Sustainable Innovation & Design : Past , Present & Future

Le Colloque National De L’Eco-Conception

2nd-3rd May 2016

Professor Martin Charter

Director

The Centre for Sustainable Design ®

University for the Creative Arts (UCA)

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5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 RENEWABLE ENERGY
8 GOOD JOBS AND ECONOMIC GROWTH
9 INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS
For Sustainable Development

ipcc
INTERGOVERNMENTAL PANEL ON
climate change

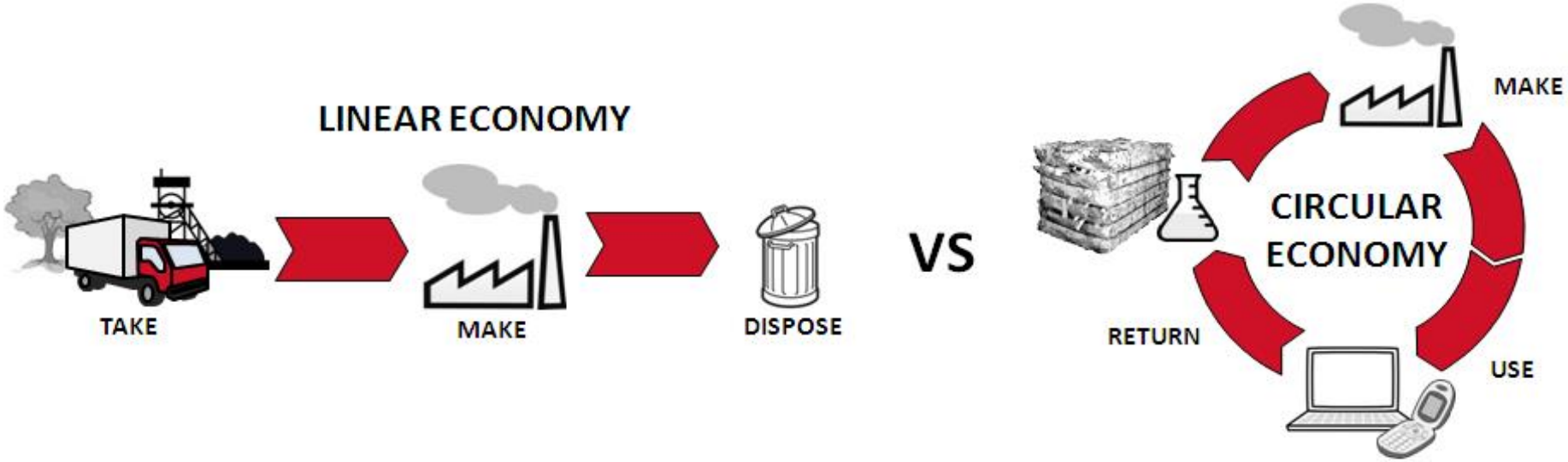

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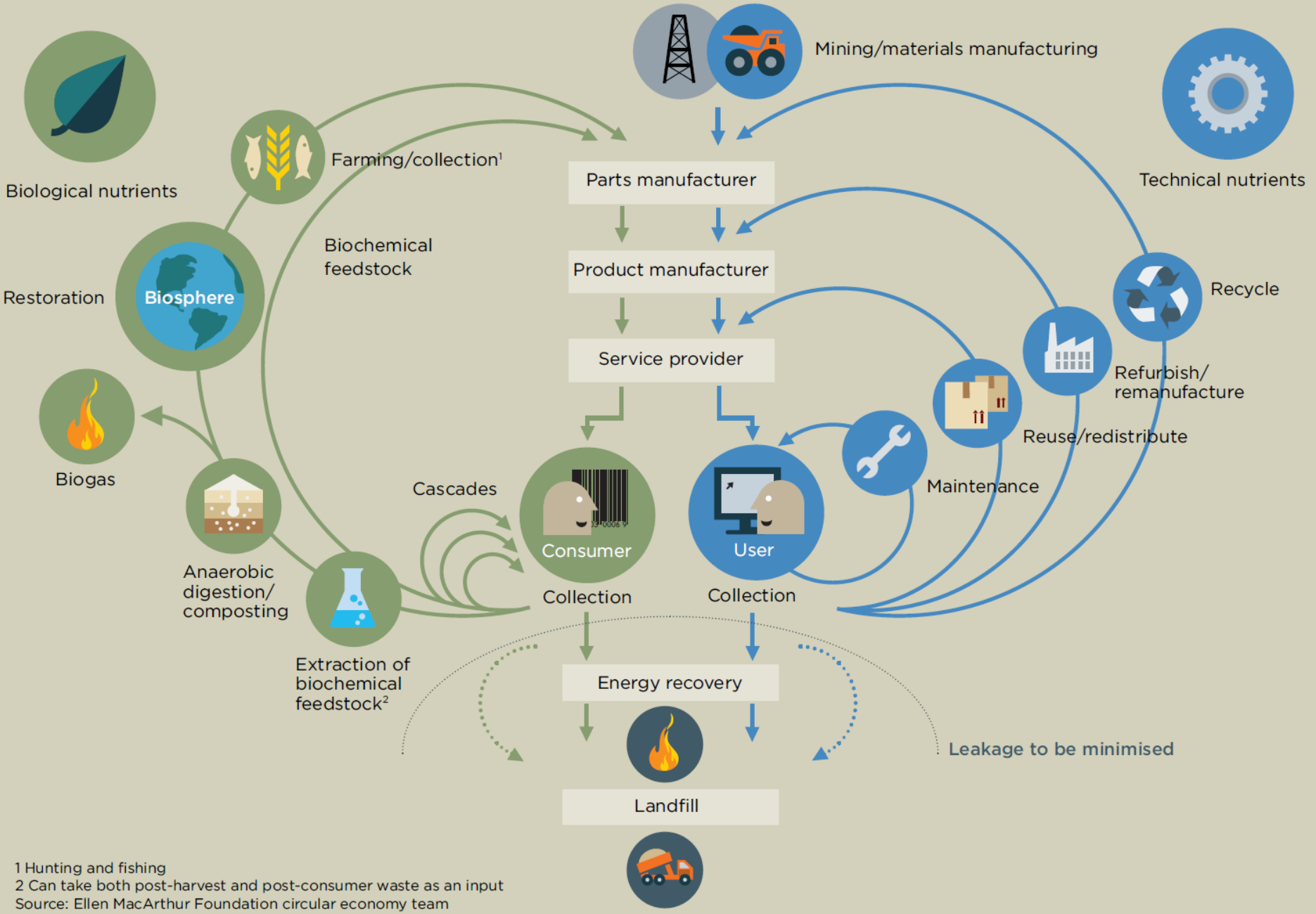
FIGURE 6 **The circular economy—an industrial system that is restorative by design**



1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input
Source: Ellen MacArthur Foundation circular economy team

European
Commission

BS 8001:2017

Principles and framework for implementing the Circular Economy in organizations – Guide

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IPP

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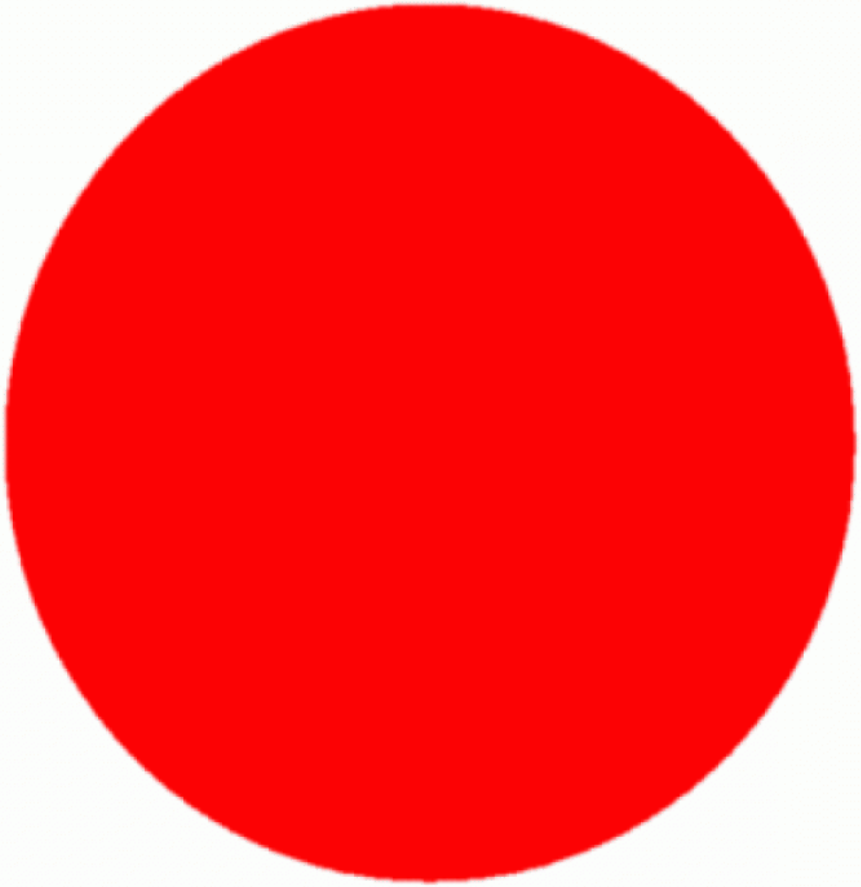

