



2018

Building the fashion's future. How to turn textiles' wastes into ecological building products

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CHALLENGING COMPLEXITY
BY SYSTEMIC DESIGN
TOWARDS SUSTAINABILITY
Turin, 24-26 October 2018

Building the fashion's future

How turn textiles' wastes into ecological building products

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_topics

_environmental impact
of textile sector

_best practices of recycling in building
sector

_EDILTEX Research project

_Circular scenarios: from textile' wastes
into ecological building products



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THE CLOTHING INDUSTRY'S ENVIRONMENTAL IMPACT

20%
OF INDUSTRIAL
WATER POLLUTION
COMES FROM TREATING
AND DYEING TEXTILES

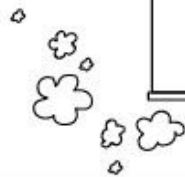
IT TAKES
700 GALLONS
OF WATER



TO PRODUCE ENOUGH
COTTON FOR ONE T-SHIRT



THE CLOTHING INDUSTRY
IS THE **SECOND-MOST**
POLLUTER OF
CLEAN WATER



MORE **90%**
THAN **OF COTTON** 
IS NOW GENETICALLY MODIFIED

PRODUCTION OF FIBER IS RESPONSIBLE FOR

18%
OF **PESTICIDE**
USED WORLDWIDE

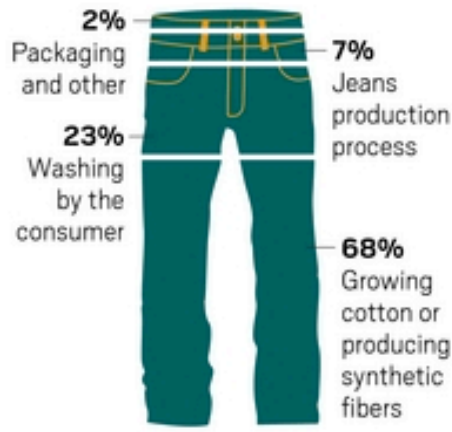


25%
OF **INSECTICIDE**
USED WORLDWIDE

Textile production impacts the environment in many ways

3,781 liters

Water used during the life cycle of a pair of Levi's jeans



11 billion kilograms

Amount of clothing that ends up in U.S. landfills each year—that's 32 kg per person

1 billion liters

Amount of water saved by Levi's since 2011 by using new garment finishing processes

15%

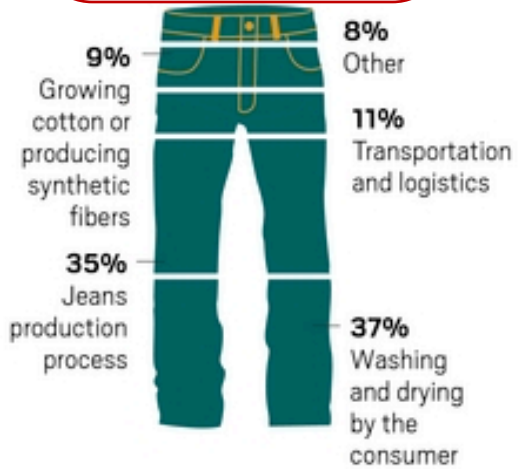
Percentage of recycled cotton that can be used in a new pair of jeans, using current technologies

