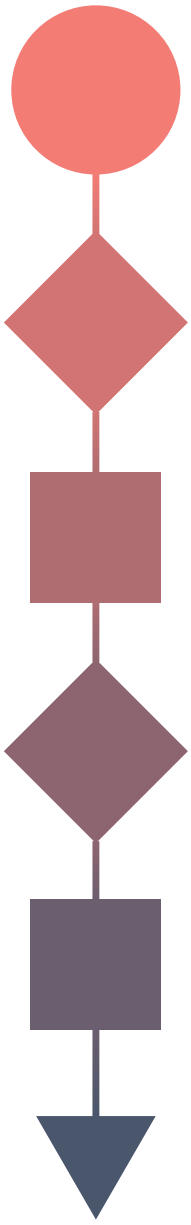
GUIDE TO THE SERVICE CASH FLOW TOOL



With the support of the Community of Practice:

This guide is related to the whitepaper 'The Circular Phone'. There is overlap between the financial chapter (5) of the whitepaper and this document. However, this is as a stand-alone guide to the Service Cash Flow Tool that was developed during the Community of Practice 'Fairphone-as-a-Service'.

Developing a financial cash flow model is essential to gain insight into the effects of a Product-as-a-Service business model on financial ratios and financial statements: balance sheet, profit- and loss statement and cash flows. In this guide, the steps needed to develop a cash flow tool for a circular Product-as-a-Service model are detailed and illustrated with the modelling results of the Community of Practice for Fairphone-as-a-Service. The flow chart summarizes the process.

STEP 1: ESTIMATE THE SERVICE FEE

In order to estimate a monthly fee, a long list of potential services and corresponding costs was first established. Subsequently, corresponding responsibilities for incurred costs was assigned to different parties to clarify who bears financial risk. As a result of this discussion, three cost categories were identified and included in the service fee:

- Asset handling;
- Finance & insurance; and
- Service & operational costs.

1. Asset handling

Asset handling costs per component are based on the price of a new component (including profit margin), the expected replacement and repair costs, and an estimation of economic and physical lifetimes per component. These costs cover the expected replacement and repair costs due to breakages or malfunctioning, and corresponding logistics and operational (handling) costs.

2. Finance & insurance

As is typically the case for PaaS models, there is a need for pre-financing the acquisition costs of assets. In the context of the FaaS model, financing costs per device were based on a fixed rate (6%) loan with a linear repayment structure for a duration of 24 months, which is likely a conservative assumption. In addition, part of the fee accounts for insurance for theft and loss of the assets.

3. Service & operational costs

The fee covers also for standard customer support services in case of failures or breakages. In addition, an extra self-repair service was offered to the customer, consisting of an extra batch of spare parts and spare Fairphones that are always present at the client's premises.

In the context of the CoP, only one service option was considered (i.e. full service), but it is worth noting that in reality different service levels can be considered. Additionally, the service fee used in the financial exercise remains subject to discussion.

STEP 2: DEFINE A REALISTIC SCENARIO

Given the scope of the FaaS project, it was not feasible to carry out in-depth scenario and sensitivity analyses. Therefore, one 'as-realistic-as-possible' scenario was defined treating the FaaS pilot as a separate entity from Fairphone's current operations. This scenario was used to estimate costs and, combined with the service fee as the main source of revenue, to model cash flows (see step 3). In order to project reasonable net cash flows, two key scenario components - growth and cycle scenarios - were considered and are described subsequently.

Growth scenario

The growth scenario defines the numbers of clients and devices to service. Developing growth scenarios typically requires an understanding of 'contract events', which reflect the growth of the customer base, the volume of contracts and the possible termination of existing contracts. In the case of the FaaS pilot, the growth scenario was kept simple and based on the following key assumptions:

- 1 creditworthy client (i.e. intended customer is a large firm with a high credit rating);
- 200 devices provided to the customer;
- 5 spare fairphones and a batch of spare components (batteries, back covers and displays) for the reserve pool; and
- The scenario has a future horizon of 5 years

Cycle scenario

Components can be returned for three reasons: due to (1) the malfunctions of a component or (2) exit of a contract (3) upgrades. Note that returns due to upgrades are in case of the FaaS pilot not taken into account. The flow – the returning and re-using - of the components, depend on various expected economic and physical lifetime considerations, psychological obsolescence and of breakage patterns through usage.

