Methodological guide: PaaS design toolkit

Federal Public Service Health, Food Chain Safety and Environment

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Profoundly different

CONTENT

About this guide

Purpose of the guide

This interactive guide will help businesses to **explore and design Product-as-a-Service models**. It provides a practical step-by-step approach to enable you to kickstart a PaaS model in your organisation. The guide is applicable to all sectors.

Who is it for?

The guide is for any organisation wanting to understand what the potential of Product-as-a-Service (PaaS) models is for their business and how you can create, deliver and capture value by implementing it. Regardless of sector, region, business activity, size or maturity, it can be used to:

- **Identify PaaS business opportunities and define its related business models.**
- **Explore and define how existing linear businesses can be transformed into a PaaS model.**
- **Refine existing PaaS models and pilots.**

While interesting for all types of organisations, the guide has been developed especially to respond to the needs of small and medium enterprises (SMEs).

How to use it?

The guide can be used in two ways:

- **From the beginning working step by step**, if you want to identify and define new PaaS opportunities.
- **From a particular step**, if you want to test or refine an existing business concept.

PaaS design is an innovative and iterative process, so be prepared to test key assumptions, adapt and learn from customer feedback, and iterate your business model with experience.

Authors

The guide has been created through a collaboration between the PaaS experts at **Möbius Business Redesign**, environmental and circular economy experts at **VITO** and involving legal and financial expertise from **SuMa Consulting**, commissioned by the **Federal Public Service Health, Food Chain Safety and Environment**.

Navigating the guide

Six steps to seize the Product-as-a-Service opportunity

This guide will coach you in identifying and defining the PaaS opportunities for your business in the following 6 steps.

Click the graphic to navigate to a section.

Understanding Product-as-a-Service

Over the past decades, producers and manufacturers have been focusing on selling their products in one-time (sales-based) transactions. At the moment of the transaction, the ownership of the product is transferred from the producer to the customer, thereby restricting the producers responsibility for the rest of the product's life. In such a model, producers gain most benefit by selling as much as they can, without having the incentive to create the best possible product in terms of quality, lifespan, repairability and/or recyclability. This lead in some cases to counternatural effects such as planned obsolescence, production of overstocks, lower quality products, …

" **Product-as-a-Service (PaaS) is a business model that combines physical products and services that generally have the potential to extend or intensify the use cycle or life cycle of the product with the goal to better fulfil customer needs.**

Shifting the economic model

As manufacturers deliver outcomes, rather than products, it changes the economic model and product manufacturers get reimbursed for outcomes, performance, … in the form of subscription or renting fees.
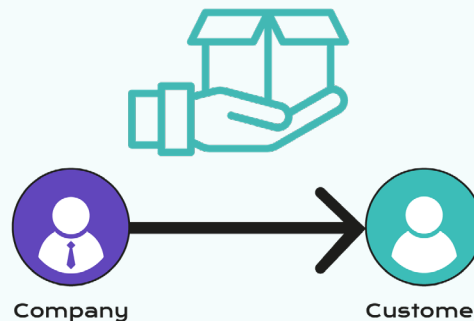
Product sales
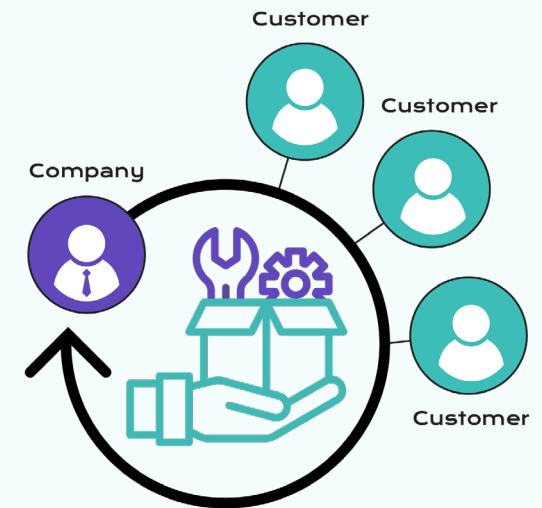
Product-as-a-Service

Product-as-a-Service (PaaS) models have a **potential of offering a smarter and more sustainable alternative** for this material-intensive consumption. Instead of selling customers standalone products, PaaS business models offer new combinations of products accompanied by services. The model **focuses on outcomes** (like performance) instead of the product itself and the service provider remains mostly the owner of the product. Because of this, the service provider can have the incentive to use the same products or components as much as possible and as long as possible by redesigning, reusing, repairing or sharing the product. Let's take a look at washing machines for example, where customers actually want clean laundry. You could sell washing machines or you could sell clean laundry (=PaaS). In the latter, customers can rent a washing machine from you and pay a monthly fee or a fee per use. In an alternative PaaS set-up, customers only pay for the cleaned laundry. The service provider will still be the owner of the washing machine and be responsible for maintenance, repair and take back of the machine.

Product-as-a-Service (PaaS) can formally be defined as "A business model that combines physical products and services that generally have the potential to extend or intensify the use cycle or life cycle of the product with the goal to better fulfil customer needs"[1].

In practice we see that a **solution which is a combination of product(s) and service(s) allows product manufacturers to deliver better customer outcomes** (e.g. better performance, upgrades, …).

Some typical PaaS characteristics

- The (legal) **responsibility and/or ownership increasingly lies with the product manufacturer.** As a result, product manufacturers can have the incentive to deliver a more material-efficient product by delivering a better performance, a longer lifecycle, etc. In practice, we see this is being supported by services like a takeback system, repair or reuse services, extended warranties, etc.

- As manufacturers deliver outcomes, rather than products, it changes the economic model and product manufacturers get reimbursed for outcomes, performance, … in the form of **subscription or renting fees.**

- The provider has a **closer relationship with its customers** which enables to collect data and analyse customer insights that help the company innovate and design new service models. This way you get insight into your consumer tastes, preferences and using habits which provides a solid long-term competitive advantage.

Product-as-a-Service

Product focused

Service focused

Use oriented

The traditional product still plays a central role, but the business model is not geared towards selling products. The product stays in ownership with the provider, and is made available in a different form, and sometimes shared by a number of users.

Individual access   **Shared access**

Result oriented

The client and provider in principle agree on a result, and there is no pre-determined product involved.

Product based   **Result based**

Understanding the potential benefits of PaaS

The Product as a Service (PaaS) business model has the potential to change how companies do business drastically: tightening the supplier-customer relationship, shifting ownership and responsibility, allowing value-based pricing, etc. There are many traditional industries that have or are being disrupted by various types of PaaS models; just consider what Xerox did in the corporate copier industry[3] or Rolls Royce in equipment for aviation[4].

Product-as-a-Service (PaaS) business models have the potential of bringing a series of advantages for both companies and their customers. We list some of them[5,6,7]:

Benefits for companies

1. **Creates a regular and predictable revenue stream** as you provide your products as a service with a recurring (monthly) fee. PaaS can generate constant revenue for your business during an economic crisis or downsizing, as customers are more likely to agree to lesser amounts of monthly payments.

2. **Creates additional revenue channels** as you add services (repairs, maintenance, upgrades, replacements of parts) related to your product.

3. **Enhances overall customer relationships and loyalty** as a PaaS model helps you to build long-term customer relationships and offers flexibility and wider choices of products.

4. **Drives sustainability and material use efficiency which reduces the dependence on (scarce) raw materials and volatility of commodity prices.** This is because the PaaS model changes the revenue cycle of companies. Companies do not make money for every new unit produced. Instead, companies generate a profit from an existing product.

5. **Enhances product development** as you are closer to the customer and their use of the products which makes it easier and faster to get feedback. This will help you make **continuous improvements** to your products.

Benefits for customers

1. **Saves upfront costs on capital expenditure** as the customer will be paying smaller subscription fees instead of bigger instalments. This also reduces their liability of ownership and residual value risk.

2. **Gives access to constant product upgrades** as they use the product on a time and need basis.

3. **Provides flexibility to buyers as they can upgrade and downgrade at any time without any hassle.** This flexibility is the biggest reason that customers have started adopting the Product as a Service (PaaS) based business model in droves.

4. **Reduces the risk of using an obsolete product** since the customer can move to a more advanced product or even to a different service provider if the product they are currently using is obsolete.

5. **Increases the accessibility** to premium or more expensive products.

Understanding circular economy strategies and its environmental impact

In Product-as-a-Service business models, the provider becomes a service-provider and is responsible for the product's well-functioning (including maintenance and repair) and the costs for disposal and waste treatment at end-of-life as he remains the owner. As such, Product-as-a-Service models offer incentives for companies to choose for more durable products, that are easy to maintain, repair and upgrade. Perverse effects, such as premature obsolescence, have lower probabilities to emerge as PaaS actually rewards manufacturers that invest in high-quality, durable and easy-to-service products. Longer product lifespan means more revenue generating opportunities.

Not all PaaS models are inherently better for the environment – or for the manufacturers bottom line – compared to sales-based models. In order to be so, products should be framed within the concept of a ci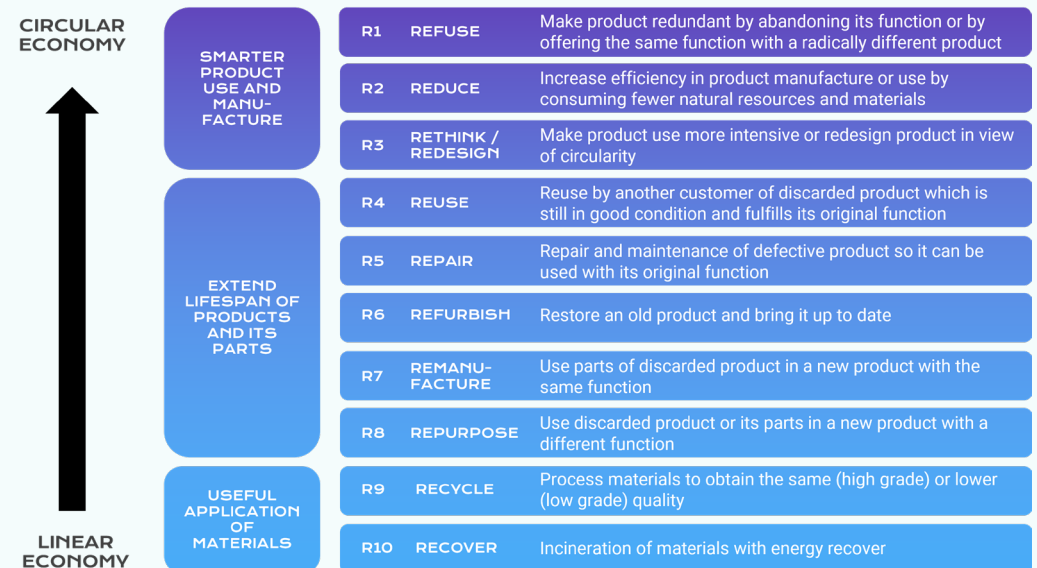rcular economy. In practice, this can be obtained by supporting products with **circular economy strategies and business models** like redesigning your product in modular way, repairing and reusing components and products to extend the life cycle, providing extended warranties or designing a takeback system. In the next section is explained what circular economy is and how it can support PaaS models. In conclusion, PaaS models have the potential (though not the assurance) to deliver more environmentally friendly product and consumption patterns.

