



TALLER DE ESPACIO Y CIUDAD

# DISEÑO SISTÉMICO

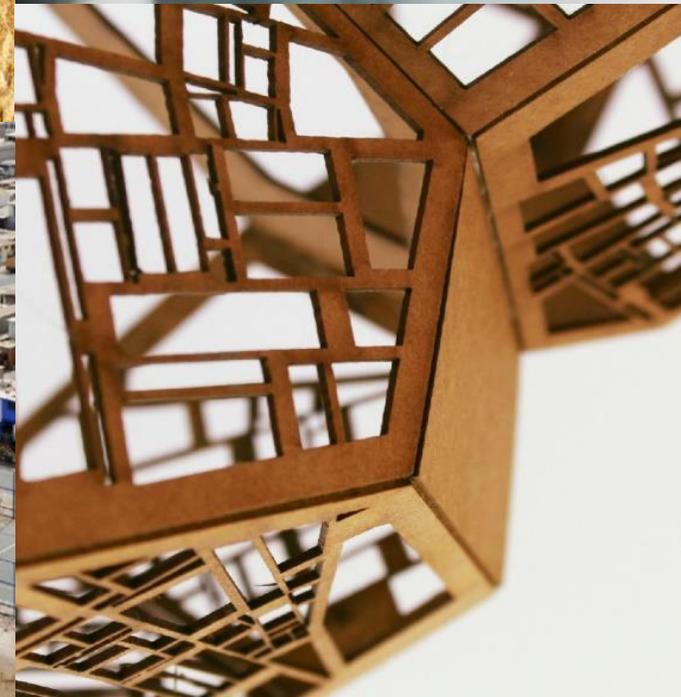
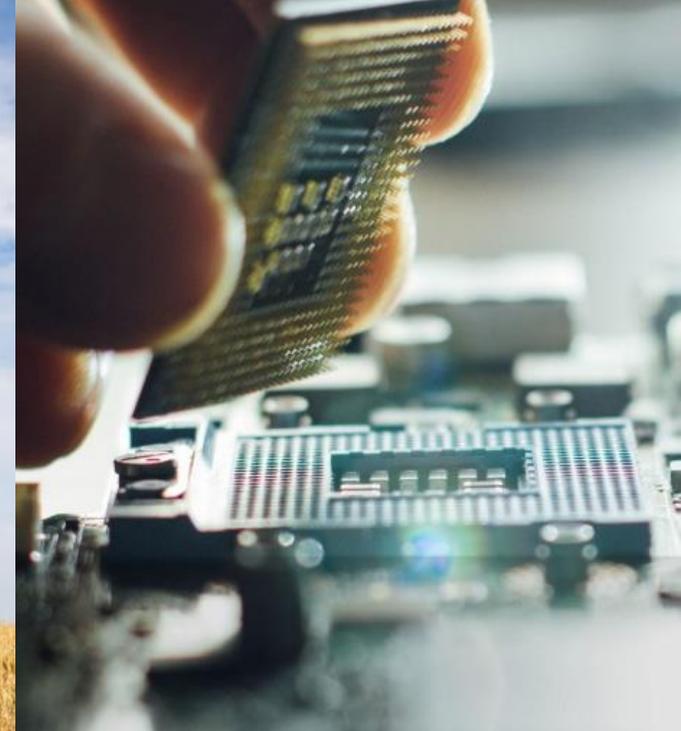
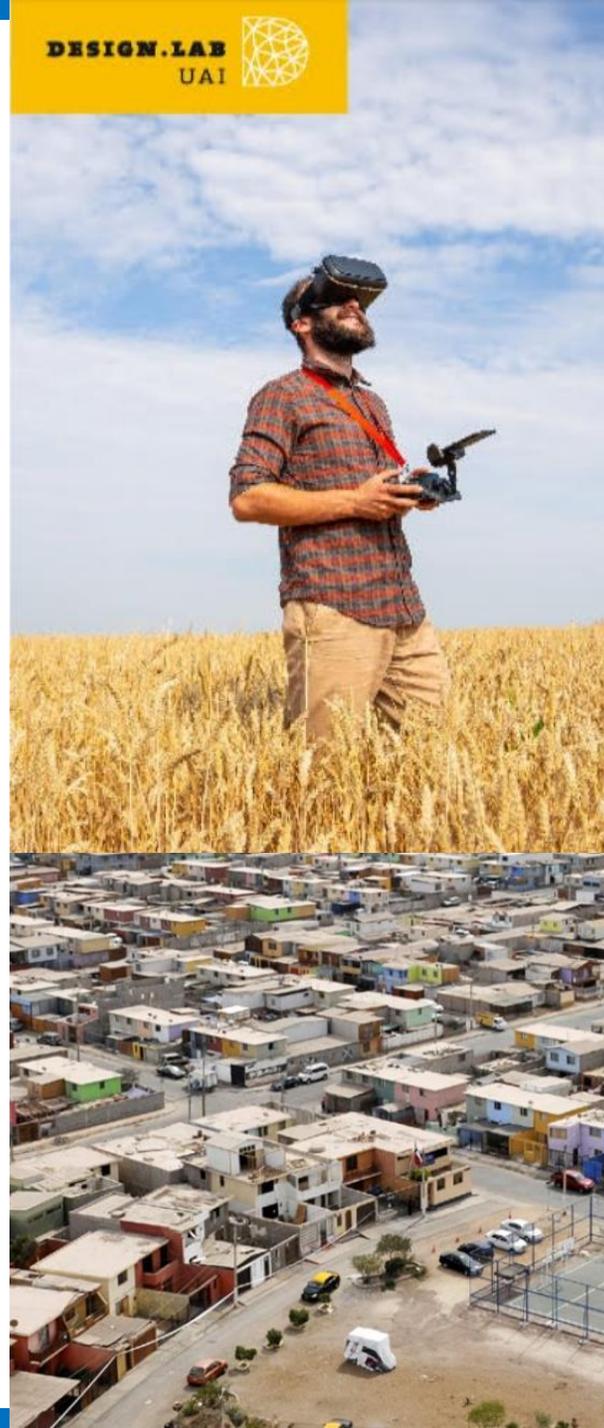
Matias Garreton

Pedro Garreton

Jose Manuel Gomez



**UAI**  
UNIVERSIDAD ADOLFO IBÁÑEZ

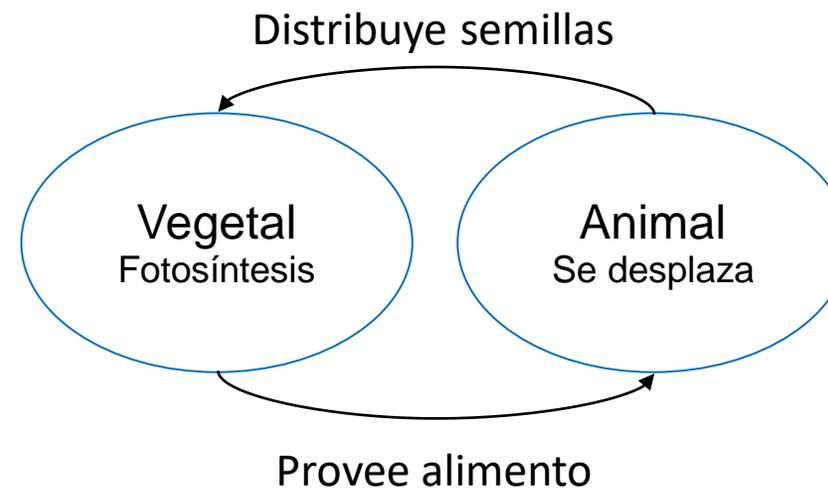


## Sistema:

- Entidades que interactúan formando un conjunto cohesionado.
- Tiene un propósito, composición (entidades), estructura (interacciones) y entorno (fronteras espaciales y temporales)
- Un sistema puede ser una entidad de un sistema mayor, dependiendo de la escala de análisis (ej: persona → sociedad)
- El valor de un sistema puede ser mayor al de la suma de sus partes, cuando existen efectos sinérgicos o comportamientos emergentes (ej: actividad neuronal → consciencia)

## Representación sistémica:

- Partes o entidades: nodos con identidad y función
- Interacciones: líneas con descripción de relaciones