IN A CIRCULAR BUSINESS MODEL, ECONOMIC LIFETIME AND PHYSICAL LIFETIME CONVERGE

Modelling FaaS on the level of components instead of the whole device enabled bringing the economic lifetime of most components closer to their physical lifetime. This is an important result of circularity; by modelling on component level, many components are mainly judged by their functionality. Only items that are fashion sensitive (i.e. with a shorter economic lifetime than physical lifetime), such as the back cover and software related components, are sensitive to trends in the market. In a linear business model, the lifetime of the product is often equal to the component with the shortest economic lifetime due to irreparability, i.e. a very short life!

Components can be returned in four possible states:

1. *As good as new*: the component can be directly re-used;
2. *Repairable*: the component can be repaired and used again;
3. *Unrepairable*: the component can't be repaired or re-used, and is ready to be recycled; or
4. *Recycled*: This is primarily a "technical" modelling state. If the stock of unrepairable components exceeds a certain threshold, the components are recycled.

Note that in reality, there are more nuances in the states of returning components, for example repairs can vary in severity and costliness. Remaining assumptions that were made are:

- Displays, Covers & Batteries are assumed to be unrepairable;
- There are always infinite new components available;
- Repaired parts are always used first. If stock of repaired parts is empty, new modules are purchased; and
- For all modules, a fictive threshold volume for cost-effective recycling of modules is set to 50.

EXAMPLE: THE STOCK AND FLOW OF BATTERIES

To illustrate this, consider Table 1 below. The first column (Q), represents the stocks of batteries in September. The number of needed batteries at that moment is 2. The stock of repaired batteries is 0 (note that this stock is always 0, because batteries are assumed impossible to be repaired), so 2 new batteries need to be purchased. Accordingly, the stock of unrepairable batteries is increased with 2 units in the next month (October). Now take a look at column U, January. At that time, an extreme event takes place in which 202 unrepairable batteries are returned. Leading to a purchase of 202 new batteries, and a corresponding stock of unrepairable batteries of 238. Because the minimum threshold of 50 is now reached (threshold for cost-effective battery recycling), the next month all 238 unrepairable batteries are moved to recycled.

Table 1: The stock of battery modules for six months:

Event projections	Unit	Sep 18	Okt 18	Nov 18	Dec 18	Jan 18	Feb 18
SCENARIO 1: REALISTIC		14	15	16	17	18	19
STOCKS							
Recycle Module 6. Battery	units	0	0	0	0	0	238
Need Module 6. Battery	units	2	2	2	3	202	2
Stock repaired @FP Module 6. Battery	units	0	0	0	0	0	0
Stock unrepairable @FP Module 6. Battery	units	29	31	33	36	238	2
Purchase New Module 6. Battery	units	2	2	2	3	202	2

