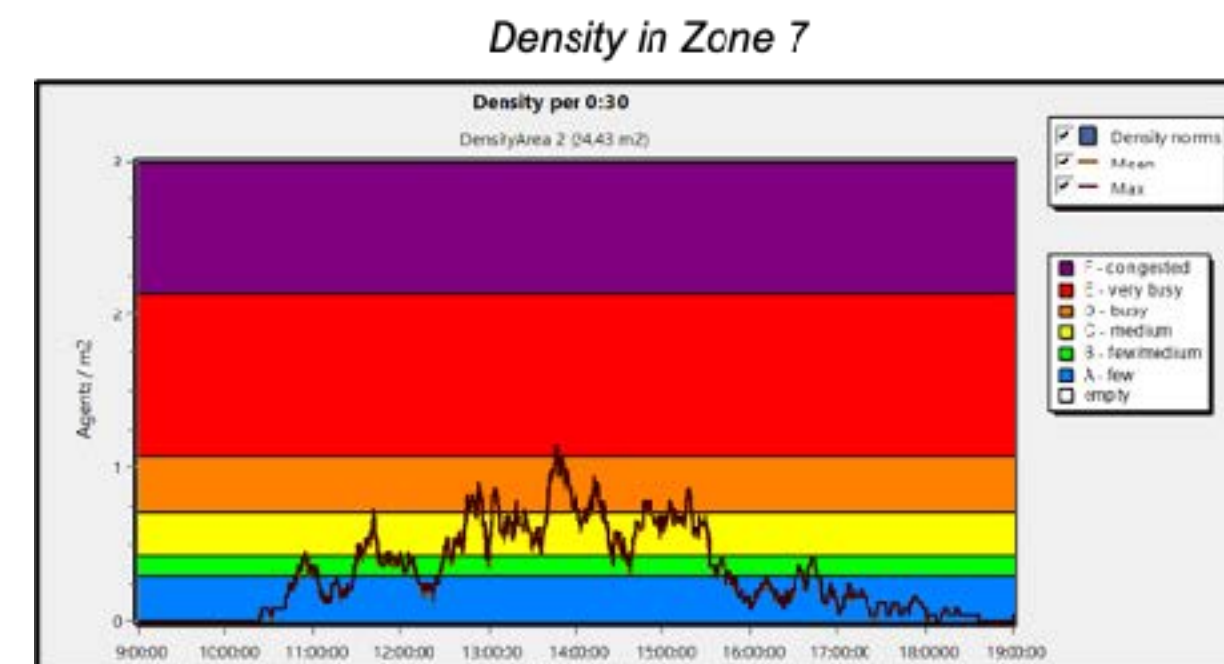


THEORY OF OPERATIONS - IN DEVELOPMENT

Standard Capacity Scenario

In Zone 7 there are two main corridors which are about 2 m wide, which guests use to move around in the zone and to stop and purchase their items. Similar to zone 6 visitors standing still on both sides of each corridor reduce the available space for moving around. However, densities in that zone remain below “busy” levels for most of the time.

Finally, in zone 9, the main area where flows interact is in the interactive section of the zone. As visitors move around in multiple directions between the 4 interactive points available, while other visitors are standing still for on average 3 mins per interactive point.

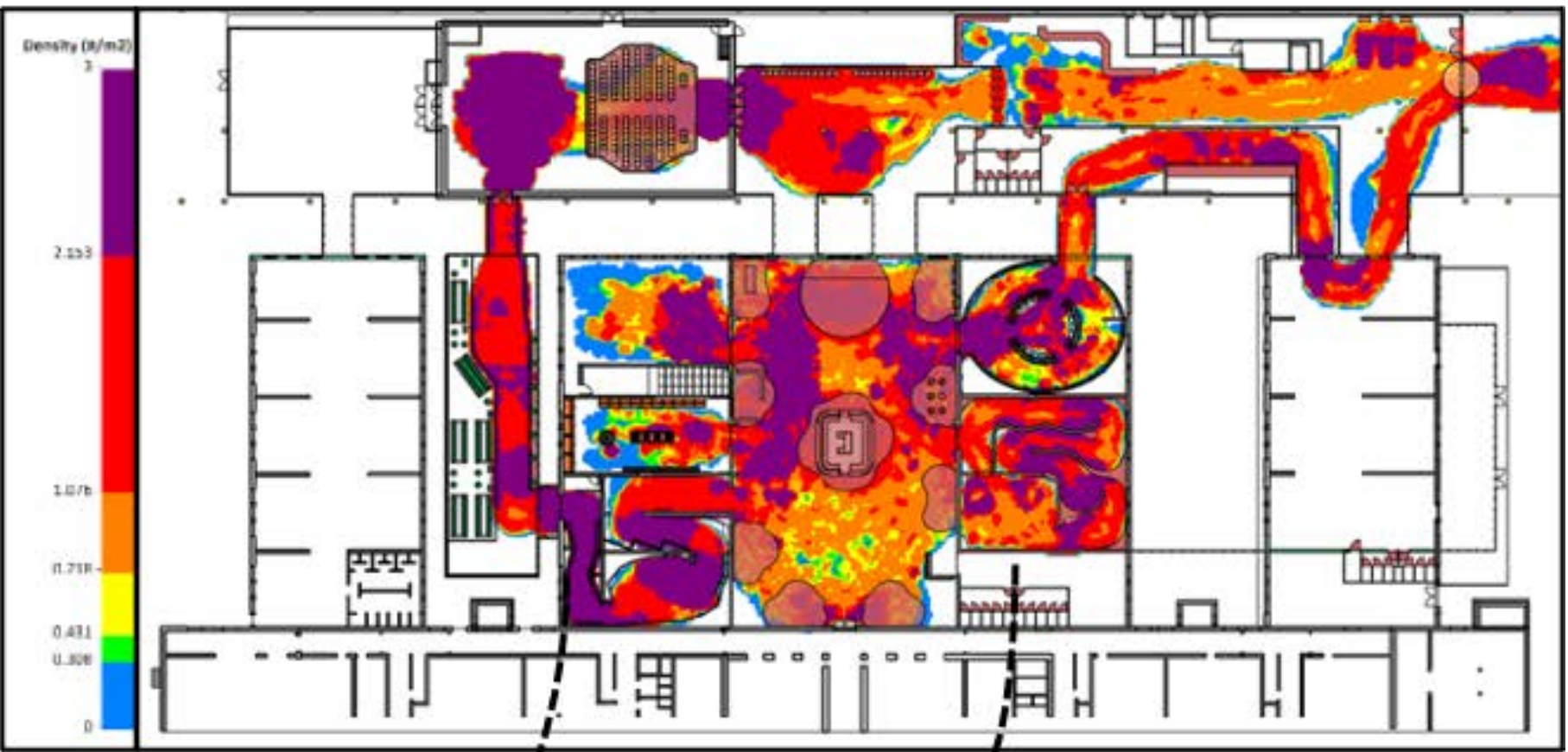


THEORY OF OPERATIONS - IN DEVELOPMENT

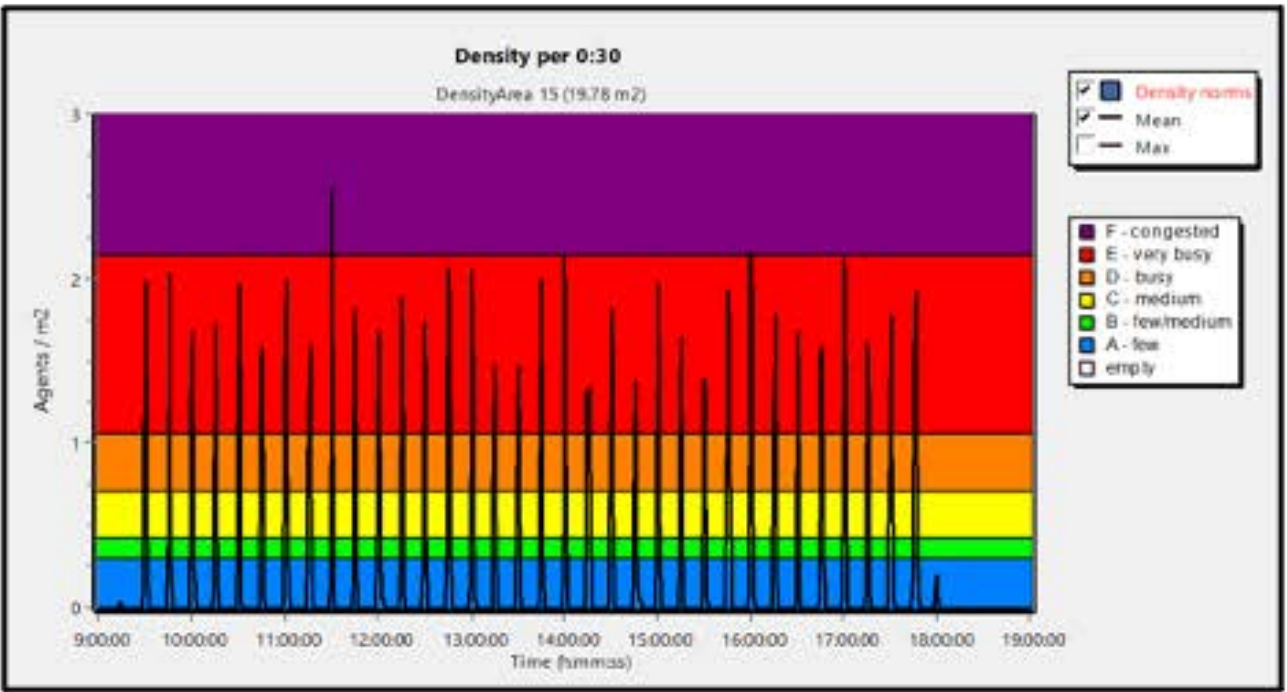
Standard Capacity Scenario

It can be seen on the density map shown that, although densities remain in the same level as the peak hour of the standard capacity scenario (level of service E), these higher densities last for longer / occur more frequently in the high capacity scenario.