3 years

Average life of a pair of Levi's jeans

33.4 kilograms

CO₂ emissions during the life cycle of a pair of Levi's jeans



Source: Levi's

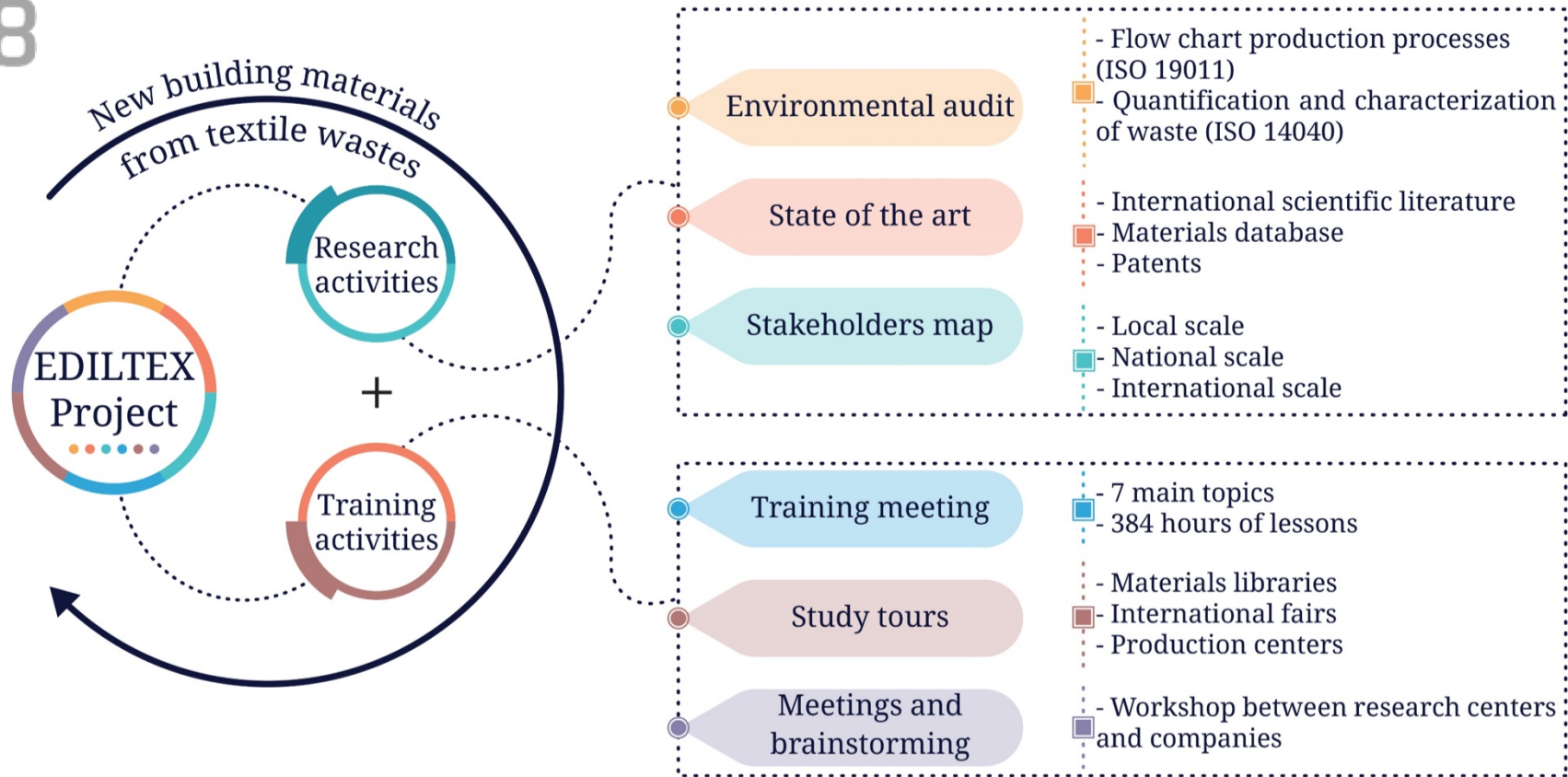
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_best practices of recycling in building sector



California Academy of Sciences, San Francisco, USA
(Renzo Piano, 2008).

Walls insulation based on **recycled denim jeans**.



