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Exploring the Benefits of combining Business Modelling with Living Labs

Olivier Rits*

iMinds-SMIT-VUB, Pleinlaan 9, 1000 Brussel, Belgium
E-mail: olivier.rits@iminds.be

Dimitri Schuurman

iMinds-MICT-UGENT, Korte Meer 7, 9000 Gent, Belgium.
E-mail dimitri.schuurman@iminds.be E-mail: olivier.rits@iminds.be

Pieter Ballon

iMinds-SMIT-VUB, Pleinlaan 9, 1000 Brussel, Belgium
E-mail pieter.ballon@iminds.be

* Corresponding author

Abstract: Business Modelling and Living Lab research both have similar objectives - to maximize the probability of successful market introduction of innovative solutions – be it through different means. Rather then being competing approaches, business modelling and living lab research methodologies are very complementary, where the combined approach turns out to be more powerful compared to the individual approaches.

Yet there are still only very few studies or reports that discuss this topic, with those studies that do touch the subject staying high level. iMinds Living Lab has gained a lot of experience in combined Living Lab – Business Modelling innovation tracks. This paper discusses the benefits of such combined innovation tracks and shares the lessons learned at the iMinds Living Lab to provide clear guidelines and to serve as a basis for further study on the subject.

Keywords: Living Lab, Business Model, Innovation, Value Network, User Research, Stakeholders, Value Creation, Value Distribution, Value Consumption, Value Capturing

1 Living Lab's view on Business Modelling

The definition of what makes a living lab is still an unresolved and largely semantic discussion (Baccarne et al. 2013). However, most of the definitions focus on the collaboration between different stakeholders, including end users, during the innovation process and combining technological research with user research. Even if they recognise the need to involve multiple stakeholders, including business partners, this involvement

in most living lab approaches extends no further than collecting some general feedback from a number of business representatives during the ideation or evaluation process. Using a living lab to explicitate and validate the actual business model of the innovation in question is seldom included.

Far less living lab definitions, studies and best-practices focus on the triple combination of technical, user and business model research. For those studies and reports that do take the business model aspect into account, we can generally categorize those studies in 3 different focus areas

- The first and biggest group of studies focus on multi-actor living lab consortia and consider the collaboration model between these partners as a key issue to be dealt with in order to secure a sustainable and long-term collaboration agreement (Garcia-Guzman et al. 2013), (Grezes et al. 2013), (Mulvena et al. 2010), (Niitamo et al. 2006), (Nikolov & Antonova 2012), (Pitse-Boshomane et al. 2008), (Schaffers et al. 2009). The lack of a good business model is being considered to be a major possible roadblock to open innovation within living labs.
- A second and much smaller group of studies focus on the business model of the living lab platform itself as a way to become self-sufficient and generate enough revenues from the services provided (Garcia-Guzman et al. 2013), (Grezes et al. 2013), (Katzy 2012), (Mulvena et al. 2010). These studies discuss what the market needs from living lab platforms, stipulating best practices of the type of assets (resources) and activities (services) a living lab should offer to the market. It is interesting to note that among these studies almost none is including business model activities as a possible service for living lab participants.
- Finally, a third group of studies state that a living lab project might provide insights not only on user needs and practices but also on new business model opportunities (Agerskov et al. 2013), (Grezes et al. 2013), (Katzy 2012), (Mulvena et al. 2010), (Niitamo et al. 2006), (Nikolov & Antonova 2012), (Schaffers et al. 2009), (Schuurman et al. 2011), (Svensson & Eriksson 2009). Still after making such general statements the focus of these studies usually turns entirely towards the user research part, leaving the business model aspect undefined and providing no guidelines at all on how to make the link. (Katzy 2012) even states that

  > "… living lab process results not only in usability of products but in more general business models for their commercialisation, however this is a result that is difficult to sell by itself …"

  This would imply that the market does not need nor want such a business modelling service.

