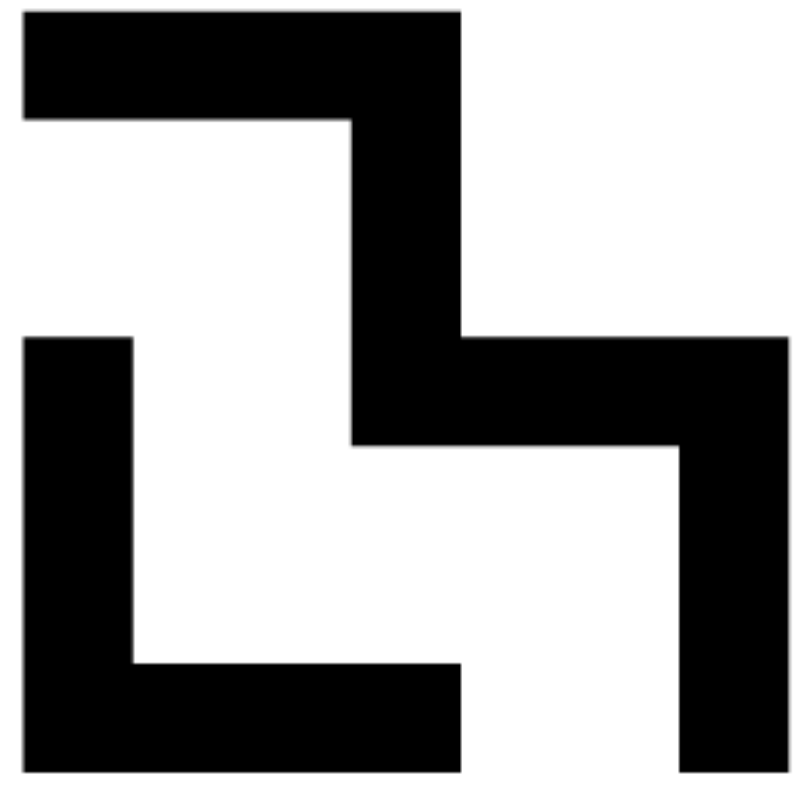


DR. LUIS ALONSO

Doctor en Arquitectura, galardonado con el prestigioso premio MIT Technology Review TR35, con más de 10 años de experiencia como arquitecta, hoy es investigador científico en el Grupo City Science (Ciencia de las ciudades) y es Principal Investigator del Proyecto Andorra Living Lab. Su forma de pensar antidisciplinar encaja perfectamente con el espíritu del MIT Media Lab.





**mit
media
lab**



Anti-Disciplinary
&
Trans-Disciplinary



2014 MIT Media Lab Fellows



Hiromi Ozaki
Design Fiction



Neri Oxman
Mediated Matter



V. Michael Bove
Object-Based Media



Edward Boyden
Synthetic Neurobiolc



Cynthia Breazeal
Personal Robots



Joseph A. Paradiso
Responsive Environments



Alex 'Sandy' Pentland
Human Dynamics



Kevin Esvelt



Hugh Herr
Biomechatronics



Cesar A. Hidalgo
Macro Connections



Iyad Rahwan
Scalable Cooperation



Ramesh Raskar
Camera Culture



Hiroshi Ishii
Tangible Media



Mitchel Resnick
Lifelong Kindergarten



Joseph M. Jacobson
Molecular Machines



Deb Roy
Social Machines



Chris Schmandt
Living Mobile



Sepandar Kamvar
Social Computing



Rosalind W. Picard
Affective Computing



Kent Larson
Changing Places



Kevin Slavin
Playful Systems



Ethan Zuckerman
Center for Civic Media



Andrew Lippman
Viral Communications
Communications Futures
Program



Tod Machover
Opera of the Future



Pattie Mae
Fluid Interf

80 Corporate Sponsors

Aegis Media

APX Labs

Bank of America

Benesse Corporation

Berwind

BT

Cisco Systems, Inc.

Comcast

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DENSO

Dentsu Inc. / ISID

Digital Garage

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EMC Corporation

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GlaxoSmithKline

Google

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Hisense Co. Ltd.

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ICICI Bank

IDEO

IKEA

Infocast Limited

Intel

Intuit Inc.

Kozo Keikaku Engineering Inc. *

The LEGO Group

Lockheed Martin

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Microsoft Corporation

Mitsui & Co., Ltd.

Natura

NEC Corporation

New Balance Athletic Shoe, Inc.

News Corporation

Nokia Corporation

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Pearson Inc.

QUALCOMM Incorporated

RR Donnelley

Saudi Aramco

Samsung Electronics Co., Ltd.

Sensormatic Electronics Corp.

Schneider Electric SA

Shell

SingTel

Starcom Mediavest Group

State Farm

State of Minas Gerais

Steelcase Inc.

TCL Multimedia

TED

Telecom Italia *

The Asahi Shimbun Company

Time Inc.

TOPPAN Printing Co., Ltd.

Toyota Motor Corporation

Toshiba Corporation

Toys"R"Us, Inc.

Trends Media Co., Ltd.

Verizon

Volkswagen Group of America, Inc.

Yamaha Corporation*



The principles

Los principios

Emergence

Authority

Emergencia
sobre
Autoridad

Pull

Push

Tirar
sobre
Empujar

Compasses

Maps

Compas
sobre
Mapas

Risk

Safety

Riesgo
sobre
Seguridad

Disobedience

Compliance

Desobediencia
sobre
Conformidad

Practice

Theory

Practica
sobre
Teoría

Diversity

Ability

Diversidad
sobre
Capacidad

Resilience

Strength

Resistencia
sobre
Fuerza

Systems

Objects

Sistemas
sobre
Objetos

Learning

Education

Aprender
sobre
Educación



Compasses

Maps

Compas
sobre
Mapas

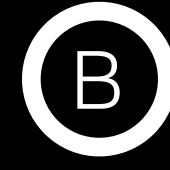


Momento
actual 

Compasses

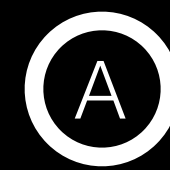
Maps

Compas
sobre
Mapas



Futuro

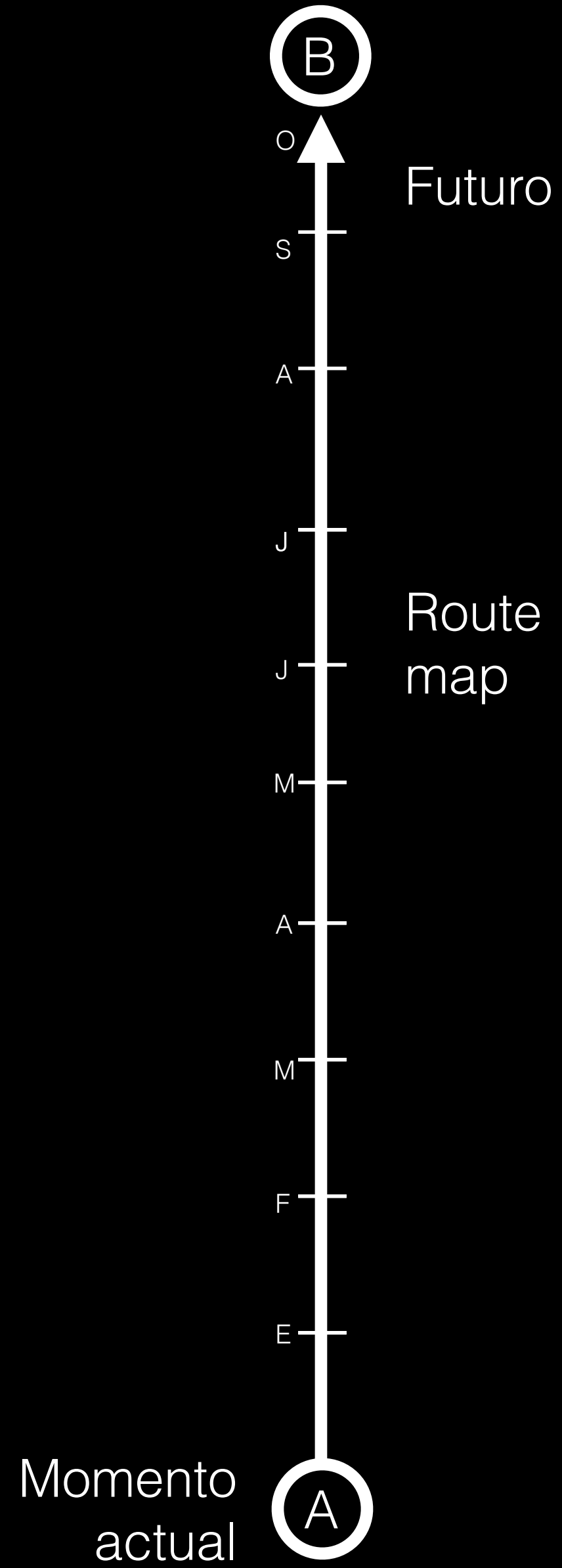
Momento
actual



Compasses

Maps

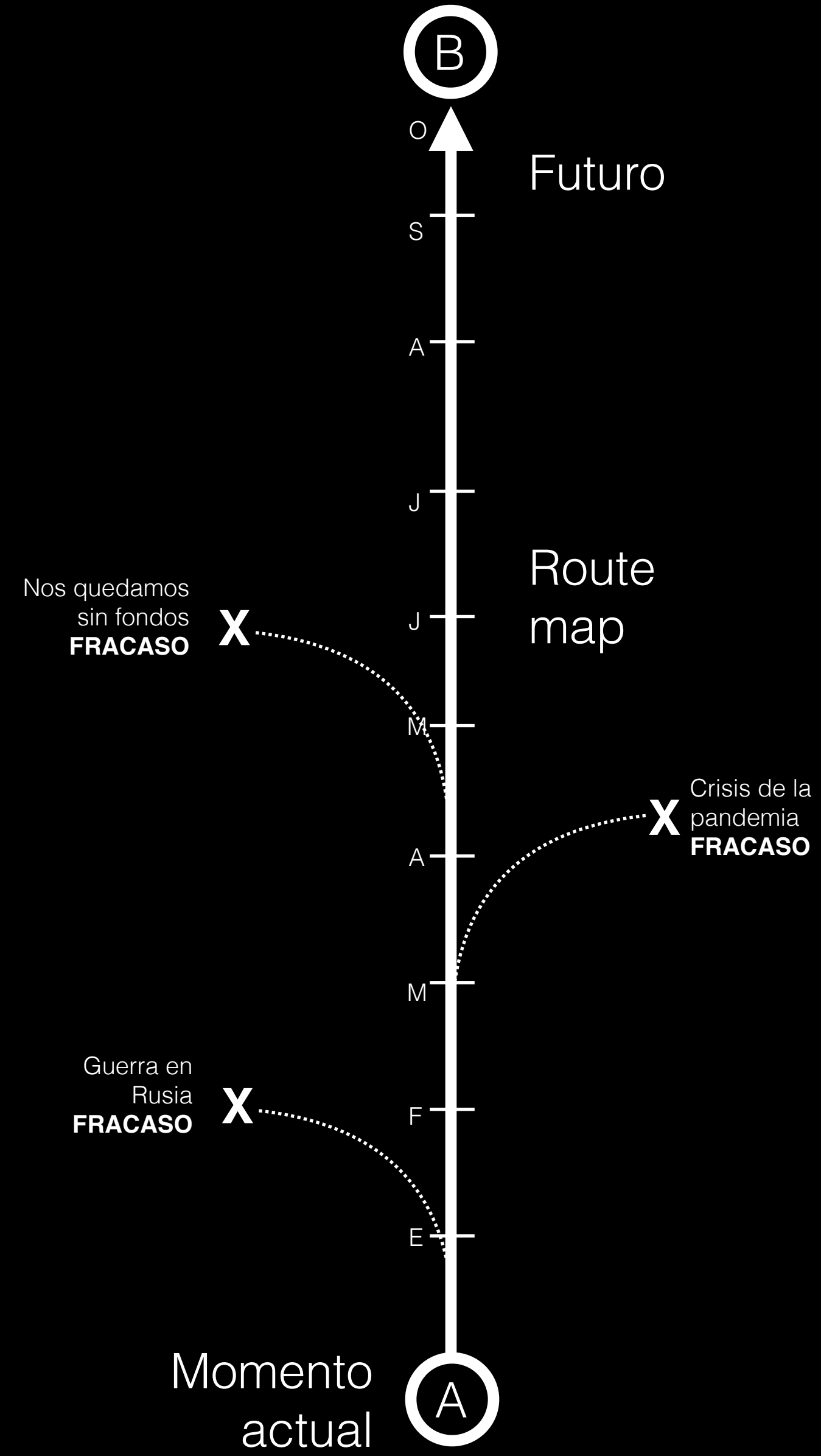
Compas
sobre
Mapas



Compasses

Maps

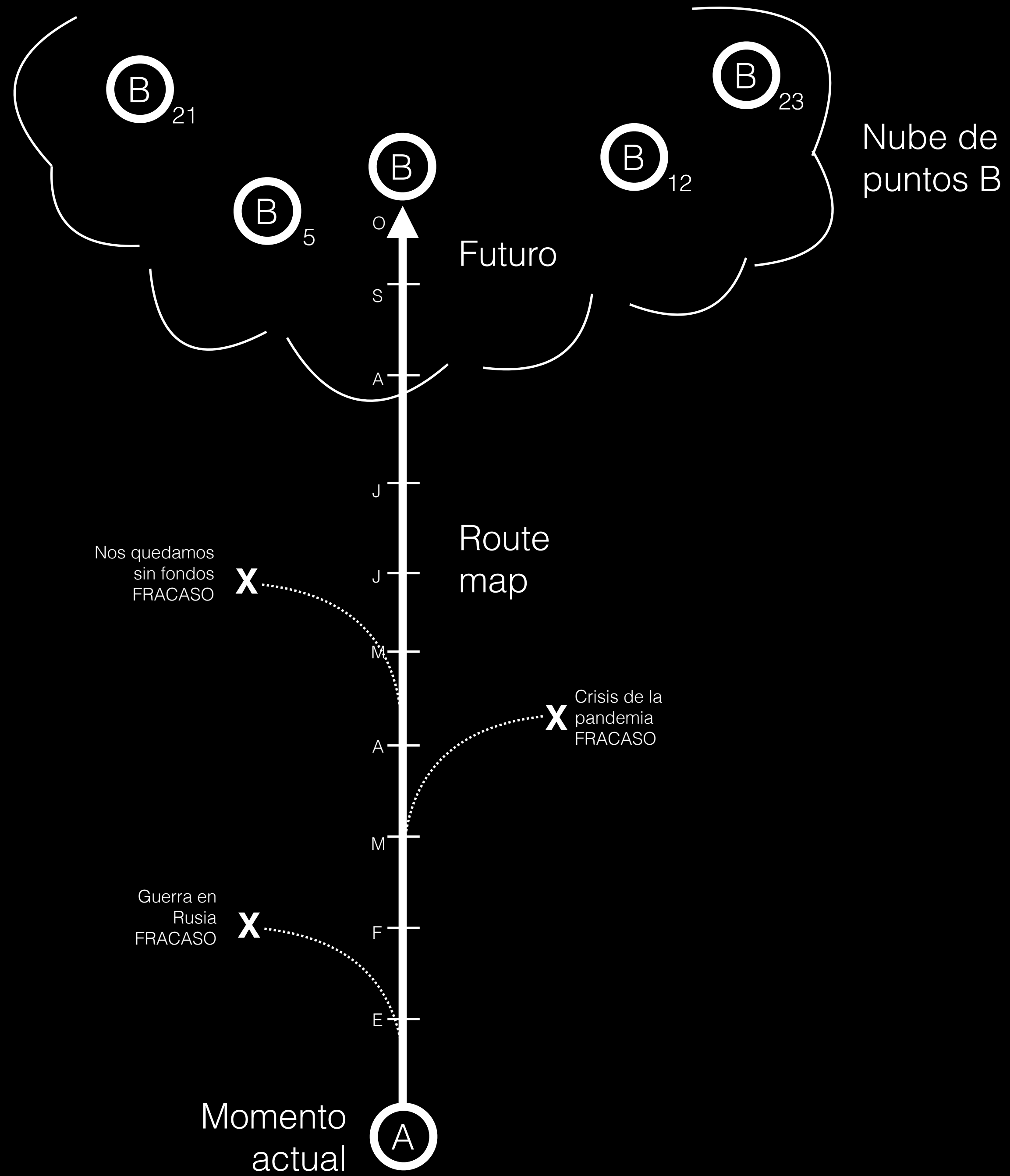
Compas
sobre
Mapas



Compasses

Maps

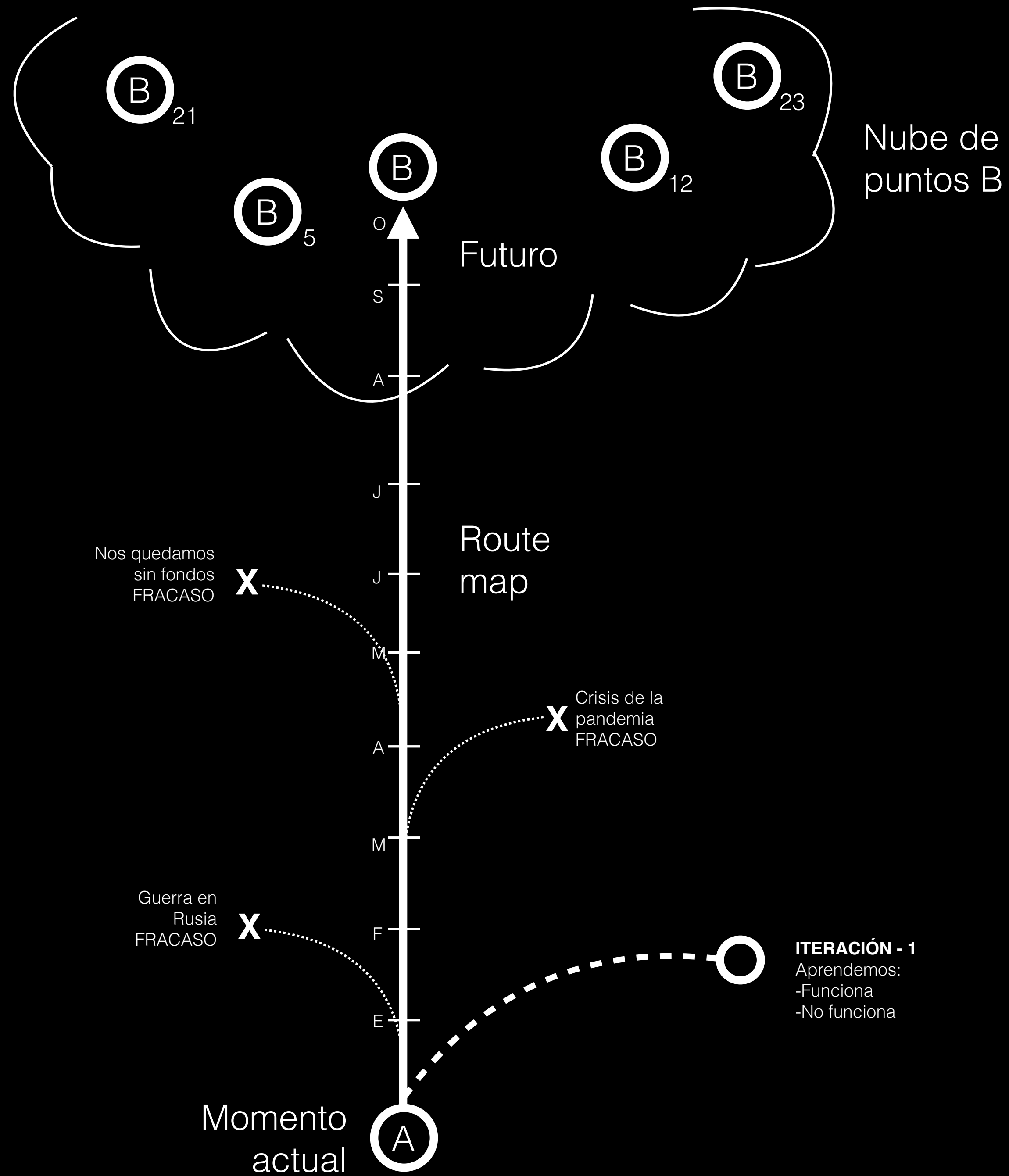
Compas
sobre
Mapas



Compasses

Maps

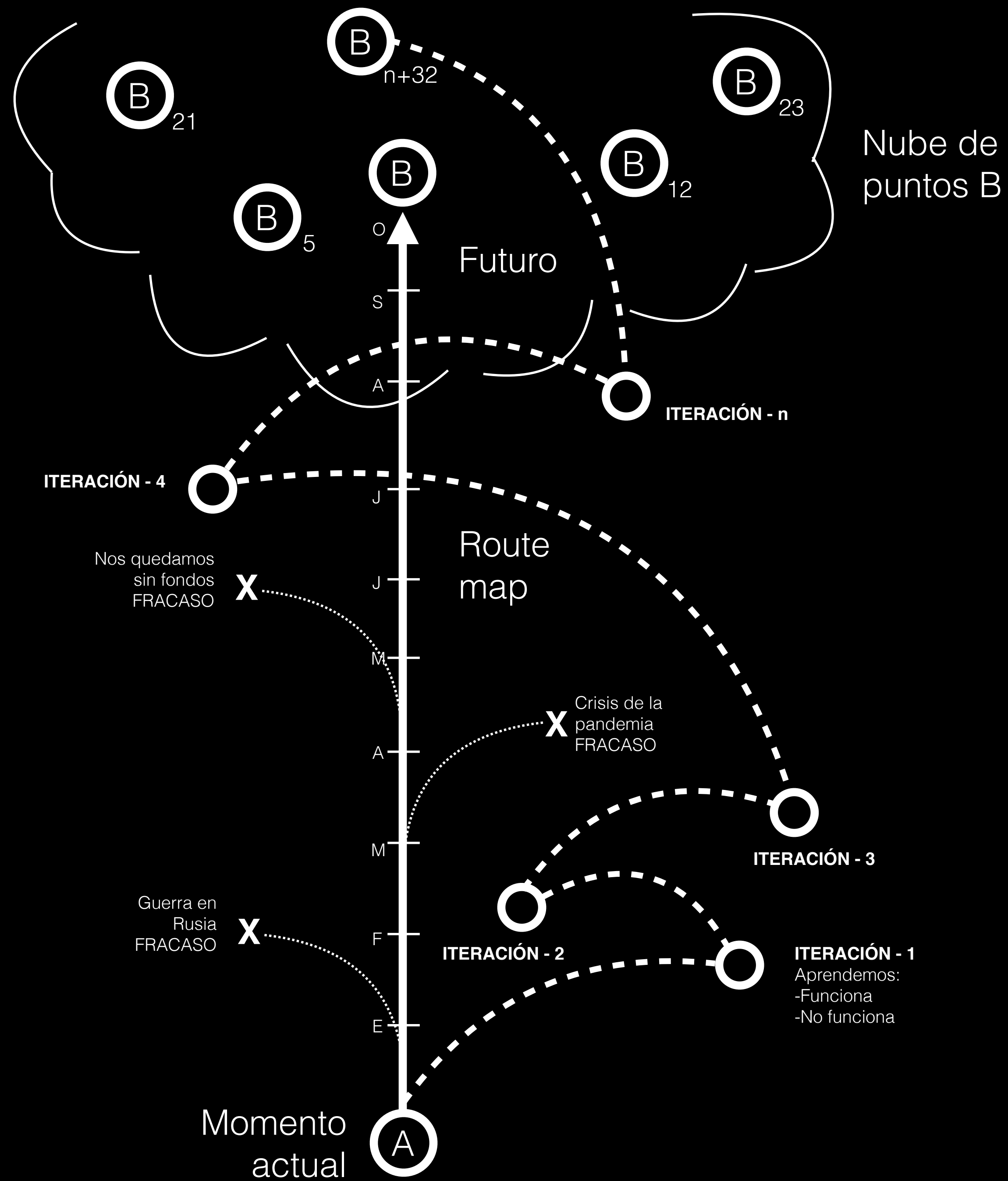
Compas
sobre
Mapas



Compasses

Maps

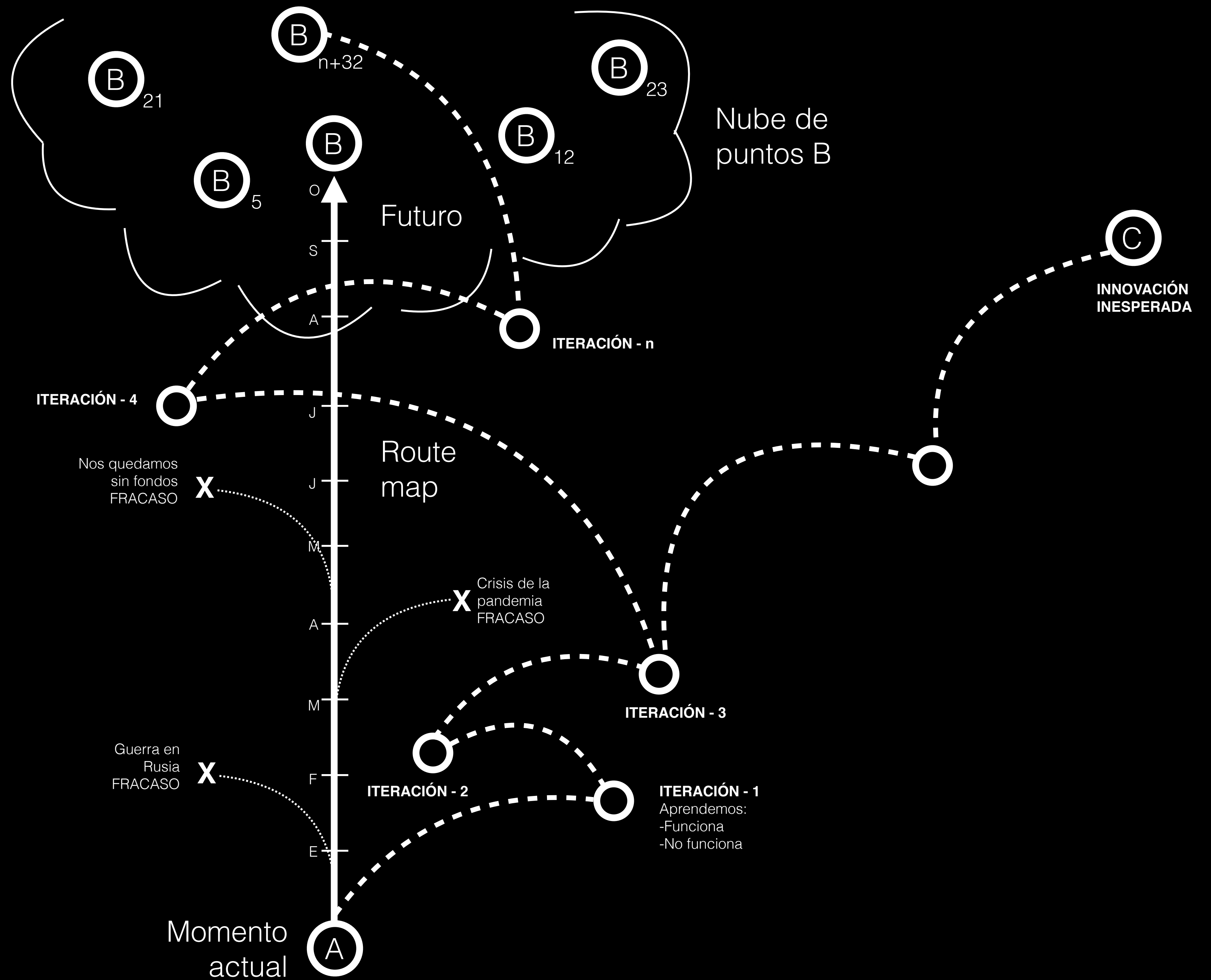
Compas
sobre
Mapas

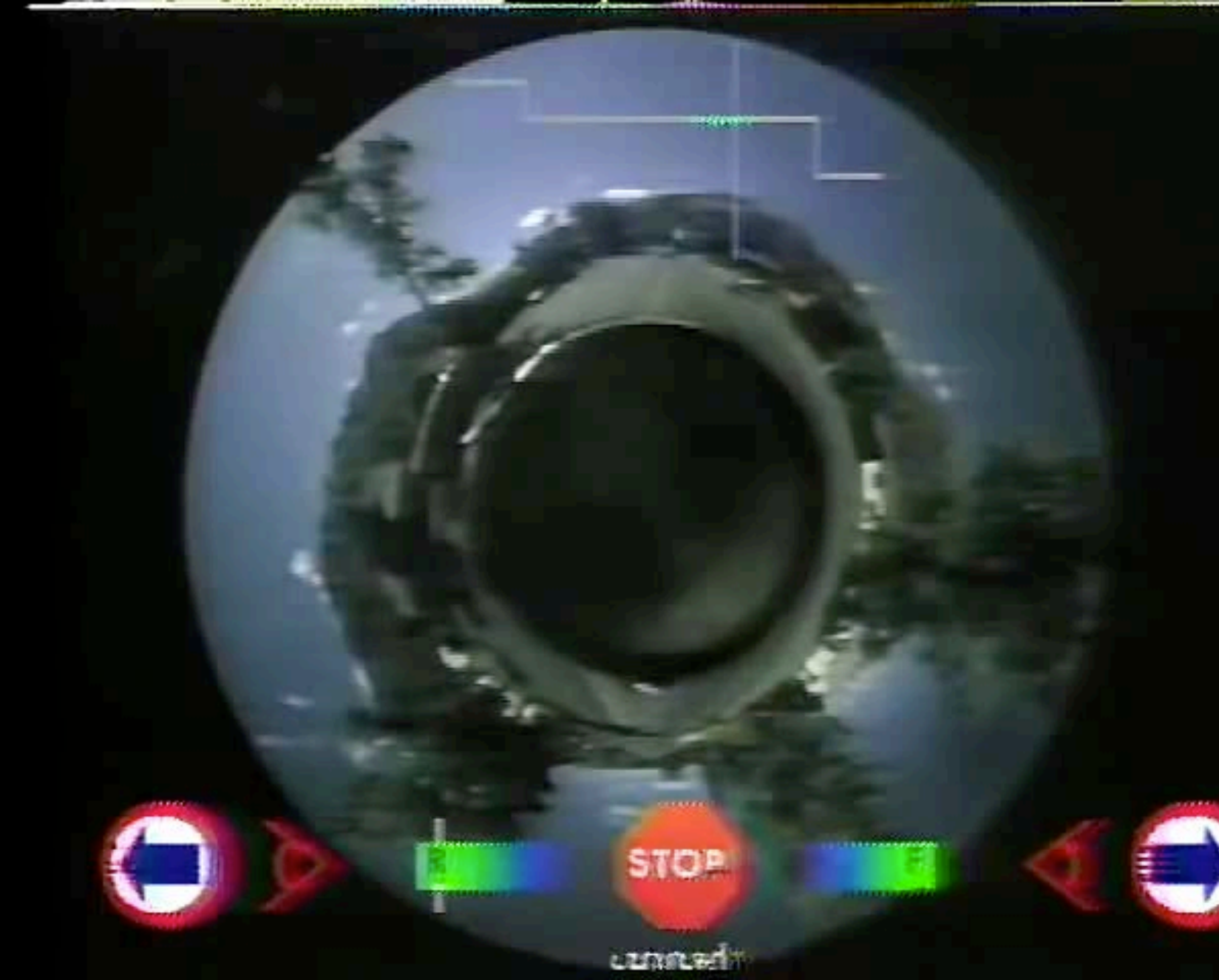
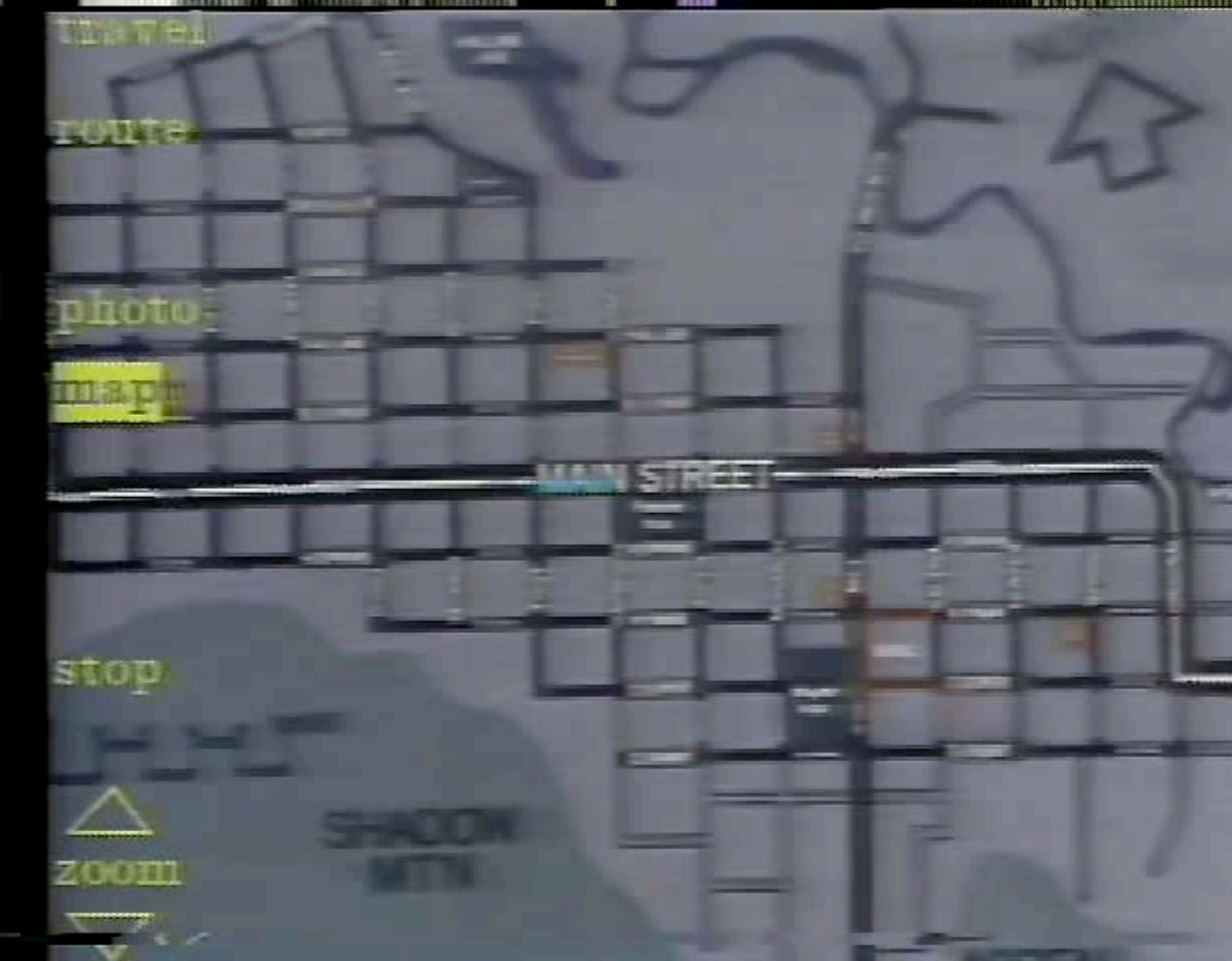


