

Title of the proposal:

# Creating the French Dyson: European leader on home appliances for tomorrow's households

Acronym of proposal:

**Bob**



*Damian,  
Antoine,  
and Bob.  
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Participant number	Organisation name	Country
1	Daan Technologies SAS	France

## Executive Summary / Abstract:

Daan Tech has developed **Bob**, world's **smallest** (35\*45\*40cm), **lightest** (9kg) & **fastest** (20mins) plastic injection mould **dishwasher**; **first autonomous 2 place settings countertop**, which cleans & dries daily dishes, with **low water** (3L) & **energy** (0.25kWh) **consumptions** thanks to its **ultrasonic & steam cleaning combination**. New generation **biodegradable gel cartridge** dispenser (patentable) will also be developed by Daan Tech; **winner of French PEPITE R&D challenge**.

Worldwide, white appliances such as dishwashers are primarily designed for family households, hence completely neglecting the **ever-growing single person or couples** (in EU-28, 2/3 of all households were composed of one or two persons in 2016; most common type was composed of a single person with 33.1% & recorded the highest increase since 2006 (3.4 percentage points); two persons corresponded to 31.7% (0.8 pp increase since 2006<sup>1</sup>) living in small apartments with small kitchens.

Hence, **Bob is an ideal solution**, relying on a **patent-pending technology (FR1870069)**, already **received 400k€ from the French government**. Extra funding is required to launch the product at the **European scale** (increasing commercial attractiveness), hence, more attractive for private investors.

**SME Phase 1 & 50k€ lump sum funding** will considerably help explore & assess the **technical feasibility, defining manufacturing process, complete the market research & business feasibility** of Bob innovative dishwasher, which is **fully aligned with Daan Tech business strategy**, helping both internal growth & targeted transnational business opportunities.

Daan Tech aim is to release the final prototype by the end of 2018, ready for manufacturing & reach TRL8. Endurance tests are required on pre-series to reduce technological risks & bring to TRL9.

**The positive outcome of SME phase 1 will allow applying for an additional funding in SME phase 2 in view of commercialisation.**

<sup>1</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Household\\_composition\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Household_composition_statistics)

**Main target:** households composed of up to 2 people mainly living in apartments. 35% of the world's households are composed of 2 people, with an increase of 14% over 2013-2018<sup>2</sup>. In the EU, 60% of household were composed of 2 people in 2016<sup>3</sup>. 7 million of households composed of 2 persons do not have a dishwasher in France.

	Description	Solutions offered by Bob	Impact of Bob	Market opportunity
Customer problem	Not enough place for a traditional compact dishwasher (55*45*50cm). No water supply available.	<ul style="list-style-type: none"> <li>• 2 place settings</li> <li>• 35*45*40 cm</li> <li>• Autonomous (water tank)</li> <li>• 20 minutes cycle</li> <li>• Less than 0.25kWh/cycle</li> <li>• 3L of water / cycle</li> <li>• Attractive design</li> </ul>	Bob uses 5 times less water than hand washing and about 30% less energy. The savings that would be realized in France:	<ul style="list-style-type: none"> <li>• impressive commercial traction for Bob (we receive email from people wanting to buy it every day)<sup>4</sup></li> <li>• no direct competitors in the EU (only 6 places settings dishwashers), competitors only in China and Japan</li> <li>• Bob consumes less water than Chinese competitors (3L vs. 12L)<sup>5</sup></li> <li>• Bob is faster than Chinese competitors<sup>6</sup></li> <li>• Bob is the first dishwasher to have its own detergent.<sup>7</sup></li> <li>• Bob will be cheaper than Chinese dishwasher thanks to its business model based on recurrent revenues (€299 including taxes vs ~500€).</li> </ul>
Customer need	Replacing hand washing and providing more comfort. Reducing the cost of cleaning the dishes Saving time (20 min cycle) Drying the dishes	Automatic magnetic aperture system to fasten drying Wi-Fi connectivity with colour display Cartridges loaded with 30 cycles of an eco-friendly, phosphate-free, nonylphenol ethoxylates-free, sodium-perborate-free optimized detergent.	<ul style="list-style-type: none"> <li>• 37kWh/household (about 8€), about 700MWh in savings for the whole country</li> <li>• 4.4m<sup>3</sup> of drinking water per household (about 14€), about 30,660,000m<sup>3</sup> of water saved for the whole country, equivalent to the annual consumption of 560,000 households.</li> </ul>	
Customer desire	Washing efficiency Attractive design Connected device (IoT)			
Customer challenge	Saving resources and reducing water and energy consumption, limiting the use of pollutant in water Facilitated payment Durability Great brand awareness	Bob will be offered for renting for €12.90/month Repair parts will be available for 10 years and sold at their acquisition price to reduce electronic waste. Students will be targeted through events and sponsorship on campuses so that young graduates know the brand.		

## 1 Excellence

### 1.1 Challenge and Solution

#### 1.1.1 Addressed customer requirements

Developing solutions to **reduce water and energy consumption** is of interest for a growing number of customers. People expect products to consume less resources and with increased efficiency. **Bob** is an ideal solution for single person or a couple where traditional 'compact dishwasher' unfit for their daily use in a very compact kitchen.

