

Fab City Global Initiative

Tomas Diez



An aerial photograph of a city, likely Chicago, showing a dense urban core with numerous skyscrapers and a complex network of highways and roads. The text "CITIES WANT TO REINVENT THEIR URBAN MODEL" is overlaid in large, white, bold, sans-serif capital letters. The background shows a mix of urban development, including residential areas, commercial districts, and green spaces.

**CITIES WANT TO
REINVENT THEIR
URBAN MODEL**

An aerial photograph of a large container port. The foreground and middle ground are filled with rows of colorful shipping containers in shades of blue, red, orange, and white. Several yellow gantry cranes are positioned along the container stacks, some with their booms extended. In the background, a large ship is docked at a pier, and the port's infrastructure, including roads and other buildings, is visible. The sky is overcast.

**THEIR
CONSUMPTION-ONLY
PARADIGM DEPENDS
ON GLOBAL SUPPLY
CHAINS**

A large container ship, the Evergreen, is stuck in a canal, surrounded by stacks of shipping containers in the foreground. The ship is partially submerged in the water, and the canal walls are visible on either side. The foreground is filled with numerous stacked shipping containers in various colors, including red, blue, and white. The background shows a hazy, overcast sky and distant land.

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

An aerial photograph showing a stark contrast between natural and industrial landscapes. The left side of the image features a patchwork of agricultural fields, some green and some brown, separated by thin white lines representing roads or irrigation canals. The right side of the image is dominated by a massive, terraced open-pit mine, with its levels descending into the earth in a series of dark, stepped slopes. The text is overlaid in the center, spanning both halves of the image.

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

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





FAB CITY

[About](#)

[Network](#)

[Blog](#)

[Resources](#)

33
YEARS

49
DAYS

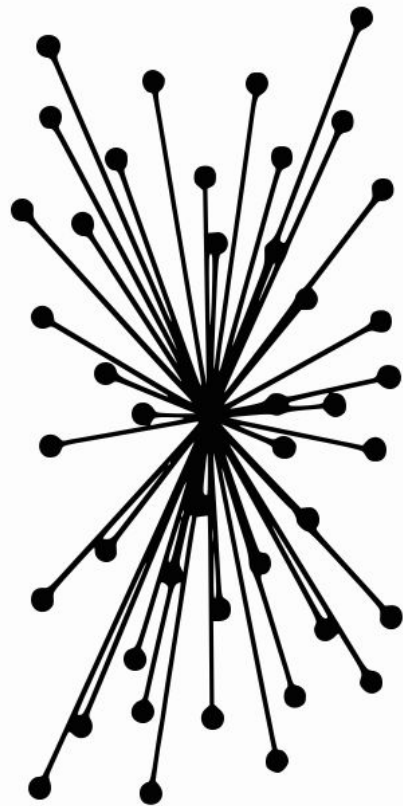
6
HOURS

17
MINUTES

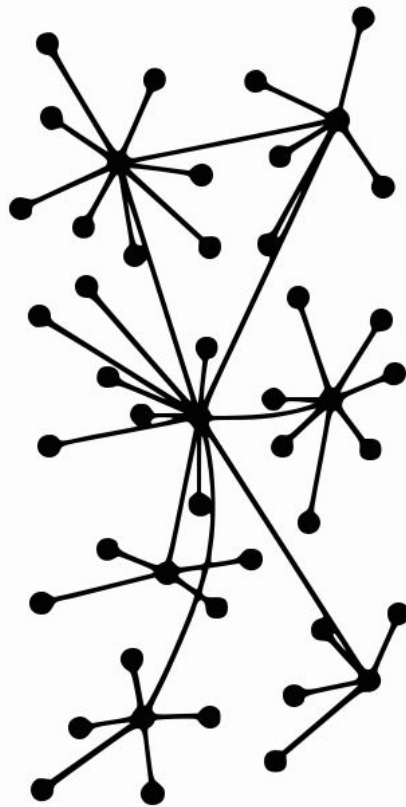
39
SECONDS

Until cities produce
everything they consume.

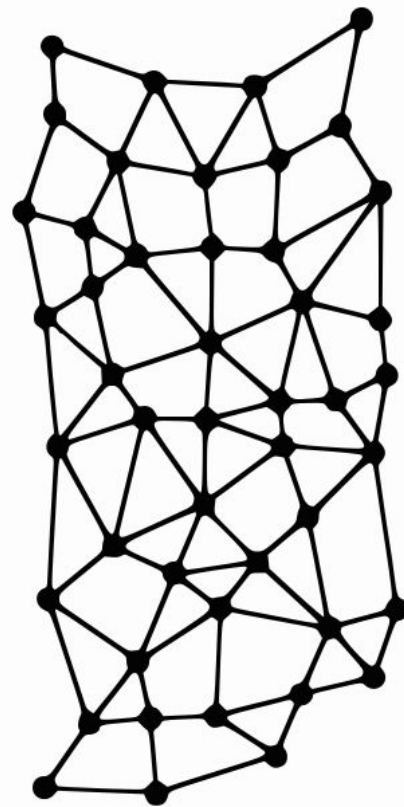
...BEFORE JULY 2054



Centralized

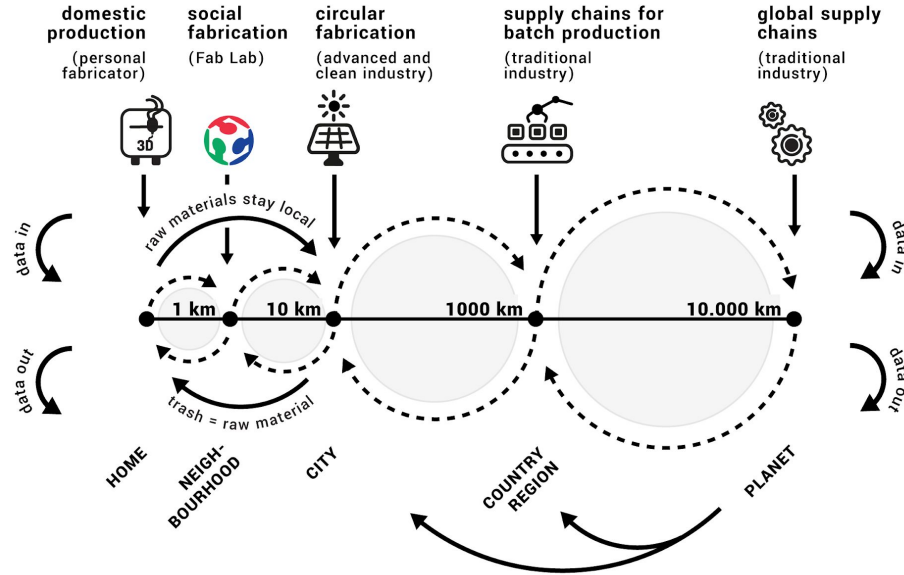


Decentralized



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 multiscale.



40 Year Plan: Produce what the city consumes by 2054



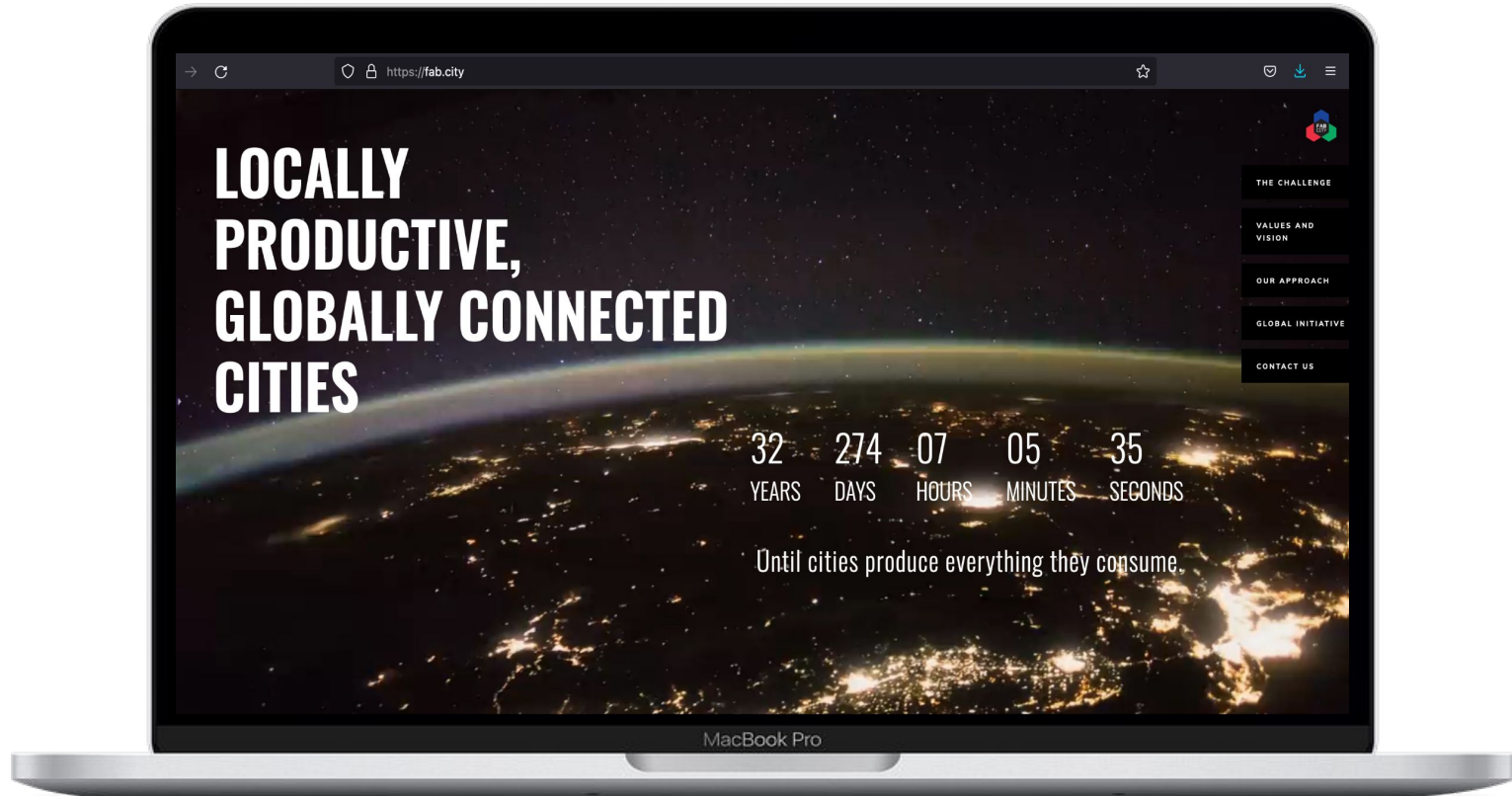
FOOD



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 Paulo
Plymouth	Recife
Hamburg	Zadar
Yucatàn Region	Valence Romans Agglo
Belo-Horizonte	Bas-Saint-Laurent
Ekurhuleni	Linz
Montpellier	Montreal
	Veberöd

A dark grey world map with green dots indicating the locations of Fab City Network members. The dots are concentrated in North America (USA, Mexico), Europe (UK, France, Germany, Spain, Italy, etc.), and East Asia (Japan, China). There are also a few dots in South America (Brazil), Africa (South Africa), and Southeast Asia (Singapore, Thailand).

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.



