



Improving JOSEPHS' service effectiveness/efficiency for corporate clients

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Professor: Prof. Dr. Kathrin M. Möslin
Advisor: Julia Jonas & Angela Roth
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Submitted by:

Dmitrij Petrov

IIS

Mat.-Nr.:

dmitrij.petrov@fau.de

Denis Feldmann

WING

Mat.-Nr.:

denis.feldmann@studium.uni-erlangen.de

Friedrich-Alexander University of Erlangen – Nuremberg
Chair of Information Systems I – Innovation and Value Creation
Lange Gasse 20, 90403 Nuremberg, www.wi1.uni-erlangen.de

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Petrov



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1 Introduction

1.1 JOSEPHS – The Service-Manufactory

JOSEPHS is located on the west side of the city of Nuremberg in Germany. As a joint project of the *Fraunhofer Center for Supply Chain Services* and *Chair of Information Systems I at the University of Erlangen-Nuremberg (FAU)*, it is a combination of a coffee shop and an open innovation platform stretched over 400m² shop floor.

JOSEPHS offers companies a unique proposition. Namely, to engage over 1000 co-creators of various age in the research and development of new products and services for three months by having a bidirectional communication of information with one of five companies presented (Gustafsson et al., 2012). The co-creators, henceforth also called end-users (see later chapter 3), are customers who come to JOSEPHS to interact with newly developed prototypes in the service laboratory (“Werkstatt”). Moreover, they can enjoy a coffee at Mr. Bleck that is just a few meters away from the service laboratory, visit diverse events held in a conference room or buy products in a small gadget shop.

The service laboratory, where the interaction happens, is offered commercially to businesses as a *platform-as-a-service* where they can exhibit their technologies, prototypes or products and services and in exchange receive a valuable feedback from end-users – their potential, future customers. JOSEPHS provides not only advices on the development and installation of the exhibition islands, but also presents the exhibits and surveys end-users. After three months, JOSEPHS changes the main theme and evaluates all the feedback co-creators have provided at every exhibition island. As end-users and co-creators are one of the main sources of innovation, their reactions and opinions help companies in developing a valuable user experience, be it a service innovation or a (yet unreleased) product.

The mission of JOSEPHS is to offer a commercial service to corporate clients which can engage with end-users in the co-creation process of a service innovation. For firms, such an exchange has a great benefit since integrating co-creators’ feedback early on, already during and not after the development

of their services and products, can prevent abortive development.

1.2 The purpose of the presented work

For this seminar paper, we are going to show possibilities of increasing JOSEPHS' productivity for corporate clients through *efficiency* and mainly through *effectiveness*. Hence, the paper is divided into several chapters. While in the theoretical foundation we take a look on how to define and measure efficiency and effectiveness (chapter 2), in the third section we present our suggestions concerning effectiveness improvement. Lastly, we discuss challenges for implementation of our solutions in chapter 4 before we conclude and summarize our work in the chapter 5.

2 The efficiency and effectiveness

2.1 Defining service productivity

The goal of most companies is to take the inputs such as labour, raw materials and other resources and transform them into an output, usually a product which they can sell with higher margins (see Appendix A). By having better utilization of input resources ("how well we produce") and ability to produce more ("how much we produce"), the firm can increase its productivity, and thus – through trading and other market forces – can become profitable (Tangen, 2005).

Both terms, *efficiency* and *effectiveness*, play a key role in achieving high productivity and being able to sustain profitability in the long-run. As shown by TANGEN (2005) many authors define both concepts differently, although there are some common characteristics. Given that our task is to suggest improvements to JOSEPHS that would have a direct impact on corporate clients, let us first define both terms independently before examining the umbrella term *service productivity*.

Efficiency is the minimum resource level that is theoretically required to run the desired operations in a given system compared to the amount of resources that are actually used (Tangen, 2005). Meaning that this ratio is defined by the output divided by the input and it embodies 'doing the things right'. Given that efficiency focuses strongly on the 'input' part of the equation, it naturally deals with the utilization of resources – before and during a transformation process – that are really used in practice compared

to their maximum potential (Tangen, 2005).

The effectiveness is defined as a ratio between actual output and expected output, thus in other words it shows how well a set of results is accomplished (Sink and Tuttle, 1989; Sumanth, 1994). Here, not only the focus is clearly on the 'output' part, i.e. after transformation of input resources, but also the effectiveness embodies 'doing the right things'. As a result of that, there are usually no limits regarding how effective a company can be (Tangen, 2005). Indeed, both concepts are task and goal dependant and achieving high efficiency and high effectiveness at the same time – or giving a preference to one of those – is a particular business challenge.

What has been described, however, can be seen to a large degree as a manufacturing-based view. Therefore, the classical definition of productivity – given that the quality of the outputs is kept constant – is to divide produced outputs by used inputs (Grönroos and Ojasalo, 2004). Yet, the condition of constant quality usually doesn't apply in the context of service productivity. The reason is that a customer can play a dual role as both customer and co-producer of the service and correspondingly his productivity can shift and have a significant impact on the quality of the service and overall productivity (Johnston and Jones, 2004; Carlborg et al., 2013).

Additionally, increasing service productivity in reality often involves a trade-off. Better service typically requires more labour intensity, lower productivity and higher cost. Yet, there is a struggle between improving service to customers (increasing customer satisfaction) and cutting costs by using less or less expensive labour (improving efficiency) (Rust and Huang, 2012; Carlborg et al., 2013).

Therefore, several theories have been developed which try to take into account the interrelationship between the use of inputs and the perceived quality of the produced outputs (Grönroos and Ojasalo, 2004). All in all, BECKER ET AL. (2011) describe six different service productivity approaches found in the current marketing, service-oriented, literature.

Whereas RUTKAUSKAS and PAULAVIČIENĖ (2015) describe *service productivity* as a ratio between the quantity and quality of output divided by the quantity

and quality of input. However, GRÖNROOS and OJASALO (2004) see it differently. For them, it is a function of *internal efficiency* (i.e. JOSEPHS' productivity), *external efficiency* (i.e. productivity from the customer) and *capacity efficiency* (i.e. the utilisation of service capacity) (see Appendix B describing their model; Jääskeläinen and Lönnqvist, 2011). An additional viewpoint is provided by JOHNSTON and JONES (2004) who define two distinct terms that form their understanding of service productivity. They call it an *operational* and *customer* productivity.

