



D2.3 – SUPER-HEERO ENERGY EFFICIENCY INTERVENTIONS MARKET AND TECHNOLOGICAL CATALOGUE

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Date: May 31, 2023

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 894404

Project details			
Project acronym	SUPER-HEERO	Start / Duration	01-06-2020 / 30 months
Topic	Innovative financing for energy efficiency investments	Call identifier	H2020-LC-SC3-EE-2019
Type of Action	CSA	Coordinator	R2M Solution
Website	super-heero.eu		

Deliverable details			
Number	2.3		
Title	SUPER-HEERO Energy Efficiency Interventions market and technological catalogue		
Work Package	2		
Dissemination level	Public	Nature	Documentation of partner program
Due date (M)	34	Submission date (M)	M36
Deliverable responsible	ZER0E	Contact person	agomez@zeroe-engineering.com

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Document History			
Date	Version	Name	Changes
1/12/2022	1	Lorena Peña Ana Gomez	Draft and brochure development
06/03/2023	2	Lorena Peña Ana Gomez	Full draft
18/05/2023	3	Thomas Messervey Sara Casciati	Addition of SH technology program partners from pilots / activities. Exec sum and conclusions. Content related to program implementation going forward.

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D2.3- AXHIBIT 1_Technology providers engagement brochure-EV

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Terms, definitions, and abbreviated terms

Acronym	Definition	Acronym	Definition
SM	Supermarket	TP	Technology providers
WP	Work package	EPC	Energy Performance Contracting
PAAS	Product as a Service	ESCO	Energy Service Company
EE Kits	Energy Efficiency Kits	PV	Photo Voltaic

1. Executive Summary

This document describes the SUPER-HEERO approach to the development of a technology and service provider partner program. Overall, this document holds information regarding technology providers, their importance in relation to energy efficiency in supermarkets. As well as the possible financial schemes that might apply to each type of technology that were selected in deliverables 2.1 and 2.2. Benefits for supermarkets to use PAAS and EPC models and how it would work in each type of technology. And the approach to involve technology providers to the project.

Related to our partner program, a top down and bottom up methodology has been followed.

Top-down: in previous reports the project identified a series of technologies, interventions, and renovation packages. The project then reached out to wide array of organizations suitable for such interventions and disseminated to them the Super Heero approach via emails, calls and a brochure. This top-down approach was before pilot activities and before the Super Heero platform / ecosystem was launched.

Bottom-up: leveraging pilot activities the project had the opportunity to directly make business with several organizations to realize those pilots. These organizations have directly experienced the model, concepts and ideas behind the project and have become champions of the SUPER-HEERO idea overall.

Several organizations have also been engaged at dissemination events and workshops. Not all are listed in this document, several will remain in standby until first projects are developed that directly involve them.

Monetization strategies related to the technology and service provider program are still under consideration and are to be further developed once the primary sides of the multi-sided business model and ecosystem ignite further. The project closes with its first few pilots complete and in progress. Once a pipeline of projects is and community of investors is more fully developed – the value proposition and revenue models are more interesting.

For anyone reading this document, and especially any technology or service providers discovering what Super Heero does, please do check with us at info@super-heero.eu. Our partners have the opportunity to have a digital booth within our capacity building web-based environment on our project webpage (www.super-heero.eu) and are the first ones we reach out to when project opportunities arise. Our partner network will also be part of/referenced on the crowdlending portal at www.super-heero.com.

2. Introduction: The role of the technology providers in the energy efficiency interventions in supermarkets

2.1. Technology providers as important actors in reversing climate change

Technology has become indispensable for the day-to-day basis. According to the report of the State of European Tech in 2018, European founders created 17 billion-dollar companies. Giving them a key role in the industrial and commercial system. Right now, most of the industrial and commercial system works through the following pathway: provider, intermediate and final client, being the technology part of the providers or intermediate.



Figure 1 Commercial system

Talking about technology providers, they can be involved in the manufacturing process of a product, its conservation, transportation, as a tool of transformation and among others. In the end, the technology or equipment supplied has a strong interaction with a process or product, if the equipment or technology is damaged or has a malfunction, it can affect the final product or process. Affecting not only the process it serves but also the resources or material it is helping to shape or transform. A common thing about all types of technology is the use of energy to function, yet technology can use many other resources such as, water, refrigerant, oil among other types of consumables. With a malfunction of the technology, resources will be wasted using more than the necessary. A key word to this point is efficiency, which in a few words can be define as how much you do with what you have (amount of the result product dived by amount of raw material used), and with an obsolete or malfunctioning equipment, the efficiency will always be decreasing.

As mentioned before, a common thing between all types of technology, no matter which goal they have, is the use of energy. Now a days energy has become a relevant topic with the climate change, this is because according to Our World in Data the 84.3% of the worldwide energy is generated from fossil fuels that are known because of their high ecological impact with the emissions of pollutants in the atmosphere.

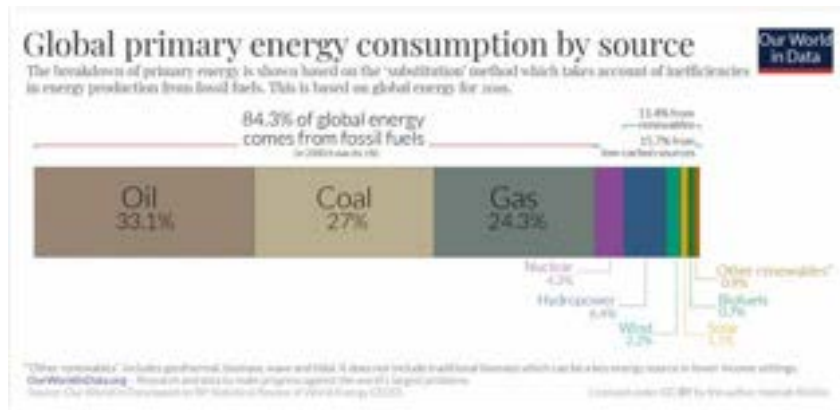


Figure 2 Global primary energy consumption by source (Our World in Data, 2020)

There is a long pathway to change this numbers and decrease the use of fossil fuels, but as Doctor Scott Tinker said, "the easiest way, the best way to transition is the energy we don't use" Doctor Scott emphasises that the best way to reduce the impact related with the energy consumption is to not use the energy that is not needed, in technical words, increase our energy efficiency.

Technology providers are in charge to research, develop and deliver the best and most efficient technologies and equipment to the client, making them responsible to start the commercial and industrial pathway in the best scenario. As well, they are responsible of supplying tools to use the technology in the best way, prolonging their lifetime use and meet the goal of the equipment or technology use.

2.2. Interaction between technology providers and supermarkets

Talking about supermarkets, like other retailers, the main equipment needed are HVAC, lighting with the addition of refrigeration.

One of the purposes of a building is to provide a comfort zone for the people who are interacting inside the building, in this case, supermarket workers and clients. According to Mirzaei, the comfort temperature inside buildings in summer should be between 25°C to 28.2°C and in winter between 21.5°C to 25°C. As well, it is important to mention that the ventilation in the building allows to decrease diseases, prevents mild and rust, helps the preservation of the oxygen, and gives a fresh area for workers and clients. In the article New Global Study Supports Healthy Buildings as a Critical Public Health Strategy by Danielle Canzanella mentions the importance of HVAC systems with efficient filtration to protect the people inside the building from negative effects of PM_{2.5} CO₂ and diseases. Along with HVAC there is also lightning, every building must have a good lighting to avoid accidents, to buy, to

pass through hallway and between many other things it is even responsible of attract the client to the article in sell; here the key is to find the most efficient way to supply light inside the building. In the other hand, being food the main product in a supermarket, the refrigeration or freezing system are highly important, they conserve the food in the best conditions, avoiding damage and reducing waste or money losses in the business, this allowing not only savings of money but also reduce food waste. In the food supply chain distribution and retail are responsible of 5.1% food waste.

The source of energy can also be a factor of interest to the supermarket science this might change the energy cost. If it comes from a renewable energy the cost could be cheaper than the fossil fuel energy; or if the supermarket has a self-supplier system, the cost of energy could decrease giving more profit to the supermarkets.

As a supermarket to define or choose a technology provider there are different considerations to consider, such as:

- Installation cost
- Installation time
- Interventions inside supermarket-is there going to be a logistic change inside the supermarket while there is the installation.
- Type of contract
- Supermarket type of ownership – franchise, cooperation, cooperative, private, etc. the internal structure of decision making is different in each one.

3. Technology providers engagement program

This chapter describes various aspects of the Super Heero partner program. Current partners are listed in Section 3.1. Method in Section 3.2. Our top-down approach in Section 3.3 and a general approach in Section 3.4. Overall, the chapter traces the development across the project of how the partner program has evolved and the different options for reaching and engage technology providers for the SUPER-HEERO project. After developing WP1, D2.1 SUPER HEERO Renovation Measure catalogue for supermarkets and D2.2 Guidelines for the implementation and financing of EE Measures in Supermarkets this task counts with enough information to develop a program that can be interesting for the technology providers, that they can see it as a possibility to enlarge their customers and even their products reach with the implementation of the technologies into the supermarkets.