The **circular economy** tackles climate change and other global challenges like biodiversity loss, waste, and pollution, by decoupling economic activity from the consumption of finite resources[8]. It is an economic and industrial system that aims to keep products, their components and materials in circulation within the system for as long as possible, while ensuring quality of use.

The 10R ladder of circularity strategies[9]

The **10R ladder of circularity strategies** explains the different strategies for closing material loops. The lower the R-number, the lesser external inputs are needed to close them, and the more circular the strategy. The higher the R-number, the less circular it is. It's time to begin rethinking our concept of waste as a resource instead of something to leave in a landfill!

R1	REFUSE	Make product redundant by abandoning its function or by offering the same function with a radically different product
R2	REDUCE	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
R3	RETHINK / REDESIGN	Make product use more intensive or redesign product in view of circularity
R4	REUSE	Reuse by another customer of discarded product which is still in good condition and fulfills its original function
R5	REPAIR	Repair and maintenance of defective product so it can be used with its original function
R6	REFURBISH	Restore an old product and bring it up to date
R7	REMANU-FACTURE	Use parts of discarded product in a new product with the same function
R8	REPURPOSE	Use discarded product or its parts in a new product with a different function
R9	RECYCLE	Process materials to obtain the same (high grade) or lower (low grade) quality
R10	RECOVER	Incineration of materials with energy recover

CIRCULAR ECONOMY

SMARTER PRODUCT USE AND MANU-FACTURE

EXTEND LIFESPAN OF PRODUCTS AND ITS PARTS

USEFUL APPLICATION OF MATERIALS

LINEAR ECONOMY

Different 10R circular strategies can be embedded in a PaaS model.

CIRCULAR ECONOMY

↑

SMARTER PRODUCT USE AND MANUFACTURE

| R1 | REFUSE |

EXTEND LIFESPAN OF PRODUCTS AND ITS PARTS

| R6 | REFURBISH |

USEFUL APPLICATION OF MATERIALS

| R9 | RECYCLE |
| R10 | RECOVER |
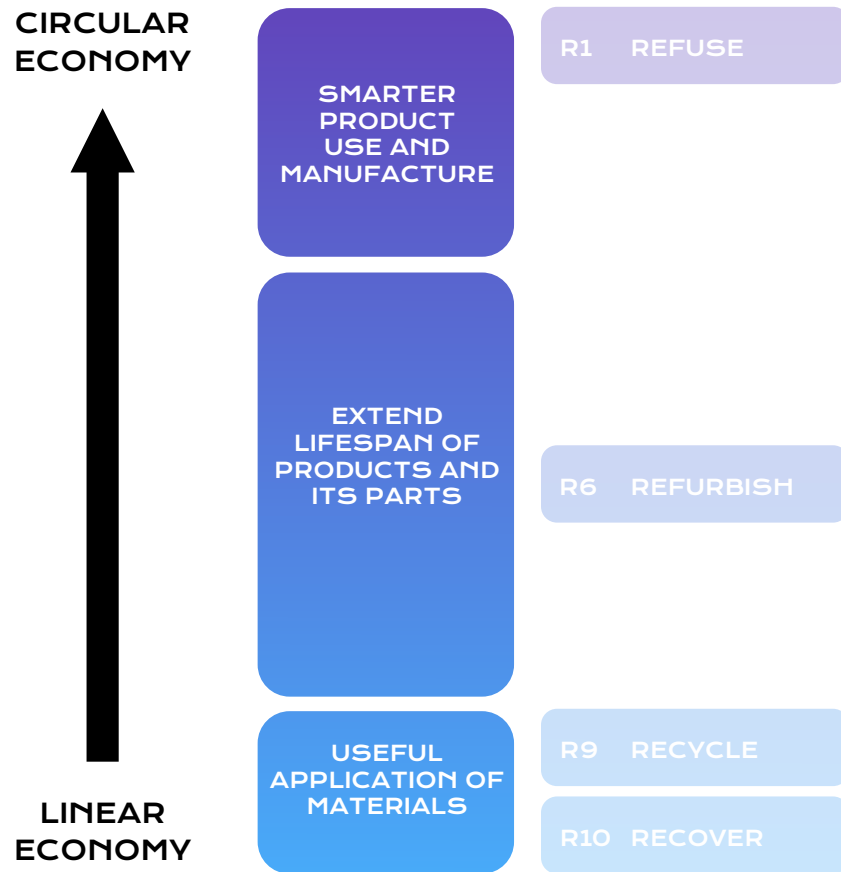
LINEAR ECONOMY

Click the graphic to explore the environmental benefits of the circular strategies that can be embedded in a PaaS model.

What about your company? Do the test!

Do you wonder where your company stands in the circular economy and how you can improve this? Do the test here, fill in your company information and download your personal report with advice on how to improve your circularity maturity

Check out the circulator tool!

Do you want to discover how you can combine circular strategies with a PaaS business model? Check out the Circulator Tool.

Identify the Product-as-a-Service potential for your organisation

Getting started

PaaS business models are more suitable for some products and customer segments, which makes it important to carefully consider what and who to target. At this stage of your journey, you will assess if your product or targeted customer segment is attractive to implement PaaS. In an environment where PaaS is still far from mainstream, it makes sense to identify potential challenges early, and explore their potential to be addressed through e.g., changes in product design, product segmentation, or customer segmentation.

The characteristics of your product will impact the viability of a PaaS business model. In general, cheap, consumable, and personal products are less suitable for PaaS compared to expensive, durable, and non-personal products. There are, however, grey zones. One example are product segments with rapid technology development (e.g. smartphones), which have traditionally been considered less suitable for PaaS as products quickly become obsolete. Yet, examples show that PaaS can be feasible for such products as well as in cases where the provider offers hardware and software upgrades to counter fast obsolescence and reuse components.

The products and customer segments to include in a PaaS offering should be carefully selected. The table below lists advantageous and more challenging product characteristics. This table works as a checklist to help you evaluate the PaaS potential of your product and its positioning in the market. Far from all advantageous product characteristics must be present in a successful PaaS offering, but if a lot of them are missing you may consider choosing a different product. The goal is to ensure the offering can still be made economically viable. This may include changes in product design or development of added services. Choose a specific product or customer segment from your product portfolio and evaluate its characteristics with the quick scan below.

Quick scan – Evaluate your product's "as-a-service" potential[10]

Advantageous PaaS characteristics	Challenging PaaS characteristics	PaaS best practices
Product cost and value		
High-value	**Low-value**	High-value products are more likely to generate the revenue needed to finance service delivery. Customers are also more likely to be willing to pay for accessing products they cannot afford or pay the full price for.
High complexity and/or cost of maintenance and repair	**Low complexity and/or cost of maintenance and repair**	The provider can deliver added value through its capabilities in maintenance and repair.
Use-phase resource inputs (e.g., fuel, water, energy) constitute considerable part of Total Cost of Ownership (TCO)	**Use-phase resource inputs constitute minimal part of TCO**	The provider is better positioned to differentiate through an optimalisation of use-related costs, which reduces customer's TCO.
Infrequently used (can be shared with several users during the same product lifecycle)	**Frequently used (more difficult to share between more than one user)**	Only paying for what you use becomes attractive if there is a large difference between ownership time and actual use time.
High material value after use	**Low material value after use**	Higher material value enables the provider to capture financial value from reusing, recycling, or remanufacturing of components and materials.
High insurance cost	**Low insurance cost**	Higher cost of ownership makes PaaS more compelling to customers.
Product design		
Modular product design	**Non-modular product design**	The provider can better reap the long-term benefits of PaaS if a product has a modular design, is easy to dis- and reassemble and fit for repair, upgrades, refurbishment, and remanufacturing.
Non-personal	**Personal (e.g. privacy, hygiene, or smartphone)**	Workhorse products in general contribute little or none to users' sense of self or expression of personality (e.g. washing machine) and could feel less crucial to own, while customers often prefer owning highly personal products.
Durable	**Consumable**	Products that last for several reoccurring use-cycles or have a longer than average life cycle are generally a better fit for PaaS.
Smart integrated product	**Analogue product**	Smart integrated products enable the utilisation of data to provide insights on product use and deliver added value to the customer.
Customer profile		
Customer has limited investment capacity and prefers OpEX	**Customer has a high investment capacity and is able to do CapEx investment**	Customers with limited upfront investment capacity prefer to pay for performance via regular fees.
Product is highly critical for the customer's business continuity	**Product is not critical for the customer's business continuity**	Customers prefer PaaS for products that are highly critical for its business continuity as they can rely on the performance guarantee of the PaaS provider.
Low emotional involvement	**High emotional involvement**	Customers are more prone to prefer owning status or identity products, especially customised ones with high emotional attachment.

Total advantageous PaaS characteristics score:

Get inspired by existing cases

Curious who already has successfully implemented PaaS business models in Belgium?
Check out the cases.

Read more on PaaS and circular business models

- **Vlaanderen circulair**: examples of circular projects in Flanders (Doeners in Vlaanderen - Vlaanderen Circulair)
- **Circular Economy Brussels**: examples of circular projects in Brussels
- **Circular Wallonia**: information on circular projects in Wallonia

Step 2

Understand the customer and market

Did you identify a product and customer segment with a significant PaaS potential in step 1?

To offer a Product-as-a-Service, it is crucial that your product and service match with your customer needs as you will engage in a long-term customer relationship. Designing a compelling PaaS offering to customers requires a deep understanding of their needs, pain points and requirements. In essence, before reverting to complex business model design exercises, you try to answer the question: what kind of PaaS model would make strategic sense in my market? What pain points should it alleviate? What strategic value can a supporting circular strategy have? Based on this information, you can formulate and finetune the value proposition your PaaS model brings. You can develop the most cutting-edge PaaS model ever – but if no customer is interested in adopting it, there is no positive (economic or environmental) impact to be created. Next to that, a clear value proposition is important as customers often have a difficulty to understand what is included, or not, in a service offering.

