CIRC4LIFE

CIRCULAR BUSINESS MODEL - CO-CREATION OF PRODUCTS

Presented by [...]
[Date]

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776503

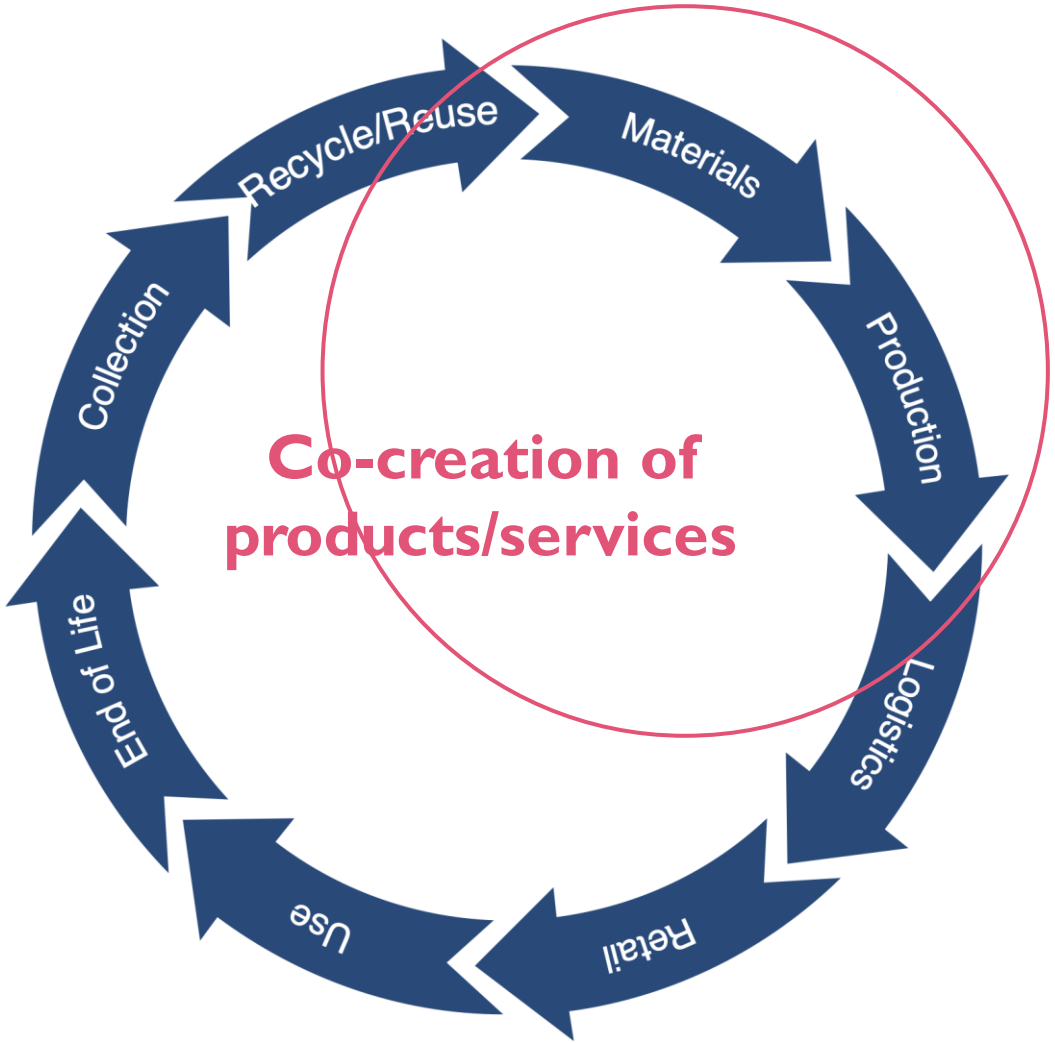
Basic information about CIRC4Life

- CIRC4Life is an international collaborative innovation project (May 2018 until April 2021) with the aim to develop and implement a circular economy approach for sustainable products and services through their value and supply chains.
- Coordinator Nottingham Trent University
- Partner organisations