Related to the business model and Super Heero approach overall, technology and service providers are the third critical leg to ignite the multi-sided business model and ecosystem. In simple terms, the ecosystem puts together projects (supermarkets), investors (the crowd), technology and service providers and ESCOs / project proponents that put it all together. Technology and service providers can include a wide range of organization types, from pure suppliers of technologies (simple procurement), to those that offer leasing or as a service

models, to consulting experts that facilitate a specific part of the Super Heero process (audit, or business model shaping, marketing support, or others).

3.1. SUPER-HEERO Technology and Service Providers

At project closure, Super Heero technology and service providers are those listed in this Section 3.1. To date, they are limited to those who have worked directly with the project, concept and approach rather than a listing of companies potentially interested. We consider these first partners “Super-Heero Certified” and will build forward deliberately expanding the approach and program.

3.1.1. Greentime Hub

<https://www.greentimehub.com/>

Greentime Hub is an environmental services company with a network of technology providers and commercial agents on the Italian market. Technology solutions include solar, batteries, co-generation using hydrogen, heat pumps, biomass, solar thermal, relamping, building automation, nature based solutions, green roofs and consulting for the implementation of sustainability and energy renovation measures.



3.1.2. Brainbox AI

<https://brainboxai.com/en/>

Brainbox AI is a market leader in the building services sector which uses deep learning, cloud-based computing, algorithms and a proprietary process to support a 24/7 self-operating building that requires no human intervention and enables maximum energy efficiency.

BBAI has a deep focus on the retail sector recently purchasing the ABB multi-retail business. In simple terms, BBAI collects data, learns from trends in building use and occupancy, connects to weather forecasts, and runs a series of over 30 algorithms to optimize building setpoints for the control of HVAC and other energy consuming systems. BBAI has interesting IP related to the helping large retailers optimize defrosting cycles in refrigeration systems via zone climate condition control.



3.1.3. Energia Europa SPA

<https://www.energia-europa.com/>

Energy Europa SPA is the producer of innovative E-Power systems that ensure power quality. In simple terms, it is a unit that receives and filters power from the grid and then which delivers it to a facility at the point of entry. In doing so, systems in the facility operate more efficiently resulting in 4-7% improvements in energy efficiency. Systems are available for various sizes and types of structures. Energia Europa has a number of case studies for supermarkets and retailers as one of its primary market segments.



3.1.4. Onyx Solar Energy

<https://onyxsolar.com/>



Onyx Solar is a global leader in solar photovoltaic (PV) glass for buildings. As a structural element, the PV Glass not only generates electricity from the sun, but also provides thermal and acoustic insulation, natural lighting, and UV/IR filters.

Among the solar solutions that Onyx Solar offers, the most popular include photovoltaic skylights, curtain walls, floors and other façade systems. PV-Glass can be produced in nearly any color and several patterned solutions are available to include opaque elements for walls (enabling near all sun-exposed façade components to be energy producing) and allowing supermarkets to use colors that match their brand. Skylights are particularly interesting in commercial shopping centers and larger supermarkets as many existing structures suffer from a greenhouse effect (increasing cooling demand) and/or are not producing energy.

Onyx Solar is well recognized with over 350 projects, in 5 continents and over 80 international awards. Its innovations have made it the most awarded photovoltaic company on the planet.

3.1.5. GFP Consulting

<https://gfpconsulting.it/>



GFP is a financial controller firm with expertise in energy efficiency / ESCO contracts. The firm has followed the Super Heero approach and pilot implementations with direct input on business models, contracts, incentives and accountability aspects between various the various subjects in any given project. GFP consulting is available to provide expertise to 3rd parties using the Super Heero approach / developing projects and business models as project proponents.

3.2. SUPER-HEERO Method: Financial schemes appropriate for SH technology providers

SUPER-HEERO has develop and propose Energy Efficient Kits (EE Kits) to implement in the supermarkets according to the building age where is established the supermarket, and the geographic zone (Northern Europe or Southern Europe) Following the table with the EE Kits

Table 1. EE Kits Add the information of the deliverable

	Categories	Measures Included	Energy Savings kWh/m ² /y	Budget Needed €/m ²	Economic Savings €/m ² /y	Pay-Back Time y
Package 1a	Old supermarket, Northern Europe, deep renovation	LED lighting, Cabinets doors, HVAC fine-tuning, Cogeneration, High-eff. refrigeration, Envelope insulation	290.8	521.3	109.3	4.8
Package 1b	Old supermarket, Southern Europe, deep renovation	LED lighting, Cabinets doors, HVAC fine-tuning, Photovoltaic, High-eff. refrigeration, Envelope insulation, High-eff. heat pump	374.2	521.3	75.6	6.9
Package 2a	Old supermarket, Northern Europe, partial renovation	LED lighting, Cabinets doors, HVAC fine-tuning, Cogeneration, High-eff. refrigeration	190.8	421.3	94.3	4.5
Package 2b	Old supermarket, Southern Europe, partial renovation	LED lighting, Cabinets doors, HVAC fine-tuning, Photovoltaic, High-eff. refrigeration, High-eff. heat pump	307.5	421.3	65.6	6.4
Package 3a	Old supermarket, Northern Europe, basic renovation	LED lighting, Cabinets doors, HVAC fine-tuning	107.5	46.3	16.1	2.9
Package 3b	Old supermarket, Southern Europe, basic renovation	LED lighting, Cabinets doors, HVAC fine-tuning	107.5	46.3	16.1	2.9
Package 4a	Average supermarket, Northern Europe, deep renovation	LED lighting, HVAC fine-tuning, Cogeneration, High-eff. refrigeration, Envelope insulation	249.2	506.3	103.0	4.9
Package 4b	Average supermarket, Southern Europe, deep renovation	LED lighting, HVAC fine-tuning, Photovoltaic, High-eff. refrigeration, Envelope insulation	279.2	493.8	61.4	8.0
Package 5a	Average supermarket, Northern Europe, partial renovation	LED lighting, HVAC fine-tuning, Cogeneration, High-eff. refrigeration	149.2	406.3	88.0	4.6
Package 5b	Average supermarket, Southern Europe, partial renovation	LED lighting, HVAC fine-tuning, Photovoltaic, High-eff. refrigeration	245.8	418.8	56.4	7.4

	Categories	Measures Included	Energy Savings kWh/m ² /y	Budget Needed €/m ²	Economic Savings €/m ² /y	Pay-Back Time y
Package 6a	Average supermarket, Northern Europe, basic renovation	LED lighting, HVAC fine-tuning, Cogeneration	82.5	281.3	78.0	3.6
Package 6b	Average supermarket, Southern Europe, basic renovation	LED lighting, HVAC fine-tuning, Photovoltaic	82.5	131.3	31.9	4.1
Package 7a	New supermarket, Northern Europe, deep renovation	LED lighting, Heat recovery from refr., Smart load manag.	112.5	78.8	16.9	4.7
Package 7b	New supermarket, Southern Europe, deep renovation	LED lighting, Solar thermal, Smart load manag.	59.2	41.3	8.9	4.6
Package 8a	New supermarket, Northern Europe, partial renovation	LED lighting, Heat recovery from refr., Smart load manag.	112.5	78.8	16.9	4.7
Package 8b	New supermarket, Southern Europe, partial renovation	LED lighting, Solar thermal, Smart load manag.	59.2	41.3	8.9	4.6
Package 9a	New supermarket, Northern Europe, basic renovation	LED lighting, Smart load manag.	45.8	28.8	6.9	4.2
Package 9b	New supermarket, Southern Europe, basic renovation	LED lighting, Smart load manag.	45.8	28.8	6.9	4.2

In resume, the technology and equipment providers needed are:

- LED lighting
- Installation of cabinets doors
- HVAC fine-tuning
- Smart load management
- High efficient refrigeration
- Cogeneration
- Photovoltaic
- High efficient heat pump
- Solar thermal
- Heat recovery from refrigeration
- Envelope insulation

As mentioned in deliverables D1.5 Financial and legal assessment of the SUPER HEERO schemes and D4.4 Financial, circular economy and customer reaction assessment the best financial schemes to apply in SUPER-HEERO for the technologies mentioned above are Product As A Service (PAAS) or Energy Performance Contracting (EPC), but being this project aim also to come up with an innovative financial scheme, crowd founding is considered to the technologies that are needed.

However, cabinets doors, smart load management, envelope insulation and heat recovery from refrigeration the measures that need to be personalize in the installation because depends in the unique design and distribution of each supermarket. These three suits more to the traditional product or service models, where the suppliers give or install the product and the supermarket manage the use of it, and its investment can be financed by the crowdfunding campaign. With these technologies and equipment, the benefits come along after the installation of them.