#### 1.1.2 Description of our innovation

**Bob, the world's smallest and fastest dishwasher, is the first autonomous 2 place settings countertop dishwasher.** It cleans and dries the daily dishes of two people in **20 minutes with only 3L of water** thanks to a **patent-pending (FR1870069) technology** combining steam and cavitation cleaning. Bob is compact enough (**35\*45\*40cm**) to be set on the side of a sink in a kitchen. A piezoelectric transducer allows to wash quickly and efficiently cutlery into a 60W ultrasonic bath, while a 900W steam generator at 110°C softens dry dirt for up to 2 minutes. Then a 6 minutes standard washing cycle at 80°C begins, heated by a 900W heating disc. Finally, a rinsing cycle occurs, and the door automatically opens to dry the dishes.

<sup>2</sup> "The cotemporary landscape for dishwashers and detergents" Euromonitor International, 2014

<sup>3</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Household\\_composition\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Household_composition_statistics)

<sup>4</sup> See comment of the Huffington Post article: <http://bit.ly/2C4LfD8>

<sup>5</sup> [https://www.alibaba.com/product-detail/mini-high-quality-restaurant-dish-washing\\_60755795208.html](https://www.alibaba.com/product-detail/mini-high-quality-restaurant-dish-washing_60755795208.html)

<sup>6</sup> <https://www.aliexpress.com/item/Haier-Free-Standing-Mini-Electric-Dish-washer-Kitchen-Sterilization-Machine-Automatic-Dishwasher-Machine-Dish-Washing-Machine/32831277572.html>

<sup>7</sup> We met Yannick Fierling, Chairman of Haier EMEA, and he told us that if we manage to put the product on the market, it would be a revolution in the dishwasher world. Our main competitors would then become rather detergent manufacturers instead of dishwasher manufacturers.

Compared to manual cleaning, **Bob reduces water consumption** from 15L to 3L. Thanks to its **ultrasonic and steam cleaning combination**, Bob **reduces energy consumption to 0.25kWh per cycle** compared to 0.35kWh per cycle with manual cleaning and to 1.1kWh on traditional dishwashers. Bob full lifecycle is at least **10 years** and contrarily to other appliances, it will be reparable with **parts sold at their acquisition price to promote reparability and reduce electronic waste**.

Since Bob is the world's fastest dishwasher, classic detergent tablets are in adapted (dissolve cycle too long). Instead, it uses a new kind of dishwasher dispenser: a **cartridge made of stone paper that does not require water for production**<sup>8</sup>, equipped with a RFID tag for level monitoring<sup>9</sup> containing the equivalent of **1 month of biodegradable gel**, separated into several compartments<sup>10</sup>, plus the water softener. As **winner of the French PEPITE R&D challenge**, we are collaborating with a public laboratory of the [Curie Network](#) to finalise the elaboration of the detergent and its production process. The resulting gel will be patented.

This is the first time a dishwasher's brand proposes both the dishwasher and the detergent. This allows Daan Technologies to control all the washing process and user experience to bring the best solution to the final customers. Contrary to current "compact" freestanding dishwashers, with its **3L removeable water tank** on the side which makes it fully **autonomous**. Bob can be connected to a water supply network if desired simply by removing the water tank and connect it directly.

Bob is equipped with **embedded sensors and powerful microcontroller** which allow real time monitoring, predictive maintenance and delivery of the cartridge. This is made possible thanks to low-cost **WiFi** enabled ESP32 chip (<3\$). Bob is also equipped with a **colour LCD display** (2.4\$) which make easier for the user to configure the dishwasher. Finally, Bob automatically disconnects its power supply once the washing cycle is finished, hence resulting in a zero-watt consumption. Again, a patent is in preparation for the underlying technical invention.

### 1.1.3 Bob compared to the state of the art

Brand	Sets	Dimensions: width x height x depth	Water consumption	Energy efficiency	Noise level	Cycle duration	Weight	Price (Net)
<b>Bob</b>	2	35 x 45 x 40 cm	3 L	A+++	45 dB	20 min	9 kg	€299
Listo LVC55L1B	6	55 x 43.8 x 50 cm	7,5 L	A+	55 dB	>60min	27 kg	€199
Proline CDW49	6	55 x 43,8 x 52 cm	6 L	A+	49 dB	>60min	25 kg	€229
Bosch SKS51E22EU	6	55,1 x 45 x 50 cm	8 L	A+	48 dB	>60min	24 kg	€239
Electrolux ESF2400OW	6	55 x 43.8 x 50 cm	6,5 L	A+	50 dB	>60min	21 kg	€275
Siemens SK26E821EU	6	55,1 x 45 x 50 cm	8 L	A+	48 dB	>60min	22 kg	€339

Hand washing the dishes consumes 15L of water per day, it is time consuming and relies on sponges full of bacteria. Current compact dishwashers available in the EU are too bulky for small kitchens, have all the same indistinctive design, are unattractive, are slow with washing cycles longer than 1 hour, require water network, are loud (>45dB) and heavy (about 20kgs). Hence, Bob is compact, remove dry dirt thanks to steam pre-washing, requires only 3L of water per cycle, is autonomous thanks to its removeable water tank, is silent (<45dB), has a tailor-made design, is smart and connected, uses cavitation cleaning, is easy to move and deliver (weight <10kgs), does not use tablets but an all-in-one ecological cartridge system that lasts 1 month (30 cycles).

