

HYBRIDISING BUILT ENVIRONMENTS AND LIVING SYSTEMS

Chiara Farinea
laac



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NATURE BASED SOLUTIONS

Nature Based Solutions are **living systems** providing cities with multiple **ecosystem services**.

Ecosystem services are defined as:

life support e.g. soil formation and oxygen production;

procurement e.g. production of food, drinking water, raw materials or fuel;

regulation e.g. climate control and tidal waves, water purification, pollination;

cultural values e.g. aesthetic, educational and recreational values

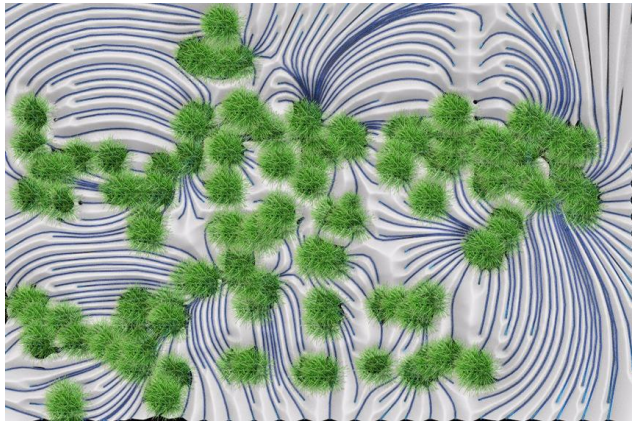
(Millennium Ecosystems Assessment, 2005)

How can **digital technologies** support us to **integrate living systems** into **urban environments** providing cities with multiple **ecosystem services** ?

