Faculty of Design

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Designing products and services for challenging societal contexts

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Designing products and services

for Challenging Societal Contexts.

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Challenging societal contexts | From perspective of products and services

Multi-stakeholder environment
- Partnership between governments, companies, NGO and end users
- Passive participation of end user

Complexity and ambiguity
- Variety of interests within stakeholders network
- Higher than in traditional businesses

Lack of regulations and policies

Low-resource settings
- Poor financial and infrastructural resources
- Dependency in subsidies and donors
- Informal economy
- Adoption of unconventional tasks (product distribution and servicing)

Technology incompatibility

Product Service System | The Concept

The PSS concept consists of a ***system of products, services, supporting networks and infrastructure, closely involving final consumers and stakeholders in the value chain and beyond***, which is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models (Mont, 2002).

Mont, O. (2002) Clarifying the concept of Product-Service System. Journal of Cleaner Production, 10(3), 237-245

Product Service System | System thinking

PSS offers design strategies based on ***systemic knowledge*** that promote innovation and social, environmental and economic ***sustainability***.

System Design
Systemic knowledge

PSS
Strategies

Sustainability
Innovation

Oslo City Bike | Oslo Bysykkel

About the course | PSS for Complex Societal Contexts

7 weeks, 7 workshops, 7 steps of the PSS design process

Introductory lecture
Inspiring lecture
Hands-on workshop

2 clients, 2 assignements

Humanitarian-PSS: Médecins Sans Frontières (MSF)
Develop a groundbreaking solution for the autoclave business model and a solution that allows the monitoring of medicines throughout the whole supply chain

Energy-PSS: Accord Illumination and Partners (SENAI and NDS/UFPR)
Develop an innovative and sustainable lighting Product Service System for Brazilian urban low-income household

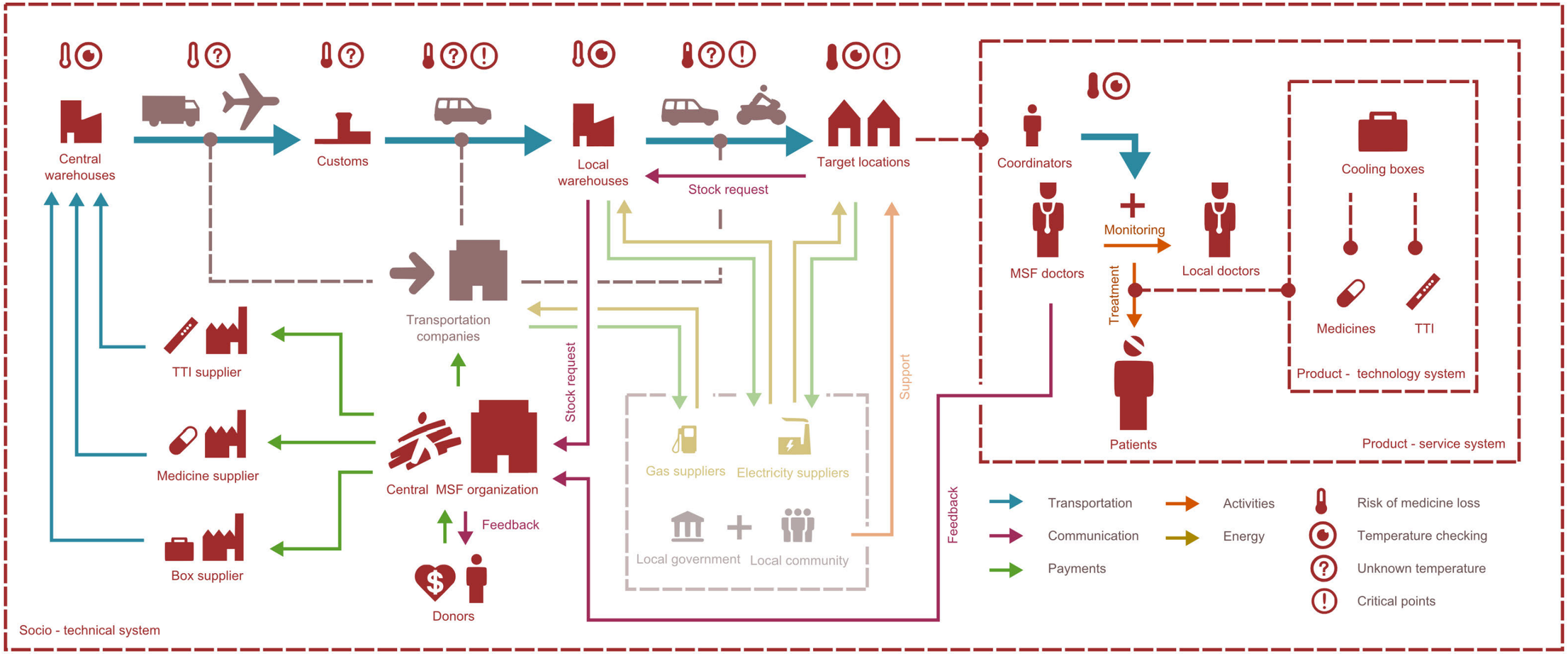
Results | 6 Energy-PSS and 6 Humanitarian-PSS projects

