

Fab City Global Initiative

Tomas Diez

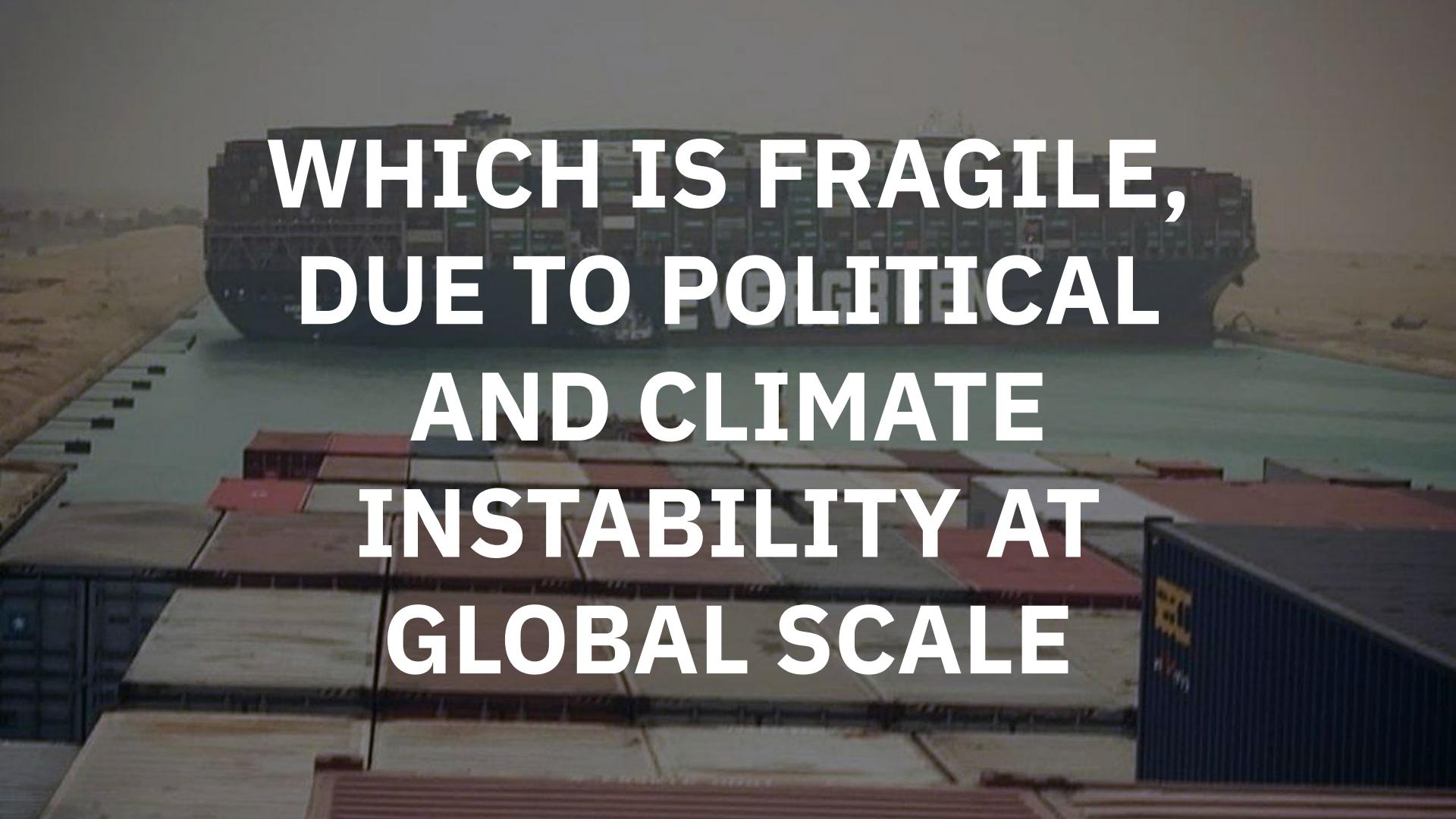


An aerial photograph of a city, likely Houston, Texas, showing a dense network of roads, highways, and urban development. The image captures the intricate patterns of the city's infrastructure and surrounding residential areas.

CITIES WANT TO
REINVENT THEIR
URBAN MODEL

An aerial photograph of a large commercial port. The foreground and middle ground are filled with numerous shipping containers stacked in organized rows. Industrial gantry cranes with yellow booms are positioned between the stacks, some with containers on their hooks. In the background, a large cargo ship is docked at a terminal. The water of the harbor is visible on the right side. The overall scene represents a major global supply chain hub.

THEIR
CONSUMPTION-ONLY
PARADIGM DEPENDS
ON GLOBAL SUPPLY
CHAINS

A large cargo ship is docked at a port, with many shipping containers stacked along the pier. The sky is overcast and hazy. The text is overlaid on the middle-left portion of the image.

WHICH IS FRAGILE,
DUE TO POLITICAL
AND CLIMATE
INSTABILITY AT
GLOBAL SCALE

The background image is a composite aerial photograph. The left side shows a patchwork of agricultural fields in various stages of cultivation, with some water bodies reflecting the sky. The right side shows a massive, deep open-pit mine with numerous horizontal terraces and winding roads or conveyor belts running along the bottom. The overall scene illustrates the scale of industrial extraction and its impact on the landscape.

**AND THAT IS
EXTREMELY COSTLY
FROM
ENVIRONMENTAL
AND SOCIAL POV**

FAB CITY WANTS TO BRING BACK PRODUCTION TO CITIES AND BIOREGIONS...





33
YEARS

49
DAYS

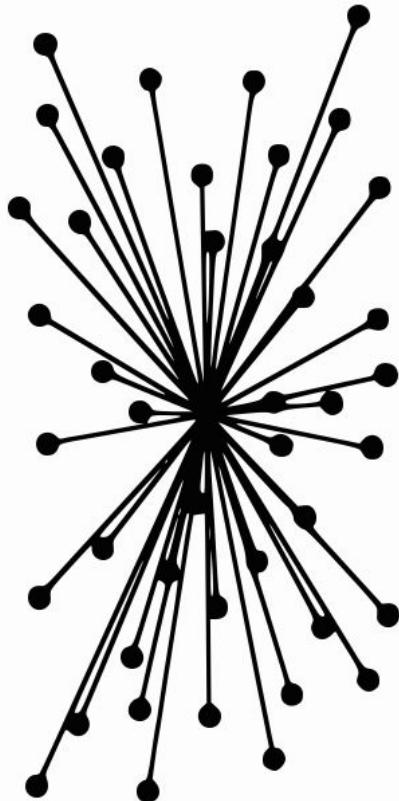
6
HOURS

17
MINUTES

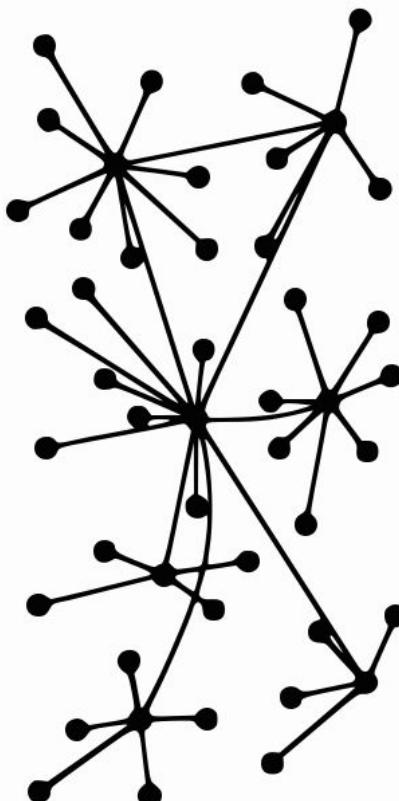
39
SECONDS

Until cities produce
everything they consume.

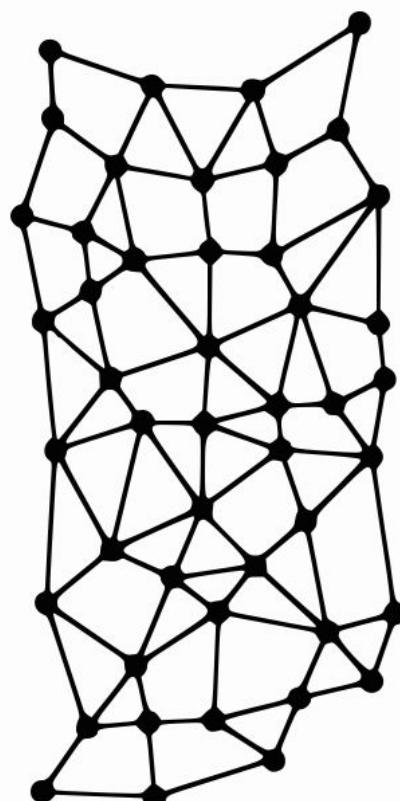
...BEFORE JULY 2054



Centralized

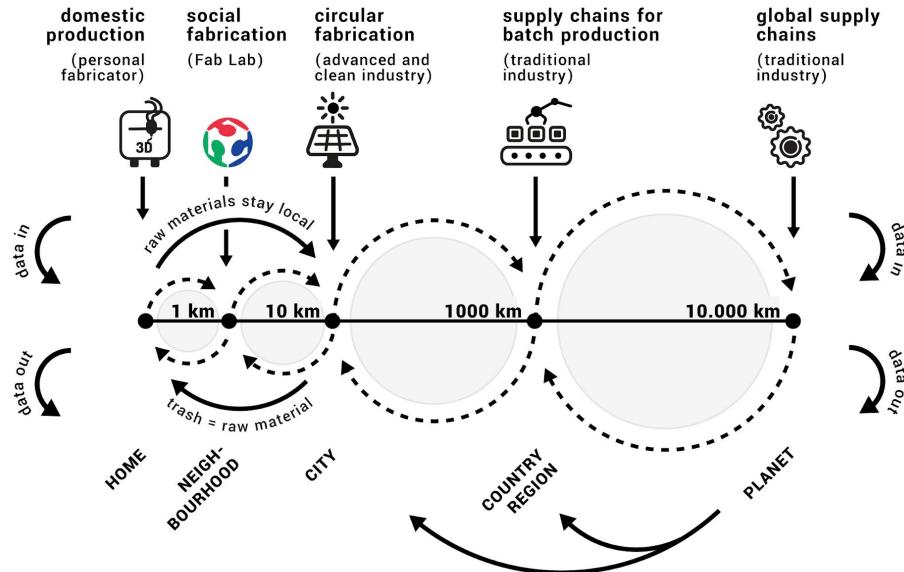


Decentralized



Distributed

RESCALING GLOBAL PRODUCTION



↳ Model: DIDO - Data In / Data Out

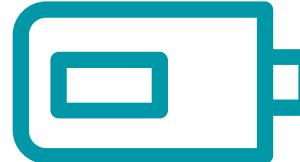
The Fab City Global Initiative proposes for cities and regions to look at their production infrastructure as an ecosystem, that is complementary, and multiscalar.



40 Year Plan: Produce what the city consumes by 2054



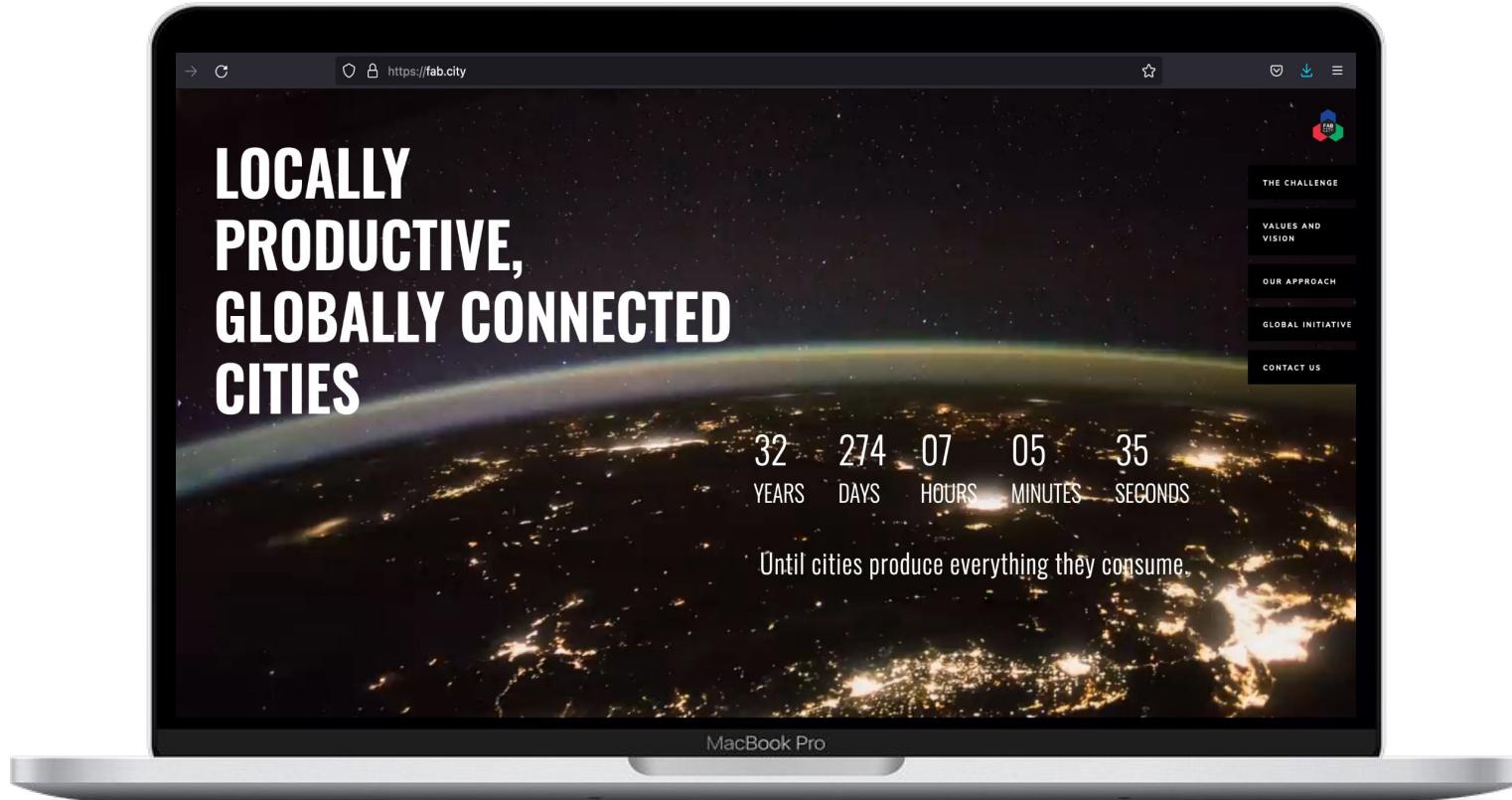
FOOD



ENERGY



MATERIALS



Organisation



GLOBAL

Network

Network of cities, regions and settlements who have taken up the challenge to move towards local production by 2054