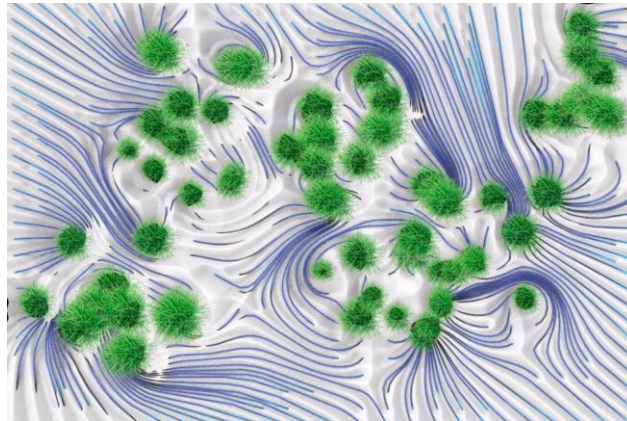
FOOD VOLTAIC

Food and energy production, water saving, flood mitigation, oxygen production

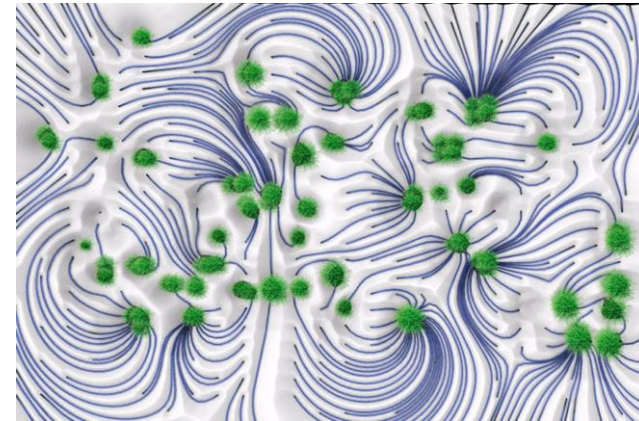




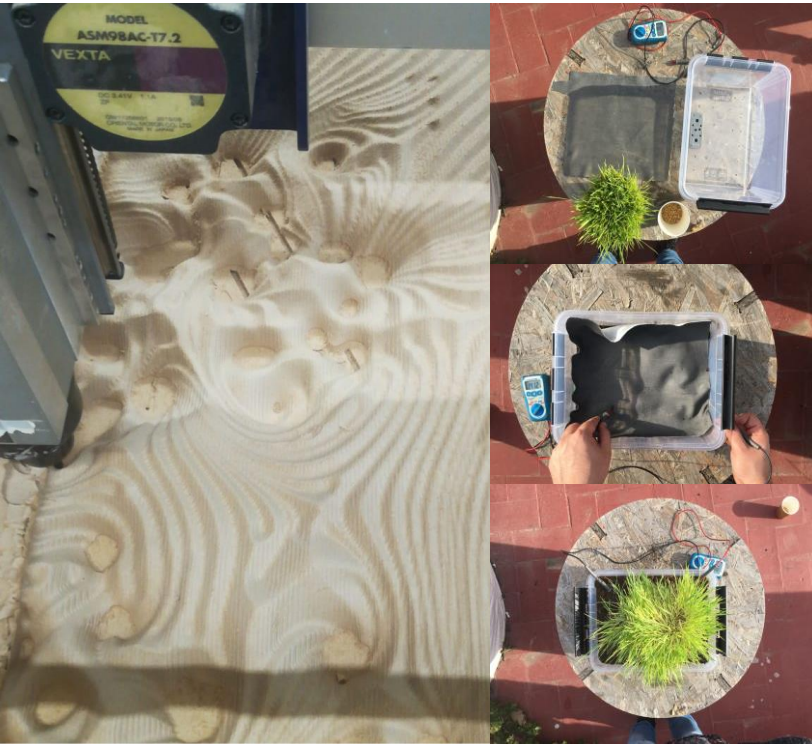
Rainy areas:
> More rain
> Less evaporation



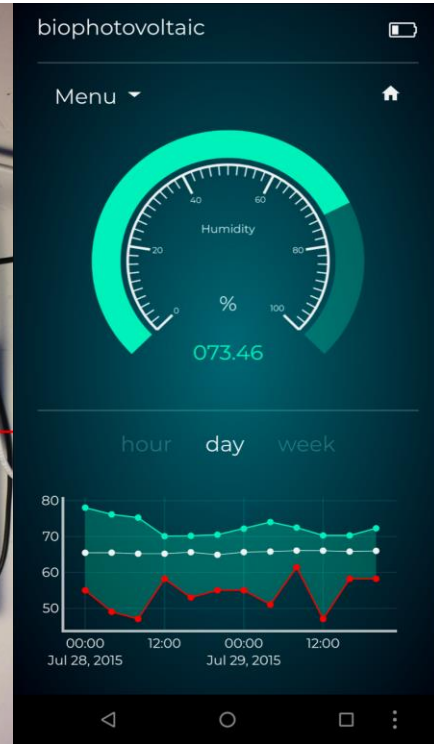
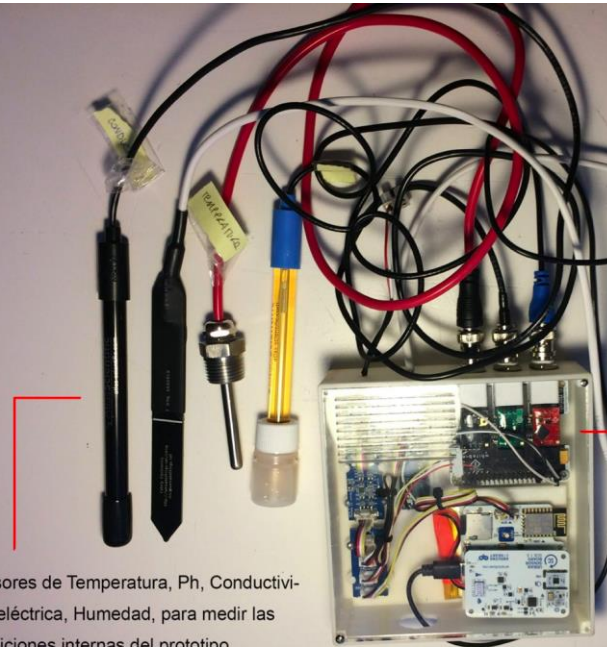
> Medium rain
> Medium evaporation



Dry areas:
> Less rain
> More evaporation



Sensores de Temperatura, Ph, Conductividad eléctrica, Humedad, para medir las condiciones internas del prototipo