Table 2 Technologies and equipment outside the PAAS model

Technologies and equipment	Benefit
Cabinets doors	The cabinets doors help to isolate a specific place which means there is not constant change between temperatures. By conserving temperatures in the places required reduces the energy consumed in HVAC or refrigeration.
Smart load management	This technology helps to monitor the energy consumption. This helps to be aware of any failure now and prevent any damage by taking corrective actions at the moment.
Heat recovery from refrigeration	The heat recover can be used in HVAC, this can reduce the mount of energy needed to heat an area
Envelope insulation	This avoids the energy loses between the inside of the supermarket and the exterior of it. This reduces the energy consumed in HVAC and refrigeration.

The other technologies such as LED lightning, HVAC fine-tuning, Photovoltaic, cogeneration, highly efficient refrigeration, solar thermal and highly efficient heat pump suit with the PAAS schemes or EPC.

According to the European Commission the EPC is a mechanism for organising the energy efficiency financing. The EPC involves an Energy Service Company (ESCO) which provides various services, such as finances and guaranteed energy savings. The remuneration of the ESCO depends on the achievement of the guaranteed savings. The ESCO stays involved in the measurement and verification process for the energy savings in the repayment period. ESCO and energy performance contracting are mostly found in the public sector and to a lesser extent in the industrial and commercial building sectors.

Talking about **PAAS**, Yang M and Evans S in the paper *Product-service system business model archetypes and sustainability* mention that PAAS models can be classified in four; product-oriented, use-oriented, result-oriented and integration oriented. (Table 3. PAAS classification).

Table 3 PAAS classification

Product-oriented	Provider sells products (the client owns the product) and offers additional service, such as maintenance, consultancy, insurance, repair, and training.
Use-oriented	Provider keeps the ownership of the products and sells the utility, availability, or function of products, such as leasing, renting, sharing, and pooling.
Result-oriented	Provider sells the results of a product, so the provider is also the user of the products, such as selling 'comfortable room temperature' rather than selling 'air conditioners'.
Integration-oriented	Mainly includes Engineering Procurement Construction (EPC) and Build Operate Transfer (BOT). where firms provide customers with a complete, ready-to-use solution including all the products and services required

For SUPER-HEERO project the models which fit for technology providers are mostly Use-Oriented, Result-Oriented, and Integration-Oriented. Regarding product-oriented model, it can be more related to envelope insulation, heat recovery from refrigeration, smart load management and cabinet doors.

An example that applies directly to SUPER-HEERO is **Lightning As A Service (LAAS)** model where it classifies as use oriented. The provider oversees the CAPEX and maintenance, and the supermarket pays for the use.



Figure 3. LAAS scheme

Another example is the **technology leasing** classify as result oriented, this is lean to technologies or equipment like fridges or photovoltaic panels. Since the supermarket is more interested in the result of the equipment; for example, the supermarket is interested to have places where the temperature is low to conserve some products therefore it needs fridges. In this case the provider leases the equipment, and the supermarket pays a fee.



Figure 4. Leasing scheme

Now, going back to the innovative schemes, SUPER-HEERO has introduced that part of the inversion for the application and installation of the kits come from crowdfunding investment. As mentioned in the deliverable 1.4 Crowdfunding can be seen as the practice of collecting resources in many forms (money, funds, tangible goods, time) from the population using online tools such as platforms. Despite the general view, Crowdfunding is mainly diffused as a capital collecting practice which, thanks to the development of digital tools easing the operations, has been highly successful in the last years. By collecting a small amount of money from many individuals it enables even small projects and start-ups to be financed. In returns, investors can be rewarded with money or other prices.

How would it work?

The investors will choose a supermarket from their preference. Each Supermarket will have their own goal, depending on which kit they would like to implement, as well the internal rate of return (IRR) depends on each supermarket project.

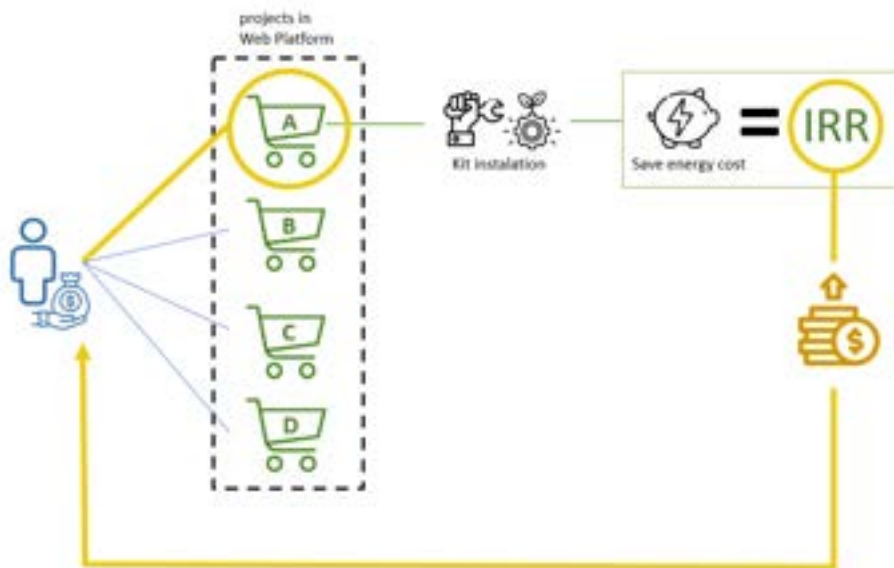


Figure 5. Inversion scheme

3.2.1. Benefits for the technology providers

In the last paper mentioned *Product-service system business model archetypes and sustainability* also mention the benefits of the PAAS models (Table 4. PAAS benefits for technology providers).

Table 4. PAAS benefits for technology providers

Result-oriented
• Improved technology • Expanded groups of potential customers • Reduced life cycle cost for manufacturer. • Reduced life cycle cost due to improved service efficiency. • Reduced risk on market. • Long-term continuous and stable revenue • High gross profit rate • Prediction of problems • Quick response to problems • Improved design - more freedom in design • Reduced costs for customers. • Provide more professional service to solve customer problems. • Reduced financial pressure for customers. • Lock in customers

Use-oriented

- Continuous revenue from leasing
- Provide more professional service to solve customer problems.
- Reduced financial pressure for customers.
- Reduced risk for customers and banks.
- Increase market by making previously unfeasible projects feasible.
- Build a business eco-system with the firm as the core firm

Integration-oriented

- Continuous revenue from leasing
- Provide more professional service to solve customer problems
- Reduced financial pressure for customers
- Reduced risk for customers and banks
- Increase market by making previously unfeasible projects feasible
- Build a business eco-system with the firm as the core firm

Product-oriented

- Increased revenue from service
- Provide more professional service to solve customer problems.
- Reduced cost for customers.
- Increased customer loyalty
- Improved resource efficiency
- Better understand customer needs
- Guide the direction of product development

3.2.2. Requirements for technology providers

- Providers must be able to work along and cooperate with national and international institutions.
- The providers must use PAAS, EPC, ESCO or similar models to be part of SUPER-HEERO project. This with the objective to achieve and circularity in the market chain.
- Access to data and information needed to develop feasibility studies. All information given is confidential and would be used only by proposal to study circularity, efficiency, viability, and growth regarding SUPER-HEERO project. The main data searched would

be information about their technologies and products (lifetime, V consumed, kWh consumed, efficiency).

- Detailed information from the demo sites and initial crowdfunding campaigns.

3.2.3. Financial schemes assessment for technology providers goals.

The objective of using models as PAAS and EPC is to prolong the life of the equipment; by using them in their best shape and making sure all the equipment components are in their best conditions. Since in these models the technology providers are the owners of the technologies, it is for their benefits to make the best maintenance that ensure the highest efficiency in their equipment. At first glance the scheme for the models is the following In the scheme Integration-Oriented charge the result of a service, following an example of how it would be a PAAS integration-oriented model with a technology provider of solar panels. (Figure 6. Example PAAS integration-oriented model)

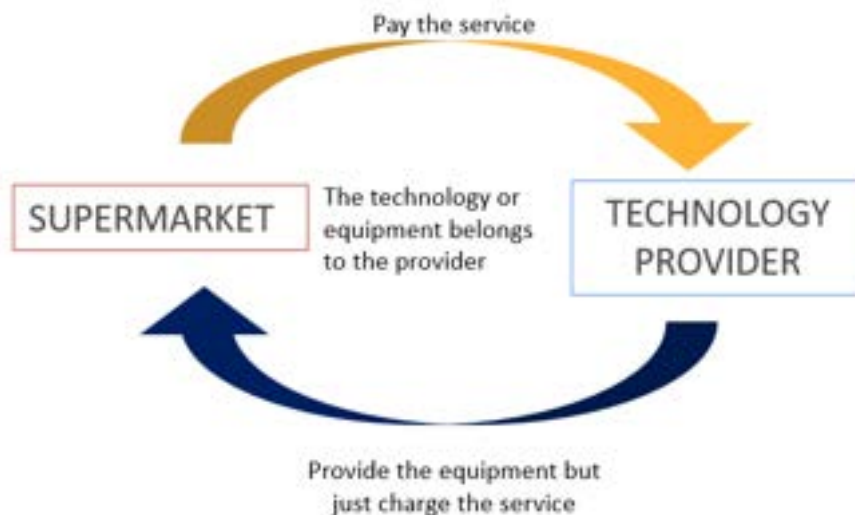


Figure 6. Technology provider model



Figure 7. Example PAAS integration-oriented model

For the **Use-Oriented model**, the client makes use of the equipment, in other words have direct interaction and manipulation of the equipment. Mostly in this model providers use leasing or rental for their equipment. Following an example of a technology providers who rents fridges (Figure 7. example PAAS use-oriented model).