Value Proposition Canvas[11,12]

The **Value Proposition Canvas** is a framework which can help ensure that a product or service is positioned around what the customer values and needs so there is a **fit between the product/ service and the market.**
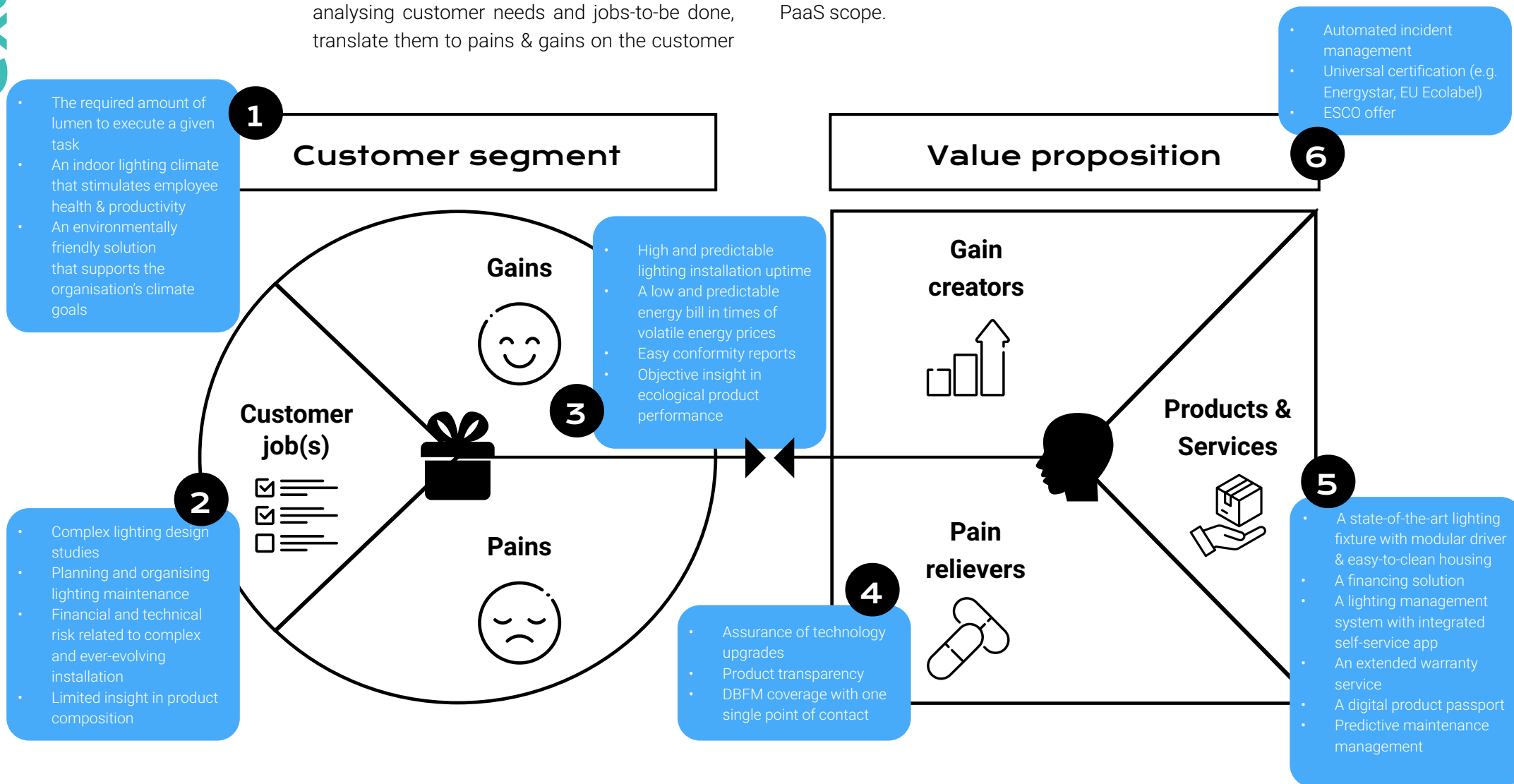
Navigate through the different steps by clicking the step numbers below.

▶◀

example

Value Proposition Canvas: completed example

The visual below shows an example of a Value Proposition Canvas for a PaaS model in the lighting industry. The identified customer segment is a public building owner. It shows clearly how you can build a train of thought by analysing customer needs and jobs-to-be done, translate them to pains & gains on the customer side and attaching possible gain creators and pain relievers in terms of (high-level) product features or service characteristics. This greatly facilitates the selection of key components (in terms of product and services) to include in the PaaS scope.

1
- The required amount of lumen to execute a given task
- An indoor lighting climate that stimulates employee health & productivity
- An environmentally friendly solution that supports the organisation's climate goals

6
- Automated incident management
- Universal certification (e.g. Energystar, EU Ecolabel)
- ESCO offer

Customer segment

Value proposition

Gains

Customer job(s)

Pains

3
- High and predictable lighting installation uptime
- A low and predictable energy bill in times of volatile energy prices
- Easy conformity reports
- Objective insight in ecological product performance

Gain creators

Products & Services

2
- Complex lighting design studies
- Planning and organising lighting maintenance
- Financial and technical risk related to complex and ever-evolving installation
- Limited insight in product composition

Pain relievers

4
- Assurance of technology upgrades
- Product transparency
- DBFM coverage with one single point of contact

5
- A state-of-the-art lighting fixture with modular driver & easy-to-clean housing
- A financing solution
- A lighting management system with integrated self-service app
- An extended warranty service
- A digital product passport
- Predictive maintenance management

16

10 characteristics of great value proposition[13]

Are embedded in great business models

Focus on few pain relievers and gain creators, but do those extremely well

Focus on jobs, pains, or gains that a large number of customers have or for which a small number is willing to pay a lot of money

Align with how customers measure success

Focus on the most significant jobs, most severe pains, and most relevant gains

Differentiate from competition in a meaningful way

Address functional, emotional and social jobs all together

Outperform competition substantially on at least one dimension

Are difficult to copy

Focus on unsatisfied jobs, pains, and gains

Read more on how to gain insight in your customers and market

Do you need more information on how to gain insight in your customers and market? Interviewing your customers face-to-face, by phone or via a survey is the first step. You can further analyse and elaborate this information by using the following tools:

- **Customer assessment (B2B, B2G or B2C)**: How to assess which customer segment to target?, p50
- **Dive deep into your (potential) customers' worlds to gain insights about their jobs, pains, and gains***
- **Identify high-value customer jobs that you could focus on***
- **Get to know your (potential) customer and what they care about in the apparel industry***
- **The value proposition instruction manual***

* You need to create a free account to access the documents on this platform

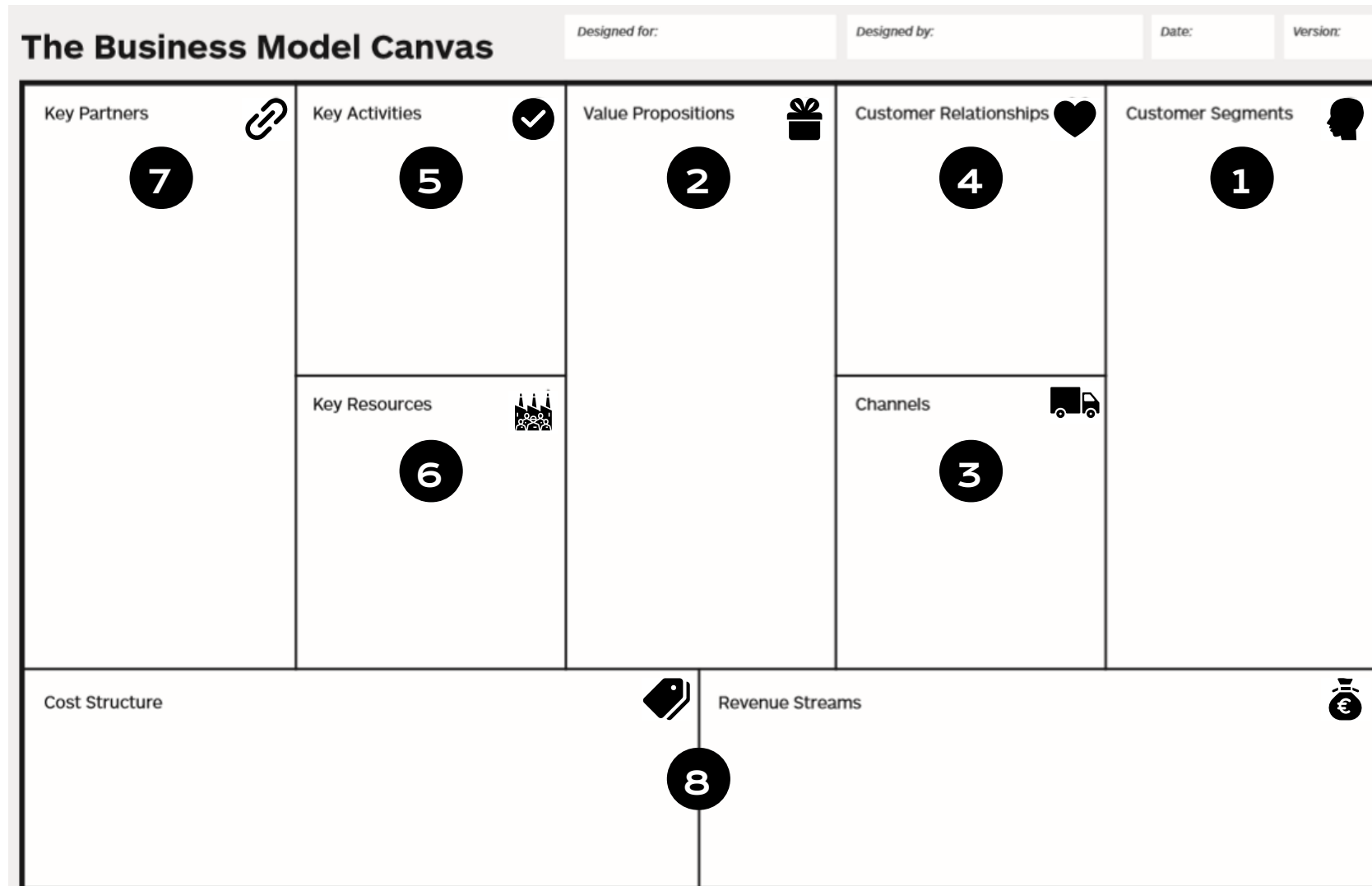# Create your Product-as-a-Service business model

To develop a successful PaaS business model, you need to ensure that your service offering is well aligned with your customer pains and gains. Secondly, this offering needs to be translated into a clear business model where you define resources, partnerships, channels and assess costs and revenues.

Business Model Canvas

In step 2, you already defined your value proposition and corresponding customer segment. Now it is time to think about how you are going to deliver this value proposition to your target audience. The most thought-through tool to use is the Business Model Canvas by Alex Osterwalder. Watch this short video explaining all building blocks before starting.

How to fill in the business model canvas?[14]

Navigate through the different steps by clicking on the graph.