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CYBER GREEN VOLTAIC

Food and energy production, flood mitigation, oxygen production

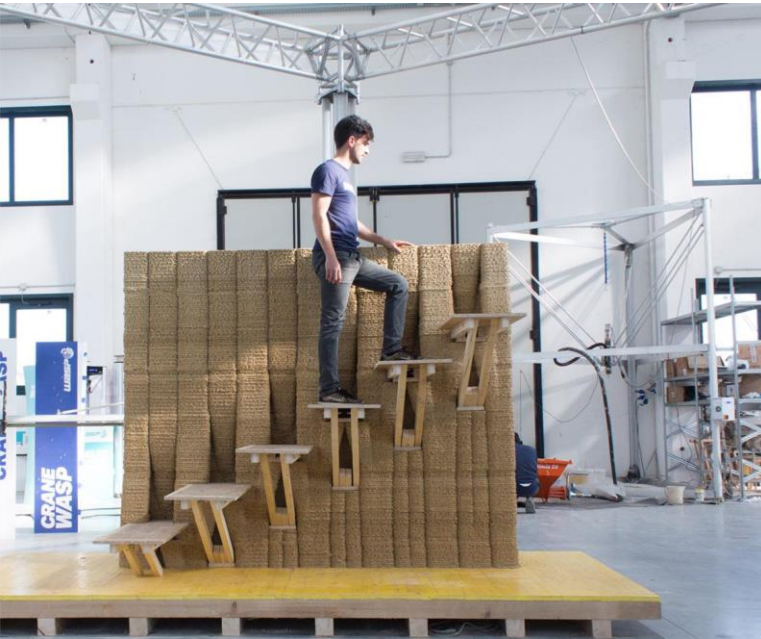


ADOBE 3D printed

3D printed wall Costrumat 2018



ADOBE 3D printed



3D printed wall Costrumat 2019



TASSELATE

Grey water phytodepuration, energy and oxygen production

MAA 01 - [SE.9 - Urban Bio-systems](#)

Students: Kavya Jose, Tawnza El Moujahid, Anna Piliugina

Developed with:
LEITAT
Technological Center

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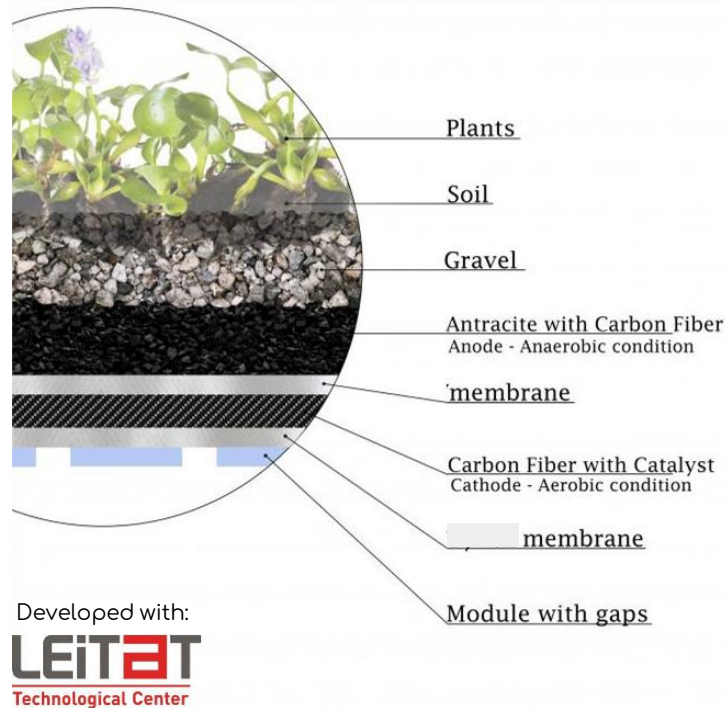
BIO-MON

Grey water phytodepuration, energy and oxygen production

MAA 01 - [SE.9 - Urban Bio-systems](#)

Students: Maya Mohan, Ozge Tektas, Nusrat Tabassum

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Maya Mohan, Ozge Tektas, Nusrat Tabassum

