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Integration of territorial resources in strategic design of sustainable product-service systems for the circular economy

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Introduction to researcher

Integration of territorial resources in strategic design of sustainable product-service systems for the circular economy

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EDUCATION

- 2018 - 2021 (planned): PhD in Design for Sustainability - Université de Technologie de Troyes, France. My research is part of the innovative training network "CRESTING" (http://cresting.hull.ac.uk)
- 2014 - 2017: Master of Science in Sustainable Resource Management - Technical University of Munich, Germany
- 2006 - 2011 Industrial Design Degree - University of Guadalajara, Mexico

PROFESSIONAL EXPERIENCE

- 2017 - 2018: Internship in Environmental, Social and Governance (ESG) Services Allianz Global and Corporate & Specialty, Munich, Germany
- 2013 - 2014: Industrial Designer - Plug Design, Guadalajara, Mexico
- 2011 - 2014: Industrial Designer - Pounce Consulting, Research and Development, Guadalajara, Mexico

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Objective for companies

- Identify their current value creation network (tangible and intangible), sustainability issues and potential value opportunities.

  Conceptualise new sustainable and circular offerings.

Objective for us

- Testing a new design approach for sustainable service-product systems

Advantages for companies

- Reflection on the company's current value creation activities.
- Development of new sustainable and circular concepts.
- Basis for communication of sustainability efforts and performance.

Why is this research interesting for your company?

- The circular economy as a source of differentiation.
  How can your current offering be leveraged by sustainable product-service system strategies?
- Increase your R&D capabilities.
  How can you actively design solutions with key partners and stakeholders?
- Think of ways to collaborate with key actors in the territory.
  How can you actively design solutions that involve local actors?
- Develop concepts for specific territories and industries.
- Promotion of your company in our project website news and social media.

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Data protection

- EU-funded research must in all circumstances comply with EU law.
- NDA; data will be anonymised; personal data will be deleted.
- Anonymised data with written permission will be stored in an encrypted UTTs repository.

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Research phases

1

Understand

Objective
understand your current offering, value creation and design process.

Time requirements
1h per interview

Activities
1-3 Individual interviews
with key actors in your company

2

Explore and conceptualise

Objective
Conceptualisation of sustainable product-service system offering for sustainability.

Time requirements
3 Workshops (2h c/u)
or 2 Workshops (3h c/u)

Activities
2-3 Workshops with key actors in your company

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Explore and conceptualise

Workshop phases

1. Analysis of current system

2. Setting a vison

3. Develop ideas

4. Conceptualise and evaluate

Type of sessions:
The workshop has been adapted to be held in a online participatory platform with the Miro tool.

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1. Analysis of current system

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1.1 Identifying key actors, levels and trends

Creating an overview of current stakeholders

Activity

The first activity aims to get insights into your current stakeholders from a company, value chain, socio-technical system and territorial levels. The actors levels mapping tool is used to identify actors in the ecosystem that you operate and the mega trends positively and negatively affecting the ecosystem.

Results

- A list of key stakeholders affecting the ecosystem
- Shared understanding of the key internal company, value chain, socio-technical and territorial actors in the current system
- Identification of mega-trends affecting your companies activities
- Main stakeholders to be included in the next activity

Participants

group of participants representing different parts of the company.

1. Analysis of current system

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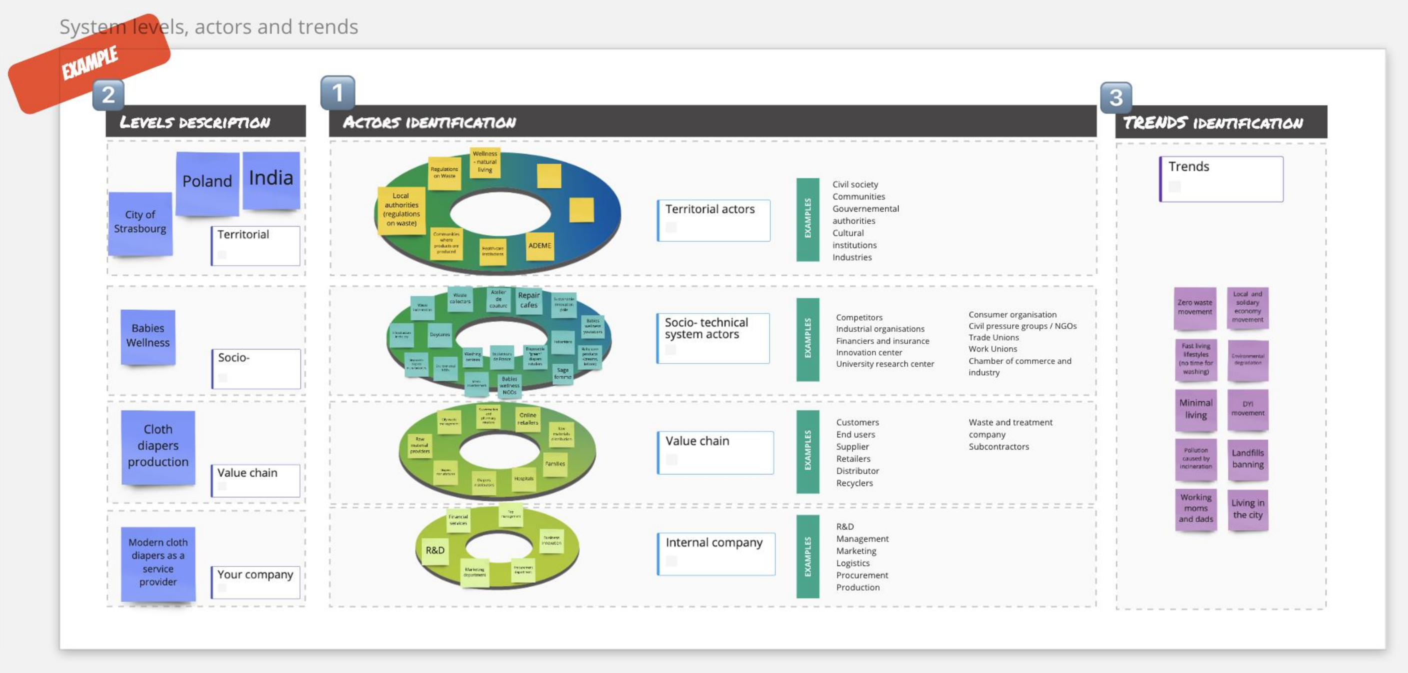
1.1 Identifying key actors, levels and trends

