

# Tools and strategies for designing sustainable products, spaces and processes

*Erminia D'Itria, Pedro Pacheco*

*Reserach Fellow, Full time profesor and researcher*

*Design Dept. - Politecnico di Milano School of architecture art and design – Tecnológico de Monterrey*



**POLITECNICO**  
MILANO 1863

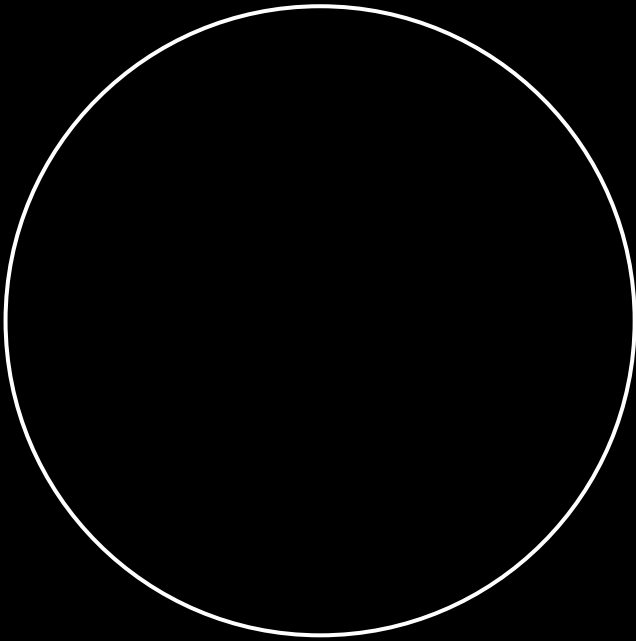


Tecnológico de Monterrey  
Escuela de Arquitectura,  
Arte y Diseño

**IMPULSO  
URBANO**

# Erminia D'Itria

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erminia.ditria@polimi.it



[www.fashioninprocess.com](http://www.fashioninprocess.com)

- **Designer**
- **PhD Candidate, Research Fellow**, Design Dept., Politecnico di Milano
- **Fashion in Process Research Lab. Member**, Design Dept., Politecnico di Milano
- **Reserach Interest:** connection between **design and production processes**, with a focus on the supply chain study of the fashion system to support its sustainable transition.
- **Expertise on material innovation** with a focus on the potential for developing new sustainable business models for the fashion industry.

## Pedro Damián Pacheco-Vásquez

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ppacheco@tec.mx



<https://www.impulsourbano.org.mx/>

- **Architect**
- **Edd, Action researcher**, School of Architecture, Art and Design, Tecnológico de Monterrey
- Integrative planning design and construction of community projects *di Milano*
- **Research Interest:** Materials and construction system innovation, pedagogical tools for civic engagement, systemic processes for design and construction
- **Expertise on** community projects and construction systems with a focus on materials innovation and participatory design.

# #ROADMAP

1. Introduction
2. Tools and strategies
3. The role of designers in the context of the circularity paradigm
4. Building your own toolkit: a kick start

# 01. Introduction

#Connecting with previous reflections  
#General concepts

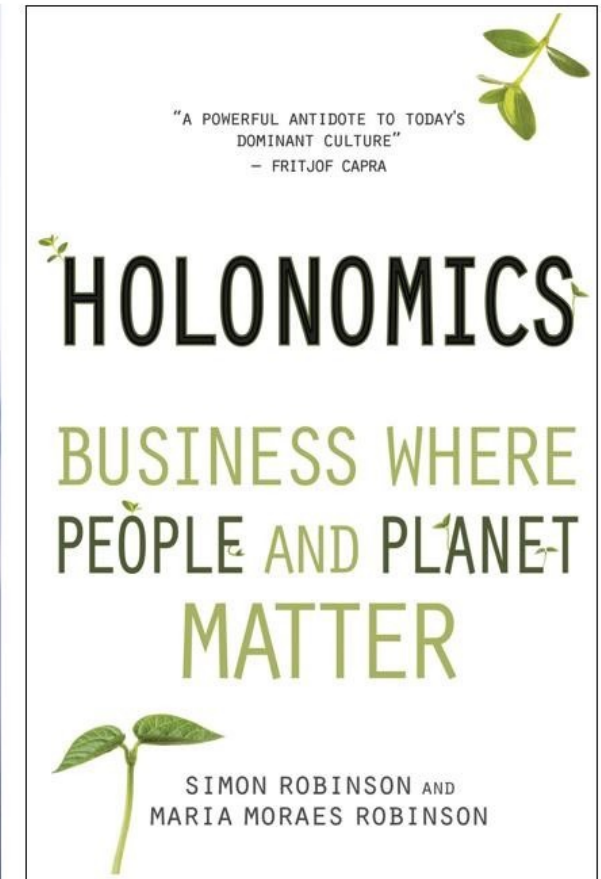
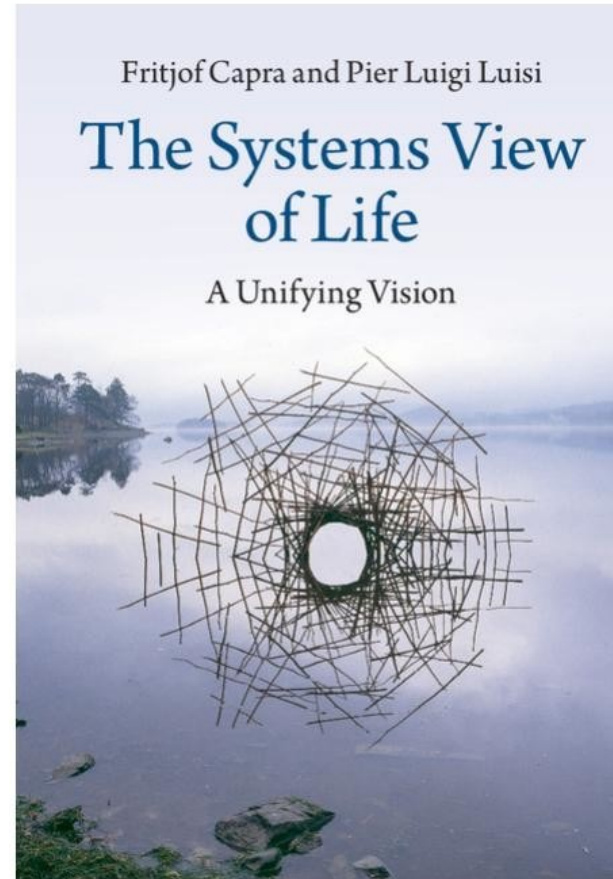
# #Connecting with previous reflections

Reduce waste – recycle

Moving from efficiency to the health of natural systems

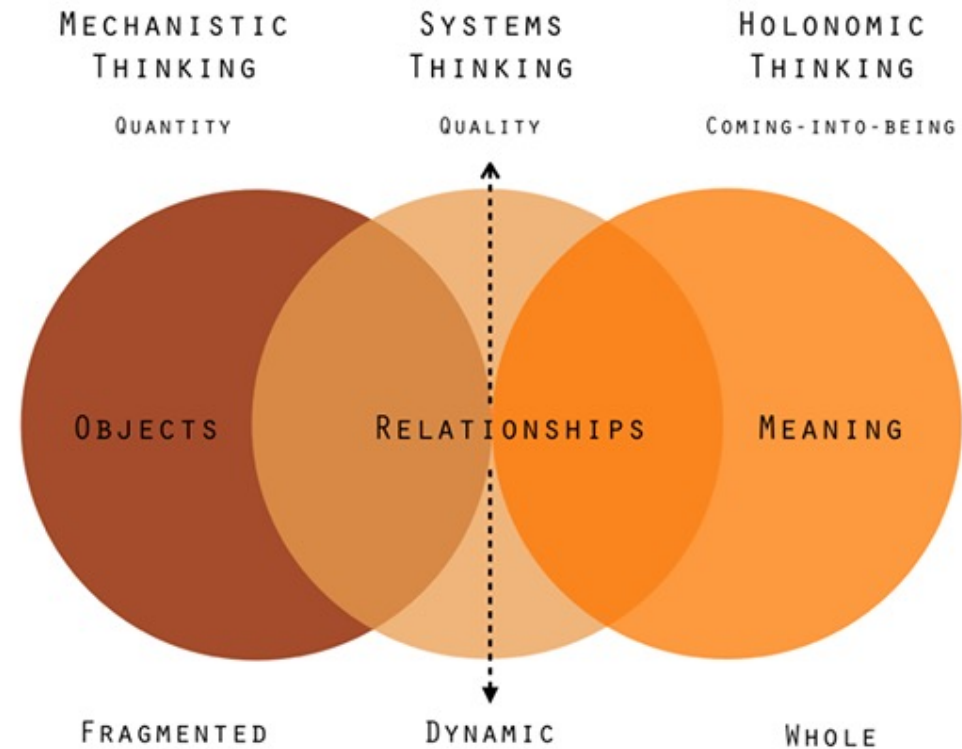
Search for lessons in nature – Biomimicri

Search for balance among all species



# #Connecting with previous reflections

We live in a complex system and is impossible to comprehend reality using conventional thinking or state of the technology.  
Perhaps the search for patterns of relationships is an alternative to find meaning in our quest for essence, fairness and balance.

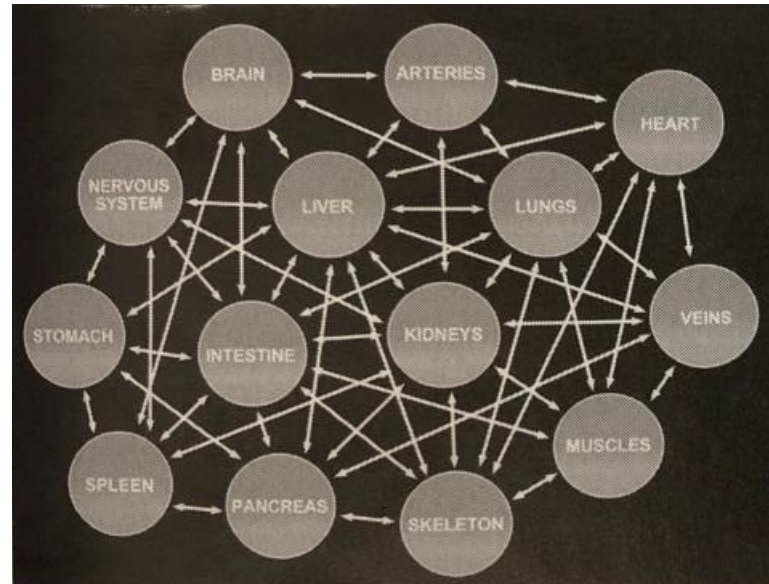


<https://sustainablebrands.com/read/stakeholder-trends-and-insights/what-is-holonomic-thinking-and-why-should-you-care>

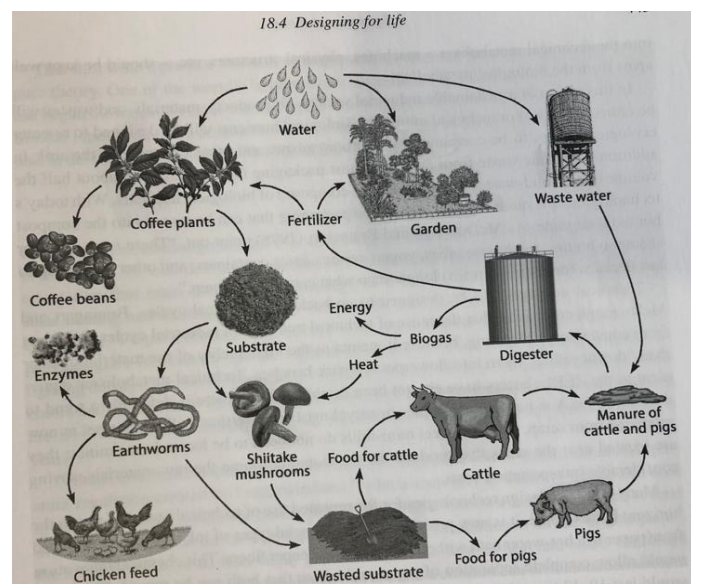
# #Connecting with previous reflections



Death system



Living system



Designing for life

Fritjof Capra & Piere Luigi: Designing for life, in The systems view of life



# #General concepts:

1. Collaboration
2. Modularity
3. Design for disassemble/deconstruction
4. Resourcing
5. Transparency

# #General concepts:

## Collaboration

1: to work jointly with others or together especially in an intellectual endeavor



Ways of participation

democratic participation

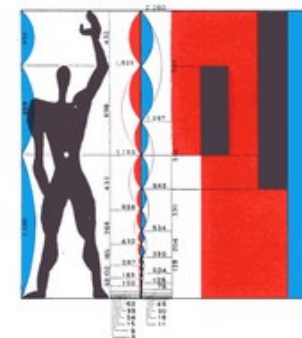
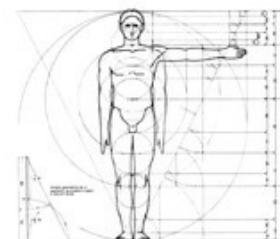
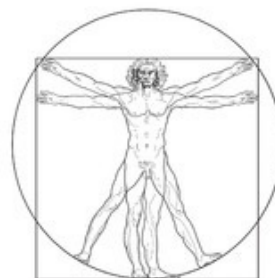
Merriam Webster <https://www.merriam-webster.com/dictionary/collaboration>

<https://extension.umn.edu/leadership-approach-and-models/civic-engagement-glance>

# #General concepts:

## Modularity

- 1 : of, relating to, or based on a module or a modulus
- 2 : constructed with standardized units or dimensions for flexibility and variety in use *modular* furniture



Merriam Webster <https://www.merriam-webster.com/dictionary/collaboration>

Modulor <https://www.archdaily.com/tag/the-modulor>

# #General concepts:

## Design for disassemble

1: to take apart

Merriam Webster <https://www.merriamwebster.com/dictionary/collaboration>



DEZEEN: <https://www.dezeen.com/2022/04/29/nike-ispalink-disassembly/>

# #General concepts:

## Re-sourcing

1: something one turns to in the absence of the usual means or source of supply.



Merriam Webster <https://www.merriam-webster.com/dictionary/collaboration>

NEW LIFE <https://initiative-new-life.de/en/sustainability-consumption-use-raw-materials/circular-recycling-economy/>

# #General concepts:

## Transparency

1: characterized by visibility or accessibility of information especially concerning business practices

“ Being open and trustable is important for BioMar, especially in respect to ethical and technical issues regarding raw materials— simply because, as we say, it is the right thing to do. ”

– Carlos Diaz  
CEO, BioMar Group



Merriam Webster <https://www.merriam-webster.com/dictionary/collaboration>

<https://globalsalmoninitiative.org/en/blog/transparency-drive-progress/>

**02.**

**Tools and strategies**

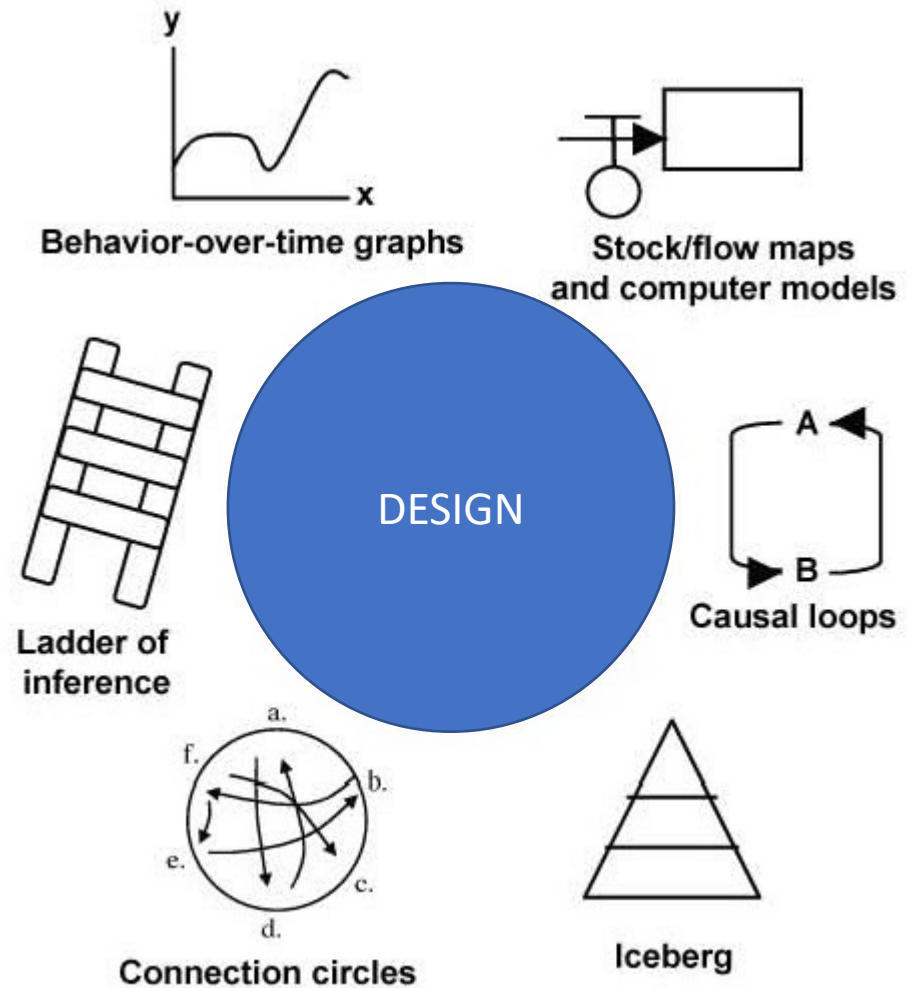
All human activities are  
performed using tools and  
systematic procedures