Compasses

Maps

Compas
sobre
Mapas





1981 Touch screen to "Google street view" 2007

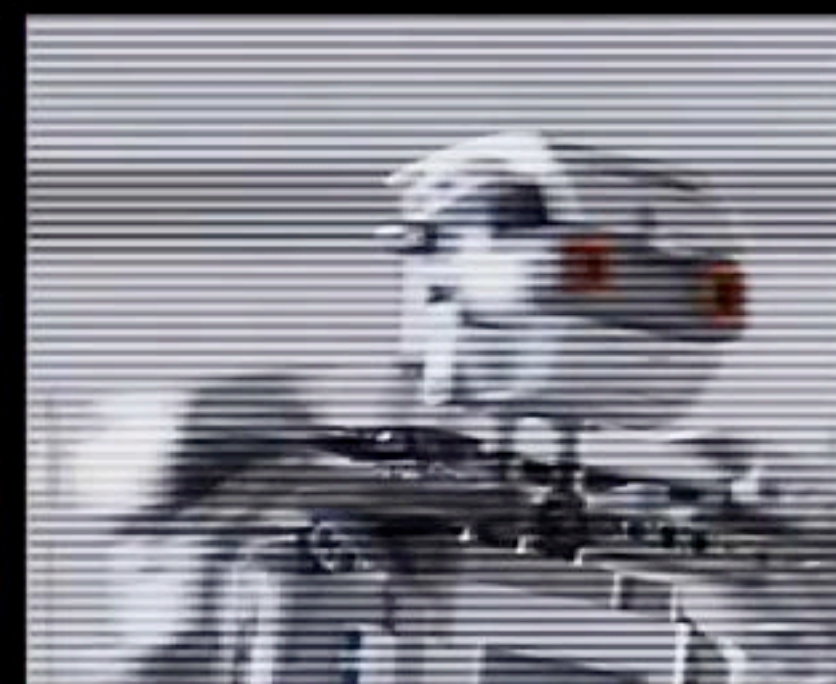
1988 The LEGO Group and the Massachusetts Institute of Technology begins on development of an “intelligent brick”

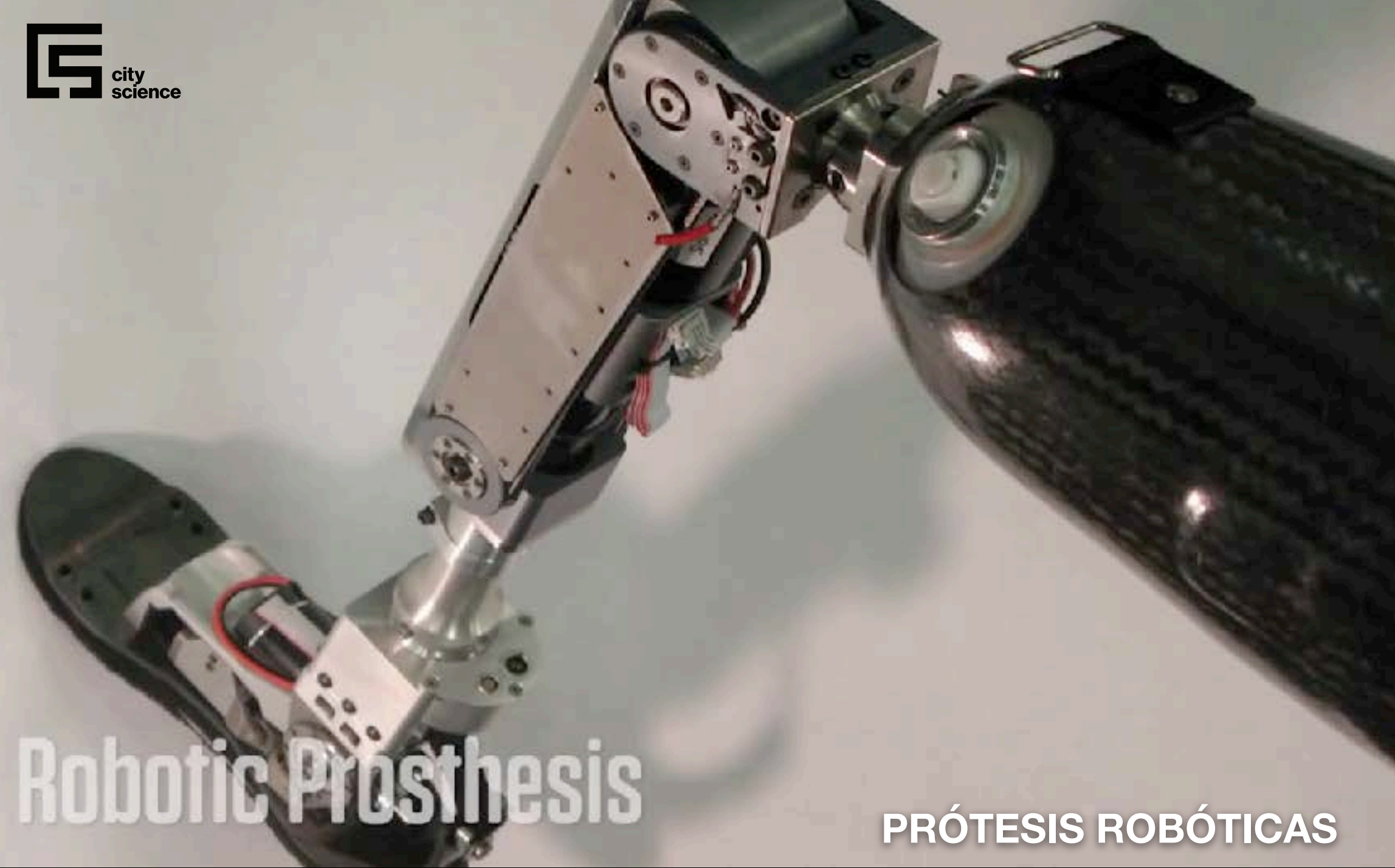


Dr. Seymour Papert, becomes



January 2006
LEGO MINDSTORMS NXT
is unveiled at the international
Consumer Electronics Show





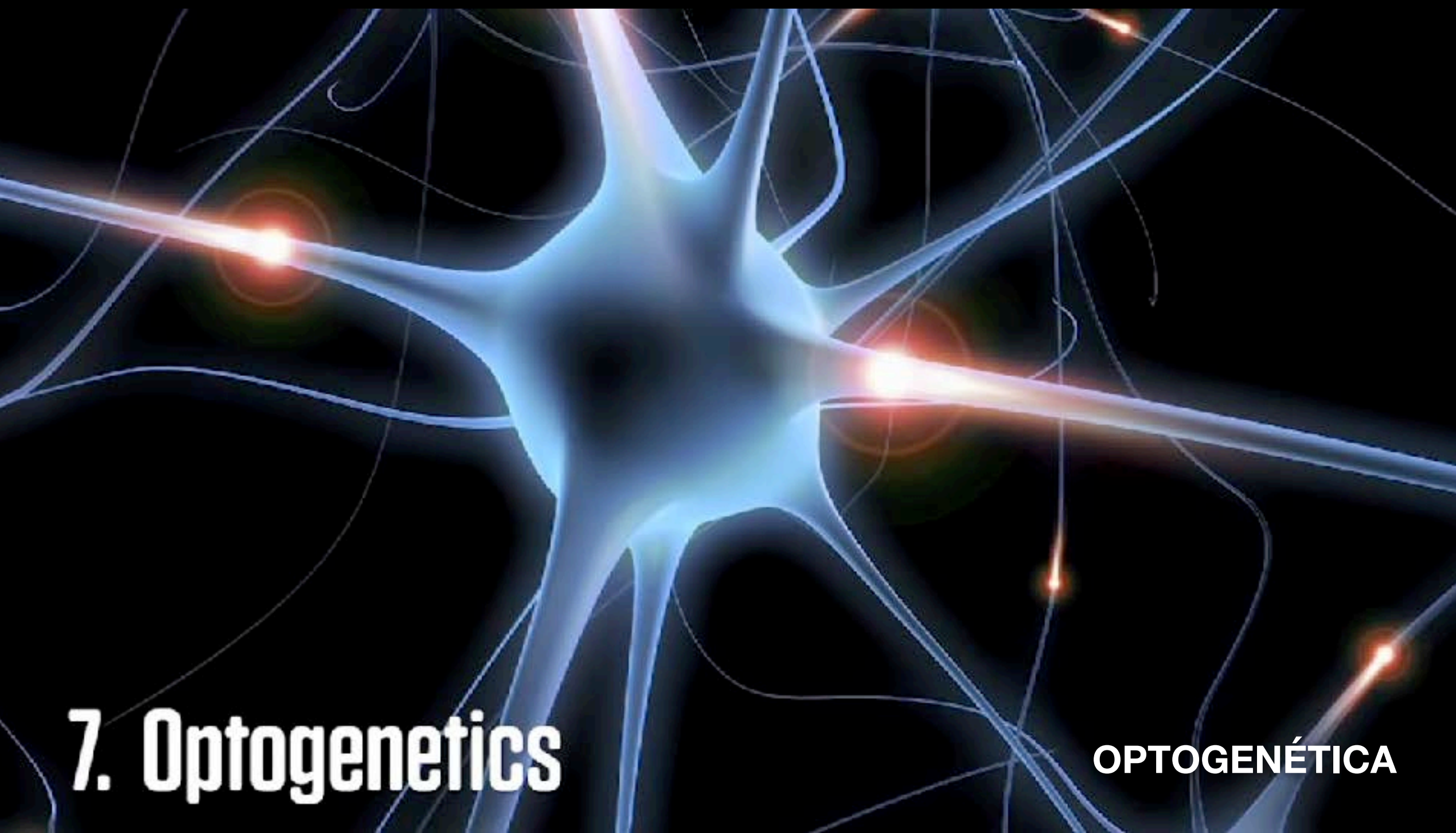
5. Robotic Prosthesis

PRÓTESIS ROBÓTICAS



6. Guitar Hero

GUITAR HERO



7. Optogenetics

OPTOGENÉTICA



8. Wearables

WERABLES



9. GPS

GPS



PERSONAL ROBOTS



2. E Ink

TINTA ELECTRÓNICA



MICRO MOVILIDAD ELÉCTRICA AUTONOMA COMPARTIDA

Soluciones Híper-locales para Retos Globales

Hacia una Red Colaborativa de Ciudades Centradas en el Ser Humano

Hyper local Solutions for Global Challenges
Towards a Collaborative Network of Human Centric Cities



¿Por qué
ciudades?



Clima
Energía
Economía
Salud

Comida
Agua
Igualdad
Paz



HOY el 55% de los HUMANOS somos URBANITAS



En 2050 El 70% de las HUMANOS serán URBANITAS



Las Ciudades ocupan el

2%

... de la masa de la Tierra



Las Ciudades producen el

80%

... de la innovación mundial (Patentes y venture funding)

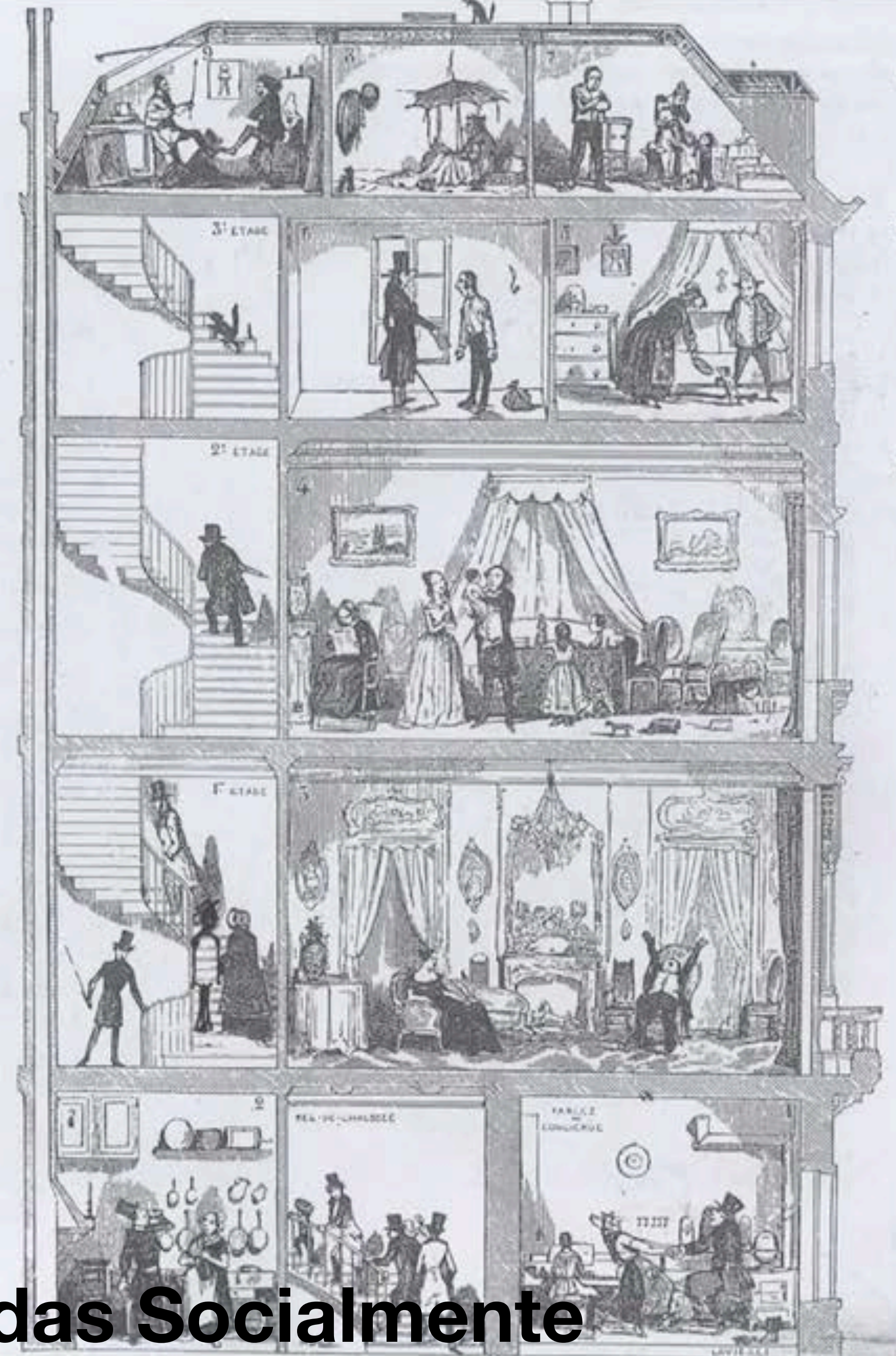
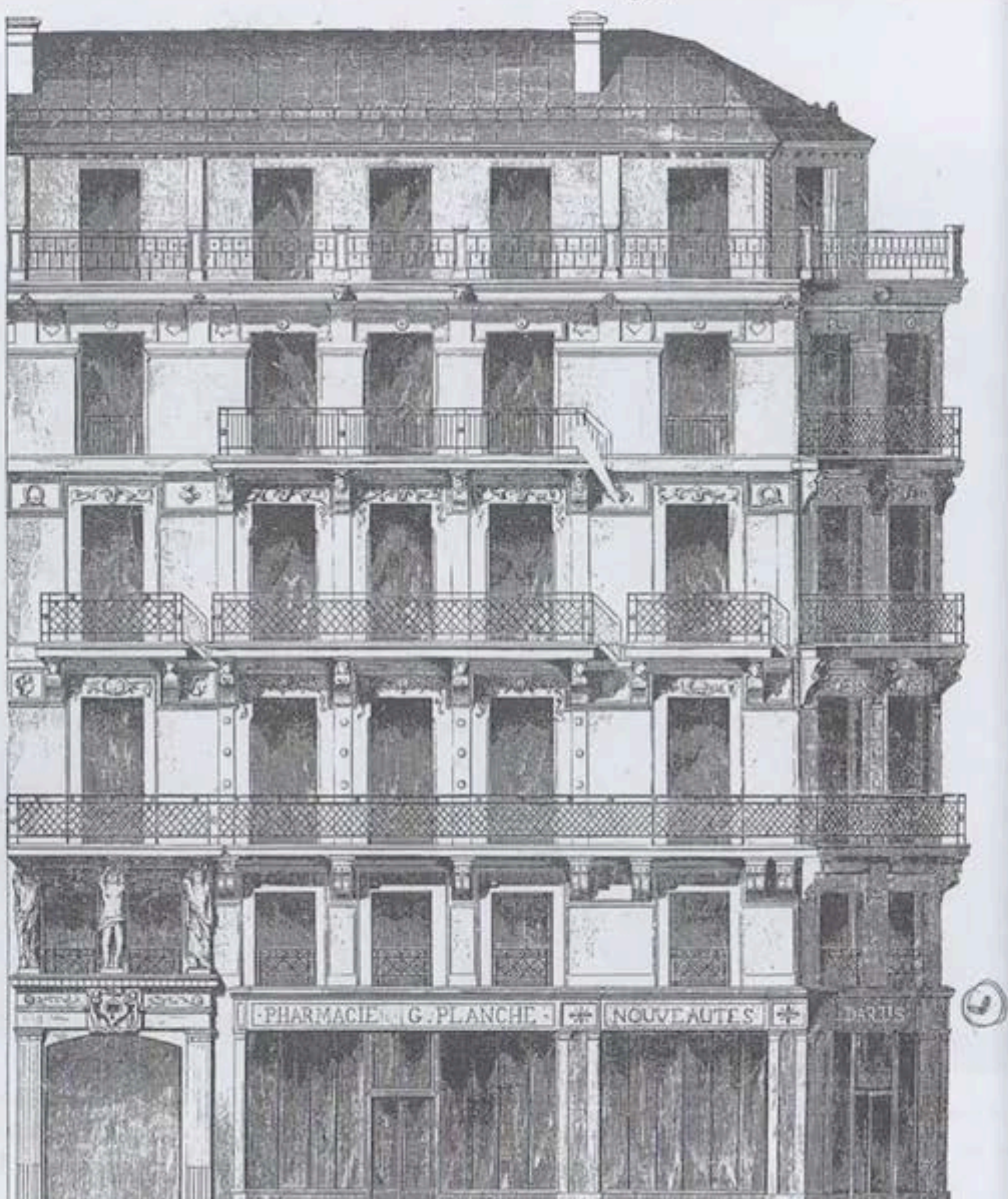
Las Ciudades producen el

75%

A world map where the landmasses are dark blue and the oceans are a lighter blue. The map is illuminated with a dense pattern of small, bright yellow and white dots, representing city lights at night. The dots are most concentrated in North America, Europe, and East Asia, with a sparser distribution in South America, Africa, and Australia. The overall effect is a glowing, textured map of the world.

Breve historia de las ciudades





Ático: Clases pobres, artistas, etc.

Tercer piso: Clase trabajadora, Servidumbre, personal de limpieza, etc.

Segundo piso: Clase media, trabajadores en el negocio/tienda, etc.

Primera planta: Clase alta, Burguesía, dueño del negocio/tienda, etc.

Planta baja: Negocio/comercio/tienda, zonas técnicas, cocina, entrada, etc.

Barcelona en tranvía

Ricardo Baños, 1908



Barcelona en tranvia

1908





The American dream

El sueño Norte Americano



“View from the Road” Kevin Lynch
“Vista desde la carretera”

Boston 1958

路面湿滑
减速慢行

Urbanización extrema y aceleración del cambio climático



Mexico City_Mexico

1807

1807



Sprawl - Crecimiento urbano en mancha de aceite

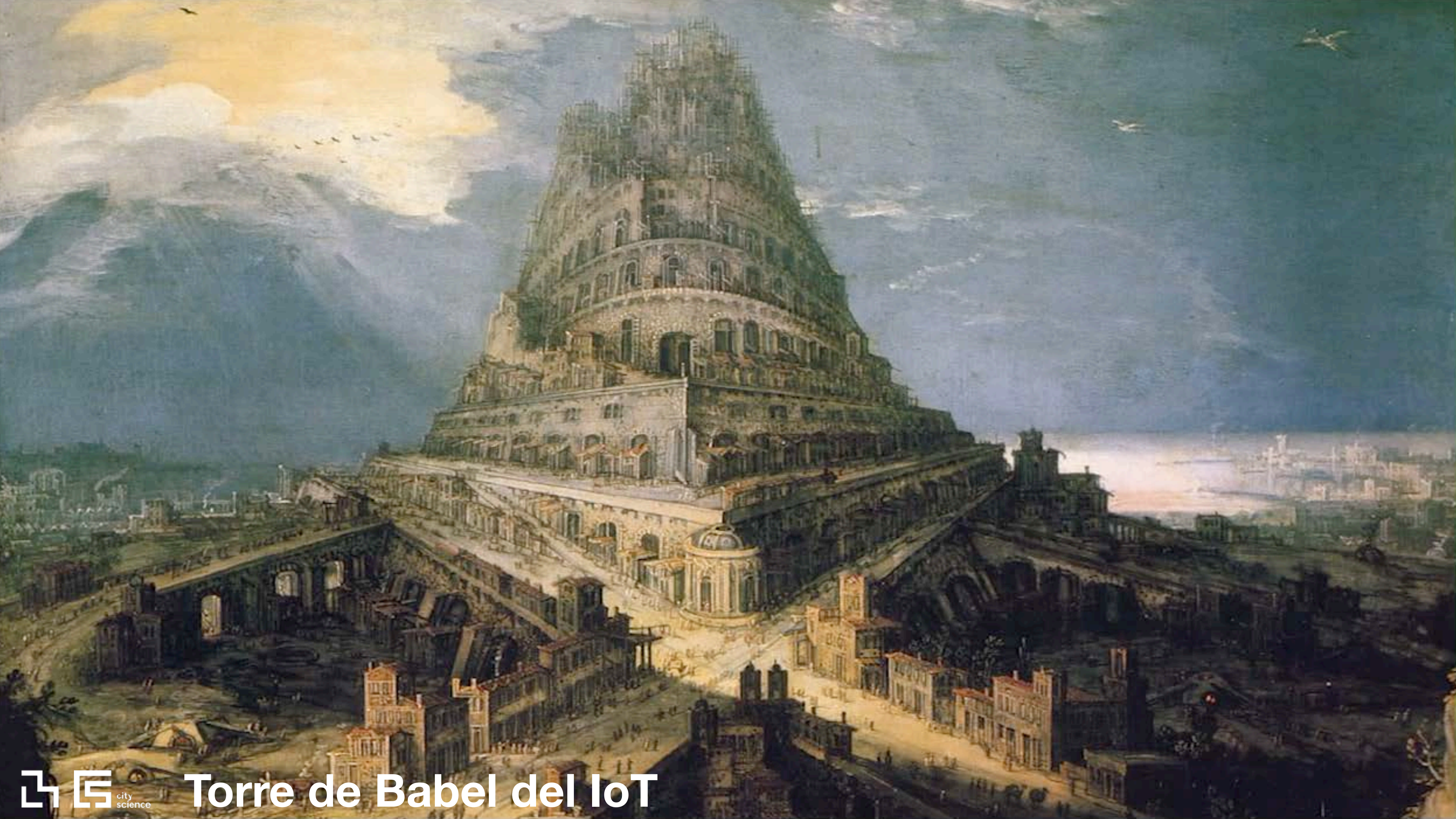


Expansión “auto-céntrica” en mancha de aceite (Los Angeles)











 **LIVE**

CNN NEWS 18

LATEST NEWS

**RUSSIA
UKRAINE
WAR**



Israel declares war

B B C NEWS

The UN's Devastating Climate Change Report Was Too Optimistic

The IPCC has been criticized for being "too alarmist. If anything, it is the opposite. With their latest report, they have been overly conservative."



the Atlantic

Why Millennials aren't buying cars or houses, and what that means for the economy



Fin del sueño americano:

Los Millennials tienden a vivir en ciudades y no a compran coches ni casas

午前11時頃

速報 岩手・大船渡で5m引き波

速報 岩手・大船渡で5m引き波

Nippon News Network



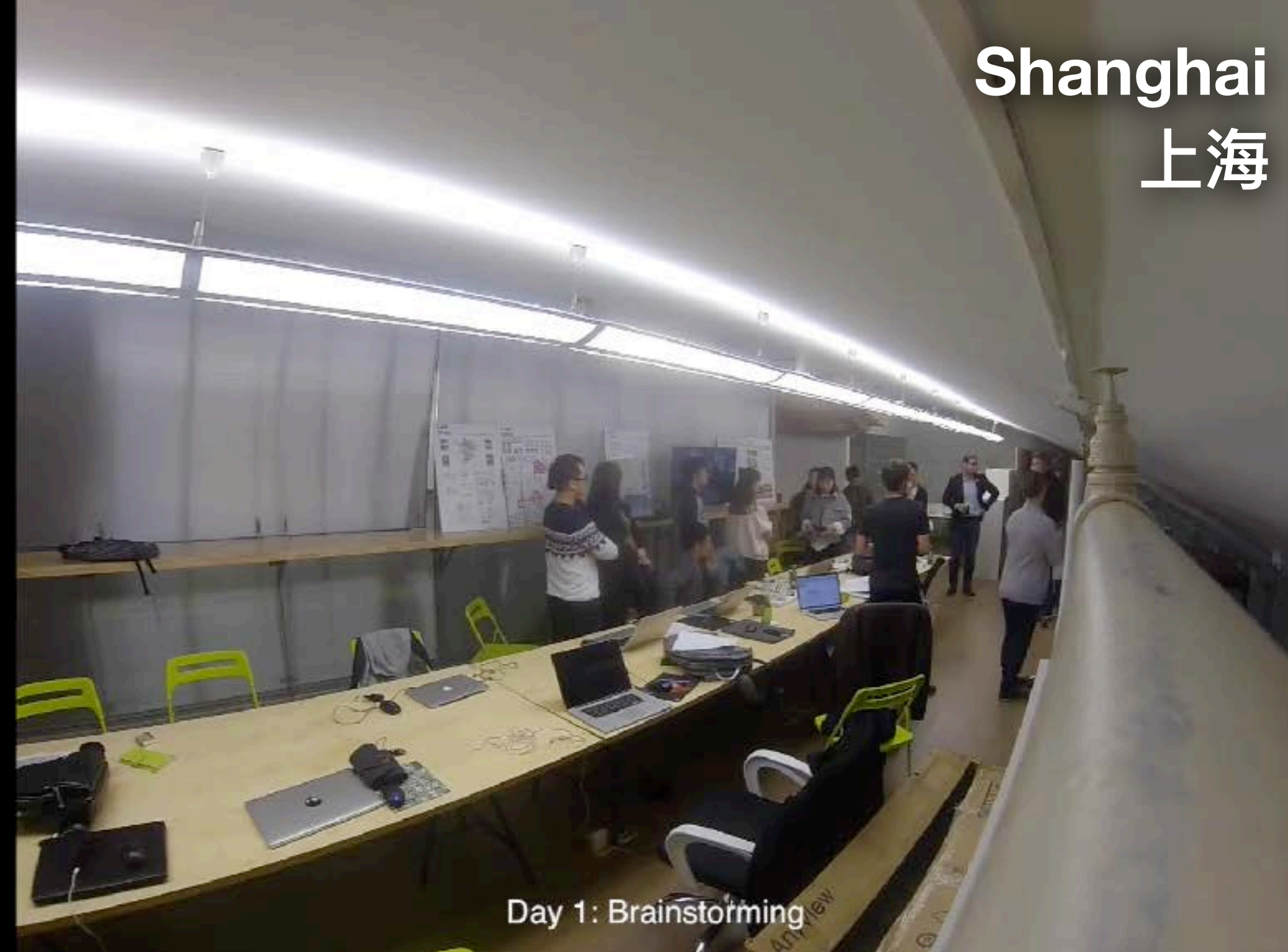
Ciudades Diversas y Caminables Centradas en el ser Humano
Paris Arrondissements (ciudad de ciudades = sistema complejo)



Red de colaboración urbana del MIT City Science



Red de colaboración urbana del MIT City Science



Shanghai
上海

Day 1: Brainstorming



Helsinki

Day 2: Lego Party G-1



Taipei
台北



Andorra

CityScope
Andorra

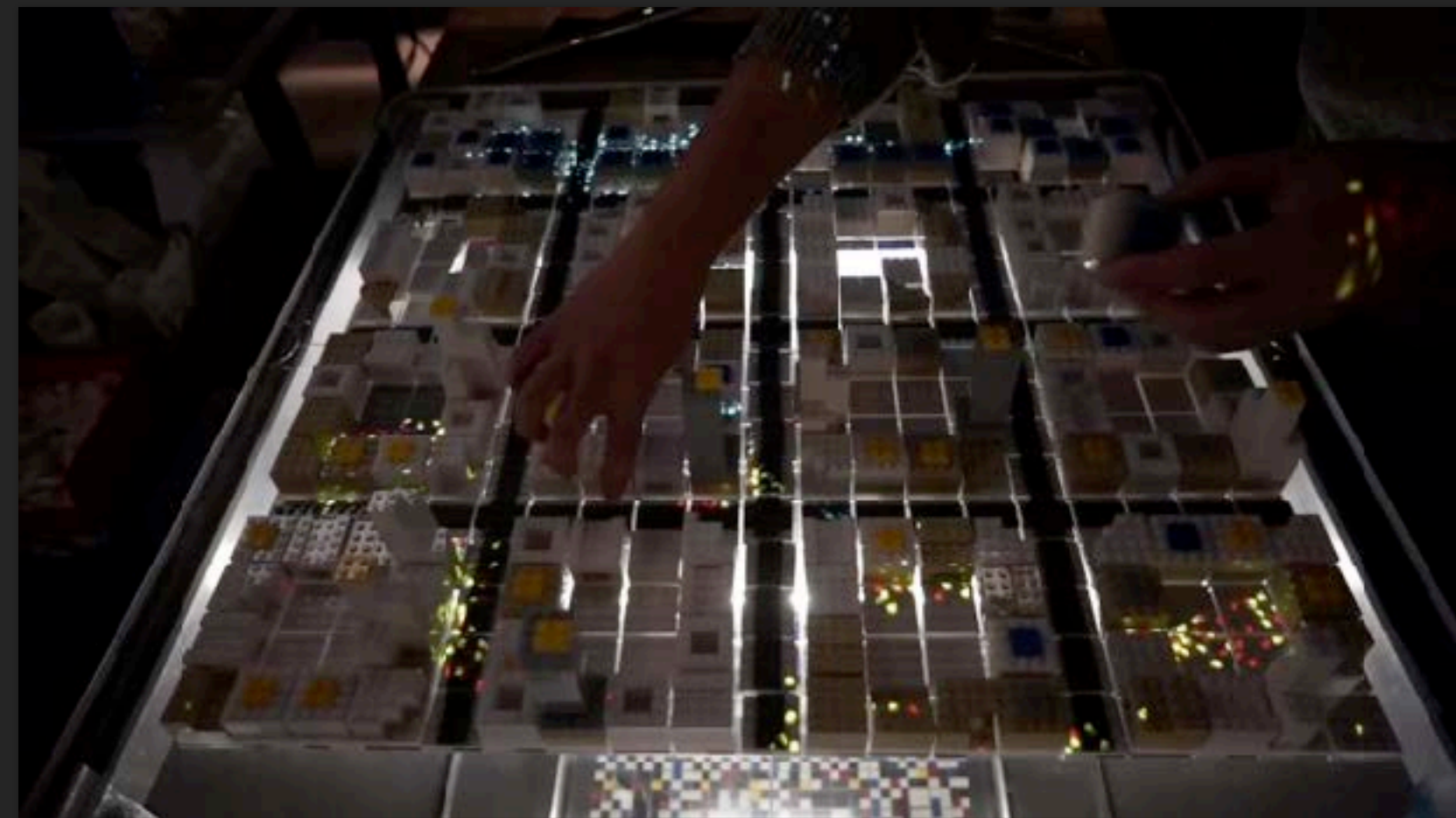
Day 1

City Science Process

Proceso de la Ciencia de las Ciudades

- 1 Insight - Conocimiento
- 2 Transformation - Transformación
- 3 Prediction - Predicción
- 4 Deployment - Despliegue
- 5 Consensus - Consenso
- 6 Governance - Gobernanza