## 1.2 Approach

### 1.2.1 Uniqueness of our approach compared to those of other companies

Bob contributes to the development of a **new market**: ultra-compact and autonomous countertop dishwashers.

#### 1.2.1.1 Eco-innovation

Bob **reduces the amount of water consumption** from 15L to 3L. Moreover, Bob is **guaranteed to last 10 years** and it is **easy to repair**, as parts can be ordered at its acquisition price (+ shipping) and replace it **following online tutorials**. Since our business model is based on **returnable and refillable cartridges**, end users' parts will be free of charge. As Bob is connected, diagnoses can be performed remotely.

#### 1.2.1.2 Circular economy

As people's mobility increases, many electric appliances tend to be stocked and unused when someone moves. If a student moves from a European major city to another, he/she will be offered the possibility to **rent Daan Tech's**

<sup>8</sup> <https://www.feuilledepierre.fr/caracteristiques/>

<sup>9</sup> Contrarily to stone paper, usual Tetra Pak packaging acts as a Faraday cage.

<sup>10</sup> <http://www.cleanea.com/notre-solution>

**appliances** (ongoing negotiations with banks for 24 months leasing). Partnerships with student unions are envisaged. Bob will be **freely recollected and refurbished** after student departure. Daan Tech will manage this service directly through its online platform. Refurbished Bob will be stored into warehouses located in the suburbs of the cities. In those warehouses, the returnable cartridges will be refilled and refurbished.

#### 1.2.1.3 Innovative technologies

Bob is built on several innovative concepts: the **automatic magnetic aperture** (relying on permanent and electromagnets) that fastens drying by convection, the stone paper and RFID-based cartridge system, the **automatic cut-off of the power supply** at the end of the cycle that saves energy, the **cavitation-cleaning** system that cleans cutlery at a sweeping frequency (20-40kHz) using power ultrasonic waves and the phase of **steam prewashing**. These technological innovations allow Bob to **reach A+++ energy label**<sup>11</sup> and to clean and dry the dishes in **only 20 minutes**. According to our test, all the usual dishes and cutlery are compatible<sup>12</sup>.

#### 1.2.1.4 Made in Europe

Bob is also an opportunity to **save industrial know-how** in white appliances industry since this sector has been hugely impacted by deindustrialization and relocation of assemblies in Asia. Our mid-term ambition to become a European **industrial company with a full range of products**. We want to offer innovative solutions that address **environmental issues as well as social ones** by creating jobs in the EU.

#### 1.2.2 Historical evolutions and trends that make this innovation possible

The market addressed by dishwasher manufacturers in the EU has remained almost the same for decades: dishwashers were designed for family households, composed of more than 2 people, which used quantity dishes to cook. This situation is no longer valid in our urban modern world. This lingering wrong perception resulted in making heavy and bulky devices, which have long washing cycles (at least one hour to save energy) and that are unfit for small kitchens. Thus, several trends make the Bob project possible:

1. The evolution of family structures, with more and more people living alone. For instance, 40% of French households will be composed of 1 or 2 people by the end of 2018 (Euromonitor).
2. The emergence of affordable electronic components, which enable us to propose a connected device with a secured cartridge system at a competitive price.
3. Ultra-compact 2 place settings dishwashers have been well received in very urbanised markets such as Japanese and Korean main cities.
4. Young people get used to paying for a monthly service (e.g. Netflix) which makes them interested in a monthly payment plus an additional usage-based system (cartridge).
5. Young European people are environmentally aware and are looking for products that are respectful of the environment and are used to ordering product directly on the internet.

#### 1.2.3 Current stage of the innovation

The fourth prototype of Bob was released in January 2018 (TRL7). Our aim is to release the final prototype of Bob by the end of 2018, iterating until we have all the necessary data ready for manufacturing (TRL8). Although the technology has been demonstrated with several prototypes<sup>13</sup>, endurance tests are required on pre-series, in order to reduce technological risks, that will be carried during SME Inst. Phase 2 (TRL9). Currently we are performing functional tests at the Parisian café “Fauve Paris” with a Bob v4. We also organised several focus groups at [Station F](#) with a dozen of participants, to make demonstrations of the prototype and get their feedback. Indeed, before applying to SME Instrument phase 2, Daan Tech needs to know how to precisely address the market and sell the product across Europe. We met several retailers which were highly interested, such as Hanako Fray from Cdiscount, Loïc Berault from Boulanger, but appliances retailers are generally located outside the city centres. Our customers are more likely to order Bob directly online and to get it delivered to their apartment.

#### 1.2.4 Aims of the feasibility study

Launching a new dishwasher and becoming a leading home appliances manufacturer require huge investments (more than two million euros). Such investment requires volume to be amortized. Thus, having an action plan with detailed costs for launching the product at the European scale will make the project more attractive for private investors by lowering the risk of commercial failure. The elaborated business plan will be realistic and will serve as a guide to the

<sup>11</sup> According to formulas given in the [EU energy labelling regulation for household dishwashers \(EU\)](#) No 1059/2010

<sup>12</sup> More tests need to be carried on crystalware but our target market usually does not use crystal glasses.

