



Cohort 5: Launching the Smart Home Initiative

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1 Introduction

In the following report paper, we are going to introduce the reader to our innovation workshop in the field of *smart home*, which we chose to investigate. This paper is structured in the following way. In the first chapter we talk about our beginnings, objectives and organisational structure, in the subsequent sections we explain how we approached our workshop (ch. 2.1), discuss a scientific method (ch. 2.2 - 2.4), which we used in order to activate our participants, and show how we conducted the workshop (ch. 3.1 - 3.2). Finally, we present its outcomes: our *concept* for the smart home initiative (ch. 4.2) and results of our conducted survey (ch. 4.1). Lastly, we summarize our work in the conclusion.

1.1 Deciding on a topic

Our journey began when our groups and topics were announced on the second Friday lecture on the 13th of November 2015. During a special break, which was given to us in order to decide on our favourite topic, we - in union - agreed on smart home. What proved harder, however, were the other topics that we had to choose if smart home had already been taken by somebody else. In that case, we wanted to have either *Internet of Things* or *Robotics*.

Even though we were ninth in line to pick, luckily enough we did not need to worry too much at the end. Besides the fact that we got our topic, it was not significant for us which “color” we will be assigned to. The only wish in that matter was not to be the **red** team as we all saw it as having the most complicated task to accomplish, which indeed proved to be the fact later on.

On the other hand, none of us really had a preference of being the **green** (the development) or **blue** (the launch) team which at the end we were assigned to. Together these three teams – all working on the smart home – formed a so-called *cohort*. Thus, we all had to coordinate our actions very closely with others.

1.2 The organizational structure

After we had been assigned to our groups, not only was it necessary to organize ourselves¹ but also to get to know each other among our cohort. In our case, it consisted of two groups of five people each and one with four members, see its visualization in Figure 6. These all had distinct tasks but worked on smart home topic.

The teams' tasks and objectives were following. For one there was a **red** team which dealt only with the acquisition and activation of people. This meant that they were responsible for searching the “*unobvious others*” and letting them being excited for our topic (e.g. thought creating an online advertisement or doing a viral marketing). Specifically, our **green**'s and **blue**'s wish was that they bring a large and diverse group of people coming to our workshop.

The **green** team dealt with the development process where they wanted to conduct a workshop with handing out a short survey, questioning the crowd about our topic. Then, they would go on and lead the attendees in order to come up with problems the smart home currently faces and which need to be solved.

Lastly, it was us – the **blue** team – who had the task to launch the “initiative” and with that in mind drive innovation and make an impact for the community at large. In fact, right after the second group have finished their workshop, we would take over and use the identified problems (that the others have sourced) and try to make the people come up with their solutions. Subsequently, we would take these solutions and turn them into a concept which would be the result of our team's and cohort's activity.

All of three teams had their own leaders, who had been agreed on during the break on 13th of November lecture. In our case, Markus volunteered and only he communicated with Marc Marheineke who was responsible for our work and reported directly to Carlos Rabes and Prof. Kathrin Möslin.

¹ Members our team were from both - the management and informatics – IIS's introductions, in addition to Lukas who studies *Industrial Engineering* (Wing). Therefore, finding a suitable date, time and place for meetings has been always challenging.

1.2.1 Meeting #1 – Setting objectives and taking decisions

Our cohort's work has started one week after we had been assigned to our topic and knew the members of our groups, on 20th of November 2015. Although for the very first meeting we planned to meet all fourteen people, at the end only parts of the **green** and **blue** team were present.

Even though we were just six, during this meeting we discussed several major points including how we are going to approach all the necessary tasks and mainly how we are going to coordinate our efforts. Despite the fact that we wanted to decide on many facts immediately, given the attendance, we did leave some space for further discussions with our peers.

For one, we brainstormed several ideas for the topic and also talked about how both (**green** and **blue**) teams would be working towards our results through the innovation workshop. For that matter we decided that our main topic for both teams would be *“Wie kriegen wir mehr Leute dazu Smart Home Produkte zu kaufen?”*. We chose this because we wanted to look for potential problems, issues and solutions which users of smart home currently see and require. Additionally, it would give us a large range of possible outcomes, from different perspectives, resulting into not influencing (in neither direction) the open innovation process during the workshop.

Besides on deciding on the theme itself, we concluded that our planned workshop would be done in one event that lasts a maximum of two hours. We could hardly imagine to get the same people together on two different events or have them stay longer than two hours in the evening, after their work.

1.2.2 Meeting #2 – Preparing the event and assigning tasks to members

During the second meeting one week later, on 27th of November of 2015 at WISO, only the **blue** and four-member **red** team met. Unfortunately all members of the **green** team had already other obligations but another timeslot wasn't suitable for the **red** and **blue** team. However, given our clear mission of how we wanted to achieve our goals, our discussion with the **red** team concentrated on two major aspects.

Firstly, as we learned from Markus, our cohort would not be able to reserve the “Denkfabrik” in December – where lectures for *Innovation and Leadership* at

JOSEPHS took place – as we have all hoped. In January, before the presentations on the 22nd and the 23rd, there would be only one week (the 2nd in 2016) in which we could hold our workshop. Therefore, we decided against doing it in January due to the possibility of an unsuccessful trial which would make the new planning very complicated due to our exams, presentations and other work. All in all, we concluded to hold our event at the end of December, 2015 – right before the holidays because we were not limited to that place and were able to book another room in *Ludwig-Erhard-Building* in *Findelgasse 7/9*. This, given the superior location, has additionally allowed our cohort to target diverse set of people coming from the city-centre, especially in the late afternoon hours.