City Scope



Urban Design
Diseño urbano

PEV



Urban Mobility
Movilidad urbana

Changing Places



Urban Living + Working
Vida + trabajo urbana



Herramientas del City Science



Planeamiento urbano dinámico CityScope

SIMULACIÓN DE DINÁMICAS URBANAS BASADA EN EVIDENCIA Y EN GRANDES CANTIDADES DE DATOS



TEA PARTY TACTICS



LIFANG
www.lifang.com

大学城制造业服务园区 (Brain-hub)



city science

SIMULACIÓN DE DINÁMICA URBANA BASADA EN EVIDENCIA Y BASADA EN DATOS



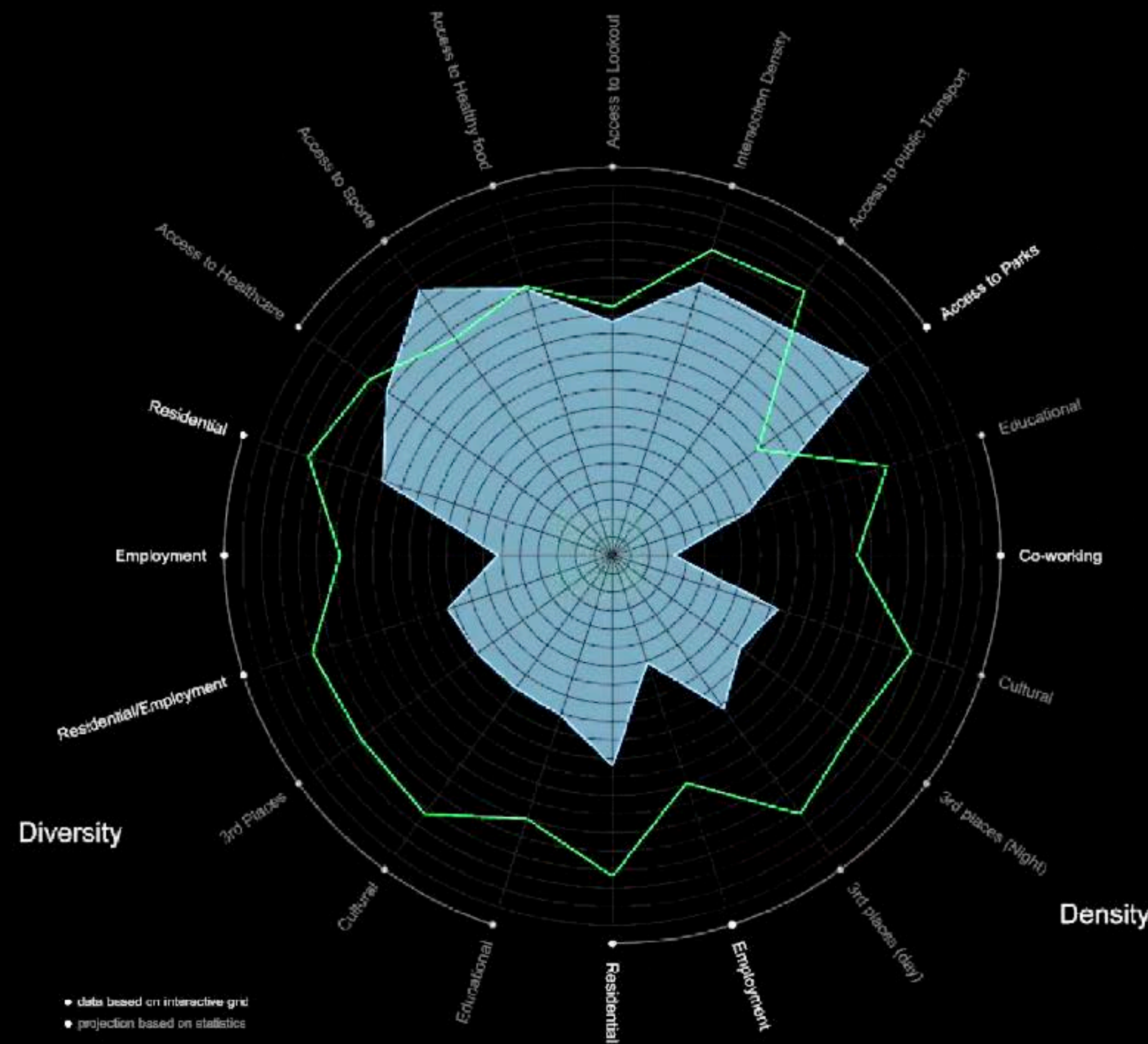
Modelos antiguos

WSJ

URBAN PERFORMANCE

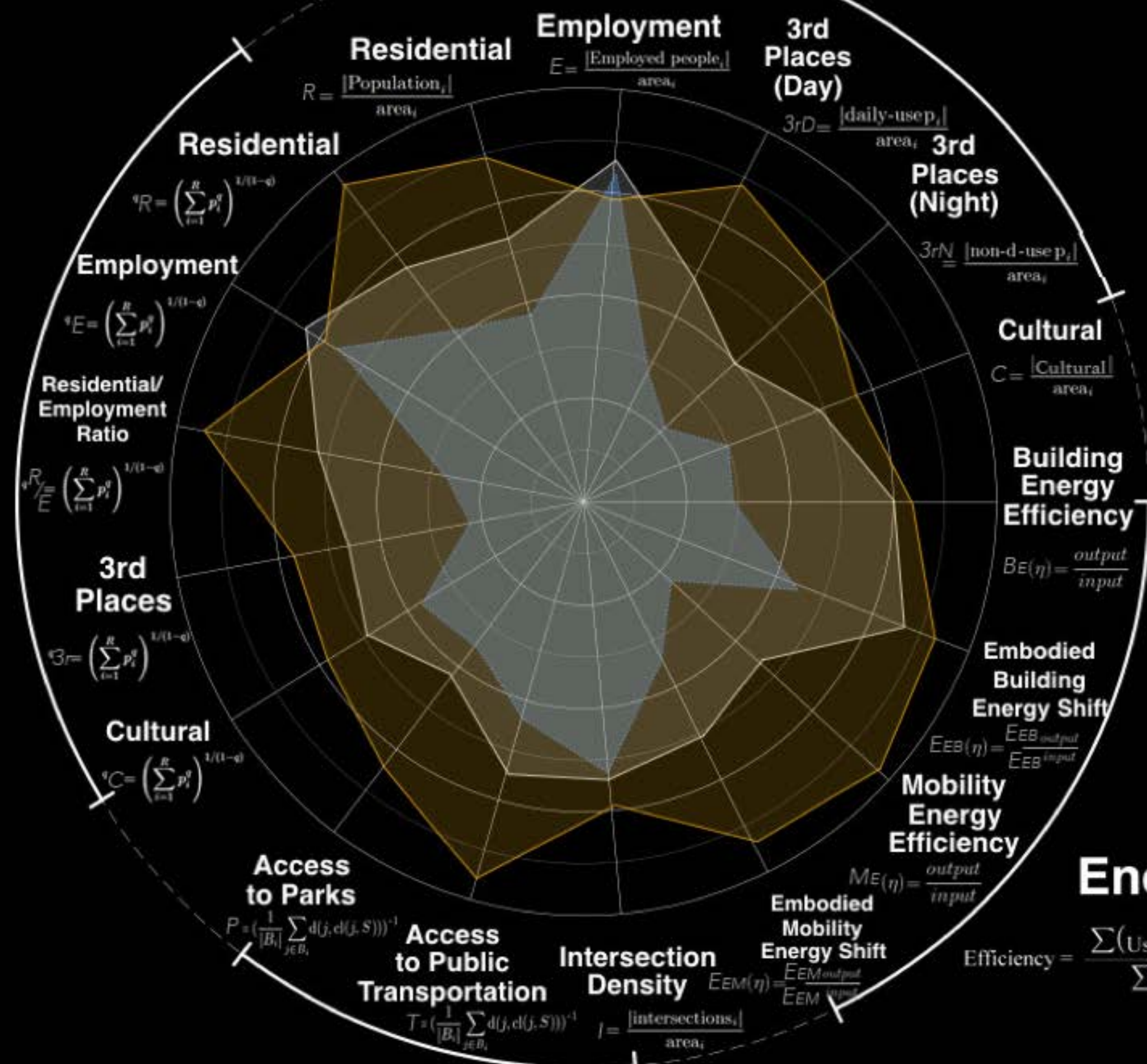
Existing Site
Proposed Site
Barcelona

Proximity



Density

$$\text{Urban Density} = \frac{|\text{Urban activity}_i|}{\text{area}_i}$$



Diversity

$$H' = - \sum_{i=1}^R p_i \ln p_i$$

Shannon index (Ecosystems)

Proximity

$$\text{Closeness to} = (\frac{1}{|B_i|} \sum_{j \in B_i} \text{dist}(j, \text{closest}(j, SM)))^{-1}$$

Energy

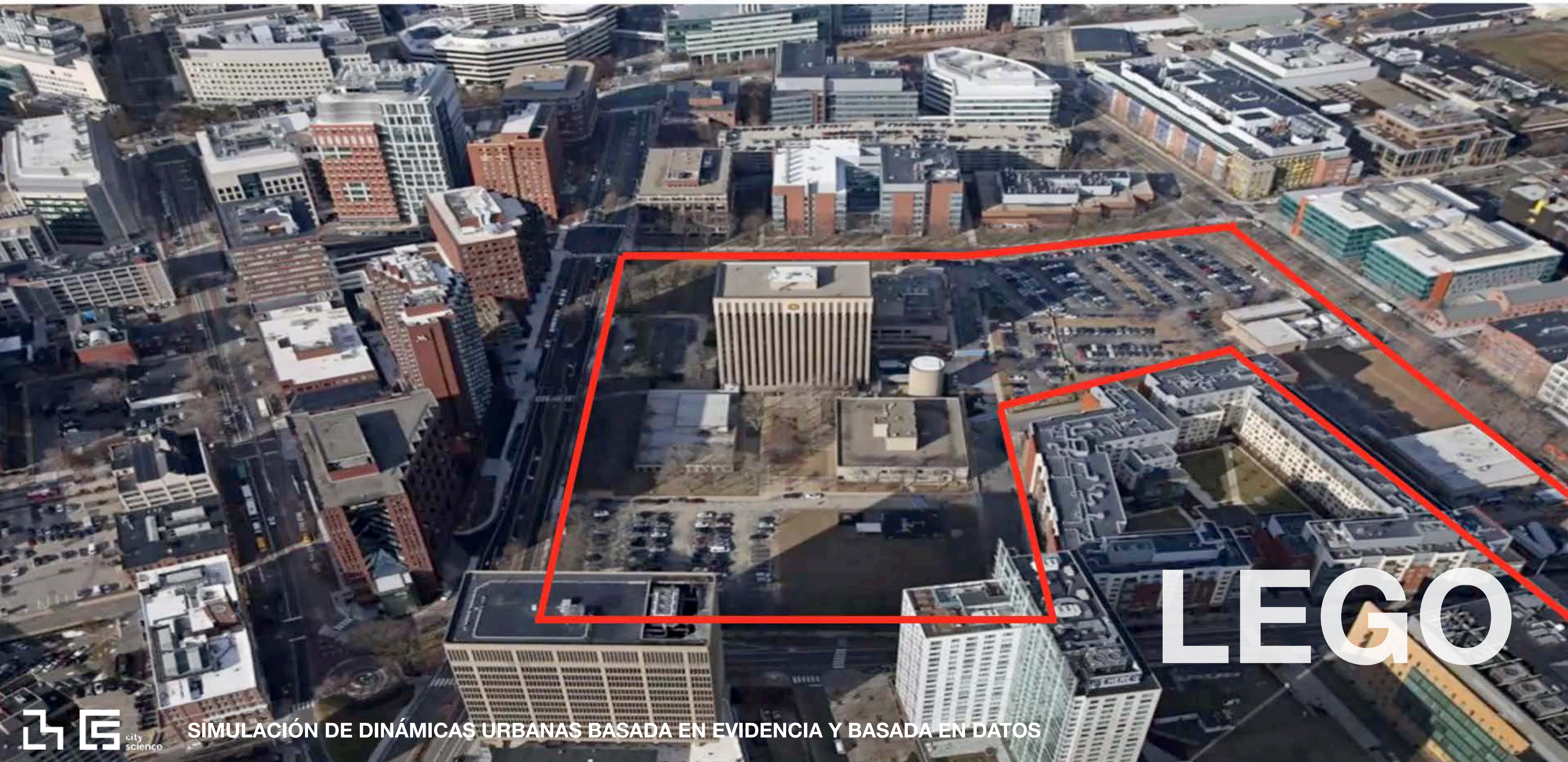
$$\text{Efficiency} = \frac{\sum(\text{Useful Energy Output})}{\sum(\text{Energy Input})} \times 100\%$$

• data based on interactive grid
• projection based on statistics

Modelos nuevos

MIT tapped to redevelop Volpe Center in Cambridge

The 14-acre Volpe Center in Kendall Square will be redeveloped by the Massachusetts Institute of Technology.



Alto nivel adquisitivo



Familias



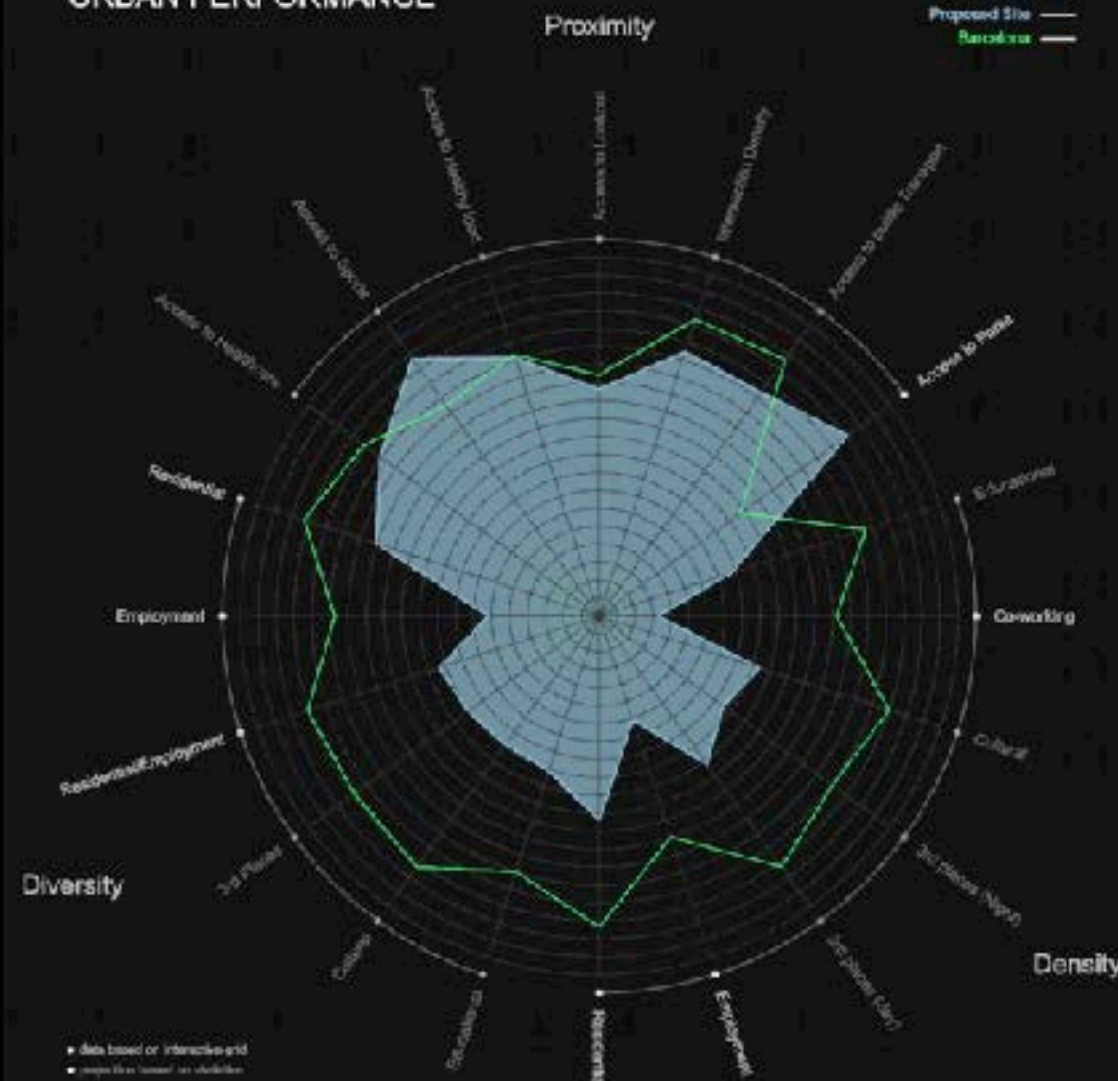
Jóvenes emprendedores



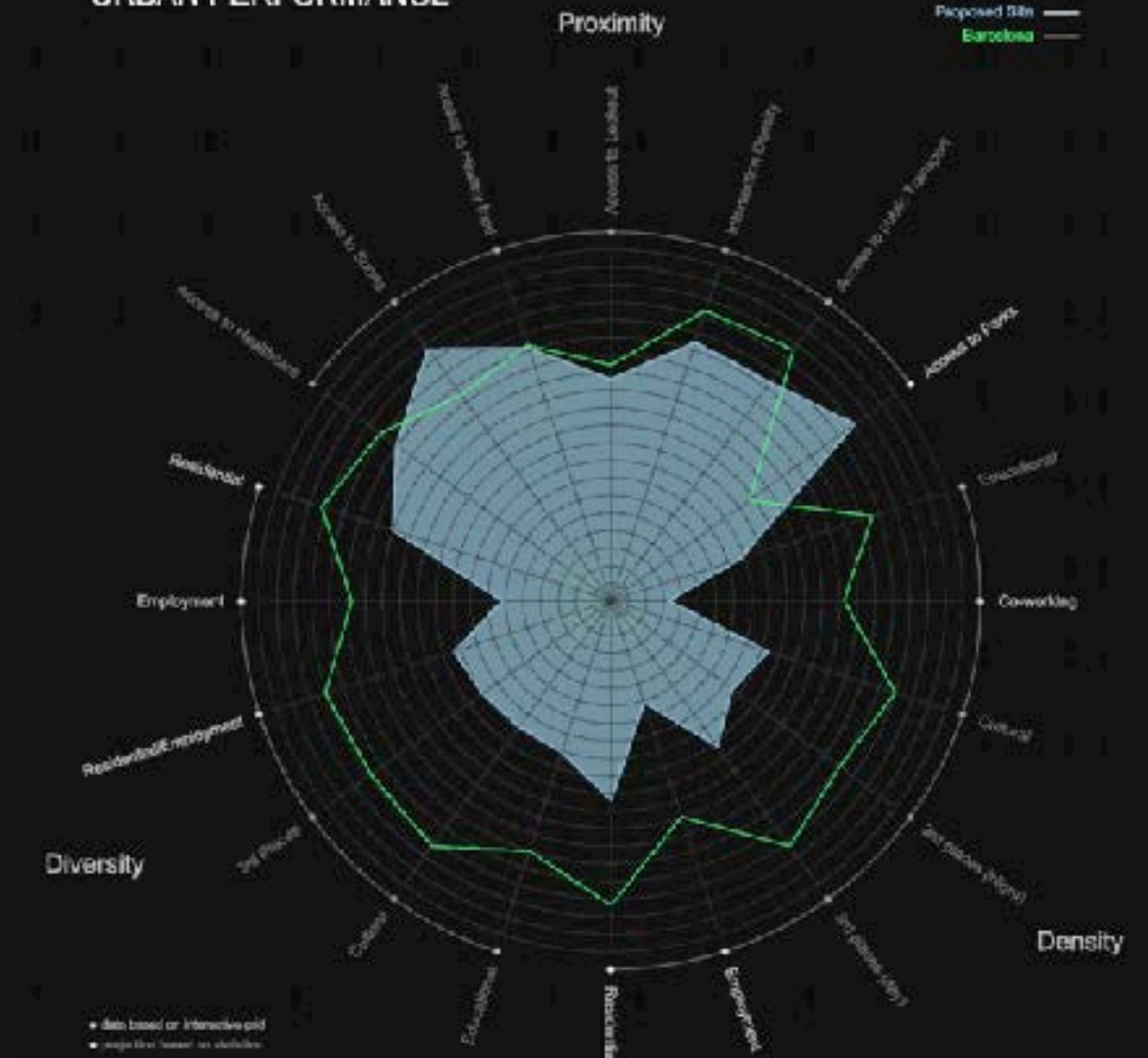
URBAN PERFORMANCE



URBAN PERFORMANCE



URBAN PERFORMANCE

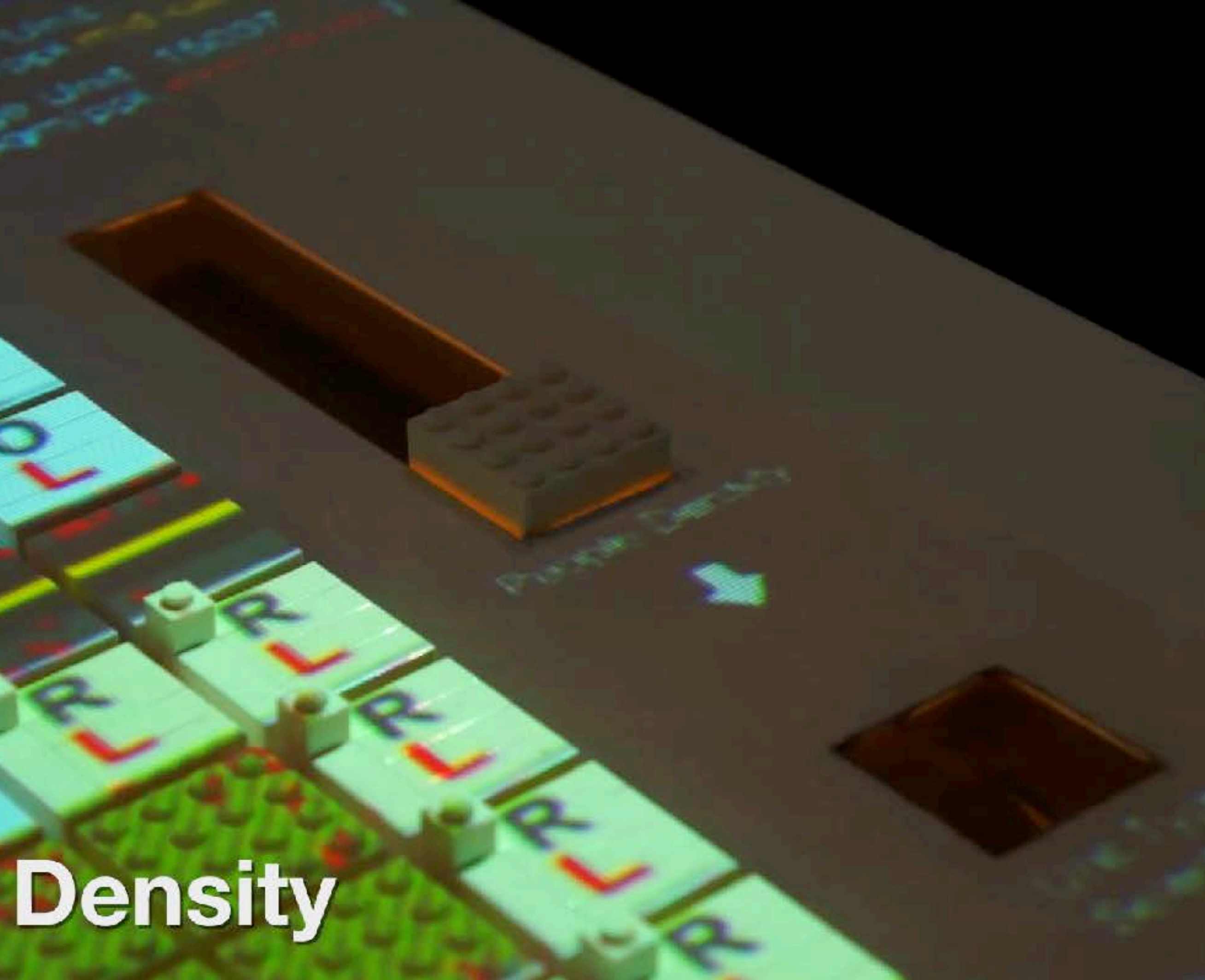


Impacts per person:

Units	RL
Area: m2 per capita	89
Consumption: kWh per capita	5930.34
Pollution production: Kg CO2 per capita	2283.18

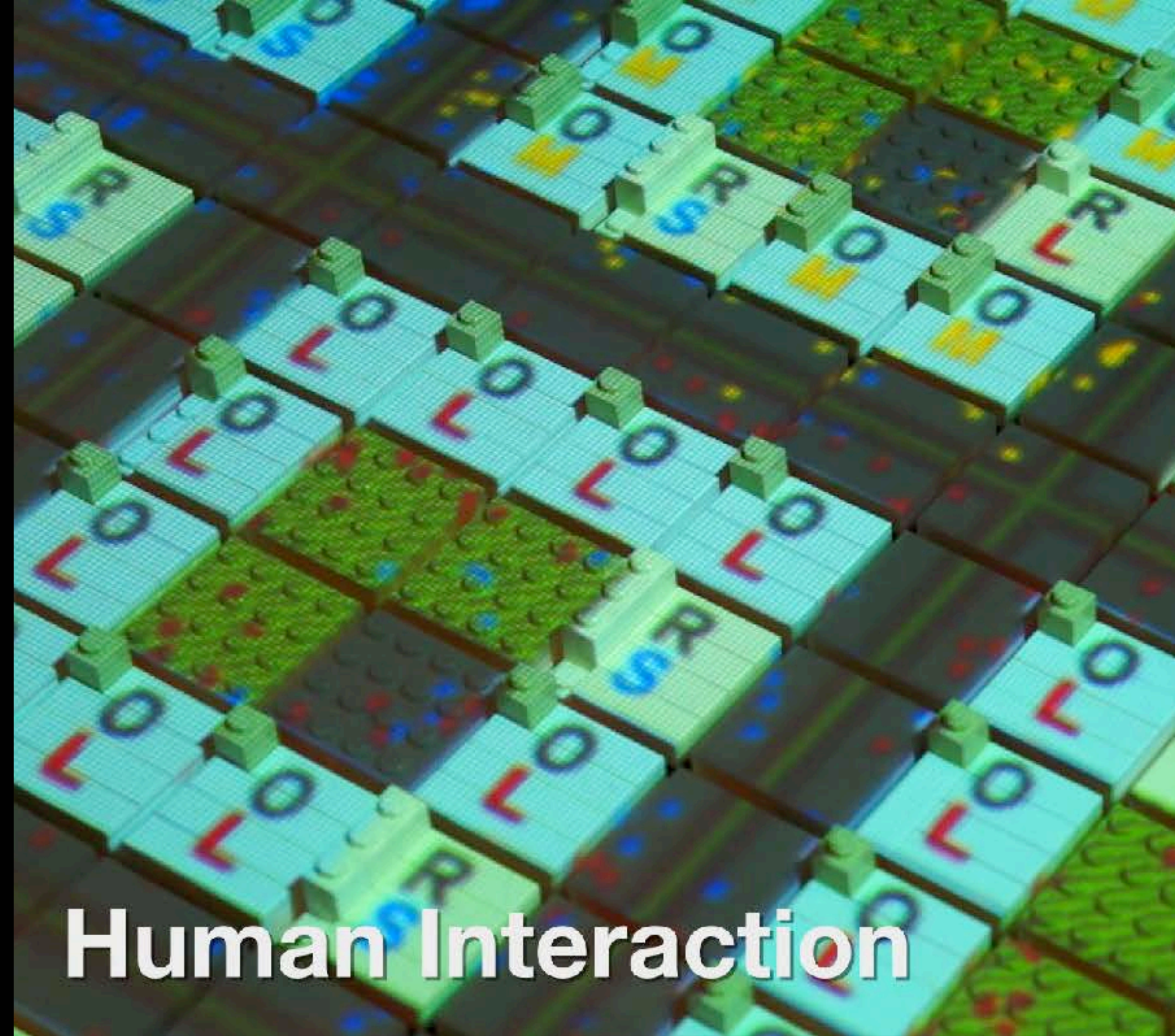
Units	RM
Area: m2 per capita	55
Consumption: kWh per capita	2617.2
Pollution production: Kg CO2 per capita	1007.26

GRUPOS



Density

DENSIDAD



Human Interaction

INTERACCIÓN HUMANA

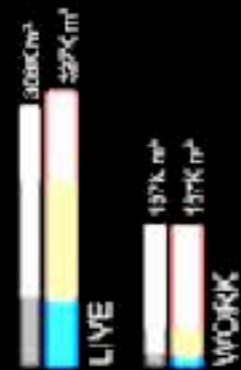
Densidad - proximidad -diversidad

AMENITIES

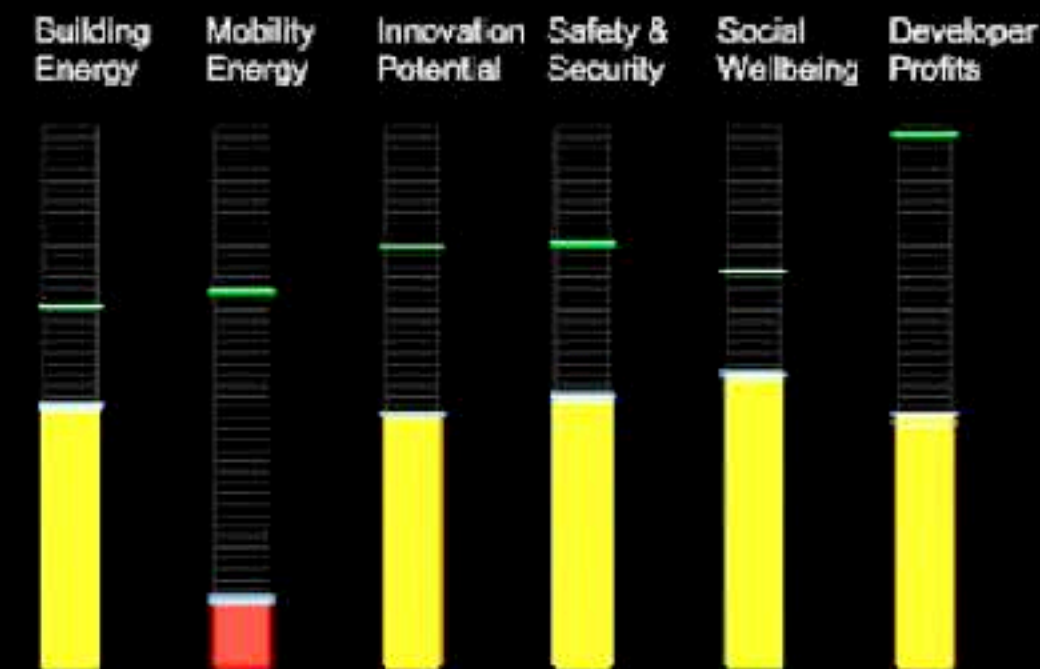
3RD PLACES / AMENITIES	ANDORRA (CURRENT)	ANDORRA (NEW)	BARCELONA
Accommodation	28	28	19
Restoration	137	138	144
Night live	5	5	93
Leisure and wellness	118	120	62
Culture	13	13	36
Fashion Shops	70	71	70
Luxury shops	18	18	47
Shopping Centers	1	1	34
Technology shops	11	12	35
Super Markets	6	6	90
Banks	4	4	13
Educational	6	6	21
Post offices	1	1	1
Co-working	1	1	2
3rd places (day)	297	301	428
3rd places (Night)	95	98	129

DEMOGRAPHICS

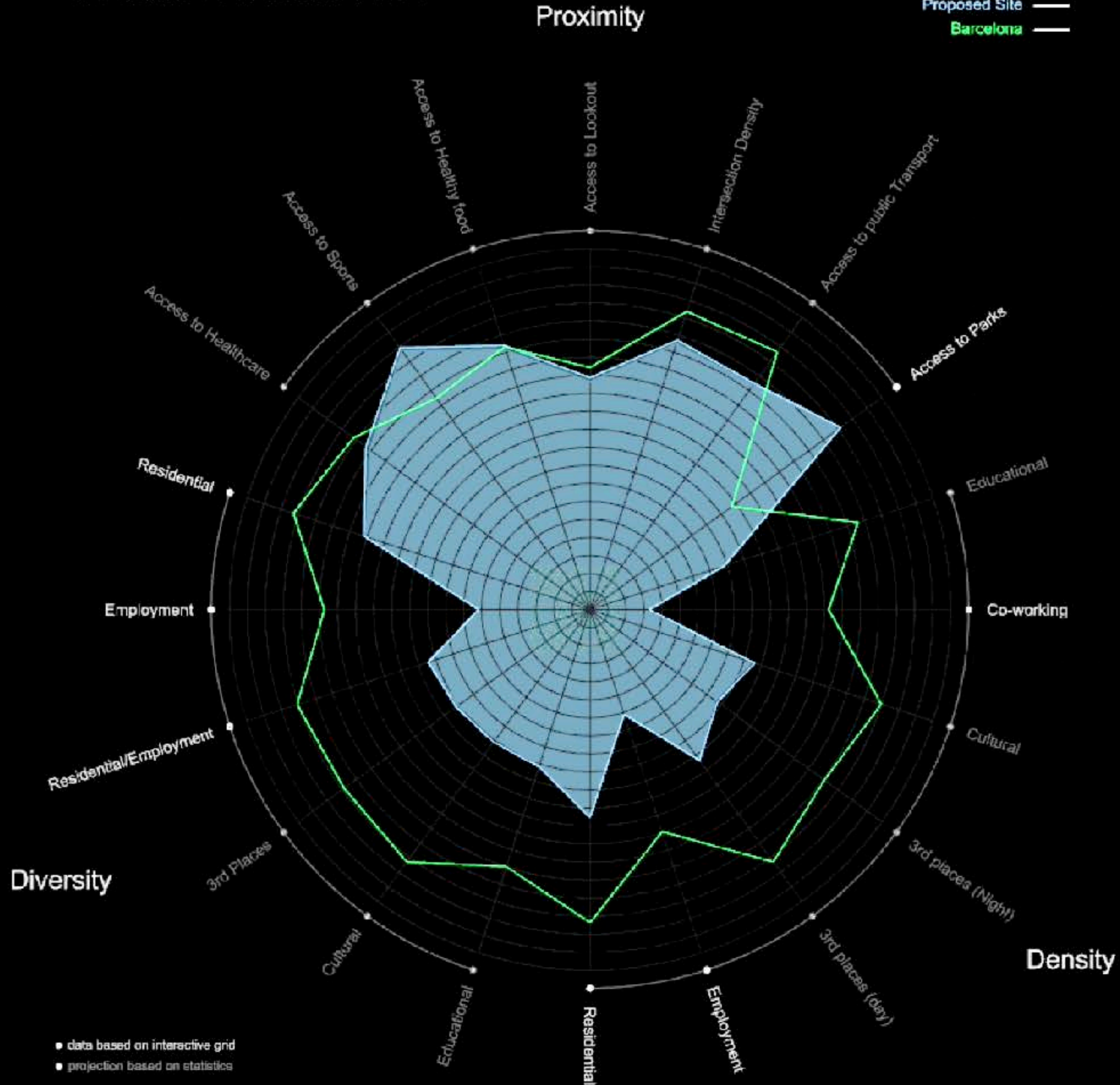
- +59 346 289 **R** Large Residential Units
89 m² / person, executives
- +0 405 465 **R** Medium Residential Units
65 m² / person, mid-career
- +0 267 267 **R S** Small Residential Units
15 m² / person, millennials
- +0 401 401 **O** Large Office Units
30 m² / person, executives
- +0 108 108 **O** Medium Office Units
18 m² / person, mid-career
- +0 43 43 **O S** Small Office Unit
5 m² / person, millennials