Creating an overview of current stakeholders



System levels, actors and trends

EXAMPLE

2 LEVELS DESCRIPTION

1 ACTORS IDENTIFICATION

3 TRENDS IDENTIFICATION

City of Strasbourg
Poland
India
Territorial
Babies Wellness
Socio-
Cloth diapers production
Value chain
Modern cloth diapers as a service provider
Your company
Wellness - natural living
Regulations on Waste
Local authorities (regulations on waste)
ADEME
Waste collectors
Atelier de couture
Repair cafes
Daycares
Sage femme
Babies wellness NGOs
Online retailers
Families
Hospitals
R&D
Trends
Zero waste movement
Local and solidary economy movement
Fast living lifestyles (no time for washing)
Environmental degradation
Minimal living
DYI movement
Pollution caused by incineration
Landfills banning
Working moms and dads
Living in the city

Territorial actors

EXAMPLES

Civil society
Communities
Gouvernemental authorities
Cultural institutions
Industries

Socio- technical system actors

EXAMPLES

Competitors
Industrial organisations
Financiers and insurance
Innovation center
University research center

Consumer organisation
Civil pressure groups / NGOs
Trade Unions
Work Unions
Chamber of commerce and industry

Value chain

EXAMPLES

Customers
End users
Supplier
Retailers
Distributor
Recyclers

Waste and treatment company
Subcontractors

Internal company

EXAMPLES

R&D
Management
Marketing
Logistics
Procurement
Production

1. Analysis of current system

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1.2 Stakeholder ecosystem mapping

Creating an overview of stakeholders relations and sustainability issues

Activity

The second activity aims to get insights on the relations between stakeholders and the sustainability issues within the current ecosystem.

Results

- Shared understanding of the current company ecosystem, stakeholders and relations
- Insights into the connections that positively and negatively impact the sustainability of your company's offering
- Stakeholders to be included in the next activity

Participants

group of participants representing different parts of the company.

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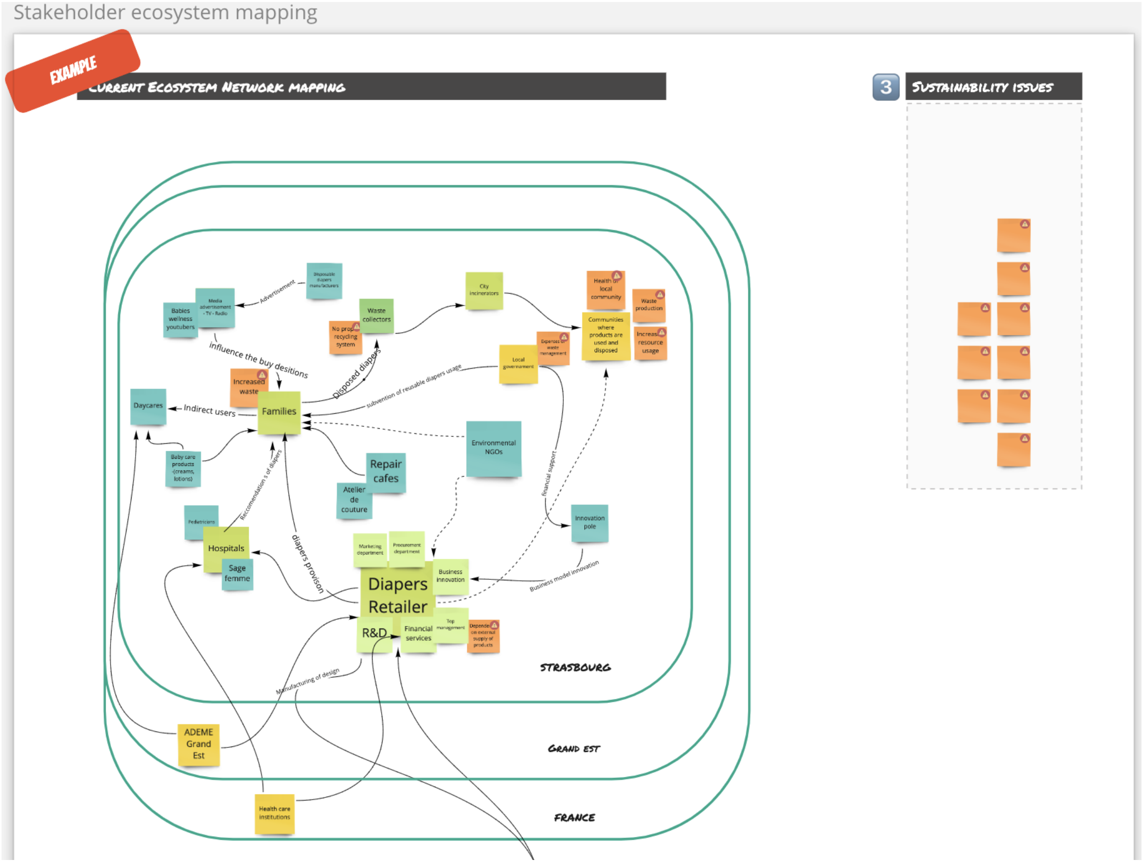
1. Analysis of current system

