Business Models for a Circular Economy

7 Companies Paving the Way

Ovaska Jukka-Pekka

BUSINESS MODELS FOR A CIRCULAR ECONOMY
7 Companies Paving the Way

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To the reader

By now it should be clear to everyone that the road we've travelled thus far as a society has come to an end. It would be an understatement to say that we are at a cross-roads. Rather, we've already passed the intersection and have now realized that we took the wrong turn decades ago. Climate change, acidification of the oceans, environmental degradation, and the dozens of other environmental and social problems we face today force us to either make a U-turn and head back towards the direction we came from or to find other paths that we haven't explored yet. Either way, business as usual has come to an end.

However, this is not the full story. With such enormous threats to our well-being it can be easy to forget that every challenge comes with an equivalent or even greater opportunity. I believe that it's not only possible to find and take advantage of these opportunities – it's absolutely necessary if we want to create a sustainable society. Therefore, the purpose of this publication is not to create more awareness of our challenges but of potential solutions. In this booklet a promising concept called circular economy will be introduced, along with seven relevant case studies. The concept of a circular economy has its roots in the 1960s, but the idea has grown traction during recent years as numerous scholars, thought leaders, companies, NGOs, and public organizations have started to promote its adoption. In the upcoming pages we will first introduce the concept and discuss it from different angles and later use the seven case studies to highlight what the circular economy might look like in more concrete terms. By doing so we hope to bring out the necessity of adopting a circular way of doing business and the opportunities that such transformation can bring with it.

To be sure, none of the ideas and models proposed in this book are fully complete nor can they be applied as such in all contexts. They are messy, explorative, unfinished, and probably none of the companies presented here have supply chains and organizations that are 100 percent sustainable. However, what they do demonstrate is the capability and willingness of humans to create novel ways of organization at the intersection between environmental, social, and economic sustainability.

Most of all, this book is about leadership because right now we need leaders. We need people and companies who are willing to take the path less travelled and go all in on sustainability. These people are all around us, from families that give up their cars and opt for public transport despite the fact that society still strongly supports private car ownership, to small business owners who decide to choose the more environmentally-friendly product material despite the fact that it might initially come out from their bottom line. These people can also be found in big corporations, though they might sometimes find their way to set up their own companies as you'll see in some of the cases in this book. We need these people, and we need to tell their story.

What makes such companies and individuals particularly valuable is how dauntingly difficult being a leader can be today. The problems we face are everything but clearly defined, and because leaders are often expected to provide answers and ways to move forward, it's a surprise someone is actually willing to try their hand at leading. But we need to realise that in a world of wicked problems, problem definitions and solutions will need to coevolve, because in the end, no one really knows what works and what doesn't. That's why we need people who are willing to experiment and to try to provide some answers even with incomplete information.

That being said, there's no denying the tremendous business opportunity that awaits companies that are willing to make the transition towards circular practices. According to a report by the Finnish Innovation Fund and McKinsey, in Finland the circular economy represents an opportunity worth at least 2 to 3 billion euros annually by 2030[1]. Therefore, proper leadership can pay hefty dividends for those who know how to seize the circular economy opportunity. I hope that the stories presented in this book will inspire others to take action and to find ways to tackle the wicked opportunities of our times.

Jukka-Pekka Ovaska
Helsinki, Finland
January 2016

[1] Sitra Studies 100. (2015). The opportunities of a circular economy for Finland.
https://www.sitra.fi/julkaisut/Selvityksi%C3%A4-sarja/Selvityksia100.pdf

1. Circular economy: a brief introduction to a big idea

Paige Poutiainen and Jukka-Pekka Ovaska

The circular economy is a hot topic in Europe at the moment, and it's getting hotter. If you've heard of the circular economy, you might be wondering: what's all the fuss about?

To put it simply, many believe the circular economy is a way to find harmony between the environment and the economy. For many years already, it has seemed that nature and industry has been and will always be at odds, and that we cannot improve one without harming the other. On one hand, if you want to grow the economy by encouraging consumption and producing more stuff, you waste precious nonrenewable resources and create copious amounts of waste. On the other hand, if you want to save the environment by eliminating fossil fuels, you run the risk of shocking entire countries that rely heavily on those fuels for transportation, and could possibly leave millions without jobs and livelihood. The point is, doing right by the economy AND the environment isn't easy, and we've become very comfortable with the ideal of tradeoffs.

However, a new model has emerged that challenges this economy versus environment

mentality. The circular economy model holds the promise that economic growth can happen for the benefit of the environment, instead of at its expense.

What is it?

At its core, the circular economy is a model for an economy that functions more like a natural ecosystem - with some modifications of course. Like in an ecosystem, nothing is ever wasted. Every waste becomes an input for something else. The circular economy model uses the same principle for an economy: nothing stays a "waste" because everything is designed to be used for something else.

In a circular economy, all materials are classified as either biological materials, i.e., materials that can biodegrade, or technical materials, i.e., materials that can't. Biological materials should be designed to safely return to the biosphere, and to do this, the returning materials need to be pure and toxic free. Technical materials, on the other hand, are not biodegradable, and therefore, they should be designed to continuously circulate in the technosphere. (That's circular economy lingo for the cycles of industry.) This means that materials have to be designed from the start with long-term use in mind.

For us this might seem revolutionary, but, in fact, the idea has been around for decades already. Back in the 1960s, economist Kenneth Boulding wrote about an ideal "spaceman" economy. He argued we should manage our resources like we were stranded in spaceship forever with no hope of fresh supplies and nowhere to store our wastes. Considering that Earth is a floating planet in space (although one that regenerates itself), we would say he had a point.

The circular economy is actually a culmination of several schools of thought, including Industrial Ecology, Cradle to Cradle, Blue Economy, the Performance Economy, and Biomimicry - all of which have their own histories and lineages. The circular economy model brings ideas from these separate disciplines together under one comprehensive concept.

How does it work?

The leading spokesperson for the circular economy is undoubtedly the Ellen MacArthur Foundation, which has developed the leading (and much referenced) model for a circular economy.

The diagram is divided into two cycles. On the left is the biological cycle, where biological materials circulate. On the right is the technical cycle, where technical materials circulate. The model spells out different strategies on each side to create circular loops. Biological materials can be, for example, anaerobically digested or composted, cascaded into other uses (e.g. using old t-shirts for housing insulation), or used in biochemical extraction, whereas technical materials can be serviced, reused, re-manufactured, or recycled.

The strategy used is highly dependent on a company's product and business context. However, the ultimately goal is to preserve as much value in the original product as possible. Therefore, products should be used for their original (or similar) purpose before energy is

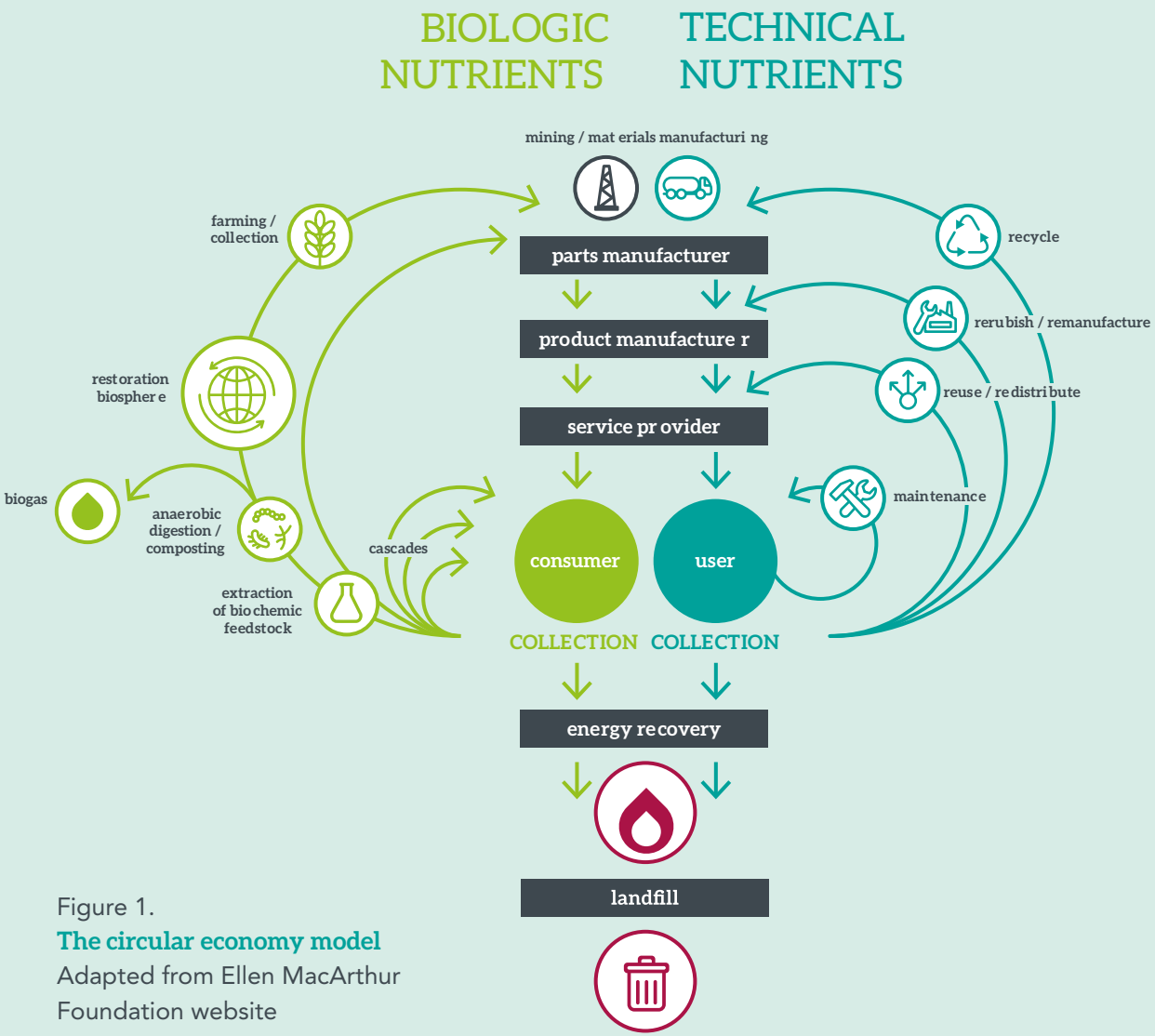


Figure 1.
The circular economy model
Adapted from Ellen MacArthur Foundation website

expended to turn them into something else. For example, in an ideal circular loop, a washing machine would be serviced as much as possible to be used as a washing machine before its individual components are harvested for some other use. In terms of the circular economy, recycling is always considered as a last resort.

You'll notice that we've used the word "products" a lot. The circular economy has more direct implications for companies with products (or product as service systems). Pure service providers may still be affected, but not as directly as product manufacturers. However, there is still a huge opportunity for new service scpaces in the circular economy as we will see later with the case Repack.

Why should my company care?

With all this talk about economies, all you business gurus out there might still be wondering, so what? What does all this mean for my company? It's no secret that our ways of production and consumption are unsustainable. And by unsustainable, we don't mean that it's bad for

sustainable development. It means that it can't last. The WWF estimates that we as a global population already use 1.5 earth. Sadly, our resource consumption far outpaces the earth's capability to renew itself. Accenture (2014) said it best: "The growth model favored by economies and indeed most companies for the past 250 years – based on the availability of plentiful and inexpensive natural resources – is living on borrowed time and so are companies that rely on it.[2]"

Our global supply of resources is dwindling. In business terms, raw materials are going to become more expensive and less available. Higher prices at the beginning of the value chain means higher prices throughout the value chain. Can you smell the business risk already?

What about efficiency?

Many companies (and policy makers) have approached the environmental crisis with the unified cry of "more eco-efficiency". The harsh truth is that efficiency improvements are necessary but not alone sufficient.

Michael Braungart and William McDonough make a compelling argument against the blind focus on eco-efficiency in their book, Cradle to cradle: Remaking the way we make things. To paraphrase, eco-efficiency only slows down the destruction; it gives the illusion of change while the destruction inevitably continues. Improvements in relative terms can't save us when the environment is being destroyed absolutely.