# #Tool

- 1: Something that helps you to accomplish something
- 2: A means to and end

Merriam Webster <https://www.merriamwebster.com/dictionary/collaboration>



# #Strategy

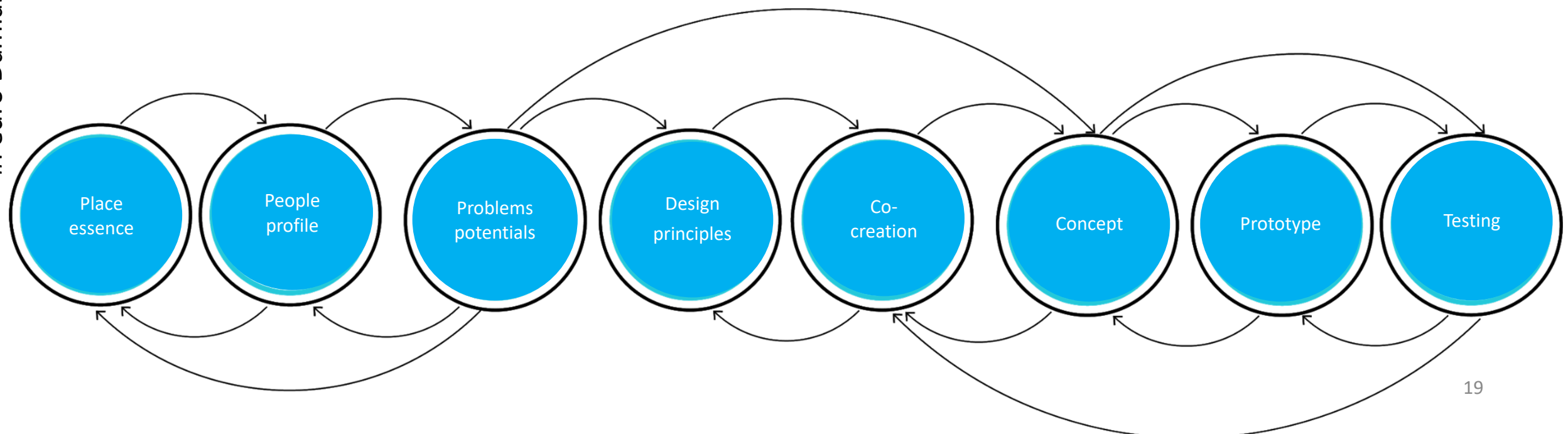
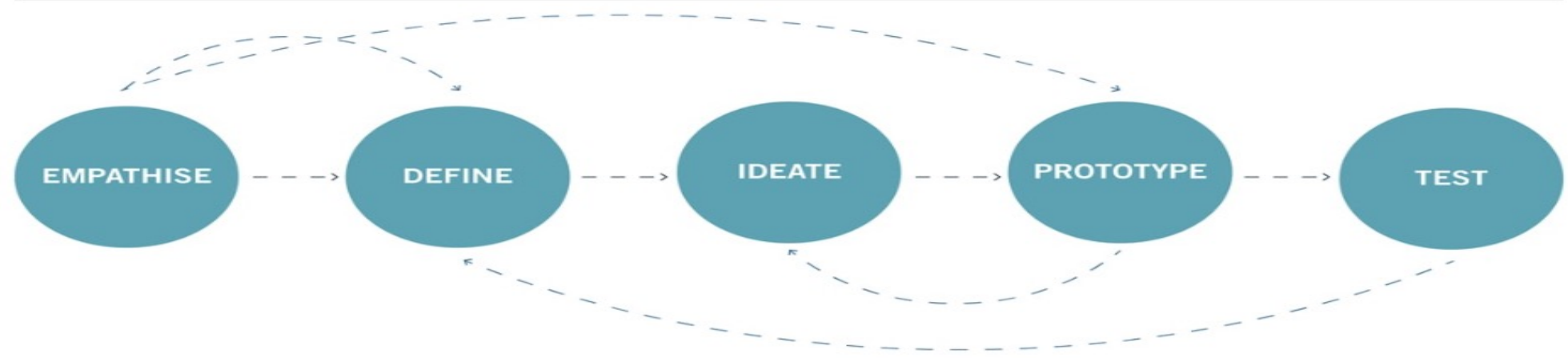
1: A way of doing something or dealing with something

Cambridge dictionary

<https://dictionary.cambridge.org/dictionary/english/strategy>



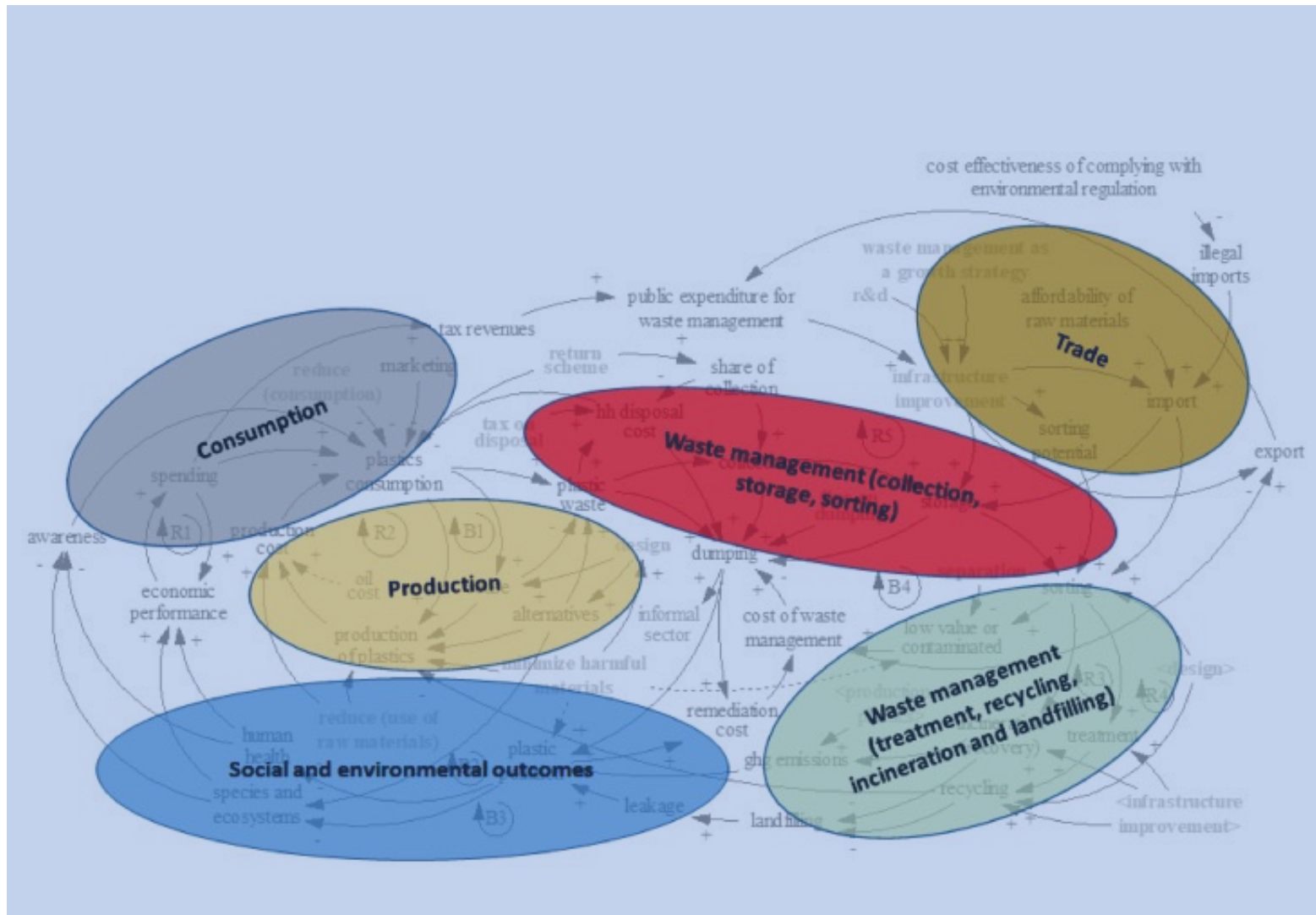
# 5 STEPS OF THE DESIGN THINKING PROCESS



# Case studies in the fashion industry

# #Key concepts:

1. Holism
2. Integration
3. Cooperation



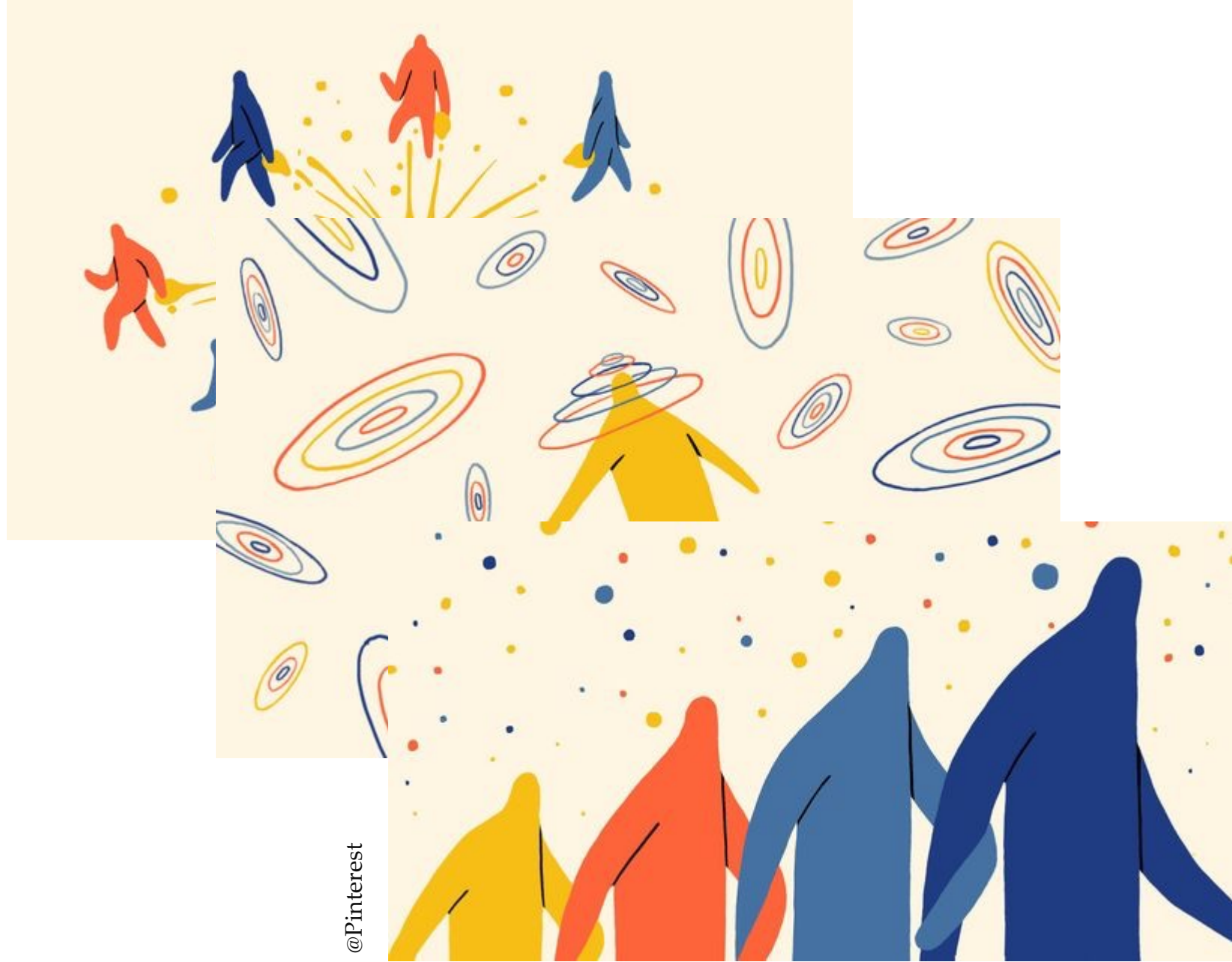
Bassi, A. M., Bianchi, M., Guzzetti, M., Pallaske, G., & Tapia, C. (2021). Improving the understanding of circular economy potential at territorial level using systems thinking. *Sustainable Production and Consumption*, 27, 128-140.

# #Strategies

1. Systemic Approach

2. Integrated Approach

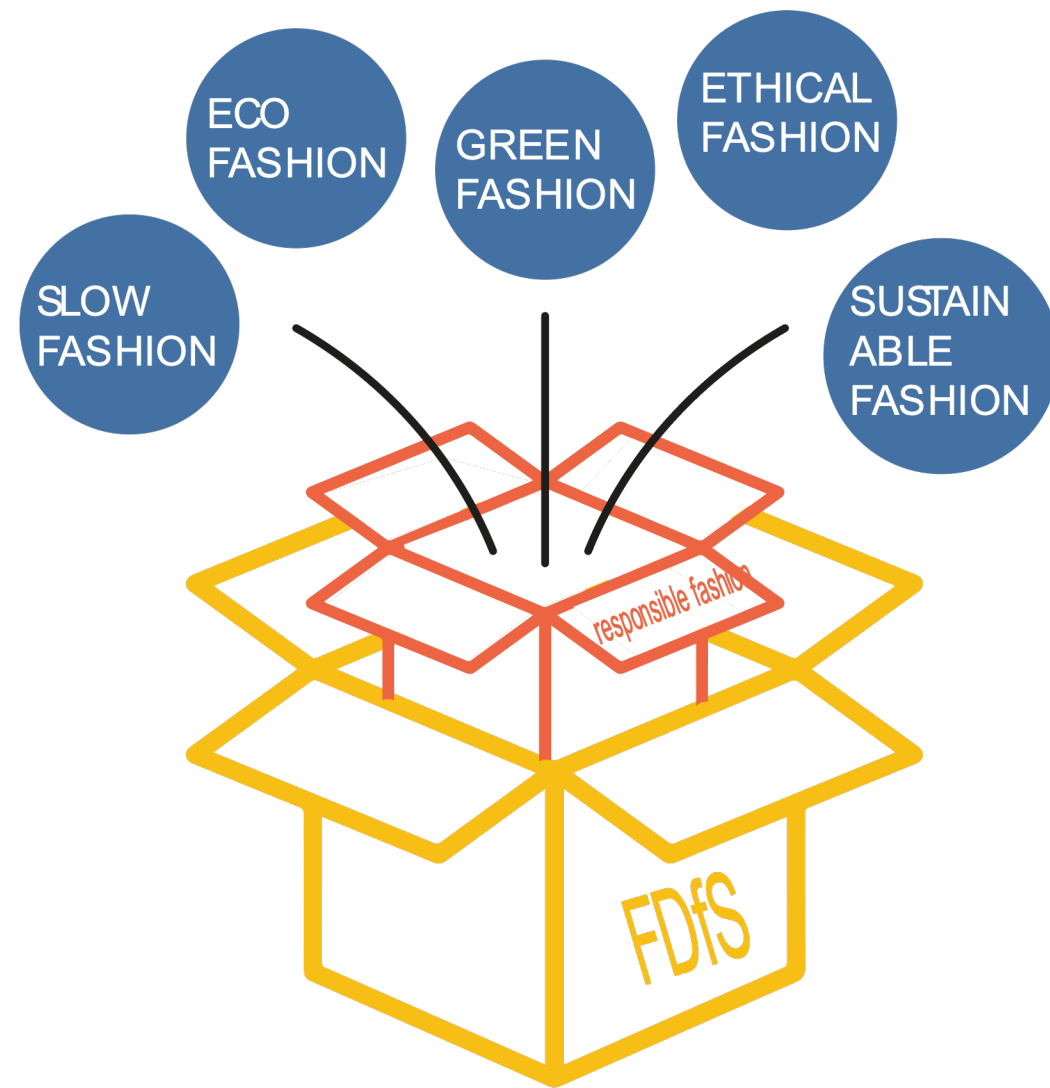
3. Cooperative Approach



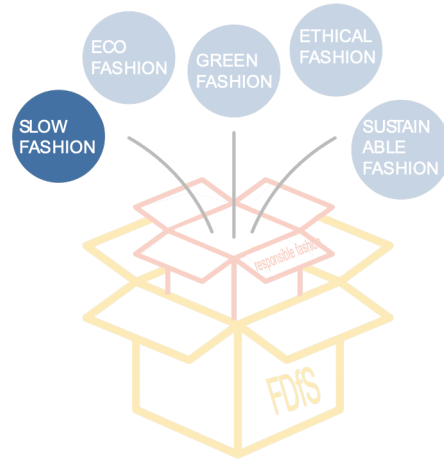
# Tassonomy Of Fashion Design Approaches to Sustainability

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Adapted from Rinaldi&Testa, L'impresa moda responsabile, p. 54



# Slow Fashion



A term coined 2007 by **applying to the fashion** sector the suggestions of Carlo Petrini's **slow food movement**, with the idea of defending good practices that intend to stand as a counter-proposal and antidote, if not actually in open opposition, to the drifts of industrial production.

The term, has its precise place in **opposition to fast fashion**, that is, to that productive and cultural system that was born out of the crisis of prêt-à-porter and **the processes of globalization of fashion**.



@KateFletcher



# Slow Fashion

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- Clothes are usually **made from high quality, sustainable materials.**
- Garments are more **timeless than trendy.**
- Often sold in smaller **(local) stores** rather than huge chain enterprises.
- **Locally sourced, produced, and sold garments.**
- **Few specific styles per collection**, which are released twice or maximum three times per year, or a permanent seasonless collection.
- Often **made-to-order to reduce unnecessary production.**

A.BCH



# Eco-fashion

The definition of eco fashion basically refers to **the design of products that maximize resource efficiency and minimize waste**, through an ethos based on improving the current system.



@Shopperbird

# Eco-fashion

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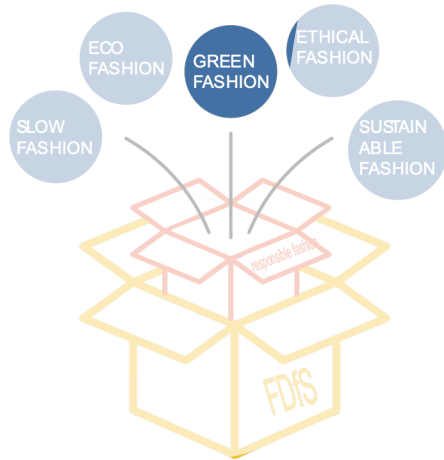
- Seasonless garments
- Genderless garments
- Designing for longevity
- Design for modularity
- Exploiting the concepts of connection and durability

# Zerobarracento



# Green Fashion

One of the first definitions coined to describe the field of sustainable fashion, it **implies an explicitly environmental agenda and often involves an interest in a single (eco-friendly) product or process.**



@StellaMccartney

# Green Fashion

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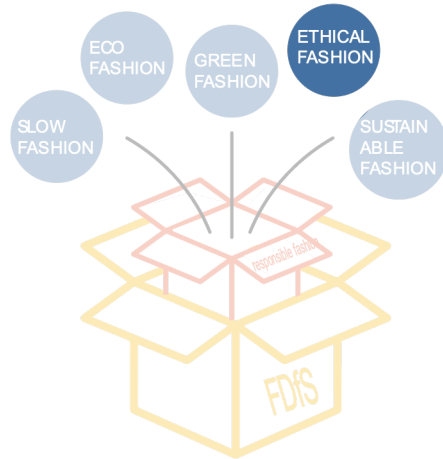
- Clothes made using raw materials such as cotton grown without the use of pesticides or silk made from worms raised on organic vegetation.
- Garments and clothing made from recycled textiles, including creative use of materials such as recycled plastic.
- Clothes designed to be more durable so they last longer.
- Clothes made without the use of certain harmful chemicals, dyes or bleaches.

## Boody



# Ethical Fashion

It indicates a commitment generically aimed at sustainability in the fashion sphere, often describing a **specific activity related to human and animal ethics, associated in particular with working conditions in the choice in the processing and selection of materials.**



@Mitheguardian

# Ethical Fashion

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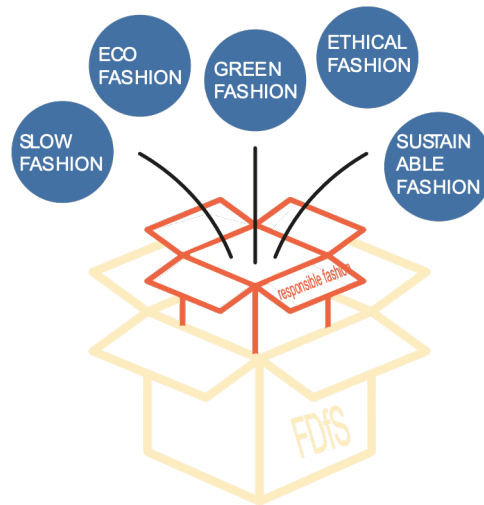
- **Reducing the negative impact on people, animals, and the planet.**
- Ensuring **workers are treated fairly across the supply chain**. This includes policies and practices on child labour, forced labour, worker safety, the right to join a union, and payment of a living wage.
- **Caring about the use of resources and energy**, reducing its carbon emissions, impact on our waterways, as well as using and disposing of chemicals safely.
- **Using no or very few animal products**, like wool, leather, fur, angora, down feather, shearling, karakul, and exotic animal skin and hair.