GLOBAL

Collective

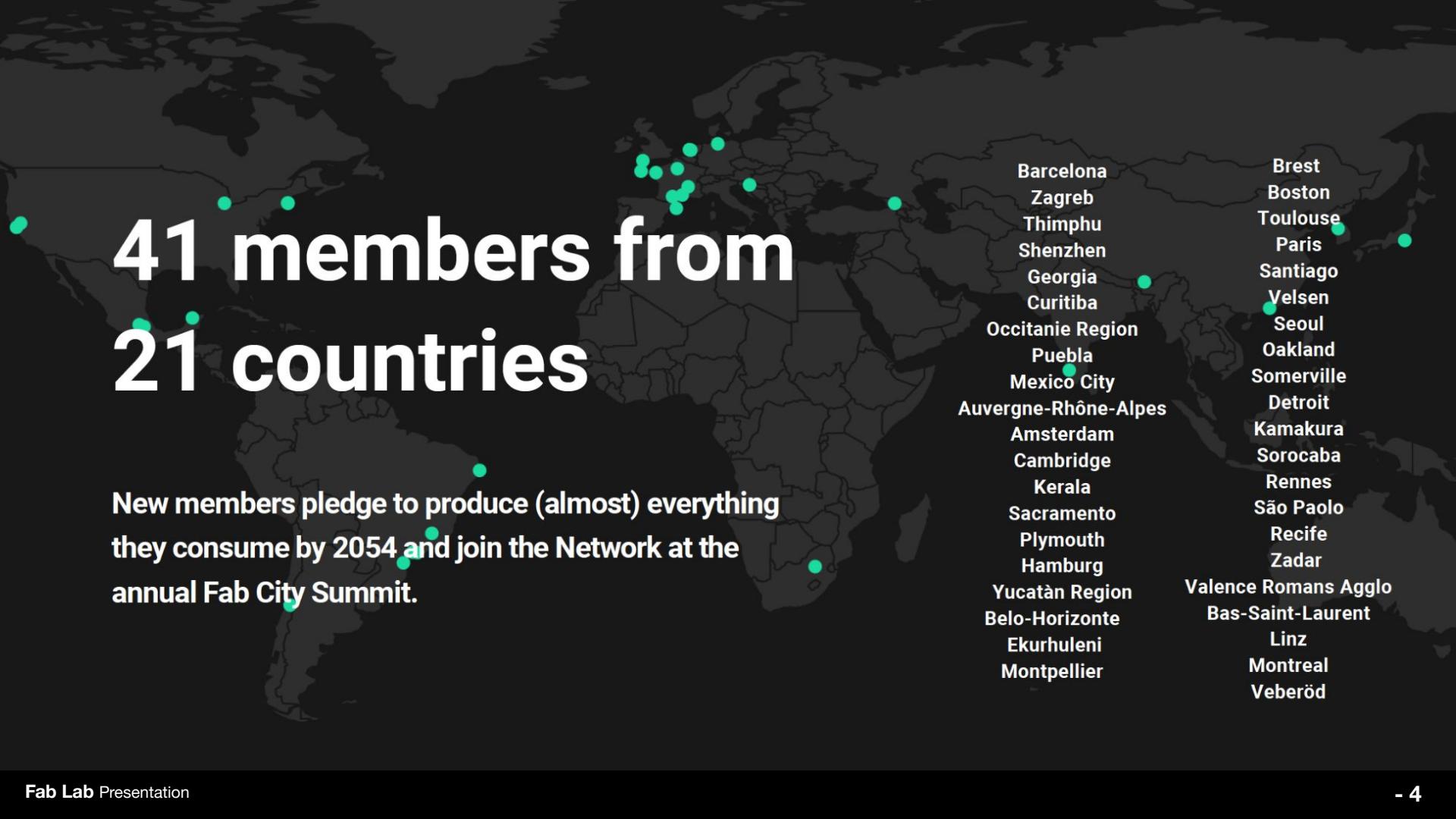
Individuals and organisations who have been instrumental in establishing the goals and objectives of Fab City.



DIGITAL/ESTONIA

Foundation

Supports the global initiative through the development of projects and educational programs.

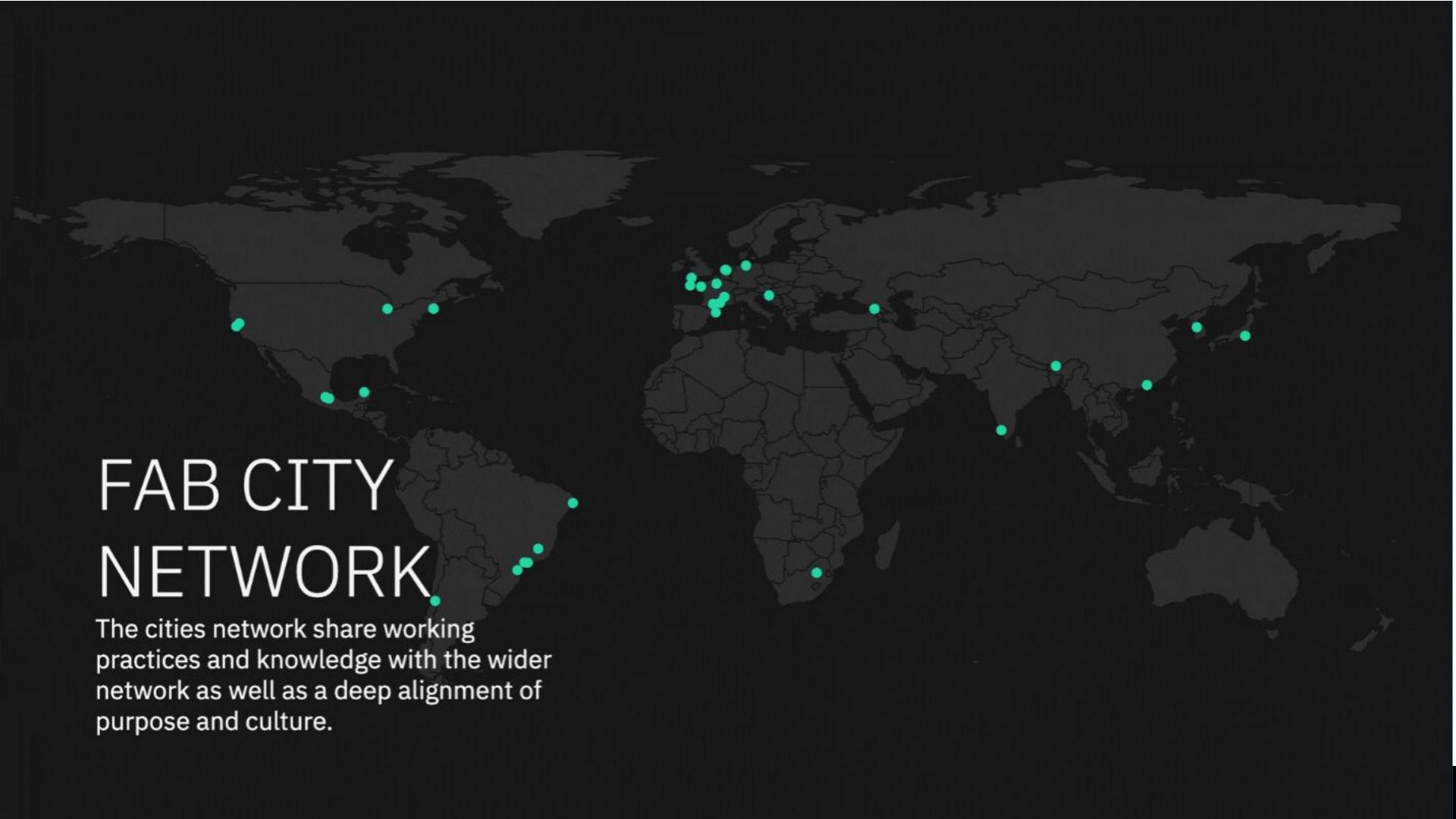


41 members from 21 countries

New members pledge to produce (almost) everything they consume by 2054 and join the Network at the annual Fab City Summit.

Barcelona	Brest
Zagreb	Boston
Thimphu	Toulouse
Shenzhen	Paris
Georgia	Santiago
Curitiba	Velsen
Occitanie Region	Seoul
Puebla	Oakland
Mexico City	Somerville
Auvergne-Rhône-Alpes	Detroit
Amsterdam	Kamakura
Cambridge	Sorocaba
Kerala	Rennes
Sacramento	São Paolo
Plymouth	Recife
Hamburg	Zadar
Yucatán Region	Valence Romans Agglo
Belo-Horizonte	Bas-Saint-Laurent
Ekurhuleni	Linz
Montpellier	Montreal
	Veberöd

FAB CITY NETWORK



The cities network share working practices and knowledge with the wider network as well as a deep alignment of purpose and culture.



Examples of projects and initiatives that are taking place in Fab Cities today to build the cities of the future.



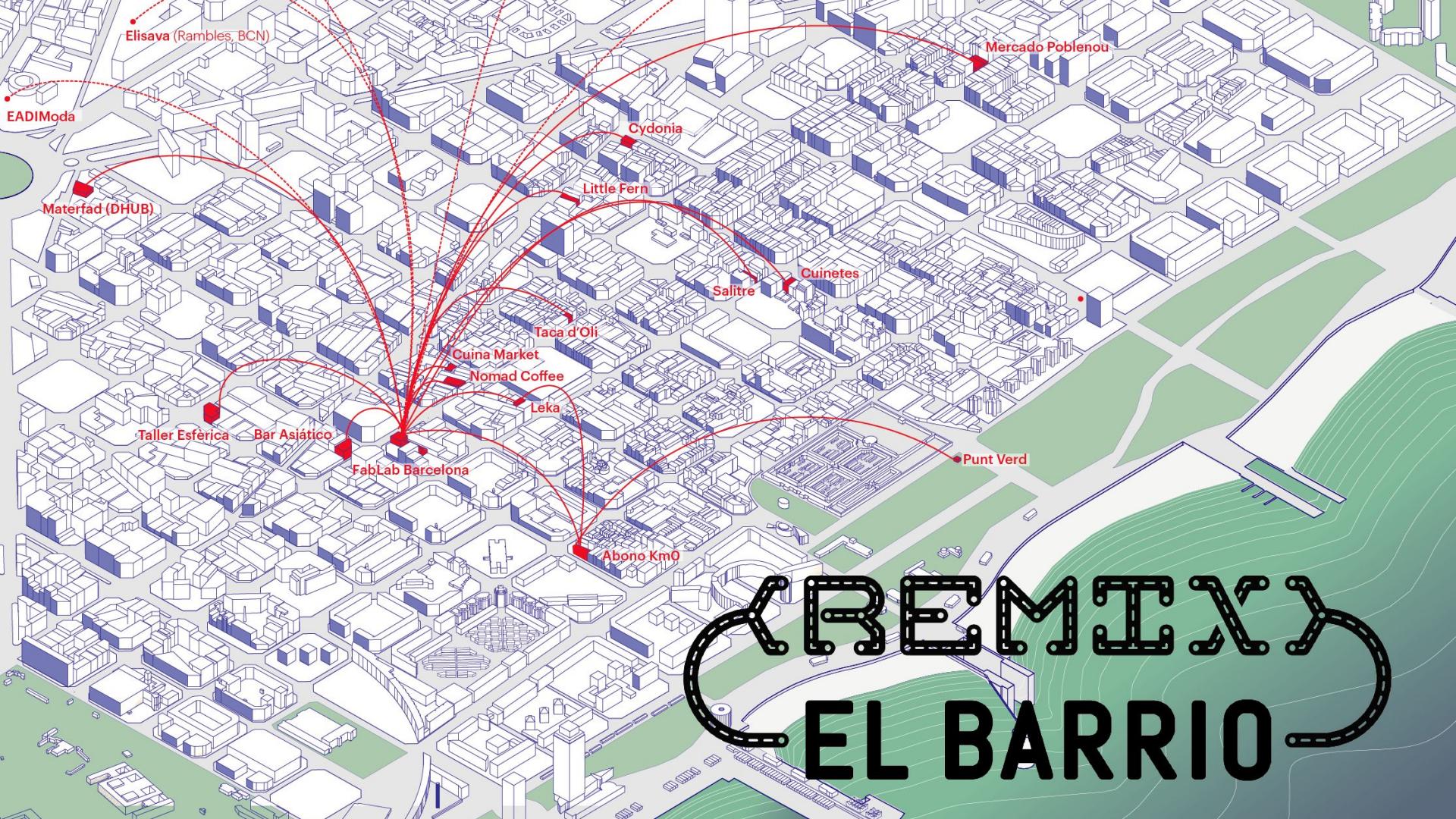
Barcelona



Circular food and materials with Remix el Barrio.

A neighbourhood movement to make beautiful salable objects from food waste!





CREMEX
EL BARRIO



Collection

Gelatin plastics

Process

Ground, Molded, Cast, Cut, Mixed, Air Dried,

License

CC BY-SA 4.0

Difficulty



Tools

Cooker/stove/hotplate, Teaspoon, Measuring Cup, Cooking pot, Scale, Thermometer, Stirring spoon, Container or bowl, Flat surface, Mold, Blender, Spray bottle,

Source

other FabTextiles Anastasia Pistofidou
Aurore Bourguignon

Composition



Glycerol

5 grams



Coffee grounds [used]

2 grams



Sodium Alginate

2 grams



Olive Oil

2 grams



Calcium chloride

7 grams



Water

35 grams

**KOFI**

Papel y packaging de cáscara de café

Esta iniciativa de Remix el Barrio nos ha permitido explorar colectivamente qué tipos de residuos orgánicos podemos reciclar localmente, y qué materiales se pueden conseguir con cada uno.

Esas investigaciones comenzaron con materiales prensados que durante el proceso de secado pueden adaptarse a diversas formas orgánicas creando objetos ligeros, imperfectos y bellos.

La decisión fue trabajar con la materia prima que era más eficiente y aportaba el mayor valor conceptual.

La cáscara del café es un residuo inevitable del proceso de tostado, que tiene como ventaja que ya está deshidratado y que son trozos pequeños, dos procesos que toda materia orgánica debe seguir para poder trabajar con la misma. Además de tener muy buen olor.

El proceso de diseño para esta cáscara de café abre un nuevo nivel de oportunidades. Este es un proceso más accesible que obtener una gran pasta, y permite formar formas mucho más grandes. Y además se puede combinar con más procesos ya estandarizados por la industria.

El proceso final requiere separar las fibras mediante cocción, y suspenderlas en agua con aglutinantes naturales, que al recolectarlos en una capa fina se conforma en papel.