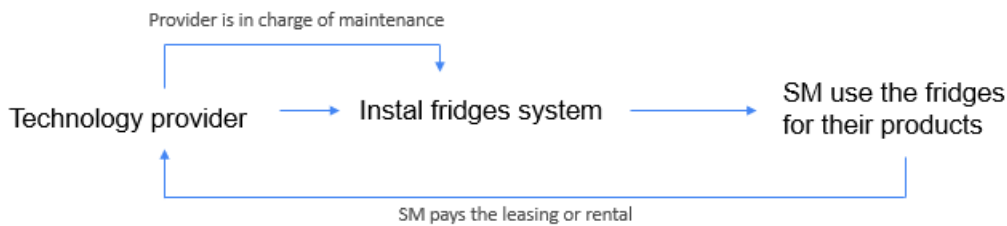


Figure 8. example PAAS use-oriented model

Finally for a **Result-Oriented model**, technology providers and clients interact with the equipment. Providers focus on selling the results of a product or benefit of a product. An example is a provider sell to have a temperature of 25°C inside a building. (Figure 8. example PAAS result-oriented).

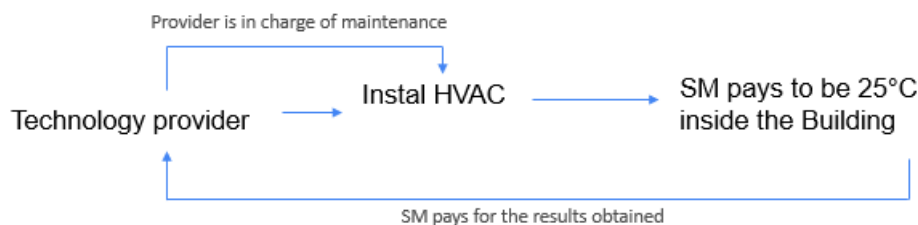


Figure 9. example PAAS result-oriented

3.3. SUPER-HEERO strategies to connect with technology providers.

The aim of this part is to expose the different ways that the project has contacted technology providers from a first stage to a final one.

3.3.1. Key aspects for an engagement program

As developed in D3.1 Guide lines for supermarket customer awareness-raising strategies in energy, environmental and social topics point 4.1. "Preparing an engagement strategy" the

preparation process for the engagement strategy it's been similar in this point and will be quoted as part of the process for this program.

3.3.2. Defining the level of companies to engage (Europe, country, or city level)

Mapping of companies based in Italy and Spain that can provide with local technologies, with this the project can aim to support the purchase and use of products from local companies, from small or medium companies and from innovative and recent technologies developed in the demo countries.

3.3.3. List of technology providers contacted.

The following table content the technology providers found in the anterior point along with the list of technology companies that already have a link with our partners and from whom we could get a satisfactory answer (see Table 5).

Table 5. TP list

Provider	Technology	Contact e-Mail	Webpage
Pastorfrigor	fridges and freezers		https://www.pastorfrigor.it/
Costan	fridges and freezers		https://www.costan.com/it
De Rigo	fridges and freezers		https://www.derigorefrigeration.com/ita/
ISA	fridges and freezers		https://www.isaitaly.com/it/banchi-frigo-supermercati/
Carel	fridges and freezers		https://www.carel.it/
Epta	fridges and freezers		https://www.eptarefrigeration.com/
Iarp	fridges and freezers		https://www.iarp-plugin.com/
Beghelli	LED		https://www.beghelli.it/it
Disano	LED		http://www.disano.it/
Philips	LED		https://www.lighting.philips.nl/consumer/led-lampen
Osram	LED		https://www.osram.com/cb/products/

Longi	PV		https://www.longi.com/it/about-longi/
Schuco	PV		https://www.schueco.com/de-en/architects/products/building-integrated-photovoltaics-bipv-
Huawei	PV		https://solar.huawei.com/nl
Sharp	PV		https://www.sharp.nl/cps/rde/xchg/nl/hs.xsl/-/html/zonnepanelen.htm
V-Energy	PV		https://www.v-energysrl.it/
SPSistem	PV		https://www.spsistem.com/
Solsonica	PV		https://www.solsonica.com/
Sunerg Solar	PV		https://www.sunergsolar.com/
Energia Europa			https://www.energia-europa.com/energy-saving/
Naturgy	solar panels		https://ofertas.naturgy.es/solar/
AC Fotovoltaica	solar panels	info@acfotovoltaica.es	https://acfotovoltaica.es/sobre-nosotros/
Otovo	solar panels	sol@otovo.es	https://www.otovo.es/contact/
Luzenled	lightning	info@luzenled.com	https://www.sgsgroup.it/en/oil-gas/qhttps://luzenled.com/
Trilux	lightning	Info.es@trilux.com	https://www.trilux.com/es/
AFEC	HVAC	afec@afec.es	https://www.afec.es/es/contacto
Fanair	HVAC	comercial@fanairsl.com	https://www.fanairsl.com/
Kelvineu	fridges and freezers	info@kelvineu.com	https://kelvineu.com/quienes-somos/
Kelvineu	HVAC	info@kelvineu.com	https://kelvineu.com/quienes-somos/
Tefcold	fridges and freezers	ish@tefcold.com	https://www.tefcold.es/contacto/ventas-administracion
Vitrinas Gómez	fridges and freezers	comercial@vitrinasgomez.com	http://www.vitrinasgomez.com/
met mann	HVAC	metmann@metmann.com	https://www.metmann.com/es/localizacion
ipsom	energy audits		https://www.ipsom.com/contactar/
ceticlick	energy audits	info@ceticlick.eu	https://ceticlick.eu/formulario-de-contacto/
evoluciona consultores	energy audits	info@evolucionaconsultores.es	https://www.evolucionaconsultores.es/contacto/
FRIGOR	HVAC	frigorsnc@gmail.com	https://www.frigorvenezia.com/

ORAM	HVAC	info@oramsrlu.it	https://www.oram-caldaievenezia.com/
CZ Impianti	HVAC	czipiantisrl@gmail.com	https://www.impiantitermoidraulicivenezia.it/
SAR srl - TECHNOLOGICAL PLANTS	HVAC	sarimpiantisrl@gmail.com	https://www.sarimpianti.it/
Repower L'ENERGIA CHE TI SERVE	gas and electricity		https://www.repower.com/it/
PATAVIUM ENERGIA	gas and electricity	servizioclienti@pataviuenergia.it	https://pataviuenergia.it/contatti/
SORGENIA YOUR NEXT ENERGY	Green energy solutions	customercare@sorgenia.it	https://www.sorgenia.it/
IBT Connecting Energies GmbH	Energy efficiency		https://www.ibtconnect.at/contatti-ibtgroup/
Otovo	solar panels	ciao@otovo.it	https://www.otovo.es/contact/
ISA SpA	fridges and freezers		https://www.isaitaly.com/it/contatti/
SGS	energy audits		https://www.sgsgroup.it/en/oil-gas/quality-health-safety-and-environment/sustainability/energy-services/energy-audit
Esco	energy audits	info@escoitalia.eu	https://www.escoitalia.eu/en/esco-italia-is-the-leading-italian-energy-service-company.html
Stbeam	solar panels	info@1stbeam.com	http://www.1stbeam.com/it/contatti
AB engineering	solar panels	info@abengineeringsrl.it	http://www.abengineeringsrl.it/en/contact
Protech	fridges and freezers	info@professionaltechnology.it	http://www.professionaltechnology.it/contatti/

From the 49 TP contacted there 2 TP responded, after the response it was scheduled an individual meeting to have a deeper explanation. One TP declined the offer, their interest was aligned to implement their equipment in the supermarket pilots, but that was not an option due to there was already established supermarket pilots and what we're going to be the

interventions. The second provider accepted the partnership and there was an announcement in LinkedIn then the following contact and would be by the project manager.



Figure 10 TP post

3.3.4. Defining the channels to communicate with technology providers

It was developed and design a brochure to create an initial approach with technology providers, this brochure is available in all the communication channels of the project.