Circular economy is about transformational change

The circular economy is about transformational change at all levels - from government policy to business models, and from technological regimes to individual consumer choices. Everything, and we do mean everything, will have to change in our lives. Reaching the circular economy will therefore require a revolution in both resource efficiency and in the basic fundamentals of business and policy. To be sure, the path towards circular economy is no easy one, and it will take many attempts to create the level of change that's necessary.

But the challenge is worth tackling, and as we'll see in the upcoming few pages, it comes with equivalent opportunities.

[2] Accenture. (2014). Circular advantage: Innovative business models and technologies to create value in a world without limits to growth.

2. The potential of circular economy

Heikki Sorasahi, Sitra

During the last decades the linear economy has flourished in minimal synchronization with nature and its limited resources. Our environmental debt is enormous as our high standard of living is a direct result of the endless exploitation of nature. A shift towards a carbon neutral circular economy not only improves our chances for survival but also enables considerable and less risky economic benefits for forerunners. Fortunately, the remarkable potential of circular economy is widely recognized and the path forward is taking shape.

Several estimates indicate the huge potential related to the circular economy. According to Accenture's calculations, the global value creation potential is worth 4.5 trillion dollars by 2030, and as much as 25 trillion dollars by 2050. At the same time, the European Commission stresses that the circular economy could bring savings of 600 billion euros for European businesses. There is a strong positive impact on employment as well: Green Alliance's findings indicate that reuse and remanufacture (which are typical ways of adding value in the circular economy) create 8 – 20 jobs per thousand tons of material compared to 5-10 jobs created per thousand tons of material by traditional recycling.

In Finland (with a government budget of 54.4 billion euros for 2016), the Finnish Innovation Fund Sitra has estimated that the circular economy represents an opportunity worth at least 2 to 3 billion euros annually by 2030. A 1.5 - 2.5 billion euro potential was estimated together with McKinsey and published in a report The opportunities of a circular economy for Finland. The analysis covered the following five sectors (in decreasing order by the size of economic potential): sharing economy and second hand, machinery and equipment industry, construction, forest industry, and food industry.

When it comes to the sharing economy and second hand, for example, it means not only new attractive options for consumers and new businesses, but also remarkable opportunities for existing companies. Especially great potential exists in renting and re-selling in both C2C and B2B markets. For example, new flexible services in car sharing and public transportation could take mobility to the next level. However, new

groundbreaking local and domestic services are needed in order to capture the highest value nationally.

Another area with remarkable potential, according to the study by Sitra and Gaia Consulting, is nutrient recycling: the economic value in Finland is estimated to be worth 510 million euros annually by 2030. Out of this, the most significant opportunities are related to biogasification and to benefits from the reduced eutrophication of the Baltic Sea. The Finnish Government's key project on circular economy focuses on nutrient recycling and aims to boost pilot and demonstration projects.

A recent report by the Club of Rome presents results of a circular economy modelling study for Finland: if each of three circular economy scenarios – renewable, energy efficiency and material efficiency scenario – were to be realized by 2030, CO2 emissions would be reduced by 68 percent, over 75,000 new jobs would be generated, and the positive effect on trade balance would be worth of over 1.5 percent of GDP. However, these positive changes require supportive policy instruments such as economic and fiscal incentives (e.g. less taxation on labor and more on fossil resources, removal of VAT from secondary raw materials), and annual transitional investments of 6 billion euro in the case of Finland, as suggested by the Club of Rome.

The circular economy potential has drawn considerable attention especially in Europe. In late 2015, the European Commission published the Circular Economy Package which includes strategic measures for the EU and legislative proposals on waste. The package highlights measures such as eco-design, extended producer responsibility, and the prevention of planned obsolescence. Additionally, the EU Commission aims to promote green public procurement and the creation of an internal market for secondary raw materials in the EU. Even though the package includes important policy guidelines, concrete incentives are still needed, for example clear indicators, fiscal incentives and funding instruments, in order to steer innovation, consumer behavior, and public procurement.

Courage to step outside the box is what the shift towards the circular economy requires from companies. Forerunners are already seeing the huge potential and seizing the moment. Small innovative companies, such as those discussed in this book, are counting on new and unusual business models. On the other hand, some existing large businesses, such as Neste, are successfully creating new while disrupting old ways of doing business. Reformers are the winners of the circular economy.

None of the presented potential estimates are perfect. Who could forecast the future precisely? No one. What matters most is that we take action on the path towards the circular economy which is a widely recognized positive opportunity and up for grabs for forerunners.

3. Opportunities in fixing the broken global circulation loops of resources

Jarkko Levänen

In the midst of justified and well-deserved hype around the circular economy, the fact that the circularity of resources is fundamentally a global phenomenon has not gained enough attention. So far, actors have mainly focused on smaller-scale optimization of circulation and related competencies. Circulation routes of resources do not, however, follow geographical or politically defined borders. Global business dynamics ensure that resources find their way into places where the prices are highest. In a similar manner, albeit with some delay, waste materials and used products typically end up into locations where their reuse or recycling is most profitable.

For the time being, we have not realized the major obstacle of circular economy, namely that most of the global circulation loops of materials and other resources are broken. Currently many kinds of virgin natural resources are injected from developing countries into richer regions more cost-efficiently than ever before, while at the same time, large portion of reusable materials are dumped back into developing world from where they do not return into circuit on a large scale.

In other words, the first part of the value chain seems to work, but the latter part is seriously leaking. Circular economy cannot redeem its excellent promise if the circulation loops are not fixed by closing them. This fixing operation is among the most urgent challenges and the biggest opportunities of circular economy.

The electronics industry illustrates how the market mechanism dictates global circulation of materials. Production facilities of almost all multinational electronics companies are located around the world. Raw material supply for these factories as well as their product delivery is organized in an efficient way through the global networks. At the same time, a massive e-waste stream – that consists of both undamaged products, which for some reason are not used anymore, and damaged products whose fixing is made expensive – flows constantly from the Western world to developing countries. Long distance transportation of waste is economically viable in this industry because it enables realization of the value that is embedded in disused devices. In practice devices are either re-sold or their materials are brought back into circulation.

It must be emphasized, however, that even though e-industry serves as an example of the current stage of circular economy at one field of industry, it definitely does not demonstrate a good practice. Many aspects in the global material management of e-industry do not bear close scrutiny. The field suffers from corruption, dysfunctional regulation and serious shortages in transparency. These together have led to the situation in which relatively large part of the total value of circulated materials is created under ecologically and socially unacceptable conditions. For example, dismantling the electronic devices may take place in life-threatening circumstances in informal workshops. Much of the transportation of e-waste is allegedly taken care of by organized crime and suboptimal material segregation processes pollute air, soil and waterways. Circulation is also inefficient because large amount of usable parts and materials of devices remain unutilized.

The case of e-industry brings forth problems that hamper global circulation of resources at many other fields as well. I will next elaborate some of these problems whose common denominator is that they can also be turned into opportunities.

First, the problems seem to appear when actors of circular economy focus only on products and forget the other parts of the value chains. The value embedded in a material disappears when the circulation loop of that material breaks down. A loop breaks, for example, in the case of dumping because then the material exits the circuit for good. An intact circulation loop, on the other hand, enables various forms of value creation. Raw material management, for example, differs greatly from the management of materials embedded in products in use or those that are detached from end-of-life products. Breaking points of circulation loops are critical for the identification of new business opportunities because in those points it is possible to tap value that has been lost. Companies able to stitch up the circulation loops around the breaking points with innovative solutions will be among the first winners of circular economy.

Second, it is important to understand the significant role of tightening regulation associated with different resources. Extended producer responsibility, as one example only, is gradually becoming more binding also in the

developing world, which will direct companies to consider global circulation loops in their everyday actions more seriously than before. Tightening regulation will increase transparency of resources' management, which in turn may support more sustainable value creation at different stages of circulation loops. When the rules are clear for all, operational environment is much more efficient. That is why forerunner companies perceive tightening regulation as a great opportunity already today.

Third, it is vital to acknowledge that circular economy must be put into practice at the local level throughout the world, which will boost the significance of proper communication. The most optimal opportunities for circulation vary between different locations and it is not even wise to pursue the circulation of all types of resources everywhere. For instance, responding to same megatrends, such as climate change or deforestation, open up very different circulation opportunities of resources in different parts of the world. Social and ecological conditions as well as the structure of the local industry define the optimal ways of circulation of resources. Identification of the most promising opportunities together with local inhabitants and business stakeholders is a huge task that requires specific expertise. Responding to local needs is an opportunity for companies that are able to depart from their current comfort zone and engage in product development in localities where the circulation of resources is broken.

Promotion of circular economy takes place in different rhythms in different parts of the world, and numerous issues shape these rhythms. It goes without saying that circulation of resources is not a priority everywhere, and the organizing capabilities of global circulation loops that connect actors from public and private sectors vary between regions. Still, concurrently the speed of transformation processes toward circular economy at the global level keeps accelerating. With this transformation lots of business opportunities in fixing and strengthening the circulation loops of resources emerge. Businesses and other actors able to identify problems in these loops around the world together with local people can provide tailored solutions and will be able to turn the circular economy trend for their benefit much quicker than many anticipate.

"Designers have remarkable opportunities to drive the transition to circular economy. The old way of focusing design on the product itself, its packaging and marketing, is simply not enough anymore. "

- Maija Aho

4. Designing circular economy

Maija Aho, Gaia Consulting

Can we generate *products, materials and services efficiently by minimizing the use of raw materials and by decreasing losses and low-value side streams? How well and how long does a product or material serve in its intended function and what kind of impacts does it have during its lifetime? How about after its life cycle? Can it be reused? Is it economically viable to repair? Can it be easily recycled? Can different materials and parts of the product be recovered cost-effectively?*

There's one common denominator to solving all these questions, and it's called circular design. Traditionally design is based on what sells, for example the product itself or its packaging. What does circular design mean? Firstly, it means designing products and services that work well in their intended function and have minimal negative and maximal positive impacts during their life cycle. Secondly, it means understanding the importance of choosing the right raw materials and assembling products with their end-of-life possibilities in mind. Thirdly, circular design aims to improve resource productivity along the whole life cycle ensuring that value

chains are efficient and all synergy possibilities are taken into account.

Products should be durable and easy to maintain and repair. Their upgradability and compatibility with other products and systems help to extend their life. In order to recover materials effectively, the recyclability of a product has to be considered already in the design phase. Many metals, for example, can be recycled if a product has been designed in a way that enables disassembling it's materials and prevents their contamination with other materials. A well-planned recycling or recovery infrastructure ensures that materials circle efficiently back to use.

Does circular economy make resource efficiency seem old-fashioned? Not at all - resource efficiency means making more from less by minimizing raw material, energy and water usage, by decreasing losses and low-value side streams, by designing out waste while simultaneously increasing the efficiency of production. These are all in the DNA of circular economy. An effective flow of materials, energy and information leads to significant economic benefits. Even more value lies in understanding the wider perspective of resource use and optimizing the location of production accordingly. This wider perspective includes resource substitutability and co-production as well as predicting the availability of resources. Simply put, the tighter the circle of materials in distance and time, the greater the cost savings.

The possibilities of circular economy are based on synergies. Synergies vary depending on the products and services in question, and can range from consumers sharing systems to closed production loops within a company and industrial symbioses between large enterprises, SME's or start-ups, just to mention a few. Secondary raw material streams may offer new possibilities for the primary business or for another company. The higher the value of the stream, the better its transportation possibilities and the easier it is to close the loop.

Designers have remarkable opportunities to drive the transition to circular economy. The old way of focusing design on the product itself, its packaging and marketing, is simply not enough anymore. Circular design is challenging and requires not only a new kind of system thinking but also open and active dialogue between designers, suppliers, industry end users and consumers. Various methods and practical tools, such as Life Cycle Assessment, as well as different circular economy indicators and indicator frameworks, for example Gaia Refiner benchmarking tool, can help in circular design by offering transparent information about the life cycle of materials and processes. The current linear design structure will sooner or later be a thing of the past.

5. Smartups, what are they?

Mikko Annala, Demos Helsinki

Imagine yourself as an owner of a 100 year-old successful business. Most of your resources are tied up in infrastructure because large infrastructure and manufacturing facilities have always been necessary to create value and make revenue. Imagine that a newcomer without any infrastructure whatsoever starts stealing your customers and suddenly becomes larger business than yours has ever been. Open your eyes: it is happening now.