MUSHROOM TILE

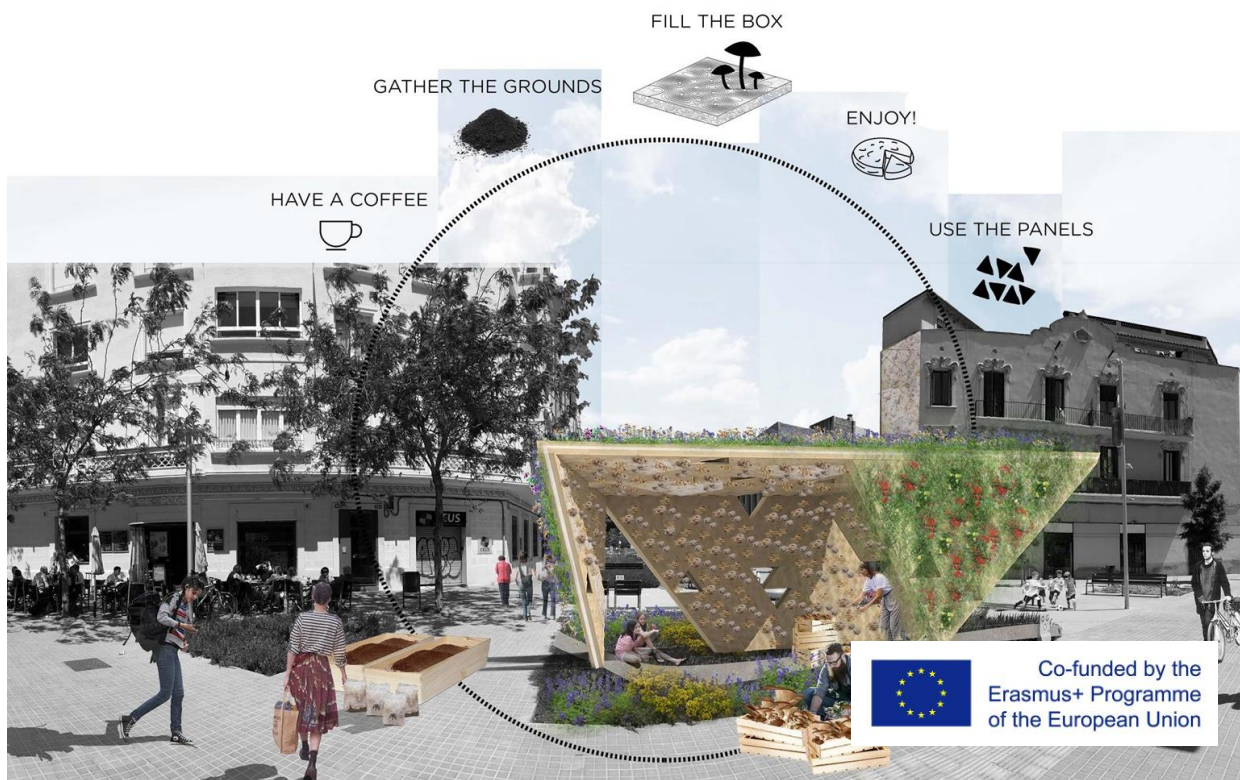
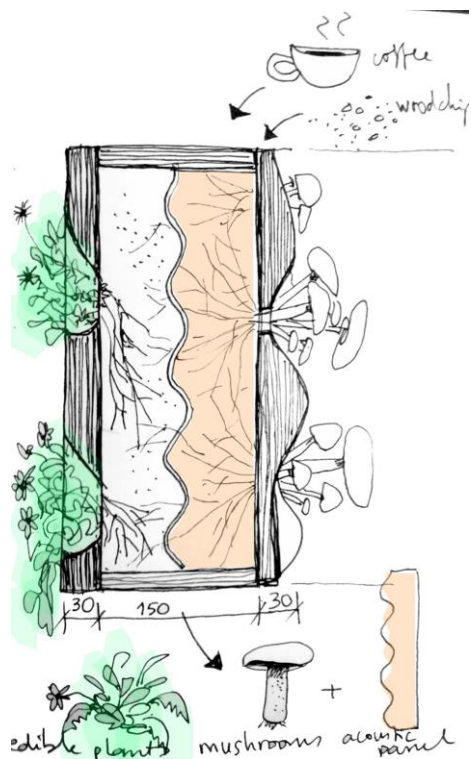
Food and construction material production