1.2 Stakeholder ecosystem mapping

Creating an overview of stakeholders relations and sustainability issues


Stakeholder ecosystem mapping
EXAMPLE
Current Ecosystem Network Mapping
3
Sustainability issues
Disposable diapers manufacturers
Advertisement
Media advertisement - TV - Radio
Babies wellness youtubers
influence the buy desitions
Waste collectors
No prop recycling system
City incinerators
Health o local community
Waste production
Communities where products are used and disposed
Increas resource usage
Expenses o waste management
Local governement
Increased waste
Disposed diapers
subvention of reusable diapers usage
Daycares
Indirect users
Families
Environmental NGOs
Baby care products -(creams, lotions)
Repair cafes
Atelier de couture
Reccomendation s of diapers
financial support
Innovation pole
Pediatricians
Hospitals
Sage femme
diapers provison
Marketing department
Procurement department
Business innovation
Business model innovation
Diapers Retailer
R&D
Financial services
Top management
Depende on external supply of products
Manufacturing of design
STRASBOURG
GRAND EST
ADEME Grand Est
Health care institutions
FRANCE

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1. Analysis of current system

1.3 Stakeholder value mapping

Understand in which ways a sustainable PSS could generate value benefits for stakeholders

Activity

The third activity you gain insights on how a sustainable product-service System offering can be attractive for stakeholders. In this activity, you also explore tangible and intangible values for stakeholders, value network and the territory. With this activity you will be able to understand if your interests and those from the stakeholders are aligned.

Results

- Understanding of current value captured, value destroyed and value opportunities for the different stakeholders
- The understanding of value in a stakeholder, value network and territorial perspectives

Participants

group of participants representing different parts of the company.

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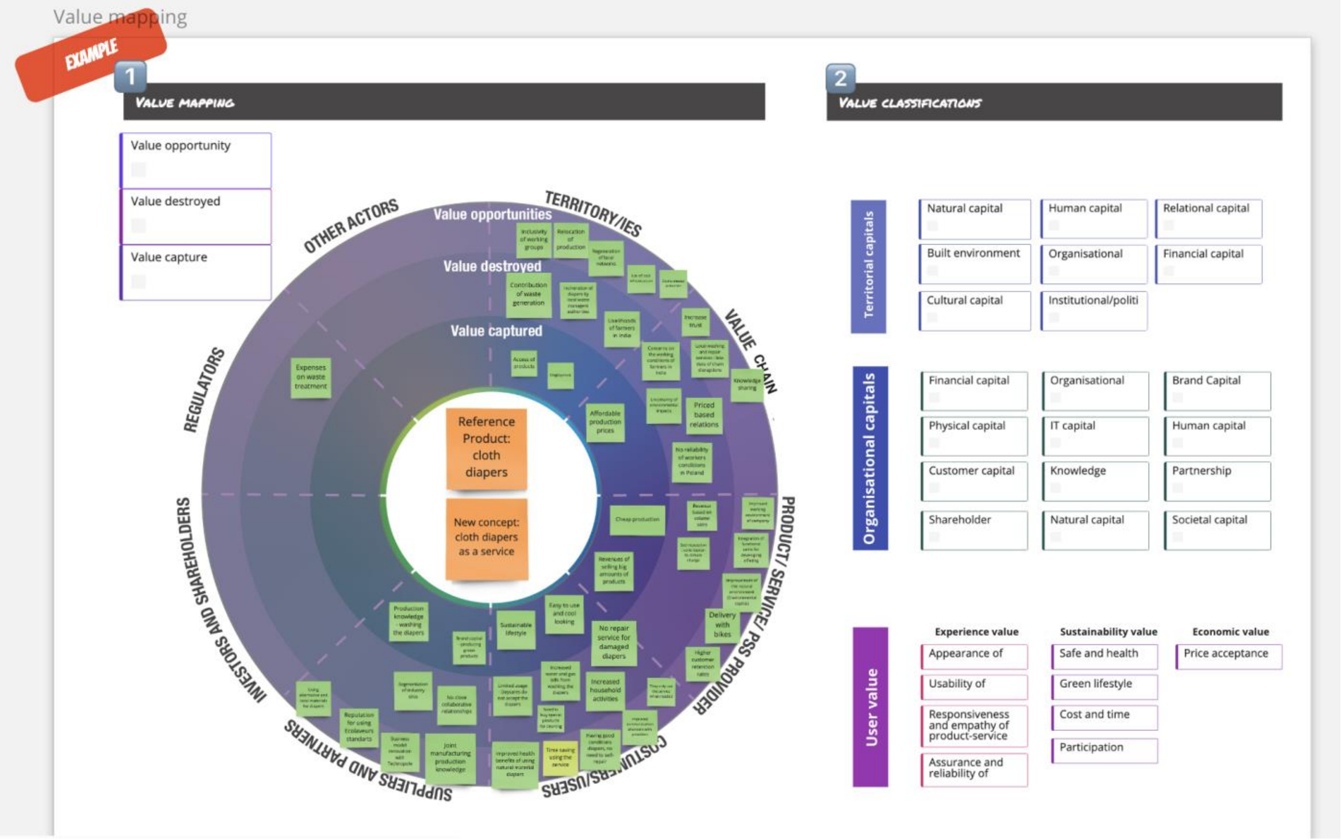
1. Analysis of current system

