



Business Innovation Observatory



Design for Innovation

Design for social innovation

Case study 16

The views expressed in this report, as well as the information included in it, do not necessarily reflect the opinion or position of the European Commission and in no way commit the institution.

Design for Innovation

Design for social innovation

Business Innovation Observatory
Contract No 190/PP/ENT/CIP/12/C/N03C01

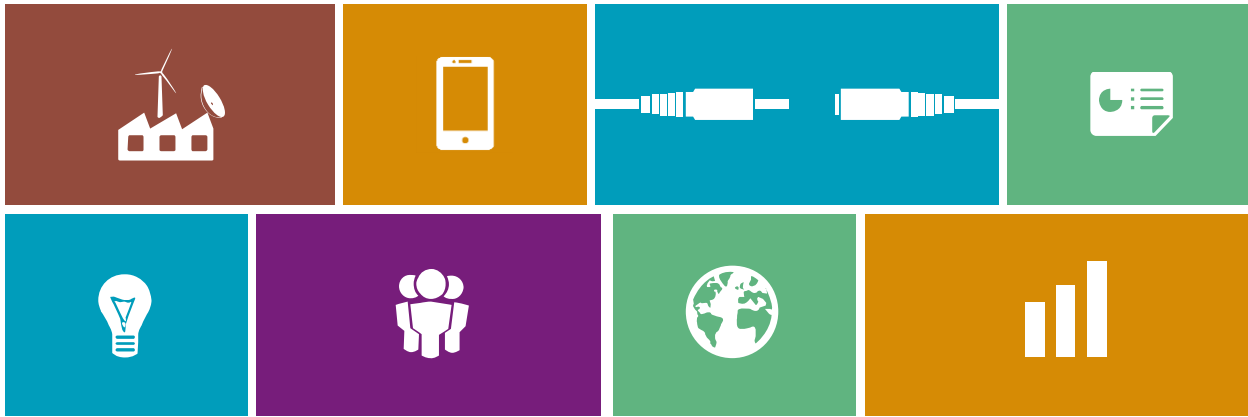
Authors: Kristina Derojeda, Diederik Verzijl, Fabian Nagtegaal, Mark Lengton & Elco Rouwmaat, PwC Netherlands, and Erica Monfardini & Laurent Frideres, PwC Luxembourg.

Coordination: Directorate-General for Enterprise and Industry, Directorate B “Sustainable Growth and EU 2020”, Unit B3 “Innovation Policy for Growth”.

European Union, February 2014.

Table of Contents

1. Executive summary	2
2. Understanding the trend of design for social innovation	3
3. Socio-economic relevance	4
3.1. The market potential of the trend	4
3.2. The socio-economic effect of design for social innovation	6
3.3. The benefits of implementing design for social innovation	7
3.4. Client side drivers for the uptake	9
3.5. Client side barriers to uptake	9
4. Drivers and obstacles for solution providers	10
4.1. Successful initiatives display a strong culture of “good-to-do-good”	10
4.2. Gaining early support from a community is vital	10
4.3. Raising capital is somewhat of a challenge for social innovation start-ups	11
4.4. Marketing is key for successful social innovation design companies	11
4.5. Successful social innovation design companies ooze creativity across the entire business	11
4.6. Up-scaling is crucial, though challenging	12
5. Policy recommendations	12
6. Appendix	14
6.1. Interviews	14
6.2. Websites	14
6.3. References	14



1. Executive summary

Design for social innovation represents an important business trend. It not only touches upon some of the key societal challenges Europe is facing, but also provides interesting business opportunities for the companies engaged in providing design services. Nevertheless, the trend is still widely underexploited.

Social innovation is the concept of developing new – often disruptive – solutions that work towards meeting social goals. The element of design is an important feature in this. Design for social innovation is best characterised by the trend of designing social innovation solutions in an effective way.

Social innovation is heralded as having the potential for making a profound impact on solving societal challenges.¹ Its impact, however, is hindered by a general lack of scale. This is exactly where design for social innovation plays a key role. Design for social innovation stimulates the market adoption of social innovations by specifically taking into account the end-users of the product.

Despite all the recent public attention, companies involved face a number of challenges. For some it is particularly difficult to attract funding, whereas for others it can be difficult to get the attention from public bodies. To address these challenges, further policy actions are needed.

In order to maximise the benefits of design for social innovation, the public sector needs to step up. On the one hand, social innovation companies need better financial support. As they are typically characterised by their relatively

small size, acquiring public funding has proven to be difficult in some cases.

It is therefore argued that public bodies need to further explore the current form of government funding. Although the SME Instrument under Horizon 2020 may already alleviate some of the challenges identified, additional support is required for accelerating the market uptake of social innovation.

A mechanism for this can be found in the Small Business Innovation Research (SBIR)-type programmes implemented across Europe. To stimulate the market uptake of design for social innovation, efforts should be made to explore contracting these companies under the SBIR-type programmes.

Furthermore, awareness needs to be created for the trend, both in the public and in the private sector. As of today, a relatively small percentage of both the public and the private sector are fully aware of what design for social innovation can bring to the table. Policy makers need to be better aware of the role design for social innovation can play in addressing societal problems, whereas private companies need to be better aware of the business opportunities it provides.

Finally, to help upscale the impact of social innovations, it is recommended to further explore collaboration networks in the field of social innovation. Through collaboration between social innovators, some of the resource challenges can be tackled and ideas can be combined.



2. Understanding the trend of design for social innovation

Traditionally, designers focus on improving the look and functionality of products. In recent years, they have

While social innovation has existed for decades, design for social innovation provides a whole new set of opportunities to increase the effectiveness of tackling some of societal's most important challenges.

broadened their approach, creating entire systems to deliver products and services that tackle societal challenges. This new approach helps businesses to be more innovative, better differentiate their brands, and bring their products and services to the market faster.

Rather than design focusing exclusively on boosting economic growth, driving consumption and stimulating sales, design for social innovation is focused on society's most important challenges, such as climate change, access to clean water, better sanitation, pollution, and poverty or malnutrition.

Social innovation is pragmatically defined as “a new idea that works in meeting social goals”.² Taking into account the more complex phenomenon of social innovation, it can more broadly be defined as “a process of change emerging from the creative re-combination of existing assets, which aims to achieve socially recognised goals in a new way”.