IMPACT / POTENTIAL



URBAN PERFORMANCE

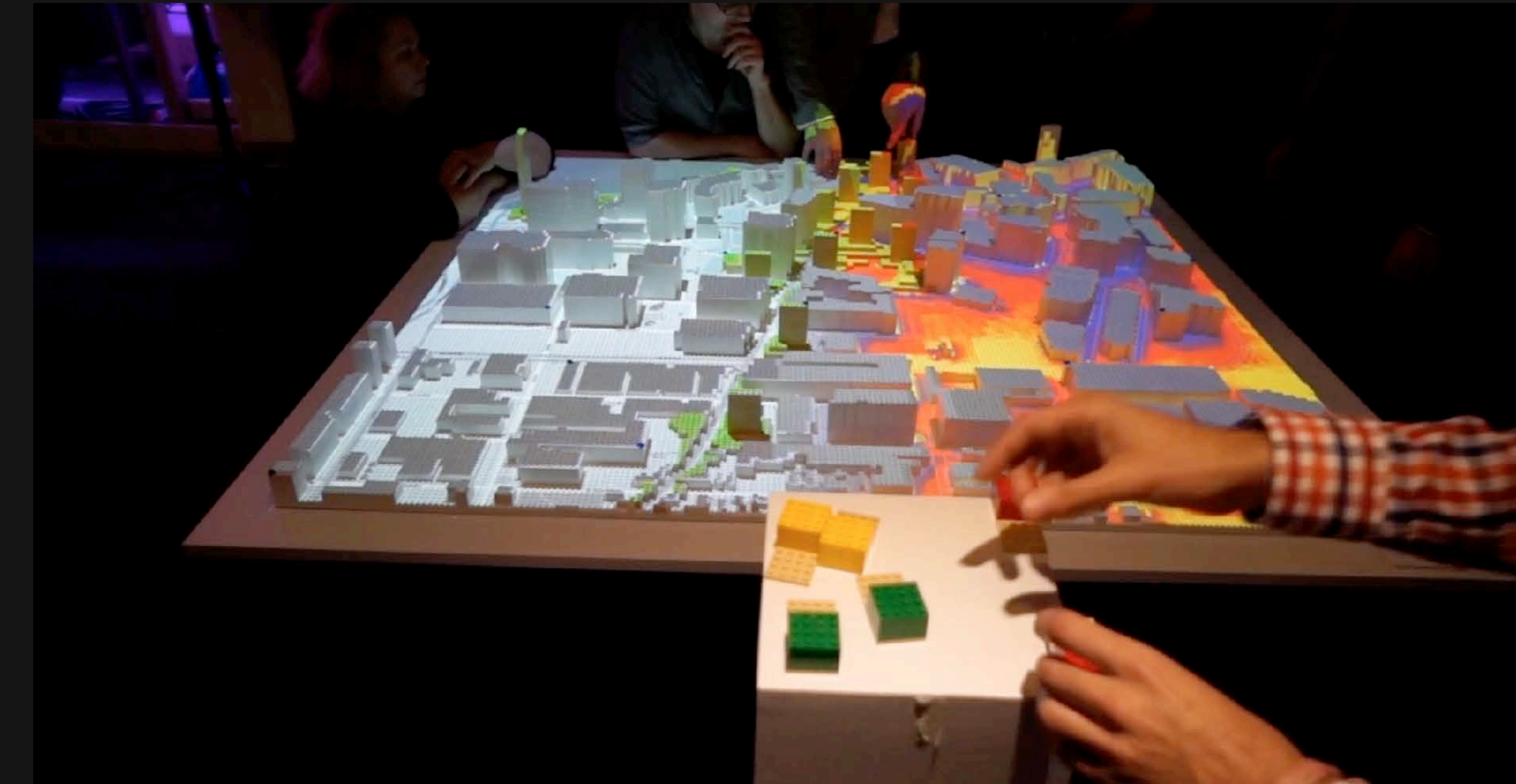


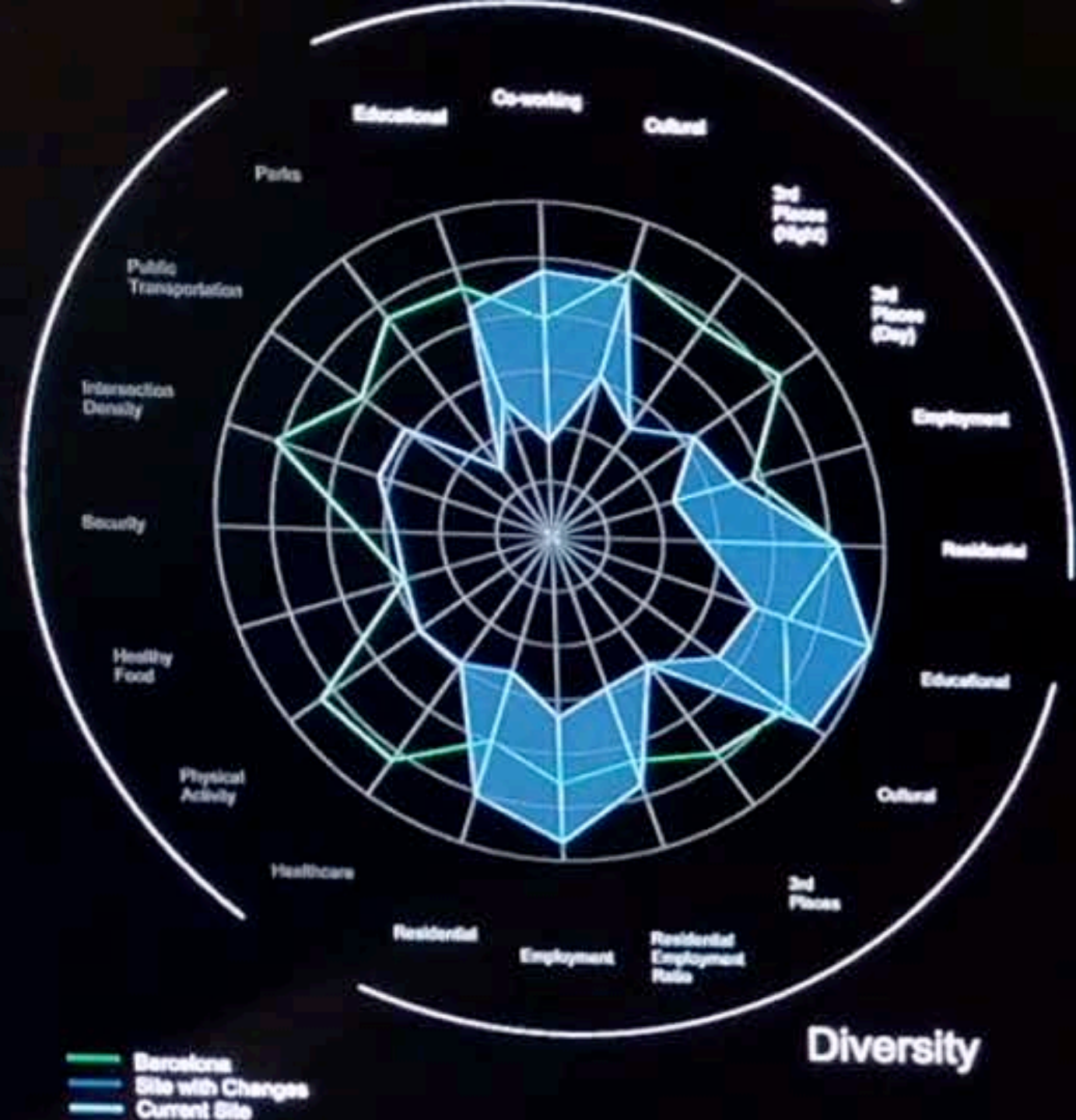
IMPACTOS CORRELACIONADOS CON LOS ONU-SDGS-ODS Y CON LOS ESG



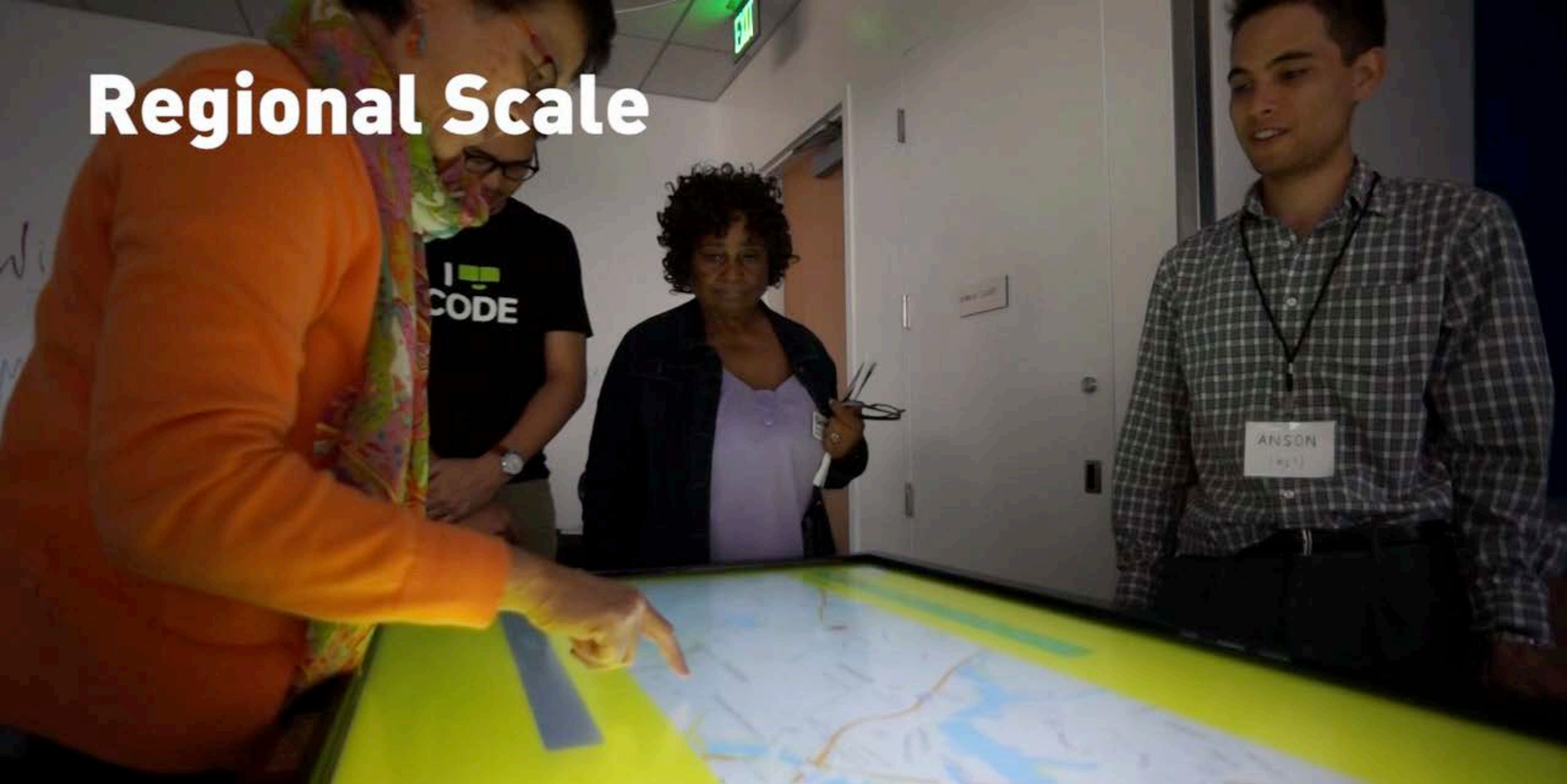
INVESTIGACIÓN RESPALDADA POR







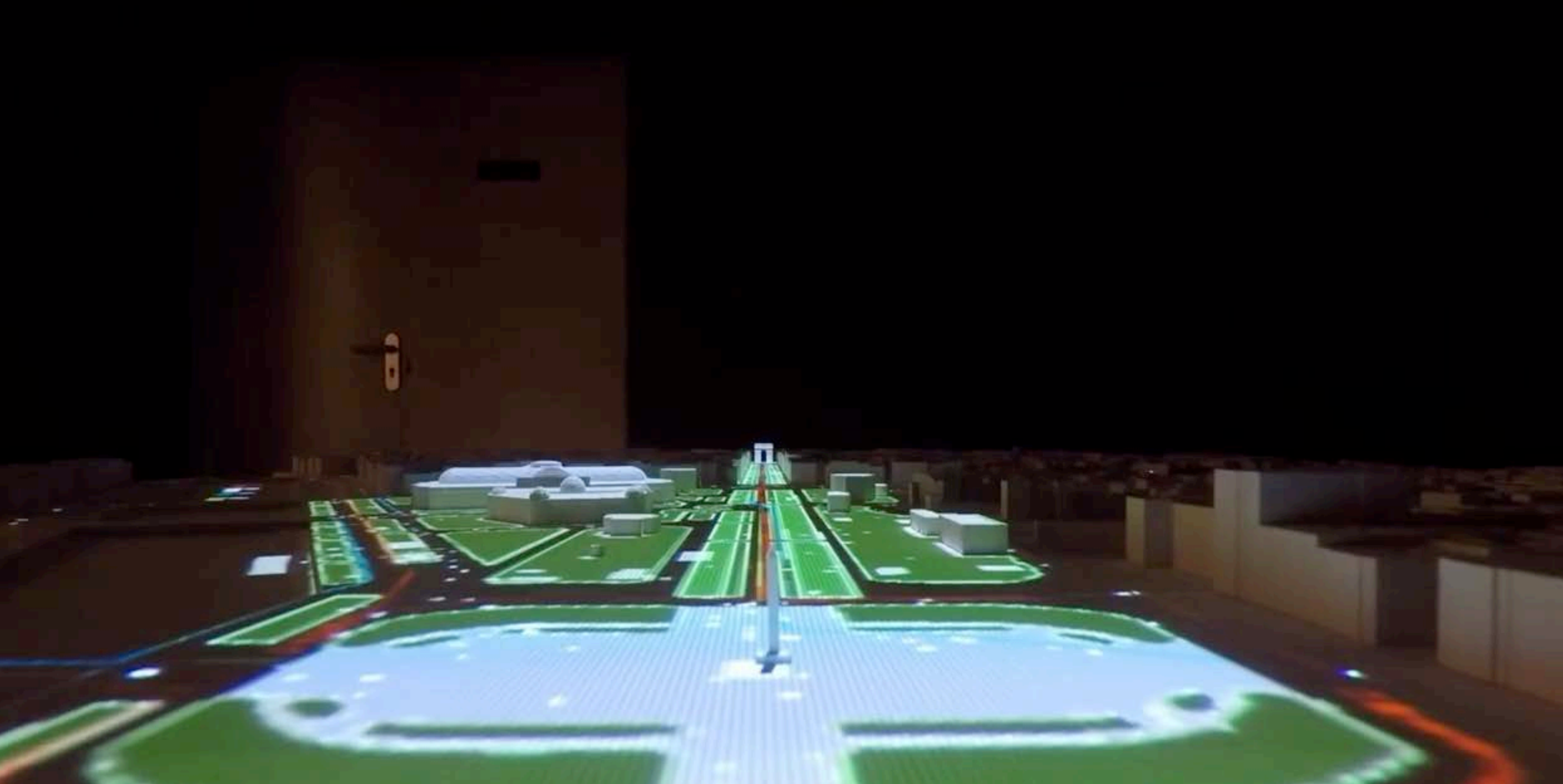
Regional Scale





Dedicated Bus Lanes Are Making Commutes Faster In And Around Boston, Data Show

COLUMBUS AVE BUS LANES NOW OPEN



CITYSCOPE CHAMPS ELYSÉES EN EL PAVILLON DE L'ARSENAL. PARIS



Paris

This article is more than 3 months old

Paris agrees to turn Champs-Élysées into 'extraordinary garden'

Mayor Anne Hidalgo gives green light to £225m-scheme to transform French capital's most famous avenue



Paris

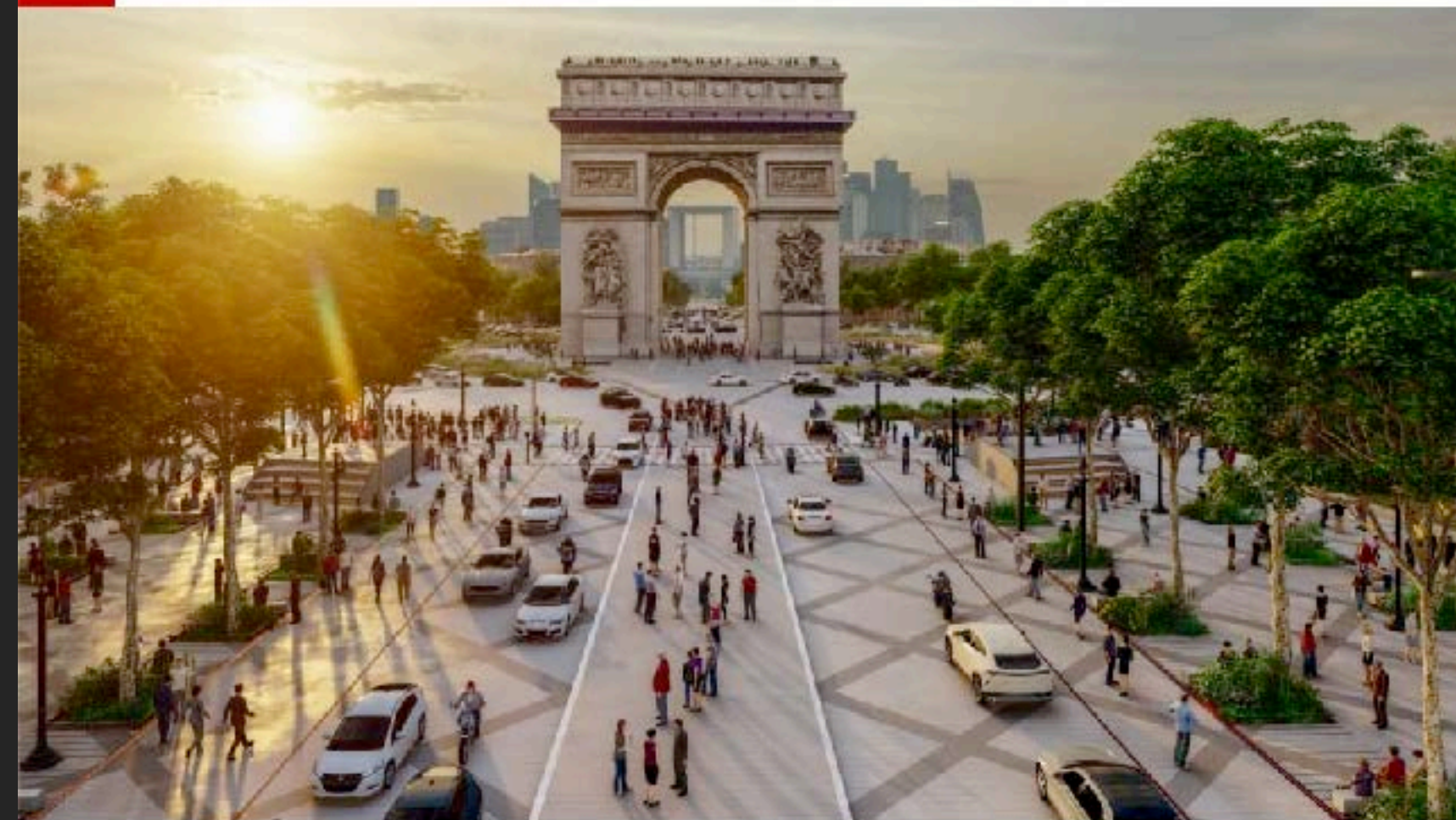
Paris mayor pushes ahead with plan to give Champs-Élysées a \$305 million green makeover

BY ELAINE COBBE
JANUARY 11, 2021 / 11:27 AM / CBS NEWS



Paris – Mayor Anne Hidalgo has confirmed that ambitious plans to transform Paris' Champs-Élysées, the iconic avenue in the heart of the French capital, are still on the table. Her initiative will see the avenue with fewer car lanes, more room for pedestrians and much more greenery.

Often dubbed "the most beautiful avenue in the world," the Champs-Élysées has gone three decades without a major overhaul, and many Parisians believe it looks tired and a lot less sophisticated than it used to.



Paris' famous Champs-Élysées set for green transformation

Jack Guj, CNN • Updated 11h January 2021





REFUGEES HOUSING IN HAMBURG

5293742.068011554,
219589.52747961803

5293674.548173372,
219516.21132325716

5293763.801949625,
219468.18839438868

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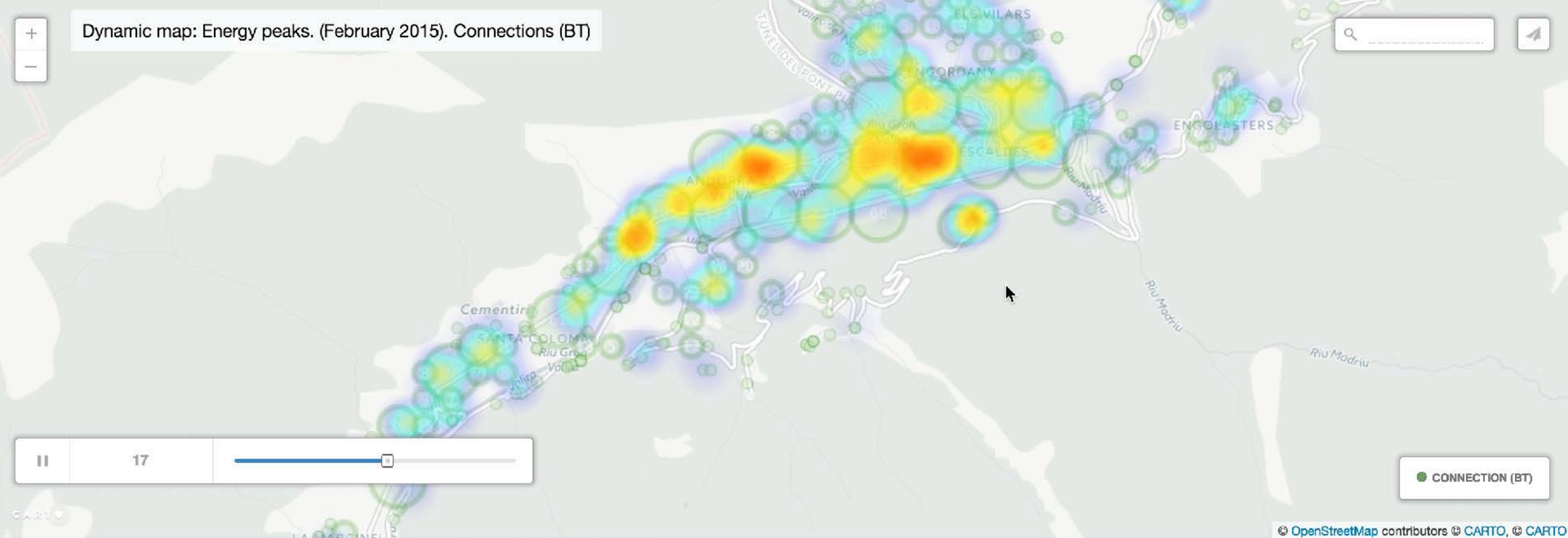
5293748.611341107,
219605.1393561713

5293703.5620571



CDR - AT - MODELO DE MOVILIDAD Y TURISMO - CORRELACIÓN DE DATOS

City Science Lab @ Andorra

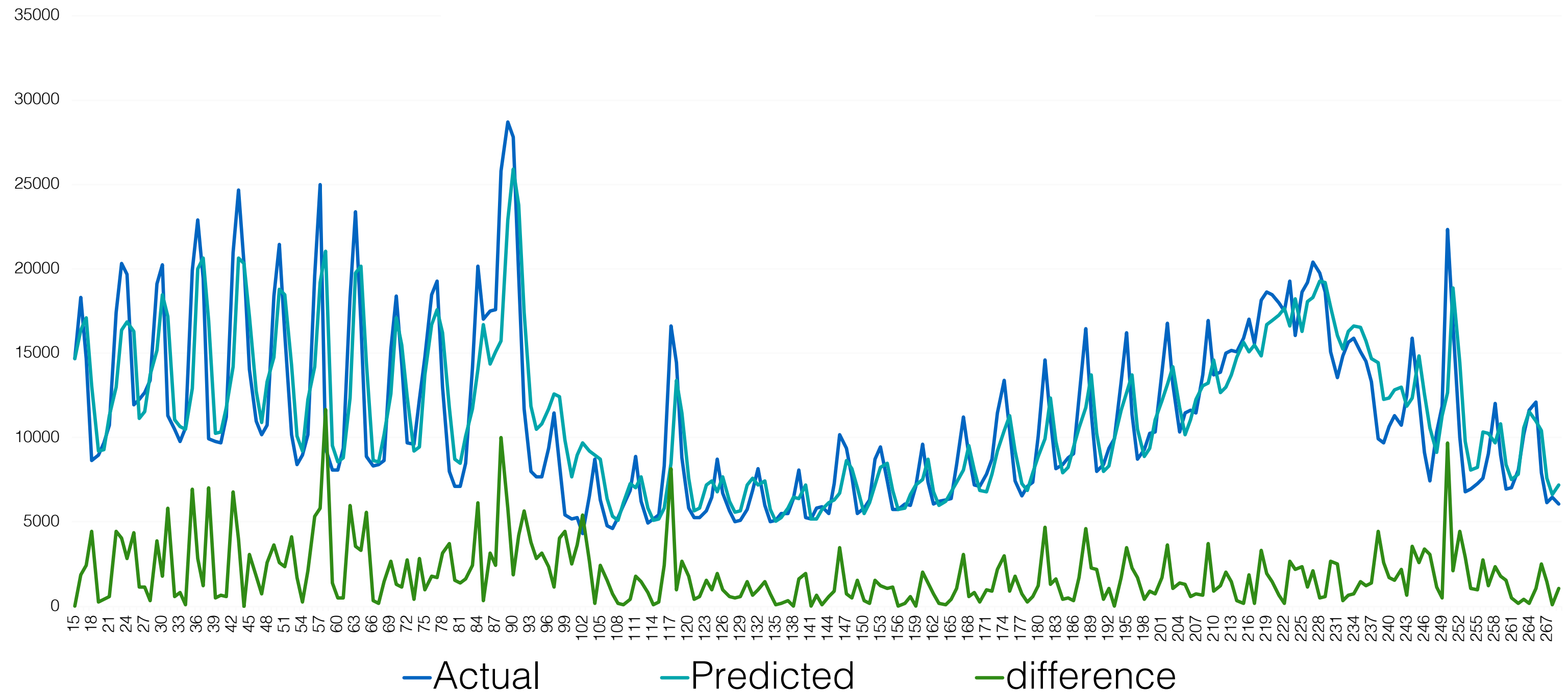


Andorra

Energy demand (and tourism) prediction

Energy and Visitor dynamic prediction

10% Improvement
(energy data + visitor data)

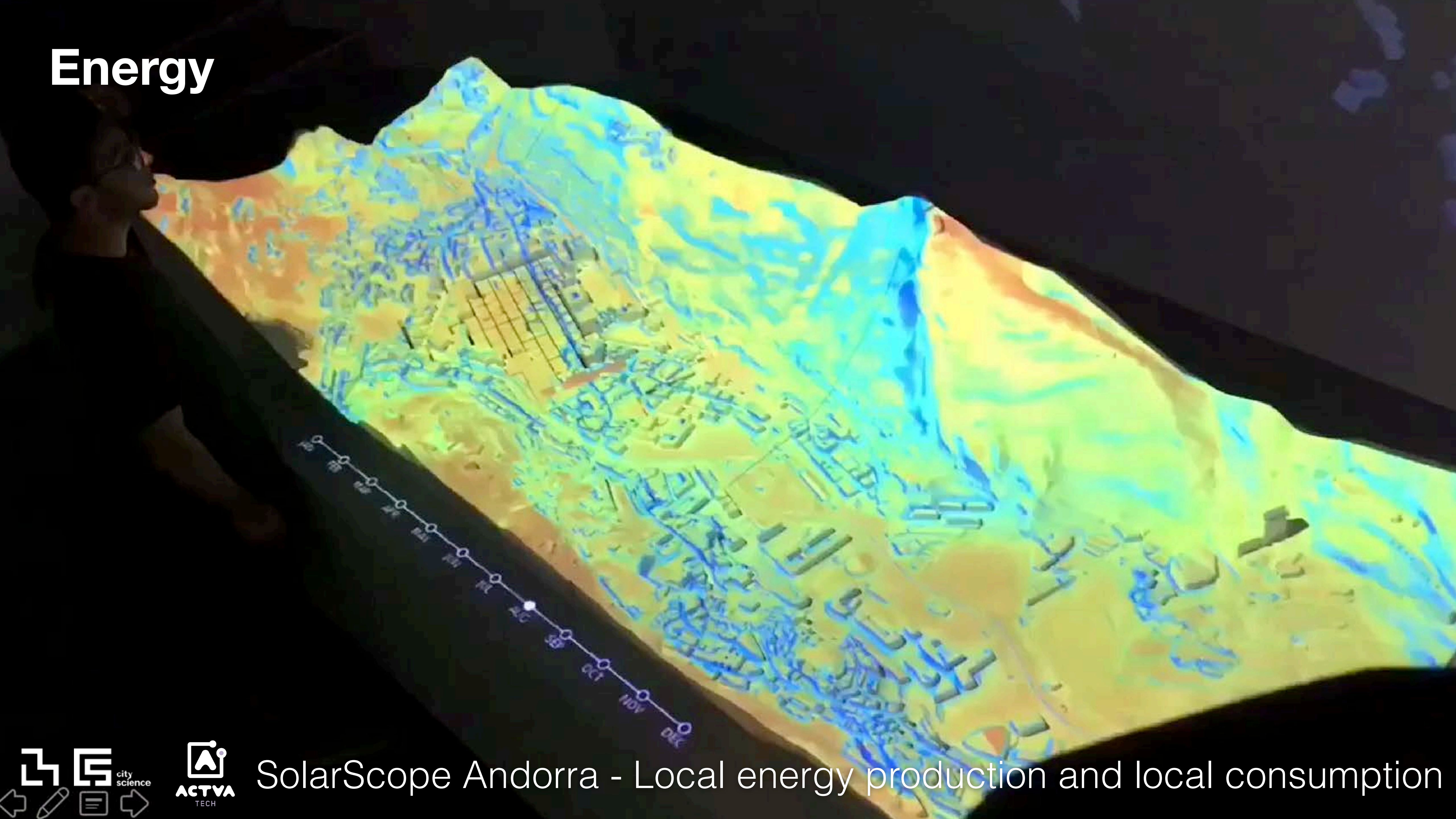


Incorporating CDRs and tourism predictions:

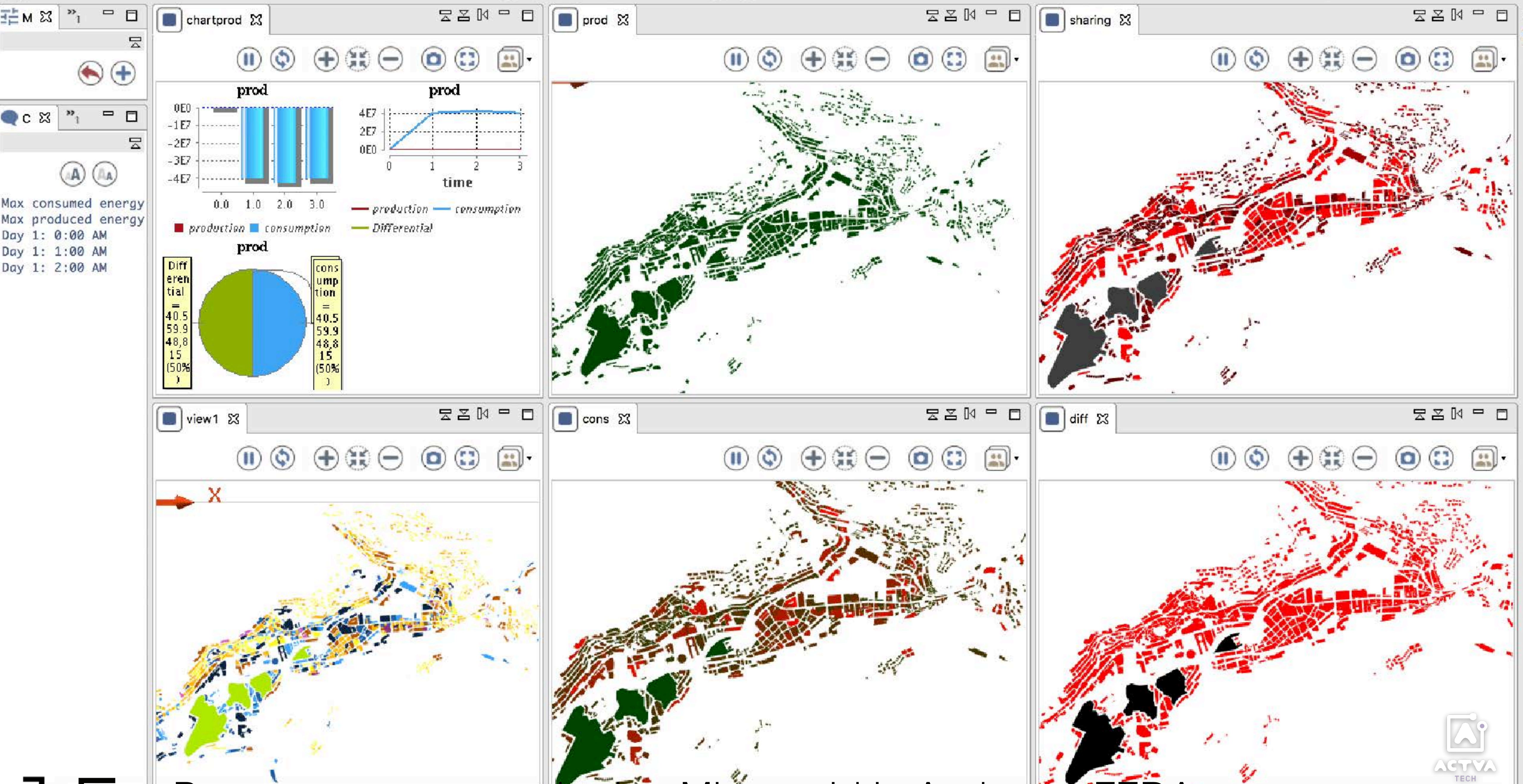
10% improvement in mean prediction error

2.6% energy demand hourly prediction error

Energy



SolarScope Andorra - Local energy production and local consumption



ReMEMBERING March 11 . 2011

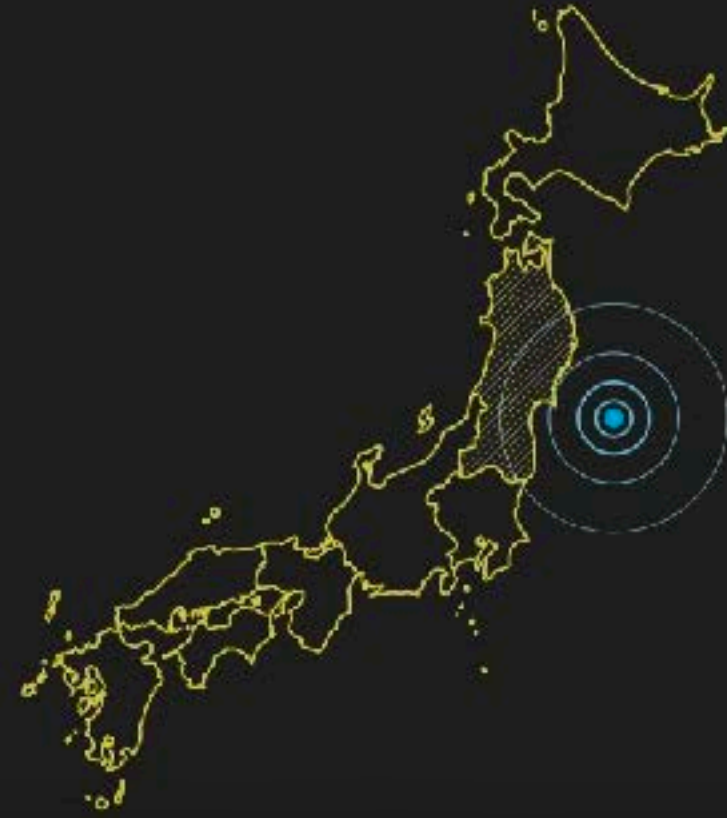
• The catastrophic TSUNAMI averaging 20 meters high swept up lives and entire towns along Japan's Tohoku coastline.

• We all read and recall numerical data, but we do not always experience what that really feels like - the immensity of a raging tsunami 60 feet high.

• If you are reading this now, you are drowning in water.

• The yellow banner commemorates the devastating disaster of the M9 earthquake, TSUNAMI, and nuclear meltdown.

MIT JAPAN 3.11 INITIATIVE
<http://japan3-11.mit.edu/>



MIT SE IMPLICÓ EN AYUDAR
A JAPÓN TRAS EL TSUNAMI

ARCHITECTURE NEWS

MIT Program Comes to Aid of Post-Tsunami Japan

By Johanna Knapschaefer, Jenna M. McKnight



MIT Program Comes to Aid of Post-Tsunami Japan

Minami-sanriku, Japan

Last summer, a team of students and faculty members from MIT traveled to Minami-sanriku, Japan, to survey damage caused by the March 2011 tsunami. The trip was spawned by the MIT Japan 3/11 Initiative, a program launched after the Tohoku catastrophe.