1.3 Stakeholder value mapping

Understand in which ways a sustainable PSS could generate value benefits for stakeholders


Value mapping
EXAMPLE
1
VALUE MAPPING
Value opportunity
Value destroyed
Value capture
OTHER ACTORS
TERRITORY/IES
VALUE CHAIN
PRODUCT/ SERVICE/ PSS PROVIDER
COSTUMERS/USERS
SUPPLIERS AND PARTNERS
INVESTORS AND SHAREHOLDERS
REGULATORS
Value opportunities
Value destroyed
Value captured
Reference Product: cloth diapers
New concept: cloth diapers as a service
Inclusivity of working groups
Relocation of production
Contribution of waste generation
Livelihoods of farmers in India
Increase trust
Knowledge sharing
Expenses on waste treatment
Access of products
Affordable production prices
Priced based relations
No reliability of workers conditions in Poland
Cheap production
Revenues of selling big amounts of products
Delivery with bikes
Higher customer retention rates
Easy to use and cool looking
Sustainable lifestyle
No repair service for damaged diapers
Production knowledge - washing the diapers
Increased household activities
No close collaborative relationships
Reputation for using Ecolaveurs standarts
Joint manufacturing production knowledge
Improved health benefits of using natural material diapers
Time saving using the service
2
VALUE CLASSIFICATIONS
Territorial capitals
Natural capital
Human capital
Relational capital
Built environment
Organisational
Financial capital
Cultural capital
Institutional/politi
Organisational capitals
Financial capital
Organisational
Brand Capital
Physical capital
IT capital
Human capital
Customer capital
Knowledge
Partnership
Shareholder
Natural capital
Societal capital
User value
Experience value
Sustainability value
Economic value
Appearance of
Safe and health
Price acceptance
Usability of
Green lifestyle
Responsiveness and empathy of product-service
Cost and time
Participation
Assurance and reliability of

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2. Set a vison and develop ideas

2.1 Setting a vision

Select a type of sustainability innovation level that fits the strategic objectives of your company

Activity

This activity consist on discussing the PSS sustainability innovation that suits the company’s strategic objectives. In this perspective, the company ponders between a single company, customer-codesign, value network, socio-technical or territorial approach, for defining a PSS design objective.

Results

- Selection of a PSS sustainability objective.

Participants

group of participants representing different parts of the company.

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2. Set a vison and develop ideas