Furthermore, social innovation is a transverse phenomenon, occurring in various single and overlapping industries and sectors. Examples of solutions that are designed to address societal challenges include additives to increase fuel efficiency, drink-water solutions, waste-management solutions, robotics and mass light-therapy solutions that influence social wellbeing. Many of these solutions are cross-sectoral, making it difficult to quantify the market potential.

The importance of design in social innovation is considered a recent phenomenon. Whereas social innovation has existed for decades, only recently did we observe increasing attention for seeking social innovation through design.

For this case study, a clear distinction needs to be made between social innovation and design for social innovation. While social innovation on itself exists, its effectiveness can be greatly affected by design for social innovation. Moreover, increasingly more solutions are designed in such a way that it facilitates social innovation.

In practise, design for social innovation has led to a number of highly innovative and effective solutions on the market. For example, companies like Dopper (NL) and Retap (DK) designed highly successful innovative eco-friendly water bottles. By exploiting an untapped consumer preference for

eco-friendly products, they designed a new product and subsequently created a new market segment.

RaspberryPi (UK) provides another highly successful example. Alarmed by the declining number of engineering students, they designed a microcomputer specifically aimed at familiarising children at an early age with programming. Over 2 million of these microcomputers have been sold, underlining the market potential of the trend.

Moreover, Smartstreets (UK) is exemplary of how important design is for social innovation. In order to address littering, specifically of gum and cigarettes, they designed an innovative bin that is both inviting for people to use and practical to install. Their innovative design allows them to be placed on lamp posts, providing easy accessibility while blending into the architectural landscape of a city.

Although (design for) social innovation has garnered increasingly more attention, up to a few years ago it has been widely ignored. However, in the wake of the financial crisis, it has become increasingly clear that social innovations will help determine the world we will live in for the near future. Social innovations and the way they are designed influence behaviours of people and have the potential to change cultures for the better of societal challenges, such as waste or energy consumption.³

Nevertheless, the theoretical work that has been done particularly focuses on the roles larger social sector organisations play. In recent publications it is argued that these larger organisations are well-placed to play an important role in society. Many of these initiatives involve formal business partnerships, such as investments, mergers or franchising.⁴

Social innovation, however, also requires political, economic, legal, and cultural changes. These aspects therefore play a key role in the effectiveness of design for social innovation⁵

The European Commission has recognised the importance of social innovation in various communications. For the EU, social innovation is a key part of their strategy for smart, sustainable, and inclusive growth in Europe by 2020. They have specifically expressed their view on social innovation, claiming that this untapped source of job growth needs to be exploited⁶ and could potentially increase the efficiency of social spending of its Member States as well as promote social processes that facilitate technical innovation.⁷



A story about the Naandi Foundation strikingly illustrates the importance of how the lack of social innovation can be detrimental for the good outcome of a well-engineered solution.⁸ In an area outside Hyderabad, India, clean water supply has been a high concern. The villagers had access to water, but the well they obtain this from was polluted. With public support, a water treatment plant was designed to provide the area with a safe water supply for a low fee. Villagers, however, still opted to use the free water supply, even though it made them sick from time to time. Contrary to what the situation above implies, the treatment plant was carefully designed and constructed. It was situated within walking distance, even closer than the free yet polluted well. The small fee was set low enough for the villagers to afford the water and paying the fee had actually become a sort of social status symbol in the community. The facility was even run by the local community. Yet villagers in the community still opted for the polluted well.

The underlying reason was found in the ecosystem. While great attention to detail was given to the business side of things, the design element had been forgone completely when it came to the ecosystem as a whole. For instance, a mandatory water can of 19L (5 gallons) was too big for many villagers to carry home and contained for many villagers more water than they required. Moreover, the facility required villagers to buy a monthly punch card for 5 gallons per day. Villagers asked themselves why they should pay for water they would not be using and opted for going to the polluted water well instead.

While this may seem common sense at first, it was only discovered after the entire process was redesigned from a social point of view. In order to alleviate the associated problems with the mandatory water can, new solutions were designed that allowed villagers to take home lower quantities with ease. Moreover, the social environment was

specifically taken into account in further optimising the process to ensure that the new and innovative water treatment facility started being used to the fullest extent.

The anecdote above teaches us an important lesson. Solutions can be designed to meet every technical requirement, but can be rendered ineffective if the social aspect is not taken into account. It also implies something different. Solutions can be rendered more effective if they are designed by taking the social aspect into account or by creating social innovation in the first place. This creates a whole new set of business opportunities for private companies as well.

Design for social innovation in this case study therefore relates to both a trend in capitalising on opportunities that address societal challenges and a trend of incorporating an element of design in social innovation. Design for social innovation erases the traditional boundaries between public, for-profit, and non-profit sectors and allows high-impact solutions to emerge from below rather than being imposed from the top. In other words, the market is encouraged to develop efficient and innovative solutions that are adopted by consumers because they want to, as opposed to regulation, which forces compliance and brings about an administrative burden in enforcement and compliance.

This case study explores how companies are creating real, practical design solutions to some of the world's many social and environmental challenges through social innovation by design. While there is always a need to develop new and better approaches to tackling social problems, it has been argued that the bigger challenge is to get those that work to a scale where they can make the greatest possible difference.⁹ The companies included in this case study were therefore carefully selected, taking into account their potential impact.

3. Socio-economic relevance

3.1. The market potential of the trend

Design for social innovation provides both business and societal opportunities. It is argued that important sectors for growth in the next decades are linked to the development of human and social capital. For example, health already represents a large share of GDP in many countries and energy efficiency provides vast cross-sectoral business opportunities.¹⁰

Quantifying the market potential specifically for design for social innovation is a utopian task. As social innovation is better characterised as an approach rather than a sector, it is unlikely that a single indicator for social innovation will

ever be available for the European Union.¹¹ Moreover, due to the highly transverse nature of the phenomenon, it is difficult to identify a set of sectors and/or industries that best describe the market potential for (design for) social innovation.