<sup>13</sup> According to the Technology Readiness Level scale, this technology is now situated in a TRL 7 level



proposal to be developed in the SME Instrument phase 2 application, and for raising funds from private investors additionally to a pre-sales crowdfunding campaign.

There are three goals to be attained during the execution of the feasibility study: **(1)** to validate the technical feasibility of the product; **(2)** to define the process of manufacturing; **(3)** to complete the market research and business feasibility to elaborate a Business Plan at the European scale.

## 2 Impact

### 2.1 Entering the market

With Bob, we target European households composed of 1 or 2 people, who are living in the most expensive European cities and who do not have a dishwasher. Based on several studies, there are 33 million households in this situation in the EU-28<sup>14</sup>.

N°of households in EU-28 in 2015	% households composed of 1 or 2 persons	% of households without dishwasher	% of households living in cities	Number of potential customers for Daan Tech (maximum sales in EU-28)
220 million	66%	55%	41%	<b>220 x 0,66 x 0,55 x 0,41 = 33 million</b>

Among those potential customer, **2 segments are easily addressable**:

- **Young graduates (20-25 years old)**, living or moving to big cities, in small apartments (less than 40m<sup>2</sup>). In 2015, 1,3 million students graduated (master's degree) from tertiary education establishments in the EU-28. We already carried a market study on 396 French young graduates living in Paris of which 76% said to be interested to buy our product. During SME Inst. Phase 1, we will test if other young urban European show the same interest for the product<sup>15</sup>. Addressing the master students from top universities has several advantages: they are geographically concentrated in campuses, according to our market survey in France, they usually have enough purchasing power to buy Bob and they are easily reachable through student unions. Several start-ups like Lydia, Michel et Augustin, Facebook or Redbull managed to take off by reaching students first, so that when they start to earn money, they buy their products.
- **Working people (26-35 years old)**, living in big cities. We get impressively good feedback from focus groups and we regularly receive messages from people renting apartments who ask us if they can buy Bob right now. Compact dishwashers market benefited from a rise in single-adult households and urban people are living in less and less space.

Our **unique selling point** is *Bob*, the **first-ever 2 place settings capacity that fits in every kitchen**, washes and dries in 20 minutes, without detergent tablets and without requiring a connection to the water network, intelligent and connected. We address the **niche market of compact free-standing dishwashers**, which means small dishwashers of 6 place settings capacity or less. According to Euromonitor International's [market studies on the dishwasher industry](#)<sup>16</sup>, **the market of compact dishwashers stands for 507,451 units sold in the EU-28 in 2016** (87,928 in France) for a total number of 9,223,800 dishwashers sold in the EU-28 (87,928 in France). It is a growing market with an average **growth of 4% each year**. Thus, we will address first **several cities** among Europe's most expensive ones: **London, Dublin, Reykjavik, Geneva, Zurich, Basel, Paris, Brussels, Amsterdam, Munich, Cologne, Luxemburg, Oslo, Copenhagen, Stockholm, Helsinki**<sup>17</sup>.

Year	<b>Sales objectives</b> based on production capacity and optimization of production costs	<b>Total dishwasher market</b> in the EU-28 (units). (estimated growth 1%/year)	Daan Tech market share on global dishwasher market	<b>Total compact dishwasher market</b> in the EU-28 (units) (estimated growth <b>4%/year</b> )	Daan Tech market share on the compact dishwasher market
2020	10 000 Bob	9,5M	0,1%	560k	1,8% (=10k Bob)
2021	30 000 Bob	9,6M	0,3%	585k	5,1% (=30k Bob)
2022	60 000 Bob	9,7M	0,6%	608k	9,9% (=60k Bob)

#### 2.1.1 Main direct and indirect competitors

The competitive landscape for compact dishwashers continues to be **concentrated among a few global manufacturers** – **BSH, Whirlpool, Electrolux, Samsung, Haier, Midea**. Beyond these players, other manufacturers have their footprint within dishwashers, including **Arçelik, Indesit, Miele, Candy**. Regarding current compact dishwasher offer, all brands offer

<sup>14</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Household\\_composition\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Household_composition_statistics)

<sup>15</sup> 'Home Appliances Manufacturers – Market Analysis – 2015-2020 trends', José Antonio Bautista, Xerfi 5XCSO02; 'Dishwashers in Germany', Euromonitor International, February 2016; Euromonitor International February 2016

<sup>16</sup> <http://www.euromonitor.com/dishwashers>

<sup>17</sup> <https://www.expatistan.com/cost-of-living/index/europe>

**similar products**, with the same technical characteristics and design.

Our **main direct competitors** are [Haier](#), [Reepaq](#), [Panasonic](#) who offer ultra-compact countertop dishwashers, but they still need to be plugged on the water network and they consume much more water (>10L). [Daewoo](#) proposes an ultra-compact washing machine but they met low sales because their price is too high (€500 incl. tax). Indeed, according to our market study in France, customers won't pay more than €300 incl. tax for small white appliances. With our business model based on cartridges, we can sell the Bob dishwasher at a very competitive price, even cheaper than Chinese competitors. Thus, all-in-one appliances like [Rosiere's](#) are not direct competitors since they are very expensive (more than €1,000 incl. tax) for our target market. Our **main indirect competitors** are the dishwasher detergent manufacturers such as Henkel and Unilever, who already contacted us, but we decided to build our own detergent. We are aware that if we are successful they will lose market shares and thus price war against us. That's why we need to reach rapidly important sales volume at the European scale (market penetration strategy).