It is now clear that the business world is going through radical changes. The world's biggest provider of accommodation and hospitality services Airbnb does not own any rooms, and the world's biggest taxi service does not have any cars. These two vastly growing billion dollar businesses are model symbols of the new era. These companies leverage digitalization in creating solutions that enable smarter and more efficient use of natural resources. Moreover, they use digitalization for finding shortcuts to interact with the end user.

Cleantech has been traditionally referred to as the idea of increasing effectiveness of

production and processes and development of clean technologies. Now the same logic is being applied to services, experiences and consumption. Solutions that make everyday practices such as mobility and housing smart and sustainable are referred to as smartups.

In fact, there is a growing legion of smartup companies hard on the heels of giants like Uber and Airbnb. In 2015, Demos Helsinki identified almost 300 smartups around the world (many of them listed in a report Cleantech takes over consumer markets). The key finding was that the solutions are usually related to mobility, housing, or food. There are two significant reasons for this. Firstly, mobility, housing and food make up the majority of average household spending in Finland. Secondly, these three factors represent a lion's share of household energy consumption and consume a great deal of natural resources. Smartups are related to the greatest challenge of our time, climate change, but are also tightly connected to huge market potential.

Ten years ago digitalization began to enable new communication innovations such as Facebook and Twitter. As a result, our lives have changed dramatically. For example, not too long ago it was normal for a person not to hear anything from their friends for months or even for years. Now we see flying moments of the lives of hundreds of our friends daily.

However, a more fundamental change is yet to come. Digitalization is now becoming strongly connected to the physical world. New solutions have begun to shape every aspect of our lives, giving us new and unforeseen ways to organize and adjust our logistic flows, heat our offices, and light our homes. Bits are starting to meet atoms, and the development is fast. Ten years from now smartups will have made many of our current practices appear like landline phones look today.

In this publication we will introduce several smartups that are using business models and solutions that can change the way we use resources. These smartups serve as examples of the potential that new business models and new digital technologies come with. If luck is on their side, the smartups in the upcoming pages can change the way in which we use spaces in our cities, how we clothe ourselves, how we recycle goods, and how we run our everyday errands.

[3] Demos Helsinki & Solved. (2015).
Cleantech takes over consumer markets.

6. Introduction to the cases and Accenture's business models framework

Jukka-Pekka Ovaska

"At its core, *the circular economy is about creating new value chains that decouple growth from the use of scarce and linear resource inputs…"*[4]

In the following pages you will find seven companies that are, in one way or another, involved in the development of a circular economy[5]. Although not all of the companies have declared themselves as advocates of circular economy, they all aim to help their customers use resources more efficiently and to create circular flows of resources. They do so by combining technology, networks, and new business models into new business systems that in the long run allow the companies to decouple economic growth from the consumption of scarce resources. In this publication we will focus on exploring the business side of the equation and leave the discussion on technology for another time. Data for the cases was collected by interviewing the company founders and by researching online sources, including news articles and the company websites.

With each case, the history and the story of the company are first reviewed, after which the

company's business model is analyzed. The analysis includes each company's value proposition, core customers, and revenue generation logic. The way in which the companies advance sustainability is also highlighted. However, the real meat of the analysis is understanding how the companies have been able to base their business models on circular flows of resources. For this purpose, we have used Accenture's framework of five circular economy business models, first introduced in Accenture's publication Circular advantage: Innovative business models and technologies to create value in a world without limits to growth (2014).

The framework and the business models are based on research on over 120 companies that Accenture identifies as using circular economy thinking and technologies in their businesses. The business models that Accenture was able to identify are grounded in circular flows of resources and, combined with new technologies, should allow companies to decouple economic growth from the consumption of resources. According to Accenture, these business models are not only about becoming less bad. Instead, the business models enable companies to transform their businesses and organizations into something with net positive effect on both economy, society and the environment. Thus, instead of playing a zero-sum game between the economy and the environment, these business models make possible for companies to drive positive change through growth.[6] And while changing the business model is not sufficient alone to make a company truly sustainable, it does play a necessary role in the road towards sustainability.

The framework itself represents the whole supply chain of a business from procurement to end-of-life disposal with the five identified business models placed along the supply chain. Each business model serves a distinctive purpose, and a company might use several of these models simultaneously. For example, a company that makes money by recovering and selling used resources (Resource Recovery) can also be involved in creating renewable or biodegradable resources (Circular Supplies).

It's clear that the framework simplifies a lot of the complexity of running a company and cannot in and of itself be used as a map for developing a circular business. The framework also doesn't include many of the key elements of a business, such as partnerships, customer channels, customer relationships and segments, or even a value proposition, all of which can be found in Osterwalder's business model canvas[7] and other similar frameworks. Thus, Accenture's framework is not an attempt to illustrate the whole business in all its complexity, but to point out how the business models allow companies to decouple resource use from economic growth. The framework highlights key points along the supply chain where changes in the use of resources can bring about whole new ways of doing business that are both profitable and environmentally sustainable.

The framework was chosen for use in this publication precisely because it cuts through the complexity of business and helps us see more clearly how the case companies have found new ways of using resources more wisely. Below is a more detailed description of each of the five business models.

Circular Supplies: Providing renewable, recyclable, or biodegradable resources

Companies using the Circular Supplies business model provide fully renewable, recyclable, or biodegradable resource inputs for other companies' and organizations' business processes. The business model replaces linear resource approaches with circular ones and phases out the use of scarce resource, such as oil, coal, and plastics. According to Accenture, this model is especially useful for companies that deal with scarce commodities or ones that have a large environmental footprint.[8]

Resource Recovery: Transforming waste into resources

The Resource Recovery business model is based on recovering the embedded value in products and used-up materials through innovative upcycling and recycling techniques and technologies. The aim is not only to recycle products, which will in many cases result in lost value, but to retain or even increase the value of the product. Examples of these techniques includes Cradle-to-Cradle Designs® and industrial symbioses between industrial companies, where waste of one company becomes the input of another. According to Accenture, this model is well suited for companies that produce large volumes of by-product or ones that can effectively reclaim and reprocess waste material from products.[9]

Product Life Extension: Extending the lifetime of products and assets

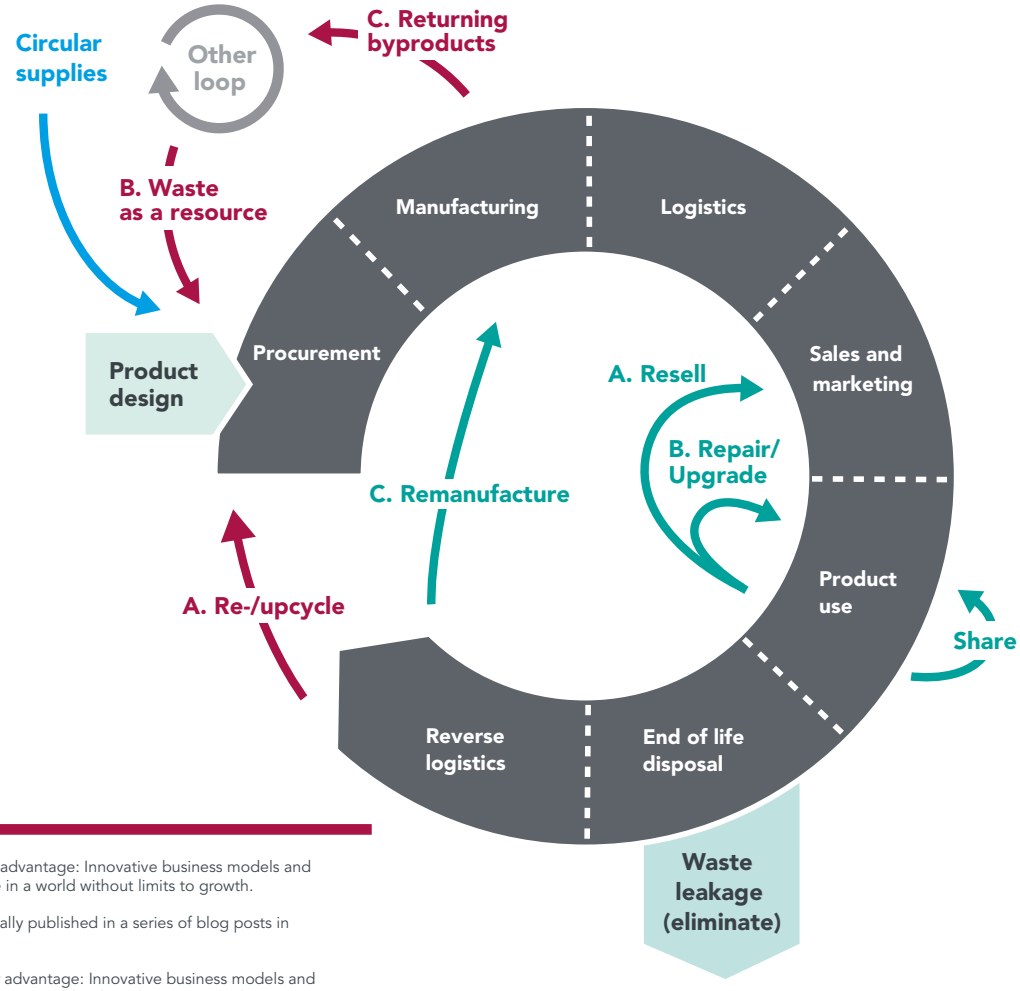
Product Life Extension business model is based on extending the lifecycle of products and assets as long as technically and economically feasible. The model is used by companies that make profit from maintaining or even improving products or product components by repairing, upgrading, remanufacturing or remarketing them. The main purpose of the model is to maintain the economic usefulness of products as long as possible and it's appropriate for most capital-intensive B2B segments and B2C companies in markets where pre-owned products are common.[10]

Sharing Platforms: Sharing excess and underused capacity and resources

A sharing platform is either an online or physical platform that facilitates the sharing of resources and decreases the overcapacity of assets. Companies that have a Sharing Platform business model help their users share resources by creating such a platform. Revenue is often generated based on transaction fees, meaning that the company takes a small amount of the monetary value that is exchanged when using the platform. Aside from helping drastically increase resource utilization, sharing platforms can be very disruptive for business as witnessed by companies like Airbnb, Zipcar, BlaBlaCar and Uber.

Product as a Service: Choosing access over ownership

The Product as a Service (or product service system) business model provides customers an alternative to buying and owning products and assets. Instead of selling products, companies lease them out or provide pay-per-use arrangements that allow customers to gain access to the functionality of products without the burden of ownership. This also incentivizes companies to maintain products and assets as long as possible and shifts the focus from sales volume to product and service performance. According to Accenture, the business model transforms product longevity, reusability, and sharing from factors that decrease sales to drivers of revenue and reduced costs. The model is particularly useful for companies that have products with a high cost of operation and that are more skilled in maintaining their products compared to their customers. Having a skill advantage in maintaining products relative to customers enables companies to make revenue by selling services and capturing end-of-life value from products.[11]



[4] Accenture. (2014). Circular advantage: Innovative business models and technologies to create value in a world without limits to growth.

[5] All of the cases were originally published in a series of blog posts in www.jpovaska.com/blog

[6] Accenture. (2014). Circular advantage: Innovative business models and technologies to create value in a world without limits to growth.

[7] Osterwalder, A. & Pigneur, Y. (2009). Business model generation: a handbook for visionaries, game changers, and challengers.

[8] Accenture. (2014). Circular advantage: Innovative business models and technologies to create value in a world without limits to growth.

[9] Ibid. Pp. 13.

[10] Ibid. Pp. 14.

7 COMPANIES PAVING THE WAY

"At its core, the circular economy is about creating new value chains that decouple growth from the use of scarce and linear resource inputs."

Accenture. (2014). Circular advantage: Innovative business models and technologies to create value in a world without limits to growth.