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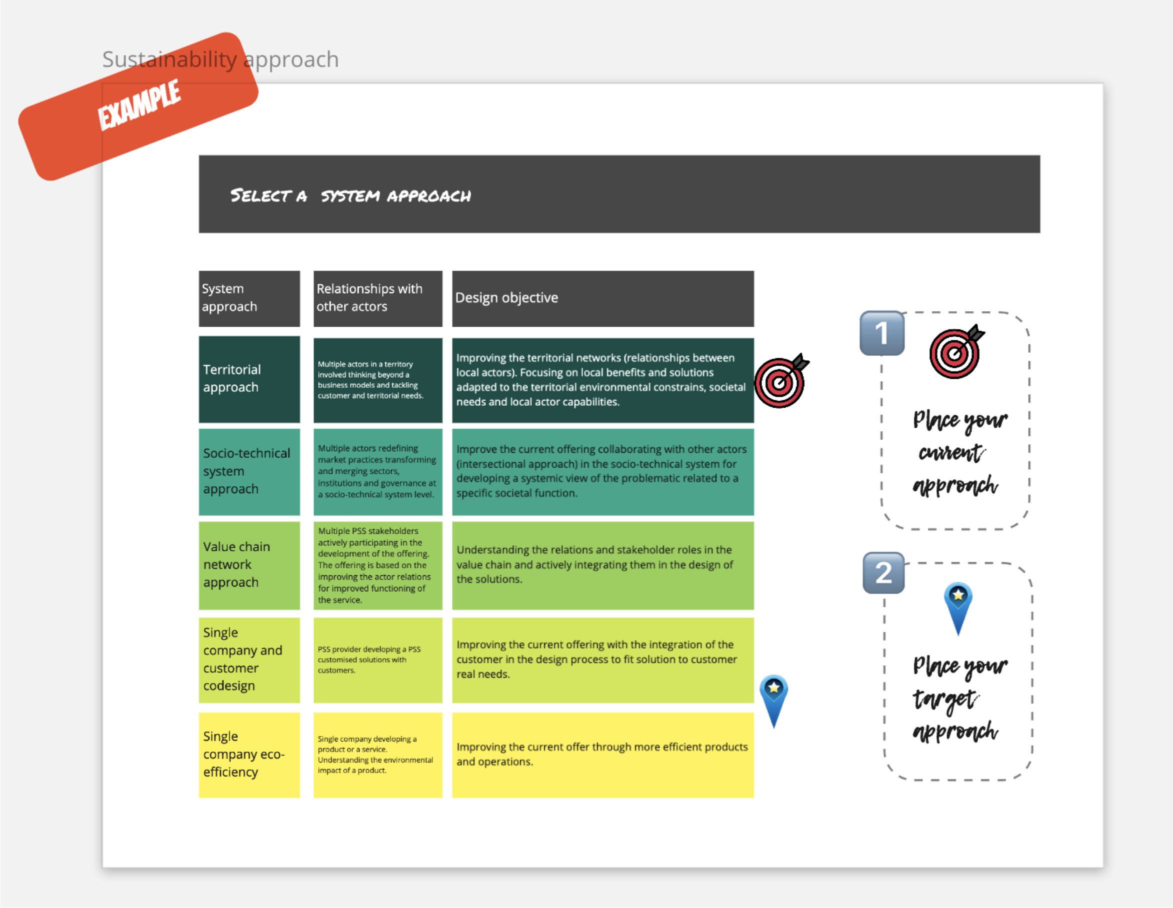
2.1 Setting a vision

Select a type of sustainability innovation level that fits the strategic objectives of your company



SELECT A SYSTEM APPROACH

System approach	Relationships with other actors	Design objective
Territorial approach	Multiple actors in a territory involved thinking beyond a business models and tackling customer and territorial needs.	Improving the territorial networks (relationships between local actors). Focusing on local benefits and solutions adapted to the territorial environmental constrains, societal needs and local actor capabilities.
Socio-technical system approach	Multiple actors redefining market practices transforming and merging sectors, institutions and governance at a socio-technical system level.	Improve the current offering collaborating with other actors (intersectional approach) in the socio-technical system for developing a systemic view of the problematic related to a specific societal function.
Value chain network approach	Multiple PSS stakeholders actively participating in the development of the offering. The offering is based on the improving the actor relations for improved functioning of the service.	Understanding the relations and stakeholder roles in the value chain and actively integrating them in the design of the solutions.
Single company and customer codesign	PSS provider developing a PSS customised solutions with customers.	Improving the current offering with the integration of the customer in the design process to fit solution to customer real needs.
Single company eco-efficiency	Single company developing a product or a service. Understanding the environmental impact of a product.	Improving the current offer through more efficient products and operations.

2. Set a vison and develop ideas

Integration of territorial resources in strategic design of sustainable product-service systems for the circular economy

2.2 Develop ideas

Define a unit of satisfaction of the system and explore ideas for the new PSS offering

Activity

This activity consist on defining a units of satisfaction of the system to be designed. After the unit of satisfaction is defined, the key value opportunities are matched with different innovation ideas for the new offering at a product, business model, territorial, and organisational innovation levels. Following the ideation, ideas are polarized in order to be prioritised.

Results

- A unit of satisfaction defined
- New innovation ideas clustered and prioritised
- Ideas for the concept design

Participants

group of participants representing different parts of the company.

