European Commission

Business Innovation Observatory

Workplace Innovation

Collaborative and Open Organisational Setups and Management Practices

Case study 11

Enterprise and Industry

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Table of Contents

1. Executive summary

Novel organisational setups and management practices refer to the organisational innovations that facilitate company interaction with its environment. Currently there is a clear trend in organisational setups towards collaborative roles, stakeholder involvement and openness. This can take the form of either: an outside-in perspective, with companies that display high degrees of stakeholder involvement; an inside-out approach, in the form of external exploitation of company ideas in different markets; or a coupled process, linking both approaches by creating partnerships with complementary stakeholders with a high degree of collaboration.

The companies in this case study show that novel organisational setups and management practices are able to carve out new markets and lead to the creation of new jobs. Due to the facilitative nature of organisational innovations, direct employment emanating from the novel setups and management practices deployed by case companies is limited (none of the case companies employs over 200 individuals). The innovative capacity these novel organisational setups facilitate, however, has already resulted in the development of disruptive innovations that reshape existing markets and jobs, and create new ones.

Case companies have the potential to improve existing products, services and processes by: finding new combinations and applications for existing technological solutions; pushing the development and commercialisation of platform technologies in different application markets; or better incorporating the perspectives of stakeholders into the development of new innovations.

In this case study, the companies that developed the organisational innovation were also the ones that adopted it. Market uptake from a client's perspective therefore equals the decision to develop and implement/use the innovation. From a client's perspective key drivers for uptake equate to the realised competitive advantages, generated as a result of the innovation. Competitive advantages include beneficial business traits or superior business functions, which make these companies more valuable from a customer's perspective.

Challenges that might negatively influence the decision to adopt novel organisation setups can originate from internal and external sources. Internal factors largely correspond to the type of organisational setup that is to be adopted. There is not much that policy makers can do to take away these challenges, as these issues are inherently linked to the type of organisation.

In the external environment there are several macro-economic trends that drive the implementation of organisational setups and management practices, including a shift to stakeholder involvement and the increasing complexity of technology. More specifically, case companies indicate that access to existing RDI infrastructures and actors that are willing to partner and participate are key. This is linked to the open character of companies in this case study and their dependence on stakeholders to facilitate certain business functions.

Access to finance can form a serious obstacle to success. Depending on the type of setup deployed, companies require the presence of specific types of funding at specific intervals. Employee-owned businesses require significant self-financing, whereas open innovation accelerators require significant investments in early stages, in order to build up a network of solution providers. In contrast, companies deploying a spin-off model require external capital for commercialisation, each time they want to bring an application to market.

In order to facilitate the presence of these key drivers, it is recommended that European policy makers develop measures that: ensure the relevant and timely availability of funding; restart national innovation programmes; support network building amongst technology start-ups and SMEs; maintain, expand and make existing RDI infrastructure more accessible for SMEs and start-ups; ensure the sufficient supply of an appropriately skilled workforce; and simplify employment procedures for non-EU residents in EU Member States.

2. Organisational setups that focus on collaborative roles and openness

The topic of this case study, "novel organisational setups and management practices" is about how companies can increase their productivity and innovative capacity through organisational innovation. As a particular organisational setup often functions best with a particular management practice and vice versa, in this case study we do not observe them in isolation. Both aspects are represented in the term organisational innovation, which can also include elements like new business models. In this case study we adopt the OECD's definition of "organisational innovation" below.

An **organisational innovation** is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations. Innovations in workplace organisation involve the implementation of new methods for distributing responsibilities and decision making among employees for the division of work within and between firm activities (and organisational units), as well as new concepts for the structuring of activities, such as the integration of different business activities. An example of an organisational innovation in workplace organisation is the first implementation of an organisational model that gives the firm's employees greater autonomy in decision making and encourages them to contribute their ideas[1].

Clearly the topic of organisational innovation is not novel in itself. Scientists and practitioners have already for decades occupied themselves with designing new organisational archetypes and implementing these in suitable environments. The organisational archetype of the machine bureaucracy and its centralised management practice, widely used in most mass production firms (at least during the previous century) is well known[2]. Since then, managers have implemented a variety of structural, organisational innovations which have helped their companies to become more efficient and/or effective in their particular business environment. The rise of new organisational structures, and corresponding management practices, can be roughly divided in different phases of thought leadership[3]. Of course, not all types of business and industries have adapted to the type of organisations designed over the years.

The first era of thought leadership on organisational innovation roughly took place between 1850 and 1970 and was characterised by self-contained organisational designs. Companies with self-contained designs had clear boundaries between themselves and customers and suppliers. Examples of these designs are the functional, divisional and matrix organisation.

The second era of thought leadership, taking place between the start of the eighties and ended somewhere halfway in the nineties, was characterised by horizontal organisational designs with team- and process-based emphasis. Such organisations tend to deploy cross-functional teams that for instance are responsible for new product development from start until end.

The third era of thought leadership started somewhere around 1995 and is characterised by companies opening up their organisational boundaries. Underlying trends for this wave of organisational designs were the rise of communication technology and globalisation that opened-up new (labour) markets. Examples of these designs are the hollow organisation, revolving around outsourcing of organisational processes and effectively applied by for instance Nike; the modular organisation, centred around outsourcing of product components and effectively deployed by for instance many automobile manufacturers; and the virtual organisation, based on temporary joint ventures between different companies to achieve a specific goal, for instance deployed by Philips and Sony for the development of Blu-Ray.

Whereas the old way of managing was to defend the companies boundaries and oversee its performance by emphasising operational roles, currently there is a clear trend in organisational setups towards collaborative roles and openness. This fits with trends within the European economy, which is becoming more and more service-oriented. Innovation in services is often "soft", rather than primarily technological, mainly involving organisational and relational changes within supply-chains or networks[4]. Furthermore, this also fits with open innovation trends[5] and phenomena like co-creation[6], which both require organisational structures without strict boundaries and that are open to changing roles and increased involvement of stakeholders such as employees, customers and suppliers. Although some forms of this, like the cooperative model, already exist for decades in certain industry (e.g. agriculture) they are currently also spreading to other industries like financial services, marketing and healthcare.

Considering the above, in this case study we focus on companies that have implemented an organisational innovation that facilitates either an outside-in approach in the form of a high degree of stakeholder involvement; an inside-out approach in the form of external exploitation of ideas in different markets; or a coupled process, linking both approaches by creating partnerships with complementary stakeholders with a high degree of collaboration.

3. Socio-Economic Relevance

Due to increasing complexity of technology and society, more and more elements or aspects influencing the development of an innovation, or successful business performance for that matter, occur outside a company's organisational boundaries. Companies need to influence, be aware of, or adjust to these aspects. In an attempt to produce innovations and be successful in such an environment, there is a drive towards the implementation of novel organisational setups and management practices that facilitate an outside-in or inside-out approach.

3.1. The market potential of novel organisational setups and management practices

The impact of the type of innovation described in this case study is transversal, as it is not limited to a particular industry or market. The companies that were sampled do not show much overlap with regards to the markets they supply. It is therefore hard to quantify the market potential of the novel organisational setups and management practices trend. The versatile applicability of this innovation type does, however, highlight its potential to generate value in nearly all industries.