SCP

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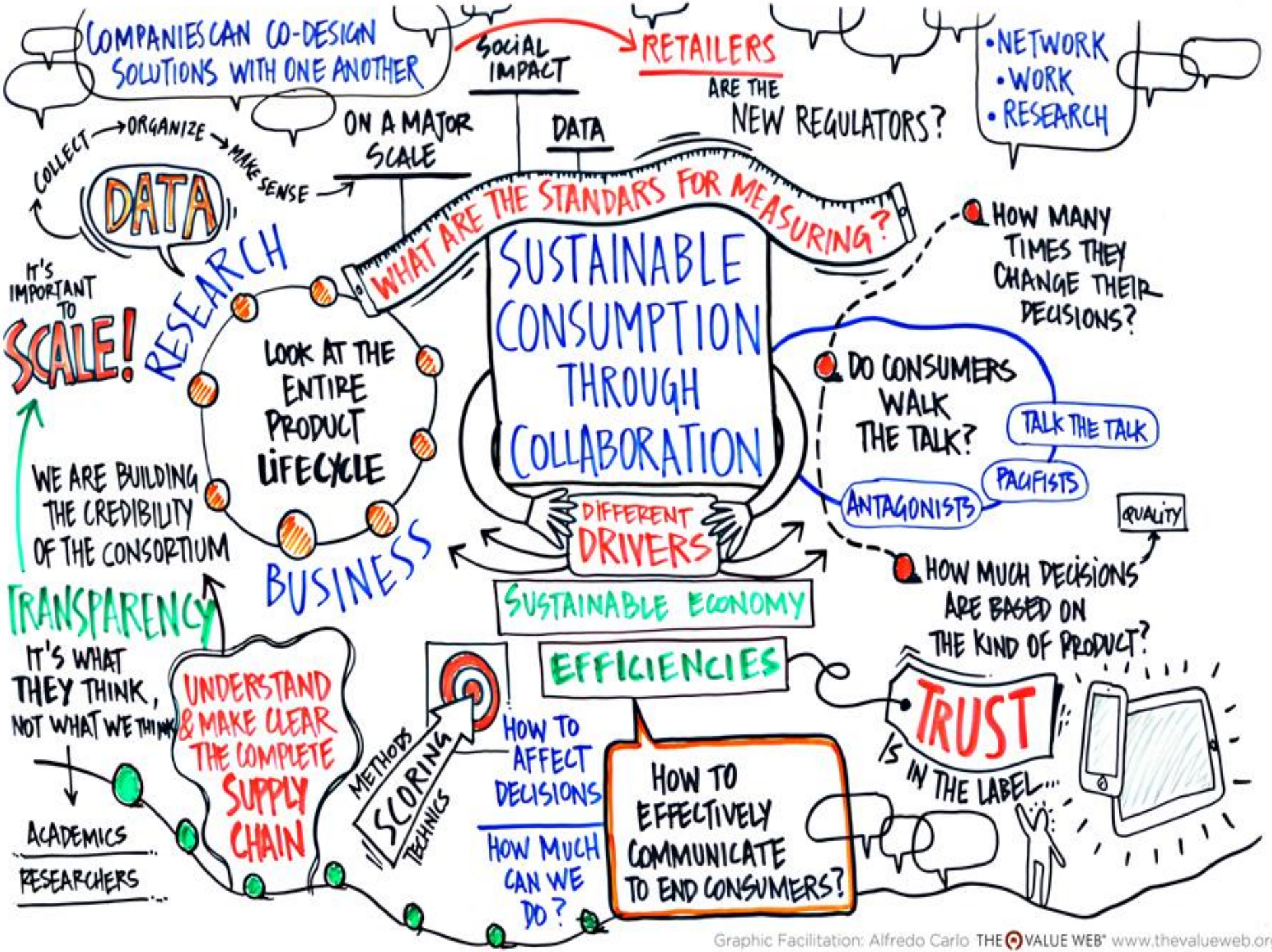
RIO+20

United Nations Conference on Sustainable Development



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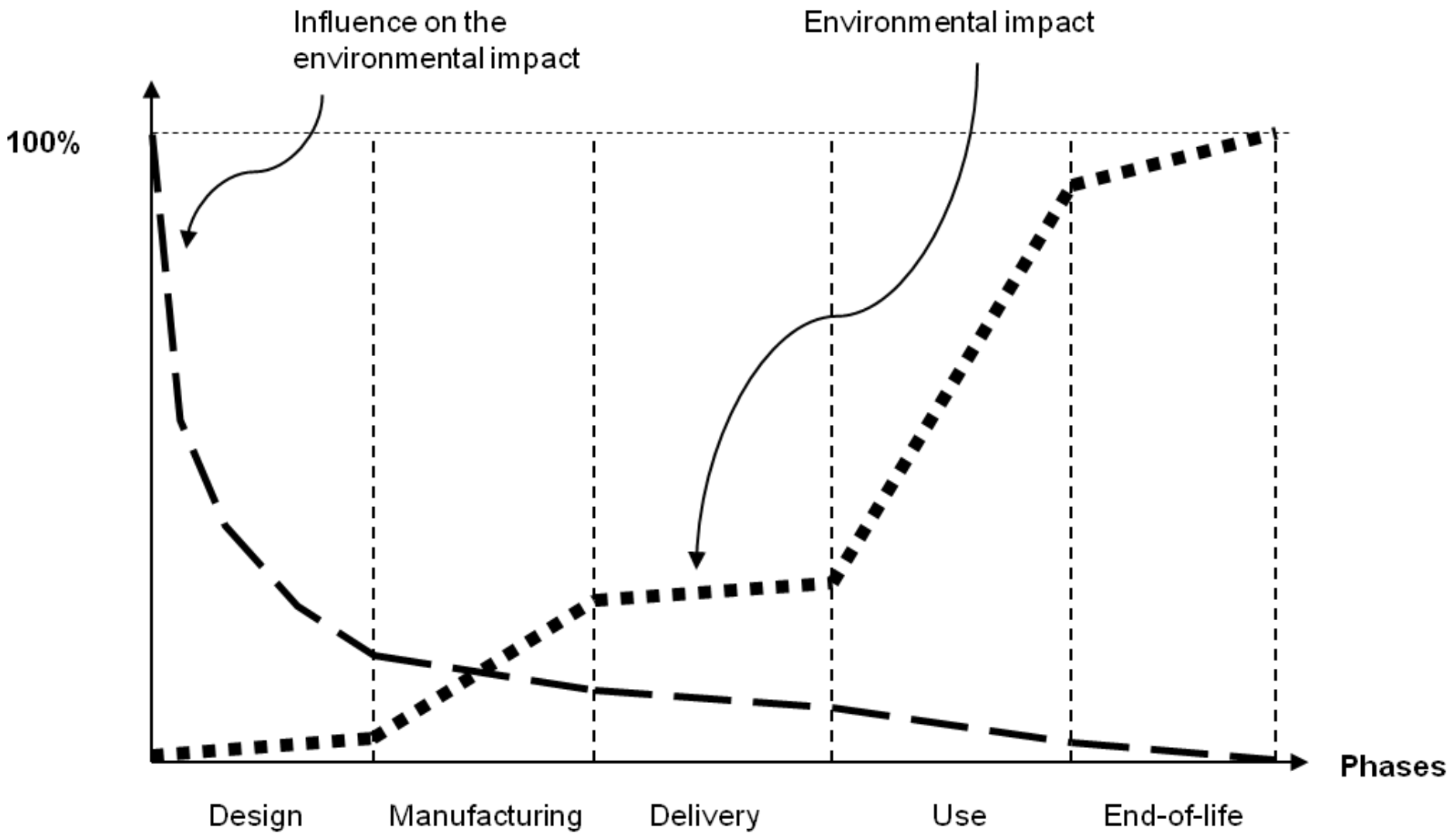
80%



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‘Cradle to grave’ product life thinking (traditional)