**SimoneCipriani @EFI**



# Responsible Fashion

By responsible fashion we mean that set of actions that take into consideration a broad set of stakeholders, not only referring to the environment and society but also to other contexts such as art and culture, media and ethics.



@Ecoalf



# Responsible Fashion

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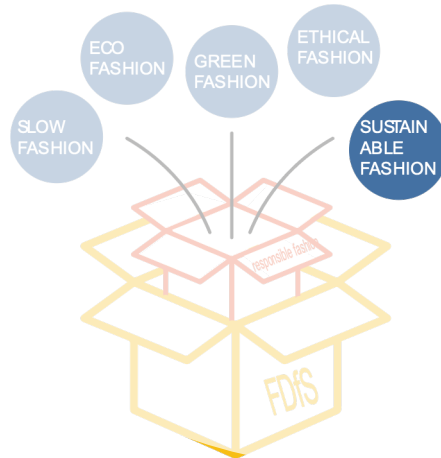
- Fashion that **promotes ecological integrity and social quality** through products, usage practices and relationships.
- A more **authentic, flexible and interconnected** vision of fashion, people and the world.
- Fashion that helps us **engage, connect and better understand** ourselves, others and our world.
- Fashion that engages in a process of **human and non-human species flourishing**.

Veja



# Sustainable Fashion

**Sustainable Fashion speaks to longevity – environmental, social, and economic systems and industries need to be designed in a way that means they are in balance and can be maintained well into the future.**



@Timberland

# Sustainable Fashion

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Clothing, shoes and accessories that are manufactured, marketed and used in the most sustainable manner possible, taking into account both environmental and socio-economic aspects.

Continuously working to improve all stages of the product's life cycle, from design, raw material production, manufacturing, transport, storage, marketing and final sale, to use, reuse, repair, remake and recycling of the product and its components

## Ecoalf

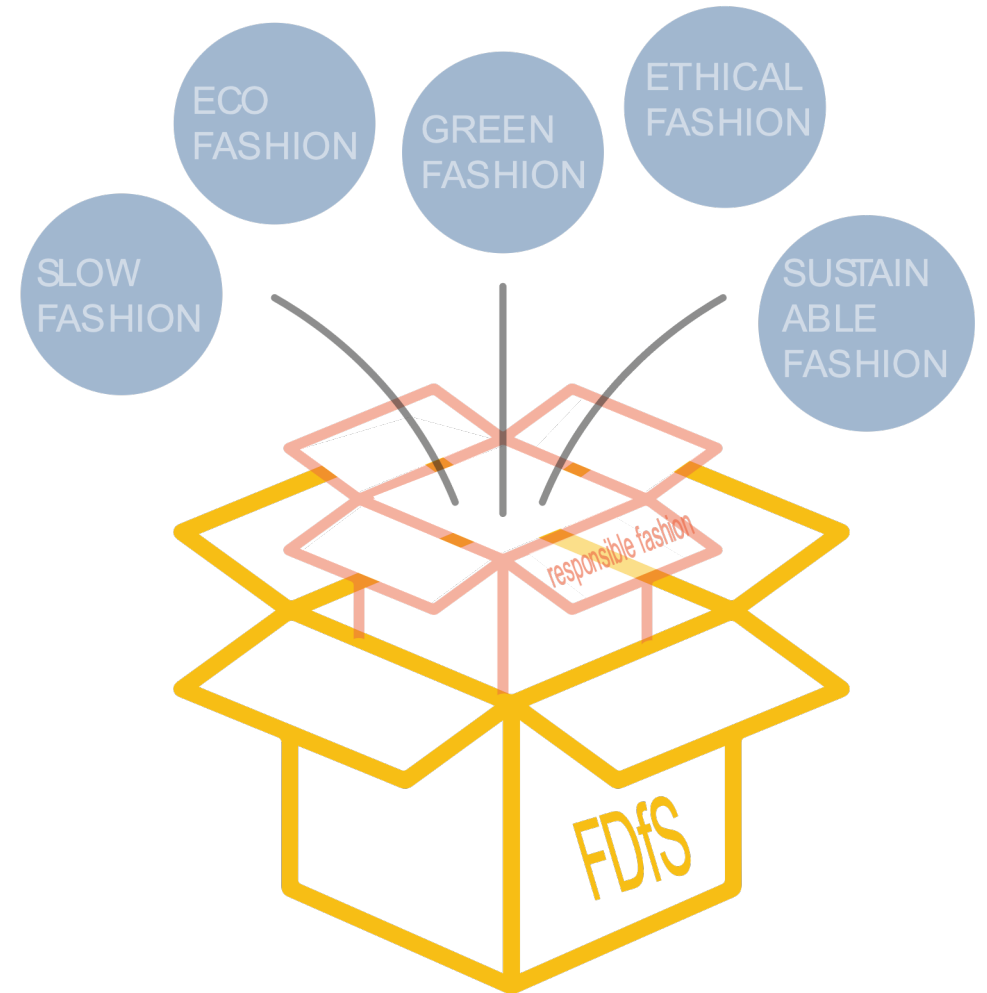


# Fashion Design for Sustainability

Fashion Design for Sustainability is a challenge to the status quo of the current fashion system. It is an approach that sets out to change fashion from its roots:

**To shift its focus from contribution to the economy, to a wider focus on a contribution to society, nature, culture and economy.**

- THE FashionSEEDS PROJECT (2019)



# #Tools

1. Tools for Sustainability
2. Design-oriented Tools
3. Fashion-Oriented Tools



<https://servicedesigntools.org/tools>

**Tool for Sustainability:** Generic design-oriented tools applicable to the entire design process.

These tools are characterised by their flexibility, creativity, and capacity to engage the user.

# Tool for Sustainability

## Product Life Cycle Design By LeNS

Qualitative tool to guide the design process from the earliest stages of product development (Sustainable Concept Ideation), consisting of:

- existing product quality assessment checklist,
- priority/improvement quality assessment sheet,
- eco-ideas tables (guidelines),
- LCD strategy pursuit checklist (simplified/normal/deep),
- multi-strategy radar

The screenshot displays the 'ICS toolkit' spreadsheet, which is used for the 'PERSEGUIMENTO DI STRATEGIE DI LIFE CYCLE DESIGN VALUTAZIONE SEMPLIFICATA'. The spreadsheet is organized into several sections, each with a set of criteria and a corresponding evaluation status.

**OTTIMIZZARE LA VITA DEL PRODOTTO**

- ALTA VALUTAZIONE:
- PROGETTARE UNA DURATA ADEGUATA
- PROGETTARE L'AFFIDABILITÀ
- FACILITARE IL RINNOVAMENTO E L'ADATTABILITÀ
- FACILITARE LA MANUTENZIONE
- SEMPLIFICARE LA RIPARAZIONE
- SEMPLIFICARE IL RIUSO
- SEMPLIFICARE LA RIFABBRICAZIONE
- INTENSIFICARE L'USO

**MINIMIZZARE IL CONSUMO DI ENERGIA**

- ALTA VALUTAZIONE:
- OTTIMIZZARE IL CONSUMO DI ENERGIA PER LA PRE-PROD. E LA PRODUZIONE
- MINIMIZZARE IL CONSUMO DI TRASPORTO E STOCCAGGIO
- SCEGLIERE SISTEMI DI CONSUMO CHE MINIMIZZANO LE RISORSE USATE
- ADOPTARE SISTEMI DI ENERGIA FLESSIBILI
- MINIMIZZARE IL CONSUMO DI ENERGIA NEL DESIGN DI PRODOTTO

**MINIMIZZARE LA TOSSICITÀ / NOCIVITÀ DELLE RISORSE**

- ALTA VALUTAZIONE:
- RIDURRE LA TOSSICITÀ E NOCIVITÀ DEI MATERIALI
- RIDURRE LA TOSSICITÀ E NOCIVITÀ DELLE FONTI DI ENERGIA

**MINIMIZZARE IL CONSUMO DEI MATERIALI**

- ALTA VALUTAZIONE:
- MINIMIZZARE IL CONTENUTO MATERIALE DI UN PRODOTTO
- MINIMIZZARE GLI SCARTI E I RIFIUTI
- MINIMIZZARE L'IMBALLAGGIO
- SCEGLIERE IL SISTEMA DI CONSUMO DI MATERIALE PIÙ EFFICIENTE
- ADOPTARE UN SISTEMA DI CONSUMO DI MATERIALE FLESSIBILE
- MINIMIZZARE IL CONSUMO DI MATERIALE NEL DESIGN DEL PRODOTTO

**ESTENDERE LA VITA DEI MATERIALI**

- ALTA VALUTAZIONE:
- ADOPTARE UN APPROCCIO A CASCATA
- ADOPTARE MATERIALI ALTAMENTE RICICLABILI
- SEMPLIFICARE LA RACCOLTA E IL TRASPORTO DOPO L'UTILIZZO
- IDENTIFICARE I MATERIALI
- MINIMIZZARE IL NUMERO DI MATERIALI INCOMPATIBILI
- SEMPLIFICARE LA PULIZIA
- SEMPLIFICARE IL COMPOSTAGGIO
- SEMPLIFICARE LA COMBUSTIONE

**OTTIMIZZARE CONSERVAZIONE RISORSE**

- ALTA VALUTAZIONE:
- OTTIMIZZARE LA BIO-COMPATIBILITÀ E LA CONSERVAZIONE DEI MATERIALI
- SCEGLIERE FONTI DI ENERGIA RINNOVABILI E BIO-COMPATIBILI

Summary bar: PECCIORE: 8X-25X; : 26X-58X; MIGLIORAMENTO INCREMENTALE: 54X-75X; ; ; MIGLIORAMENTO RADICALE: 76X-188X

Logo: LENS lab POLIMI DESIGN AND SYSTEM INNOVATION FOR SUSTAINABILITY

License: CC BY

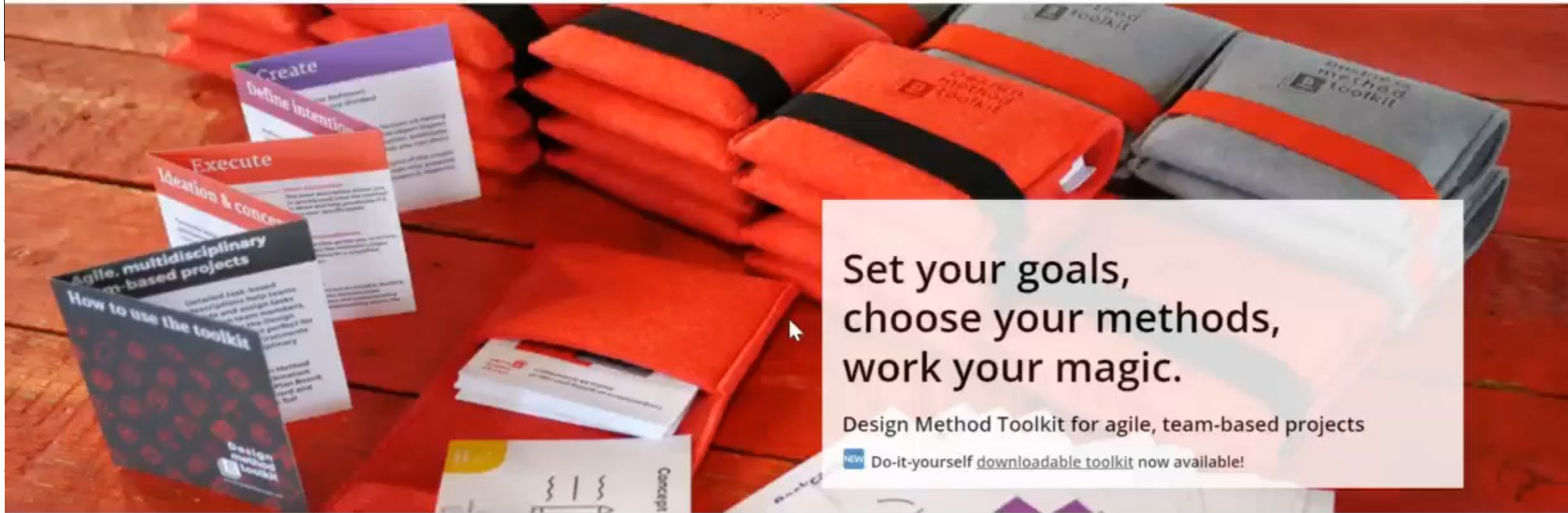
<http://www.lens-italia.polimi.it/>

**Design-oriented Tool:** Design-oriented tools are applied in the Design for Sustainability (DfS) field.

They are characterised by their broad spectrum of reference, their informative purpose, and capacity to have an influence on their topic, even indirectly.



#Erminia D'Itria. POLIMI



SHARE THE TOOLKIT



The Design Method Toolkit is a project by the Digital Society School



ideation, prototyping or testing.

**Fashion-Oriented Tool:** Design-oriented tools with a specific focus on Fashion Design in the Sustainability field.

These tools are characterized by a focused, informative, and direct purpose.

The Loop - Close The Loop

close-the-loop.be/en

Home - PhD Design | Fashion In Process | FashionSEEDS Docu... | Tasks for Completio... | Mapping Sustainab... | BoF - The Business... | Textile-Platform - N... | Altri Preferiti

**CLOSE THE LOOP**  
A GUIDE TOWARDS A CIRCULAR FASHION INDUSTRY

FLANDERS DC | CIRCULAR FLANDERS

EN

THE LOOP | CASES | NETWORK | TIPS | PLANNER | ABOUT | CONTACT

**RESOURCES**  
Materials matter  
Go for low impact materials  
Choose recycled or recyclable fibres  
Reuse and redesign waste  
Learn from nature  
Think through every aspect of your FAN?

**ABOUT THIS GUIDE**  
In a circular fashion industry, designers, producers, retailers & consumers are challenged to take the whole life cycle of a garment into account. Flanders DC and Circular Flanders guide you through the principles of this sustainable way of working.

**DESIGN**  
Design for eternity  
Design to last  
Design for rebirth  
Design to minimize waste  
Design to reduce the need for rapid consumption  
Design with new technologies in mind

Scrivi qui per eseguire la ricerca

Collegamenti 32°C ITA 14:14 26/07/2022

**03.**

The role of designers in  
the context of the  
circular paradigm

ACTORS IN CIRCULAR CHANGE

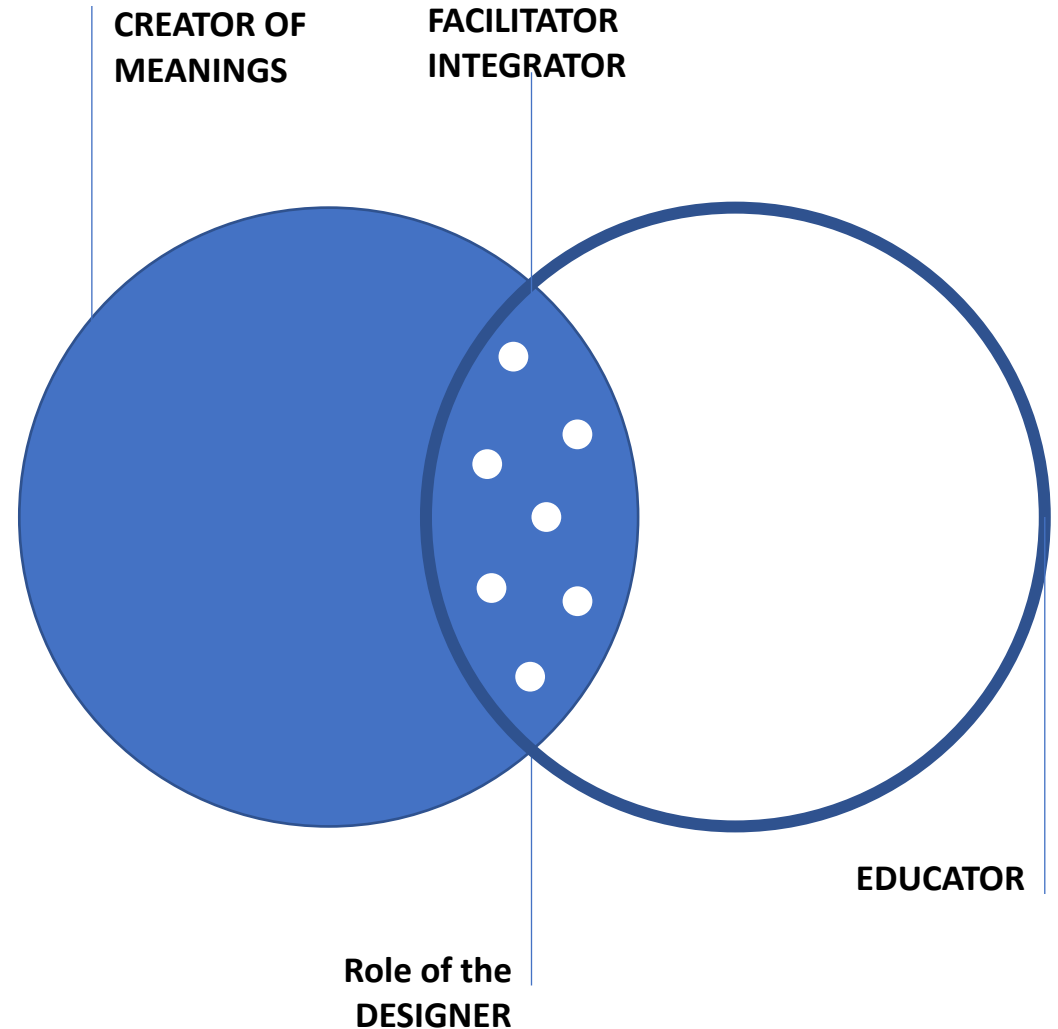
## The role of the designer

The 2017 Montreal Declaration emphasized that:

the figure of the designer plays a central role not only in the product creation process, but also in 'educating consumers in the values of social, cultural and environmental sustainability.'

Facilitators

Integrator



ACTORS IN CIRCULAR CHANGE

## The role of the designer

CREATOR OF MEANINGS

"Design has never been more valued than it is today. It means connecting to people, to customers, to fashion".