None of these studies or reports discusses the need to consider also the business model of the innovation itself in the living lab track. (Svensson & Eriksson 2009) is the only study that does explicitly state the importance of addressing the business model of the innovation itself early on in the process. Interestingly, this study also takes the viewpoint of the SME as point of departure. However this study does not discuss this topic in detail and only mentions in high-level fashion that

> "… after each activity we have discussed possible business model opportunities with the enterprises to be able to follow up…"

In sum, most of the living lab community is considering business models mainly in order to optimize their own operation and sustainability. And the few studies from living lab

literature that do mention business modelling services for innovation projects on top of the living lab platform, remain high-level without providing any insights into guidelines or results or without explicitly explaining the benefits.

2 Business Modelling view on Living Labs

A business model describes the business logic of a company, i.e. the way in which a company creates, delivers and captures value. This so-called business logic is key in the strategy of any innovation. Already in 1986 Teece (1986) implicitly linked the importance of a business model for companies active in innovation in general

> " … the mistaken illusion that developing new products which meet customer needs will ensure fabulous success. It may possibly do so for the product, but not for the innovator …"

Teece (1986) argues that sustainable innovation by companies highly depends upon their ability to understand real customer needs, their ability to link it with complementary assets and services and their ability to design and maintain a sustainable strategic advantage (business model). As such Teece (1986) implicitly embeds user knowledge and value networks (sustainable collaboration) within business modelling. As discussed in the section above, user knowledge and stakeholder collaboration are 2 important characteristics of living labs. Teece (2010) more explicitly states

> "… What business model pioneers often posses – or develop – is an understanding of some 'deep truth' about the fundamental needs of customers and how competitors are or are not satisfying those needs, and of he technological and organizational possibilities (and trajectories) for improvement …"

This principle is present in the many different business model frameworks available today, even if each framework is focusing more on some parts dependent upon the context in which it is to be used. Ballon (2007) for example takes a market-oriented view, proposing a framework for analysing and redesigning complex markets with many stakeholders in the value chain. The Business Model Canvas proposed by Osterwalder et al. (2010) – probably the best-known business model framework today – takes a more single-company-oriented approach. It is beyond the scope of this paper to discuss in full all the different frameworks. The important fact to note here is that all business model frameworks without any exception put the customer, the customer need and the eco-system upfront as key components.

What is lacking though in the field of business modelling is clear guidelines for how to practically work with these frameworks and even more so for how to properly incorporate user knowledge and stakeholder collaboration.

Osterwalder et al. (2010) provide some guidelines by defining 5 phases in the process: (1) mobilising – preparing the business model project, (2) understand – gather all necessary information, (3) design – generate and test options, select the best, (4) implement – put the model into practice, (5) manage – adapt and fine-tune based upon market feedback. Both Teece (2010) and is more explicit on the iterative character of innovation and business modelling, stipulating the importance of discovery, learning and adaptation

> "… A business model is successfully pioneered only after considerable trial and error … once articulated, it is likely will have to be tested and retested, adjusted and tuned as the evidence with respect to provisional assumptions becomes clarified …"

Breuer & Mahdjour (2012) start from the principle stated by Teece (2010) to even include topics such as stakeholder analysis and user involvement, however rather as single shot research steps and with a focus rather on internal team dynamics and alignment.

In conclusion, the business modelling community at large recognizes the importance of user and stakeholder involvement and some even point to the required iterative approach. Even if these are the 3 key elements of the living lab definition, yet this community seems to be unaware of the living lab concept.

Both living labs and business modelling have similar objectives and even though at least the business model community recognizes the usefulness of the concepts provided in a living lab approach, we see no structural linking between both concepts.

3 The iMinds Living Lab Approach

Over the past 3 years, the iMinds Living Lab has been conducting a series of Living Lab projects specifically targeted at individual SMEs. Within these projects, which amount to a number of around 40 up to the present day, the need of SMEs to include business model aspects as part of the living lab exercise gradually came to the fore.

Before business modelling activities were embedded in to the living lab, innovation tracks were planned based on an iterative series of user research steps. These were meant to support companies in exploring, validating or testing their innovative solutions with end-users (see picture below).