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_EDILTEX project
methodology



Meetings and brainstorming

Roberto Giordano

1_Training activities

7

Main topics

384

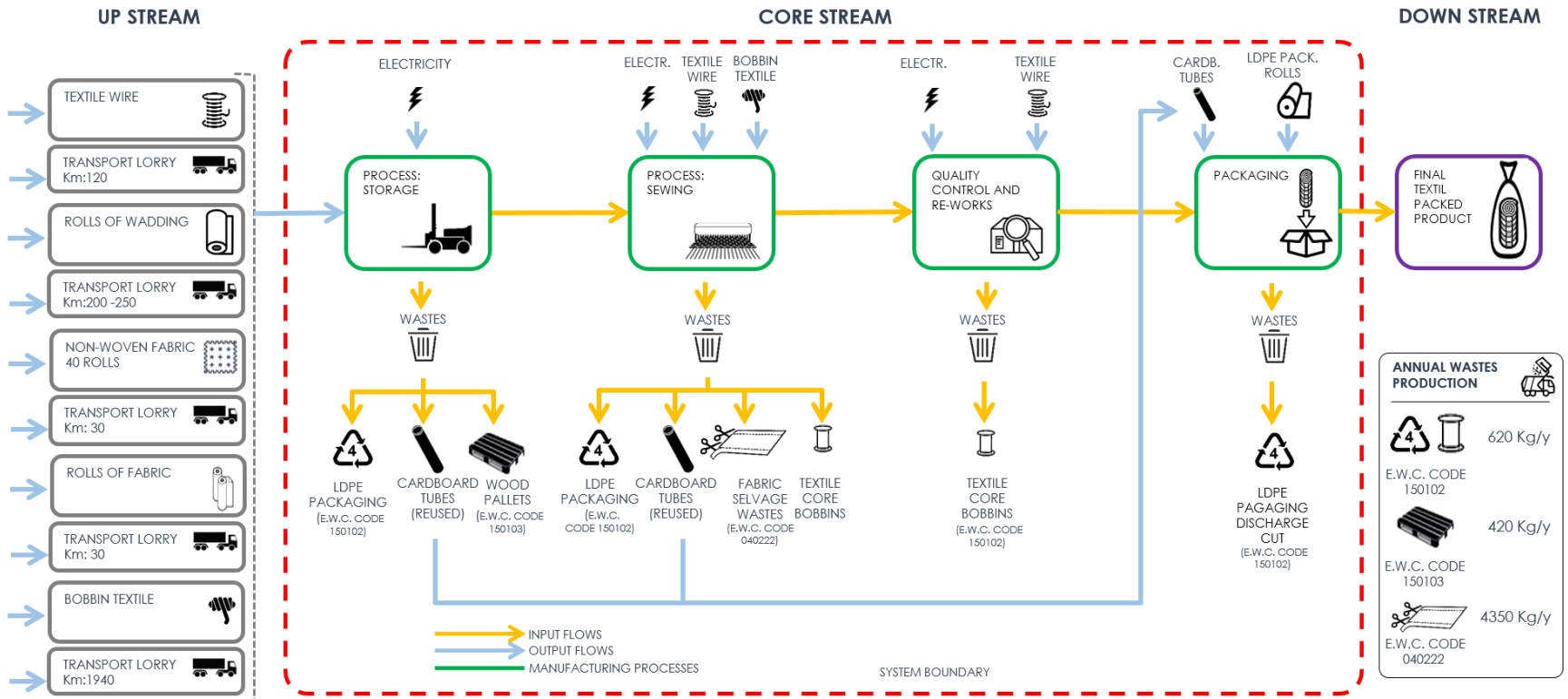
hours of classes



Study tours

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2_Research activities Environmental Audit and Analysis

