Demola: Open innovation platform

Demola is an open innovation platform and university–business collaboration model for the creation of new products and services. Student teams work to solve challenges sourced from companies and other organizations. The projects lead to “demos” and prototypes, a majority of which are bought by the companies and organizations through a licensing system devised for the Demola framework. The Demola model is now being used in various countries and has proved effective where cooperation between universities and companies is infrequent and the collaboration models are weak. In these environments, Demola has produced real-world outcomes and ongoing engagement among participants.

By Kalle Lamminmäki and Vesa Salminen

Introduction

The logic of product and service innovation is changing. Companies and public organizations face pressure to create products and services more quickly due to intense global competition, the growing integration of different technologies, the shorter life cycle of products, and increasing costs of production (OECD and the World Bank 2013a). These pressures call for more effective linkages between companies and other knowledge actors. Organizations are encouraged to tap into a wider base of ideas and technology to find complementary expertise and combine existing knowledge from a wider variety of sources (OECD and the World Bank 2013c). Innovations no longer originate solely in companies’ and organizations’ research and development (R&D) laboratories and research departments. One way to address these changes is to widen the sphere of innovation (Aho et al. 2008; OECD and the World Bank 2013c). Open innovation seeks to strengthen the link between companies and other knowledge actors.

The Demola platform represents one way to facilitate open innovation, which views R&D as an open system. This means valuable ideas can come and may enter the market from inside or outside a company or organization (Chesbrough 2006, 1–5). External knowledge thus assumes greater importance. The open innovation paradigm addresses the need to increase linkages for innovation and speed up knowledge diffusion. The idea is related to the need to combine and
integrate different technologies, various (often multidisciplinary) types of knowledge, and diverse skill sets (OECD and the World Bank 2013c). Open innovation processes have also become more appealing due to the speed with which they proceed. A good example is innovation in the software business, where products are developed and refined on an almost daily basis (Kilamo et al. 2011).

Universities are an important source of knowledge and ideas for companies. The companies’ range of means to exploit university-based know-how is limited, however, so this avenue remains somewhat underutilized (Chesbrough 2006). The Demola innovation environment is multidisciplinary and strongly supports collaboration between universities and industry, facilitating the creation of novel service and product concepts and knowledge transfer (Davey et al. 2009).

**Program design**

The Demola platform was first established in Tampere, Finland, in 2008 and has since spread to other cities and countries. Currently, there are eight Demola centers in six countries (see the results section, below, for a list). The platform’s aim is to boost a multidisciplinary, agile innovation culture and encourage entrepreneurship.

The following five organizations form the core of Demola Tampere activities:¹

1. Innovaatio Oy Uusi Tehdas, the local Demola operator in Tampere
2. New Factory International Oy, which provides support for the implementation of the platforms and coordinates the international Demola Network
3. Tampere University of Technology
4. University of Tampere
5. Tampere University of Applied Sciences

The Demola model offers a form of university–business collaboration for R&D and product development. Participating companies range from small and medium-sized enterprises (SMEs) to large-scale international enterprises (for example, the global semiconductor chip maker, Intel). Several public sector organizations, such as the City of Tampere, have also participated in Demola projects (Davey et al. 2009).

Although Demola resembles Living Lab platforms, another form of open innovation, the two differ somewhat. Whereas Living Labs seek to incorporate the wider community in the testing, piloting, and experimentation of products and services, Demola involves mainly students.

---

¹ The educational institutions are hereafter referred to as “universities,” the term used by Demola. Unless otherwise indicated, the eight Demola platforms currently in place are referred to collectively as Demola. Discussion of any particular Demola platform singles that platform out.
Furthermore, Living Labs emphasize the testing of new products and services, while Demola’s projects focus more on their creation and on the production of demos and prototypes.

**How does the Demola model work? Company perspective**

The Demola model involves three stages:

1. The company poses to one or more student teams a real-life problem (a “challenge”); no starting fees are involved.
2. The project is formed, and the student team(s) start(s) working on the problem.
3. If the company is satisfied with the result, the company can either license shared rights for it or purchase all rights for itself (Demola Tampere 2013).