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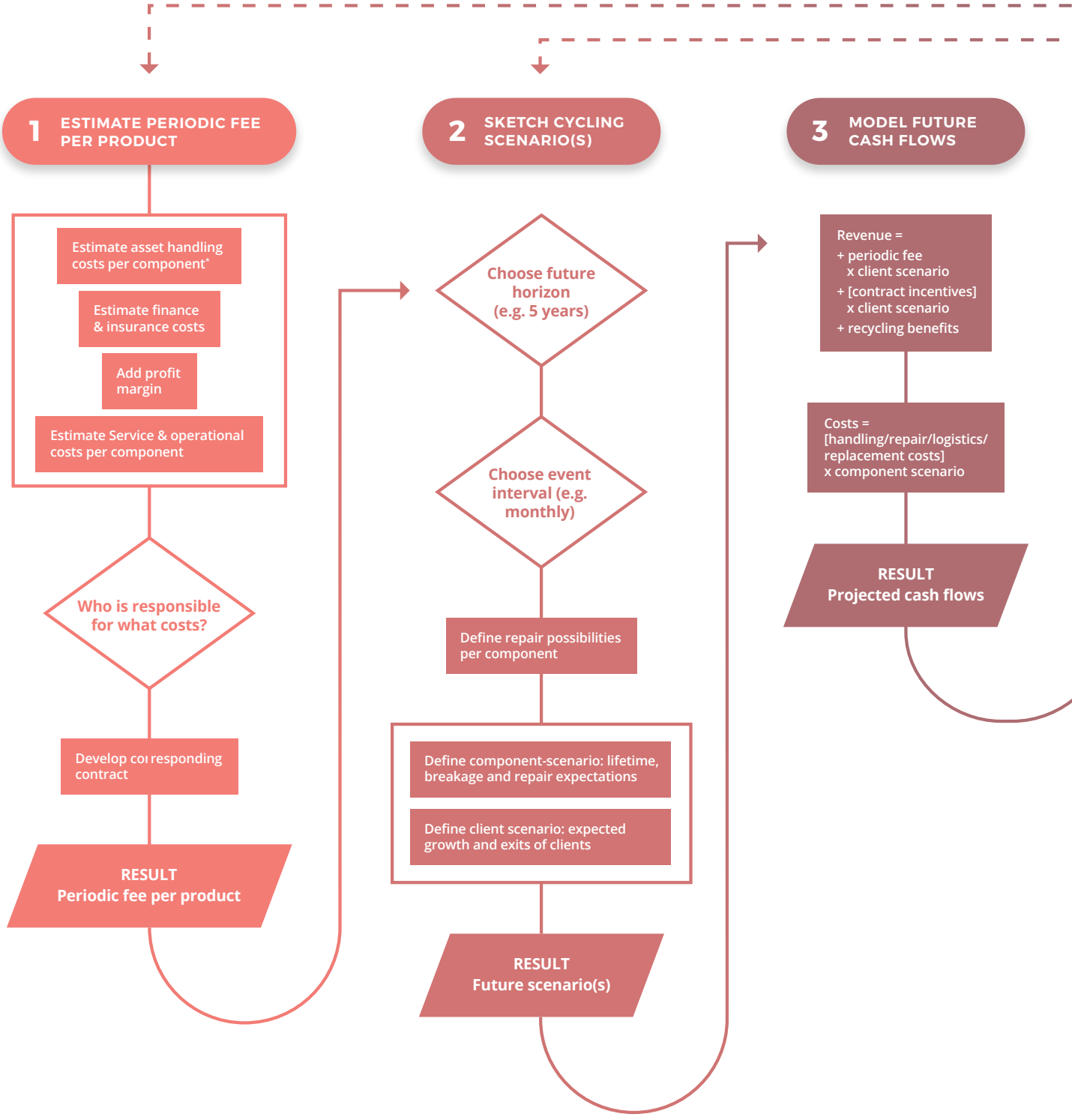

CIRCLE ECONOMY

* A circular product is assumed to be able to be dis- and re-assembled into components or materials