- Virgil Abloh



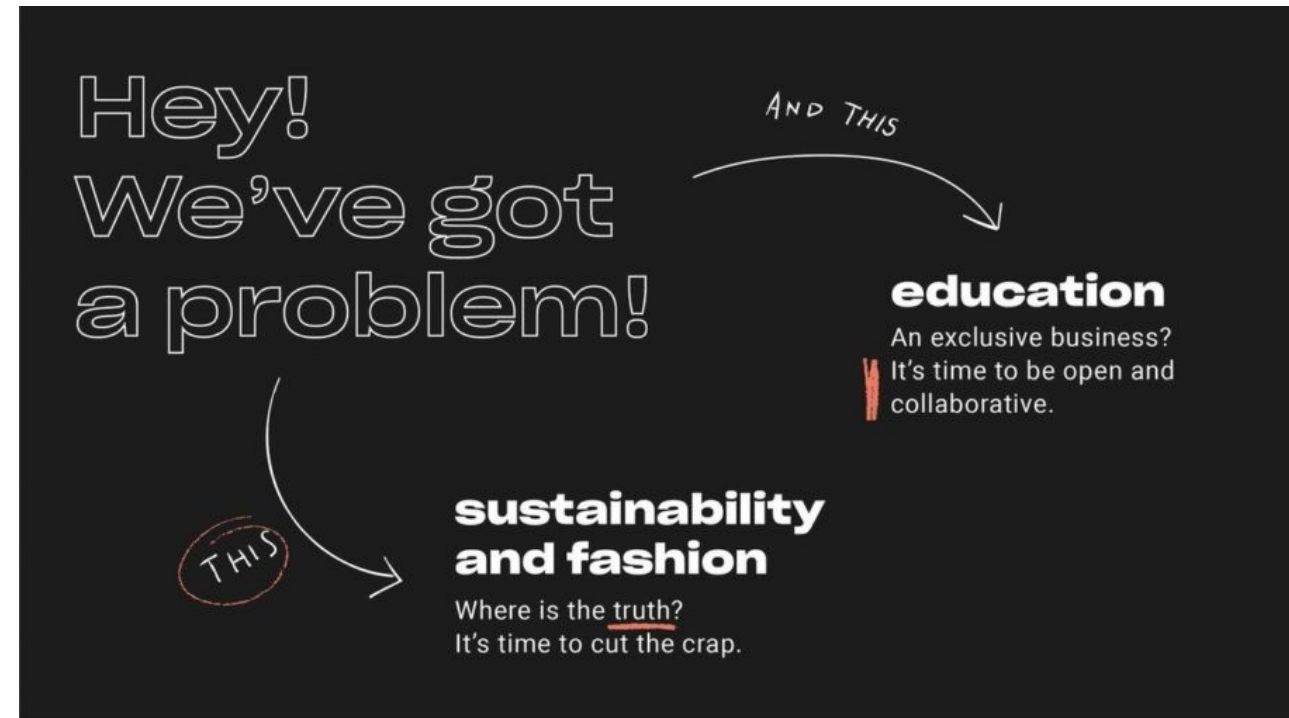
ACTORS IN CIRCULAR CHANGE

## The role of the designer

### EDUCATOR

"We believe that the formation of a new corporate culture is at the core of sustainable development and innovation."

- WRAD

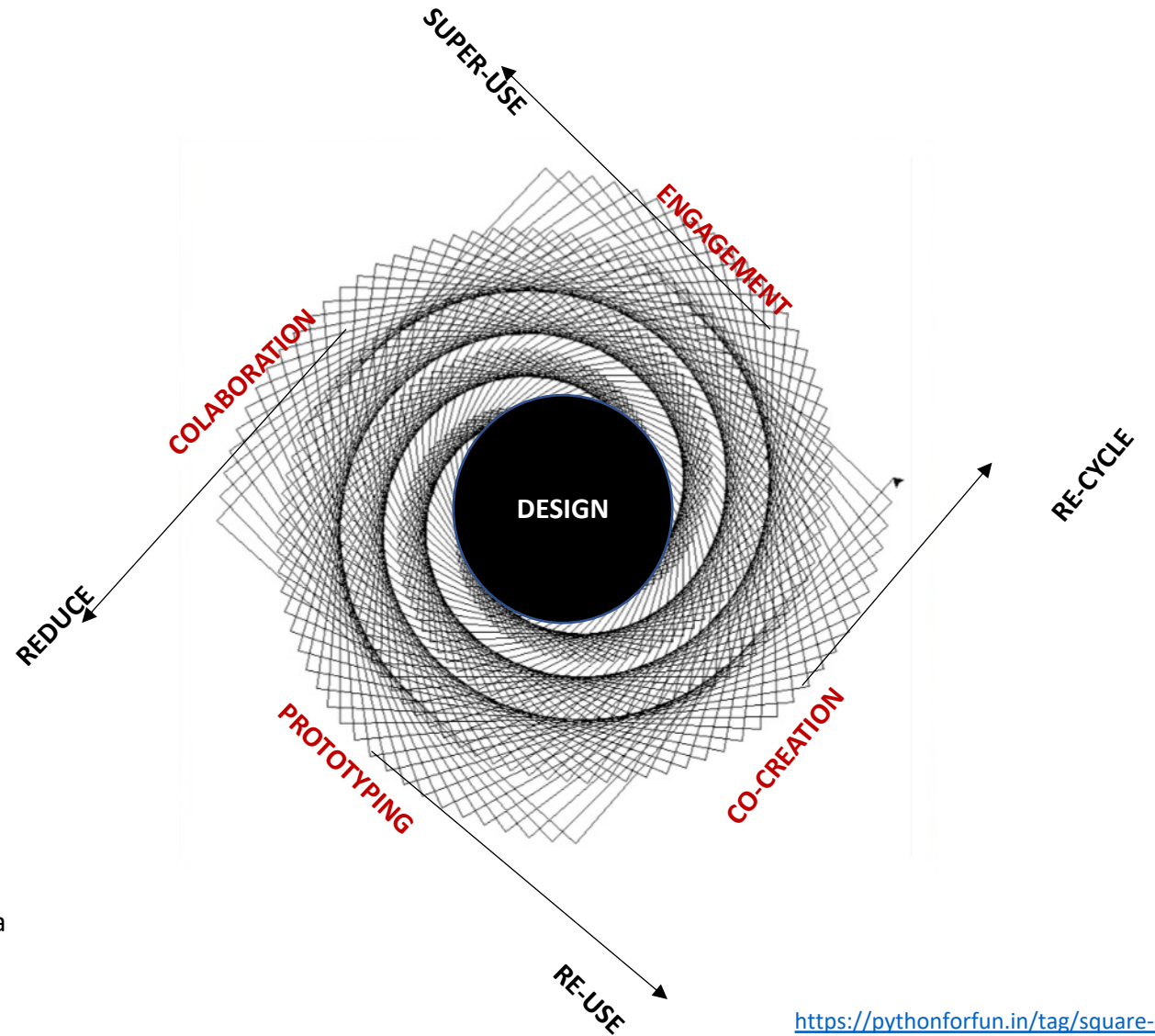


# The role of the designer

## INTEGRATOR and FACILITATOR

The individual and communities who design and implement ...(systemic solutions)... are ecologically literate: they have realized that, in order to create and maintain sustainable societies, we need to honor, respect, and cooperate with nature...”

Fritjof Capra



<https://pythonforfun.in/tag/square-spiral/>



# Case studies in architecture and industrial design

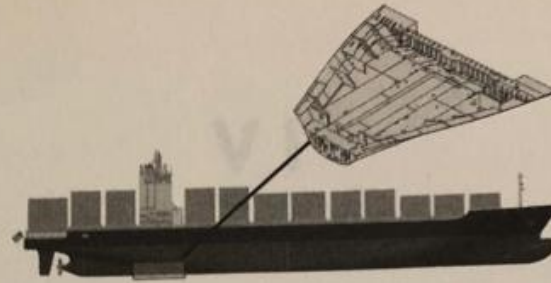
# #Key concepts

1. **Modularity**
2. **Prefabrication**
3. **Disassembly**
4. **Regenerative development and design**

# refabricating ARCHITECTURE

How Manufacturing Methodologies Are  
Poised to Transform Building Construction

Stephen Kieran James Timberlake



**BLOCKS, CHUNKS, MODULES**

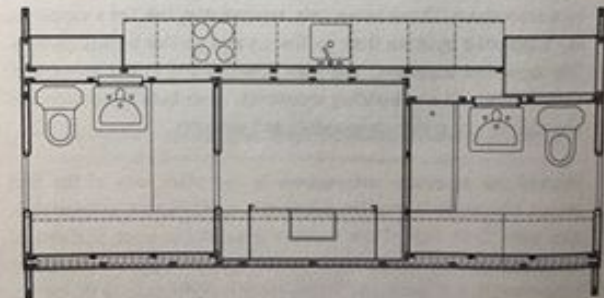
## BLOCKS, CHUNKS, MODULES

- Large components rather than parts
- Digital modeling for assembling.



## • PREFABRICATION

- Reduce waste
- Improve working condition
- Increase speed in construction on site
- Facilitate repairs
- Reduce costs
- Reduce environmental impact
- Control manufacturing



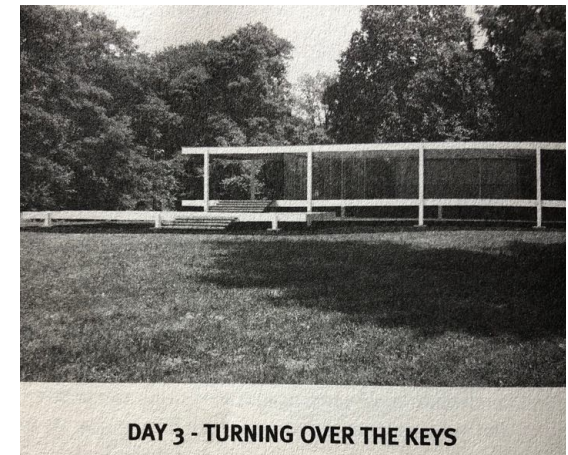
ADDING CHUNKS



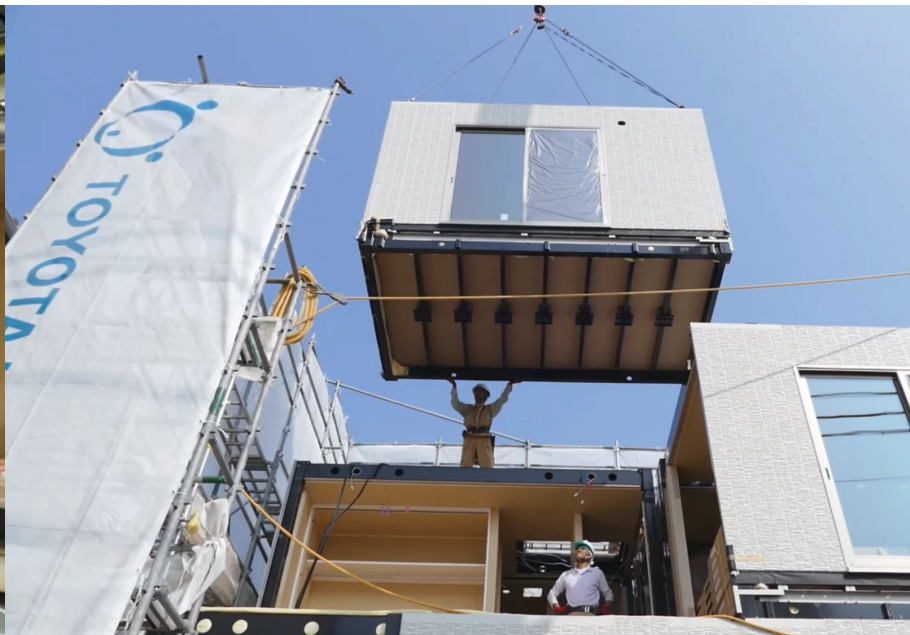
DAY 1 - DELIVERIES AT THE SITE



DAY 2 - REASSEMBLING THE COMPONENTS



DAY 3 - TURNING OVER THE KEYS



Toyota Snap: [https://www.vice.com/en\\_us/article/z43vp5/watch-toyota-snap-a-two-story-home-together-like-lego-bricks](https://www.vice.com/en_us/article/z43vp5/watch-toyota-snap-a-two-story-home-together-like-lego-bricks)



Apex House, Wembley Video by Vision Modular & Tide Construction - STUDENT SCHEME



VISION

Total build programme – 12 months  
29 storeys in total  
Over 580 student beds

scape

scape

site  
TIME-LAPSE FILMS

<https://www.youtube.com/watch?v=XZ-yUedPDZc>



[https://www.clarin.com/arq/distinguen-desarrollo-argentino-solucion-a-bano-lavadero-cocina-pieza\\_0\\_H1mGGzwdM.html](https://www.clarin.com/arq/distinguen-desarrollo-argentino-solucion-a-bano-lavadero-cocina-pieza_0_H1mGGzwdM.html)



Prefabricated restrooms: <https://www.euro-components.com/>





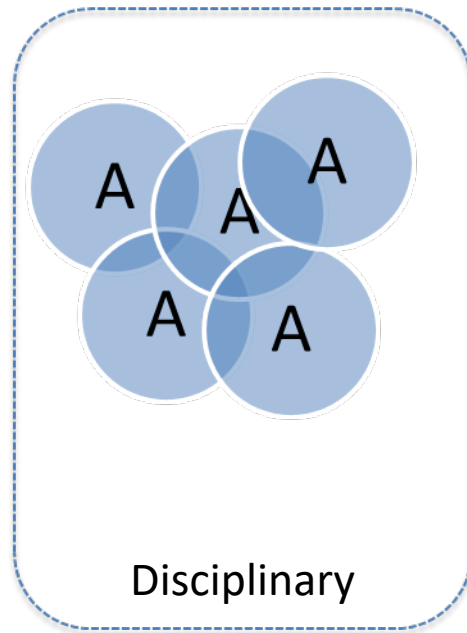
Iglesia de Cristo Obrero, Atlántida, Uruguay Eladio Dieste



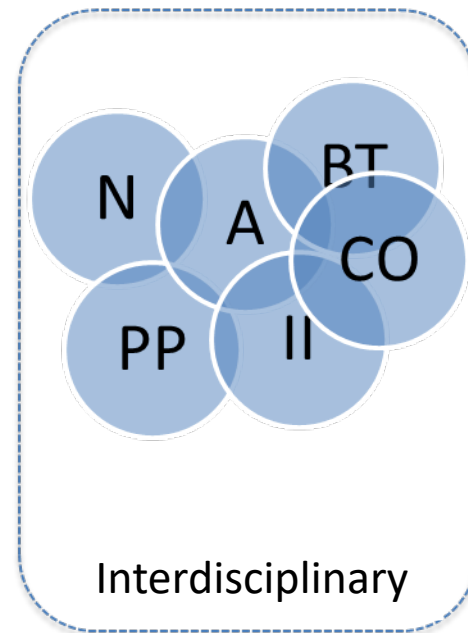


Galeria, Gabinete de Arquitectura, Bienal de Venecia, Solano Benitez

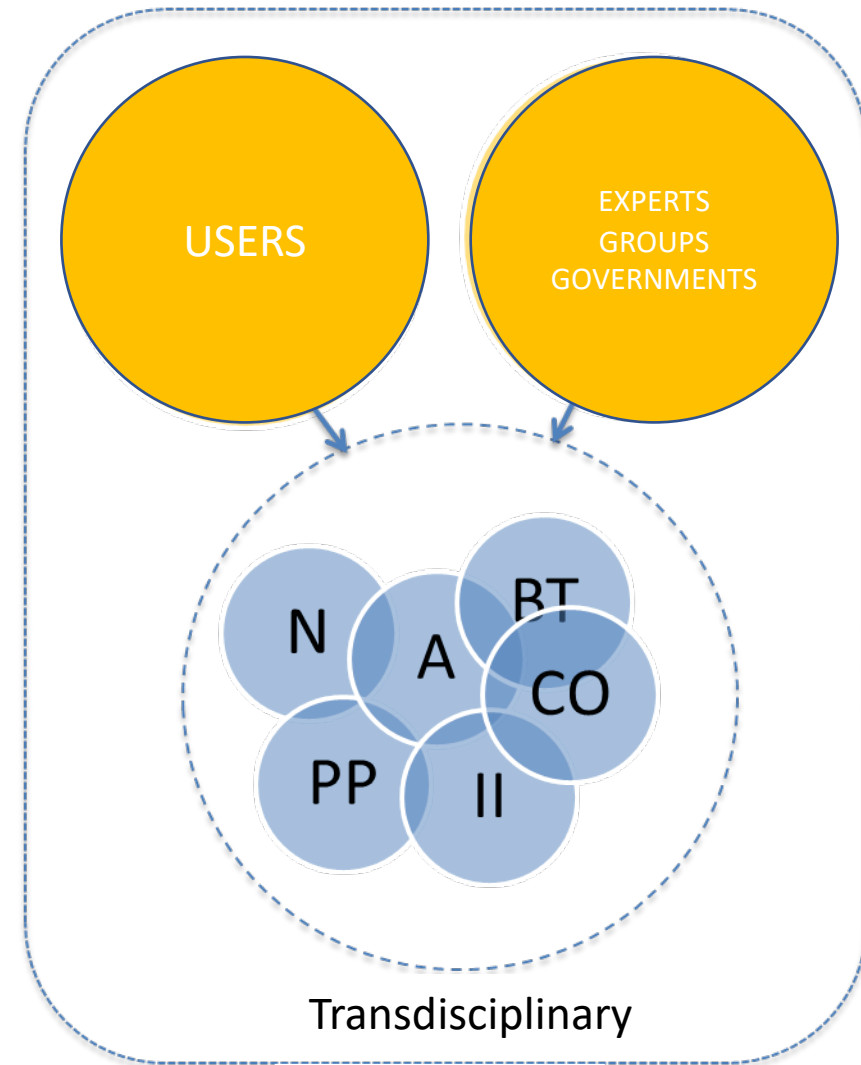
# PEDAGOGICAL MODEL



Hypothetical context



Hypothetical context



Real context

*Among, throughout and beyond disciplines*

A-Arquitectura    PP-política publica    BT-Biotecnología    CO-Comunicación    II-Ingeniería Industrial    N-Negocios



# CASA ROSENDA

# Casa Rosenda

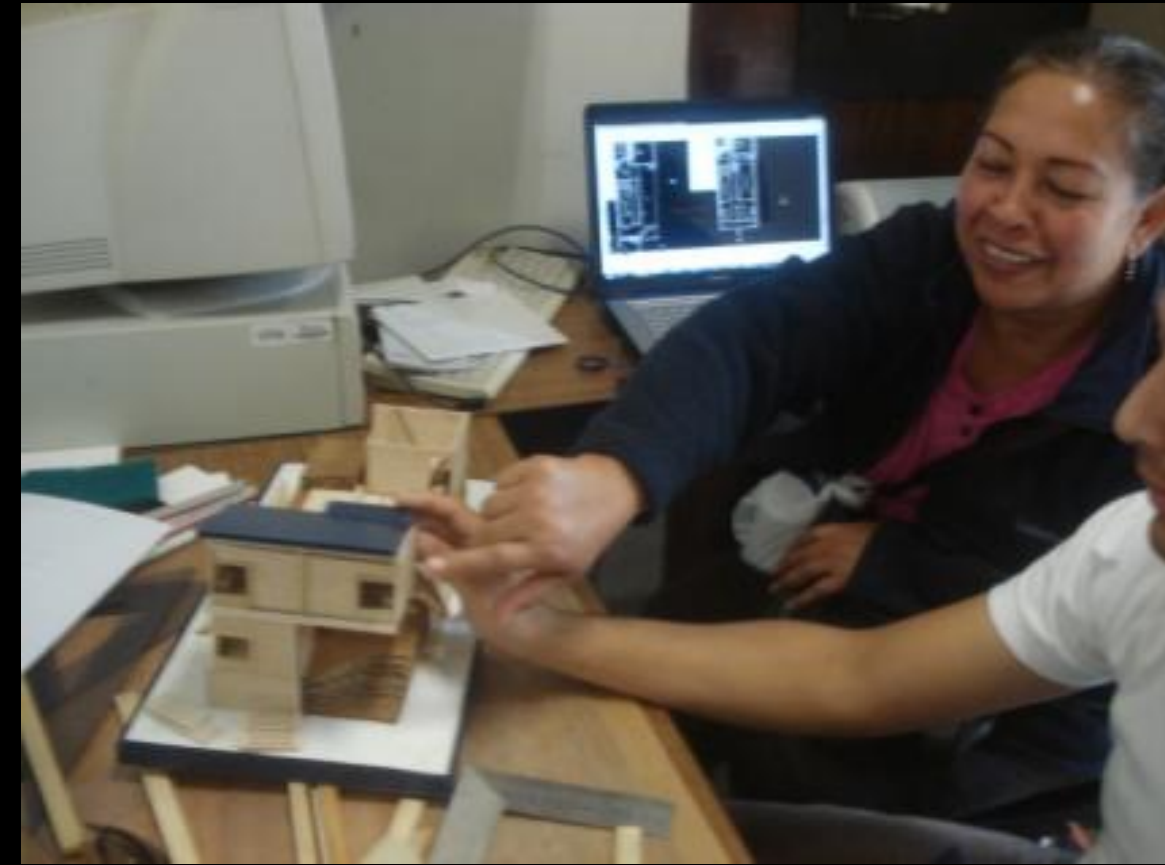
Monterrey, Mexico  
2010  
60 m<sup>2</sup>  
20,000 \$ US  
40% re-used materials



- Rosenda Flores.
- Janitor TEC de MONTERREY, Campus Monterrey
- 51 years old.
- She used to live with two daughters and four grandchildren
- Original house 30 m2
- New house 60 m2







































From the house system to the street system

# From the street system to the park system





COMING SOON

Person standing on the dirt path.