### 2.1.2 Main barriers to entry

The main barrier to entry in the white appliances sector is **industrializing the product**. The amount of required investments will be determined during this Inst. SME Phase 1. Even competitors are unlikely to invest in a similar product until we put ours on the market and we show that it is a very profitable niche. Since we have to sell Bob all around Europe to amortize initial investments, we will need to understand and overcome the cultural differences. For this purpose, we will go to the best European universities to exchange with students, beginning with ESCP Europe's campuses.<sup>18</sup>

To sell at our target price (€250 or €12.99 per month excl. of taxes), we will have to resort to direct sales. Thus, we need **to build a strong brand awareness** to make people aware of our solution. We will overcome this barrier by using **direct guerrilla marketing** in top universities campuses (ambassador programs) all around Europe. We will replicate what "[Le Slip Français](#)" did using on-site direct marketing and social media, plus an ambassador program that will allow students and young graduates to earn €30 every time one of their friends buys a Bob. We want to build a strong community, by organising events and offering premium goodies to ambassadors.

## 2.2 Business model

### 2.2.1 Innovation fit with our overall strategy

This innovation will allow us to control the whole value chain (vertical integration), from R&D and gel manufacturing to marketing and direct sales. Bob is the brand for everything related to dishes, since we will also sell dishes under the Bob brand, with a fun and modern positioning and made for people living in small spaces. We will sell the Bob at low margin in direct sales (penetration strategy) and earn money on the cartridges and the accessories (fun dishes made in France). Nevertheless, during this phase 1 project, we will study the opportunity to licence our IP on the cartridge to other appliances manufacturers (Seb, Krupp, Magimix, etc. - Nespresso model).

### 2.2.2 Value chain and main stakeholders

Since we chose to integrate the whole value chain, we manage the **development, industrialization and commercialization** stages. For the development stage, we are working with [S20 Industries](#), a former manufacturing plant of Fagor-Brandt based in West France. Since they no longer produce dishwashers, they sell us their know-how in dishwashers at a very competitive price, allowing us to carry out all the product development internally. Bob is designed to be **entirely made from injected plastics parts**, so we will buy moulds but subcontract plastic injection to plastics moulders who already have injection moulding machines (for instance S20 Industries) and then build our own assembly line for Bob. We will manufacture the cartridge, but we will buy the stone paper. We will also need to produce our own gel. The required investment for this will be fixed during this SME Inst. Phase 1 according to the results of the partnership with the Curie Network.

### 2.2.3 Revenue model and commercialization plan

We have two revenue streams. First, the **transaction revenue**: As explained in the above paragraph, Bob will be sold through direct sales and through market places and ambassadors at the price of 250€ exclusive of tax. Then, **recurring revenues** coming from the direct sales of cartridges at the price of 8€ exclusive of tax (1 cartridge = 1 month of use).

The **commercialisation** stage will consist in direct sales through our website and market places<sup>19</sup> such as [Amazon](#), [Launchpad](#), [Cdiscount](#), [Boulanger](#), etc. Direct marketing will be done through campus programs to target students and young graduates. We have a pilot program in France at [CentraleSupélec](#). The idea would be to replicate this in all the top European

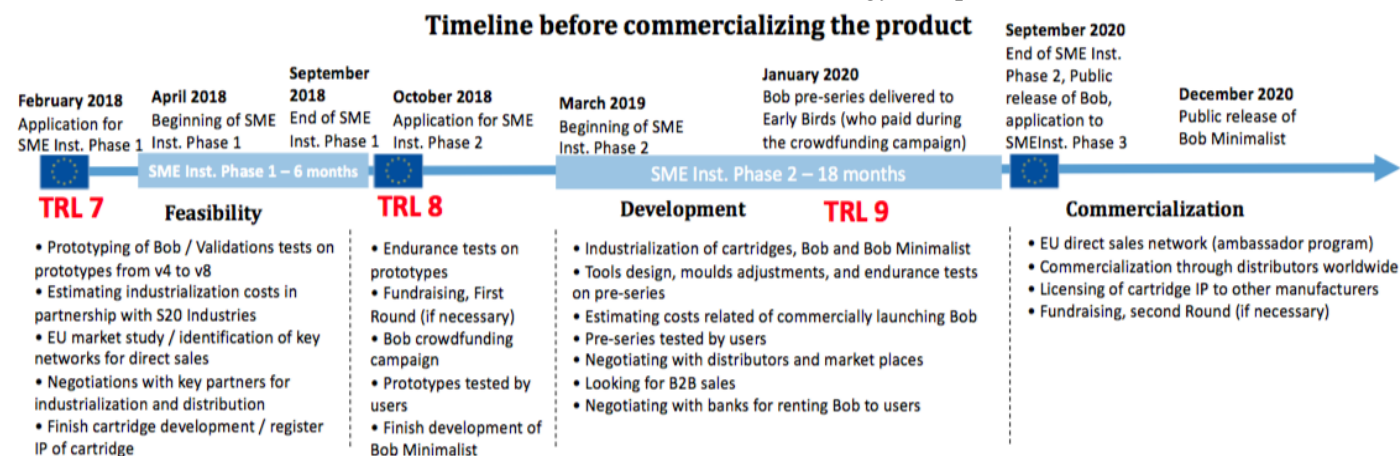
<sup>18</sup> As an alumni of ESCP Europe, Damian has a privileged access to student unions over the 5 campuses.