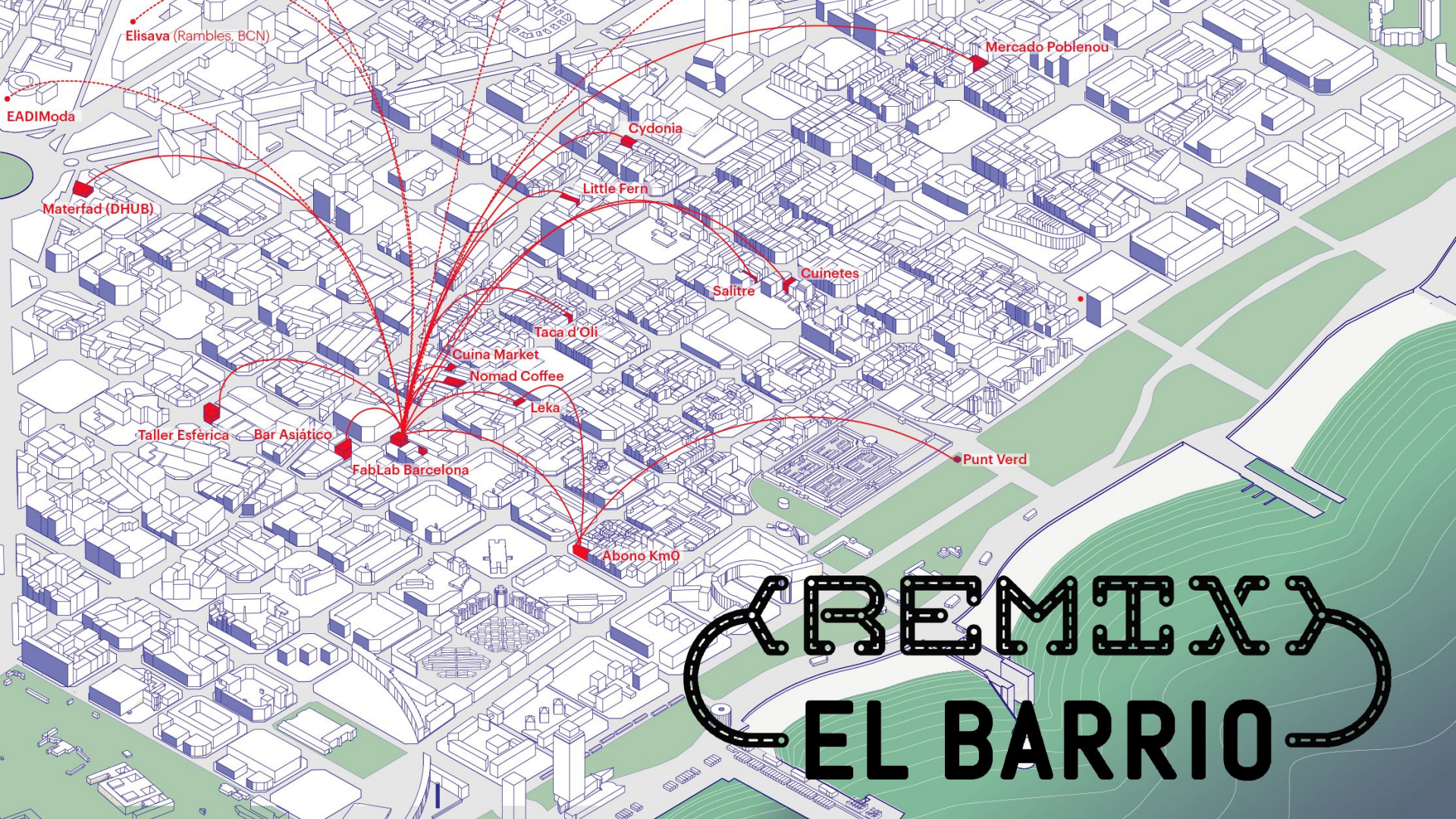
Barcelona



Circular food and materials with Remix el Barrio.

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





Elisava (Rambles, BCN)

Mercado Poblenou

EADIModa

Cydonia

Materfad (DHUB)

Little Fern

Cuinetes

Salitre

Punt Verd

Taca d'Oli

Cuina Market

Nomad Coffee

Leka

FabLab Barcelona

Bar Asiàtic


Taller Esfèrica

Abono Km0

CREMITS

EL BARRIO





Materials LibraryDataAboutProjectsContact UsLoginJoin

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 rescatar localmente, y qué materiales se pueden conseguir con cada uno.


Esa investigación comenzó con materiales pensados 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 hacer papel con esta cáscara de café abre un nuevo nivel de oportunidades. Este es un proceso mucho más accesible que obtener una gran prensa, y permite hacer formatos mucho más grandes. Y además se puede combinar con más procesos ya estandarizados de 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 Miguens

Coleaboradores: Nomad Coffee, Restaurante Leka

Contacta: @dhuemiguens



13

Fab Lab Presentation

- 4

MAKING PAPER
FROM COFFEE HUSKS
KOFI PAPER

0:02 / 1:49

Making Paper from Coffee Husks - REMIX EL BARRIO

1,028 views • Feb 19, 2021

32 0 SHARE SAVE ...

FAB LAB BCN **Fab Lab Barcelona**
972 subscribers

SUBSCRIBED

Vienna

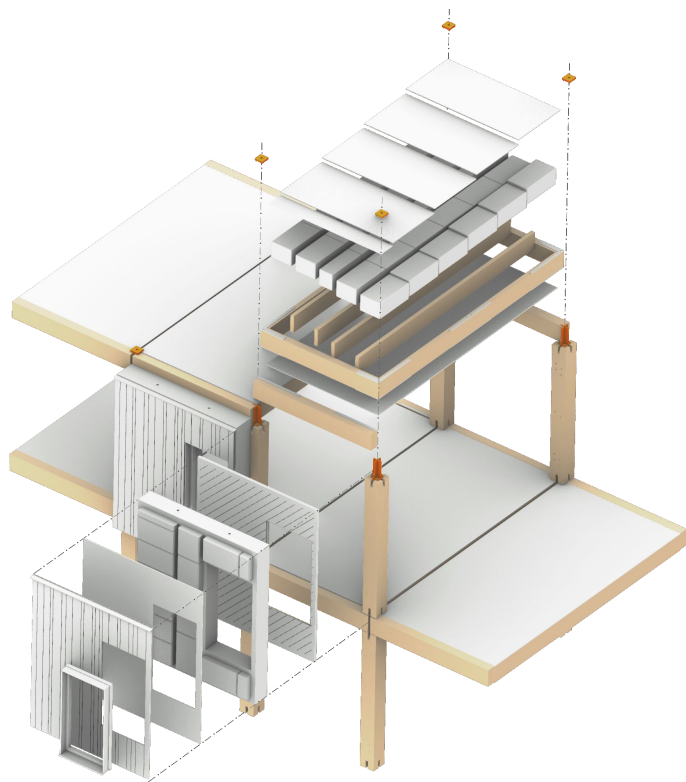


Build your own
multi-story
house.

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









X.
vivihouse

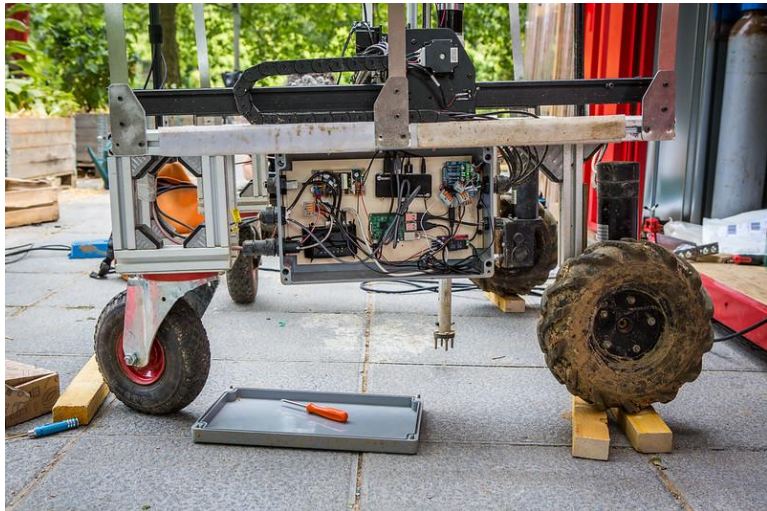
Chatelain/Barcelona



Program your
garden with Romi
family of robots.

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

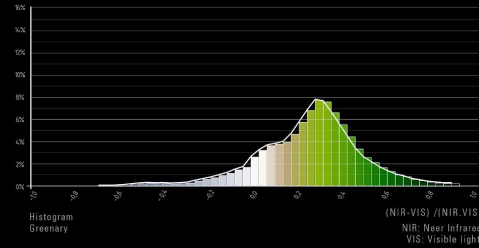
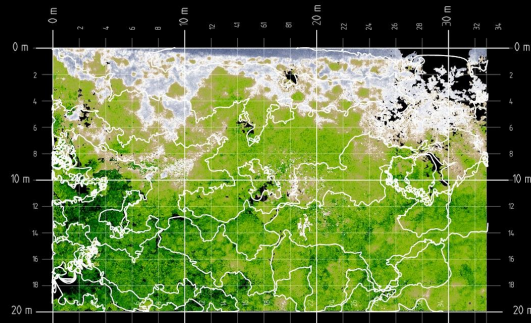
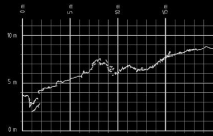
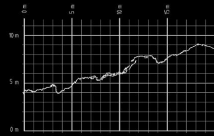
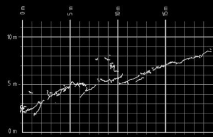
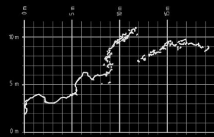
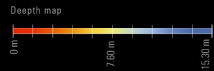
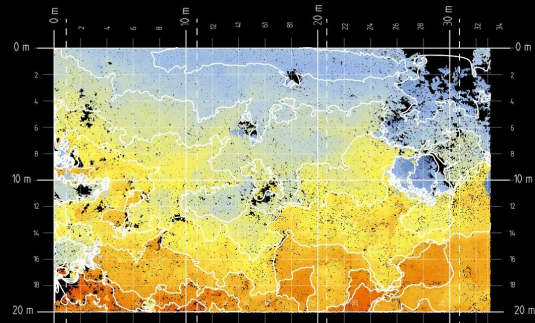




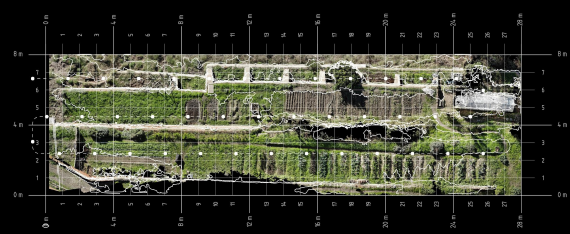
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R4 | MELLIFEROUS GARDEN VALDAURA RESEARCH GARDEN



R1 | HORTICULTURE VALDAURA RESEARCH GARDEN



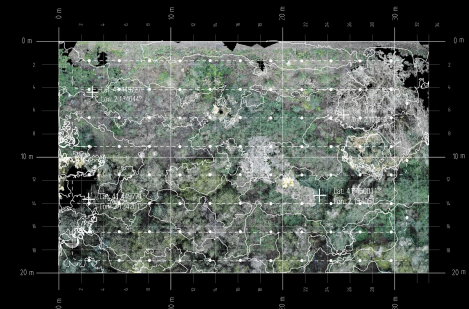
FLIGHT INFO
Date: 2023-10-10 10:10:10
Altitude: 100 m
Camera: 100 mm
Resolution: 100 mm
Processing time: 10 min

IMAGE
Size: 100 x 100
Resolution: 100
Processing time: 10 min

DEPTH
Size: 100 x 100
Resolution: 100
Processing time: 10 min



R4 | MELLIFEROUS GARDEN VALDAURA RESEARCH GARDEN



FLIGHT INFO
Date: 2023-10-10 10:10:10
Altitude: 100 m
Camera: 100 mm
Resolution: 100 mm
Processing time: 10 min