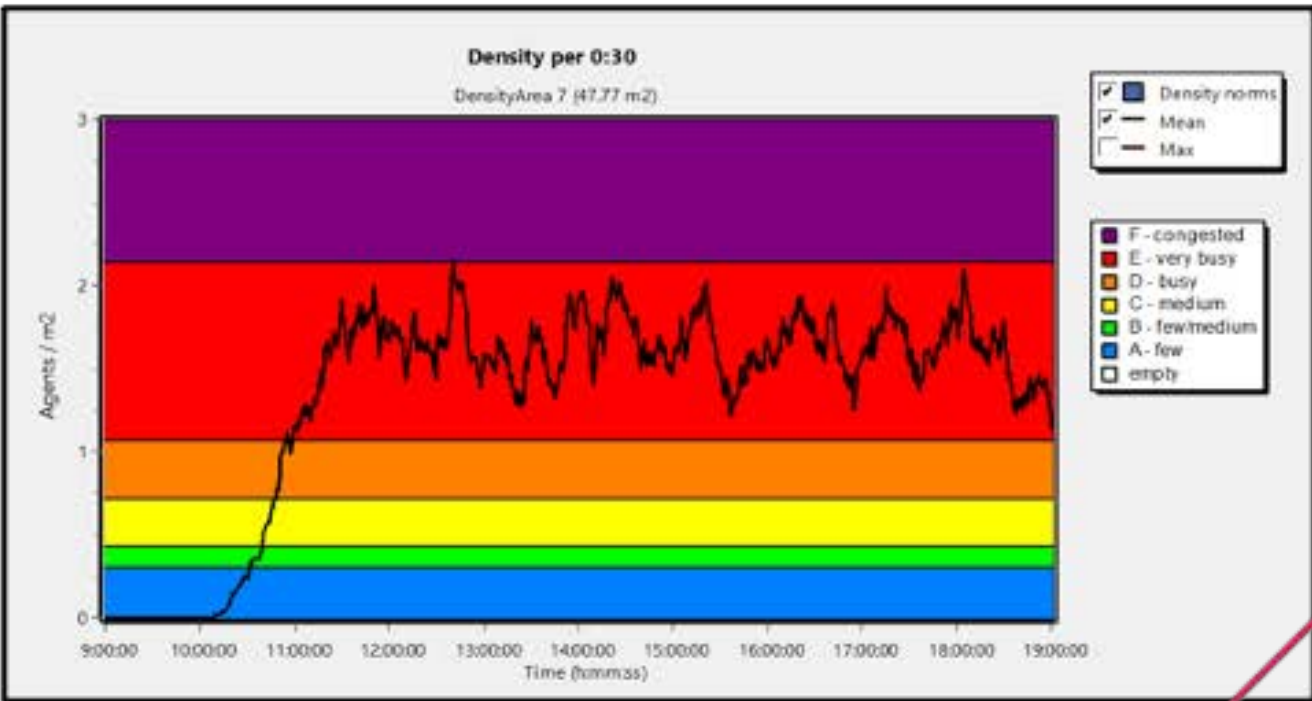
Density map: maximum densities in the environment over the entire simulation period



Density over time by the 'Smell' section of Zone 6



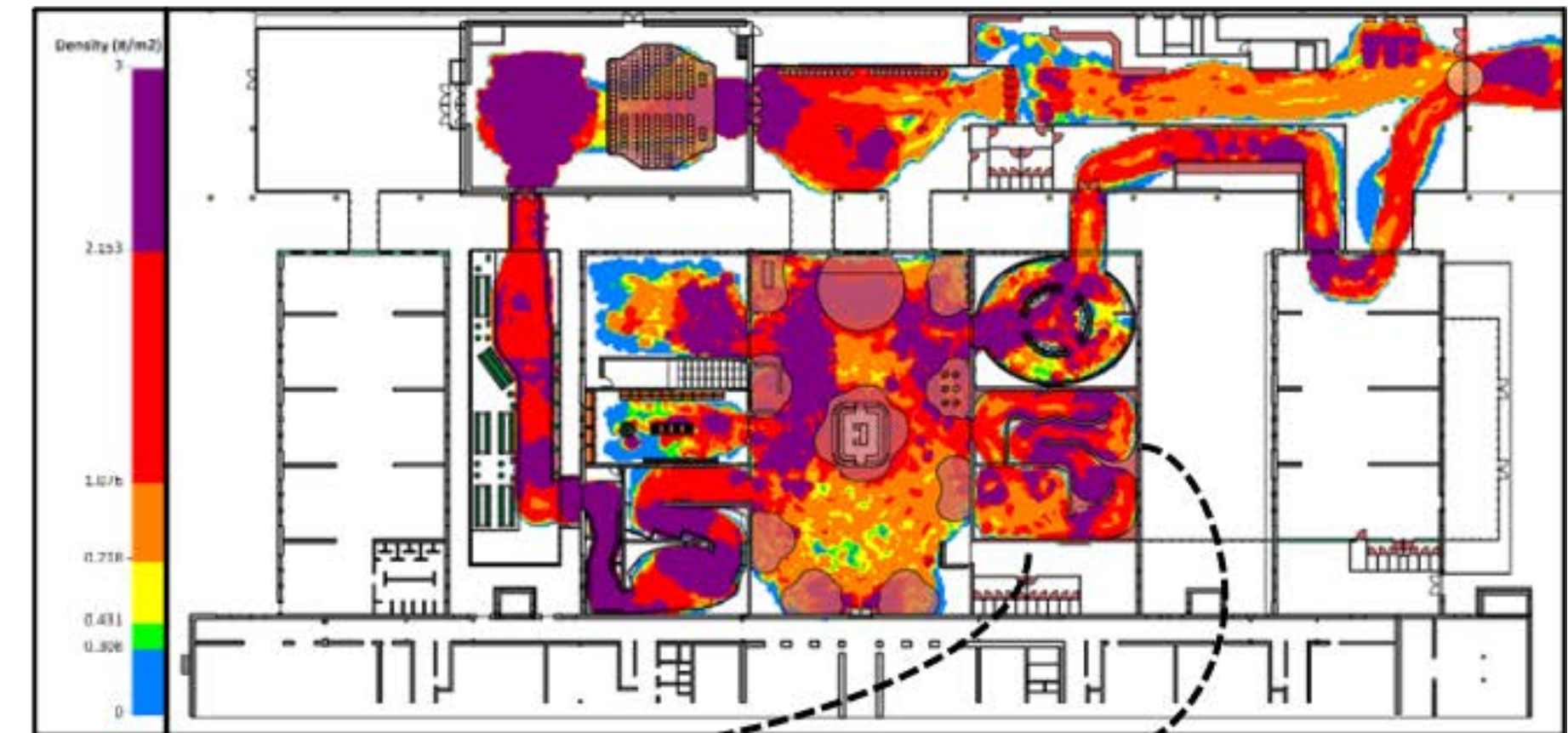
Density over time by interactive area of Zone 9