Secondly, it was important to talk about how many people the **red** team would be able to bring. Their initial goal was about 50 to 60 people, but we all quickly agreed to set the goal more realistically and target around 20-30 people at maximum. As we also found out having a smaller group rather than a bigger one is also recommended, see Holt et al. (2015) and Berkun (2013). Additionally, this choice was not only due to the capacity limitations of either place but also our (largely non-existing) experience of organizing and conducting such events.

Finally, we also held a brief discussion within our **blue** team in order to split tasks that we all had in mind.

2 Preparing the Initiative

In order to prepare the event, we decided on a fair task distribution. Dmitriy would take the responsibility for creating the survey and Josef, Markus, Daniel and Lukas would take on the organizing the workshop itself, including the preparation of methodical fundaments.

2.1 Schedule

As previously stated, we decided on an innovation workshop which would be held with the goal of generating a creative concept with the crowd. For this to be as successful as possible, three members of the group conducted a basic research in order to determine which innovation method is best suited for our cause. Daniel, Lukas and

Markus would choose and describe several approaches which all can be (at least theoretically) applied in our workshop, with their advantages and disadvantages.

2.2 Requirements for the method

For our innovation workshop on the topic of smart home we wanted a technique which fulfils certain requirements that we deemed are necessary for its success. These requirements included the following:

- A method, that can be conducted with a heterogeneous group (in terms of demographic and education)
- A method that can be performed with little to no former preparation on sides of the participants
- A method that can be performed without scientific background knowledge
- A method that can be fully utilized within one hour and
- A method that is fun and easy for participants

2.3 Selecting the method

We came up with three methods that could yield interesting results. First, we found a method called *Six Thinking Hats* which promised to be a very interesting technique that would result in highly differentiated concepts. Sadly, we decided against it because it is best performed in a homogenous group and would require a lot of time to be figured out by participants.

The second method that we considered was the “*Brainwriting/Pin Card*” method. Even though this method is very manageable in groups and yields a large quantity of results, we again decided against it as it has only very little interaction with the other participants and would also be less “fun”.

The last and final procedure we found was the “*reversion method*” or also called *Flip-Flop* method which is described by Vangurdy (1987). In this, the actual problem is turned inside out and then discussed in a brainstorming situation in small groups. We settled with this method because we think it fulfils all abovementioned criteria.

2.4 Flip-Flop Method

Firstly, at the beginning of the workshop, participants are divided into small groups of 4 to 6 people. These groups then get their own workbench (work area; in our case two tables next to each other) where they are going to create their ideas. It is very beneficial, if the teams consist of diverse and heterogeneous individuals as it helps to generate more extraordinary thoughts.

After the groups have been organized, a problem that needs a solution is stated. The moderator of the group inverts this problem into an anti-problem, potentially ridiculing the problem statement in the process. For example, *“How can we sell more Smart Home products?”* becomes *“How can we hinder people from buying Smart Home products?”* or another one *“What can the government do to promote consumers to use Smart Home products?”* becomes *“How can consumers convince the government to use more Smart Home products?”*. Solutions are then sourced using an idea-generation technique such as brainstorming.

The moderator of the team has the task of documenting the generated ideas while the participants must generate solutions, ideas or concepts for the anti-problem. Solutions are not rated or commented by neither the moderator nor the other participants. It is important to also oblige to the other defined rules of brainstorming as for example even ridiculous ideas are documented. After a pre-defined time period of 10 to 20 minutes, the ideas are refined and the best of them are chosen from the pool. Then, these are converted back into solutions for the actual problem. The groups later discuss all collected solutions and generate real, sophisticated, concepts based on the findings. Finally, the solutions (these concepts) from all groups are gathered, presented and reviewed by the workshop team.

3 Workshop

3.1 Execution plan

Due to the necessity of very close coordination of all activities regarding e.g. logistics, time schedule (see Table 1) etc., both teams were working together on setting up their workshops about smart home.

Once the **green** team would be finished, our workshop would start with a brief introduction of our group, vision for the event and explaining the *Flip-Flop* method, which we planned to apply (step one). Then, in step two, we would start with the main part of our innovation workshop, the *Flip-Flop* method.

1	<i>Welcome and Introduction</i>	Welcome and introduction of our group. The Flip-Flop method will be introduced and explained.	15 min
2	<i>Flip-Flop Method</i>	<ul style="list-style-type: none"> • Invert the problem • Apply idea generation method (Brainstorming) • Select and refine ideas 	30 min
3	<i>Presentation and Discussion</i>	Teams are presenting the results, which will be discussed afterwards.	10 min
4	<i>Conclusion</i>	The group concludes the workshop.	5 min

Table 1 displays our initial planning of time.

The first step of the chosen technique is to invert the problem, followed by an idea generation method that in our case is the brainstorming method. After collecting the ideas, the groups select their best ones and refine them. In step three, the teams present their main conclusions to the audience and discuss them with other participants. In the last step, step four, we conclude our workshop and give thanks the participants for attendance.

3.2 The conducted workshop

Eighteen people – 6 women and 12 men – attended the workshop which took place from 6:10 pm until 8:00 pm (for both teams). Ten out of twenty participants were people with no relation to the university, the course or our cohort and as described later many of the participants had already a strong knowledge about our topic.

It was intended, at the beginning, to conduct the workshop in German but due to a lot English speaking attendees we decided to switch to English. Unfortunately, our team

also had to shorten our workshop from one hour to just 45 minutes because the **green** team took a few minutes longer for their workshop than expected.