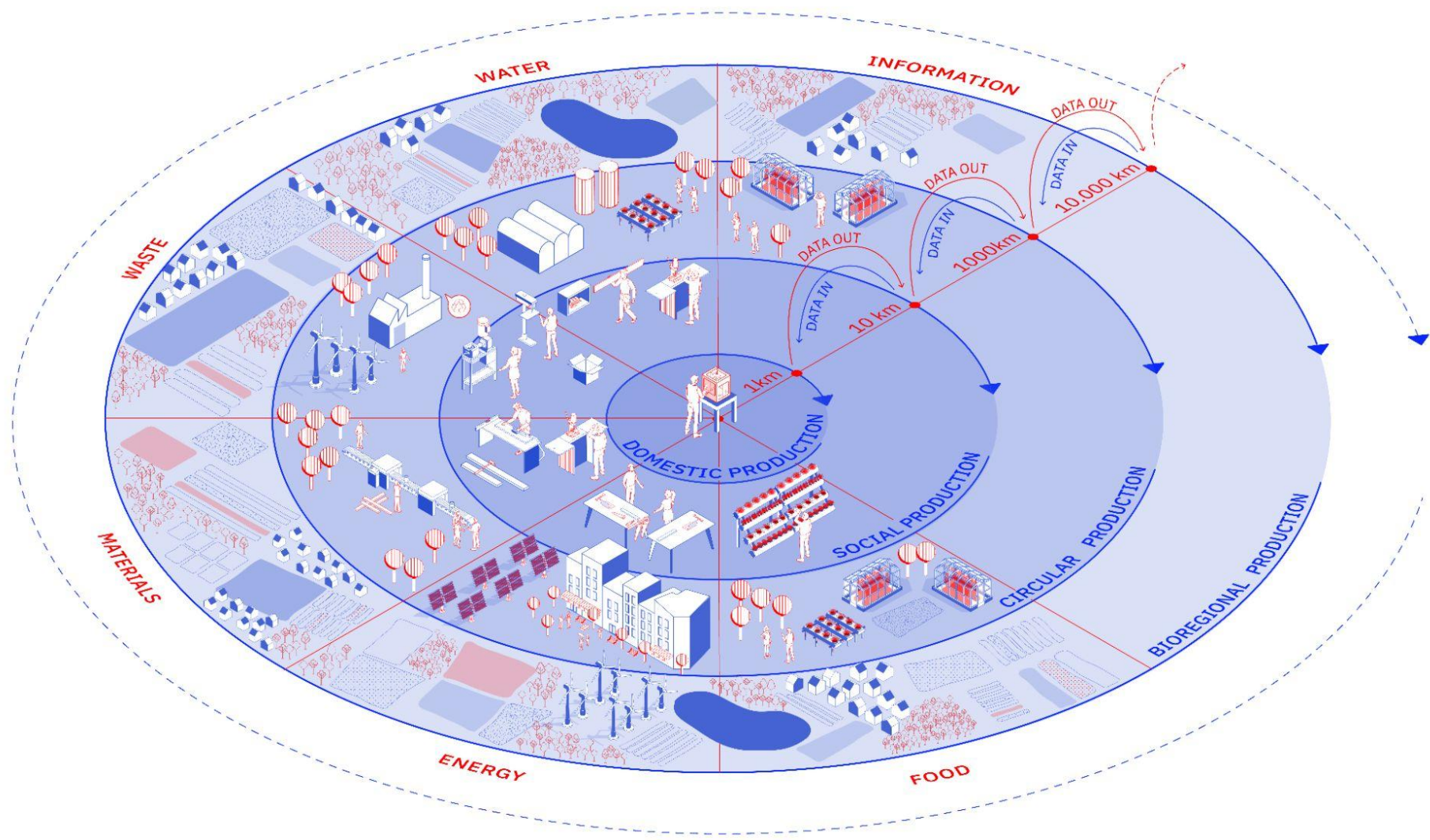
IMAGE
Size: 100 x 100
Resolution: 100
Processing time: 10 min

DEPTH
Size: 100 x 100
Resolution: 100
Processing time: 10 min







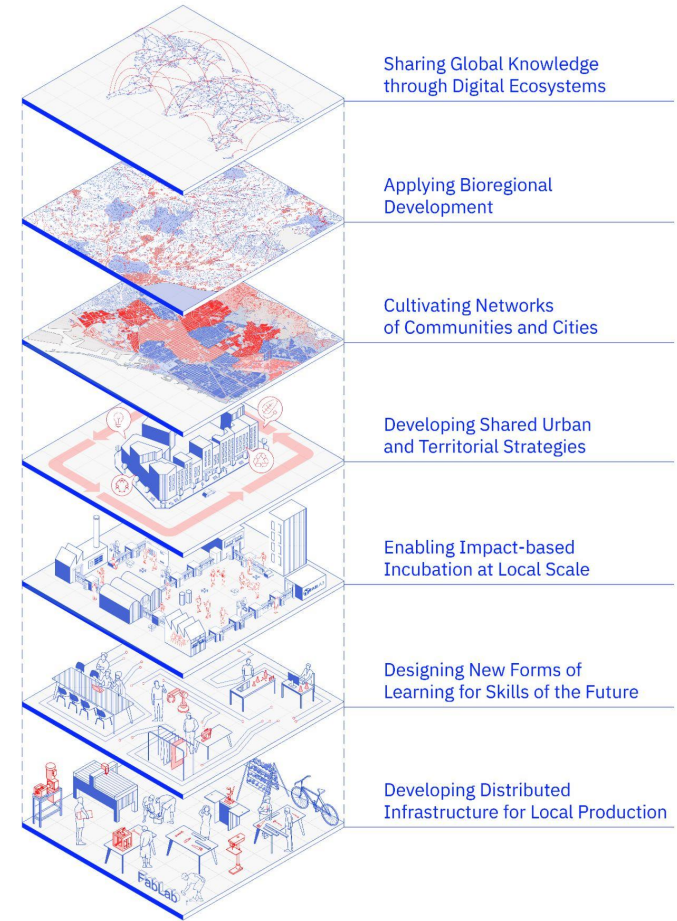
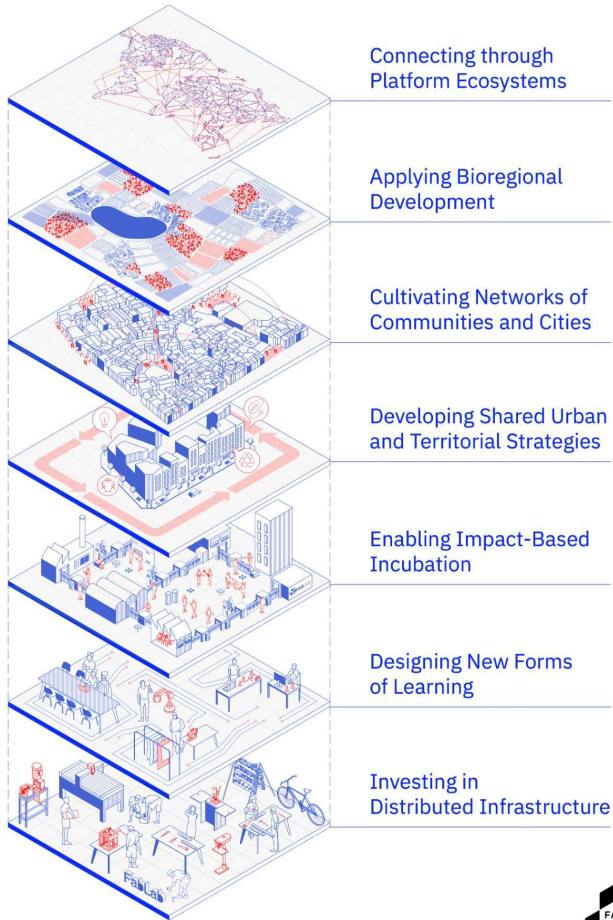