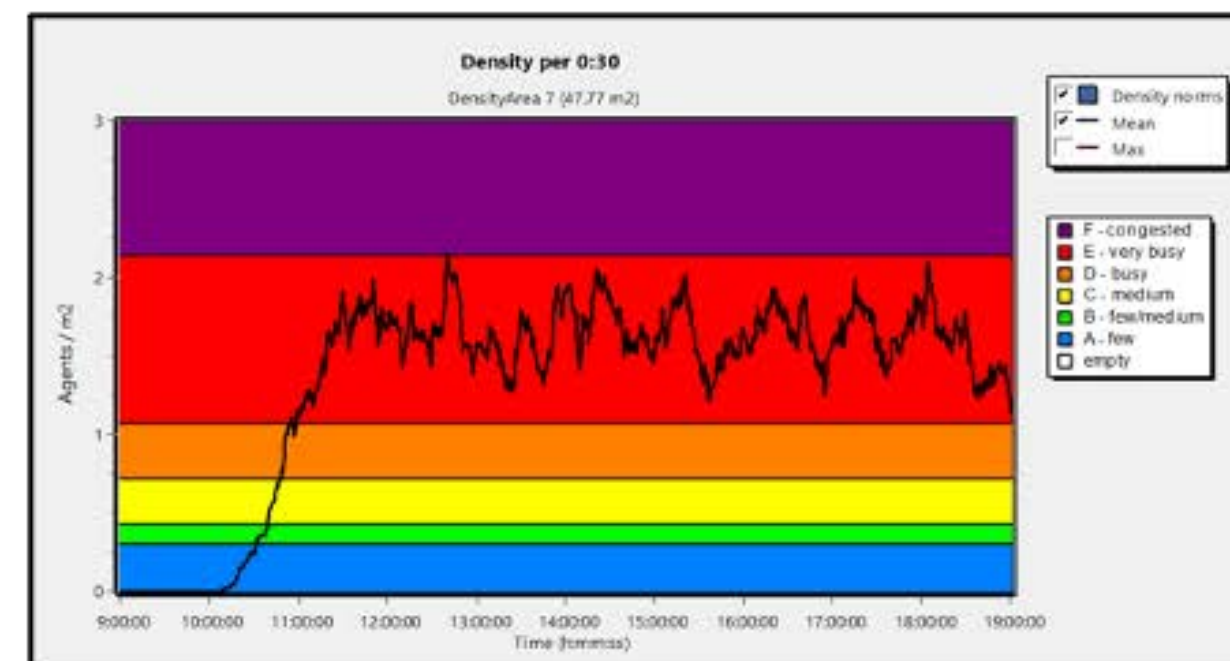
THEORY OF OPERATIONS - IN DEVELOPMENT

Standard Capacity Scenario

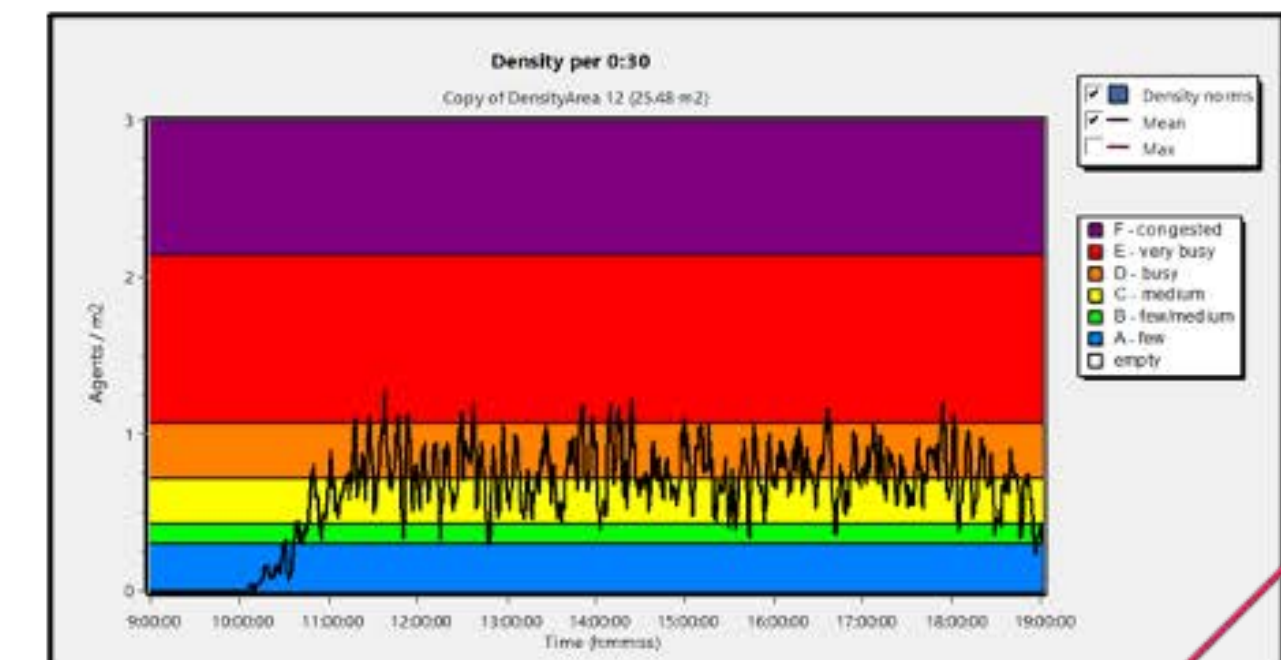
It can be seen on the density map shown that, although densities remain in the same level as the peak hour of the standard capacity scenario (level of service E), these higher densities last for longer / occur more frequently in the high capacity scenario.



Density over time by interactive area of Zone 9



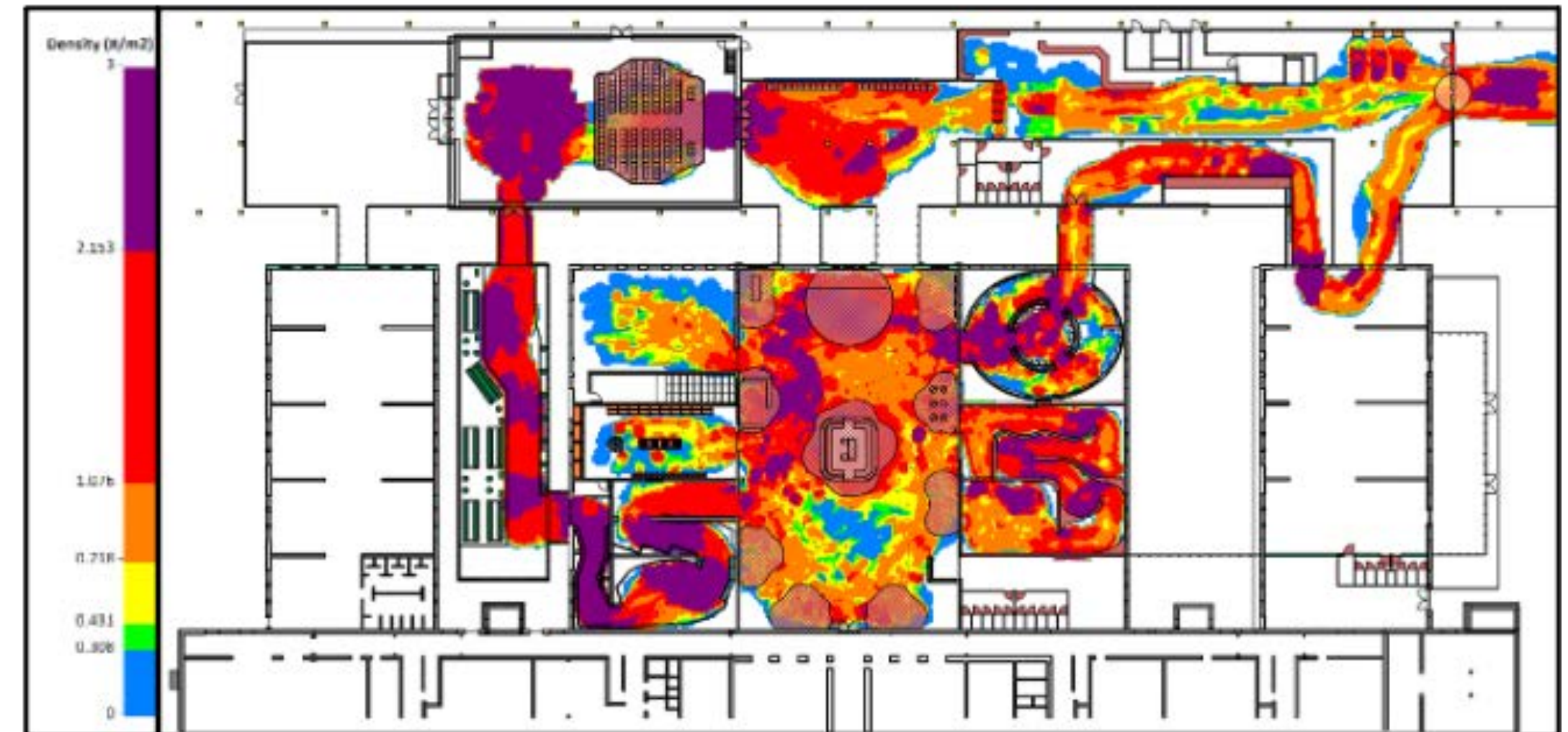
Density over time by mini shows area of Zone 9



THEORY OF OPERATIONS - IN DEVELOPMENT

High Capacity Scenario

- For most of the processes where visitors have to queue for, the standard capacity and high capacity scenarios do not present significant changes, except for the kiosks, where queues occur more frequently and are longer
 - Kiosk:
 - Queues of at least 1 person per kiosk occur around 40% of the time
 - Maximum queue is about 4 persons per kiosk, and it occurs about 10 times during the simulation period.
 - Turnstiles: queues of 1 person per turnstile occur less than 5 times during the simulation time
 - Food machines: queues of 1 person per food machine occur around 3% of the time