Extraction of raw materials

Manufacturing

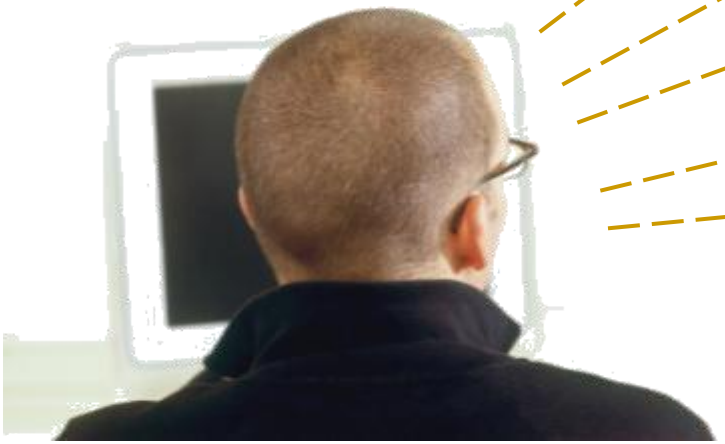
Packaging and distribution

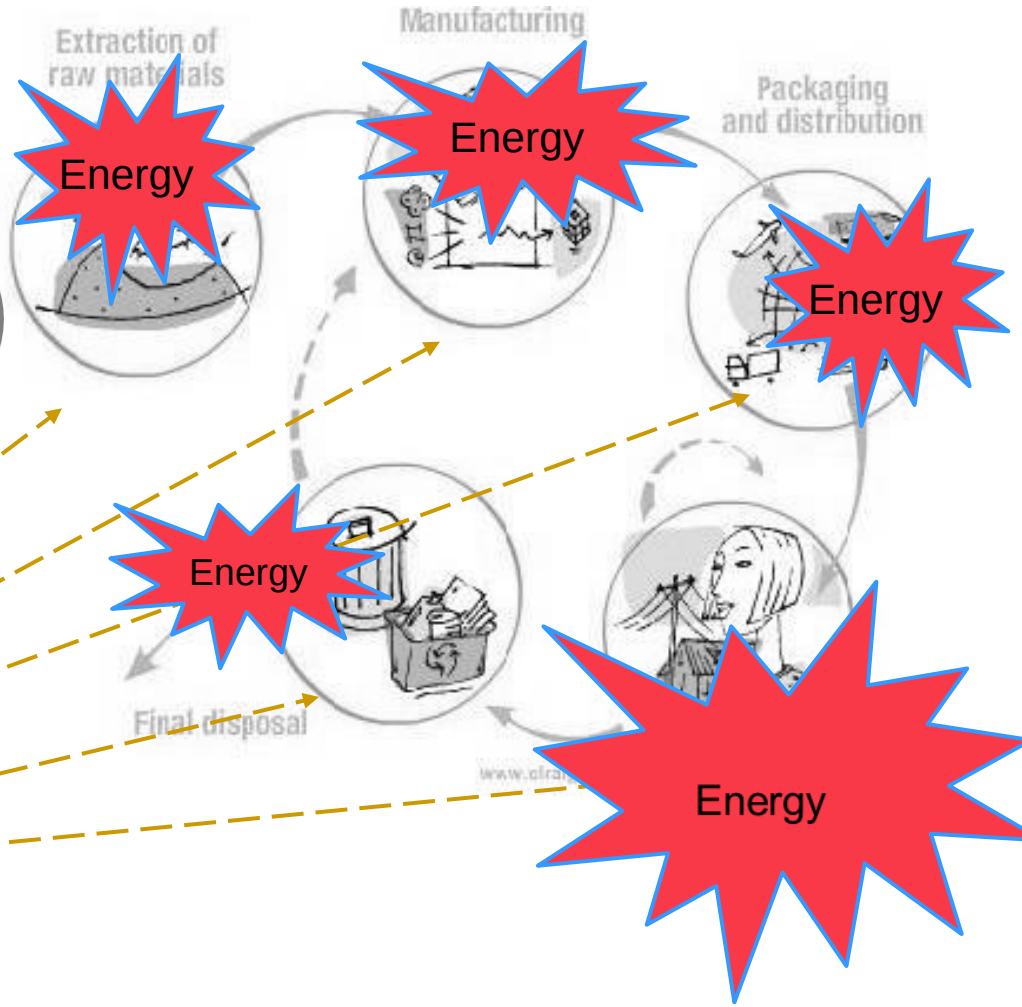
Use and maintenance

Incineration and disposal

Life Cycle Thinking in Design

Consumption of energy, materials, water etc.?
Anticipated emissions to air, water, or soil?
Anticipated pollution through noise, vibration, radiation, electromagnetic fields etc.?
Expected generation of waste material
Possibilities for reuse, recycling and material recovery ?





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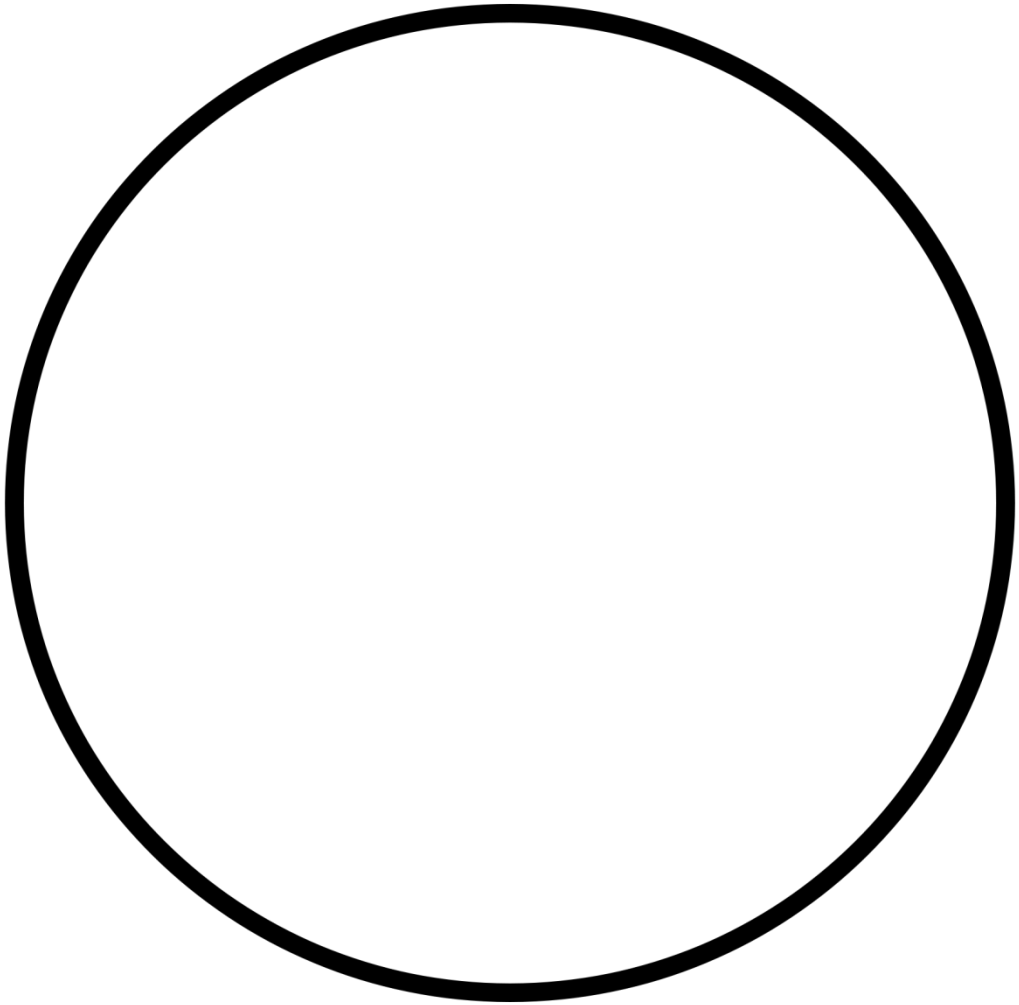

Eco-design - Examples

PHILIPS

Green Flagship Products

A Philips Green Flagship product that either

- Has the best environmental performance in the market, or
- Is the most innovative environmental friendly product in its portfolio, or
- Is the best environmental solution in its application area.

A Philips Green Flagship is benchmarked in six green focal areas and must perform significantly better (>10%) in at least three of the these green focal areas:

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Eco-design - Examples

PHILIPS

Green Flagship Brightview XCT Scanner

Compared to its predecessor, the Precedence 16, this Green Product's environmental benefits include