Participantes: Dihue Miguez

Colaboradores: Nomad Coffee, Restaurante Leka

Contacto: @dihuemiguez



Making Paper from Coffee Husks - REMIX EL BARRIO

1,028 views • Feb 19, 2021

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Fab Lab Barcelona
972 subscribers

SUBSCRIBED



Vienna

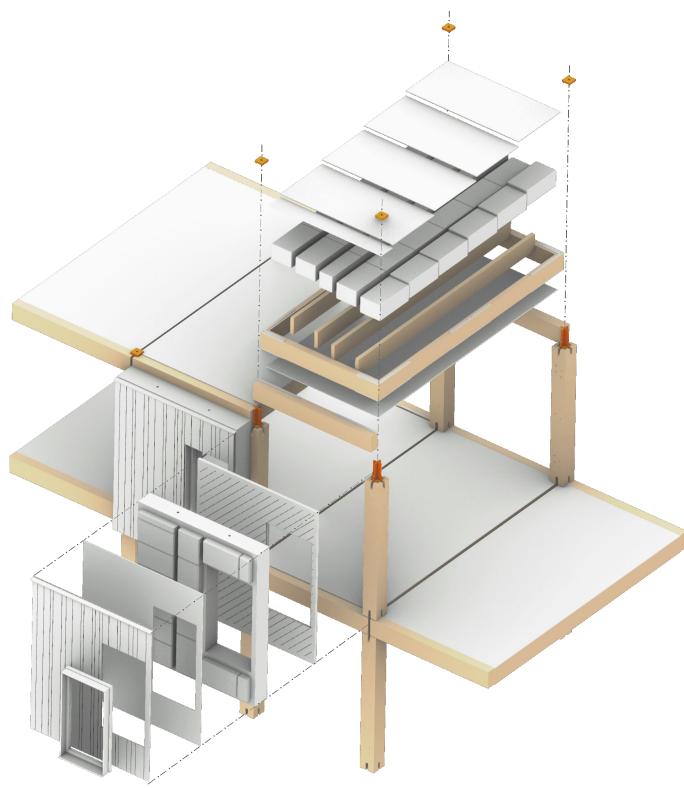


Build your own
multi-story
house.

vivihouse is an easy-to-build house
that is modular, customizable and
scalable!









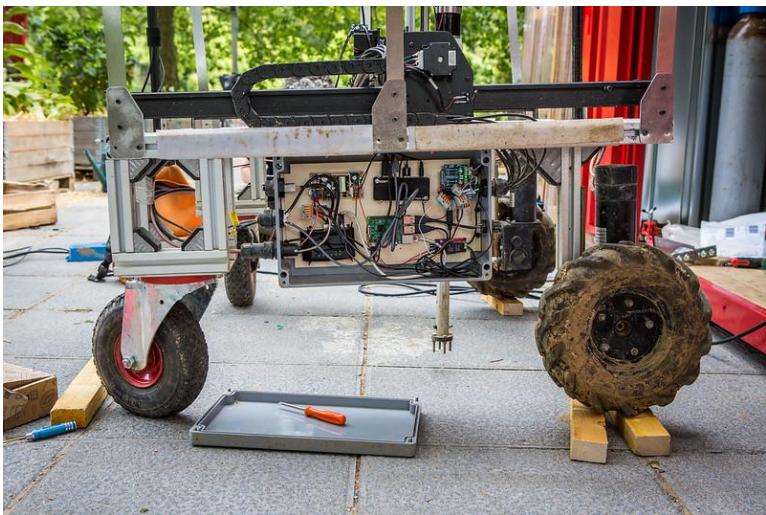
Chatelain/Barcelona



Program your
garden with Romi
family of robots.

Small-scale automated garden
solutions make urban and peri-urban
farming more efficient and fruitful!

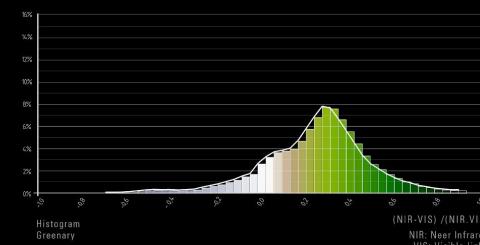
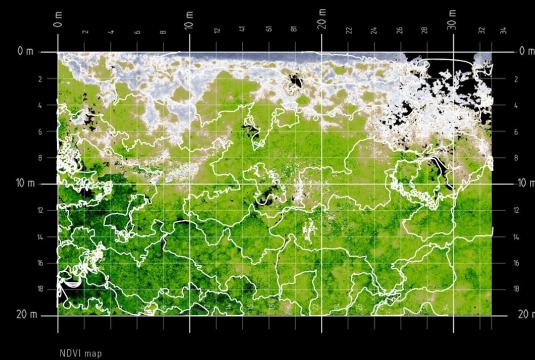
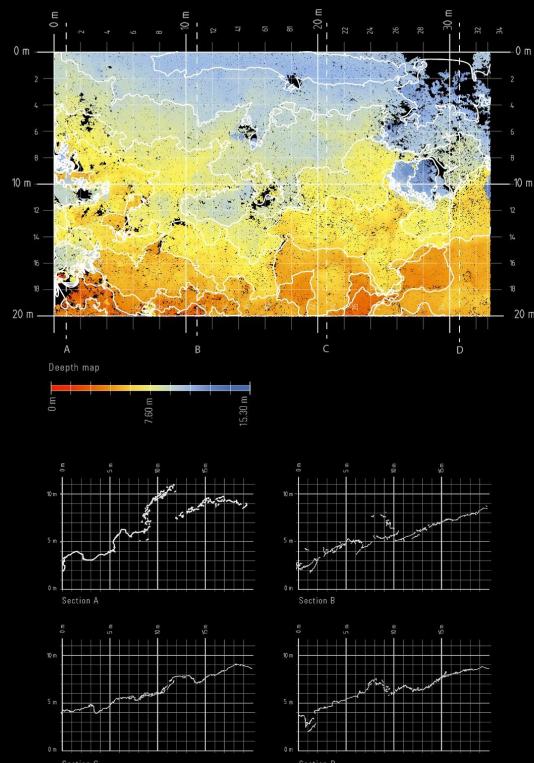




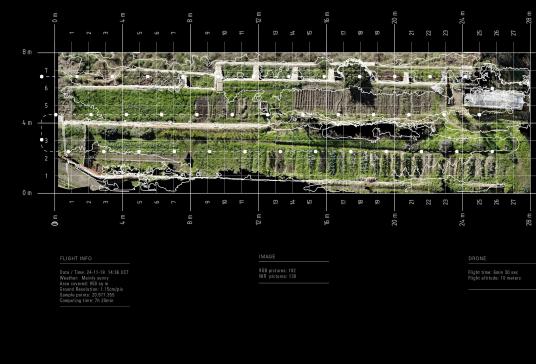
Total detected - 200504



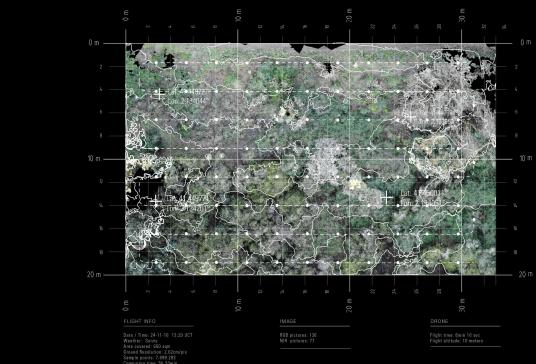
R4 | MELLIFEROUS GARDEN
VALDAURA RESEARCH GARDEN



R1 | HORTICULTURE
VALDAURA RESEARCH GARDEN

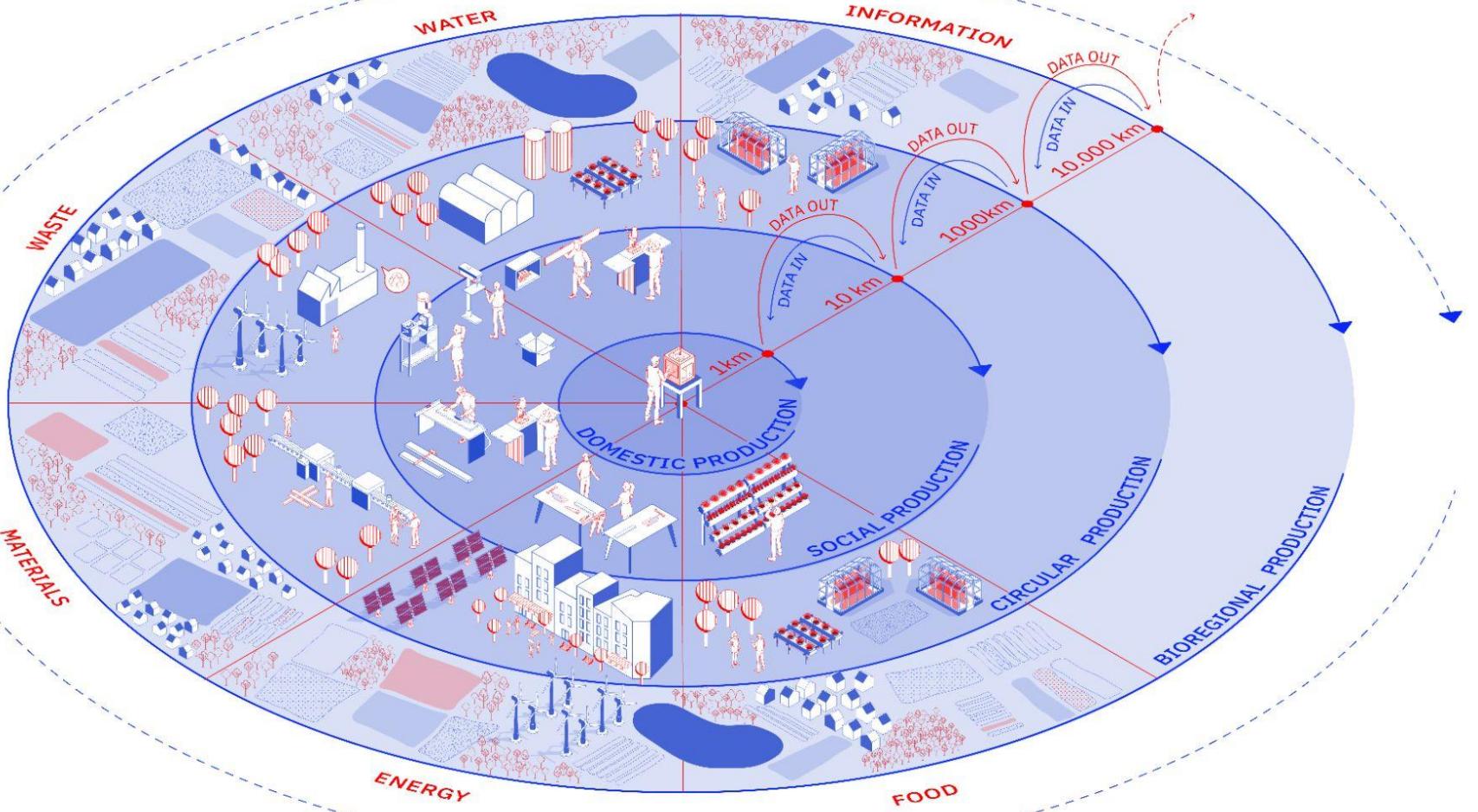


R4 | MELLIFEROUS GARDEN
VALDAURA RESEARCH GARDEN







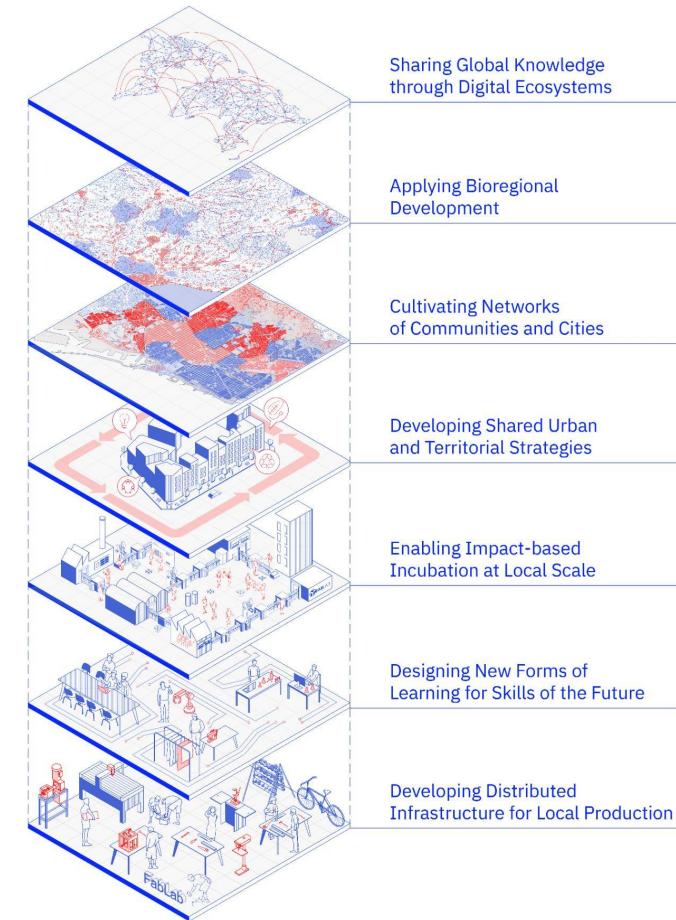
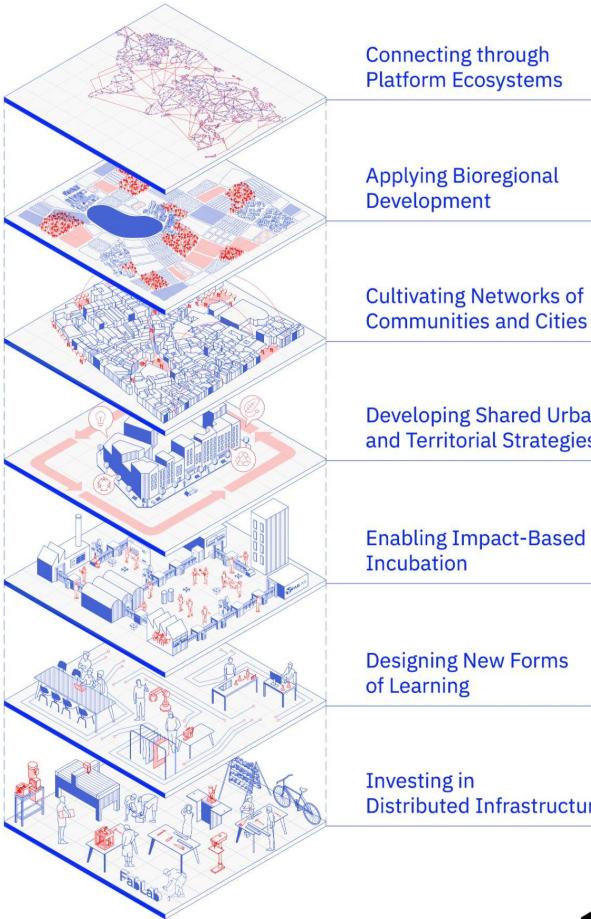


**HOW IS THIS GOING
TO HAPPEN?**

**THE FAB CITY FULL
STACK PROVIDES AN
INITIAL RESPONSE
TO **HOW** WE WILL
MAKE FAB CITIES
POSSIBLE**

FULL STACK

The Fab City Global Initiative is envisioning and constructing possible urban futures by working at multiple and interconnected scales.



STRATA

The Fab City STRATA is composed by complementary and non-linear layers. The STRATA works as a Full Stack for cities, regions and towns, to make operative the Fab City implementation in a multiscalar and ecosystemic approach.