Service effectiveness is when the customer, who comes to JOSEPHS either as an end-user or a corporate client, decides whether the service he experiences reaches the expected quality and fulfils his expectations in a satisfactory matter. This can be equated with the quality of a service as well. Hence, the higher the customer's satisfaction is, the greater is also JOSEPHS' effectiveness. On the contrary, a *service efficiency* is determined by the use of resources in order to achieve a goal and perform a desired service for the customer.

Being productive, as we see it, is when (I) all exhibition islands for companies are booked and (II) end-users come in a "high" number. Additionally, JOSEPHS becomes productive for companies (III) when co-creators engage with firms' products and services by providing them a high-quality feedback, as opposed to just low-quality one or none at all.

2.2 Measuring JOSEPHS productivity

As researchers have different theories concerning the definition of service productivity, there is also no agreement on its measurement (Biege et al., 2013). Indeed, challenges related to measurement can only be solved after outputs and inputs have been properly defined. Furthermore, the key challenge seems to be the basic unit for measuring the quantity of the performed services (Jääskeläinen and Lönnqvist, 2011).

Not only services are usually very complex and have many qualitative and quantitative inputs and outputs, but a service provider itself has an important influence on an end-user's experience. Given the *intangibility* of the output, services are very hard to grasp. Other criteria distinguishing them from products are presented under the acronym *IHIP* – being *heterogeneous*,

inseparable and lastly *perishable* (Biege et al., 2013; Sherwood, 1994).

2.2.1 Input and output resources

We define inputs as a composition of all resources, both tangible as well as intangible, needed to provide the (service) output. In order to increase efficiency, inputs have to be optimally utilized. If considering the service productivity theory of GRÖNROOS and OJASALO (2004), input resources are seen as a part of the *internal efficiency* that is defined as how effectively input resources are transformed during the service process to outputs in the form of services.

According to GRÖNROOS and OJASALO (2004) outputs are seen as a part of the *external efficiency* which is defined as how well the quality of the service process and its outcome is perceived. This also determines the service effectiveness that contains both, the service quality JOSEPHS intends to provide and service quantity that largely depends on the demand (Jääskeläinen and Lönnqvist, 2011). The same authors also state that the design of measures for the intangible output elements is a big challenge. Appendix C shows an example of possible input and output factors from all three main parties involved – companies, the operator (JOSEPHS) and end-users.

2.2.2 The instruments and concepts

JÄÄSKELÄINEN & LÖNNQVIST (2011) and JOHNSTON & JONES (2004) repeatedly emphasize the fact that services have *IHIP* properties and contain many different types of input and output units, and thus are difficult to ‘capture’.

During our research, we could observe that the current state of science concerning the measuring of the service productivity is still in its initial phase. This is further validated by BIEGE ET AL. (2013) who propose four requirements for a productivity measurement of services, e.g. being able to measure innovativeness or internal output of a service process. Indeed, out of three evaluated service productivity theories, only a conceptual view presented by GRÖNROOS and OJASALO (2004) achieved to cover two of the requirements partially. As a result, currently there doesn't seem to be an agreement upon a unified approach, for example a formula, for measuring and calculating the service productivity.

Nevertheless, GRÖNROOS and OJASALO (2004) describe three basic alternatives of measuring productivity and argue that financial measures that calculate the value of the outputs of the service process are the only valid measures of service productivity (Jääskeläinen and Lönnqvist, 2011). The other two proposed alternatives are *physical measures* known from the traditional manufacturing perspective and a combination of both, financial and physical measures.

Thus, it is also necessary to look at more traditional, physical measures known from manufacturing. At JOSEPHS, the time end-users spend in order to provide feedback at each of the five exhibition islands can be measured for example, but also how many end-users have been served per employee. On the other hand, it is important to consider that these metrics don't reflect the quality of feedback or amount of assistance provided by employees to each end-user (Grönroos and Ojasalo, 2004).

Nonetheless, McLAUGHLIN and COFFEY (1990) and later JÄÄSKELÄINEN (2009) explored general and more detailed measurement methods and frameworks. Besides the abovementioned monetary approach, JÄÄSKELÄINEN (2009) also quotes researchers who suggest measuring the change of productivity, multiplying the output quality with output quantity, applying different matrix methods (e.g. the objective matrix) or using performance measurement systems such as *balance scorecard*.

To conclude, JÄÄSKELÄINEN & LÖNNQVIST (2011) reached the result that the current literature reveals a lack of empirical examination of the measurement of service productivity at the micro level. But on the other hand, BIEGE ET AL. (2013) also state that theory published by GRÖNROOS and OJASALO (2004) currently presents the most comprehensive concept for measuring the productivity of services, as it includes the relevant findings of service research.

3 Improving JOSEPHS' effectiveness

One of the issues concerning theories presented by BECKER ET AL. (2011) is that they are oriented rather towards the co-creators of a service. However, for our purposes, we need to concentrate on companies that engage in the

innovation process carried out by JOSEPHS. Additionally, those presented concepts do not provide frameworks or further methodologies how productivity could be improved.

In the further course of the presented work, we are going to use the two terms 'end-user' and 'co-creator' synonymously. Even though 'end-users' mainly refers to people who only use a product and only sometimes provide feedback. On the other hand, co-creators engage in the process of developing and enhancing a product or a service, and hence provide meaningful ideas by participating in the creation mechanism.

As illustrated in Appendix D, we have focused on the interaction between JOSEPHS, end-users and companies and specifically on the value exchange of the innovation process. In this specific section of the innovation process, the companies (corporate clients) are described as JOSEPHS' partners (see Appendix E) because they work together in order to provide a value to end-users and in return receive feedback and suggestions concerning their exhibited ideas or prototypes. Considering this specific workflow, the end-user is seen as a customer who needs to be motivated and lured to JOSEPHS in order to engage in the innovation process. Thus, the coffee shop (Mr. Bleck) located in the same place acts as an enticement to lure the customers into the service manufactory.

While in the manufacturing context, the use of standardization and automation can in fact greatly increase a plant's productivity, in service industries, though, the use of automation and standardization may actually worsen the service result. In fact, when considering the necessity of explaining and presenting each idea or prototype to co-creators at JOSEPHS, the automation of this process (e.g. printed explanation or presentation) would appear as a reduction of the service quality (Rust and Huang, 2012). Thus, there is no possibility of automation because each interaction with the customer is unique and requires different approaches of communication and also presentation of the exhibits to end-users. On the one hand, JOSEPHS may consider to have less staff (resulting in better utilization of existing assistants to a higher degree; better efficiency), but on the other hand this will naturally affect the effectiveness of the service for

corporate clients (e.g. assistants are overwhelmed by the amount of work, hence do not engage into deep conversations with co-creators).