The **green** team started introducing the topic by explaining smart home and showing recent products to activate and develop the idea generation process. During their time, they have also collected the survey and then our group took over to create solutions to the current issues of the trend.

After the greeting and the introduction to the *Flip-Flop* method, the groups had the task to invert the problem which was mentioned in the chapter 1.2.1. Subsequently, they had to find solutions for the inverted problem by conducting a brainstorming session in order to come up with creative solutions. After the brainstorming, the team members concentrated on the main results and had to refine their best ideas. Each of them created a small presentation with their final and detailed solutions. After the presentation, the other groups were discussing the key outcomes and were asking questions about the concept.

The four groups indeed came up with very creative proposals and covered a lot of relevant issues within the smart home trend (see Figure 1). Also the feedback from the participants after the workshop about the event was more than positive. The results of our workshop will be discussed in the next section.

4 Findings of Open Innovation in Smart Home

4.1 The results of the underlying survey

During the first meeting, we have also come up with the idea of creating an anonymous survey in order to gain a quantitative and qualitative assessment of a smart home trend. This would be developed by our team and passed over to the **green** one which would hand it out during their workshop to the “*unobvious others*” to fill in (see Figure 5). Indeed, the procedure would be two-fold.

Firstly, the **green** team would introduce the participants to the topic itself and ask a few minutes later to fill in just the first five questions. Then, at the end of their part, they would ask again to fill in the rest of the survey. We decided for it this way both from organizational reasons (not to overwhelm the responders with the information,

wasting their time and not feeling being engaged from their side) but also in order to inform our participants who come and do not know about the trend at all. Therefore, provide them the minimal (necessary) information for answering the rest of questions.

Retrospectively, this proved to be (quite) unnecessary as people, who come, had already some understanding and background in this topic. Such an observation and conclusion during the event is further strengthened by the answers to the very first question of the survey. Namely, there were only one man and one woman out of 18 responders who heard the term smart home for the very first time.

The goal of the survey was to analyse the understanding of this trend among different people in order to derive any possible consequences for the future use of such technology (see also the Figure 2). In the survey we had also included two (optional) demographic questions regarding the age and gender. Not only it would be interesting to know if there are any (and we would assume so) differences between age groups (e.g. millennials vs. baby boomers²) but also for example if one could conclude that women are more active when adopting such a new technology. Besides this reason, the results of both the workshop and the survey would be used in order to develop a template (a concept) for inventors of smart home products (see the next section).

During the course of our preparation, the survey has been done (properly) only in German, and therefore only this version has been also printed out. Our thinking was that participants will be from different backgrounds, age groups etc., and thus combining it with the German workshop would be appropriate in order to mitigate possible language barriers. However, even before the workshop had started, we saw several attendees who could speak only in English resulting into changing the language of it, see section 3.2.

Even though the **red** team was particularly asked to market this event to all demographical groups, this proved to be unsuccessful as in the workshop we only had relatively young people coming (i.e. fellow students). The “*unobvious others*” become our friends who knew the trend as part of their general knowledge. As a result, in the survey 83% of all attendees marked that they are between 18 and 29 years old. Only

² Millennials have been born during 1980s to early 2000 whereas baby boomers were born during 1945 and 1965 (Schroer, 2015).

three people identified themselves in the demographic of 30-49 years old. Given all of that, we cannot derive any significant conclusions as not only is this sample very small but there is also not enough differentiation in terms of age (or gender). Therefore, any conclusions must be taken very carefully and cannot be applied to the whole population.

Regarding the first question, not only is “*online*” the main source of how young generations in countries such as USA or Finland consume news nowadays, but also the way of how they come across these new trends too (Reuters, 2015). Indeed, over the half of responders ticked the advertisement in online, TV and outdoor as an option from where they learned about the trend. Due to a relative new field of interest and availability, only a handful heard about it either from their friends or read it in the newspaper and alike.

As described, the smart home is still rather in its infancy and it was again not surprising to us that the majority of responders (55%) didn’t have any friends who had smart home technology installed nor did they have any devices installed themselves at their own homes (77%) (Iconcontrol, 2015). On the other hand, the technology has very promising use cases and as always there are early-adopters. In fact, six participants (33%) knew his/her *two* friends who were using smart home technology already at their home.

In the question 6 and the closely related question 7, we found out that indeed the usefulness (e.g. through good use cases), price and the user experience (“user-friendliness”) are – in that order – the most important features of this technology. When asked about what costs the participants would be willing to accept or have already paid, the answers were more spread across different price ranges. While between 51 and 100 Euro has been cited most frequently (ticked 5 times), the second and third most common ones were already between 151-200 Euro (three times) and more than 200 Euros (twice), respectively.

With these two questions we also saw something which could have been avoided if we conducted a proper “trial” testing of the survey beforehand. Namely, in the question 7 it is unclear how the person should respond (the question is: “*Wenn der Preis eine von der oben genannten Kriterien ist, wie viel haben/würden Sie dafür ausgeben?*“). Not only the mistake occurs in the wrong declension of the definite article in the phrase

“eine von der” (should have been “eine von den”), but the major mistake occurs in the last part, after the comma, where we additionally ask what would people pay for it. Initially this question has been seen to be dependent on the question previous. However, we later added the second part to understand people’s willingness more in detail and with that we (unintentionally) deleted the abovementioned dependency. As a consequence, when analysing the raw data, three answers to it contained zero ticked options and we attribute it precisely to the misunderstanding of the question. Retrospectively, the right one was simply to ask “*How much would you spend on the smart home technology/devices?*”.