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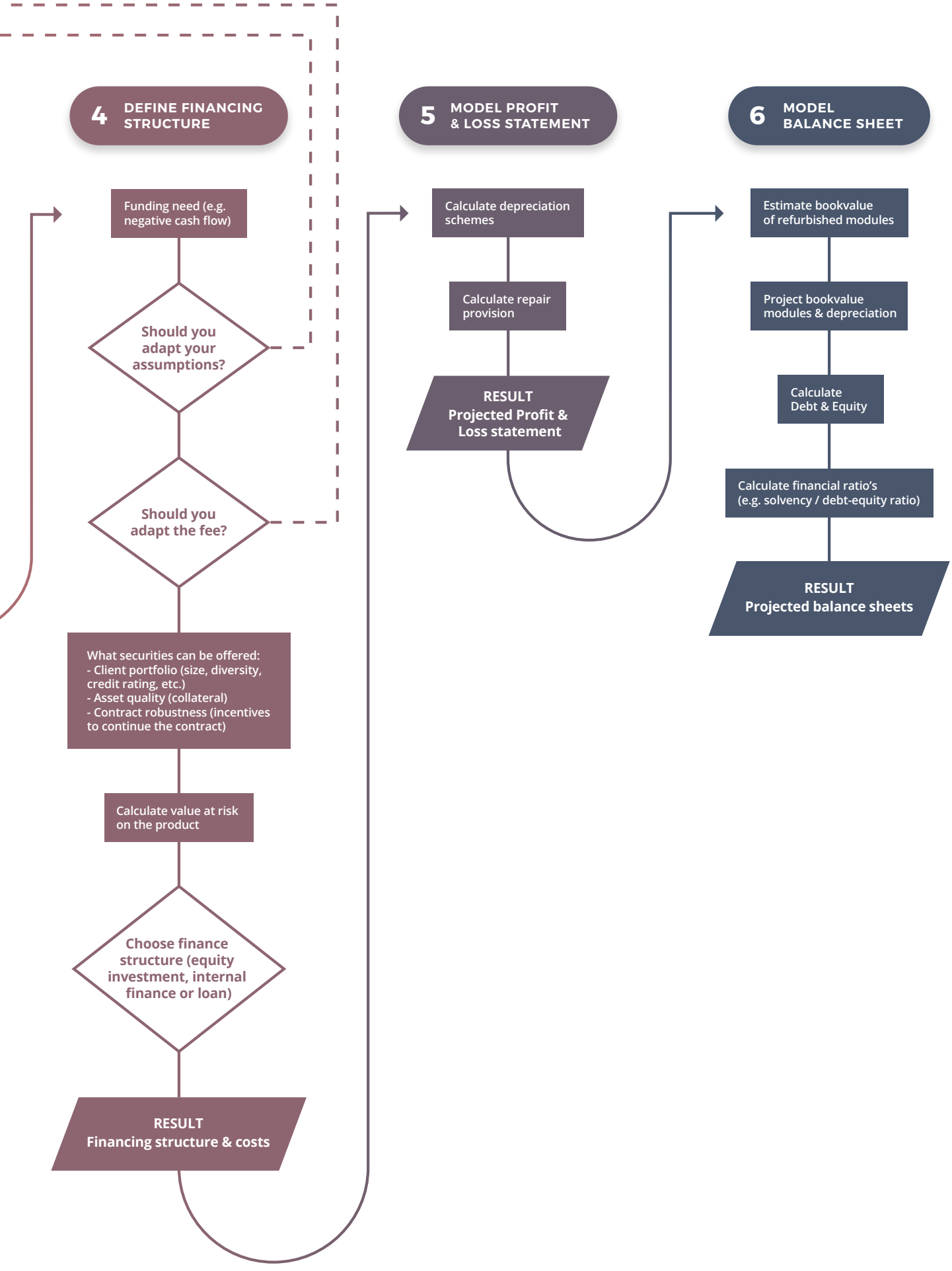


STEP 3: MODEL CASH FLOWS

With an estimated service fee and realistic scenario at hand, the next step was to model cash flows for the FaaS pilot. The development of a financial cash flow model was essential to gain quantitative financial insights based on which financing solutions could be devised (see Step 4). Cash inflows are mainly due to periodic service fees, instalment fee and recycling benefits. Cash outflows are affected by the cycle scenario and corresponding costs of servicing the modules.

The resulting cumulative cash flow projection is presented in Figure 1 and additional net cash flows are provided in Figure 2. Initial investment needs are required to acquire devices, which means the cumulative cash flow is negative at the beginning of the pilot. The cost/revenue balance (i.e. the gradient) is positive, which indicates profitability and suggests it may be possible to lower the service fee. The cumulative cash flow becomes positive after 21 months after which FaaS requires no external financing anymore. Failure of modules at the end of their expected lifetimes results in significant periodic costs.

Figure 1: Cumulative cash flows. X-axis = months

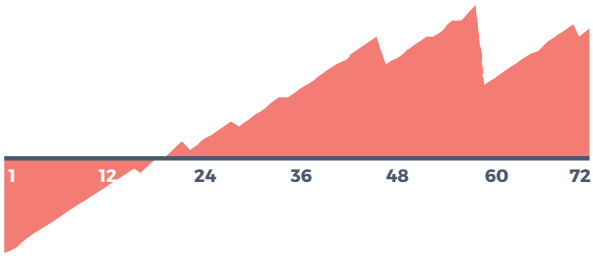
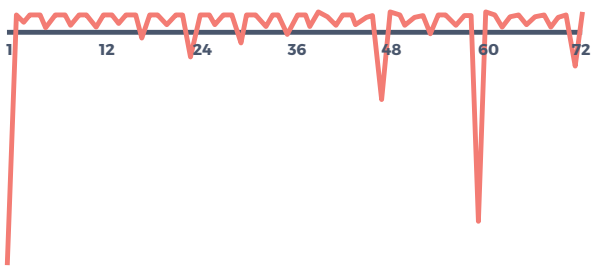
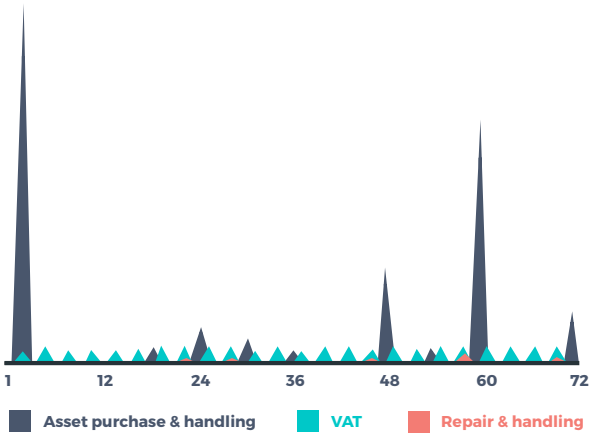