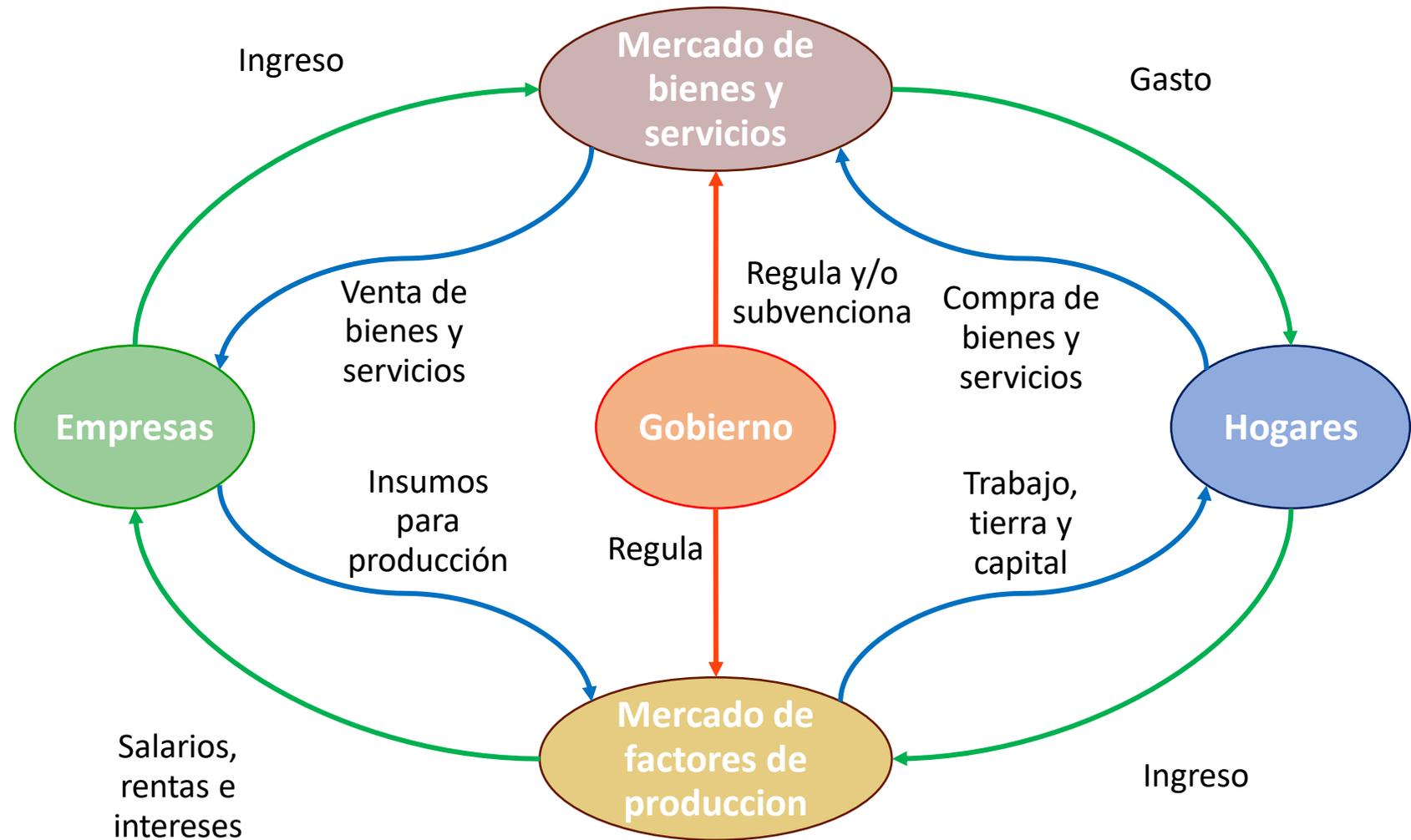
**Propósito:**  
sobrevivencia

**Emergente:**  
evolución

**Economía**

Propósito:

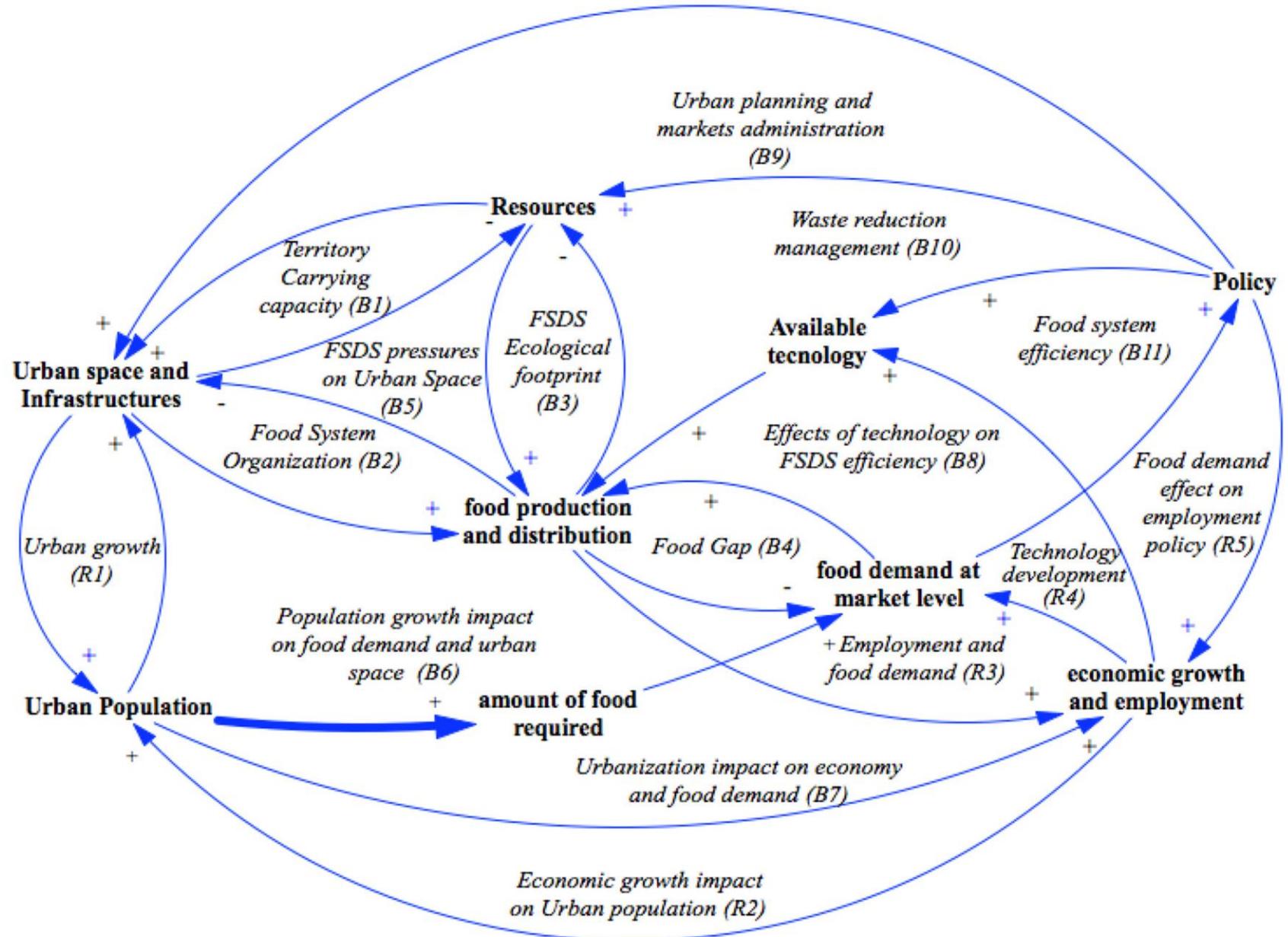
Emergente:



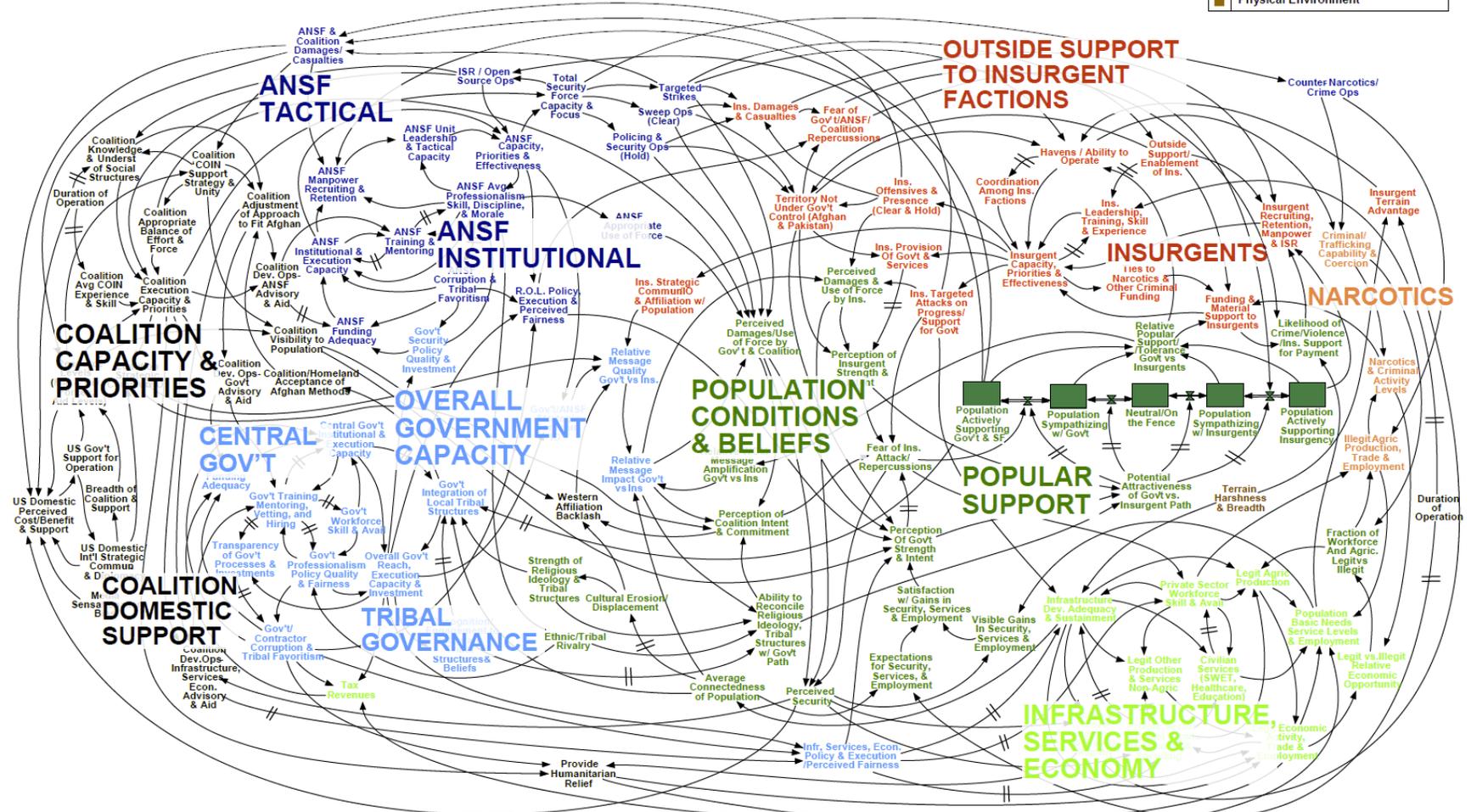
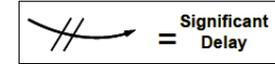
## Agricultura