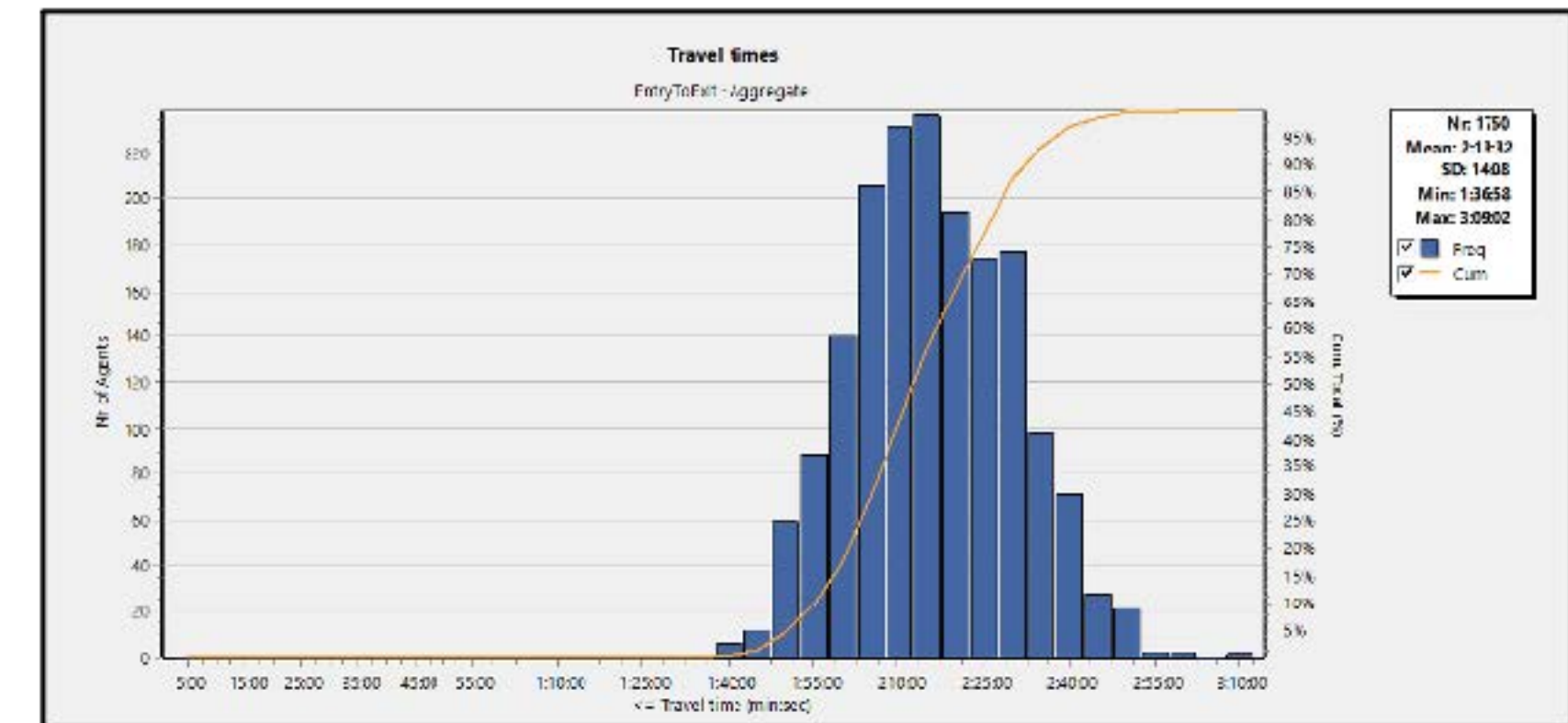


THEORY OF OPERATIONS - IN DEVELOPMENT

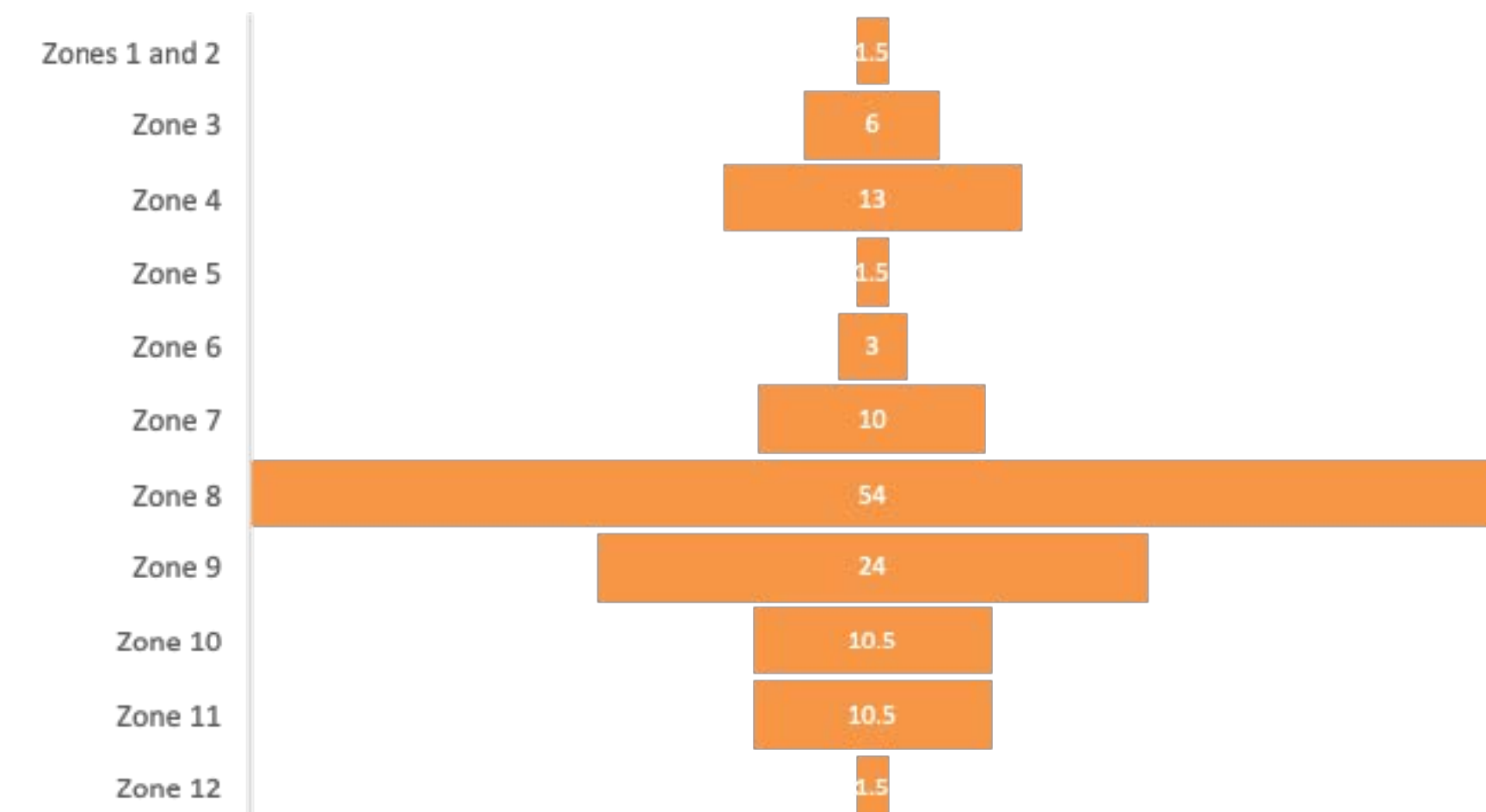
Both Scenarios

- The travel time includes walking + waiting + activity times.
- The top graph shows the travel time results from entering to leaving the experience which indicate that visitors spend on average about 2:10 hrs in the experience, while the 95-percentile travel time is 2:30 hrs.
- The bottom graphs shows the average time spent in each zone, where it is highlighted that:
 - Visitors spend most of the time in zone 8.
 - The second most representative time is zones 9, where also the space available is less than in Zone 8, so it is recommended that inflow and outflow of that zone are balanced to avoid crowding.

Travel time distribution of total time from entering to leaving the experience



Average time spent per zone (mins)