<sup>19</sup> We use market places since they do not require margins that exceeds 15% and since we want to keep control over price.

universities, starting with [ESCP Europe](#) networks. During H2020 SME Inst. Phase 1 we will identify the key stakeholders in other European countries and see how to replicate what is already in place in France.

Our ambition is really to become in the midterm a **real industrial company with a full range of products**. We plan to have our own **R&D centre**. The resulting IP will be used in our products. For instance, we have planned to launch:

- **Bob**, in 2020, the world's smallest, fastest and smartest dishwasher.
- **Bob minimalist**, in 2020, an affordable version of Bob (less expensive with less features) for mass market.
- **Built-In Bob**, in 2021, a version for professionals (BtoB): camping cars, boats, companies' break rooms.
- **Eve**, in 2022, the world's first fully autonomous ultra-compact washing machine, which will use its water tank as a lest (instead of concrete), and that will use a vortex technology to separate dirt from water.



## 2.2.4 Scalability for addressing the European market

Once we get significant funding from crowdfunding, banks or SME Inst Phase 2, we will be able to manufacture and ship Bob for the whole European market. Our minimal target for the crowdfunding campaign is **1,000 units**, but a good campaign would result in **4,000 units** sold (€660,000 of turnover<sup>20</sup>). The production capacity we could reach without additional investments is currently **10,000 Bobs per month** using the existing facilities of S20 Industries. Our model is scalable for two reasons: First, we can deliver Bob through all Europe for a competitive price thanks to our business model based on recurrent revenues (for instance, **Bob will cost less than its current Asian competitors**) and quickly have sufficient cash inflows to finance Bob's development. Second, thanks to our eco-design approach, Bob parts can be changed easily, so we can have dedicated operators in each of the Daan warehouses in the suburbs of the main European cities.

## 2.3 Financing

Damian Py is Chief Executive Officer with 55% of shares, Antoine Fichet is Chief Operating Officer with 45% of shares.

### 2.3.1 Expected growth, profit and jobs

Initial business projections for direct sales established with a certified accountant (Alexis Springer):

Year	Units	Turnover	Dir. costs	Manuf. costs	Indir. costs	Margin	Employ	Taxes	Net income
2018	Feasibility (SME Instrument Phase 1), fundraising								
2019	SME Instrument Phase 2, industrialization								
2020	10000	2,5M€	400K€	1,6M€	260k€	240k€	10	80k€	160k€
2021	30000	8M€	1,3M€	5,2M€	780k€	720k€	30	240k€	480k€
2022	60000	23M€	3,8M€	15M€	1,8M€	2,4M€	60	800k€	1,6M€

Feasibility Phase: from April 2018 to September 2018	
Estimated funding requirements	Plans to ensure the subsequent financing
Technological Feasibility: 300k€ Industrialization Feasibility: 100k€ Business Feasibility: 50k€	<b>Public funds:</b> 50k€ (SMEInst Phase 1), 30k€ (Innov'Up French Grant), 150k€ (seed loan), 150k€ (innovation loan from Bpifrance). <b>Private funds:</b> 43k€ (love money), 140k€ (bank loans)
Total: 450k€	Total: 563k€
<b>Output: Initial Business plan for creating a new home appliances manufacturer at the European scale</b>	

<sup>20</sup> For early adopters during the crowdfunding campaign, Bob will be sold at €165 excl. tax.

Development Phase <sup>21</sup> : from March 2019 to September 2020 (18 months)			
Option 1 – Direct sales.		Option 2 – Licensing of our cartridges system.	
Estimated funding requirements	Plans to ensure the subsequent financing	Estimated funding requirements	Plans to ensure the subsequent financing
500k€: industrialization 1500k€: machine tools, moulds, assembly line 500k€: first batch (parts) 500k€: delays, problems.	2000k€: SME Instrument Phase 2 1000k€: private investors 500k€: crowdfunding	300k€: industrialization 500k€: machine tools 100k€: first batch of cartridges 100k€: delays, problems, workers' salary	1000k€: SME Instrument Phase 2 500k€: private investors
Total: 3M€	Total: 3.5M€	Total: 1M€	Total: 1.5M€
<b>Output: Business Development containing detailed commercialisation strategy, financing plan explaining the investment of private investors + marketable product</b>			

Commercialisation – Market launch: from September 2020 to December 2020			
Estimated funding requirements	Plans to ensure the subsequent financing	Estimated funding requirements	Plans to ensure the subsequent financing
500k€ Marketing and com. 1000k€ commercialisation	1500k€: private investors	500k€ Marketing and communication 500k€ commercialisation	1000k€: private investors
Total: 1.5M€	Total: 1.5M€	Total: 1M€	Total: 1M€