**HOW IS THIS GOING
TO HAPPEN?**

**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 multiscale and ecosystemic approach.



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

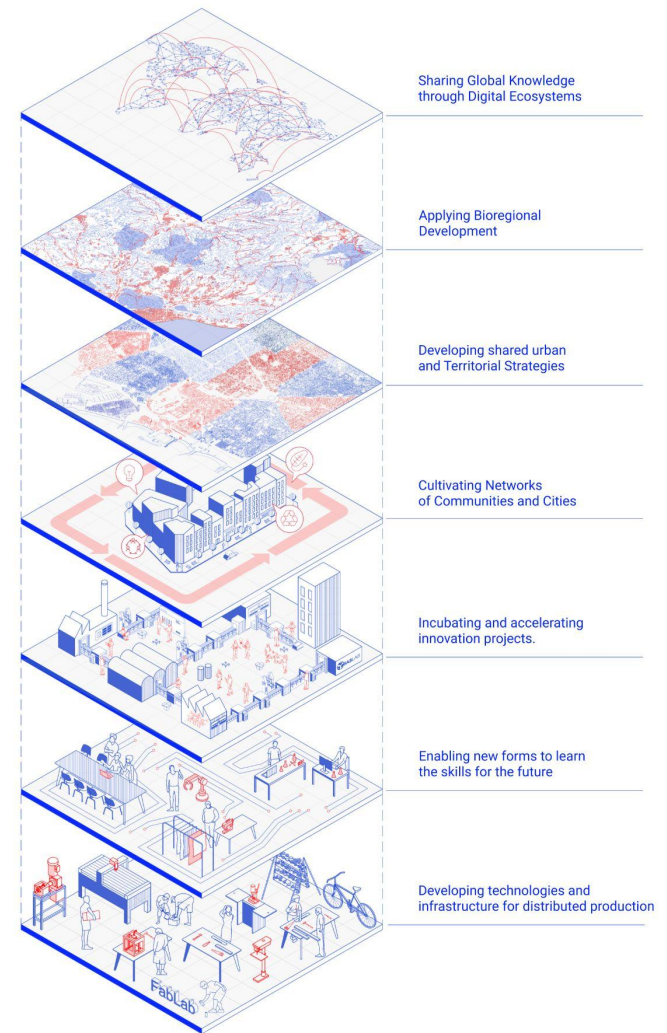


FAB CITY FULL STACK

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

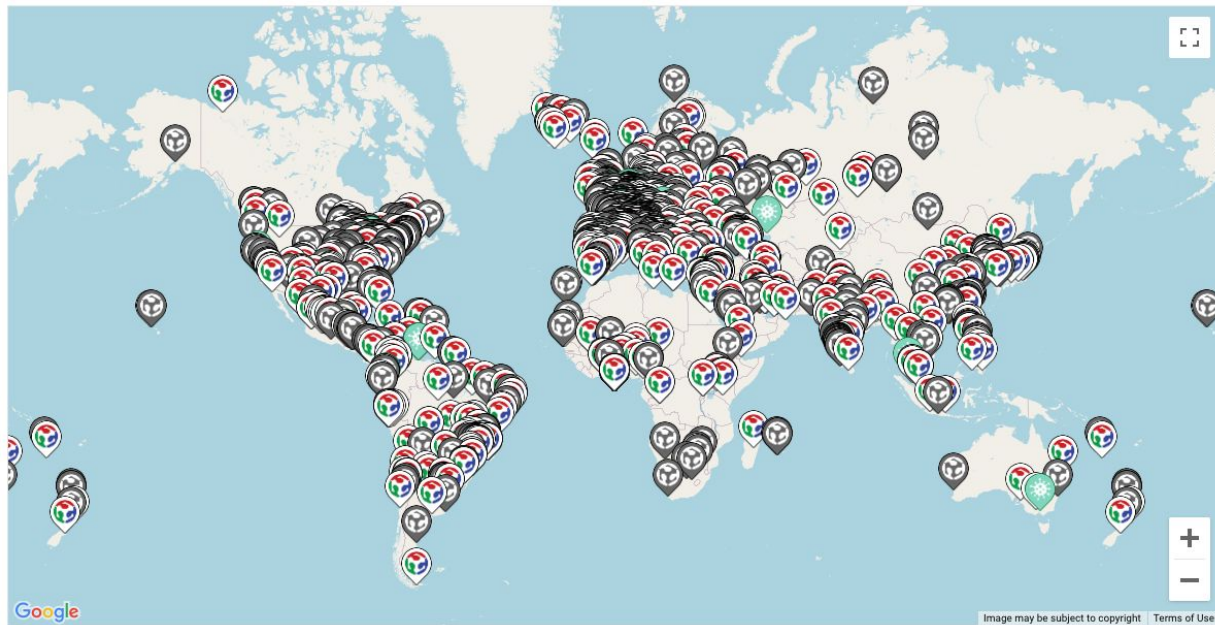
Sign in

Sign up

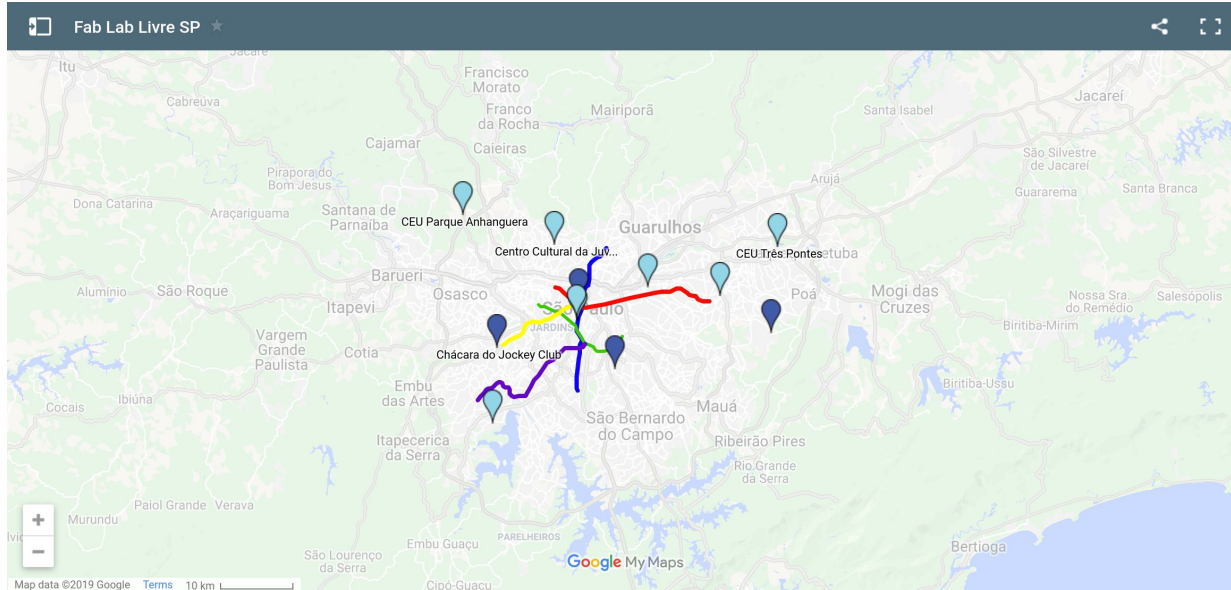
List view

Map view

+ Add Lab



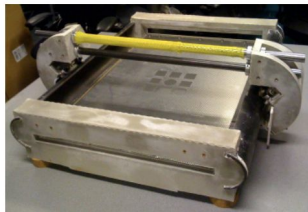
Global Fab Lab
Network. Over 2000
Fab Labs worldwide.
Source:
<http://www.fablabs.io>



Fab Labs as public infrastructure in Sao 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)



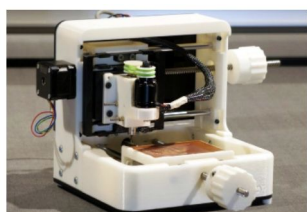
CAST CEMENT CNC
(2010)



FAB IN A BOX
(2010)



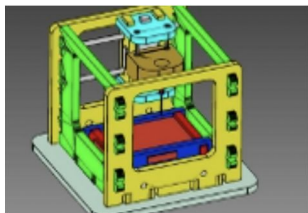
CLANK-LZ
(2020)



NEO PICO
(2021)



CLANK / MUDSTACK
(2021)



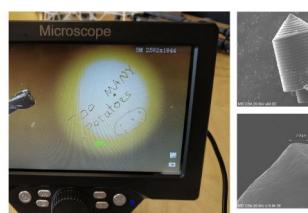
MTM SNAP
(2011)



DIY EDM
(2012)



FOLDAFAB
(2012)



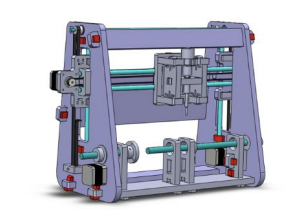
MICROPANTO
(2021)



PARALLEL PRISMATIC ACTUATOR
(2021)



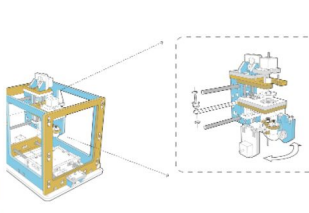
URUMBOT
(2021)



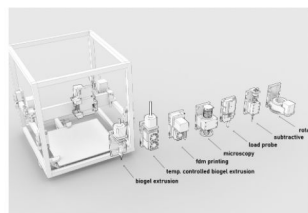
MULTI PROCESS LATHE
(2012)



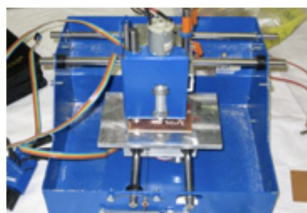
POP FAB
(2012)



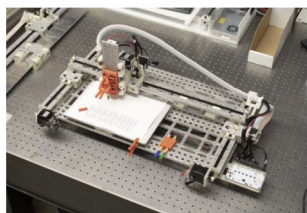
TIMING BELT 5 AXIS
(2012)



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



[APPLY for FAB ACADEMY](#)

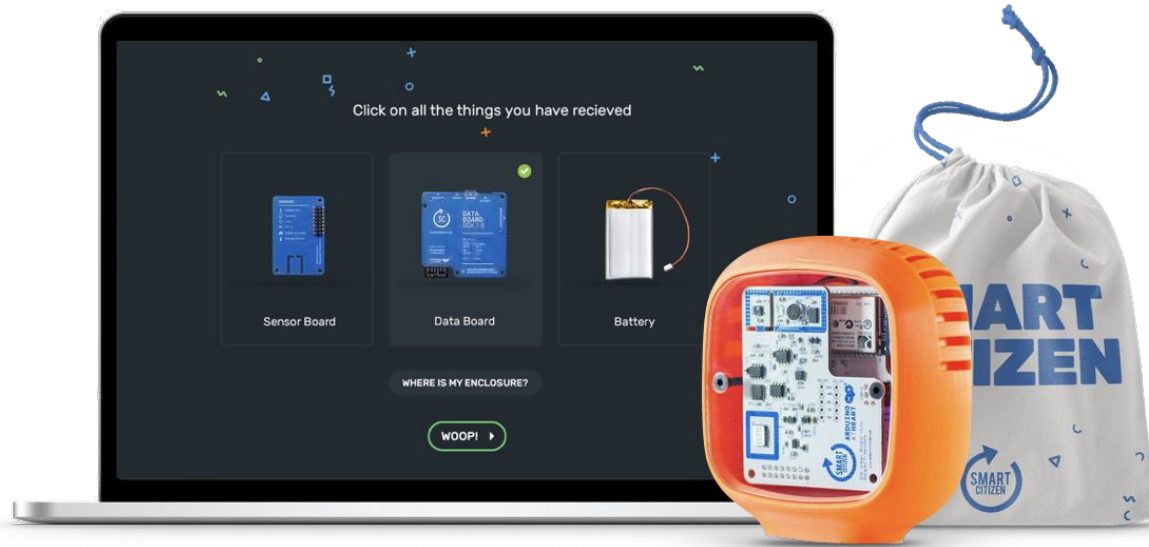
Connecting with global programs inside the Fab Lab Network, such as the Fab Academy, Fabricademy, and the soon to be launched **Master in Design for Distributed Innovation**

A dark gray world map with white outlines of continents and countries. Numerous red and white location pins are scattered across the map, primarily concentrated in North America, Europe, and East Asia, with a few pins in South America and Africa. The pins represent a global distribution of data or users.

**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

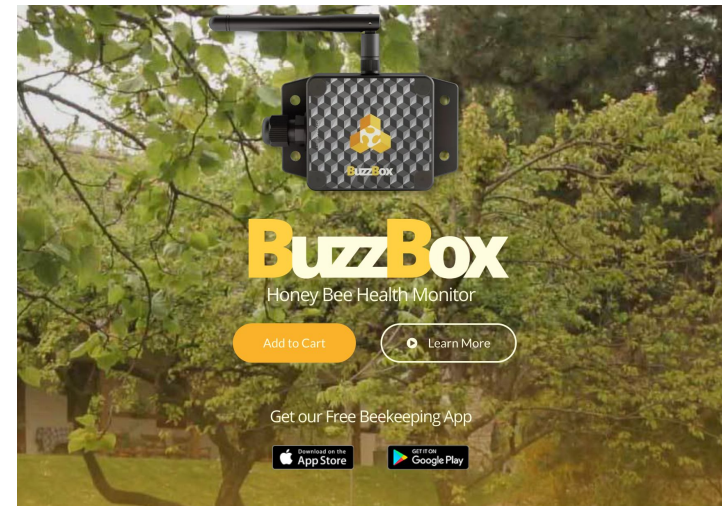


Colorado Top Bar Source File Pack

The Barcelona Warre



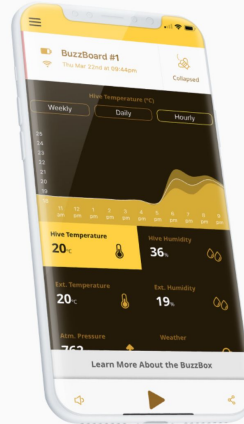
Barcelona Warre Source File Pack



Get the OSBeehives Beekeeping App

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.



