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How to drive innovation?

Analyzing the innovation process underlying the current program structure at Daimler FC think! tank

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Abstract

This thesis assesses the innovation programs offered by Daimler Finance and Controlling think! tank with regard to the comprehensiveness of steps in the innovation process they cover. Innovation has long been acknowledged as a main driver of competitiveness and growth, with researchers highlighting the need to view innovation as a process. To support FC think! tank in finding possible ways of innovation program improvement, an ideal-typical innovation process is derived from the literature and compared to the structure of the FC think! tank programs, which are addressed in more detail in a short case about the unit. It is recommended that the programs should possibly extend their structure to support innovation teams more comprehensively.

Keywords: *Innovation, Corporate Innovation, Innovation Process, Innovation Process Model*

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1 Introduction

1.1. Relevance and Problem Statement

“The enterprise that does not innovate ages and declines. And in a period of rapid change such as the present [...] the decline will be fast.”- Peter Drucker (1985)

In today's dynamic economy innovation is widely acknowledged as one of the main operational and strategic drivers for developing and maintaining competitive advantage (Birchall et al. 2011; Johannessen, Olsen, and Lumpkin 2001, 27). Companies are further recognizing innovation as an important driving force for corporate growth (Besant and Tidd 2015, 5; Nagano, Stefanovitz, and Vick 2014). Hereby it is essential for companies seeking to enhance their innovation efforts, to view innovation as a process and not as a single event and thus to manage it systematically and effectively as part of their innovation management efforts (Besant and Tidd 2015, 12; Vahs and Brem 2013, 226). By ensuring a sound management, the efficiency of the process can be improved and probability of failure of innovations can be lowered (Conway and Steward 2009, 279; Engwall, Kling, and Werr 2005). In the past decades, there has been a considerable amount of research touching on a variety of different innovation process models. With a growing comprehension of this line of research, the understanding of the innovation process has developed from rather closed and sequential to open and interactive process models (Salerno et al. 2015). Nevertheless, common main phases of the innovation process can be found in all models, suggesting an overarching agreement on their relevance for successfully generating innovations. The essential need for innovativeness has been recognized by many companies, which are establishing various innovation units within or outside the boundaries of their organization to enhance the traditional R&D functions (Wagner and Wosch 2015; Hervé and Bischofink 2016). And yet, successfully implementing innovation has been rather elusive for the majority of companies, often related to

poor innovation processes, as reported by the companies (Kuratko, Covin, and Hornsby 2014). In line with the trend of increasing innovation efforts, in the beginning of 2016, the German premium car manufacturer Daimler AG established its FC think! tank as an internal innovation unit within the finance department of the company. The unit since has developed different innovation programs targeted at the finance and controlling employees, and is looking for possible ways of program enhancement and refinement.

1.2. Objective of the Thesis and Outline

This thesis has the objective to provide the FC think! tank with an ideal-typical model of the steps in an innovation process, and to further assess which of those steps are currently supported by the FC think! tank's innovation programs. This allows to subsequently point out possibilities for optimizing the programs' setup. While being aware of the fact that the distinct innovation process varies for different industries or even companies, this will nevertheless allow a comparison to an idealistic process, which can be adapted to the unit's needs. Ideally, this will identify potential for program refinement and aid in ensuring the ideas and projects passing the programs are able to yield tangible and scalable results. First, the literature on innovation management and innovation process models is reviewed. The literature review serves as a basis for working out the ideal-typical steps that should be included in a successful innovation process. This is relevant, since the innovation process is supposed to ensure all required steps from the initiation of the idea to its implementation (Vahs and Brem 2013, 225). To understand the structure of FC think! tanks innovation programs, semi-structured interviews are conducted. A short case study of the FC think! tank in general and the setup of the programs in specific is presented, summarizing the information extracted from the interviews and company internal data. Based on this the innovation process steps currently supported by the internal innovation programs are identified, and subsequently discussed

with regard to an ideal-typical innovation process. Finally, conclusions and recommendations for the team and the setup of the programs are drawn.

2 Literature Review

2.1. The Concept of Innovation

Before addressing the specific case of Daimler FC think! tank, it is of importance to develop an understanding of the concept of innovation, and particularly to examine the different approaches in the context of innovation process models. To date a variety of definitions of innovation exist in the literature, nevertheless, full consensus is yet to be reached (Johannessen et al. 2001, 20). According to the OECD (2005), an innovation is defined as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations” (OECD and Eurostat 2005, 46). This definition encompasses two essential aspects of innovation. Firstly, it emphasizes the notion that an innovation must have been implemented and secondly, it highlights the existence of the different types of innovation (e.g. product, process, marketing, and organizational innovation).¹ There further seems to be consent in the literature that innovation generally must be seen as a process and not as a single event, and thus needs to be managed accordingly (Vahs and Brem 2013, 231; Trott 2012; Conway and Steward 2009, 10). In accordance with this, Drucker (1985) highlights how innovation represents a core process for a company, requiring it to organize innovation as systematic activity. In this sense, successful innovations generally imply systematic planning, consistent implementation and ongoing control of all associated activities. Consequently, the importance of a robust management approach to this process has been highlighted by various researchers, suggesting that compliance with a common

¹ see appendix for a detailed overview of the different types of innovation.

process model and the systematic use of innovation management tools can make the innovation process more efficient and reduce the probability of failure significantly (Engwall et al. 2005; Conway and Steward 2009, 279). In the scope of this thesis, this definition of innovation as a process and its systematic management as a success factor for innovations is adopted as a working definition.