Enviro Data (ENV), Jonathan Michael Smith (JS), Kosnic Lighting Limited (KOS), Centre of Research for Energy Resources and Consumption (CIR), European EPC Competence Center GmbH (EECC), The Institute for Ecology of Industrial Areas (IETU), RISE IVF AB (SWE), Make Mothers Matter (MMM), ONA PRODUCT (ONA), INDUMETAL Recycling (IND), GS1 Germany GMBH (GS1G), Laurea University of Applied Science (LAU), Center for European Policy Studies (CEPS), Institute of Communication and Computer Systems (ICCS), Recyclia (REC), S.A.T. Alia (ALIA)

- Content specific for this module tool produced by

CO-CREATION OF PRODUCTS/SERVICES



Key tools and service

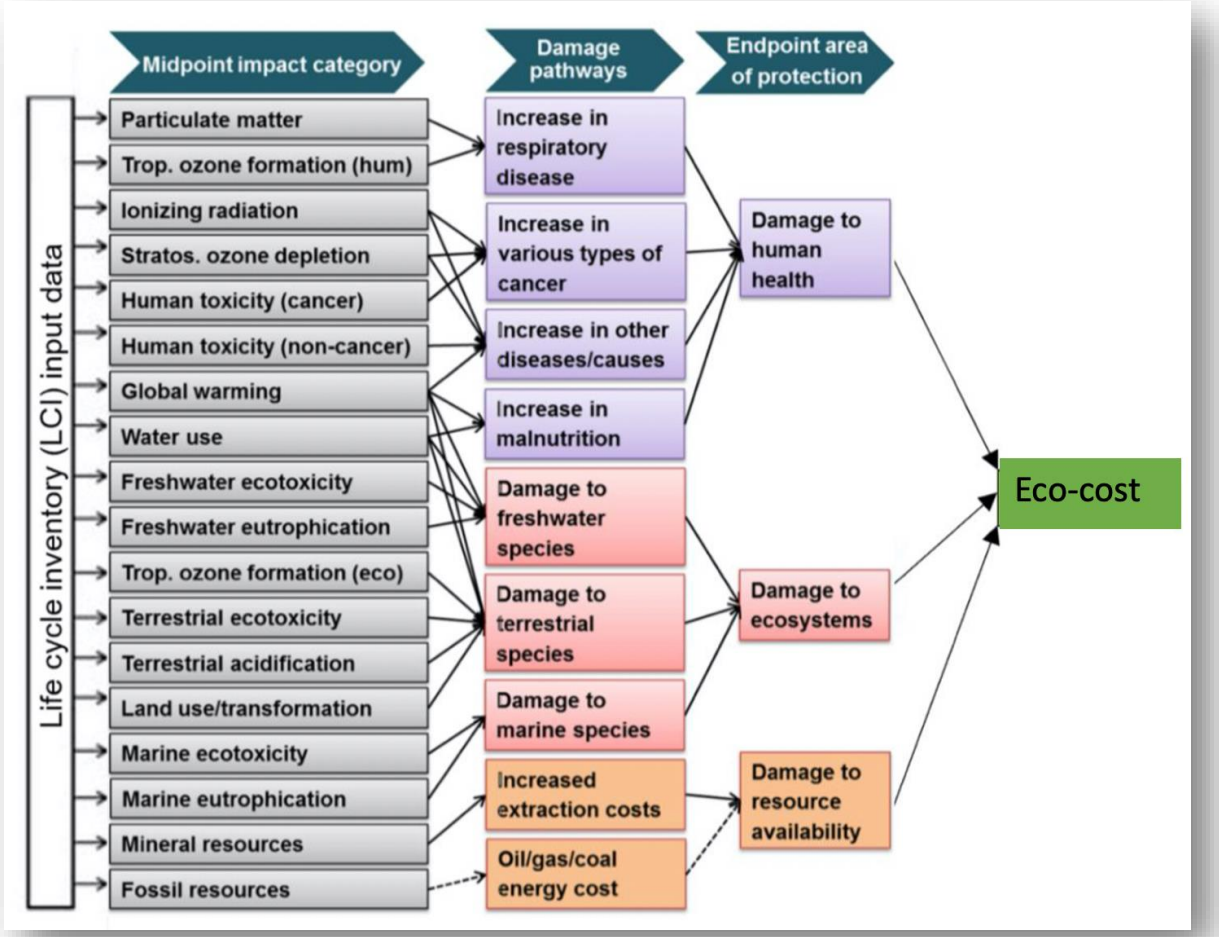
- Eco-cost approach
- Data mining technology for online consumer review
- *Example: Leasing service for industrial lighting; Taking back scheme for End of life domestic lightings.*