7.1 PiggyBaggy

Name:	Coreorient Oy / PiggyBaggy (beta)
Founded:	2011
Founders:	Harri Paloheimo and Heikki Waris
Industry:	Multiple industries / ICT-enabled services
Main services:	PiggyBaggy crowdsourced ride-sharing for goods; Smart service system development and consulting
Sustainability:	PiggyBaggy lowers emissions and resource consumption by providing access to already existing mobility, similar to car sharing

Company history

Have you ever needed a particular tool to do some really small task, such as drilling a hole in a wall or tightening a loose screw in a bike, but didn't have that tool available? And then had to either spend a lot of money to buy that tool or a lot of time finding someone who could lend it to you? Or have you ever spent half a day trying to get some mundane task done, such as delivering a book to a library or returning a broken MP3 player back to store? I'm sure you have. And I bet you have some tool that you've only used a few times in your life, such as a power drill, lying around in your basement.

What if instead of owning expensive equipment, you could rent or borrow the tool you need, or pay someone else in your neighborhood to drill the hole for you? And how about if you didn't always have to go to the library to borrow books, but could instead pay someone else to deliver the book, or use a library access point near your house?

What if you could live in a world with less stuff to take care of, less hassle over mundane things, and more time to do the things you really care for?

Moreover, what if in this world you could get things done by using less resources, less or no gasoline, and less energy. You would pay for services, instead of goods, and would have access to functionality and results, instead of having ownership of the damned power drill. And even if you do want to own your power drill, the rest of it sounds pretty good, right?

A Finnish company called Coreorient, is trying to build that world. Founded in 2011 by several ex-Nokia experts, Coreorient is a company that has been involved in developing services and technologies that help people get everyday things done more efficiently while using less time. The company's flagship service, PIGGYBAGGY, is a crowdsourced ride-sharing service for goods. The idea of PiggyBaggy is simple: let's say you need to deliver a broken laptop to an electronics store for a fix-up. Instead of going yourself, you can use PiggBaggy to get someone in the PiggyBaggy community to deliver the laptop for you in return for a small payment. For example, someone might be commuting past your house and the electronics store and could therefore take your laptop on her way to work, giving you more time to do other things.

"When I spent half a day returning a broken microwave back to store, I remember thinking at one point that this doesn't make any sense, and that there has to be a more efficient way to get this done."

According to the CEO of Coreorient, Harri Paloheimo, the idea for crowdsourcing goods-delivery came to him when he was returning a broken microwave back to store. As Paloheimo didn't own a car, the journey to return the microwave involved taking several buses and a subway.

Paloheimo began tinkering with an idea of a crowdsourced ride-sharing service for goods and even tried to get Nokia to collaborate with several existing ride-sharing companies. In the end, however, Paloheimo didn't get

PiggyPaggy

the required support from headquarters and finally he left Nokia in 2012 to lead Coreorient. The company had already been founded officially in 2011 by his colleague, Heikki Waris. Although the men were taking a risky leap from a big corporation to run a small startup, being an entrepreneur felt oddly familiar to Paloheimo: "I had been acting as an intrapreneur at Nokia for years before starting my own business. I had imagined that things would work in a more rational way outside big corporations, but I soon realized that the same pitching theater and power point circus that I was used to continued in the real world."

Power points and pitching weren't the only thing familiar to Paloheimo. He was also very accustomed to facing failure: "They say that you can't have success before going bankrupt a few times. Well, I hadn't gone bankrupt, but I had experienced some big failures in Nokia. For example, having to disband a team you've lead feels a lot like going bankrupt to me."

After initial difficulties, PiggyBaggy began gaining momentum and and by the end of 2015 the service had over 1500 users and between 700 - 800 items delivered so far. Aside from PiggyBaggy, Coreorient is also constantly experimenting with new concept and service development and wants to take part in developing a sharing economy. However, Paloheimo makes it sure that the company wants to avoid becoming similar to Uber: "We want to frame ourselves as a second wave sharing economy startup. The first wave consisted of companies like Uber, which maximized value solely for their end users. We, however, think about sharing economy and our business from a broader perspective. We want to maximize value for all stakeholders and interest groups involved in our business, not just for ourselves or our customers."

Paloheimo explicitly emphasizes that Coreorient wants to take part in developing business models and win-win-win structures that maximize value for both consumers, the company itself, and the society at large. As an example of this, Paloheimo talks about Coreorient's collaboration with the city of Tampere: "We got funding from the European Social Fund to find ways to activate youngsters that are in danger of becoming marginalized. We are now trying to find ways to use crowdsourcing as a medium for involving young people in society and to help them find a job. Although we use crowdsourcing as our main tool, it doesn't necessarily involve PiggyBaggy or ride-sharing", says Paloheimo.

According to Paloheimo, Coreorient has been involved in many similar projects all around Finland. The different experiments have also enabled Coreorient to test different assumptions about the markets and their customers, which helps the company to refine its ideas and services. Armed with this experience, Coreorient is now looking outside Finland to Europe and beyond.

"The experiments we've conducted in Lahti, Jyväskylä, Helsinki, and Tampere have confirmed us that our systems and main concepts work. However, now the time for experiments is over and we need to make decisions about where and with whom we want to go on with this. Finland is getting small for us, and we're potentially looking to expand to Denmark, or maybe

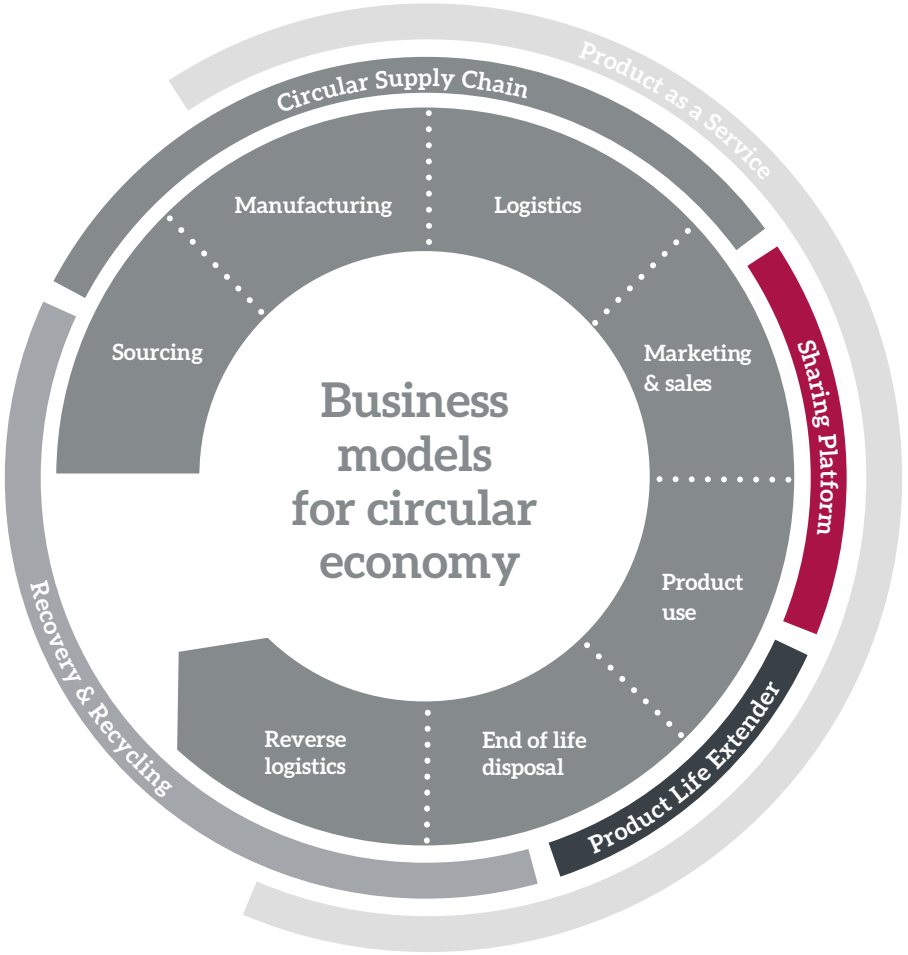
India." By the end of 2015, Coreorient was already looking for partners and collaborators to make this expansion happen, while also continuing to develop their core service concepts.

PiggyBaggy business model: sharing platform

According Accenture's business model framework, PiggyBaggy has a sharing platform business model. A sharing platform is either an online or physical platform that facilitates the sharing of resources and decreases the overcapacity of assets. In PiggyBaggy's case, the excess capacity is people's time and mobility. PiggyBaggy enables individuals and businesses to tap into the existing mobility in order to get items delivered.

PiggyBaggy is an excellent example of the power of IT and the internet to create new ways of organizing human action. What PiggyBaggy actually does is that it uses the internet to provide access for tapping into excess mobility and time – something that would have been near impossible to do 20 or 30 years ago. By creating the PiggyBaggy platform, Coreorient has essentially created a new marketplace where the supply and demand of mobility and time can meet.

For example, I might need a book delivered to the library, but I don't have enough time or I'm otherwise unable to go to the library myself (lack of time and mobility). However, there are hundreds of people going past my house and the library every day, many of whom could pick up my book and return it without making a major detour (overcapacity of time and mobility).



Accenture's (2014) 5 business models for a circular economy.

BUSINESS MODEL:
Sharing platform

VALUE PROPOSITION:
"Ride-sharing for goods. Convenient. Sustainable. Secure."

MAIN CUSTOMERS:
1) People who need help in getting items delivered.
2) Businesses that need low-cost options for purchase delivery.

REVENUE GENERATION LOGIC – *TWO OPTIONS*

Subvention-based: online businesses will pay Piggy-Baggy for using it in purchase delivery.

Transaction-based: end customers of second-hand online marketplaces will pay PiggyBaggy for using it in purchase delivery.

PiggyBaggy allows me to delegate my task to these people, therefore putting the overcapacity of time and mobility into good use.

According to Harri Paloheimo, Coreorient has at least two potential business models for PiggyBaggy. One is based on a subvention model, where PiggyBaggy would essentially enable businesses that do home delivery to lower their costs by using the PiggyBaggy community to deliver customer purchases. Paloheimo elaborates: "In EU and in Finland it costs approximately 15 euros to deliver a product to a customer. At the same time customers are on average only willing to pay 5 euros for the delivery. This means that businesses lose 10 euros on average per every packet delivered to consumers. Our idea is that we could lower these costs and get paid for doing so."

The other option would be to use a transaction fee -based business model, where the customers would be individuals shopping at second-hand marketplaces. Usually in second-hand shops the end users arrange the delivery of items themselves, but by using PiggyBaggy they could use crowdsourcing to get their items delivered. PiggyBaggy would charge the transporter around 15 – 20 per cent of the fee he or she received from the customer.

In both business models PiggyBaggy lowers the costs of transportation while also reducing emissions and pollutions from cars by decreasing the overall number of car trips.

But PiggyBaggy is not the only service that Coreorient has been developing. The company has been experimenting on a concept called smart containers. A smart container is essentially a ship container that is used as an access

point for different services and resources. For example, smart containers in Kalasatama, Helsinki have been equipped with library services, organic food services, recycling services and electric car charge points. Furthermore, the containers can be used as PiggyBaggy delivery points.

How are PiggyBaggy and the Smart Containers connected? Paloheimo shares a vision of a global network of community-run smart service points, connected by crowdsourced goods delivery. According to Paloheimo, this kind of network of services and crowdsourced transportation represents a viable alternative for today's centralized mass manufacturing and transportation.

"We want to maximize value for all stakeholders and interest groups involved in our business, not just for ourselves or our customers."

- Harri Paloheimo

7.2 Pure Waste Textiles

Name:	Pure Waste Textiles
Founded:	2013
Founders:	Hannes Bengs, Anders Bengs, Lauri Köngäs-Eskandari, Jukka Pesola and Maela Mandelli
Industry:	Sustainable fabrics and clothing
Main productss:	Recycled fabrics and clothes
Sustainability:	Pure Waste Textiles provides recycled fabrics and clothes to consumers, other clothing labels, and retailers.

Company history

One of the most important issues related to circular economy is making sure that we use existing resources as efficiently as possible. In fact, waste should be completely designed out from our products and production systems. This is where a company like Pure Waste Textiles can help.