Against this conceptual backdrop, and as a result of the lack of transversal market data, this section of the case-study has drawn on data collected from interviews and examples found in literature and practice. This data presents and details the market potential of the trend based on, i.e. how novel organisational setups facilitate certain desired business function; the manner in which deployment of these setups improves existing products, services and process that create new jobs and markets; and the competitive advantage that companies deploying novel organisational establish. A summary of the companies interviewed for this case study is provided in Table 1.

As illustrated in Table 1, novel organisational setups and management practices are applied to a variety of industries, including: ICT and automation, processing technology, consultancy and financial services. As a result of these novel setups these companies are able to develop innovations for customers in various industries, including: oil and gas, automotive, healthcare, pharmaceuticals, renewable energy, textile processing and food and beverages.

Table 1: Overview of the company cases referred to in this case study

Company	Location	Business innovation	Success signals
Finext	NL	Organisational innovation: Finext consists of an employee – owned network of financial services companies. The network is made up out of several autonomous teams that are responsible for their own P&L account. Team members collaboratively make all decisions, including for instance the height of salaries. There is no supra-team management layer. Different team members fulfil different management roles and collaborate with individuals in other teams sharing that role. The company operates in the financial services industry.	Finext's employees were able to purchase the company for approximately EUR 4 million in 2011. Since the buyout, the company's culture was restored to its former glory. Finext has been profitable since its independence and has generated much exposure due to its unconventional management practices.
Almende	NL	Organisational innovation: Almende is a research-based organisation with a spin-off network for commercialisation of business opportunities. This organisational setup allows the core organisation to fully focus on research and exploratory activities. The spin-offs are aimed at external exploitation of business ideas in collaboration with market parties. The company develops ICT platforms for self-organising networks. These platforms can be applied to multiple industries, e.g. logistics or healthcare.	The last 8 years, the company has maintained its employee workforce at around 30 individuals. The company has set up 4 spin-offs and participates in another 3. An additional 100 individuals are employed at these 7 spin-offs. Almende was able to perform break-even in the last several years, based on research subsidies and fees from its spin-offs. 4 spin-offs are already generating profit. The other 3 are still in the early stages.

Company	Location	Business innovation	Success signals
BlueThink	IT	Organisational innovation: BlueThink deploys an open innovation structure with an extensive network of "solver" companies that provide support in delivering innovative and tailored business solutions for customers (seekers). BlueThink's organisational setup allows the company to act as a broker for ideas and technologies. The company mainly develops innovations for the oil and gas industry, automotive and food and beverages industry.	The company currently employs ten employees. It has a solver network of over 280 companies, six customers and three on-going projects. The expected revenue for 2013 is EUR 750,000.
FeyeCon	NL	Organisational innovation: FeyeCon, just like Almende, has successfully put structural ambidexterity into practice. The relatively small research and technology-based mother company is focused on further developing its platform technology (based on liquefied CO2), through contract research for its customers. Once a market opportunity for application of the technology in a certain market is spotted, a part of the organisation is spun-off. Subsequently, this spin-off pursues external exploitation of the application, often in collaboration with a launch customer. Amongst others, the company has developed innovations for the food processing, pharmaceutical and textile processing industries.	The core company currently employs approximately 25 persons and successfully conducts contract research for customers in a variety of industries. Furthermore, it generates substantial income through licenses distributed to its spin-offs. At the moment 10 different spin-offs are operated, of which most already generate profit.
Ponoko	NZ	Organisational innovation: Ponoko is an online marketplace where creators, digital fabricators, materials suppliers and buyers meet to make a wide variety of products, based innovative fabrication methods such as 3D-printing, laser cutting, and CNC routing. Ponoko's online platform allows designers, fabricators, material suppliers and buyers to find one another and co-create in a manner that is efficient, transparent and mutually profitable. Effectively this platform allows the company to completely open-up its organisational boundaries to both suppliers and customers. A large number of flexible business cases have been made to work based on the Ponoko concept of digital transportation of design files and local fabrication of items in production hubs throughout the world.	Ponoko is a company that was founded in New Zealand at the beginning of 2008 by Mr. David ten Have and Mr. Derek Elley. The innovation was market-ready within 10 months and has in the previous four years managed to spread to four continents, featuring manufacturing hubs in various countries, and allowing new businesses to be founded and made profitable based on the Ponoko concept. The innovation already generates profit.
Lego	DK	Organisational innovation: Lego is a great example of a traditional company that has made its own co-creation. Since Lego's last patent ran out in 1988 it has had to survive the competition of copycat firms while contending for children's attention with the growing market for video games and consoles. However, the internet has allowed the company to reach its loyal customer base in a new way. With the online Lego Factory system, they can design and order their own products using a downloaded virtual design environment. Consumers can also browse and buy products created by other customers. To launch the concept Lego ran a competition using its Lego Factory system to allow consumers to enter their own product designs. After sifting through 200,000 entries, Lego chose 10 designs to create three new products to launch into the mass market. The firm paid a 5% royalty to the winners.	Co-creation is now an essential part of the Legocompany. It makes use of a giant Lego-community, more than 2.5 million members. With these members, they develop formal relationships. Consumers can upload their own designs with the best Lego into production. The best ones receive 5% royalty on sales. Per week, more than 3,000 are designs uploaded and the system is used by eight million people a month. Designs are better every year. Thanks to the internet, adults can see that there are also other adults who love Lego. They used to think that they were the only ones and kept the secret. The participation of adults in this community has therefore exploded.

The companies in this case show that the type of novel organisational setups and management practices described here, are suitable for application in both small and medium enterprises. There are also ample examples in literature and practice that proof this trend's potential for adding value in large corporations.

Finext's model of an employee owned network organisations works well in the company's particular setting, as the company has been generating profit for several consecutive years. The model has also proven its worth for large corporations like Semco Partners (founded by Ricardo Semler, whose approach formed the inspiration for Finext's

founders), a Brazilian conglomerate of companies focusing on the service and industrial sectors. The conglomerate employs over 3,000 people and showed double digits growth for several consecutive years[7]. Its founder Ricardo Semler is considered the founding father of industrial democracy and employee empowerment.

A large European company successfully deploying a similar model is the Mondragon Corporation, a Spanish cooperative employing over 80,000 persons of whom 85% are a member (owner). This co-operative showed revenues of over EUR 14 billion in 2012 and invested 9% of its resources in R&D last year[8].

In general stakeholder owned companies make a valuable contribution to Europe's economy. Especially in the UK, Italy, Spain and the Scandinavian countries, co-operatives (companies in which various stakeholders are a member) make up a significant share of the economy in terms of revenue (see Table 2).