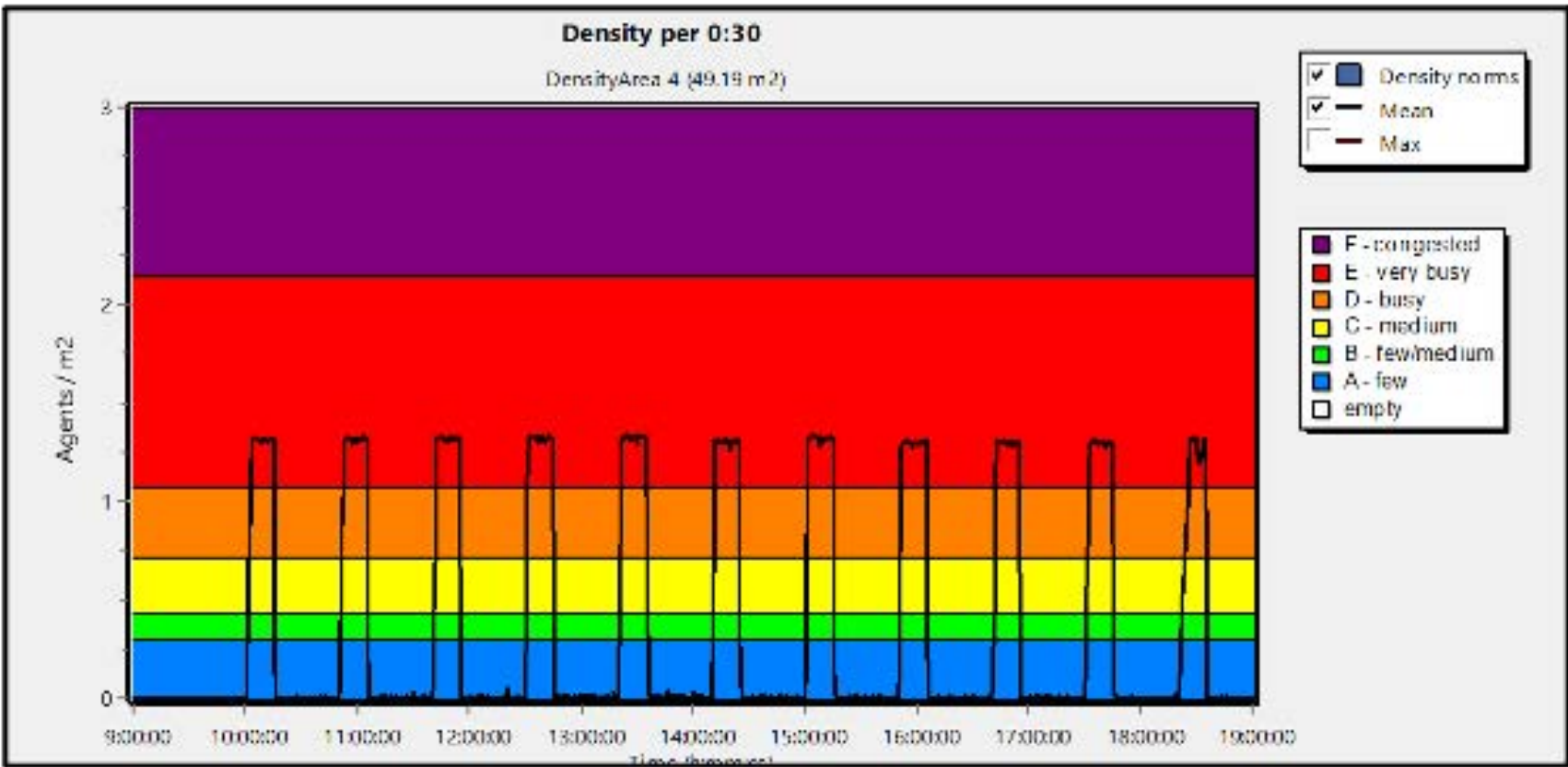
THEORY OF OPERATIONS - IN DEVELOPMENT

Both Scenarios

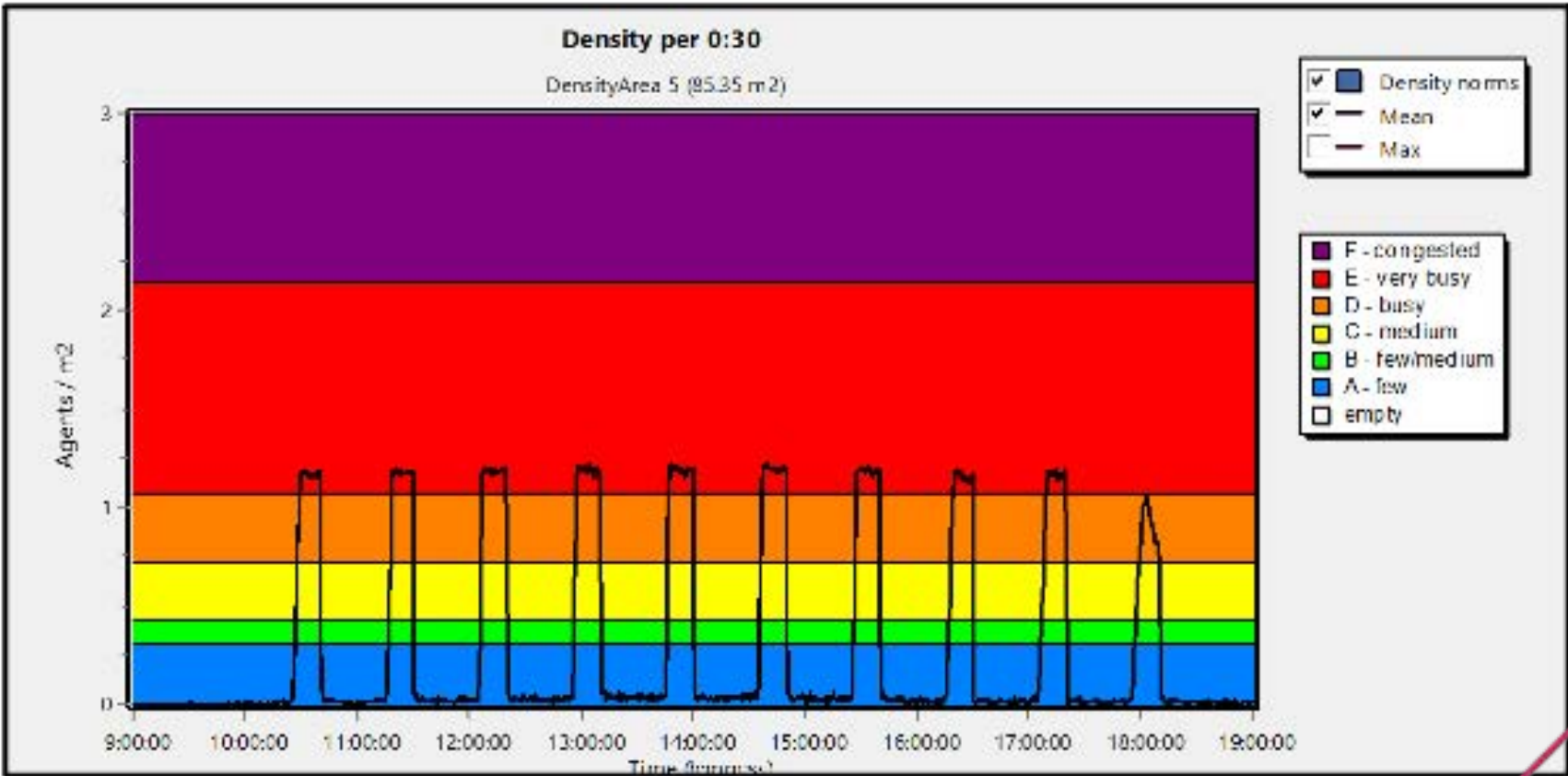
- Demonstration kitchen & Town Hall
 - The density over time is shown for these activities where it can be seen that with the capacity values provided densities around 1.2 persons/m2 by both the demonstration kitchen and the town hall areas.
 - The table below shows the share of guests who are able to watch these performances:
 - In the high capacity day, around 30% of agents participate in the cooking demonstration, and 47% in the town hall performance

Performances – Zone 8					
Scenario	Total	Cooking Demo		Town Hall	
		Total	%	Total	%
Standard Capacity	1848	878	48%	1267	69%
High Capacity	3026	954	32%	1433	47%