Expanding more on the innovation process itself, the following section will aim at providing an overview of different innovation process models found in the literature and highlighting the general phases constituting the innovation process.

2.2. The Innovation Process

An organization's innovation process is considered a complex process, consisting of a variety of activities and events, which may either occur sequential or in parallel (Adams and Bessant 2006, 36). According to Desouza et al. (2009) the existence of a formal innovation process within the company provides a structure for innovation efforts and is recognized as a first indicator of successful innovation programs. This innovation process needs to consistently ensure all necessary steps from the initiation of an idea to its market launch (Vahs and Brem 2013). During the past decades, the innovation process has been conceptualized in different ways by various authors. Before addressing the classification of these models it is important to bear in mind that innovation process models have traditionally been designed for product innovations in the scope of new product development (NPD) activities (Salerno et al. 2015). Consequently, one could debate whether these are relevant for different types of innovation, and thus some reasoning is provided as to why NPD targeted models can in fact be applied in the scope of this thesis and in general. Conway and Stewart (2009) argue that the innovation process models developed since the 1950s are applicable to both process and service innovation, since they are rather generic in nature. Hence,

they reason that the terms innovation process and NPD process may be used interchangeably, a view that is adopted in the scope of this thesis (Conway and Steward 2009, 278, 280). Further, Tidd et al (2005) suggest that although innovations as well as innovating organizations differ broadly in nature and scale, the same fundamental innovation process with underlying structure of phases can be found in each case (Tidd, Bessant, and Pavitt 2005, 70).

2.2.1 The Evolution of Innovation Process Models

Since the 1950's there has been a growing body of research outlining and conceptualizing the innovation process. While some of these models focus more on the organizational departments in which innovation occurs, others emphasize the activities taking place in the innovation process (Saren 1984). A prevalent approach is found to be the categorization according to different generations (Rothwell 1994; Trott 2012, 26). In these innovation process models, a great emphasis is put on the conceptualization of innovation within an organization in the context of different political, social and economic conditions in each of the generation's time periods (Meissner and Kotsemir 2016). Rothwell's (1994) five generation innovation model is one of the most cited works in this field, providing a historical overview of the evolution of innovation process models from the 1950s to the 1990s². According to this categorization, process models have evolved from first and second-generation technology-push and market-pull models through third generation interactive or coupling models and fourth generation integrative models, to fifth generation network models (Rothwell 1994). Overall, Rothwell (1994) describes a development from linear and sequential innovation process models towards increasingly comprehensive models, accounting for more complexity and interaction, by emphasizing internal and external linkages, alliances and networking, and are thus believed to represent the innovation process more accurately. Stemming

² see appendix for an overview of the six generations of innovation process models

from rather recent research, these five generations have been supplemented with a sixth generation, the one of open innovation (Trott 2012, 25), first introduced by Chesbrough (2003a). Open innovation encompasses the notion that valuable ideas may arise from and be brought to market from inside or outside the boundaries of the organization, as opposed to the former prevailing view of restricting innovation activities to the boundaries of the company (Chesbrough 2003a, 43, 2003b, 36). After highlighting the types of innovation process models, the next section sets out to examine the different steps in the sense of types of activities occurring in the innovation process.

2.2.2 Steps in the Innovation Process

Although the individual innovation process is believed to vary among different industries and companies, a broad agreement is shared among researchers regarding its main phases (Vahs and Brem 2013; Salerno et al. 2015; Tidd and Thuriaux-Alemán 2016; Conway and Steward 2009). Numerous authors have proposed certain sets of activities for their respective innovation process models (Salerno et al. 2015). A common facet of all models appears to be, that the span they cover can be divided into different phases comprising all activities necessary to get from an idea to its practical implementation (Vahs and Brem 2013, 231). Overall success of new products and processes is considered to be closely related to the type and the quality of execution of activities performed in the innovation process, as well as the comprehensiveness of the process itself (R. G. Cooper and Kleinschmidt 1986). The following provides an overview of types of activities in an innovation process most prevalently found in the literature. The selection was based on often cited process models indicating activities, as well as commonly described phases in well-known academic innovation management literature. It is noted that, in line with the other works, the terms phase, stage, and step will subsequently be used interchangeably.