Photo courtesy MIT

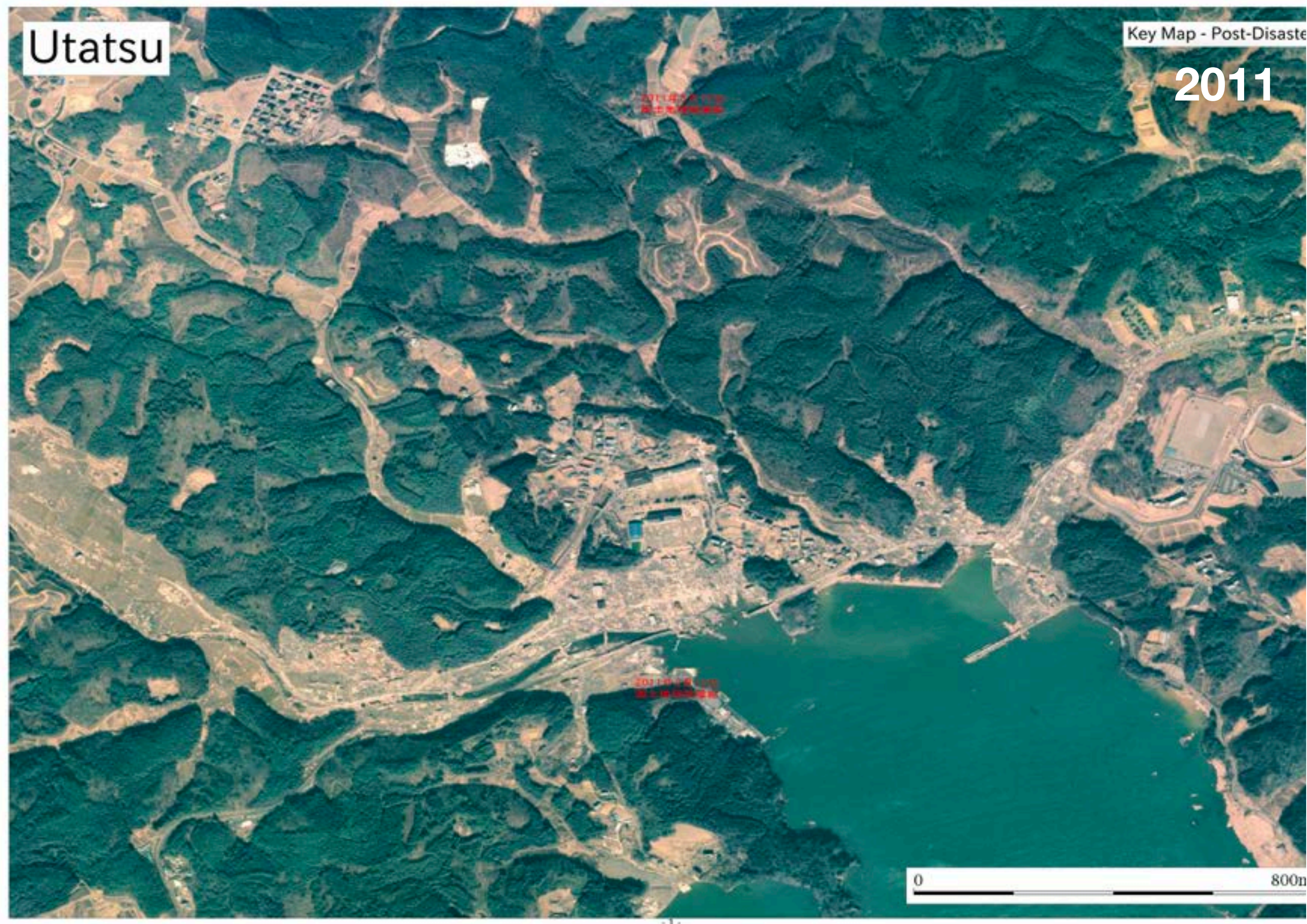


TSUNAMI DE JAPON 2011



Minami-sanriku Hamare Utatsu antes del 3/11

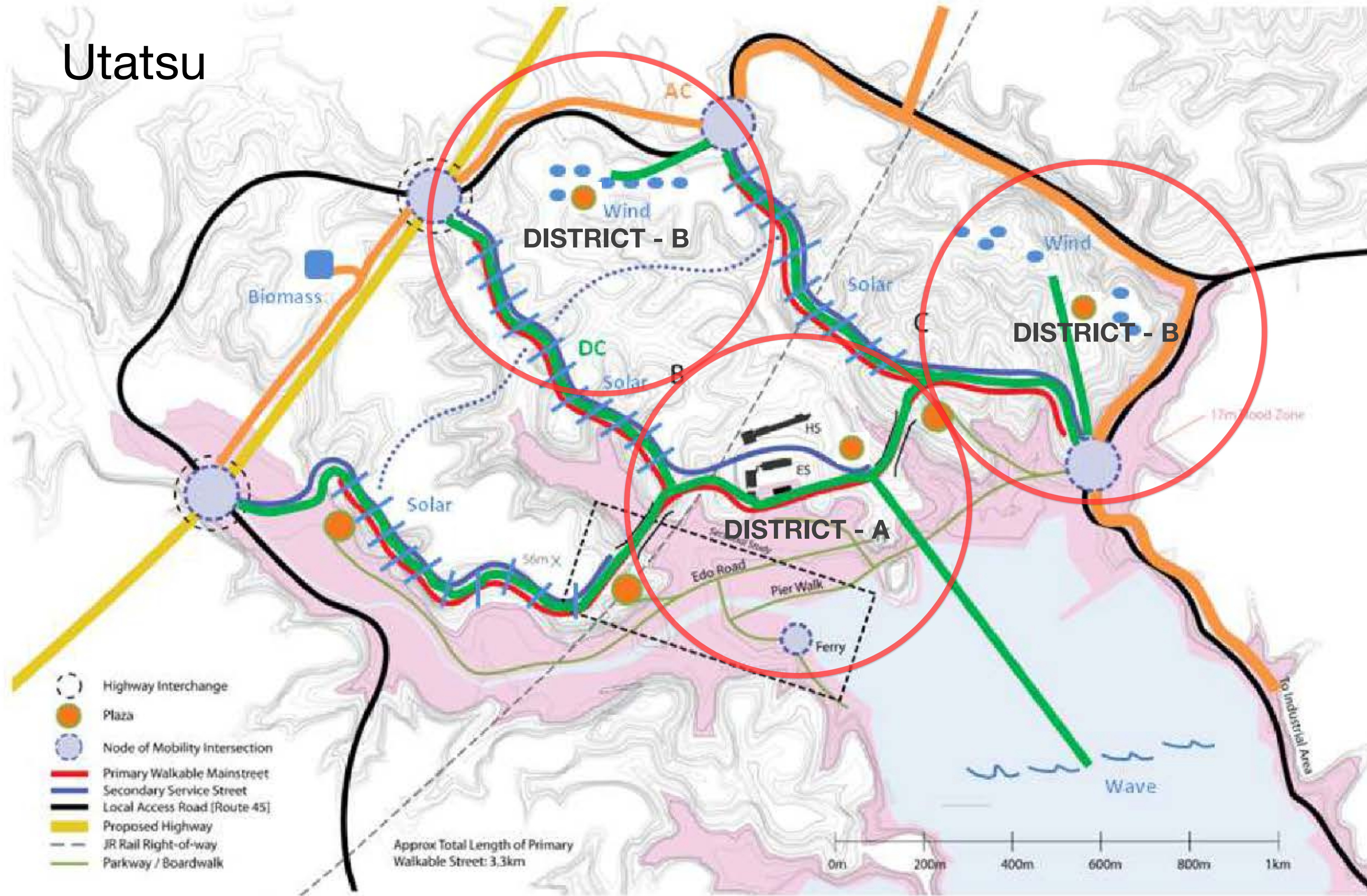




Minami-sanriku Hamare Utatsu después del 3/11



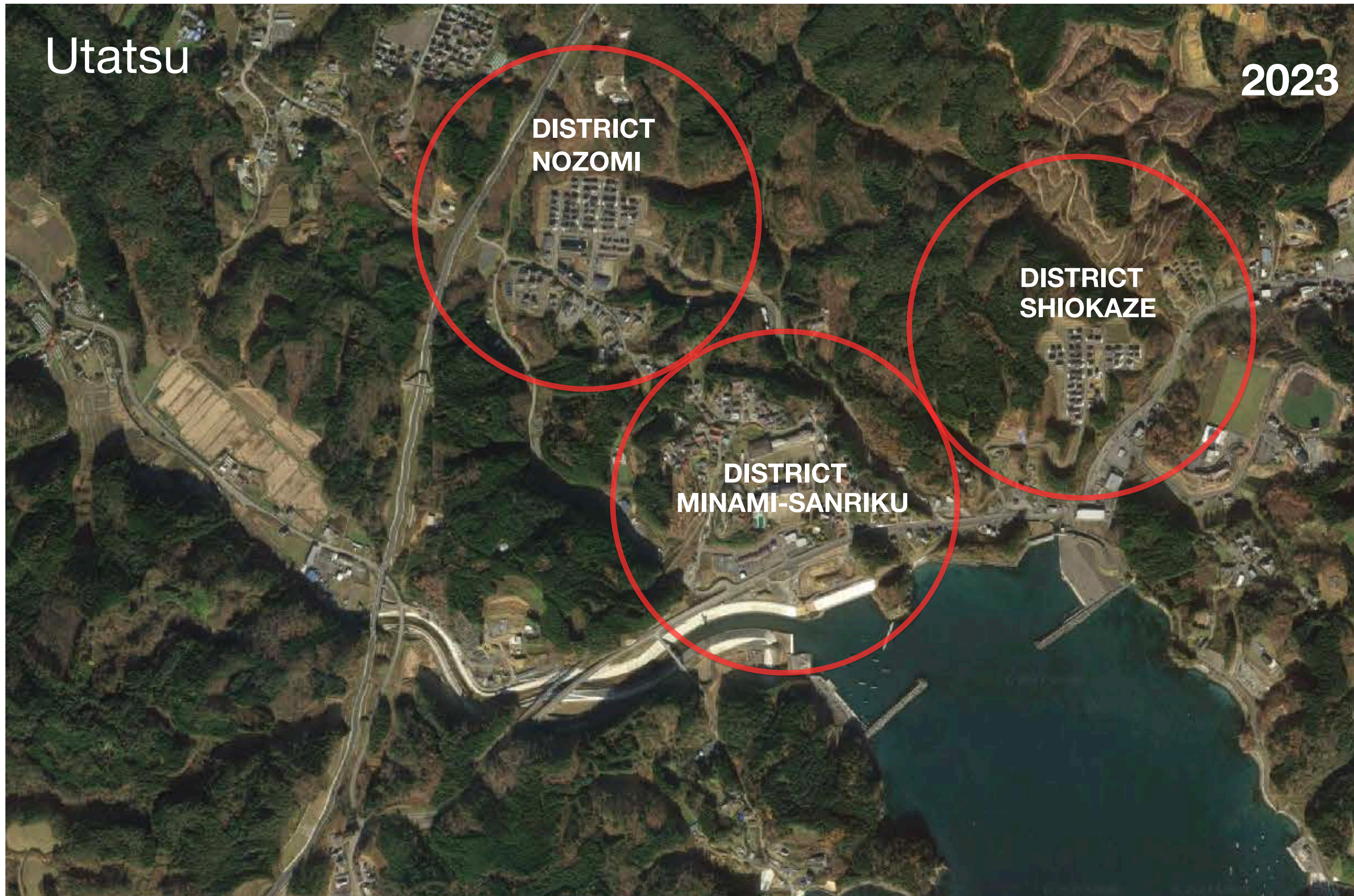
Utatsu



Changing Places Group MIT ML - Plan urbanístico para Minami-sanriku Hamare Utatsu 2011

- 1 Comunidades resilientes, y caminables
- 2 Fácil acceso a Tiendas e Infraestructuras de ocio y servicios
- 3 Sistema de Control de Microgrid (MCS) + Blockchain
- 4 Producción de energía a escala de distrito
- 5 Almacenamiento de energía a escala de distrito
- 6 Distrito conectado a la MacroGrid
- 7 Transporte como almacenamiento de energía secundario
- 8 Energías renovables como principal fuente de energía
- 9 Energía fósil y MacroGrid como soporte energético temporal y secundario





Minami-sanriku Hamare Utatsu 2023 - Google Maps

- 1 Comunidades resilientes, y caminables
- 2 Fácil acceso a Tiendas e Infraestructuras de ocio y servicios
- 3 Sistema de Control de Microgrid (MCS) + Blockchain
- 4 Producción de energía a escala de distrito
- 5 Almacenamiento de energía a escala de distrito
- 6 Distrito conectado a la MacroGrid
- 7 Transporte como almacenamiento de energía secundario
- 8 Energías renovables como principal fuente de energía
- 9 Energía fósil y MacroGrid como soporte energético temporal y secundario



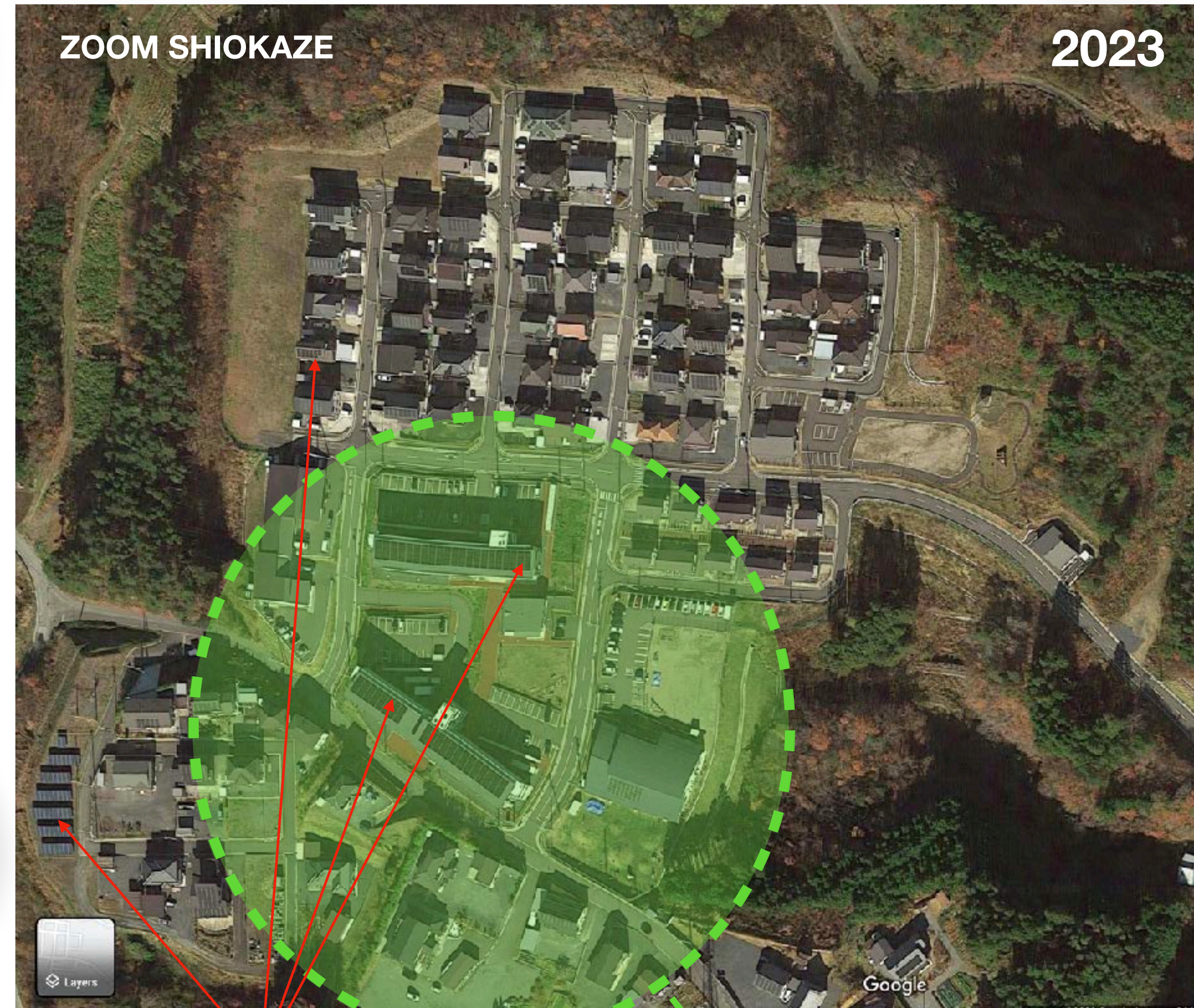
ZOOM NOZOMI

2023



ZOOM SHIOKAZE

2023



Minami-sanriku Hamare Utatsu 2023 - Google Maps

PANELES SOLARES (MICRO-GRID)

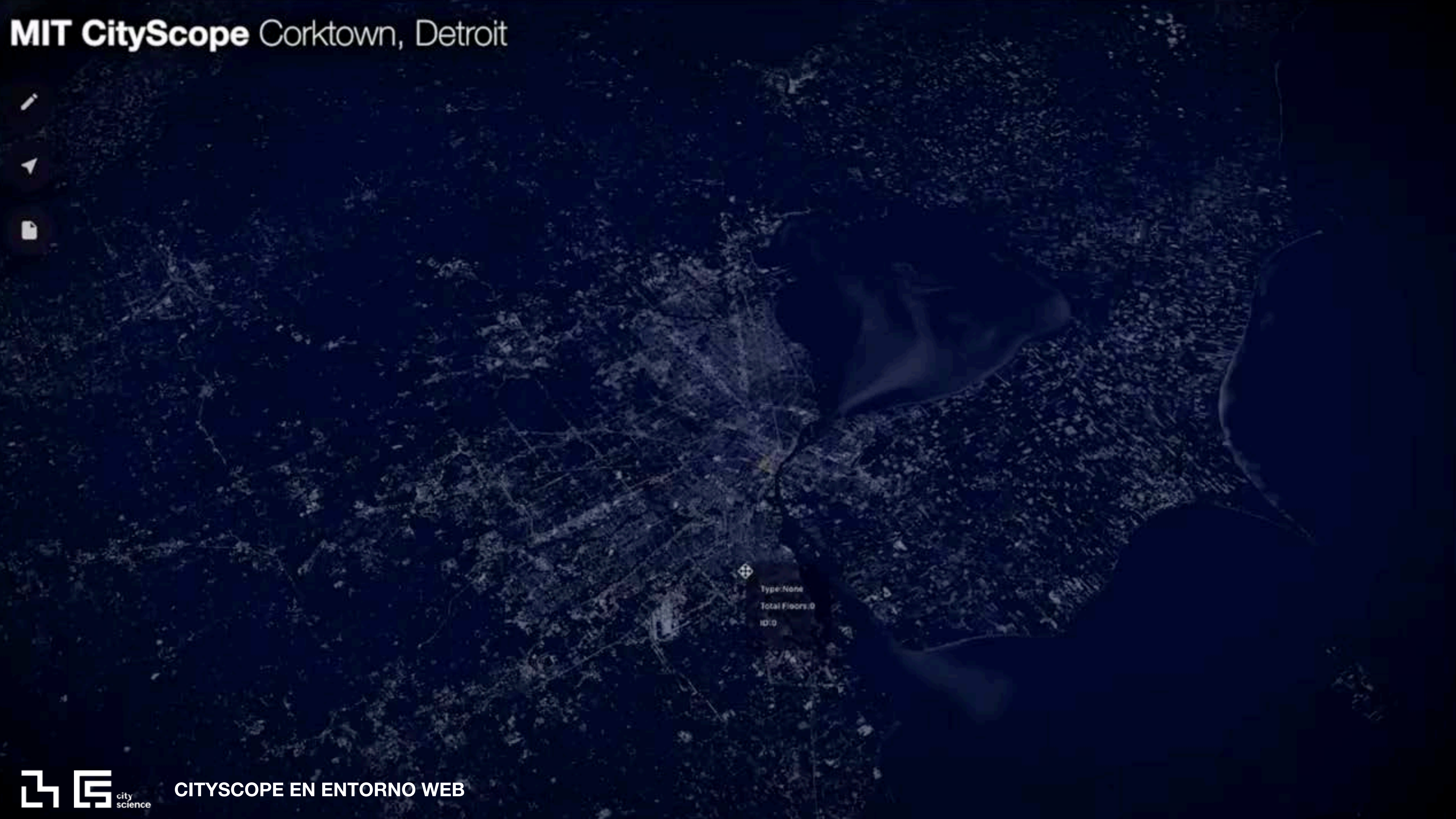
TIENDAS E INFRAESTRUCTURAS DE OCIO Y SERVICIOS

PANELES SOLARES (MICRO-GRID)

TIENDAS E INFRAESTRUCTURAS DE OCIO Y SERVICIOS

TSUNAMI DE JAPON 2011 - DISTRITOS CAMINABLES ENERGÉTICAMENTE AUTÓNOMOS





Type:None
Total Floors:0
ID:0



Lugares para vivir y trabajar CityHome - ORI

ENTORNOS HIPER-EFICIENTES PARA AUMENTAR LA EQUIDAD, DIVERSIDAD, HABITABILIDAD Y ASEQUIBLES

ORI - cama que se descuelga desde el techo





ORI - Una Spinoff del CS MIT ML (www.orisystems.com)

Video image by Ori



Movilidad Urbana PEV & MIT Autonomous Bicycle Y Simulación

ELECTRO, AUTONOMO, COMPARTIDO + LIGERO Y COLABORATIVO



PEV: Mapeo Urbano



Luis Alonso

Massachusetts Institute of Technology





pev

Persuasive Electric Vehicle



0





142



city
science

MIT Autonomous Bicycle

2.50

Emisión promedio de CO₂ que cada habitante del planeta puede producir cada año para que en 2050



Emisión promedio de CO₂ que cada habitante del planeta puede producir cada año para que en 2050



tener un 80% de posibilidades de limitar el calentamiento global a 2°C

EFFECTOS DEL CAMBIO CLIMÁTICO



AUMENTO DEL NIVEL DEL MAR

Cuando la temperatura de la superficie se calienta, se produce la fusión del hielo de los glaciares y aumenta la cantidad de agua que desemboca en los océanos de todo el mundo y pone en peligro a numerosas ciudades que se sitúan bajo el nivel del mar.



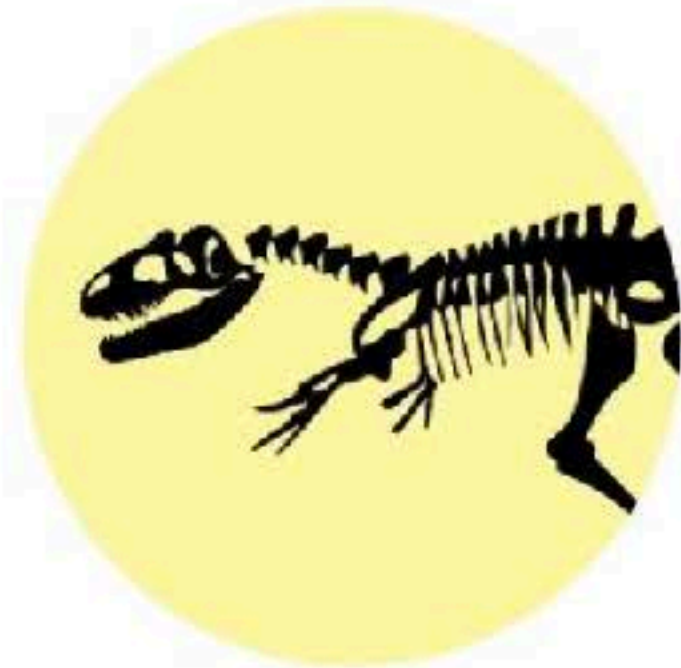
TORMENTAS ASESINAS

Si la temperatura de los océanos se vuelve más cálida, las tormentas son más intensas. En los últimos 30 años, la gravedad y el número de ciclones, huracanes y tormentas han aumentado y se han casi duplicado.



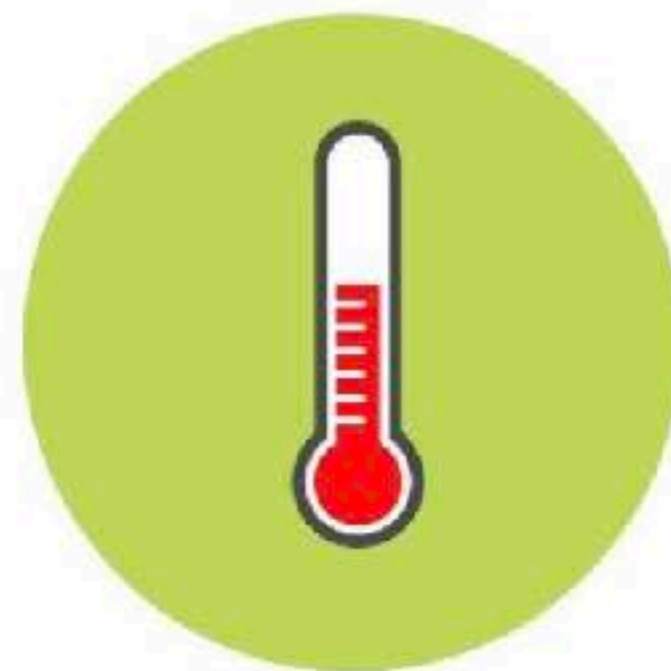
SEQUÍA

Existe una gran escasez de agua que disminuye la producción mundial de alimentos.



ESPECIES EN EXTINCIÓN

La desertificación, el aumento de las temperaturas de los océanos, así como la deforestación, ponen en peligro a varias especies, que pronto podrían extinguirse. El oso polar pasa a ser el primer ejemplo.



ENFERMEDADES

Las temperaturas más cálidas, inundaciones y sequías, se cambian y crean las condiciones adecuadas para que las ratas, mosquitos, así como otras plagas que son portadoras de enfermedades prosperen.



DESTRUCCIÓN DE ECOSISTEMAS

Plantas y animales mueren o se trasladan a otros hábitats (no nativos). Cuando los ecosistemas de los que dependen para sobrevivir (como los arrecifes de coral) se ven amenazados.

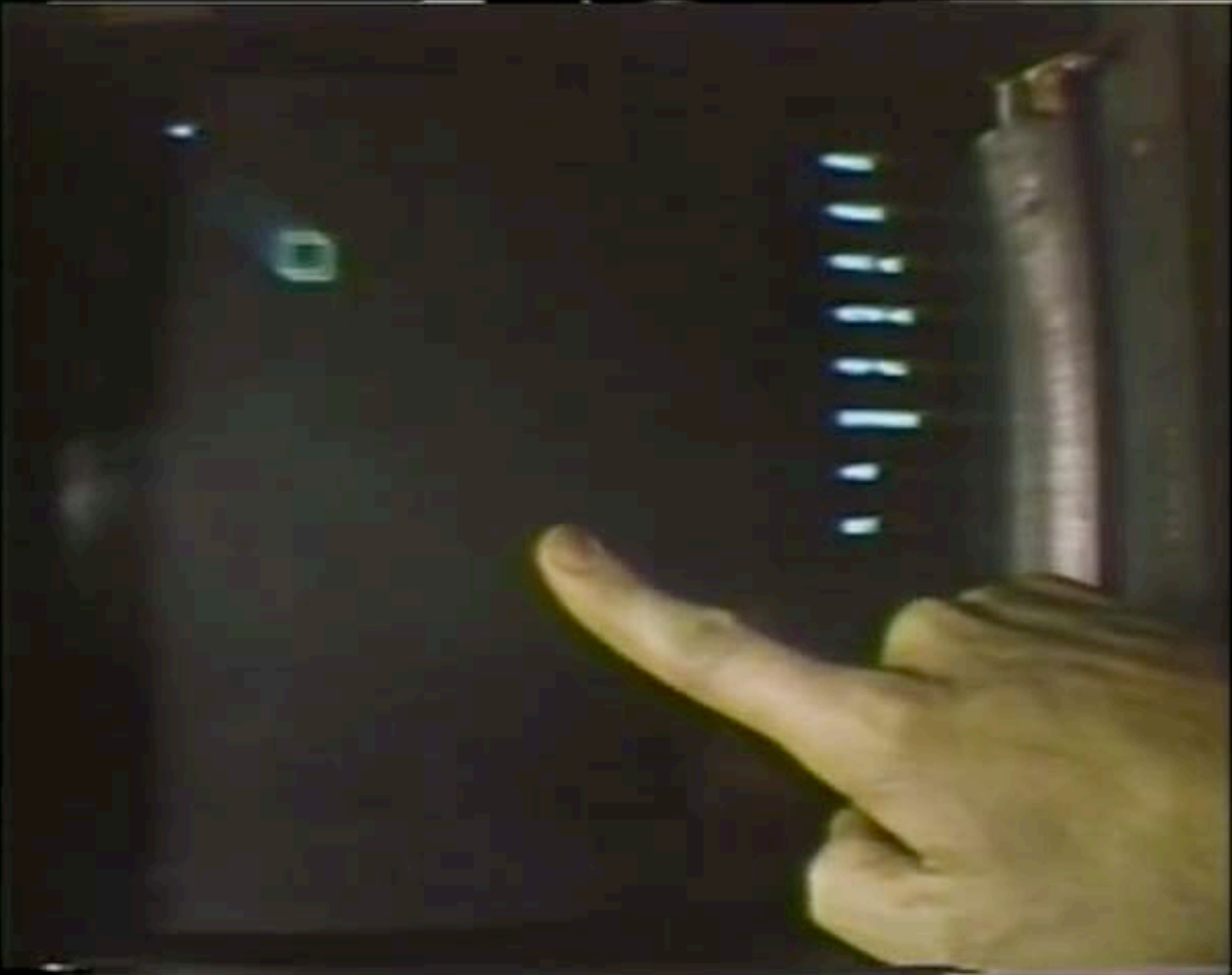


2001 A SPACE ODYSSEY (1968)

2001 Odisea en el espacio 1968
Stanley Kubrick



MIT Media Lab - El poder de la imaginación y la ciencia ficción



1971, primera investigación en Touch screen

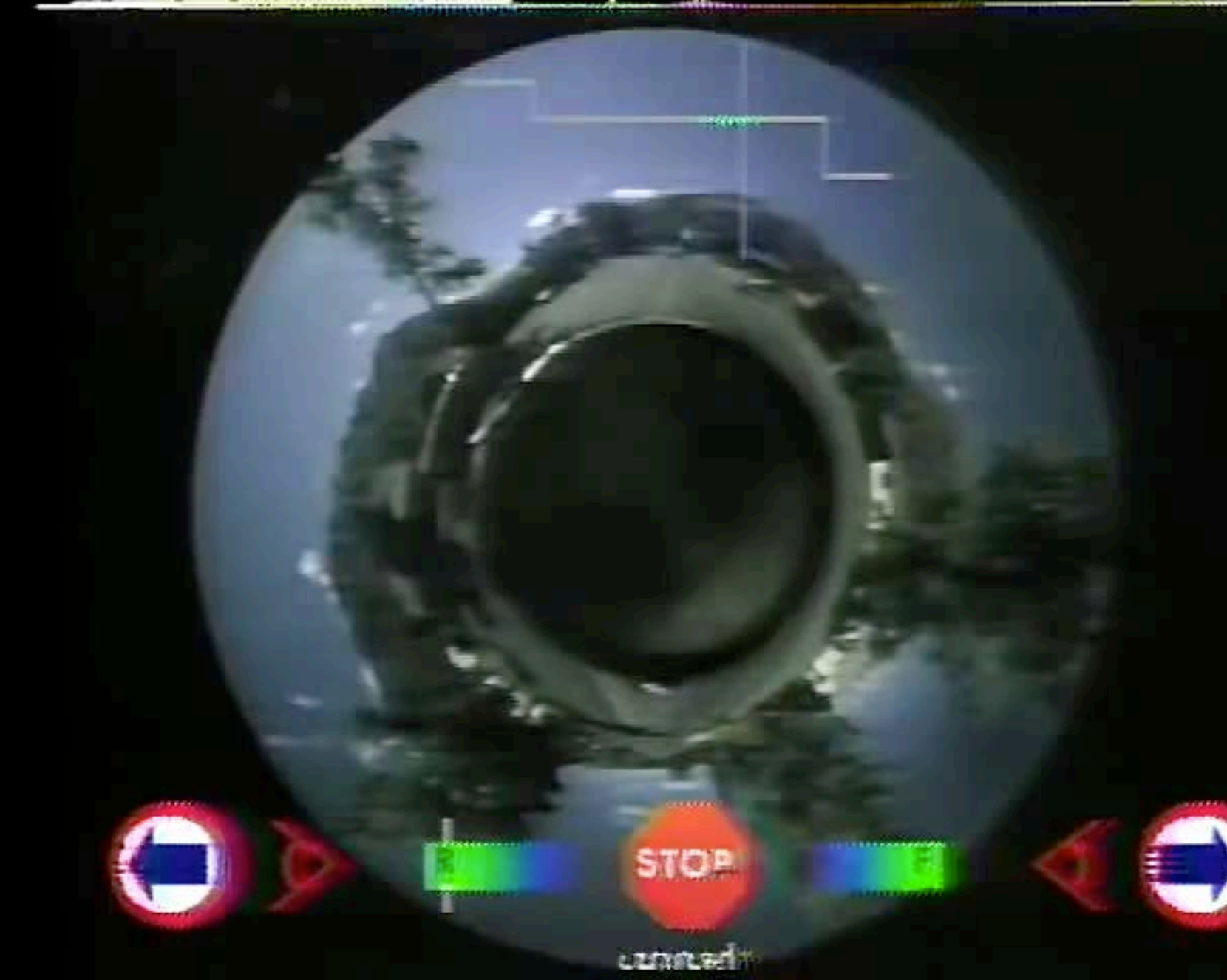
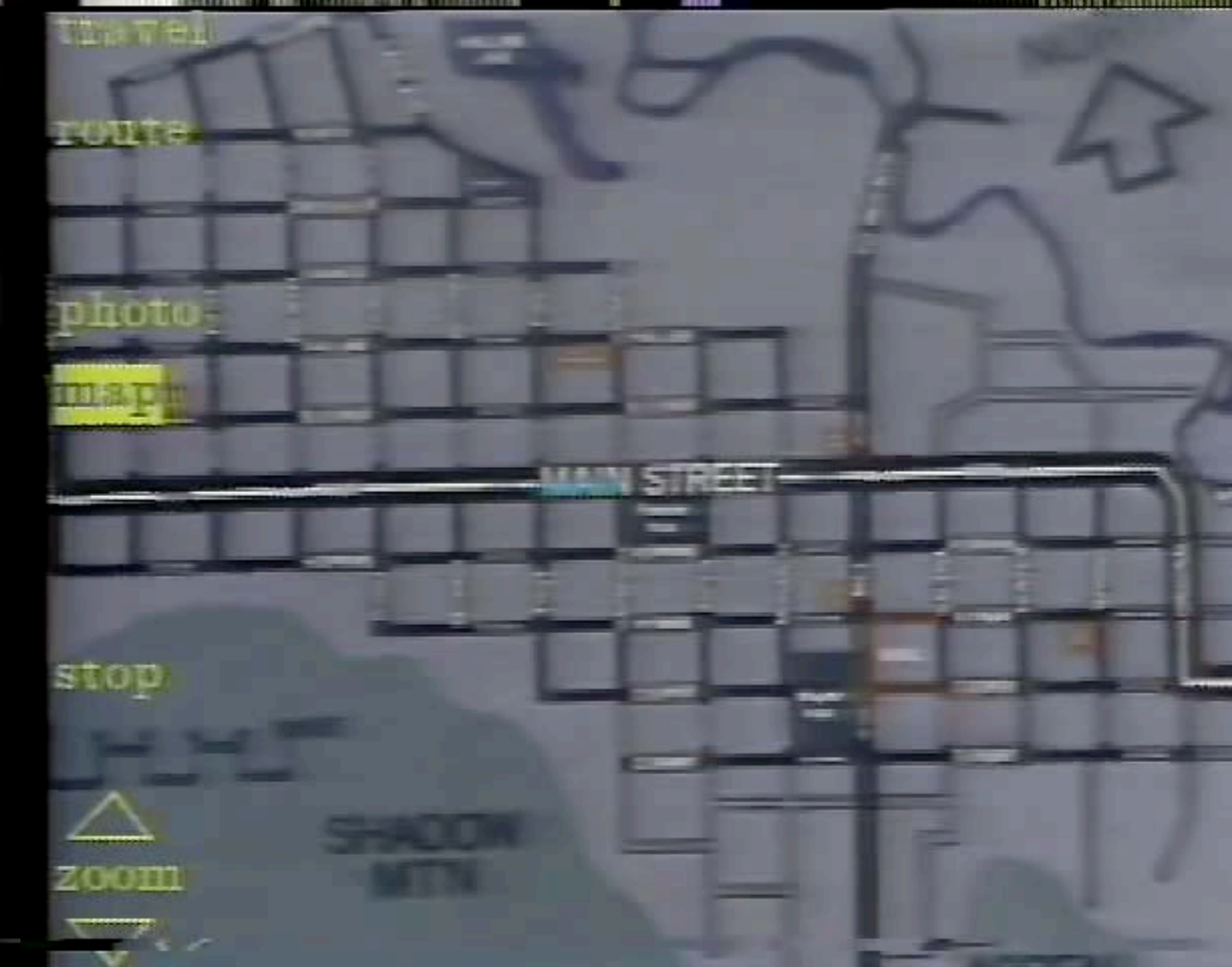


MIT Media Lab - El poder de la imaginación y la ciencia ficción

**MIT Media Lab primer
Touch screen (1984)**

**El poder de la
imaginación y la
ciencia ficción**





 Del Touch screen (1984) al "Google street view" (2007)



**1er iPhone con
Touch screen (2007)**



Aumento del Nivel del Mar



Waterworld (1995)

Waterworld 1995
Kevin Reynolds

Sequía - Aumento de la temperatura



Mad Max Beyond the Thunderdome (1985)

Mad Max: Más allá de la cúpula del trueno 1985
George Ogilvie y George Miller

Destrucción del ecosistema



FANDANGO
MOVIECLIPS 



The clock stopped at 1:17

The Road (2009)

La carretera 2009
John Hillcoat

SUBSCRIBE



Enfermedades

Philadelphia, 2035



'Listen carefully.
They must be followed exactly.'