Pure Waste Textiles is a clothing company that produces 100 percent recycled **fabrics** and **clothes.** This is how Pure Waste Textiles works: the company buys leftover materials and fabrics that would normally go to waste from textile manufacturers, sorts the waste by color, tears the fabric apart into raw cotton, spins the cotton into yarns and finally turn the yarns into usable textiles. The end product is a 100 percent recycled and high quality textile that would have normally been disposed as waste. Furthermore, because the company sorts the waste by color, no extra dyeing is required during the process.

Pure Waste Textiles was founded after the owners of the Finnish ecological clothing label, Costo, began searching the markets for cotton that would be 100 percent recycled. The Costo label had previously used surplus materials from other clothing manufacturers in its products, but in 2010, the company wanted to take things up a notch by creating a clothing line out of completely recycled fabrics. Using recycled fabrics would not only be a more ethical choice but would also make more business sense as it would allow the company to provide a steadier stream of supply for its retailer clients. However, according to one of the founders, Hannes Bengs, the task of finding 100 percent recycled fabrics proved difficult:

"Back then we started thinking about using completely recycled textiles and so we began looking for fabrics that would be 100 percent recycled. To our surprise, we couldn't find any suppliers for recycled fabrics. We then got excited and realized that we could start supplying recycled textiles ourselves."

The company set to work straight away and began creating prototypes and test batches, which finally lead to the founding of Pure Waste Textiles in 2013. Potential suppliers were found from China and India, and after long negotiations the company was able to form partnerships with local manufacturers.

"We had Jukka Pesola working with us, who had 15 years of experience from doing trade in Asia. He knew about the local manufacturers, factories and recycling centers. The technology for producing recycled textiles was actually in place, it just hadn't been used for creating 100 percent recycled fabrics before", says Bengs.

Although the company had the benefit of using existing contacts, finding a partner hadn't been easy. The company needed to prove that producing completely recycled textiles would actually work. Bengs elaborates:

"The biggest challenge was that no one wanted to produce anything for us at the beginning. They were mostly afraid that using recycled fabrics would break their machines. After wrestling with this issue for some time, we were able to produce a few working test batches and then things finally took off."

BUSINESS MODEL:
Recovery and Recycling

VALUE PROPOSITION:
We make 100 % recycled, premium quality, and sustainably produced yarns and fabrics.

MAIN CUSTOMERS:
Clothing brands and manufacturers.

REVENUE GENERATION LOGIC:
The business model is based on selling fabrics and yarns to clothing manufacturers and brands. However, in 2015 the company's main cash flow still came from selling t-shirts to companies and individual consumers.

Pure Waste Textiles wants to create a positive change in the clothing industry by making ecologically produced clothes and textiles more available to consumers. According to Bengs, the biggest sustainability issues in the clothing industry are related to quality and time.

"If a company is selling a t-shirt with a 5 or 10 euro price tag, it is cutting costs in either quality, materials or labor. It just isn't possible to produce a quality shirt for 5 euros. Another major issue is the existence of fast fashion. Having a product go out of fashion in six months is simply not sustainable." The main problem behind both issues is that the externalities, such as carbon emissions, destruction of habitat, or social issues that are caused by cheap manufacturing are not paid by the companies themselves but by local communities, national governments, or by future generations. If the full cost of producing a t-shirt or a pair of jeans was paid by the companies, we would most likely have very different clothing prices.

In the future, Pure Waste Textiles wants to form partnerships with big clothing manufacturers and labels, where Pure Waste would provide the fabrics and the manufacturer would do the rest. The company's vision is that when people think of recycled, high quality, and ethical clothing, they will think of Pure Waste Textiles, similar to how people think of Gore Tex when it comes to dry and water-proof clothes.

Today Pure Waste Textiles already has competition in the recycled fabrics markets. For example, Eco-fi, a US company, sells polyester fiber made from post-consumer plastic bottles, while Brentano, also from the US, offers post-consumer recycled polyester fabrics.

Pure Waste Textiles business model: recovery & recycling

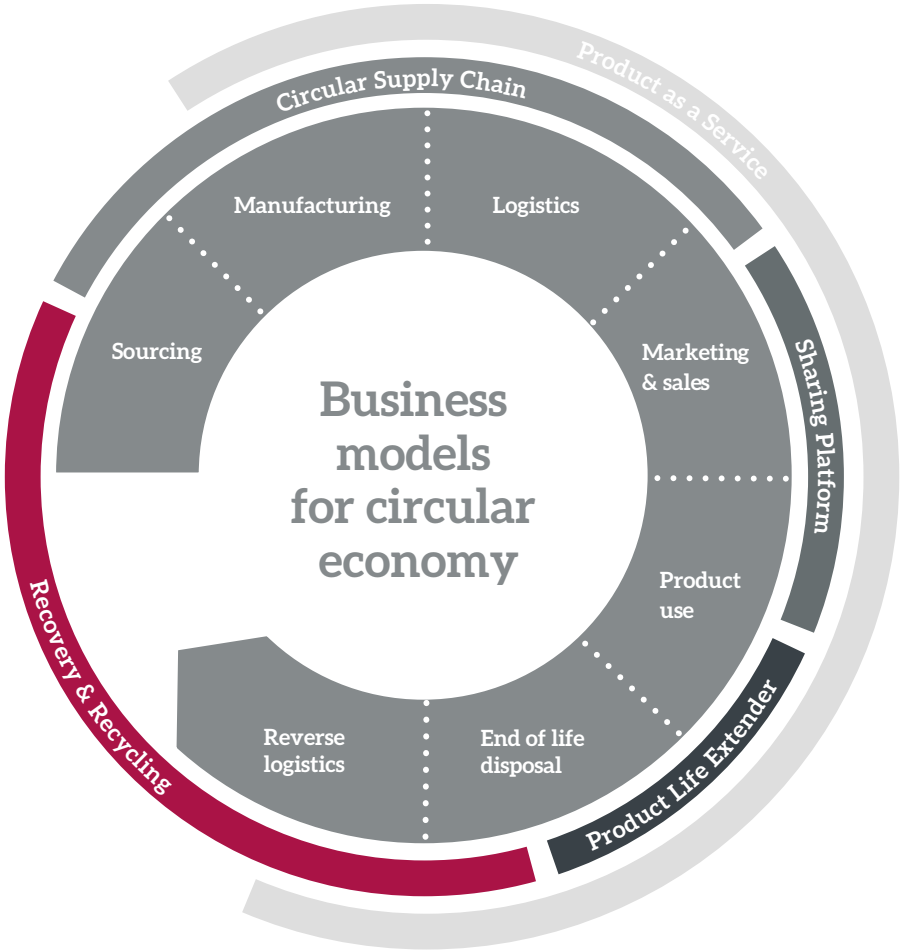
According to Accenture's business model framework, Pure Waste Textiles has a Recovery and Recycling business model. According to Accenture (2014), the model enables companies to eliminate material leakage and is good fit for companies or industries that produce large volumes of by-product. In this case, Pure Waste Textiles helps clothing manufacturers to eliminate waste from the clothing manufacturing process by turning by-

product into usable fabrics. While the manufacturing processes and technologies used to create fabrics might be complex and sophisticated, the business model of Pure Waste Textiles is relatively simple. The company buys by-products from manufacturers, turns them into usable fabrics or clothes, and sells them forward.

What's particularly interesting about Pure Waste Textiles and its business model is the scale of the unused resources that the company is trying to tap into. According to Pure Waste Textiles, 10 – 15 percent of the material from clothing manufacturing is usually wasted, which only a few companies have been able to take advantage of so far. If that 10 – 15 percent could be turned into a profitable business, we could see a great rise in material use efficiency in the clothing industry.

Moreover, while reducing the waste and by-products from industrial processes is an important issue in itself, there are other even bigger improvement opportunities to explore. What if we were able to recycle all clothes not just the pre-consumer fabrics? What industries, what companies, and how many circular economy jobs could we see emerge when we start exploring such opportunities? Pioneering companies like Pure Waste Textiles often pave the way to finding other places where innovative business models and technologies could be used to create circular economy businesses.

And most importantly, while advanced technologies will be needed in the future to create a circular economy, Pure Waste was able to rely on existing technologies in creating its circular business model. Sometimes it's not better technology that we need but better purposes for using our technologies.



Accenture's (2014) 5 business models for a circular economy.

7.3 Sharetribe

Name:	Sharetribe Oy
Founded:	2011
Founders:	Juho Makkonen, Antti Virolainen and Niklas Begley
Industry:	Software
Main services:	A platform for creating online marketplaces
Sustainability:	Sharetribe contributes to the development of a sharing economy by helping its customers build peer-to-peer online marketplaces.

Company history

If you have always wanted to start your own online business but have lacked the technical skills required to build a website, then Sharetribe is for you! Sharetribe is an online platform that has streamlined the creation of peer-to-peer marketplaces. It allows anyone to build a customized website that can be used as a marketplace or as a platform for peer-to-peer sharing - no programming skills needed.

Sharetribe is simple to use, and it only takes a few minutes to get your site running. You can then customize everything from the design and layout of the website to the transaction fees you collect. Because Sharetribe has made the technical side of developing a marketplace much easier, an entrepreneur can now focus on the business development side of things, such as building the customer base and marketing the company's website.

Sharetribe Oy was founded in 2011, but the company has been in development since 2008 when two of the three co-founders, Juho Makkonen (CEO) and Antti Virolainen (COO) were working on a research project in Aalto University.

According to Juho Makkonen, he and Virolainen were originally developing an online sharing platform for students in Aalto University as part of their diploma work. Students using the site were able to share and rent items such as power drills and course books. At first there were no business ambitions involved in the project, but after graduating in 2010, the two founders started to consider building a company around the idea.

"We saw business potential in the concept. At the same time we both wanted to find a job where we could have a positive impact on society. Around that time people started talking about sharing economy, and so we finally decided to start the company in 2011", says Makkonen.

After exploring different concepts and doing a shift in strategy, Sharetribe found a working business model and won the Peloton Summer Camp competition in 2013. By the end of 2015, the company had over 500 customers in more than 40 countries, with the customer base having grown 400 percent in the previous 12 months. Makkonen and his team have grand visions for the company: "We want to do the same to online marketplaces what Wordpress did to the publishing industry. Wordpress opened up its code in 2003 and today one in four websites around the world is run on Wordpress. What we want to do is to make founding a marketplace so cheap and simple that anyone can do it", says Makkonen.

The vision behind Sharetribe is highly connected to the ongoing shift in consumer values from ownership to access, also known as the sharing economy. Put simply, the sharing economy means that people are more willing to borrow, share and rent resources, such as **bags**, **books**, **toys** or **bikes**, instead of owning them. By helping people create marketplaces more easily and cheaply, Sharetribe contributes to this development.

It's important to note that sharing economy doesn't always mean shared profits. While companies like Airbnb, Uber and TaskRabbit have helped democratize commerce, these marketplaces are still owned by a selected few individuals. Makkonen wants to change this.

BUSINESS MODEL:
Sharing platform

VALUE PROPOSITION:
We make it easy and affordable for sharing economy entrepreneurs around the world to create and run their own online marketplace.

MAIN CUSTOMERS:
Sharing economy and lifestyle entrepreneurs

REVENUE GENERATION LOGIC:
Customers pay a monthly fee ranging between $39 - $299. Fee depends on the number of members participating in the marketplace.

"I think having a too centralized ownership is a major problem in the markets. Companies like Uber and Airbnb are all venture capital backed big players who get all the real profits. What I want to see is more local players being able to develop their own marketplaces where the profits stay with the local owners."

Combine Sharetribe with 3D printing, the maker movement and crowdfunding sites such as Indiegogo and Kickstarter, and perhaps we'll soon see the rise of marketplaces where financial assets, production capital and distribution networks are in the hands of the many instead of the chosen few.

Sharetribe business model: sharing platform

According to Accenture's business model framework, Sharetribe has a sharing platform business model. A sharing platform is either an online or physical platform that facilitates the sharing of resources and decreases the overcapacity of assets. In Sharetribe's case the company helps entrepreneurs develop online sharing platforms, i.e. peer-to-peer marketplaces. Sharetribe is an interesting case because the company has the potential for building a highly scalable business model. According to Makkonen, the team is working hard to develop the core service to be as solid as possible with the aim that customers can get excellent service without having to ever contact customer support. To make this happen, the team is also planning on expanding the company's blog so that customers can find as much content and support as they need.