**AND NOW WE WANT
TO PROVIDE THE
TOOLS TO DEVELOP
**STRATEGIC ACTION
PLANS** FOR CITIES
AND REGIONS**

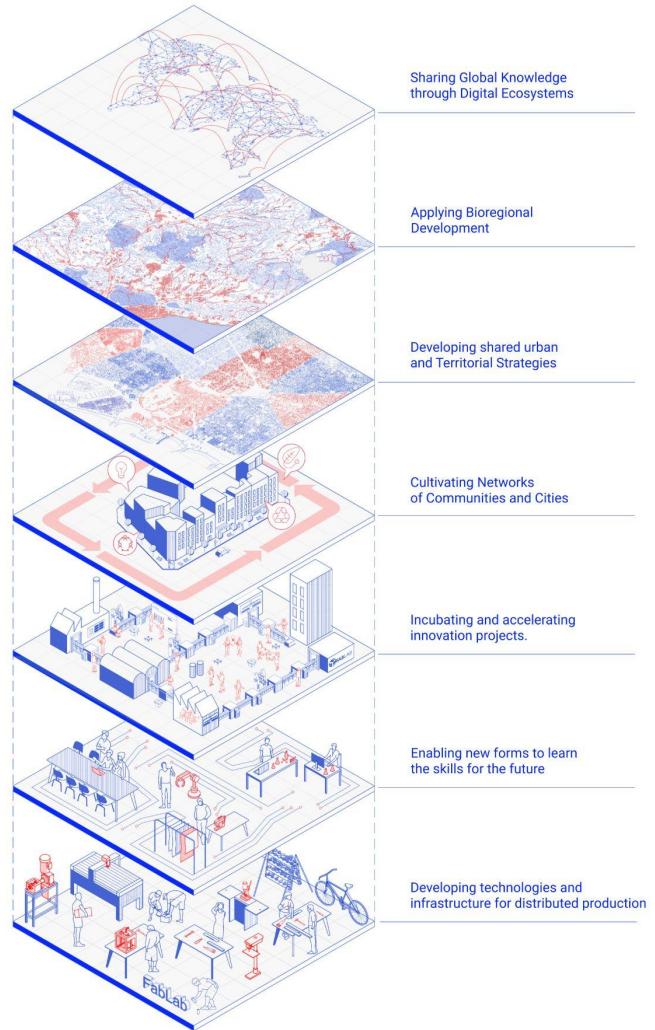
FAB CITY FULL STACK

A tool to develop Strategic Action Plans based in
distributive and regenerative principles



How it works?

The layers help cities and regions to identify disaggregated efforts as part of their local strategy to transform their production model. Each layer has examples from other Fab Cities, or outside, which can inspire and help cities to refine their efforts at the local level. Cities can start applying the Fab City Full Stack from any of the layers, without a specific order.



THE LAYERS IN DETAIL





**Developing
distributed
infrastructure
for local
production**



Fablabs.io

Search, anything

Labs Orgs Machines Jobs Events Network Projects Forum

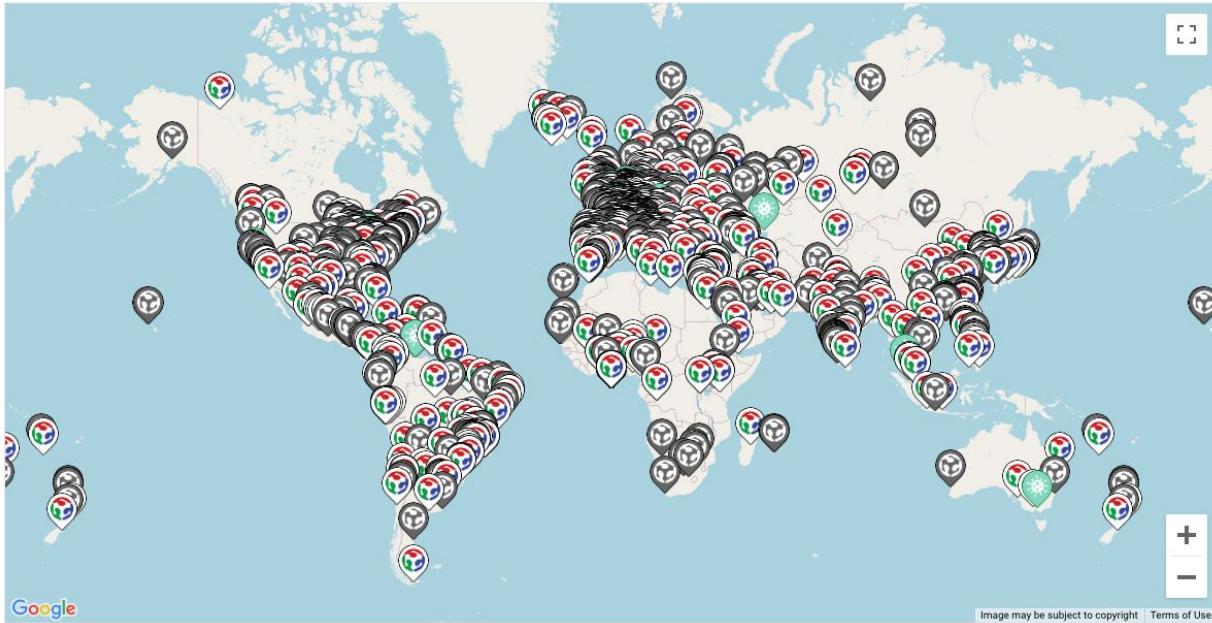
Sign in

Sign up

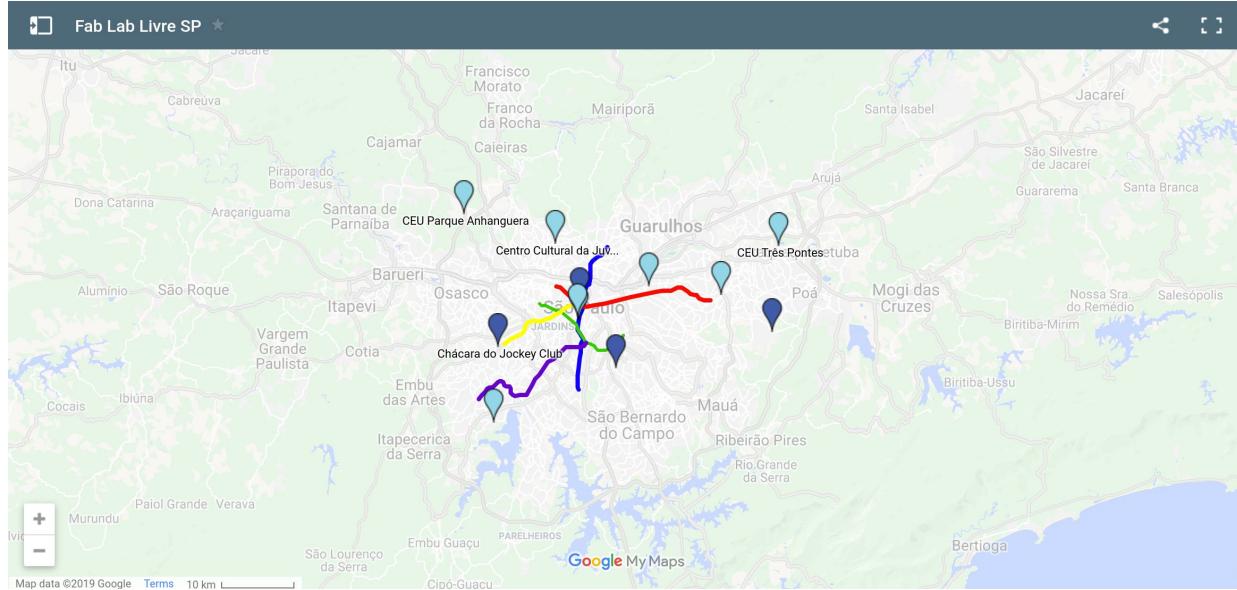
List view

Map view

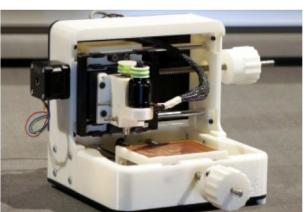
+ Add Lab



Global Fab Lab
Network. Over 2000
Fab Labs worldwide.
Source:
<http://www.fablabs.io>



Fab Labs as public infrastructure in São Paulo. 12 Fab Labs have been developed by the City Council in the most deprived areas in order to provide skill building and also solutions to local needs.



MTM LJ
(2009)

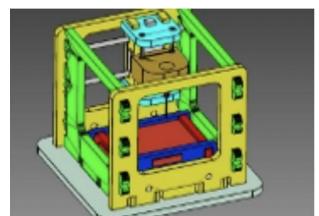
CAST CEMENT CNC
(2010)

FAB IN A BOX
(2010)

CLANK-LZ
(2020)

NEO PICO
(2021)

CLANK / MUDSTACK
(2021)



MTM SNAP
(2011)

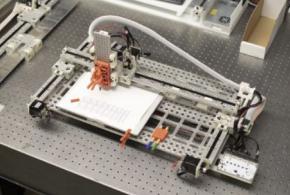
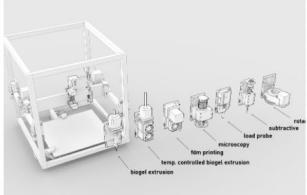
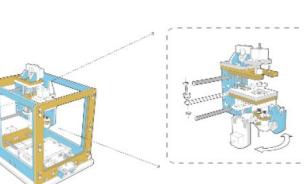
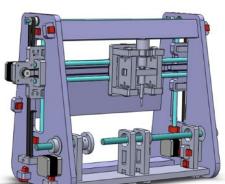
DIY EDM
(2012)

FOLDAFAB
(2012)

MICROPANTO
(2021)

PARALLEL PRISMATIC ACTUATOR
(2021)

URUMBOT
(2021)



MULTI PROCESS LATHE
(2012)

POP FAB
(2012)

TIMING BELT 5 AXIS
(2012)

CLANK!
(2022)

PCB MILL
(2008)

LITTLE RASCAL
(2019)



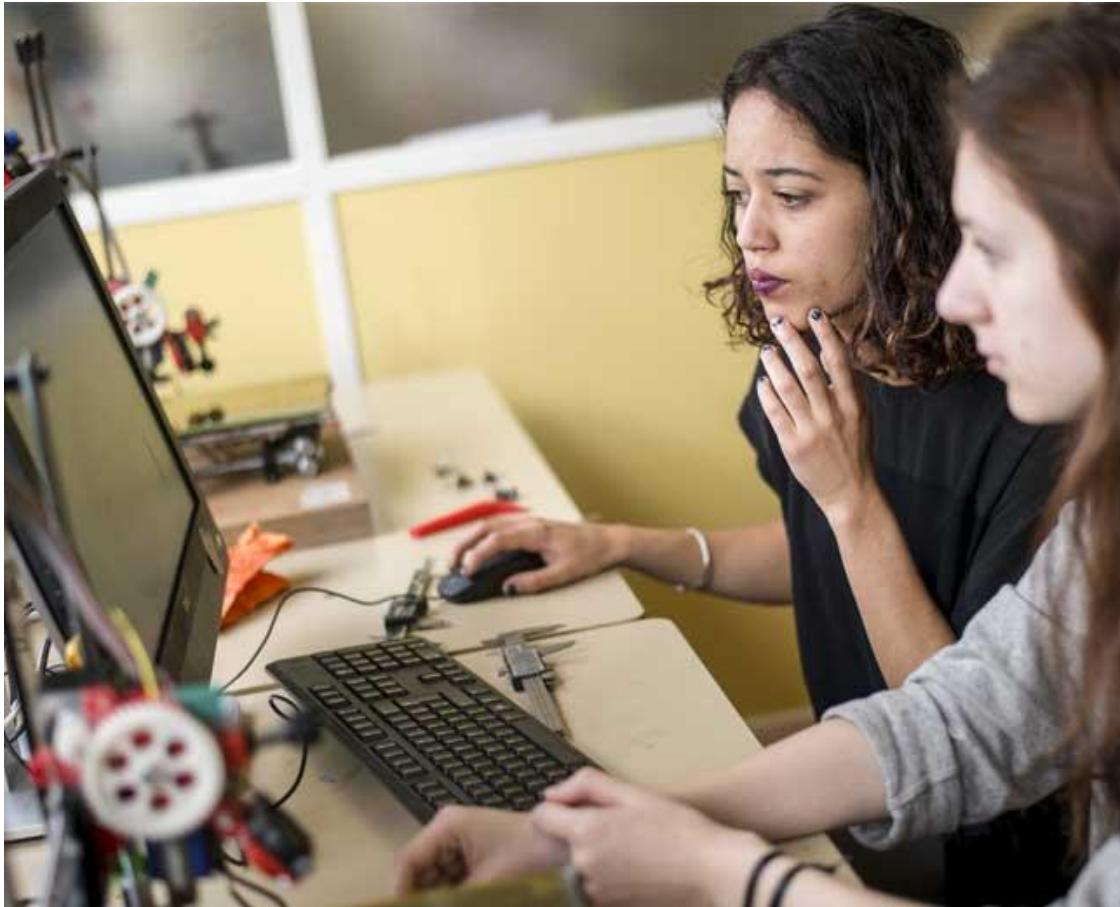
Example of a **flexible factory operating at the regional level**, supplying products manufactured on demand, and being able to shift the kind of production periodically: from cars, to shoes, to furniture, etc.



**Designing
new forms of
learning
for skills of the
future**



Critical and creative thinking in schools, including digital fabrication technologies, biomaterials design, circular economy, and entrepreneurship.



Vocational training program to develop digital skills in fabrication, circular economy and innovation. New job force for a digital and distributed economy

What is the Fab Academy Program?

The Fab Academy is a fast paced, hands-on learning experience where students learn rapid-prototyping by planning and executing a new project each week, resulting in a personal portfolio of technical accomplishments

Fab Academy Distributed
Educational Model

It offers a distributed rather than distance educational model, students learn in local workgroups, with peers, mentors, and machines, which are then connected globally by content sharing and video for interactive classes.

Join the Fab Academy Network

Fab Academy runs in more than 70 Fab Labs, for more than 250 students per year in the largest campus of the world. Fab Academy Program is part of the Academany, the Academy of Almost Anything.