Healthy



Dormant



Missing Queen



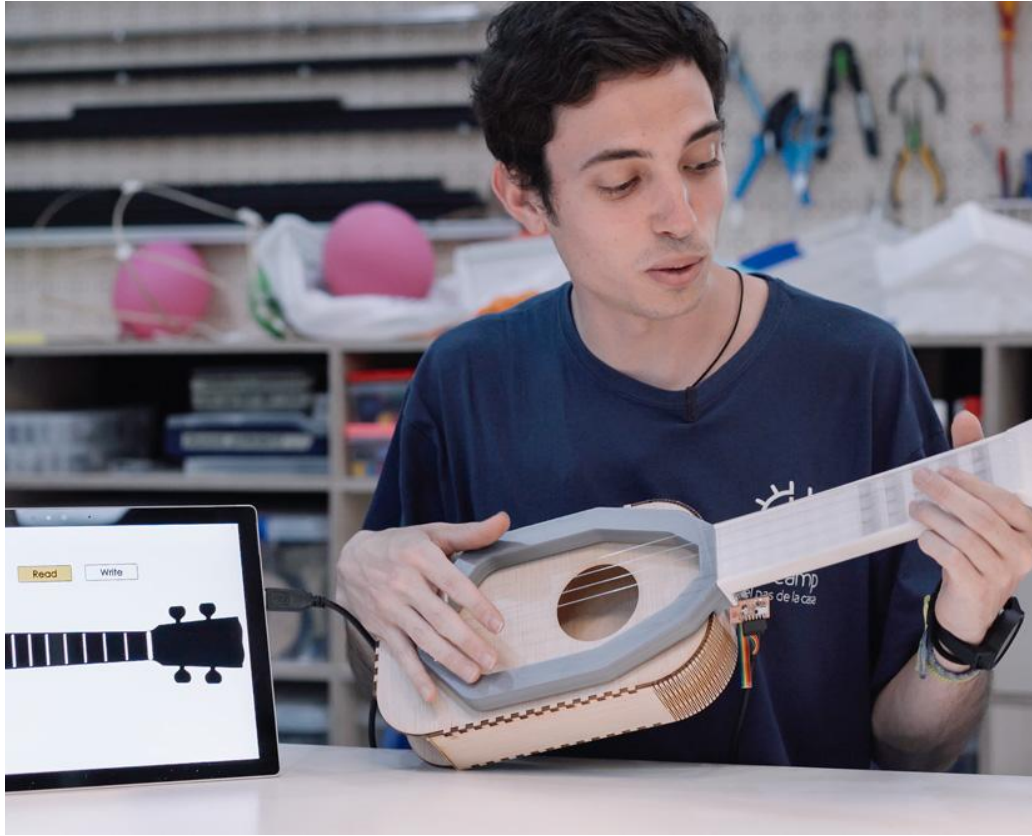
Swarming



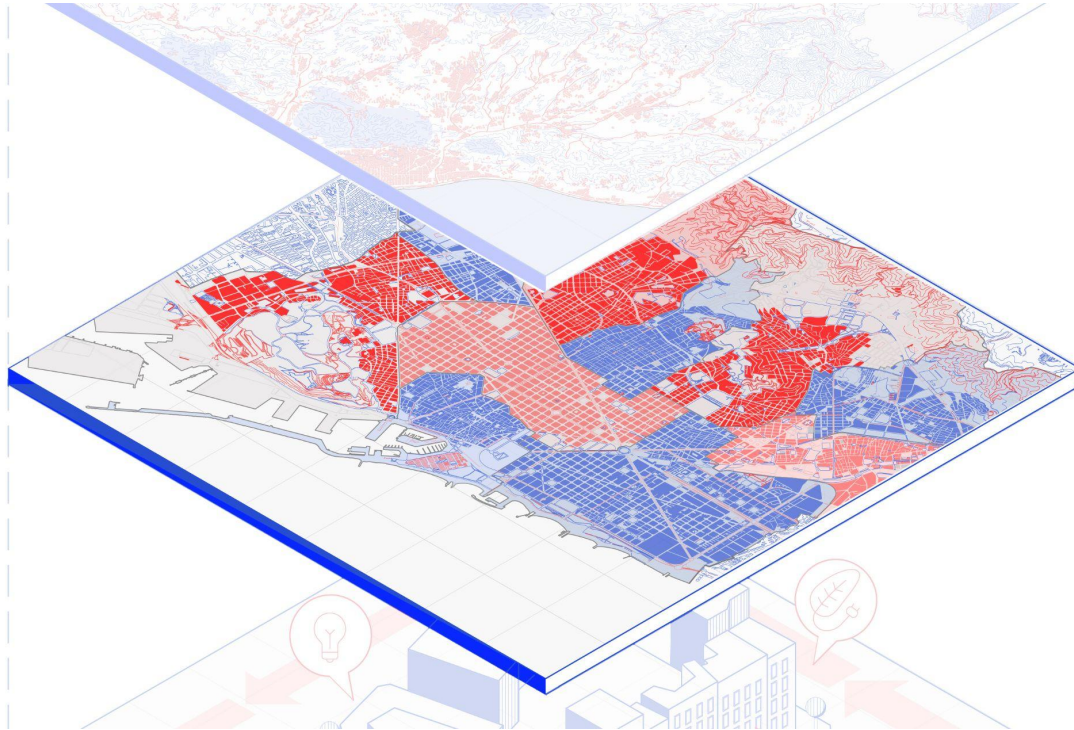
Collapsing



Collapsed



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.

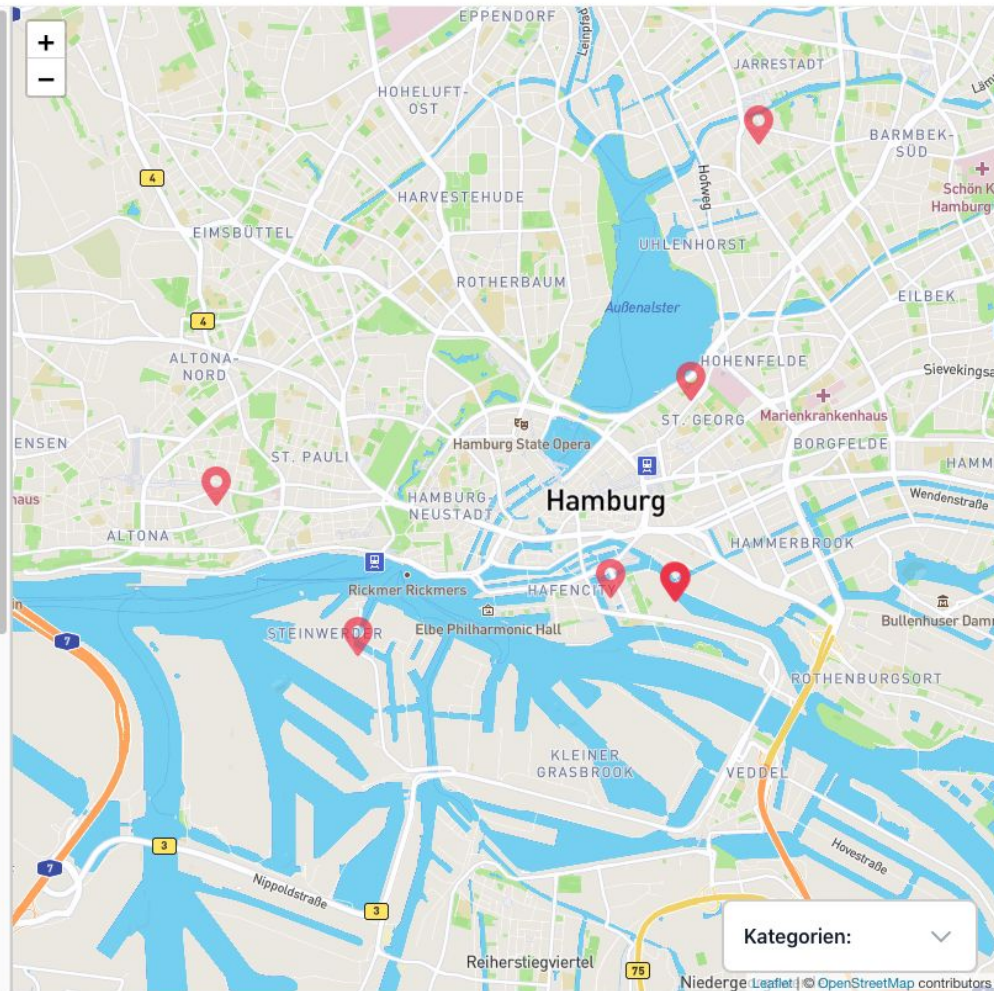
FAB LAB / OFFENE WERKSTATT

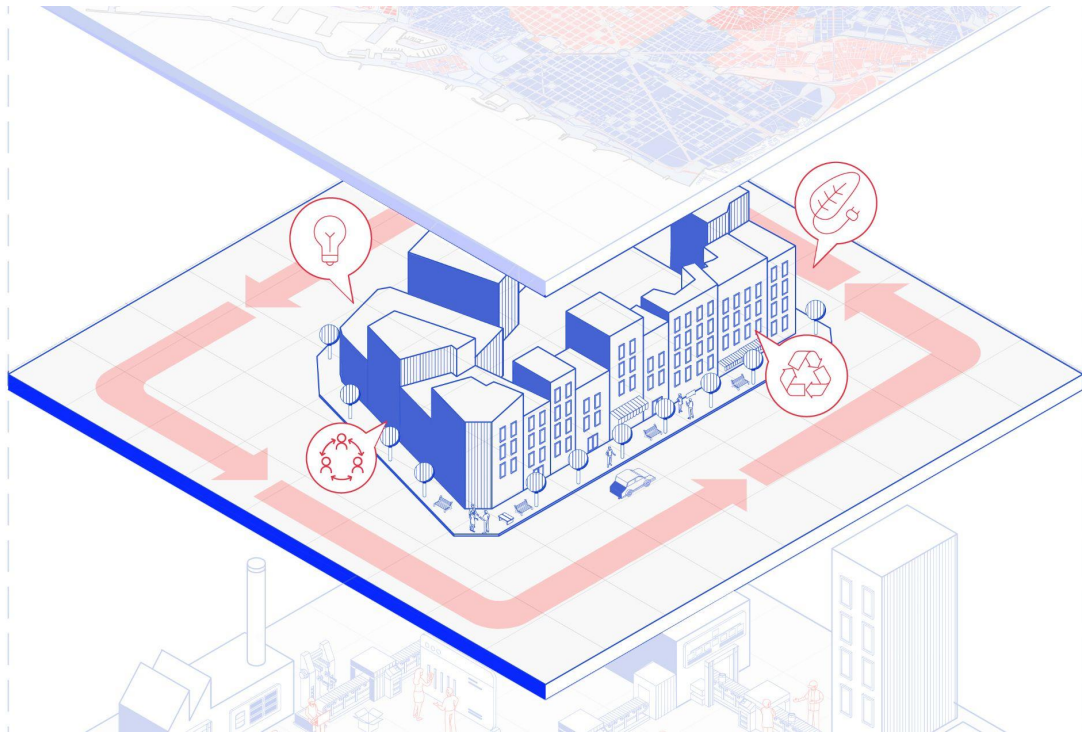
Attraktor e.V.

FAB LAB / OFFENE WERKSTATT

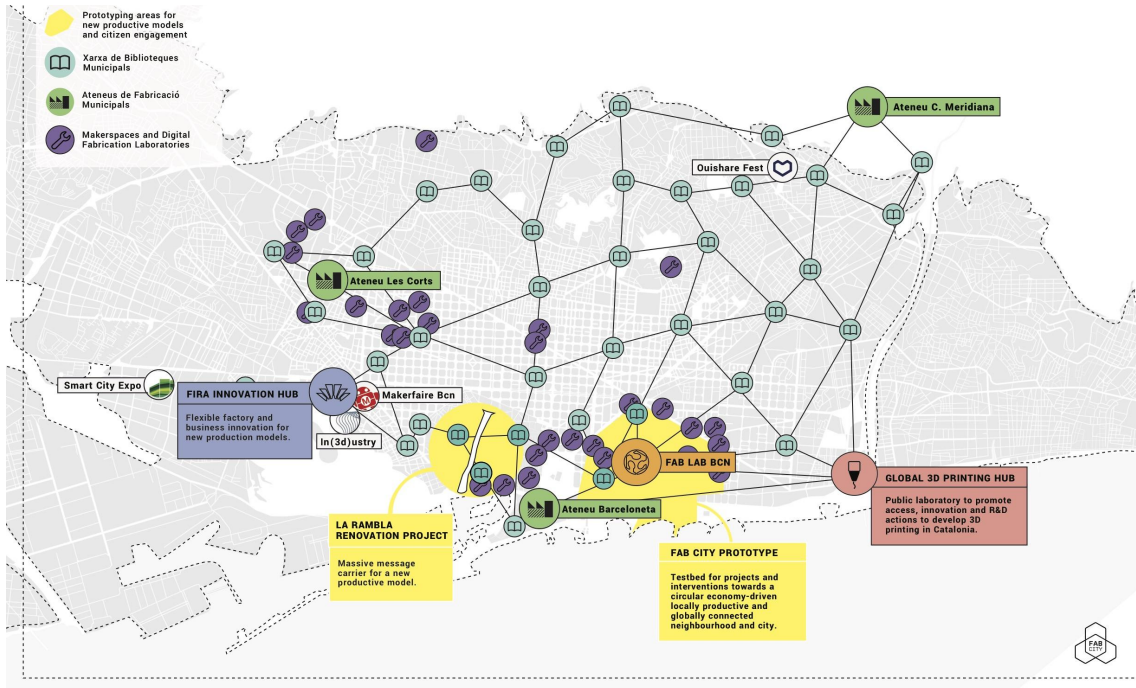
Curious Community Labs e.V.