Density graph: Demonstration Kitchen



Density graph: Town Hall



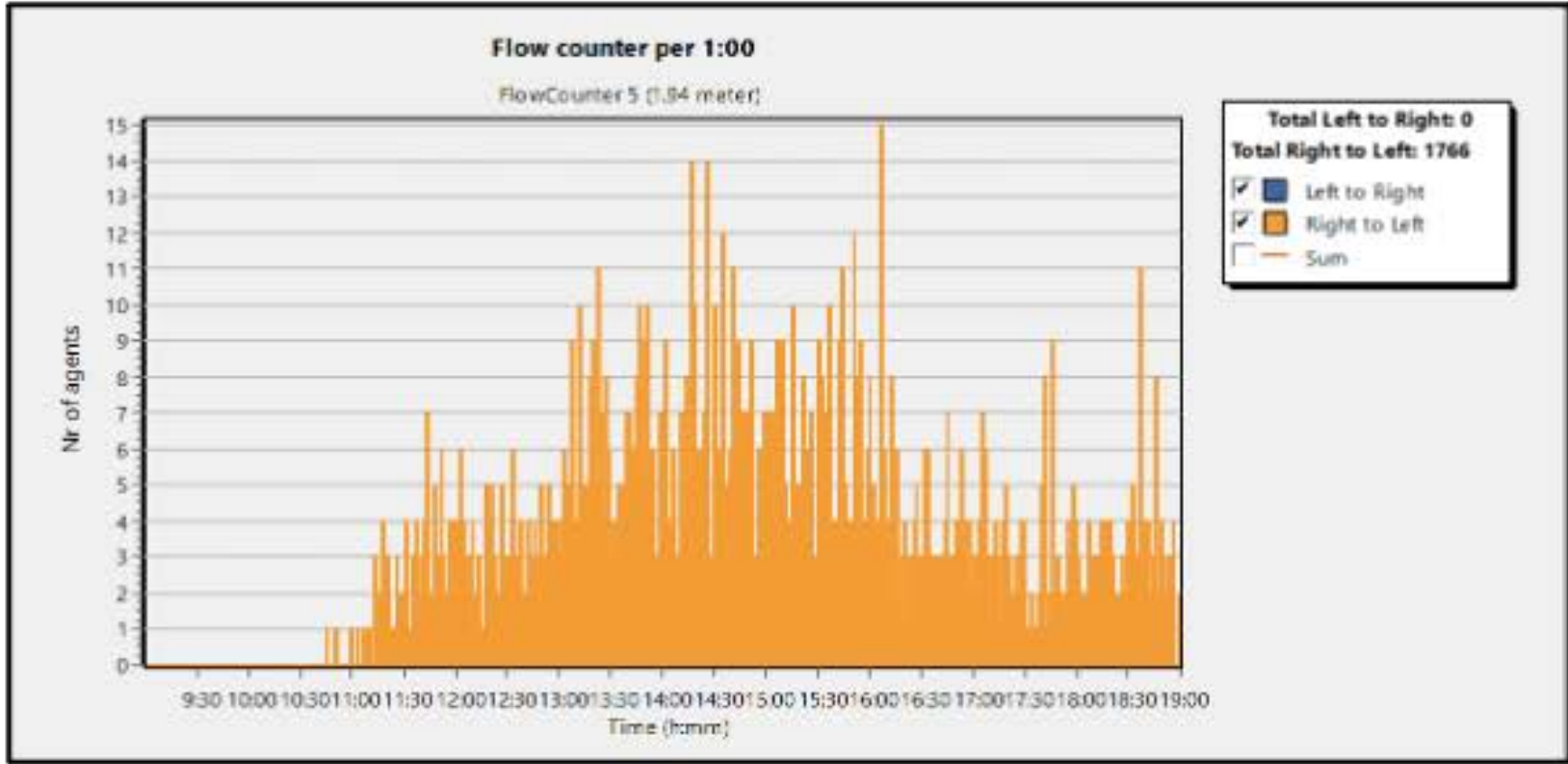
THEORY OF OPERATIONS - IN DEVELOPMENT

Other Discussions

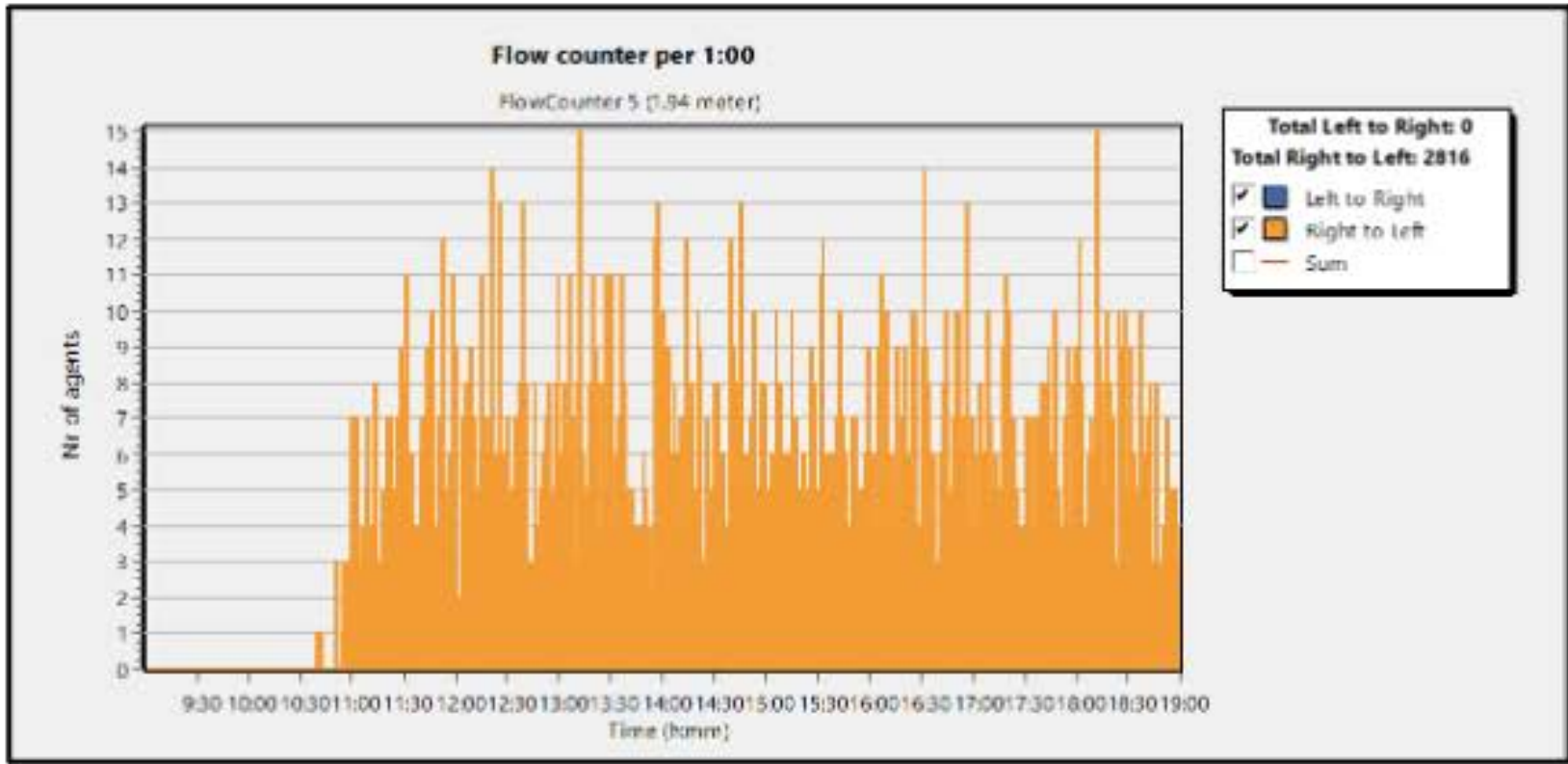
- Food Machines
 - The capacity of this process depends on the number of machines available and their process times.
 - For 4 food machines, with a process time of on average 11 seconds, a total of 21 guests can be served per minute ($4 * 60/11$)
 - The maximum inflow into zone 12 is 15 persons/min. For this peak demand, it is possible to statically calculate the process time of the food machine, for different number of food machines available. The results of these calculations are summarized in the table below:

Food Machine			
Peak demand into Zone 12	15 people/min		
Nr of food machines	3	4	5
Avg process time (secs)	12	16	20