The brochure is included in this report as Annex 1 and the following email utilised to support its use:

Email

Through the list of contacts, an invitation was sent to invite technology providers to get to know SUPER HEERO project and extend the opportunity to work along. Following, an example of the email sent. This email was sent directly to the email addresses in Table 5, and for the TP with no email address in their web page of contact sections it was sent the same text.

Dear _____,

I hope everything is going well. I contact you from Zer0-e a Netherland based company. We are currently working on the Horizon 2020 program as part of Super- Heero, a project that is financed by the European Commission and has a goal to develop and implement innovative financial schemes such as crowdfunding, PAAS and EPC to finance the retrofitting of small and medium size supermarkets, in this project we are looking to create an easier way to connect technology providers with supermarkets, and to include the local and general community in the investment processes to reach the needed or part of the needed money to afford the renovation of equipment.

We contact you as important part of the supply chain of equipment to deliver, electricity, lighting, gas, cooling and heating, and other equipment for a supermarket to function correctly. So, this is an invitation to reply to us if you are interested in knowing more and if you see it as an opportunity for your business to be part of the solution of the climate change.

If you want to know more visit our web <https://super-heero.eu/> and reply to this email to schedule a call and start a conversation.

*Looking forward to reading you.
Regards,*

Social Networks

Following the communications and dissemination channels, the brochure (appendix I) will be shared in the social networks of the project and will be available for download expecting to get attention and receive call of interest from different technology companies in Europe.



Figure 11 Brochure example

SUPER-HEERO Web Page

The brochure will be available for download along with information regarding the generalities of the project and the key aspects that can make a technology companies engage with it.

After the brochure was sent to the list of the technology providers, a meeting was arranged to explain one to one (online) about SUPER-HEERO project and if the partner is interested there will be a support letter to close the compromise from both sides.

Workshops

In the Workshops the project was introduced to stakeholders and the conversation went through benefits and how it will be to be part of SUPER-HEERO project. There were 3 workshops with different modalities, online and hybrid.



Figure 12 Workshop 1



Figure 13 Workshop 2

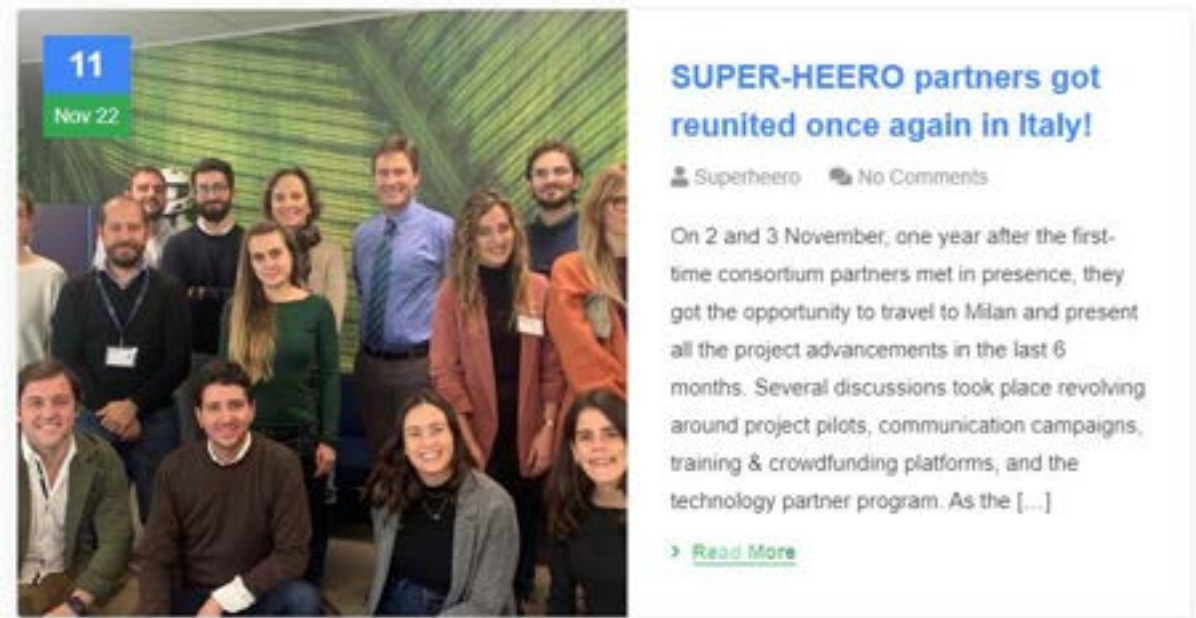


Figure 14 Workshop 3

3.3.5. Engagement Letter

To formalize the partnership with the technology providers and SUPER HEERO, it was developed an engagement letter que the Project Manager and the TP representative would sign.

ENGAGEMENT LETTER

Between

SUPER-HEERO

and

[__TP name__]

This ENGAGEMENT LETTER is made as of __date__ (the “effective date”) by and between:

(A) **SUPER-HEERO project**

(B) [__TP name__]

RECITALS

WHEREAS [__TP name __] being a company specialized in the service of [__technology __] origin from [__country __] and

WHEREAS SUPER-HEERO who aims to provide a replicable and financial scheme for energy efficiency investment in small and medium supermarkets based on stakeholders and community engagement.

WHEREAS together SUPER-HEERO and [___TP name ___] seek to work together to promote the implementation of efficient equipment and technologies and circular business models in supermarkets. With the propose to reduce energy consumption and decrease emissions because of energy production.

NOW THEREFORE, in consideration of the mutual covenants contained herein, the Parties hereby mutually agree as follows:

1. The purpose of this engagement letter is to formalize the participation of [___TP name ___] in SUPER-HEERO project.
2. [___TP name ___] will participate in the activities that are able to according to their capacity.
3. [___TP name ___] agrees to be part of the technology provider catalogue of SUPER-HEERO project.
4. [___TP name ___] will share the necessary information if it is needed for SUPER-HEERO project. And SUPER-HEERO participants compromise to maintain confidentiality in the given information.
5. [___TP name ___] and SUPER-HEERO project agree to be honest with each other and in case there is something that might affect the activities or job of the other party; the information will be shared immediately.
6. [___TP name ___] knows the propose of SUPER-HEERO project and is open to work with circular business models if it is required.

IN WITNESS WHEREOF the Parties have entered into the engagement letter

[___TP name ___]

[___SUPER-HEERO director ___]

Name

Title

Name

Title

4. Technology catalogue

As the technology partner program matures to include more partners covering a fuller set of intervention measures, work was done to create a generic (non-provider specific) technology catalogue bringing to life the technology types most relevant to supermarkets and including those listed in D2.1 (a previous report entitled “Renovation measure catalogue for supermarkets.” The report, is appropriate for desktop reading, the catalogue is appropriate for expositions and marketing purposes.

Extracts are included in Annex 2.



Figure 15 Technological catalogue (Appendix 2)

5. Conclusions

This report has documented the trace of the technology partner program for Super-Heero. It is exciting in that our partners become advocates of the approach and have the potential to multiply everything that Super-Heero sets out to do. Patience has been required in the project with respect to the partner program. First, projects and investors have to be established in the platform as the core transaction in the multi-sided business model. Then, there is value in partners joining the ecosystem once it ignites.

The report has documented a top down and bottom up approach to the technology partner program. First partners are listed in Chapter 3. Several potential partners are awaiting the first direct collaboration to make the partnership concrete. An catalogue of general technology interventions, a partner brochure and memorandum of agreement have been developed.

Most importantly, the Super Heero ecosystem is dynamic and growing. Be sure to check our capacity building materials and to contact us at info@super-heero.eu for information and collaboration opportunities.