HANDWERKS BETRIEB

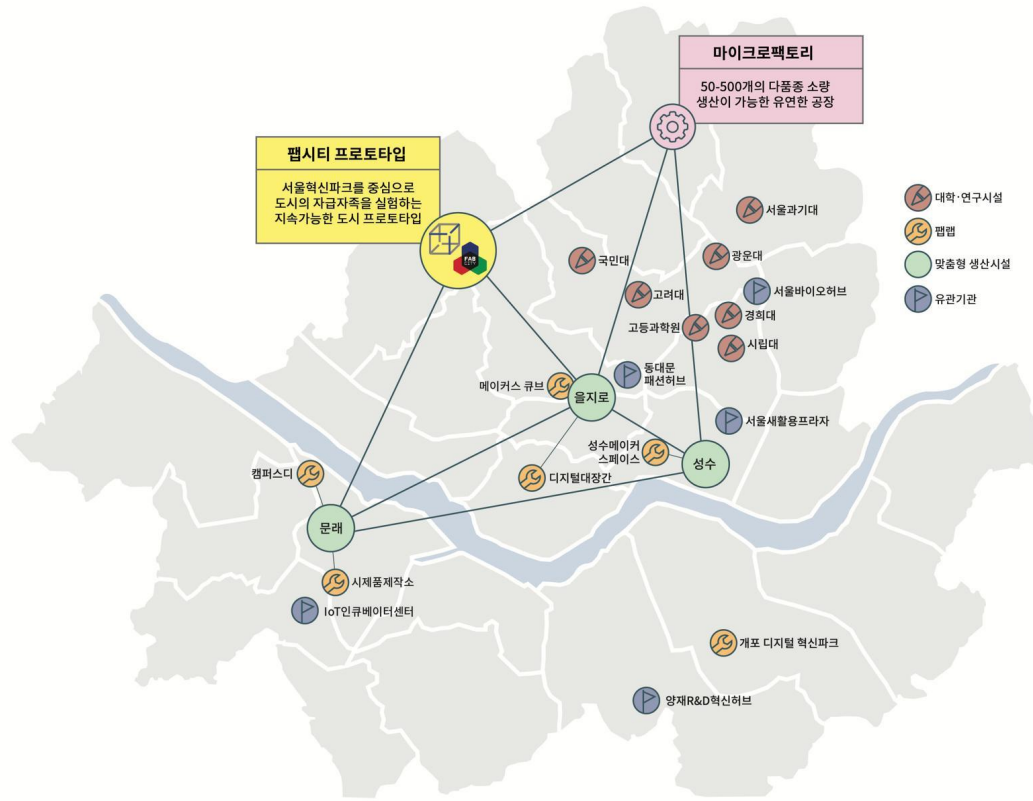
Goldschmiede Killinger GbRBILDUNGS- UND
VERANSTALTUNGSORT**designxport / Hamburg Kreativ
Gesellschaft mbH**BILDUNGS- UND
VERANSTALTUNGSORT



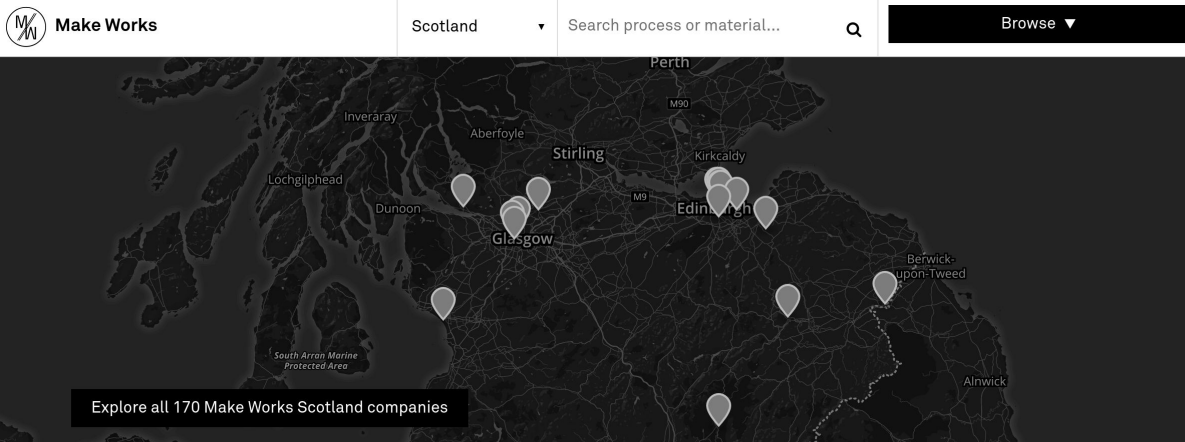
**Developing
urban and
territorial shared
strategies**



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.



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.](#)

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.