Demola work is challenge driven, with the project ideas coming from the industry and other organizations. This ensures that the products, services, and concepts developed have practical business applications. The students’ work is supported by both the industrial and academic partners, whose role is to provide guidance to the student team throughout the project. Demola provides the workspaces for team work and co-creation (Kilamo et al. 2011, 308).

The end results of the teams’ work on the problems they are handed often differ from initial expectations. According to Petri Räsänen and Ville Kairamo of Demola, research priorities may change considerably in the course of the work. Indeed, unexpected end results are a regular outcome in an open innovation process. The original idea is put to the test in an environment different than that of the company’s R&D department, whether in the setup of the research team or the research approach adopted. As a result, the original idea often finds a wider variety of applications and configurations than was previously possible. New issues are given more salience, and old priorities may be found of less use. At best, this means new forms of value creation (Chesbrough 2006, 191).

The project topics cover the following areas (Demola Tampere 2014):

- Business concepts
- Software
- Design and art
- Education
- Engineering
- Environment
- Governance
- Health care
- Media and communications
- Social science

Organizations that have presented challenges to Demola teams include companies such as Intel, UPM (a forest industry company), and the Finnish Broadcasting Company. The wide range of participating companies indicates a demand for new ideas and insights in almost all fields of the economy. Public sector organizations have also presented Demola teams with various challenges, such as managing municipal traffic services. The following are two examples of Demola challenges on which projects have been based:
Case I: Nokia challenged the Demola teams to create a successful real-time “ride sharing” service, which was to be expandable to the whole of the European Union. The subtasks included creating the back-end service, front-end applications, and a website with features such as a map view, route planning, secure login functions, and a user rating system (Demola 2014).

Case II: The City of Tampere challenged a Demola team to research current smart cities throughout the world. The project’s goal was to adapt concepts found in the cities to fit best in the context of Tampere and combine them with the cultural advantages Tampere has to offer (Demola Tampere 2014).

Implementation

Team structure

At the center of the platform are teams formed by students from the participating academic institutions. Selection of the teams depends on the students’ own motivations. Applicants are encouraged to find a problem that interests them and match it to one of the available projects listed on the Demola website, where they can filter the list according to the types of skills required. The teams are thus formed on the basis of the applicants’ common interests, with the students having no knowledge of other team members in advance, other than their sharing an interest in the same topic and, often, a personal motivation to solve a particular problem in the field (Kilamo et al. 2011, 307–9; Anon. n.d.).

Figure 1. Demola partners

Source: Kilamo et al. 2011.
Setup costs for projects vary, depending on the country and city where the project is to be conducted. Given how demanding it is to bring together the various knowledge actors, a platform must have at least two certified Demola facilitators. The capacity building that takes place before the platform is established is crucial to its success and requires resources.

Estimates put the costs of running a Demola center between €150,000 and €300,000 a year. Demola Tampere’s initial annual operating budget was approximately €200,000, with funding primarily public and the City of Tampere Business Development Programme the main financier (Davey et al. 2009; Lehenkari et al. 2009, 31).

**Intellectual property rights in Demola**

A well-functioning intellectual property (IP) system provides a setting in which innovation and creativity thrive and ideas and underlying knowledge are diffused (OECD and the World Bank 2013b). In open innovation, companies use external sources of innovation for product development and market access. The danger is that, as the invention process is moved outside a company’s R&D department, other actors are more likely to be able to imitate the idea. If such competitors are quicker to commercialize the product, the company stands lose a great deal. The protection of intellectual property is, thus, central to the success of open innovation. A company that is not certain its IP rights are protected is less likely to participate in the work of open innovation platforms (Chesbrough 2006, 109–10) The intellectual property rights framework is a critical component of successful innovation policy.

The IP rights that originate in a Demola project (that is, the rights to the actual results of the project) lie, in the first place, in the ownership of the students. The partner company or organization, whose needs originally led to the creation of the project, owns the background materials for it, however. The company can buy wide and parallel usage rights to the results by paying the project team an agreed-upon reward—in other words, the team licenses its work to the industrial partner (Kilamo et al. 2011, 310). The price is based on a predefined, results-focused pricing system.

In terms of the three actors in the IP rights “triangle” (universities, students, and companies), the Demola model strengthens the link between students and companies and, to some degree, weakens it between companies and universities. Students gain improved and more extensive rights to their own work, and companies are able to deal more directly with them instead of with the university. National IP rights systems vary, however, and the model needs to be adjusted to the local IP rights environment.