- 64% reduction in energy use,
- 59% reduction in product weight

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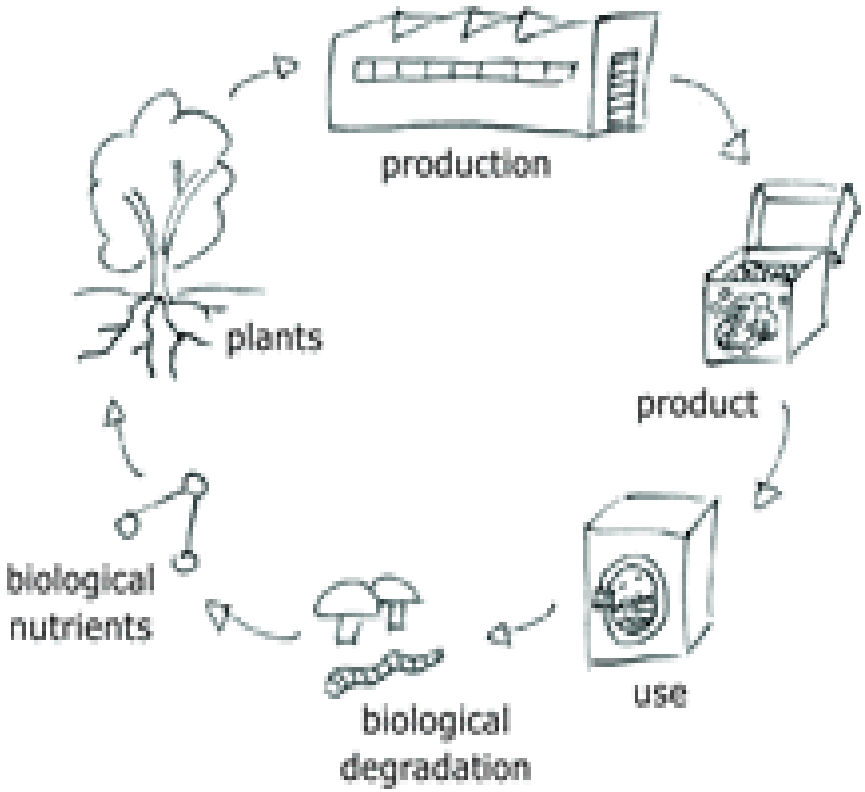
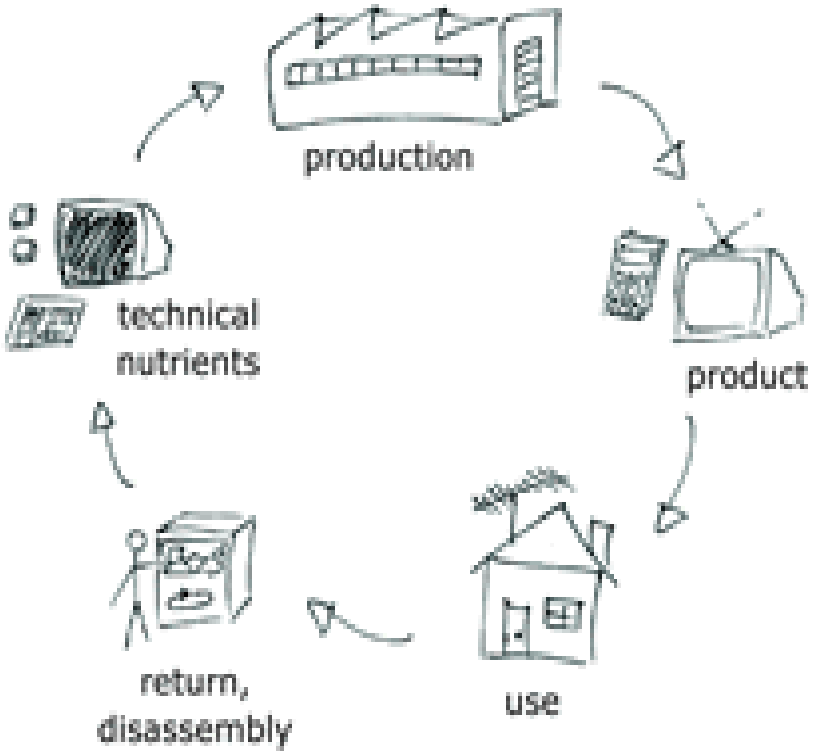
Circular Economy



biological cycle



technical cycle

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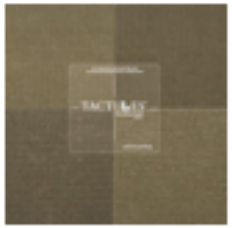
Eco-design - Examples

InterfaceFLOR

Green product examples

Opening Night™

This collection is comprised of InterfaceFLOR hybrid yarn, a blend of nylon bio-based fibre of Polylactic Acid (PLA). PLA fibers are derived from starch based agricultural waste materials such as non food grade corn.



TacTiles™

TacTiles contains no liquid components, using them virtually eliminated the issue of Volatile Organic Compounds (VOCs) during carpet installation.

Rawhide™

Rawhide offers 4% renewable content (fibre) and 57% total recycled content.

Chenille Warp™

Depending on the colourway, Chenille Warp offers 62-65% total recycled content.

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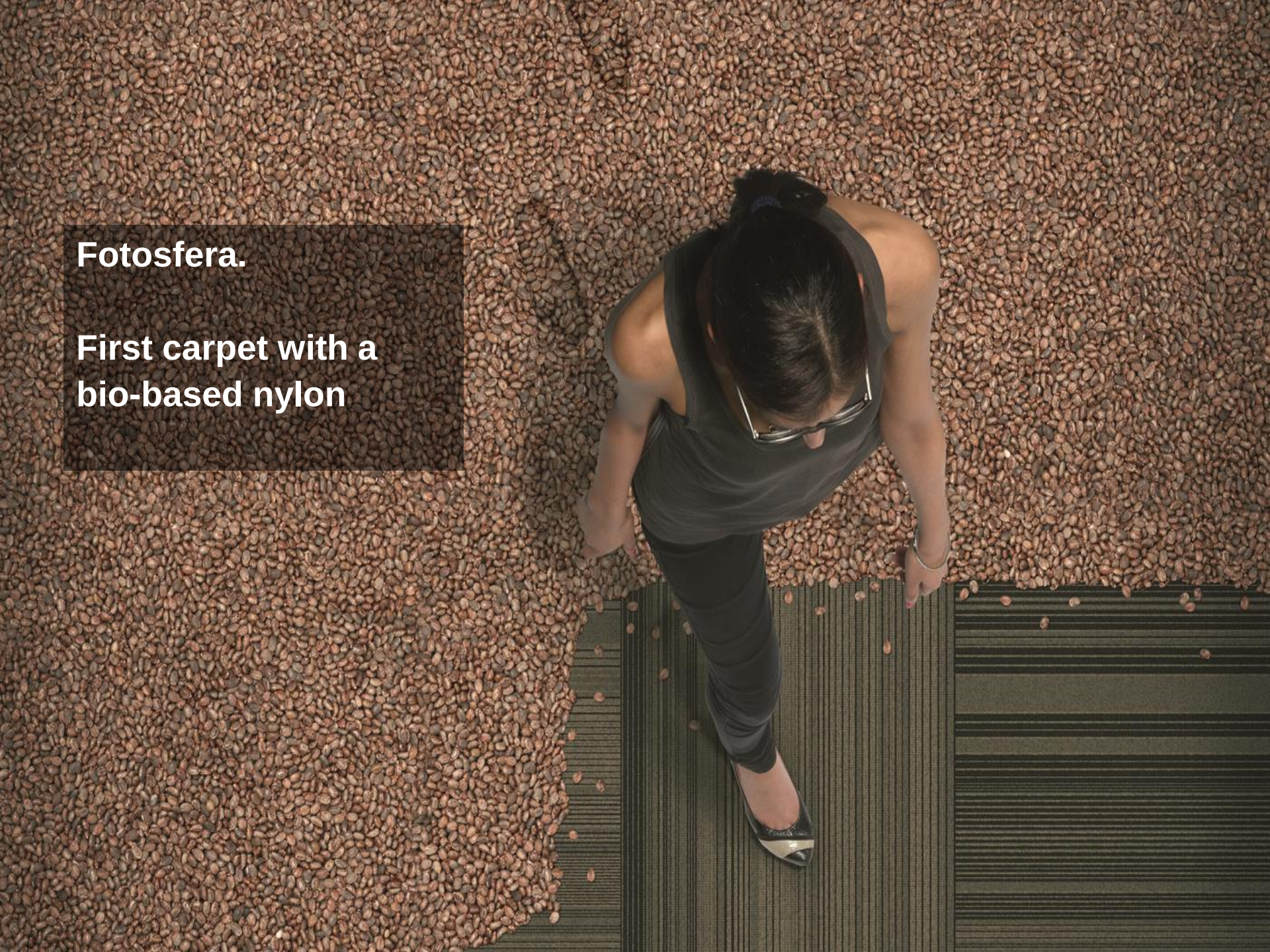
Fotosfera.
First carpet with a bio-based nylon

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PD ISO/TR 14062:2002

Environmental management — Integrating environmental aspects into product design and development

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Environmentally conscious design for electrical and electronic products

Eco-conception pour les produits électriques et électroniques

TC 111 Environmental standardization for electrical and electronic products and systems

JWG ECD - 62959 Convenor & Members

Convenor	National Committee
Mr Daniel Trillos	CO
Mr Shu YAMADA	JP

Member	National Committee
Mr Johannes Auer	DE
Mrs Solange Blaszkowski	NL
Mr Tan Boon Chong	MY
Mr Martin Charter	GB