Figure 2: Net cash. X-axis = months



In a similar way, cash outflows in Figure 3, show the three main outflow categories. Asset purchases are irregular but account to a relatively large cash outflow due to components returning after physical lifetime. Quarterly VAT payments are regular and equal due to the scenario of one client, with an equal number of devices in use. Repair and handling costs are relatively low compared to the other cash outflows.

Figure 3: Cash outflows due to Asset purchase, VAT and Repair and handling. X-axis = months



STEP 4: EXPLORE THE FINANCING STRUCTURE

A financial model is required to get out of the deadlock, whereby businesses lack quantitative data about circular business models and financiers are reluctant to invest. Practically, it provides insights into the expected financing need for FaaS, and in turn opens the possibility of examining securities and appropriate financing solutions.

Funding need

A major share of the investment need for PaaS concerns the production and acquisition of assets. Attracting external funding for such financing need can be done in different ways such as equity out of existing business lines, external equity or through debt financing.

In case of the FaaS pilot, the investment need was relatively small. However, with a growing portfolio of contracts, the investment need could grow significantly. This requires financial flexibility, with new financing being available as soon as a new contract enters into force, as well as standardization of contracts to reduce transaction costs. With the need for flexibility in mind, debt financing was assumed for the FaaS pilot.

Value at risk & securities

There are generally three main securities that can mitigate the financial risk in a PaaS business model:

- Client quality and a diverse client portfolio
- Asset quality

- Contract robustness (e.g. incentives to continue the contract)

In order for Fairphone to secure favorable financing conditions, it is essential to consider the 'value-at-risk' of the FaaS proposition and to offer appropriate securities to financiers.

Client quality

The quality of clients in the FaaS portfolio is a key factor influencing the risk profile of the proposition. For the FaaS pilot, the intended launching customer (PGGM) was considered to be a high-quality customer with low credit and debtor risk. Consolidating a strong portfolio in the future will depend on a combination of the number and diversity of clients.

Asset quality

Fairphone devices provide another important security as value can be extracted from the sale of the phones in case of default. Currently, the Fairphone has a high residual value in the market. However, if market conditions change the value of the assets could become less. In a worst-case scenario collateral value could become equal to its scrap value. Therefore, we consider two residual value scenarios:

- High residual value: linear depreciation scheme from 100% at point zero to 20% after 3 years and
- Scrap value: €4,00 per device

Contract robustness

Various options exist to mitigate risk for Fairphone and financiers by improving the robustness of the contract. First, re-marketing risk can be mitigated with a termination fee covering the residual value-at-risk of the assets. Such fee would incentivise customers not to terminate their contract. Given the high value of second-hand Fairphones in the market, a termination fee was seen as redundant. Second, an instalment fee (e.g. €50 per device) can be introduced. This can be seen as a co-investment by the customer, and would significantly influence the investment need and corresponding value-at-risk.

The calculated Value at Risk is illustrated in Figure 4 and Figure 5, given the elements to secure financing, i.e. instalment fee (equity) and assets (in case of liquidation of the contract).

Figure 4 Value at Risk with assumed high residual value

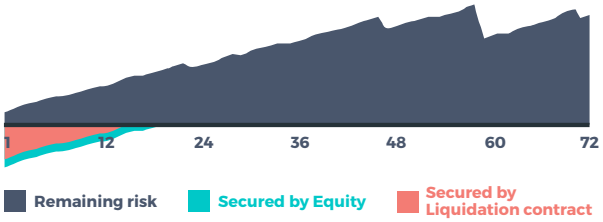
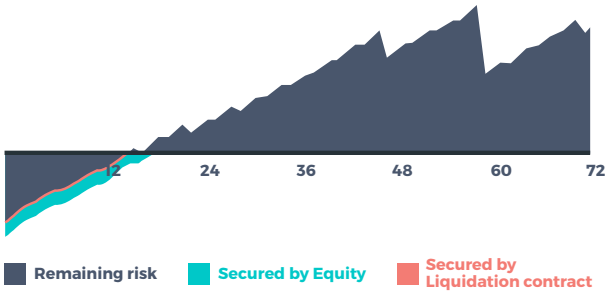