Phase	0	I	II				III	IV	V	VI	VII
Utterback (1974)		Idea generation					Problem solving / Idea development		Implementation and diffusion		
Baker and McTavish (1976)		Idea generation	Screening		Commercial evaluation		Technical development	Testing		Commercialization	
Thom (1980)		Idea generation			Idea acceptance		Idea realization				
Booz, Allen & Hamilton (1982)	New product strategy development	Idea generation	Screening & Evaluation		Business analysis		Development	Testing		Commercialization	
Cooper (2008)		Scoping			Build business case		Development	Testing & validation	Launch		
Tidd & Bessant (2005)		Search			Select	Acquire	Execute		Launch		Sustain (Reinvention & Learning)
Hansen & Birkinshaw (2007)		Idea generation			Idea conversion					Idea diffusion	
Conway & Steward (2009)		Idea generation	Idea screening	Concept dev. & testing / Marketing strategy dev. / Business analysis			Product development	Market testing		Commercialization	Post-project evaluation
Trott (2012)	Strategic planning / Assembling knowledge	Generating business opportunity			Product concept generation		Development of product prototypes	Market & technical testing	Market introduction		
Vahs and Brehms (2013)	Situation analysis / Problem identification	Idea generation	Screening	Storing Ideas	Evaluation and decision		Development / realization		Market launch		
Salerno (2015)		Idea generation	Screening / Idea selection				Development			Diffusion / Market sales	
Tidd and Bessant (2015)		Concept generation	Project assessment and selection				Product development			Product commercialization	
Aarikka-Stenroos et al. (2017)		Ideation / Envisioning			Decision making		Development		Launch and commercialization		

Table 1: Overview of phases in innovation process models; own representation.

As one can see, almost all authors consider some form of *idea generation* as the beginning of the innovation process. The authors seem to mostly agree on the terminology, merely three choose different terms for the first step in the innovation process. Vahs and Brem (2013) include a precedent step of situation analysis or problem identification as an impulse for innovation, arguing that the starting point of every purposeful innovation process should be an identified problem. Trott (2012) and Allen, Booz and Hamilton (1982) recognize a phase of strategy planning or development as antecedent to idea generation. While some authors include an activity dedicated

to *screening of ideas* (Vahs and Brem 2013; Salerno et al. 2015; Booz et al. 1982; Conway and Steward 2009), almost all agree on a subsequent step *selecting the ideas* to be pursued, whereby exact terminologies vary. This entails for example business analysis (Booz et al. 1982; R. Cooper 2008; Conway and Steward 2009), concept generation (Trott 2012; Conway and Steward 2009) or some other kind of evaluation and ultimately leads to decision making. The next step, although varying in terminology, is widely acknowledged to involve the *development* of an idea into some form of product or process. While some researchers consider *testing and validation* as a separate step (e.g. Baker and McTavish 1976; Booz et al. 1982; Cooper 2008; Conway and Steward 2009; Trott 2012), other authors commonly include such activities in the phase of development (e.g. Tidd et al. 2005; Vahs and Brem 2013; Besant and Tidd 2015). Subsequently, authors appear to be in agreement of a following stage of implementation or *launch (market introduction)*, introducing the innovation to its target market. Once the innovation is implemented, a logical next step perceived by various authors concerns the innovation's diffusion or *commercialization*. While this majorly represents the end of the innovation process, some authors include one further post-launch step dedicated to learning or re-invention (Tidd and Bessant 2005, Conway and Steward 2009). Based on the presented overview of steps in an innovation process found in the literature, the following suggests an ideal innovation process including the most important stages and their potentially entailed activities. A phase will hereby be included if it was considered a distinct step in the innovation process by at least four authors. Although these activities seem to be agreed upon in the literature, they generally represent a consistent generic process, and not always necessarily correspond to the representation of the actual process as it occurs in individual industries or companies. Nevertheless, such are models believed to be helpful in guiding a company's innovation efforts and thus form the basis of comparison in this work (Trott 2012, 558). Further, although most of the innovation process models found in the literature are represented as a

sequence of steps, these are by no means always succeeding in strictly linear shape but involve several feedback loops and sometimes even parallel activities (Meissner and Kotsemir 2016).

Based on the above described findings with regard to steps in an innovation process, the following paragraph aims to provide an ideal-typical innovation process model for successful innovations, building the foundation for a later discussion of the FC think! tank innovation programs. The subsequent proposal of phases or activities in the innovation process does not, however, indicate any specification about the form of their occurrence, allowing for agility in the process through incorporating feedback in various iterations.

2.2.3 Proposed Ideal-typical Innovation Process

1 Idea Generation

The first phase of the innovation process entails the generation of high-quality ideas to be pursued, which are generally considered the raw material of any innovation (Nagano et al. 2014). Ideas can hereby emerge from within or outside of the company. Vahs and Brehm (2013) hold the view that the ideas at the beginning of an innovation process are in fact problem-solving proposals to previously identified problems. Two types of proceedings for this initial phase are recognized, the company can either collect existing ideas from various sources (e.g. from employees, customers, suppliers or competitors), in which case no measures for further generation of ideas are undertaken, or it can actively promote idea generation by deploying different techniques (e.g. brainstorming, lateral thinking, benchmarking, reverse engineering) (Vahs and Brem 2013, 228; Conway and Steward 2009, 291). In accordance with this latter approach, Nagano et al (2014), among others, argue that although creativity and inspiration are at the core of ideation, it is equally important to collect and analyze information to realize potential trigger signals through environmental scanning and situation analysis (Tidd et al. 2005).