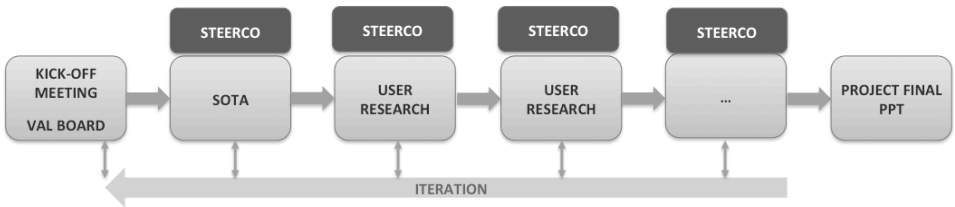

Figure 1: the iMinds Living Lab pre-business modelling innovation track

The innovation tracks start with a kick-off meeting during which the instigator (i.e. the individual or group of individuals from whom the idea or need at the start of the living lab originates, and who enter into the living lab process as clients) explains the innovative concept and the living lab researchers explain the living lab context and expectations. In a second part of the kick-off meeting the assumptions about the users and stakeholders and the corresponding research questions are discussed and fine-tuned using a hypothesis-driven tool, the validation board (Coorevits & Schuurman 2014).

In a second step the living lab researchers will perform an environmental scanning or State-of-the-Art (SotA). This step serves to get a good view on the market from a user perspective and is the basis on which the next research steps will be planned. After these 2 initial steps, the living lab research can finally start. It is beyond the scope of this document to detail which research steps are exactly used in which circumstances, but based upon the maturity of the innovation and the research questions a selection is made from a broad portfolio of user research methodologies including surveys, co-creation sessions, field tests, and so on. At the end of the project a final overview and summary of lessons learned is discussed with the instigator.

Phase 1: Project-based business modelling activities

As the need to include proper business modelling aspects became gradually more clear, the first business modelling steps were purely opportunity driven, i.e. if there was a demand for some kind of business modelling activity, an opportunistical search was launched for external business modelling expertise. As depicted below these trials were single shots, where the business model researchers were operating still rather outside of the living lab track.

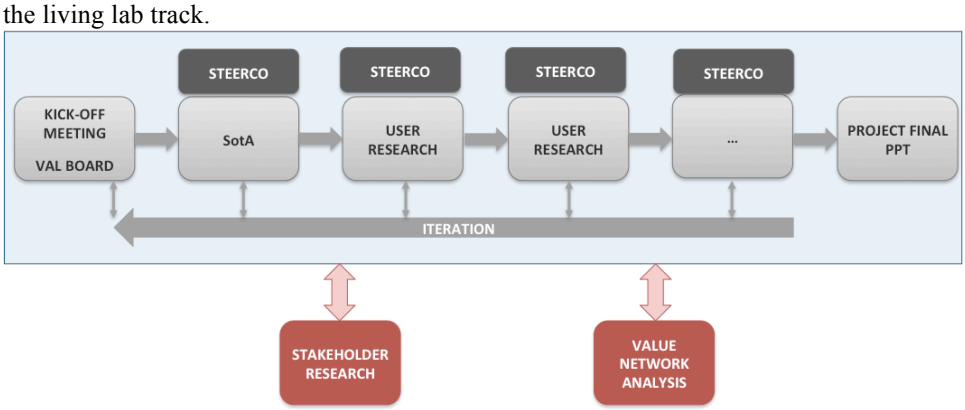

Figure 2: One-shot trials on business model activities within a living lab context through "external" business model expertise

The MADUF project (Schuurman et al. 2011) was the first project performed within the Living Lab that had a business modelling research question. One of the desired objectives of the project was to provide an analysis of the market as a whole and the corresponding opportunities from which some policy recommendations could be extracted. Business modelling efforts were therefore focused on a market-centered view using value network and stakeholder analysis as the main methods (Norman & Ramirez1993), (Stabell & Fjeldstad 1998).

