

Future Scenarios on Convergence:

Applying Autodesk's Convergence Story Framework to Imagined Futures

Strategic Foresight

August 2020



Team

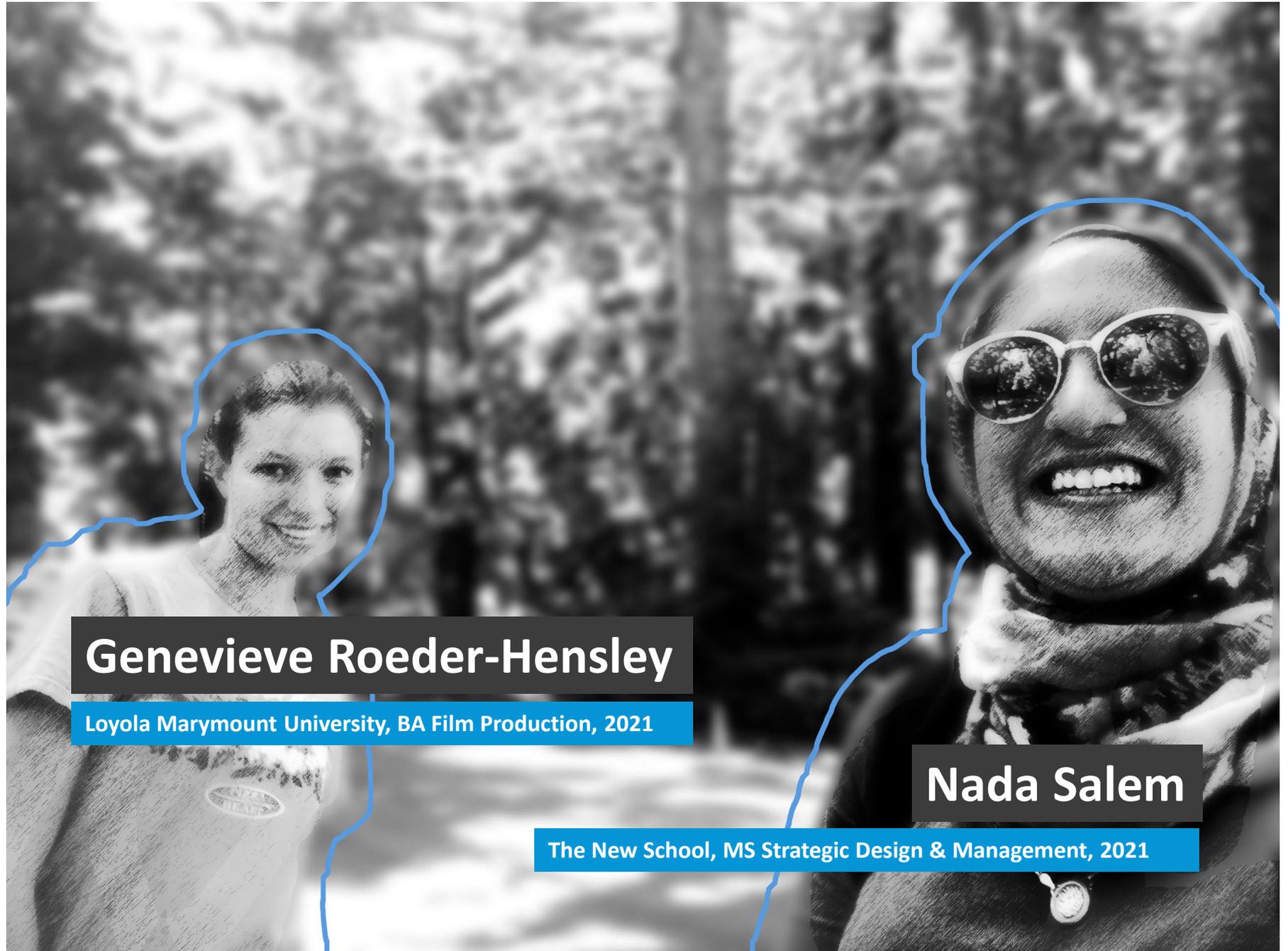
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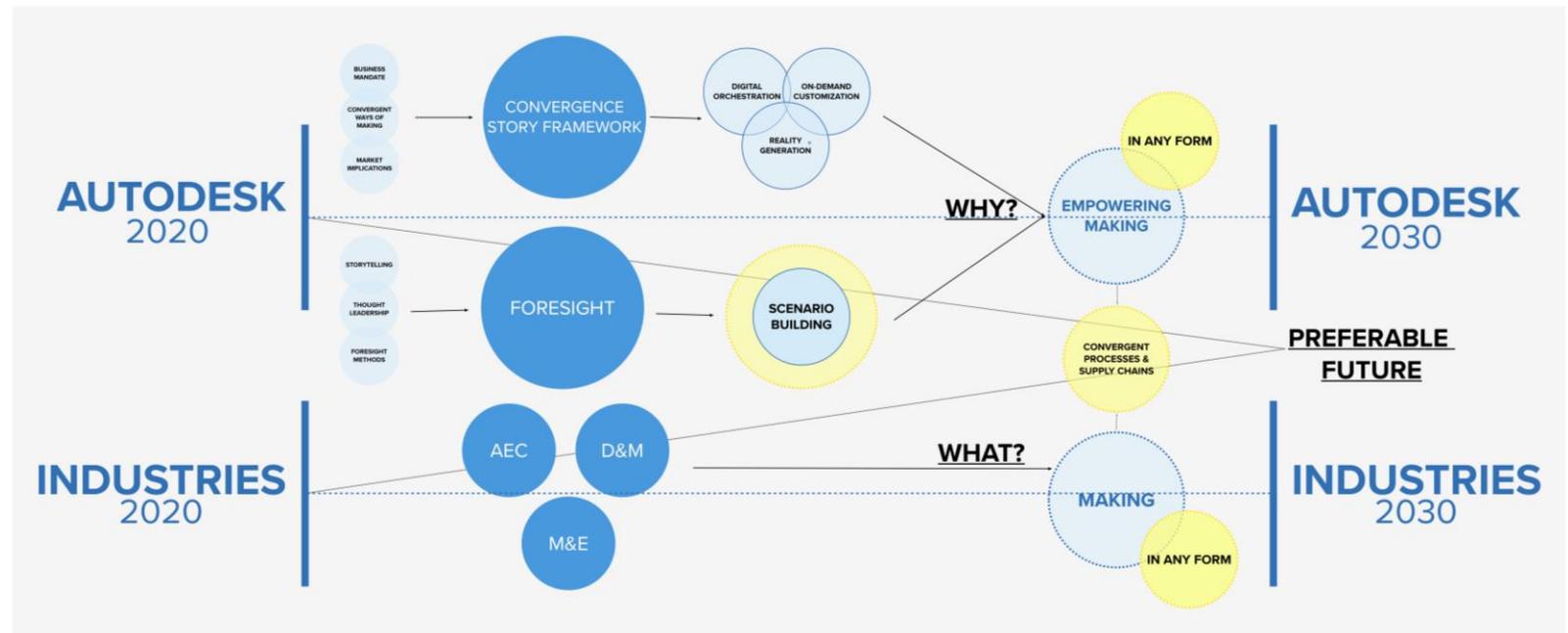
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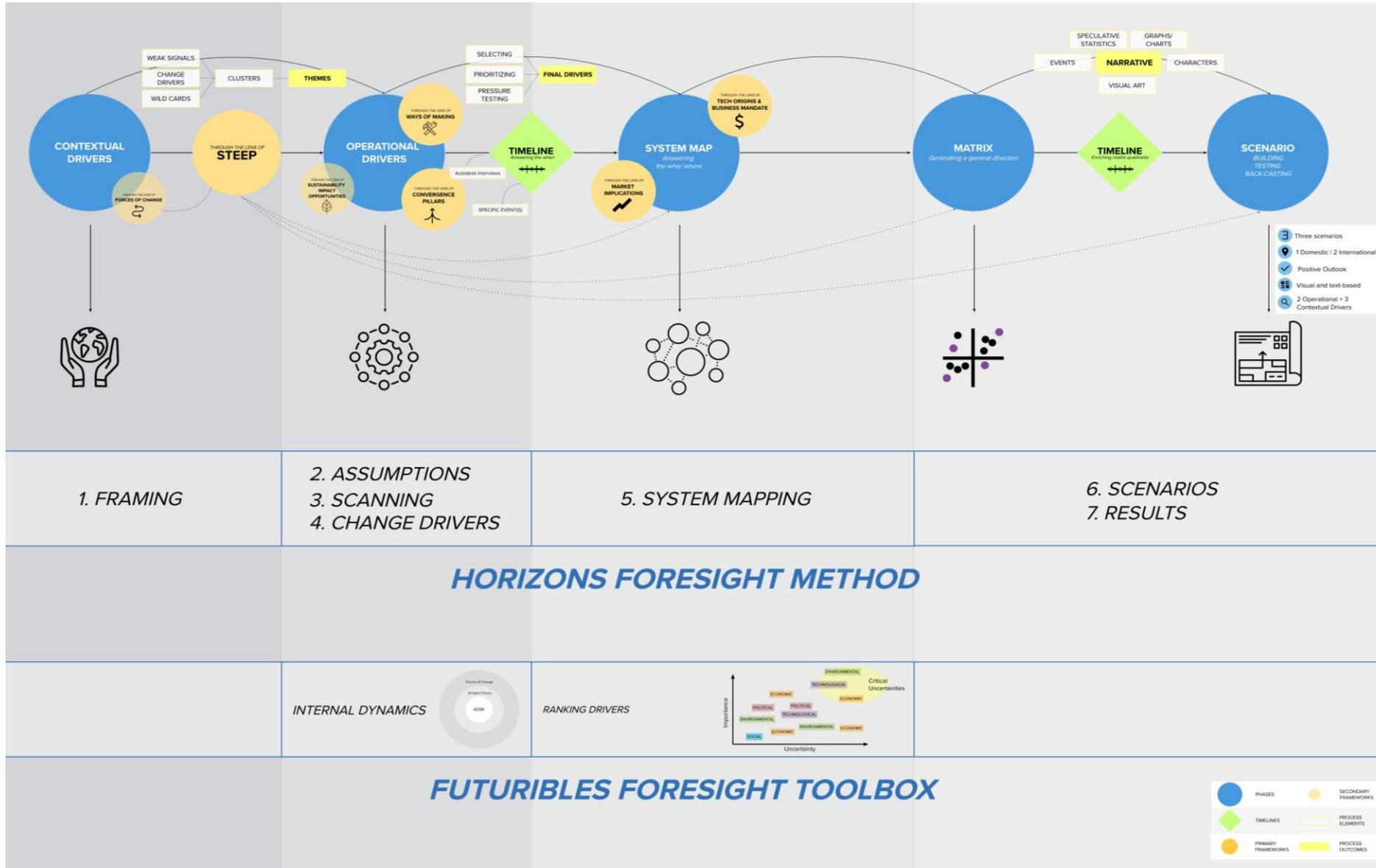
Project Goals

The goal of the project is to explore how **convergence** can shape Autodesk's and our **customers' future**. By articulating different **scenarios** around the convergence of **processes, supply chains**, and even entire **industries**, we will gain a better understanding of how value increases for our customers and how Autodesk can act as an accelerator.

The result of the project will inform Autodesk's **thought leadership** efforts around convergence. It will help Autodesk explore a larger set of **possible futures** and identify the **preferred ones**.