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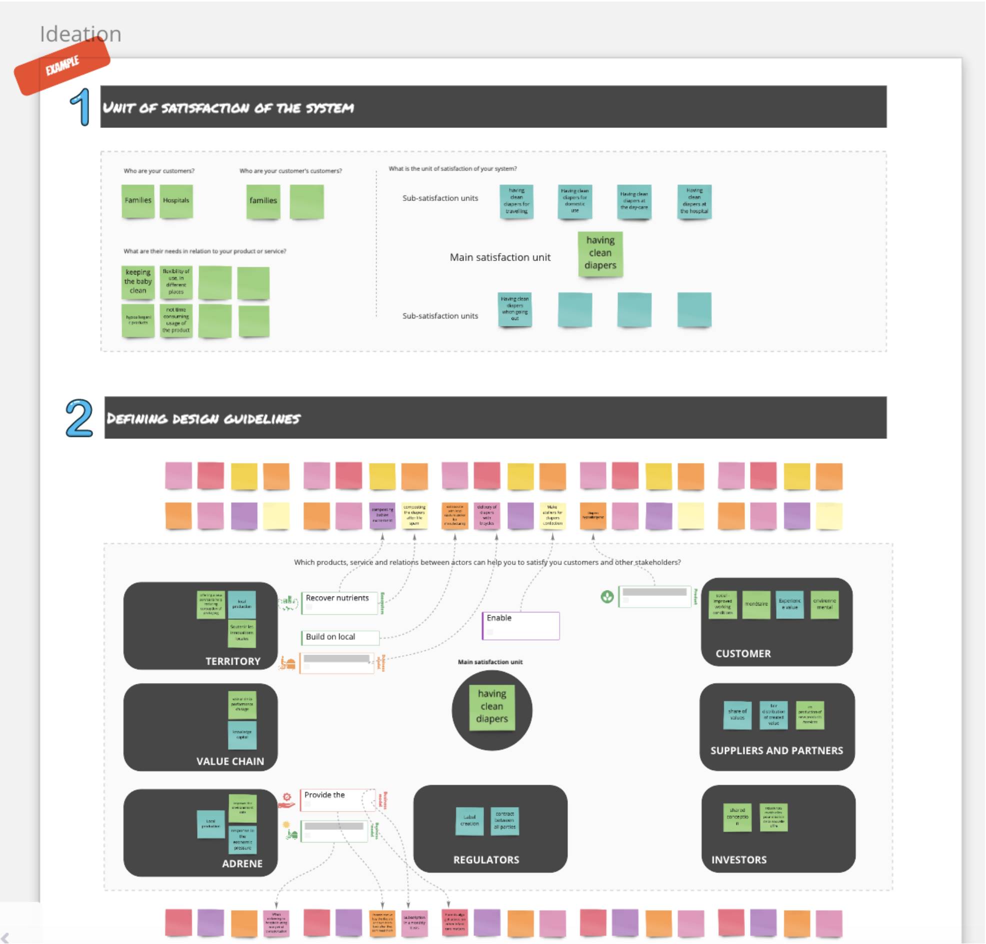
2. Set a vison and develop ideas

2.2 Develop ideas

Define a unit of satisfaction of the system and explore ideas for the new PSS offering



Ideation

EXAMPLE

1 UNIT OF SATISFACTION OF THE SYSTEM

Who are your customers?
- Families
- Hospitals

Who are your customer's customers?
- families

What are their needs in relation to your product or service?
- keeping the baby clean
- flexibility of use, in different places
- hypoallergenic products
- not time consuming usage of the product

What is the unit of satisfaction of your system?

Sub-satisfaction units: having clean diapers for travelling; Having clean diapers for domestic use; Having clean diapers at the day-care; Having clean diapers at the hospital

Main satisfaction unit: having clean diapers

Sub-satisfaction units: Having clean diapers when going out

2 DEFINING DESIGN GUIDELINES

Which products, service and relations between actors can help you to satisfy you customers and other stakeholders?

TERRITORY: local production; Soutenir les innovations locales

Recover nutrients

Build on local

Enable

Main satisfaction unit: having clean diapers

CUSTOMER: social - improved working conditions; monétaire; Experience value; environmental

VALUE CHAIN: knowledge capital

SUPPLIERS AND PARTNERS: share of values; fair distribution of created value

ADRENE: Local production; response to the economic pressure

Provide the

REGULATORS: Label creation; contract between all parties

INVESTORS: shared conception

Subscription in a monthly basis

3. Conceptualise and evaluate

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3.1 Conceptualise and evaluate

Ideas are transformed into concepts

Activity

This activity consist on choosing some of the ideas identified on the previous activity to be merged into a sustainable PSS concept. The concept is defined by a simplified business model canvas, a functions diagram and an actor network map.

Results

- A simplified business model canvas
- A functions diagram
- A PSS offering actor network

Participants

group of participants representing different parts of the company.

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3. Conceptualise and evaluate