Figure 5 Value at Risk with assumed low residual value (i.e. scrap value)



Circular Lending structure

Different financing structures were discussed based on the above considerations. Based on the cash flow, contractual considerations and financing need, the preferred structure was to work with a current account credit. The amount of credit decreases depending on the payments received from the customer. A current account structure provides financial flexibility, with credit being exactly as high as the investment need. There are also drawbacks from this flexible type of financing: interest rates can be volatile, which can affect the profitability of the proposition, and the bank technically has the right to terminate the current account on very short notice. While the preferred option in the short-term, it may not be a sustainable funding source for the long-term obligations FaaS implies, unless these risks are specifically accounted for.

In the future, the ideal financing structure would ideally be a combination of several lending structures. For example, combining the flexibility of current account structures with the robustness of a lease structure could be an effective way to finance the FaaS proposition. Lease structures indeed complement current account structure with longer-term fixed interest rates and lower termination risk. CoP

members expressed willingness to tweak existing financing structures for this pilot.

Other financing structures that were discussed in the light of financing FaaS will shortly be discussed here.

1. Two-step approach

The two-step approach that was introduced consists of two types of financing. The first is the short-term pre-financing of the phones (assets). The second step consists of paying out the present value of future cashflows, in other words, the upfront one-off payment of the expected cash flows. The contracts are then transferred to the financier. The collecting and billing of the rental fees can be either done by Fairphone or by the financier.

2. Lease: loan based on book value and underwritten by the assets

In this case, the lessor finances 80%-100% of the book value of the portfolio of Fairphones based on collateral lease. Legal ownership lies with Fairphone and the duration of the collateral lease is equal to the economic lifetime of the Fairphone. If the book value increases, due to for example upgrades or repairs, finance can be added. Vice versa, lower book value can result in interim repayments. For a larger number of devices this can be automated. This is similar to current account, but finance is based on the asset, which is less fitting to the circular service. On the other hand, it provides a fixed interest rate and cannot be terminated in the short-term.

3. Lease: financier owns the assets and leases the assets back to Fairphone

In the lease-sub-lease construction, the lessor buys the assets, in this case the Fairphones, and becomes their legal owner. The lessor leases (in a financial lease) the assets back to Fairphone, that adds value to it with providing the services and offers this to their (B2B) clients. Fairphone has the obligation to re-acquire legal ownership of the assets in the end of

Table 2: Elements of Profit and Loss statement for the FAAS model

Profit and Loss Statement	
Revenue out of periodic fees	+
Instalment fee	+
Module recycling benefits	+
TOTAL REVENUE	**SUM**
Cost of Sales	
Logistics	-
Repair provision	-
Insurance	-
GROSS PROFIT	**SUM**
Operating costs	
Personnel	-
Overhead	-
EBITDA	**SUM**
Depreciation Tangibles	-
EBIT	**SUM**
Interest expenses	-
EBT	**SUM**
Corporate income tax (20% of EBT)	-
NET PROFIT	**SUM**

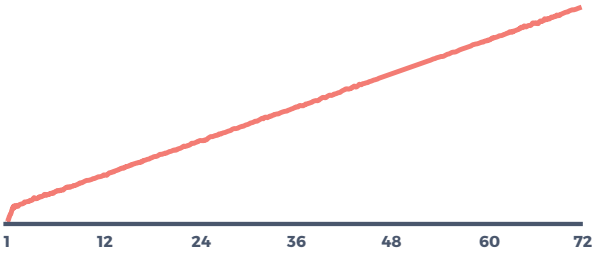
the lease duration (which is typically the equal to the economic lifetime). Risk assessment in this construction is based on cash flows and underlying asset.

STEP 5: PROJECTED PROFIT AND LOSS (P&L) STATEMENT

The profit and loss statement (P&L) is a financial statement that summarizes the revenues, costs and expenses incurred during a specific period of time. The elements of the profit and loss (P&L) statement for the FaaS business model are detailed in Table 2. Revenues are generated by the periodic fee, instalment fee and recycling benefits. Deducting cost of sales, operating costs and interest expenses, taxes, depreciation and amortization from the revenues leads to net profit.