"We want to find more scalable ways of communicating with our customers. Our marketing strategy is based on providing content and information about the same problems our core service aims to solve. We have also had some discussions with potential partners about providing business coaching to our customers", says Makkonen.

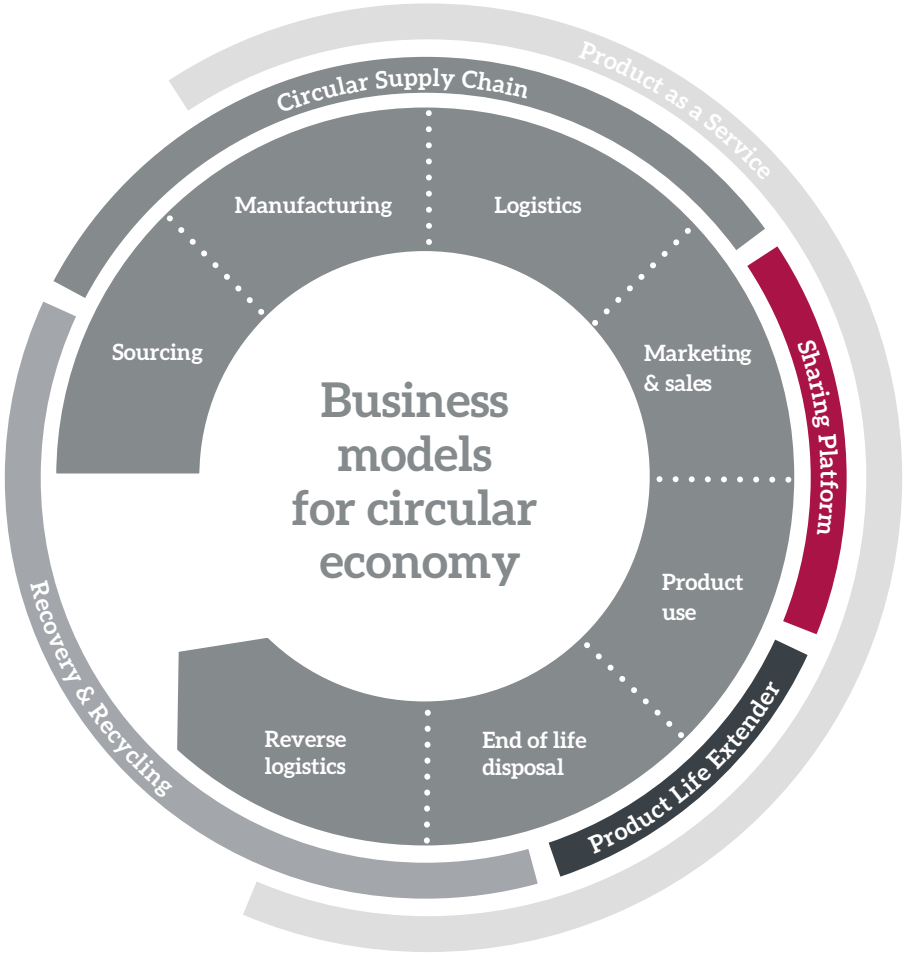
Furthermore, Makkonen shares a vision of a complete partner ecosystem. "We have been thinking about developing an ecosystem of services, where our partners could build on the platform we have developed. We could have our own app store similar to Shopify."

Sharetribe

As with any startup, it's too soon to tell whether Sharetribe will scale up to become a key player in the markets. However, having a scalable and automated core service that can be customized with partner applications can translate into high profit and growth potential.

In the end though, having a startup is not all about making a lot of money or even saving the world for Makkonen. Sharetribe team – founders included – works no more than 40 hours a week, and everyone takes normal annual vacations.

"Me and Antti have put a lot of thought into why we're doing this thing. One important reason was contributing to society, but we also wanted to have a balanced life with the freedom to live the way we find best. I think working around the clock and sacrificing your friends and family defeats the purpose of working in your own company."



Accenture's (2014) 5 business models for a circular economy.

7.4 Kierrätysverkko

Name:	Kierrätysverkko Oy (website only in Finnish)
Founded:	2001
Founders:	Harri Välimäki, Pasi Papunen, Heikki Laakso, Kompassi Oy, Pixoi Oy, Juha Saarinen, Markius Rimon
Industry:	Reuse and recycling IT-services and business concepts
Main services:	Kierrätyskeskus 2020 - modernization of recycling centers
Sustainability:	Kierrätysverkko Oy is driving the transformation towards a circular economy by helping to modernize Finnish recycling centers.

Company history

Kierrätysverkko Oy's mission is to help society use its resources more efficiently. In order to fulfill its mission, Kierrätysverkko Oy developed a prototype of a modern recycling center in 2015 and in the future the company wants to modernise the whole Finnish recycling system. The name 'Kierrätysverkko' reflects the company's mission: in English the name would mean Recycling Network. According to the CEO and one of the founders of Kierrätysverkko Oy, Harri Välimäki, the idea for the company emerged around 5 years ago when he started wondering about why the supply and demand of recycled and reused materials were intersecting so poorly.

"According to studies, the Finnish people use eight billion euros a year on consumer goods, but we get bored with most of that stuff within six months. At the same time over half the population thinks that selling their stuff in second-hand shops, such as Tori.fi or Huuto.net takes too much time and effort. This means that over half of the stuff we buy ends up stashed away in our basements and storage rooms."

Although Välimäki has a background in IT and had little experience in environmental issues, the question got stuck in his mind and he decided that something needed to be done. Founding a company to tackle the issue appeared a viable option, but Välimäki also realized that he couldn't start the venture on his own. "With a long business background I knew right from the start that I shouldn't do anything by myself. Therefore I started gathering a team of professional across different fields of knowledge, including IT, marketing, and business consulting."

Välimäki also felt strongly that Kierrätysverkko needed to be founded on solid societal values and that the company would in fact be a social enterprise. This would mean that under Finnish law the company would be completely transparent about everything, including the ownership structure of the firm. Furthermore, the purpose of Kierrätysverkko Oy wouldn't be to make profits for shareholders, but to maximize societal value. Despite its social mission, the company is not a non-profit-organization and, therefore, works like any other private enterprise. Välimäki also emphasizes that Kierrätysverkko is looking for scalable business solutions to the excess stuff problem.

To make a real impact, Kierrätysverkko Oy set out to no less than transform the Finnish recycling system. The idea was to use digital services to make recycling centers more accessible and easier for the end user. The modern recycling center would be connected online to other centers across the country, which would allow the end users to browse used products also over the internet rather than being stuck with the local center's inventory. However, before the company could begin modernizing the Finnish recycling center network, Kierrätysverkko had to first take a detour and develop two other services: MPankki, a resource sharing platform for the b2b markets, and Mahdoton, an online community for circular economy entrepreneurs and advocates. Välimäki elaborates: "Initially we found lots of support from end users. However, we struggled to find recycling centers that would work with us. This came to us as a surprise, but that's the nature of creating something new, there's always resistance to change."

BUSINESS MODEL:
Sharing platform

VALUE PROPOSITION:
End users: One stop shopping for used goods and one stop recycling.
Society: Putting human and physical resources into more efficient use.

MAIN CUSTOMERS:
1) Individuals who want to get rid of unwanted items.
2) Individuals interested in buying used goods.

REVENUE GENERATION LOGIC:
Kierrätysverkko Oy receives a provision on the goods sold at the recycling center.

After successfully launching MPankki and Mahdoton, the company was finally able to negotiate partnerships with Patina recycling center, the city of Lahti, and two waste management companies: Päijät-Hämeen Jätehuolto Oy and Lassila & Tikanoja Oyj. The partnerships also opened doors for funding from the Ministry of the Environment.

With the help of the new partnerships, Kierrätysverkko Oy began developing a working prototype of the modern recycling center in Patina, Lahti. The prototype, called Kierrätyskeskus 2020, was completed in the spring of 2015, and the company is now refining the model and using it as a reference for finding new partnerships with other municipalities and recycling centers.

Kierrätysverkko business model: sharing platform

According to Accenture's business model framework, KK2020 has a sharing platform business model. A sharing platform is either an online or physical platform that facilitates the sharing of resources and decreases the overcapacity of assets. In Kierrätyskeskus 2020's case the recycling center helps individuals share their excess goods with other people.

There are several interesting aspects about Kierrätyskeskus 2020 worth pointing out. Firstly, in modern recycling there is a clear distinction between reuse and actual recycling. Reuse means that you're using an existing product again for the same purpose it was made for, whereas recycling means that you're taking the product apart for other purposes. According to Välimäki, there is a lot of embedded value in existing products, which is lost if the products are taken apart for recycling. Therefore, in the modern recycling center, products would be reused as often as possible, and recycling or incineration would only remain as a last resort for unwanted items.

Secondly, KK2020 uses a one-stop shop principle, which hides the complexity of recycling behind a single service. According to Välimäki, the idea is that individuals will have one place for all reusable and recyclable goods, instead of having to make multiple stops.

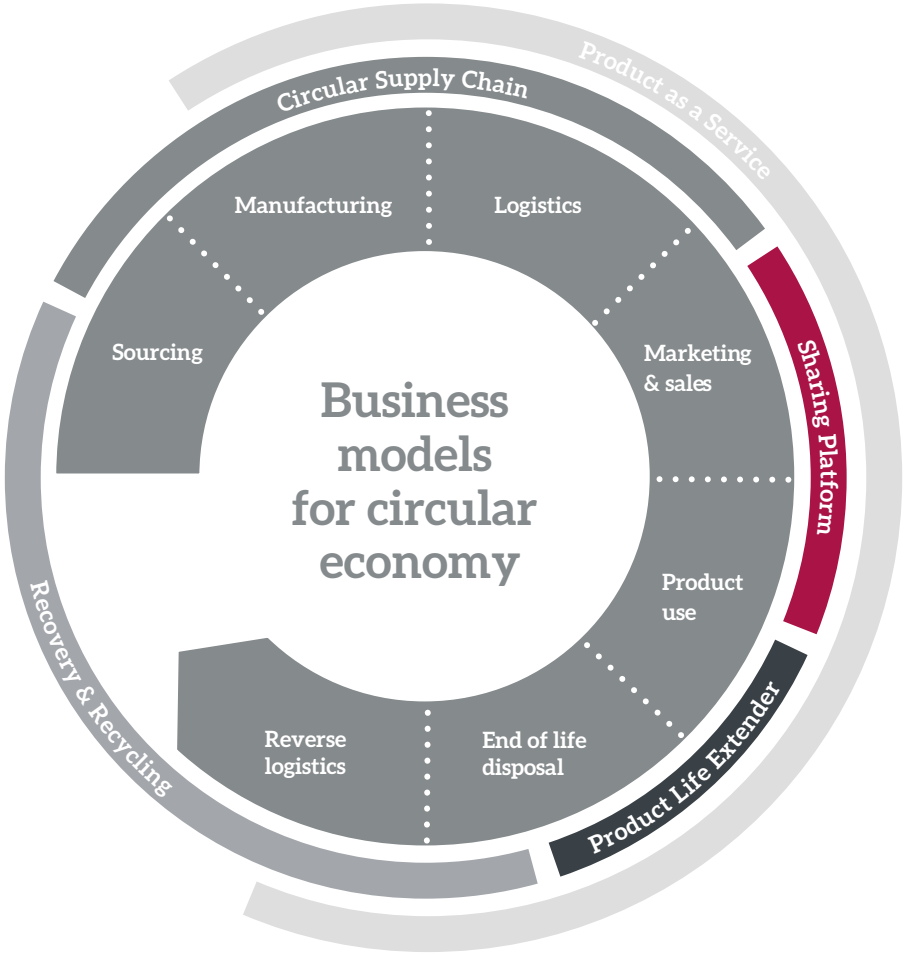
"We want to create a one-stop shop, so that the end user doesn't have to think about where to take their used goods. In the modern recycling center you won't have to know what is and what isn't usable beforehand."

Thirdly, all recycling centers will be networked together to allow users to browse goods from other centers online. This creates larger economies of scale and helps users find a larger selection of recycled goods. However, the purpose is to also allow all recycling centers to operate independently and have their own unique brands. Digitalization serves a clear purpose.