The most frequent factors of convincing people buying the smart home devices were low installation (i.e. mainly purchasing) costs and providing clear benefits for customers (e.g. by lowering the bills). On the contrary, better advertisement and cooperation between cities and utilities (e.g. in order to lower the national consumption of energy) was not seen as a significant reason for potentially new users. In regard to the utilities, however, users would trust them – together with the security providers – the most as being best equipped to provide smart home technology, according to answers from the question eight and eleven.

And why would anybody want to buy smart home devices at all? According to our participants, the reason number one is of course the possibility of saving the energy (not limited to, of course), and thus lowering the bills. Furthermore, the technology allows for example to turn off the heating through a remote control over the internet if the person forgot it and left the home. With that in mind, the security and privacy must be absolutely taken into the account when designing and developing these devices (and the technology itself).

Also, providers cannot expect that older (and even younger) people will adopt such technology if the complexity of it is way too high. These challenges must be taken care of at early stage in order to push the technology to the market quickly at the right time. In fact, it presents very high potential for the future with many useful use-cases. Yet, at the same time, such a new technology contributes to the risks we already deal with nowadays and these will surely not decrease in the near future, rather the opposite.

To summarize, given that our goal was to investigate the understanding and analyse peoples’ attitude toward it, we can conclude by saying that such a survey proved to be

a valuable source of information with many assumptions that we initially had being (partially) confirmed. Yet, we should also mention that more time had to be attributed towards the creating survey as clearly our logic was not enough to identify all issues which occur the during the workshop later. Moreover, another lesson learned is that we should have created two language variants of the survey in order to “recognize” only English-speaking attendees.

4.2 The results of the workshop

As described in the sections above, the participation of attendees was very high and productive. Their results were summarized and written on posters (see Figure 1) and with the help of this visualization, we deviated those concepts to make smart home products more appealing for the public. As a result, we considered the savings as one of the most important points due to all groups mentioning it in one form or another. Thus, this being a basic feature and benefit of smart home. Hence, the savings in terms of money, time and power should be particularly outlined to increase the motivation for buying smart home products.

Additionally, the price of smart home products is a fundamental barrier in buying them too. Therefore, it needs to be lowered while at the same time the main benefits need to be pointed out more clearly and distinctly. We also discovered – during our workshop – that the usability and the design of a product is carrying a major role in its acceptance and willingness to buy it.

So far, only early adapters with a high understanding of technology are buying these products. Thus, the installation and use of the products must be easier through a comfortable plug & play functionality.

Another big issue are security and privacy terms. Many participants in the workshop told us they have real worries about their individual data being transferred and stored (somewhere and usually) in the USA. Therefore, both foreign and domestic companies need to embrace this effectively and consequently enhance the trust in their security and their handling of sensitive individual data, particularly in Europe.

A further step towards a higher adoption of smart home technology would be a better marketing and sales-promotion. Indeed, different approaches could be applied like for

example extended warranty, promising future software updates for X years ahead or the “return of money” in case the product is not delivering what the company has promised. Alternatively, discounts for clients for further product purchases through online submission of feedback about products can be used as well.

The workshop results helped us see which problems consumers have when deciding to buy a smart home product. In order to gain a real value out of the workshop, we created a concept for smart home technology. It is similar to a template which helps to guide inventors along the way of designing a smart home product that fulfils the demands of consumers and has a more powerful initial appeal towards them.

To be specific, a smart home product must be designed to appeal to a broader range of people. This does not start in the marketing phase. The product must be designed in a way which makes its benefits visually comprehensible.

4.2.1 A new approach to *customer benefit visibility*

One team had a very innovative and unusual idea. They, themselves, were obviously on the consumer side of smart home products. Nonetheless, they developed the idea that the whole design and purpose of the smart home product has to be completed whilst keeping the visualization of benefits in mind (Figure 1). This converts to the product not only being designed to fulfil its main function but also designed to communicate its benefits. So, not only the smart home product itself has to be altered but also the way companies design them (see Figure 4).

Each stage of the rudimentary product development process is confronted with a requirement for benefit visibility. If these requirements are not met, there is the chance that customers will fail to see the benefit that is inherent in the product. The approach is similar to the “gateway”-approach in project management.

- (1) Idea generation phase: In this phase, the requirement is fairly simple. The product idea must be generated with benefit visibility in mind. For example, “Can I design a product in a way that the benefit is clearly visible to the (outside) customers?”
- (2) Product design phase: The benefit must be visible from both the product packaging as well as the product design itself. An optimal design would emphasize the product benefit in a way that the customer needs little to no more

information on what the benefit of the product is. For example, an intelligent socket would have an LCD-display showing how much energy it saved today.

- (3) Product development phase: In the development phase – if the aforementioned requirements have been met – the development team incorporates the design aspect of benefit visibility in the product, making it easy to advertise.
- (4) Marketing phase: In the marketing phase, it is important that the advertisement supports the customer benefit visibility built up in design and development phase. The ads teach the user to recognize and understand the benefit-message the product communicates through its design.
- (5) Sales and distribution phase: In the last phase, the distribution channels must follow up the efforts of the other phases and sell not a product but the customer benefit itself (i.e. the experience).