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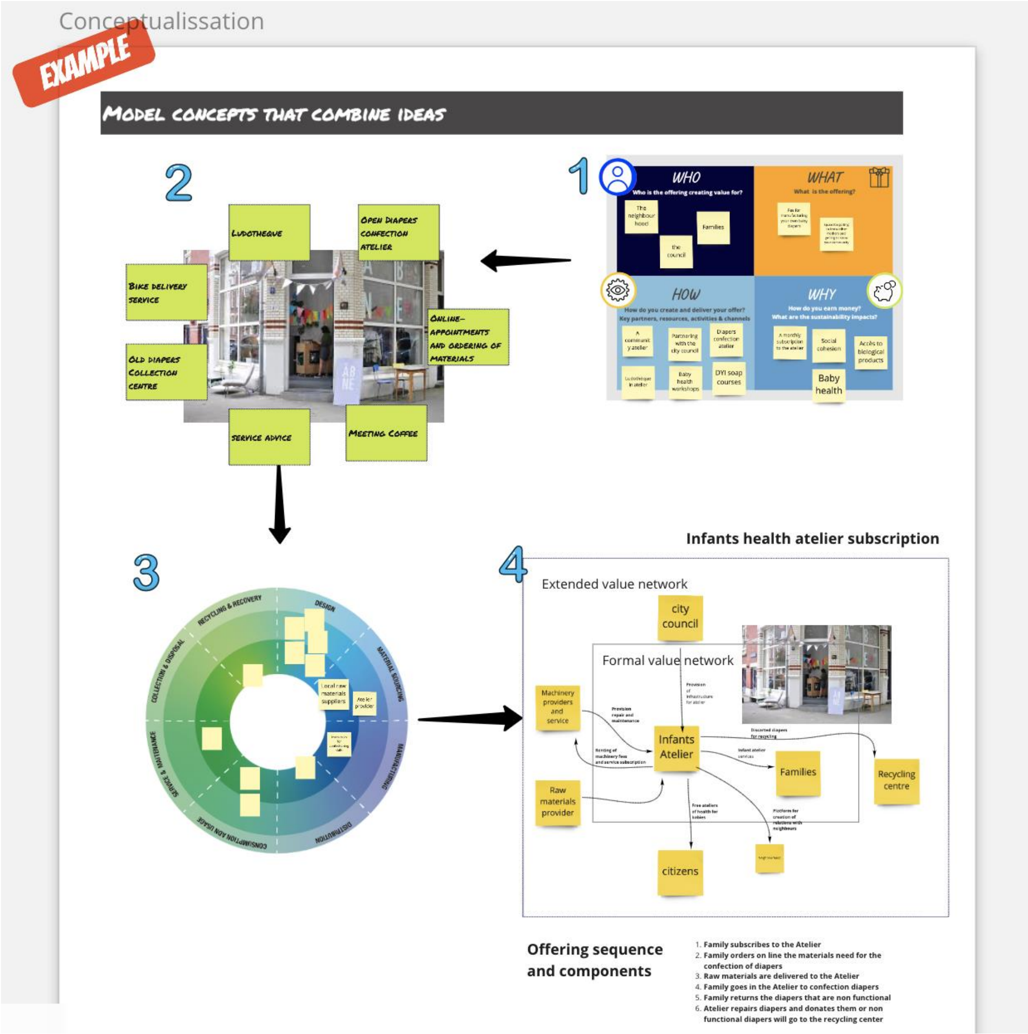
Ideas are transformed into concepts


Conceptualissation
EXAMPLE
Model concepts that combine ideas
1
WHO
Who is the offering creating value for?
The neighbourhood
Families
the council
WHAT
What is the offering?
HOW
How do you create and deliver your offer?
Key partners, resources, activities & channels
A community atelier
Partnering with the city council
Diapers confection atelier
Ludothèque in atelier
Baby health workshops
DYI soap courses
WHY
How do you earn money?
What are the sustainability impacts?
A monthly subscription to the atelier
Social cohesion
Accès to biological products
Baby health
2
Ludotheque
Open diapers confection atelier
Bike delivery service
Old diapers collection centre
Online-appointments and ordering of materials
Service advice
Meeting Coffee
3
RECYCLING & RECOVERY
DESIGN
MATERIAL SOURCING
MANUFACTURING
DISTRIBUTION
CONSUMPTION ADN USAGE
SERVICE & MAITENANCE
COLLECTION & DISPOSAL
Local raw materials suppliers
Atelier provider
4
Infants health atelier subscription
Extended value network
city council
Formal value network
Machinery providers and service
Provision repair and maintenance
Provision of infrastructure for atelier
Infants Atelier
Renting of machinery fees and service subscription
Raw materials provider
Discarted diapers for recycling
Infant atelier services
Families
Recycling centre
Free ateliers of health for babies
Platform for creation of relations with neighbours
citizens

Offering sequence and components

1. Family subscribes to the Atelier
2. Family orders on line the materials need for the confection of diapers
3. Raw materials are delivered to the Atelier
4. Family goes in the Atelier to confection diapers
5. Family returns the diapers that are non functional
6. Atelier repairs diapers and donates them or non functional diapers will go to the recycling center

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3. Conceptualise and evaluate

3.2 Conceptualise and evaluate

Concepts are evaluated according to their value creation benefits for different actors

Activity

The concept developed on the previous activity is evaluated according to a value criteria considering important stakeholders. The concept can be compared to the current offering of the company and with other concepts.

Results

- An evaluation of the concept/s developed
- The value criteria can be used to negotiate and discuss the value potentials of the offering with different departments of the company and stakeholders
- The results of the evaluation and the concept can be used as a basis for a value benefits narrative of the concept

Participants

group of participants representing different parts of the company.