Energy PSS

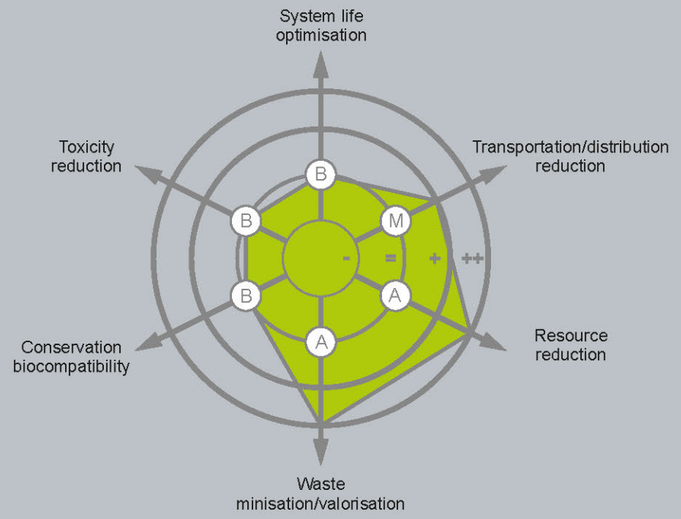
Pay-per-use (card) LED-light system
LED lighting products that empower craftsmen
Self sufficient solar LED leasing system that enables energy sharing
Local shop/school of modular LED-light products that empower craftsmen
Lighting PSS based on local resources
Modular LED lighting kit for craftsmen

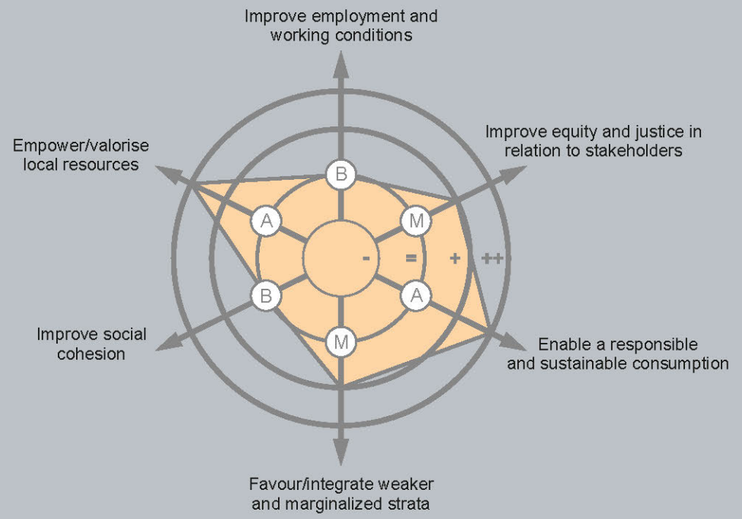
Humanitarian PSS

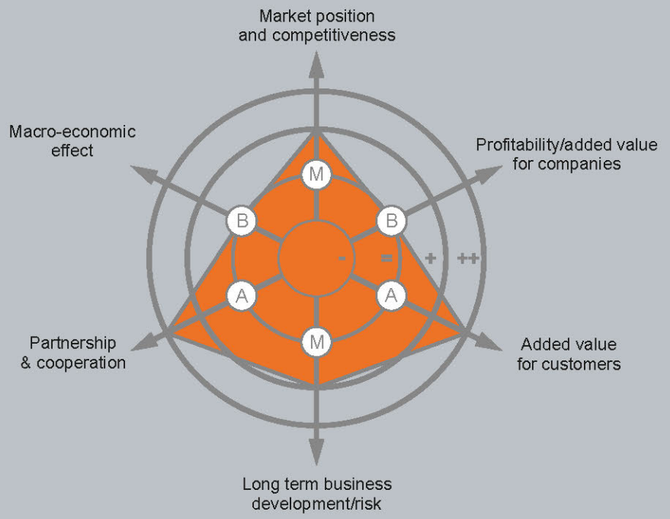
Sustainable leasing model of sterilization equipment
Maintenance lab for medical devices
A digital sharing platform for cooling boxes
RFID monitoring system
Visual communication paper form to create awareness amongst cold chain drivers
Improved vaccine monitoring device