The Demola approach is often associated with open source innovation. The licensing of products works differently in the Demola model, however. In the Demola model, according to Räsänen and Kairamo, the IP rights clearly belong to a designated group of actors (either the

---

2 These figures refer to the period 2008–10, when Demola was established.
Companies need to accept the openness of the innovation model. Some have found it hard to trust the other parties in the projects, fearing that the IP rights born of their work may be stolen by other participants. The openness of the model makes establishing trust among the parties a continuing challenge. Companies may find it hard to give up some control of their R&D processes to external actors. Yet the importance of universities as the source of many important innovations cannot be underestimated. The Demola IP rights framework has been constantly refined to adjust it to these needs. Its basic principles are clear: as stated, the student team owns the right to the results of the project, and the participating company or organization is entitled to buy a right to use the results.

The IP framework has been subject to fine tuning. Räsänen and Kairamo say its legitimacy has increased in tandem with the increase in participation by larger global companies. Nevertheless, company concerns regarding knowledge leakage need to be addressed rigorously. Bad experiences pose a constant danger to the legitimacy of the platform. A solid framework for IP protection is a mandatory precondition for meaningful university–business collaboration.

Results

The Demola platforms have monitored their operations constantly since 2008. The following was true at the time of writing (Demola 2014):

- There were eight Demola centers in Europe in the following locations:
  1. Tampere, Finland
  2. Oulu, Finland
  3. Vilnius, Lithuania
  4. Budapest, Hungary
  5. Malmö, Sweden
  6. Norrköping, Sweden
  7. Maribor, Slovenia
  8. Riga, Latvia

- The platform had twenty-seven partner universities in Europe.
- Demola had established cooperation with approximately 150 companies.
- 1,500 students had participated in Demola projects.
- 308 projects had taken place under the Demola platform.
- The platforms had gathered approximately €1 million in licensing fees for students.

The Demola “challenges” have covered an extensive field of industries. The innovation platform has played a role in the creation of innovations in eCommerce, the game industry, and the
service sector, among others (Demola 2014). The Demola website at http://tampere.demola.fi/project/list/all shows the variety of the projects.

The transfer of technology and knowledge among universities, companies, and public sector organizations and the idea of tapping into a wider pool of knowledge are central to the Demola model. This means value creation in the form of new products and services. The utilization of the wider potential in society (especially through universities) for value creation will be of increasing significance in the future.

Strengthening university–business collaboration is a key achievement of the model. Demola platforms have contributed to the strengthening of innovation networks, especially among universities, companies, and public sector organizations, and their work has shown that cooperation between companies and universities has intensified (Demola 2014, 1). According to interviews with Matti Vuori of the Department of Computing and Electrical Engineering, Tampere University of Technology, and Ari Närhi, of the Art and Media Department, Tampere University of Applied Sciences, along with the European Collaborative and Regional Open Innovation Strategies (EURIS n.d., 8–9), the model at its best may lead to a new kind of “partnership” that is crucial to sufficient knowledge transfer and diffusion between the two parties.

Furthermore, educational institutions benefit from the cooperation established under Demola. Innovation-related teaching is neither traditional nor common in universities, and Demola brings the processes of product innovation and commercialization closer to them. Vuori says the work has contributed to increasing the institutions’ emphasis on innovation by presenting them with a novel way to deepen their contacts with the business sector. This is particularly valuable in smaller cities, where the innovation networks are less dense. Increased collaboration among the regional educational institutions themselves is another valued outcome of the Demola platform, according to both Vuori and Närhi. Demola cooperation presents the educational institutions with new options for learning by giving students opportunities for hands-on problem solving and work experience (Demola 2014).

Working on multidisciplinary teams equips students with valuable skills for working life. In addition, they learn cross-discipline collaboration (as might a technology student and a media student working together, for example). The projects are real, as they have been handed to the teams by companies or public sector organizations, which motivates the students. In addition, according to Närhi, participation in Demola projects improves their employment opportunities.

An illustration of Demola’s logical framework is presented in figure 2.
Lessons learned

Key takeaways

The innovation base is constantly widening. The quickened pace of innovation and tough market competition force companies and public sector organizations to seek alternative sources of innovation and ideas for market access from outside traditional sources.