6. References

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Mirzaie, Fahimeh & Eghbali, Seyed & Mahdavinejad, Mohammadjavad & Rohani, Reza & Nobakhti, Masoud. (2014). Proposing a More Efficient Model to Enhance Natural Ventilation in Residential Buildings

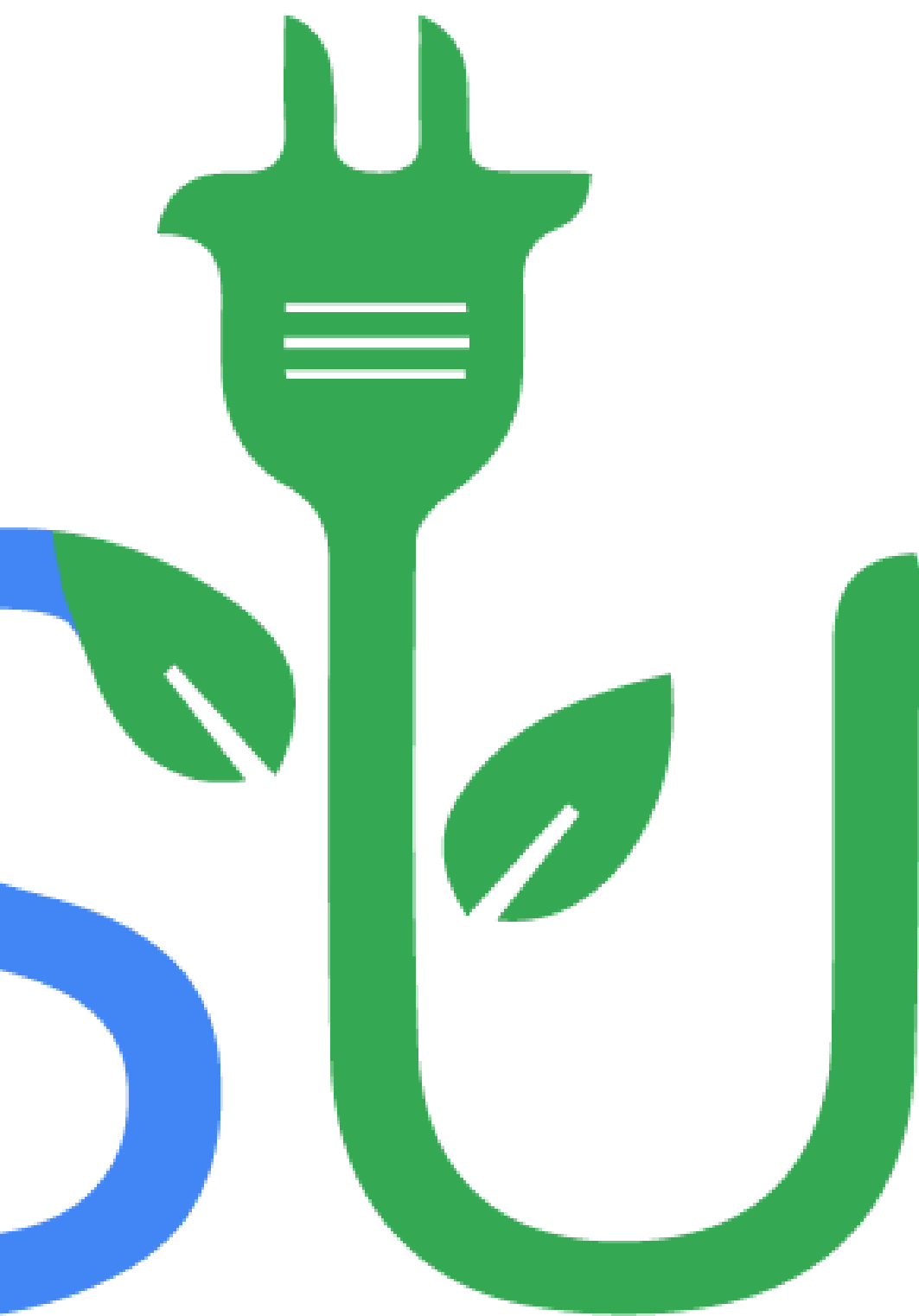
Danielle Canzanella. (2021). New Global Study Supports Healthy Buildings as a Critical Public Health Strategy. 2021, from Carrier Global Corporation Sitio web: <https://www.prnewswire.com/news-releases/new-global-study-supports-healthy-buildings-as-a-critical-public-health-strategy-301372280.html>

Caldeira, C., De Laurentiis, V., Corrado, S., van Holsteijn, F., Sala, S. 2019a. Quantification of food waste per product group along the food supply chain in the European Union: a Mass Flows Analysis. Resources, Conservation & Recycling. 149:479-488. <https://doi.org/10.1016/j.resconrec.2019.06.011>.

State of the European Tech. (2018). State of the European Tech in partnership with Slush and Orrick. 2023, from: <https://2018.stateofeuropeantech.com/chapter/state-european-tech-2018/article/welcome-state-european-tech-2018/>



Technology Providers Catalogue



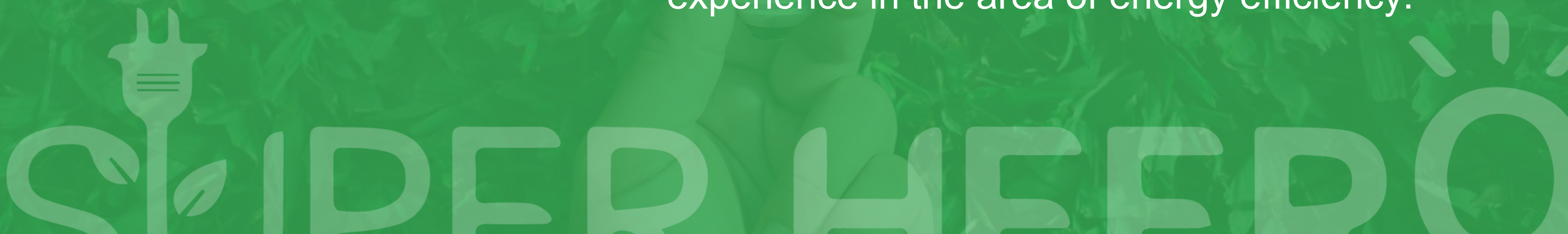
Increasing energy efficiency in supermarkets

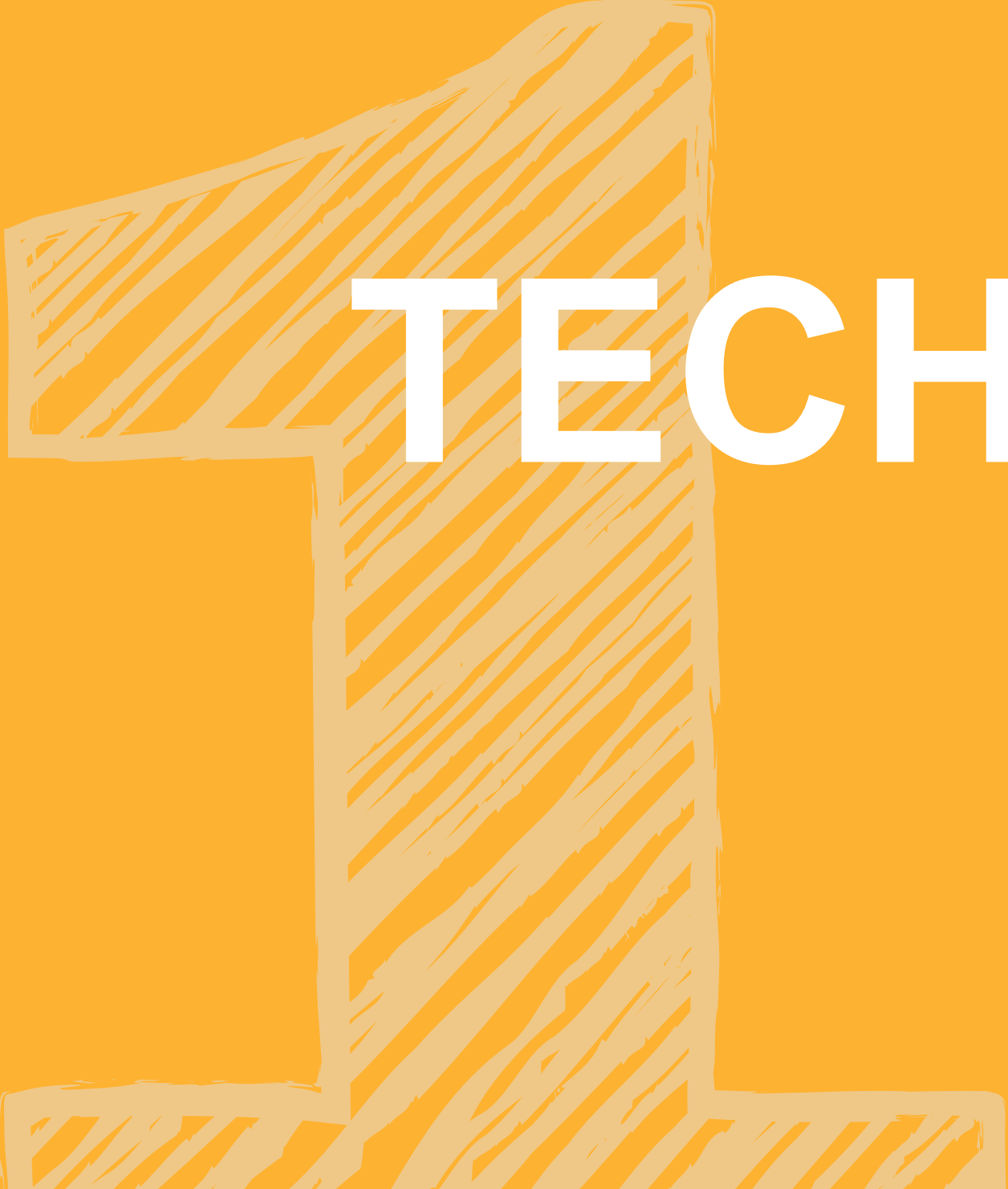
1 TECHNOLOGIES

The objective of this catalogue is to promote technologies that help supermarkets to reduce their energy consumption and decrease the CO2 with subscript footprint of their CO2 of footprint.