Key benefits

- Measure and record the eco-impacts of the product life cycle
- Identify consumer preferences and apply into product design specification
- Prolong product life span, and easy to recycle/reuse

ECO-COST APPROACH - VALUE

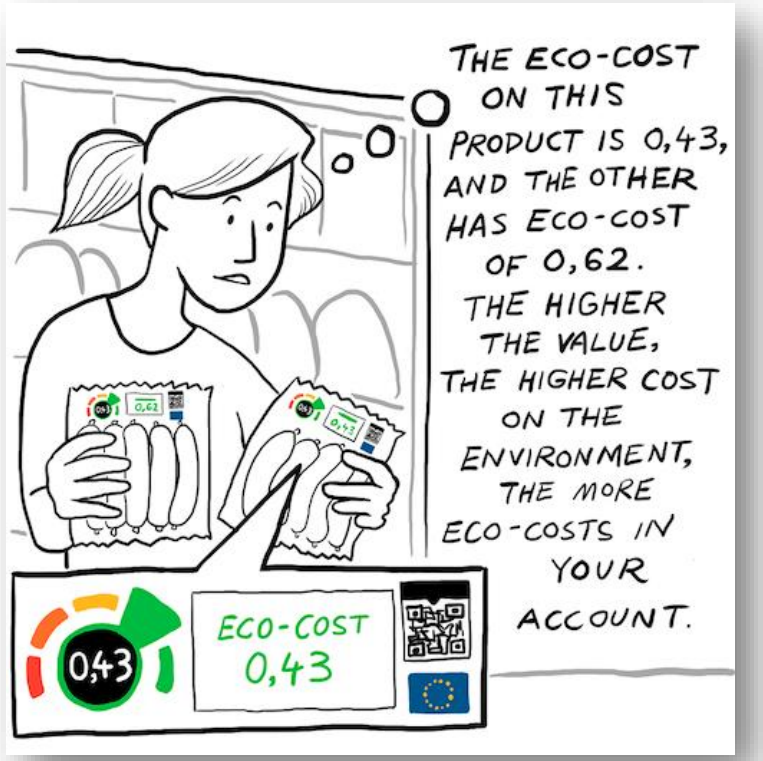
- The eco-cost is a cumulative value, which accounts for an aggregate of the ecological impacts throughout the product life cycle.
- Eco-cost value is obtained via utilising the method of life cycle impact assessment (LCIA).
- One of the most commonly used LCIA methods is ReCiPe, which applies seventeen midpoints and three endpoints to assess the impact of product.