2 Idea Screening and Selection

The aim of this phase in general is to narrow the ideas down by identifying and selecting those ideas believed to be successful and thus worth pursuing. While the authors seem to agree on the phase of screening the idea, the exact activities comprised in this stage vary in terminology according to different authors. Since, however, the overall aim is described to be the same for the different approaches, namely to reach some kind of decision making, they consequently will be taken together in the phase of idea screening and selection. This phase of the innovation process involves a variety of sub-processes which can be divided into different screening and evaluation activities including the translation of ideas into concepts and further business analysis through the creation and presentation of business cases. Activities related to the screening process aim at evaluating technical and marketing feasibility and include initial or preliminary screens as primary formal evaluation, customer screens and concept testing, technical screens and testing (Trott 2012, 556). A business analysis is commonly performed for ideas that got through the prior filtering processes and is often based on the creation of a business case including revenue, cost, and profit projections (Conway and Steward 2009, 294). Underlining the notion of non-linearity of the innovation process, although mentioned as second step, further screenings may occur at every stage of the process (Trott 2012, 564–67; Tidd et al. 2005, 389). Further techniques that might be applied in the screening and selection stage are, for example, focus groups, product or process mappings, and especially for process innovations activity analysis and simulation techniques (Tidd et al. 2005, 389?; Francis and Bessant 2005). Taken together, the screening and selection phase is responsible for an informed decision-making process by evaluating one or more ideas with regard to their attractiveness and screening them out if they do not meet the required objectives (Conway and Steward 2009, 294).

3 Idea Development and Testing

Despite some authors separating idea development and testing into two separate phases (e.g. R. G. Cooper and Kleinschmidt 1986; Conway and Steward 2009; Trott 2012) in this suggested process they are considered as belonging to the same phase due to the activities being closely intertwined in the sense of design-test-build cycles (Besant and Tidd 2015, 328). The idea development phase is widely acknowledged to be the heart of any innovation process, since it encompasses the transformation of an idea or a concept into a new and improved process, service, or product (Conway and Steward 2009, 295). This stage of the innovation process aims at translating customer or user requirements and demands into technical specifications and incorporating these in the process or product design, and thus developing the prior selected ideas into a marketable, successful product or an operational process in the organization (Conway and Steward 2009, 295; Nagano et al. 2014). Activities during the development and testing stage include prototype development and testing. While prototypes can take a variety of different forms, they undoubtedly play a key role in the overall development process, comprising a minimum set of features of the desired product or process (Conway and Steward 2009, 296). The prototypes are quickly tested and validated within the organization and with potential customers and users, providing the opportunity of iterative development by incorporating received feedback (Trott 2012, 568). As such, activities related to testing and validation in this phase can range from in-house tests and customer tests to trial or pilot production (R. G. Cooper 1993, 213). It is important to note that the development stage commonly entails one or multiple of these design-test-build iteration cycles until the current design is believed to meet the established user requirements (Besant and Tidd 2015, 328). In the literature, there appears to be a lack of unity as to where exactly the development process ends, with some models including the market launch in the development phase and others considering it as distinct step. In

the scope of this model and based on the review presented above, the development phase ends with a validated and implementable form of a product, service or process.

4 Market Launch

Although not all authors specifically outline the launch of an innovation as a separate phase, in which case it is commonly incorporated in other phases, this model considers market launch as such, following the development process. The launch phase comprises all steps necessary for bringing an innovation to its market introduction or first use, including required manufacturing, marketing and distribution decisions (Utterback 1974; Conway and Steward 2009, 297). In this phase, the market for the new product, service or process should be defined and explored and consequently prepared for launch. This entails the clarification of marketing related questions such as when, to whom, how to launch the new product, service or process (Tidd et al. 2005, 393). Tidd, Bessant, and Pavitt (2005) identify various ‘enabling routes’ for the launch phase, such as test marketing, the development of a marketing strategy and plan and, in the case of launching into an internal market (e.g. process innovations), they highlight the importance of change management activities (393-97). An improved or new product is hereby considered as launched with its introduction in the marketplace, while in the case of new or improved processes, implementation is reached as they are brought into use within the organization (OECD and Eurostat 2005, 47).

5 Commercialization

When attempting to define the activities involved in the commercialization phase, a lack of consensus regarding the specific scope of this phase becomes evident. Although it is frequently included in the innovation process, some authors relate it mainly to the marketing perspective (e.g. Adams 2006) and others consider it as subsequent step to the development and testing and thus as a rather broad phase comprising all activities from launch into full-scale production as well as

related marketing and sales efforts (Tidd and Bodley 2002). This finding concurs with the work of Adams and Bessant (2006), who recognize that in innovation management the phase of commercialization seemingly is the one which is least developed. They further provide reasoning for this phenomenon, arguing that commercialization is frequently considered as belonging to other research fields, especially marketing. Within the scope of this proposed process model, commercialization entails marketing, sales and distribution efforts, aiming at increasing the commercial adoption of a new product, service or process. Hence, commercialization aims at making the innovation a commercial success (Adams and Bessant 2006, 37–38).