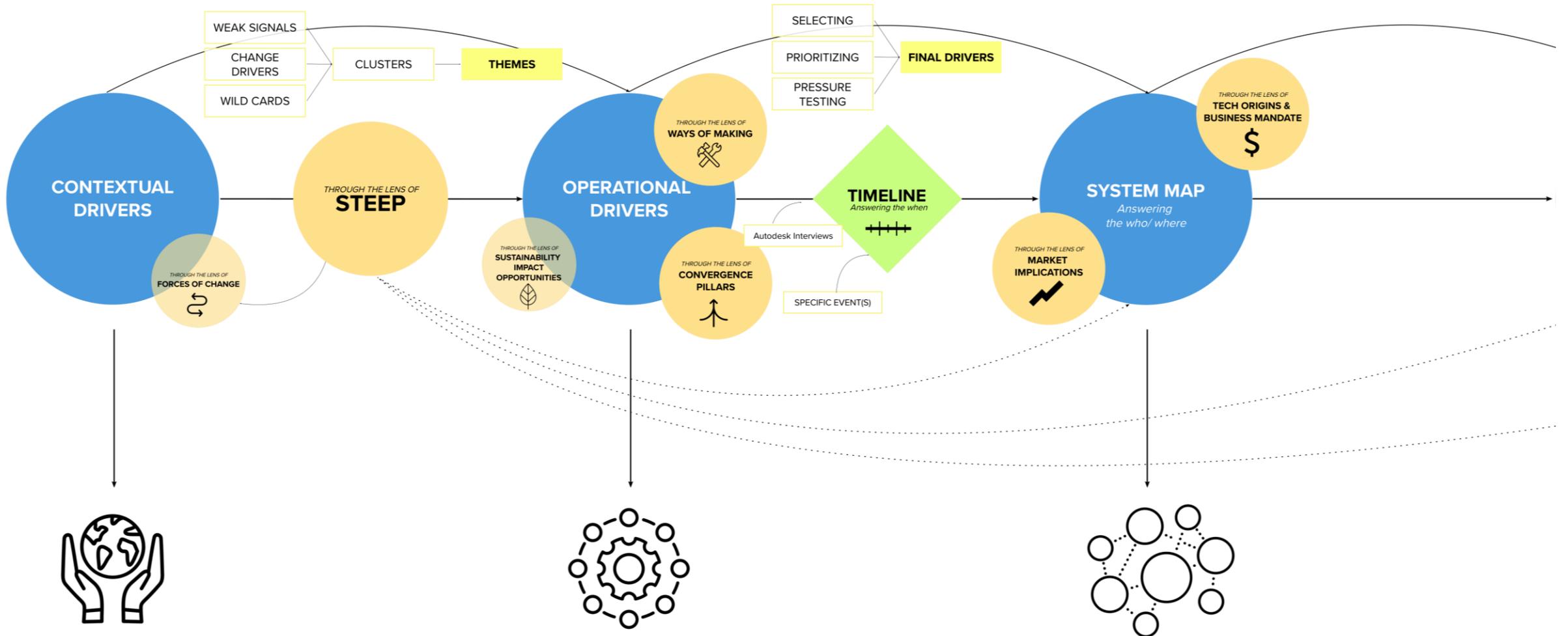


Scenario Building Process

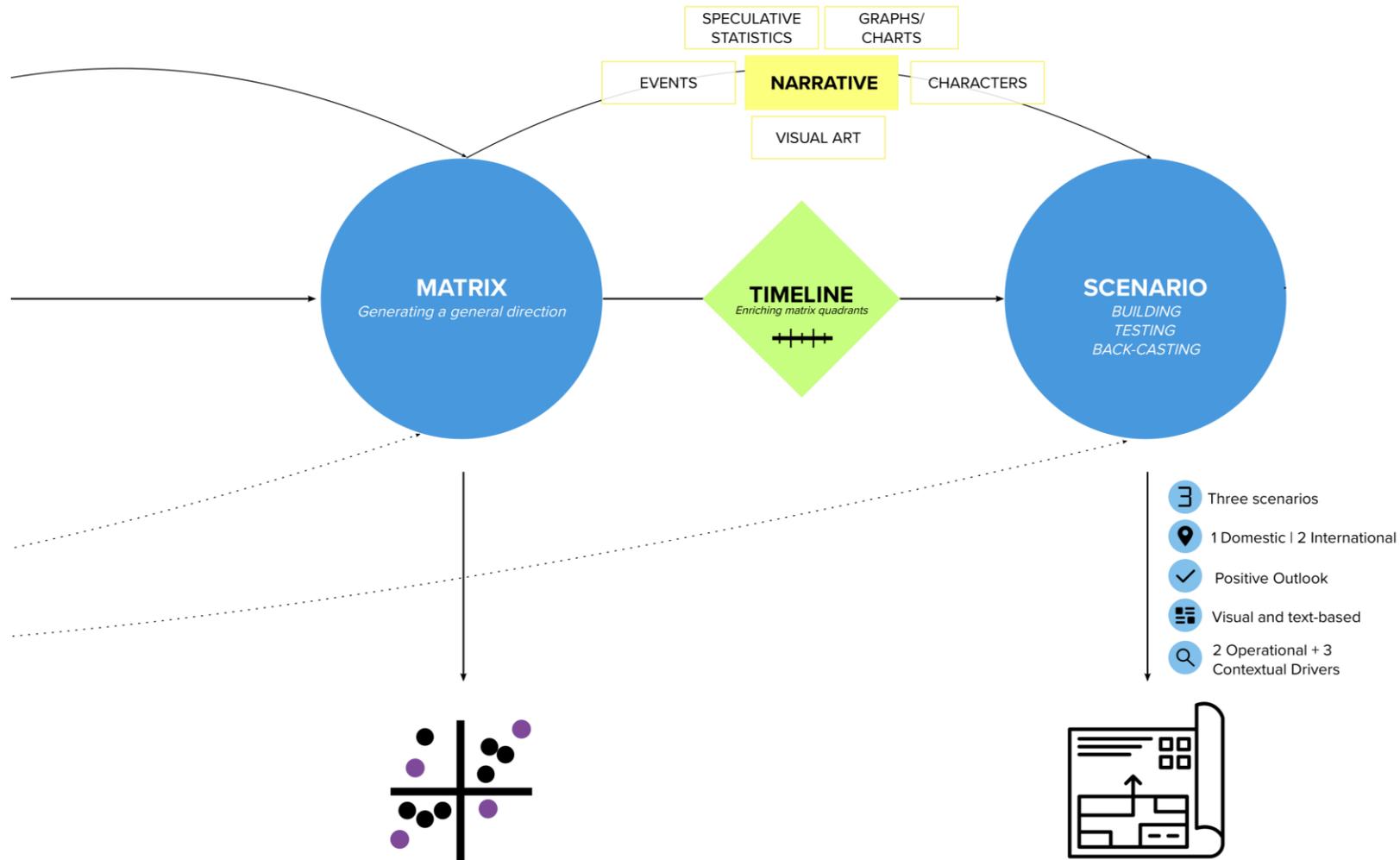


- ## FORCES OF CHANGE
- Social**
- Changes to learning will define livelihoods.
 - Increased access to technology in developing world will create a new global consumer class
 - New value exchanges will develop as societies adapt to increased global connectivity and technology
- Environmental**
- The need to manage increased complexity of the built environment will accelerate the development of smarter software
 - Climate change and its inevitable consequences will require mitigation and adaptation
 - A global water crisis will threaten water security, displacing large parts of the world's population
- Economic**
- Continued economic disruption will drive a more local and more resilient supply chains and distribution channels
 - Cost will continue to be the primary driver for automation that will challenge workers to learn new skills
 - Economic growth in Africa and SE Asia will outpace North America, Europe, and South America
- Political**
- A multi-polar global landscape with different philosophies will fragment the world's data and digital infrastructure
 - A generation of digital citizens entering politics will entrust greater market value to social and environmental disparities
 - A new form of populism will engender unexpected ideological alliances between the ruling party and other rungs of society
- Technological**
- Building trust between named users, organizations, and devices will be the key business differentiator in the digital economy
 - Increasing structured data in the cloud will result in growing competition to generate insights through machine learning
 - Convergence of processes, supply chains, and industries will open up the competitive landscape of our customers
-
- ## SUSTAINABILITY IMPACT OPPORTUNITIES
- A. Energy & Materials**
- The economy of fewer resources
Innovation for better energy & better materials
Design for circularity, renewability, abundance
- B. Health & Resilience**
- Design for equity, safety, illness & disease prevention
Design for resilience at personal, community, and city-scale
- C. Work & Prosperity**
- Enabling meaningful work in the era of automation and machine intelligence
Designing technology that complements human ingenuity
-
- ## CONVERGENCE PILLARS
- Flexes to Your Needs
 - Powers Data-Driven Decisions
 - Enables Seamless Collaboration
 - Fuels Agility and Productivity
 - Catalyzes New Opportunities
 - Equips Workforce to Adapt
- ## WAYS OF MAKING
- Digital Orchestration
 - On-Demand Customization
 - Reality Generation
 - Responsive Reshaping
-
- ## BUSINESS MANDATE
- Unleash Innovation
With Agility & Productivity
By Harnessing Technology
- ## MARKET IMPLICATIONS
- New Standards
New Structure
New Opportunities

Scenario Building Process



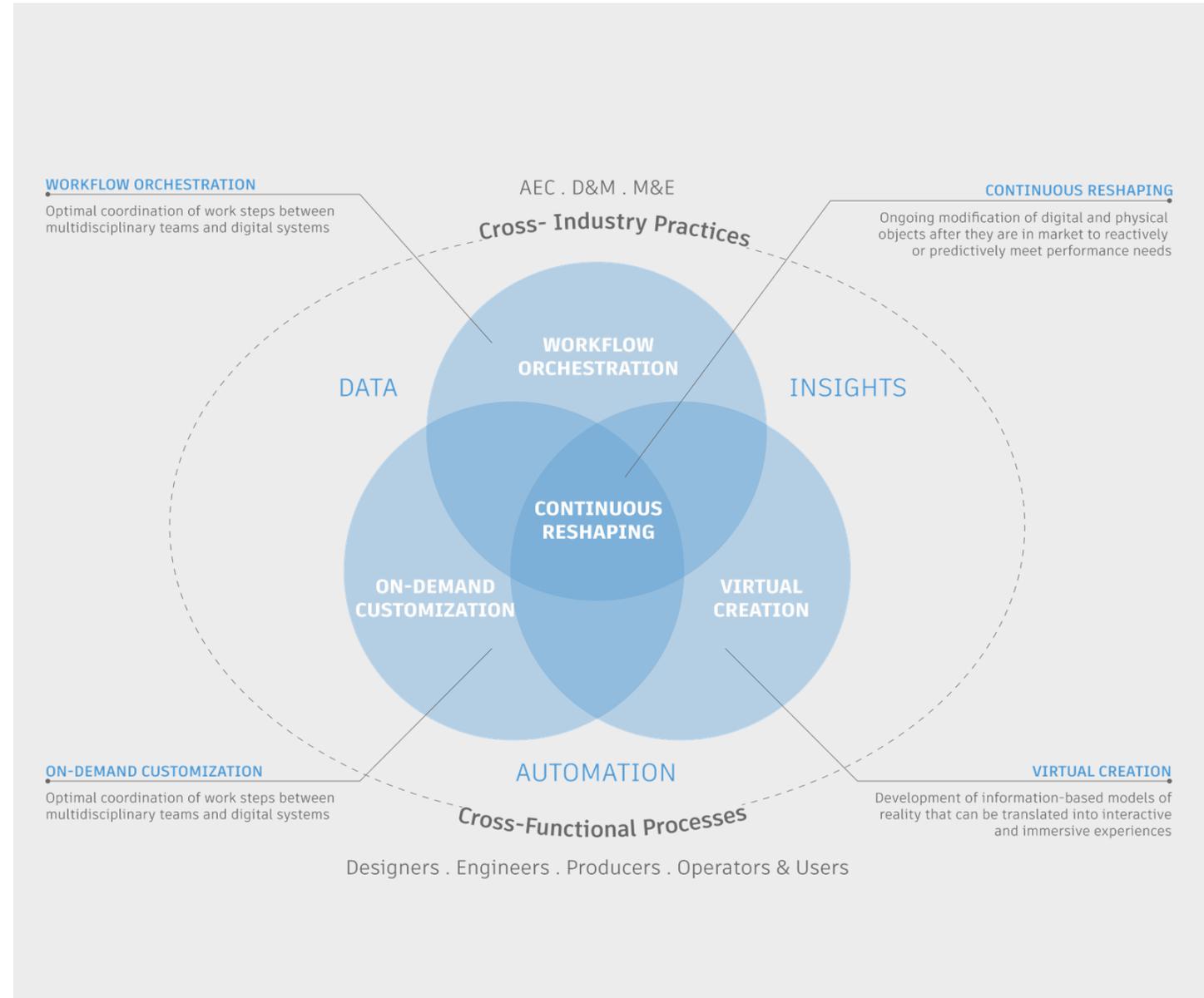
Scenario Building Process



Convergence Story



Innovators have many options.
Orchestrate workflows and teams digitally to reduce costly steps and improve quality.
Customize precisely what's needed at scale.
Create immersive **virtual experiences**. Even **continuously reshape** objects long after their initial creation, thanks to streaming sensor data. **These new ways of making are not only emerging, they are converging.**



Expert Interviews

We conducted interviews with experts in AEC, D&M, and M&E from:

- The Autodesk Global Network
- External Industry Connections
- Internal Autodesk Experts

Goals

- Apply industry expertise to scenarios
- Get feedback on work in progress
- Understand a region or culture better that relates to a scenario