Person standing near the stone steps.

Person walking on the stone steps.

Person standing near the colorful tire structure.









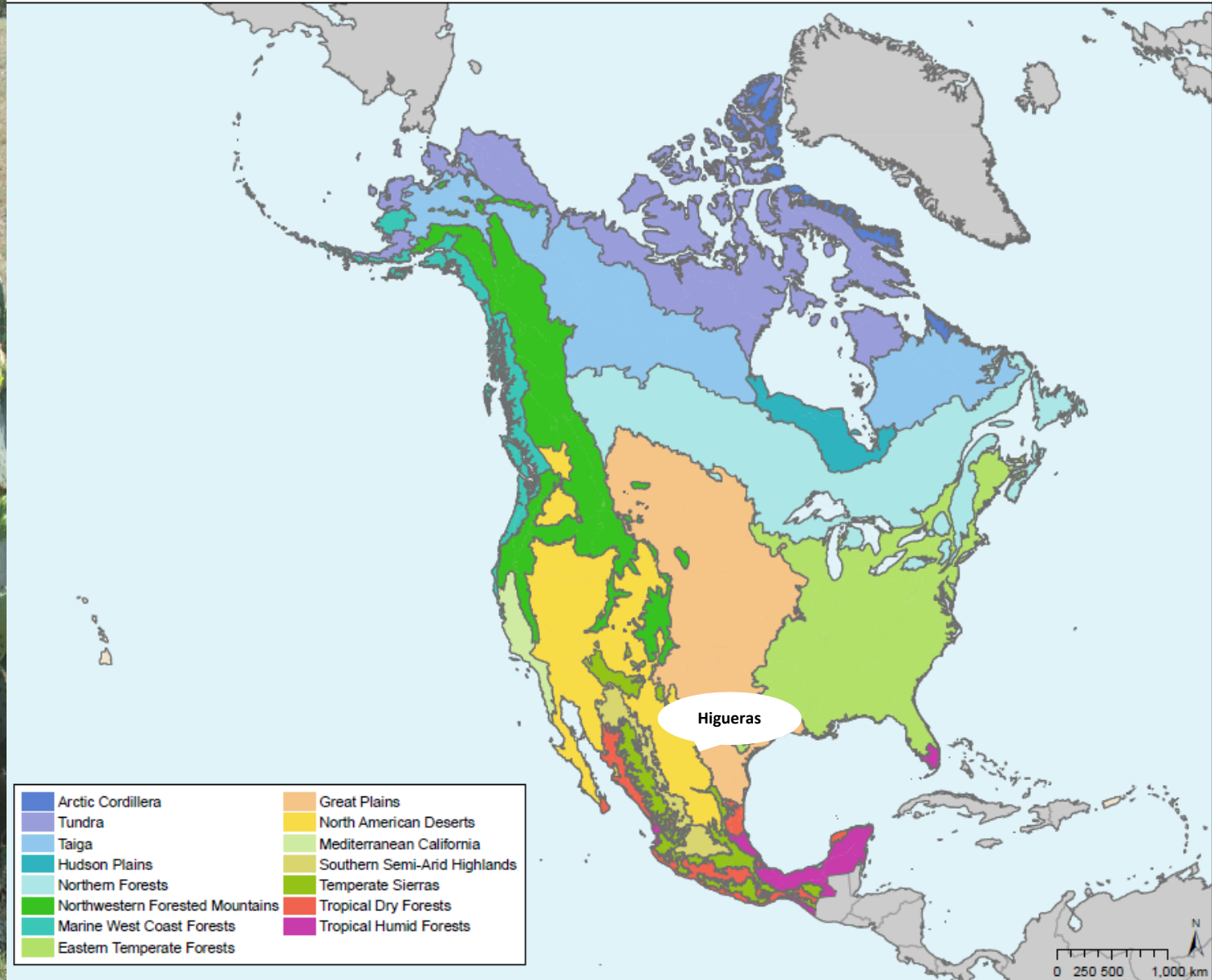
## INTERPRETIVE CENTER FOR SUSTAINABLE ENVIRONMENTAL EDUCATION

“A place where trees and other species live happy...” Visitor of the center





“The best oregano in the world, that grows wildly in the Picachos Mountain is in extinction and we want to do something about it...” Alfonso Barragán, 2011



Commission for Environmental Cooperation. 2009.  
 Ecological regions of North America: toward a common perspective.  
 Commission for Environmental Cooperation, Montreal, Quebec, Canada. 71pp.

Projection: Lambert Azimuthal Equal Area  
 This poster was created on February 28, 2012





Higueras

México  
Mexico

Google

Sierra de Picachos  
NPA 75,852.55 Hectars

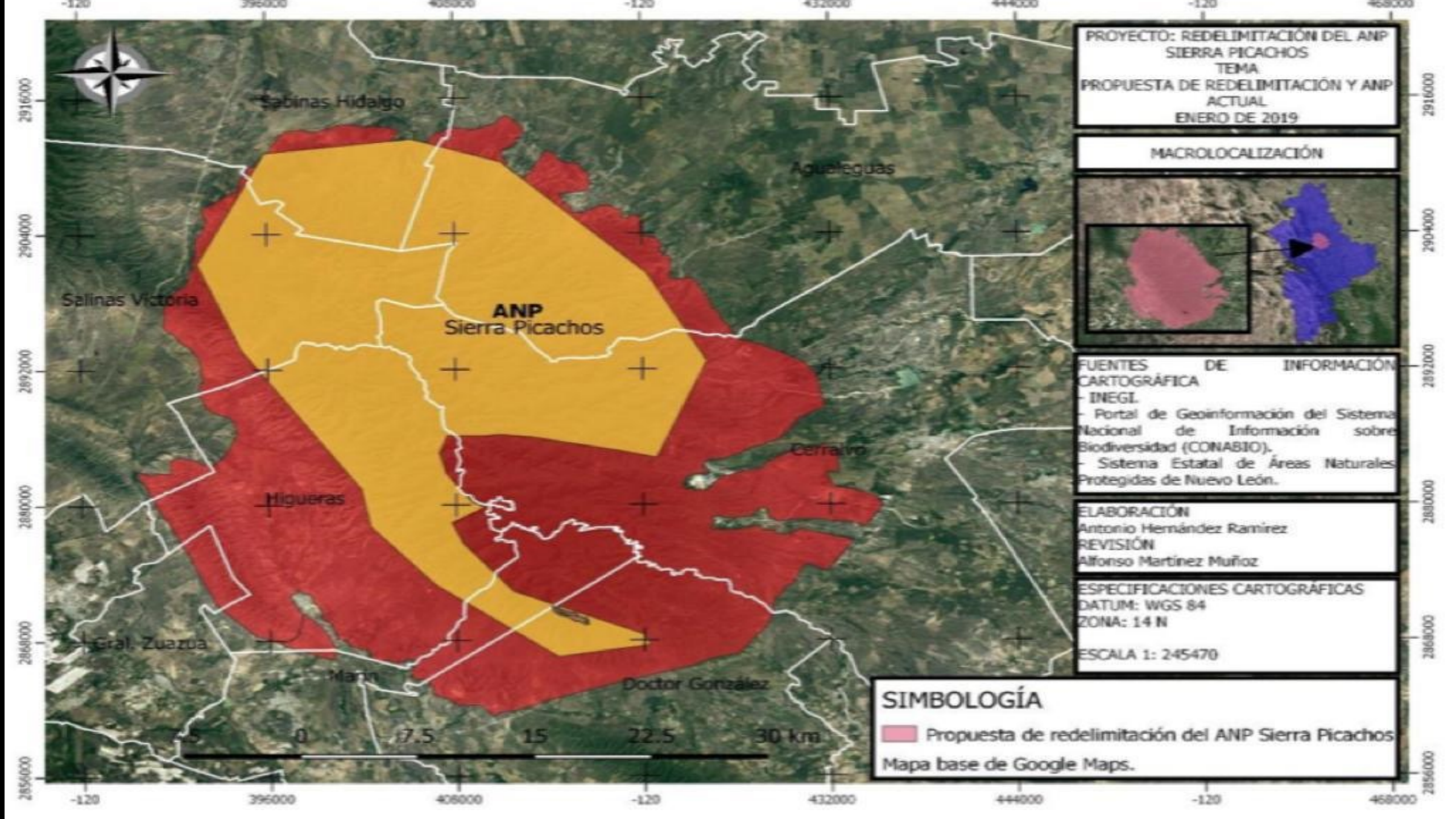
Higueras



Metropolitan Monterrey







PROYECTO: REDELIMITACIÓN DEL ANP SIERRA PICACHOS  
TEMA  
PROPUESTA DE REDELIMITACIÓN Y ANP ACTUAL  
ENERO DE 2019

MACROLOCALIZACIÓN

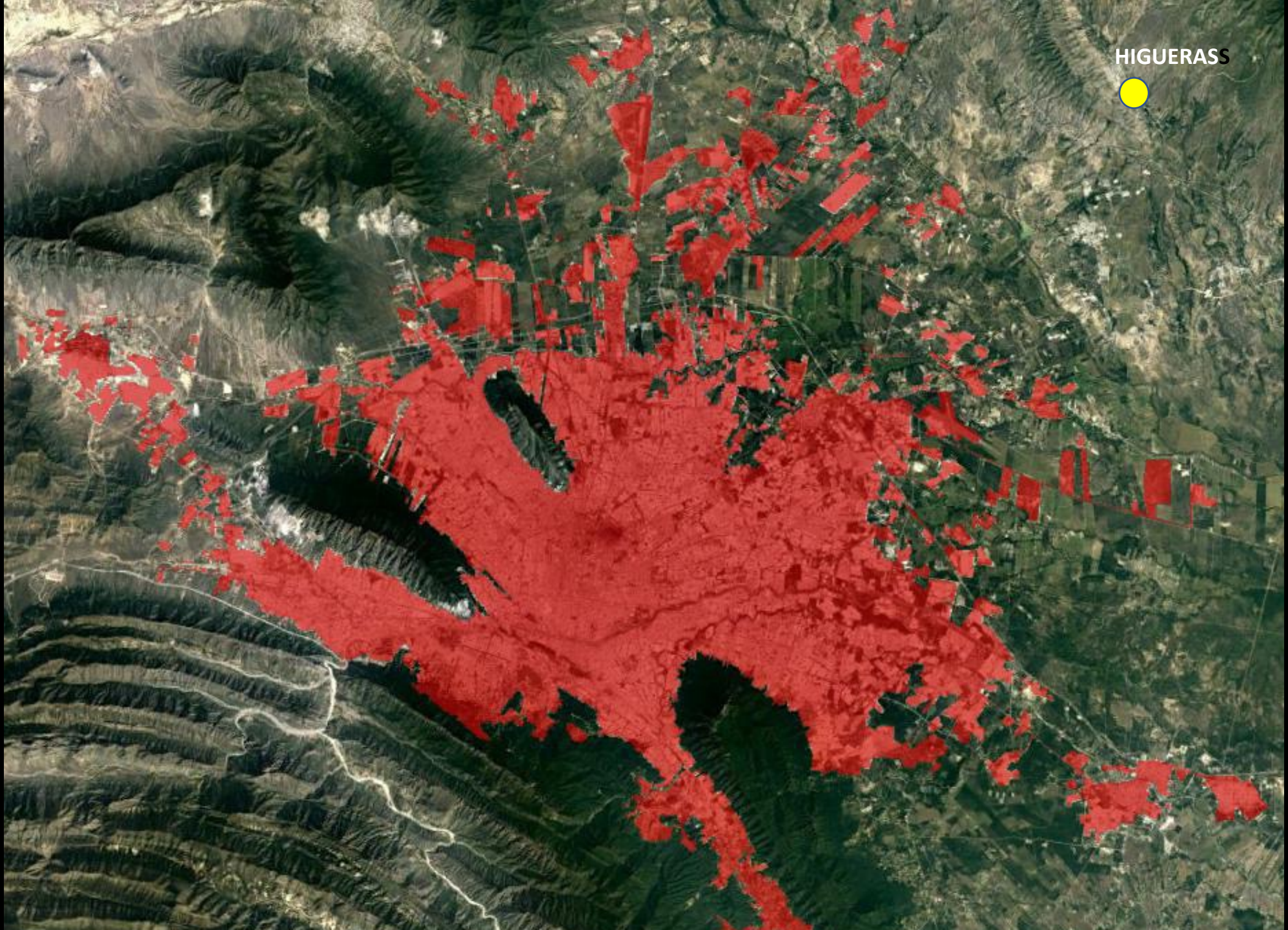


FUENTES DE INFORMACIÓN  
CARTOGRÁFICA  
- INEGI  
- Portal de Geoinformación del Sistema Nacional de Información sobre Biodiversidad (CONABIO).  
- Sistema Estatal de Áreas Naturales Protegidas de Nuevo León.

ELABORACIÓN  
Antonio Hernández Ramírez  
REVISIÓN  
Alfonso Martínez Muñoz

ESPECIFICACIONES CARTOGRÁFICAS  
DATUM: WGS 84  
ZONA: 14 N  
ESCALA 1: 245470

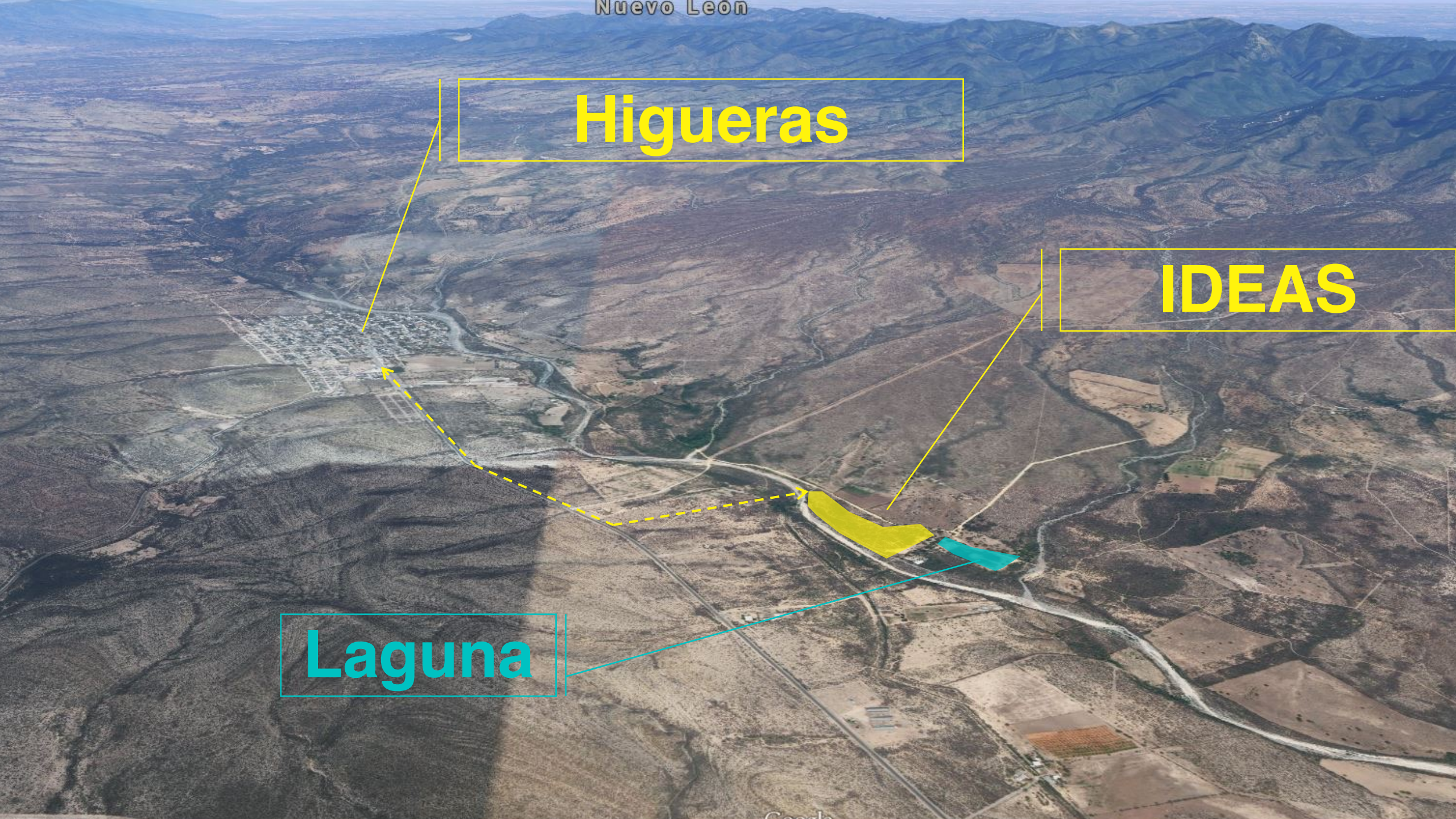
**SIMBOLOGÍA**  
■ Propuesta de redelimitación del ANP Sierra Picachos  
■ Mapa base de Google Maps.



Higueras

IDEAS

Laguna



















¿CUÁL ES EL HIGUERAS QUE NOS  
MERECEMOS?













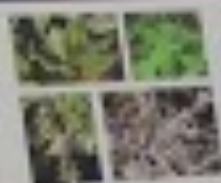


## Centre de Biodiversitat Natural

El Centre de Biodiversitat Natural té com a objectiu principal la difusió i la promoció de la biodiversitat i el desenvolupament sostenible. A través de les seves activitats i projectes, el Centre treballa per a la conservació i el desenvolupament de la biodiversitat i el medi ambient.