As has been mentioned before, the described innovation process should not be considered as a linear sequence. Rather it is important to highlight the iterative nature of the process, as well as the possibility of overlapping or even parallel phases. As such, for instance, a business analysis performed in the screening and selection phase will be further refined and enhanced during the development and testing phase. Similarly, marketing planning in the market launch and commercialization phase should not only begin after the product or process is developed but rather in parallel with product or process planning. Bearing this in mind, the described innovation process can be depicted as shown in figure 1.

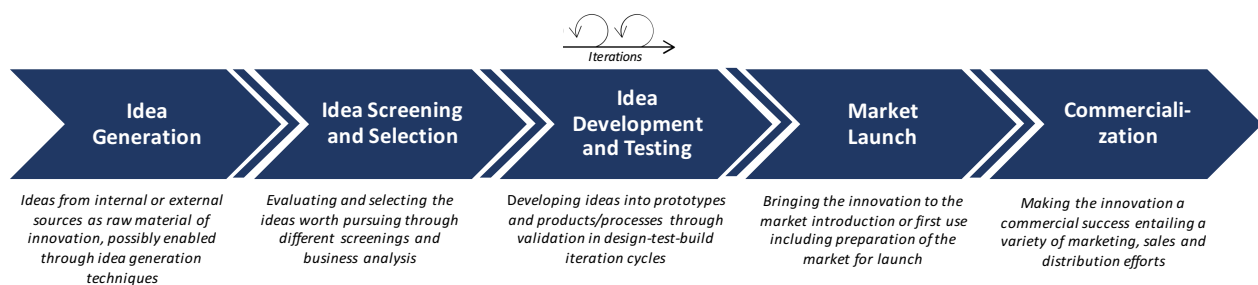


Figure 1: Ideal-typical innovation process; own representation.

3 Innovation at Daimler FC think! tank

3.1 Methodology

In order to gain a deeper understanding of the setup of Daimler FC think! tank and to obtain insights into the structure of the innovation programs, four semi-structured interviews with team members of the FC think! tank were performed. The interviewees were chosen according to their presumed relevant knowledge of the topics under review. Therefore, interviews were conducted with the deputy team lead for information about the FC think! tank in general and the respective innovation program leads were interviewed to allow a best possible description of the individual innovation programs. Semi-structured interviews were decided as the appropriate choice, as they allow the interviewees to describe the structure of their programs freely while still providing the interviewer with a fundamental structure and questions to ask, in case of information missing. Additional to this, the company provided some internal data which were used in the sense of document analysis. The information extracted from the interviews and the company data was utilized to construct the following description of Daimler FC think! tank and builds the basis for the subsequent discussion.

3.2 What is Daimler FC think! tank

In the beginning of 2016, the finance and controlling department of Daimler AG established a new department in line with its best finance strategy program, which is responsible for creating a future-oriented strategy of the finance organization. The idea arose from Daimler AG's CFO, who is a firm believer in Daimler's innovativeness and was keen to establish an innovation unit within his finance department. The Daimler FC (Finance and Controlling) think! tank was set up for internal innovation projects related to finance and controlling. The aim was to enable innovation by supporting approximately the 13 000 finance employees with their ideas and projects through providing them with the creative space and professional support. The team of Daimler FC think!

tank, which initially counted four employees, was faced with the task of developing suitable measures and programs in order to drive innovation within finance. Within the first six months, it moved to a loft-like creative space with three project areas equipped with writable walls and moveable panels. The general mission was articulated as the following: “Your partner for future ideas: With innovative methods, acknowledged specialists and an inspiring environment, we at the FC think! tank accompany our colleagues and their ideas on the way to structured, sustainable and convincing results.” The FC think! tank team today counts ten employees and in its position as an incubator within the finance organization of Daimler, the team until now has launched the innovation programs think!impulse, think!ubate, think!process and think!project, which will be outlined hereinafter.

3.3 Innovation Programs and Processes

- **think!impulse**

Objective - Spreading an innovation culture among the Daimler FC employees and to the outside, through inside-out and outside-in expert events, global hackathons, and be-a-startup-for-a-day campaigns stands at the heart of the think!impulse program.

Despite part of the program portfolio of FC think! tank, think!impulse will, in the following, not be further considered, as it does not aim at producing innovations by following an innovation process but rather can be seen complementary to the other programs, facilitating them by spreading the necessary innovation culture.

- **think!project**

Objective – The program aims at individually supporting innovation projects in different phases on their way to creating successful innovations and thereby targets product, process, as well as business model innovations. In order to be accepted into the program, the innovation projects have

to fulfill certain criteria verifying their fit with the finance department and company vision and their classification as actual innovation project. For ideal support, the projects can rely on coaching support from external and internal coaches with expertise in agile methods and, if needed, can consult experts from the FC think! tank network.