2 PROVIDERS

Inside this catalogue it is going to be found a list of technology providers which were selected because of their good practices and experience in the area of energy efficiency.





TECHNOLOGIES

LED Lighting

Long life span
Low energy consumption
Limited unneeded heat production
No UV emissions
Efficient



High diversity of colors
and forms

High Efficiency Reversible Heat Pump

Air (aerothermal heat pump): most common and less-efficient solution but is always applicable

Water (hydrothermal heat pump): which allows a higher efficiency but requires availability of a water body close to the heat pump installation site

Ground (geothermal heat pump): which reaches the maximum possible efficiency but requires availability of space and suitable soil characteristics for the installation (horizontal or vertical) of geothermal probes.



**Provide the correct temperature inside
the supermarket with a high efficiency**

Condensing Gas-Fired Boilers for Heat Production

For supermarkets where heating needs are covered with old conventional boilers using diesel or natural gas, the replacement of the old boiler with a new natural gas fired condensing boiler is of interest in order to increase heat production efficiency and decrease fuel supply costs.





Solar-Powered Lighting Poles in Outdoor Areas

Adoption of solar-powered lighting poles equipped with an integrated photovoltaic module and battery to self-produce and store the electricity required for the lighting pole.

Renewable energy

Solar Panels

In a Supermarket there will be always energy consumption. That is why it is important to ensure that energy needs are covered with renewable energy sources. Depending on the supermarket location the best renewable energy is different.



Heat Recovery from Products' Refrigeration Systems

The recovery of part of this heat for reuse within the supermarket building is particularly of interest, since during winter, supermarkets are characterized by contemporary space heating needs and products' cooling needs, and the range of temperatures of the two heat streams is compatible.

Reuse your energy!

Vertical Wind Turbine

In a Supermarket there will be always energy consumption. That is why it is important to ensure that energy needs are covered with renewable energy sources. Depending on the supermarket location the best renewable energy is different.





Smartmeters

Smartmeters help have control of the consumption and identify if there is any variation in order to make corrective actions.

Monitor the consumption



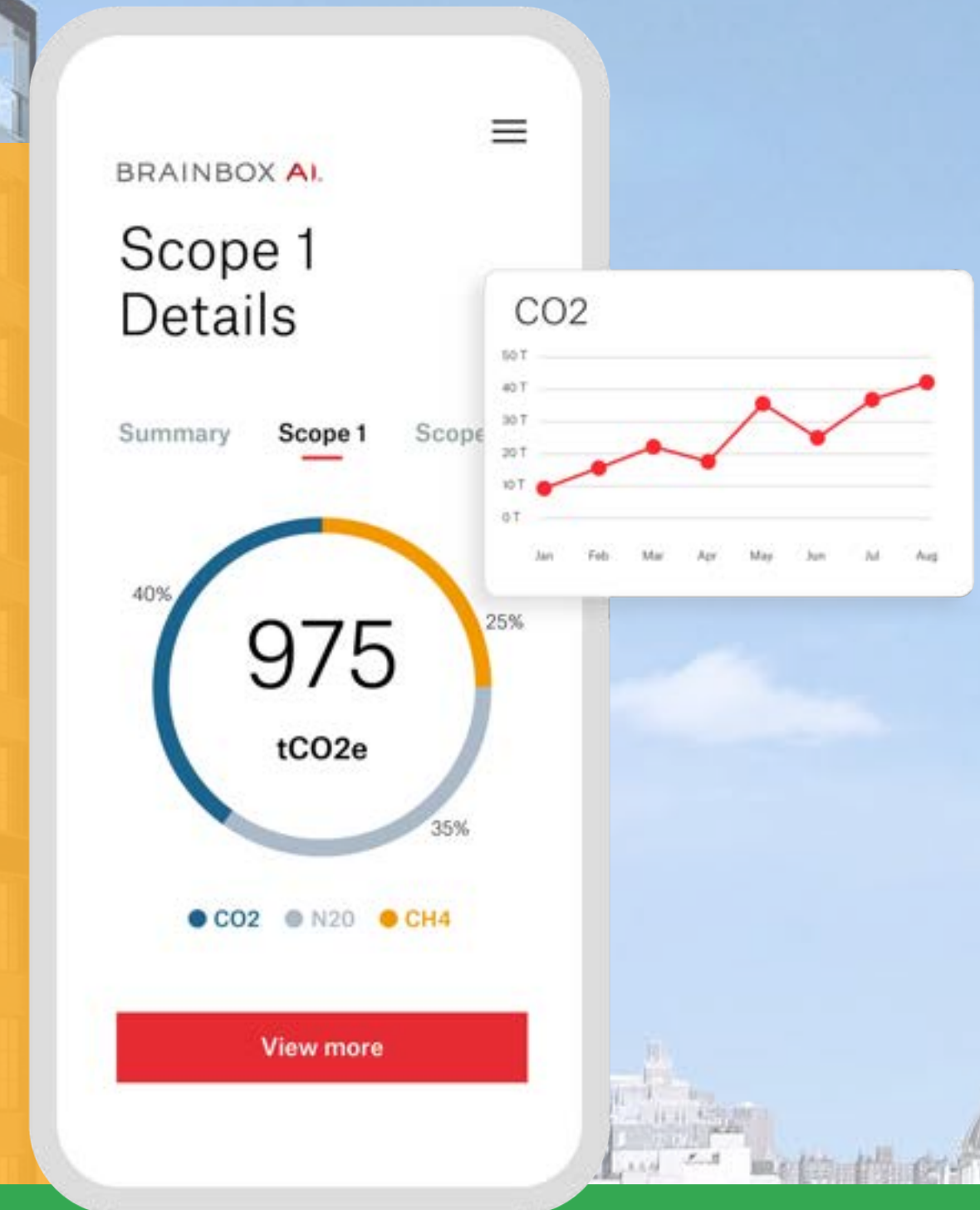
PROVIDERS

Greentime Hub

Greentime Hub is an environmental services company with a network of technology providers and commercial agents on the Italian market. Technology solutions include solar, batteries, co-generation using hydrogen, heat pumps, biomass, solar thermal, relamping, building automation, nature based solutions, green roofs and consulting for the implementation of sustainability and energy renovation measures.

Brainbox AI is a market leader in the building services sector which uses deep learning, cloud-based computing, algorithms and a proprietary process to support a 24/7 self-operating building that requires no human intervention and enables maximum energy efficiency.

BBAI has a deep focus on the retail sector recently purchasing the ABB multi-retail business. In simple terms, BBAI collects data, learns from trends in building use and occupancy, connects to weather forecasts, and runs a series of over 30 algorithms to optimize building setpoints for the control of HVAC and other energy consuming systems. BBAI has interesting IP related to the helping large retailers optimize defrosting cycles in refrigeration systems via zone climate condition control.



Onyx Solar Energy



Onyx Solar is a global leader in solar photovoltaic (PV) glass for buildings. As a structural element, the PV Glass not only generates electricity from the sun, but also provides thermal and acoustic insulation, natural lighting, and UV/IR filters.

Among the solar solutions that Onyx Solar offers, the most popular include photovoltaic skylights, curtain walls, floors and other façade systems. PV-Glass can be produced in nearly any color and several patterned solutions are available to include opaque elements for walls (enabling near all sun-exposed façade components to be energy producing) and allowing supermarkets to use colors that match their brand. Skylights are particularly interesting in commercial shopping centers and larger supermarkets as many existing structures suffer from a greenhouse effect (increasing cooling demand) and/or are not producing energy.

E-Power

It is a Smart Green Technology composed by a patented filter that reduces losses and disturbances, acting mainly on the current waveform, useful for optimizing the energy consumption, decreasing the downtimes and reducing greenhouse gas emissions; connected in series, preferably right after the low voltage circuit breaker and upstream of the loads handled.

EP-X is a Patented Inductive Filter that creates a counter-component for disturbances caused by electrical devices in the network with the aim of reducing the losses in the electrical system and optimizing the transmission of energy on the electrical system.