ECO-COST APPROACH – APPLICATION

Eco-account

Eco-shopping

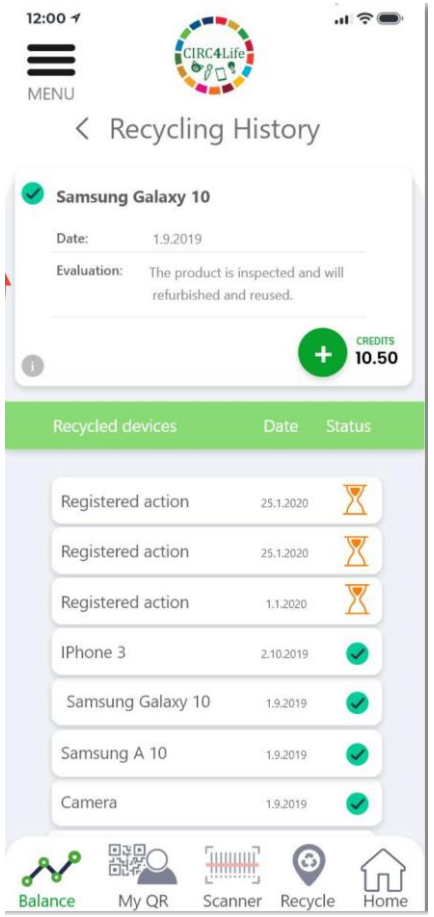


Eco-shopping

ECO-CREDIT

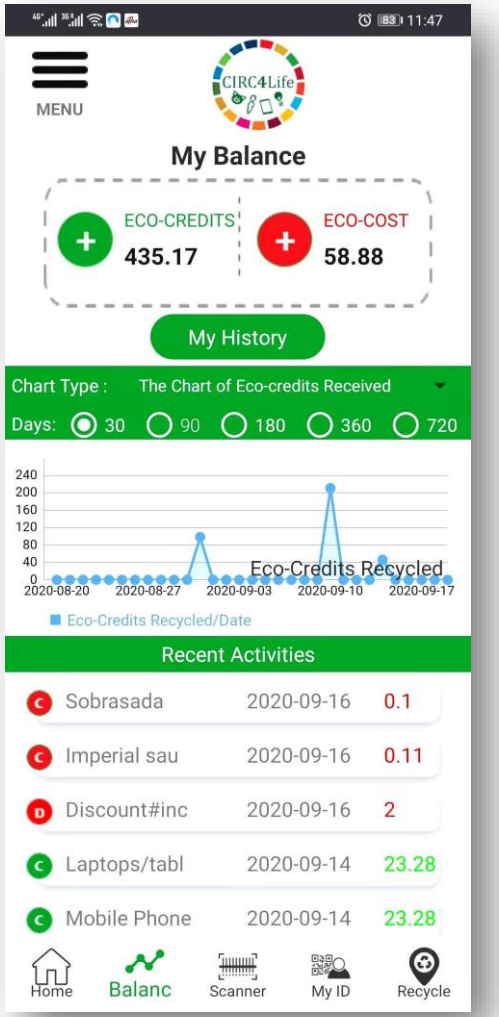
- Eco-credit, which is used to credit the customer's positive behaviour for their longer-time use, and their sorting process for later recycling or reuse of the products.

- Eco-credit value could be higher than Eco-point value due to longer use time, and hence. The eco-credits are calculated based on the eco-points).