Concerning our task, we have decided to focus only on improving JOSEPHS' effectiveness for corporate clients. In fact, if we focused on efficiency too, we would be required to study the utilization of JOSEPHS' input resource, e.g. the use of materials. We deemed this to be beyond the scope of this paper.

3.1 Six Sigma – Increasing productivity at JOSEPHS

The feedback is certainly the most important resource that end-users give to JOSEPHS which is then later analysed and provided to companies. In order to improve it – meaning gathering high-quality feedback in high amount – widely used manufacturing approaches can be taken here into account, too (see chapter 2.2.2). Thus, we have decided to apply a quality management technique called *Sig Sigma* that is known from manufacturing industry and has been developed in 1980s by Motorola.

In the service setting, the core idea of this quality and process improvement technique is to yield a dramatic reduction in defects, errors, or mistakes in service processes. It does that by focusing relentlessly on reducing process variation and eliminating non-value added steps or tasks. The objective of Six Sigma is to understand how defects occur and then to devise process improvements to reduce the occurrence of such errors which improve the overall customer experience, and thereby enhance customer satisfaction (Antony et al., 2007). Indeed, it is described as a disciplined approach for improving service effectiveness (i.e. meeting the desirable attributes of a service) and service efficiency (i.e. time and costs; Antony et al., 2007).

Six Sigma is a set of tools and techniques and it consist of two methodologies: *DMAIC* and *DMADV*. Due to the possibility of improving existing business processes – i.e. gathering and analysing feedback sheets co-creators filled-out – we have applied the project methodology abbreviated as DMAIC – **D**efine, **M**easure, **A**nalyse, **I**mprove and **C**ontrol (Smith, 2003; Villanova University, 2016).

The first phase of DMAIC is to *define* a system and its problem or defect that may lead to a company's dissatisfaction. Naturally, we think of low quality as

well as low quantity of feedback provided.

This aspect also goes hand in hand with the second stage of *measuring* key aspects of the current process and collecting relevant data. According to our knowledge, out of over 3000 people coming to JOSEPHS in the period between February-April 2016, 1500 end-users have provided feedback and only 500 end-users have engaged for at least 20 minutes with a company's idea or prototype and provided feedback of higher quality. If a requirement of a firm was to gather feedback from 1000 co-creators who engaged with its idea for more than 20 minutes but only gathers 500, then it may not be satisfied with the outcomes, and thus with JOSEPHS. What we need in this stage is to establish key performance indicators (e.g. 500 end-users with high engagement) which function as a reference for the improvements. Later, as we measure the new key performance indicators, we will compare it to former key performance indicators and assess the made improvements.

Next, we *analyse* the data to investigate and verify cause-and-effect relationships. Indeed, why do not end-users provide high quality feedback automatically and why do not more people engage more intensively at all? The causes of these problems can range from being bored already after the second exhibition island, not fully understanding the purpose of the technology/prototype to not being fully motivated to spend time and energy to provide feedback in an appropriate manner.

The second to last step is to *improve* or optimize the current process, set up pilot runs to establish process capability and implement improvements. What we essentially recommend is to motivate people by exchanging values. By providing values that end-users appreciate, JOSEPHS and its companies can receive valuable feedback and ideas in return (see Appendix D). This can include a better and longer assistance provided to end-users by asking them more specific and deeper questions or applying gamification principles (see later chapter 3.1.2). In this phase, JOSEPHS also has to adapt all training and briefing materials for the staff and other involved business processes.

The last step of the DMAIC project methodology focuses on the *control*. After

the improvements have been implemented, there is a need to monitor the future state process to ensure that any deviations from the target will be corrected and adjusted. DMAIC is repeated until the desired quality level is obtained.

By going through the DMAIC methodology step by step, we can lower the feedback's vagueness (its "defectives") and increase its validity. Then, by gathering feedback of higher quality, JOSEPHS can provide data and recommendations of higher significance to the companies, and therefore enhance the effectiveness for corporate clients.

3.1.1 Improving JOSEPHS' questionnaires

By applying DMAIC we found out that various questions in the exhibition islands' questionnaires are too general or verbalized too imprecisely. End-users confronted with those questions interpret them differently depending on their mind-set. However, answers provided by co-creators are not necessarily wrong but the variety of answers may increase, and therefore falsify the result. For instance, the exhibition island "CODIFeY" had the following question: "In what street would you like to have charging stations – on a main street or side street?" Depending on the lifestyle of end-users the answers may vary of course. A logical thinker may say that since most cars drive on a main street it would also be logical to have charging stations there. Yet, a pragmatic thinker who has his apartment in a side street and works at the office in downtown where he always has to find a parking space for his car, he would choose the side street answer. The reason for his answer is that there are never any free parking spaces left in the main streets. However, a father of a family living in his own house does not need any charging stations since he can charge his car in his garage and underground parking at work. Yet, he would prefer having charging stations in main streets because they are clearly visible for him when going with his family on vacation and driving through other cities.

It is important to fully understand the motives and reasons for the answers end-users choose instead of gathering just answers. Only when a company completely understands what a customer wants, it can provide a good service. In order to receive a clear picture of the end-user's needs and

thoughts, and thus having a higher effectiveness, the questions have to be more accurate and specific.

Another idea regarding the improvement of JOSEPHS' questionnaires focuses on how co-creators can help to ease JOSEPHS' burden of selecting companies for future exhibition islands. Our suggestion relates to JOSEPHS' operational level where end-users are asked about their opinions and suggestions concerning JOSEPHS itself at the end of their participation in the innovation process.

The questionnaire given to end-users could be extended by adding questions concerning end-users' preferences and wishes. Instead of currently asking them vague questions such as "what do you wish from JOSEPHS in the future", it would more effective to ask precise questions of which they may not even think of in the first place. Those questions can broach the issue of companies, technologies, products or services the co-creator would like to see in JOSEPHS in near future, e.g. during the next "theme-world".