Central warehouses
Customs
Local warehouses
Target locations
Stock request
Coordinators
Monitoring
MSF doctors
Local doctors
Cooling boxes
Medicines
TTI
Product - technology system
Treatment
Patients
Product - service system
Transportation companies
TTI supplier
Medicine supplier
Box supplier
Central MSF organization
Feedback
Donors
Stock request
Support
Gas suppliers
Electricity suppliers
Local government
Local community
Feedback
Socio - technical system
Transportation
Communication
Payments
Activities
Energy
Risk of medicine loss
Temperature checking
Unknown temperature
Critical points

Analysis | 6 Energy-PSS and 6 Humanitarian-PSS projects







Advantages of system approach when designing for challenging societal contexts

Social

- Think beyond the concept of affordability towards a concept of value creation;
- Consider a broad network of stakeholders and their motivations for change as well as for roles for new stakeholders from parallel industries;
- Promote social integration and cohesion;
- Empower the (local) end-user through education, employment and leadership;
- Promote knowledge exchange and communication for improved awareness and consumption;

Economic

- Increase competitiveness and innovation;
- Promote sharing of responsibilities and gains amongst stakeholders;
- Consider positive macroeconomic impact;
- Design of affordable solutions;
- Offer added value for business;
- Design of scalable solutions with a long-term business perspective;

Environmental

- Consider technological and organizational dependencies of products;
- Optimize lifecycle of products and services - from manufacturing to disposal;
- Valorise local material resources;
- Reduce dependency on material resources and environmental footprint;
- Promote awareness and choice of environmentally-friendly resources;