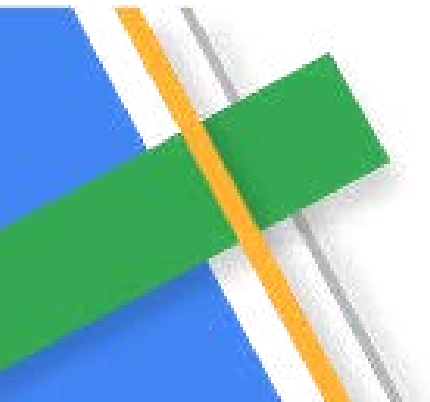
www.energia-europa.com



GFP Consulting

GFP is a financial controller firm with expertise in energy efficiency / ESCO contracts. The firm has followed the Super Heero approach and pilot implementations with direct input on business models, contracts, incentives and accountability aspects between various the various subjects in any given project. GFP consulting is available to provide expertise to 3rd parties using the Super Heero approach / developing projects and business models as project proponents.

www.gfpconsulting.it/



ENGAGEMENT LETTER

Between

SUPER-HEERO

and

[___TP name___]

This ENGAGEMENT LETTER is made as of ___date___ (the “effective date”) by and between:

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[___SUPER-HEERO director___]

Name

Name

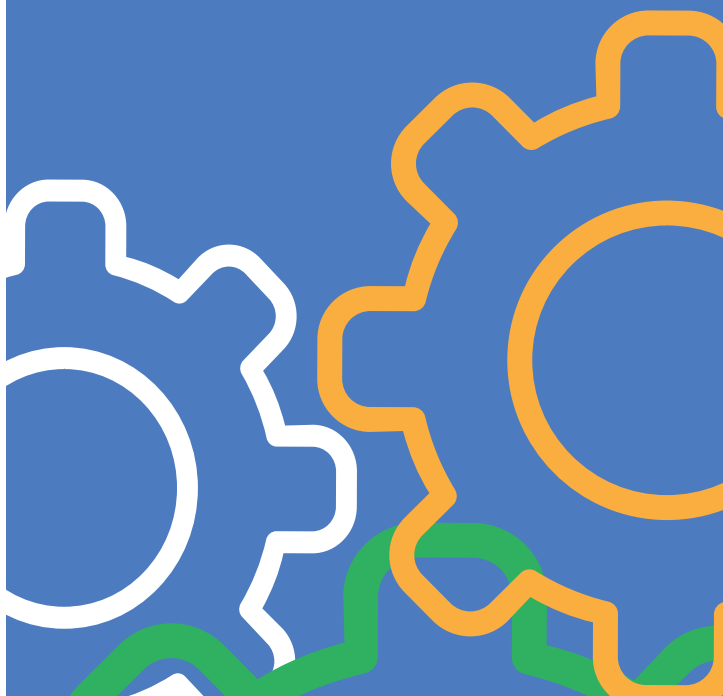
Title

Title





TECHNOLOGY PROVIDERS



About Super Heero

The project aims at providing a replicable financial scheme for energy efficiency investment in small and medium supermarkets, based on stakeholder and community engagement.



Technology providers

Will have the opportunity to explore **innovative Business Models** based on crowdfunding campaigns, circular economy (e.g. technology leasing and pay-per-use agreements) that could help them to capitalize in a transition and economic opportunity. While increasing your customer base with the project demo - sites.

Technology sought



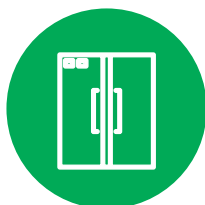
Monitoring



High efficiency
refrigeration



LED Lighting



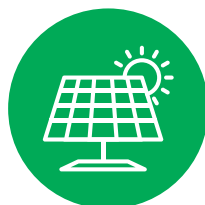
Cabinet's doors



HVAC
Fine tuning



Smart load
management



Photovoltaic
system



Benefits for you!

As echnology providers you could:



Increase the opportunity to have Long term contracts
Implement the innovative bussiness models developed in the project.



Have high exposure on the Crowdfunding platform for this and other projects.

Have high exposure on the TP catalogue for replication

Pottentially increase your base of customers.

What do we ask for?

- Cooperation with national partners and international institutions.
- Work along our partners to fit the PAAS schemes to the project demo sites.
- Engage in the Technolgy providers program for Super Heero.
- Sharing of (anonymous) data and information about technologies and products. *

*Confidentiality agreements will be signed.

Opportunities

High Level Technical Support from the project partners expert in the field of innovation and sustainability.

Professional Companionship on the study and analysis of the current situation in order to find possible and viable solutions to increase energy efficiency and reduce consumption and emissions.

Support with the planning of business models and revenue streams for technology providers.

Boosting the alignment process towards the global sustainability targets and **GHG reduction**.

CROWDFUNDING
CAMPAIGNS

EPC

TECHNOLOGY
LEASING



SUPER HEERO Project partners



Tán—dem

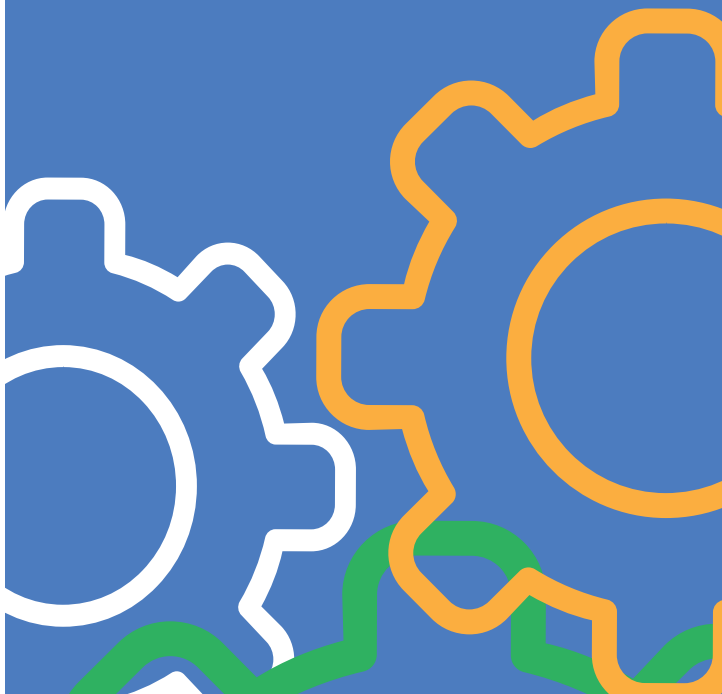


Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from
the European Union's Horizon 2020 research and innovation
programme under grant agreement No 894404



PROVEEDORES DE TECNOLOGÍA



Acerca Super Heero

El proyecto busca proveer esquemas financieros replicables para inversiones en eficiencia energética en pequeños y medianos supermercados basados en el compromiso de partes interesadas y la comunidad.



Proveedores de Tecnología

Tendrán la oportunidad de **explorar modelos de negocio innovadores basados en principios de economía circular** (EJ: acuerdos de arrendamiento de tecnología y pago por uso) que podrían ayudarlos a capitalizar una transición y una oportunidad económica, mientras incrementan su base de clientes con los lugares de implementación en el proyecto.

Tecnologías



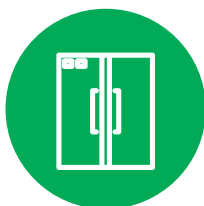
Monitoreo de
consumo de equipos



Refrigeradores de
alta eficiencia



Iluminación
LED



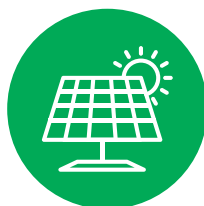
Puertas de
enfriadores



HVAC de óptimo
funcionamiento



Gestión inteligente
de cargas



Sistemas
fotovoltaicos

Beneficios para TI como proveedores de tecnología podrás:



Incrementar la oportunidad de tener contratos a largo plazo



Implementar los nuevos modelos negocio.
Alta exposición en la plataforma de Crowdfunding para este y otros proyectos.



Alta exposición en el catalogo de proveedores tecnología.

Promoción a diferentes clientes.

Incremento potencial de sus clientes.

Qué necesitamos de ti?

- Cotizaciones para las intervenciones de eficiencia energética que se llevaran a cabo por el proyecto.
- Cooperación con socios nacionales e instituciones internacionales.
- Trabajar con nuestros socios para adaptar los esquemas PAAS a los sitios de demostración del proyecto.
- Compartir datos (anónimos) e información sobre tecnologías y productos.*

*Se firmaran acuerdos de confidencialidad.

Oportunidades

Soporte técnico de alto nivel de instituciones italianas y españolas e internacionales expertas en el campo de la innovación y la sostenibilidad.

Acompañamiento profesional sobre el estudio y análisis de la situación actual, con el fin de encontrar soluciones posibles y viables para incrementar la eficiencia energética y reducir consumos y emisiones.

Soporte en la planificación de modelos de negocio y fuentes de ingresos para los proveedores de tecnología.

Impulsar el proceso de alineación hacia los objetivos globales de sostenibilidad y **reducción de GEI** (Gases de efecto invernadero).

CAMPAÑAS DE
CROWFUNDING

CONTRATOS DE
DESEMPEÑO
ENERGETICO

ARRENDAMIENTO
DE EQUIPOS

Product
as
Service

Lighting as
a service

Energy as
a service

Cooling as
a service

ESQUEMA DE
PRODUCTOS COMO SERVICIO

Socios del proyecto SUPER HEERO



Tán—dem



Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from
the European Union's Horizon 2020 research and innovation
programme under grant agreement No 894404