▶ **12 Monkeys** ▶▶

12 Monkeys (1995)

12 monos 1995
Terry Gilliam



City Sci-fi

Climate Change

An aerial photograph of a city, likely Cambridge, Massachusetts, showing a dense urban landscape with numerous buildings. A red, irregular outline highlights a specific area in the center of the image, which is the MIT-Kendall Square area. The text is overlaid on the left side of the image.

Ejercicio mental:

Transformación del MIT-Kendall Square

Explorando intervenciones contra el Calentamiento Global antes de 2030

Trabajos y Vivienda



Kendall Square / MIT

Actividades diarias



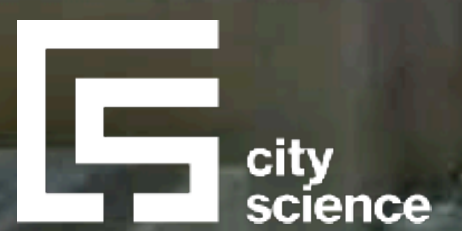
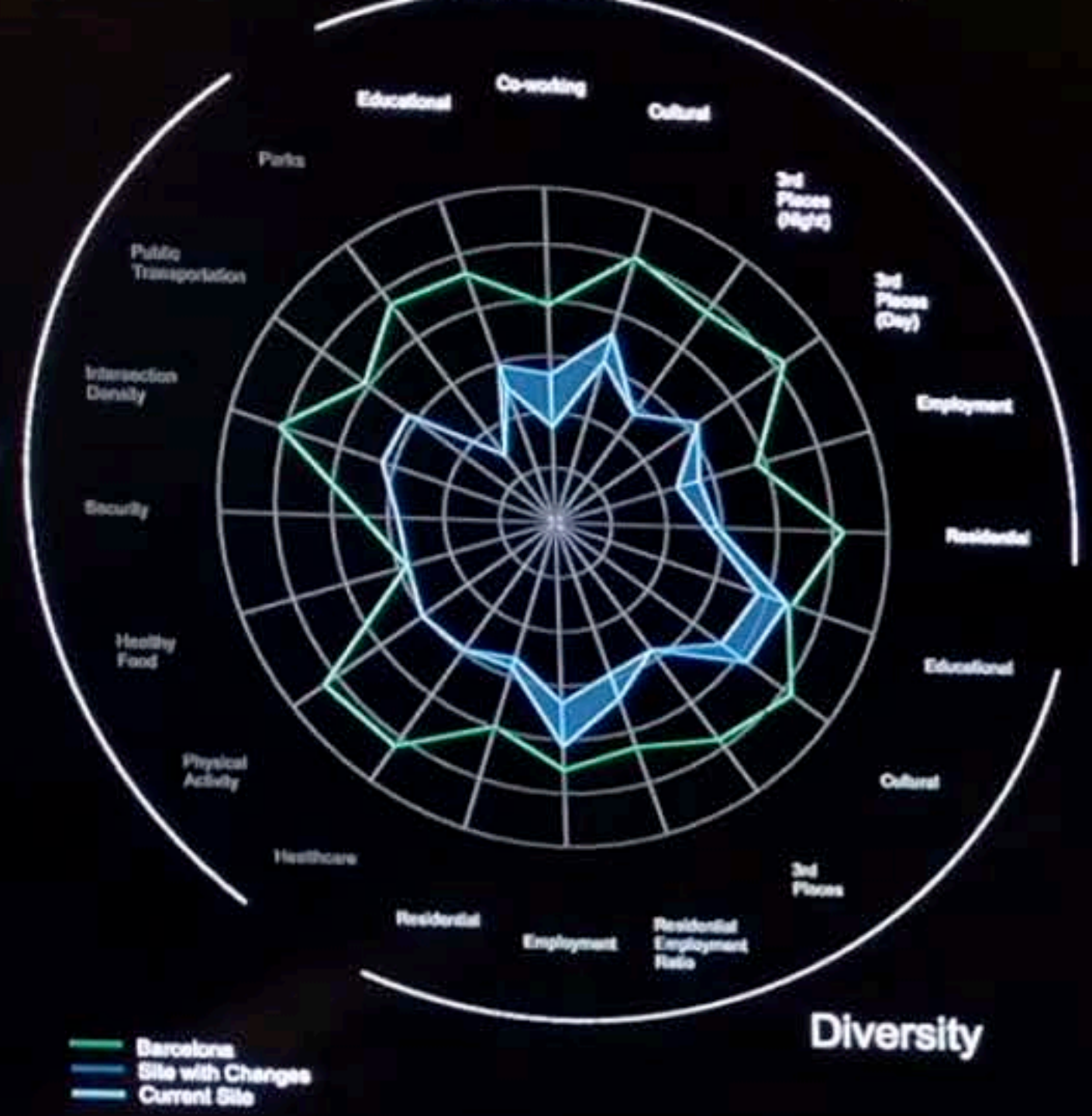
Kendall Square / MIT

Impactos ambientales



City Science Group, MIT Media Lab

CityScope



PLATAFORMA CITYSCOPE - SIMULACIÓN DE DINÁMICAS URBANAS BASADA EN DATOS Y EN EVIDENCIAS CIENTÍFICAS

Emisiones medias actuales, por persona: MIT-Kendall Square

17.19
T CO₂



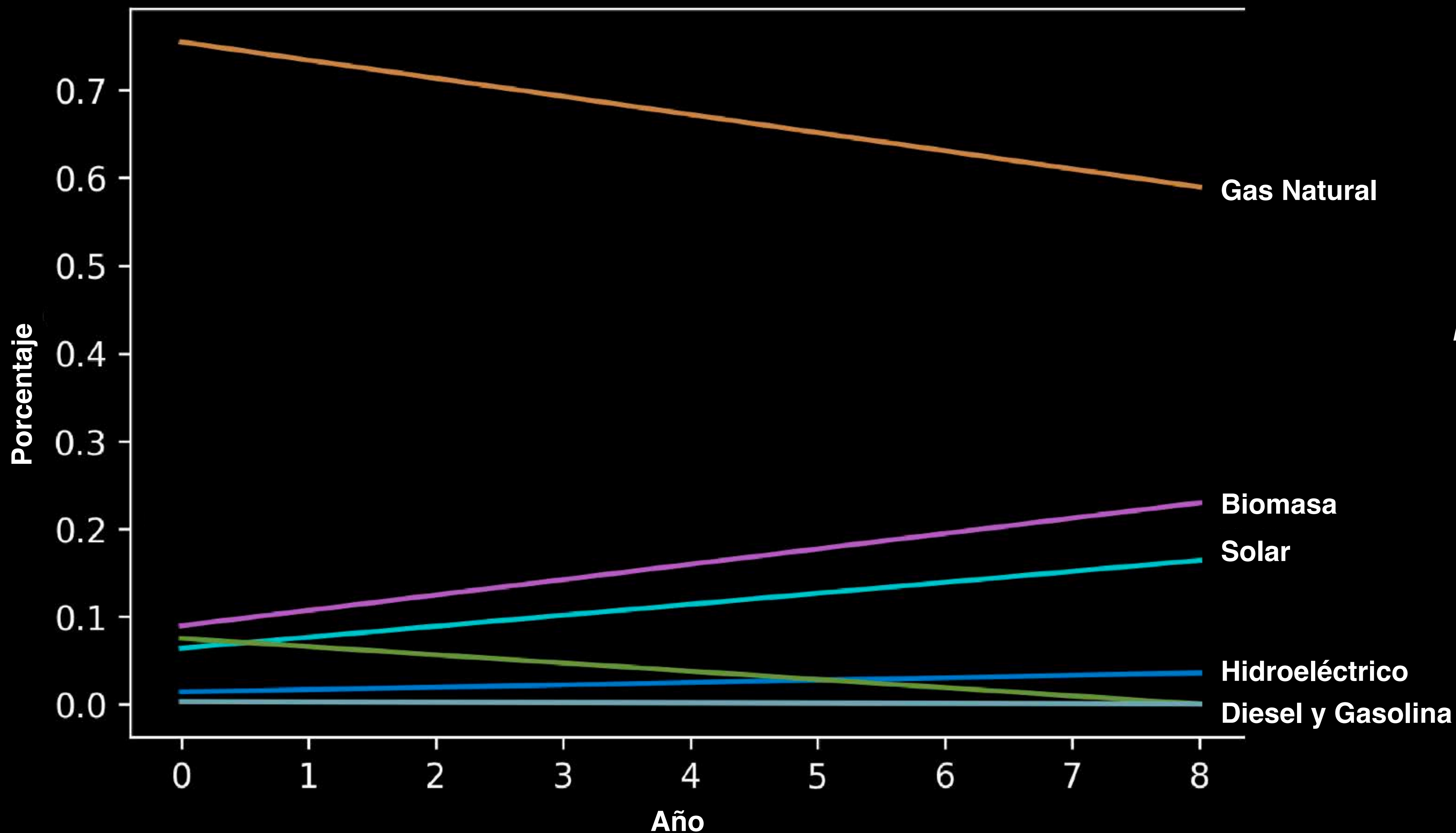
**¿Cómo llegamos a 2,50 T para el año
2030?**

Intervenciones

1 Grid Decarbonization

Descarbonización de la Red

Hoja de ruta de descarbonización de la red Massachusetts 2030



*"El **40%** de la electricidad de Massachusetts provendrá de fuentes limpias y renovables para **2030**"*

Gov. Charlie Baker

A large, stylized globe with a color gradient from light orange at the top to deep red at the bottom. The globe has a textured, wavy surface. In the center, there is a semi-transparent circular callout containing the text '17.19' and 'T CO₂' below it.

17.19
T CO₂

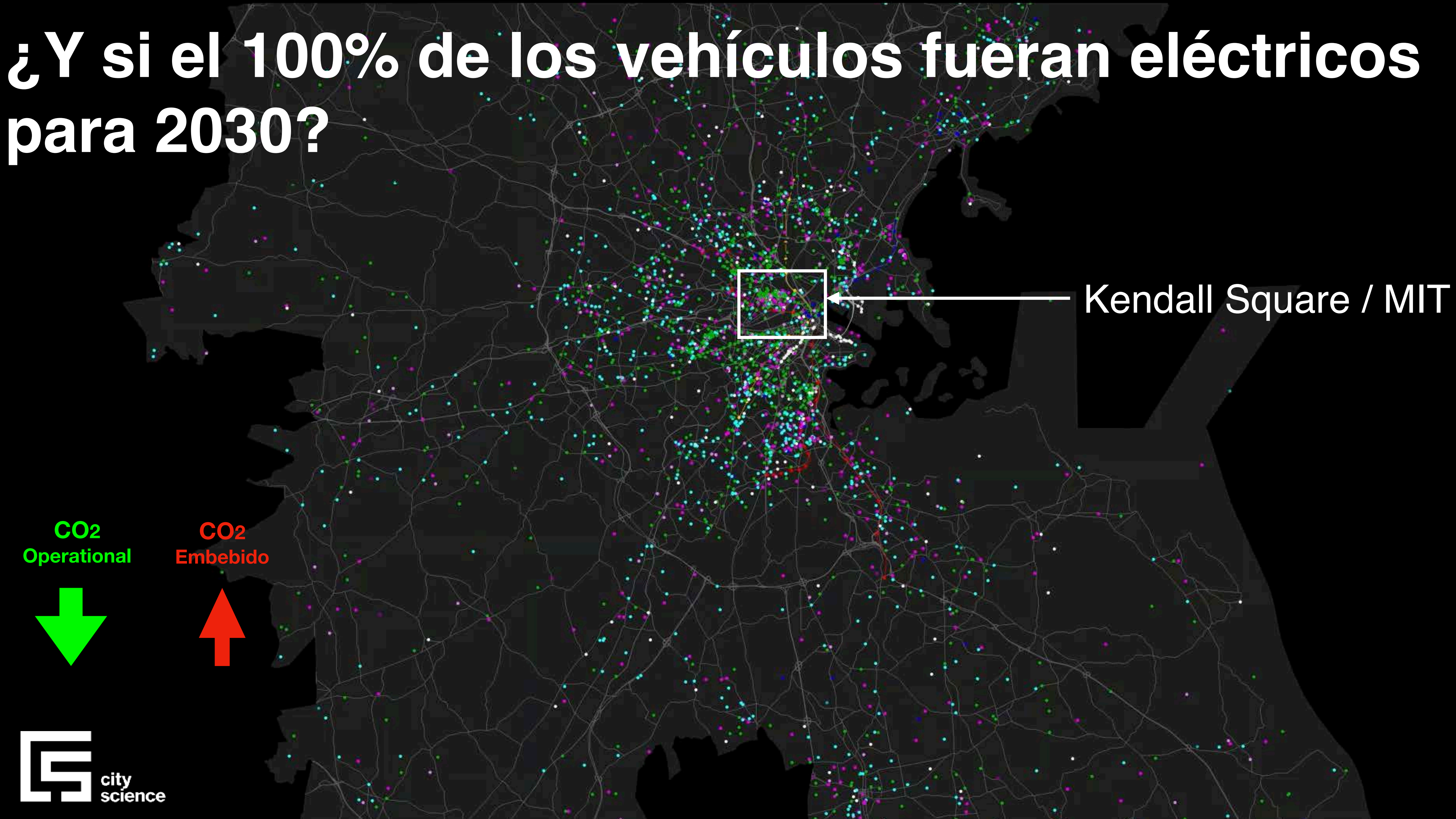


2 Electric Vehicles

Vehículos Eléctricos

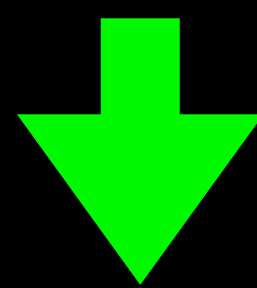


¿Y si el 100% de los vehículos fueran eléctricos para 2030?



Kendall Square / MIT

CO2
Operational



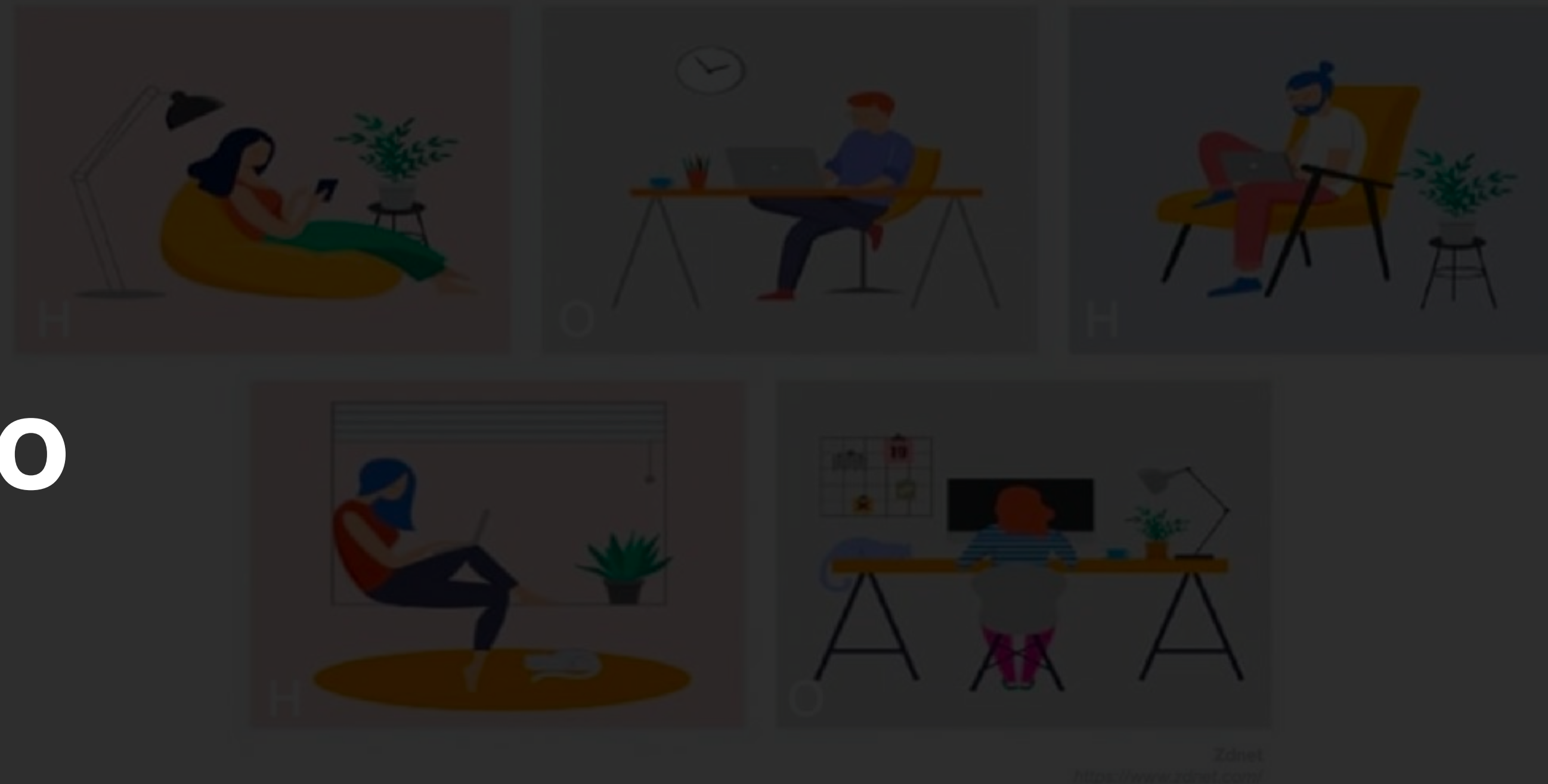
CO2
Embebido



Grid Decarbonization

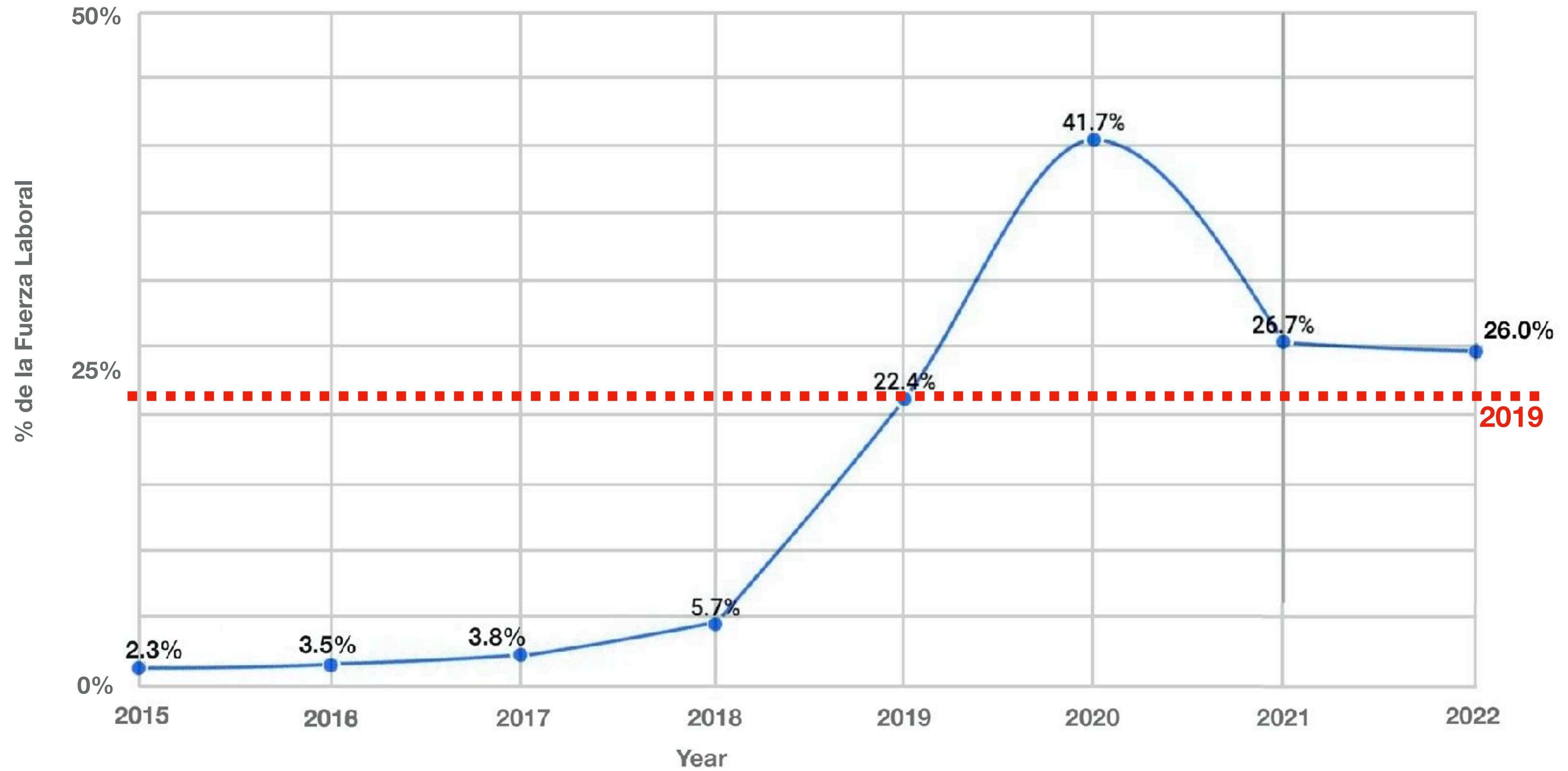
15.81
T CO₂

3 Hybrid Work Teletrabajo



¿CÓMO VA A IMPACTAR EL TELETRABAJO EN NUESTRAS CIUDADES?

% de Americanos trabajando de Forma Remota (teletrabajando)

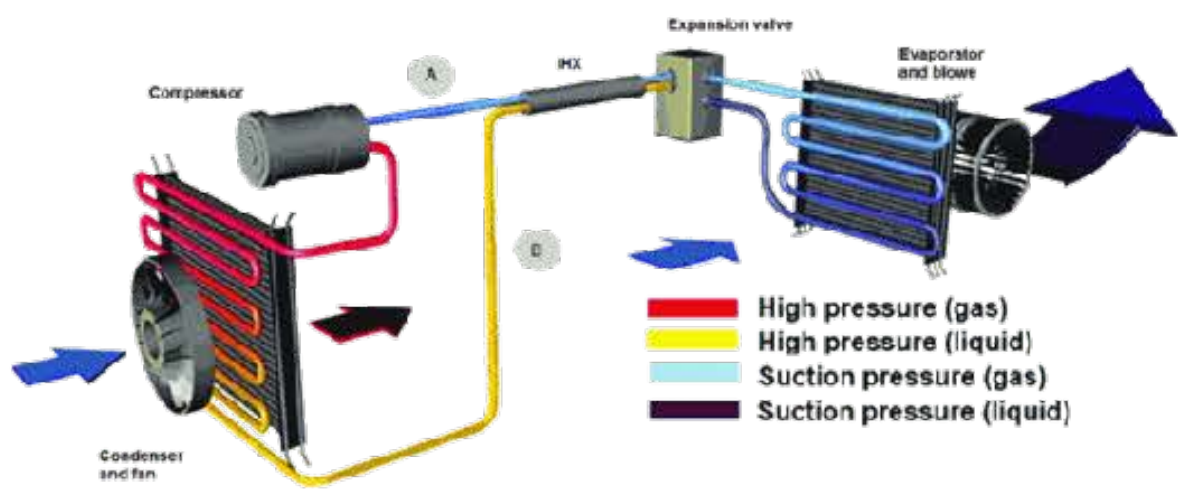






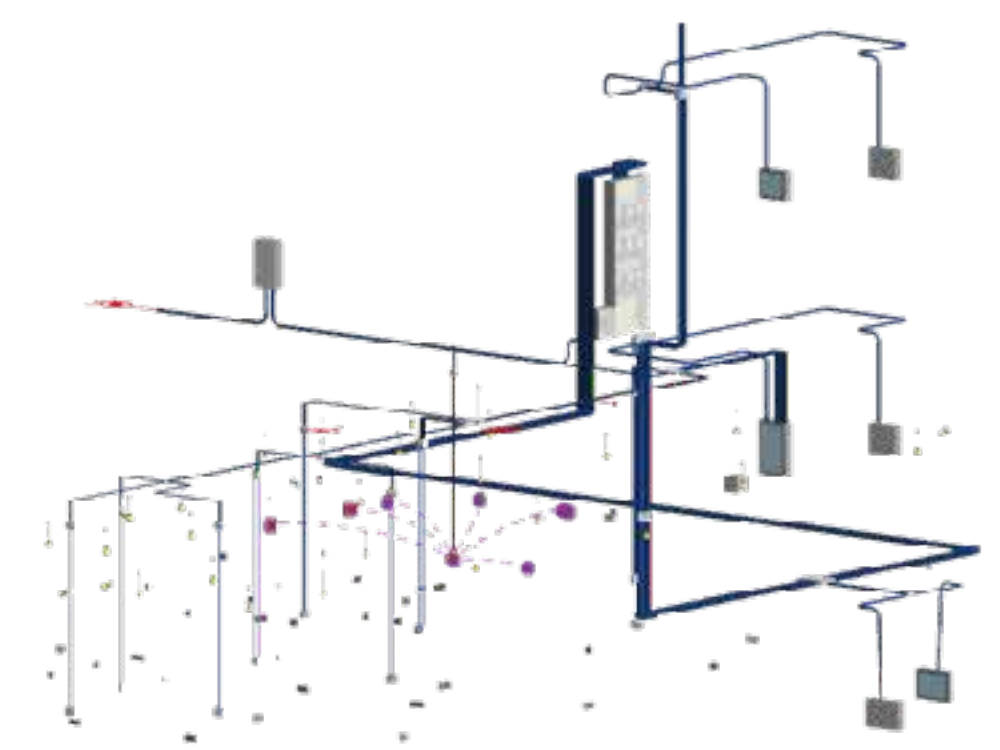
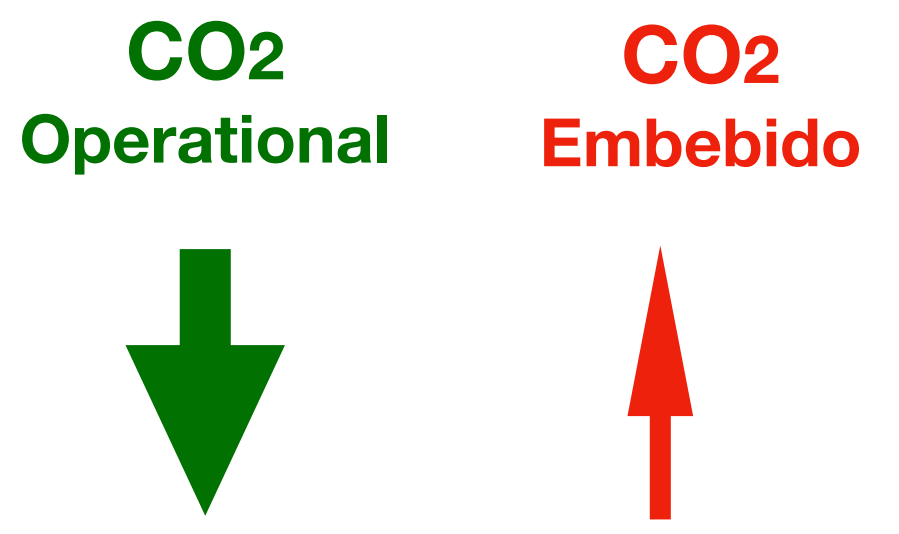
4 Deep Energy Retrofit for Buildings

Rehabilitación energética de edificios



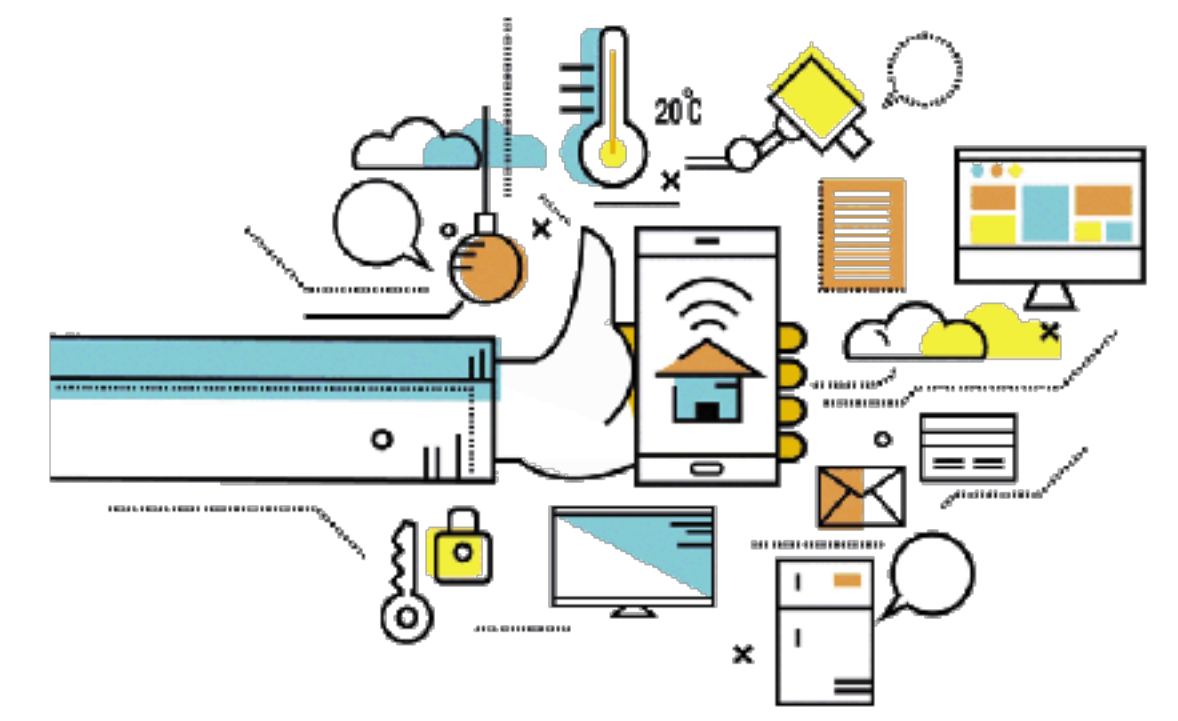
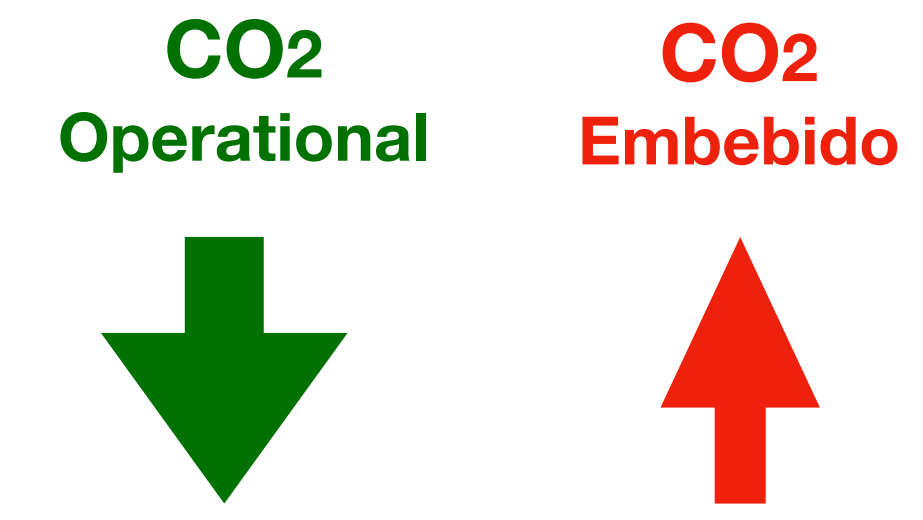
Jakub Janus
<https://www.researchgate.net/>