AUTODESK GLOBAL NETWORK



Ralph Montague



Alberto Tono



Mirra Lee Maheden



Landon Messal

EXTERNAL INDUSTRY CONNECTIONS



Aaron Fry



Islam Mashtooly



Mouaz Abouzaid



Nan O'Sullivan



Niamh Peren

INTERNAL AUTODESK EXPERTS



Ben Fischler



James Awe



Eric Piccuezzu



Amy Marks



J. Sassaman



Garin Gardner

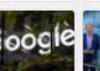


Greg Fallon



Alex Stern

Research

 <p>Generators meet - TAKEAWAYS At a redefining video game development, both for testing and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>In COVID-19 a Flash - TAKEAWAYS Integration of healthcare architecture and design, where construction focus on STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Profabrication meets - TAKEAWAYS Integration of contract and design, where construction focus on STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Next in London - TAKEAWAYS Architecture designed specifically for post-production and digital STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Black-centered design - TAKEAWAYS Design that takes into account not only skin color but STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Studio Ghent is first - TAKEAWAYS More studios used to traditional studios used to STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>AI uses traditional - TAKEAWAYS AI is capable of creating beautiful graphics etc not just STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Video Games Don't - TAKEAWAYS Games like Roblox, Assassin's Creed, and others have large STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Architecture in the P - TAKEAWAYS The project Architecture in the People is the result STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Starkens Best Design - TAKEAWAYS In Italy's earthquake damaged region a super high-tech July STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>McAulley Students - TAKEAWAYS The idea of a park is reimagined by design students and experts STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>ODX Introduces Ne - TAKEAWAYS ODX has designed a new residential project for Seattle STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Spider-Man Miles M - TAKEAWAYS Video games selling with updates and a couple expansion STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>DMM / Jason Long a - TAKEAWAYS Example of San Francisco allowing special-use affordable STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Starbucks is about L - TAKEAWAYS Starbucks is moving away from its focus on being a "third space" STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Last Shall Be Fir - TAKEAWAYS The importance of incorporating people into architectural STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>IBM, Microsoft, and - TAKEAWAYS Companies like IBM, Microsoft, and Amazon are moving away from STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Six experts on how - TAKEAWAYS A wealth of ideas to think about anything from street redesign to STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Chevron's Sick State - TAKEAWAYS Chevron makes big investments in natural gas STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Story of How M - TAKEAWAYS A move Upstream example where spaces of violence in the STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Tiny Homes Can Ma - TAKEAWAYS Emerald Village (EVI), an affordable micro- STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Good Content vs Go - TAKEAWAYS Instagram leaves a lot of questions and concerns when it STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>We're feeling more L - TAKEAWAYS Loneliness is an increasing mental health issue, and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The new nonprofit - TAKEAWAYS A company in New York will employ forward progress for a STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>
 <p>Open-Source Child - TAKEAWAYS A company in Brazil designed furniture for education spaces that is STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Some Hotel / AS Ar - TAKEAWAYS A small hotel in Columbia prepared for its integration of STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>How a Machining C - TAKEAWAYS Adaptability of machinery to build and this critical to STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>How The Mandator - TAKEAWAYS A new technology the Mandator has emerged that could help to STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Walmart Emplo - TAKEAWAYS Walmart is able to partner with Spotify to help in regulating and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Spark's next Start - TAKEAWAYS Spark is able to partner with Spotify to help in regulating and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>New Las Vegas Cas - TAKEAWAYS The Strip is able to partner with Spotify to help in regulating and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>MIT is set of these - TAKEAWAYS MIT is set of these supercomputers, and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>New 3D printing te - TAKEAWAYS A new type of material has been created, but it's a real application STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>How All and VR Wa - TAKEAWAYS The design of all materials, and how the design of STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Bricks, Glass and m - TAKEAWAYS The design of all materials, and how the design of STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Future of C - TAKEAWAYS There are many ways for the gaming experience to evolve STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Facebook announce - TAKEAWAYS In September of 2020, Facebook launched its new platform STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Artificial Intellig - TAKEAWAYS The AI technology specifically looks at how the manufacturing STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>From Backing to S - TAKEAWAYS The AI technology specifically looks at how the manufacturing STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Future of artif - TAKEAWAYS The AI technology specifically looks at how the manufacturing STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Planes Are Runni - TAKEAWAYS A new way of transporting goods is being used in STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Quantum computin - TAKEAWAYS Interdisciplinary quantum computing has many advantages that will STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>DeepTechDrawing - TAKEAWAYS A Chinese University has developed the most advanced face STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Emotionally aware - TAKEAWAYS Emotional AI could help us solve the complex aspects of STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>These Lego-like mod - TAKEAWAYS A new innovation in starting blocks is being used in sporting events to collect STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>SLEIGH Unexpecti - TAKEAWAYS Facial recognition is being used in sporting events to collect STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Facial Recognition L - TAKEAWAYS Facial recognition is being used in sporting events to collect STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>NBSI Designs Car F - TAKEAWAYS NBSI has imagined a new model of a car that has a lot of STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>
 <p>NASA orders Lunar - TAKEAWAYS Move towards generalization of space technology and the STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Structural and Light - TAKEAWAYS Wood has become an efficient alternative to steel and concrete STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Generating Water fr - TAKEAWAYS As the climate continues to unfold, professionals in STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>First all electric F-L - TAKEAWAYS Ford is about to release their first all electric vehicle that will STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Visualizing the In - TAKEAWAYS Designers, builders, business owners and occupants are STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Bio Revolution L - TAKEAWAYS Bio is everywhere and in the next 20 years the potential for bio such STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>A robot with will be - TAKEAWAYS A robot with will be used to monitor STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>IBM stops work on f - TAKEAWAYS IBM backed out of its facial recognition work over concerns that STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The US Air Force is p - TAKEAWAYS The US Air Force continues to explore new artificial STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>3 Reasons Construct - TAKEAWAYS A culture in the industry that wants things to move faster and construction STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>You can now buy on - TAKEAWAYS Shopify and webpart partnership allows further commerce that STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Walmart partners w - TAKEAWAYS Walmart partners with Shopify to bring online and complete STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Future of Asia D - TAKEAWAYS Corporate Asia is an exciting, scary, and rapidly growing STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Inspired Design and - TAKEAWAYS The ability to scan and engage natural elements into design STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Design in a Post CO - TAKEAWAYS Safer materials and design STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Tesla Cybertruck C - TAKEAWAYS Tesla's Cybertruck is a problem of green energy STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>DOUBLE SIDED SOL - TAKEAWAYS Energy employment based on outside available data (NREL) STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>EUROPE'S LARGEST - TAKEAWAYS Sellers creating their own regulations for what sustainability STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Supercharging Euro - TAKEAWAYS The future of material consumption could all be low based products STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Waste Treatment Pl - TAKEAWAYS Waste treatment plant helps power itself and store energy through STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>GOOGLE AND WWF - TAKEAWAYS Google and WWF Sweden have announced a STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The Future for farm - TAKEAWAYS Europe experienced the highest May on record, and with a STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Unleash is Investin - TAKEAWAYS One of the largest product companies in the world is trying to STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The vertical farm let - TAKEAWAYS An indoor farm grows the ingredients for salads for wealthy STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>
 <p>MAJOR BROADCAST - TAKEAWAYS By 2025 Sky Europe's largest production company is planning STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Reforming with th - TAKEAWAYS Companies may need to internally deal the climate risk STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Climate change is ab - TAKEAWAYS A very far-reaching but detailed production of the damage possible STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>These Four Make fo - TAKEAWAYS A startup has created a market for cows that captures the methane STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>The tech industry is t - TAKEAWAYS Logitech plans to use its own transparency about its pollution as a STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Fully decarbonizing - TAKEAWAYS Moving towards decarbonization varies as companies STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Companies talk a lot - TAKEAWAYS Most companies fall a level of their environmental friendliness STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>In the future home, t - TAKEAWAYS Our homes will need to become more energy efficient, flexible, and STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Covid-19 CEO Eng CL - TAKEAWAYS CEO wars as more public than ever voice for a company, and a STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Start to become Ch - TAKEAWAYS Alibaba and other major Chinese companies will benefit STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>	 <p>Unusual record - TAKEAWAYS Unusual record STEEP - CONVERGENCE P... - TIMEFRAME Future - SOURCE - WAYS OF MAKING</p>													

The 5 Drivers



CHANGE IN RELATIONSHIP TO BUILT ENVIRONMENT



WIDESPREAD INTELLIGENT CO-CREATION BETWEEN HUMAN & MACHINE



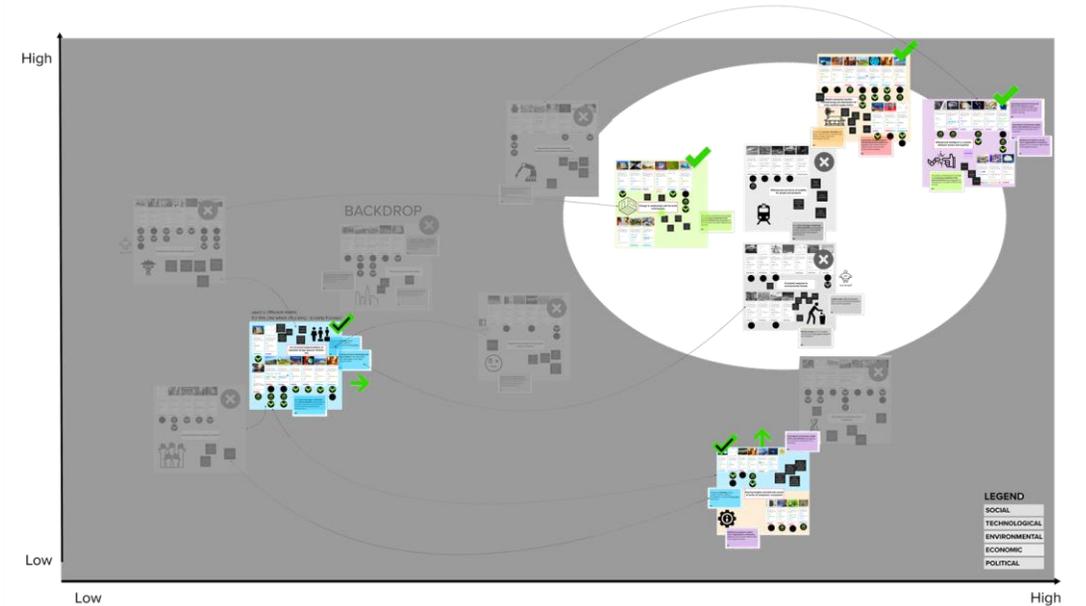
INCREASED IMPLEMENTATION OF EQUITABLE DESIGN



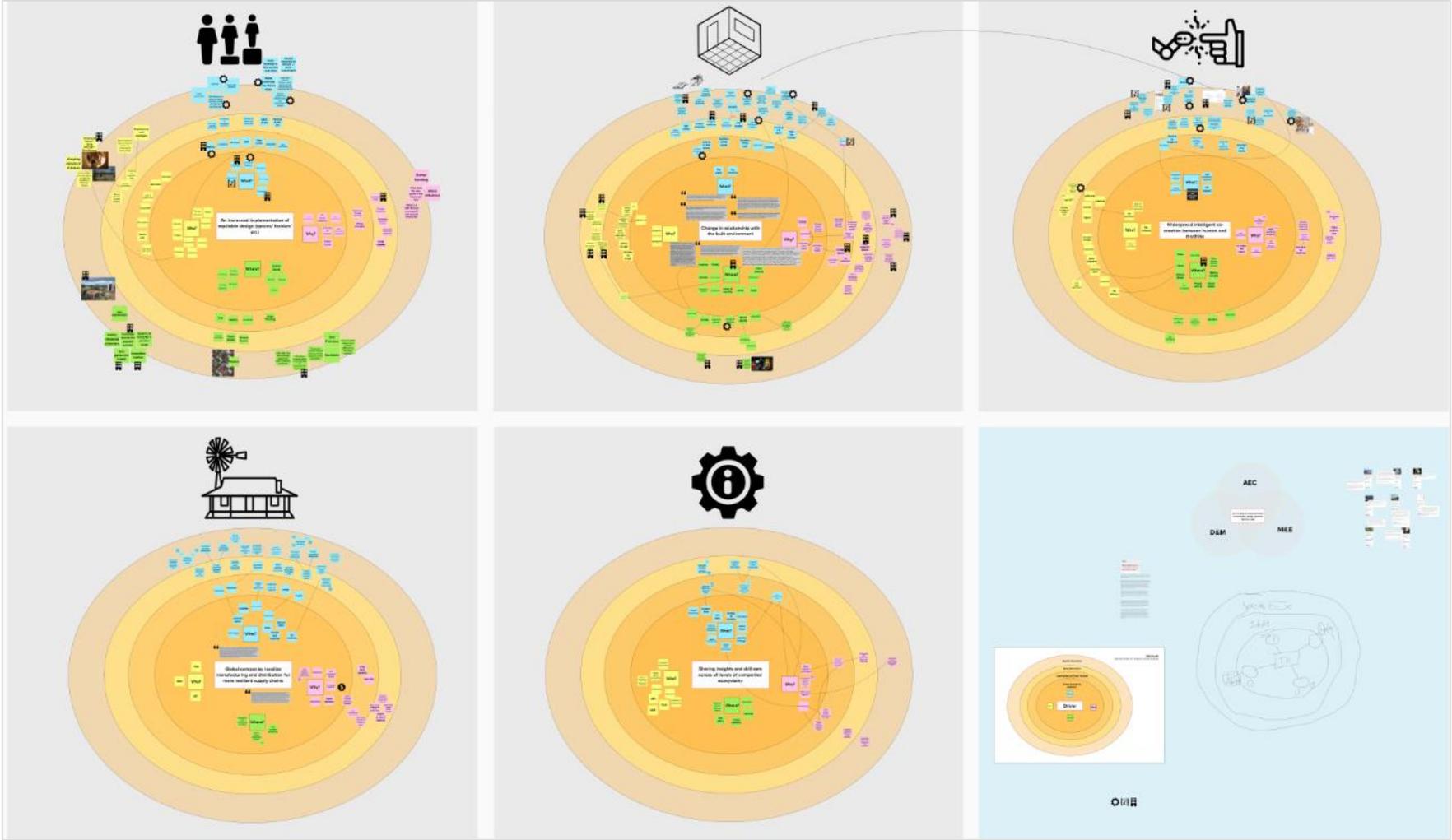
GLOBAL COMPANIES LOCALIZE MANUFACTURING & DISTRIBUTION FOR MORE RESILIENT SUPPLY CHAINS