Title & Task

JWG ECD - 62959

Environmental Conscious Design (ECD) - Principles, requirements and guidance

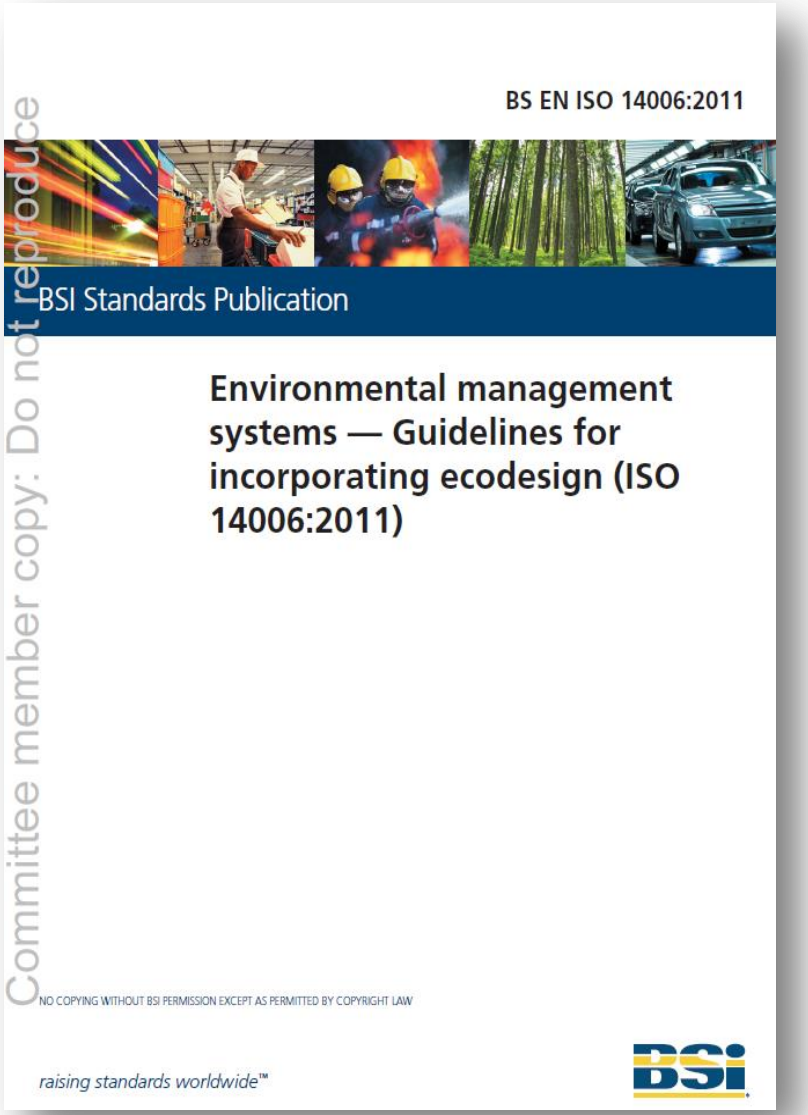
- To develop IEC/ISO 62959

What is EN ISO 14006:2011?

"ISO 14006: 2011 - Environmental Management Systems - Guidelines for incorporating ecodesign" was published on 8th July 2011.

It is a non-certifiable guidance standard

It will assist organisations in establishing a systematic and structured approach to the incorporation and implementation of an ecodesign process within an environmental management system (EMS) primarily but not exclusively conforming to ISO 14001:2004



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BS EN ISO 14001:2015

BSI Standards Publication

Environmental management systems — Requirements with guidance for use

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8 Operation

8.1 Operational planning and control

The organization shall establish, implement, control and maintain the processes needed to meet environmental management system requirements, and to implement the actions identified in 6.1 and 6.2, by:

— establishing operating criteria for the process(es);

— implementing control of the process(es), in accordance with the operating criteria.

NOTE Controls can include engineering controls and procedures. Controls can be implemented following a hierarchy (e.g. elimination, substitution, administrative) and can be used individually or in combination.

The organization shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

The organization shall ensure that outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process(es) shall be defined within the environmental management system.

Consistent with a life cycle perspective, the organization shall:

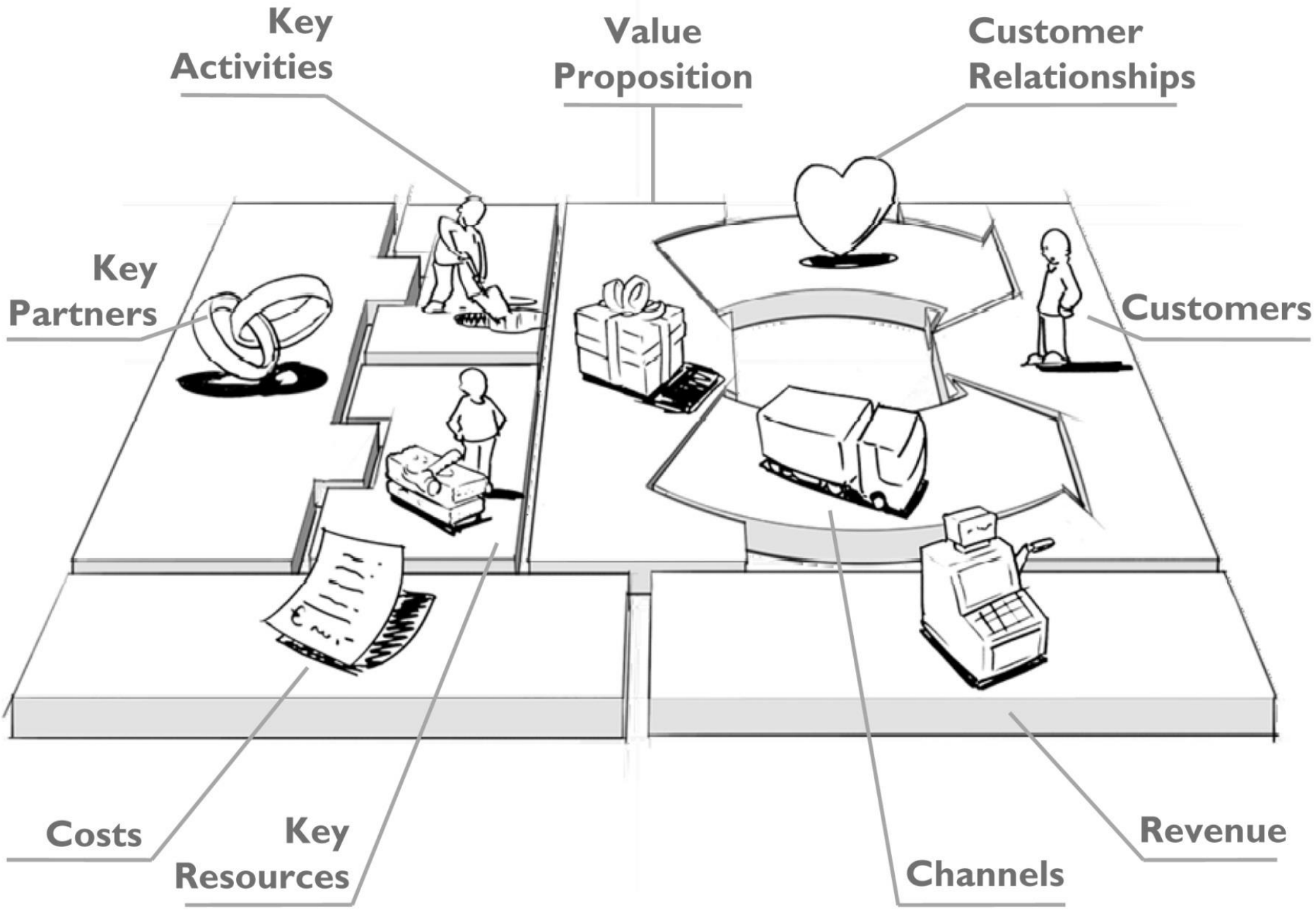
a) establish controls, as appropriate, to ensure that its environmental requirement(s) is (are) addressed in the design and development process for the product or service, considering each life cycle stage;

b) determine its environmental requirement(s) for the procurement of products and services, as appropriate;

c) communicate its relevant environmental requirement(s) to external providers, including contractors;

d) consider the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

The organization shall maintain documented information to the extent necessary to have confidence that the processes have been carried out as planned.


Key Activities
Value Proposition
Customer Relationships
Key Partners
Customers
Costs
Key Resources
Channels
Revenue
drawings by JAM

xerox

patagonia
USED PATAGONIA GEAR
POWERED BY
ebay
List your used Patagonia Clothing and Gear.