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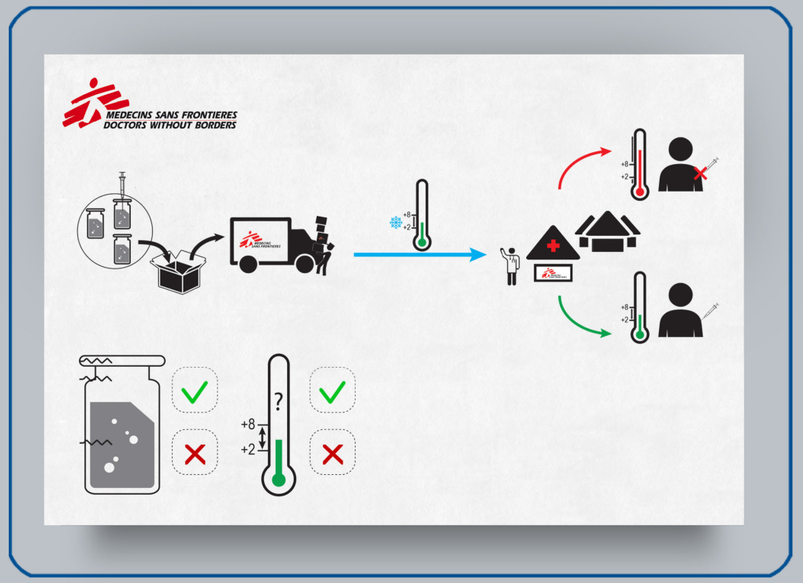
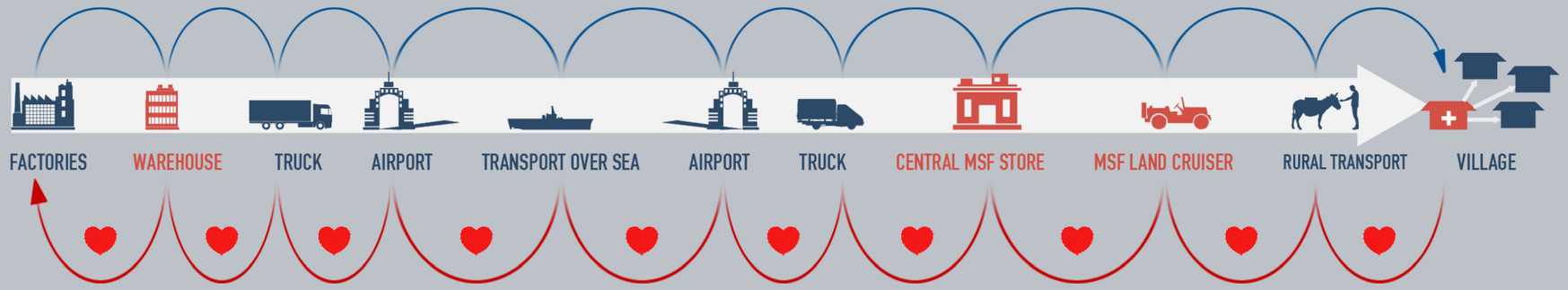
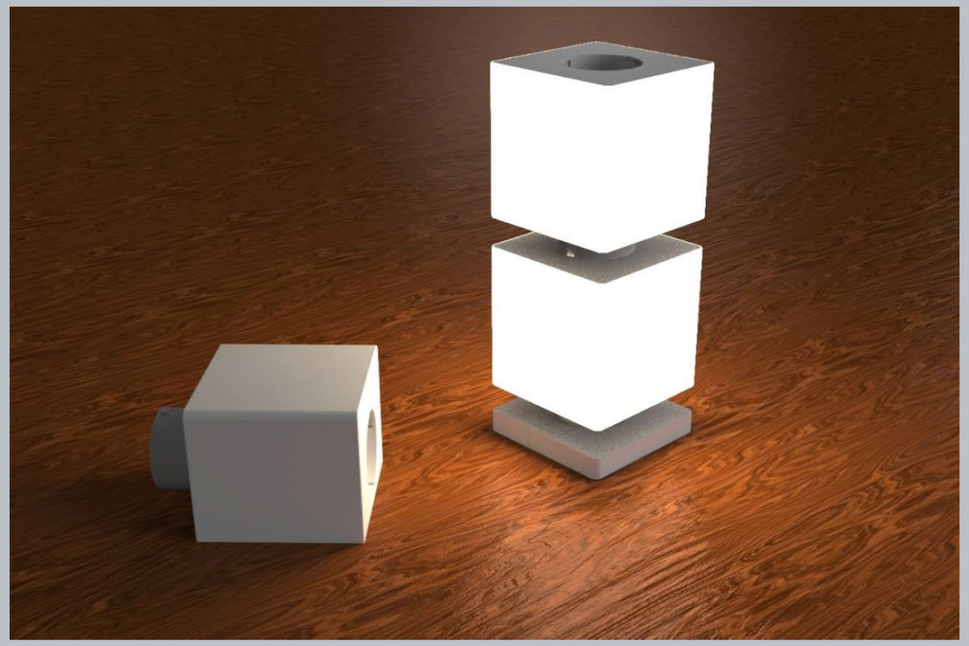
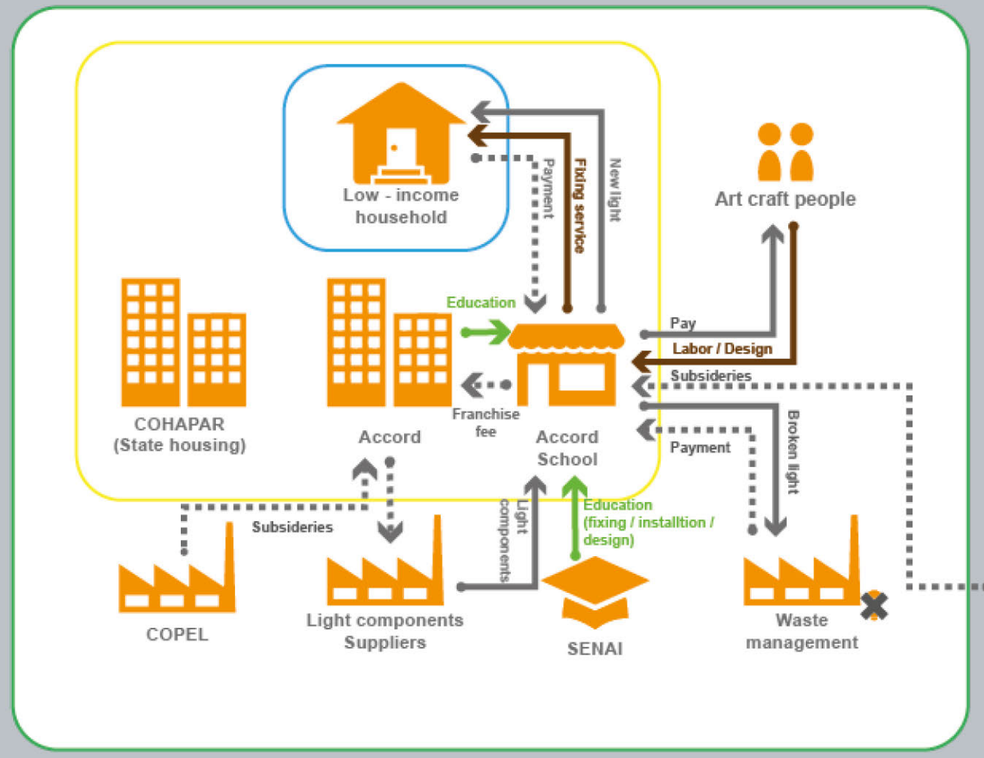
Celsius | Visual communication to create awareness amongst cold chain drivers





Power Cube | Local Accord schools that empower craftsmen





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Dream Steam | Sustainable leasing model of sterilization equipment

WE WANT TO CREATE AN EPERIMENT THAT SENSITIZES STERIFLOW FOR THEIR TASK AND responsibility to create an online platform.