Despite the lack of quantitative measurements, the market potential for design for innovation is regarded to be substantial. The social economy includes over 2 million enterprises (i.e. 10% of all European businesses) which employ over 11 million paid employees (the equivalent of 6% of the working 21 population of the EU).¹² Moreover, earlier reports have already hinted that businesses that provide energy efficiency solutions, such as fuel additives,

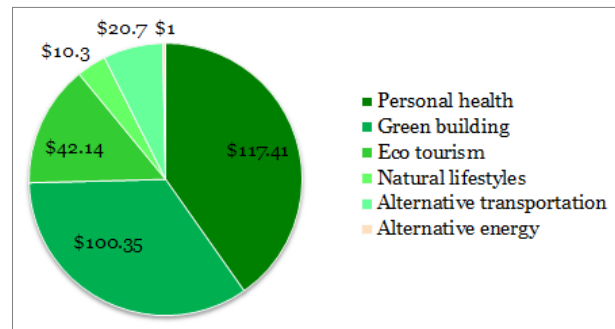


are actually helped by environmental regulation.¹³ The underlying reason is simple: their solution helps meet societal goals and is consistent with environmental regulation in the field. The regulation in turn stimulates market uptake.

Only recently business opportunities of social innovation have been identified in the literature. Whereas the traditional stance in the literature is that social innovation does not lead to feasible or efficient business opportunities, recent efforts are convinced that it provides new market opportunities.¹⁴ In fact, experts argue that the trend is widely underexploited.

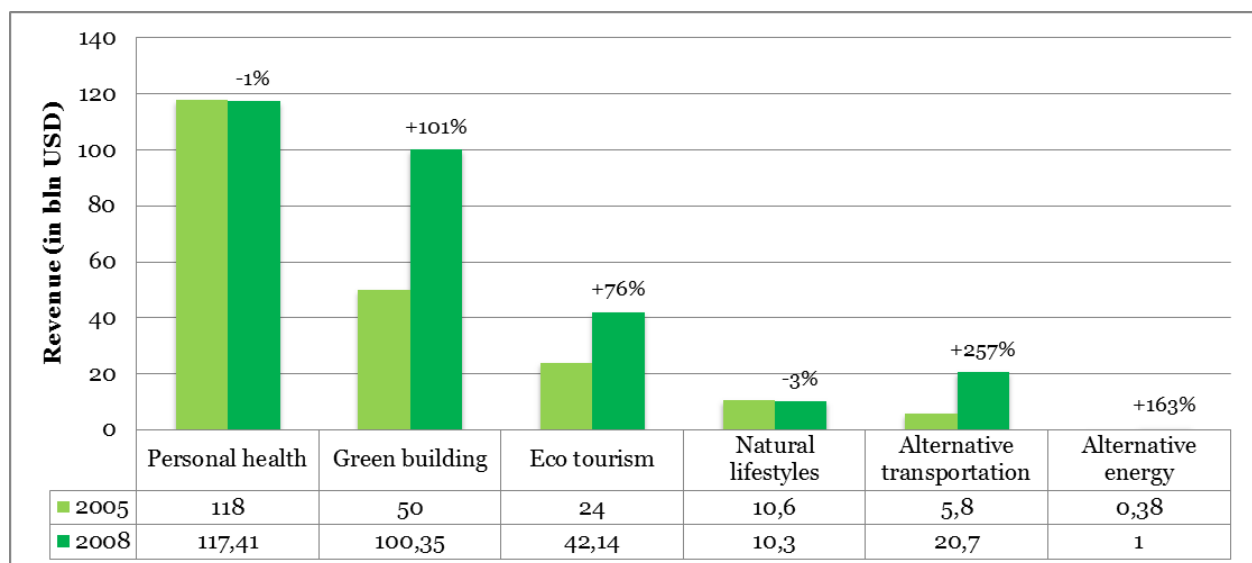
In addition, market estimates have become scarcely available for related sectors, i.e. sectors that thrive on sustainable business solutions. These statistics, however, have only been published for the United States. Moreover, the statistics relate to the market for Lifestyles of Health and Sustainability (LOHAS). This market only includes sectors that thrive on sustainable business solutions, capitalising on a trend of increasing social responsibility. The included market segments are listed in Figure 1 below. The LOHAS marketplace has therefore been used as an approximation of the market for social innovation.

Figure 1: Breakdown of estimated size of the U.S. LOHAS market (in billion USD, 2008)¹⁵



The latest available estimations show that the U.S. LOHAS market was worth over 290 billion USD in 2008, up from approximately 209 billion USD in 2005. In a period of three years, the market has shown astonishing growth of over 39%. Figure 2 shows per sector how the market has developed between 2005 and 2008.

Figure 2: Sectoral growth of the U.S. LOHAS market 2005-2008 (in billion USD)¹⁶

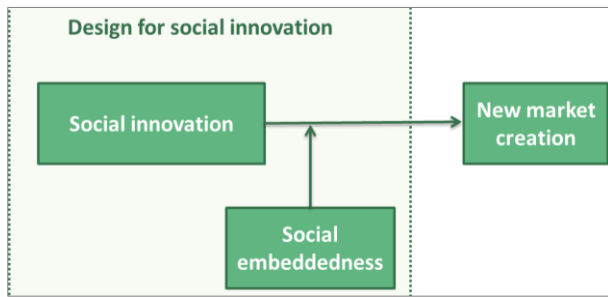


The discussion above primarily focuses on social innovation due to the scarcely available data. Social innovation alone, however, is not enough. The degree to which social innovators are socially embedded plays a crucial role in creating high-value business propositions. This is especially the case for social embeddedness with customers. If the social innovation relates to the core values of customers and of society in general, a large customer base is likely to be found. Put differently, social embeddedness positively moderates the relationship between social innovation and new market creation.¹⁷

This is exactly where design for social innovation comes into play. We can think of design for social innovation as a way of delivering social innovation and creating social embeddedness. Design for social innovation increases the effectiveness of both social innovation and social embeddedness, which in turn creates new market opportunities. The design element therefore has the potential to catapult social innovation and social embeddedness. Figure 3 on page 5 shows an adapted, simplified model of how design for social can lead to new market creation.



Figure 3: Relationship between design for social innovation and new market creation ¹⁸



In summary, while it is difficult to establish the exact market potential in sheer numbers, design for social innovation is an important facilitator for new market creation. Design for social innovation provides businesses with new opportunities that are still widely under-exploited. The cross-sectoral nature of the trend has the potential to both disrupt well-established markets, such as energy and health, and create new services.

3.2. The socio-economic effect of design for social innovation

Although design for social innovation has interesting business prospects, clearly one of the largest benefits is found in the socio-economic effects. Design for social innovation can catapult social innovation and create social embeddedness. These aspects combined have a profound socio-economic effect.