Propósito:  
Alimentar a la  
humanidad

Emergente:  
Mejora de calidad de  
vida



## Afghanistan Stability / COIN Dynamics



**Intervención en Afganistán**

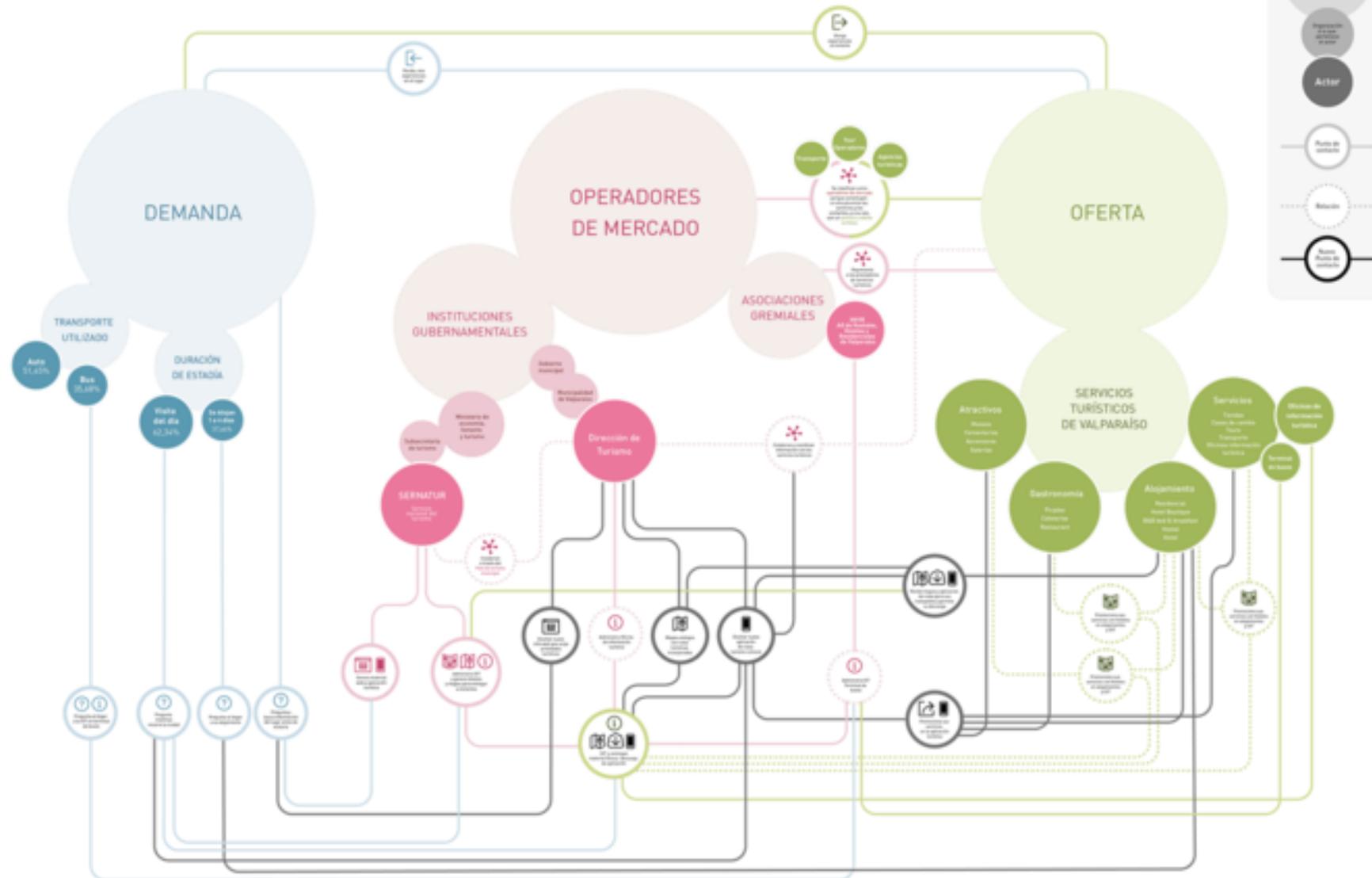
**Propósito:**  
¿Derrotar al terrorismo?

**Emergente:**  
¿Paz mundial?

**WORKING DRAFT - V3**

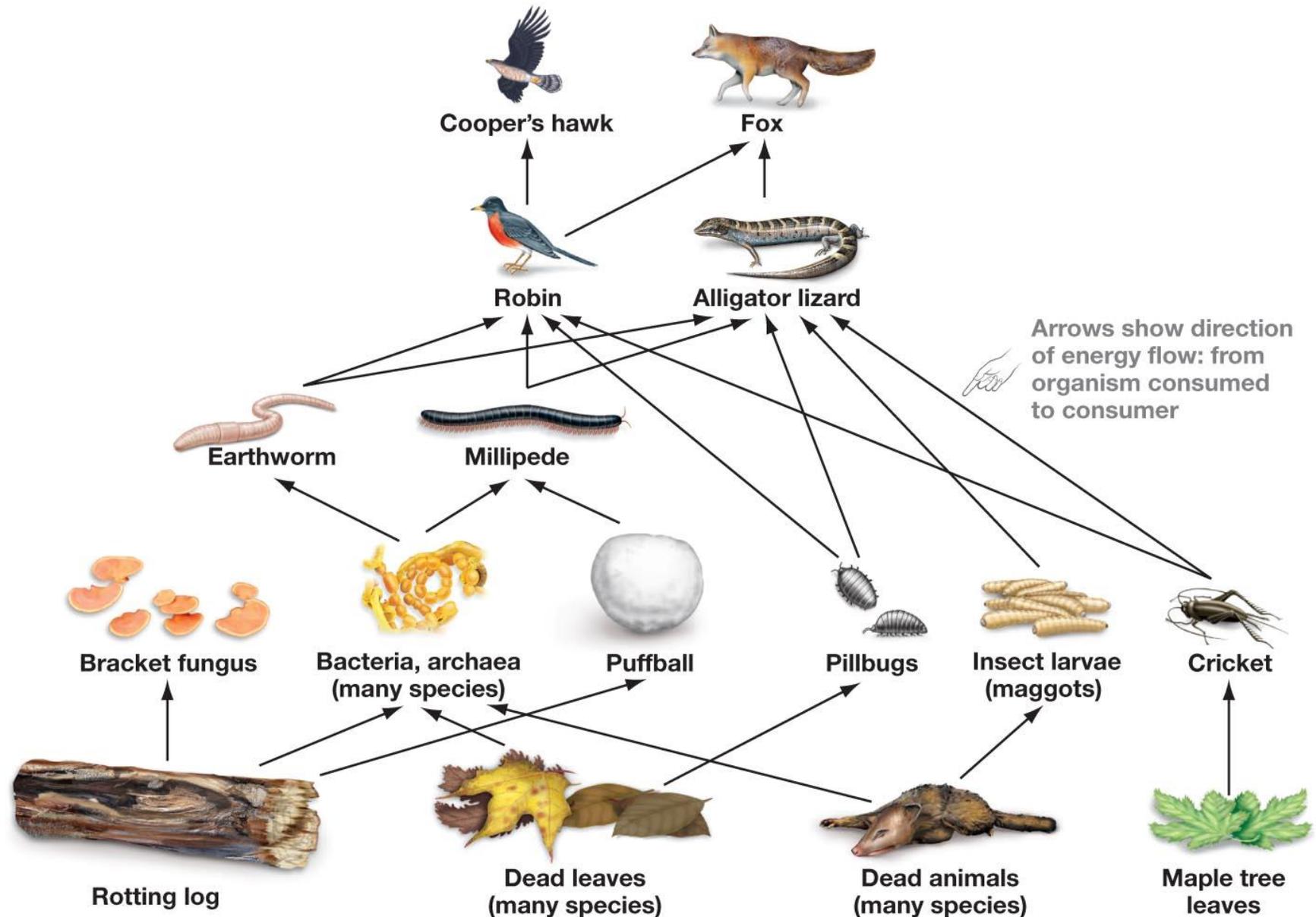
## Actores del Turismo en "Conoce Valparaíso"