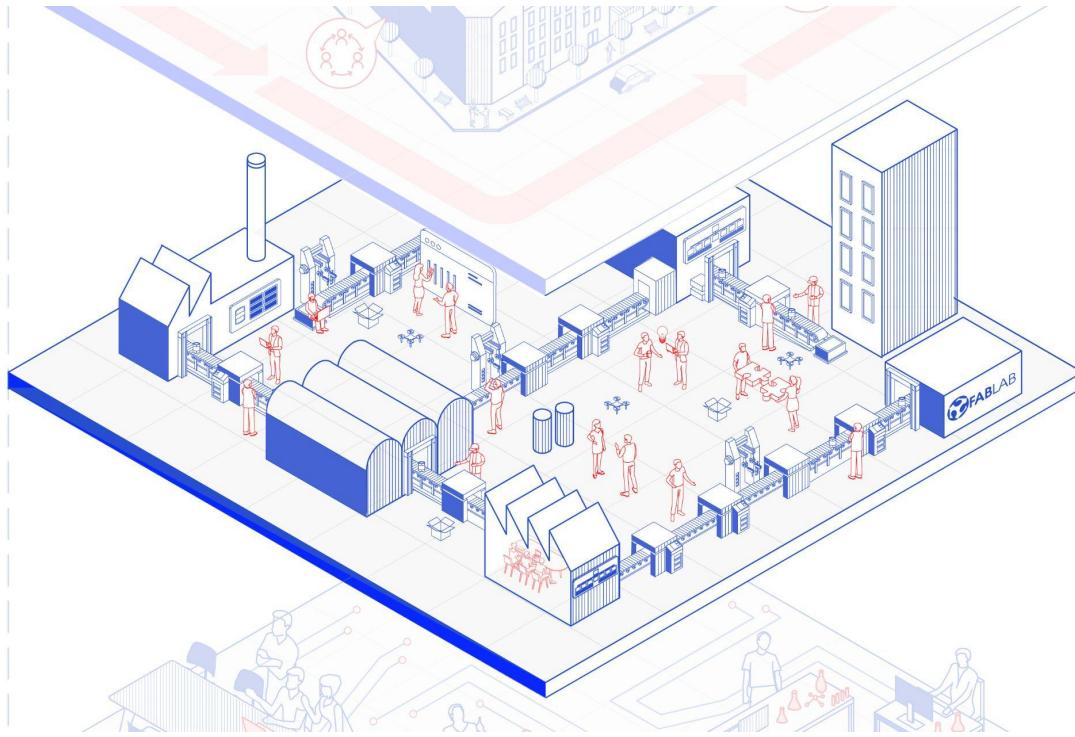
Find a node near you



Connecting with global programs inside the Fab Lab Network, such as the Fab Academy, Fabricademy, and the soon to be launched



A DISTRIBUTED
LEARNING EXPERIENCE



**Incubating and
accelerating
impact-based
innovation
at local scale**



Hands on and project-based learning are great pre-incubators of **projects that have the potential to solve Fab Cities challenges.**

The Colorado Top Bar



Colorado Top Bar Source File Pack

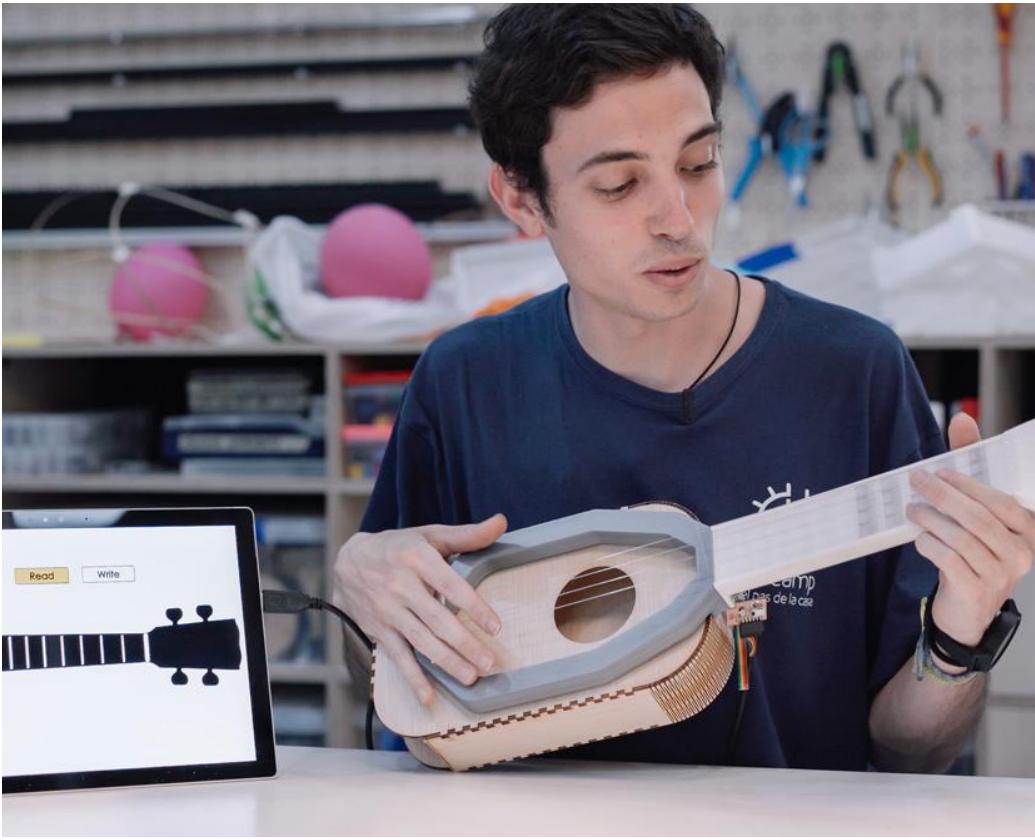
The Barcelona Warre



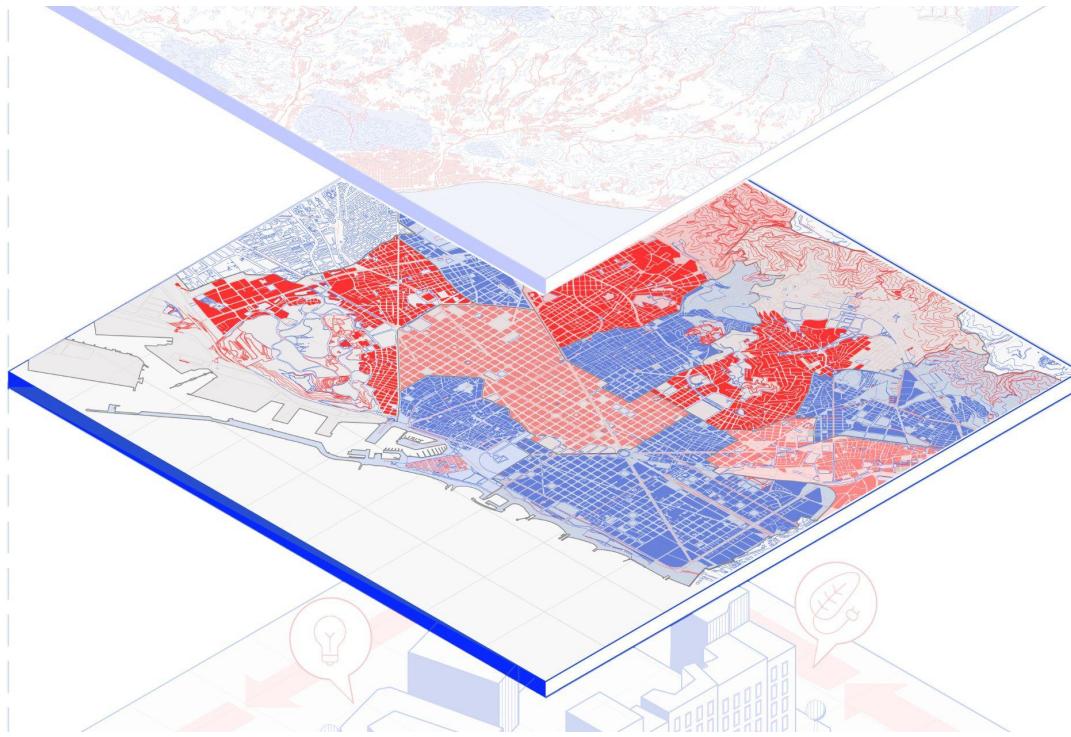
Barcelona Warre Source File Pack

An advertisement for BuzzBox. It shows a black rectangular device with a yellow logo and a small antenna, mounted on a tree branch. The background is a green, leafy forest. The text "BuzzBox Honey Bee Health Monitor" is displayed in large, bold letters. Below it are "Add to Cart" and "Learn More" buttons. At the bottom, there are links to download the app from the App Store and Google Play.

An advertisement for the OSBeehives Beekeeping App. It features a smartphone displaying the app's interface, which includes graphs for hive temperature, humidity, and pressure. The text "Get the OSBeehives Beekeeping App" is prominently displayed. Below the phone, there are six hexagonal icons with bee symbols and labels: "Healthy", "Dormant", "Missing Queen", "Swarming", "Collapsing", and "Collapsed". The text "Use our beekeeping app to automatically detect a growing list of hive conditions, so you can more effectively care for your bees. Your AI assistant is constantly learning from a global network of beekeepers studying bee sound." is also present.



Creative skills applied to the real world demands can drive innovation from Fab Labs to the world. Fab Cities need to **incubate and accelerate projects coming out of learning programs.**



**Cultivating
networks of
communities
in cities and
regions**

THE FAB CITY PROTOTYPE

Poblenou Neighbourhood, Barcelona

A Fab City is a new urban model for locally productive and globally connected self sufficient cities that shifts how cities source and use materials by bringing back production to distributed and smaller scales. More production occurs inside the city, neighbourhoods and citizens' homes, along with recycling materials and meeting local needs through local inventiveness. In Barcelona's Poblenou district, this model is being constructed through an evergrowing web of leaders, makerspaces and citizens.



Connecting projects and activities with the locality where these spaces are located opens up opportunities for projects to land in real world contexts, and impact directly in a territory.



11 Orte:

FAB LAB / OFFENE WERKSTATT

Fab Lab Fabulous St. Pauli e.V.

FAB LAB / OFFENE WERKSTATT

HoFaLab e.V.

FAB LAB / OFFENE WERKSTATT

Welcome Werkstatt e.V.

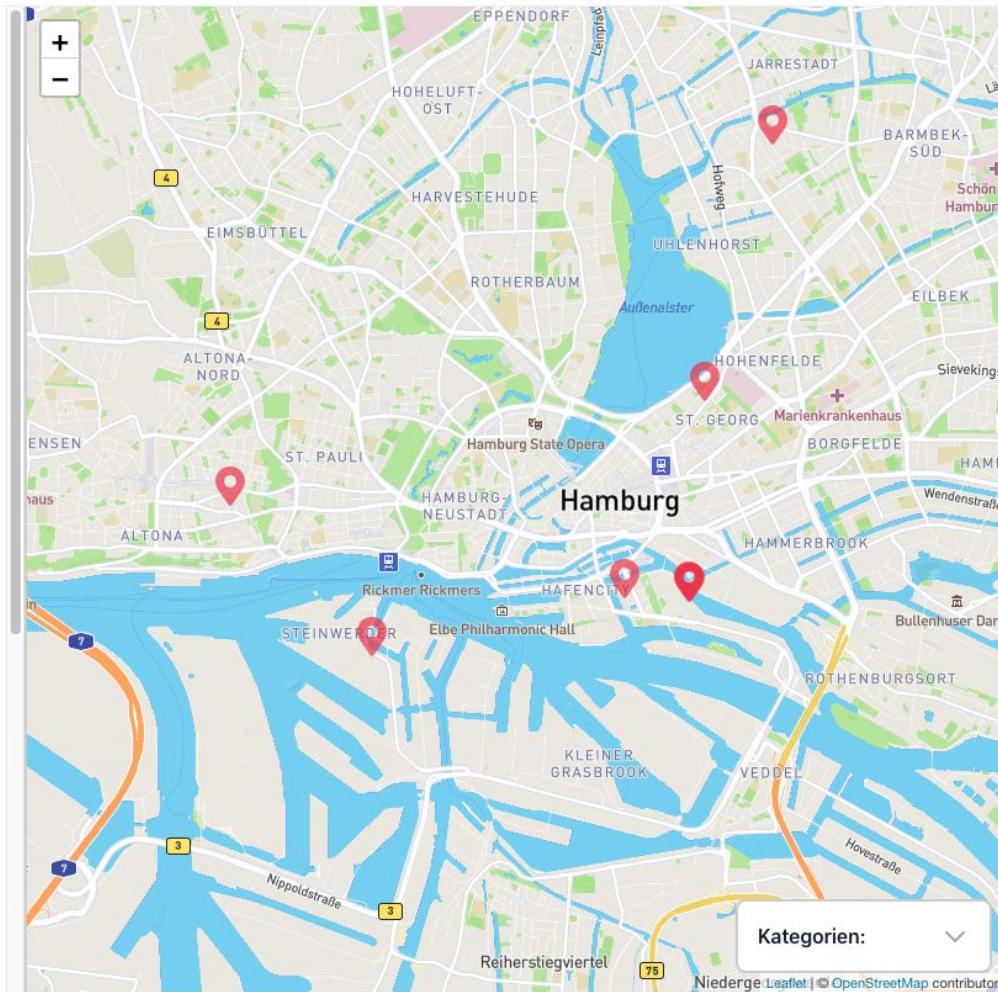
FAB LAB / OFFENE WERKSTATT

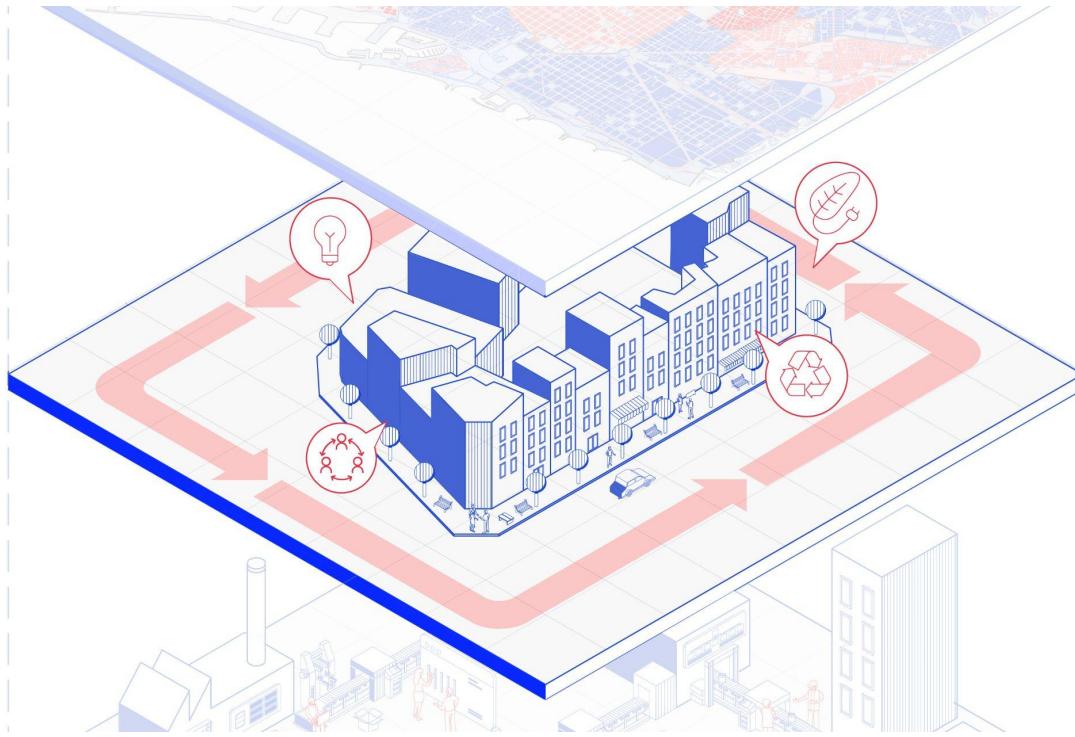
Attraktor e.V.