"Creating a network requires the use of digital and online tools, but we also need to reshape all the processes inside the recycling center. We also need partnerships with waste management companies."

Finally, the processes and IT systems that enable networking the centers together are relatively easy to operate, which makes it easier to train staff and to install necessary equipment. Scaling the system can, therefore, be done much faster.

According to Välimäki, Kierrätysverkko Oy is already negotiating new deals about Kierrätyskeskus 2020 with several municipalities. If Kierrätysverkko Oy is successful, all Finnish recycling centers will be using the same technology as the one in Patina. After Finland, Välimäki and Kierrätysverkko Oy plan to go out and sell the idea abroad.



Accenture's (2014) 5 business models for a circular economy.

7.5 Venuu

Name:	Venuu Oy
Founded:	2013
Founders:	Jasu Koponen, Jerome Saarinen, Emil Sågfors
Industry:	Online portals
Main services:	Search engine for finding venues
Sustainability:	Venuu.fi enables event organizers to find and rent unused spaces in cities. By doing so Venuu Oy increases the use rate of existing resources and assets.

Company history

If you have always wanted to arrange a party in an oil silo, now's your chance! Venuu.fi is a Finnish online service that makes it easy for event organizers to find venues and to rent spaces that would be difficult or impossible to find for outside users. Using the service is free for people trying to find a venue, while venue providers pay either a monthly subscription or a commission fee. The available spaces range from unused oil silos to empty office buildings, and from private saunas to coast guard patrol boats. This allows people to arrange events in some really wacky places! For example, check out **this** location.

According to one of the founders and the CEO of Venuu, Jasu Koponen, the idea behind Venuu dates back to 2012, when he and Jerome Saarinen were arranging the Aalto Lunch Beat discos.

"I have always been interested in buildings and spaces. I saw some really inspiring spaces being used in events in Berlin, and I wanted to do something similar in Finland. Many of our ideas had to be canceled, however, because we couldn't find any suitable venues", says Koponen. Because finding venues for the Aalto Lunch Beat was very difficult and time consuming, Koponen and Saarinen eventually got an idea of a website similar to **Airbnb** but for event locations.

"There is a lot of information about potential venues online, but it's all scattered and hard to find. Furthermore, there are no good pictures about the venues, especially when comparing to Airbnb. We wondered why no one had already founded this kind of service and we eventually decided to do it ourselves", Koponen says.

After winning the Aalto University Summer of Startups competition in 2013, the founders launched Venuu.fi in October same year. By 2015 there were over 1300 spaces available for rent in Venuu.fi in Helsinki and Turku, Finland. Koponen and his team have grand visions for Venuu. Aside from Airbnb, Koponen compares Venuu to Amazon.com and wants Venuu to become the marketplace for event organizers. In the future customers would also be able to have other necessary arrangements done via Venuu.fi. For example, if you're planning a wedding, you'd be able to hire a wedding band, a disc jockey, and florists, find accommodations for guests and arrange catering through Venuu.fi.

Currently, there doesn't seem to be any other platform similar to Venuu in Finland. Search results for renting venues in Finland bring up sites like **Saunatilat.fi, Kokouspaikat.com**, and **GoExperience.fi**. However, these websites mostly just list existing service providers, while Venuu.fi allows anyone with a suitable event location to sign their space up for rent. International competitors include a US-based eVenues Inc and a UK-based Hire Space Ltd.

Venuu business model: sharing platform

According to Accenture's business model framework Venuu has a sharing platform business model. A sharing platform is either an online or physical platform that facilitates the sharing of resources and decreases the overcapacity of assets. In Venuu's case the company has developed an online sharing

BUSINESS MODEL:
Sharing platform

VALUE PROPOSITION:
1) End users: Find new and exciting venues quickly and without a hassle.
2) Venue providers: By using Venuu you will reduce your risk and bring in more customers.

MAIN CUSTOMERS:
Venue providers and event organizers

REVENUE GENERATION LOGIC:
Venue providers pay a commission for each time a venue is rented via Venuu.fi.

platform where individuals and companies can put up their vacant spaces for rent as event venues.

What makes Venuu.fi different from other sites that list venue locations is that Venuu allows individuals and companies that are not in the venue business to rent out their spaces for extra income. This is also highly important from a sustainability point of view: By putting existing buildings, boats, and other spaces to new use, the company increases the efficiency of these spaces and decreases the need to construct new buildings.

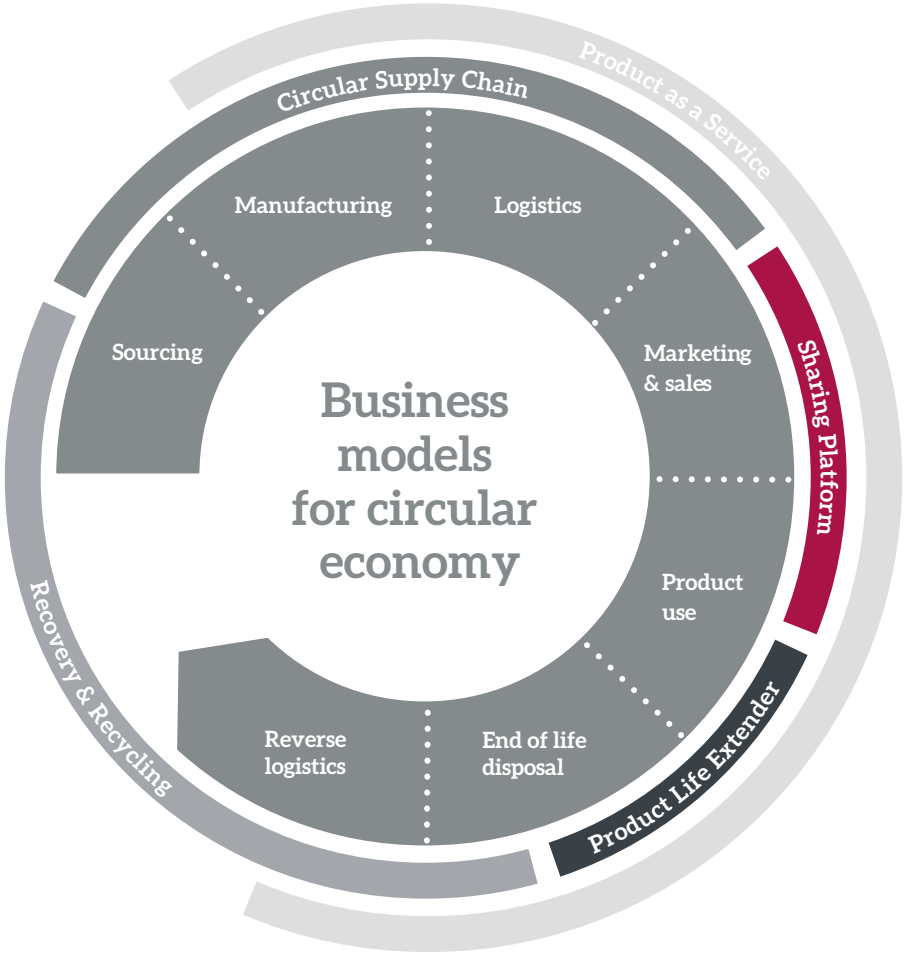
Companies such as Venuu.fi, **Airbnb**, **BlaBlaCar** and **Uber** have all found new uses for already existing assets, which decreases the need to create new ones. Unbuilt office spaces, hotels and cars save up resources, energy and carbon emissions. At the same time these services create new sources of revenue for both individuals and companies.

It is worth noting that Venuu also helps bring people together. When I asked about Venuu's societal mission, Koponen paused for a moment and then gave the following answer:

"Often the best memories people have revolve around different life events. Whether it's your wedding day, or that party where you found your life partner, or that one time at Slush when you finally found an investor for your venture, it's these moments that we often come back to in our memories. If Venuu can help people come together and enjoy life more often instead of staring at their smart phones, I think we have done our job well."

"If Venuu can help people come together and enjoy life more often instead of staring at their smart phones, I think we have done our job well."

- Jasu Koponen



Accenture's (2014) 5 business models for a circular economy.

7.6 RePack

Name:	RePack / Peruste Oy
Founded:	2011
Founders:	Juha Mäkelä, Jonne Hellgren and Petri Piirainen
Industry:	Packaging materials
Main products:	Reusable delivery packages
Sustainability:	Repack produces and leases reusable packaging for companies.

Company history

Repack is a Finnish packaging materials manufacturing company that wants to reduce the amount of trash by introducing an alternative to disposable packaging materials: reusable delivery packages. Furthermore, Repack has developed a truly interesting business model. The company doesn't sell the delivery packages it produces, but rents them out for companies. By renting reusable packages instead of selling disposable ones, the company makes sure that the packages come back and remain in use.

So how does Repack work? Let's say you're buying a new pair of jeans online. Upon purchasing you are presented two options for delivery: regular packaging or Repack. Depending on the store, you will have to pay between 0 – 10 euros extra for using Repack packaging. By choosing Repack, the jeans you bought will then be delivered in a reusable package that you can send back via mail (no stamps needed). After sending the package back you will receive a ten euro coupon for the online store where you bought the jeans.

The idea for Repack was born in 2010 when the three founders of Repack, Juha Mäkelä, Jonne Hellgren and Petri Piirainen, were working on a product development project with Finland's post office. The trio had already founded one company before, Peruste Oy, which works in sustainable product design. One of the founders, Juha Mäkelä, initially came up with the idea and after a year of consideration the three men decided to take action and begun doing market research by contacting online retailers.

According to Jonne Hellgren, these initial contacts were made in a true lean fashion, without having a single product or even a prototype to show to their prospective clients. However, there was enough demand for the idea, and Repack was finally founded in 2011. By the end of 2015, Repack's has a growing customer base of various Finnish retailers, including Globe Hope, Varusteleka, Isku and Martela. According to Hellgren, the company is also planning its expansion to international markets.

RePack business model: product as a service

According to Accenture's business model framework, Repack has a product as a service business model. By transforming a product that was previously disposable into a service, the company has developed a product service system.

A product service system essentially means that a product is used to provide a service, for example when renting a car. Car rentals provide access to the benefits of having a car at your use without the burden of owning one. A product service system can also be a mix of various products and services, but the focus is always in providing a stellar customer experience, not on the products themselves. This shifts the focus from products to understanding and serving the underlying needs of the customer.

BUSINESS MODEL:
Product service system

VALUE PROPOSITION:
Trashless life

CUSTOMERS:
Online stores and retailers mainly in consumer goods business

REVENUE GENERATION LOGIC:
Retailers pay for using Repack's packages on a pay-per-use basis

In Repack's case this means that the company's customers don't actually buy its delivery packages, but instead pay for the benefits of using them. The underlying need is to have goods packaged in a way that they can be delivered to the end user in a reliable and cost-efficient manner. Repack serves this need by providing access to reusable packaging while also relieving its customers from the trash that comes with disposable packaging.