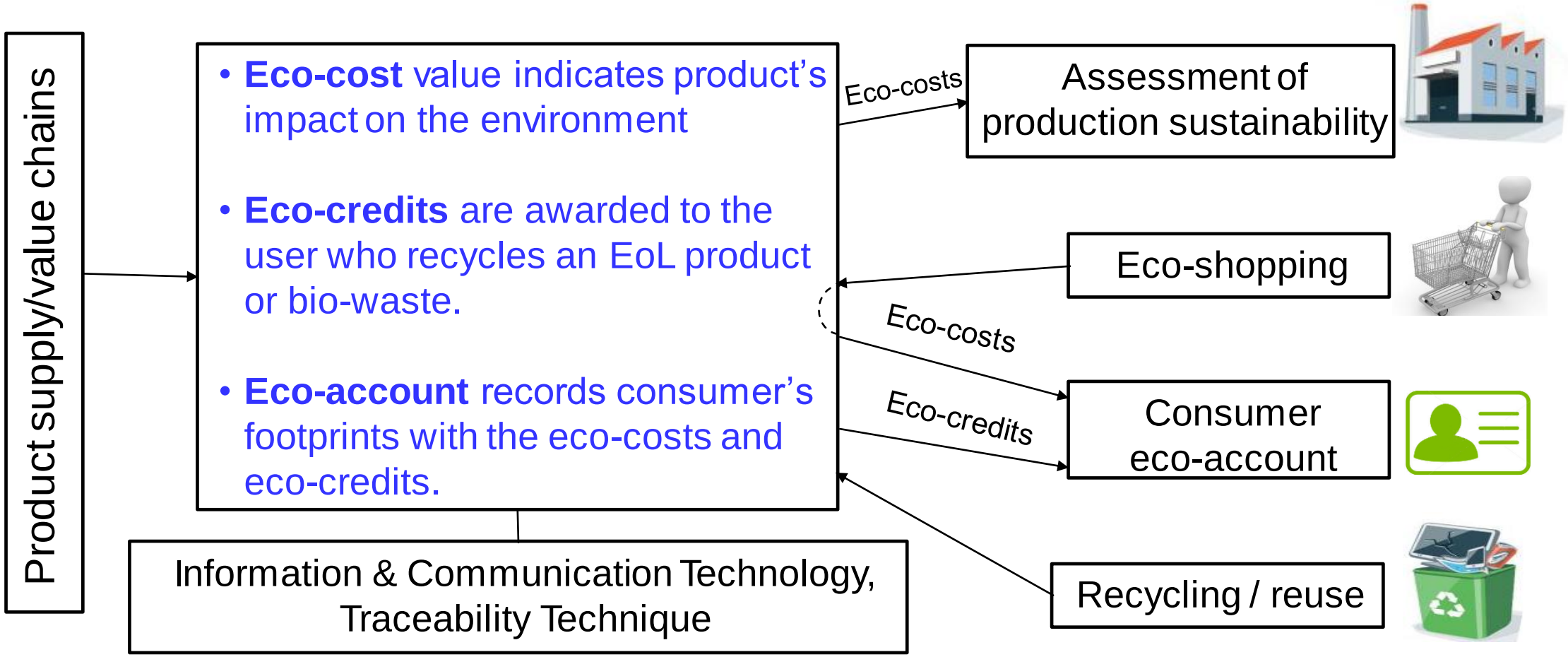


ECO-COST AND ECO-CREDIT VALUE

Products	eco-costs (via purchasing)	eco-credits earned (via use and recycling/reuse)	eco-balance (use eco-credits minus eco-costs)
book	9	11	2
computer	18	13	-5
Total	27	24	-3