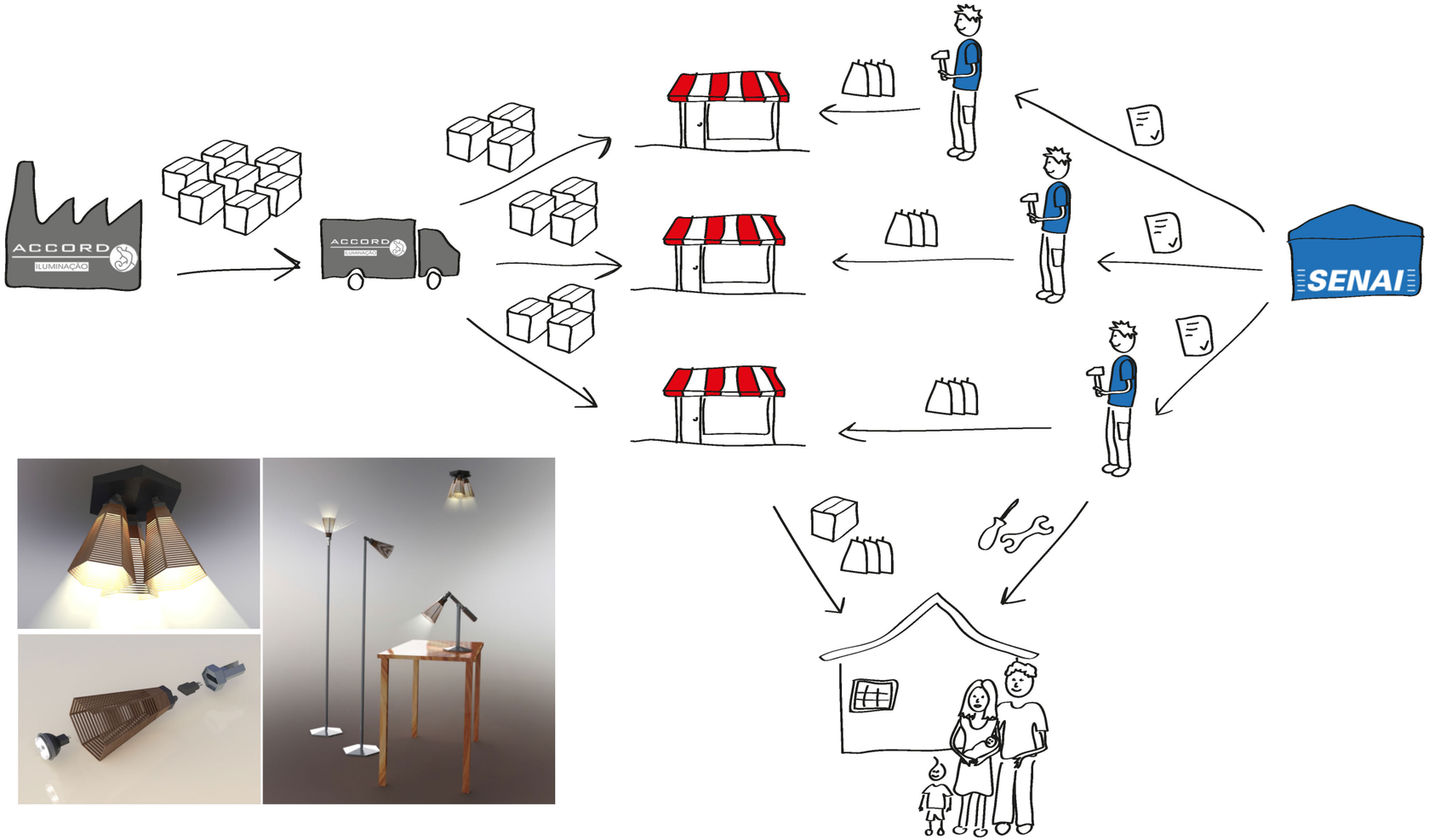
With a budget of 100 €, a board game has to be designed that puts Steriflow employees into MSF's and the local doctors' shoes in order to foster understanding and open-mindedness. It is a fun way to understand each other and mentally prepare Steriflow for the collaboration.