FAB LAB / OFFENE WERKSTATT

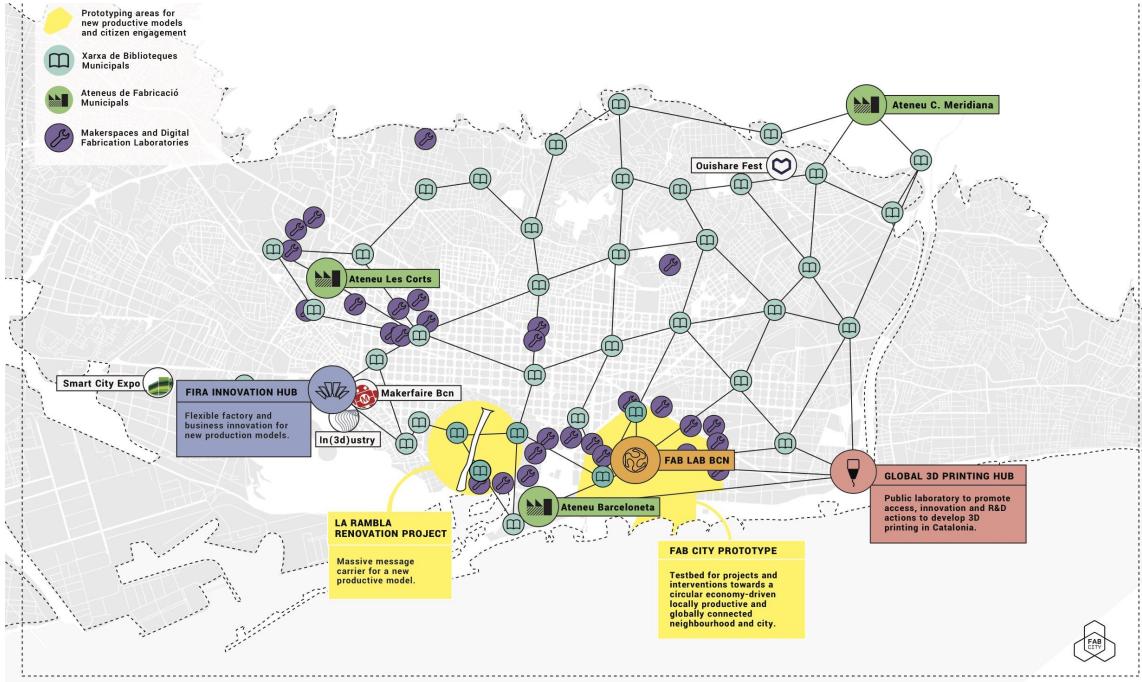
Curious Community Labs e.V.

HANDWERKS BETRIEB

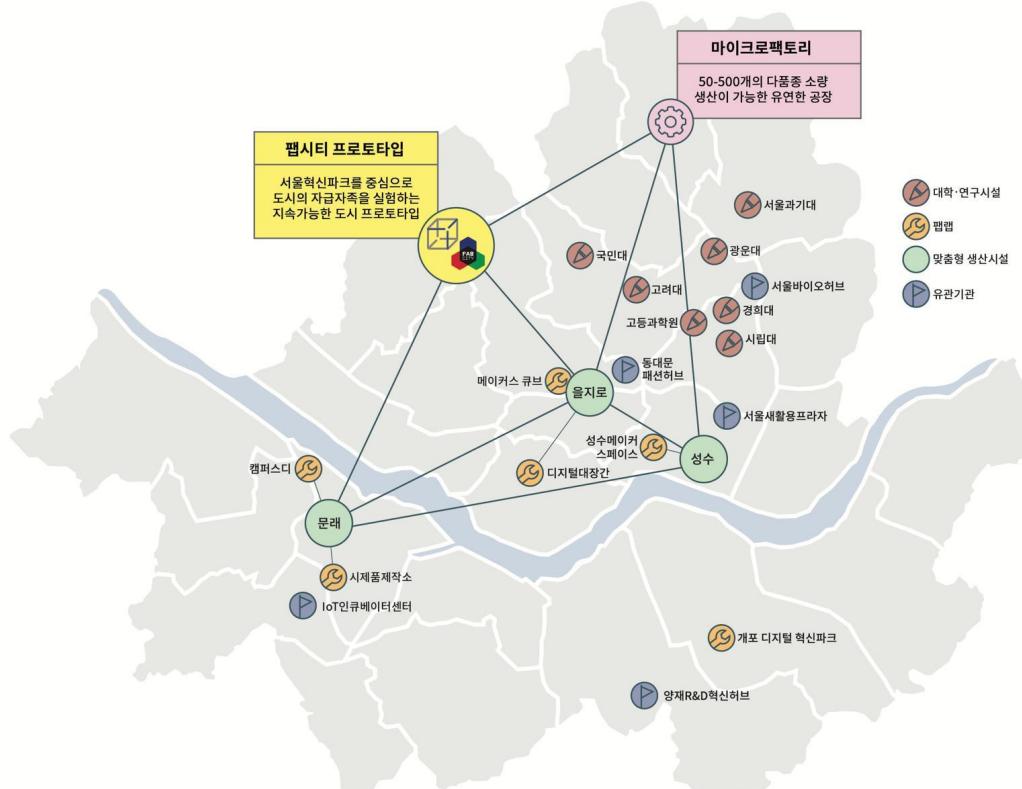
Goldschmiede Killinger GbRBILDUNGS- UND
VERANSTALTUNGSSORT**designxport / Hamburg Kreativ
Gesellschaft mbH**BILDUNGS- UND
VERANSTALTUNGSSORT



**Developing
urban and
territorial shared
strategies**



Identifying local and regional actors that can share common objectives in relation to overarching themes such as advanced manufacturing or circular economy.



Large scale strategies
could include
complementary
infrastructure and
ecosystems to support
the development of the
local Fab City agenda.



Make Works

Scotland

Search process or material...



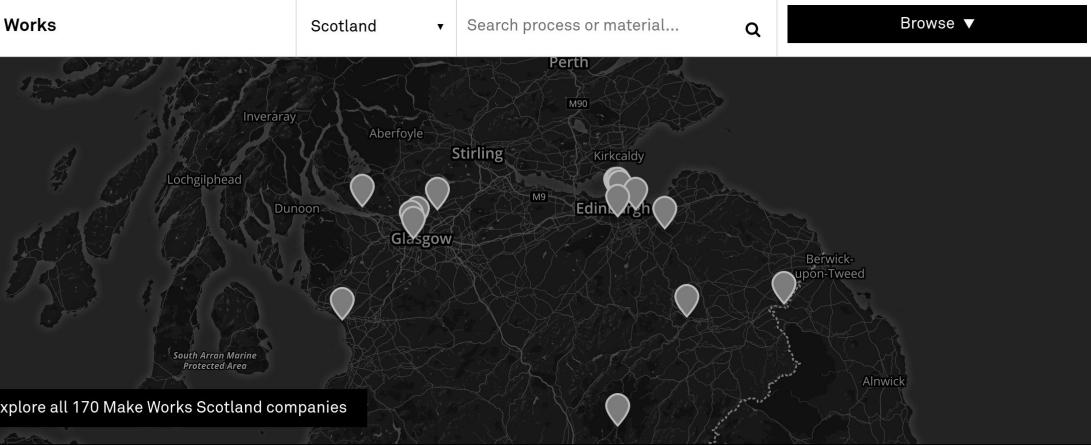
Browse

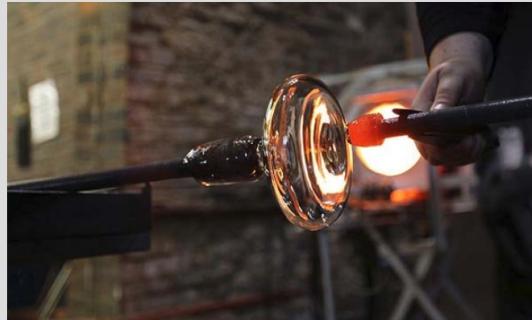
Identifying resources beyond the city limits, which can include the industrial fabric at the regional scale, as well as natural elements that sustain life in cities.

Explore all 170 Make Works Scotland companies

Learn about manufacturing in Scotland

Each region of Make Works is run by independent individuals or organisations, with a common passion to make manufacturing and fabrication more accessible where they live. [Find out about Make Works Scotland here.](#)





Processes in

[Browse](#)



Industries in

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Materials in

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Locations in

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All Factories

[Browse](#)

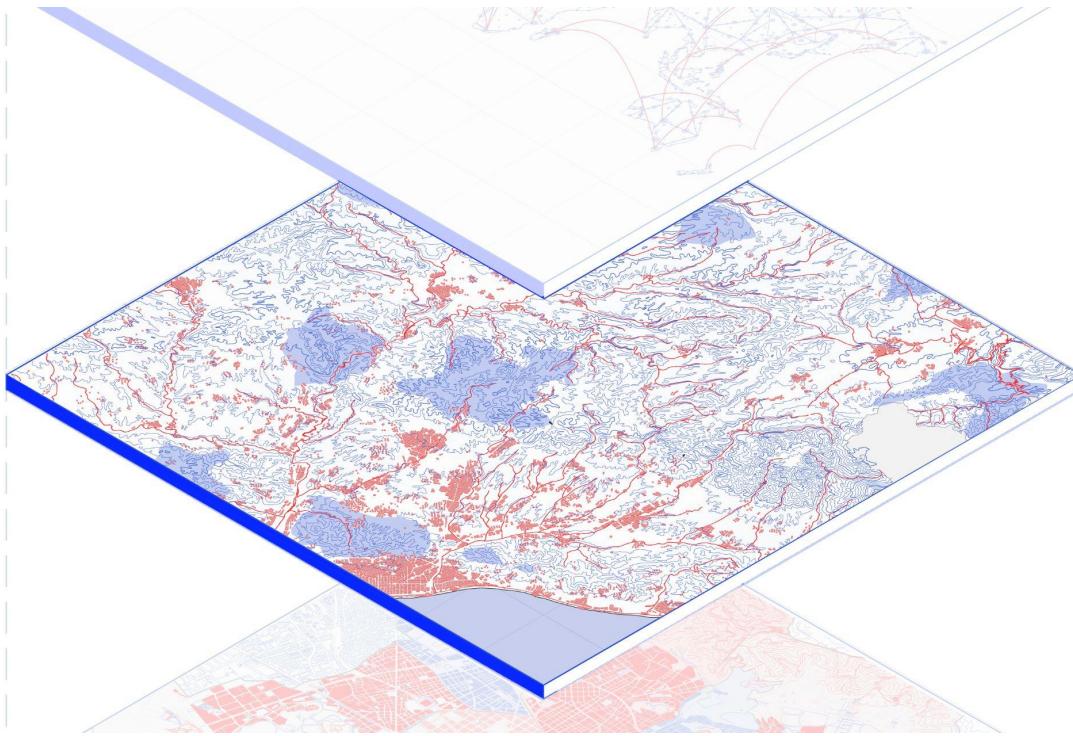


Blog & Guides

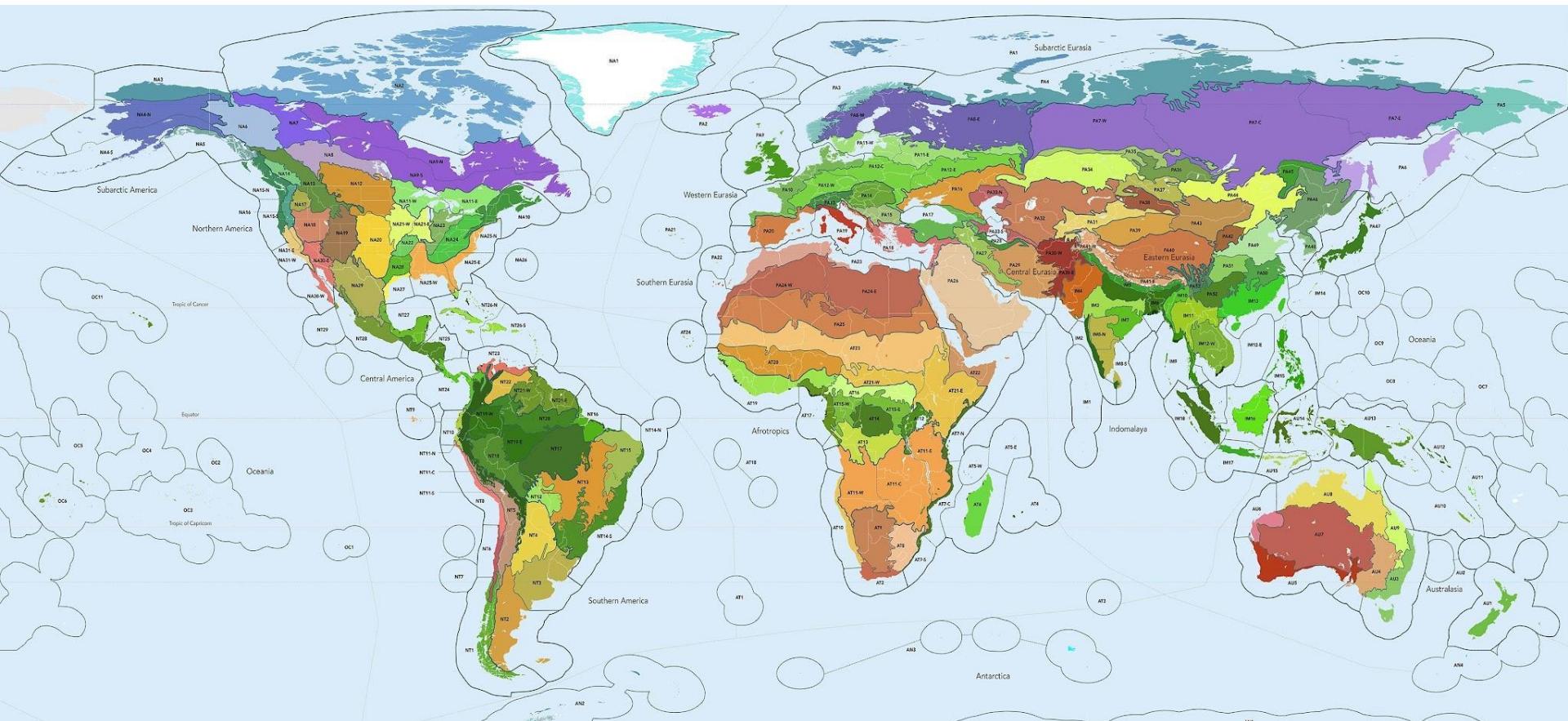
[Read](#)

**TRASH
IN**

**PRODUCT
OUT**



**Applying
principles of
bioregional
development**



Northern Amazonian Forests (NT20)

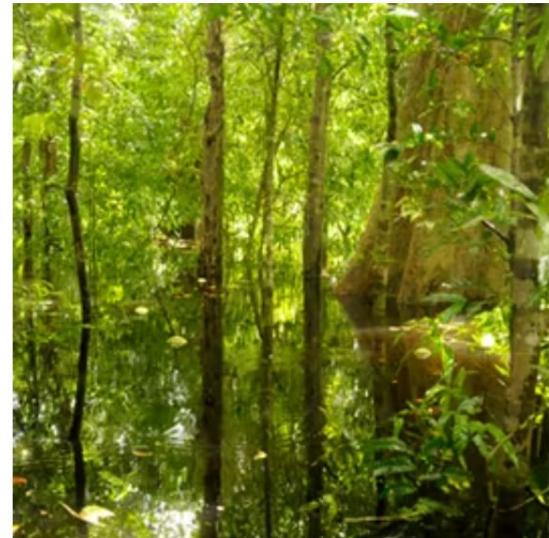
Total Land Area (1000 ha): **105,232**

Number of Ecoregions: **5**

Protection Target: **93%**

Protection Level: **6**

The Northern Amazonian bioregion, located in the Southern America (Neotropical) realm, lies between the Amazon River and the Guiana Shield and includes the Rio Negro, the principle northern tributary of the Amazon. The bioregion consists entirely of moist tropical forests, containing five ecoregions as well as the largest biological reserve in Brazil.