Net profit is positive from the start, as illustrated in the Figure 6. Note, that the peak in the first month is due to the instalment fee that is received for every device in the first month. Note that net profit is based on the fact that assets are financed upfront and that only interest is paid.

Figure 6: Cumulative net profit. X-axis = months



The impact of repairs and replacements are spread over time through the use of a repair provision. An amount is reserved for repairs and replacements every month, and any repair/replacement is paid out of this reserve.

STEP 6: MODEL BALANCE SHEET

From the projected cash flows and profit and loss statement, the balance sheet can be projected. The biggest challenge is to activate the different components on the balance sheet, given that all components have different lifetime expectations. To accurately estimate book value on component level with different cycles, it is essential to have a data management infrastructure in place that can track and trace components with their cycling behaviour, lifetimes, generated revenues and handling costs. Without this, it is impossible to record asset value on a component level on the balance sheet.

The elements of the balance sheet for the FaaS pilot are detailed in the template (Table 3) .

Note: The impact of repairs and replacements are spread over time using a repair provision. An amount is reserved for repairs and replacements every month, and any repair/replacement is paid out of this reserve.

Leverage and Solvency

No equity financing was introduced at the start but was gradually build up through cumulative net profits (i.e. result period on the balance sheet). The investment need for internal or external equity can be established through balancing solvency and leverage.

The solvency ratio is the ratio of equity to total assets. Solvency is an indicator of a business' ability to meet its financial obligations. The solvency ratio is always in between 0 and 1. Without additional paid-in equity, the solvency ratio is quite low in the first 2 years, but grows towards a steady 0,7 due to positive net profits (result period), see Figure 7.

The debt-equity ratio (leverage) shows a decreasing pattern converging to 0,5 after two years, as debt is reduced in the first two years, and at the same time equity (cumulative net profit) grows. Please find the detailed results in Figure 8.

Figure 7: Solvency ratio FAAS. X-axis = years

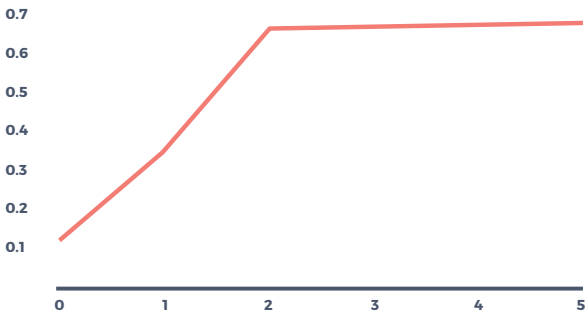
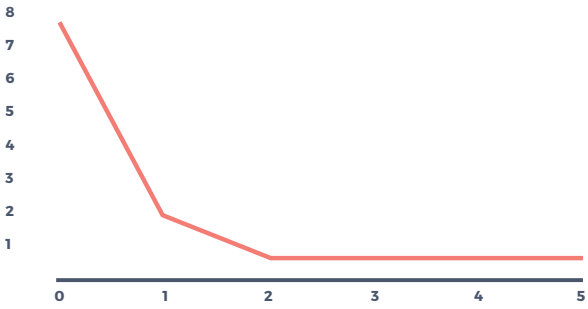


Figure 8: Debt-equity ratio FAAS. X-axis = years



Both the solvency ratio and debt-equity ratio should be balanced, so that Fairphone can meet its financial obligations, while at the same time not making the business fiscally vulnerable. An investor will be reluctant to invest in a highly-leveraged business (i.e. lots of debt) because equity investment is subordinate in priority to the payment of debt. On the other hand, a business that is financed largely through equity loses fiscal opportunities. A bank, for example, may require these ratios to be of a specific balance to grant a loan. This way the required height of corresponding equity (either from investors or from Fairphone) can be extracted.

Table 3: Elements of the balance sheet for the FaaS model

Assets	Liabilities
Intangible assets Top module Bottom module Camera module Core module Plastic back cover Battery Display	 Paid in Additional paid in Other reserves Result Period
Tangible assets **Cash**	**Total equity** **Current account bank** **Provision for repairs** **Taxes and social security**
TOTAL ASSETS	**TOTAL LIABILITIES**

COLOPHON

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