## 2.4 Intellectual Property Right (IPR) and legal framework

Bob abides by the EU standards on dishwashers<sup>22</sup>. Bob will get a **A+++ energy label**<sup>23</sup> (82kWh/year), low water consumption (840L/year) and good cleaning marks. Further tests need to be carried during SME Inst Phase 1. Final certification will be granted only on pre-series since cleaning marks depend on which detergent is used. Daan Technologies applied for an **invention patent (FR1870069)** for its integrated ultrasonic cutlery washing device. Daan Technologies holds a **design patent (No. 2017-4384)** on Bob. Bob and Daan Tech are **registered brands (No. 4406034, 4363657 and 4363513)**. The invention allows us to save space and water, and to improve the washing and drying quality of cutlery. In addition, this invention could be used in traditional compact and full-size dishwashers. So, there is a real potential for licensing it to manufacturers of traditional dishwashers. However, it still is possible for our competitors to design ultra-compact dishwashers, but they are unlikely to meet our performance. Our strategy for IPR is to protect every new content that will be publicly available, such as brands, design patents and invention patents. Since the core of our business model is Bob's cartridge, lot of attention had been paid to register design patents and invention patents worldwide, by applying for a PCT (Patent Cooperation Treaty) to WIPO. Those patents are in preparation and we will apply during SME Inst Phase 1. Some parts of the Bob will be protected with secrecy, such as embedded software running on the Bob, which will be protected by preventing external reading of the microcontroller memory. For instance, the **electronic authentication method of cartridges** to avoid the use of counterfeit ones will not be disclosed nor patented.

### 2.4.1 Freedom to operate

We checked the freedom to operate. We do not infringe any of the published patents regarding ultrasonic cleaning, steam cleaning and compact dishwashers as whole, according the patent bases to which we have access (Patent Scope, Google Patent, French National IP Institute). We regularly check patent published by our competitors on dishwashers. During SME Inst Phase 1, deeper research will be carried to ensure freedom to operate.

## 3 Implementation

### 3.1 Team

Our team is composed of 6 engineers from both mechanical, electronics, and embedded software engineering fields. The two company's owners, Damian and Antoine, have a technical and commercial background. In order to overcome our team weaknesses, we have several advisors, such as Yannick Fierling, President of Haier Europe (Industrialization) and Jean-Pierre Martin, former MD of Fujitsu Europe (commercialization). To launch Bob commercially by 2020, we will hire 2 campus managers and 2 business developers during SME Inst. Phase 2 to create and animate the community among students and young graduate, through student unions.

<sup>21</sup> The exact amount required for development phase and market launch will be determined during SME Phase 1.

<sup>22</sup> [https://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/ecodesign/dishwashers\\_en](https://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/ecodesign/dishwashers_en)

<sup>23</sup> Commission Delegated Regulation (EU) No 1059/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household dishwashers Text with EEA relevance



Name	Gender	Role	Qualification	Main achievement
Damian Py (CEO)	Male	CEO, CFO, Patent Engineer, Chief Electrical Engineer, Business manager, Industrialisation Manager	MSc Electrical Engineering, MSc Management, MSc Mathematics	Made his first stun gun at 11, Tesla coil at 16, WiFi controlled robot at 17. Worked at Bpifrance and Ministry of Defense.
Antoine Fichet (COO)	Male	COO, CMO, Chief Mechanical Engineer, Head of Sales, Business manager, Market studies	MSc Management, BSc Mechanical Engineering	Won a contest in 2012 with the “Rudy project”, first idea of Bob. Worked in several investment funds (Bpifrance, 50Partners).
Kawtar Karram	Female	Mechanical Engineer	MSc Mechanical Engineering	Worked as engineer at Betema. @Daan: In charge of Strength of materials and moulds design.
Camille Moret	Female	Chemical Engineer	MSc Chemical Engineering	Worked as engineer at Waterleau. @Daan: In charge of the development of the washing detergent.
Ashish Pathak	Male	Electrical Engineer	MSc Electrical Engineering	Designed several connected objects. @Daan: In charge of electronic programming.
Soheib Dehbi	Male	Mechanical Engineer	MSc Mechanical Engineering	Worked as engineer at SNCF. @Daan: In charge of the cartridge design.

### 3.2 Work plan – Work package and deliverable

#### Work Package Title: Feasibility Study (M1-M6) (Avril 2018-September 2018)

The overall objectives of the feasibility study are (1) to validate the technical feasibility of the product (Task 1), (2) to define the process of manufacturing (Task 2), (3) to complete the market research and business feasibility to elaborate a Business Plan at the European scale (Task 3). The feasibility study is divided in the following tasks managed by Daan.

#### **Task 1 – Technical feasibility: (M1-M6)** *Damian Py, Soheib Dehbi, Kawtar Karram and Nicolas Ravallec from S20industries.*

**Task 1.1 Parts qualification and fabrication of final prototype (M1-M3):** further tests need to be carried out on prototypes using S20industries laboratories and expertise. From current prototype, a golden prototype will be made (v6 or more) in which functional tests will be carried and parts qualified for industrialization:

- Make a golden prototype that is the same as the final product;
- Run washing test for standard washing marks, energy consumption, noise emission;
- Perform test for determining the best material to be used for the cartridge package;
- Perform test to qualify parts (resistance, mechanical fatigue, ageing);
- Perform on-site endurance tests with beta testers and 2,000 cycles in laboratory.