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WE HOLD THESE TRUTHS TO BE SELF-EVIDENT
SELF-REPAIR MANIFESTO:
REPAIR IS BETTER THAN RECYCLING.
MAKING OUR THINGS LAST LONGER IS BOTH MORE EFFICIENT AND MORE COST-EFFECTIVE THAN MINING THEM FOR RAW MATERIALS.
REPAIR SAVES THE PLANET.
EARTH HAS LIMITED RESOURCES AND WE CAN'T RUN A LINEAR MANUFACTURING PROCESS FOREVER. THE BEST WAY TO BE EFFICIENT IS TO REUSE WHAT WE ALREADY HAVE!
REPAIR SAVES YOU MONEY.
FIXING THINGS IS OFTEN FREE, AND USUALLY CHEAPER THAN REPLACING THEM. DOING THE REPAIR YOURSELF SAVES SERIOUS DOUGH.
REPAIR TEACHES ENGINEERING.
THE BEST WAY TO FIND OUT HOW SOMETHING WORKS IS TO TAKE IT APART!
IF YOU CAN'T FIX IT, YOU DON'T OWN IT.
REPAIR CONNECTS PEOPLE AND DEVICES, CREATING BONDS THAT TRANSCEND CONSUMPTION.
SELF-REPAIR IS SUSTAINABLE.
REPAIR CONNECTS YOU WITH YOUR THINGS ○ REPAIR EMPOWERS AND EMBOLDENS INDIVIDUALS
REPAIR TRANSFORMS CONSUMERS INTO CONTRIBUTORS ○ REPAIR INSPIRES PRIDE IN OWNERSHIP
REPAIR INJECTS SOUL AND MAKES THINGS UNIQUE ○ REPAIR IS INDEPENDENCE
REPAIR REQUIRES CREATIVITY ○ REPAIR IS GREEN ○ REPAIR IS JOYFUL
REPAIR IS NECESSARY FOR UNDERSTANDING OUR THINGS ○ REPAIR SAVES MONEY AND RESOURCES
WE HAVE THE RIGHT:
TO OPEN AND REPAIR OUR THINGS WITHOUT VOIDING THE WARRANTY
TO DEVICES THAT CAN BE OPENED ○ TO ERROR CODES AND WIRING DIAGRAMS
TO TROUBLESHOOTING INSTRUCTIONS AND FLOWCHARTS
TO REPAIR DOCUMENTATION FOR EVERYTHING ○ TO CHOOSE OUR OWN REPAIR TECHNICIAN
TO REMOVE 'DO NOT REMOVE' STICKERS ○ TO REPAIR THINGS IN THE PRIVACY OF OUR OWN HOMES
TO REPLACE ANY AND ALL CONSUMABLES OURSELVES
TO HARDWARE THAT DOESN'T REQUIRE PROPRIETARY TOOLS TO REPAIR
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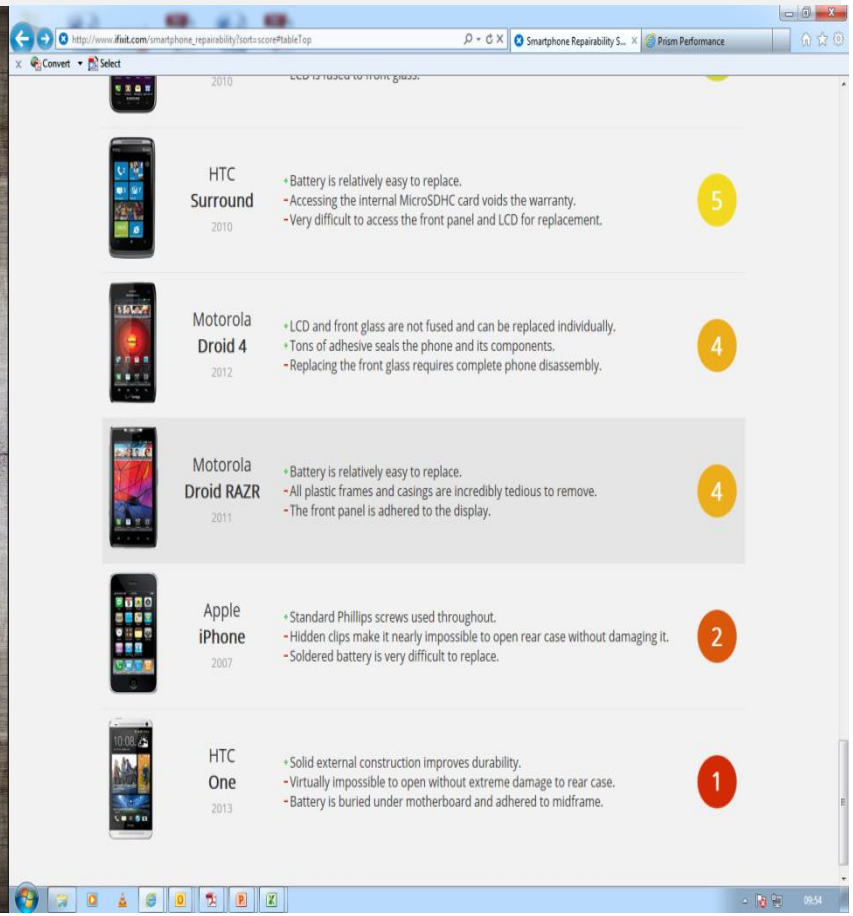
HTC Surround 2010
+Battery is relatively easy to replace.
-Accessing the internal MicroSDHC card voids the warranty.
-Very difficult to access the front panel and LCD for replacement.
5
Motorola Droid 4 2012
+LCD and front glass are not fused and can be replaced individually.
+Tons of adhesive seals the phone and its components.
-Replacing the front glass requires complete phone disassembly.
4
Motorola Droid RAZR 2011
+Battery is relatively easy to replace.
-All plastic frames and casings are incredibly tedious to remove.
-The front panel is adhered to the display.
4
Apple iPhone 2007
+Standard Phillips screws used throughout.
-Hidden clips make it nearly impossible to open rear case without damaging it.
-Soldered battery is very difficult to replace.
2
HTC One 2013
+Solid external construction improves durability.
-Virtually impossible to open without extreme damage to rear case.
-Battery is buried under motherboard and adhered to midframe.
1

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method.
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naturally derived hand wash
clémentine
method.
cucumber
method.
sea minerals
naturally-derived hand wash
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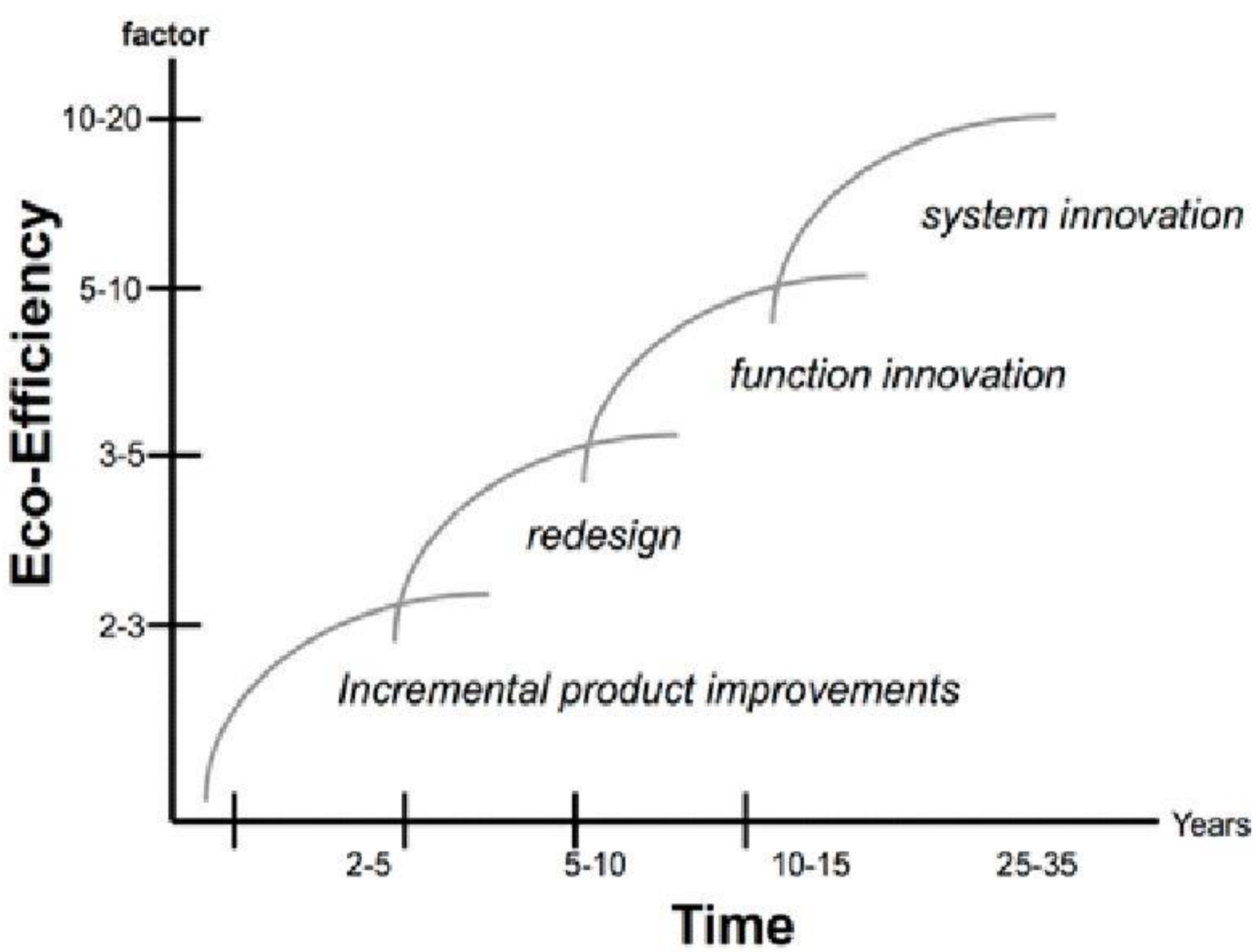
method.
french lavender


factor
10-20
5-10
3-5
2-3
Eco-Efficiency
system innovation
function innovation
redesign
Incremental product improvements
Years
2-5
5-10
10-15
25-35
Time