Companies are currently switched every three months and as a result JOSEPHS' management has to identify new ones regularly. Yet, this alone is a very time-consuming process and it requires a lot of coordination and organizational skills. By implementing our idea, we would partially shift the responsibility of identifying new companies for future "theme-worlds" from JOSEPHS' management towards the end-users. Once, a certain amount of 'votes' is reached, the chosen company(/ies) would be evaluated – as it is certainly done now – and contacted with an offering. The offering, however, would instantly become more attractive because those companies would feel demanded and even obligated to come to JOSEPHS since they are being requested by co-creators who would like to contribute to their innovations. Furthermore, co-creators would be able to provide better feedback since they are familiar to (knowledge) or at least interested (intrinsic motivation) in the topics and research field of the suggested company or technology.

Another benefit is that end-users gain an additional decision-making 'power'. This could strengthen the relationship between them and JOSEPHS as the personal involvement in the innovation evaluation process increases by

suggesting e.g. one's favourite company. Independently, whether the suggested company will participate or not, the co-creator will nevertheless check JOSEPHS more closely and frequently for instance on Facebook. Such a higher personal involvement would result in higher effectiveness for businesses since end-users are more eager to participate in the co-creation process repeatedly and hand-in feedback of better quality.

3.1.2 Gamification based incentive system

The main problem for gathering feedback at JOSEPHS is that end-users who provided feedback once are not being motivated to come again. It may be entertaining to engage in this innovation process once but JOSEPHS lacks motivating incentives for co-creators who spend time, creativity (for potential improvements) and energy. Therefore, JOSEPHS and its exhibiting companies need to provide more than just insights into new technologies and inventions to the end-users in order to obtain their relevant thoughts and opinions. The innovation process at the service manufactory has to be designed more entertaining, interesting or even challenging in order to increase end-users' intrinsic motivation.

In the following we would like to present our gamification based incentive system which rewards end-users providing the highest quality feedback. In order to reward them, their personal data is required, otherwise an unambiguous allocation to the respective feedback would not be possible. Contrariwise, feedback has to be anonymous too or else feedback givers may not tell the whole truth. Thus, if end-users are willing to participate in our gamification based incentive system (JOSEPHS' employees would ask this at the beginning end-user's participation), they would receive a unique participant number which can be linked to a nickname that end-users can choose freely. Such a participant number can also be seen as an account where co-creators can collect reward points that can be earned by providing good feedback. The reward points (F) can be calculated with the following formula:

$$F = (T + Q_a) * G$$

Depending on the time an end-user spends at an exhibition island, he receives a particular amount of points T . Moreover, it is important how many questions this end-user answers in the questionnaire at the same exhibition

island which is represented by Q_a . Even though partially completed questionnaires may still be useful for some companies, the formula distinguishes partially from entirely completed. Finally, the guide (JOSEPHS' staff who accompanies the end-user through the whole innovation process) can rate (G) the end-user concerning the quality of provided ideas, suggestions and other opinions. In order to limit the guide's rating power (i.e. his subjectivity), we recommend a binary numeral system for the value G .

Furthermore, each exhibition island holds a leaderboard presenting the top ten feedback providers of the relevant exhibition island. In order to prevent misuse of the incentive system, end-users are allowed to provide feedback at each exhibition island only once a month (evaluation period). Thus, co-creators who evaluate the same exhibited product twice in the same month won't receive any reward points for the second feedback. However, the total period for providing feedback is limited to three months, just as the exhibited products and services. Since most of the exhibiting companies adjust or change their questions after a specific period of time (e.g. four weeks) end-users will receive different questions every evaluation period. At the end of the exhibition, the co-creators who gained the highest score at each of the five exhibition islands can choose between a sponsored reward and a conversation with the company's research & development manager (or of any other involved department). The exhibiting companies can decide what kind of reward they would like to sponsor. Yet, it is also in their own interest to provide an attractive reward in order to motivate co-creators to enter the feedback competition. Moreover, co-creators may also be interested in talking with developers themselves and obtaining more background information and insights about the presented ideas and products or firm's innovation process. For example, this would be possible when presenting recommended actions and gathered feedback to the specific companies.

This gamification based incentive system does not only motivate end-users to come to JOSEPHS on a regular basis and provide feedback in order to receive a reward, but it also triggers the competitive spirit since only the best feedback givers will be rewarded. Naturally, people like being challenged and they love being appreciated for their effort. Therefore, co-creators will be

motivated to evaluate the exhibited products and services more closely and hand in feedback of higher quality. However, the goal of the gamification based incentive system is not only to focus on rewarding co-creators in terms of 'buying feedback provider' but rather to focus on increasing the intrinsic motivation of co-creators and making them feel important for the innovation process. If there is a reward that can be won by providing the best feedback, then end-users will think that their engagement and ideas must be valuable for JOPSEHS. Moreover, this incentive system does not interfere with end-users who do not want to participate and receive a reward but rather just would like to provide feedback at JOSEPHS as it is currently. As already mentioned, end-users are free to decide whether they would like to obtain a participant number for the incentive system before they begin their journey through the service manufactory.

By implementing the presented idea, JOSEPHS' effectiveness would increase since JOSEPHS would not only be able to collect more feedback but also of a higher quality. Thus, JOSEPHS could provide data and recommended actions of higher significance to the companies which would result in higher effectiveness for the corporate client.

4 Discussion of chances and challenges

Now, we would like to reflect on the chances and challenges of our ideas when implementing them at JOSEPHS.

By applying DMAIC, we discovered defects that JOSEPHS should investigate and eliminate to lower uncertainty of questionnaires in the future. In fact, some end-users participating at the innovation process have troubles answering questions at the exhibition islands because questionnaires are verbalised imprecisely. Therefore, the questions become biased and depending on the end-users' mind-set, the answers will have a greater variation (see chapter 3.1.1). By neutralizing the possibility of interpreting questions differently, JOSEPHS would be able to gather the specifically needed information about end-users' needs without any distortive assumptions that are only known to the responder. Indeed, this means that such a question will have to be much longer or replaced by a couple of more specific questions but it will also lead to a greater informative value.