*Del.: Product evaluation report attesting TRL8, qualified bill of materials*

**Task 1.2. FTO (M1-M6):** All the technical team is asked to automatically check the FTO of each of the technical solution they chose and writing notes on the state of the art. Each member of the team is asked to keep an official laboratory register provided by the Curie Network and National Institute for IP, to ensure traceability of work.

*Del.: Report guaranteeing FTO for each chosen technical solution and development history for each patentable solution*

**Task 1.3. IPR (M2-M4):** Based on the reviews performed by members of the team and the traceability guaranteed by laboratories registers, Damian will write patents and apply for PCTs in partnership with an IP consultancy. The anteriority report given by EUIPO will provide an additional proof of freedom to operate.

*Del.: patent applications for cartridge system and possibly other sub-systems.*

#### **Task 2 – Industrialization feasibility: (M3-M6)** *All the technical team and Nicolas Ravallec from S20industries.*

**Task 2.1. Industrialization plan (M4-M6):** Determining precisely the cost of industrialization of Bob is key for estimating investments and fundraising. Damian Py, Soheib Dehbi, Kawtar Karram and Nicolas Ravallec and his team will perform a technical analysis of the industrialization process. Then they will define then a more detailed industrialisation plan thanks to S20industries expertise with detailed costs and timeline. Damian Py will also contact plastics moulders to benchmark S20 Industries’ prices for Bob industrialization.

*Del.: Industrialization plan*

**Task 2.2. Key partners selection for industrialisation (M3-M6):** Damian Py & Antoine Fichet will meet potential key partners for the development of the product, Emmanuel Richard from SERDI (a French SME specialized in winding) and Jörg Landerbarthold (a German company specialized in pumps). Damian and Ashish will contact several PCB assemblers to benchmark their prices for industrializing our electronic boards. Damian, Kawtar and Soheib will contact plastics moulders to get quotation for moulds fabrication and benchmark the different offers such as using aluminium moulds or silicon moulds for final prototype. Finally, Damian and Camille will look for a partner for the fabrication of the gel for the cartridge. Finally, all team members (Damian, Antoine, Soheib, Kawtar, Ashish, Camille) will secure supply by contacting and negotiating with suppliers. For components, samples need to be ordered and qualified.

*Del.: Secured list of suppliers for the entire bill of material, with price depending on quantity, and suppliers for moulds*

### **Task 3 – Business feasibility (M1-M6)** *Damian Py and Antoine Fichet*

**Task 3.1. Market studies (M1-M6):** Damian Py & Antoine Fichet will conduct 8 studies in 8 European big cities/capitals to precisely define total available market size and growth rate, competitors, potential licensees and their requirements. They will also assess the willing to pay for the innovation. They will replicate what have been done in France with the pilot program at CentraleSupélec. The idea is to organize several focus groups with a dozen young graduates, to make demonstrations of Bob and get feedbacks. The first targeted city is London, based on the characteristics of this city quite like Paris (1,84 million people living alone, high rent price: 1195€/month for 45m<sup>2</sup> on average). They will start with London's ESCP Europe campus (thanks to Damian's network), then London Business School, University College London (which has a high percentage of postgraduate students – around 53%.) and King's College London. The aim of these qualitative studies is to establish the cultural differences between young graduates living in Paris (France) and young graduates living in other big cities, in order to answer the question: Is Bob designed for the EU-market (size, aesthetic, price)? These studies will also allow us to carry out prototype demonstrations in operational environments, such as small English kitchens. The others targeted cities are: Dublin, Roma, Barcelona, Amsterdam, Copenhagen, Zurich and Munich.

*Del.: Market study analysis (one for each targeted cities)*

**Task 3.2. Commercial plan strategy definition (M4-M6):** Antoine Fichet will define a more detailed commercialisation plan at the European scale (timelines, costs, organisation, commercialisation route (internet, retail ...)), based on interviews of potential key business partners and the results of the market studies. We already contacted retailers in France (cf page 4). The aim is to do the same with European company, such as Saturn GmbH in Germany, or John Lewis in England.

*Del.: Commercialization plan at the European scale*

**Task 3.3. Business Plan definition (M6):** Damian Py & Antoine Fichet will estimate the market potential and conditions and draft a precise business plan for the product. How Bob has the potential to boost the growth of Daan Technologies will also be assessed.

*Del.: Business Plan at the European scale*

**Deliverable:** The final feasibility report will detail the results of the previous tasks and provide a business plan with all details required for the SME Instrument phase 2 application.

### **3.3 Resources**

The 50k€ lump sum of SME Inst-Phase 1 aims to support the following activities (refer to Section 4 for more details):

Task	Title	Amount
Task 1	Technical feasibility	20k€
Task 2	Industrialisation feasibility	25k€
Task 3	Business feasibility	26,5k€

	A. Costs of the feasibility study/Direct and indirect costs of the action	Total costs	Reimbursement rate %	Maximum EU contribution	Maximum grant amount
Form of costs	Lump sum				
	50 000	71 429	70 %	50 000	50 000