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### Activitats

- Observació de la natura
- Recorreguts
- Tallers
- Cursos i seminaris
- Excursions i sortides
- Recopilació de plantes

### Per a més informació contacteu amb nosaltres

Agència de Biodiversitat



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### Exposicions



### Exposicions















# Mobility system



LA NORIA



MIRADOR SIERRA PICACHOS



PLAZA RÍO



PARQUE DEPORTIVO



JARDIN BOTÁNICO LA NACAHUITA



SIERRA PICACHOS



LOMA DE LA CRUZ

# Lineal park

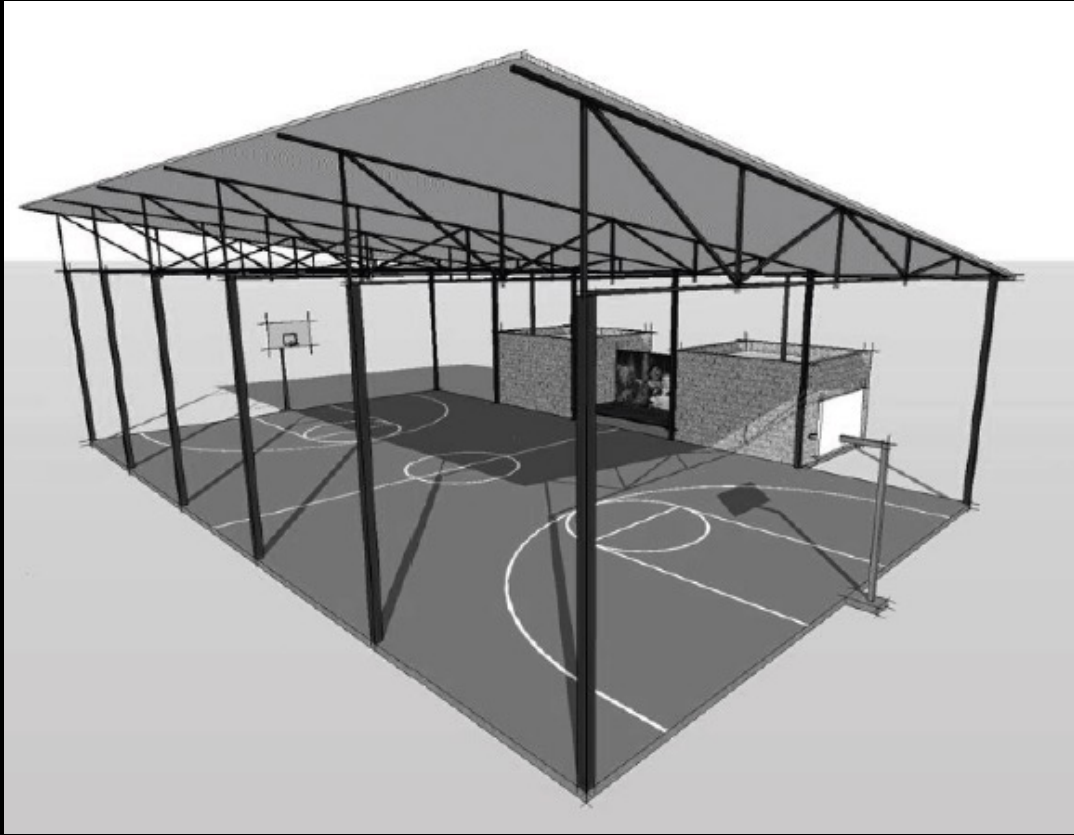




**Camping in the mountaing and the valley**



**Entrance to Higuera**



**Water harvesting and shading in the primary school**



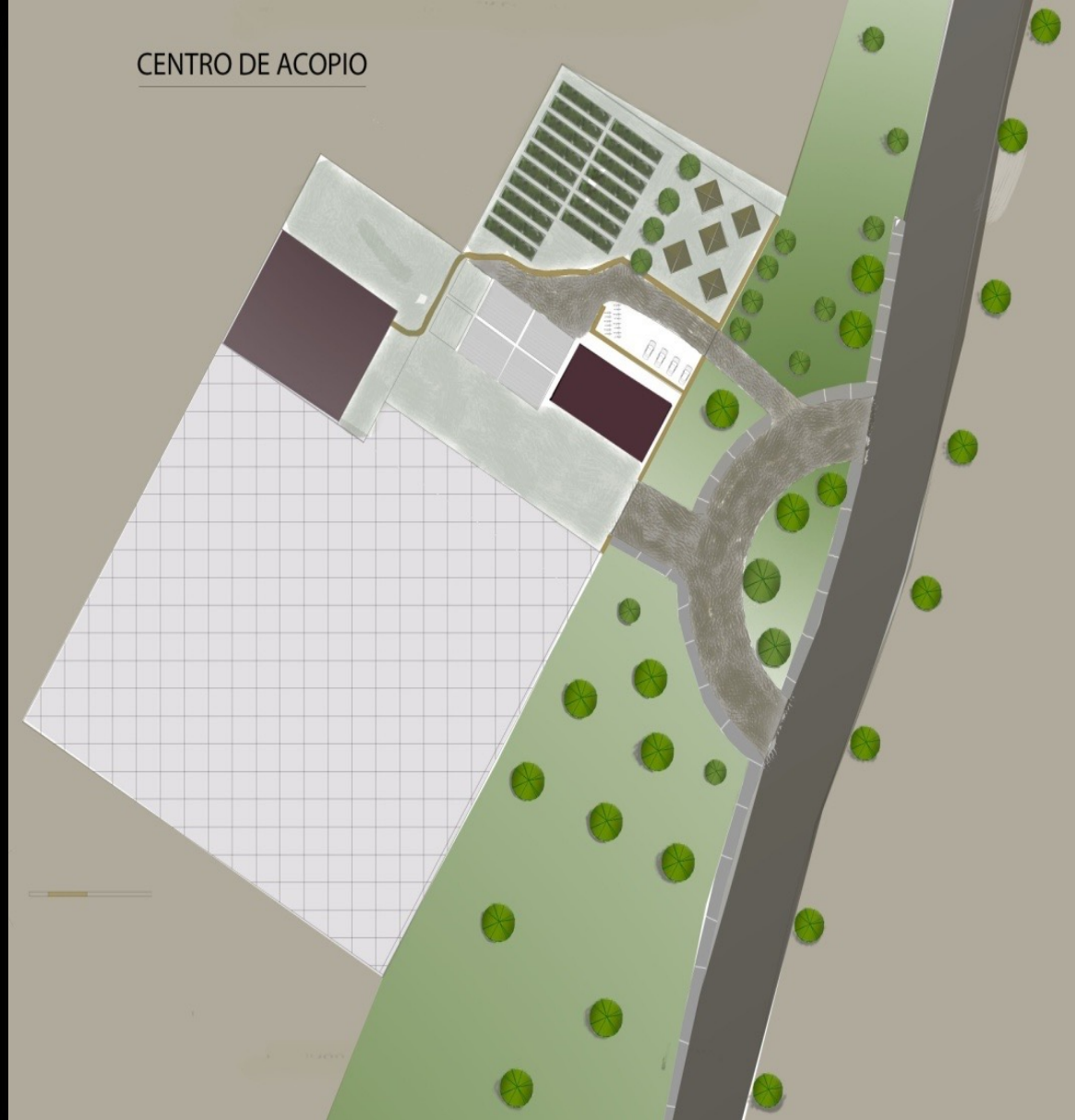
**Community center**



**Regeneration or creeks in the downtown area**



CENTRO DE ACOPIO



**Center for composting, production of soils and native plants**



**Interpretive trails in the forest and the desert**

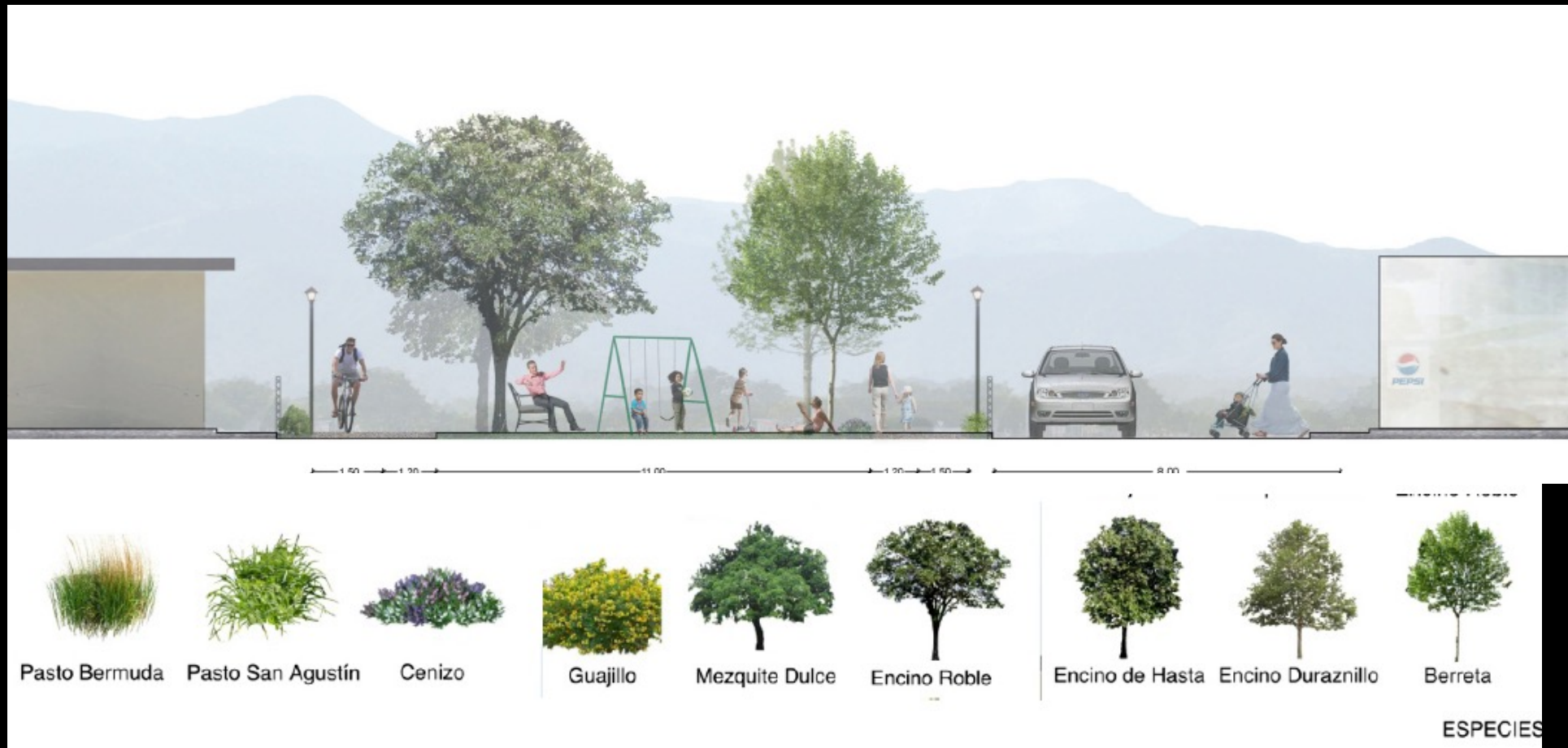


**Recreation at the lagoon**





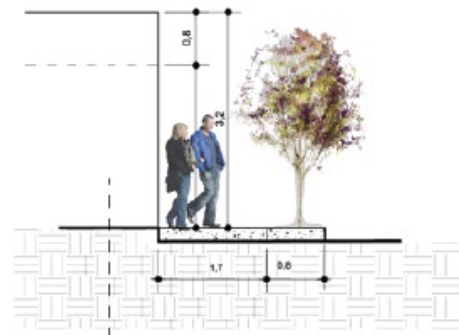
**Center for alternative therapy**



# Urban reforestation

### ELEVACION

Una planta en edificación



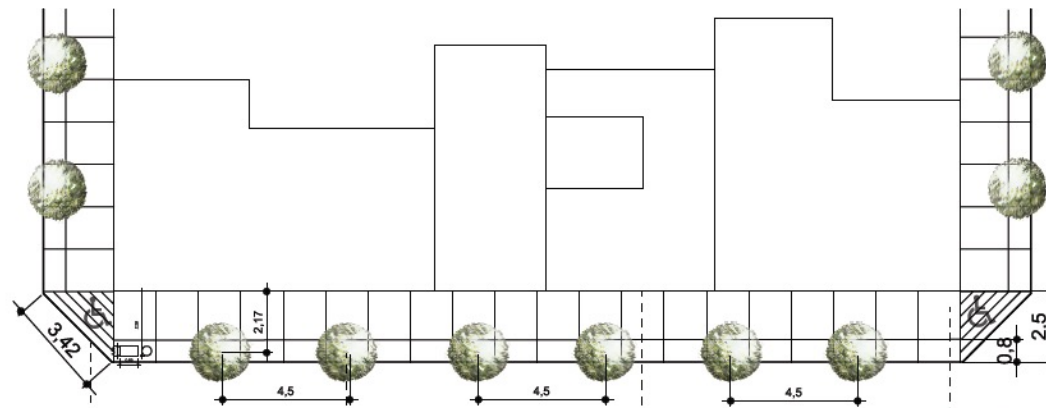
Se considera 3.2 mts como altura maxima a edificaciones de un nivel, con un pretil de .80 cms

### ELEVACION

Dos planta en edificación



Se considera 5.6 mts como altura maxima a edificaciones de dos nivel, con un pretil de .80 cms



Todas las esquinas tendran acceso para personas discapacitadas.

Arboles seran segun propuesta de sistema de paisaje

No se dejara ningun remetimiento en fachadas para dar una continuacion solo con cambios de materiales y colores.

Banquetas con materiales de la zona perfectamente lisos y limpios para la accesibilidad de toda la gente incluyendo discapacitados

# Construction norms to enhance the identity of Higueras

Higueras, N.L. es un municipio rico en recursos naturales y posee una locación privilegiada. Encontrándose a un costado de la Sierra Picachos y siendo esta hogar del Oso Negro y de un cotizado Orégano, posee grandes áreas de oportunidad para desarrollarse dentro del área del tan nombrado Ecoturismo.



**Sierra Picachos**

Área Natural Protegida (A.N.P.) de Nuevo León, México.  
Con el carácter de Zona Sujeta a Conservación Ecológica del Estado

El Centro de Manejo Ambiental, tendrá como principal objetivo crear espacios para el estudio, conocimiento, difusión de información, y manejo de la biodiversidad autóctona de Higueras y Sierra Picachos. Lo cual dará inicio a una nueva cultura de conciencia ambiental.



► Arq. Karina de la Garza, Óscar Guerrero, IQA 5to, Ana Palencia, ARQ 12, Samantha Robles, ARQ 9no, Marina Sandoval, IQA 5to, Dr. Pedro Pacheco, y Enrique Torreallas, LEC 7mo, ganadores del primer lugar junto a sus profesores asesores.



► Erick Lizcano, ARQ 3ro, Alejandro Vázquez, ARQ 3ro, Nancy Rueda, LEC 7mo, Guillermo Davis, ARQ 3ro, y Gabriel Ortiz, LAE 5to, ganadores del segundo lugar junto a su profesor asesor, el arquitecto Edmundo Reyes.



► Ana Silveo, LEC 9no, y Angélica García, ARQ 10mo, ganadoras del tercer lugar.

POR LUIS MARCO GARCÍA

Buscar un desarrollo sostenible para comunidades que más lo necesitan fue la razón por la que estudiantes del Tecnológico Monterrey realizaron proyectos innovadores, que los hicieron acreedores del Premio CEMEX-TEC 2013 en la categoría 'Transformando Comunidades'.

Por primera vez desde su creación en el 2001, equipos del Campus Monterrey obtuvieron los primeros tres lugares, entre fueron Jardín Botánico Regional, Centro Recreativo de Educación Ambiental (CIEBA), y Centro Recreativo, Cultural, de Abasco y Huertos Urbanos, respectivamente.

"Fue más que nunca nuestra sociedad necesita de ciudadanos, empresas e instituciones comprometidas con la idea de transformar e innovar con propuestas sustentables. México necesita líderes conscientes de la transformación que requiere el país, que generen o impulsen soluciones integrales a las problemáticas de las comunidades mexicanas", destacó Juan Romero Torres, presidente de CEMEX México en la ceremonia de premiación el pasado 27 de septiembre en la Sala Mayor de Recreos.

**Ganadores**

Para reactivar la economía del municipio de Higueras, Nuevo León, el equipo ganador del primer lugar propuso la creación de un Jardín Botánico Regional que fomenta el cultivo de plantas endémicas de la región y puedan generar desarrollo.

Los alumnos ganadores son Samantha Robles, ARQ 9no semestre, Marina Sandoval,

# Ganan alumnos por proyectos sustentables

## Estudiantes del Campus Monterrey obtienen los tres primeros lugares de la tercera edición del Premio CEMEX-TEC

IQA 5to semestre, Enrique Torreallas, LEC 7mo semestre, Oscar Alejandro Guerrero, IQA 5to semestre, y Ana Cristina Palencia, egresada de ARQ; sus profesores asesores fueron Karina de la Garza y Pedro Pacheco, del Departamento de Arquitectura.

"Fue un orgullo para mí, y el hecho de haber podido vincularlo con mi propia estancia de investigación en la Modalidad de Liderazgo para el Desarrollo Social, el hecho de que el proyecto se pueda hacer y darle seguimiento para ayudar a esa gente que en verdad lo necesita, no tiene manera de expresarse, el poder ayudar a los demás", comentó Alejandro Guerrero.

La propuesta realizada por el equipo consistió de la construcción de un vivero a espaldas del Centro de Educación Ambiental de la Asociación Ecológica de la Sierra Picachos en Nuevo León (AESPEAC), con la que colaboran, para fomentar el cultivo de plantas como pino, durahnils, orégano, y otras de la región.

Otro de los objetivos del proyecto es enseñar la importancia ecológica de los recursos naturales de la región, difundir

conocimiento a la población a través del Jardín Botánico y las estaciones de cultivo de dichas plantas dicho centro funcionará como un medio económico para generar fondos y autosustentarse.

**Crea**

El Centro Incentivo de Educación Ambiental (CIEBA) busca impulsar en la comunidad de Aramberri, Nuevo León, un gran sentido de pertenencia en sus habitantes para que en su lugar de origen generen desarrollo a través de la educación.

Dicha propuesta ideada por Erick Lizcano, Alejandro Méndez, Guillermo Durán, alumnos de ARQ 3er semestre, Nancy Rueda, LEC 7mo semestre, y Gabriel Ortiz, LAE 5to semestre, se puede replicar en otros municipios y la primera etapa consistió en la construcción de salteres agrícolas, un primer invernadero y otras recreativas.

Otros trabajos planeados dentro del proyecto son la realización de un área de cultivo orgánico, una explanada comunal y una plaza polivalente, un segundo invernadero, una cancha deportiva y una biblioteca, con lo cual los habitantes sentirán un lugar en el que puedan desarrollar sus competencias y así poder superarse.

Sus profesores asesores fueron los arquitectos Edmundo Reyes y Daniel Martínez.

**Huertos urbanos**

La Zona del Cerro de la Campana es un lugar muy cercano al Campus Monterrey y su condición social contrasta con gran parte del área en la que se encuentra, al estar cerca de San Pedro.

Debido a esto, las alumnas Angélica García ARQ 10mo semestre, Ana Silveo, LEC 9no semestre, María Ferrnanda Salazar, 10to 6to semestre y Aída Ramírez, recién egresada de ARQ, idearon el Centro Incentivo, Cultural, de Abasco y Huertos Urbanos, para ofrecer a los habitantes de esta

comunidad una oportunidad de aprendizaje y superación.

El proyecto consta de un mercado de abastos, huertos urbanos y centro comunitario cultural, rodeado de espacios públicos, ya que las integrantes del equipo consideraron que la mejor manera de regenerar el tejido social es a través de conexiones que unan a la comunidad y generen diálogo. El doctor Pedro Pacheco y el arquitecto Marcelo E. Usher fueron sus asesores.

**Propuestas innovadoras**

David Noel Ramírez, Rector del Tecnológico de Monterrey, resaltó la importancia de generar este tipo de proyectos y que éstos generen un impacto en la comunidad.

"Ojalá que quienes hoy han sido reconocidos logren la implementación del proyecto. Nuestra visión es poner a disposición del país todas esas investigaciones para que puedan ser transferidas e implementadas, nuestro sueño es ese", explicó en la premiación, en la que se presentaron los proyectos de los 10 equipos finalistas y estuvieron presentes directivos de CEMEX y la Innovación. El primer lugar recibió un monto económico para llevar a cabo la primera fase del proyecto y una salda electrónica. También en el evento se entregaron los premios a la categoría Innovación en la Construcción, que reconoció a proyectos emprendedores de diferentes Estados: los ganadores fueron Ecolibrit, de Chihuahua, GO2 CRIITO, de Puebla, y Epitermos, de Veracruz.