Nuevos vínculos entre actores a partir del proyecto

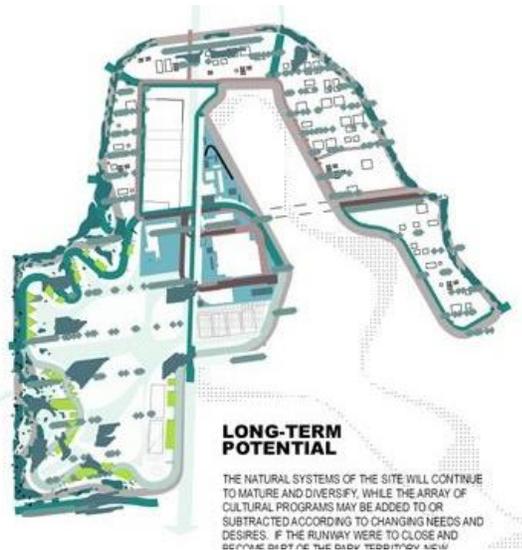
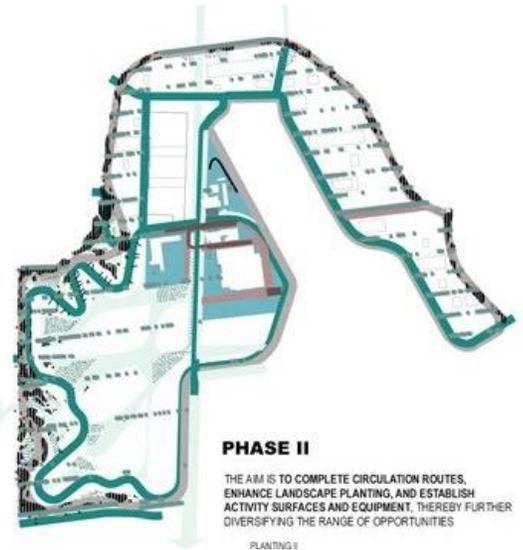
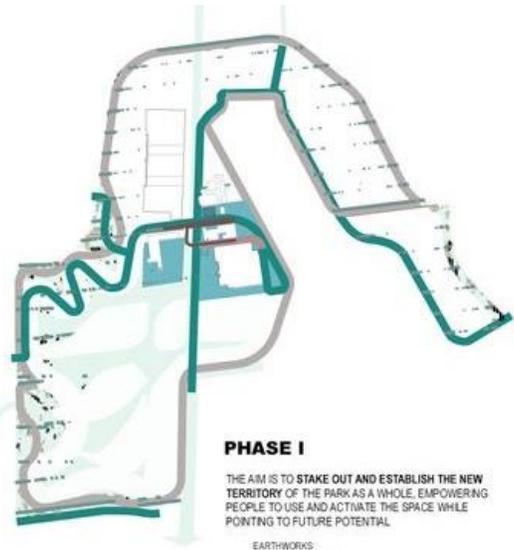
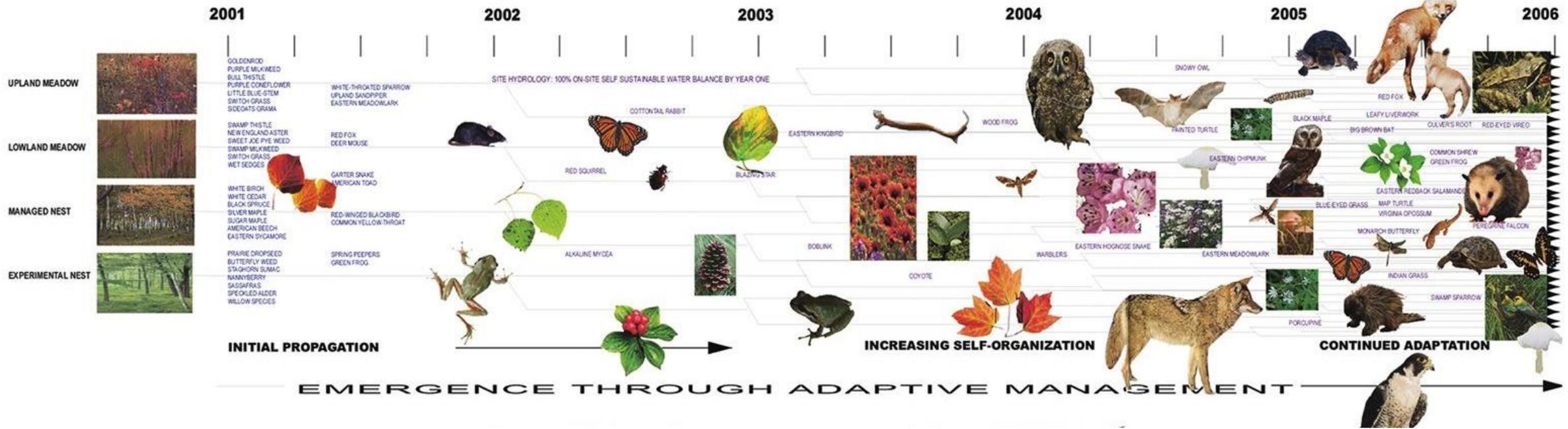