Processes in

Browse



Industries in

Browse



Materials in

Browse



Locations in

Browse



All Factories

Browse



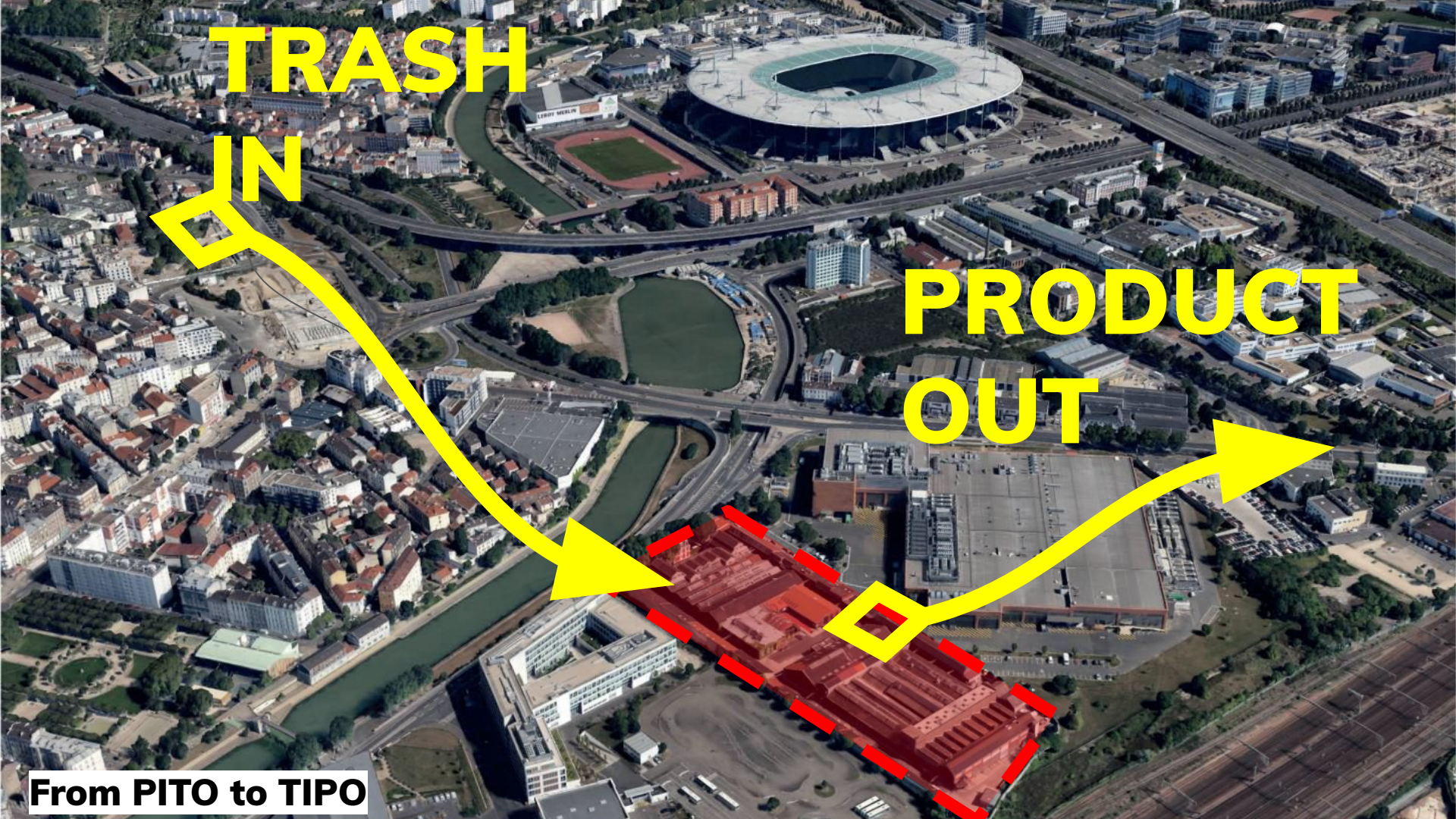
Blog & Guides

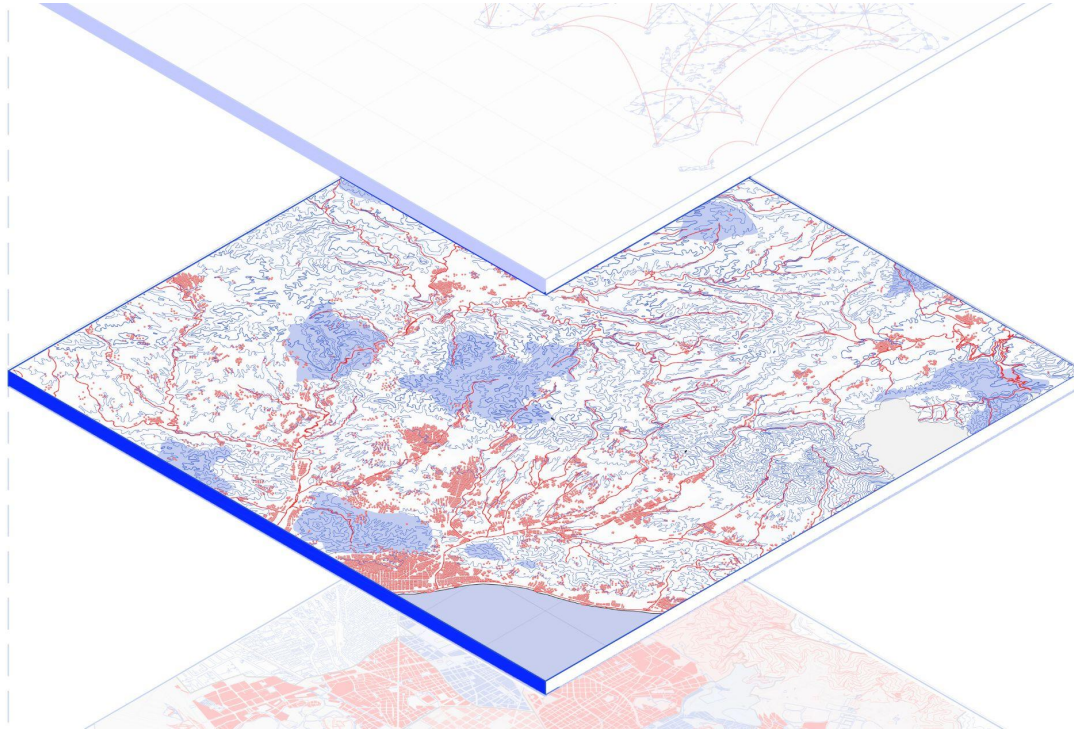
Read

**TRASH
IN**

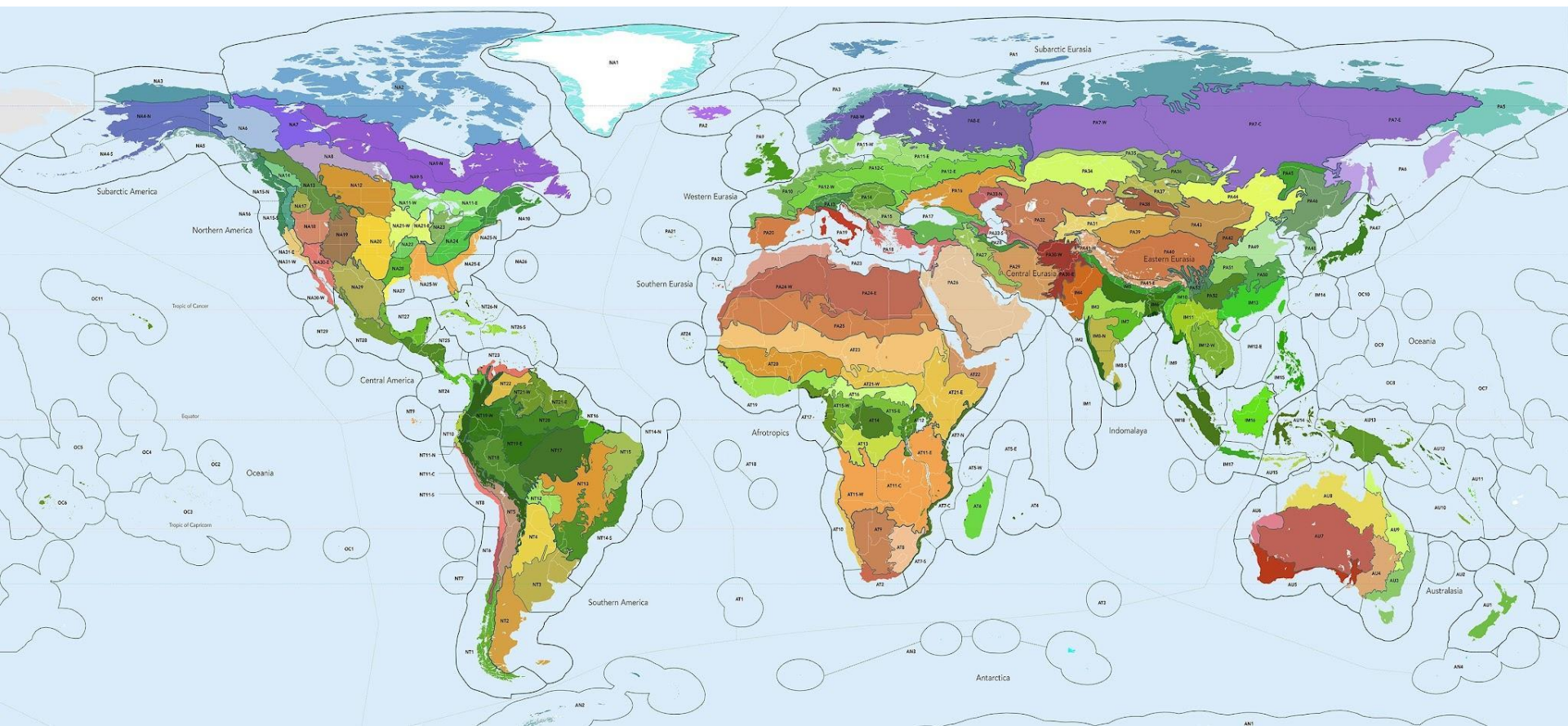
**PRODUCT
OUT**

From PITO to TIPO





**Applying
principles of
bioregional
development**



Northern Amazonian Forests (NT20)

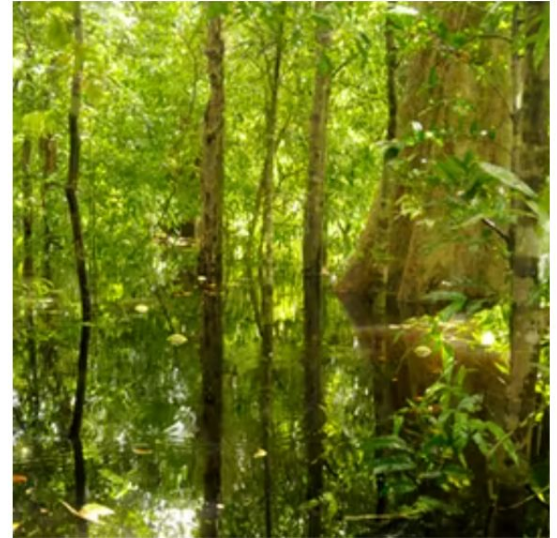
Total Land Area (1000 ha): **105,232**

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

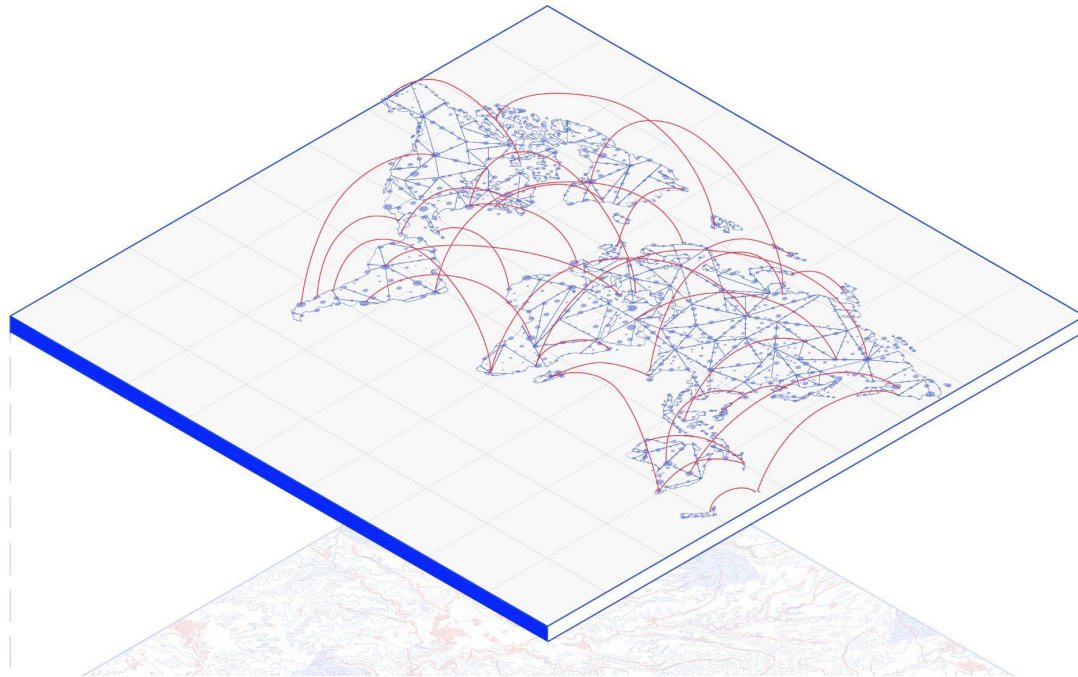


Apply knowledge



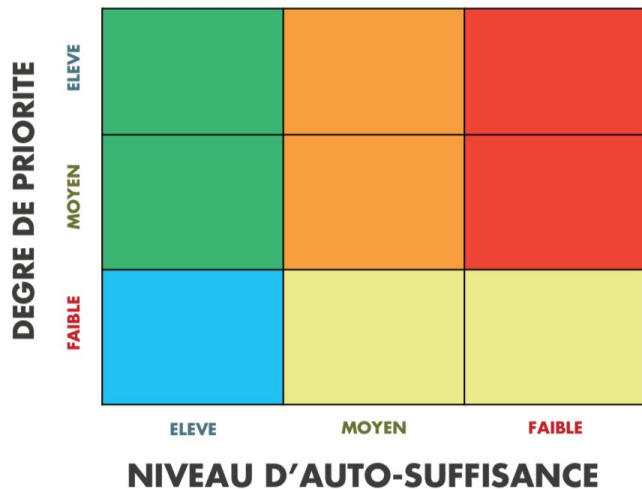
Foster a community





**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.

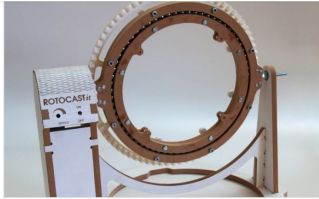


ACTION

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



@eeb/smill

The goal of this project is to make a machine small...

40 14



+fablabbcn/smart-citizen-kit

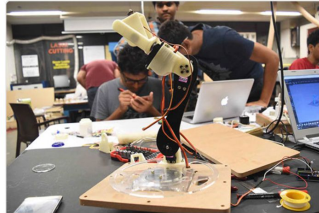
An Open-Source Environmental Monitoring Platfor...

37 12



+aquapioneers/aquapioneers

The Ecosystem uses a natural process called Aqua...



@avishek/krab-v10

Krab is a small 6-axis robotic arm controlled from R...

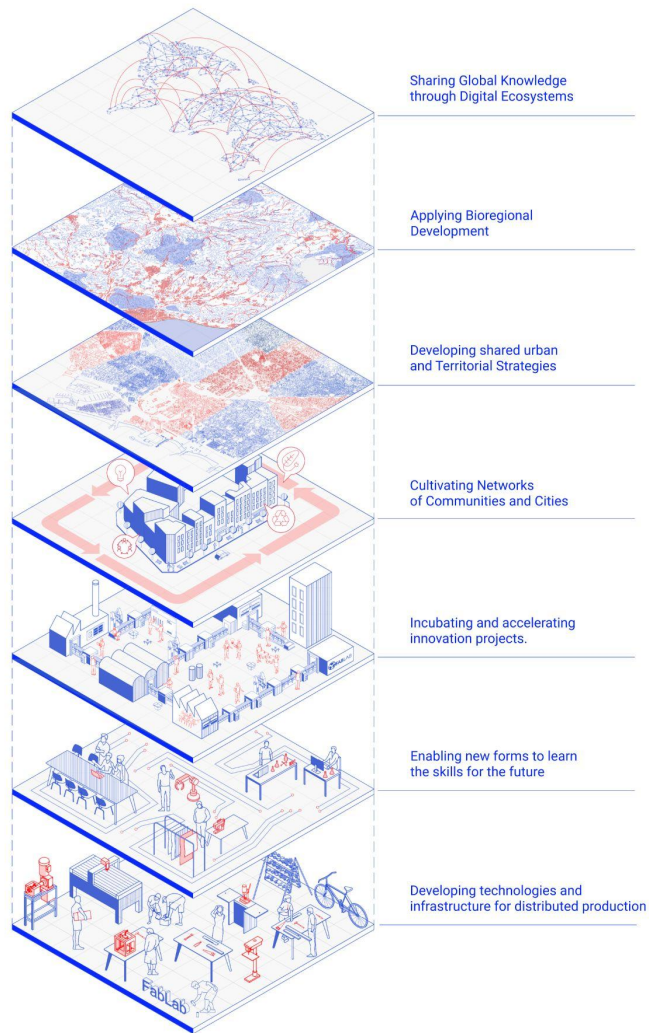


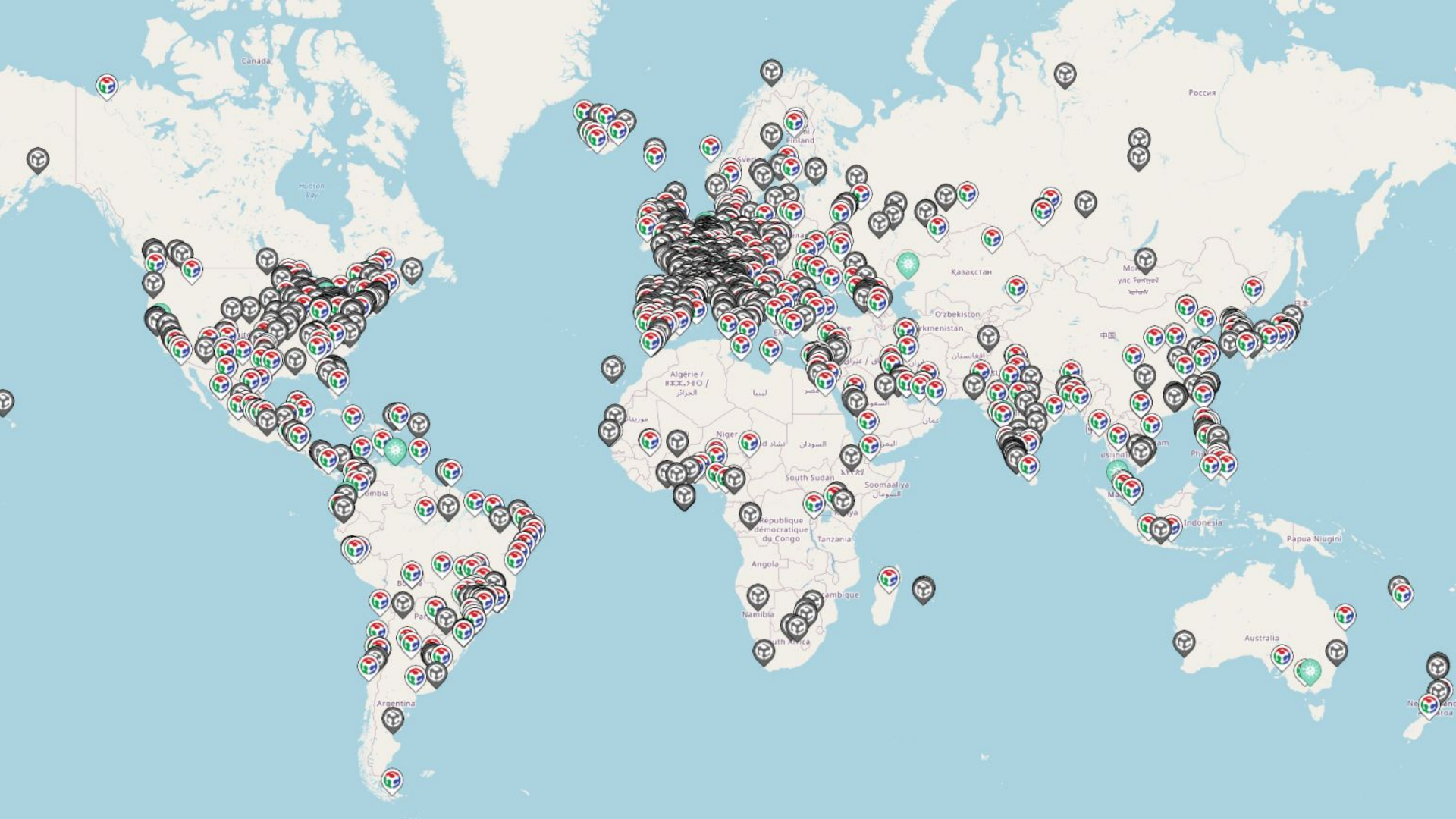
+OSBeehives/colorado-top-bar-beehive

The Colorado Top bar hive is a modern adaption of...