3. Conceptualise and evaluate

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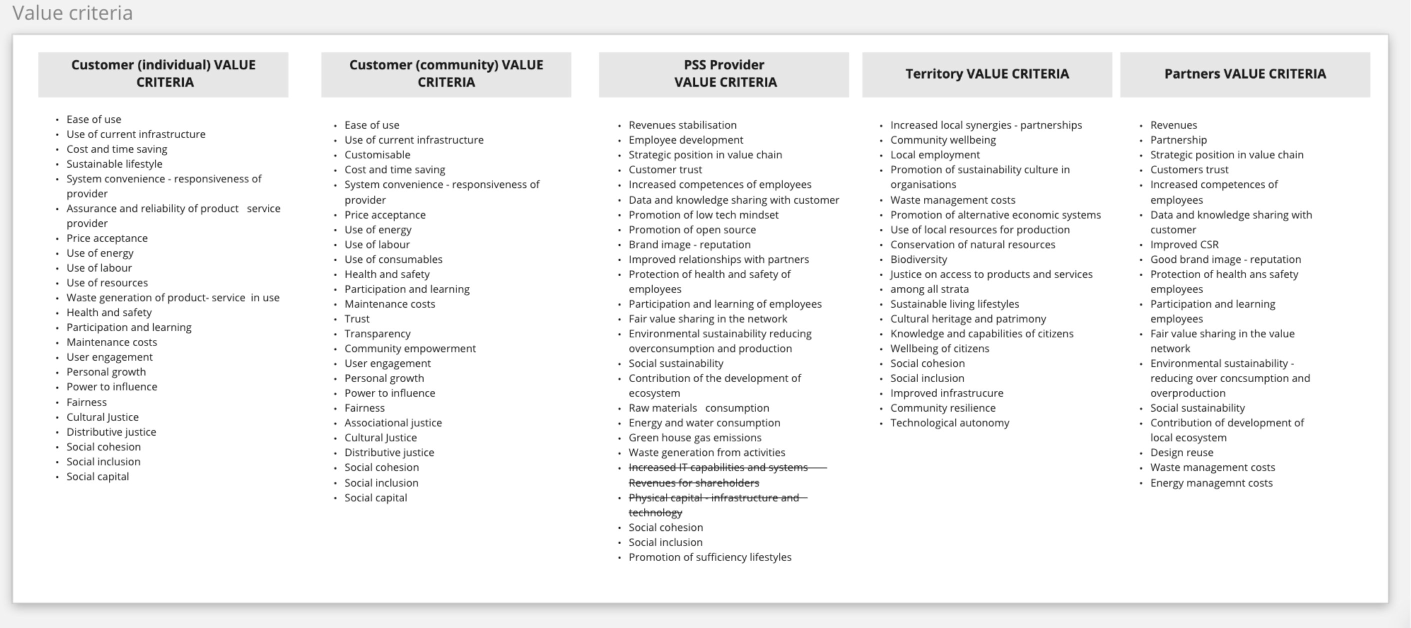
3.2 Conceptualise and evaluate

Concepts are evaluated according to their value creation benefits for different actors



Value criteria

Customer (individual) VALUE CRITERIA

- Ease of use
- Use of current infrastructure
- Cost and time saving
- Sustainable lifestyle
- System convenience - responsiveness of provider
- Assurance and reliability of product service provider
- Price acceptance
- Use of energy
- Use of labour
- Use of resources
- Waste generation of product- service in use
- Health and safety
- Participation and learning
- Maintenance costs
- User engagement
- Personal growth
- Power to influence
- Fairness
- Cultural Justice
- Distributive justice
- Social cohesion
- Social inclusion
- Social capital

Customer (community) VALUE CRITERIA

- Ease of use
- Use of current infrastructure
- Customisable
- Cost and time saving
- System convenience - responsiveness of provider
- Price acceptance
- Use of energy
- Use of labour
- Use of consumables
- Health and safety
- Participation and learning
- Maintenance costs
- Trust
- Transparency
- Community empowerment
- User engagement
- Personal growth
- Power to influence
- Fairness
- Associational justice
- Cultural Justice
- Distributive justice
- Social cohesion
- Social inclusion
- Social capital

PSS Provider VALUE CRITERIA

- Revenues stabilisation
- Employee development
- Strategic position in value chain
- Customer trust
- Increased competences of employees
- Data and knowledge sharing with customer
- Promotion of low tech mindset
- Promotion of open source
- Brand image - reputation
- Improved relationships with partners
- Protection of health and safety of employees
- Participation and learning of employees
- Fair value sharing in the network
- Environmental sustainability reducing overconsumption and production
- Social sustainability
- Contribution of the development of ecosystem
- Raw materials consumption
- Energy and water consumption
- Green house gas emissions
- Waste generation from activities
- ~~Increased IT capabilities and systems Revenues for shareholders~~
- ~~Physical capital - infrastructure and technology~~
- Social cohesion
- Social inclusion
- Promotion of sufficiency lifestyles

Territory VALUE CRITERIA

- Increased local synergies - partnerships
- Community wellbeing
- Local employment
- Promotion of sustainability culture in organisations
- Waste management costs
- Promotion of alternative economic systems
- Use of local resources for production
- Conservation of natural resources
- Biodiversity
- Justice on access to products and services
- among all strata
- Sustainable living lifestyles
- Cultural heritage and patrimony
- Knowledge and capabilities of citizens
- Wellbeing of citizens
- Social cohesion
- Social inclusion
- Improved infrastrucure
- Community resilience
- Technological autonomy

Partners VALUE CRITERIA

- Revenues
- Partnership
- Strategic position in value chain
- Customers trust
- Increased competences of employees
- Data and knowledge sharing with customer
- Improved CSR
- Good brand image - reputation
- Protection of health ans safety employees
- Participation and learning employees
- Fair value sharing in the value network
- Environmental sustainability - reducing over concsumption and overproduction
- Social sustainability
- Contribution of development of local ecosystem
- Design reuse
- Waste management costs
- Energy managemnt costs

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Thank you for your attention

We are looking forward to collaborate with you!

Best regards from France.

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