Regarding the questionnaires asking co-creators about their wishes and preferences at the end of the innovation process, this idea would improve the relationship between co-creator and JOSEPHS if he experiences the impact of his suggestions in the next exhibition. Moreover, the co-creator's feedback would be of higher quality since his suggested company, product or technology is well known to him or at least interesting for him, as already mentioned in chapter 3.1.1. Contrariwise, if the suggested products/services, companies or technologies are not exhibited in the next exhibition the relationship between JOSEPHS and the affected co-creator may worsen and result in feedback of less quality or even not coming back at all since he may feel ignored. To avoid such dissatisfaction, JOSEPHS would have to be more transparent concerning questions that affect future exhibitions. For instance, the collected data could be posted on Facebook illustrating how many co-creators have voted for specific companies, products/services and technologies and highlighting JOSEPHS' choice selecting the best five. Of course implementing and monitoring these ideas will cost JOSEPHS a lot of time and effort, especially evaluating open-ended questions. But these improvements will result in higher effectiveness for corporate client. However, if the collected data helps a company to be more successful in developing their product/service, then it will be willing to pay more (to cover JOSEPHS extra costs) and even engage in cooperation with JOSEPHS, Fraunhofer or WI1.

The challenges of installing the gamification based incentive system are clearly calculating and illustrating the reward points at JOSEPHS. We have developed this idea due to the fact that end-users are not motivated sufficiently to come to JOSEPHS even though they have the most significant impact on the outcome of the innovation process. Providing incentives to the co-creators requires spending much time, costs and effort indeed. But on the other hand JOSEPHS will be able to increase the quality of feedback, the reach and the degree of brand awareness of participating companies. Moreover, JOSEPHS does not have to reward all co-creators but only the most effective feedback providers. As already mentioned in chapter 3.1.2, JOSEPHS should seek cooperation with the participating companies and

motivating them to sponsor rewards. Therefore, JOSEPHS would be able to save costs and the companies could decide how they would like to motivate co-creators by sponsoring an interesting reward.

Rewarding people coming to the service manufactory and providing feedback will encourage them to check its website more regularly and even inform and motivate other potential co-creators. Installing leaderboards may be expensive. Therefore, an even better option is having leaderboards only on JOSEPHS' website. Hence, incentive seeking feedback provider will have to visit the website in order to check their score and will even receive other information simultaneously (e.g. future exhibitions, presentations & guest speakers).

The gamification system, however, can also be expanded by introducing playful elements. For example, at the exhibition island with the sleeping-aid end-users could compete against the automatic sleeping-aid by cradling a crying baby doll to sleep and measuring the needed time. End-users would be able to experience the product in a playful and entertaining manner.

5 Conclusion

Concentrating on end-users and putting ourselves in their position may seem to be far-fetched in the first place regarding the topic of service productivity improvement for corporate client at JOSEPHS. Nevertheless, it is important to analyse the whole innovation process and be aware of the fact that the co-creators providing feedback generate the crucial data and ideas that consequently are analysed and evaluated by JOSEPHS. Hence, inaccurate or bias data that is generated at the beginning may lead to incorrect recommended actions for corporate clients. Eliminating the threat of inaccuracy right in the early stages and even improving the feedback collected from end-users using an incentive system to increase intrinsic motivation, will ultimately enhance JOSEPHS' productivity for corporate clients and help JOSEPH to provide significant recommended actions to its clients.

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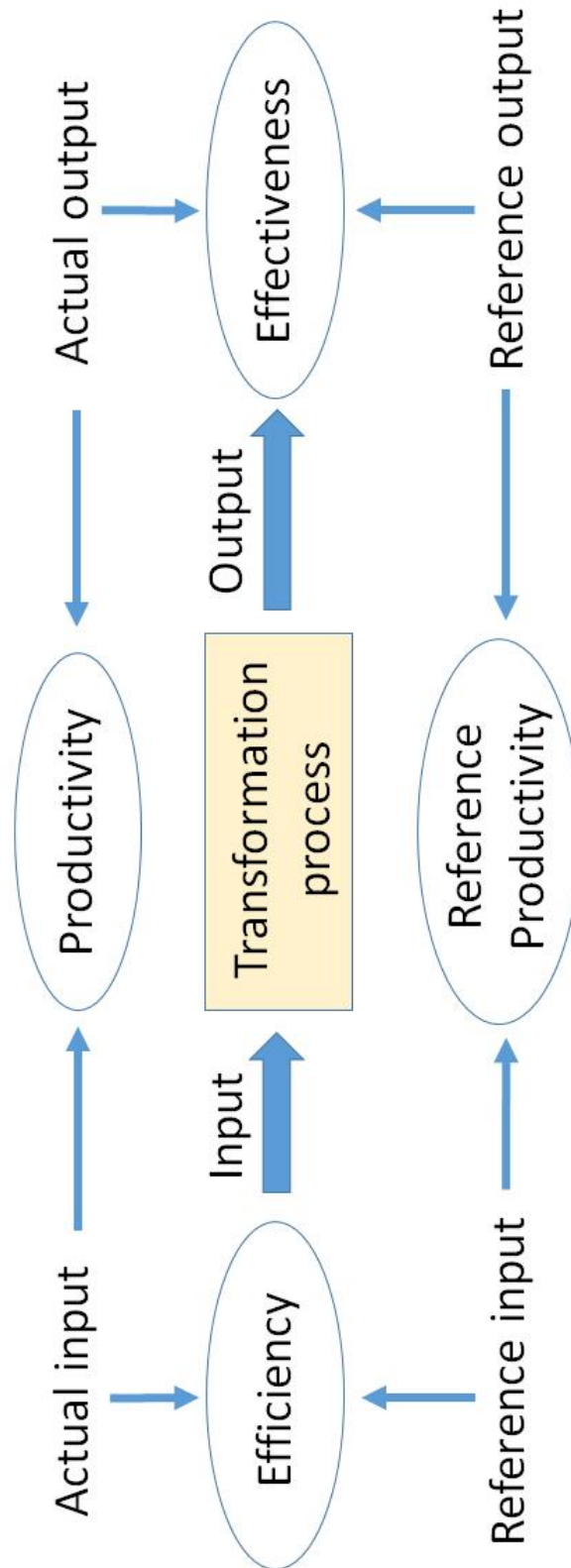
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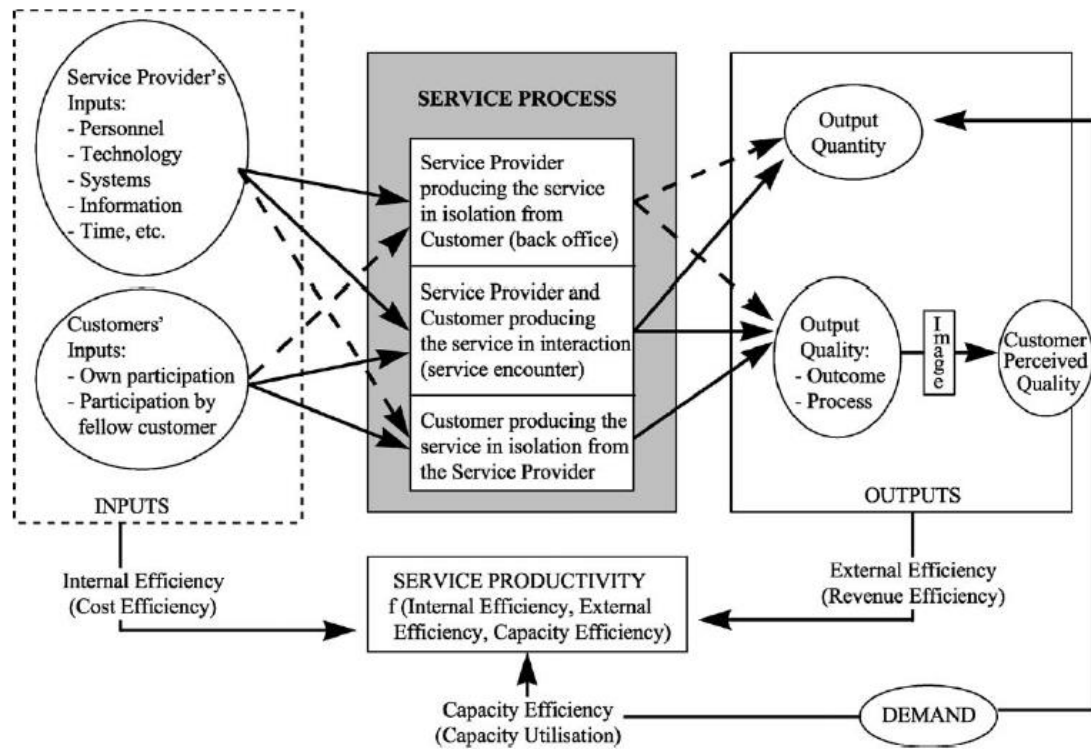
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Appendix A Transformation process of inputs and outputs