Innovation process - think!project offers support to innovation projects in any phase from beginning to end, by tailoring the specific content to the needs of the project in its current phase. Therefore, the duration and design, including choice of methods, of the workshops is decided individually. For projects seeking support in the beginning phase the focus is put on strategy building, and observation and understanding of project goals and customer needs. The middle phase focuses on ideation, prototyping and testing and the end phase should involve support with regard to pilot development and implementation. Thus, in some cases the program might accompany an innovation project throughout the whole process, but predominantly, it is involved only in specific activities and consequently the steps supported by think!project can vary for each project. In any case, the current state of the program encompasses support offerings for the phases from innovation strategy and idea generation to high-level prototype building (e.g. paper prototypes and storytelling) and validation, with phases of piloting and implementation only theoretically being in the scope of the program but still in planning and not yet available.

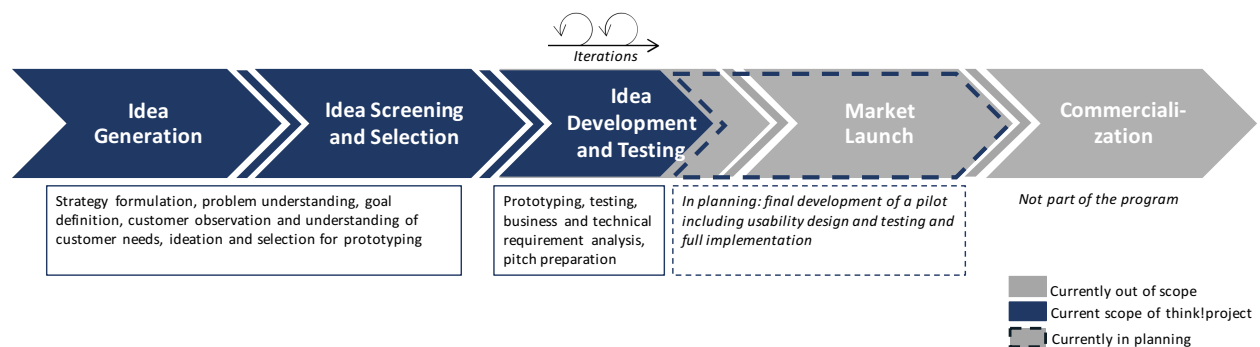


Figure II: Innovation process think!project; own representation based on information from the company.

- **think!ubate**

Objective - The program supports employees with promising ideas in the scope of a six-week program with predefined content. It further aids in conveying an entrepreneurial mindset to the finance and controlling employees of Daimler AG. The type of innovations this program targets are product, business model, as well as in some cases process innovations. The current scope think!ubate is to develop ideas into minimum viable products (MVPs), a minimum version of the product with only those features allowing to release it to and receive feedback from selected early customers.

Innovation process – think!ubate follows a more structured and standardized approach. The ideas entering the program are generated in the scope of an innovation challenge in a Daimler AG business unit as a response to a problem or question raised by this unit. The selection of ideas to be pursued within think!ubate is based on a crowdfunding logic, whereby fellow employees vote for the most promising ideas. These steps occur before officially entering the program, yet, a form of selection is also performed within the program, since the first step within think!ubate is dedicated to problem validation in the sense of firstly assessing if there is an actual problem which can be solved with the idea and identifying whether customers exist for it. If the outcome is positive, the teams build a MVP of their product and test and validate it with the customers. This solution testing is the basis for iterations or alterations enabled through customer feedback. Following the validated MVP is a pitch preparation and training for subsequent pitching of the idea to the so-called shark tank consisting of an upper-level management committee. The sharks decide if the idea being pitched will be further developed. For the time being, this is where think!ubate ends. The teams take the idea back to their functional units and are responsible for subsequent full product development and launch. However, an extension (called traction) is currently being planned which

is targeted at further development and implementation and will most likely consist of some sort of pilot building and following roll-out.

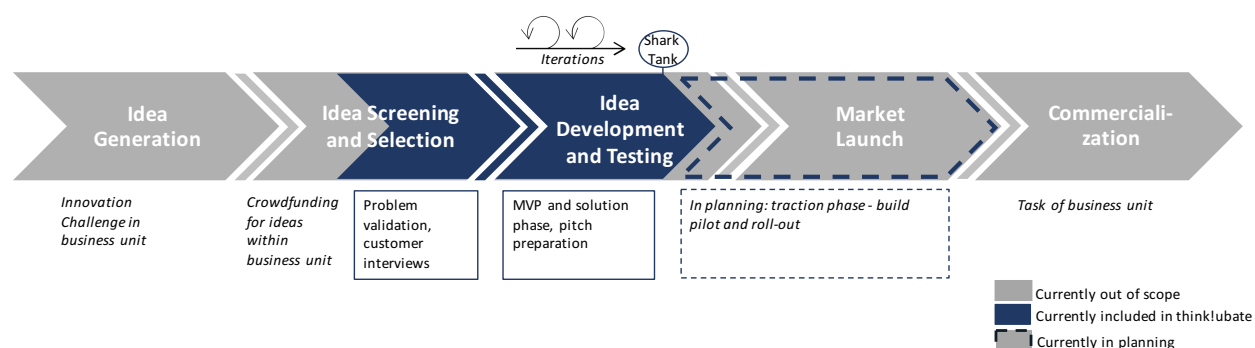


Figure III: Innovation process think!ubate; own representation based on information from the company.