The Business Model Canvas

Designed for:	Designed by:	Date:	Version:

Key Partners 🔗 ⑦	Key Activities ✓ ⑤	Value Propositions 🎁 ②	Customer Relationships ❤ ④	Customer Segments ② ①
	Key Resources 🏭 ⑥		Channels 🚚 ③	

Cost Structure 🏷 ⑧	Revenue Streams 💰

1. Customer Segments[15]

Here you describe the customer or customer group the company targets with its products and/or services. The characteristics of a (potential) customer are described. Grouping customers into segments makes it easier to respond to the different needs of specific customers. See outcome of step 2.

- *Which customer groups do you want to serve?*
- *What are the needs of these customers (groups)?*
- *Discuss their paying preference: subscription (monthly, yearly) or per use?*
- *How will you increase your customer loyalty?*
- *How will you measure your customers' satisfaction?*

2. Value Proposition

Your value proposition describes what your product and/or service delivers in terms of value to your customer. It is an overview of the products and/or services that create value for a particular customer segment. The value proposition is the reason customers prefer one company over another. See outcome of step 2.

- *What products and/or services do you offer your customers?*
- *What are your strengths to make customers choose your business?*
- *What elements make your business unique for the customer?*

3. Channels

This building block includes a description of how a company interacts with its customers. The marketing, distribution and service strategy are described here.

- *Through which channels (communication, distribution and sales channels) do your products and/or services reach customers?*
- *How are customers (groups) kept informed of your offerings?*
- *Which criteria does your place of business have to meet in terms of accessibility, expansion possibilities, (digital) visibility, atmosphere and design, image, etc.?*
- *What name will you use for your activity?*
- *What image do you want to project and how will you achieve this?*

4. Customer relationships

Customer relationships are built and maintained with each target customer segment. This building block describes the kind of relationship a company establishes with specific customer segments.

- *How do you maintain a relationship with your different customers (customer groups)?*
- *In what way will you interact with them?*
- *How will you make yourself known to your customers (own website, events, mailings, flyers, advertisements, through partners, social media, …)?*

5. Key activities

This is a description of the key activities a company needs to realise to make its business model work. In other words, this is the set of actions and/or processes you undertake to reach your customers and work with your partners.

✏️ **Give an overview of your core activities and processes (production, marketing, sales, service, maintenance, administration, ...) in the first column of the table.**

6. Key Resources

The set of resources and people that the company needs to serve the customer. Key resources enable the company to create and provide a value proposition, reach markets, maintain relationships with customer segments and earn revenue.

✏️ **List your core resources in the second column (physical resources, intellectual resources, human resources, financial resources, ...). and indicate who within the company takes on which task (third column).**

Activities (step 5)	Needed resources (step 6)	Needed people within the company (step 6)	Needed partners (step 7)
Production			
Activity 1:			
Activity 2:			
Activity ...:			
Marketing			
Activity 1:			
Activity 2:			
Activity ...:			
Sales			
Activity 1:			
Activity 2:			
Activity ...:			
Service organisation			
Activity 1:			
Activity 2:			
Activity ...:			

7.   Key partners

This building block describes the network of suppliers and partners that will influence the success of the business model. Who are the key partners you work with? Which partnerships are essential to your offering? What services do they provide you with? Which partners are crucial to be even more successful? Which suppliers will you work with and why (payment terms, service, image, quality, location, terms of lease, etc.)?

Complement the table with the partners you will need to execute each activity in the last column.

Return to table

8.   Revenue Streams and Cost Structure

Did you define all other building blocks? Go to step 4 to build your business case by determining the revenue streams and the cost structure.
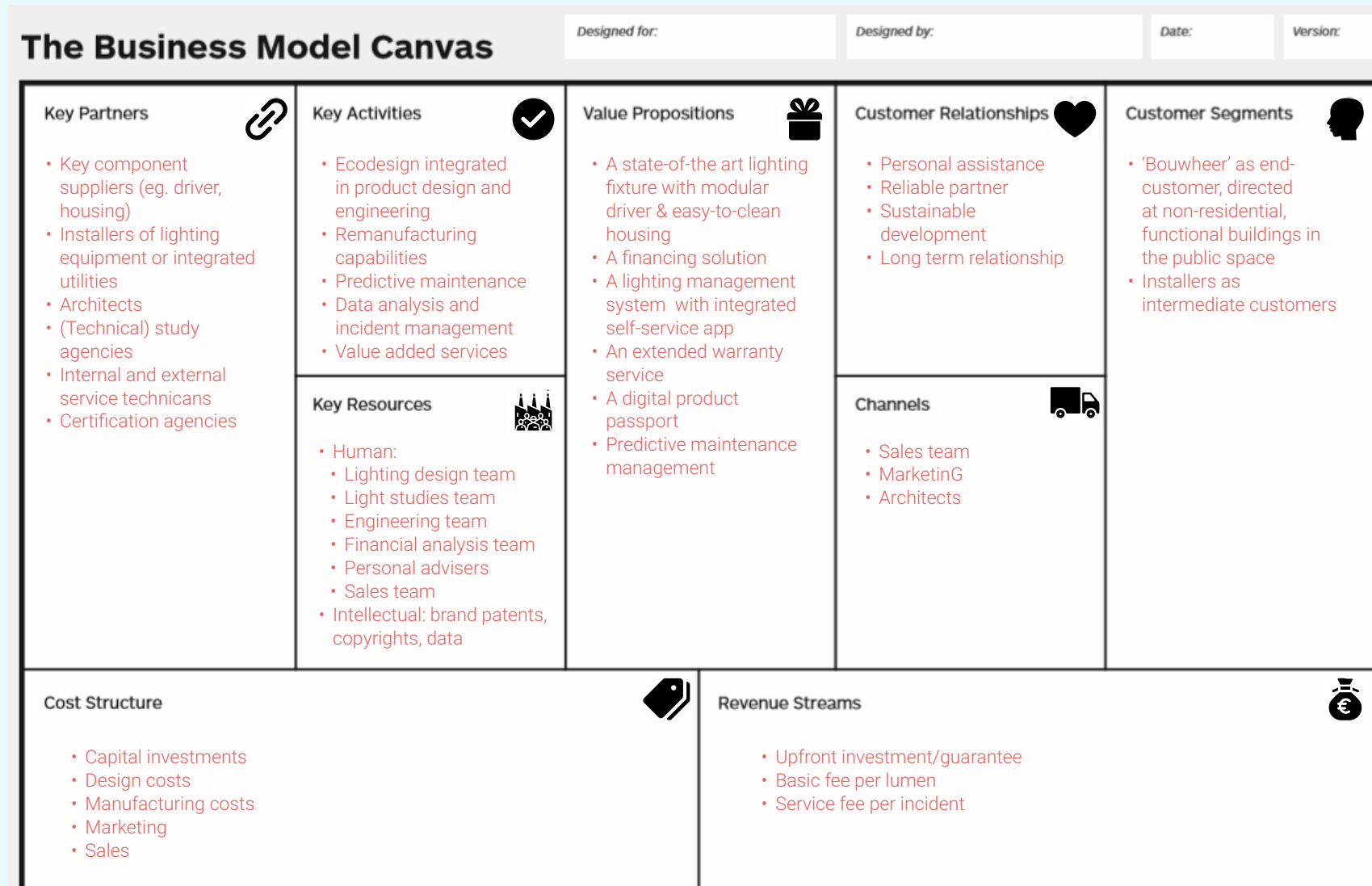
Read more on how to fill in a business model canvas

- **The business model canvas instruction manual***
- **Nine questions to assess your business model design***
- **Checklist for designing crystal clear business mode canvases***

* You need to create a free account to access the documents on this platform.

Business Model Canvas: completed example

The example below shows a Business Model Canvas for a lighting equipment manufacturer looking to build a business model around PaaS in the lighting industry, directed towards public building lords. This building model canvas builds further upon the Value Proposition Canvas.

The Business Model Canvas

Designed for:	Designed by:	Date:	Version:

Key Partners 🔗

- Key component suppliers (eg. driver, housing)
- Installers of lighting equipment or integrated utilities
- Architects
- (Technical) study agencies
- Internal and external service technicans
- Certification agencies

Key Activities ✅

- Ecodesign integrated in product design and engineering
- Remanufacturing capabilities
- Predictive maintenance
- Data analysis and incident management
- Value added services

Key Resources 🏰

- Human:
  - Lighting design team
  - Light studies team
  - Engineering team
  - Financial analysis team
  - Personal advisers
  - Sales team
- Intellectual: brand patents, copyrights, data

Value Propositions 🎁

- A state-of-the art lighting fixture with modular driver & easy-to-clean housing
- A financing solution
- A lighting management system with integrated self-service app
- An extended warranty service
- A digital product passport
- Predictive maintenance management

Customer Relationships ❤️

- Personal assistance
- Reliable partner
- Sustainable development
- Long term relationship

Channels 🚚

- Sales team
- MarketinG
- Architects

Customer Segments 👤

- 'Bouwheer' as end-customer, directed at non-residential, functional buildings in the public space
- Installers as intermediate customers

Cost Structure 🏷️

- Capital investments
- Design costs
- Manufacturing costs
- Marketing
- Sales

Revenue Streams 💰

- Upfront investment/guarantee
- Basic fee per lumen
- Service fee per incident

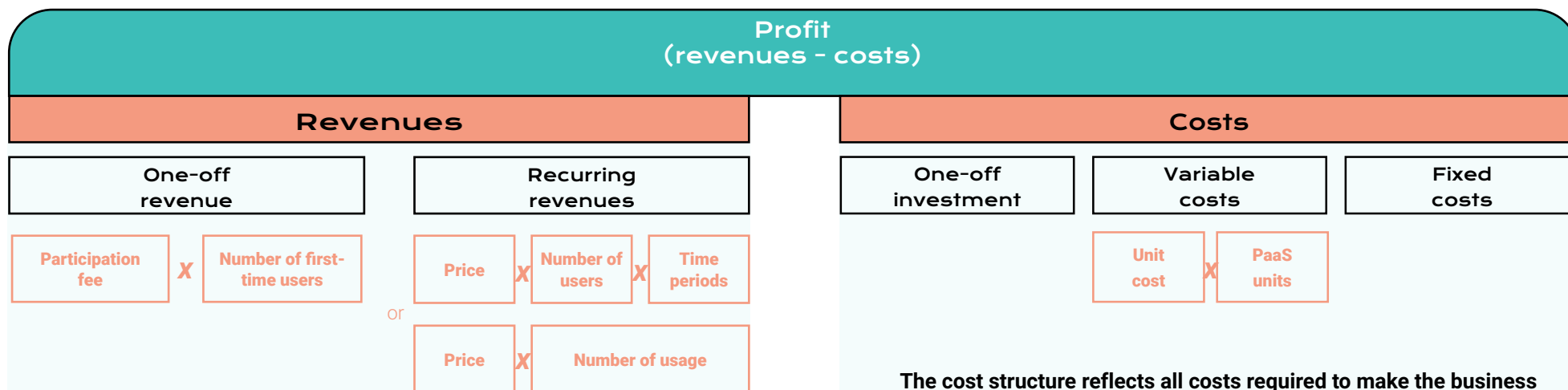# Build your Product-as-a-Service business case

In this step, we will help you to get started on building your business case so you can assess and optimise the financial viability of your model before pilot launch. You will identify the costs and revenues of your PaaS business model, identify the preferred pricing model and evaluate your financing options for the needed investments.