The next experience with business modelling within a living lab context was during an SME project on new business models in the music industry. Again, the Living Lab researchers did not provide any business model activities in this project, but were working with a customer that was very pro-actively and openly linking the end-user needs and insights with sustainable business model design (Baccarne et al. 2013). This project raised the awareness of the possible strong link and mutual interest between the living lab research and the business model design.

However as discussed in (Baccarne et al. 2013) a couple of weaknesses in the approach were identified, the most important being that both user and business model research were too separated from each other along the full innovation track. But overall it was concluded that there was scope for increased cross-disciplinary co-operation between user research and business model research in all of the iMinds Living Lab tracks.

Phase 2: Concluding Business Model Workshops

In the next phase, iMinds internalised the business modelling activities within the living lab platform by including the business model researchers right from the start, i.e. already during the sales and project definition phase. This allowed the researchers to capture and understand the business modelling expertise and needs from the instigator side right from the start.

Based on this understanding the living lab track was redesigned, including not only user research but also stakeholder-related and business research steps. In practice, this resulted in a research track (as depicted below) with the following steps

- Kick-off meeting where the customer explains the innovation concept and is asked to explicitly explain the envisioned business model. The validation board of the lean start-up approach was used for this. But the focus of the formulated research questions remained focused strongly on the user level as we are using the validation board from lean start-up approach (Ries 2011), focussing on customer segments, needs and solutions only.
- SotA, consisting of an "environmental scan" via desk research pertaining to the market from both an end-user and business model perspective.
- A combination of user and stakeholder research steps dependent upon the specific needs of the innovation instigator
- A final business model workshop, replacing the previous final summary presentation by linking the gathered insights to the envisaged business model and formulating a set of recommendations for the overall strategy related to the innovation. These recommendations are interactively discussed with the instigator.

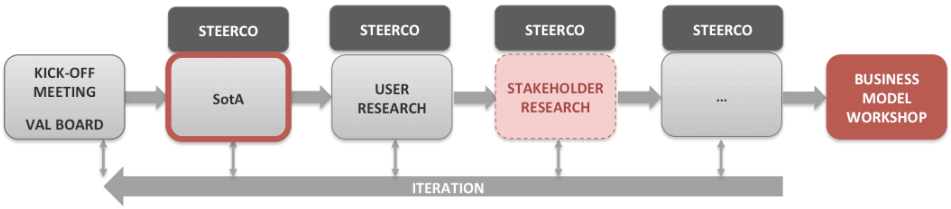

Figure 3: Living Lab track for concluding business model workshops

The first advantage is that living lab researchers are able to discuss the impact of the living lab track at a much broader level, leaving the instigator with a clearer view on strategic options and a practical set of next steps. The important additional advantage of planning these business model workshops at the end of the track is that one can discuss strategy based on validated facts and a lot of data. Without the inputs of the Living Lab research on users and the eco-system, it would be much harder to counter opposing beliefs. Such opposing beliefs are much less present after a solid Living Lab track.

However, while successful there was a downside to some of these workshops. For some projects, the outcome of the business model workshop, and of the entire living lab track, was that a fundamental change in the innovation concept or business model was required for successful market introduction. Surely the living lab track was considered very useful, however the researchers and the instigators felt that the living lab should and could have tackled some of the business model issues sooner in the process. Given the living lab's iterative approach, this would have allowed to pivot sooner and start exploring, validating or testing the adapted innovative concept sooner.

Another downside was that stakeholder research happened before the business model workshop, whereas it was deemed necessary to bring up the business model before in order to understand the research questions for that specific stakeholder.

Phase 3: Steering Business Model Workshops

Mainly triggered by the potentially impacting conclusions from the business model workshops, the workshop was moved forward in the process as much as possible. Right

after the SotA was deemed to be the earliest instance at which the business model workshop could take place. Putting the business model discussion at the very start of the project (during kick-off) would make it quite hard for the business model researchers to discuss the business model in full depth without any prior insight into the concept or the market. By organising the business model workshop directly after the SotA, living lab researchers were able to discuss the business model before any of the user or stakeholder research steps were carried out, while still allowing the business model researchers to get to grips with the particular characteristics of the target market and the prevailing trends.