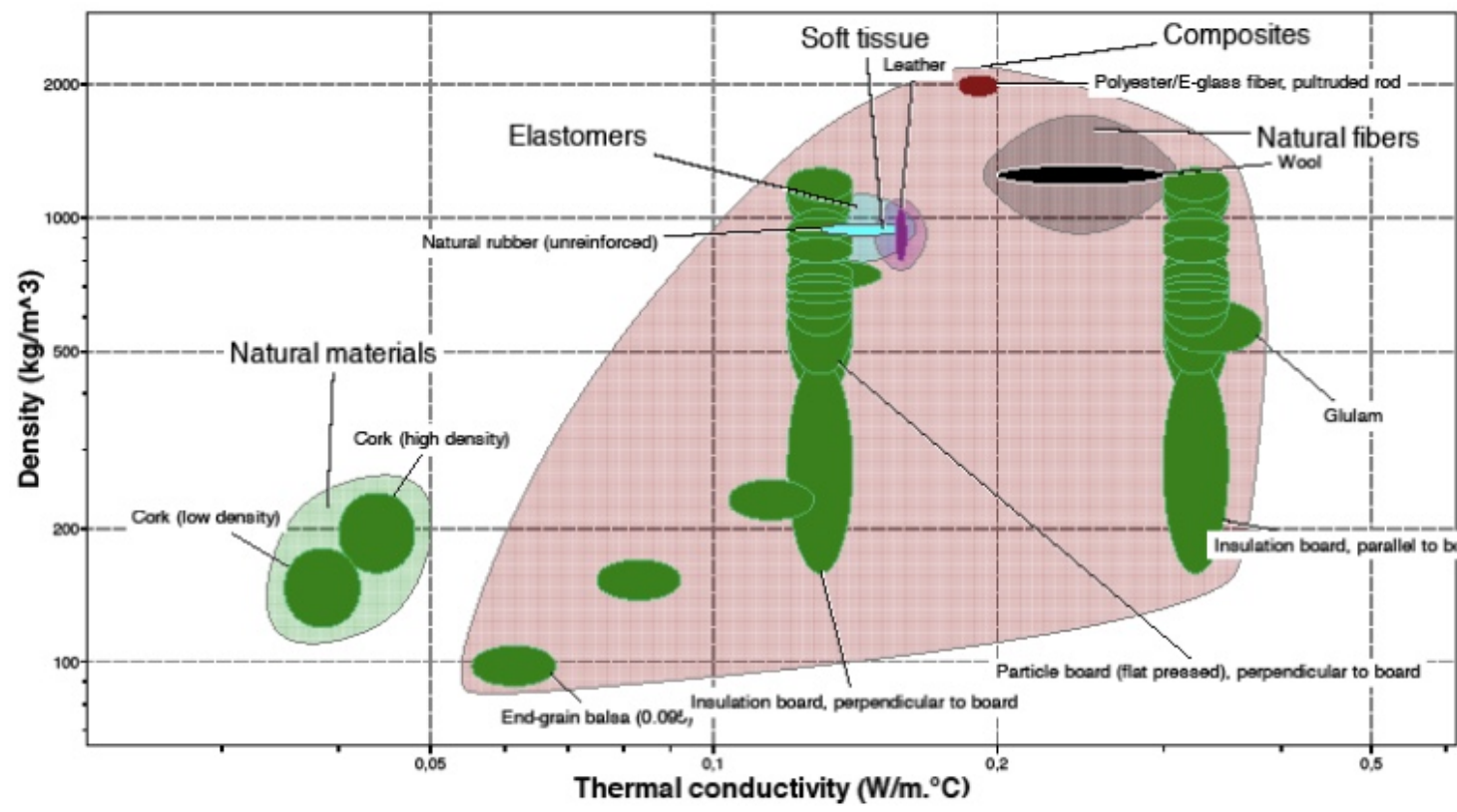


Waste produced by SMEs (2017)



SME	Gesta	Magia	Trapuntificio Giglioli
Main type of waste	mixed textile waste (artificial, synthetic, natural fibres)	leather waste (cattle and sheep)	polyester wadding waste
Quantity of waste (kg/year)	6740 + other waste in stock	1650 + other waste in stock	4350

2_Research activities
Wastes properties and performances



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_EDILTEX project methodology

S

W

1st scenario_textile wastes as SRM
in existing recycling companies (building sector)

O

T

2nd scenario_textile waste in online markets,
marketplaces
other sectors)

3rd scenario_new building materials

3rd scenario

Strengths

- Raw materials (textile waste) at zero or almost zero cost.
- "Green" image of the new company.

Weaknesses

- Long periods of time for experimentation, prototyping, validation of product performance, business plan development and market identification.
- Significant investments for production plant realization.