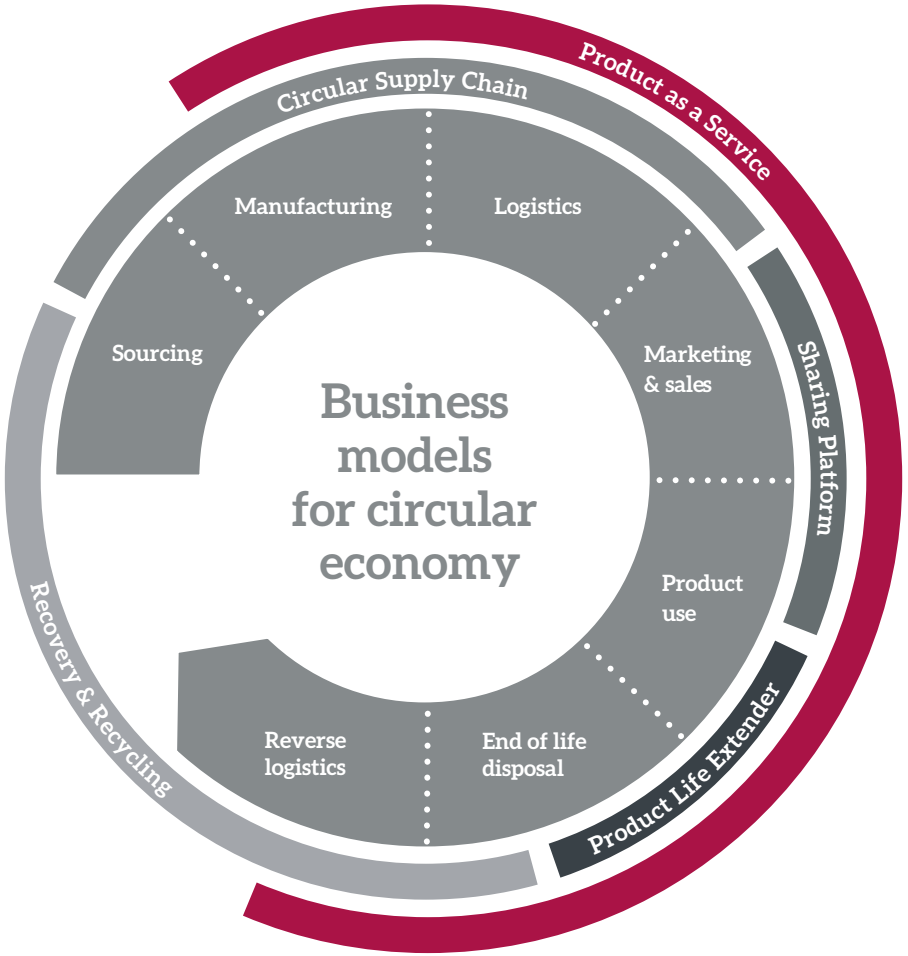
Repack's company clients pay each time they use a Repack delivery package. According to Jonne Hellgren, retailers using Repack packages then decide whether they make the end user pay for using Repack. In most cases the end user pays around 1 – 5 euros but receives a discount coupon she can use in the retailer's online store.

It's also interesting to note how Repack resembles **Ecovative**, a company that produces biodegradable packaging materials, with its quest for reducing the amount of package material trash. While Repack has solved the trash issue by developing reusable delivery packaging, Ecovative has approached the problem by producing and selling biodegradable packaging materials. The two companies therefore represent the two opposite flows of nutrients in the circular economy model - one biological and the other technical.

RePack

"If your RePack looks like it got its ass kicked, it simply means he's doing his job. Destroying trash – trip after trip. And never complaining."

www.repack.fi



Accenture's (2014) 5 business models for a circular economy.

7.7 Nurmi Clothing

Name:	Nurmi Clothing
Founded:	2010
Founder:	Anniina Nurmi
Industry:	Clothing
Main products:	Sustainable clothing + a clothing rental service
Sustainability:	Nurmi Clothing uses fabrics and production processes that are less harmful to the environment compared to most other clothing companies. Nurmi Clothing is also experimenting with a clothing rental service.

Company history

Note: Nurmi Clothing online store and the clothing library have been on a break since December 2015. According to the founder Anniina Nurmi, the company is taking a time-out to develop a new Nurmi 2.0 concept. More information can be found on Nurmi Clothing website and here: https://www.youtube.com/watch?v=zgfIXXHP8S4.

What would you do if you realized that you're studying a field that's mostly dominated by unsustainable and unethical practices? Anniina Nurmi answered this question by founding her own company with the aim of helping transform the clothing industry. The result was Nurmi Clothing, a Finnish sustainable clothing company operating in Lahti, Finland.

According to Nurmi, the story of Nurmi Clothing began in 2006 when she was studying to become a fashion designer at the Lahti Institute of Design. Being a conscientious consumer was important to Nurmi, and realizing that the fashion industry wasn't the most sustainable industry out there, she began questioning her career choice: "There was this deep inner conflict within me about becoming a fashion designer while knowing that the fashion industry is anything but sustainable."

However, after reading the book Eternally yours, timely design about sustainable industrial design, Nurmi realized that the principles introduced in the book could also be applied to fashion design. Nurmi graduated in 2007 and started working for L-Fashion group as a clothing designer while continuing to search information about sustainable design from books and online. "Back then there was not much literature about sustainable clothing design, so I had to gather bits of information from here and there. At the same time I was learning a lot about how a large clothing business operates, thanks to my position at L-Fashion Group. At around 2008 I started writing about my insights about sustainability in my **blog**."

Nurmi also launched an online store in 2008, selling sustainable clothes made by other manufacturers. The idea for establishing her own label came to her a year later.

"I began thinking: I write about and sell ecological clothing made by other brands, but I am a fashion designer by profession. So why not establish my own brand? This was in 2009 and I finally started selling clothes under my own label in 2010, slowly adding new garments and growing my collection." As her collection grew, Nurmi was also able to see how sustainability practices have developed and improved over the years.

"In 2008 there were very few sustainable clothing labels in Finland and sustainable clothes were hardly ever discussed in popular media. Today things are much better, but there's also a lot more greenwashing. The clothing industry is still a long ways to go from becoming truly sustainable, especially because clothing manufacturing is so complex."

Nurmi makes sure that her clothes are as ecologically and ethically produced as possible in two main ways. Firstly, she uses materials that have less burden

BUSINESS MODEL:
Product service system (Nurmi Clothing Library)

VALUE PROPOSITION:
Clothes and accessories where the nordic tradition of minimalism and long-lasting design goes hand in hand with true sustainability

MAIN CUSTOMERS:
People who want responsibly and ecologically produced clothing.

NURMI CLOTHING LIBRARY REVENUE-GENERATION LOGIC:
Subscribers pay a membership fee on a monthly or on a semi-annual basis.

on the environment, including hemp, organic cotton, recycled fibers and upcycled deadstock fabrics. She also makes sure that the fabrics she uses are high-quality and the best fit for the purpose. Secondly, Nurmi chooses suppliers she knows thoroughly and who are willing to be transparent about their own supply chains. All Nurmi suppliers can be found **here.**

Furthermore, being less bad is not enough for Nurmi. She is also interested in finding circular economy practices for her business and wants to transform the industry from a linear, take-make-waste model to a circular one. Nurmi is currently searching for ways to implement service design and reuse and remanufacturing principles in her business. One concrete result was the launch of the Nurmi **clothing library** in 2014. Today Nurmi Clothing is still a small player in the markets, and Nurmi wants to grow the business in the future. By growing her business Nurmi believes she can have a positive impact on society.

Nurmi Cothing business model: product as a service

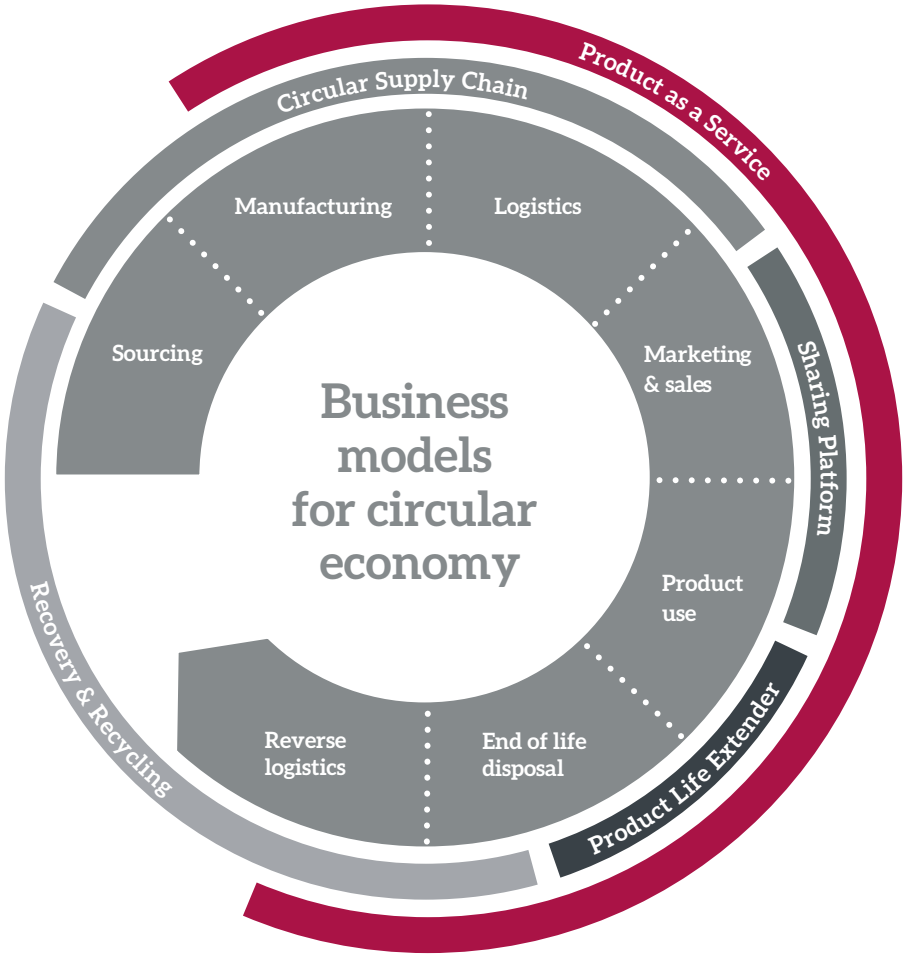
Although most of Nurmi Clothing's revenue still comes from traditional sale of products, Nurmi Clothing also has a clothing library that allows people to rent clothes instead of buying them. Based on the below framework from Accenture, Nurmi Clothing Library has a product service system business model.

When a product is used as a service, the idea is to provide access to the benefits of using the product while retaining the burden of owning the product within the company. In Nurmi Clothing Library's case, customers pay for getting access to clothes instead of owning them. You can rent two clothes for two weeks at a time for a membership fee of 30 euros per month, which makes 7,5 euros per garment each month. It's also possible to have a six-month membership for 120 euros, making each garment cost only 5 euros per month.

According to Nurmi, the library is still at an experimental phase, and she aims to develop and expand the concept in the future. Nurmi also believes that developing the rental collection into a major source of revenue requires changes in consumer behavior.

"For clothing rental to work we need to see a major shift in consumer behavior. Consumers are now used to buying clothes dirt cheap from a big retail outlet and then throwing them in the trash can once they're bored with them. We at Nurmi Clothing want to create positive experiences about renting clothes and make it as easy and affordable as possible for customers."

Nurmi Clothing Library is not alone in testing the clothing rental waters. Many new services are currently being introduced in the markets, including **Rent the Runway** for women's dresses, **The Mr. Collection** for men's clothes, **The Ms. Collection** for women's clothes, and **Bag Borrow or Steal** for bags and accessories. Trying to find similar services in Finland is trickier, though. There are only a couple of clothing rentals in operation and they have difficult opening hours. Nevertheless, check out **Vaatepuu** in Järvenpää, and **Vaaterekki** in Riihimäki and Helsinki



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Afterword

Jukka-Pekka Ovaska

In this publication we have briefly discussed the idea and potential of circular economy with seven cases that hopefully made the concept of decoupling resource consumption from economic growth more concrete. We are not, however, proposing that having a circular business model guarantees economic success or a sustainable and resilient organization. What we have instead tried to demonstrate is that economic growth and a prospering environment are not necessarily at odds, but that we can (and should) in fact have both. We also wanted to show that businesses are already adopting revenue models and business systems that make environmentally sustainable growth possible.

So what comes next?

For the companies discussed in this book, this is only the beginning, and the entrepreneurs undoubtedly have many challenges ahead that will test their business models. But it's also only a start for the rest of us – we have a long road ahead before we can declare that our societies are no longer dependent on growing resource consumption. However, I choose to be an optimist and believe that creating a circular economy is a goal that we can reach in time. The EU Commission's circular economy package, the 2015 Paris Agreement on climate change and the dozens of large companies that are now asserting the need for more strict environmental regulations are clear signs that a necessary shift in mind sets has already taken place. Now we need more examples of how things can be done differently to enable companies and the society at large to make the necessary revolution.

As for myself, I will keep on exploring and learning about sustainable business systems and models in my studies in the Creative Sustainability master's degree program in Aalto University. I will also continue to share what I've learned in my blog www.jpovaska.com/blog. Thanks for reading and let's continue to design sustainable systems!

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