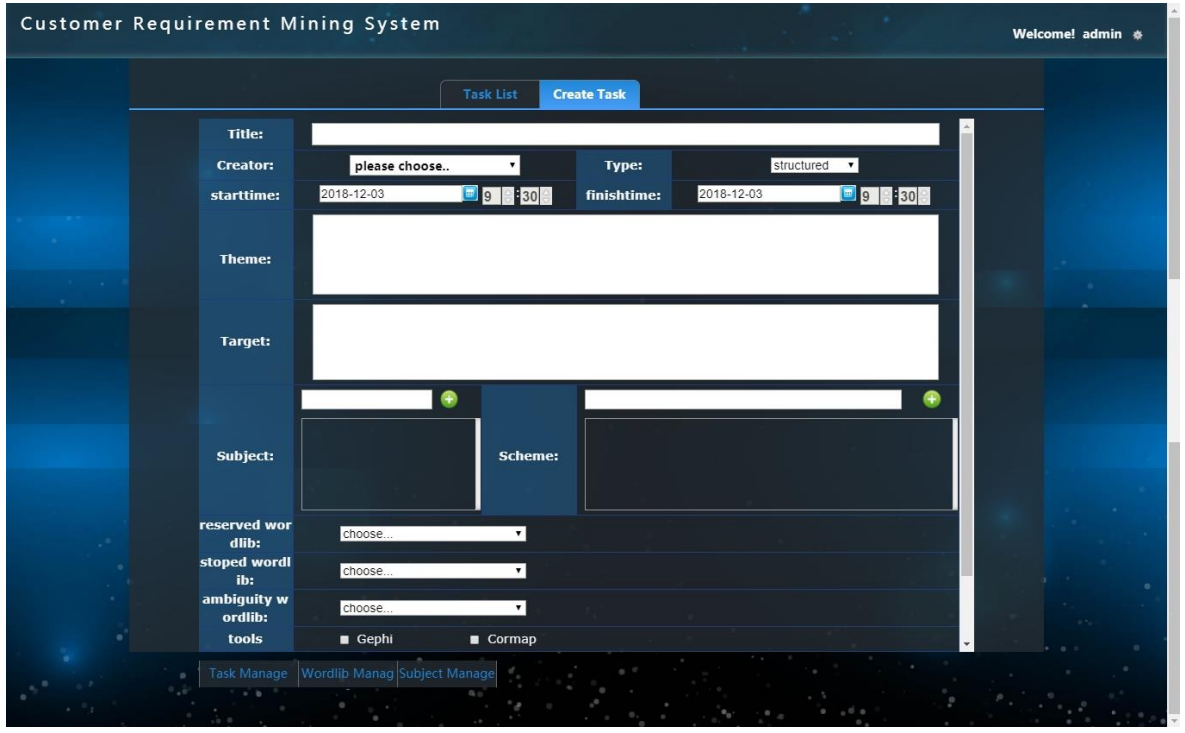


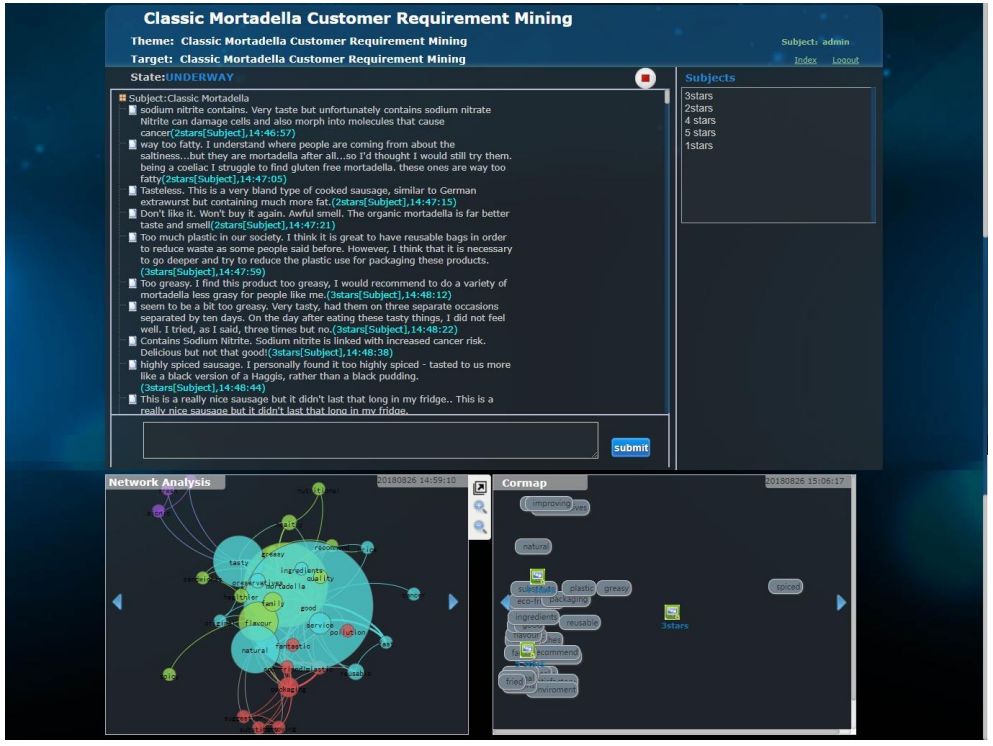
ECO– ACCOUNTING PLATFORM



DATA MINING FOR ONLINE CUSTOMER REVIEW

Select Target Product → Establish Analysis Objectives → **Mining Online Reviews** → Select Online Reviews → Texture Processing → Compose PDS