Goal
- make problems tangible
- **Sensitize Steriflow employees**
- create shared tacid knowledge
- **prepare Steriflow mentally** for the creation of platform
- create mutual understanding

how?
- dream Steam creates a fun game to transfer important messages and knowledge.
- **game also includes financial** aspects + encourages the user to **reflect critically**
- **Through role play, put Steriflow** employees in the position of MSF and the local doctors.
- Empathy and sympathy is created

Requirements
- 100 € to build and test
- materials and some time to develop the game
- team dream Steam to do all of the above

LED-kit | Modular LED-light kit for craftmen



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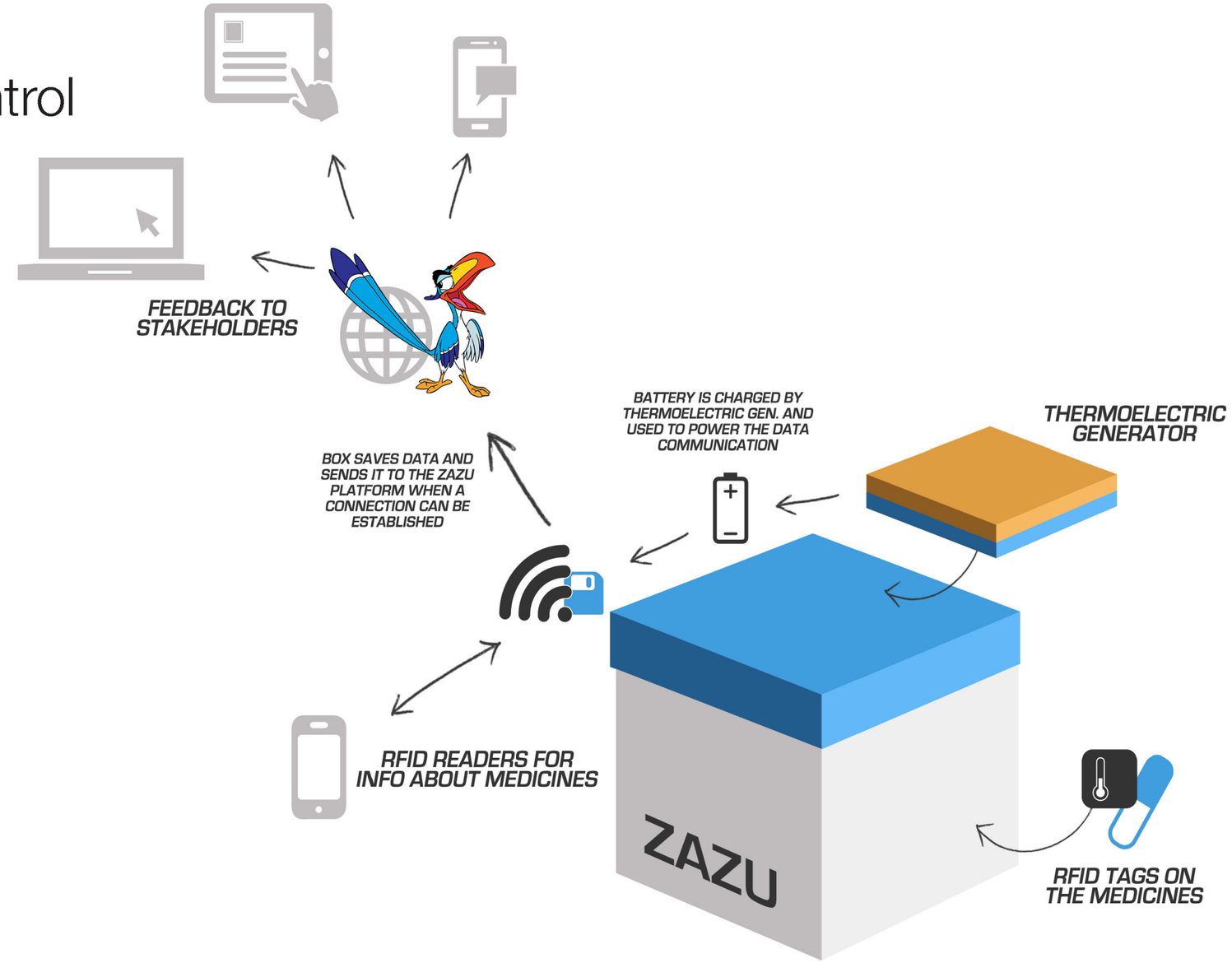
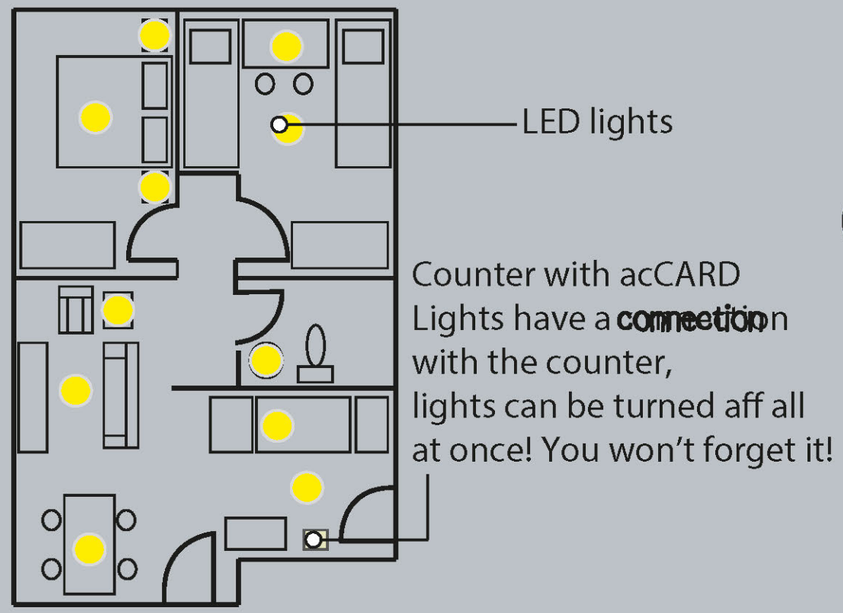
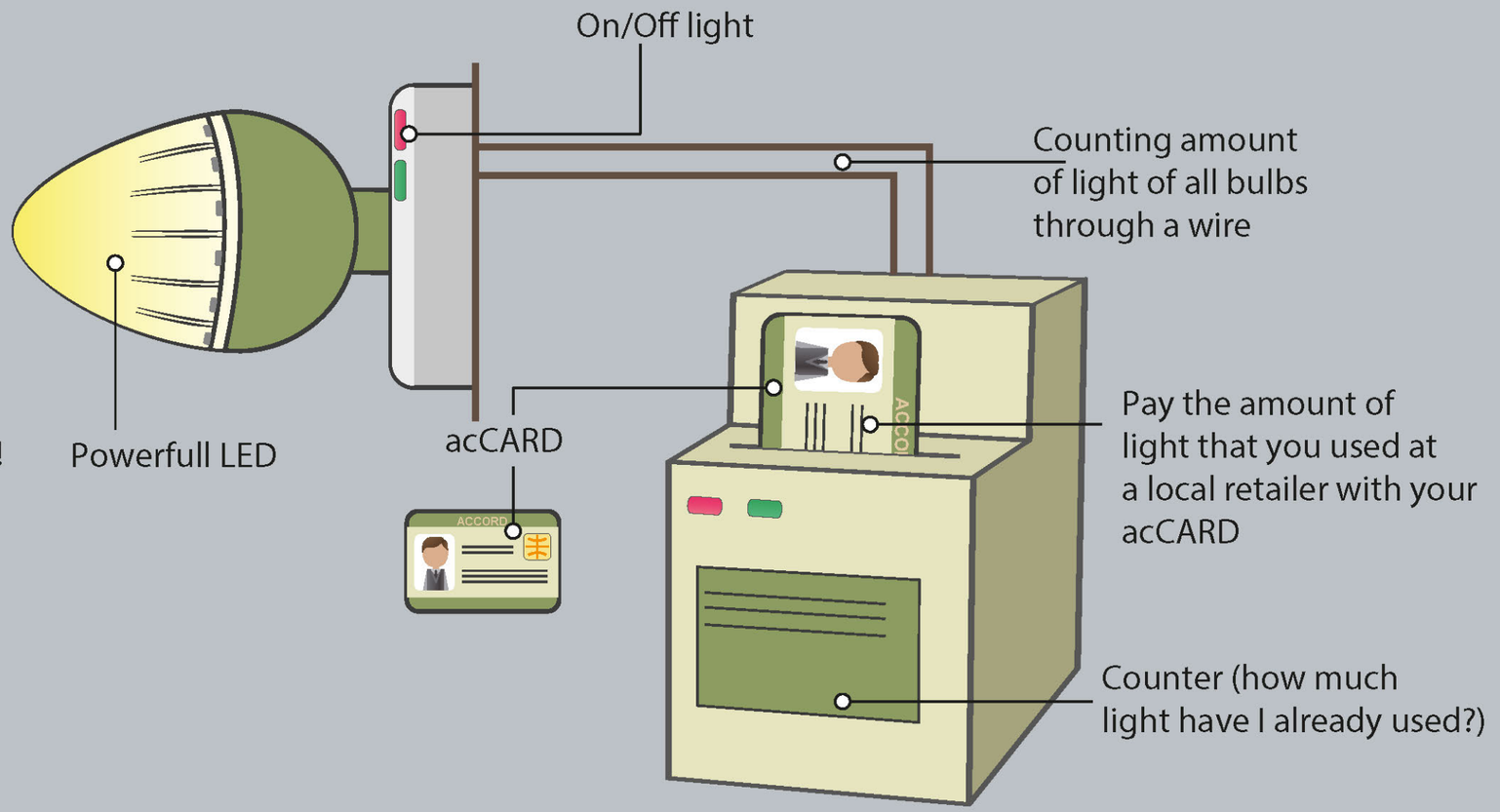
Zazu | Cold chain control