# PIRAMIDE ALIMENTARIA EN ECOSISTEMA

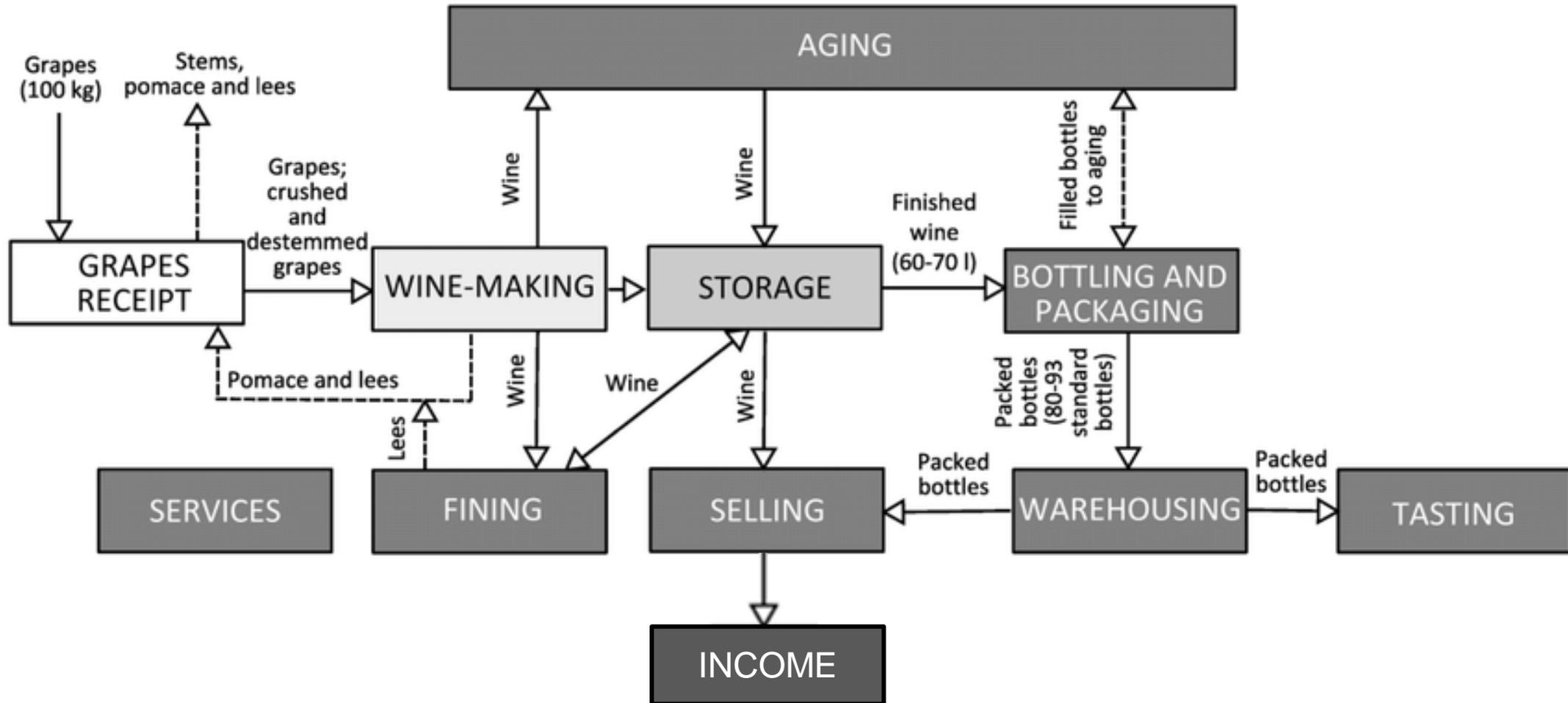


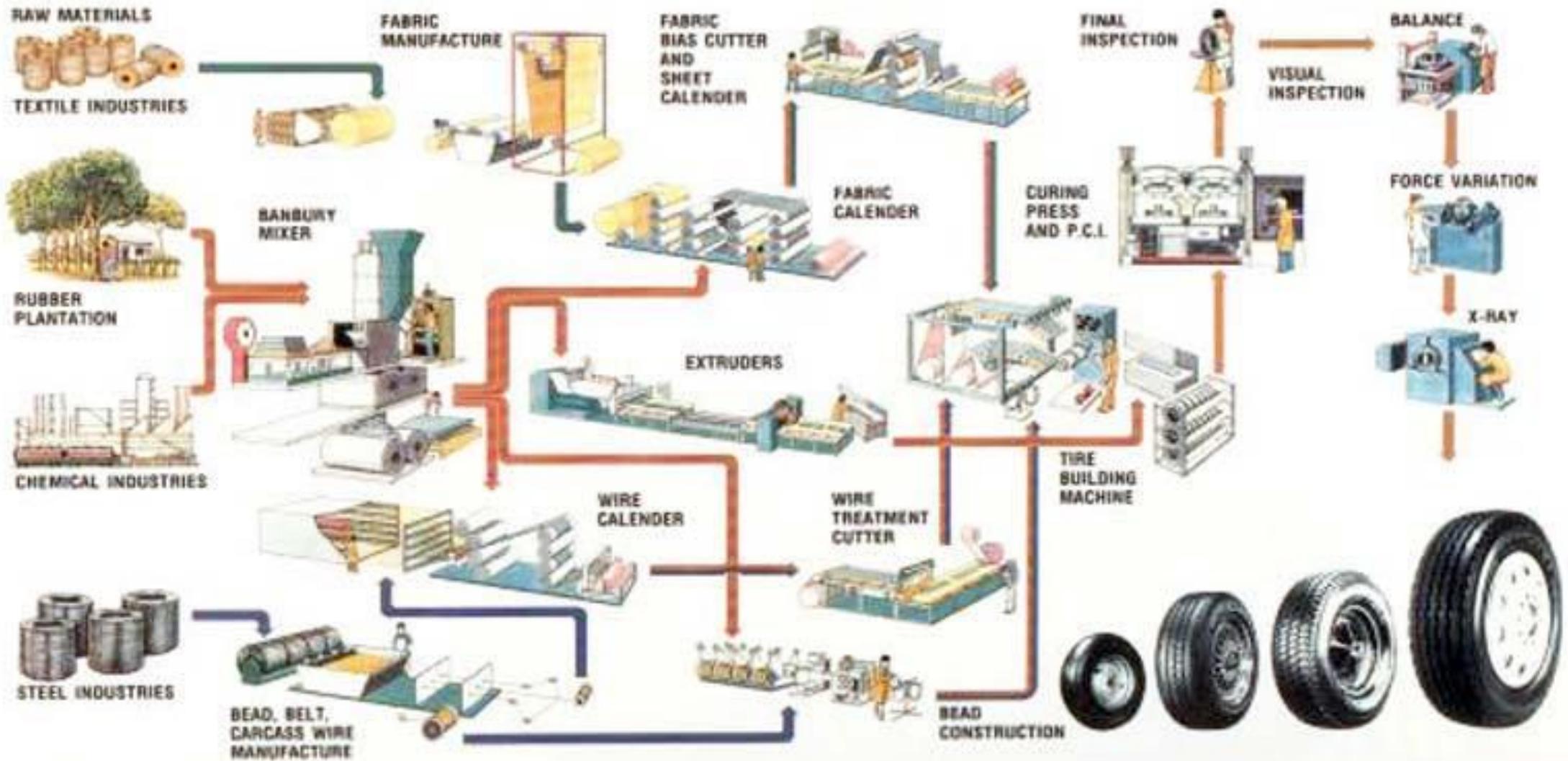
# INCREMENTO DE BIODIVERSIDAD





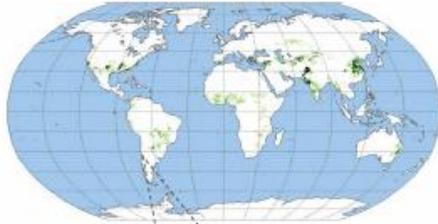
## Producción de vino



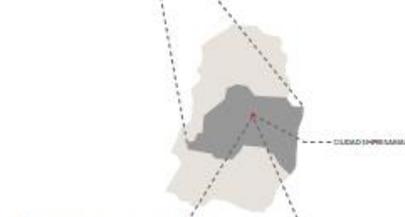


## ESCALA TERRITORIAL: Interacciones territoriales

Producción mundial de algodón



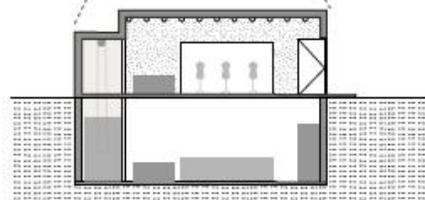
Impacto mundial del algodón



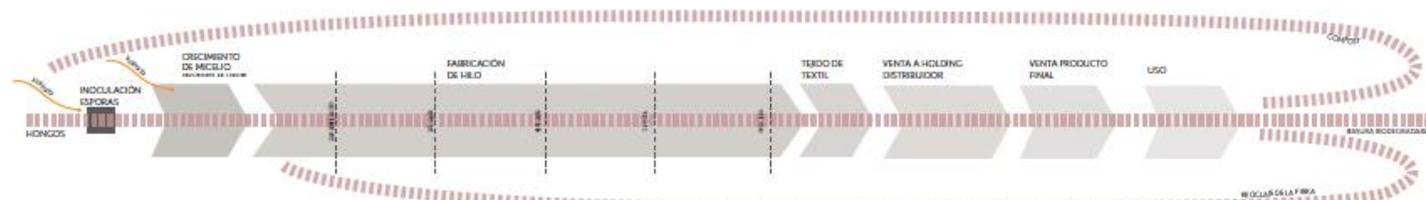
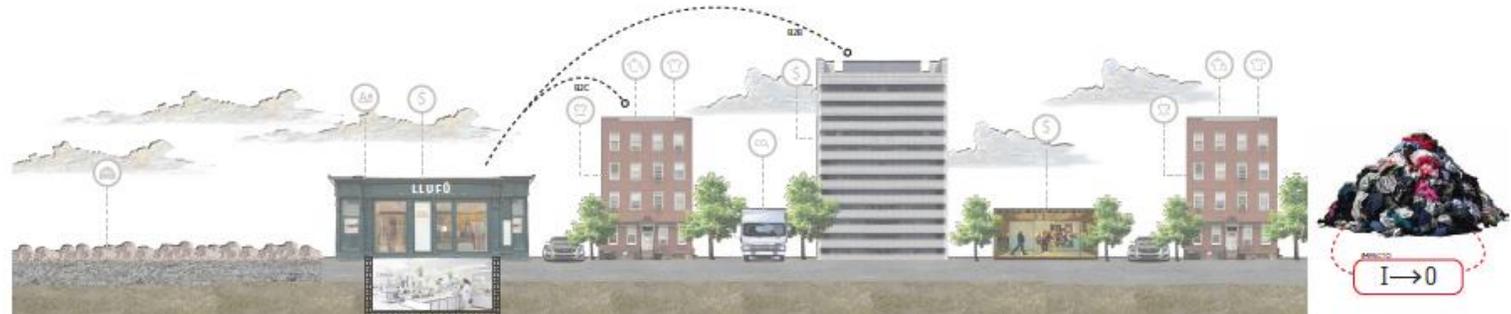
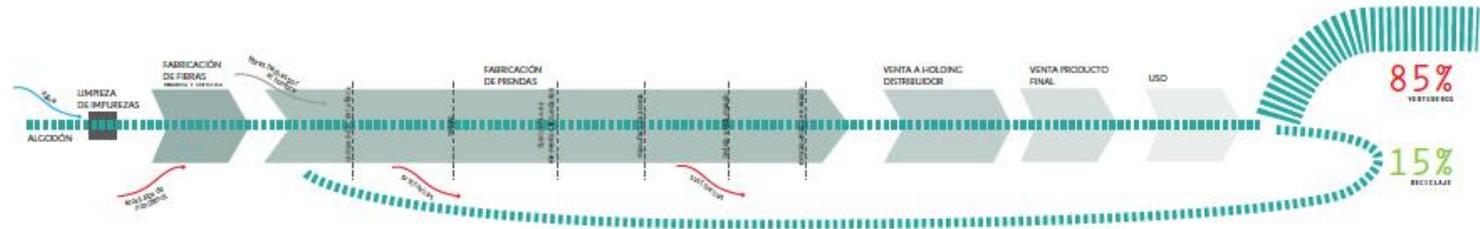
Chile, Región Metropolitana, Santiago