Standard capacity scenario: flows into Zone 12



High capacity scenario: flows into Zone 12



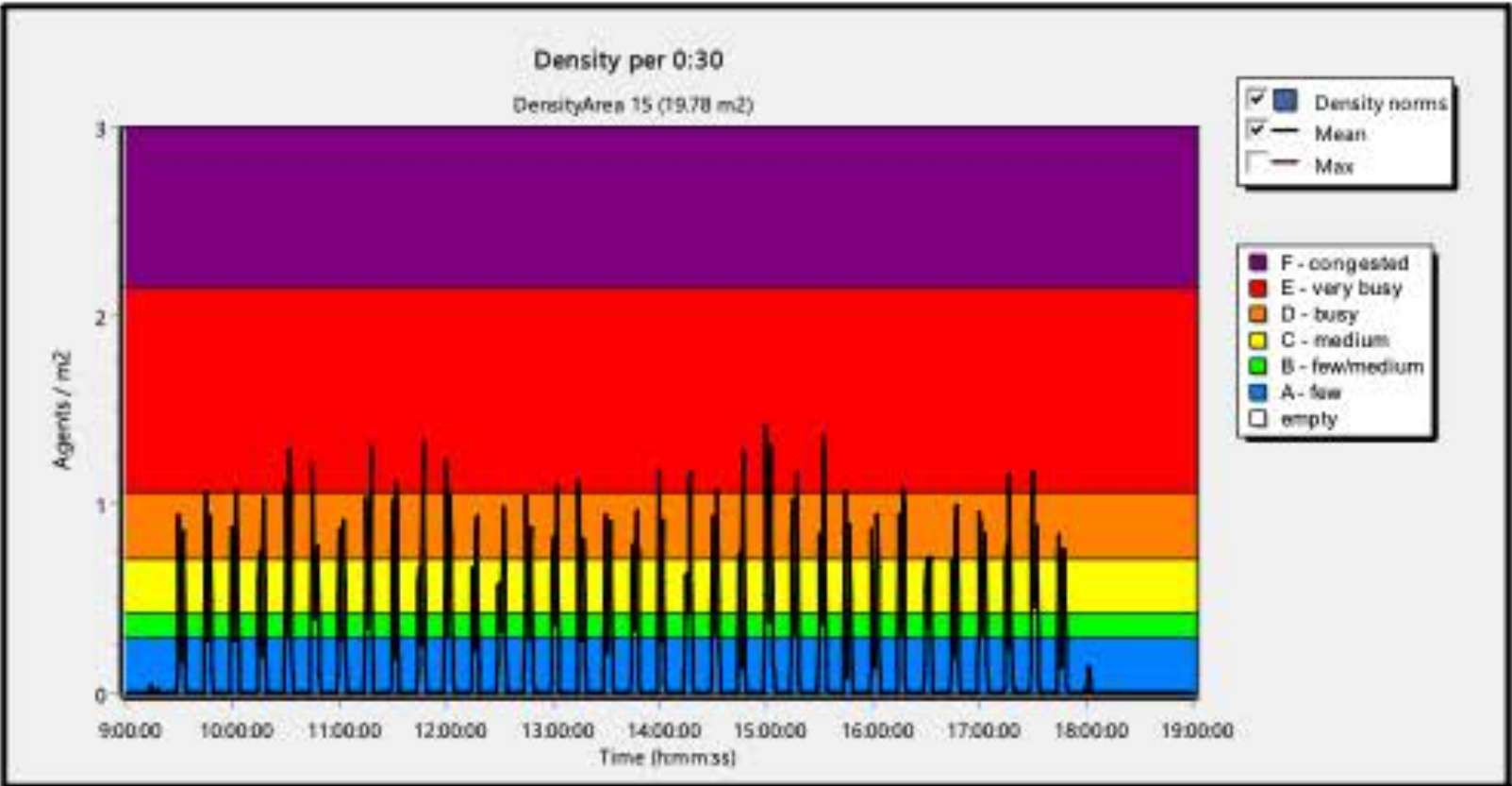
THEORY OF OPERATIONS - IN DEVELOPMENT

Other Discussions

- Flow into Zone 6
 - From the scenarios simulated, it could be seen that peak inflow into Zone 6 is around 60 – 65 persons/min, which contribute to the densities by the ‘smell’ section reaching around 2 persons/m2 for a period of maximum 30.
 - The resulting densities into that section can be decreased if guests are spread out further in Zone 5, or if the inflow into Zone 6 is controlled by personnel, in order to reduce the peak values.
 - The table below indicates the inflow ranges and the corresponding maximum densities obtained from the simulation, and the graph on the right shows the densities by the ‘smell’ section for the peak inflow of 40 – 45 persons/min

Inflow vs. Density - Zone 6			
Peak inflow (persons/min)	65 - 60	55 - 50	45 - 40
Max density in 'smell' (persons/m2)	2.0	1.8	1.3

Density over time by the ‘smell’ section in Zone 6 for peak inflow between 40 – 45 persons /min