**122**  
PROYECTOS PARTICIPARON EN EL PREMIO



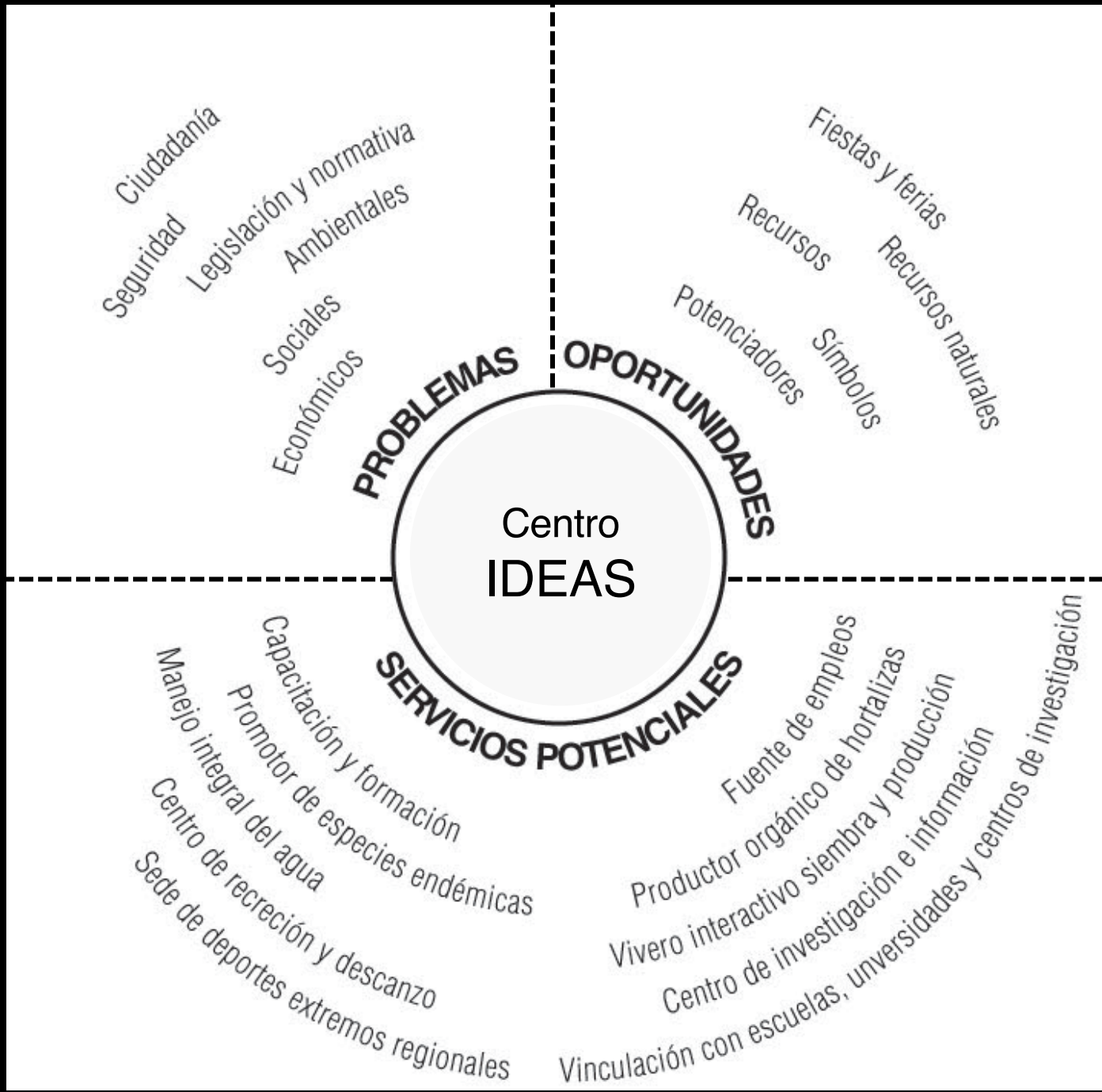


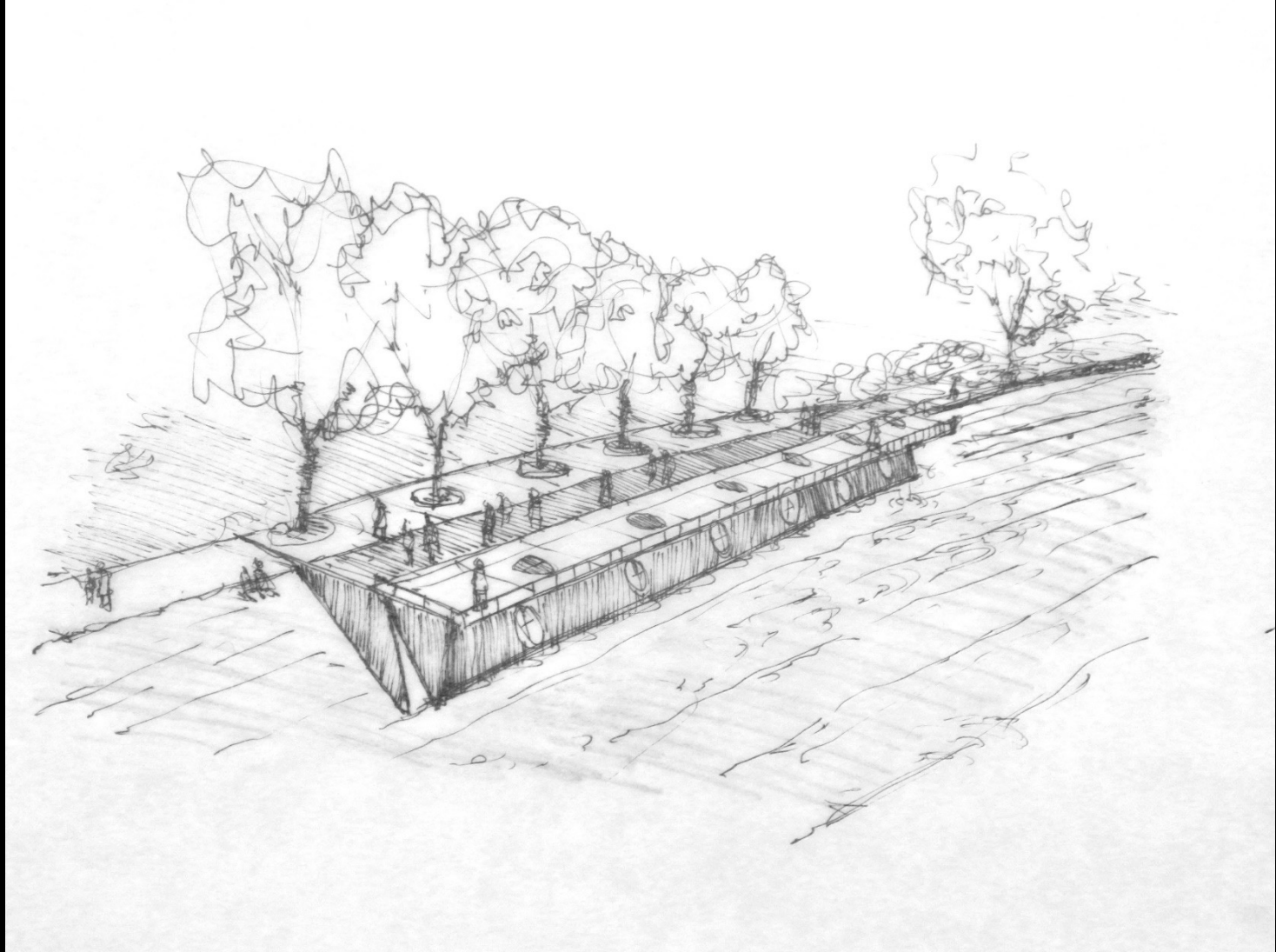


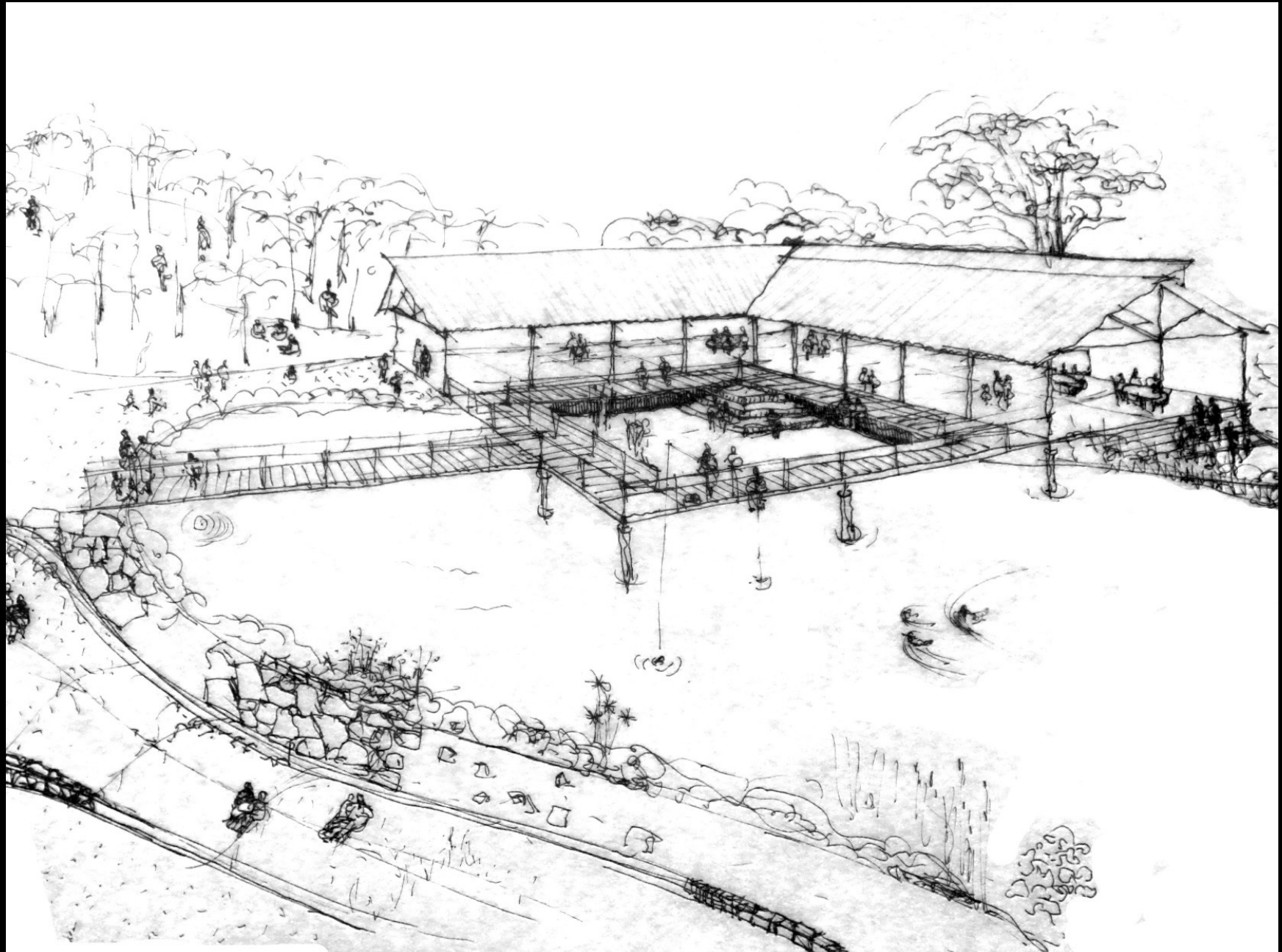


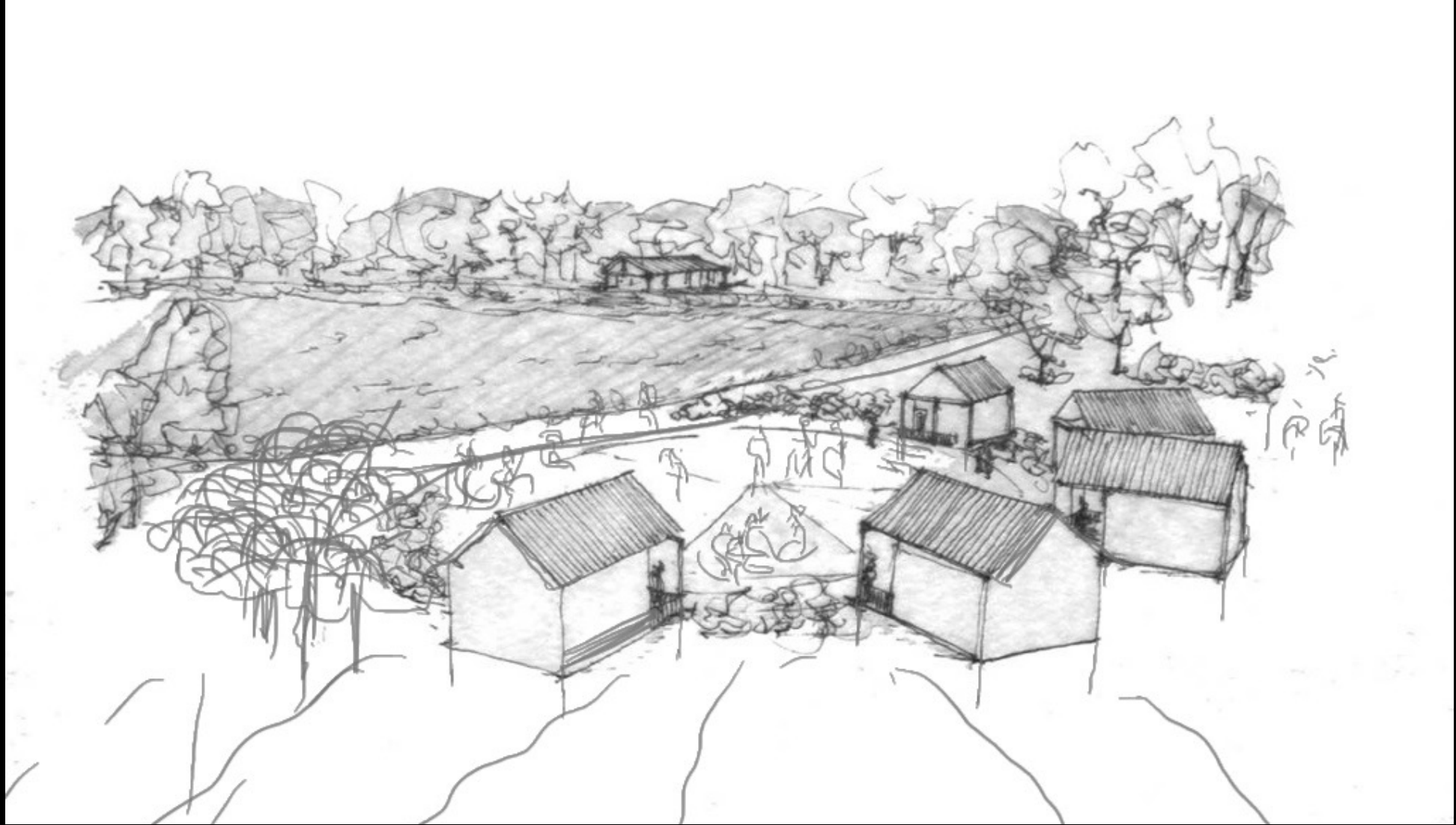


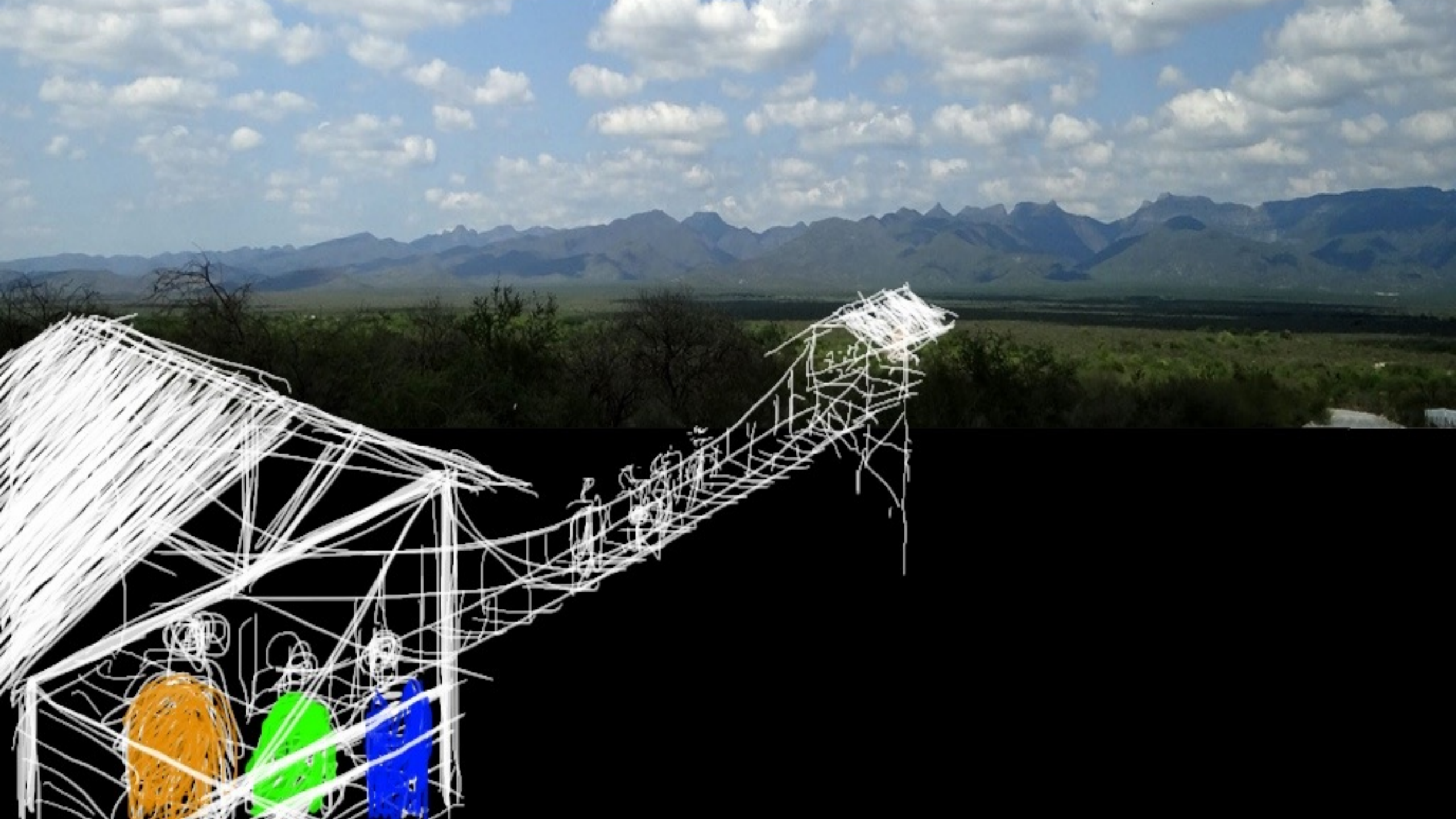
















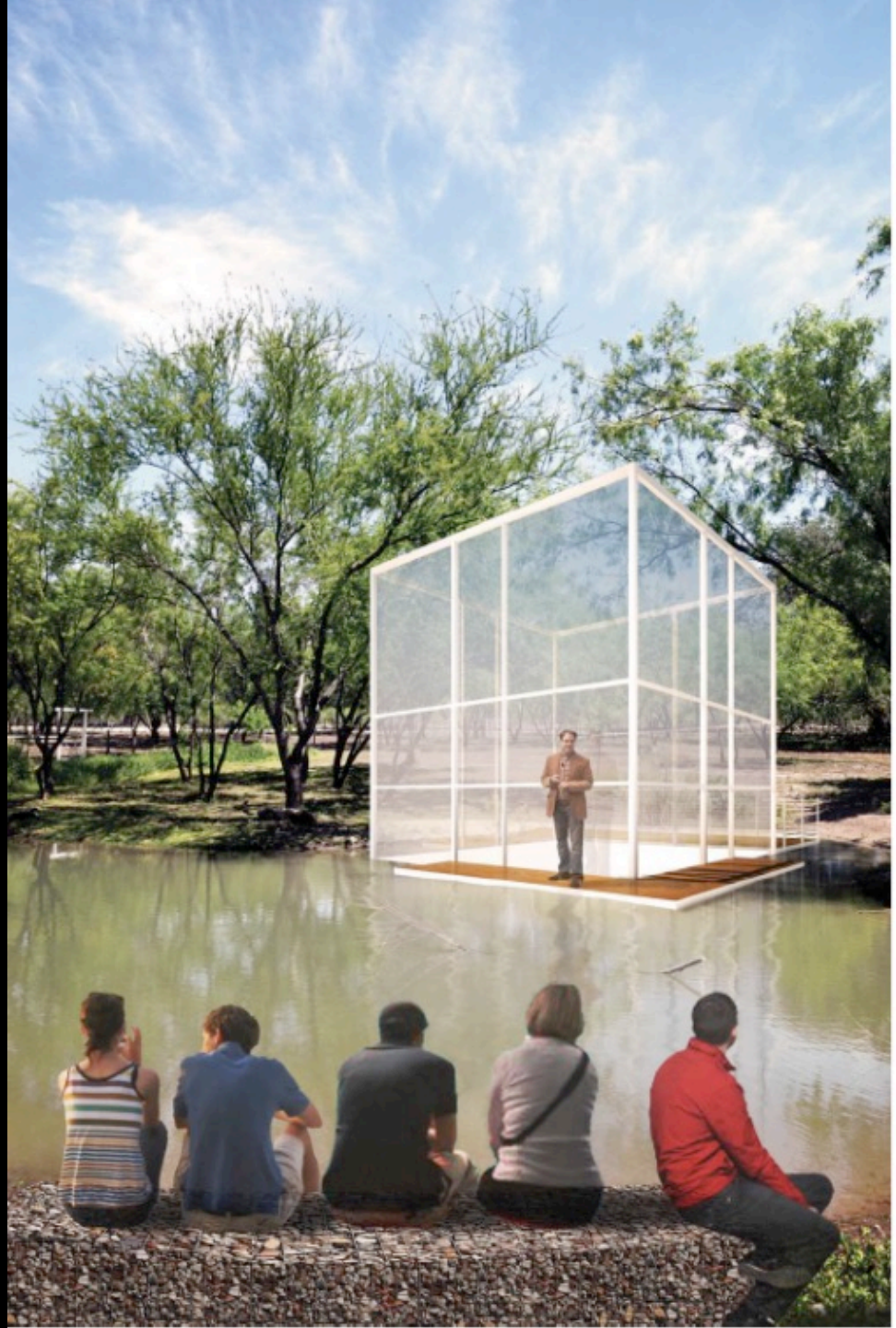




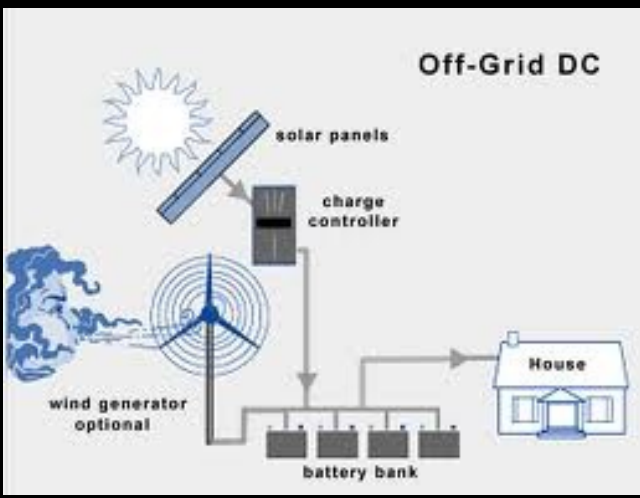


- 1. Zona de Agua
- 2. Zona de Tierra
- 3. Zona de Energía
- 4. Zona de Aire

# PLAN MAESTRO

























# The social and educational hub















# IMPACTOS Y RELEVANCIA

A través del tiempo, AESPAC ha buscado impactar positivamente en la región de Sierra Picachos



## Ambientales

- Reforestación 350 especies nativas; 10 brigadas de limpieza, entre empresas y niños AESPAC.
- 50 talleres AESPAC de educación ambiental, más de 2,500 asistentes;
- Escuela de Niños AESPAC, 4 generaciones, más de 100 niños graduados



## Sociales

- Más 30 alianzas estratégicas con empresas, universidades nacionales e internacionales y con ONGS;
- Participación en CONAGUA, en Consejos de Flora y Fauna y en Consejos UANL e ITESM. Consejo Cívico y Vertebral
- Del 2012 al 2018, los delitos han disminuido un 60%, según datos oficiales



## Económicos

- Más de 1.5 millones de pesos en derrama económica por eventos AESPAC. Y visitantes a la región.
- 10 Muestras gastronómicas y artesanales;
- Más de 15 emprendedores locales, mejorando la economía familiar.
- Más de 150 empleos temporales por eventos AESPAC



## Culturales - Deportivos

- 5 seriales de Outdoors fest , más de 5 mil corredores locales, nacionales y extranjeros;
- 2 eventos culturales CONARTE
- Más de 100 niños rurales de los municipios de la región;
- Constitución de grupo coral Niños AESPAC.



## Desarrollo sustentable

- Se ha detenido la proliferación de pedreras;
- Se han conservado especies nativas como el oregano y la candelilla;
- Se han protegido las diversas Cuencas de Berarga Hídrica;
- Se trabaja en la iniciativa por la ampliación del Área Natural Protegida. Pasar de ??



## Planeación Urbana

- Se ha impedido el crecimiento de complejos habitacionales e industriales que atentan contra la Naturaleza;
- Se insta por un plan de movilidad periférica a la Sierra de Picachos



## Turismo con sentido Ecoturismo



## Club Deportivo



## Áreas de Descanso



## Gastronomía

# Redes Sociales de AESPAC



66,100











CONOCE MÁS

CONOCE MÁS

CONOCE MÁS

## Últimas Noticias

[VER MÁS »](#)



### CONCURSO INFANTIL: DIBUJANDO LOS PAISAJES DE MI MUNICIPIO

🕒 18 Jul 2022 🗨️ 0 Comment

La Asociación Ecológica de la Sierra de Picachos, A.C., en el marco conmemorativo de su 11 aniversario, invita a las niñas y los niños de la región a participar en el Primer Concurso Regional de Pintura Sierra de Picachos "Dibujando los Paisajes de mi municipio"



### CLAUSURA DEL SEGUNDO DIPLOMADO DHALE

🕒 31 May 2022 🗨️ 0 Comment

La Asociación Ecológica de la Sierra de Picachos, A.C. y Centro Cívitas organizaron, el pasado 24 de abril, 2021, un día de reforestación en el Centro Interpretativo y de Educación Ambiental Sustentable (Centro IDEAS)