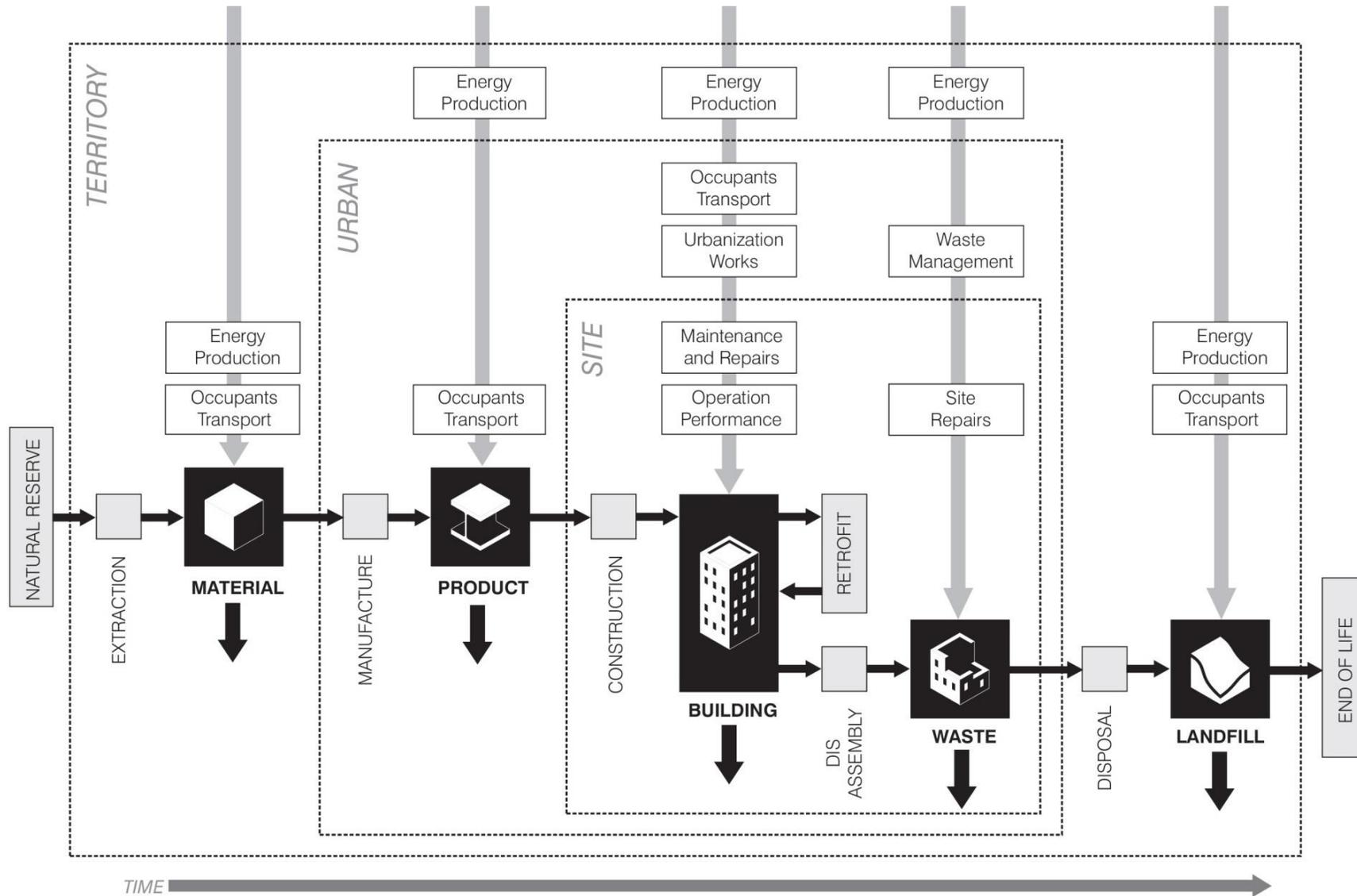


Ciudad empresarial, Huechurabazá



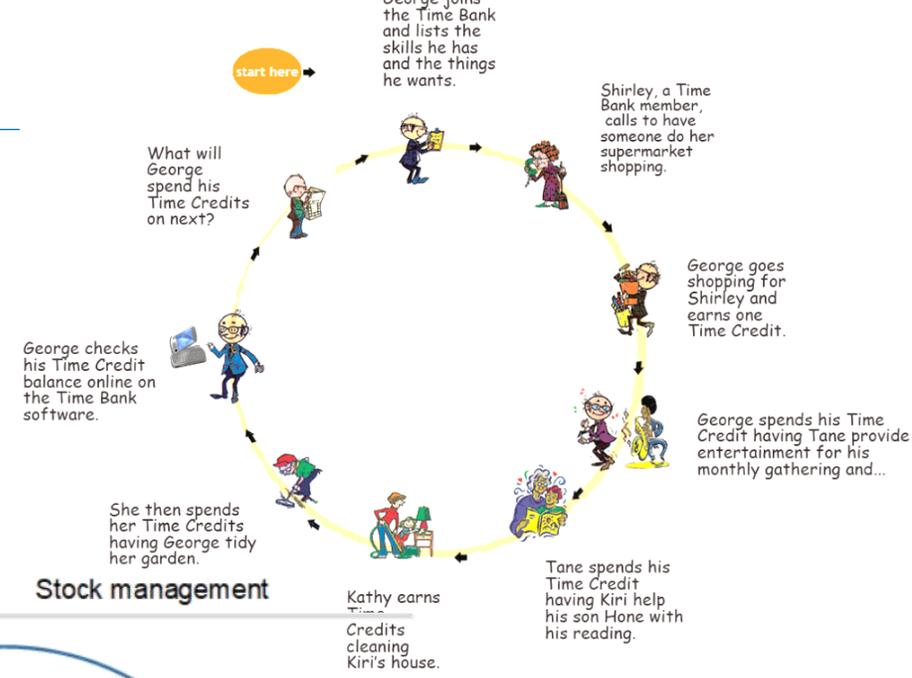
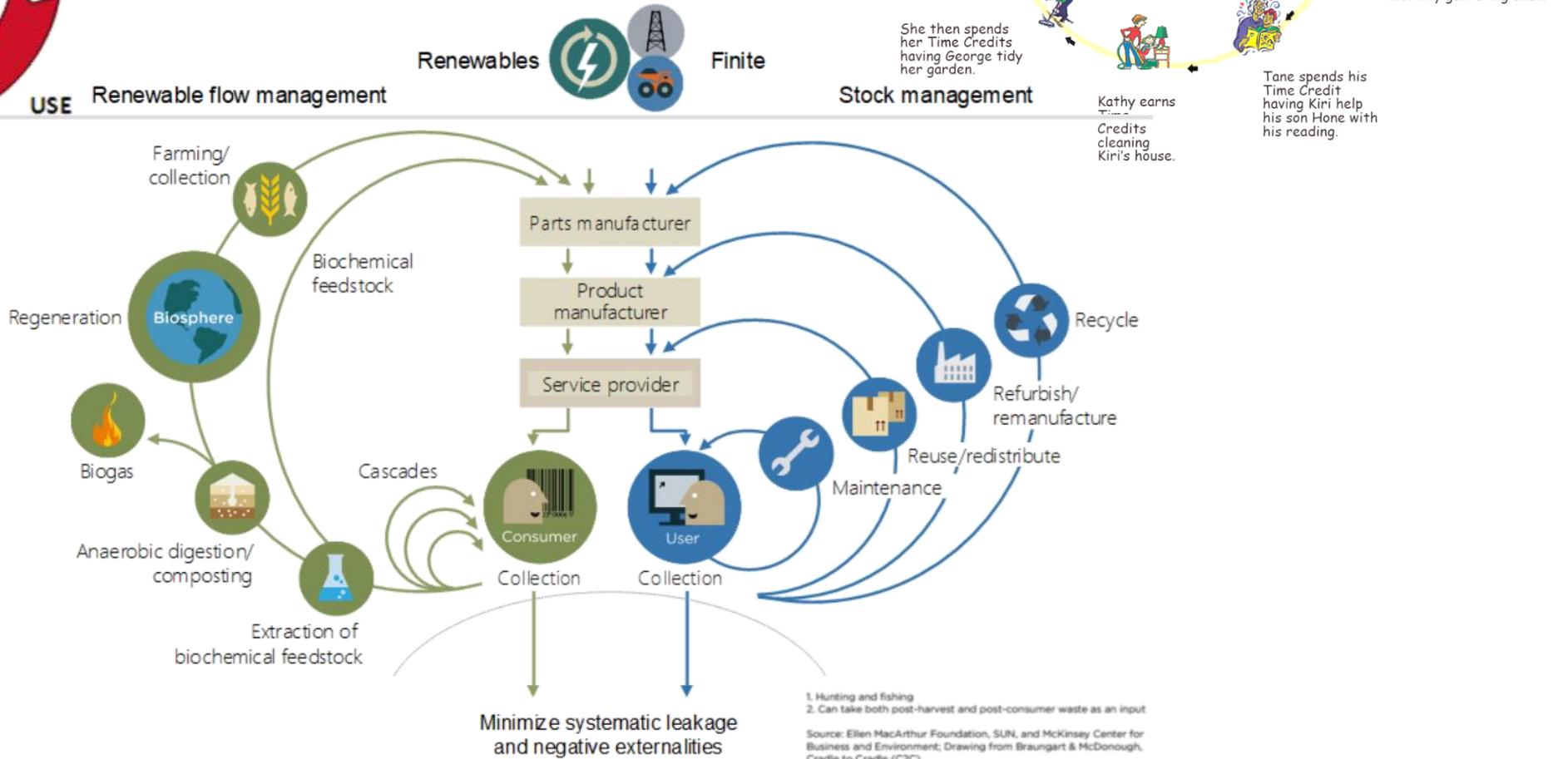
Tienda de venta, fábrica de producción LLUFU