Whereas value creation through innovation is often associated in the private sector with wealth, in the social

sector it should be associated with social impact.¹⁹ Social embeddedness can facilitate this process of social innovation, as it acts as a positive moderator.²⁰

As a result of the underdeveloped literature on (design for) social innovation, the socio-economic effects have not yet been quantified. In fact, economists have not paid much attention to the social impact of business innovations as a whole, let alone of social innovation and – even more specifically – design for social innovation.²¹ Despite the lack of quantification, the literature agrees that social innovation at least brings about positive effects on social welfare, perhaps even more so than from a business perspective.²²

Nevertheless, a link between social innovation and welfare outcomes has been identified.²³ Social innovation affects the achievements and opportunities of individuals, which has a direct link to their well-being. The stance in the literature is that it empowers people to live alternative lifestyles, increasing their degree of freedom. Moreover, the freedoms people enjoy depend on many factors and circumstances, which explains the many forms of social innovation.²⁴

New solutions through (design for) social innovation are believed to have the potential to make a major difference to society.²⁵ The economic crisis has had a profound effect on the European economy, with public sector debts towering in the glooming aftermath of the needed stimulus packages. Moreover, productivity trends for public services are noted to be weak and the long term effects of demographics and climate change present challenges for Europe as a whole. Social innovation is regarded as one of the key trends that have the potential to provide efficient and effective solutions to these challenges.²⁶

Table 1: Company case studies

Company	Location	Business innovation	Success signals
Raspberry Pi	United Kingdom	A charity foundation that designed and currently licences a cheap credit card sized computer to teach children programming skills.	Winner of the Index Award 2013, exceeded expectations by selling over 2 million units to date in November 2013
SNE Architects	Denmark	The world’s first combination of drainage of rainwater and recreation area	Nominated for the Index Award 2013, international press coverage, implementation under way.
Smartstreets	United Kingdom	Design and manufacturing of innovative gum and cigarette bins for the City of London	Won or short listed for over 15 product design, sustainability and environmental awards, over 100 cities now using the products.
Aldebaran Robotics	France	The most widely used humanoid robot for academic purposes worldwide	The only European humanoid robot available on the market; shipped over 1300 NAOs in more than 40 countries all over the world. NAO was selected as the official robot for the Standard Platform League of the Robocup.
RehabCare	Ireland	A centre that offers person-centred services to those that are disadvantaged to participate in the life of their local community in ways that match their choices	RehabCare supports more than 3,000 people throughout Ireland each year.



3.3. The benefits of implementing design for social innovation

The solutions analysed in this case study exemplify a number of clear benefits for companies for implementing a strategy of design for social innovation.

First of all, design for social innovation can create new and untapped product markets for companies. As it has been argued in this case study, a combination of innovative social design and innovative social solutions, paired with social embeddedness, creates new product markets. Examples can be found all over Europe. Aside from the company cases above, |Chapter 2 provided the market for eco-friendly water bottles as an example. Companies such as Doppo (NL) and Retap (DK) designed the water bottles to tap into a market with consumers that have a strong preference for sustainable products. Their clever way of redesigning a traditional product (i.e. bottled water) by using sustainable materials and developing an inviting design, has allowed them to create a whole new market segment (i.e. the market for eco-friendly water bottles). As a result, society gains from an environmental point of view, the companies gain from positioning a new product successfully on the market, and consumers gain from the utility they derive from using the preferred sustainable products.

Social innovation also helps companies to increase product placement opportunities in existing markets. Social benefits of products can catapult innovations to success by reaching out to a larger end-user base. In a way, these kinds of solutions cater to a relatively recent and untapped consumer preference for more sustainable products.

The market for fuels provides an example for this. Although the market for fuel additives is widely exploited at the moment, and is not the focus of this case study as it mostly focuses on the social innovation part instead of its design, it has benefitted considerably from the social benefits it brings about. Fuel additives that increase fuel efficiency and reduce emissions turned out not only to be favoured by regulation, but also by customers. As a result, new companies have been able to launch their disruptive technology in an industry dominated by giants.²⁷

The social benefits associated with social innovation provide an important market potential for design for social innovation. Design for social innovation has a higher chance to result in market success for those innovations that also have a higher social impact. This creates a powerful synergy, in where the social innovation itself is regarded as beneficial both from a societal and consumer point of view, as well as the design of it maximises the adoption of the social innovation.

Employing a strategy of design for social innovation also brings about benefits for people working for the companies.

The drivers discussed in Chapter 4 suggest that the employees tend to feel good about doing something for society. In fact, they feel empowered as they get the chance to help tackle some of society's key challenges. In other words, they feel as if they can make a difference. Social innovation design therefore not only brings about "hard" business advantages, but also contributes to these so-called "soft" advantages.

Each of the companies selected for this case study attempts to tackle a key societal challenge. These challenges and their corresponding solutions exemplify the social aspect of this business trend, and are listed below.

Problem 1 - Year-on-year decline in technical programming skills of new generations. It is no secret that the educational system faces challenges, not only in Europe, but all over the world. Less and less students choose for a career in the Science, Technology, Engineering and Mathematics (STEM) fields. As a result, supply of the associated skills is in decline. Whereas supply has been declining over the years, demand for these skills is increasing strongly. Moreover, children these days are less interested in picking up these subjects and critics believe that key solutions therefore need to address this issue already at an early age.

Innovative solution 1 – Raspberry Pi® is a tiny and cheap computer designed for kids to teach them programming skills. The company was created by Eben Upton, Rob Mullins, Jack Lang and Alan Mycroft, based at the University of Cambridge's Computer Laboratory, after they became concerned about the year-on-year decline in the numbers and skills levels of the A Level students applying to read Computer Science. Historically, applicants that came in already had reasonable knowledge of programming, as they programmed for a hobby. From the 2000s onwards, however, they started to notice that most programming experience was limited to some web design.

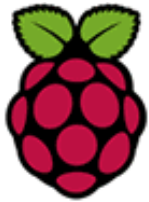
To counter the declining trend in programming skills, they came up with the idea to design a small and cheap computer specifically for making programming attractive to children. The computer, nowadays called Raspberry Pi®, was designed at a point where mobile processors were becoming so powerful that they were able to provide excellent multimedia. The latter was considered to be key for making the product attractive to children. First concepts were designed between 2006 and 2008, and the first production model was produced in 2011. In 2012, the company shipped their first units to end-users. In 2013 they sold more than 2 million units, something they only hoped to achieve in 2014.