- **think!process**

Objective – The program is designed similar to think!ubate, but it specifically targets process innovations. Process owners seeking to innovate or substantially improve an existing process can apply to the program and will be hosted and supported by the FC think! tank for a six-week period with four participating teams. Think!process was initiated in 2017 after the FC think! tank realized, that more than 50% of projects were process related.

Innovation process - Since the process owner and his team have been working in their processes for a long period of time, a form of idea generation has mostly already taken place within their work environment, by ideating possible ways of improvement. Yet, further ideas might be discovered in the beginning of the program. The first step within think!process is dedicated to the review and analysis of the current process in place, which ordinarily exists in a graphical form. After comprehending the current issues and prospective requirements, efforts are made to identify and work out the target process. Therefore, the ideas are evaluated regarding different aspects in the scope of proof of concepts, validation activities and risk and impact analyses, in order to select the most promising idea for a target process and hence the optimal solution for the team. The

identified target process is then developed into a prototype version of the process, in the form of visualizations or paper prototypes, which are tested and validated with all relevant stakeholders, including management and customers. Subsequent to a validated prototype is the calculation of a business case to illustrate the predicted output of implementing the new target process, mainly involving resource reduction and increased efficiencies. Finally, the last two phases of the program are devoted to pitch preparation for pitching the new processes to high-level management members in the shark tank. As is the case within think!ubate, the sharks decide whether the process is to be implemented, revised, or eliminated. As such, dependent on the respective team, the end result of think!process might be a high-level prototype that needs refinement or in some cases an implementable process. The current setup of the program does not include further development or launch and commercialization activities, leading to the process owner being responsible for consequent implementation. In the scope of the prospectively envisaged traction program, some of these further steps might be included and supported by the FC think! tank in the future.

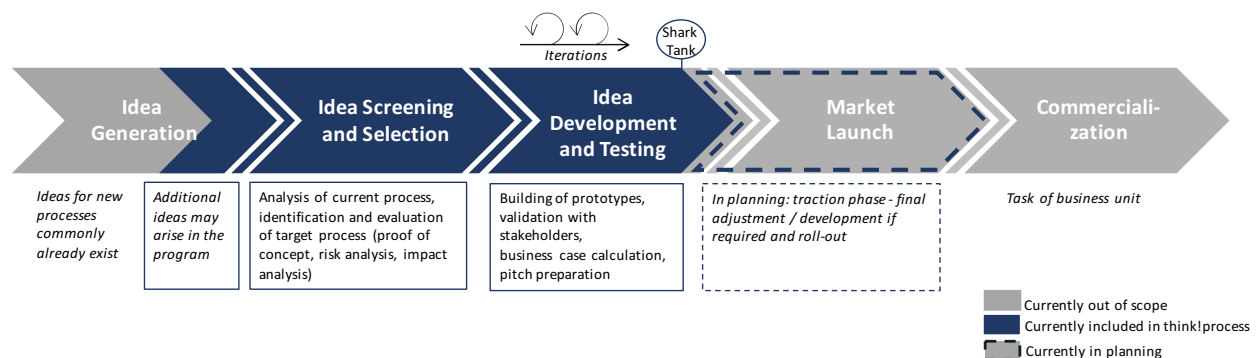


Figure IV: Innovation process think!process; own representation based on information from the company.

4 Discussion

After working out a proposed innovation process based on the literature and subsequently outlining the steps supported by the FC think! tank innovation programs, the following aims at drawing a comparison. This discussion will build the foundation for a subsequent formulation of

recommendations to the company. The FC think! tank programs in their current form will consequently be discussed in more detail.

Common to all three programs is that they do not, or not yet, include activities related to the phases of market launch and commercialization. While a traction program for pilot building and rollout is currently in the process of planning, the responsibility of commercialization will remain within the respective business functions. Since the innovation models found in the literature commonly refer to new product development processes targeted at external markets, commercialization efforts for increasing the commercial success of the new product are frequently highlighted as a distinct phase. Yet, in the special case of the internally directed FC think! tank innovation programs, addressing different types of innovations from inside the corporation and generally aiming at a company's internal market, the innovation process is considered as concluding with the successful market launch or roll-out. Thus, questions of commercialization are not regarded in the scope of FC think! tank innovation programs. Rather, once the new product or process is launched, it is the responsibility of the business unit it arose from to secure and promote its usage and success.