Table 2: Representation of co-operatives in several national economies in the EEA[9]

Country	Number of co-operatives	Employees	Annual turnover € (millions)
United Kingdom	24	102,007	21,105
Italy	114	56,951	13,140
Finland	22	42,142	11,460
Spain	170	50,951	8,436
Denmark	418	35,000	5,888
Sweden	42	8,366	4,463
Norway	117	22,500	4,047

The model deployed by Almende and FeyeCon is working well for them. This approach shows many signs of what in literature is referred to as a structurally ambidextrous organisation. Both companies have successfully developed multiple spin-offs which pursue external exploitation of ideas in different markets (inside-out approach). They both break-even with their research and development centred core organisations. Thanks to their organisational setups, both companies generate a substantial amount of innovations in relation to their company size (respectively 30 and 40 individuals). Such a setup can, however, also be successfully deployed within large organisations.

Literature shows various examples of large corporations that **successfully split up their exploitative and explorative business functions** in different business units, eventually resulting in both increased performance and development of disruptive innovation. Examples include **Ciba Vision**, part of Novartis, and **USA Today's** online newspaper division[10].

Companies like BlueThink facilitate open innovation processes, a trend that is currently widely applied in various industries. It follows logically that intermediaries like BlueThink that facilitating open innovation processes, in the presence of strong existing technology infrastructure and complex technological problems, have great potential.

The number of **Open Innovation Accelerators** (**OIAs),** intermediary companies facilitating open innovation, is significant. Most OIAs aim to develop disruptive innovations by combining existing technologies to new application domains. Examples include IDEO [11], InnoCentive [12] and NineSigma[13].

A self-assessment amongst OIAs shows that the market volume for these types of companies is currently approximately **EUR 2.7 billion**. It is expected that this volume will double within the next two years, to a total of **EUR 5.5 billion in 2015**[14]. OIAs cover approximately 80% of the open innovation market. BlueThink's setup, delivering business innovations to its customers through its extensive "solver network", is rather unique. Most other OIAs do not function through such an extensive and formal network (with contractual partnerships) of solver companies.

3.2. Facilitating business traits and functions through organisational setups and management practices

The companies in this case study are all relatively mature, with only BlueThink having been founded in the last ten years. All companies are, however, still actively operating their organisational innovation and constantly fine-tuning it. These particular innovations have not been developed as a result of policy measures, but rather as a result of founder philosophy, environmental demands or sheer necessity.

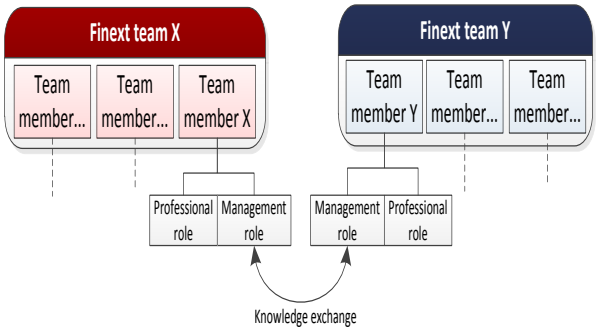
The four companies included in this case study have all developed an organisational innovation to either tackle an organisational problem or exploit a market opportunity. The innovations differ with regards to nature, reach and impact. They all, however, show flexible or open organisational boundaries and high levels of stakeholder involvement, in order to generate a certain desirable business trait (e.g. entrepreneurial culture) or business function (exploitation).

Restoring a company's former culture – Finext originally was founded as a financial services company, based on the principles and ideas of Ricardo Semler (in 1999). The company's "collaborative" culture disappeared when it was acquired by Ordina in 2004. Finext's employees decided to collaboratively purchase the subsidiary from Ordina, in order to restore its former culture.

Innovative solution 1 - Finext has a unique organisational structure. The company functions as a network of seven market oriented teams. Each team has its own profit and loss statement and all decision making is done collaboratively by all team members (including setting wages etc.). There is no formal management hierarchy. Each team member has a professional role and he/she can claim a management role (natural leadership). Between teams, employees with the same management roles transfer knowledge and experience, in order to better perform their management tasks. The company is owned, for 75%, by its employees. The remaining 25% is controlled by the Finext holding, in which employees also have a share. This way, all employees are incentivised to increase the overall performance of the company.

The company generates revenues by providing financial services to its customers. The above described organisational setup allows the organisation to be of more value to its customers, resulting in better service quality and customer relations.

A graphical display of the cross-fertilisation between the same management roles in different autonomous Finext teams. Within each autonomous team, team members can claim specific management roles. There is no supra-team management to coordinate synergies. Interaction between Finext teams has to occur naturally.



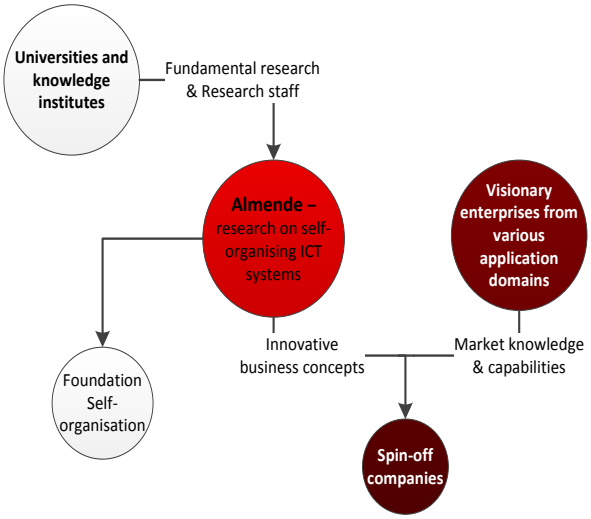
Establishing a relatively small company that can make a **translation from fundamental research to innovative business solutions**, and commercialise these in diverging markets.

Innovative solution 2 - Almende, the core organisation, has no direct customers and focuses on conducting research and exploring ideas. This provides employees with the freedom required to gain new insights. Graduates, PhDs and Postdocs (current mainly used) can conduct their own research within the organisation as long as there is some overlap with the company's direction. The company constantly evaluates whether produces research results might be used in the market. If an opportunity is spotted, market partners are sought to commercialise the opportunity in a spin-off. The company focuses on core platform technologies, facilitating applications in diverging markets.

Until now, Almende has set up four spin-offs itself and is participating in three others. It has also launched the Self-organisation foundation, which promotes the principle of self-organisation facilitated by ICT. This means that structure and order emerge without centralised coordination.

The company generates revenues by acquiring and executing European research grants. Furthermore, its receives research fees from its spin-offs, which in return can commercialise technology developed by Almende.

A figure displaying the Almende's "network" for developing innovations. Almende is positioned at a crossroads between of academic research, innovation, development and industry.

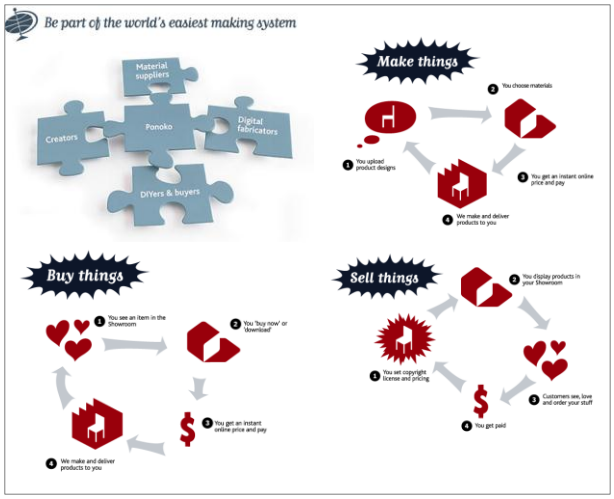


Exchanging manufacturing designs and sharing manufacturing equipment - It is expensive to manufacture objects in small volume, because there is little possibility for economies of scale. Especially for small organisations or creative individuals, gaining access to manufacturing equipment and those able to operate it can prove to be difficult. The Ponoko concept allows a global, virtual community to connect and exchange manufacturing designs, use of manufacturing equipment and operating skills, materials and consumer requests, with limited overhead and transportation costs.