CREATE
YOUR
FUTURE

PARADIGM SHIFT

Arctic Ocean
Arctic Ocean
Arctic Ocean
Greenland (Den.)
Iceland
Norway
Finland
Russia
Canada
U.S.A.
United States of America
North Atlantic Ocean
North Pacific Ocean
North Pacific Ocean
Kazakhstan
Mongolia
China
Japan
Hawaiian Islands
U.S.A.
Mexico
Morocco
Algeria
Libya
Egypt
Turkey
Iran
Saudi Arabia
India
Mauritania
Mali
Niger
Chad
Sudan
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Oman
Nigeria
Ethiopia
Somalia
Uganda
Kenya
Rwanda
Burundi
Zaire
Tanzania
Gabon
Congo
Angola
Zambia
Zimbabwe
Namibia
Botswana
Malawi
Mozambique
Madagascar
South Africa
Swaziland
Lesotho
Indonesia
Malaysia
Australia
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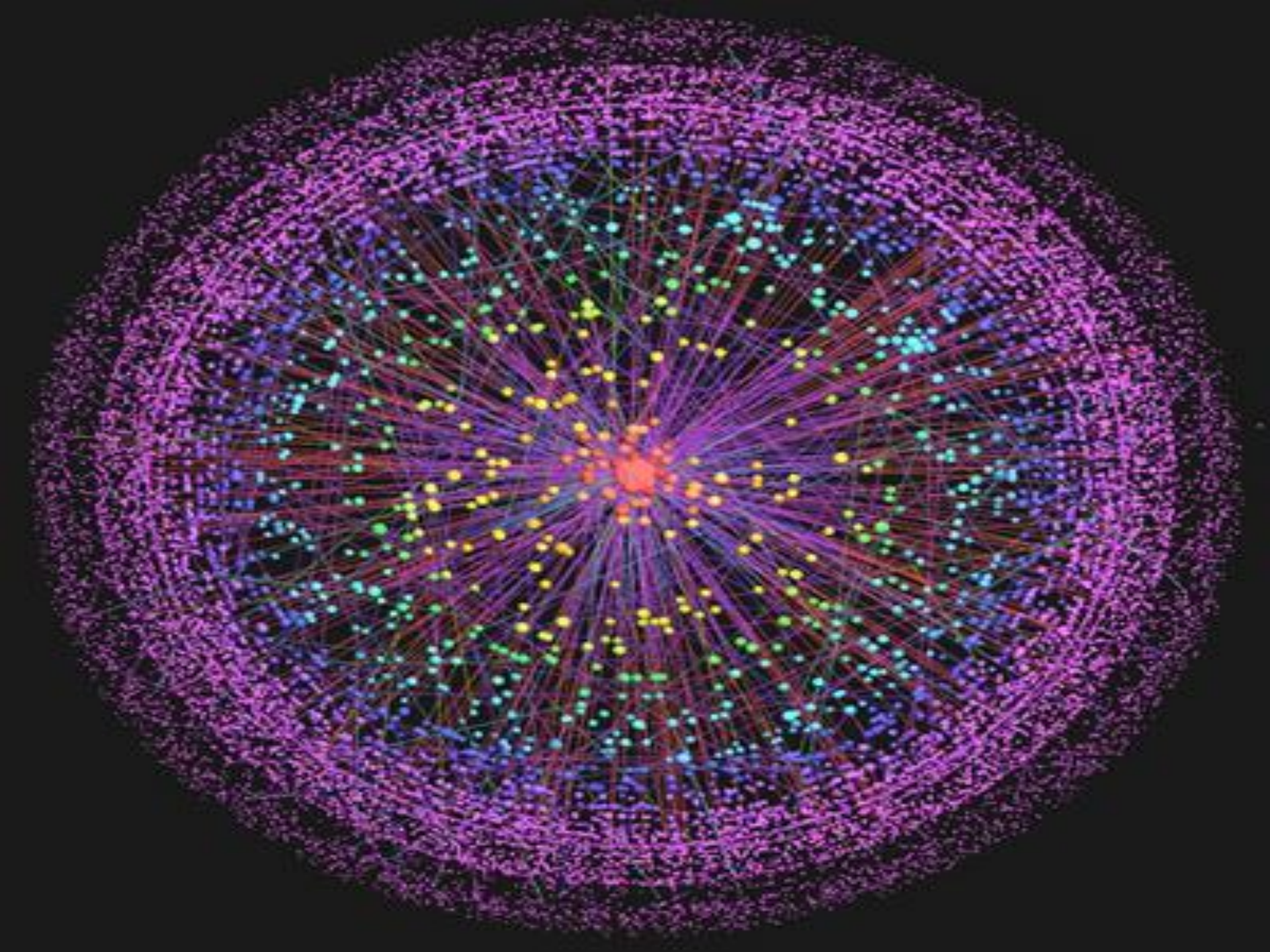

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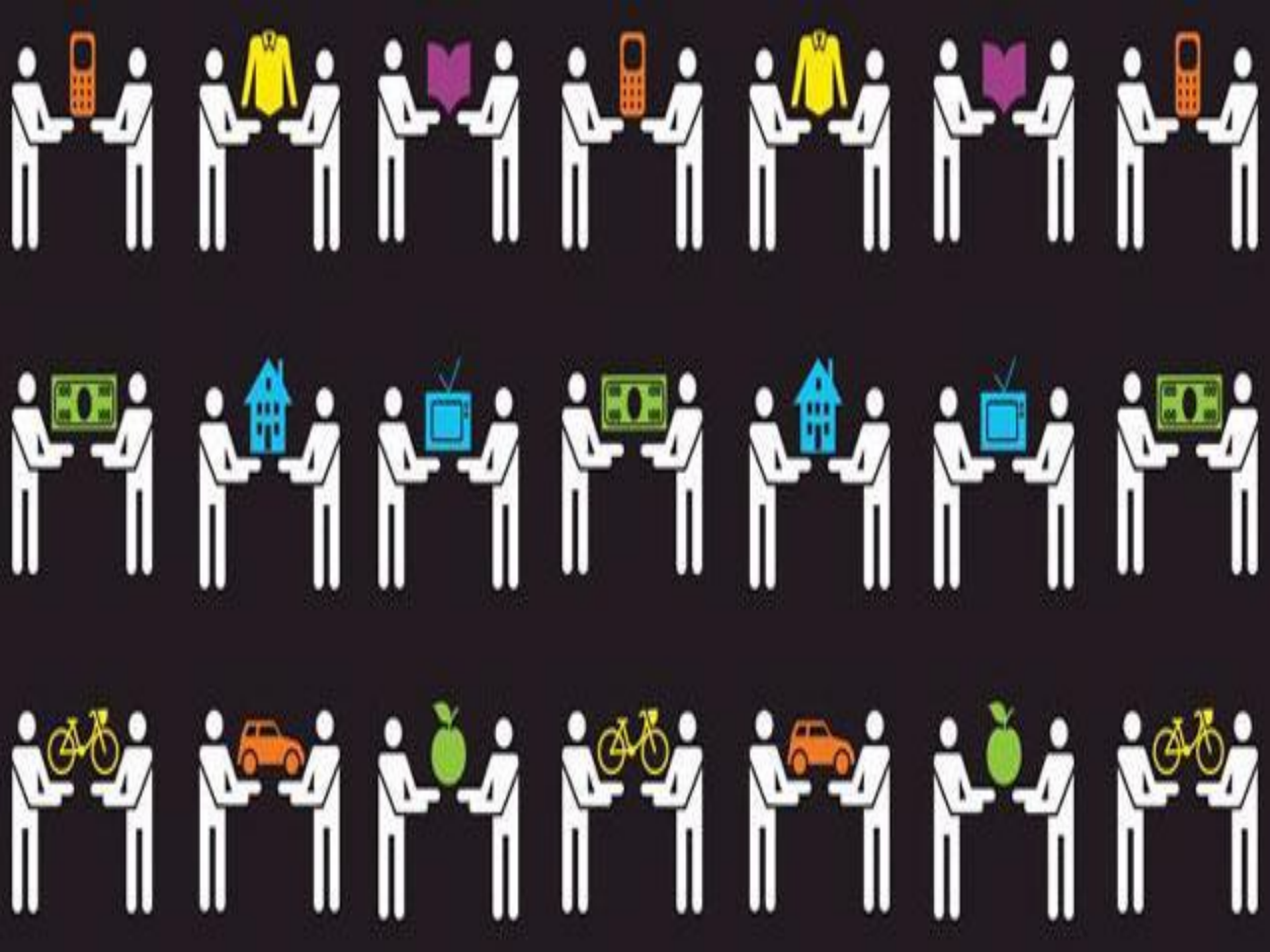