Define costs and revenues

Use a **profit tree**[16] to identify all revenues and costs related to the business model developed in Step 3. Define assumptions per driver and note the source.

Profit
(revenues – costs)

Revenues	Costs

Revenues

One-off revenue	Recurring revenues

Participation fee	X	Number of first-time users

or

Price	X	Number of users	X	Time periods

Price	X	Number of usage

Value propositions successfully offered to customers result in revenue streams.

Questions

Where do you make your money?
What revenue streams do you have?
How can you develop additional sources of revenue? Detail the composition of revenue by range of products or services.

Examples

- **One-off revenue**: registration fee, damage fee, …
- **Recurring revenue**: rental fees, subscription fees, pay-per-use fees, …

Costs

One-off investment	Variable costs	Fixed costs

Unit cost	X	PaaS units

The cost structure reflects all costs required to make the business model work.

Questions

What are your main costs?
Detail the composition of costs by one-off investment, variable costs and fixed costs.

Examples

- **One-off investment**: set up time investment, IT systems, website
- **Variable costs**: delivery and installation cost, service and transportation cost (maintenance, repair, …), spare parts, costs related to ownership (stock management, depreciation costs, insurance, …), end-of-life costs (refurbishing, reusing, recycling, …), sourcing and manufacturing costs, material and packaging costs, operational costs: water, energy and fuel use
- **Fixed costs**: personnel costs, administrative costs, marketing costs, customer acquisition/retention cost

Choose your pricing model

The choice of a **pricing model** is one of your key decisions since it will impact the sustainability performance, product utilisation rate, customer convenience, as well as revenue and operational cost. The two main types of pricing models, **pay-per-use and pay-per-period** (i.e. subscription), come with different advantages and limitations. The optimal pricing model depends on the physical product involved, the provider's cost structure and the customer segment and characteristics.

An overview of the advantages and limitations can be found on the next page. Together with the identified revenues and costs, this information will help you select the most suitable pricing model[17].

Read more on pricing models

- **Discover the pricing strategy tool, p. 23**

How to decide? Consider the following:

Which pricing model makes more sense from a customer point of view? It is crucial to be able to explain to your customers why your pricing model is convenient – and cost-efficient – for them. Talk to your customers or your would-be customers about your product and how you want to charge for it and consider this information in your decision making.
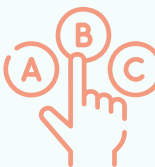
Test two different pricing models and see which one is more successful.

Consider what model moves you closer to creating a sustainable business. Subscription models may look like the reasonable answer but sometimes, the nature of the product may make it challenging to retain long-term subscription customers, making pay-per-use a better choice.

Experiment with price setting, e.g. down payments, different subscription periods, member fees etc.

Product-as-a-Service

Product focused

Service focused

Use oriented	
Individual access	**Shared access**

Result oriented	
Product based	**Result based**

Identifying financing needs and challenges (1/2)

Building an appropriate financing solution starts with the identification of the nature and extent of the financing needs (based cash flow plan) and the challenges that need to be addressed. These challenges may arise from the nature of the PaaS business model or the (financial) situation of the PaaS provider. In addition, public instruments in the form of loans, guarantees, equity stakes, or support through subsidy instruments may influence the challenges faced by a PaaS provider.

Defining your financing needs through cashflow planning

A good starting point for defining PaaS financing needs is to prepare a cashflow plan. This type of planning pinpoints the different cashflows (expenditures and revenues) an organisation or business is expected to witness over a certain period of time. A period of 5 to 10 years, depending on the nature of the PaaS involved, will often be appropriate (hereafter referred as "the planning period").

Step 1 – To build a cashflow plan, you must first realistically **estimate the expected evolution of the PaaS business** over the planning period. Note that, to allow external scrutiny, it is relevant to document any hypothesis on which the expected evolution builds. Have it challenged internally or externally so that you have a relevant basis for building your cashflow plan.

Step 2 – **Gather all cash flow information** linked to the expected evolution of your PaaS business. At this stage you don't need to consider financing aspects, e.g. loans, etc., but focus on gathering information on the key:

- **Cash out flows** such as capital expenditure (investments in capital goods - CapEx) and operational expenditure (e.g. maintenance costs - OpEx), including personnel cost; real estate; insurance, taxes, …
- **Cash in flows** (revenues), e.g. monthly or yearly payments from clients for your services.
- Use the profit tree to identify all possible cash out/in flows to identify all possible cash out/in flows.

Note that, while more detailed cashflows may be relevant at a later stage, a rough estimation may already provide sufficient information to allow for a preliminary indication on financing needs, and hence, establish a short list of financing solutions which could be further scrutinised.

Capital expenditures (CapEx) are funds used by a company to acquire, upgrade, and maintain physical assets such as property, plants, buildings, technology, or equipment.

An operating expense (OpEx) is an expense that a business incurs through its normal business operations. Operating expenses include rent, equipment, inventory costs, marketing, payroll, insurance and funds allocated for research and development.

Identifying financing needs and challenges (2/2)

Step 3 – **Organise the cash flow information over the planning period**, indicating what expenditure or revenues you expect to see over the planning period. Depending on the nature of your business a cashflow plan can be organised using monthly, quarterly, or yearly intervals.

Step 4 – **Analyse cashflows and define gross financing needs.** Comparing cash in and out flows over the planning period will inform you on your cashflow needs (negative cashflows) and surpluses (positive cashflows) for each interval (e.g. month, quarter, year). By aggregating each interval with the previous interval, you obtain a view on the cashflow position throughout the planning period. This will allow you to identify your gross financing needs.

Step 5 – Define net financing needs. A PaaS provider can cover (part of) its gross financing needs using its **own financial resources/reserves**. For example, the PaaS provider can use its own resources to purchase goods and services that he will use to provide PaaS services. Own capital can also be used to attract additional external financing resources. Own resources can be supplemented with subsidies/grants (non-repayable funds). For example, at regional and EU level – notably as part of the Green Deal – several **subsidies/grants** programs and calls, are available. While subsidies/grants can support the start-up of a PaaS they **do not offer a structural solution to financing challenges**. Indeed, many factors (e.g. political preferences, budgetary constraints, etc.) can jeopardise the availability of subsidies over time. Hence, building a robust business case would require to be viable without a long-term external support (e.g. via subsidies). Nevertheless, subsidies may be very useful in the run-up and launch phase of the PaaS activities.

By deducting the available own resources and external non-refundable resources (grants and subsidies) from the gross financings need (defined in step 4) we can define the minimum net financing need that will need to be covered to execute the proposed business plan. In the section Financing options, we will explain and evaluate some possible ways to secure funding.

Typical PaaS financing challenges

While PaaS providers may experience financing challenges like any other (new) business, **some challenges are more typical to a PaaS context.**

Linear models allow for rather short investment cycles: the supplier monetises on his investment at the time of the sale (a one-shot operation). A circular business model will often work differently: the PaaS provider acquires investment goods with which he provides a PaaS service which will accrue revenues over a longer period (long investment cycle). Especially when requiring considerable CapEx, PaaS is likely to inflate financing needs and extend investment cycles. This leads to an accumulating large balance sheet, acting as a "bank" to the clients, which increases the credit risk exposure (from clients) as compared to a linear model.

These above PaaS characteristics may give way to the challenges on the next page.

	Sales model	As-a-service model (without finance partner)
Your turnover and margin	Turnover and margin are realised 100% upfront	Turnover and margin are realised over time
Your billing process	1 invoice 1 payment	48 invoices to be sent for a 4-year contract
Your cash collection, debt monitoring	One-off	48 follow-ups
Your cash position	100% of cash is collected immediately. Payment terms on 30, 60, 90 days	Cash is collected in installments. A source of financing is required (equity or loan)

Challenge 1: Matching cashflows (cash flow problem)

In order to be able to deliver the PaaS services to their customers, circular models may require PaaS providers to invest in hard- en software. This requiring an upfront investment from the PaaS provider, while clients only pay smaller fees over a longer period. In addition, some of the assets may well be idle (not generating revenues) e.g. between the moment of purchase and the start of the PaaS contract or upon termination of a PaaS contract. These situations generate an imbalance in cash flows, which may lead to a negative cash position. Conversely, an asset could keep generating revenue long after the initial investment has been offset by the associated PaaS fees, ultimately improving the PaaS provider's cash position.

Hence, the following factors may exacerbate cash flow problems:

- **Choice of financing instrument**: This occurs when the monthly instalments of the loan or leasing fee are not fully covered by the revenues from the PaaS activities. A longer loan period may alleviate this problem.
- **Low profitability**: if the PaaS services are barely profitable, it increases the risk of structural cashflow imbalances.
- **Performance risk**: the PaaS provider bears the performance risk and hence, if investments due to failure are idle the PaaS provider will face repair/replacement costs and asset downtime.
- **Credit risk**: defaulting clients will reduce expected revenues, increasing the cashflow problem. In longer-term contracts, credit risk becomes more critical compared to one-time transactions with upfront payments for a product or service.
- **Use risk**: in pay-per-use models revenues are largely dependent on the use of the service (e.g. number of photocopies, washing cycles, etc). Hence, in addition to the credit risk the PaaS provider also bears the use risk. This can impact cash flow (problems) but may improve as the portfolio grows and averages provide a better forecasting reference.

Challenge 2: Securing adequate financing (creditworthiness limits)

Most of the financing will be done on a recourse basis meaning that, apart from the cash flows coming from the PaaS activities, a bank will assess the borrower creditworthiness (as witnessed by the company's balance sheet) and/or request additional collateral (e.g. a mortgage) and (personal) guarantees so as to adequately cover its counterparty/credit risk. This may particularly challenging for small, new enterprises with limited capital and no track record.

A creditworthiness issue could be caused or exacerbated by (a combination of) several factors, for example:

- **Limited capital / financial reserves** of the PaaS provider.
- **Uncertain / unpredictable returns** of the PaaS services (due to performance risk; credit risk; etc.).
- **Limited residual value of assets / installations** used for providing PaaS services (e.g. lighting and light fixtures) so that they cannot be used as collateral.