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MUTUALISM



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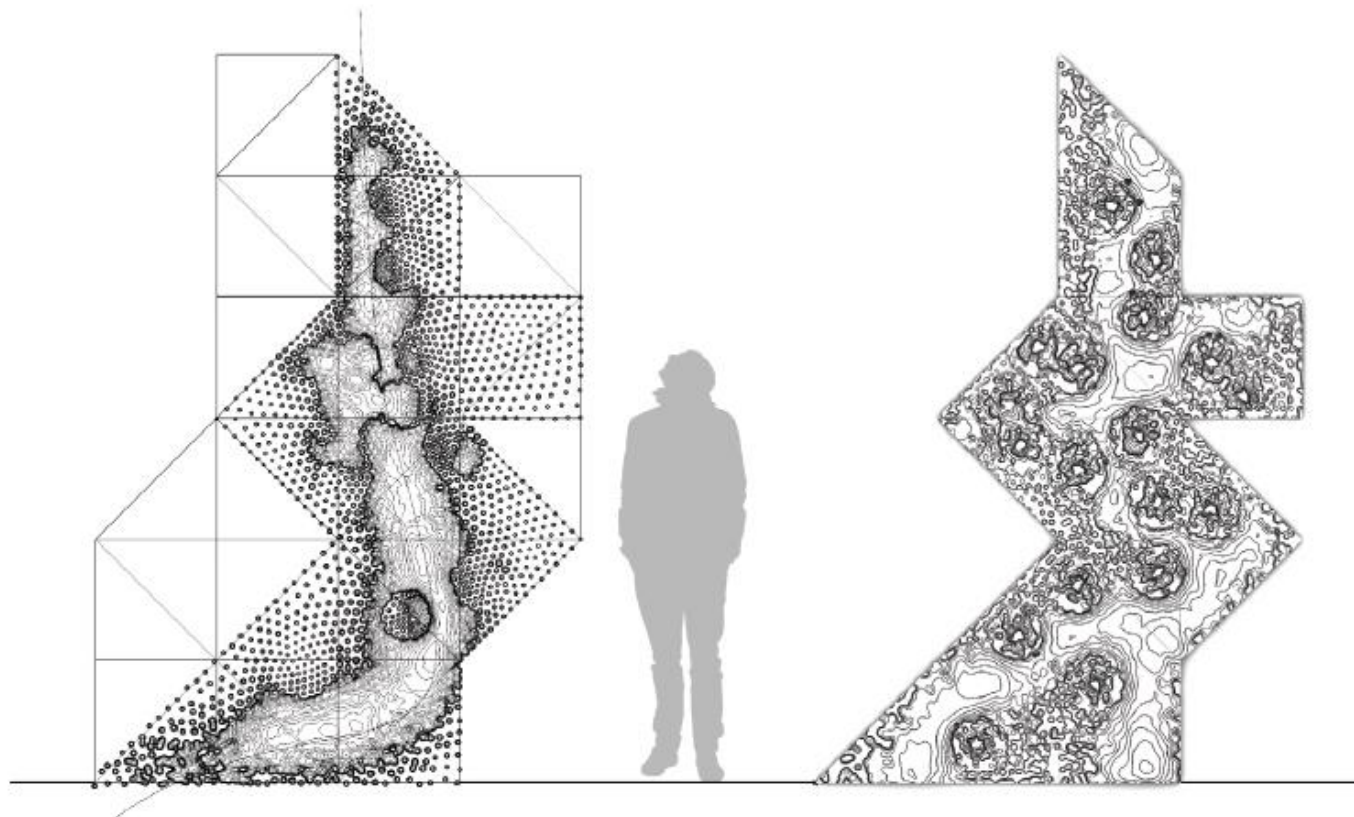