Aire acondicionado de alto rendimiento



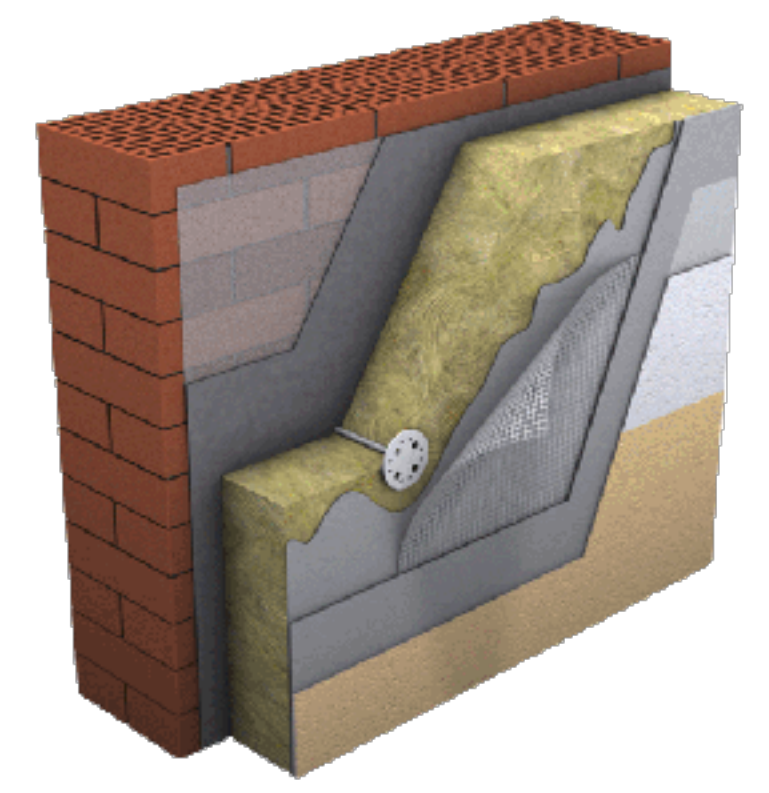
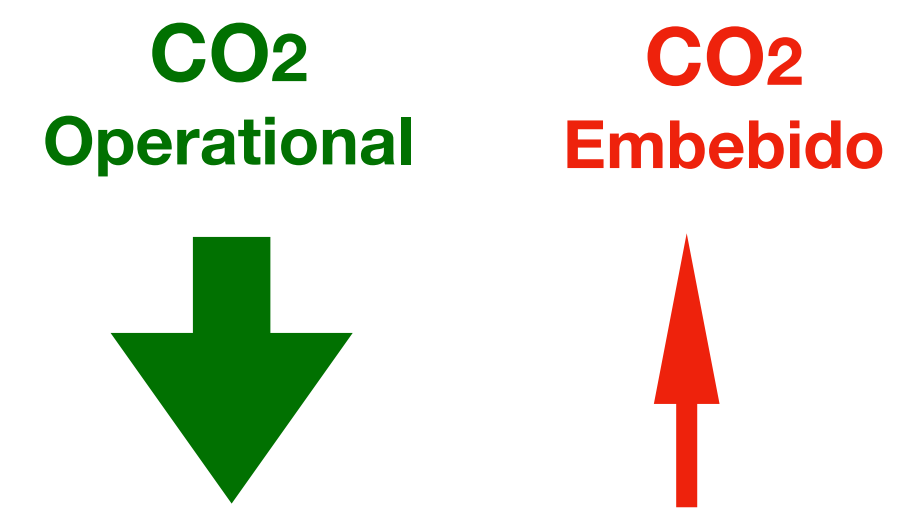
TK-BT
<https://www.inventa.com/tk-bt>

Iluminación y electrodomésticos de bajo consumo

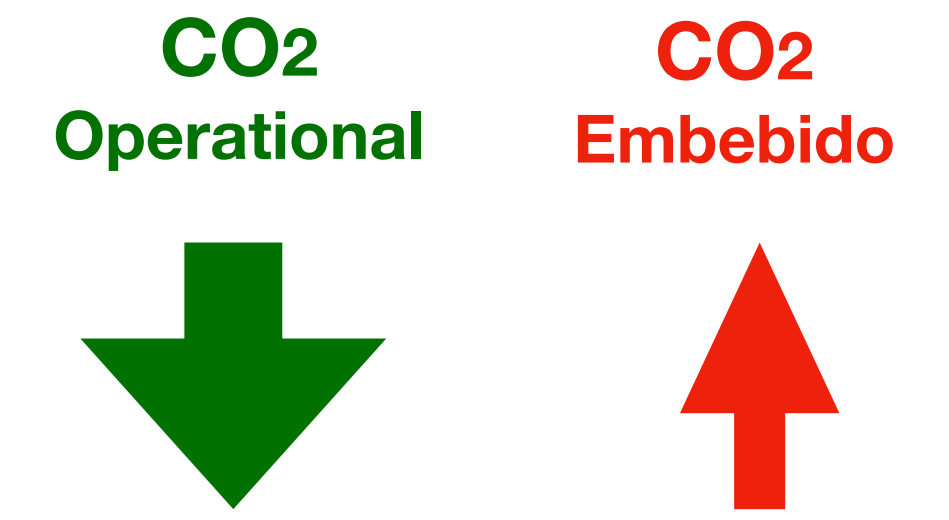


Taiwantrade
<https://www.taiwantrade.com/>

Sensores y controles inteligentes

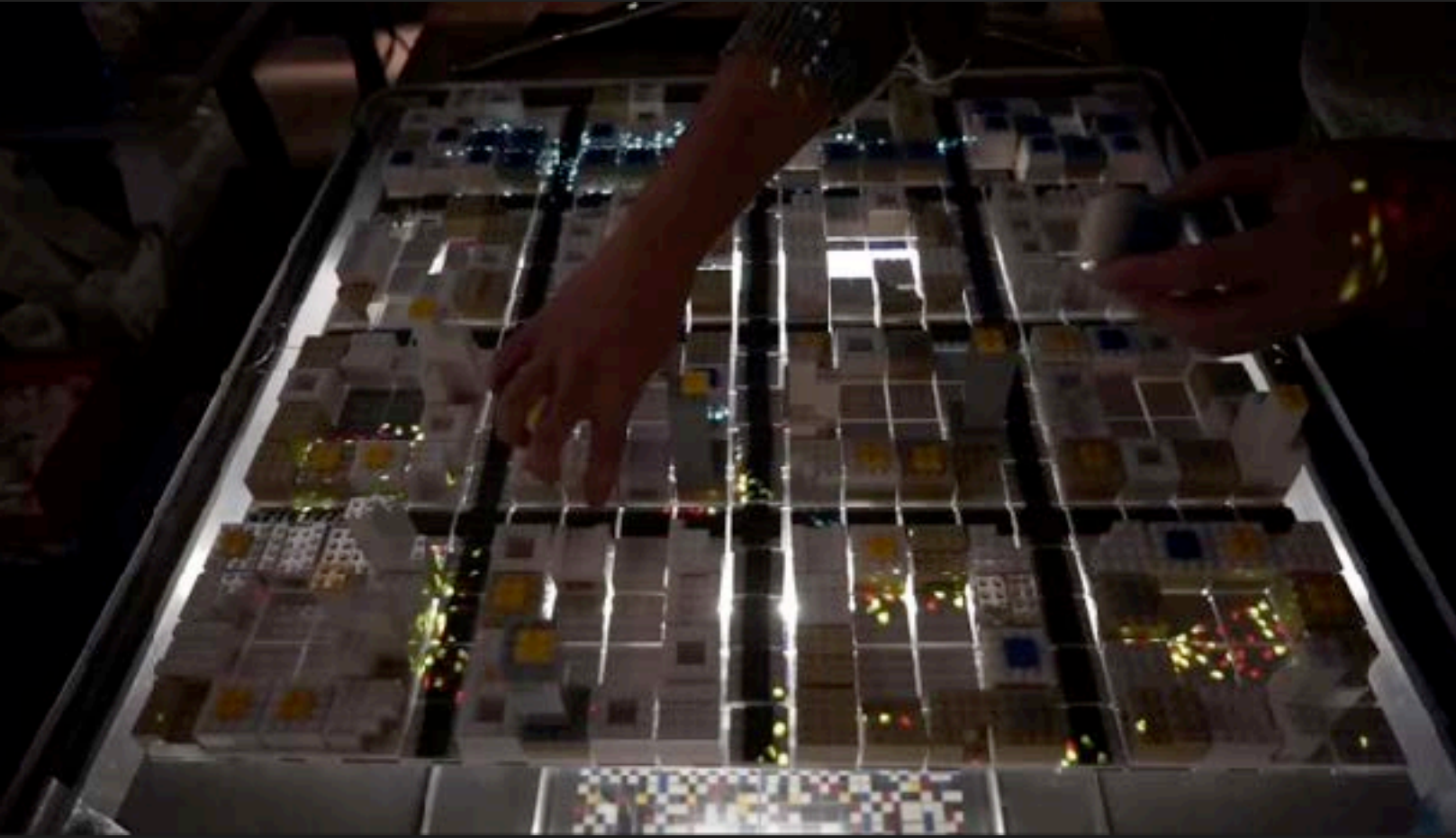


Aislamiento Térmico





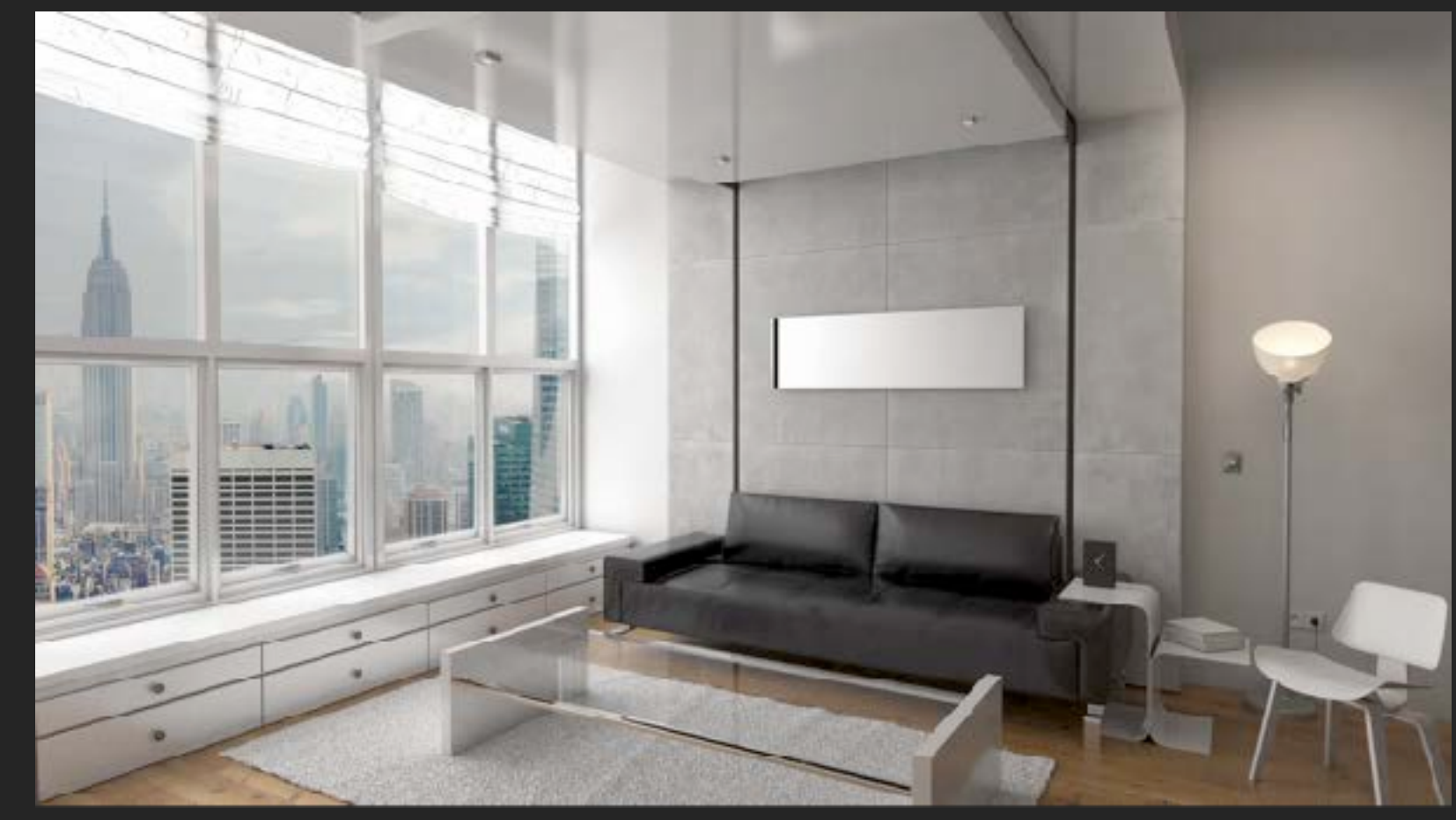
Herramientas del MIT City Science Group



Diseño Urbano



Micro-movilidad Urbana



Vida+Trabajo urbano

Herramientas del MIT City Science Group para
fomentar ciudades, innovadoras, sostenibles, y de
escala más humana



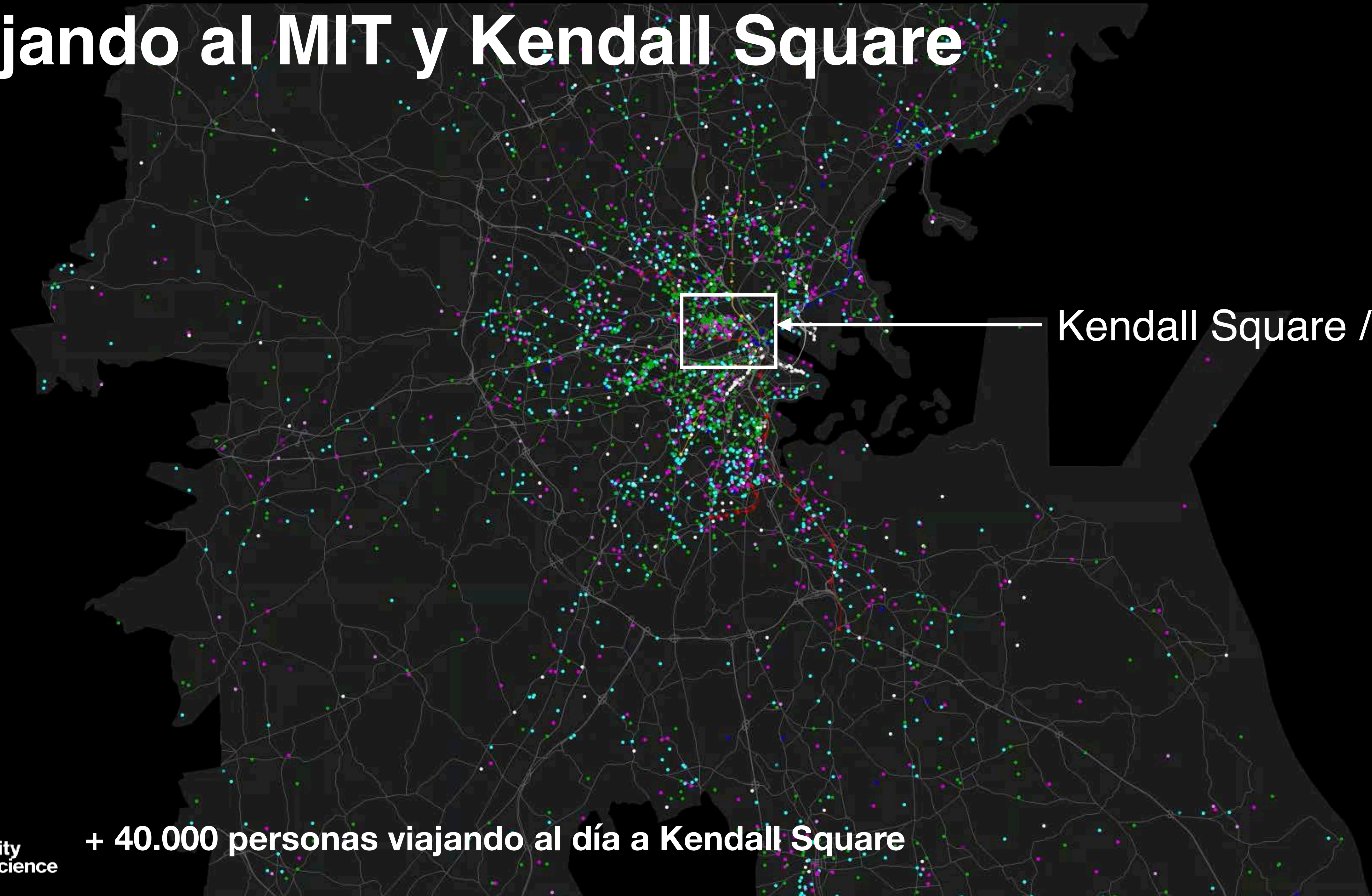
¿Cómo las herramientas y procesos de City Science pueden reducir la huella de carbono de los consumidores?

5

Live-Work Symmetry

Simetría entre vida y trabajo

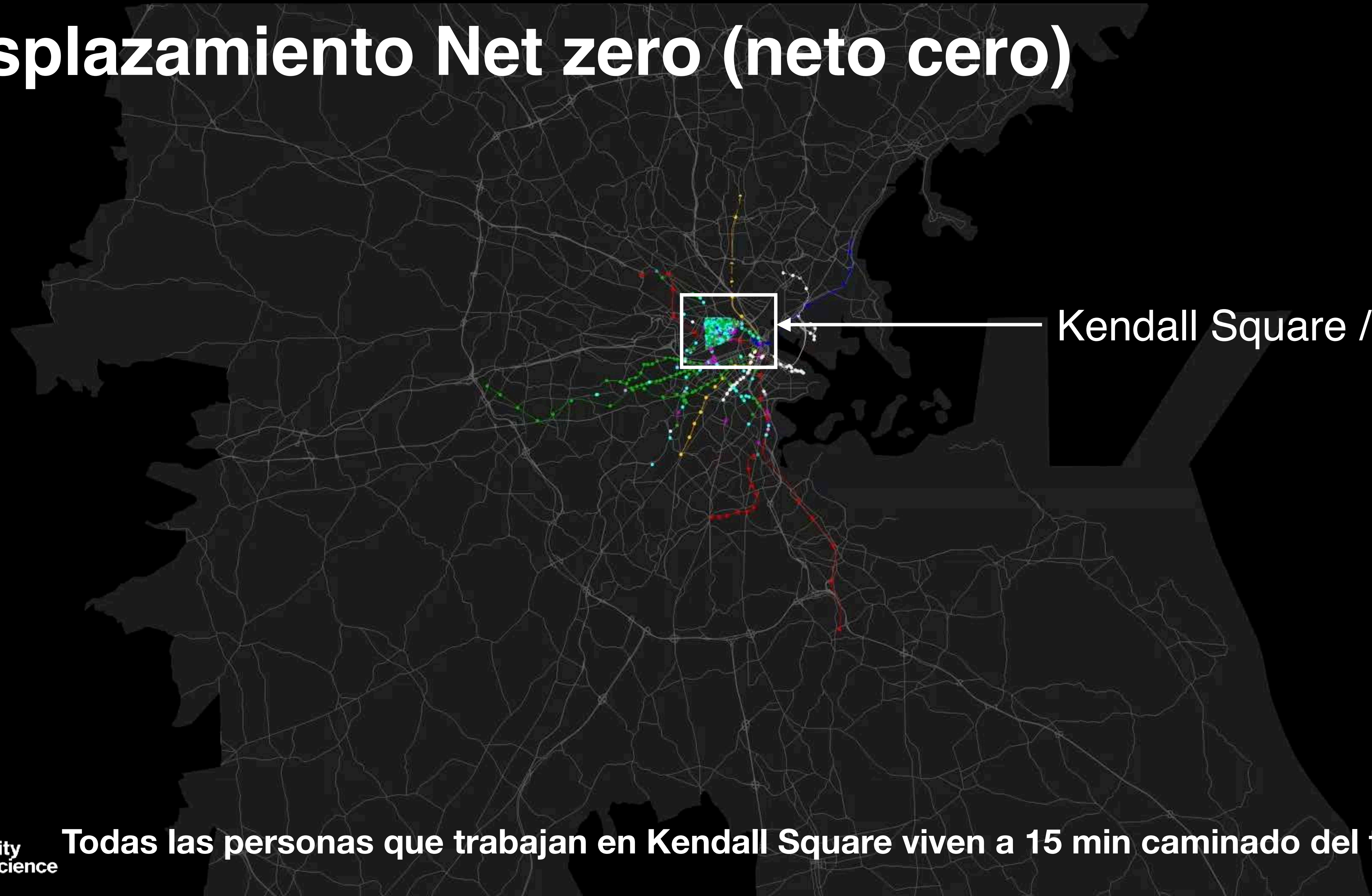
Viajando al MIT y Kendall Square



Kendall Square / MIT

+ 40.000 personas viajando al día a Kendall Square

Desplazamiento Net zero (neto cero)



Kendall Square / MIT







6 Walkable Access to Amenities

Acceso a servicios urbanos y comercio

Datos de Movilidad y Servicios Urbanos (POI):



SAFE GRAPH

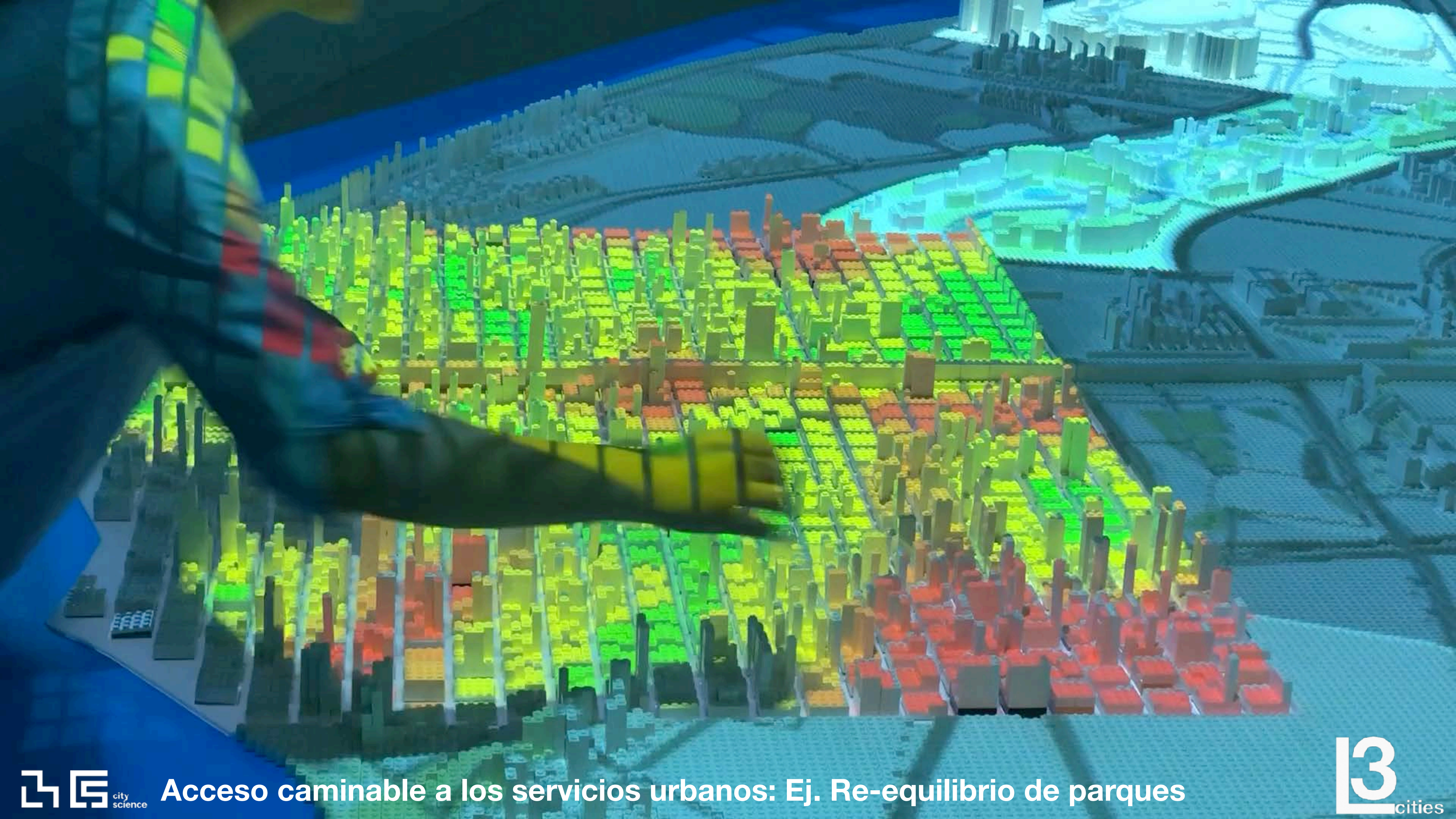
Datos de transporte que incluyen modo, propósito, origen, destino, distancia, duración, tiempos e información completa de ruta

Servicios Urbanos y Puntos de Interés ubicación y patrocinio

POI Category	Visits/person.x	Visits/place.x	Persons/place
Restaurants and Other Eating Places	6.3	2857.2	456
Lessors of Real Estate	54.8	25306.7	461
Museums, Historical Sites, and Similar Institutions	3.4	3054.4	897
Other Amusement and Recreation Industries	3.4	3084.6	914
Religious Organizations	0.7	677.5	1026
Personal Care Services	0.2	385.4	1907
Offices of Physicians	0.4	756.2	2034
Other Schools and Instruction	0.5	1054.5	2098
Specialty Food Stores	0.4	1372.4	3205
Offices of Dentists	0.2	505.7	3319
Drinking Places (Alcoholic Beverages)	0.6	2029.7	3616
Offices of Other Health Practitioners	0.1	551.3	3839
Death Care Services	0.1	582.9	4021
Building Material and Supplies Dealers	0.6	2574.6	4382
Management, Scientific, and Technical Consulting Services	0.1	505.9	4892
Grocery Stores	0.7	3399.9	4917
Depository Credit Intermediation	0.1	660.4	5239
Automotive Repair and Maintenance	0.1	500.1	5324
Child Day Care Services	0.2	1325.2	5864
Clothing Stores	0.2	1206.6	6456
Health and Personal Care Stores	0.4	2598.1	7018
Book Stores and News Dealers	0.6	4762.8	7474
Specialty (except Psychiatric and Substance Abuse) Hospitals	0.1	1066.0	8039
Other Miscellaneous Store Retailers	0.3	2290.7	8825
Electronics and Appliance Stores	0.2	1521.5	10055
Traveler Accommodation	0.4	3896.1	10431
Sporting Goods, Hobby, and Musical Instrument Stores	0.2	2448.5	10658



POI Category	Visits/person.x	Visits/place.x	Persons/place
Restaurants and Other Eating Places	6.3	2857.2	456
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7 Hyper-efficient Places of Living

Lugares hipereficientes para vivir



TikTok
@jeremycohen



1.1M



7434



74.7K

00:00/00:18

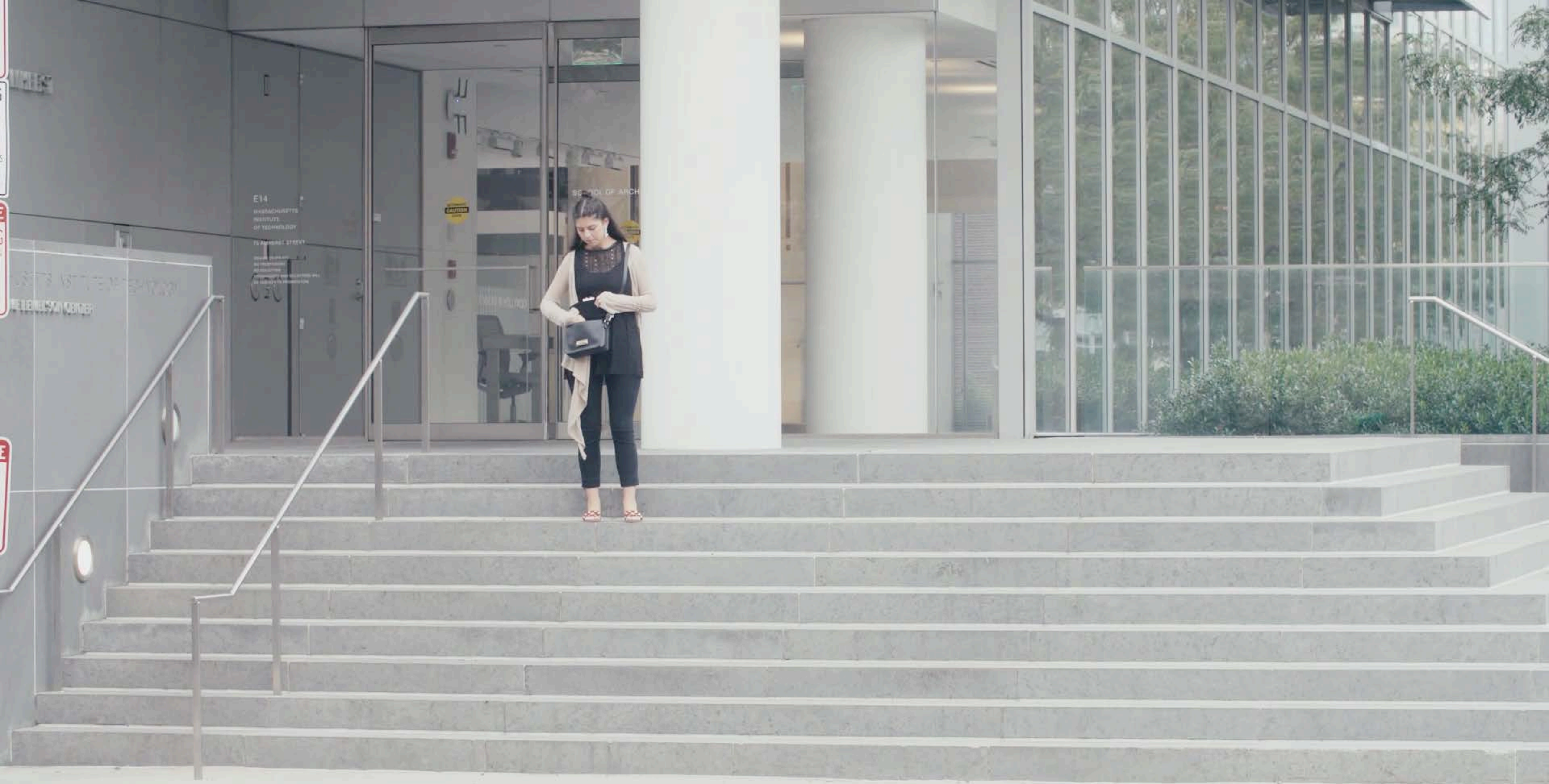


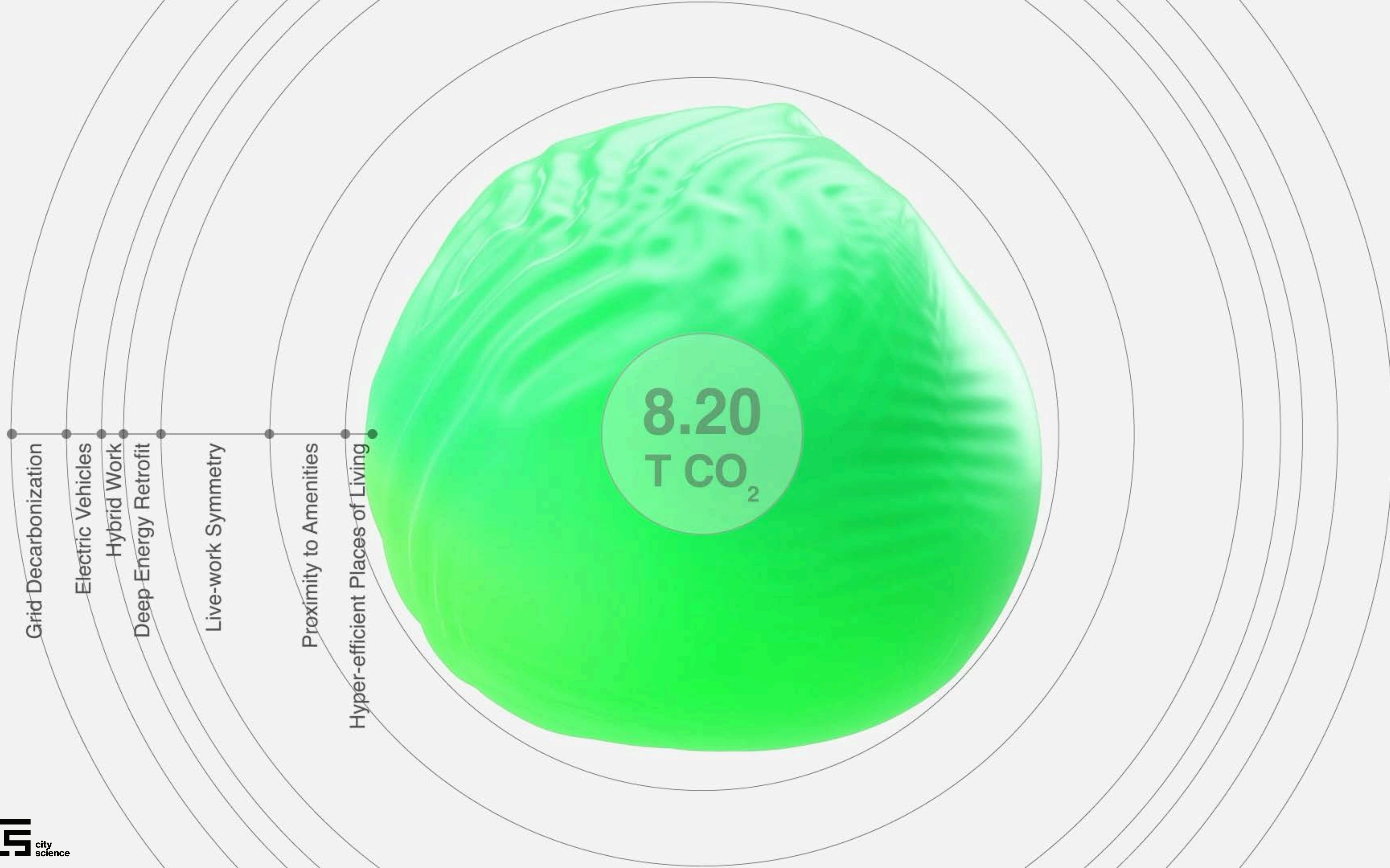




8 Lightweight Community-Scale Mobility

Movilidad ligera a escala de barrio





SPARC

9 Low-Carbon, High-Density, Community Power

Energía urbana de alta densidad

Fusion Ready Cities? - ¿Ciudades preparadas para la fusión?

**MIT
Technology
Review**

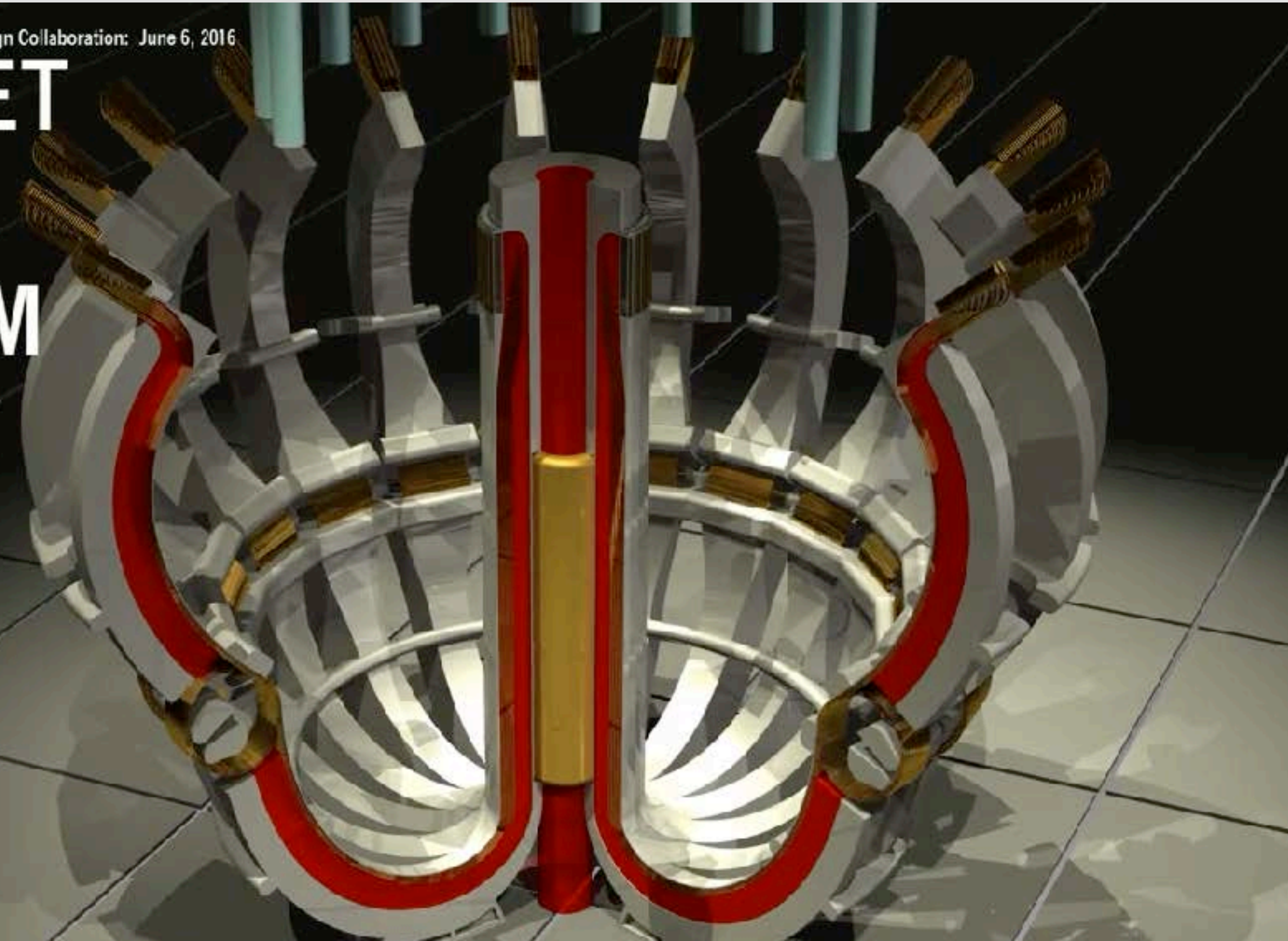
CLIMATE CHANGE

A hole in the ground could be the future of fusion power

MIT's startup Commonwealth has a new powerful magnet that could finally make fusion power a reality.