Innovative solution 5 - Within the Ponoko concept, the designer, anywhere in the world, delivers his design digitally in a manner that allows the manufacturer to start producing with limited overhead and lead-time cost. The manufacturer, anywhere in the world, can simply turn on his machine, fill it with material, and start producing according to the design. The entire production is priced and paid for upfront. This allows for a lower cost for small production volumes than outside of the Ponoko concept, and closer to buyers. This is especially attractive for people that for instance want to have a prototype built, and for hobbyists and small business owners that are in the market for the manufacturing of small volumes of sellable objects.

Governmental research labs also use the production serviced through Ponoko. Some fabricators now produce several thousand objects per month, selling them through different channels. Also, art designers have discovered the Ponoko concept and use it to distribute their art work across the globe, by having their designs manufactured in local manufacturing hubs of Ponoko close to their buyer.

A figure displaying the four main types of contributors to the ponoko platform and business model.



Re-focusing a firm's core activities - In 2002, Lego was dangerously close to bankruptcy. The company had diversified broadly and was licensing the brandname for all sorts of merchandise, was developing themeparks and running Lego airways in Europe. In order to become profitable again, the company had to regain focus on its core activities, producing and selling toys.

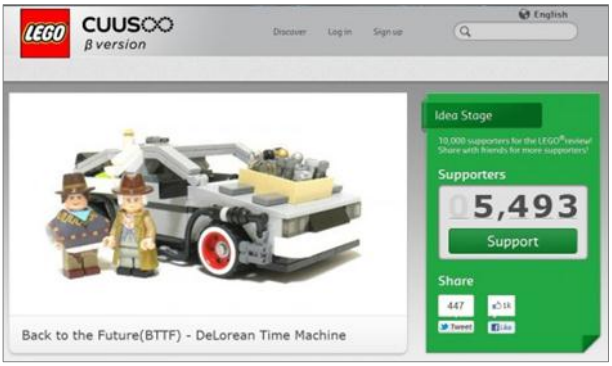
Innovative solution 6 - The move that reinstated Lego as one of the world's leading toy manufacturers was a shift towards co-creation. In the late 1990's, the company started listening to the adult Lego communities and created a forum specifically for direct communication between its members and Lego's own employees. As a result of this the company came up with a software tool that users could use to co-create Lego designs.

In 2005, a group of technically skilled Lego enthousiasts began to "hack" (tap into) the company's software tool for developing new products, called Lego Factory. Lego Factory gave its users to develop and send in their own construct designs to Lego. The enthousiast found the software was not functioning properly and associated prices were unrealisticly high.

The hackers altered the software to bring down the cost and reduce wasted bricks. Oddly enough, Lego went along with their changes. The hackers were welcomed to the company's HQ in Denmark to help them further alter the software. Ever since that point, Lego has worked towards tapping into its underlying fan base for ideas.

In 2008, the company launched its Lego CUSSOO website. Users can log on, upload and idea for a model, and then the general community votes on it.

A figure displaying a page from the Cuusoo website, with a user's design and the amount of supporters it has already acquired. When the number of supporters hits 10,000 the design is taken into mainstream production.

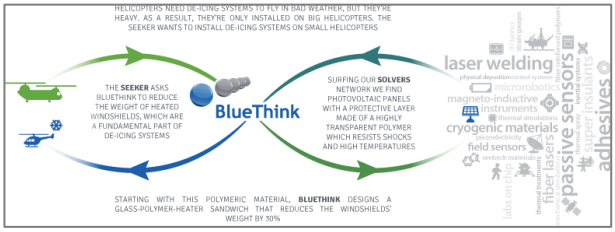


There is a need for unconventional, **out-of-the-box solutions to technological business problem**s, especially amongst large corporations.

Innovative solution 3 - BlueThink's founders were already active in technology consulting before they founded the company. They sought a new way of delivering value to customers. BlueThink has created a network of over 280 "solver" companies by which they are supplied with creative technology based solutions to "seeker" problems. Solver companies are often technology based start-ups, a large share of which are located in the same region as BlueThink (Turin and Milan). Seeker companies are usually large corporates active in the oil and gas, automotive or food and beverage industry. When BlueThink identifies a match between a seeker's problem and a solver's technology, all three parties are brought together in order to develop a tailored solution.

BlueThink generates revenue through its service provision to customers. Seeker companies pay a fee to BlueThink for problem definition, identifying and selecting suitable solver companies and technologies, and facilitating the whole process of generating a tailorised solution.

A graphical respresentation of how BlueThink creates a match between a "seeker" (customer) and a company in their "solver" network. After having established the match, all three parties work together to come to a tailored solution.

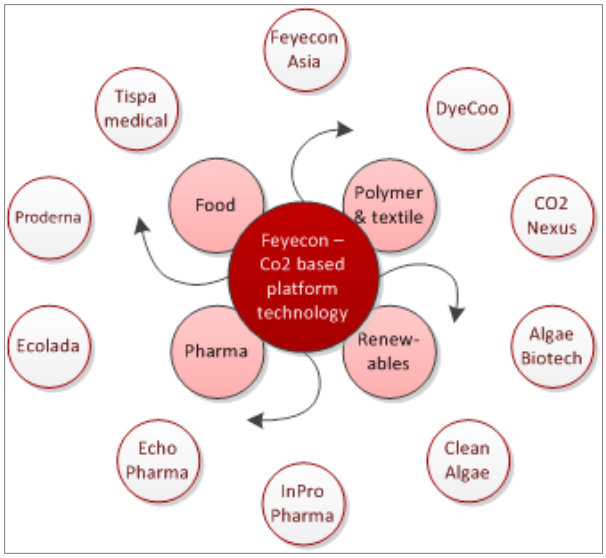


Lack of infrastructure to translate research into an innovation – FeyeCon's founder had developed a key platform technology during his PhD research but did not have the commercial capacity and infrastructure to turn it into an innovation.

Innovative solution 4 - FeyeCon's founder developed a platform technology for liquid CO2 applications. After spinning-off from university, he set up a research oriented firm to further develop the platform technology. Through contract research for customers he build-up a network of potential launch customers in a large variety of industries. When the company (together with a customer) identifies a market opportunity in the form of an application of its platform technology, it allows a part of the firm to spin-off to become fully focused on the up scaling and commercialisation of the application. This is often done in close collaboration with the customer company, as FeyeCon lacks the respective market knowledge. This allows FeyeCon itself to remain focused on research and development of its core, platform technology.