MYCOSCAPE

Food and construction material production



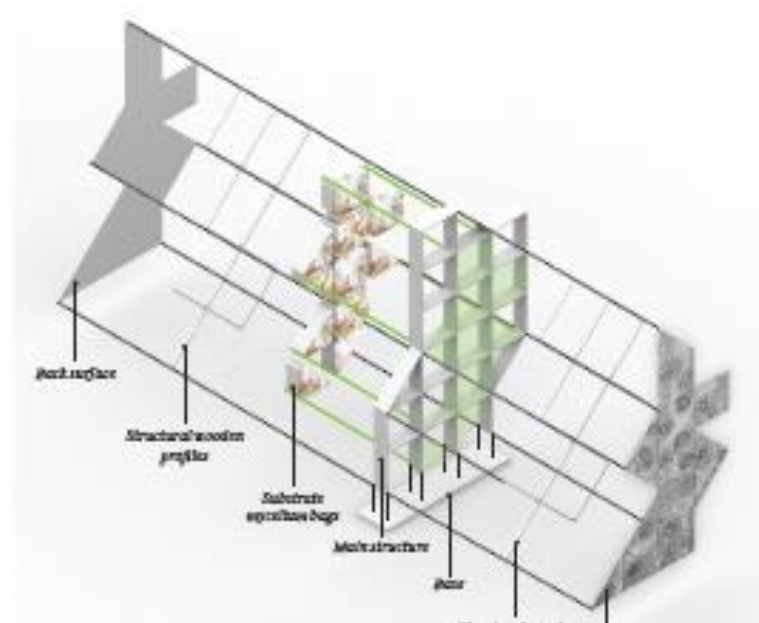




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Front view simulation of
the final prototype



Exploded isometric
diagram of the
final prototype





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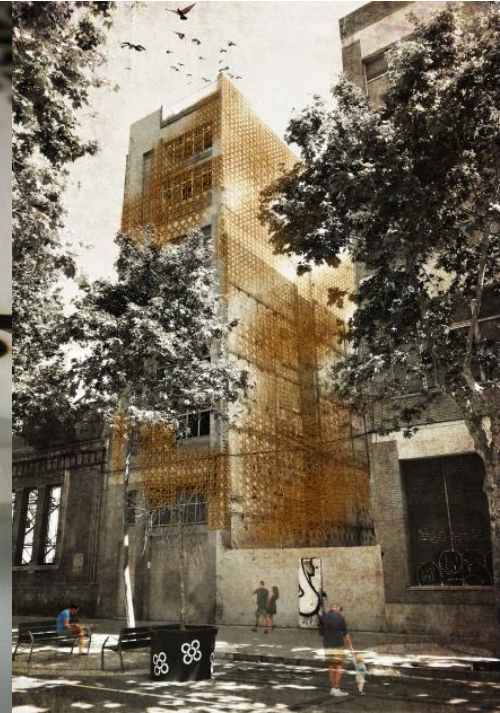
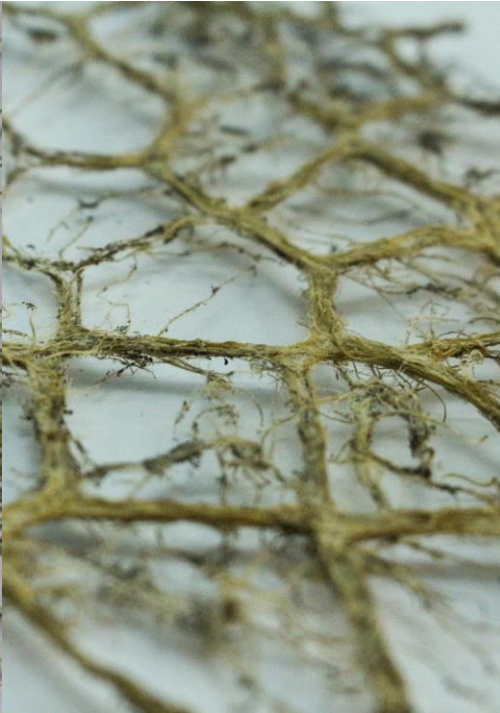