MIT Plasma Science & Fusion Center Design Collaboration: June 6, 2016

**BLANKET
AND
VACUUM
VESSEL**





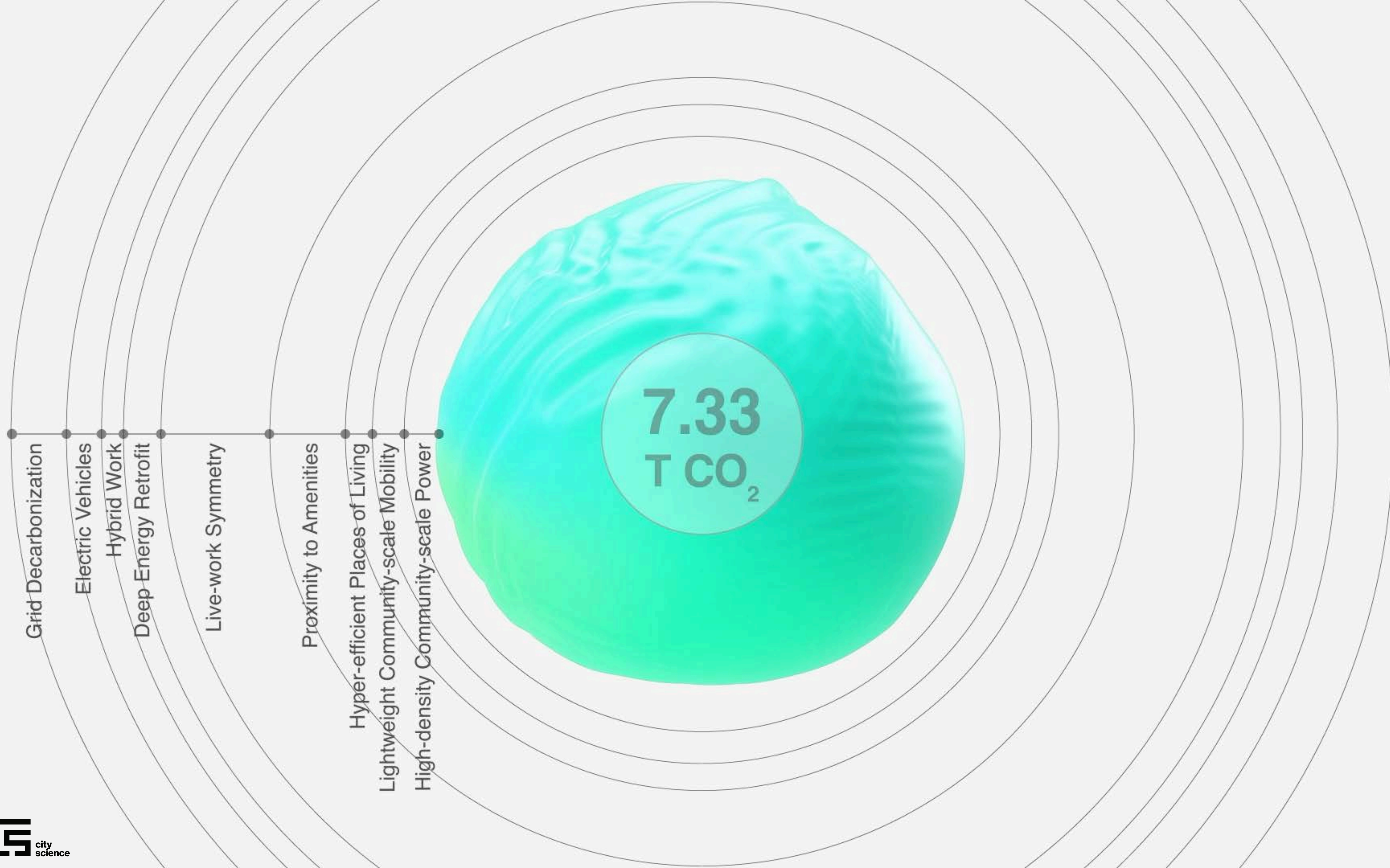
10

Low-Carbon Diet & Local Food Production

Dieta baja en carbono y producción local







Grid Decarbonization

Electric Vehicles

Hybrid Work

Deep Energy Retrofit

Live-work Symmetry

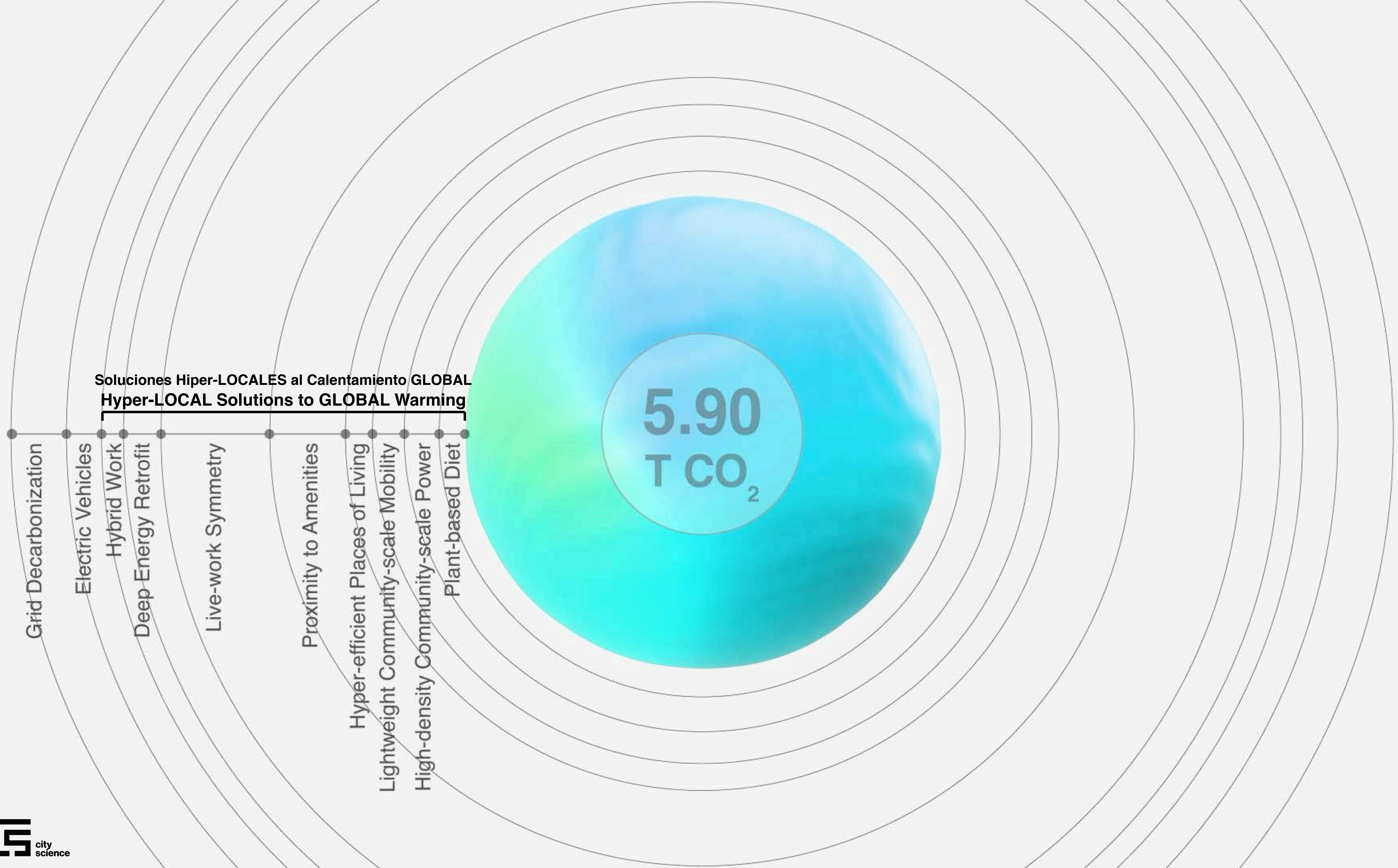
Proximity to Amenities

Hyper-efficient Places of Living

Lightweight Community-scale Mobility

High-density Community-scale Power

7.33
T CO₂



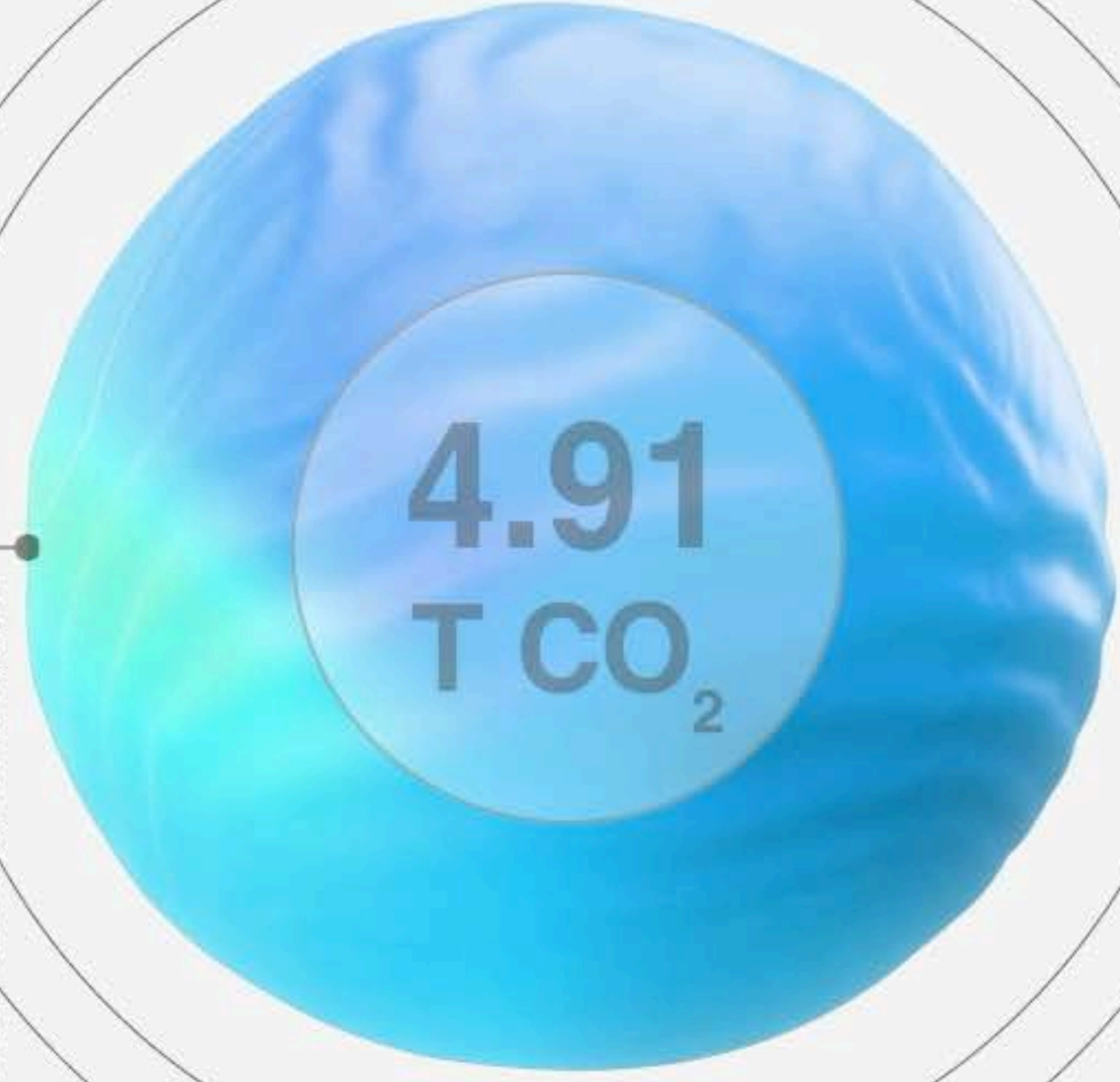
Soluciones Hiper-LOCALES al Calentamiento GLOBAL
Hyper-LOCAL Solutions to GLOBAL Warming

- Grid Decarbonization
- Electric Vehicles
- Hybrid Work
- Deep Energy Retrofit
- Live-work Symmetry
- Proximity to Amenities
- Hyper-efficient Places of Living
- Lightweight Community-scale Mobility
- High-density Community-scale Power
- Plant-based Diet



Soluciones Hiper-LOCALES al Calentamiento GLOBAL
Hyper-LOCAL Solutions to GLOBAL Warming

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- Hyper-efficient Places of Living
- Lightweight Community-scale Mobility
- High-density Community-scale Power
- Plant-based Diet
- Air Travel Decarbonization



Soluciones Hiper-LOCALES al Calentamiento GLOBAL
Hyper-LOCAL Solutions to GLOBAL Warming

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- Hyper-efficient Places of Living
- Lightweight Community-scale Mobility
- High-density Community-scale Power
- Plant-based Diet
- Air Travel Decarbonization
- Net-zero Servers





Soluciones Hiper-LOCALES al Calentamiento GLOBAL

Hyper-LOCAL Solutions to Global Warming

In sync with Nature



Screen Master



Black Panther (2018-2022)

New Technology/Material like Vibranium... Wakanda..?



CITIES

WITHOUT

ORDER

WITHOUT

PLANNING



**3.5 mil millones de personas
vivirán en comunidades sin
infraestructura.**

UN Habitat

A nighttime photograph of a city skyline with a complex, multi-level highway interchange in the foreground. The lights from the buildings and the traffic on the roads create a vibrant, colorful scene. The text is overlaid in large, white, bold letters.

Para 2050, el coste de la infraestructura convencional superaría el PIB anual combinado de los Estados Unidos, China, Europa.



POWER WITHOUT GRIDS

Community-Infrastructure

Janicki OmniProcessor





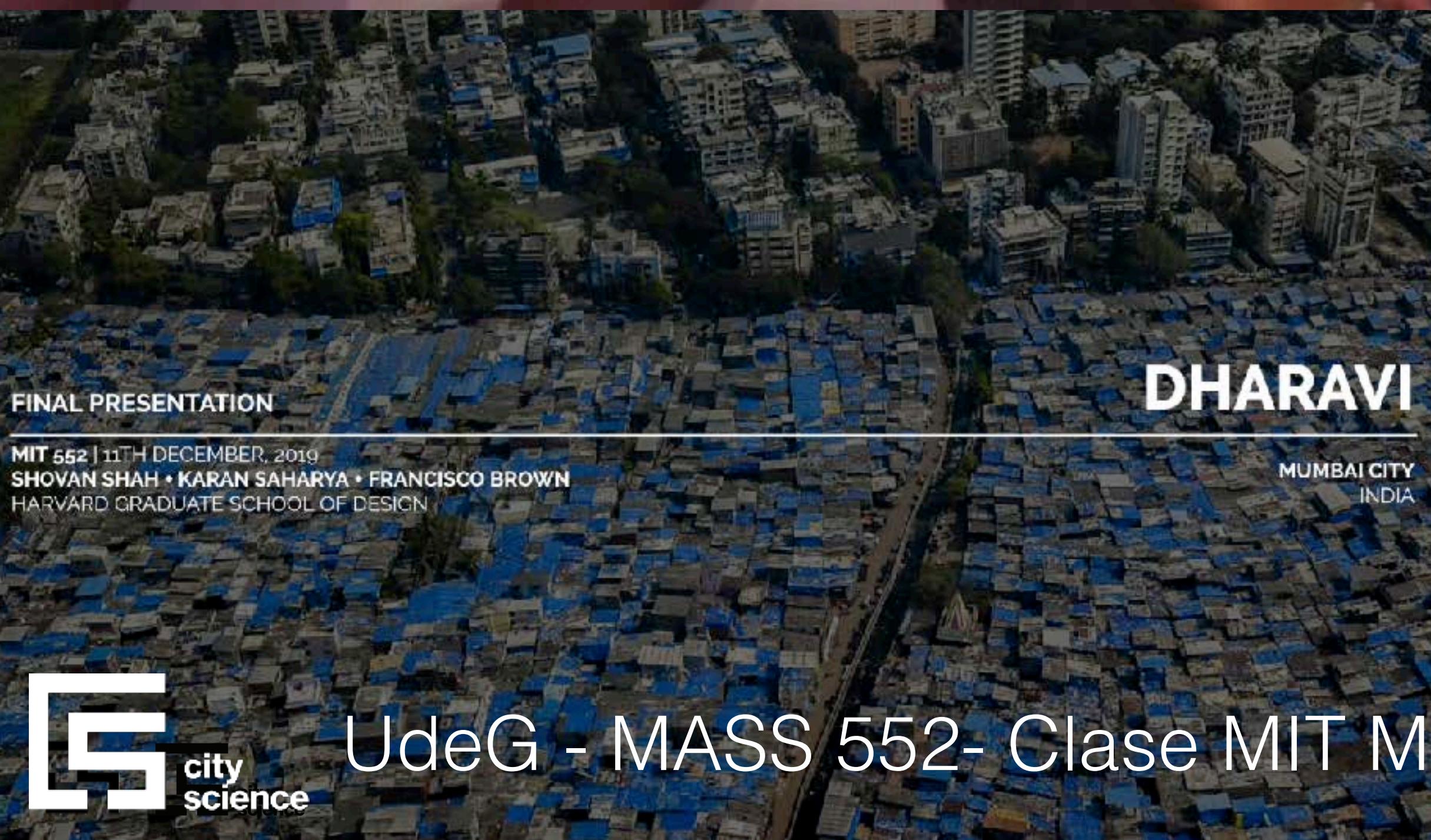
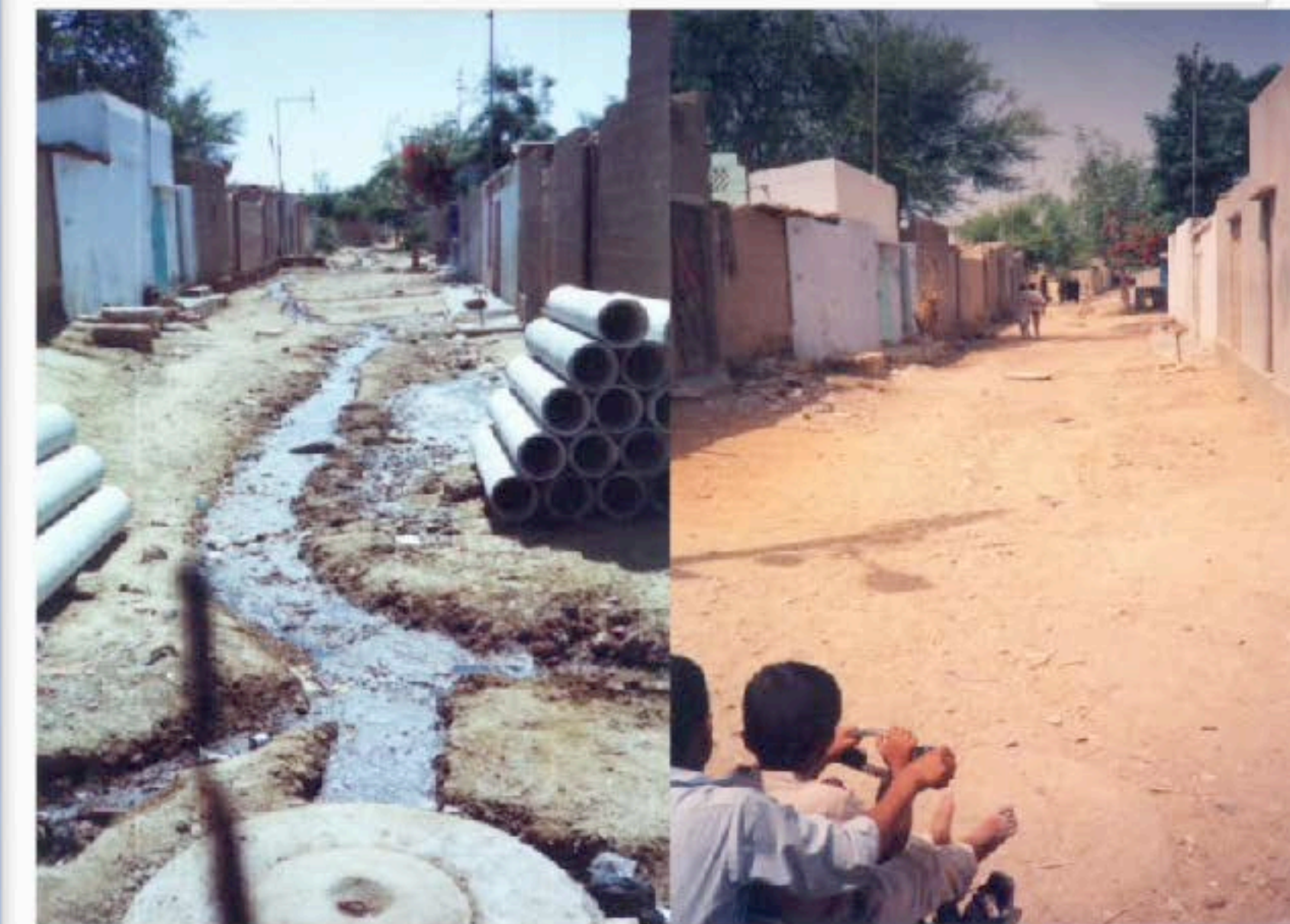
SETTLEMENTS WITHOUT

Ayswavi Attliso, Ilia Yazdanpanah, Moulshree Mittal, Stephen Zongheng Sun

GO

Strength History of Self-Organization

In 1980, the development expert and entrepreneur, Akhtar Hameed Khan, observed how many communities were self-organizing to fill the gap in services—from building homes and schools to water delivery—and launched the **Orangi Pilot Project** (OPP). Now globally renowned, the project has not only led the DIY sewage projects which continues to expand to this day, but has built a network to manage a plethora of programs, ranging from micro credit to water supply, to women's savings schemes.



FINAL PRESENTATION

MIT 552 | 11TH DECEMBER, 2019
SHOVAN SHAH • KARAN SAHARYA • FRANCISCO BROWN
HARVARD GRADUATE SCHOOL OF DESIGN

DHARAVI

MUMBAI CITY
INDIA



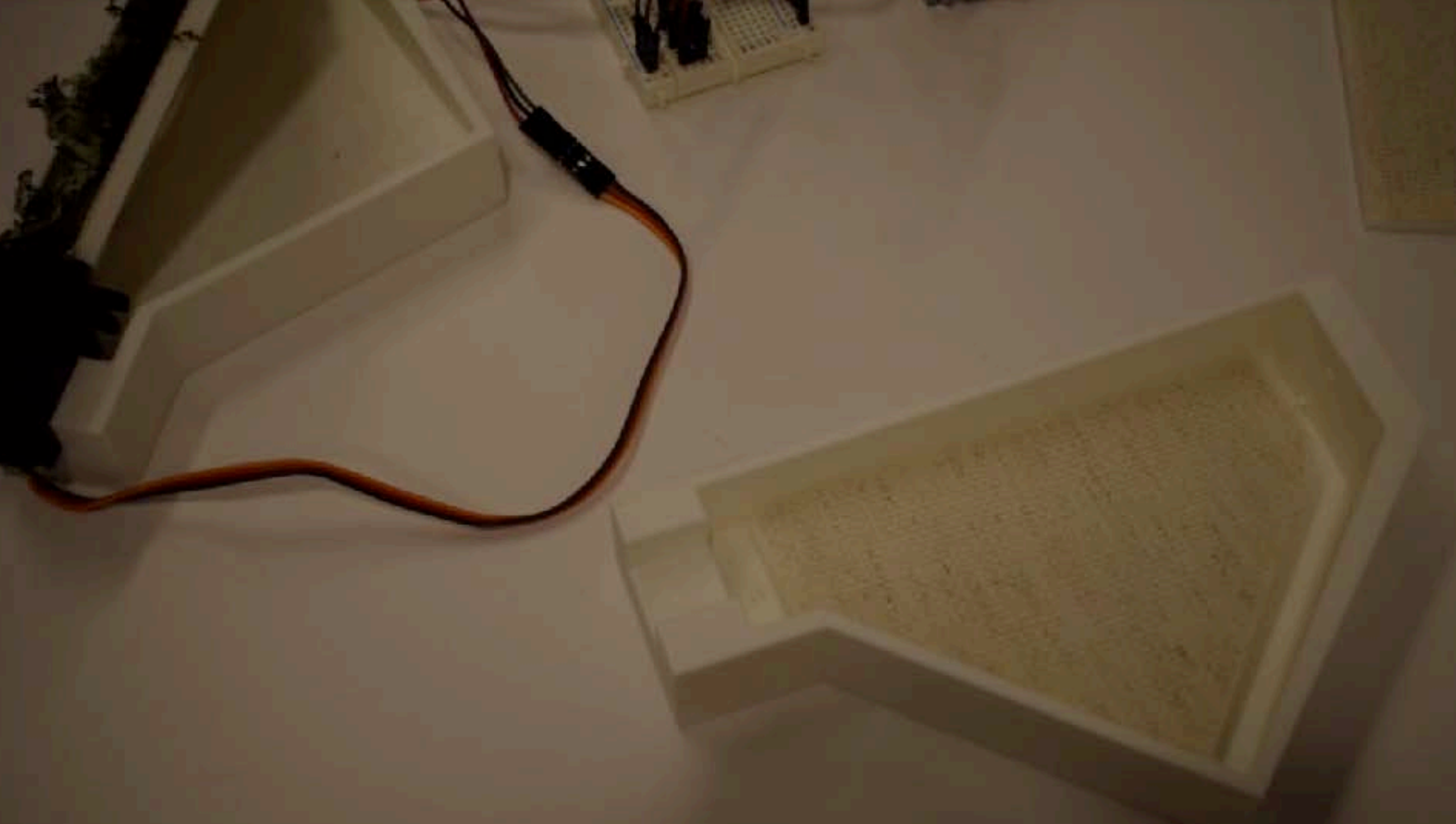
ISDA

Tondo, Manila

Nicolas Ayoub, Nick Beer, Andres Rico
Settlement Without - MIT Media Lab, Fall 2019

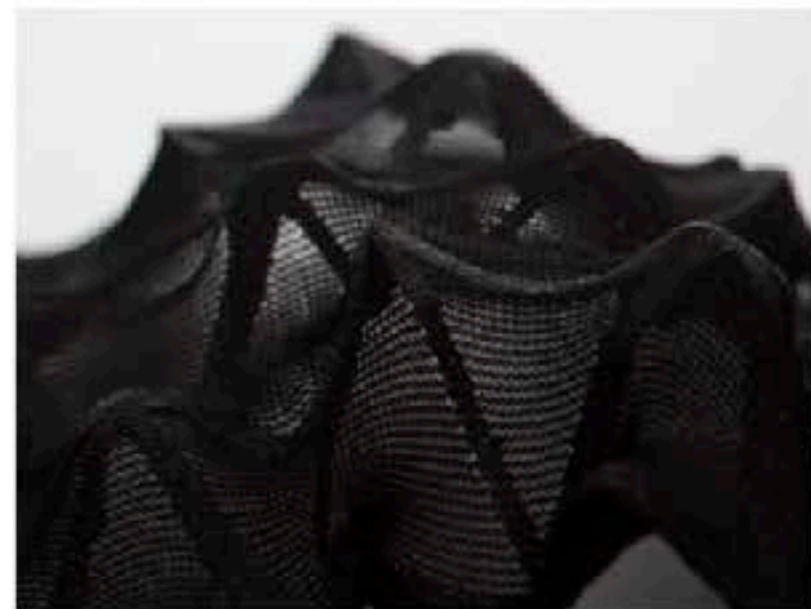
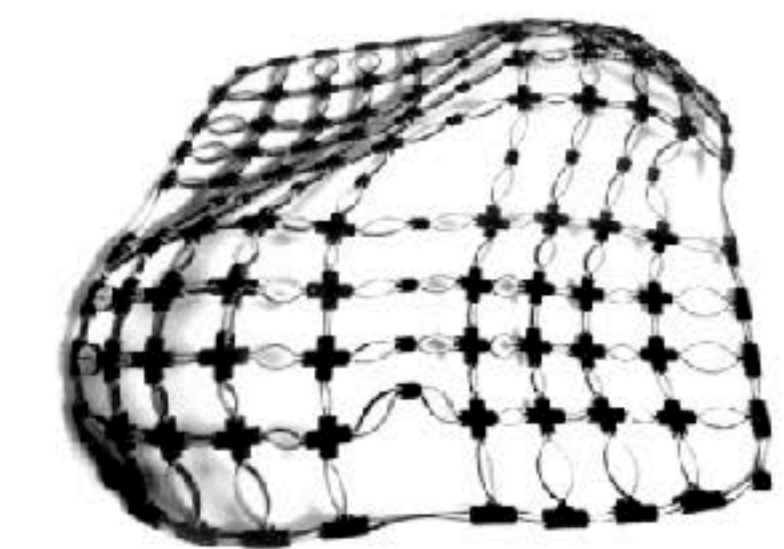


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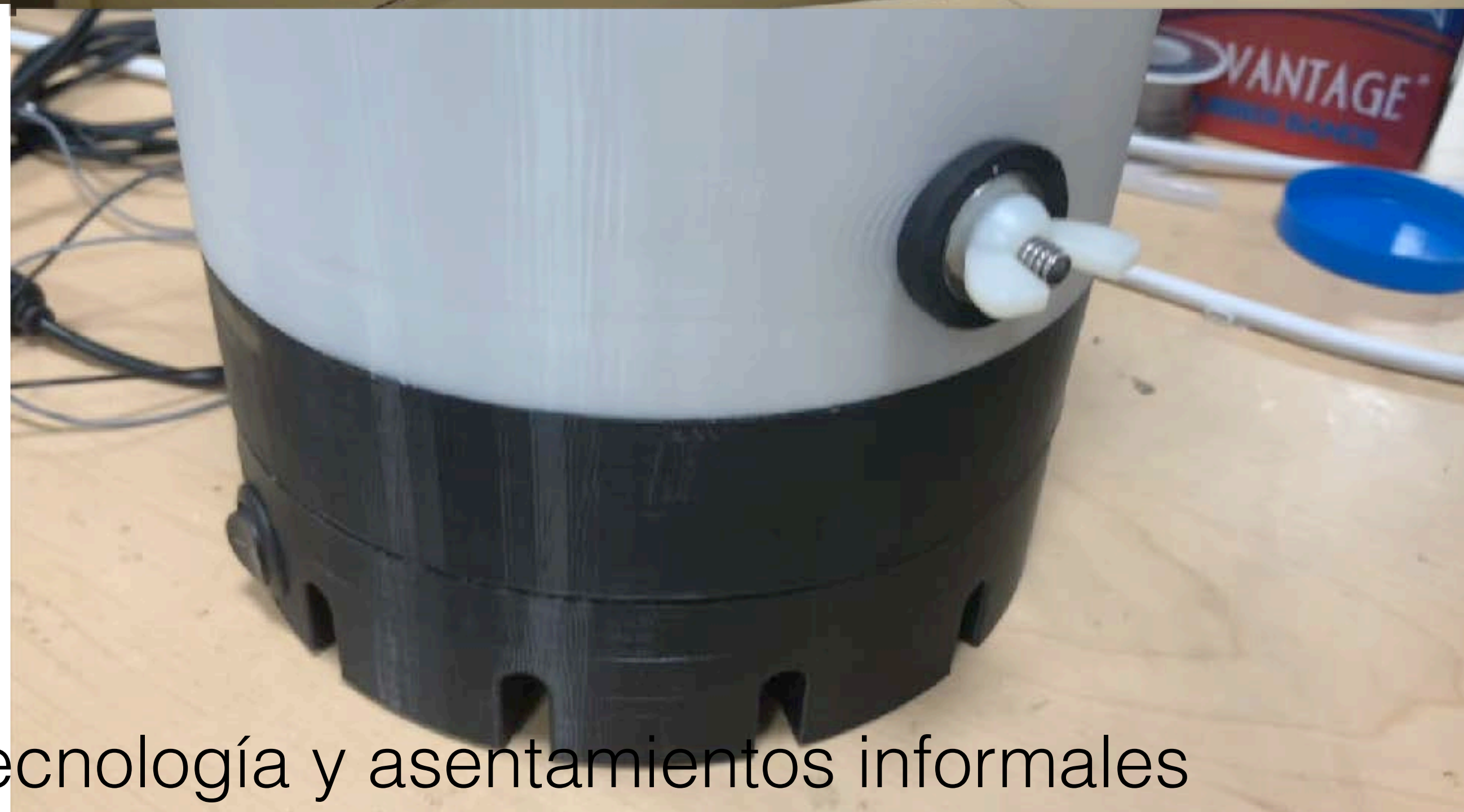
PROTOTYPE DESIGN | MATERIAL TECHNOLOGY

4D-PRINTED PROGRAMMABLE MATERIALS



- Robotics-like behavior without reliance on complex electro-mechanical devices as well as adaptive products or mechanisms that respond to user-demands and fluctuating environments.
- Designed to become highly dynamic in form and function, yet they are as cost-effective as traditional materials, easily fabricated and capable of flat-pack shipping and self-assembly.

Source: <https://science.sciencemag.org/content/364/6445/11057>
<https://doi.org/10.1126/science.1250147>
 Material sample by Gabe Fields



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Limpieza y cuidado de lomas del centinela - Concurso de Murales- Mural en el cristo



“smart” city
“green” city
“sustainable” city
“intelligent” city
“low-carbon” city
“eco” city
“resilient” city
“digital” city”



“smart” city
“green” city
“sustainable” city
“intelligent” city
“low-carbon” city
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“digital” city”



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¡Muchas gracia - Thank you very much!

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