Opportunities

- Different technological solutions can be developed (concrete blocks, sound absorption panels, thermal insulating plaster, etc.).
- European funding for SMEs** related to circular economy.
- Growing attention to environmental issues and ever-increasing demand for eco friendly products.
- Financial incentives for use of products with % recycled materials.
- European approach to environmental labeling (EPD, Ecolabel, etc.).

Threats

- Continuity of production based on availability of waste (in quantitative terms).
- Many competitors with traditional products.
- Bureaucratic and regulatory rigidity at national level.

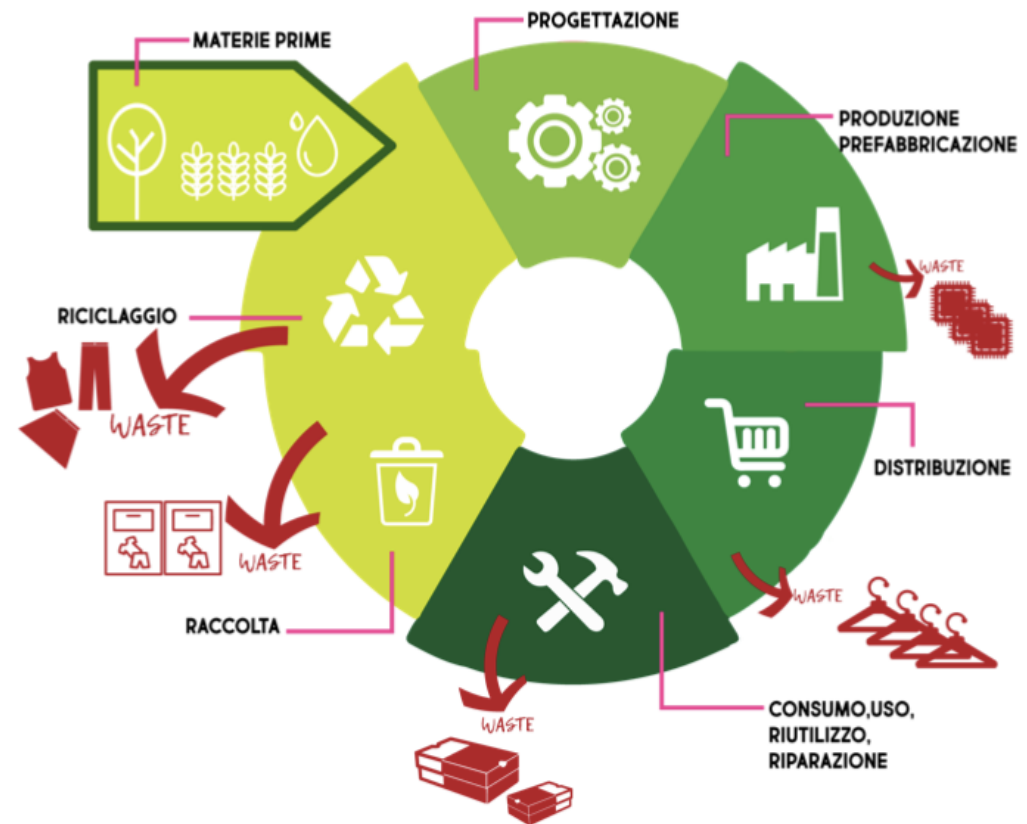
3rd scenario_new building products

_Material sorting and concept design

_Prototyping

_Monitoring and validation of expected performance

_Identifying the value proposition

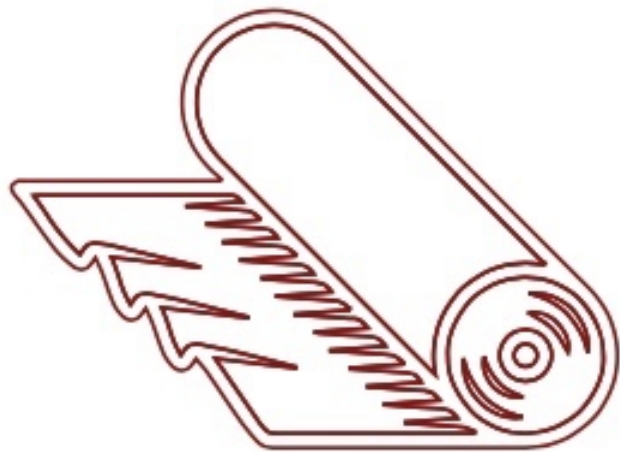


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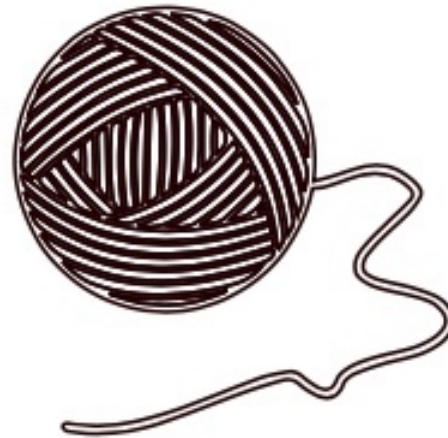