4.2.2 A template for customer-friendly smart home products

As our workshop revealed, current smart home products fail to appease to the public. As our results are only taken from a fairly homogenous group, the template for customer-friendly products obviously is representative of what a demographic group of the ages 18 – 29 would expect from a smart home product. The template (Figure 3) shows how a smart home products should be designed to please the requirements of the public. For that we name five main requirements: (1) a price affordable for young demographic, (2) a standard interface that communicates with other systems, (3) the data being stored in Germany under the national law, (4) the product is easy to use and setup (plug & play, smartphone guided setup) & (5) the benefits are visible to unobvious outsiders. Our findings implicate that products, which fulfil these criteria, are more likely to have a greater acceptance from the aforementioned demographic.

5 Summary

To conclude our report, we would like to sum up our own thoughts on the project, our results (concepts) and our contribution to the smart home community.

We begin with our impressions of the project itself. All in all, we enjoyed the project and the work in our team very much. However, we would have liked to have a more diverse team (i.e. in terms of the culturally diversity) in order to have an even greater

team efficiency (Cox et al., 1991). Concerning the workshop, it was a fun new experience for most of us. Even though, the collaboration and communication with the other teams in the cohort was on the one hand a strenuous task, on the other hand it really helped us deliver the best possible results as well.

Although we didn't expect the outcomes we ended up with, nevertheless, we were positively surprised with some very extraordinary ideas and the concepts we derived from the workshop and the survey. As in fact both contained some new and innovative thoughts. Going back to the expectations, the reason for its divergence brought us the fact that our attendees in the workshop weren't very heterogeneous. This resulted in fairly limited and similar ideas and later also the conclusions, especially during their presentations.

Our contribution to the society and smart home community through our concept (and the survey) allow the inventors to develop smart home gadgets with a new approach, considering greatly the ever-evolving customer expectations and customer benefit visibility (see 4.2.1). We firmly believe that large enterprises (akin to ones such as Google and Amazon), who are either already taking first steps in developing and producing smart home devices or are yet to take them, should think very deeply what these products are supposed to deliver to the customers. Not just from the functional perspective but also in terms of customer needs, usability and benefit.

As one can see from announcements in recent months by different companies, they are already slowly entering the space and one can expect only increase in smart devices being able to deploy. Yet, many of them – and this can be said already today – will fail to attract the target customers who will not be interested in them. Our attempt to minimize such situations is by no means the only use. Companies must be absolutely sure of the target group and therefore, for example, conduct (expensive) market research. And with that in mind, we end our report here.

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7 Appendix

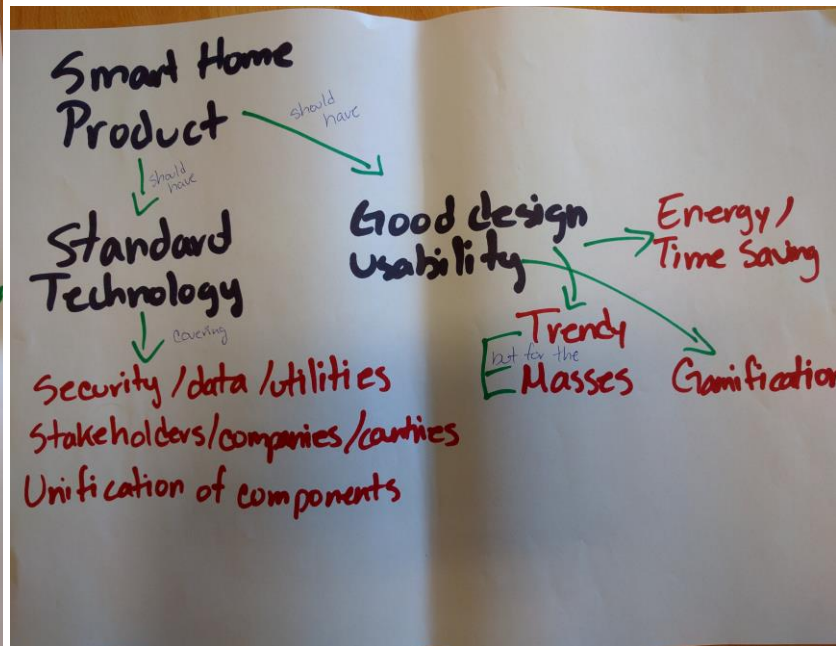
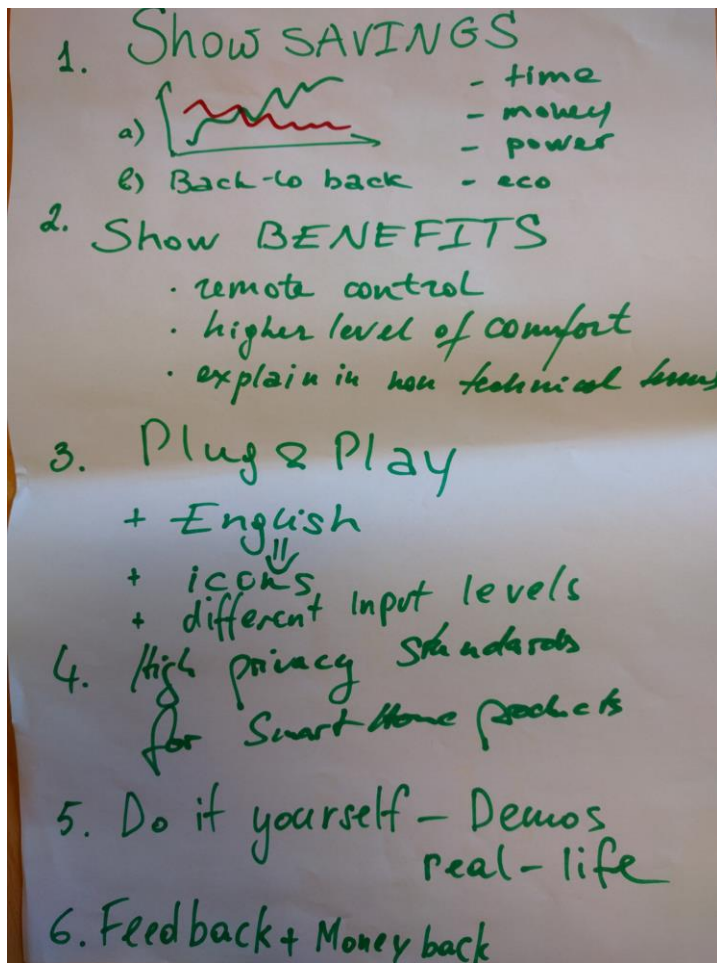