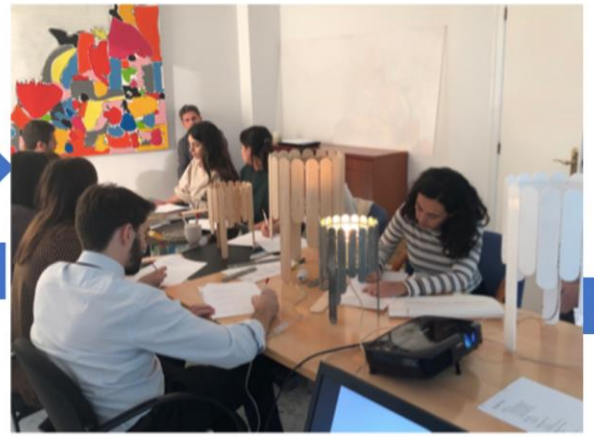




DATA MINING FOR ONLINE CUSTOMER REVIEW – LIGHTING EXAMPLE

Consumer preferences through mining their reviews and workshops

Prototype



Consumers feedback via Workshop and focus group

ona®

Improved version

NEW CIRCULAR BUSINESS OPPORTUNITY - LEASING SERVICE FOR INDUSTRIAL LIGHTING

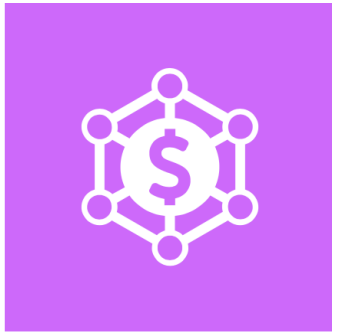
- Survey results - Leasing service for industrial lighting

Moe than **57%** responses think this service is important

90% responses show that their own company is doing the replacement work when the lighting product goes faulty

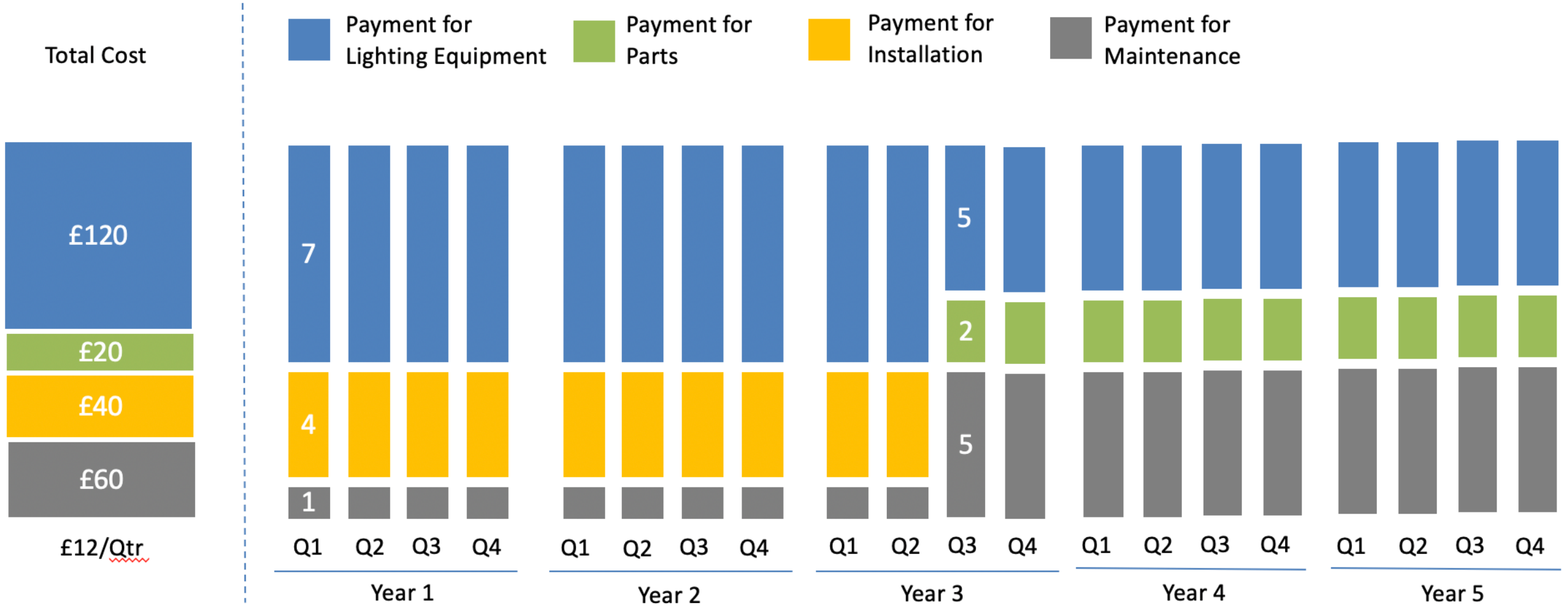
Interested services (**42%**):