With its critical user base, a vibrant community and clear vision, Raspberry Pi® is a unique and inspiring example for design for social innovation. While already widely adopted



on the market, the social impact is yet to come. The product, however, has all the potential to make a difference.

Raspberry Pi® was founded in 2006 and is based in the United Kingdom. The company designed a small and cheap dual-boot computer that provides both multimedia and programming functionalities.



Raspberry Pi™

Problem 2 - Increased chance of flooding requires real solutions to counter the potential damage. Regardless of the cause of climate change, even sceptics agree that there is a real chance of flooding in the future. With the ice caps slowly melting, new dynamics are created and solutions need to be designed to be able to counter the potential damages caused by flooding. The only problem is: how can we do this in a cost, resource and space efficient manner?

Innovative solution 2 – Rabalder Parken is a recreational oasis, designed by SNE Architects (formerly known as Nordach). These Danish designers came up with a solution to secure the Danish city, Roskilde, from future flooding by creating an innovative drainage system. As heavy rain only occurs a few times per year and as flooding is only a potential risk, they designed the drainage system in the form of a recreational area. When the area is not flooded, it can be used for various other purposes, such as a skate park.

Founded in Copenhagen in 2006, SNE Architects is an architecture company that has sustainability at the core of their objectives.



Problem 3 – The world's biggest litter problem: cigarette and gum litter. Cigarette litter accounts for over 50% of litter worldwide.²⁸ 200 Million cigarette butts are dropped every day in the UK alone. In terms of the global perspective, 4.5 trillion cigarette ends are littered every year worldwide, which take up to 10-50 years to degrade. Moreover, it blights landscapes, it leaks toxics into watercourses, there is significant fire hazard and it causes a

serious threat to wildlife.²⁹ On top of that, gum is estimated to blight a worrying high 99% of town and retail areas. To put that in perspective, it would take an estimated 17 weeks to clean Oxford Street, only to find it covered in gum again a mere 10 days later. In addition, gum litter is considered to be one of the most expensive forms of litter to clean up. For the United Kingdom, it has been estimated that it costs approximately 10 pence per glob to clean up, totalling an average of 20.000 GBP to clean up a town centre.³⁰

Innovative solution 3 – SmartStreets, a company based in the United Kingdom, asked themselves what the key drivers are behind cigarette and gum litter. In their research, they found out that the main reasons cited are that there are not enough bins in the area or that they could not find one in case they needed one. The designers are SmartStreets therefore created a new concept to make disposal easier by making it easy to find and easy to use. Their solutions include the Smartbin™ (not to be confused with “smart” bins that track cell phone data), which is a unique wrap around design bin that fits to any style or size of lamp post. As lamp posts are widely available in cities all over the world, they are easily installed and provide ideal locations.

Smartstreets is a company based in the United Kingdom, working on innovative waste solutions.



smartstreets™

solutions for the urban environment

Problem 4 - A need to solve real societal problems with ICT and microelectronics applications. Although we have seen a wave of automation in the past decades, there is still real ground to cover in providing high quality, resource efficient and effective solutions for some of the biggest societal challenges. The health sector is under constant pressure to provide efficiencies, but is struggling to maintain a high quality service. Furthermore, educational systems are under pressure to come up with initiatives that stimulate students to pursue a degree in Science, Technology, Engineering and Mathematics.

Innovative solution 4 – Aldebaran Robotics developed NAO, the first humanoid robot in Europe. More importantly, the robot is available at a comparatively low price point. After passing the programming test, you can own a full humanoid robot of 58cm for approximately 12.000 EUR. NAO is used as a research platform by more than 350 prestigious



universities and research labs around the world. Teaching with robots is inspiring to students, making a career in Science, Technology, Engineering and Mathematics engaging, fun and motivating.

NAO, however, serves a second purpose. The highly advanced robot is capable of human-robot interaction. NAO can identify specific people, react to voice commands, and uses expressive gestures to communicate. This means that it effectively serves as a building block for developing advanced and automated solutions for caretaking of the elderly, robot-child interaction in hospitals and supporting people with disorders, such as autism, to live independently.

Aldebaran Robotics was founded in 2005 by Bruno Maisonnier, who had a strong vision that we are at the verge of the era for robotics. They are headquartered in France and have distribution and marketing worldwide.



Problem 5 - A need for person-centred assistive technology to improve the lives of individuals with disadvantages

Modern technologies can have a significant positive impact on both the day-to-day activities of those with disadvantages and their future prospects and opportunities. As the solutions involved need to be tailored and customised per individual case, it is difficult to establish a commercially viable market offering.

Innovative solution 5 – RehabCare works with technology partners from industry and academia, RehabCare develops tailored, innovative solutions to problems for individuals. The innovative solutions developed by RehabCare include assistive technology designed to enable independence, such as sensors that can replace a computer mouse, devices that allow users to operate a computer using only their eyes, and that are fun, intuitive and cost-effective.

RehabCare is the provider of choice of person-centred, health and social care services that facilitate people who are disadvantaged to participate in the life of their local community in ways that match their choices, aspirations and needs



3.4. Client side drivers for the uptake

One of the key client side drivers for the uptake of the innovations is the fact that these aim to solve some of society's biggest problems in a smart way. By coming up with solutions that speak to the minds of a large community, the innovations gain a considerable amount of appreciation for what they are doing. In many of the social innovations, we therefore see that they are a success partially because the end-users feel like they played an active role in helping society.

The aura of "doing good" also extends to finding business partnerships and capital. In the case of Raspberry Pi, the fact that they were not driven by profit provided them a good position in negotiations, providing new opportunities for driving down the costs.

Irrefutably, the design of the social innovation is a key driver for significant uptake. Social innovations that are designed with the end-user in mind most often succeed in reaching a large community. SmartStreets is a proven case in which this is demonstrated. By taking all parties into account from the beginning, they designed a solution that is not only practical to install (i.e. fits on streets, blends in the architectural landscape yet stands out enough to be recognisable, etc.), but it also practical in use (i.e. within walking distance, inviting, recognisable, etc.). This has been essential for the successful uptake of the innovation.

The final key driver that can be identified for the uptake of the innovation is to set a competitive price point for the product. While this does not necessarily hold for all of the social innovations, Aldebaran Robotics and Raspberry Pi clearly demonstrate a strong push for bringing down the cost and subsequent selling price of their end-products. In fact, both companies set very challenging low final selling prices before even engineering the solutions. While this has posed challenges of their own (i.e. engineering the solutions within the limits of the final selling price), it also helped them reach an incredible end-user base.