Figure 1 present two examples (concepts) which teams have created and later presented.

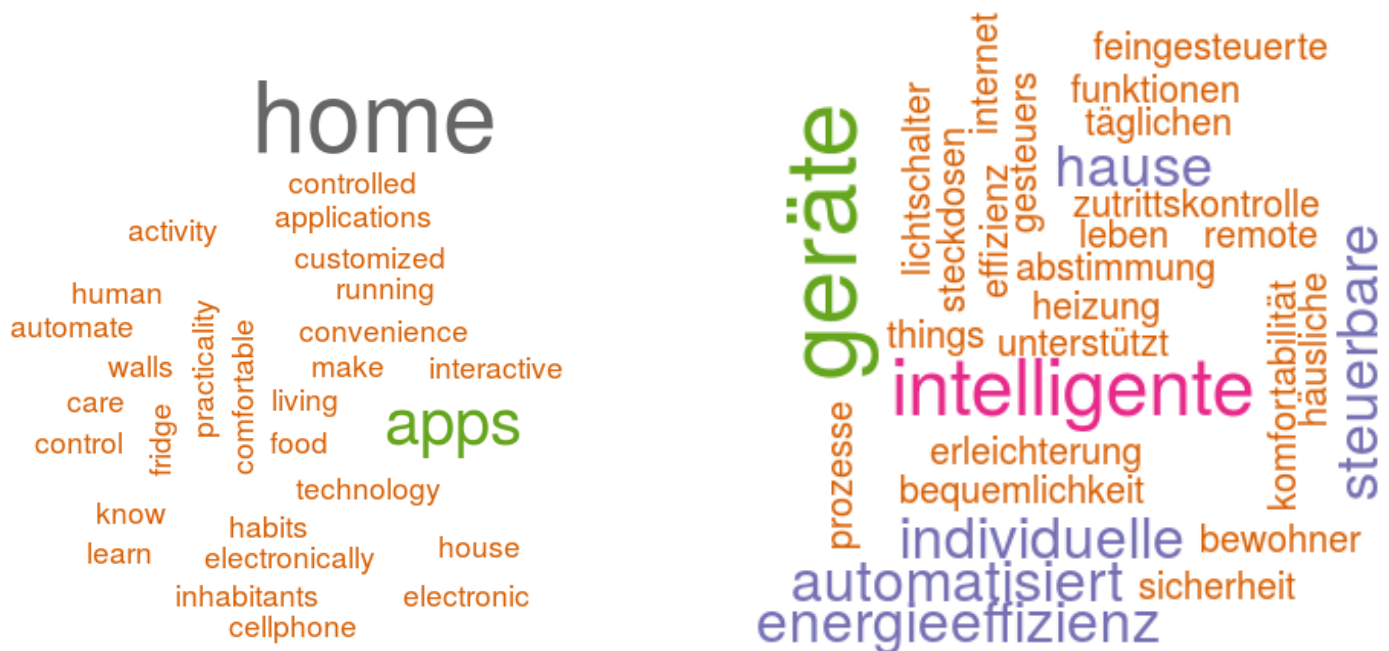


Figure 2 displays two wordclouds, in German and English, which contain words (i.e. as a part of answers) to the third question in our survey.