ROOT MEMBRANES

Food and construction material production



Diana Scherer



INSECTS HOTEL



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POBLE JOC

<http://activepublicspace.org/category/installations/barcelona/>



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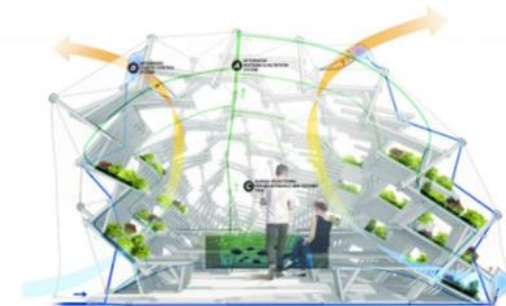
FOOD PRODUCTION AND LEISURE PAVILION

- > food production (the system is optimized to maximise solar radiations on plants)
- > water saving (hydroponic system avoids loss of water in soil - optional)



Iaac | 007 3075 18
Urban Orchard

DESIGN SECTION
AUTOMATED SYSTEMS



Co-funded by the Horizon 2020 programme
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MULTIFUNCTIONAL WOOD STRUCTURE

- > shading
- > resting



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SUPERBARRIO

> public space simulation tool



Virtual design platform dedicated to public space design



DATA ANALYTICS



EDUCATION and
AWARENESS



COMMUNICATING
URBAN PLANS

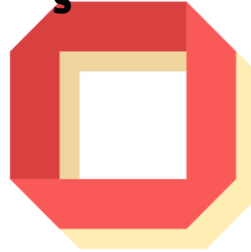


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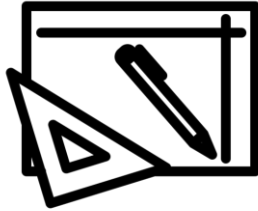


Citizen

s



Super BARRIO



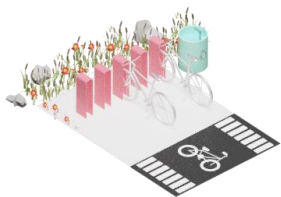
Architects



Municipalities



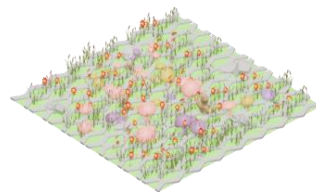
Neighborhood



Sentier cyclable et piétonnier



Pavillon de la production alimentaire et des loisirs



Grow Tile



Eclairage



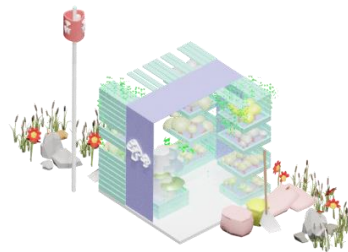
**Technological
Solutions**



Jardin végétal mobile



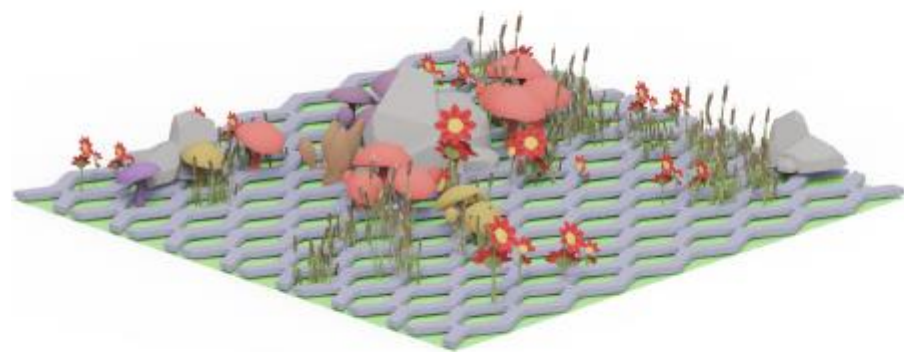
Structure en bois multi-usage



Ferme de champignons urbaine



Ma Solution fondée sur la nature



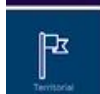
scores

Nature	●	●	●	●	○
Wellbeing	●	●	●	○	○
Health	●	●	●	○	○
Mobility	○	○	○	○	○
Participation	●	○	○	○	○
Economy	●	●	●	○	○