3.5. Client side barriers to uptake

Client side barriers are mostly found in reaching a large community and increasing the diffusion of the innovation. Moreover, attracting capital, particularly from the public domain, poses barriers.

One of the key barriers to uptake is the need for these solutions to "prove" themselves. Scepticism on the market is one of the biggest enemies of these innovative solutions, possibly preventing soaring market uptake.

This often results in longer timeframes in which the innovation diffuses. For example, Aldebaran Robotics had a tough time in convincing their customers that they actually had a working humanoid robot at this price point. The best



way for them to deal with this turned out to simply go to their potential customers and show that it was working.

From a public domain perspective, solutions designed to tackle societal challenges often need to prove themselves over a longer time period. It is often impossible to measure (part of) the impact the solution has on the short term. After the solution has proven itself, uptake tends to accelerate.

In terms of attracting capital, the companies faced some specific challenges. It should particularly be noted that long procedures for attracting capital hinder the innovation and market uptake process by delaying business activities.

Most of the reported challenges were related to attracting public funding. Given the relatively small size of the companies, applying European funding was regarded as a long and bureaucratic process. The absence of a quick mechanism for attracting this type of capital specifically for

SMEs has forced them to look for different sources of capital.

Private funding, however, is also not without its challenges. Due to the relatively high risk of the projects, bank loans are often difficult to acquire. Given the concept of the innovations, venture capital is also often ill-suited, though we have observed companies in the social domain that had successful rounds of venture capital.

Finally, lack of an engaged end-user community poses a potential barrier for uptake. Although the success stories detailed here have not faced particular challenges here, they share a link to their client and/or end-user base, particularly at an early stage. Engaging with these groups provides them valuable market knowledge, “buzz” in the community, and feedback on the innovation, which can be used to further tailor the innovation to the end-users. Absence of such engagement makes diffusion particularly challenging.

4. Drivers and obstacles for solution providers

There are a number of drivers encouraging and obstacles hampering the business development of the companies providing solutions for social innovation by design. These drivers and obstacles impact both the companies developing these solutions and the adoption of these by users in a range of different target sectors. This section will highlight the key drivers and obstacles that have been identified for this case study.

4.1. Successful initiatives display a strong culture of “good-to-do-good”

The companies discussed in this case have developed solutions that (potentially) have a profound impact on some of the biggest societal challenges Europe is facing. Although they are market driven, they are not necessarily pursuing these innovations for profits. In fact, one of our company cases, Raspberry Pi, opted for structuring the company as a charity foundation to guarantee a maximum return to the educational field.

All of the selected companies feel a strong need to help address some of the key societal challenges at hand. This is not only reflected in the visions of the founders of the companies, but also in the working culture.

Raspberry Pi made it clear from the start that they were not in this for personal gain. Aside from structuring the company as a charity foundation, the founders all worked voluntarily to build up the concept.

Similar cases can be made for SNE Architects, SmartStreets and Aldebaran Robotics. While these are all commercial companies, they started from the perspective that something needed to be done. Their primary concern was not how they could make a profit, but how they could deliver a solution that would have maximum social impact.

Today, this is still reflected in the working culture of these companies. This strong vision of “doing good” is not only embedded in the corporate values and at management level, but trickles down to the whole organisation. Employees note that this strong vision of “doing good” motivates them to come up with extraordinary solutions. An added upside of these innovations is that the employees working at these companies generally feel empowered, as they feel that they are making a real difference.

4.2. Gaining early support from a community is vital

The social impact and survival of design for social innovation companies are both highly influenced by the size of the community they are able to reach. It is therefore crucial that they start building a community as quickly as they can in the business process.

The reason for this is twofold. First, social innovations start having a real impact when a high number of end-users, i.e. a critical mass of consumers, are using the innovation. Whether it is making use of an innovative bin to get rid of a piece of gum or whether it concerns children programming



on a cheap microcomputer, a small number of consumers is not going to make a big difference.

Second, as it is often difficult for these companies to attract private funding, they need working capital to survive. In order to raise capital, a proven method for the companies discussed here has been to make a push for the market. By selling at an early stage, funds start trickling back into the company, providing the necessary boost to continue operations.

In addition to the two reasons above, early support opens up opportunities for early feedback. While this may be an open door, companies engaging in early feedback with their potential customers tend to display better market adoption from the start. Feedback at an early stage ensures that companies design solutions potential consumers *actually* want, instead of solutions companies *think* consumers want.

The company cases are exemplary for the above. Raspberry Pi was so successful in reaching a large community that by the time the microcomputer went on sale, the overwhelming demand for it crashed both of the company's websites. Moreover, Aldebaran Robotics fully leveraged on their early customer base by quickly selling their products. Although their robot was operational, they explained their early customers that it still required further development. They asked their community to keep providing feedback, which they incorporated as quickly as possible. This early feedback loop has helped them tremendously in designing the innovation.

4.3. Raising capital is somewhat of a challenge for social innovation start-ups

Access to finance is one of the most critical success factors for the past and future development plans of the firms interviewed for this case study. However, raising start-up capital turned out to be somewhat a challenge for some of the companies, given the concept of the business they are running.

Many of the social innovation companies are not in business for the profits in the first place. In addition, they are associated with a risk in pay-off and typically materialise over a period longer than 1-3 years. This makes venture capital funds particularly ill-suited for design for social innovation companies, as these funds typically look for a rate of return in a shorter time window.

Due to the high risk, it is also difficult to get bank loans, especially in the aftermath of the financial crisis. Financial institutions are pushing strong on well-developed business plans and have become rather averse to projects that pose higher risks.

To counter this type of market failure, public bodies offer grants and support. While suitable from a market failure perspective, the application procedure is often regarded as long and bureaucratic, especially for SMEs. This poses a real challenge to social innovation start-ups, who generally do not have the resources and expertise to both design and innovate as well as apply for public funding. Moreover, they typically require a quick capital injection to get them started.

4.4. Marketing is key for successful social innovation design companies

One of the key success factors for social innovation design companies is to have a strong marketing approach. This is also strongly linked to reaching a large community at an early stage.

To maximise the impact of social innovations, this type of companies tend to look for the highest adoption rate on the market they can achieve. A strong marketing campaign is crucial for this.