Open innovation platforms present a relatively cost-effective way for companies and public sector organizations to broaden their R&D bases and develop alternative avenues of access to the market. University–business collaboration provides a means to tap into a wider pool of
knowledge and diffuse it without significant investment in infrastructure or additional administrative structures. Cooperation serves to increase trust between the participating actors.

Given that the model has already been tested and proven in practice in various operating environments, Demola provides a good benchmark and a number of lessons for countries interested in setting up open innovation platforms. The Demola platform can act as the connecting hub between companies and educational institutions. In many cities, university–business collaboration provides a mode of cooperation that did not exist before. Successful projects best facilitate the development of trust between the actors. As an intermediary between business and academia, the students act as the “glue” that strengthens the links between the nodes.

**Practical lessons**

- **The key imperative with open innovation platforms is to ensure companies maintain interest in the model.** If open innovation is utilized more widely, a solid framework for IP rights management is vital for its success. If this is not in place, companies lose incentive to participate. The Demola model has a formal IP rights framework for collaboration and a strategy for IP utilization and protection. The framework has been fine tuned, based on experiences from the work of the Demola platforms.

- **An advantage of the platform is the participation of several educational institutions in its operation.** Innovation platforms are, arguably, often guided markedly by the interests of particular educational institutions (for example, regional universities). In the long run, this may take the platforms’ approach to innovation in a direction that does not best serve the purpose of multidisciplinary problem solving. In the case of Demola Tampere, the participation of three different educational institutions helps ensure the platform remains responsive to a broader body of participants. As a result, it can tap into a larger knowledge pool of students who seek to put their skills into practice.

- **Special attention should be paid to overcoming the lack of trust among the participating organizations.** The usefulness of the platform has, from time to time, been questioned by the participating universities, companies, and other key actors. The actors who take part in its creation do not always trust each other for different reasons, and often no networks connecting them are in place.

- **The participating organizations have to strengthen and, in some cases, create from the beginning altogether a mode of cooperation.** The lack of previous university–business collaboration may hinder the creation of a functioning network between educational institutions and companies. A formal platform also to some degree challenges existing connections that had hitherto been formed on a person-by-person basis, in some cases replacing more private (and often exclusive) personal relationships with a more collective form of cooperation.

- **Companies and other organizations participating in the platform need to accept that their problem definitions may sometimes be misplaced and result in unexpected outcomes.** This needs to be clearly communicated to the partners.
Applicability

The Demola model provides one way to advance open innovation. It could benefit regions where cooperation between universities and companies is infrequent and the collaboration models outdated or not in place. The model could serve to widen the access of other knowledge actors to previously closed networks, hence improving knowledge transfer and diffusion. The model can also serve to build trust between universities and industry.

The Demola platform is characterized by relatively low starting costs and, compared to other innovation platforms (for example, business incubators), is relatively economical to set up. The infrastructural needs (that is, the need for spaces to work) are not extensive, and the model does not require a sizable staff to function. The time from the setup of the platform to the creation of first solutions or products is short—only three months, at best. The lightness of the model and the relative ease of setup ensure its cost-effectiveness—and its painless dismantling, if needed.

The governance framework (for example, the framework for IP rights) of the model has been fine-tuned based on the experiences of several countries and can be implemented relatively easily in other cities. Furthermore, wider awareness of the Demola “ecosystem” (with eight platforms in place) assists in the implementation phase.

Related topics on the IPP

Open innovation: https://www.innovationpolicyplatform.org/content/open-innovation

How has innovation changed over time? https://www.innovationpolicyplatform.org/content/how-has-innovation-changed-over-time?topic-filters=12178

Innovation networks and clusters: https://www.innovationpolicyplatform.org/content/innovation-networks-and-clusters?topic-filters=11389

Intellectual property rights: https://www.innovationpolicyplatform.org/content/intellectual-property-rights?topic-filters=11386

What sorts of linkages can foster innovation? https://www.innovationpolicyplatform.org/content/what-sorts-linkages-can-foster-innovation?topic-filters=12071

Acknowledgments

Petri Räsänen / Demola

Ville Kairamo / Demola

Matti Vuori / Tampere University of Technology
References