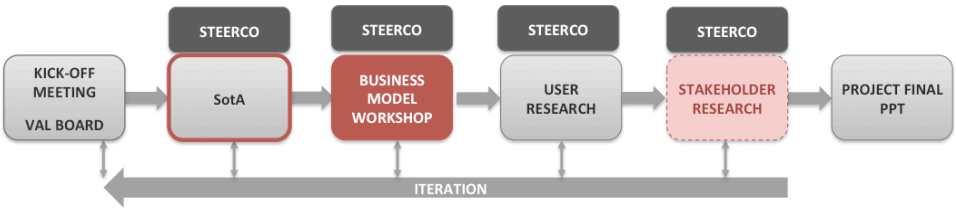

Figure 3: Living Lab track for steering business model workshops

The advantage of this approach is of course that living lab researchers were able to detect possibly high-impacting issues with the business model design at a much earlier stage. Also it made it easier to understand the stakeholder issues and plan for the proper stakeholder research steps, also in view of highly explorative stakeholder research questions.

As shown in the innovation track above, steerco's (steering committee meeting) were planned after each research step where the results of the research were presented (even if the instigator would have been present during the research step) and the next steps were discussed. It rapidly turned out that, triggered by the initial business model workshop, instigators wanted to discuss these results in a broader context and link it to the earlier discussion on the business model. This was a downside of the model on the organisational level – it was hard to plan the required business modelling efforts for those additional steps.

Phase 4: Full 360° Innovation

In phase 2 and phase 3 the business model activities and the user research activities were embedded within the same track, but - even though there was an open exchange of data and a real will to collaborate - both activities were still quite loosely coupled in that each researcher planned and executed his or her research individually.

From phase 2 onwards – with the concluding business model workshop concept – it was learned that a living lab track is able to provide much more information and insights besides the obvious user needs and use of the innovation itself. Users have a broader buying experience journey (Chan & Mauborgne 2005): they need to buy the solution (sales), it needs to get delivered to them somehow (distribution), they need to pay for it (pricing), they consume it (experience economy), possibly buy supplements (eco-system), and so on. Living Lab user research is able to uncover the relevant user context (eg. time, location, trigger, community, stakeholders, installed base…) that helps to fine-tune the different value aspects of the full business model. In short it was understood that a living lab track can actually provide insights into the many different

aspects of the business model, where user research – if properly designed – can be linked not only to customer segment and value proposition but also to marketing, distribution, eco-system, pricing etc.

Also from phase 2 the living lab researchers saw that the required fundamental adaptation for some of the projects was mainly driven by the combination of a lack of resources and a misalignment with the current strategy. Resources and strategy are strongly linked, as strategy will define which resources are required and resources will define (to some degree) which strategy can be pursued. However resources are limited – even more so for SMEs – and it is important to carefully plan which resources should be dedicated to which activities. These resources could be financial (money), physical (buildings, machines), human (personnel) or intangible (data, experience, partnerships…). They are required not only for the value creation itself, but also for the value delivery, the value capturing and the value consumption parts of your business model. This lead the researchers to the understanding that in highly iterative innovation tracks as is typically so in a living lab context, the full business model view and especially the resource- and strategy-view is required at all times to ensure the instigator will be able to sustainably profit form the innovation (Teece 1986).

From phase 3 onwards – with the steering business model concept – the living lab researchers saw that the benefits do not only flow from living lab to business model, but also the other way around. The different components of any business model framework are strongly interlinked with the end user, which is a central and key component in business model frameworks. When shaping the user research, the context of the user is important. It helps to more specifically define for example the customer segment and needs based upon the context of not only consuming the value, but also value delivery and capturing. On top of this, adding the full customer buying journey and perspective to the user and stakeholder research helps living lab researchers to be more specific, allowing for more focussed and specific feedback from users and stakeholders.