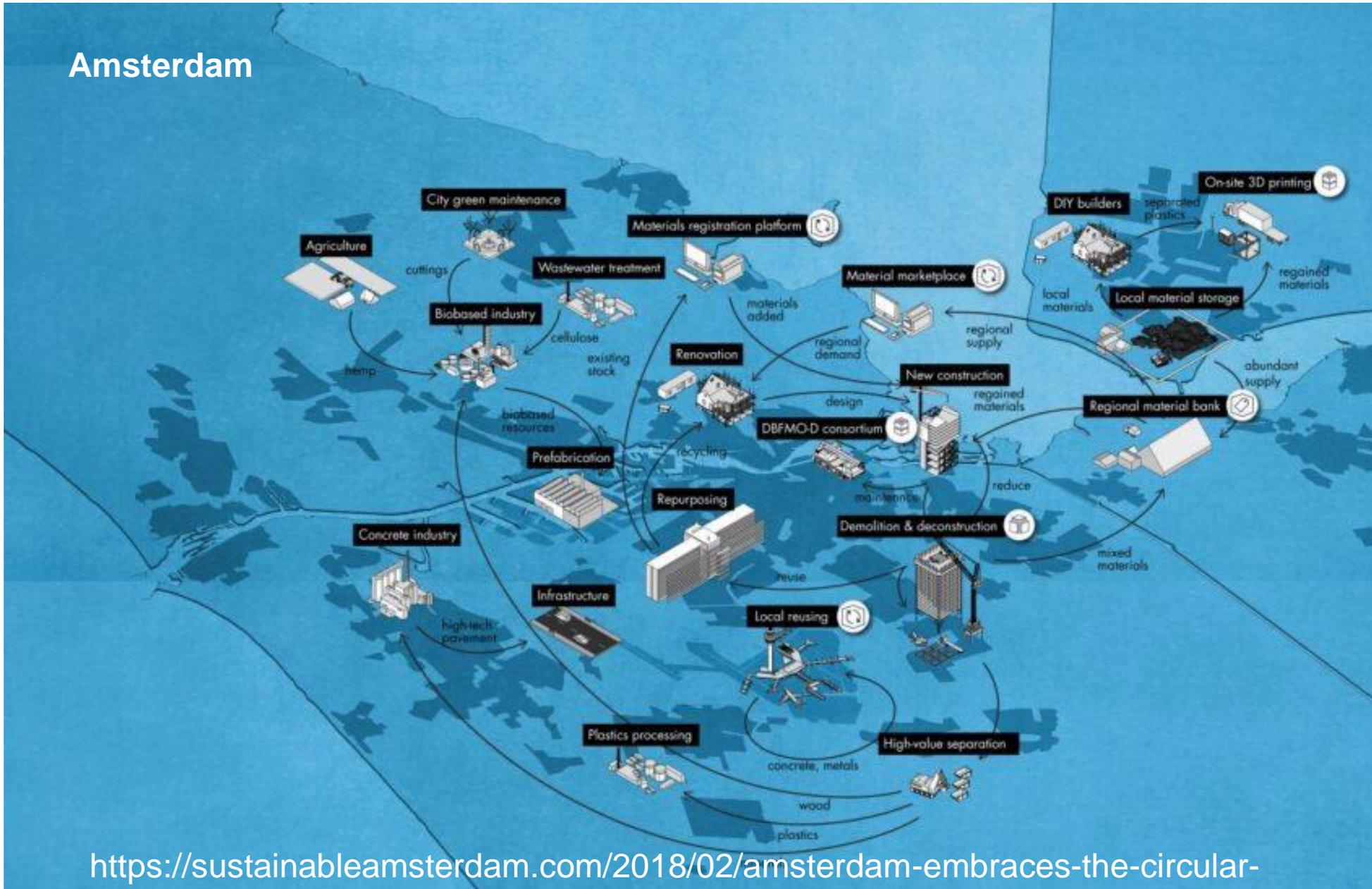


*Expanded temporal and spatial energy boundaries in design.*

# ECONOMIA CIRCULAR



## Amsterdam



<https://sustainableamsterdam.com/2018/02/amsterdam-embraces-the-circular-economy/>

## Principios para construir, proliferar e interconectar ciudades:

- La ciudad está compuesta por partes estandarizadas organizadas en una matriz
- La ciudad se organiza por principios generales determinados social, cultural y políticamente
- La ciudad es un sistema de flujos cambiantes que interactúan en un modelo genérico
- La ciudad se adapta a condiciones topológicas, climáticas y culturales locales

### BUILDINGS



**THE BASILICA** is a flexible building used for gatherings and commercial transactions. It is commonly located adjacent to the forum, and it is intended to house market activities during inclement weather. Due to its flexibility, the basilica is easily appropriated by Christians for their liturgical needs.



**THE CAPITOLIUM** is the temple of state religion. Dedicated to the Capitoline Triad (Jupiter, Juno, and Minerva), the capitolium is easily identified by its tripartite plan, in which each cella houses a cult statue. Only cities swearing an allegiance to Rome have a capitolium, and therefore, it is an indicator of Romanness.



**TEMPLA** are religious buildings dedicated to the veneration of gods, the Imperial family, and native cults. The templum is the official "residence" of a god or emperor within a particular city and therefore has no interior function other than the display of statuary and ritual sacrifice. The Roman templum is "usually in the middle of the city, integrated into the center of religious, political, and economic life."



**THE THEATRUM** is a building dictated by an Imperial edict which requires games in honor of the Capitoline Triad. The theatrum is used for the presentation of games and performances, although not comedies and pantomime acts, which are reserved for the amphitheater.



**THERMAE** are baths. They provide an important public service to the city (hygiene) as well as an important space for socializing, political brokering and business transactions.

### MONUMENTS



**THE ARCUS** is a monument used to commemorate a military or legislative victory. Arches are usually located in prominent locations in the city, such as flanking the capitolium at the head of the forum (as in Pompeii) or at the intersection of the cardo and decumanus (as in Jerash).



**THE COLUMN** has a similar function to that of the arch, as it is primarily used for commemorative purposes in a prominent urban location.

### PLANNING



**CARDO ET DECUMANUS** are the primary perpendicular axes which define the geographical and spiritual center of the city. *Cardo* is the Latin word for "hinge," which indicates its cosmological significance as "the ideal line on which the sky seem(s) to swing." The rite of establishing the *cardo* and *decumanus* is performed by a magistrate who determines the center of the new city according to solar orientation.



**CENTURIATIO** is the process of "gridding" for agricultural purposes and establishes an inseparable connection between the city and its surrounding landscape.



**THE FORUM** is a centrally located outdoor space intended for the exchange of goods and services, as well as the main public social space in the city. Many of the main public buildings (particularly the capitolium, basilica and templa) are directly adjacent to the forum, thereby establishing a close relationship between commerce and governance.

### INFRASTRUCTURE



**AQUAE DUCTUS** is the infrastructure system used for the transport and distribution of water.



**LIMITES** are the system of edges. They can be walls (as in the case of Britain and parts of Northern Europe), or ditches (as in the case of Germany). *Limites* may be intended as a fortification for the exclusion of barbarian invaders, although it is more common for edges to serve as regulators of trade, controlling the flow of goods entering, or leaving, the Empire. On the scale of the city, Roman walls also serve as containers, thereby establishing an interiorized urban condition.



**VIAE** form the network of stone-paved roads which connect all the cities of the Empire to one another. *Viae* are between 4-6m wide and allow for large-scale trading activity. Similarly, *viae* allow for the efficient (and regulated) flow of commercial products, slaves, animals, and mail.