Appendix B Service productivity model as described by Grönroos and Ojasalo (2004)

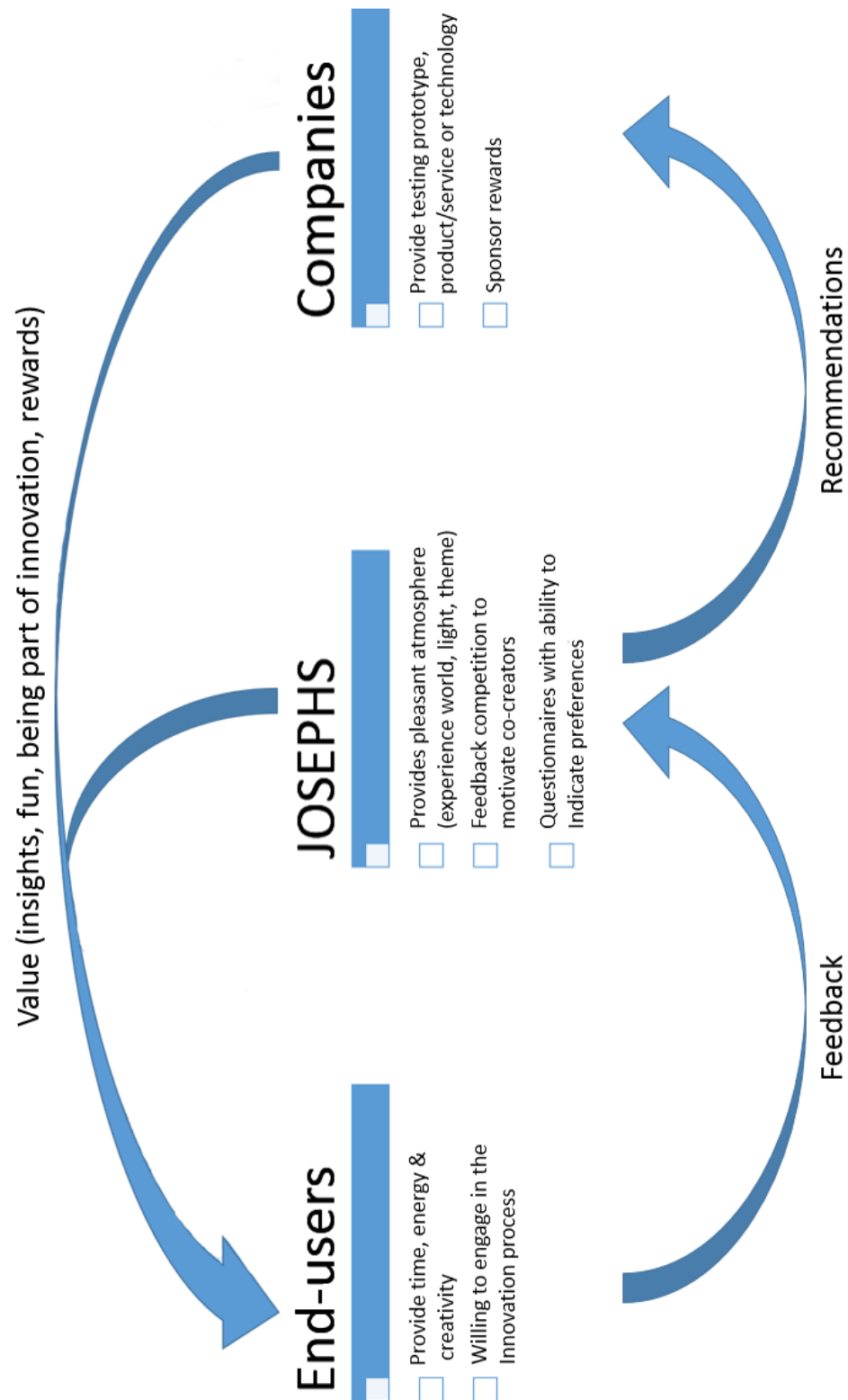


Appendix C Input & output resources distinguished between tangibility, quality & quantity























State	Quality/Quantity	Examples for inputs
<i>Tangible</i>	Quality and quantity	IT, other (raw) materials and equipment (e.g. chairs, tables etc.)
	Quantity	Corporate client's expenditures (invested capital e.g. repeatedly)
	Quantity	Number of end-users coming into JOSEPHS and hired employees
<i>(In)tangible</i>	Quality and quantity	Corporate clients' ideas and prototypes
<i>Intangible</i>	Quality and quantity	Co-creators' and firms' time and energy
	Quality	Training provided to JOSEPHS' staff
	Quantity	Intensity and time spend at each exhibition island