Feyecon has several sources of revenue. The company, just like Almende, acquires and executes European research grants. Furthermore, it conducts contract research for its customers, in exchange for a fee. Finally, the company's numerous spin-offs pay a licensing fee for use of Feyecon's intellectual property rights.

A figure displaying the 4 main departments from which FeyeCon is conducting contract research for its customers, and the spin-offs that were created to commercialise its CO2 platform technology.



3.3. Three ways to improve existing products, services and processes that create new jobs and markets

The companies in our case study show that novel organisational setups and management practices are able to carve out new markets and thus create new jobs. Because of the facilitative nature of organisational innovations, direct employment as a result of the novel setups and management practices deployed by case companies is limited (none of the case companies employs over 200 individuals). Indirect creation of new markets and jobs, as a result of disruptive innovations that might potentially be created by case companies, is substantial.

Especially the technology centred companies in this case: Almende, FeyeCon and BlueThink have the potential to be involved in the creation of completely new markets or disruption of existing markets. FeyeCon's platform technology, liquifying Co2, allows many industries to take a completely new look at their standard processes based on for instance water as a process fluid. These companies have the potential to improve existing products, services and processes by:

"Incumbent firms in the oil and gas industry are in need of out-side the box solutions to their technical challenges. Their extensive internal R&D departments are superior at incremental improvement, but due to their classical appraach to problem solving, lack the perspective to come-up with radical innovations."
– BlueThink

- **Combining existing technological solutions** available within the R&D&I infrastructure of one industry with challenges and problems in a completely different industry (open innovation processes); or
- **Pushing the development of a platform technology** (e.g. self-organising ICT-systems or liquefied CO2 technology), and identifying and pursuing commercialisation of the same core technology in different application markets.
- **Better incorporating the perspectives of stakeholders** into the development of new innovations, resulting in increased uptake and value added of innovations amongst its users.

3.4. Realising competitive advantages through novel organisational setups and management practices

All case companies derive either beneficial business traits or superior business functions from their particular organisational setup and/or management practice. Companies that adopt novel organisational setups and management practices, as defined in this case study, are able to better leverage collaborative potential in their

environment. Furthermore, it empowers these companies to come up with new business functions, or better focus on existing ones.

Finext, through its employee owned and team based setup, was able to **restore its culture** after the company became independent from Ordina. Employee ownership did not only enable this independence, but also results **in a more proactive, committed and entrepreneurial workforce**. The Finext network of teams is able to successfully **operate without an overarching management layer**. This facilitates bottom-up processes and customer orientation. Finally, the workforce's entrepreneurial spirit is illustrated by the fact **that five new spin-offs** have sprouted from the Finext network.

Almende focuses on its core business, which is doing research and coming up with new ideas and business solutions. **The company is not limited by customer desires or wishes**, because it does not directly interact with clients. This provides a competitive advantage in that the company **can fully focus on explorative capacities without being limited** by commercialisation goals, governance structures (which universities and large corporates face) or business as usual. **The required exploitative capacities are found in the market through partnerships** with visionary enterprises in various application domains. The moment a team of employees starts to commercialise a technological idea or concept (in collaboration with a market party), it is spun-off from the core organisation into a stand-alone company. This way both Almende and the spin-off are not restricted by each other's aims or goals. Because Almende focuses on platform technology, there are ample opportunities for synergies between different spin-offs.

FeyeCon operates an organisational setup that is similar to that of Almende. The company also boasts **superior explorative and exploitative business functions** by focusing on either one. **The focus is realised by structurally separating both functions**. The core organisation is responsible for exploration of new ideas and applications for its platform technology (liquefied CO2), and mainly conducts research. The exploitative capacity is fulfilled by spin-offs, often in collaboration with market parties that are **fully dedicated to their own application markets**. This way FeyeCon, a company with only 30 employees, has already been able to develop disruptive innovations for multiple markets (e.g. textile, pharmaceuticals, renewables and food processing).

BlueThink's innovative manner of creating value for its customers is based on **a three step approach**. In the first step, the company identifies and contacts a potential solver company (supplier of technological ideas and solutions) and signs a non-disclosure agreement. This in order to gain insight into the available technology. The second step entails a more general agreement in which both parties establish on which domains the available technology and ideas can be of value to BlueThink's customers. The third step is conducted when BlueThink identifies a match between the solver's technology and a customer problem. BlueThink then has all parties sign a specific agreement for execution of the respective project. The company's approach is different to that of its competitors in that **BlueThink actively participates in tailoring the solver's technology to the seeker's demands**. In a standard project, **BlueThink takes a technical solution from one market and modifies it to solve a problem from a customer in a different market**: illustrated by the example displayed in the picture above, in which a protective layer from the photovoltaic industry is applied for de-icing systems in aviation. **BlueThink is able to insource innovative capacity,** by using and combining ideas and technologies from its solver network in novel ways.

3.5. Client perspectives and challenges related to the uptake of organisational innovations

An organisational innovation is the implementation of a new organisational method in a firm's business practice, workplace organisation or external relations. The nature of this type of innovation makes it difficult to sell on a market. Restructuring projects executed by consultancy firms within large corporations could be an example of how an organisational innovation could be sold on the market. The interviewed companies in this case developed and implemented their organisational innovation themselves, and do not offer the setup itself for sale. **Case companies are therefore both the developer/supplier of the innovation and at the same time a client for the innovation.**

There is, however, a client perspective to these novel organisational setups and management practices. Although customers of the case companies do not take up the innovation under discussion themselves, they do benefit from its results.

Finext's employee-owned organisational setup facilitates an entrepreneurial and committed workforce. Finext's customers experience service provision by employees that are willing to put more effort into projects, are directly incentivised to build up long-term relations, and are all individually accountable for overall project results. **It literally is as if the customer is always addressed by the company's owner**.

BlueThink's whole value proposition is centred on its organisational setup. All value added to customers can therefore be considered a direct result of the organisational

innovation. Customers are provided with novel insights into technological problems there internal R&D departments are unable to solve.

FeyeCon and **Almende**'s organisational setups allow customers to take an active role in the development and commercialisation of novel applications for their respective markets. The model allows customers to partner with the development team of a novel technology and in some cases even take a stake in the ownership of the innovation, by taking part in a spin-off company.

The **Ponoko** concept allows designers, manufacturers and material suppliers to collaborate in new ways, across huge geographical barriers, with very limited lead-time and overhead, in unusually small volumes, and very close to buyers. This has allowed many small designers to expand their business, tapping into new markets abroad. Also, it has allowed small manufacturing companies to increase their order portfolio and organise it in a manner that fits their operations. Moreover, buyers of small volumes of items pay far less compared to ordering small volumes from large manufacturing companies, if these companies woul accepted their order at all.

Finally, for most organisational innovations, the company that develops the innovation is also the only one that will use it. Uptake therefore equals the decision to develop and implement/use the innovation. Key drivers for uptake from a client's perspective therefore largely equal the realised competitive advantages described in the previous section. Challenges or requirements that, if not met, might negatively influence this decision can originate from internal and external sources. Challenges that might arise from the company's internal context largely correspond with the type of organisational setup that is to be adopted.