### TRADE/SERVICES

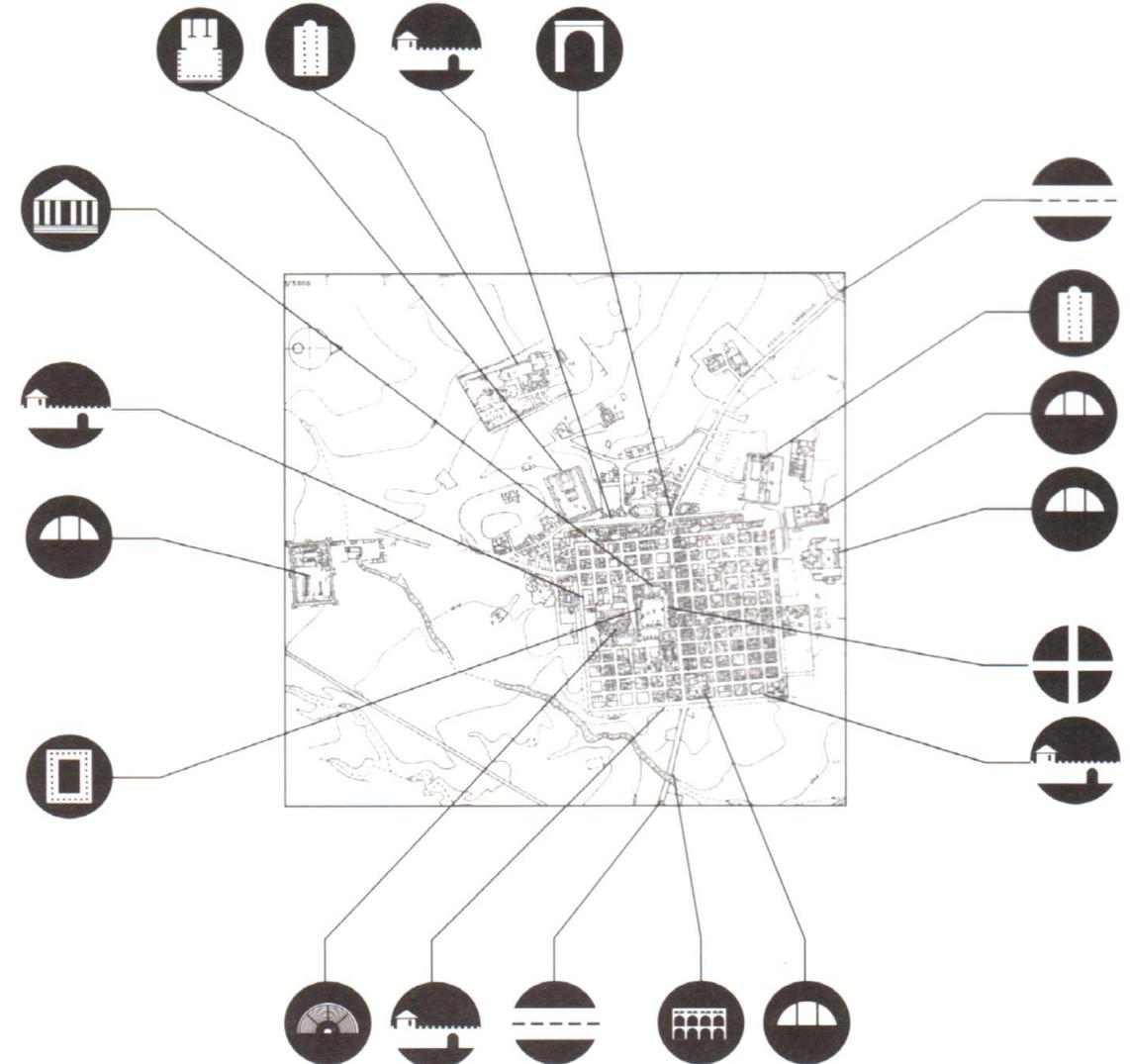
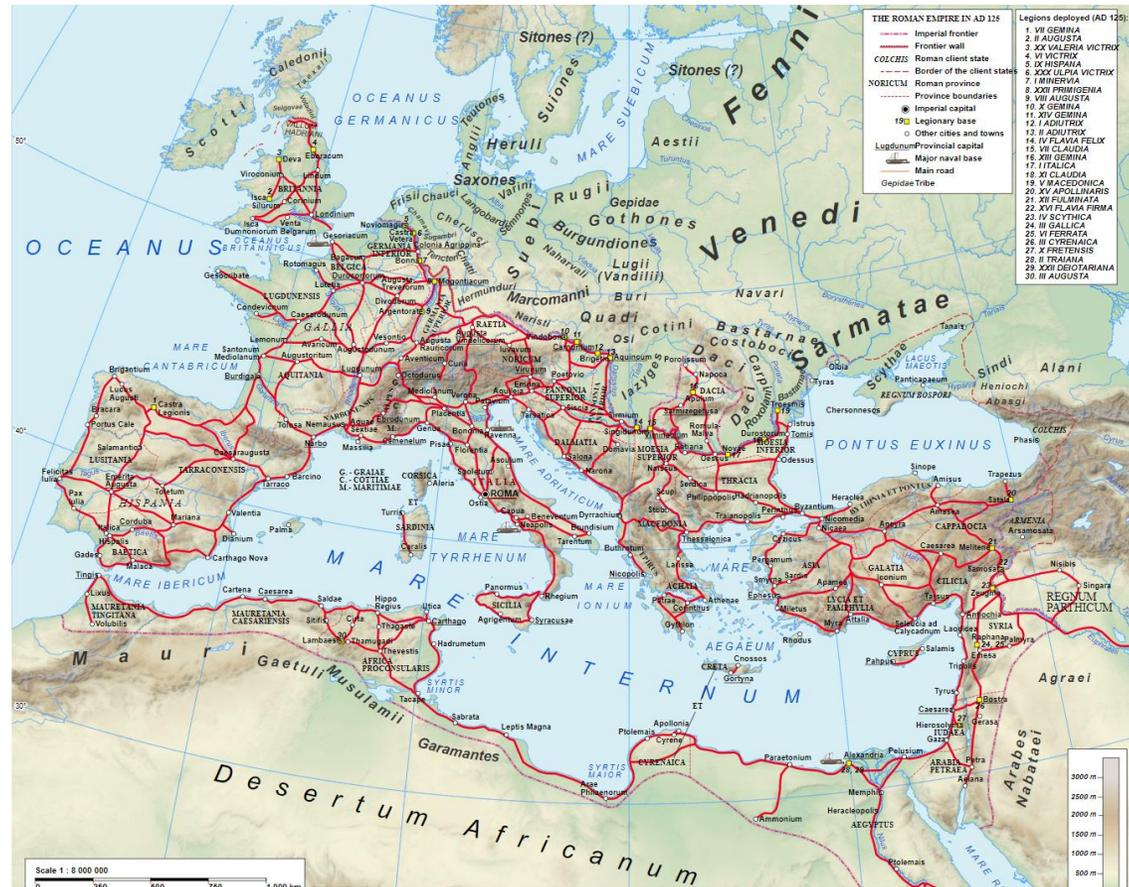


**TRADE** is a defining characteristic of the city. Commercial goods which might influence the development of the city include amphorae, animalia, argentus, aurum, marmor, materia, oliva oleum, piscis, garum, triticum, and vinum.

# SISTEMA OPERATIVO ROMANO

## Procesos para expandir un imperio

- Definir principios generales de operación
- Instalar el programa en una nueva ciudad
- Ejecutar el programa en la ciudad
- Reproducir las ciudades
- Interconectar las ciudades



# DESIGN REMIX SHAPE REPEAT

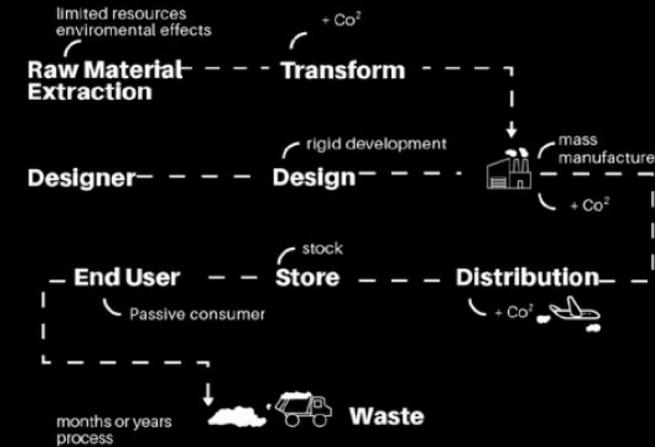
## BEFORE

Product In -  
Trash Out



## LINEAR

Centralised -  
Siloed



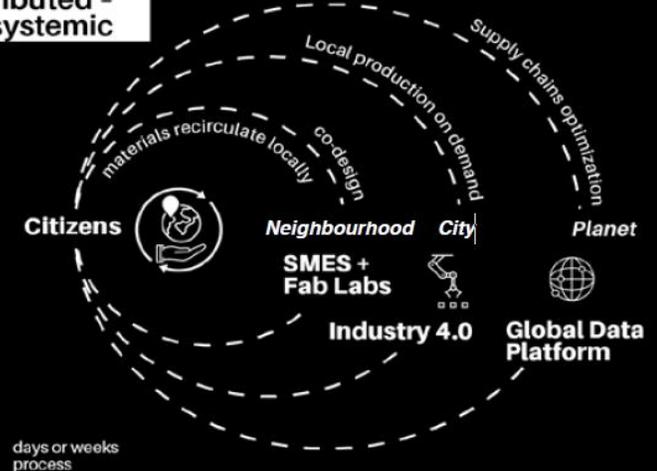
VS

## IDEAL

Data in -  
Data Out



Distributed -  
Ecosystemic



How distributed design is changing the way makers and designers approach collaboration, tools and the market.

## Diseño Sistémico:

- Es un proceso creativo que involucra la producción de objetos que establecen relaciones económicas, ecológicas o culturales con un contexto determinado
- ¿Qué propongo diseñar? ¿Con qué o quiénes interactúa mi propuesta? ¿En qué espacio material o abstracto se desarrolla esta interacción?

## Diseño Multidimensional:

- Es el diseño de interacciones a escala de objeto, comunidad, territorio, ecosistema, país y planeta.
- Es el diseño de una secuencia de actividades en el tiempo
- Es el diseño de sistemas de valor: económicos, culturales y/o ecosistémicos
- Genera sinergias y comportamientos emergentes que aportan más valor que la suma de sus partes



¿A?  ¿Z?

Buena pregunta  
Innovación en Contexto



**Conflicto**

Exceso



Carencia