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_Circular Scenarios

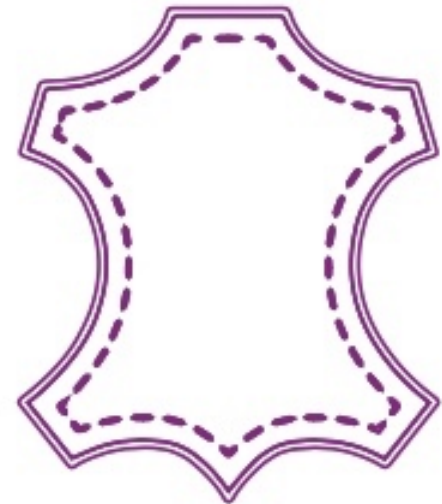
_Material sorting and concept design



_Polyester



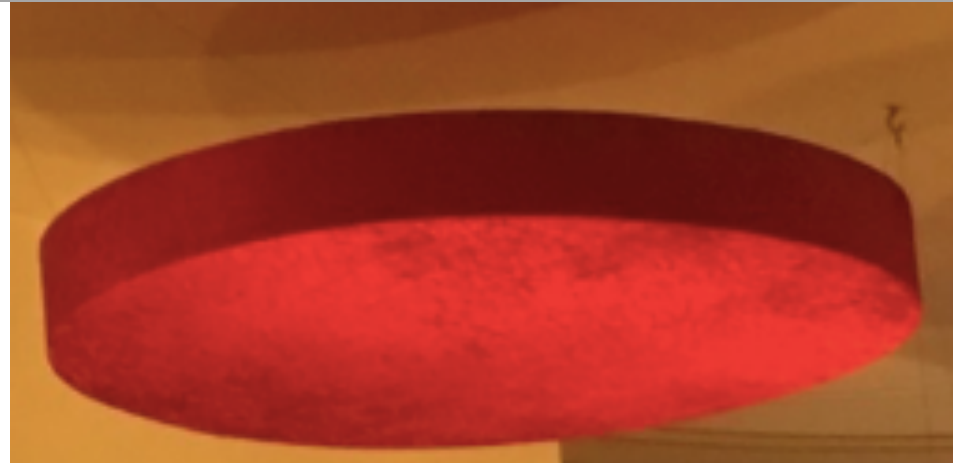
_Wool



_Leather

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_Circular Scenarios



_Leather

_Wool

_Polyester

_Framework

_Prototyping



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_Circular Scenarios

_Monitoring and validation of expected performance



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Open issues:

- ✓ Performances are crucial for building materials. Is the monitoring of waste samples reliable?
- ✓ A circular product has really a lower environmental impact? Are there suitable indicators available to assess?
- ✓ Are national rules suitable for fostering re-use and recycling activities?

Despite it is required to managing properly situations of complexity in which there are no simple answers and lot of efforts are still necessary **an addition is however possible:**

"BUILDING THE FASHION FUTURE"