Financing options

Most commonly used solutions to tackle cashflow problems (challenge 1):

Increasing the capital: allows to create a buffer to bridge the period between the investment (cash out) and the generation of returns (cash in).

Bond or commercial loan: if an equity option is not available or does not suffice to cover the financing needs, the PaaS provider can try securing debt finance in the form of a **bond or commercial loan** to cover temporary negative cashflows.

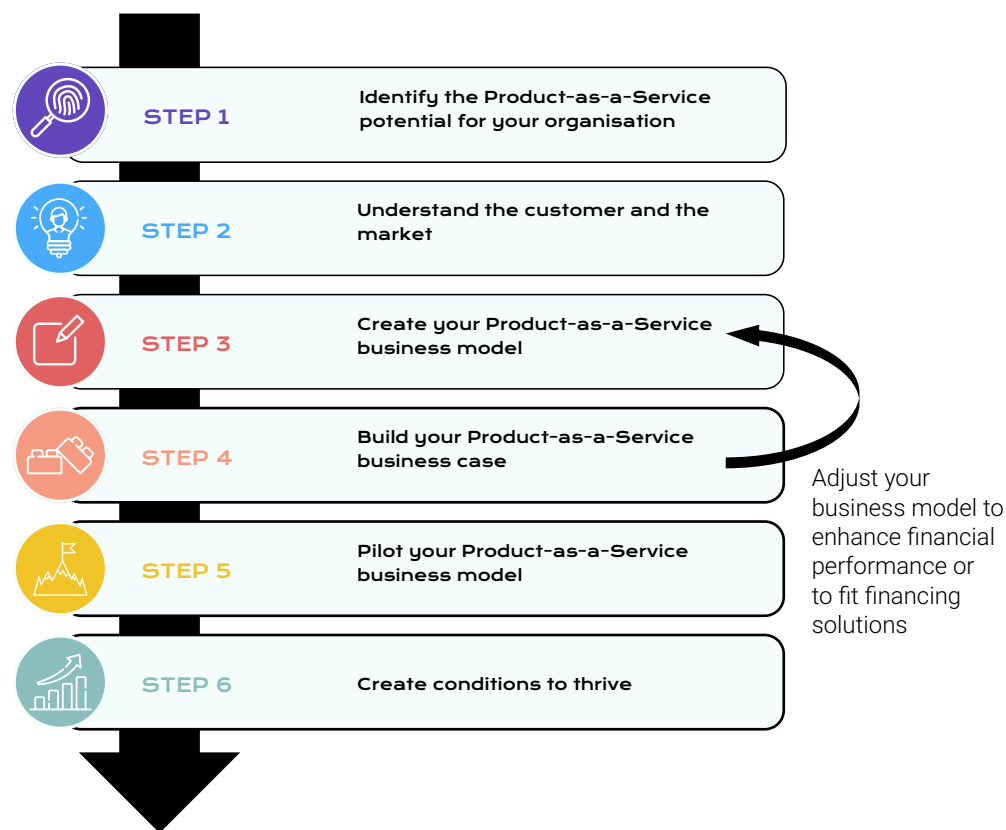## Most commonly used solutions to address creditworthiness limits (challenge 2):

Venture capital: Venture capital can be accessed through an equity participation, a subordinated loan or through a bond (convertible or not) issued by the company. Venture capital can be provided by the 3Fs (Family, Friends and Fans); business angels (network), venture capital funds, crowd funding, etc.[19]

Alternative solutions

Click on the options to read more.

Final remark

The financing question is closely linked to the business model used. If a particular business model makes it hard to find an appropriate financing solution, it may be relevant to review and adapt the business model to fit within the existing financing solutions.

STEP 1	Identify the Product-as-a-Service potential for your organisation
STEP 2	Understand the customer and the market
STEP 3	Create your Product-as-a-Service business model
STEP 4	Build your Product-as-a-Service business case
STEP 5	Pilot your Product-as-a-Service business model
STEP 6	Create conditions to thrive

Adjust your business model to enhance financial performance or to fit financing solutions

Pilot your Product-as-a-Service business model

Welcome to the pivotal phase of your PaaS journey: piloting your Product-as-a-Service business model. This stage is where theory meets practice, where you'll turn your ideas into tangible realities.

At the heart of this phase is the Lean Startup methodology—a proven approach that treats business development as an ongoing experiment. Beyond the Lean Startup methodology, we explore testing techniques that can be applied early in the idea phase. These methods provide rapid and cost-effective ways to understand your customers, refine your value proposition, and build a robust business model.

In this step, you'll discover how to assess customer interest, willingness to pay, preferences, and priorities. With each iteration of the 'Build – Measure – Learn' loop, you'll fine-tune your PaaS venture, ensuring it aligns closely with customer needs and market dynamics.

The Lean startup methodology

The lean startup methodology looks at business development as an experiment. It focuses on testing and actively working with potential customers to help you create a product or service they need. You can use the lean startup method to help you save time and money and put you in a better position for success.

The three steps that make up the lean startup methodology are:

1.	Build
2.	Measure
3.	Learn

Think of the lean startup approach as a loop. As you learn and go through each step, you'll return to the first step to update your products and services to optimise your value proposition.

Navigate through the different steps by clicking the step numbers below.

Testing your business model[23] (1/2)

Testing is usually associated with expensive pilot projects at the end of the product development process when it's usually too late to make major modifications or change course. Here we outline a number of testing techniques that you can already apply during the search and design phase of your business ideas. These techniques enable you to generate market facts rapidly and cheaply while you are still seeking to understand your customers and design your value proposition and business model. This testing goes beyond interviewing or market observations, and gets potential customers to perform certain actions that prove their interest. This type of testing can be applied as early as the instance you have an idea. The facts you gather in the process should continuously inform your search for great value propositions and business models.

Testing interest & relevance

Do potential customers show interest in your ideas? Are your ideas relevant to them? Are they interested enough to perform an action?

You can start testing the interest and relevance of your ideas with customers before even having a concrete value proposition in mind. By testing jobs, pains, and gains you can figure out if customers even care about the issues you intend to address. The following techniques allow you to get started on testing your customers' interest:

- **Ad Tracking / "Fake" Ads**: Ad tracking is an established technique that is used by advertisers to measure the effectiveness of ad spending. The same technique can be used in a powerful way to track the interest or lack of interest of potential customers for a new value proposition that doesn't even exist yet. If few or no potential customers respond to your ad campaign, they either don't have the job, pain, or gain you are planning to address, or they don't see fit in your advertised value proposition.

- **Landing Pages:** Setting up so-called landing pages on the Internet is a very quick and low-cost approach to testing people's interest in an idea. While this technique originates from online services it can be applied to physical products just as easily. The goal of a landing page is to attract traffic and then test several calls to action with potential customers such as the ones outlined below.
  - Sign-up with their email to be notified about the launch of a product
  - Fill out a survey to collect valuable information about people's interest
  - Measure click activity on your landing page

Testing your business model (2/2)

Testing willingness & ability to pay

Are potential customers interested enough in the features of your value proposition to buy? Will they put their money where their mouth is?

Validating your customers' interest and gathering facts that prove you are addressing issues that are relevant to them is not sufficient. You also want to prove that they are willing to pay you for addressing those issues. The following techniques allow you to get started on testing your customers' willingness-to-pay:

- **"Fake" Sales**: There is a big difference between people telling you they are interested in your value proposition and them pulling out their wallet, credit card, or unlocking a budget in a business-to-business environment. It's the difference between information and facts. Simulating a "fake" sales for an unfinished or even non-existing value proposition is a great way to get to those facts. Of course, you need to manage what happens once the "customer" has completed the "fake" purchase, since the value proposition doesn't yet exist. Being transparent, explaining them that it was a test and then offering them a future discount for the value proposition you are testing or giving them another goodie is usually a powerful way to turn them into great advocates for your cause. There are several techniques to simulate a purchase. The simplest technique to simulate a purchase is to put a buy now button on your website or landing page.

- **Prototyping**; Prototyping is a strategy used for fast and quantitative market testing of a value proposition, product, service, or feature. Often a cheaper proxy allows you to test the assumptions underlying your value proposition more quickly and more cost effectively. Ask yourself what you really want to learn and what the cheapest hack possible is to test that assumption.
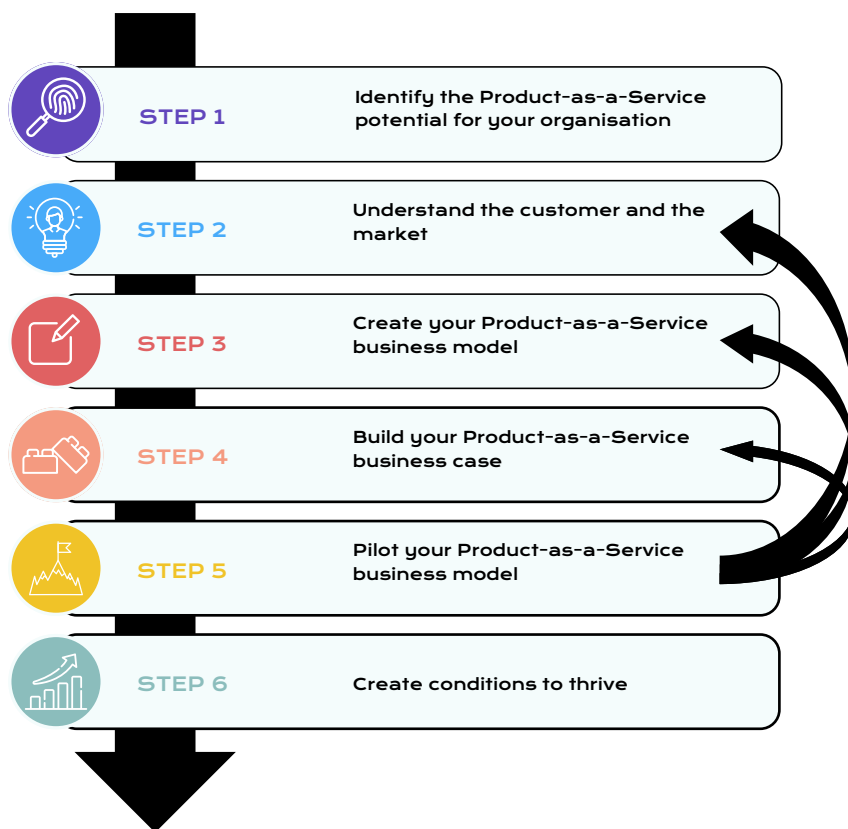
Testing preferences & priorities

Which features of your value proposition do potential customers prefer? What do they really value? What do they prioritise?