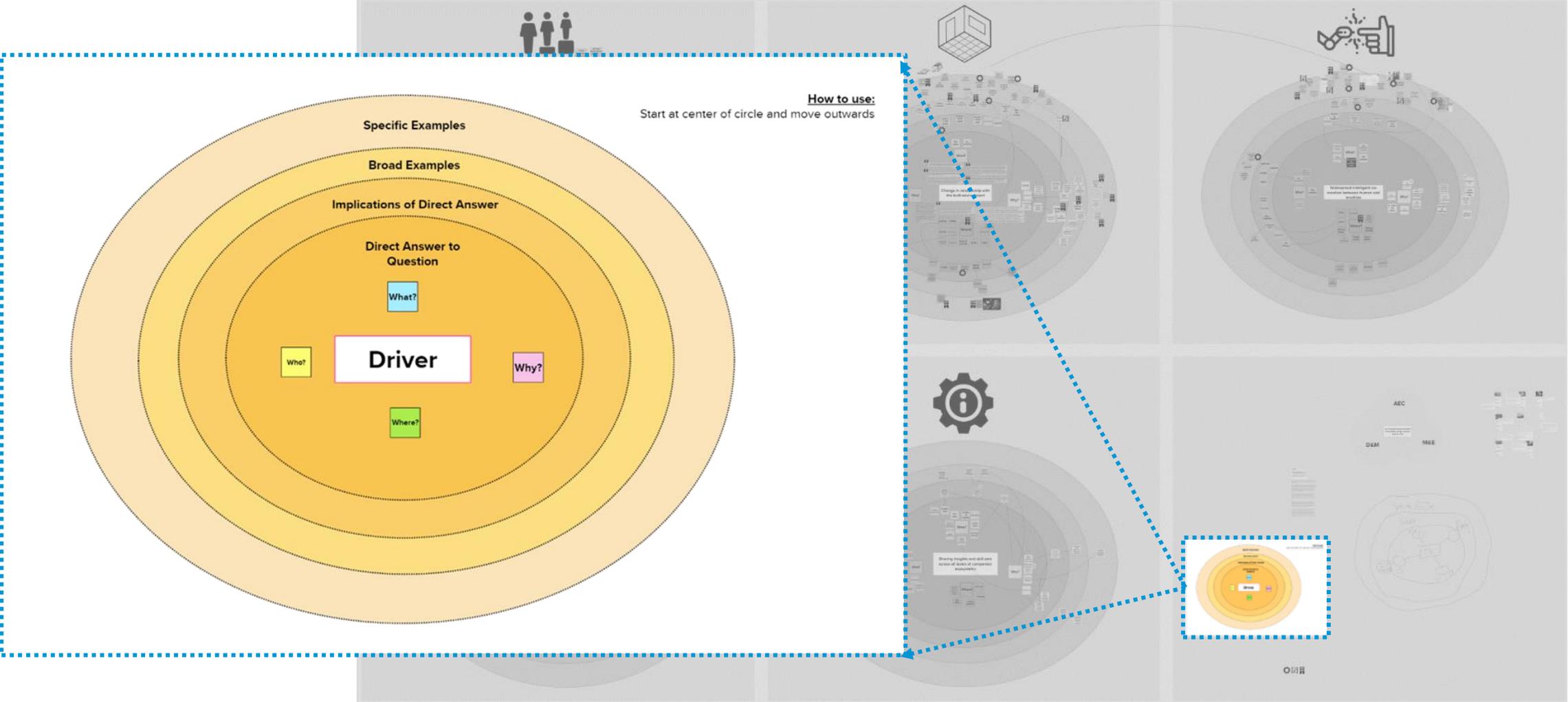
SHARING INSIGHTS & SKILLSETS ACROSS ALL LEVELS OF COMPANY'S ECOSYSTEM



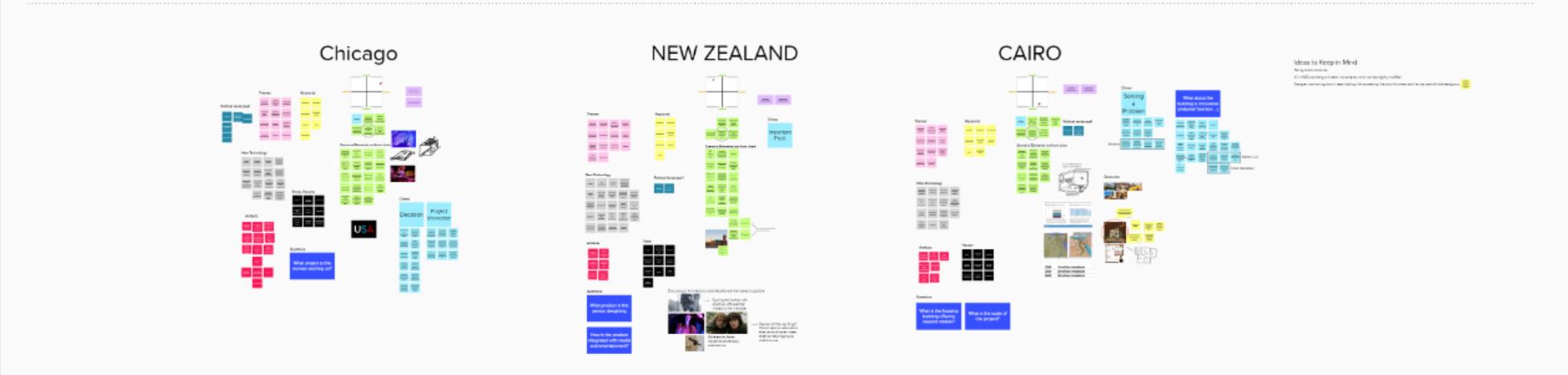
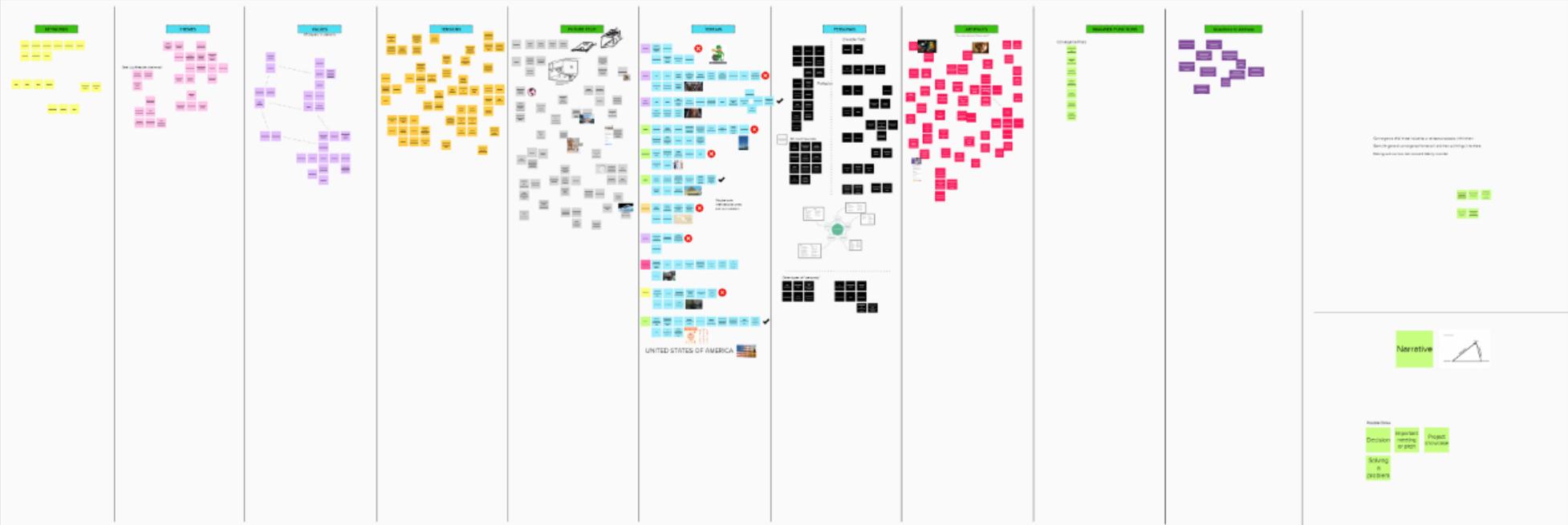
System Mapping