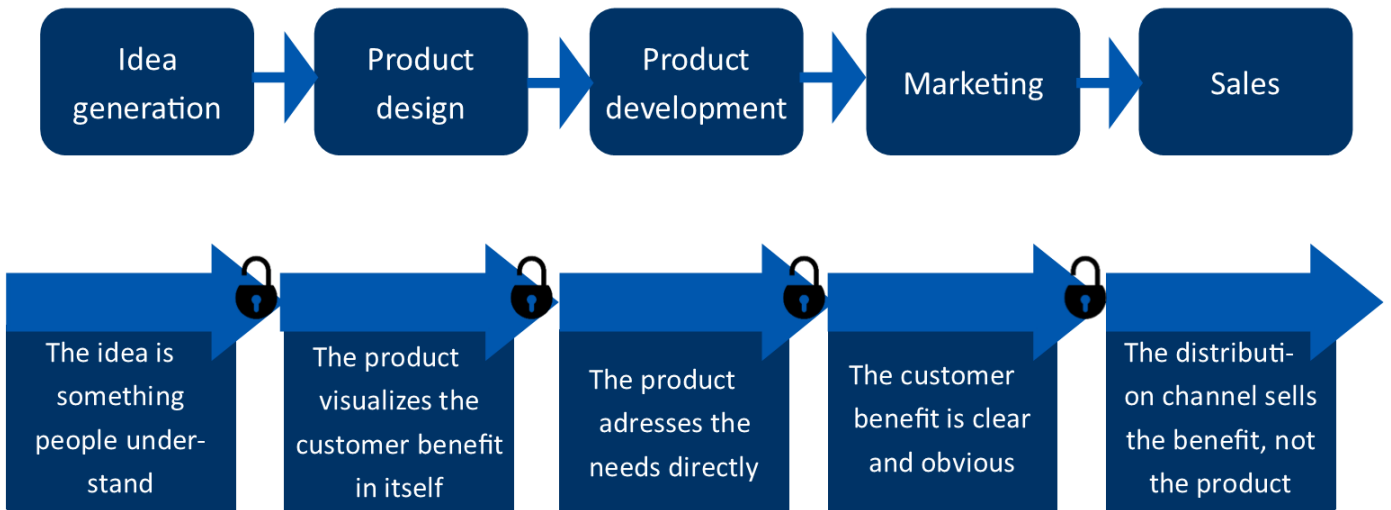


Figure 4 shows the reflective product design process.

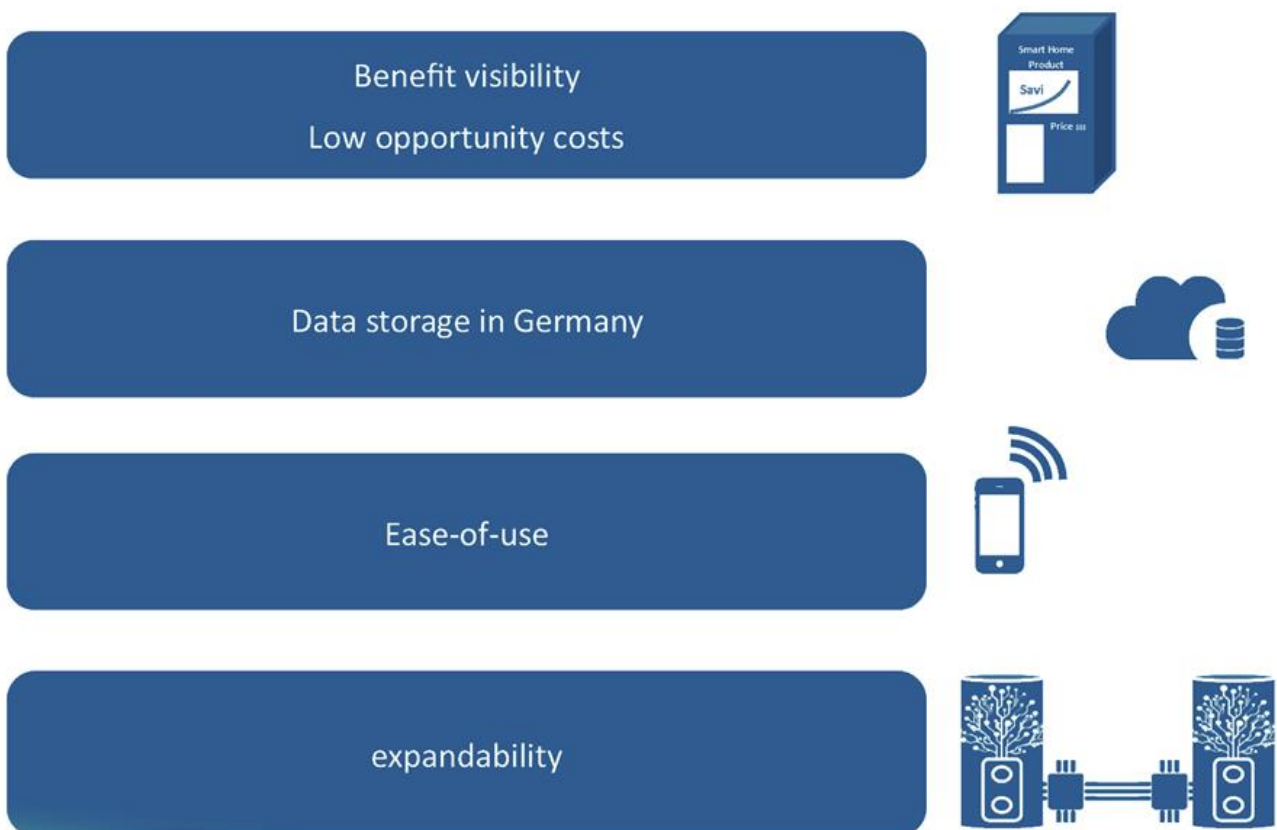


Figure 3 displays a template for smart products with attributes named in boxes.

Umfrage

1E: Haben schon von *Smart Home* gehört und wenn ja, wie gut kennen Sie es?

- ☐ Ja, und ich halte mich für einen Experten in dem Gebiet.
☐ Ja, und ich glaube, dass ich gute Kenntnisse davon besitze.
☐ Ja, ich habe ein wenig Wissen über *Smart Home*.
☐ Nein, habe ich nicht, und ich höre es jetzt zum ersten Mal.

2E: Wenn Sie bereits von *Smart Home* gehört haben, woher kennen Sie es?

- ☐ Werbung in TV, Internet, Outdoor usw.
☐ Mein Freund(e)/Kollege(n) haben darüber gesprochen.
☐ Habe darüber in der Zeitungen usw. gelesen.
☐ Ich habe darüber erst jetzt gehört.
☐ Andere, nennen Sie bitte die Quelle:

3E: Was kommt Ihnen den Sinn, wenn Sie den Begriff *Smart Home* hören? Bitte beschreiben Sie es kurz.

4E: Wie viele Ihrer Freunde haben *Smart Home*-Geräte / Technologien installiert?