When you are designing a value proposition you will often be confronted with the question of which issues are more relevant to customers or which features they value more. Generating facts on your customers' preferences and priorities is a much better approach to design than prioritising solely based on your assumptions. The techniques outlined in this section also allow you to learn more about your customers' take on alternative prices. The following techniques allow you to get started on testing your customers' preferences:

- **Split Testing**: Split testing, also known as so-called A/B testing is a powerful technique to test the performance of two or more options. You compare two or more identical versions of a value proposition, minimum viable product or landing page with one variation per version that you want to test. Even marginal changes can sometimes have a major impact on behaviour. In e-commerce, for example, the location of a purchasing button, the colour of a website, etc. can all have major impacts on purchasing behaviour. The goal of split testing is to identify changes that increase or maximise an outcome of interest.

- **Innovation Games®**: Innovation Games® are a powerful technique popularised by Luke Hohmann that help you unearth, describe, and prioritise value propositions and features by using collaborative play with your customers. These games can be played by customers online or in person.

After reiterating the 'Build – Measure – Learn'-loop and adapting each time your product to the customer feedback, it is now necessary to reevaluate your value proposition, business model and business case. To what extend does your value proposition needs to be adjusted? And what influence does this have on your business model and case? Go back to step 2, 3 and 4 and make the necessary adjustments if necessary.

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STEP 6   Create conditions to thrive

Use data and feedback from customers to optimise your value proposition, business model and/or business case

Read more on testing your business model

- **Testing your business model reference guide**

Create conditions to thrive

This step explores the essential conditions required to thrive in the PaaS ecosystem. We delve into the fundamental shifts in mindset, technology integration, and customer-centricity necessary for success. Additionally, we address the complexities of managing multiple revenue streams, optimising reverse logistics, elevating customer service, and redefining marketing strategies. Amid this transformation, also the critical considerations for minimising environmental impact and the legal intricacies unique to PaaS are examined.

By following the actionable advice we provide in this step, you'll be well-equipped to navigate the challenges and harness the opportunities of PaaS implementation effectively on your path to succes.

Conditions to thrive: implementation

1. Transforming mindsets[24]

You are tasked to change your business's approach from purely selling products to also providing services. There needs to be a **shift from a product-centric perspective to a service-based, customer-centric mindset in the whole organisation and supply chain.** This could mean facing resistance and loads of questions. Create a clear vision on PaaS within your organisation and communicate this to your own employees and partners in the value chain. To improve capabilities, organise specific trainings (circular economy, customer centricity, …) for your employees.

2. Integrating technology to collect data[25]

The top 20% of companies successfully implementing PaaS combine **technology, usage data and co-development with the customers** to design their offerings. Digital infrastructures like Digital Product Passports, Internet-of-Things (IoT), Artificial Intelligence (AI), process automatisation, CRM-software, etc. can support you.

3. Managing multiple revenue streams and administrative hassle

PaaS brings diverse types of revenue from multiple channels, and you'll have to **prepare your business to manage these streams**. Define processes and resources for handling your different revenue streams (renting, leasing, selling, pay-per-use, …) to guarantee customer satisfaction. If you want to outsource this administrative hassle, an external funding partner could take up the role as administrative supporter to manage all payments.

4. Organising reverse logistics

With PaaS, your business will have to accommodate the reverse logistics of your service-based products. You need to create the foundation to **take back products and decide to reuse, refurbish, recycle, or declare end-of-life**. It is important to organise this as efficient as possible to limit costs.

5. Focusing on customer service

Customer service is at the heart of a successful PaaS strategy, and it's not easy to ensure you're delivering it to the highest possible level each time. Unreliable or inconsistent customer experiences could undermine your efforts to include service-based offerings. Hiring the **right people** and using **appropriate systems** to help you satisfy your customers can help you increase the overall quality of your services.

6. Redefining marketing strategies

Adding services to your products includes redefining your go-to-market plans and positioning your offerings to your audience, which requires a **change at every level** — from how you communicate on media platforms to your website. You must also find your customers' hidden needs and intertwine them in your marketing. Also, you need to invest time in keeping current customers to make sure they don't lose connection with your organisation.

Conditions to thrive: lower environmental impact

Product-as-a-Service models don't automatically create a lower environmental impact compared to traditional selling models. This will only be the case if the necessary circular economy strategies (reuse, repair, retrofit, …) are applied, leading to an extended lifespan of the product and a reduced demand for new products.

There are a number of attention points in terms of environmental performance to consider when setting up a PaaS model. These are listed below, together with some suggestions to limit impact:

1.   Transport

Transport (e.g. for maintenance, repairs, sharing or renting etc.) often represents a considerable and often underestimated share in the overall environmental impact of PaaS models.

- Serve **local markets** or foresee local maintenance, repair or renting services to minimise transport distances
- Minimise the need for transport by choosing durable products that require **little maintenance or repair**, or that are easy to maintain or repair by the user
- Use **sustainable forms of transport**

2.   Number of products in circulation

Not all PaaS models lead to fewer products in circulation when products are still exclusively used by a single user (e.g. installation of white goods-as-a-service, car leasing).

- Discourage low use-intensity purchases and **encourage shared use**
- For those products that are exclusively used, make sure that they are **sustainably produced, energy-efficient and durable** and that users are encouraged to use the same product for a long time, instead of premature replacements for a newer model (see point 3)

3.   Energy efficiency

For products with a considerable energy consumption during the use phase (e.g. EEA), compared to the impact from production, intensified or prolonged use is not always desirable.

- Make sure these products are as **energy efficient** in use as possible
- Be aware of the trade-off between lifetime extension of products vs. timely replacing products with new, more energy efficient ones

4.   Longer lifespan

While there is an incentive for PaaS model providers to offer qualitative and repairable products, an effective longer lifespan is not always guaranteed because of the user behaviour (care, maintenance, …).

- Make **user maintenance easier**
- Increase the **tolerance for minor damage**
- Provide **updates, upgrades, makeovers, refurbishment,** etc. so users are encouraged to keep the same product for a longer time, instead of premature replacements for a newer model

5.   Consumption volume

Service models can make certain products more accessible to more users. Besides possible social benefits, this also carries a risk that consumption volumes would eventually increase or that a shift from more environmentally friendly alternatives to these services would occur (e.g. car sharing replacing public transport).

- Assure **affordability, user-friendliness and attractiveness** of the most sustainable options

Conditions to thrive: legal (1/2)

The client relation in a PaaS context differs substantially from a sale of goods in a linear economy context. These differences commend special attention when defining the contractual relations with clients. Below we highlight the most important points of attention when drafting contractual documents for PaaS services:

1. Ownership of PaaS goods

The ownership of the goods used for delivering the PaaS services does not reside with the PaaS clients. It either stays with the PaaS provider, or with a third-party finance provider, such as a leasing company. This has a number of implications which can be dealt with in the contractual relation:

- **Liability of the PaaS provider for the safe functioning of the goods.** Typically, this should be covered by a compulsory civil liability insurance. This may impact the insurance premiums. In addition, it is relevant to indicate how to properly use the PaaS goods to avoid unsafe situations.

- **Liability of the PaaS client for damages to the PaaS goods**, e.g. caused by an incorrect use of the goods; possibly it may be relevant to request or offer an insurance for the PaaS goods to the PaaS client to cover any damage to the PaaS goods; in addition, it is useful to indicate how to properly use the PaaS goods to avoid damaging these goods. A deposit guaranteeing the duty of care by the client can also be included in the contract.

- **Replacement of goods.** In some cases it might be more cost-efficient for the PaaS provider to replace an existing installation by a new more efficient one to provide the PaaS services. The contract should provide such possibility of replacement.

- **Restitution of the goods upon termination of the contract.** Provisions should be made as to the situation of the goods at the end of contract. This may entail provisions with regard to the modalities under which goods can be taken back by the provider; the reimbursement of costs for damaged goods, the possibility for clients to purchase the goods and the price setting for such goods; the end of life treatment for goods that have become waste.

2. Payment

The payment by the client is contingent on the service provided. The service provision and the payment conditions can vary substantially and should therefore be detailed in the contract:

- **Definition of the agreed upon service with clear key performance indicators** so as to avoid whether or not the agreed upon service was provided.

- The **basis for the payment** (for example based on availability of a certain performance vs actual use).

- Under what circumstances can the client be **freed from paying the PaaS fees** or can payment of these fees be **suspended, reduced**, etc. For example, if the availability of the PaaS service is less of x % of the agreed upon availability the client is entitled to a reduction y% of the agreed upon monthly fee. Additional conditions may be made applicable (e.g. a timely communication of the underperformance). The performance risk - unless it is attributable to the client - will normally be borne by the PaaS Provider.

Conditions to thrive: legal (2/2)

3.   Credit risk

The long-term client relationship also implies that the credit situation of the client may change over time. To reduce the client credit risk, the contract can provide for the possibility of an early termination (and recuperation of the PaaS goods) under particular circumstances that may affect a client's payment capacity. Such early termination could, for example, be foreseen after a client misses two consecutive monthly payments; or initiates the compulsory alarm bell procedure aimed at avoiding bankruptcy.

4.   Contract duration

One of the appeals of PaaS is that clients do not have to invest in an installation and can in principle **stop using a certain installation more easily** by terminating a PaaS contract (higher flexibility appeal). On the other hand the PaaS Provider wants to be able to plan cash flows and doesn't want to have idle assets. Hereto he can contractually provide for a minimum contract duration, a switching cost to be charged to clients upon early termination, etc.

Conclusion and next steps

This guide was created on behalf of the Belgian Federal Public Service Health, Food Chain Safety and Environment as part of a measure within the Federal Action Plan Circular Economy (FACE) intended to support small and medium-sized enterprises in the exploration and designing of Product-as-a-Service models. The guide provides a practical step-by-step approach to enable you to kickstart a PaaS model in your organisation. The guide is applicable to all sectors.

The Belgian Federal Government is convinced that a shift to a circular economy is crucial to become more sustainable and reduce the consumption of finite resources. Product-as-a-Service business models are one possible way to acquire this. In Product-as-a-Service business models, the provider retains ownership or control of the product throughout the use-phase. In this case, the provider has a much stronger incentive to maximise product utilisation as you can gain more revenue with the same volume of products.

This guide is **a starting point for your journey into creating, delivering and realising value through PaaS business models.** PaaS business design is an innovative process, so be prepared to test key assumptions, adapt and learn from customer feedback, and iterate your business model with experience.

Do you have a concrete business idea and need more support? VLAIO (Flanders), SPW Recherche (Wallonia) and Innoviris (Brussels) offers support for training, consulting, investment and research & development to companies. Visit their site to see which support is available at the moment.
- VLAIO (Flanders): https://www.vlaio.be/en/subsidies
- SPW Recherche (Wallonia): https://recherche.wallonie.be/nl/home.html
- Innoviris (Brussels): https://innoviris.brussels/nl

Cases

Car sharing – Dégage

Who is Dégage?