For an employee-owned network of autonomous teams, especially the will, mind-set, skills and available funds amongst the existing workforce can form challenges. In an employee-owned business like Finext, a large share of the employees has to be willing and able to take up and conduct management roles. Furthermore, their mind-set has to be entrepreneurial, because there is no boss telling them what to do. Finally, a large share of the employees has to be able to collectively bring up the funds required for either purchasing or founding the company.

For a model that facilitates open innovation it is particularly important to have a workforce that is experienced and trained to work with a wide spectrum of technologies. This has to be combined with entrepreneurial capabilities, because customers expect new combinations of existing problems and solutions. Moreover, applicability of this model is largely limited to consultancy firms.

A **model as deployed by FeyeCon and Almende works best for organisations that already have a strong research orientation**, as this facilitates commercialisation in a later stadium (not vice versa). Substantial investments in commercial capabilities might prove a challenge, as these have to be either sold or structured as separate organisations. Splitting up business functions might result in resistance amongst the workforce. Moreover, it requires a workforce that is willing to be mobile, as parts of the organisation are constantly spun-out into the market. Finally, experience and research skills on development of a certain platform technology are desirable. Platform technologies facilitate many different applications, while simultaneously providing opportunities for creating synergy between the different application domains.

There is not much that policy makers can do to take away these challenges. Most are inherently linked to the type of organisation. Environmental obstacles and drivers for uptake (or usage) of the organisational innovations in this case will be discussed in the next chapter.

4. Drivers and obstacles for novel organisational setups

There are several macro trends driving the implementation of organisational setups and management practices that are focused on stakeholder involvement, and the creation of networks and partnerships in the company's environment.

First of all, in the recent decade there has been a **shift in corporate philosophy from creating shareholder value to creating stakeholder value**. It is believed that stakeholder involvement results in more sustainable business solutions, opposed to short-term, shareholder value oriented practices. Pressing global matters like environmental friendliness demand a stakeholder perspective. Novel organisational setups with open organisational structures facilitate the inflow from stakeholders into the organisation and outflow from company aspects into the environment. Moreover, the flat hierarchical structures that some novel organisations deploy, allow ideas and new directions to be developed bottom-up.

Second, **rising complexity of technology demands collaboration between companies specialised in various aspects of a technology.** Moreover, to come up with radical and disruptive innovations instead of incremental improvements, a company's R&D department might be forced to in-source external ideas or through collaboration with external parties combine different technologies into new applications. Organisational setups that facilitate such processes within an organisation or make it easier for a company to interact with its environment will be driven by this trend.

The earlier mentioned shift towards a service economy, especially in many European countries, and associated service innovation often involve organisational and relational changes within supply-chains or networks. In a service economy, highly educated knowledge workers are the core of the working force. These knowledge workers require a different approach to management, in order to reach their full potential. Organisational setups and management practices that empower these workers, like for instance employee owned businesses with high levels of autonomy, perform better in such a setting.

This theory coincides with the **network-centric configuration of organisations**. In these types of organisations, knowledge workers are able to create and leverage information to increase competitive advantage through the collaboration of small self-directed teams. For this to work, an organisation has to resign its use of a single form of organisations structure and has to move to an adaptive hybrid form that allows multiple organisational setups to coexist within one company[15].

Furthermore, employees are not the only stakeholders that get more and more involved with the way businesses make decisions and pursue innovations. The trend of **open innovation** requires an organisational structure in which the boundary between a firm and its surrounding environment is more porous, enabling innovation to move easily between the two. In this new model of open innovation, a company commercialises both its own ideas as well as ideas from other firms and pursues ways to bring its in-house ideas to market by deploying pathways outside its current practices[16]. This organisational model complies well with trends like **co-creation,** as open innovation strongly focuses on peer-production through communities, consumers, lead users, knowledge institutes and other stakeholders[17].

Other drivers and obstacles that were mentioned during the interviews are discussed in the paragraphs below.

4.1. Access to financing for novel organisational setups can form both a driver or obstacle to success

There is **no clear identifiable pattern for access to financing as either an obstacle or driver for novel organisational setups**. For companies like Almende and FeyeCon that develop innovations using a spin-off model, the challenge of finding access to the required capital has to be tackled every time a new spin-off is created. Both companies depended on founder capital and (European) research subsidies for setting up their core business activity, doing research. **FeyeCon** also conducts contract research. This way the company comes into contact with potential launch customers and creates a revenue stream. Spin-off companies of FeyeCon pay licensing fees on IPR to the mother company. For commercialisation of technology in spin-offs FeyeCon gains support from market partners to raise the required capital.

Almende does not have any direct customers (no contract research at the moment). Almende almost completely focuses on European research subsidies and grants, because it is too much hindered by lack of investments and subsidies for research in the Netherlands. Almende currently participates in seven different projects funded under the 7th Framework Programme (FP7), a European wide funding

programme set up by the European Commission. Together with the research fees that its spin-offs pay to the mother company, Almende can break-even on its business conduct. The company will be able to continue its core conduct in the future (there is no aim to grow in terms of number of employees). For the commercialisation of innovations, Almende is dependent on market partners to raise the required capital. This is, however, not sufficient to reach the spin-offs' full potential with regards to growth. Scarce funding sources for start-ups in the Netherlands are an obstacle to growth, particularly in international markets. Furthermore, Almende would like to conduct more contract research in order gain additional income and get into touch with market parties. In the Netherlands, however, private and public investment in research and innovation are too limited. This is another obstacle.

To set up **Finext** in its current form, the company depended on its employees to raise the required capital. Collaboratively they assembled the required funds to make their company independent from its owner Ordina. Since its independence, the company has not required external funding from Venture Capital funds, business angels or other investors (apart from regular bank loans and credits).

Bluethink mostly relied on founder capital for its starting up. The company is struggling to acquire bank loans due to the financial crisis, which has hit Italy especially hard. Luckily for Bluethink, the nature of its value proposition means that the innovation is only developed after a customer has been contracted. However, contracting customers and building and maintaining the solver network required funding too.

4.2. The availability of actors that are willing to partner is a key driver for success of novel organisational setups

The availability of actors that are willing to partner and get involved is a key driver. All companies or organisational parts focus on a specific part of the process or function, and require collaboration with other parties to develop innovations or successfully conduct certain business functions. Especially the companies that deploy a form of structural ambidexterity, with a strict division between exploration and exploitation of ideas, are depending on partnerships for the latter to be realised. **The level on which partnership are established differs for each company.**

For **Finext**, partnering mainly happens **on an intra-organisational level**. All employees that join the company are offered to become an owner (or partner for that matter) of the organisation. This has several beneficial effects, amongst others a more proactive workforce, better motivated employees, more commitment to the overall company's performance and more entrepreneurial activity. Furthermore, the autonomous teams and its members have to partner with each other in order to share ideas and experience on professional and management roles. There is no management layer that facilitates this process.