METABOLISM OF ISLANDS

Mol is a network of scholars conducting policy-relevant research to support island economies achieve resource security and self-reliance, and build resilience to the impacts of climate change.

What we do



Create knowledge



Share knowledge

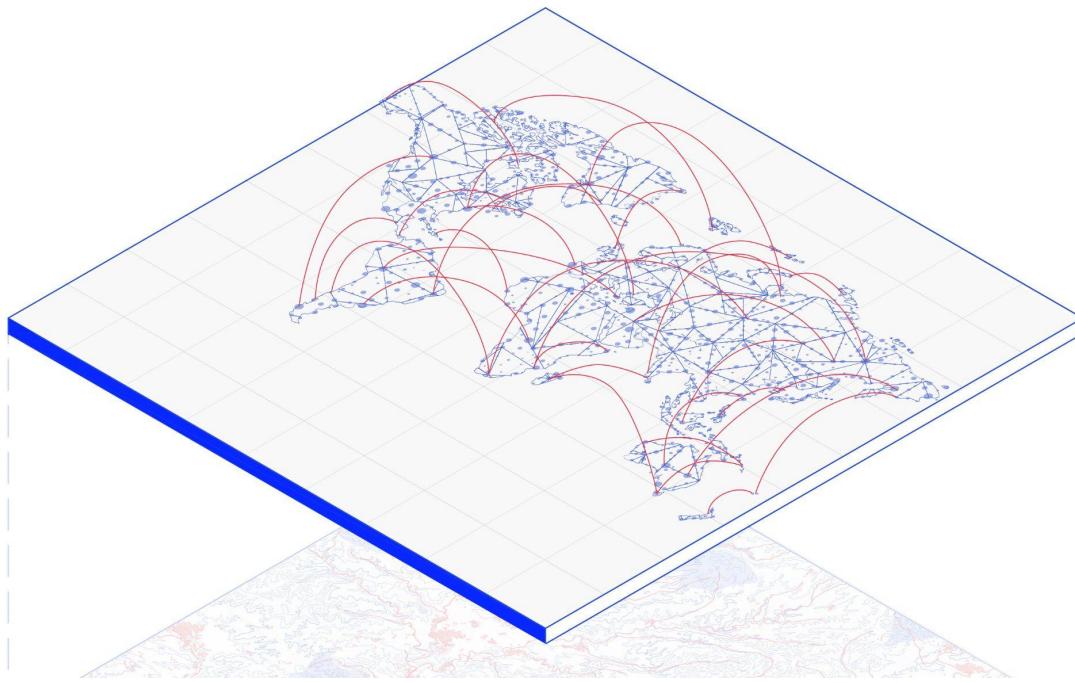


Apply knowledge



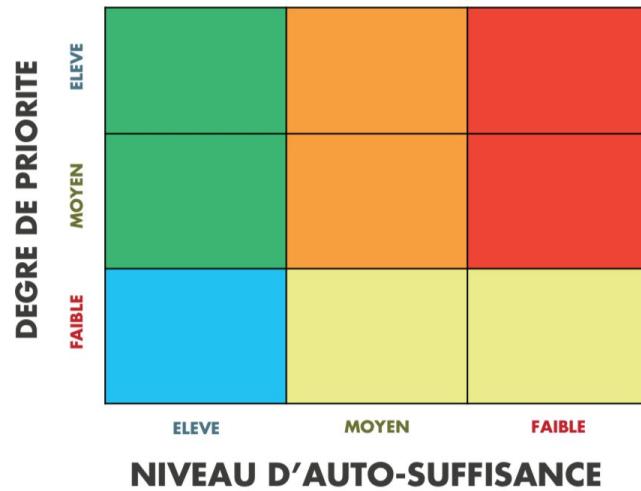
Foster a community





**Sharing
global knowledge
through digital
ecosystems**

		Niveau de priorité du secteur										
		0	1	2	3	4	5	6	7	8	9	10
Niveau d'auto-suffisance	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	1	2	3	4	5	6	7	8	9	10
	2	0	2	4	6	8	10	12	14	16	18	20
	3	0	3	6	9	12	15	18	21	24	27	30
	4	0	4	8	12	16	20	24	28	32	36	40
	5	0	5	10	15	20	25	30	35	40	45	50
	6	0	6	12	18	24	30	36	42	48	54	60
	7	0	7	14	21	28	35	42	49	56	63	70
	8	0	8	16	24	32	40	48	56	64	72	80
	9	0	9	18	27	36	45	54	63	72	81	90
	10	0	10	20	30	40	50	60	70	80	90	100



Shared global metrics
on what cities consume
and what they produce.
How to measure
success and progress
towards 2054.



SENSING

Open source technologies that gather environmental data

With communities across Europe, we will be co-creating sensors & devices that use the **Smart Citizen platform** to capture environmental data.



AWARENESS

Enabling and designing platforms for collective sensemaking

We'll be testing tools and methodologies for *making sense* of data in pilots in **Amsterdam, Barcelona & Prishtina**, and raising awareness of social and environmental issues.



ACTION

Moving on a trajectory from awareness to positive change

With the pilot learnings we will develop the **Making Sense toolkit** – a manual to organise citizen sensing campaigns for positive social change.

Tools, methods, approaches, developed by organizations and communities in cities and towns, that could **inspire others globally.**



@saverio/rotocastit
ROTOCASTIT is a rotational casting machine that fe...
65 8



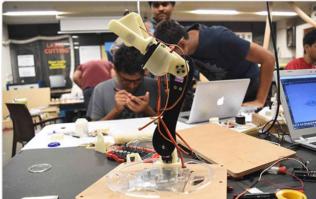
#cnc-milling #cnc
The goal of this project is to make a machine small...
40 14



+fablabbcn/smart-citizen-kit
An Open-Source Environmental Monitoring Platfor...
37 12



+aquaioneers/aquaioneers
The Ecosystem uses a natural process called Aqua...
1

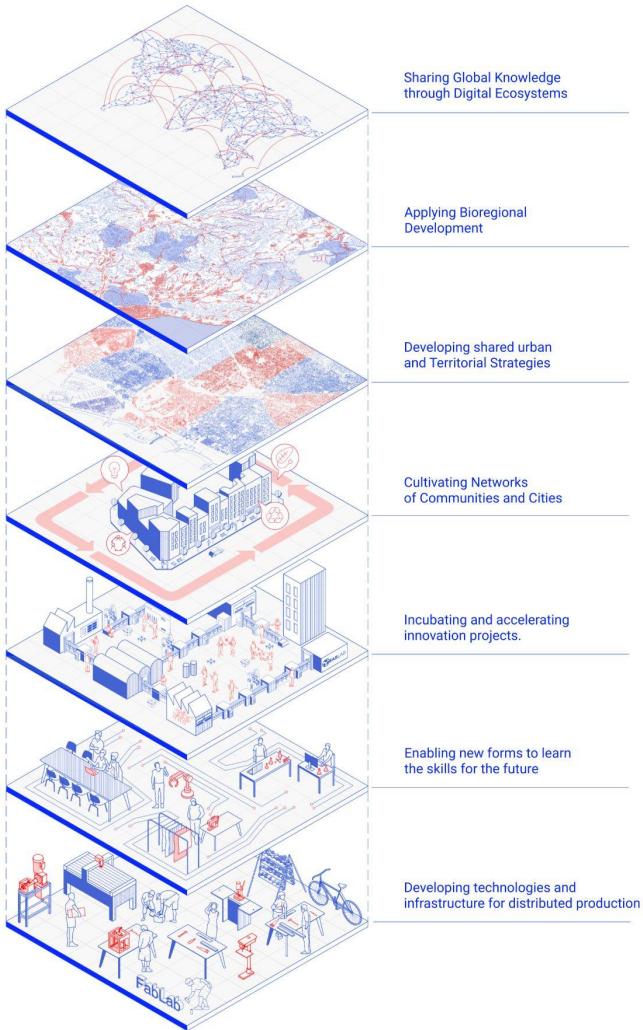


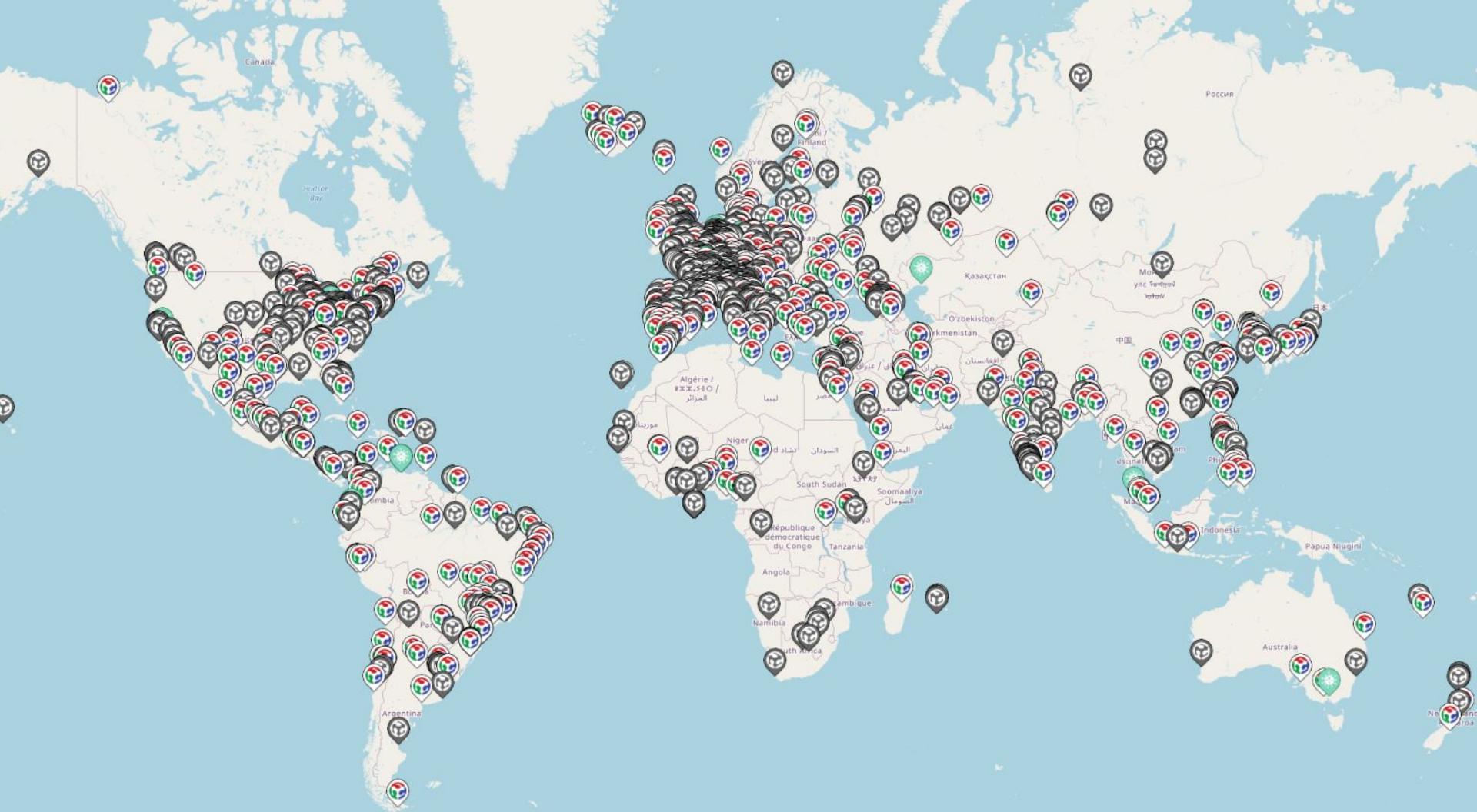
@avishhek/krab-v10
Krab is a small 6-axis robotic arm controlled from R...
1



+OSBeehives/colorado-top-bar-beehive
The Colorado Top bar hive is a modern adaption of...
1

Global repositories of Fab City projects
developed by local innovation ecosystems, that could be adapted and replicated globally.





Fab City Network

Central to the global initiative is a network of cities, regions and settlements who have taken up the challenge to move towards local production by 2054. New members are welcomed to the Network at the annual Fab City Summit.