Domestication is again not only determined by the value consumption part. Value creation, distribution and capturing will all substantially impact domestication of the innovative solution as well. In short adding business modelling to the living lab track helps to improve the design and implementation of the user research, resulting in more specific and valuable feedback.

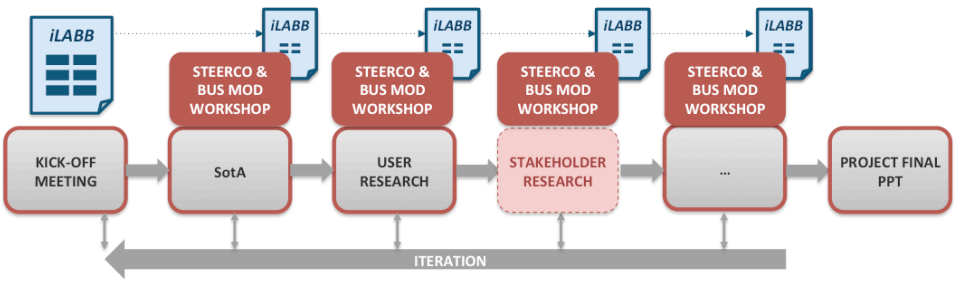

Figure 4: 360° Innovation Track

The three lessons described above lead iMinds Living Lab to redesign the innovation track by embedding user-, stakeholder- and business model research in every step and from the very start as shown above. Practically the business model workshops are now

embedded as part of the steerco's, during which user and/or stakeholder aspect were already being discussed. This new approach allows the living lab researchers to

- reflect the results of every research step to the full user and business model scope
- optimize the iterative aspect of the innovation tracks by taking the full and most updated user and business model scope as a basis for the design and planning of the next research steps

ILLAB – The iMinds Living Lab Assumption Board

As discussed above, the innovation track started with the hypothesis-driven validation board to list and manage all the assumptions and research questions around the user's perspective on the innovative solution. As discussed by Coorevits & Schuurman (2014) this tool is well suited for the rather user-focused living lab tracks, however it lacks both content and strict guidelines in order to include the full business model at this phase. Breuer & Mahdjour (2012) use the business model kit, which takes business model aspects explicitly into account. Although this is an important improvement to the validation board, it was found to be too complex both in content and use. In order to enable the living lab researchers to manage and plan for highly iterative 360° innovation tracks, iMinds Living Lab adapted the framework to their specific need and more importantly added a practical approach for implementation as show below