### FESTEJA AESPAC EL DIA DEL NIÑO

🕒 17 May 2022 🗨️ 0 Comment

La Asociación Ecológica de la Sierra de Picachos, A.C. y Centro Cívitas organizaron, el pasado 24 de abril, 2021, un día de reforestación en el Centro Interpretativo y de Educación Ambiental Sustentable (Centro IDEAS)



### ARRANCAN BRIGADA DE SANEAMIENTO DE LA LAGUNA DE HIGUERAS.

🕒 17 May 2022 🗨️ 0 Comment

La Asociación Ecológica de la Sierra de Picachos, A.C. y Centro Cívitas organizaron, el pasado 24 de abril, 2021, un día de reforestación en el Centro Interpretativo y de Educación Ambiental Sustentable (Centro IDEAS)



<https://www.aespac.org/>

**04.**

**Building your own toolkit**

# Conventional VS Alternative design processes

- Theory to practice
  - Research to product
  - Speculation to manifestation
- Practice to theory
  - Engage with users and place > identify potentials
  - Sensing first conceptualizing next
  - **Sensing > Speculation > theory**

# Sensing > speculation > theory

- Based on the research you have started
- Explore the physical manifestation of your project using alternative formats and materials
- How would you communicate your project to a child, to an elderly person, to an indigenous group, to a group of teachers, to a businessperson, to the local authorities?
- Does the thinking about your audience, allows you to see things that you have not seen?
- Do you need to adjust your concept? (try not to eliminate what you think is not necessary and concentrate on the new directions.
- Describe and use different media to represent your design process.
- What lessons have you learned so far that help you frame the wicked situation being address.

# A process design-oriented tool

- Frame the wicked situation
- Focus on potential VS problems – Example
  - Designing a house VS designing a system to live in balance with nature
- Move from sustainable to regenerative thinking
- Think about nested wholes and establish boundaries for the issue being addressed
- How does your project help us all increase our consciousness about our habitat - **educational component**
- Architecture (product) is not the end in itself; it is the medium to see greater things. In essence, **DESIGN IS A TOOL**

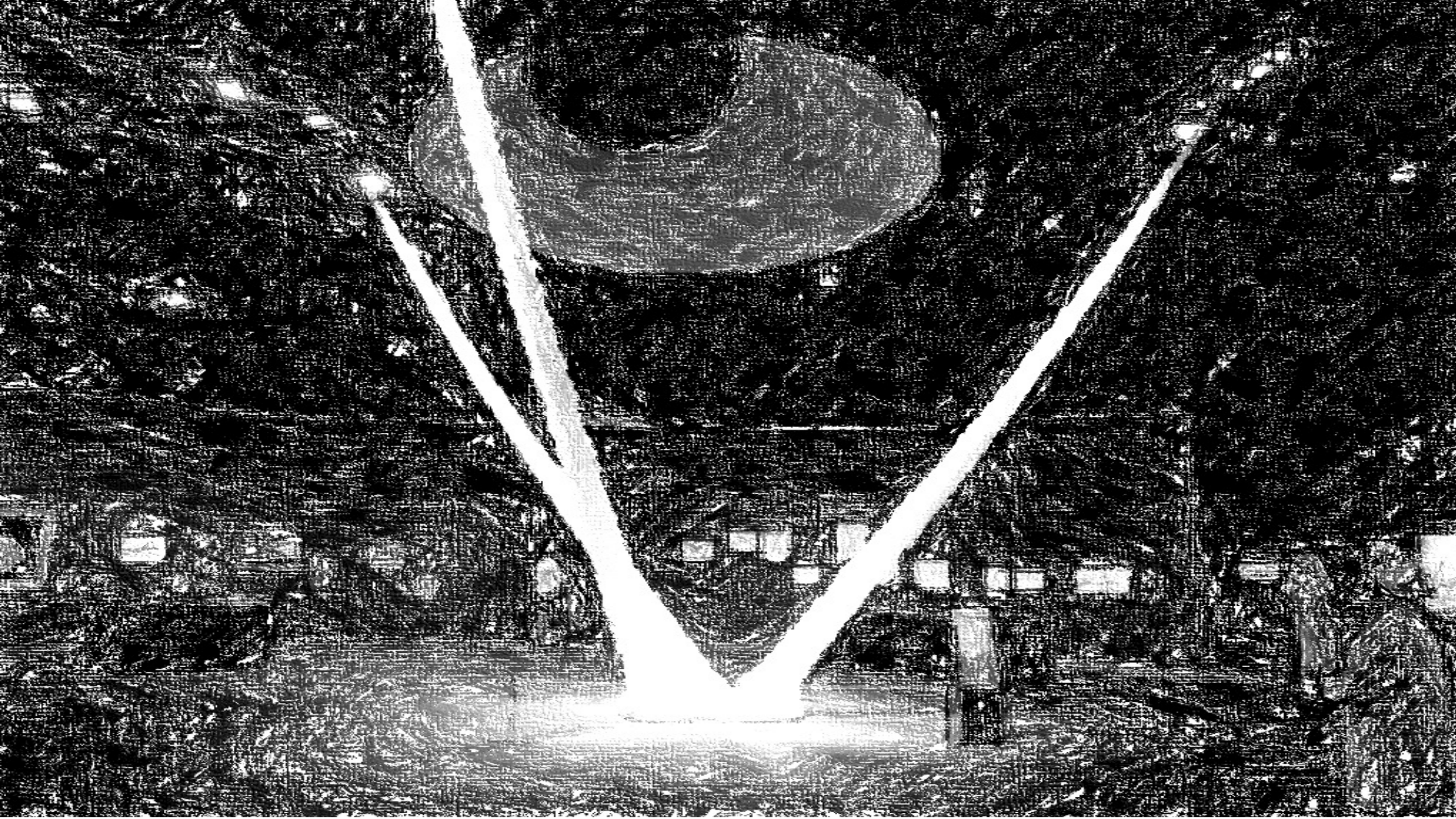
FINAL  
experience

# Circular Fashion

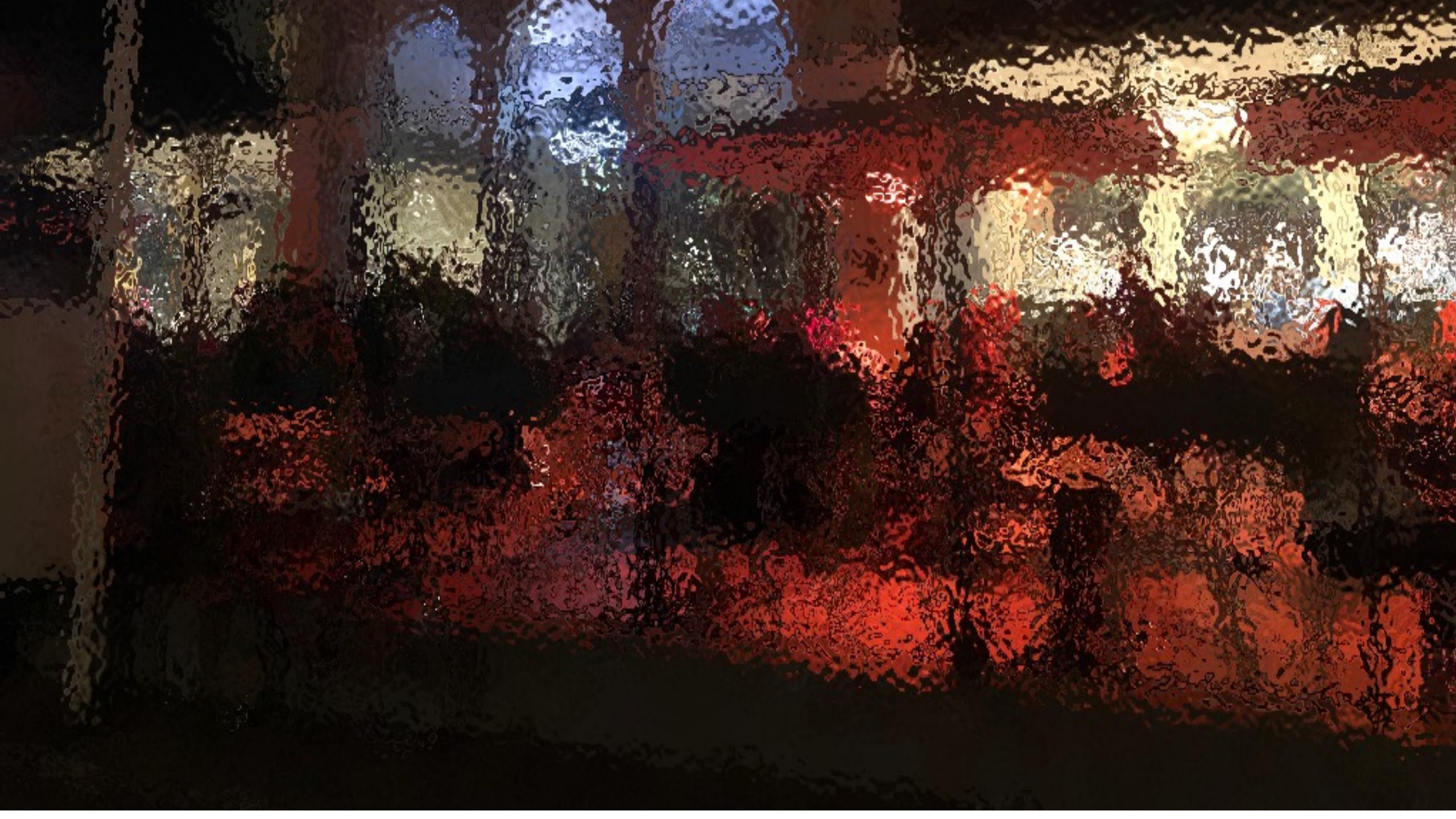
-  
Disassembling  
and Modularity

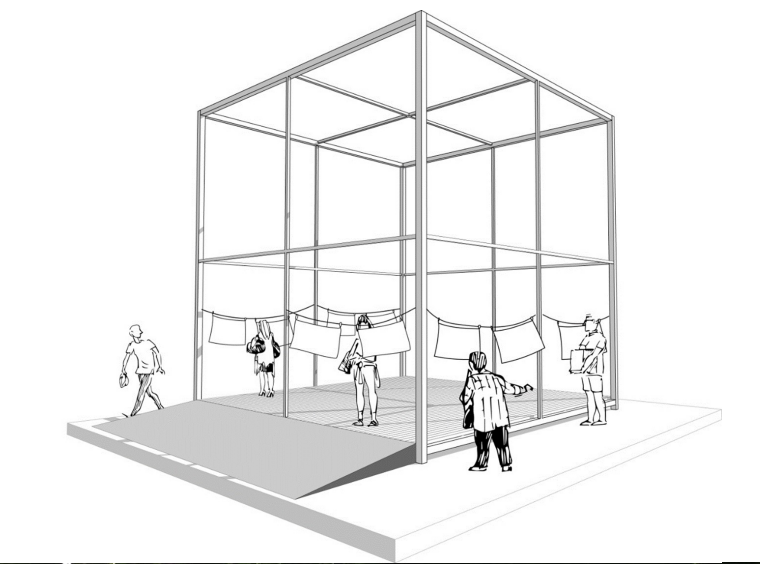


@FLAVIALARocca









**Urban Cell for Wellbeing and Opportunities (C.U.B.O.). A tool for engagement.**

# THANK YOU!

Erminia D'Itria, Politecnico di Milano, [erminia.ditria@polimi.it](mailto:erminia.ditria@polimi.it)

Pedro Damián Pacheco-Vásquez, Tecnológico de Monterrey, [ppacheco@tec.mx](mailto:ppacheco@tec.mx)

# Additional resources

- The systems view of life – Fitjof Capra [https://www.youtube.com/watch?v=o\\_MDRI-Q76o](https://www.youtube.com/watch?v=o_MDRI-Q76o)
- Regenerative development – Bill Reed <https://www.youtube.com/watch?v=JtoP6zXSvUs>
- The shopping cart desigg – IDEO <https://www.youtube.com/watch?v=izjhx17NuSE>