AcCard | Pay-per-use (card) LED-light system





Lessons learnt | Working in Process

BE AWARE
- Dependency on donors or subsidies determines priorities
- Diversity of contexts
- Poor diversity of available skills/expertise
- Ideology-motivated decision making

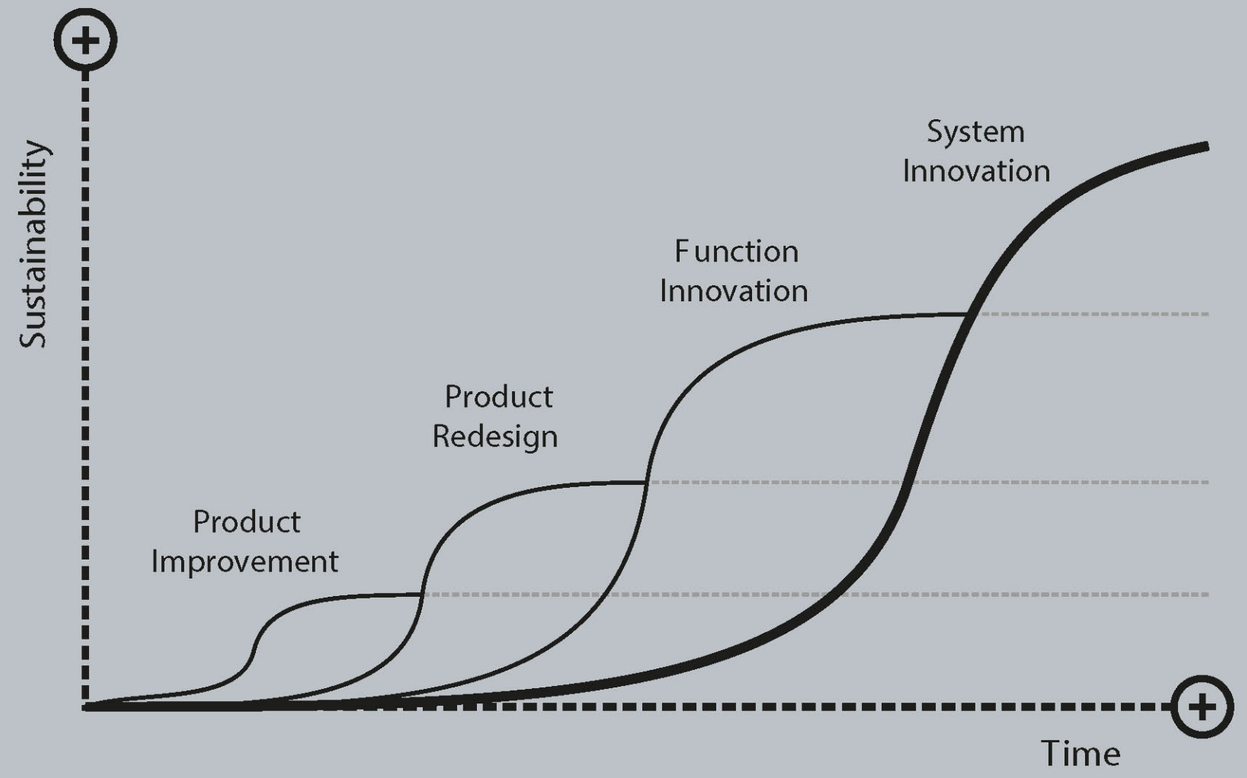
ENSURE
- Motivation of each stakeholder is addressed
- And local end-user practices are respected

COMMUNICATE
- Complexity with hands-on processes and visualizations
- Involve stakeholders in building shared mental models

FAMILIARIZE
- Stakeholders with PSS
- Tackle lack of organizational knowledge

MANAGE
- Expectation regarding results and stakeholders involvement
- Prepare universities to offer an experimental space
- And support the follow-up of projects

Q&A | Thank you



Brezet, H. (1997). Dynamics in ecodesign practice. Industry and Environment, 20(1-2), 21–24.