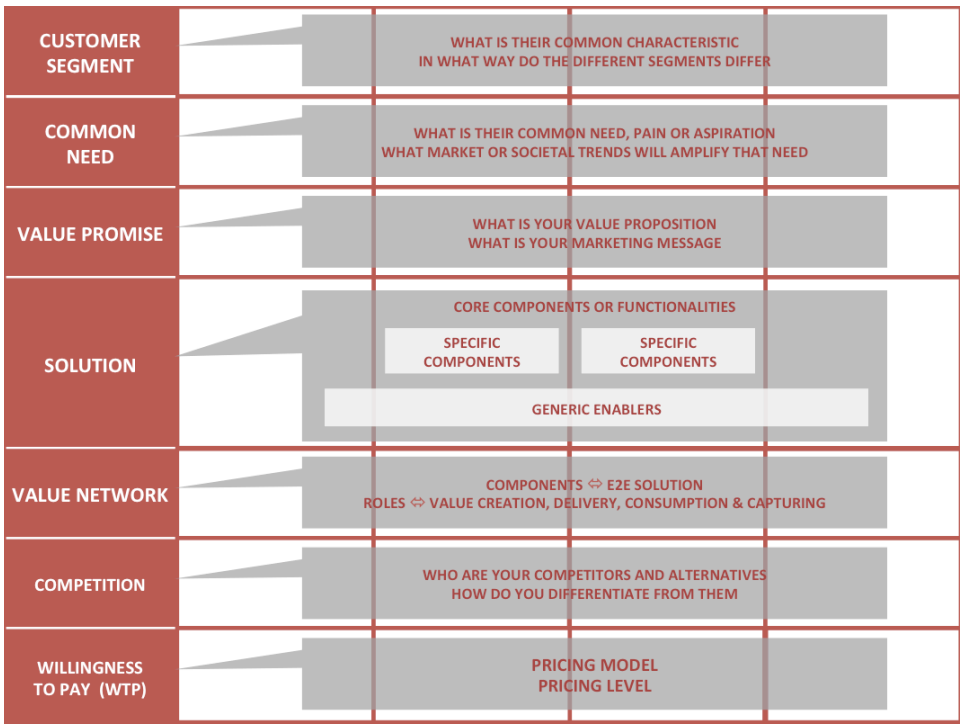

Figure 5: the iMinds Living Lab Assumption Board (ILLAB)

A full discussion of the ILLAB tool, the framework and the guidelines for management and planning are beyond the scope of this paper, but a tool such as ILLAB is key for

successfully embedding and linking user-, stakeholder- and business research in living lab tracks. It serves as a tool for design, management and follow-up of assumptions, lessons learned and innovation tracks in general.

5 Conclusion

Business Modelling researcher and Living Lab researcher have the common objective to maximise the probability of successful market introduction for innovative technological solutions. Living lab researchers do so by involving end-users and stakeholders in the innovation track. Business modelling researchers do so by considering the business implications of the different phases of any business: from value creation, to value distribution, value consumption and finally value capturing. Rather then competing approaches to innovation, they are quite complementary with the combined approach possibly being more powerful when strongly linked and embedded within the same track.

We have discussed the Living Lab's point of view on business modelling. We have also discussed the business modelling (non-existing) perspective on Living Labs. This discussion showed that today both worlds are not combining forces with only few weak links between both.

Next we have discussed the evolution of embedding business model research within the iMinds Living Lab, describing the 4 phases and lesson's learned. Starting from the innovation track design from the 4th and last phase – the 360° innovation track – we have discussed the mutual benefits of strongly linking and embedding user research and business model research into the same innovation track. Next we briefly discussed the ILLAB tool as a key tool for managing and planning combined innovation tracks.

Contrary to the statement by (Katzy 2012) that business model insights from living lab tracks would be difficult to sell, the experience gained at the iMinds Living Lab has turned this aspect into one of the key services, next to that of user-research, panel management, prototyping and living lab methodology.

As an interesting side effect, the combined approach has challenged the living lab researchers to adapt and improve the design and implementation of a living lab innovation track. This ability to design and manage efficient innovation tracks is drawing a lot of interest from partnering institutions and stakeholders.

As a last remark, our findings are mainly based on the SME projects running in the iMinds Living Labs. However the principles and frameworks discussed in this paper apply to all types of organisations and companies. The resources-view discussed are usually a bigger constraint for SMEs than for bigger companies. In that respect it is quite understandable that the conclusions were driven by SME projects, similar to (Svensson & Eriksson 2009). Nonetheless, all companies have limited resources and should carefully consider their use. Therefor also bigger companies would benefit from a combined Living Lab – Business Modelling innovation track. The recent interest in our ILLAB approach shown by partnering organisations and bigger companies certainly supports the case. The importance of innovation track design and management through tools such as iLLAB, will be an important point to further investigate.

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Note

Outside scientific literature we have found 2 handbooks bundling a set of best practices for living lab research. The first is the *KC3 Business Model* from the European Network of Living Labs (ENoLL) discusses the necessity for a business model for cross-border living lab collaboration, positioning it in the 1st group of living lab literature. The second is *The Living Lab Methodology Handbook* from the Botnia Living Lab. They do mention business modelling as part of the service offering, but only high level, positioning it in the 3rd group of living lab literature.

KC3 Business Model
http://knowledgecentre.openlivinglabs.eu/support/connect/business-model-design

The Living Lab Methodology Handbook
http://www.ltu.se/cms_fs/1.101555!/file/LivingLabsMethodologyBook_web.pdf