System Mapping



Reviewing Research Outcomes



Reviewing Research Outcomes

KEYWORDS

THEMES

VALUES

TENSIONS

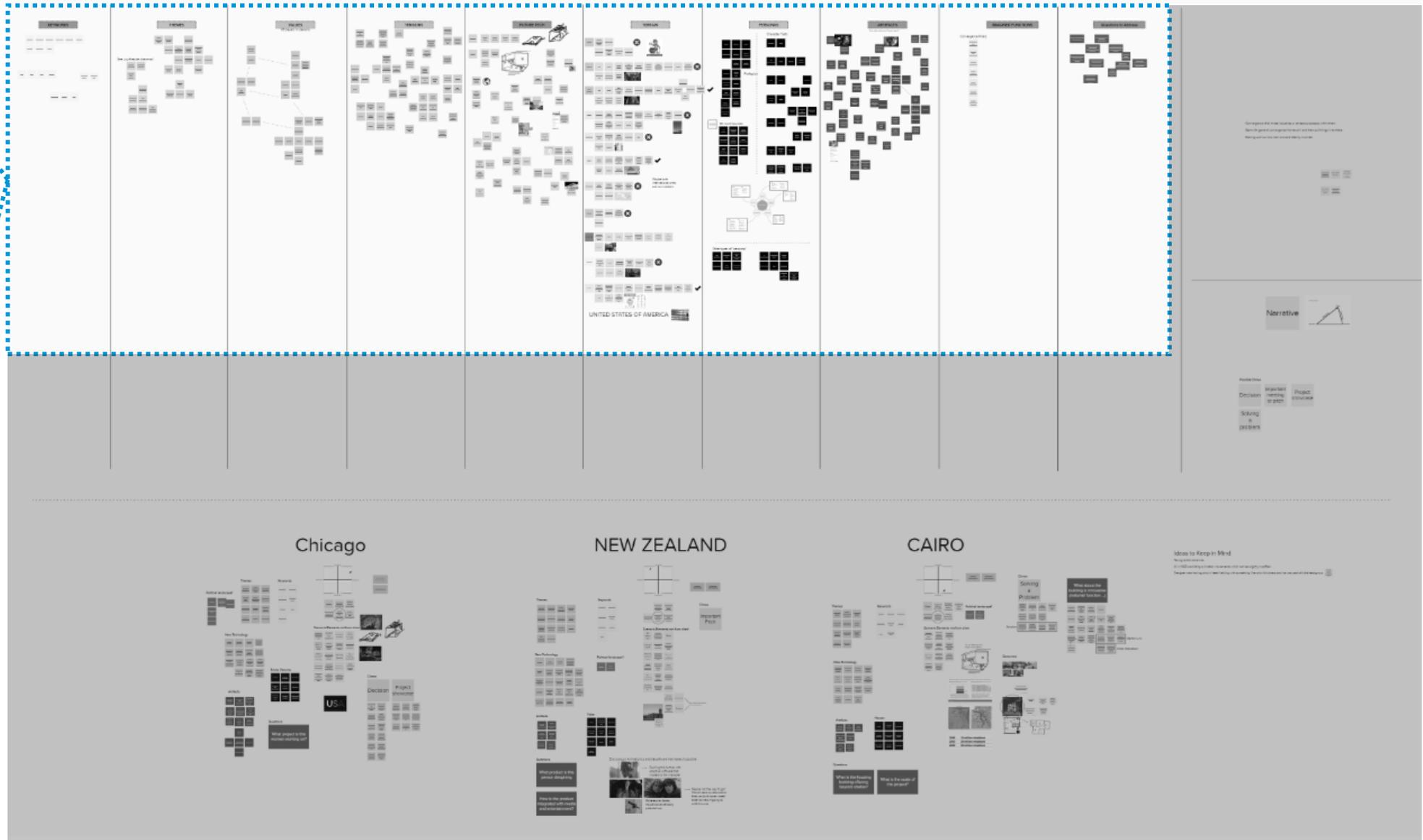
FUTURE TECH

TERRAIN

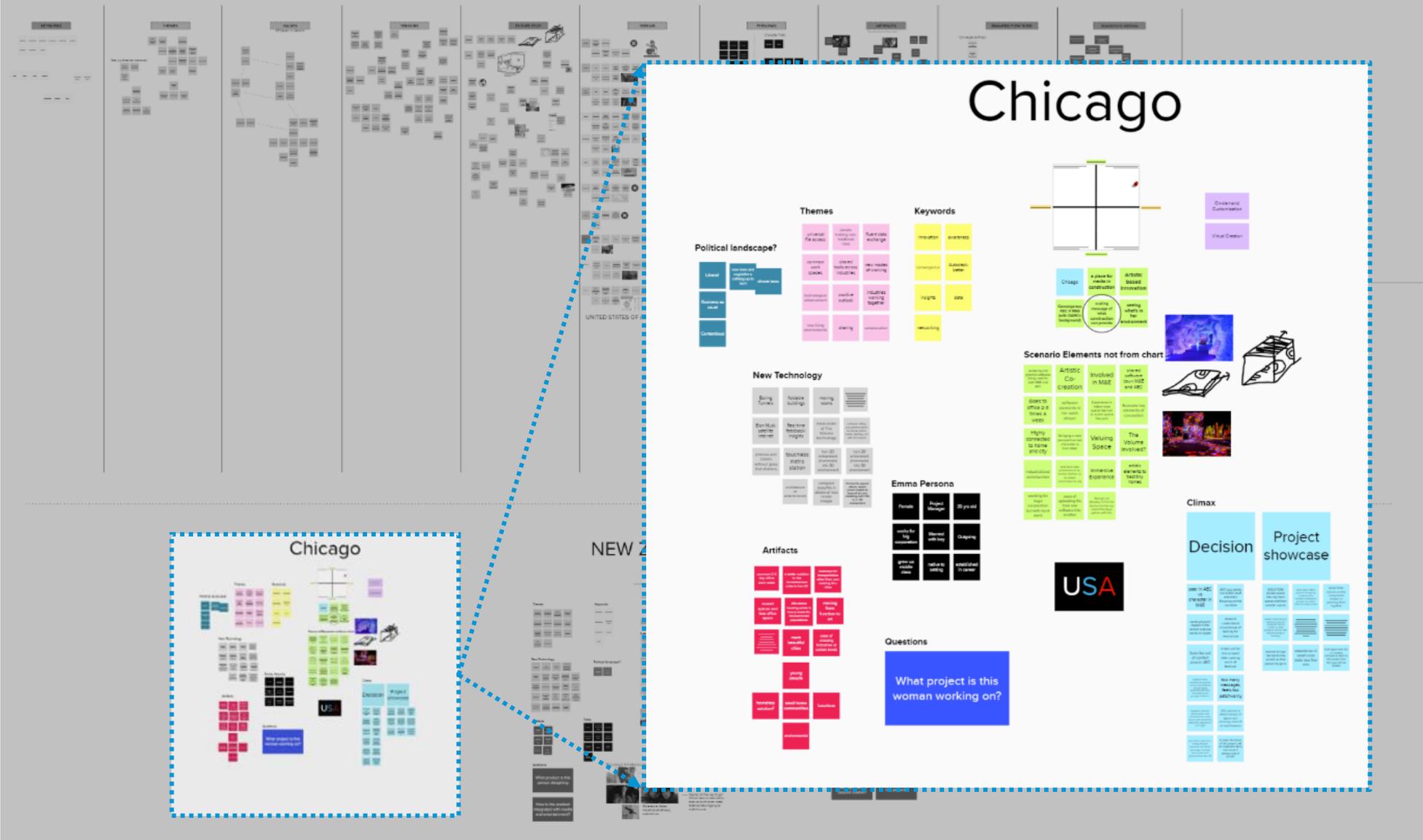
PERSONAS

ARTIFACTS

IMAGINED
FUNCTIONS



Reviewing Research Outcomes



Scenario Matrix



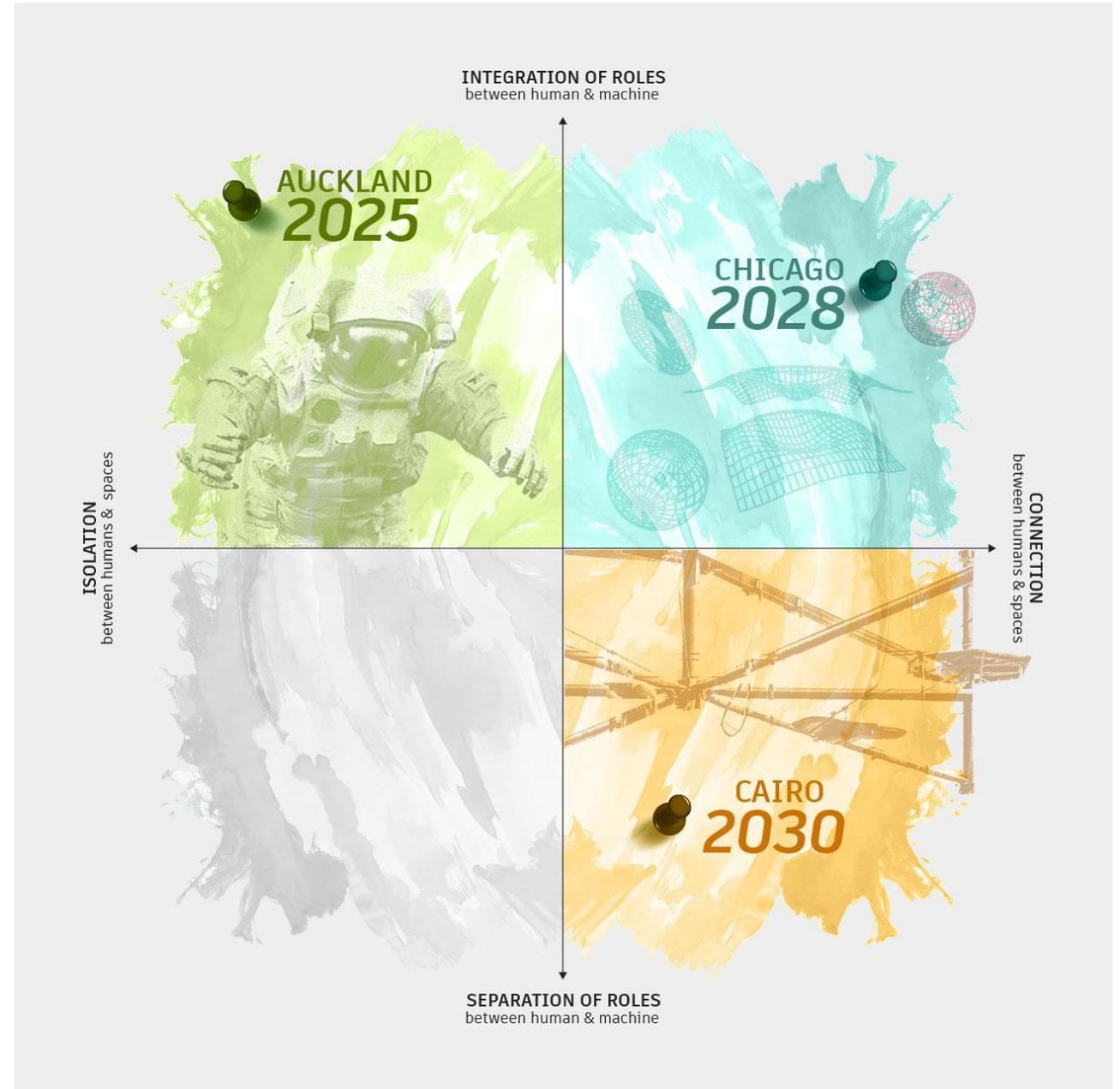
X AXIS:

CHANGE IN RELATIONSHIP TO BUILT ENVIRONMENT

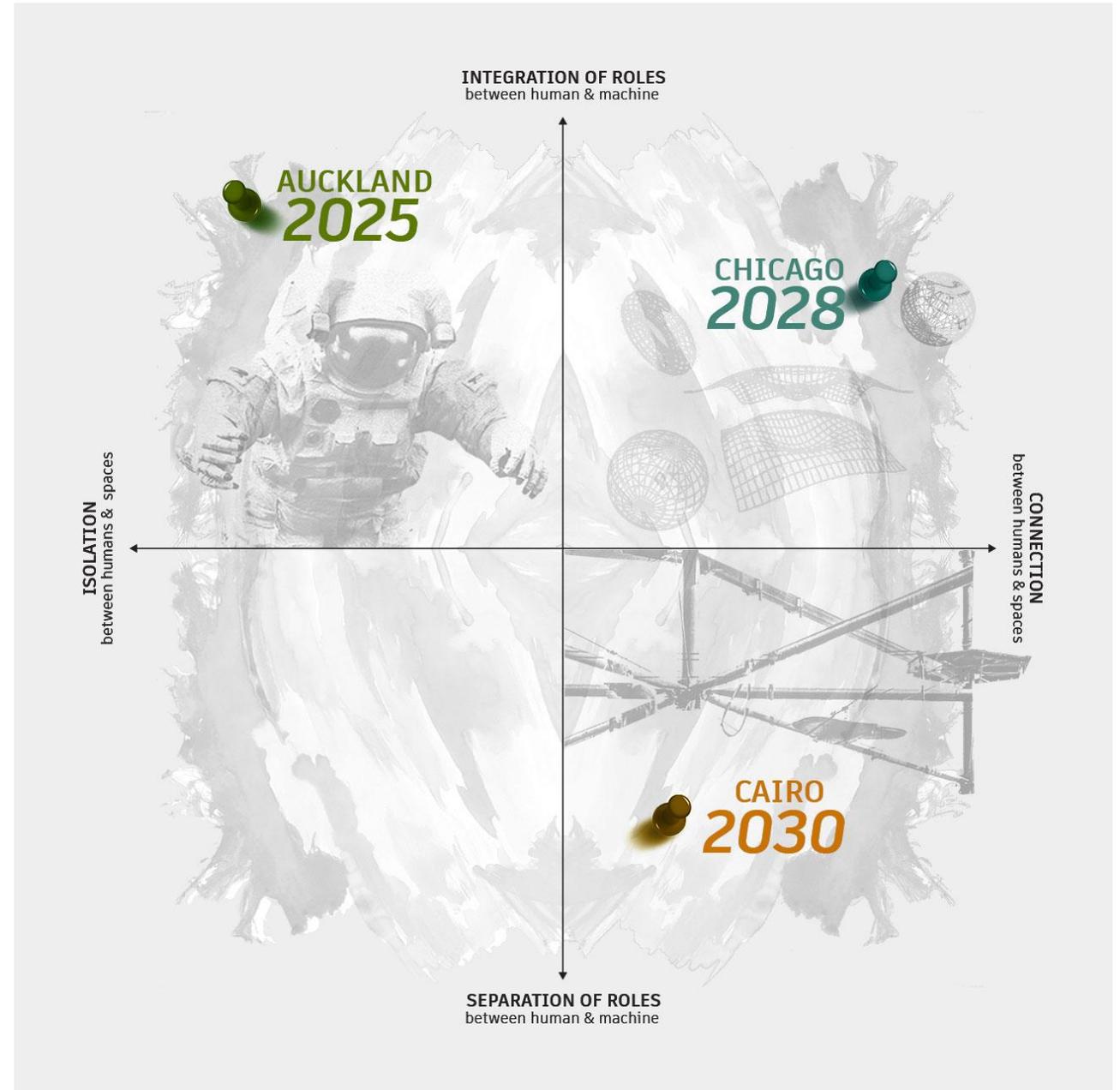
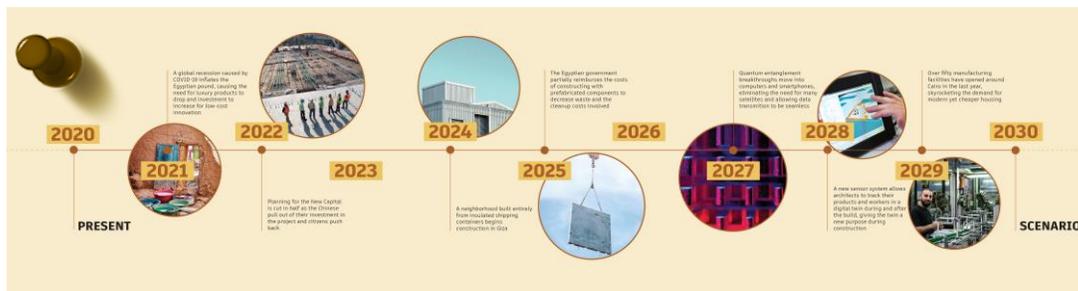
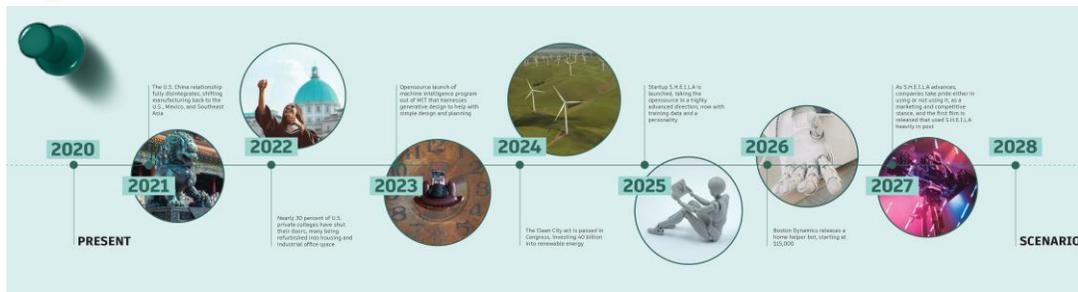
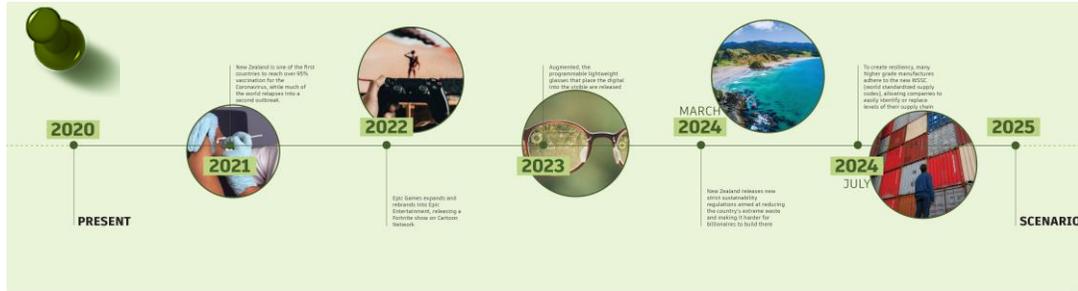


Y AXIS:

WIDESPREAD INTELLIGENT CO-CREATION BETWEEN HUMAN & MACHINE

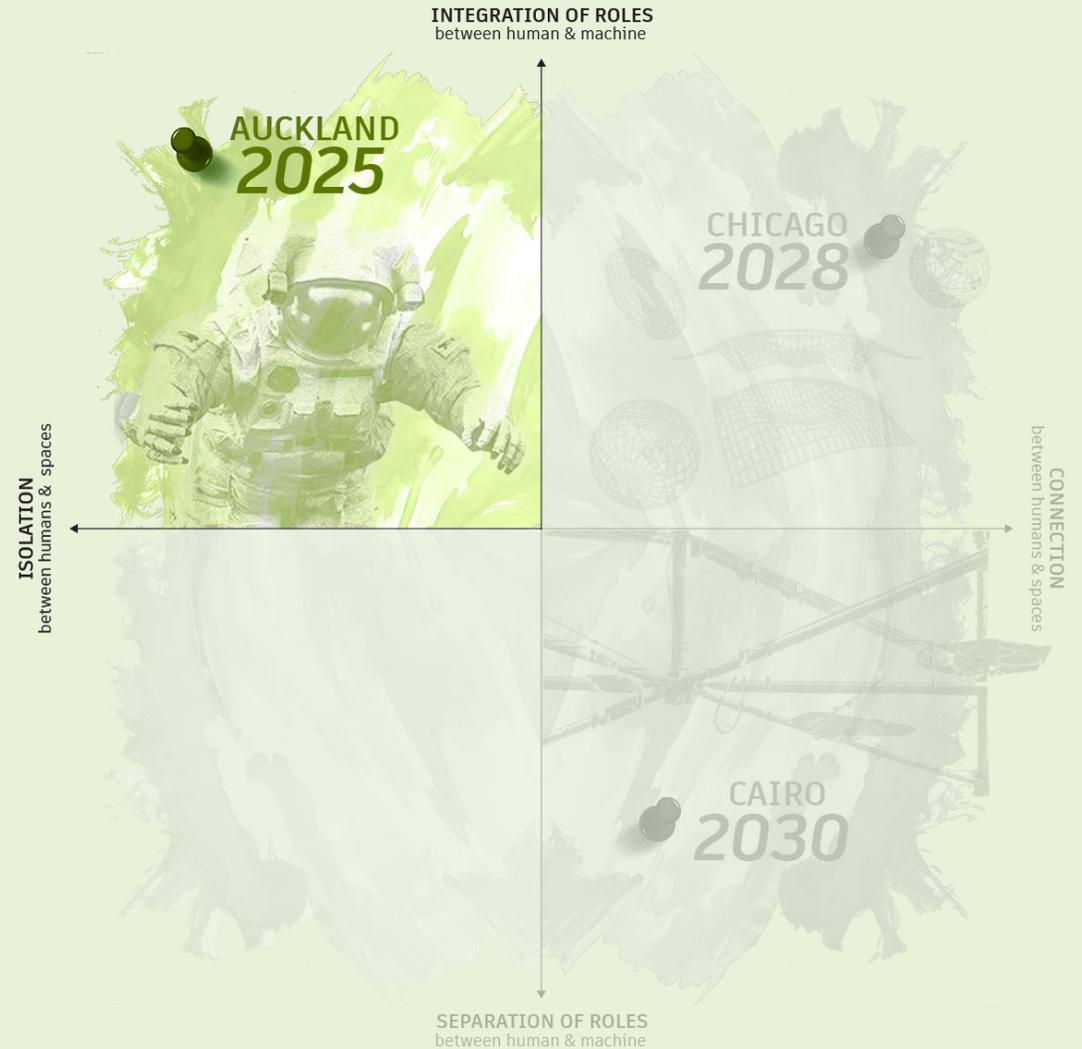


Matrix & Timelines





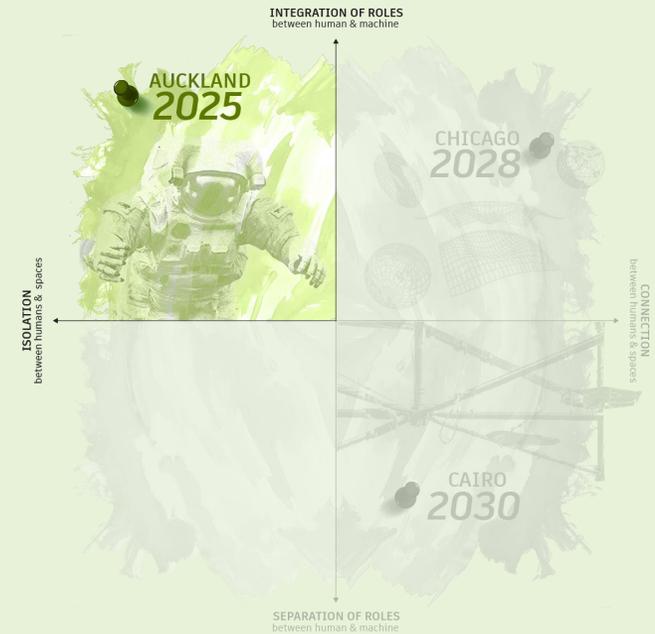
Auckland 2025: Augmenting Circular Realities



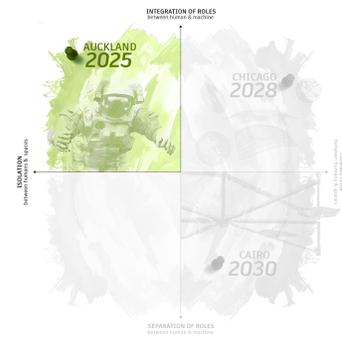
Scenario Overview

“

Taika Waru is a 28-year-old manufacturing technology manager. Taika works for Epic Entertainment who (for the first time) will be holding an augmented reality music festival just outside of Auckland, marketed as zero waste. Taika's goal is to ensure the massive festival set pieces are built on time and for easy assembly and disassembly. Using AR technology originally developed for entertainment purposes, Taika successfully tests a prototype with his adapted software and connectors he 3D printed. He feels he has landed on an effective build and reuse plan. However, Taika's manager wants him to just get the set pieces built as is, waving Taika's sustainability goals. Being Maori, Taika is highly conscious about the environment and deeply saddened by the high level of waste generated by New Zealanders. With the help of an entrusted friend directly impacted by this new technology, Taika will have to learn how to speak up for the value of his work and show his boss that efficiency and sustainability can easily work together.



Core | Tech Tension | Personal Tension



Core: Can Taika leverage augmented reality technology to enable continuous reuse of a music festival's massive set pieces?

Tech Tension: Can entertainment technology solve assembly and disassembly challenges to achieve sustainable design of augmented experiences?

Personal Tension: Terrified of confrontation, will Taika find the courage to speak up to leadership, in order to stay true to his Maori and New Zealander values surrounding guardianship?



TAIKA

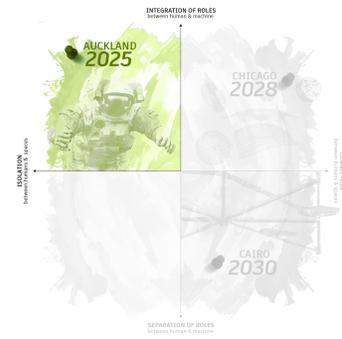
Male, 28-year-old
Programmer



We look for joy and excitement in events and temporary installations. As much as these experiences thrill us, we need to think more consciously about what happens after the event is over, because that is what stays with us.

Auckland, NZ

Scenario Timeline



2020

PRESENT



2021

New Zealand is one of the first countries to reach over 95% vaccination for the Coronavirus, while much of the world relapses into a second outbreak.

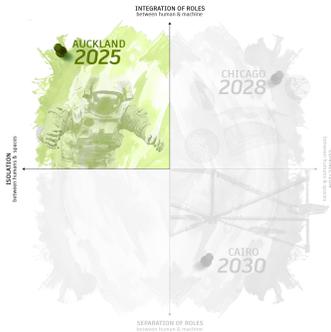


2022

Epic Games expands and rebrands into Epic Entertainment, releasing a Fortnite show on Cartoon Network

2023

Scenario Timeline



2023

Augmented, the programmable lightweight glasses that place the digital into the visible, come onto market

**MARCH
2024**



New Zealand releases new strict sustainability regulations aimed at reducing the country's extreme waste, making it harder for billionaires to build there

**2024
JULY**

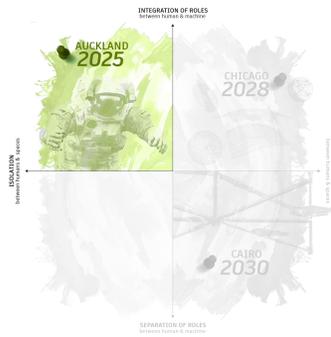


To create resiliency, many higher grade manufactures adhere to the new WSSC (world standardized supply codes), allowing companies to easily identify or replace levels of their supply chain

2025

SCENARIO

Scenario Statistics



34%

Maori representation in New Zealand Parliament



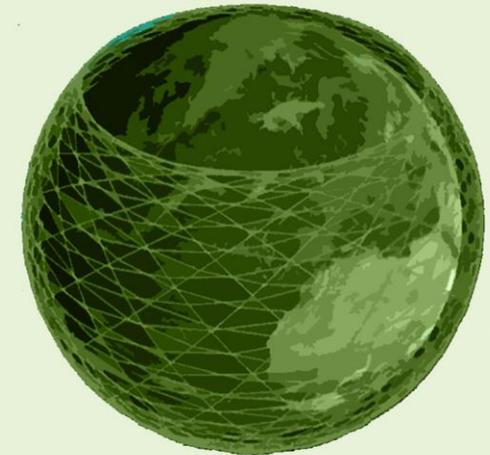
12,831

Tons of garbage pulled off New Zealand beaches in last year



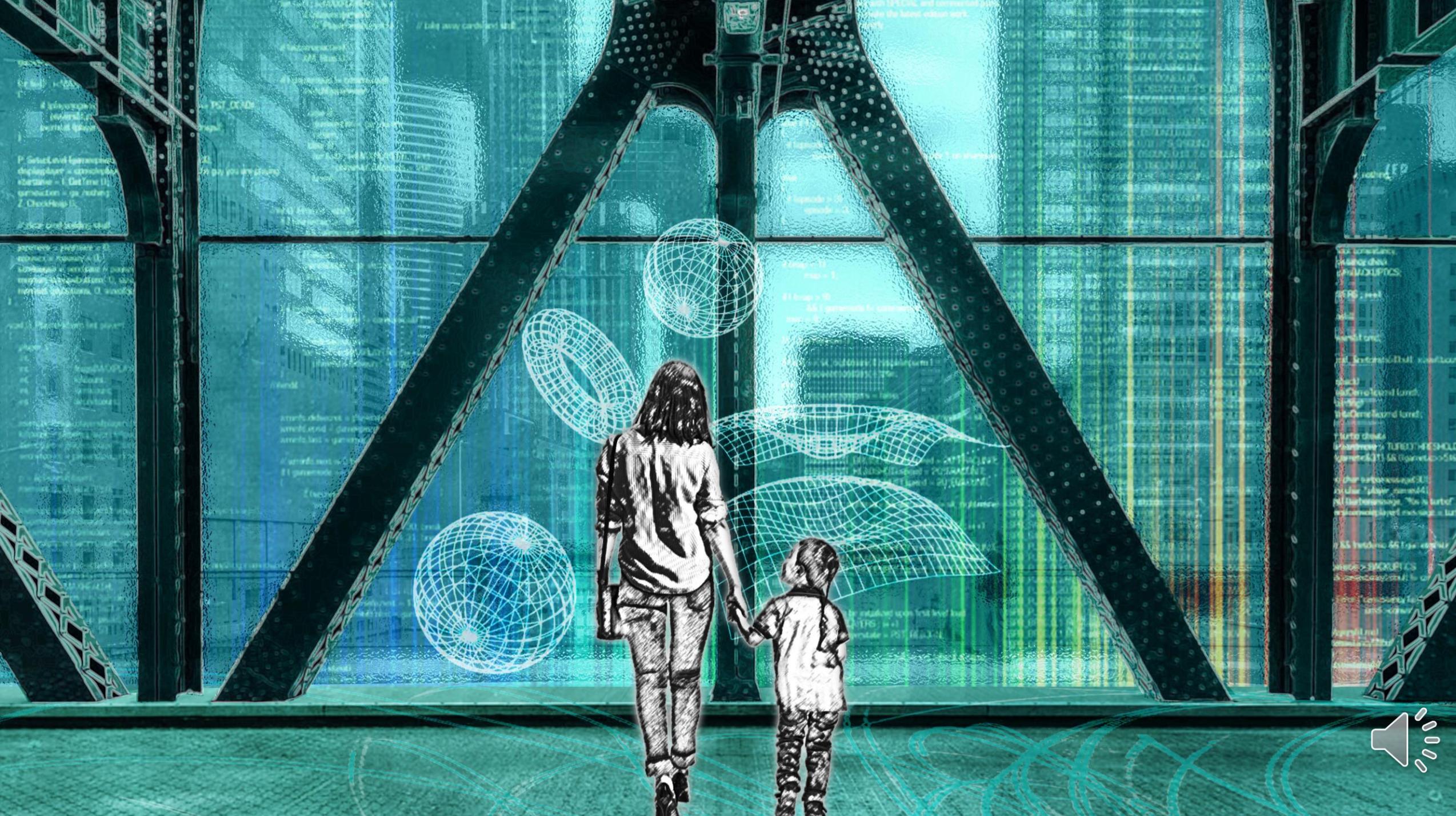
87%

Of waking hours spent by Gen Z looking at screens

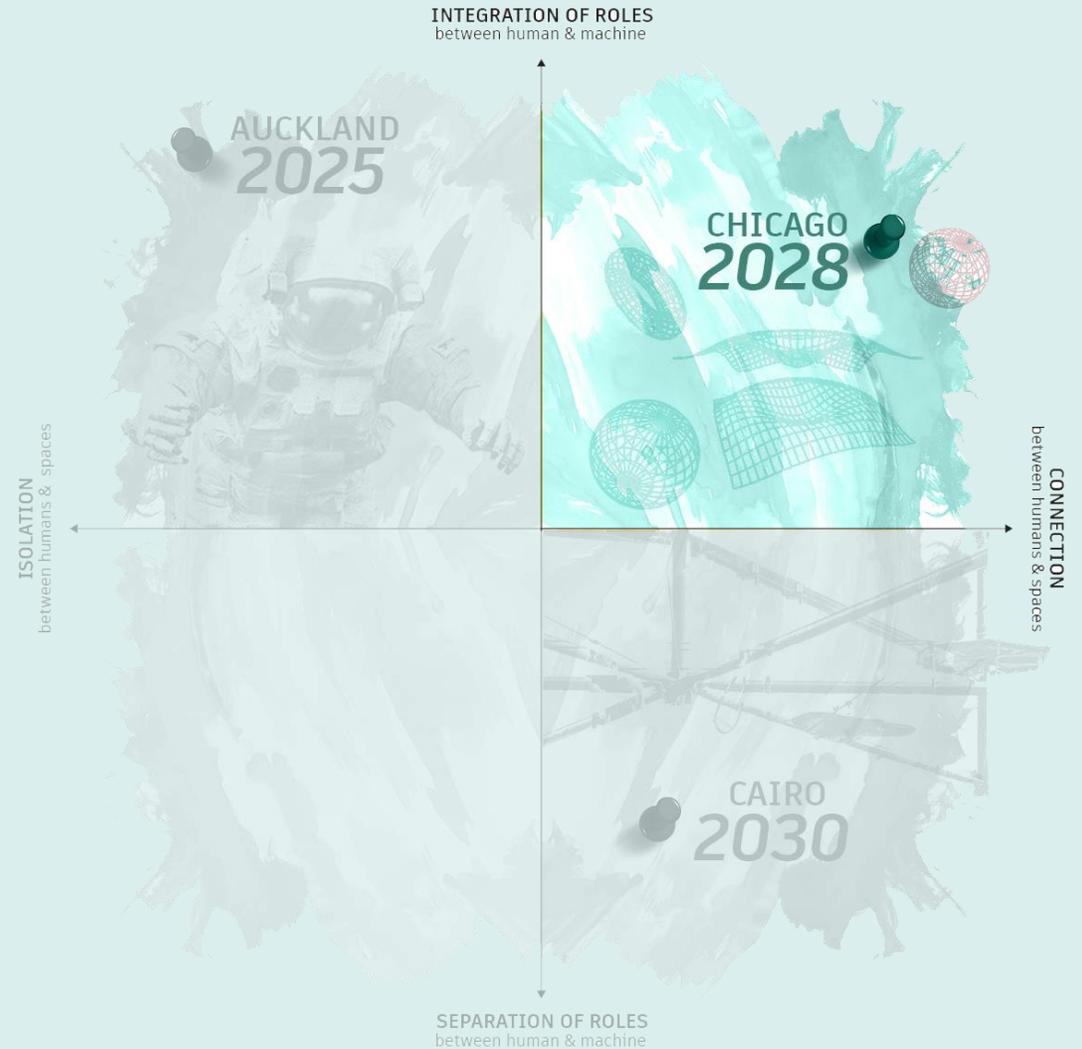


45%

Of New Zealanders using Starlink internet



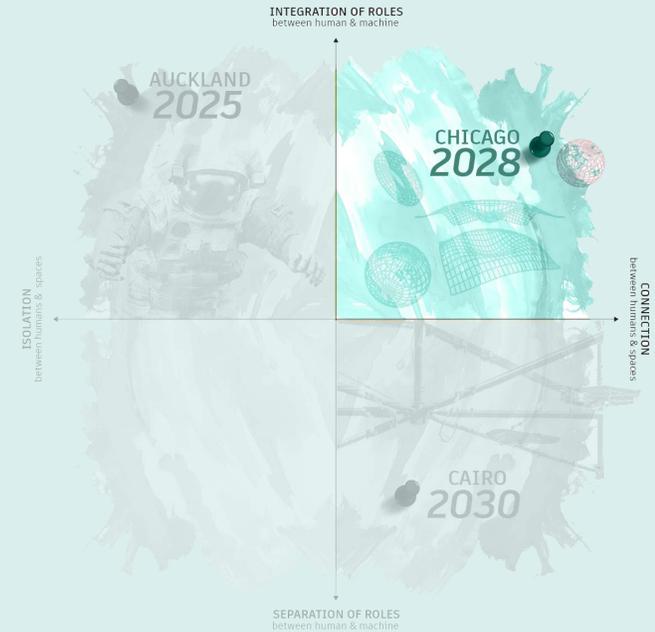
Chicago 2028: *Trusting Machine Intelligence*