- ☐ 0 ☐ 2 ☐ 4
☐ 1 ☐ 3 ☐ 5 oder mehr

5E: Haben Sie *Smart Home*-Technologien bei sich zu Hause auch schon installiert?

- ☐ Ja, ich habe.
☐ Nein, ich habe nicht.
☐ Vielleicht, ich weiss es nicht.

6E: Welche von diesen Faktoren haben Sie berücksichtigt bzw. würden Sie bei der Installation berücksichtigen?

Bitte wählen Sie maximal 3 Antworten.

- ☐ Nützlichkeit
☐ Benutzerfreundlichkeit
☐ Zuverlässigkeit (z.B. durch lebenslange Garantie)
☐ Preis
☐ Instandhaltungskosten
☐ Sonstige(s), nennen Sie bitte:

7E: Wenn der Preis eine von der oben genannten Kriterien ist, wie viel haben/würden Sie dafür ausgeben?

- ☐ 0-50 Euro
☐ 51-100 Euro
☐ 101-150 Euro
☐ 151-200 Euro
☐ mehr als 200 Euro
☐ Ich habe den "Preis"-Faktor nicht angekreuzt.

8E: Was hiervon kann Ihre Regierung/Gemeinde tun, um *Smart Home* attraktiver zu machen?

- ☐ Mehr effektive Werbung.
☐ Klare Vorteile für die Kunden (z.B. Senkung der Stromrechnung).
☐ Erstellung von besseren Anwendungen.
☐ Arbeit mit mehreren kommerziellen Anbietern (z.B. Versorgungsunternehmen)
☐ Niedrige Kosten für die Installation.
☐ Sonstige(s), nennen Sie bitte:

9E: Von welcher Funktion der *Smart Home* Technologie Sie sind am meisten begeistert?

Bitte wählen Sie nur 1 Antwort.

- ☐ Energiesparfunktionen (z.B. intelligente Thermostate)
☐ Sicherheitsanwendungen (z.B. gegen Einbrecher)
☐ Fernsteuerung von Geräten (z.B. durch ein Smartphone)
☐ Sonstige(s), nennen Sie bitte:

10E: Wo sehen Sie die größten Gefahren für den kommerziellen Erfolg von *Smart Home*-Technologien?

- ☐ Sicherheitsprobleme (z.B. Fernsteuerung Ihres Hauses).
☐ Die öffentliche Akzeptanz.
☐ Datenschutz (z.B. Daten werden mit Dritten geteilt).
☐ Unklare Vorteile.
☐ Unnötige Komplexität.
☐ Hohe Kosten.
☐ Sonstige(s), nennen Sie bitte:

11E: Welchem Unternehmen würden Sie am meisten vertrauen, um Ihnen *Smart Home*-Technologien anzubieten?

- ☐ Telekommunikationsunternehmen (z.B. Vodafone, Deutsche Telekom usw.).
☐ Versorgungsunternehmen (z.B. E.ON, N-ERGIE, RWE usw.).
☐ Sicherheitsanbieter.
☐ Versicherungsunternehmen.
☐ Online Service Unternehmen (z.B. Google, Apple, usw.).

Demographische Fragen

12E: Was ist Ihr Geschlecht?

- ☐ männlich ☐ weiblich ☐ Keine Angaben

13E: Wie alt sind Sie?

- ☐ jünger als 18 Jahre ☐ 50-64 Jahre alt
☐ 18-29 Jahre alt ☐ älter als 65 Jahre
☐ 30-49 Jahre alt ☐ Keine Angaben

Figure 5 shows our survey.

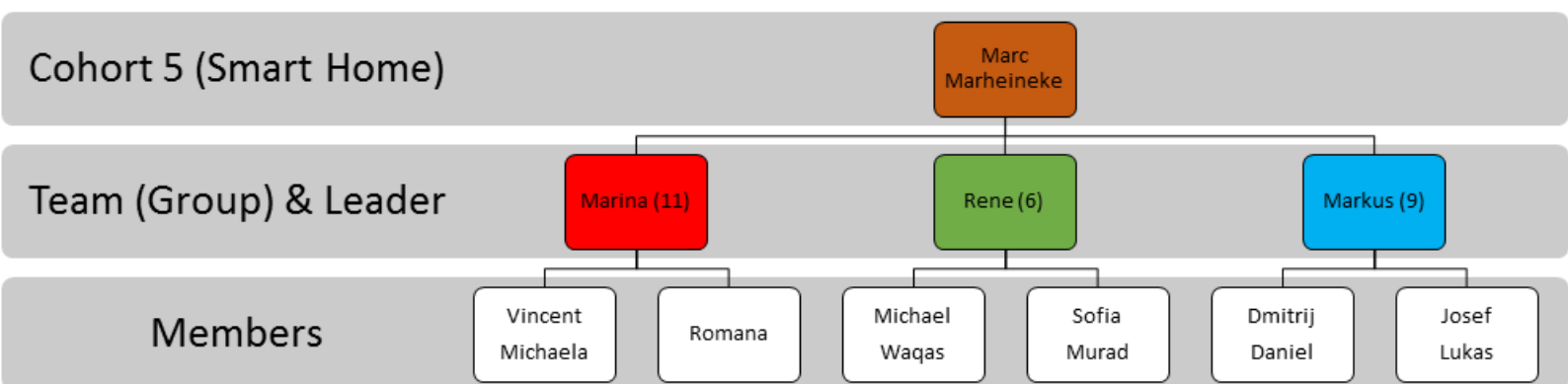


Figure 6 provides an overview of how our groups were structured.