Successful marketing strategies include leveraging the online community, e.g. through social media, forums and online publications. Raspberry Pi, for example, was hyped on the internet before the release of the product. Remarkably, the hype was not created by Raspberry Pi itself, but was the result of people picking up information on the project. Raspberry Pi reached out to the online community, involving them in every step along the way.

A key challenge in the marketing activities, however, is often found in allocating the resources for this, especially when budgets are tight within the company to engineer a solution at a low final selling point. Nevertheless, we have observed that the selected companies found ways of dealing with that, e.g. on voluntary basis (Raspberry Pi) or by targeting large events (Robocup, Aldebaran Robotics).

4.5. Successful social innovation design companies ooze creativity across the entire business

Successful design is unmistakably connected to creativity, and social innovation by design is no exception to that. Strikingly though, the element of creativity does not only reflect on design here. Creativity in the entire set of business operations is a common trait among the company cases.

While it should be clear that creativity has been essential for the solutions designed by the selected companies, the extent to which creativity was required in other business operations varies. Nevertheless, they share a common outcome: they can be identified as key drivers for the success and survival of these initiatives.



Raspberry Pi faced particular challenges in the fabrication process. As they are a fabless company, i.e. a company that only takes care of design and has no production capabilities whatsoever, they needed to outsource production. Instead of simply outsourcing production, which comes with all its perks, they came up with a different solution. Inspired by successful companies in the microelectronics sector, they adopted a licencing model for their design. By licencing the design to two external companies, they disposed themselves of the risks of manufacturing and secured a solid source of revenue. Moreover, it allows external companies to make a small profit on the design, while the licence fee is entirely reinvested in the Raspberry Pi foundation.

Aldebaran Robotics displayed creativity in creating different application areas of NAO. By approaching markets in a differentiated way, but with the same product, new application areas were created. For example, NAO was selected as the standard robot for the Standard Platform League of the Robocup.

4.6. Up-scaling is crucial, though challenging

As has been argued before, it requires scale to get the best impact out of social innovation. Up-scaling, however, is not only important from a social benefit perspective. As some of the companies are not necessarily chasing profits, margins tend to be low. Up-scaling is then needed to drive down both price and cost of the innovation, creating a stronger competitive position on the market and a healthier business.

Up-scaling does not come without its challenges. The challenges relate to different aspects of the up-scaling process. Up-scaling production poses challenges. However, an up-scaling sale is also a significant area where companies face challenges.

Indeed, Up-scaling manufacturing can be troublesome for companies. At Aldebaran Robotics, they have kept as much

of production at their facilities in Paris. While this had significant benefits for the innovation process, as feedback was directly looped from R&D back to manufacturing and vice versa, it also put a considerable strain on production costs and scale. As such, they were forced to outsource parts of manufacturing abroad. To date, however, they still assemble all the individual parts in the facilities in Paris.

Raspberry Pi chose not to deal with (up-scaling) production, as they found an innovative way for bypassing this stage. They opted to licence the design to other parties, who produce and distribute the product themselves. The licence fee Raspberry Pi receives is reinvested in the Raspberry Pi charity foundation, while the external parties are free to make a small profit on the production.

An up-scaling of sales also poses particular challenges. This is best evidenced in the case of SmartStreets. While their innovative product is well received by public institutions and has proven itself on the market, it is still difficult for the company to exponentially increase sales. One of the key barriers here is that public bodies are organised differently across countries, making it difficult to identify and get in contact with the right people. Moreover, procurement procedures were often regarded as lengthy processes, hampering the uptake of the innovation.

Aldebaran Robotics appreciated that different regions require different approaches to marketing and distribution. Therefore, they set up distribution centres in the United States and in Asia, employing local people with market knowledge to take care of the distribution process. Nevertheless, they faced a particular challenge in diffusing the innovation to different regions. For instance, customers in the United States generally looked for more end-product solutions, whereas customers in Europe and Asia appreciated that Aldebaran chose to finish final development with their early customer base. Before they understood this, however, an up-scaling sale was perceived as a real challenge.

5. Policy recommendations

The drivers and obstacles detailed in Chapter 3 and Chapter 4 identify some of the key areas in which policy may be required. Nevertheless, existing policies are in some areas already in place. It is therefore worthwhile to fully consider the extent to which these challenges require further policy action.

One of the pivotal aspects concerns the financing of (design for) social innovation in Europe. This has not only been identified as a potential barrier in this case study, but also in the existing literature on social innovation.³¹

It has been argued that Europe has a crucial role to play in accelerating the field of social innovation. More specifically, the European Commission is called upon to act as a catalyst to make social innovation happening. This includes all aspects of the process, ranging from stimulating start-ups in the field, facilitating growth of the innovations, and help scaling.³²

To an extent, these recommendations are supported by the findings in this case study. Particularly, it has demonstrated the need for the EU to look for simplifications in the public



financing of such innovative companies. While the SME Instrument in Horizon 2020 is already a step in the right direction, alternative policies may also be worthwhile to consider.

The Small Business Innovation Research programme (SBIR), as designed in the United States, may provide inspiration for this. Several SBIR equivalents exist in Europe. However, the European equivalents are reported to be less successful than their US counterpart, though admittedly this is not because of the idea itself.³³ Although we will not argue for a complete overhaul of the SBIR-type programmes here, we do note that the SBIR-type programmes offer a mechanism through which public policy can reach out to these innovative SMEs.

The SBIR-type programmes can potentially be used to contract innovative companies to design solutions for societal challenges. By setting clear goals and targets from a public side, but letting a private party find a solution that actually sits well with its end-users, innovative solutions can be engineered that are used to maximum result. The innovative concepts of Smartstreets detailed in this case study are exemplary in this. By expanding and extending the scope of the SBIR-type programmes, these kinds of innovations may become a higher priority for new and existing companies.

In addition to extending and simplifying public procurement and public support, there is a strong need to increase awareness for the potential of design for social innovation. More specifically, both policy makers and companies should be made more aware of the untapped opportunities. As the field is still relatively new, many are not very familiar with

the tremendous impact design for social innovation can make. By creating awareness under policy makers, particularly under procurement officers at national and regional level, the number of procurement contracts for social innovations could increase, stimulating companies to develop these solutions. Moreover, by increasing awareness under private sector, more companies may choose to develop social innovation design solutions.