State	Quality/Quantity	Examples for outputs
<i>Tangible</i>	Quantity	Revenue
	Quality & quantity	Feedback & market research data
<i>Intangible</i>	Quality (and quantity concerning value)	Presentation of recommended actions to corporate clients in such a way that it adds value to the clients' development process
	(Perceived) Quality	Satisfaction & experienced working atmosphere (end-users and corporate clients)
	Quality	Brand
	Quality & quantity	Publicity, press


Appendix D Illustration of the value exchange in the service innovation process (with our implemented ideas)





Appendix E Service business model canvas


 Customer perspective	Customer Customers in the business model End-users / co-creators						
 Cost Structure Costs borne by the focal company	 Key Resources Resources provided by the focal company	 Key Activities Activities carried out by the focal company	 Value Proposition Value propositions of the focal company	 Relationship Contribution of the focal company to maintain the relationship	 Channels Channels provided by the focal company	 Revenue Streams Revenue captured by the focal company	
<ul style="list-style-type: none">- Travel costs- Time and energy- Products at gadget shop	<ul style="list-style-type: none">- Knowledge- Opinions & suggestions- Ideas	<ul style="list-style-type: none">- Providing feedback- Usability tests- Providing new ideas- Signing up for the gamification based incentive system	<ul style="list-style-type: none">- Insights in new technologies & inventions- Being part of innovation- Contribute ideas to new products and services- Being rewarded for providing best feedback	<ul style="list-style-type: none">- Newsletter- Signing up for incentive system- Follow on Facebook- Self-service	<ul style="list-style-type: none">- Facebook- E-mail- Personally coming to JOSEPHS	<ul style="list-style-type: none">- Rewards (product, service, background information about exhibited innovation, conversation with development manager)	
Company perspective							
 Cost Structure Costs borne by the focal company	 Key Resources Resources provided by the focal company	 Key Activities Activities carried out by the focal company	 Value Proposition Value propositions of the focal company	 Relationship Contribution of the focal company to maintain the relationship	 Channels Channels provided by the focal company	 Revenue Streams Revenue captured by the focal company	
<ul style="list-style-type: none">- Utility costs (energy, internet, etc)- Cost of maintaining equipment (e.g. repair)- Personnel costs- Cost of material- Rent- Training costs	<ul style="list-style-type: none">- Flexible furniture- Well equipped exhibition islands (TV, internet, cameras,...)- Gadget shop- Well trained team- Know-how- Great location in downtown Nuremberg- World of experience	<ul style="list-style-type: none">- Contracting companies- Contract and Payment- Developing questionnaires- Marketing activities- Presentation of exhibited products / services- Evaluation of feedback- Verbalizing recommended actions- Rating co-creators- Calculating reward points- Updating Leadboards	<ul style="list-style-type: none">- Image improvement- Advertisement (Press, an exhibition island)- Consulting- Providing insights into new inventions- End-user testing- Significant feedback data- Different themes	<ul style="list-style-type: none">- Individual assistance for companies- Individual assistance for end-users- Establishing an innovation community- Gamification based incentive system- Asking co-creators for suggestions & opinions	<ul style="list-style-type: none">- Customer service- Facebook- Website- Personally inside JOSEPHS	<ul style="list-style-type: none">- Bookings by companies- Incomes from gadget shop- Suggestions regarding JOSEPHS itself	
Partner perspective							
 Costs borne by partners	 Resources provided by partners	 Activities carried out by partners	 Value Propositions for partners	 Contribution of partners to maintain the relationship	 Channels provided by partners	 Revenues captured by partners	
<ul style="list-style-type: none">- Reward costs- Costs for exhibition islands- Additional service costs	<ul style="list-style-type: none">- Technology- Prototype/service- Decoration- Rewards- Questionnaires	<ul style="list-style-type: none">- Contracting JOSEPHS- Registration- Developing questionnaires- Having conversations with best co-creators- Adjusting exhibited products and questionnaires	<ul style="list-style-type: none">- Customer oriented evaluation- Co-creation & usability tests- Minimizing risk of failure- Community- Image improvement & advertisement- Gathering high quality feedback	<ul style="list-style-type: none">- Community- Newsletter- Key Account	<ul style="list-style-type: none">- Website- Key Account	<ul style="list-style-type: none">- Savings (e.g. monetary and time in means of preventing abortive development)	