Dégage is a **Peer-to-Peer (P2P) platform** that enables individuals to **share their car or make use of a shared car** in Flanders and Brussels. In 2022, Dégage had more than 400 shared cars, 30 shared bikes and almost 5.000 members. The non-profit association does not aim for profit, but for social and liveable neighbourhoods. Dégage's cars are widely used. Every year, the organisation grows in number of members, vehicles and usage by 10 to 40%. Dégage counted as many as 6,830,436 shared kilometres and 67,511 trips at the end of 2022.

All shared cars are available at a transparent **fixed mileage fee**. Members pay per kilometre - not per time - which makes the shared cars suitable for longer periods. The user pays Dégage quarterly for their kilometres driven; Dégage in turn reimburses the owner for the costs incurred for these shared kilometres. Partly because the shared cars are used so frequently, Dégage can guarantee an accessible mileage rate.

PaaS business model of Dégage

Product renting or sharing

Pricing model	Pay-per-use: users pay a fixed fee per kilometre driven.
Financial implications	• Dégage is a P2P platform. Car owners can share their vehicles. Dégage has no private fleet, so no upfront investment was needed. • Dégage is partly funded with a 35 euro registration fee and a 75 euro deposit per member. • Dégage operates as a volunteer organisation, supported by 4 employees.
Circular strategies	R1 Rethink: car sharing makes it possible to have fewer cars.1 Dégage car replaces 3 to 10 individual cars.
Environmental impact	• Shared and intensified car use[26] has significant environmental potential, with potential CO_2 emission reductions of 8-18% due to reduced car ownership (30% less) and shorter distances driven (15-20% less)[27,28], especially when organised locally. • Nonetheless it is important to be aware of potential rebound effects: car-sharing's accessibility without investment might lead to increased car usage, potentially undermining greener transport options like public transit and biking[29].

Service provider

Strenghts

- Reinforces social cohesion around a mobility solution.
- Offers a mobility mode situated between public transport and private car use.

Challenges

Due to higher market prices some people prefer to sell their car (in case of low to no usage) instead of offering the car through a car sharing platform.

Customer

Benefits

- User: only pays for the occasional use of the car and does not need to make a big upfront investment.
- User: cheaper than owning a car in case of limited use.
- Owner: splits (a part) of the fixed costs (like purchase, maintenance, insurance, …) by sharing their car.

Disadvantages

- Availability of shared cars depend on location and time.
- Not suitable for daily commute to work.

Installations-as-a-service - ETAP

Who is ETAP?

ETAP develops energy-efficient, comfortable and innovative lighting solutions in professional environments: offices, schools, hospitals, but also shops, warehouses and industries. Circularity, sustainability and corporate social responsibility are also top priorities for ETAP. Therefore they introduced Circular Light-as-a-service (C-LaaS). With C-LaaS, ETAP offers you a 'managed services' solution for all your lighting and emergency lighting needs. No need to invest your own money in a lighting installation, for a fixed annual fee ETAP will meet all your requirements. They handle the design, financing, installation and maintenance of your lighting, while ensuring the lighting performance, energy efficiency and legal compliance of your installation throughout its lifetime.

PaaS business model of ETAP

Functional result

Pricing model	The customer pays for a predefined amount of light capacity (lumen) installed.
Financial implications	A third party financial solution is applied to pre-finance the lighting solutions, whereby the financial institution becomes the owner of the installation, while performance risks (e.g. guarantees) related to the installation remain with ETAP.
Circular strategies	• R2 Reduce: economically interesting to minimise resource usage per product. • R4 Repair: to extend the lifecycle time of their product. • R5 Refurbish: to extend the lifecycle time of their product.
Environmental impact	• The main environmental benefit is in developing high-quality, energy-efficient installations with optimised lifecycle management (via monitoring, preventive maintenance and repair) to extend their lifetime[30,31]. • Using high quality products (with low depreciation over time), ETAP can often guarantee the same amount of light with fewer fixtures compared to standard set-ups, reducing resource consumption. • A share of the environmental pressure is generated during the use phase of the installations due to their energy consumption.

Product requirements

• Requires little maintenance and/or repair
• Requires easy repair: modular, simple spare parts, ...
• Requires easy dismantling and end-of-life processing

Service provider

Strenghts

• Unburdening customers by providing and including installation, maintenance, repair and take-back.
• Higher quality can be used as an advantage over cheaper (non-European) products.
• The upcoming renovation wave is to be considered a business opportunity.

Challenges

• Building owners lack insight in cost of lighting maintenance (Total Cost of Ownership), making it more difficult for them to objectively compare the as-a-service proposition with the business-as-usual scenario.
• Agreements must anticipate a series of contingencies (e.g. building owner bankruptcy, building sale, early contract termination, ...).
• Subsidies for infrastructure purchases by public organisations may not always permit switching to service-based models like light-as-a-service.

Customer

Benefits

• Exclusive use.
• Customers only pay for lighting usage, without an upfront investment.
• Predictable, all-inclusive costs covering maintenance and repairs.

Disadvantages

Consumer bound by long-term contractual terms: in case of early termination of contract, the investment cost needs to be compensated by purchasing the installation at residual cost.

Equipment libraries – Tournevie

Who is Tournevie?

Tournevie is **an affordable and ecological tool library in Brussels**. It provides high quality tools to build, renovate and repair to private individuals without the need to use these on a regular basis. Similar to a book library, individuals can join Tournevie for either one year (€40) or one month (€20) and enjoy unrestricted borrowing of quality tools. After one or two weeks, the items have to be returned. Pooling, financing and sharing tools in this way provides an easy alternative to low quality, cheap products found in hardware stores, or expensive tools at big rental companies focusing on professional users. Tournevie also provides additional services such as access to open wood and metal workshops, machine operation training, and the sale of sustainable and reclaimed wood, further reducing financial and accessibility barriers to DIY. Currently, Tournevie serves 500 members with a collection of 400 power tools and nearly 2,000 tools, facilitating approximately 8,000 tool transactions each year.

PaaS business model of Tournevie

Functional result

Pricing model	Pay-per-period: customers pay a fixed subscription fee (yearly or monthly).
Financial implications	• Required pre-financing of all tools (possibly with external parties). • Tournevie retains ownership of the tools - the assets are listed on their balance sheet. • Tournevie is funded with the subscription fees (yearly or monthly). • Tournevie is a non-profit initiative run almost entirely by dedicated volunteers. The minimal paid staff includes one workshop coordinator, one library coordinator and one regular repair freelancer.
Circular strategies	• R1 Rethink: tool sharing makes it possible to have fewer tools. • R4 Repair: to extend the lifecycle time of the tools.
Environmental impact	• Tools are often underutilised, but through tool rotation among members and regular maintenance in a library, tool lifespan is extended and the number of new tools purchased per user is limited. • More intensive tool usage has limited additional impact[32], even for electric tools, as manufacturing contributes significantly to the environmental footprint. • Tool libraries incentivise the provider to offer high-quality, easily maintainable and repairable products and to focus strongly on proper maintenance and repair to extend the lifespan. • A key denominator for environmental performance is the transport between the library and the user, each time tools are lent out. • This model is especially valuable when serving only users within a small geographic area around the library, and transportation is achieved through environmentally friendly means such as bicycles.

Service provider

Strenghts

- Making high-quality tools more affordable
- Unburdening customers by providing and including storage, maintenance, repair and take-back
- Little competition from other players
- Integration in local ecosystem
- Provides additional social benefits in terms of local cohesion, sharing of proper usage of tools (trips and tricks), …

Challenges

- Need for technical expertise for which there is a tight labour market (with related elevated costs).
- Need for an affordable dedicated (large) space close to the customers.
- Difficulty to find sufficient people to volunteer.
- More difficult to lever on social impact realised when searching for (public) financing.

Customer

Benefits

- Only pays for the occasional use of the tool and does not need to make a big upfront investment.
- Can use different high-quality tools for a small fee.

Disadvantages

- Some tools may not be available at certain times due to high demand
- Needs transportation to pick up and drop off borrowed tools.

Attention point: The management of liabilities in the event of an accident related to the application of the tools is a point of attention.

White goods-as-a-service - Papillon

Who is Papillon?

The Papillon project was launched in Belgium to help low-income families reduce costs with resource-efficient household appliances. This collaborative effort between BSH Home Appliances s.a. and SAAMO West-Vlaanderen social enterprise aims to replace outdated household appliances with new, efficient equipment — and at the same time analyse the potential of a sustainable appliance rental model.

Thanks to Papillon, families in energy poverty can rent a washing machine with low energy and water consumption for a monthly rental fee of 9€. The local Public Centre for Social Welfare (OCMW/CPAS) pays the one-off registration fee of 15€/unit for each family. Papillon works closely together with the local Public Centres for Social Welfare and distributes the washing machine via them in their network, while also providing tips and advice. Service (delivery, maintenance, return) and warranty (repair) are included by Bosch for the entire 10-year rental period. At the end of the contract, supplier Bosch will take back the appliances for reuse or recycling.

PaaS business model of Papillon

Functional result

Pricing model	Pay-per-period (subscription): customers pay a fixed subscription fee (monthly).
Financial implications	• Papillon needs to collect all monthly rental fees and pays this yearly to Bosch. • Bosch remains owner of the washing machines which means the assets remain on the Producer's balance sheet.
Circular strategies	• R2 Reduce: economically interesting to use less resources per product • R4 Repair: to extend the lifecycle time of their product • R5 Refurbish: to extend the lifecycle time of their product
Environmental impact	• The Papillon initiative provides financially vulnerable families access to energy efficient and high-quality appliances, which translates into lower water, electricity and detergent use[33,34,35]. • The exclusive use of appliances in this model does not lower the number of appliances produced, although repair and reuse practices can extend lifetimes. • The impact of transport for maintenance and repair interventions can significantly influence the environmental performance of this model, so this should be mitigated if possible. • Potential rebound effect, as improved accessibility to appliances can increase their use.

Service provider

Strenghts

• Unburdening customers by providing and including installation, maintenance, repair and take-back.
• Making high-quality (energy and water efficient) appliances more affordable.

Challenges

• Responsible for take-back of the products.
• Need for transport for service, repair and installation.
• Need for technical workers for which there is a tight labour market.

Customer

Benefits

• The customer pays a smaller monthly subscription fee and does not need to make a big upfront investment.
• Predictable and constant costs as maintenance and repair are included.

Disadvantages

• Consumer bound by contractual terms.
• When a contract is terminated earlier, the appliance will be returned to Papillon.

Product requirements

• Requires little maintenance and/or repair
• Requires easy repair: modular, simple spare parts, ...
• Requires easy dismantling and end-of-life processing

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