Bluethink has established a **solver network** of over 280 start-ups and SMEs through which it is supplied with novel ideas and new applications for existing technology. The company spend the first year (2010) on building the solver network. BlueThink approached companies through Italy and the rest of Europe that were in possession of interesting technologies. No customers were approached during this period. The company has established contractual partnerships with many of its solvers. When Bluethink perceives an opportunity for a match between the problem of a seeker and technical solution of a solver, the company brings all parties together to develop a tailored solution. The company is currently, however, struggling to find customers to partner with. In Italy there are not many potential customers, large corporations that invest heavily into R&D, for BlueThink. Furthermore, decisions by large corporation during these innovation trajectories take substantial time, meaning that BlueThink needs several customers to be constantly active.

FeyeCon is a mainly research and development oriented company. For up scaling activities, commercialisation of ideas and technology, and market related knowledge **it almost always has to develop partnerships with customer companies**. Sometimes FeyeCon established joint ventures with these customer companies and/or these companies function as a lead customer. FeyeCon often lacks the commercial and market capacities to decently commercialise innovations.

Almende has a pure focus on research and often lacks the financial power or market capabilities to commercialise its technology itself. It therefore requires **partnerships with visionary enterprises from various application domains to develop innovations**. Moreover, partnerships with universities help the company to acquire researchers and fundamental research results. The partnerships allow the company to fully focus on its exploratory business function. The exploitative business function is outsourced to partners.

4.3. Creation of synergies between different actors is a key challenge novel organisational setups have to tackle

For all companies interviewed in this case study**, the creation of synergies between different groups of actors is a key challenge**. These organisational setups

derive a large part of their added value from this cross-fertilisation. Generating cross-fertilisation can be challenging, because groups of actors speak different languages, have different thought logics, serve different purposes and have different interests.

For **Finext** it is particularly important that **cross-fertilisation between the similar management roles** of different business units is realized. Because there is no actual management layer governing the coordination of the different teams, synergies have to be realized through inter-team collaboration. Individuals with similar management role formally and informally meet to discuss issues and share ideas. At the same time, the company wants its separate autonomous teams not to limit each other in their business conduct.

FeyeCon aims to **maintain synergies between the various spin-offs** that pursue commercialisation on their own markets. There are ample opportunities for synergies, because all spin-offs commercialise technology that is based on a platform technology based on liquefied CO2. When an application of the technology is spun-off from the mother company, there are usually several FeyeCon employees that start operating the spin-off. FeyeCon's culture and interests are therefore usually preserved in the beginning. When the spin-off matures and attracts more new employees it is harder to maintain the culture and transfer of knowledge and ideas between both organisations.

BlueThink's whole **business model is centred on creating synergies between different actor groups.** The company acts as a broker of ideas and technology between seekers (customers) and its solver network. The creation of synergy between the customer's R&D department, the seeker's technology offering and BlueThink's own capability to tailor technology solutions, is key to deliver out-of-box ideas that are relevant to customers. These out-of-the box ideas are direly needed by BlueThink's customers, which mainly originate from the oil and gas industry. Large corporations in the oil and gas industry have resource-rich, dedicated R&D departments. These departments are very well equipped to develop incremental improvements to existing processes and instruments, using a classical approach. BlueThink, through its solver network, is able to provide a "lateral point of view" (by looking into other technology markets), which the customer is not able to see. This results in novel and unconventional solutions.

Almende, through **its position at a crossroads** of fundamental research from universities and market knowledge and capabilities from stakeholders in its network, is able to create synergies. These synergies take the form of ICT based platform technologies ("semi-products") that can be tailored to specific market demands.

4.4. Technology centred, novel organisational setups rely on existing R&D&I infrastructures for developing innovations

Depending on the type of service or product delivered, companies deploying novel organisational setups effectively **make use of existing R&D&I infrastructure**. The companies in our sample that supply technology based solutions, either participate in an incubator programme, have partnerships with universities and other technology companies. Presence of an existing R&D&I infrastructure is a clear driver for the technology based companies in our case because they know how to leverage external ideas and results and can form a bridge between for instance university research and business demands.

BlueThink participates in an **incubator programme of the University of Turin** and as a result of this receives support in the form of consultation and access to professional networks. Moreover, due to the company's nature as a sort of technology broker, its survival is dependent upon the technology and solutions provided by the existing R&D&I infrastructure in its "solver network" been able to include some of its fellow incubators start-ups in the "solver network".

FeyeCon's platform technology is the result of a PhD study conducted by its founder at the Technical University of Delft. **Since spinning off from the university**, the company has maintained close ties with its R&D&I infrastructure. A part of the company's laboratory is still located at the university, and there is transfer of knowledge and technology between both organisations.

Almende has a **history of collaborating with universities and other research institutes**. It has done so in several European research grants. The company is mainly research oriented and can therefore easily collaborate with both universities, based on their shared activities, and commercial companies, based on its experience in setting up spin-offs.

Finext's value proposition is not so much based on technology. The company is therefore **less reliant on existing RDI infrastructures.**

The national legal systems for **intellectual property rights** (IPR), differ in their importance for the various types of organisational setups. Only the technology centred organisation, BlueThink, Feyecon and Almende are directly affected by intellectual property rights. The role of IPR to each organisation, however, differs. **Almende's** founder indicates that they not make use of patents and other IPR whatsoever. All developed software is distributed as open source software, meaning that there are freely accessible to

the public (with some restrictions/requirements for redistribution). In their perspective, the current IPR system does not offer any advantages for them, as the required disclosure of key technical knowledge would too much empower competitors. Furthermore, the company expects that due to the substantial financial requirements for suing infringement in court, against a financially strong opponent they would not stand a chance anyway. **Feyecon** on the other hand does apply for patents for most of it's key technical inventions. Indeed, royalties paid by spin-offs for licenses to these patents form a significant part of their revenue mechanism. Finally, **BlueThink** does not apply for IPR itself, but often gets involved with them through either its seekers or solvers. As a result of applying the technology of a solver in a seeker company, licensing agreements between both are common practice. Moreover, as all three parties often have to fully understand full functioning of the applied technology, use of non-disclosure agreements is business as usual. To conclude, there is no clearly identifiable pattern for IPR as either a barrier or driver for these type of business models.

4.5. Availability of skilled and motivated workforce is key to the success of novel organisational setups

Almende operates from a complex that houses 25 to 30 employees. The company grows by pushing innovative business ideas with commercial potential into a spin-off. The employees that worked on this idea usually follow the concept into the new organisation. This opens-up slots for new researchers that can conduct research on new application fields. This model does, however, require a stable inflow of researcher that is willing to operate in such a dynamic environment. The company is an attractive employer for people that are interested in technology, because it is more practically oriented than a university and not so short-term oriented as a pure commercial company. It is, however, hard to arrange all administrative requirements for its highly international workforce. There is no direct lack of skilled workers, but getting skilled foreigners over to the Netherlands for employment remains an administrative obstacle.

FeyeCon shows similar demands to its workforce. With a main focus on research the company houses many employees with a technically oriented PhD degree. Mobility of employees is rather high due to the spin-off structure. The company's core workforce also consists of many international employees. There are no concrete obstacles, however, in attracting the required workforce.