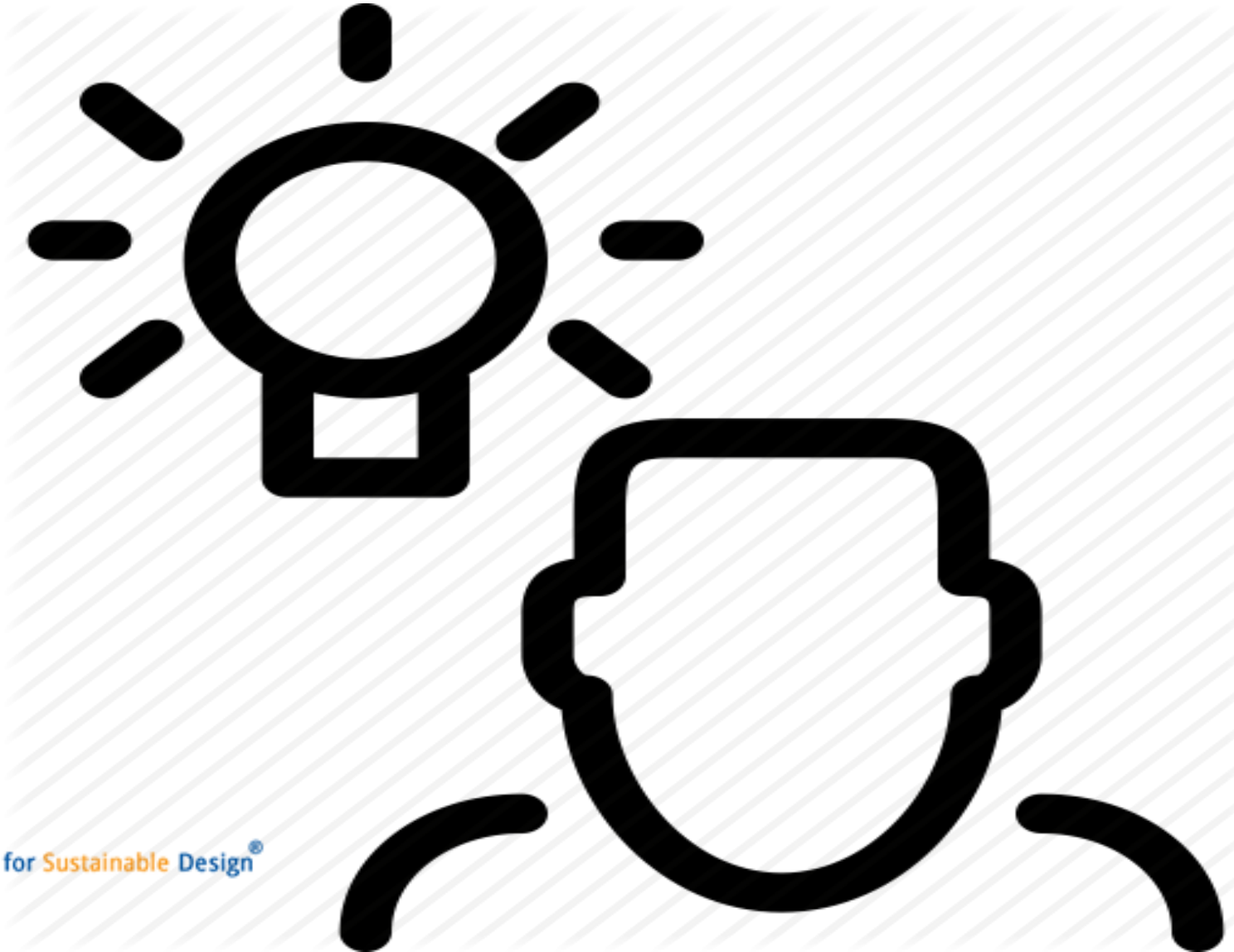

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sweet water
343mL (11.6 FL OZ)
BOTTLE MADE WITH
OCEAN
PLASTIC
method.
DISH + HAND
sea minerals
odor eliminating 2-in-1 soap
this bottle is made with recovered ocean plastic*
343mL (11.6 FL OZ)

circular ocean

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Industry 4.0

YESTERDAY

TOMORROW

imaginarium

Re-Industrialisation 1.0

Decentralisation

Low Carbon

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GreenXChange

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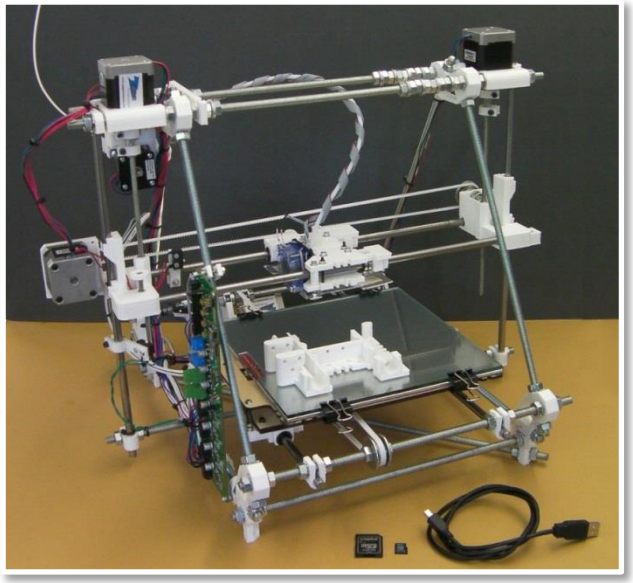
3D Printing

RepRap



MakerBot INDUSTRIES

Thingiverse

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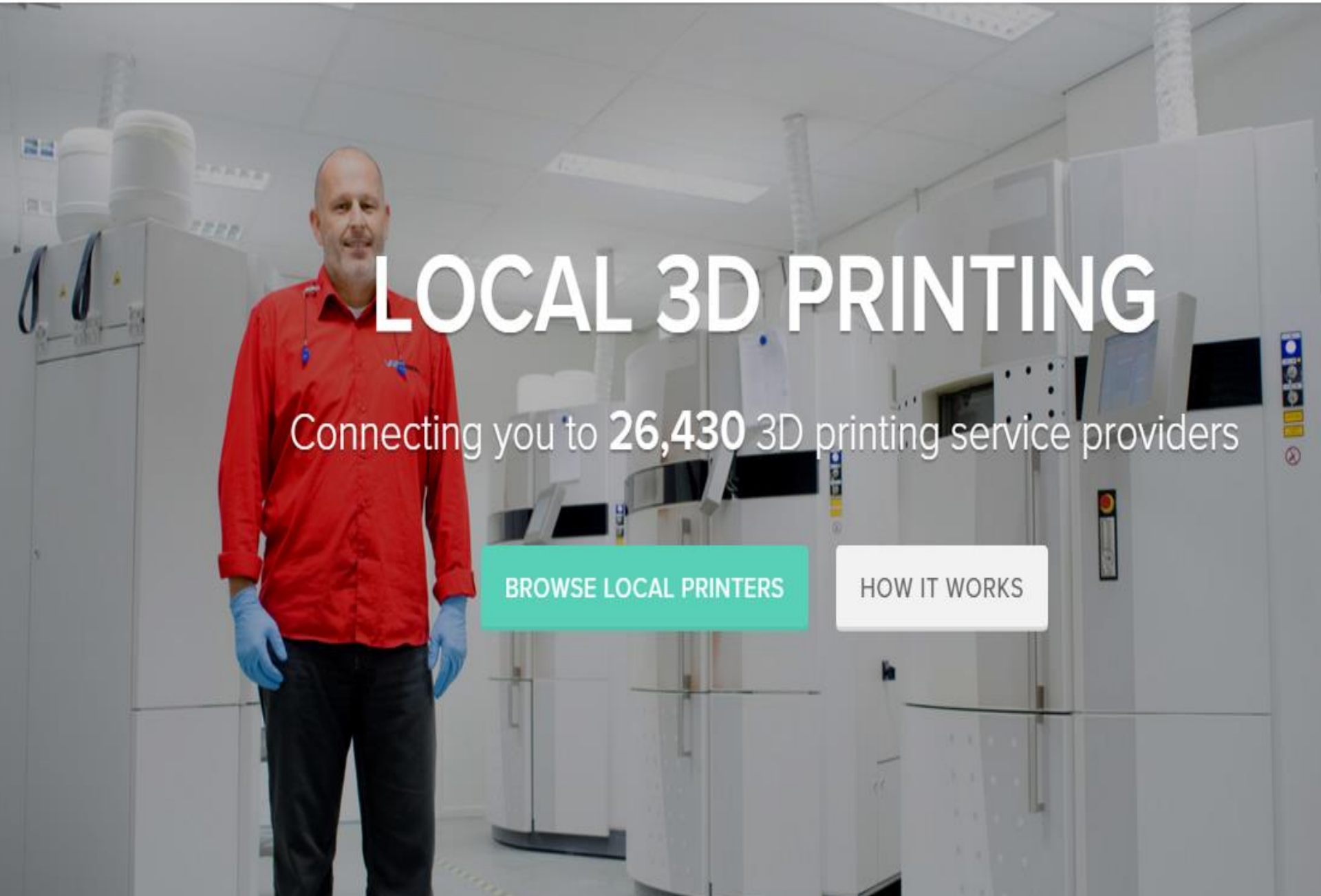
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Farnham Repair Café
10am – 12:30pm
14th May 2016
Farnham United Reformed Church
South Street
Farnham
Surrey
GU9 7QU

Visitors to FRC:	545
Repairs completed:	132
Repair rate:	59%
Landfill diversion:	477 Kg
CO^2 reduction:	219 Kg

Farnham Repair Café is

Farnham Repair Cafe is a Collaborative Project between The Centre for Sustainable Design ® at the University of the Creative Arts and Transition Town Farnham.

Farnham Repair Cafe is a part of the global repair café movement led by Repair Café International Foundation.

Farnham Repair Cafe is supported by Farnham Town Council, Farnham United Reformed Church and University of the Creative Arts.

Transformation or Transition

(R)evolution or Evolution

TOP DOWN

BOTTOM UP

SUSTAINABLE FUTURES

Contact Details

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