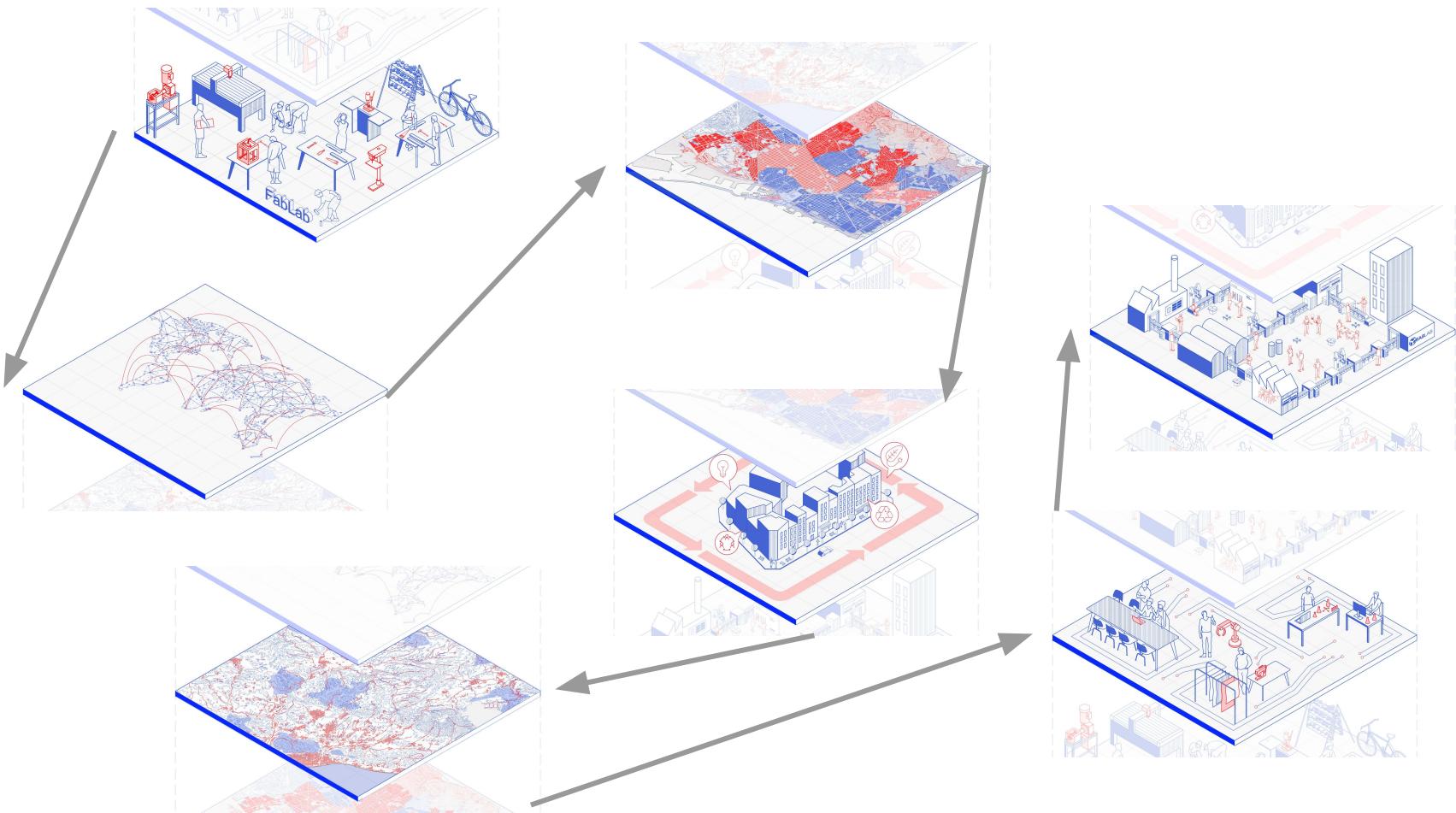
Barcelona

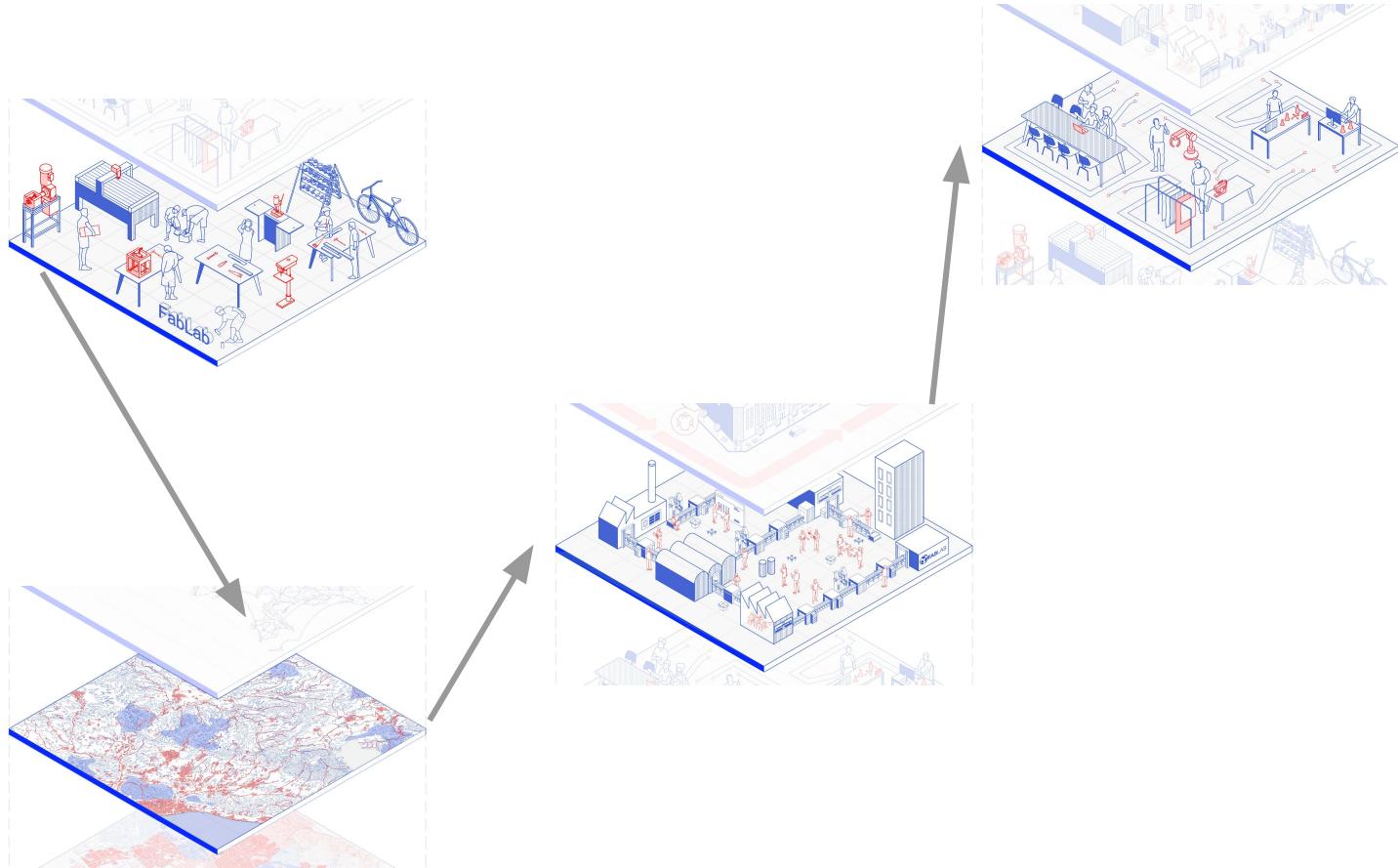


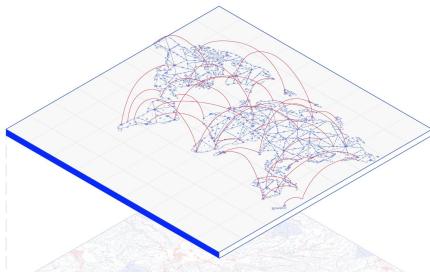
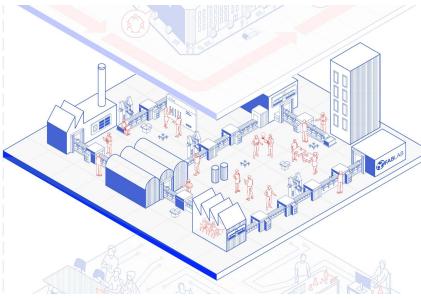
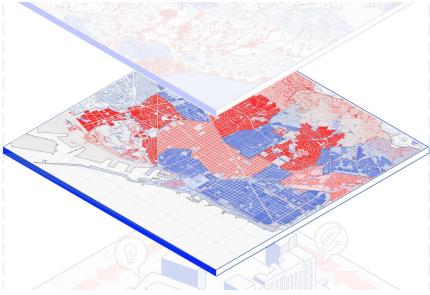
Barcelona is a world-leading city in the field of urbanism. The city's iconic urban model.

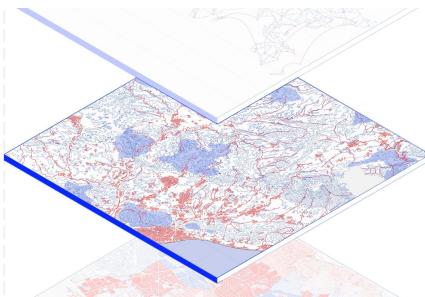
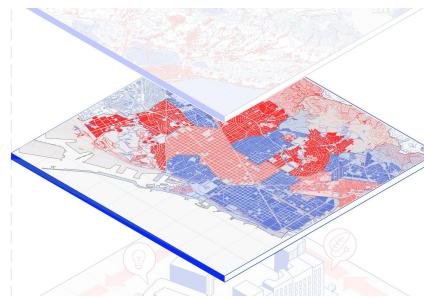
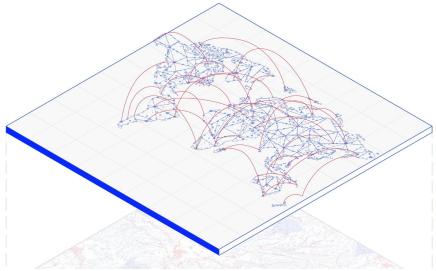
[Read More →](#)

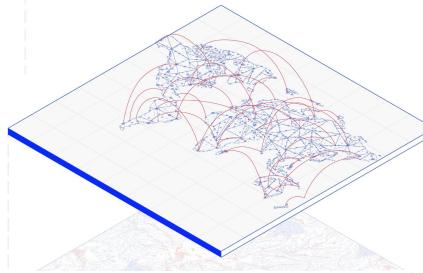
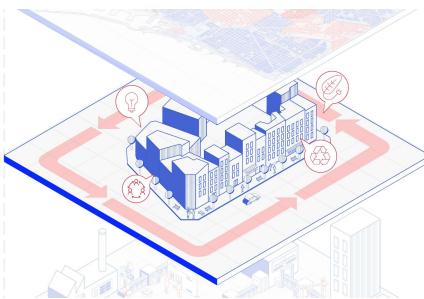
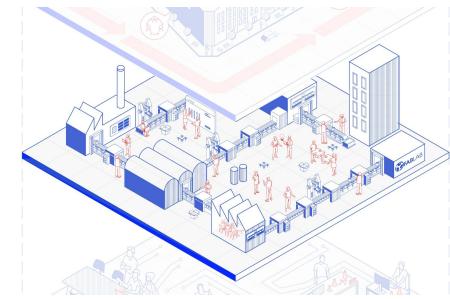
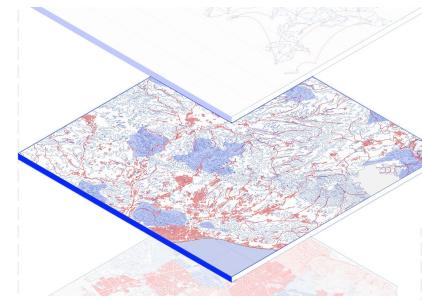
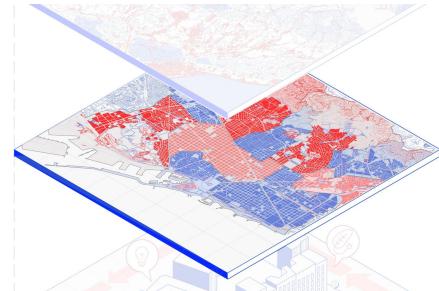
[ABOUT THE NETWORK](#)













Fab City has developed a set of cards that can be used to identify how the different layers of the stack relates to local initiatives, by providing a playful approach to discovery and mapping.

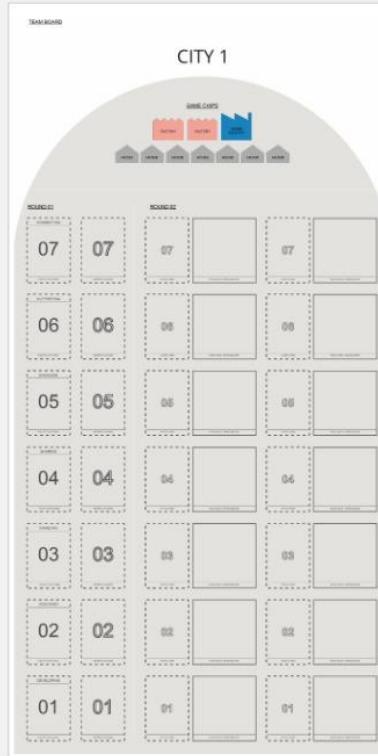


1 Getting familiar with the SAP

Check the SAP Cards ([orange](#)) and get familiar with them. Organize them according to the numbers on the first "Round 1" column.

Check the inspiration cards ([blue](#)) on your board. Place them next to the SAP Cards on the second "Round 1" column.

Inspiration cards



2 Shape your own activity

1. Write your activity in an empty SAP Card (white). Select carefully which layer fits better to the scope and approach of your activity!
2. Place your idea on the first "Round 2" column.
3. Plan your activity! What resources do you still need? Look for them on the Stakeholders pile and paste them next to your activity.
4. What stakeholders are involved? Which ones do you still need? Place them on the Resource pile and paste them next to your activity.
5. Is your activity complete? Then let the others know by placing a [yellow](#) on the "Fab City Board".

To have a fully defined activity you need at least one SAP Card with one stakeholder and one resource linked to it!

Resource and Stakeholder Cards

Resource Cards

Stakeholder Cards

3 Expand your initiative through the SAP

1. We are not done. What other activities could you place on the other layers of the SAP? How do they connect to your first activity? Be imaginative and expand your idea!
2. Which stakeholders and resources would be involved in these new activities?
3. Try to get a full "family" of three connected initiatives. Place a [yellow](#) and please them under the same column, connecting resources and stakeholders to them!
4. Do you have one full family? Let us know! Place a [yellow](#) on the "Fab City Board".
5. If you manage to have activities for the 7 layers, you would be able to use a [Super Factory](#)!



Fab City Full Stack

<http://www.fab.city>
@fabcityglobal



Fab City Strategic Action Plan

SAP

Fab City Summit 2021



What is the Fab City Strategic Action Plan (SAP)

The Fab City Full stack is an operational tool for Fab Cities start implementing local strategies at different scales, depending their core capabilities, interests, and opportunities. The stack is comprised by a series of non-linear and non-hierarchical interconnected and interdependent layers, that serve as aggregators and organizers of efforts being carried by cities in their ambition to produce (almost) everything they consume by 2054.

What is it in this layer?

Communications, computation, and fabrication infrastructure for distributed production, including Fab Labs and makerspaces, but also the core technologies to be developed to support local production. It also contemplate large scale infrastructure, such as flexible factories, distributed data storage, p2p communication networks, to mention some.

Why is important?

Productive cities and bioregions need to invest in the development of the needed infrastructure for the 21st century. Such infrastructure increases local resilience, while aims to detach from the dependency of global supply chains, fossil fuels, and modern slavery. Fab City puts open source infrastructure development at its core, considering that both hardware and software need to be accessible to everyone, anywhere.

How can you make this layer useful in your city?

Infrastructure is needed to provide what cities need. Local production of energy, food and materials, can become part of the city and region infrastructure. Data storage and communication networks are city and regional infrastructure.

Cities can plan their budgets in infrastructure development, focused on open source technologies for local production.

EXAMPLE



FAB CITY COLLECTIVE

A group of individuals (urbanists, designers, makers, innovators, artists, developers, engineers, and other professionals and enthusiasts around the world) who contribute to the development of different Fab City projects at the local level, with the support of organizations, governments and other actors. The group participates in different projects worldwide with a focus on expanding its historically European focus to Asia and the Americas.

FAB CITY NETWORK

The Fab City Foundation is the legal and organisational structure of the globally distributed Fab City community. It is location-independent, enabled by the Estonian e-Residency program which allows individuals and organizations the ability to function more seamlessly across borders and bureaucratic lines.

[GO THE NETWORK](#)

FAB CITY FOUNDATION

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EXAMPLE

Oslo Local and European perspectives
on urban-regional collaboration

Circular practices
Resource efficiency
Diversification of suppliers
Relocating production

EXAMPLE

[Evolutionary game analysis on improving collaboration in sustainable urban regeneration: A multiple-stakeholder perspective](#)