Finext's organisational setup and management practice is centred on employee ownership. Furthermore, management roles have to be conducted by team members besides their normal professional tasks. This requires availability of a workforce that is willing to take a risk and is motivated to take responsibility. Being an owner of the firm also implies that if the firm's value drop, employee investments also devaluate. Finext values employees that, beside their profession, are also able and willing to occasionally show leadership and perform management roles.

Bluethink is still a relatively young company only employing 10 individuals at the moment. For the supply of an educated workforce the company relies on its strategic geographical location near the universities of Turin and Milan. Technologically educated workers are mainly supplied by the University of Turin, whereas the University of Milan focuses more on the education of a commercial workforce.

5. Policy recommendations

As novel organisational setups and management practices are not directly linked to a particular market or industry, identified policy recommendations are rather general. Furthermore, the number of improvements that can be made in the regulatory domain are limited. Case companies do rely heavily on existing RDI infrastructures, a domain to which policy makers can make valuable contributions. Finally, as mentioned afore, there is not much that policy makers can do to take away the internal challenges for uptake, faced by companies trying to adopt the described innovation in this case. Most are inherently linked to the type of organisation.

Partnerships between different groups of actors involved in these novel organisational set-ups and management practices need to be stimulated and facilitated. One of the key drivers of the success of the analysed companies is the availability of actors that are willing to partner. Companies, however, sometimes face difficulties in finding the right partner, or in finding a partner at all. By stimulating collaboration and facilitating collaboration between companies, cross-fertilisation between e.g. management roles can be realised. Platforms, such as cluster organisations, can be used to promote the collaborative opportunities in this field. Moreover, a set of collaboration tools could be developed to deepen partnerships in organisational set-ups and management practices. The networks of companies can be easily expanded through effective participation of companies in networks such as the Enterprise Europe Network (EEN), the International en European Incubator Networks (e.g. European Business & Innovation Centre Network EBN), which should be promoted.

Policymakers should support companies in tackling the challenges they face in creating synergies between different groups of actors. The organisational setups analysed in this case study generate a large part of their added value from knowledge and information exchanges between these different groups of actors. Companies face challenges in this process due to language barriers, different thought logics among actors, different purposes and different interests. It is therefore key for these companies to get the involved stakeholders aligned in order to maximise synergies. Initiatives that stimulate knowledge and information exchange therefore need to be further developed and explored. Policymakers can also make use of existing collaboration tools and platforms, such as clusters, matchmaking events and collaborative projects to further stimulate knowledge and information exchange between the groups of actors. At national level, policy makers should ensure the involvement of these companies into strong excellence clusters, which will help with their partner search and matchmaking efforts both withint he clusters as well as through cluster collaboaration networks, allowing them to connect with new partners throughout various sectors.

There is a need for policy measures that maintain, expand and make existing RDI infrastructure more accessible for SMEs and start-ups. Because companies operating technology centred organisational setups rely on existing R&D&I infrastructure, policy measures aimed at maintaining, expanding, and providing access to this infrastructure could be beneficial. Measures that incentivise companies to provide access to their intellectual property could facilitate the combination of technological solutions in new application markets. Moreover, government funded research programmes focused on development of platform technologies, could help to develop highly versatile and widely applicable technologies that are accessible to all.

Policymakers should come up with measures that ensure the availability of funding for companies deploying novel organisational setups and management practices, for a variety of reasons. The research and exploration oriented setups of FeyeCon and Almende benefit substantially from research subsidies, grants and contract research. These sources of funding help to accelerate development. Because many member state programmes for innovation have ended, due to financial austerity, these companies are highly reliant on European research subsidies. It is therefore key that the **Horizon 2020 funding programme becomes more accessible for participation of start-ups and SMEs**. Also, an the national level, implementation of EU financial instruments such as JEREMIE and the Risk Sharing Facility should be enforced in those Member States that did not yet implement it.

Moreover, these companies require **European policy measures that re-start national innovation programmes**, in order to maintain the innovation eco-system. This way, small research companies gain an additional source for research subsidies and are less dependent on European initiatives. Additionally, by re-opening innovation programmes or kick-starting new ones, **private sector investment into R&D is also stimulated**. This provides small research companies with another valuable source of income, namely contract research. By **stimulating contract research**, these small organisations can get in touch with larger market players (often customers to research companies) and build valuable networks. These customer networks, consisting of potential launch customers and joint venture partners, often form the most important source of commercial capacity for small research firms (e.g. most of FeyeCon's partners for setting up spin-offs originated from the company's existing customer base).

Companies like BlueThink, which **cannot rely on research subsidies** to fund their core business conduct, **need access to bank loans to get started**. For accelerators of open innovation it is important to first build up a network of technology companies, from which to browse ideas and solutions, to have a value proposition to their customers. During this build-up, it is hard for the company to generate income or bring in customers. **In this stadium bank loans are the most important funding modality**. The financial crisis in most EU-member states has, however, made it nearly impossible for these long-term initiatives to acquire a loan. Policy makers should introduce measures that provide government backing of soft loans.

Moreover, for these types of companies, policymakers could also setup **more direct support mechanisms**. Open innovation accelerators, and therefore also technology start-ups and large R&D centred corporations, are benefitted by **policy measures that support network building**. Inclusion of (technology) firms operating in other national markets is hard for companies like BlueThink. If open innovation accelerators were able to focus their efforts on a single reference point in a regional economy, for instance a public university, for identifying the various technology start-ups/SMEs in that region, duplication of efforts can be prevented. By providing incentives to public universities to maintain an updated index or registry of technology start-ups in their region (apart from already existent incubator or accelerator programmes), open innovation accelerators would require less funding to get into operation.

All companies included in this case mainly employ highly educated individuals. Although no direct obstacles to the supply of skilled workers has been mentioned, for these organisational innovations to remain in operation, **policy makers have to ensure a constant supply of technologically educated individuals.** Companies like FeyeCon and Almende show how to bridge the gap between fundamental research, mostly conducted at universities, and application in the market by commercial companies. They play a valuable role at a cross-road between universities and the commercial sector, and are considered an attractive employer for people interested in technology and its commercial application. Vice versa, these companies can also act as promoters or ambassadors for technology-centred education programmes. **Policy measures that are able to identify these types of organisations, and promote the unique positions they provide for technology researchers amongst high-schools and university students**, can help to interest more people for technical studies and research.

Furthermore, companies specifically focusing on a new platform technology require an international workforce to attain all relevant skills and capacities. Therefore, **policies aimed at simplifying employment of non-EU residents in EU-member state countries**, especially with regards to administrative requirements, would reduce costs and efforts these start-ups and SMEs have to invest.

6. Appendix

6.1. Interviews

Company	Name	Designation
Finext	Wim Heuvelman	CEO/founder
Almende	Hans Abbink	CEO/founder
BlueThink	Andrea Ranieri	CEO/founder
FeyeCon	Martijn van Groen	Business developer

6.2. Websites

Finext	http://www.finext.nl/
Almende	http://www.almende.com/home
BlueThink	http://www.bluethink.it/index.php
FeyeCon	http://www.FeyeCon.com/

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