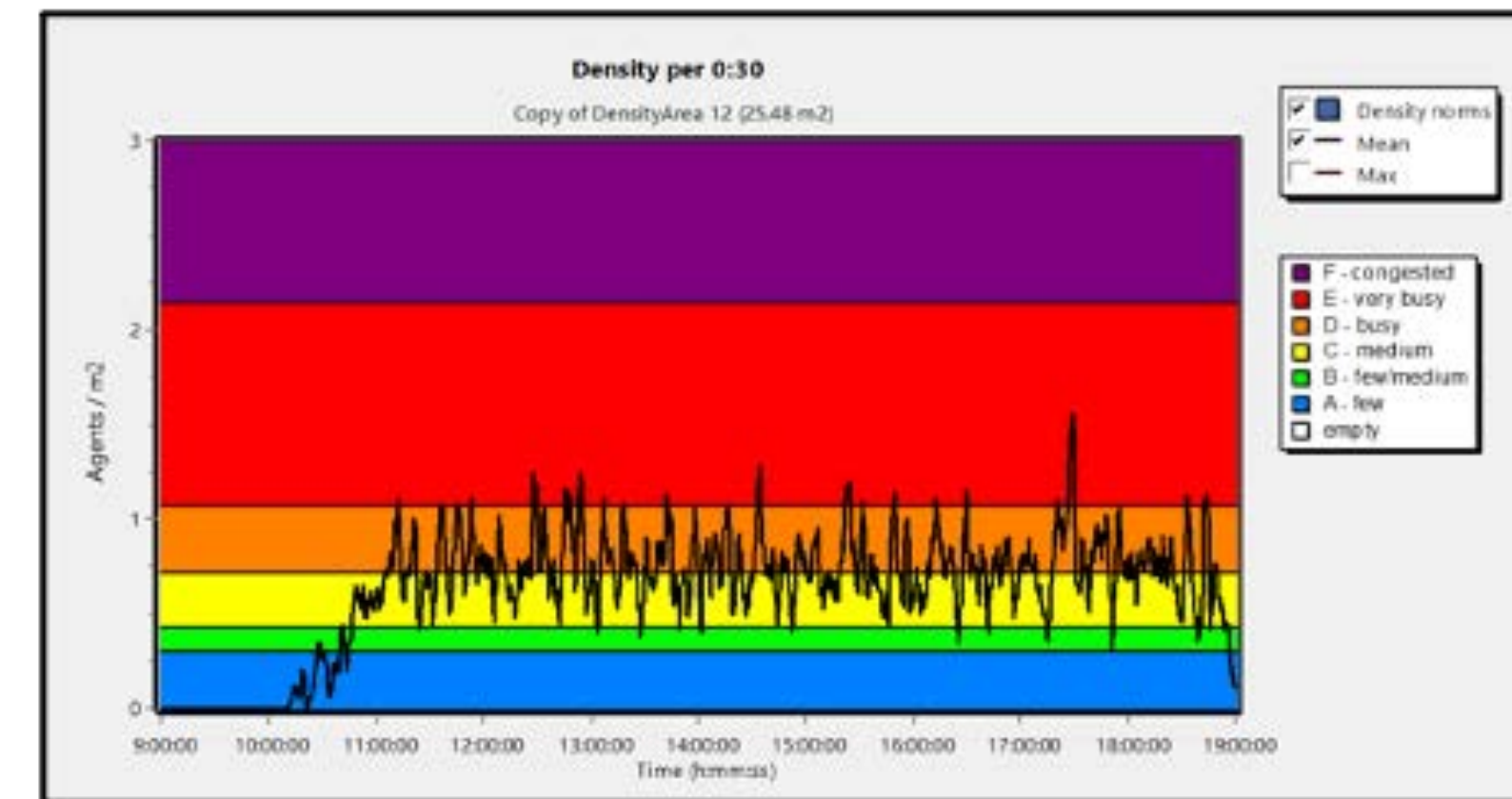


THEORY OF OPERATIONS - IN DEVELOPMENT

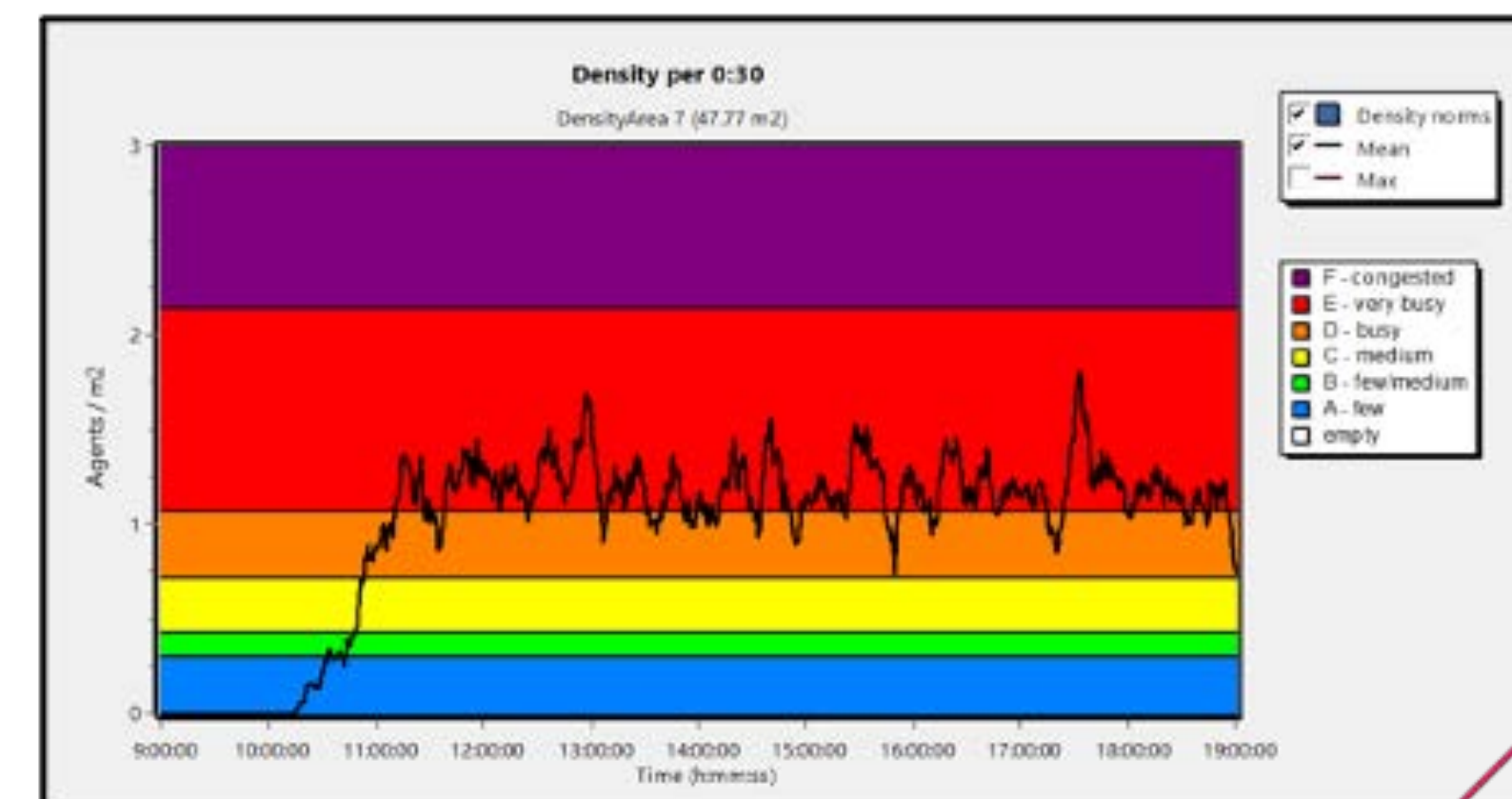
Other Discussions

- Flow Balance in Zone 9
 - As previously mentioned, there are two sections in Zone 9, the mini show and the interactive sections. As in this zone flows are unidirectional due to the route defined, the inflow into the interactive section is strongly influenced by the outflow of mini show section.
 - In the scenarios previously presented, the average time spent in the mini show section was 9 mins, while in the interactive it was around 12 mins. As indicated in the results, this different times result in different groups of guests being concentrated in the interactive section, increasing densities.
 - An extra scenario is simulated where the average time in the interactive area reduced to 9 mins, as in the mini show section.
 - The figures on the right illustrate the density over time for this extra scenario, with the high-capacity demand, where it can be seen that by the interactive area densities are on average 0.5 persons/m² lower than in the results of the initial high-capacity scenario.

Density over time by mini shows area of Zone 9



Density over time by interactive area of Zone 9



THEORY OF OPERATIONS - IN DEVELOPMENT

Conclusions & Discussions

- Overall, in most of the zones in the experience, densities remain in levels of service below “busy” for most of the time, in both the standard capacity and the high-capacity scenarios.
- Groups of 90 persons are formed due to the theater performance.
- Different groups formed by the theater can interact in some zones:
 - After the theater, the time spent in zones 5 and 6, and the theater performance time for the following group, allows for the first group to completely dissipate before the second group arrives.
 - However, as the average time of the interactive activities in zone 8 (The Hub) is higher, the second group of visitors from the theater arrives while there are always guests from the first wave still there.
- The main difference between the standard capacity and the high-capacity scenarios is that in the latter higher densities are more frequent than in the former, but the maximum density values achieved remain on the same level of service.

THEORY OF OPERATIONS - IN DEVELOPMENT

Conclusions & Discussions

- Zone 6
 - For an average time in the exhibits in Zone 5 of 45 seconds, the peak inflow into Zone 6 is around 65 – 60 persons/min, which result in densities of around 2 persons/m² in the ‘smell’ section.
 - It has been shown that for peak inflow of 45 – 40 persons/min, the resulting maximum densities in the ‘smell’ section can be reduced to 1.3 persons/m². This lower peak inflow can be achieved by spreading visitors further in the Zone 5, or by manually controlling the number of visitors into Zone 6.
- Zone 8
 - Around 870 guests are able to participate in the cooking demonstration performance, while for the town hall performance, this number can be around 1400 guests.
 - Visitors spent on average almost 1 hour in this zone alone moving between the interactive points and the performances.
 - This spreads the inflow of visitors to the surrounding zones (e.g. zone 9 and 10) and frequently result in visitors from different groups formed at the theater gathering and interacting in this zone.

THEORY OF OPERATIONS - IN DEVELOPMENT

Conclusions & Discussions

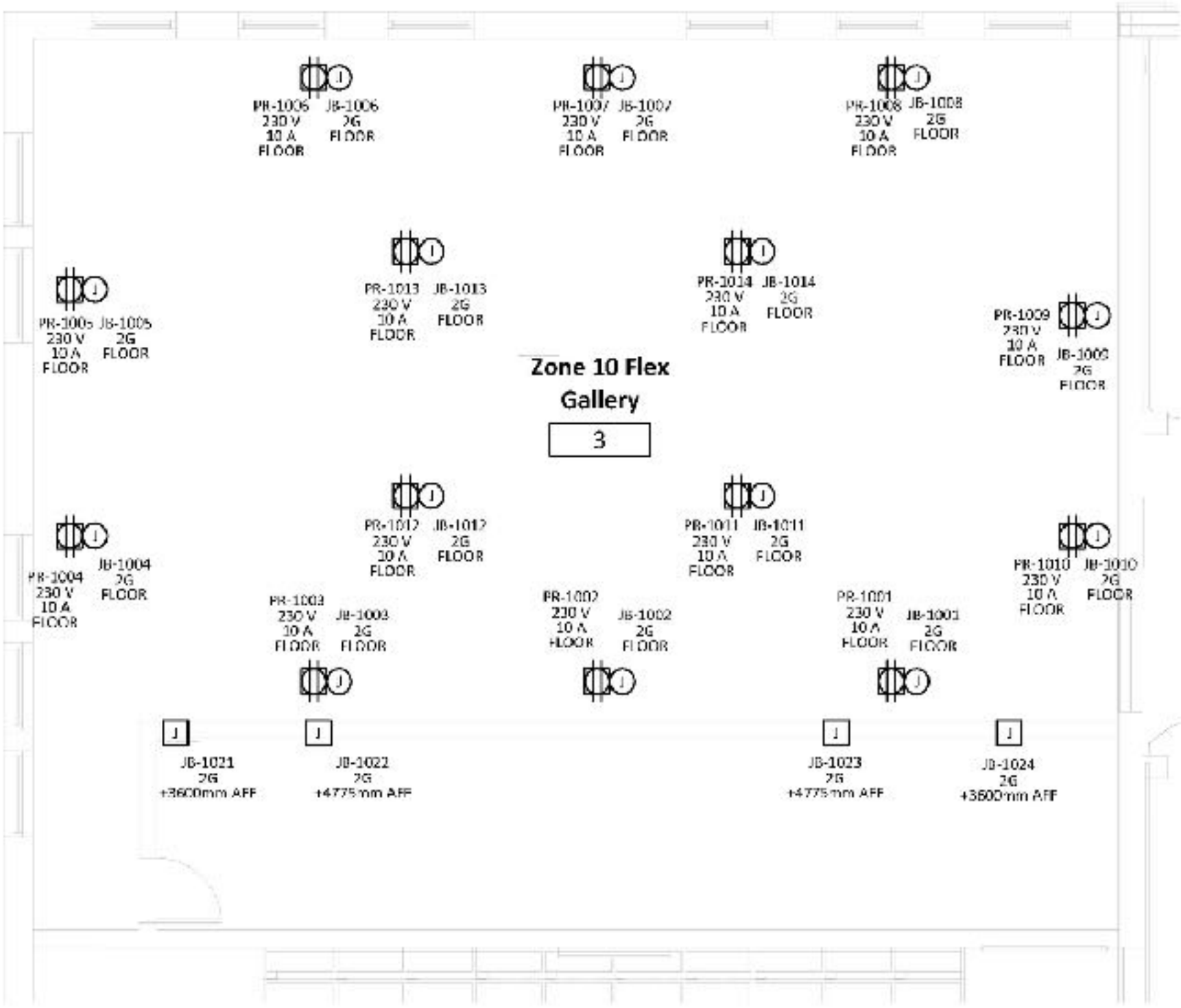
- Zone 9
 - The average time spent in the mini show section of Zone 9 has been increased to 9 mins.
 - As the average time spent in the interactive section of that zone remains higher (on average 12 mins), densities of around 2 persons/m² occur during the peak hour flows in that section, increasing interactions and making movement in this area uneasy.
 - An extra scenario is shown where the time in the two sections of this zone is balanced, that is, the average time in the interactive section is reduced to 9 mins, where it could be seen that on average densities decrease in 0.5 persons/m².
- Zone 12
 - The number of food machines necessary depends on the process time of this activity.
 - For the simulations 4 machines are assumed with an average process time of 11 secs. For these, queues occasionally occur (about 1% of the time) in both the standard and high-capacity scenario, as the inflow into Zone 12 remains the same in both scenarios.
 - For the peak flow into this zone of 15 persons/min, the process times for this activity have been calculated in a static manner for different number of food machines available and can be found within this document.

AVC PACKAGE

PRELIMINARY FACILITY IMPACT

PRELIM. FACILITY IMPACT

In addition to providing a digital copy of this deck, BRC has also provided the World Food Center Team with a copy of the 100% Audio, Video, Control Review Package. This contains preliminary heat, power and rigging loads for each area to allow the engineering team to evaluate their current allocations. The package also includes a full schematic drawing set of the Flex Gallery and a recommended catwalk layout for the theatre. This set gives the Architect and the construction team an understanding of the packages that will be delivered in the next phase.



② ZONE 10 FLEX GALLERY ELECTRICAL PLAN
Scale 1 : 75
0 0.75 1.5 3.75 7.5 m

WORLD FOOD CENTER

VIDEO FLY-THROUGH

PLEASE SEE VIDEO FILE 4

A NOTE FROM THE LEGAL MAN

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THANK YOU