Finally, the literature on social innovation has established a need to help scale social innovation. This is also supported by our findings for the company cases, which to a various degrees reported challenges in scaling the innovations.

As a general recommendation, we therefore support earlier work in arguing that there is a need to find ways of incentivising organisations to scale the innovations. Aside from providing the necessary public support for financing the companies, the collaborative aspects of developing solutions also need to be considered in this light. Specifically, the social sector needs to be aware that in many cases it is infeasible to develop a high impact solution by a single company. Therefore, collaborative networks in the field of social innovation could be further explored.³⁴ Furthermore, the use of large-scale demonstrators could also be further explored for design for social innovation. Market uptake from innovations such as the innovative bin designed by Smartstreets, could be stimulated by such a support. Large-scale demonstrators can provide the necessary boost in market acceptance, as well as finding out what exactly works in the region. This may help foster solutions that maximise social impact and provide companies with the necessary support to upscale.³⁵



6. Appendix

6.1. Interviews

Company	Name	Position
Raspberry Pi	Eben Upton	CEO
SNE Architects	Søren Nordal Enevoldsen	CEO
SmartStreets	Andrew Farish	CEO
Aldebaran Robotics	Rodolphe Gelin	CTO

6.2. Websites

Raspberry Pi	www.raspberrypi.org
SNE Architects	www.SNEarchitects.com/
SmartStreets	www.smartstreets.co.uk
Aldebaran Robotics	www.aldebaran-robotics.com/

6.3. References

- ¹ SIE (2012), "Strengthening social innovation in Europe: Journey to effective assessment and metrics", coordinated by the European Commission - DG Enterprise and Industry, Brussels.
- ² Mulgan (2006), "Social innovation. What it is, why it matters, how it can be accelerated", London: Basingstoke Press
- ³ Howaldt, J., and Schwarz, M. (2010). "Social innovation: Concepts, research fields and international trends", K. Henning, & F. Hees (Eds.).
- ⁴ Dahrendorf, R. (2009), "Nach der Krise: Zurück zur protestantischen Ethik? Sechs Anmerkungen," Merkur. Deutsche Zeitschrift für Europäisches Denken, 63 (720), pp. 373-381.
- ⁵ Owen, J. and R. Marvel (2013), "When Bees meet Trees: How large social sector organisations can help to scale social innovation", Clore Social Leadership Programme, United Kingdom.
- ⁶ European Commission, (2011), SPEECH/11/190, accessed on 06-12-2013 at http://europa.eu/rapid/press-release_SPEECH-11-190_en.htm
- ⁷ Reinstaller, A. (2013), "An evolutionary view on social innovation and the process of economic change", Austrian Institute of Economic Research, Austria.
- ⁸ Adapted from: Brown, T. and J. Wyatt (2010), "Design Thinking for Social Innovation", Stanford Social Innovation Review, winter 2012.
- ⁹ Owen, J. and R. Marvel (2013), "When Bees meet Trees: How large social sector organisations can help to scale social innovation", Clore Social Leadership Programme, United Kingdom.
- ¹⁰ BEPA, (2011), "Empowering people, driving change: Social Innovation in the European Union", European Communities, Luxembourg.
- ¹¹ SIE (2012). "Strengthening social innovation in Europe: Journey to effective assessment and metrics", coordinated by the European Commission - DG Enterprise and Industry, Brussels.
- ¹² SIE, (2012), "Financing Social Impact: Funding social innovation in Europe – mapping the way forward", European Union.
- ¹³ PwC, (2013), "Innovation: How to convert Research into Commercial Success Story? - Part 2", carried out for the European Commission - DG Research and Innovation.
- ¹⁴ Kumar, P. (2012). "Social Innovation Market Creation and Social Embeddedness", Carlson School of Management, University of Minnesota.



- ¹⁵ National Marketing Institute, (2010), "LOHAS Market Size", available at <http://www.lohas.com/sites/default/files/lohasmarketsize.pdf>
- ¹⁶ *Ibid.*
- ¹⁷ Kumar, P. (2012). "Social Innovation Market Creation and Social Embeddedness", Carlson School of Management, University of Minnesota.
- ¹⁸ Adapted and amended from: Kumar, P. (2012). "Social Innovation Market Creation and Social Embeddedness", Carlson School of Management, University of Minnesota.
- ¹⁹ Sosa, S. (2012), "Design Thinking for Social Innovation: A Systematic Approach to Generating Ideas with Impact", 2012 Texas Nonprofit Summit presentation.
- ²⁰ Kumar, P. (2012). "Social Innovation Market Creation and Social Embeddedness", Carlson School of Management, University of Minnesota.
- ²¹ Pol, E. and S. Ville, (2009), "Social innovation: Buzz word or enduring term?", *Journal of Socio-Economics* 38.6 (2009): 878-885.
- ²² *Ibid.*
- ²³ Reinstaller, A. (2013), "An evolutionary view on social innovation and the process of economic change", Austrian Institute of Economic Research, Austria.
- ²⁴ *Ibid.*
- ²⁵ SIE (2012). "Strengthening social innovation in Europe: Journey to effective assessment and metrics", coordinated by the European Commission - DG Enterprise and Industry, Brussels.
- ²⁶ *Ibid.*
- ²⁷ PwC, (2013), "Innovation: How to convert Research into Commercial Success Story? - Part 2", carried out for the European Commission - DG Research and Innovation.
- ²⁸ Keep America Beautiful, available at <http://www.kab.org>.
- ²⁹ Keep Britain tidy, available at <http://www.keepbritaintidy.org>.
- ³⁰ *Ibid.*
- ³¹ SIE, (2012), "Financing Social Impact: Funding social innovation in Europe – mapping the way forward", European Union.
- ³² Owen, J. and R. Marvel (2013), "When Bees meet Trees: How large social sector organisations can help to scale social innovation", Clore Social Leadership Programme, United Kingdom.
- ³³ OECD, (2010). "Public Procurement Programmes for Small Firms: SBIR-type Programmes", available at <http://www.oecd.org/innovation/policyplatform/48136807.pdf>
- ³⁴ Owen, J. and R. Marvel (2013), "When Bees meet Trees: How large social sector organisations can help to scale social innovation", Clore Social Leadership Programme, United Kingdom.
- ³⁵ European Commission (2013), "Introducing the Large Scale Demonstrator Approach", retrieved from http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=6677&lang=en