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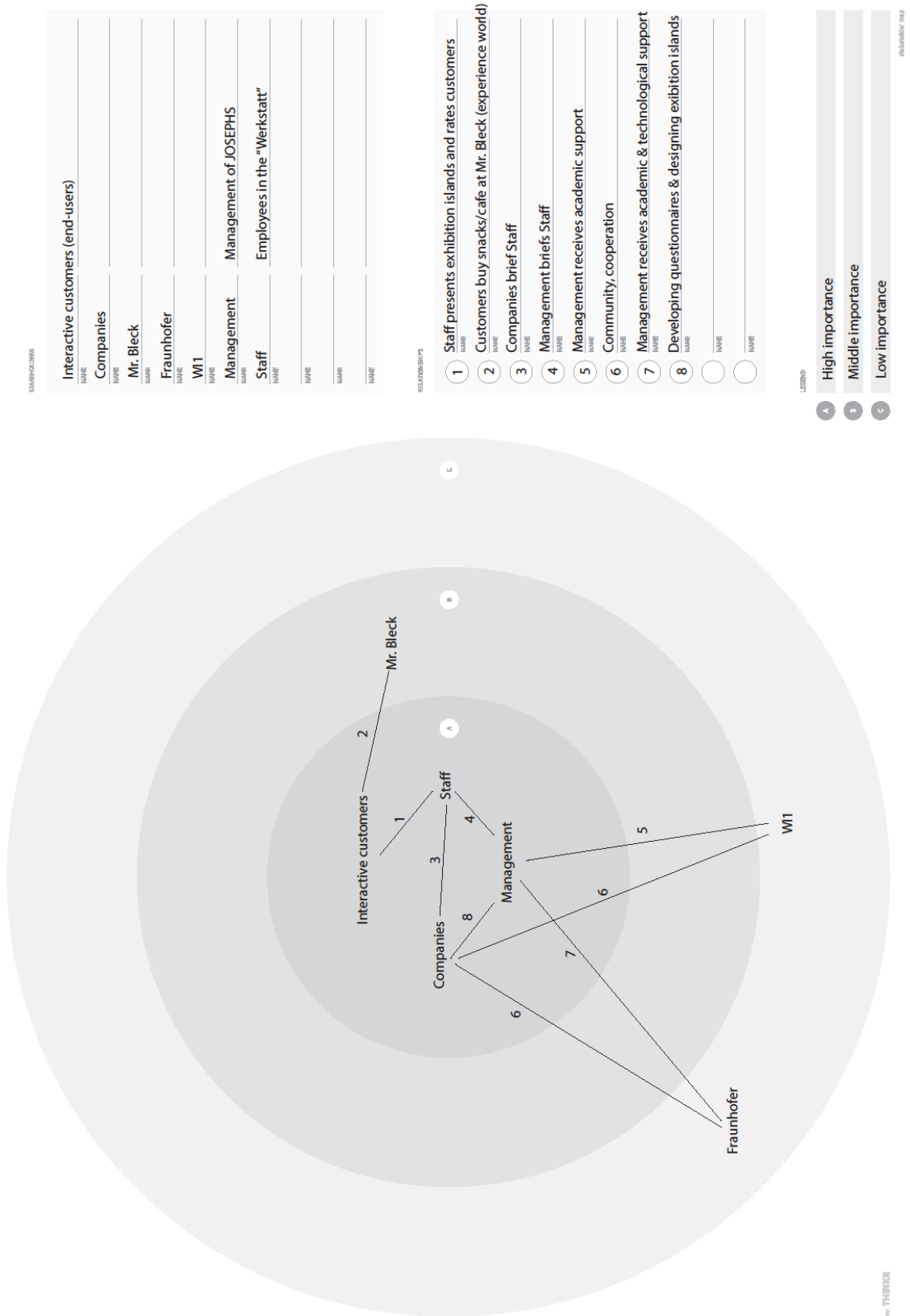
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Appendix F Stakeholder map regarding our idea



Appendix G Persona of the key stakeholder “Interactive Customer”

NAME Roland		AGE 21
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OCCUPATION **Student**

NATIONALITY **German**

MARITAL STATUS **Single**

CITY **Nuremberg**

QUOTE
I want to own the latest technology, NOW!

KEY ATTRIBUTES

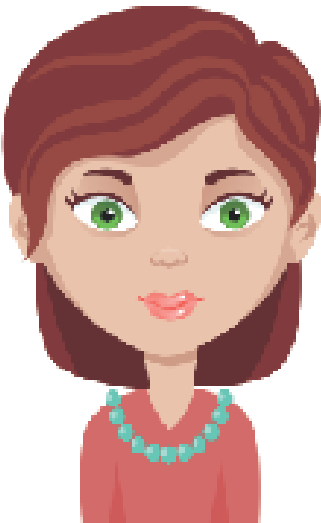
- ♦ Innovation; continuously on the lookout for innovative products
- ♦ Studies economics and computer engineering
- ♦ Tech-Freak; owns the latest iPhone, iPad, Oculus Rift
- ♦ Checks Facebook daily for new posts concerning technologies and inventions
- ♦ Curious; wants to understand how things work
- ♦ Loves computer games
- ♦ Has programmed his own app - a jump and run game
- ♦ Introverted person in his social environment
- ♦

What Roland expects from JOSEPHS:

- Roland is looking for places to check out new inventions
- He is constantly looking for inspirations to improve his apps or program new apps
- Tries to avoid crowded places (hence does not like big innovation exhibitions)
- His preference for gaming and new technologies / invention would be combined in JOSEPHS
- He can prove his creativity and innovativeness in the competition at JOSEPHS (gamification based incentive system) to receive an interesting new product
- He can meet peers at JOSEPHS who share his mind-set
- If he provides the best feedback he will be able to talk to a R&D manager, ask him profound questions and receive better insights into an innovation development process
- Even if his favorite company or technology that he is mostly interested in is not exhibited at JOSEPHS he can suggest his preference at the end of the questionnaire


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Appendix H Persona of the key stakeholder “Exhibiting Company”

NAME Maria	AGE 34
	Project Manager at Beyerdynamic OCCUPATION
	German NATIONALITY
	Married, no children MARITAL STATUS
	Augsburg City
	Any plan won't survive its first encounter with reality QUOTE
KEY ATTRIBUTES <ul style="list-style-type: none"> • Works for a headphone manufacturer • Master in Electrical Engineering • Pragmatic character; functionality is more important than aesthetics • Always tries to minimize risks • Ambitious and hard-working • Constantly tries to broaden her horizon • Unconventional thinking • Nitpicking, perfection seeker • 	What Maria expects from JOSEPHS: <ul style="list-style-type: none"> - Tries to find new areas of application for her product - Would like to exhibit her prototype at JOSEPHS to test usability and functionality and minimize the risk of abortive development - Would like to gather feedback inexpensively - Wants to address a great variety of people (age, gender, occupation, ...) - Expects precise and meaningful feedback in order to improve her product - Likes the gamification based incentive system due to high quality feedback that can be gathered - Is willing to reward the most motivated feedback provider for his suggestions and opinions that help to improve her product
PROJECT	DATE

Appendix I Persona of the key stakeholder “Staff”

NAME Josephine	AGE 24
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Student (Staff at JOSEPHS)

German

Single

Nuremberg

“Creativity is intelligence having fun”

What Josephine expects from JOSEPHS:

- JOSEPHS is her first real insight into an innovative firm
- Would like to meet peers and talk about innovation and start-ups (she dreams of starting her own business)
- Wants to know how and what people think of innovation and what needs they have
- She hopes to get inspired by JOSEPHS' processes and actions when it comes to gathering data / feedback from end-users
- Wants to learn how to present a product/service properly in order to excite end-users
- She is motivated to rate co-creators and hence reward diligent feedback provider who contribute value to the innovation process
- Expects a comfortable and pleasant working environment where co-creators are not being hustled to be creative or innovative but are motivated and supported

<p>KEY ATTRIBUTES</p> <ul style="list-style-type: none"> * Studies Economics Master * Works at JOSEPHS as a student assistant * Open-minded * Predominantly in a good mood * Creative and inventive * Dislikes big companies * Loves working with people face to face * Dreamy * Dislikes clerical work 	
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