**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.

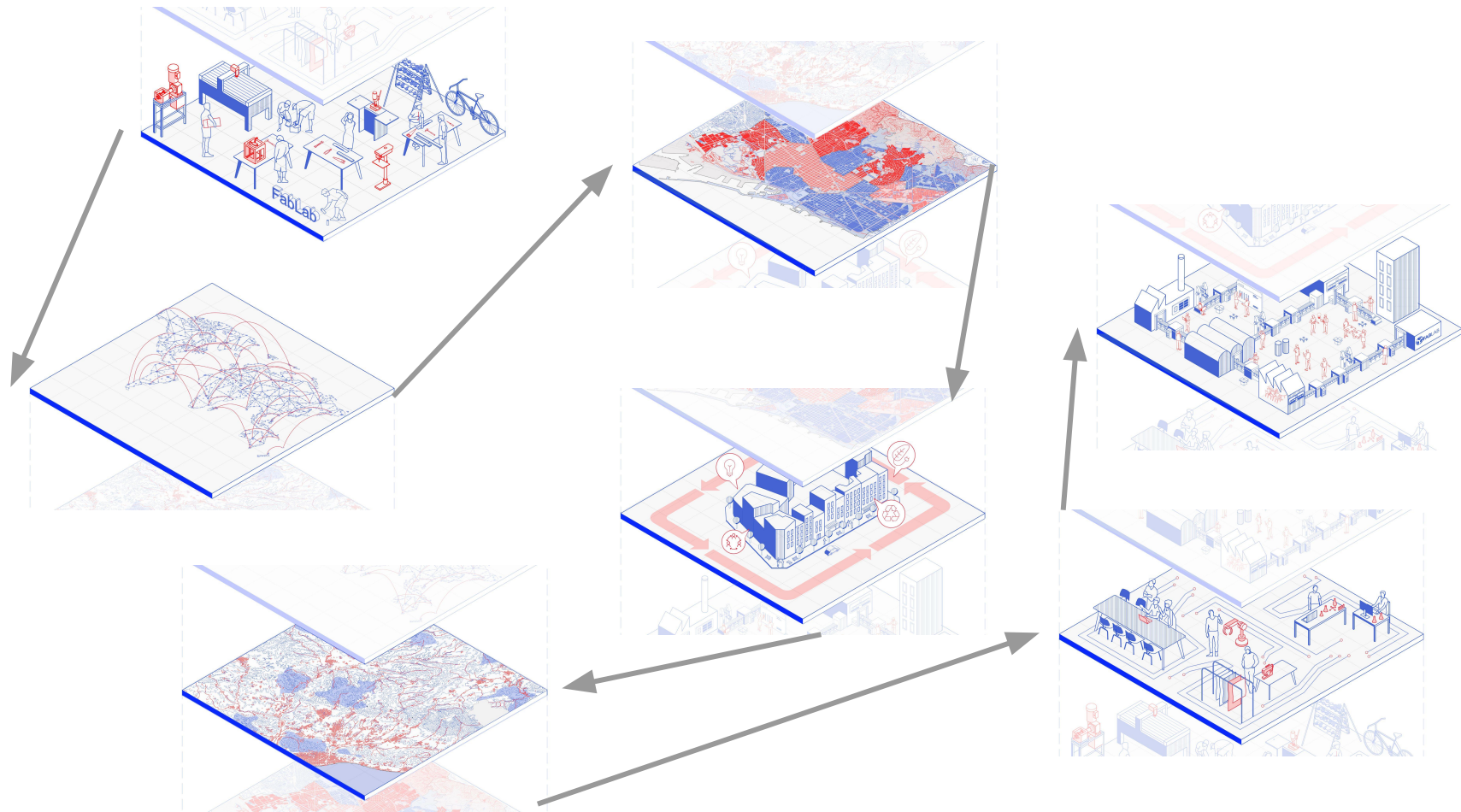
Barcelona

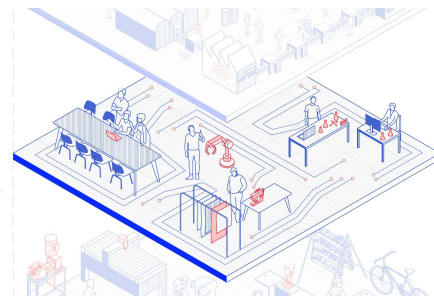
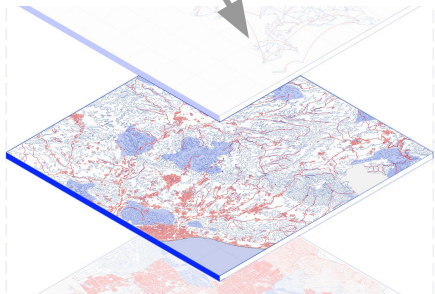


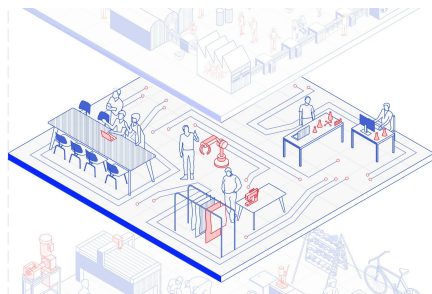
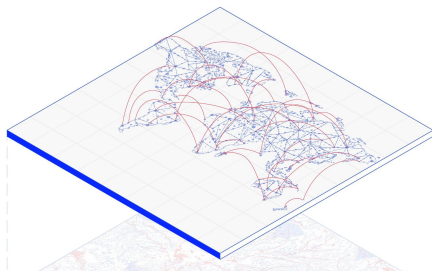
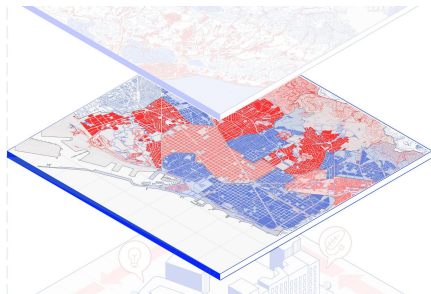
Barcelona is a world-leading city in the field of urbanism. The city's iconic urban model.

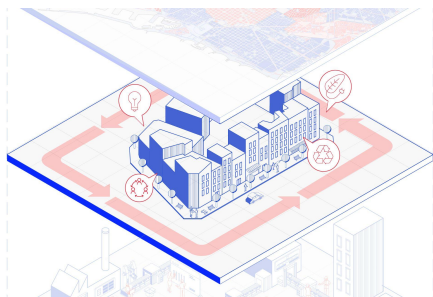
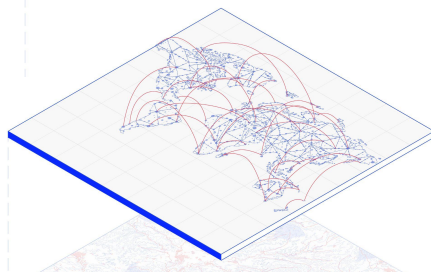
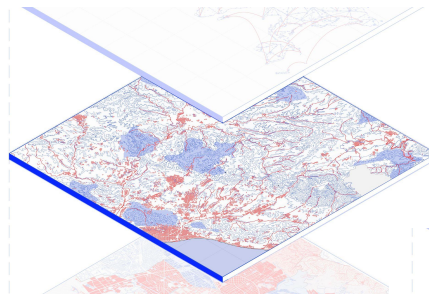
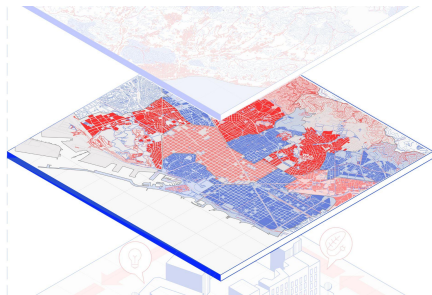
[Read More →](#)

[ABOUT 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



TEAM BOARD

CITY 1



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. Which stakeholders do you have? Which ones do you still need? Look for them on the Stakeholders' pile and paste them next to your activity.
4. Which resources do you have? Which ones do you still need? Look for 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 **Stakeholder** 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

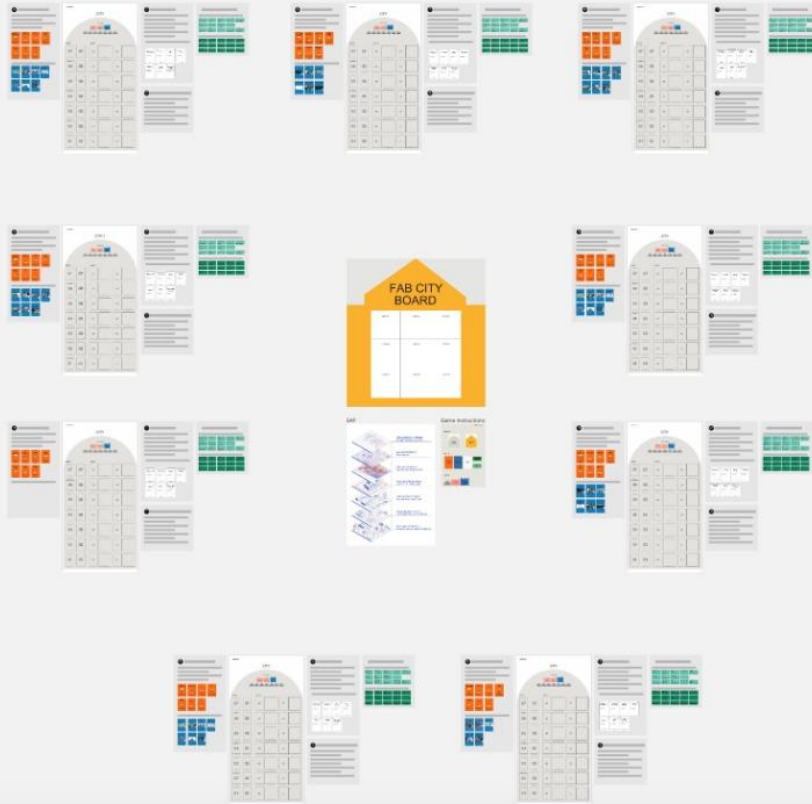


Stakeholder Cards



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 explore new ideas.
2. Which stakeholders and resources would be involved in these new activities?
3. Try to get a full 'family' of three connected initiatives. Use the SAP Cards 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 **Factory** 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 contemplates 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](#)