- Intelligent usage and energy analytics via IoT solutions
- One service provider provides holistic solution



A flat rate payment plan is preferred (**71.43%**).

LEASING SERVICE FOR INDUSTRIAL LIGHTING - PAYBACK PLAN



LEASING SERVICE FOR INDUSTRIAL LIGHTING - COMPARISON OF COSTS (UK TARIFF)

	Fluorescent (existing installation)	LED (new installation)
Energy Consumption:	1,350,000 kWh	485,000 kWh
Energy Cost (7.9p per kWh):	£106,650	£38,315
Maintenance Costs:	£5,500	£0
Fittings and Installation: (repaid through lease)	£0	£53,000
Total Costs:	£112,150	£91,315
Total Savings:		£20,835

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WORKSHOP

USE ECO-POINT APPROACH TO IMPROVE COMPANY SUSTAINABILITY

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WORKSHOP AIM

- Understand what eco-cost value mean to companies/consumers.
- Knowledge about the main environmental impact contributors.

EXAMPLES FOR ECO-COST VALUES

Product	Unit	eco-cost value (Points)	Note
domestic LED lighting	per luminaire	17 Pts	6.7w per luminaire, 40,000 hours life span
industrial LED lighting	per luminaire	120 Pts	100w per luminaire, 40,000 hours life span
organic potato	1kg	0.33 Pts	0.05 Pts, per potato (approx. 0.15kg)
pork sausage	1kg	0.43 Pts	0.1075 Pts per 0.25kg (the weight of the product)
pork loin	1kg	0.57 Pts	0.5130 Pts per 0.9kg (the weight of the product)

WORKSHOP STRUCTURE

Individual/group work :

- Pick one product manufactured from your company, to estimate its eco-point value based on previous slide.
- Draw a simplified flowchart describing the manufacturing process/flow.
- Highlight the main manufacturing procedures/materials that contribute environmental burden.
- Mark the possible impact contribution percentage associated with those procedures/materials.

WORKSHOP ASSIGNMENT

Open questions:

- Apart from the energy consumption, what is the major impact contributor for the product eco-cost value?
- Discuss the alternative materials or manufacturing technologies that can mitigate the overall eco-cost value.
- Does the mitigating solution cause additional environmental burden that may be neglected?

WORKSHOP CONCLUSIONS

- [To add during or after the workshop]

You can find CIRC4Life app from Google Play, please feel free to share your feedback with us.

THANKS

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References

- TEXT