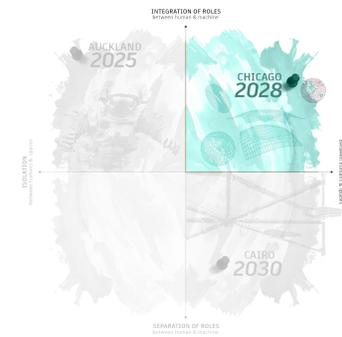
Scenario Overview

“

Emma Lee is a 35-year-old experience designer. She is developing a permanent interactive experience for the entrance hall of the Warped Park Tower, set for completion in 6 months. Emma is leading the project with Emilio, an architect at the firm. And, working alongside them both is SHEILA, the software program that helped design the entire building and is now helping design and render the experience. Emma and Emilio both have problems with SHEILA, but where Emma sees hope in machine intelligence, Emilio wants to stop working with it entirely. Currently, Emma feels she is at a roadblock with the project and is having repeated disagreements with Emilio and SHEILA, who is making more decisions than Emma feels comfortable with. Meanwhile, Emma's seven-year-old son is getting into trouble. Through her overlapping roles as a modern mom and as a manager, Emma will learn how to best modify the firm's project to better engage with its audience. Through watching her son interact with SHEILA, she and Emilio will discover how to reshape their project through trust in the program, utilizing both participant's creativity and machine intelligence's potential.



Core | Tech Tension | Personal Tension



Core: Can Emma discover how to work with machine intelligence to create an experience that will enable the continuous adaptation of a physical space?

Tech Tension: Can machine intelligence become a trusted advisor for balancing operational, environmental, and social trade-offs?

Personal Tension: Will Emma find a way to trust machine intelligence she sees such potential in, to collaborate on a complex project outside her main area of expertise?



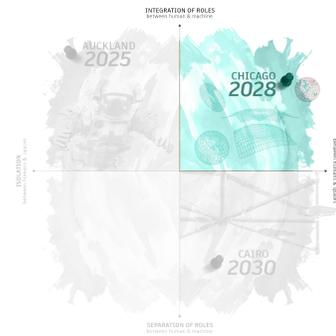
EMMA
Female, 35-year-old
Project Manager



The architecture industry can be exciting again if the essence of architecture is demonstrated in an engaging manner. What better way to do that than through an immersive experience?

Chicago, USA

Scenario Timeline



2020

PRESENT

2021

The energy-recycling touch wall is released as prototype, a glass touchscreen for an entire wall or room, designed primarily for office spaces



2022

Nearly 30 percent of U.S. private colleges have shut their doors, many being refurbished into housing and industrial office space



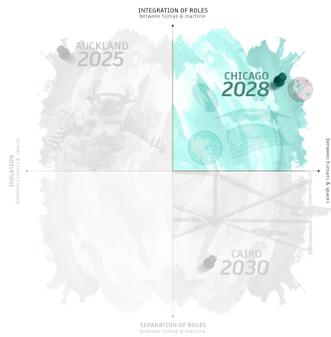
2023

Opensource launch of machine intelligence program out of MIT that harnesses generative design to help with simple rendering and planning



2024

Scenario Timeline

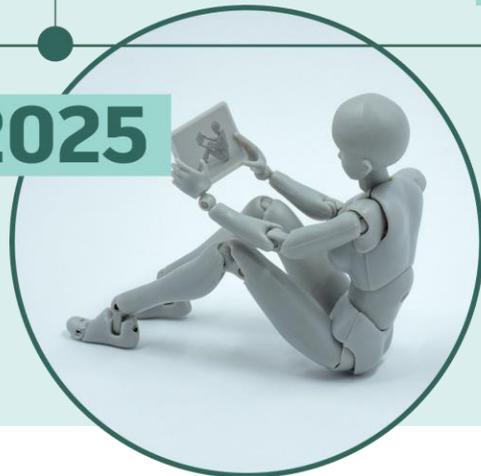


2024

The Clean City act is passed in Congress, investing 40 billion into renewable energy

Startup S.H.E.I.L.A is launched, taking the opensource in a highly advanced direction, now with training data and a personality

2025



2026



Boston Dynamics releases a home helper bot, starting at \$15,000

2027

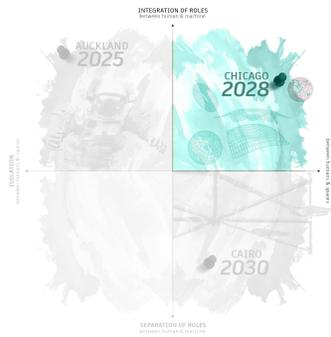


As S.H.E.I.L.A advances, companies take pride either in using or not using it, as a marketing and competitive stance, and the first film is released that used S.H.E.I.L.A heavily in post

2028

SCENARIO

Scenario Statistics



3

Days working in the office is standard for most white-collar jobs



813

Wind turbines in Lake Michigan



117

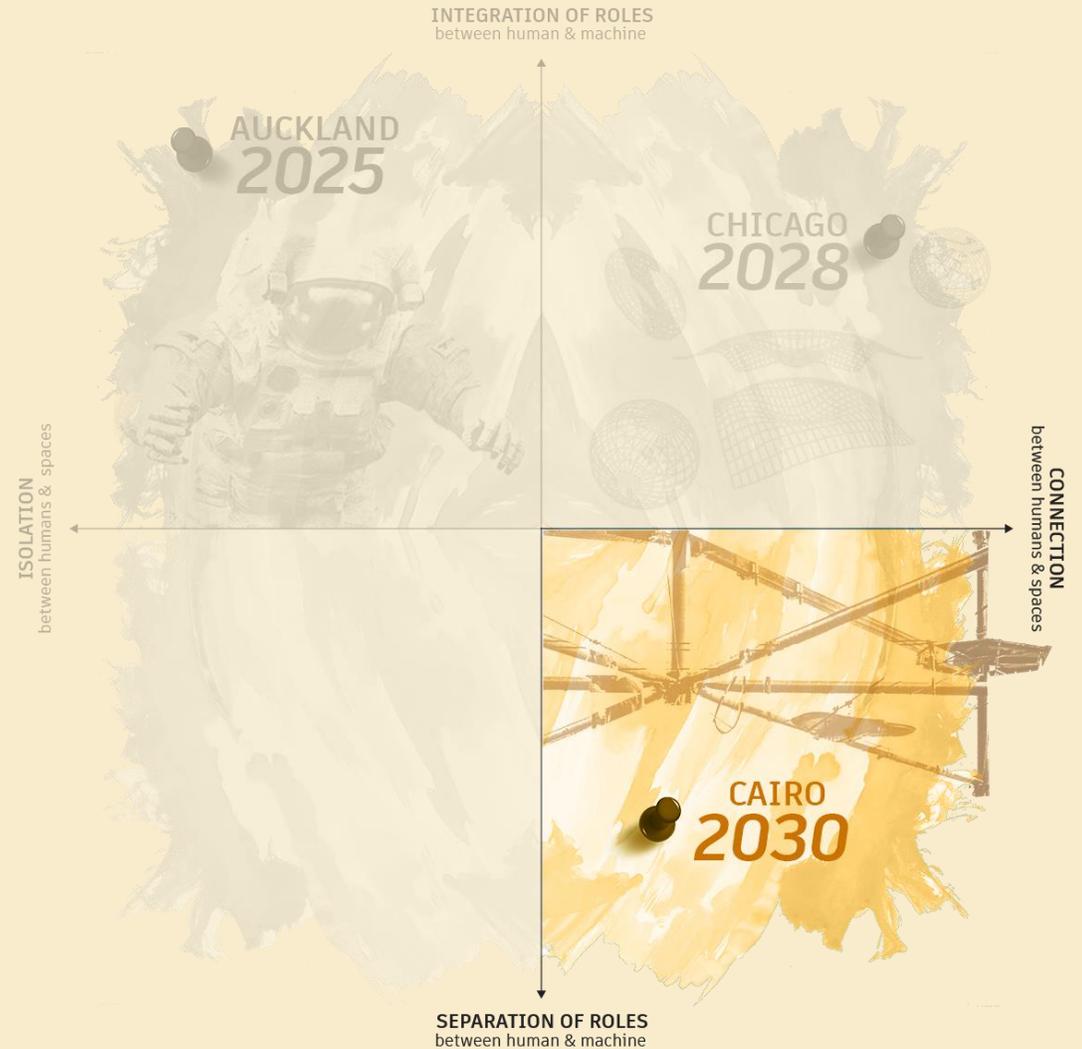
Miles of widened and new bike lanes in Chicago in last 3 years



32

Average age a woman has first child in the U.S.

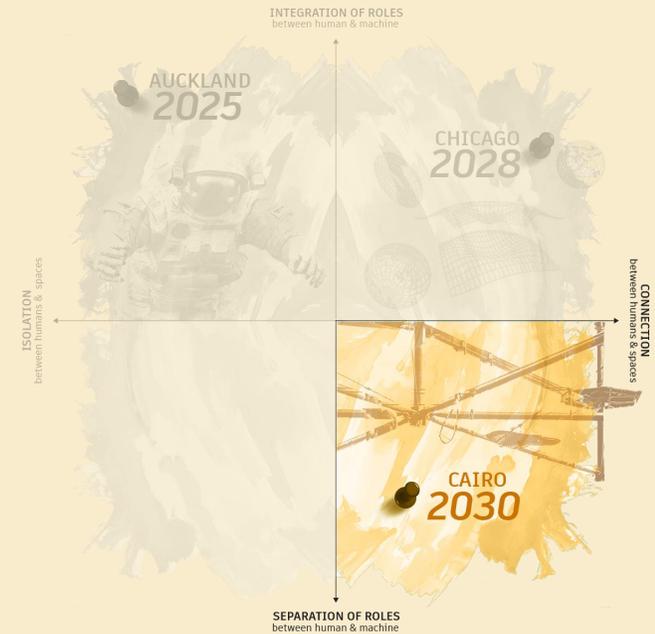
Cairo 2030: *Orchestrating a Digital Twin*



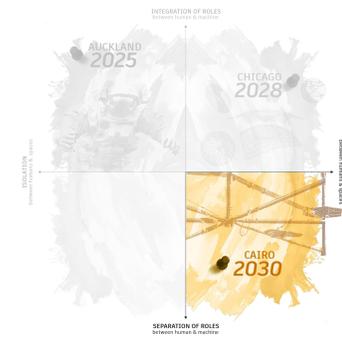
Scenario Overview

“

Hassan Abdel Hady is a 60-year-old construction company owner who lives in Cairo, Egypt. Hassan and his architect daughter, Mona, are working on Buyout, a residential project targeting the average middle-class Egyptian family. In its design phase, Buyout came about by aggregating and synthesizing data related to the project's local and contextual conditions, including budget, family size, building material availability, expected and unexpected environmental conditions, as well as universal best practices for mid-size residential design. This data-driven approach continues to the construction phase as digital twinning allows for a continuous feedback loop between physical and virtual. Hassan and his co-workers recognize the value of this work method, but struggle to maintain a sense of agency as processes become too mechanized. As Hassan works on finding the right balance, he is reminded of the true value of hands-on, tactile, and cumulative experience. He reassures himself and his team that their expertise will remain to be the project's driver, and that technology serves as a supportive enabler.



Core | Tech Tension | Personal Tension



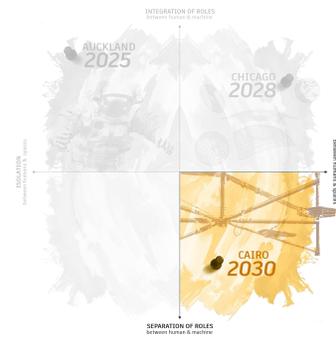
Core: Can Hassan leverage data-driven insights into spaces and manufactured building elements to build residential housing that can adapt to various environmental and contextual conditions?

Tech Tension: Can technology replace the accumulated contextual expertise of construction specialists, particularly when it comes to predicting emergent conditions on-site?

Personal Tension: Having doubts about technology, will Hassan be able to reassure himself and his field workers of the value of their contribution—one that can't be replaced by technology?