Compostage communautaire et monnaies sociales



	5
	4
	4
	0
	2
	3



Échange de solidarité et circuit de marché équitable



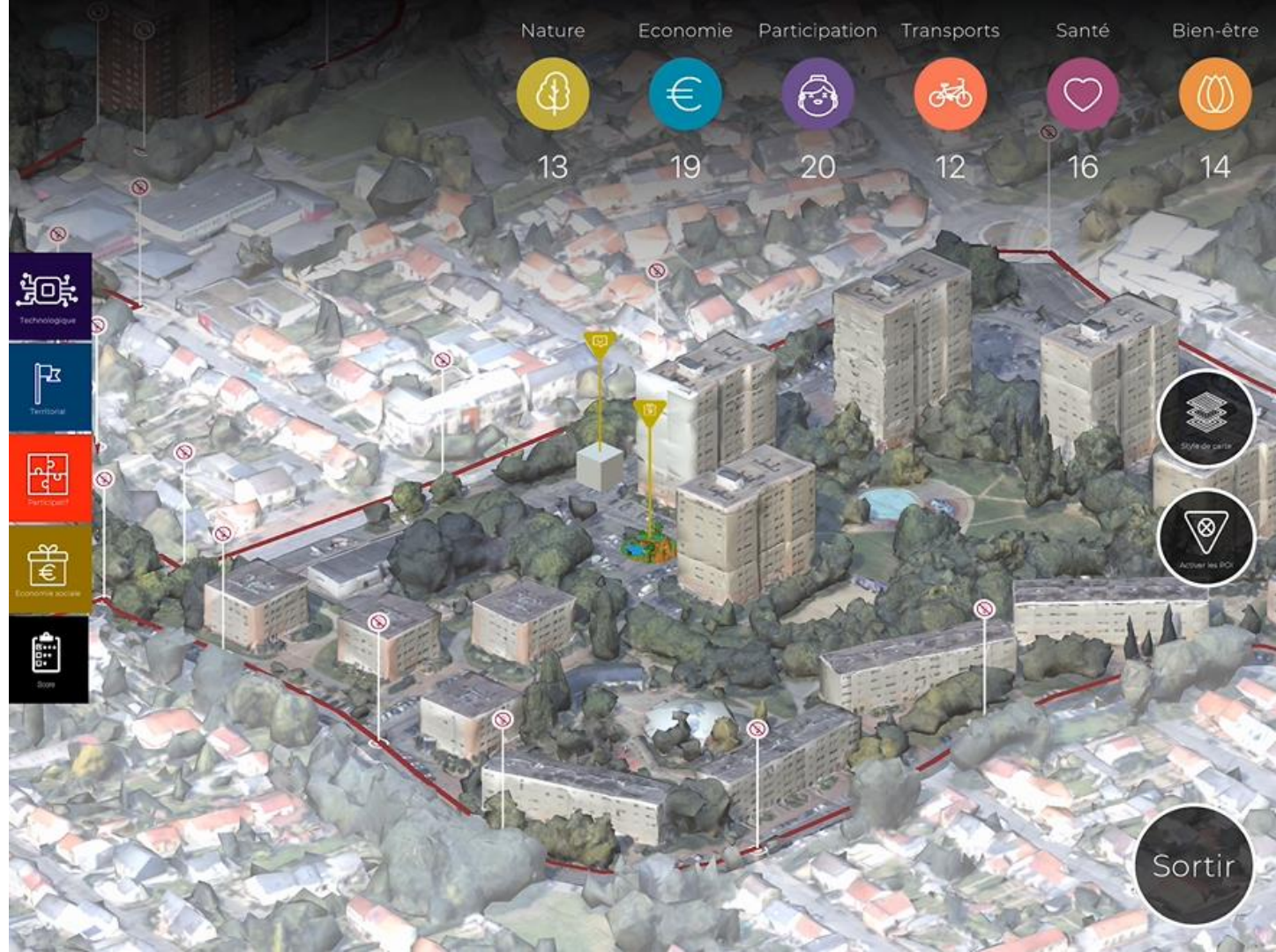
	2
	5
	5
	1
	3
	4

Circuit d'échange Solidarité Marché équitable pour les enfants



	2
	5
	5
	1
	3
	4







**Can we build the cities of future
basing them on nature based dynamics?**

Thank you