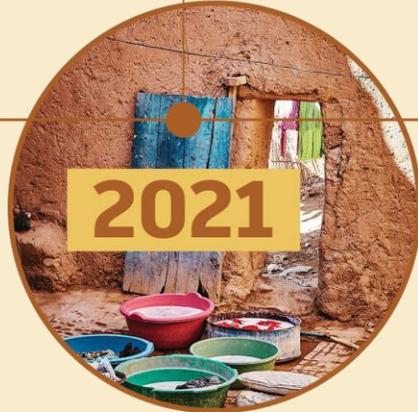


Scenario Timeline



2020

PRESENT



2021

A global recession caused by COVID-19 inflates the Egyptian pound, causing the need for luxury products to drop and investment to increase for low-cost innovation

2022



2023

Planning for the New Capital is cut in half as the Chinese pull out of their investment in the project and citizens push back

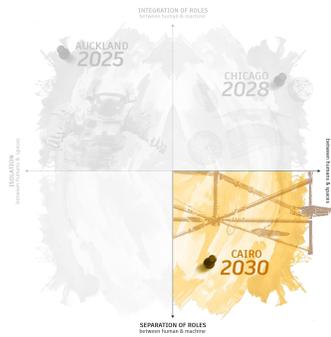
2024



2025

A neighborhood built entirely from insulated shipping containers begins construction in Giza

Scenario Timeline



The Egyptian government partially reimburses the costs of constructing with prefabricated components, to decrease waste and the cleanup costs involved

2026

Quantum entanglement breakthroughs move into computers and smartphones, eliminating the need for many satellites and allowing data transmission to be seamless

2028



Over fifty manufacturing facilities have opened around Cairo in the last year, skyrocketing the demand for modern yet cheaper housing

2030

2025



2027



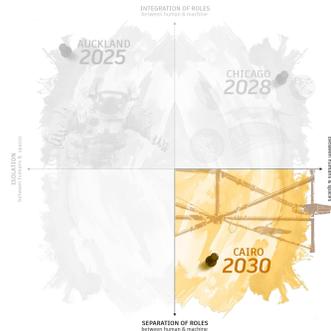
A new sensor system allows architects to track their products and workers in a digital twin during and after the build, giving the twin a new purpose during construction

2029



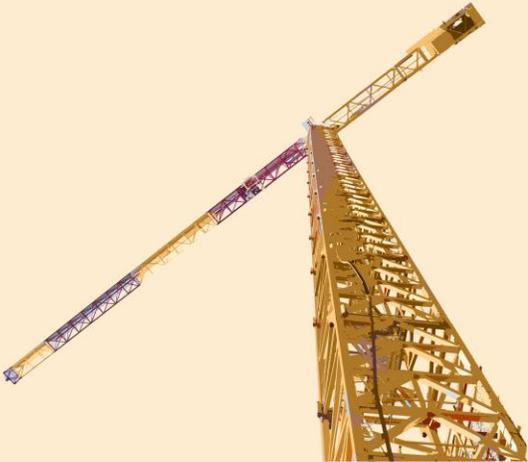
SCENARIO

Scenario Statistics



29

Million people in Greater Cairo



\$130

Per month salary of average Egyptian construction worker (2,078 EGP)



1.2%

Of homes in Cairo now self-regulating

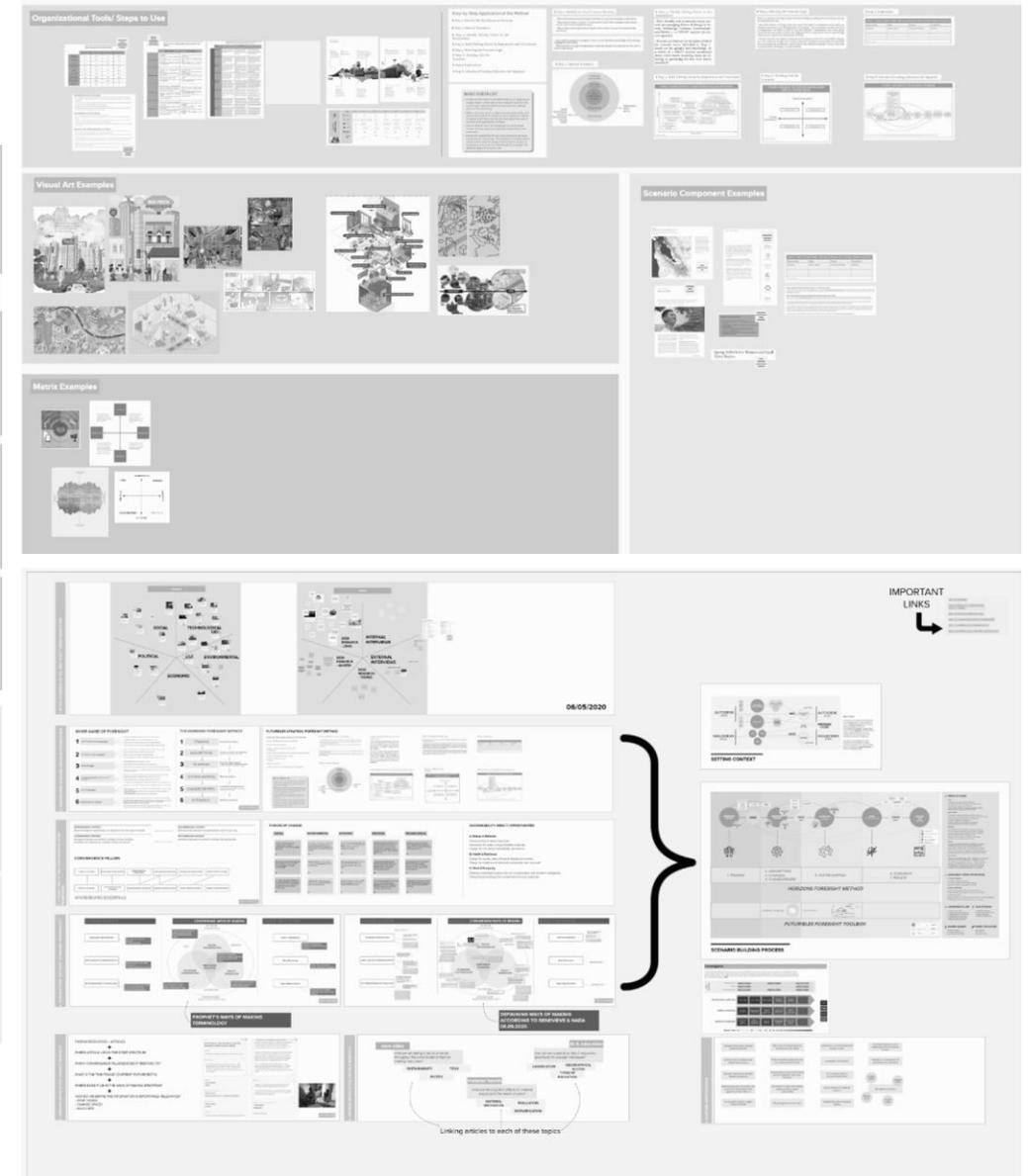
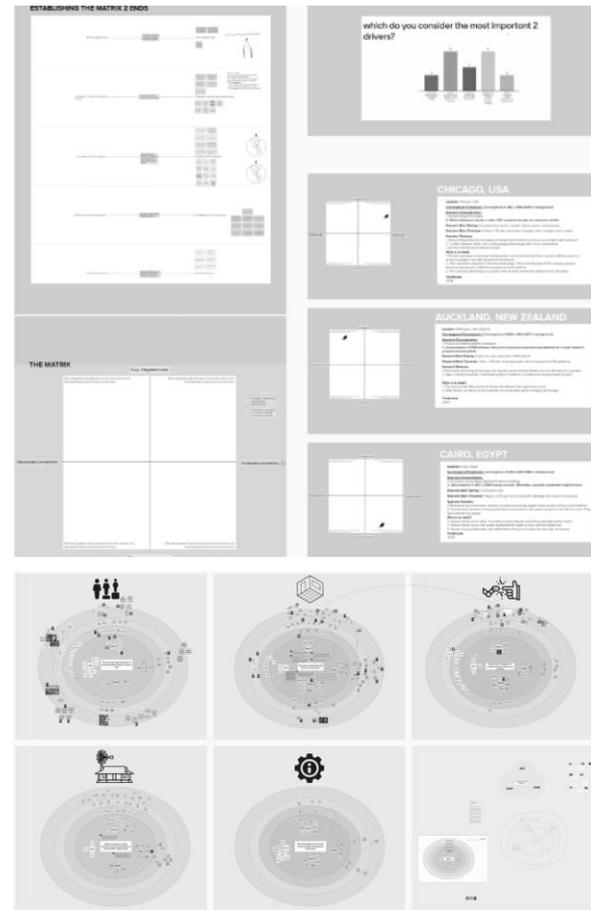


20

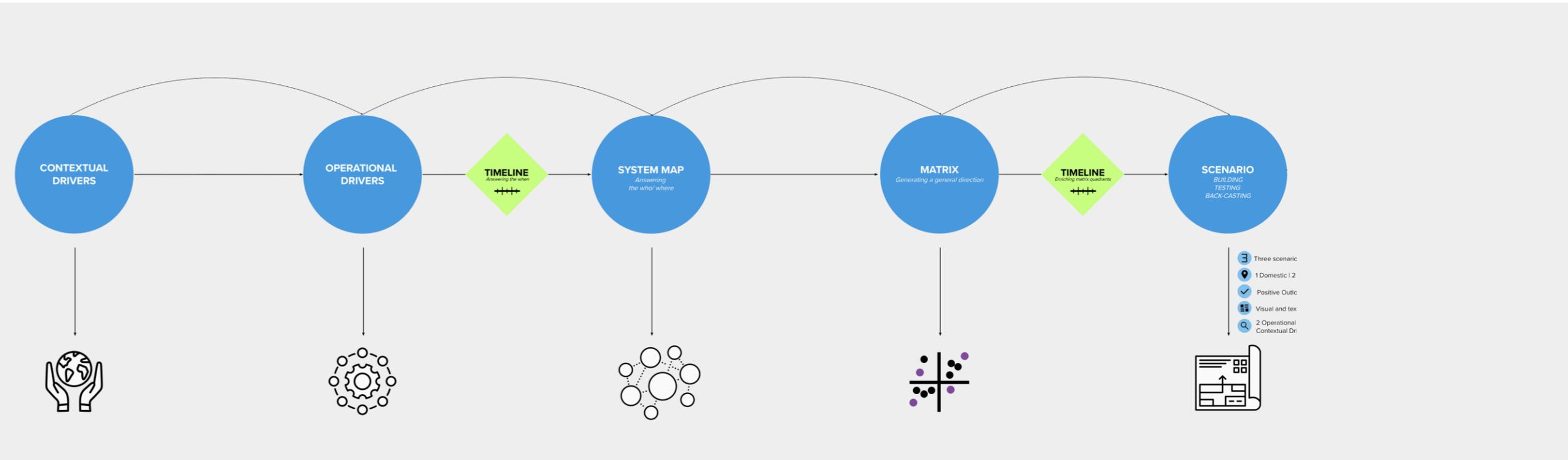
Days of rain in Cairo last year, above average

Takeaways

- Thinking strategically about the future
- Developing **narratives** that engage audience's thinking and **humanize the technology of the future**
- **Co-creation** is a huge part of this process. We were surprised by how much time, effort, and coordination foresight work takes!
- **Interviewing experts from different fields** is great, but we learned how to work the technical conversations into our scenarios, so they are relevant to both experts and non-experts



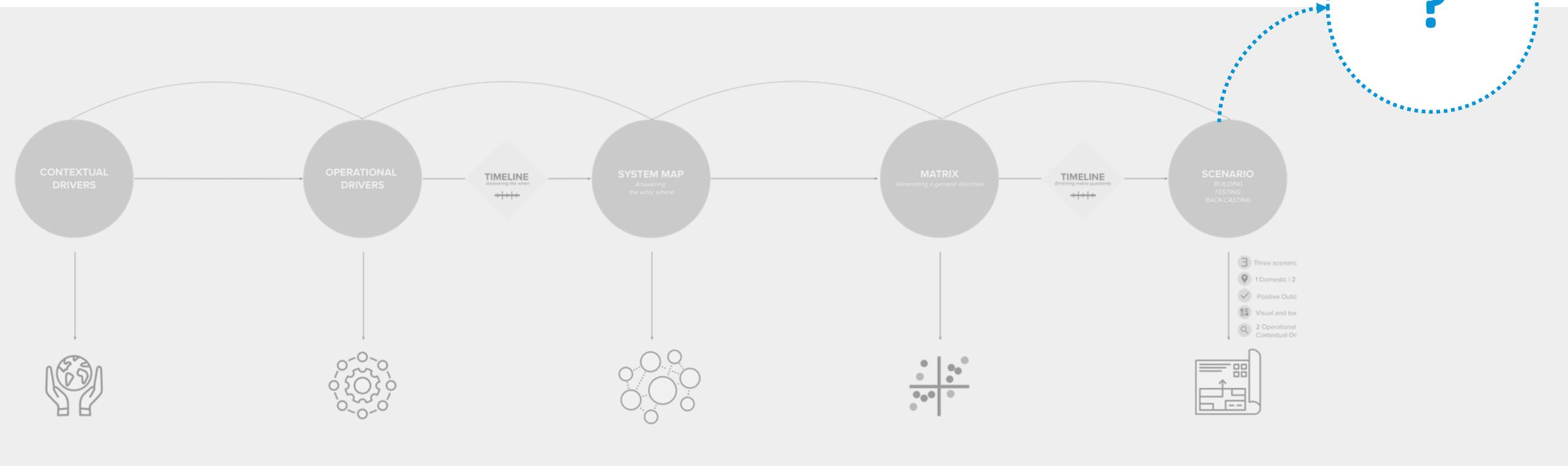
Next Steps



Next Steps

GETTING FROM THERE TO NOW

Backcasting from the Scenario to present time



Thank you.



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