When considering *think!project*, the program's setup seems to be rather holistic with regard to the phases of the innovation process it can potentially accompany. If the program setup will, as planned, be able to include innovation projects in the end phase, think!project would thus offer support corresponding to the stages from idea generation through to market launch. Yet, it is important to highlight that due to its individualistic character, the extent and specific design can vary for each innovation project, which makes a general comparison rather difficult. While some projects may only turn to the program in a very specific phase (e.g. only for support in strategy creation or ideation), others could potentially require support, for instance, for the phases of ideation through prototyping and testing. Therefore, by building on customized concepts, the

program does not necessarily follow a defined innovation process but rather has an individual project support character, offering the support where needed. In this sense, after completing the workshop within think!project, a follow-up meeting is held during which support for subsequent stages is offered, but in case the projects do not take it up, they simply return to their departments without FC think! tank being involved in any further activities regardless of the current project stage. Consequently, it appears to be difficult to determine the exact impact the program has in the whole innovation process of the projects. This does not mean, however, that this approach is not considered as valuable for the different projects. In fact, feedback from the projects having participated in think!project workshops has been positive, justifying this type of setup for the program.

Comparing *think!ubate* to the literature based innovation process, one can see that its current structure incorporates activities corresponding to the idea screening and selection and idea development and testing phase. Idea generation and initial screening and selection efforts are not part of the program, but take place within the initiating business unit. This implies, that the program itself does not have an influence on the quality and initial assessment of the ideas being generated, but rather every idea receiving the highest votes by fellow employees enters think!ubate. Some form of screening does take place within the scope of think!ubate, however, since when entering the program the ideas are further evaluated through problem validation with customer interviews. Nevertheless, as opposed to the approach suggested by the literature, a more specific concept or business case creation and subsequent analysis is not performed at this stage. Rather, if the customer interviews support the proposed idea, it is then developed into a MVP to directly be tested with the customers. This on the one hand implies possible benefits from early customer involvement, but on the other hand it bears the risk of committing time and resources to ideas that

might would have been screened out by a prior thorough business analysis. In accordance with the suggested model, the design of the program incorporates iteration by allowing for the inclusion of customer feedback, though only one iteration loop is intended here due to the timeframe of the program. Within the current think!ubate design the end product is an approved or rejected MVP and thus, compared to the ideal-typical process, here the support in the idea development and testing phase concludes before arriving at a pilot or final product or process.

For *think!process*, targeted exclusively at process innovations, the setup is slightly different. While ideation in the form of coming up with ideas to innovate current processes is mostly performed by the employees involved in the process, the program does cover activities relating to screening and selection. This entails, for example, analyzing the current process and applying techniques (e.g. proof of concept, risk analysis, customer validation) to select and develop the most suitable target process. Yet, similar to think!ubate, a detailed business case for the target process is analyzed only after process prototypes are created and tested with the users. The program thus far ends with an approved, rejected or improvable target process prototype or in some cases a ready to implement process and therefore can go a step further than think!ubate. Nevertheless, since both programs currently do not explicitly follow up with or support the teams after their pitch in the shark tank, the innovation success cannot be assured. This would change if the envisaged new traction program would effectively be implemented, extending the scope of support within FC think! tank, as has been mentioned before. Further, by being involved in phases subsequent to prototype and MVP development as part of the programs' innovation process, the risk of these innovation activities drowning in day-to-day business could be reduced.

In general, defining the innovation process provides a structure for the innovation efforts, whereby the overall success of new products and processes is considered to be closely related to the type

and the quality of execution of activities performed, as well as to the comprehensiveness of the innovation process itself (R. G. Cooper and Kleinschmidt 1986). Thus, increasing comprehensiveness of program design with regard to the activities in an established formal innovation process they support, is suggested to positively influence the programs' and therefore the innovation's outcomes. Thereby it can be argued that due to the more standardized approach of think!ubate and think!process, enhancing these programs could lead to a more efficient innovation process by accompanying multiple innovations and teams in one program batch. Ideally, this would result in more innovations benefiting from the standardized approaches and leading to a reduction in the demand of individual project support through think!project. Although tailored support is certainly valuable, it does require more individual efforts due to specifically designing the workshop content and methods for each innovation project.

5 General Conclusion

This thesis compared the three FC think! tank innovation programs think!ubate, think!process and think!project to an ideal innovation process as suggested by the literature. This ideal process was derived by the analysis and comparison of a number of different innovation process models found in the literature. It was found that the programs support different steps of the innovation process, with think!ubate and think!process following a similar approach from idea screening and selection to idea development, whereby all ideas or projects entering and leaving the programs are in the same phase. Whereas think!project was identified to being potentially able to cover all stages but in fact rather corresponding to project support in individual phases due to its customized approach.

5.1 Recommendations

Based on the discussion of the different innovation process phases supported by the FC think! tank programs, some recommendations for possible adjustment of their structure are presented.

Following Cooper and Kleinschmidt's (1986) reasoning of the importance of a comprehensive innovation process with high-quality activities and the notion of adhering to a common process model reducing the probability of failure of innovation and increasing efficiency (Engwall et al. 2005; Conway and Steward 2009), it is suggested as desirable for FC think! tank to be involved as much as possible in the development of innovations to ensure quality of execution during all stages.

With regard to the specific programs, for *think!project*, it would be recommendable to aim at consistently being involved in the innovation projects as early as possible. This way the theoretically holistic program set up could come into effect, allowing the projects to profit from a continuous involvement of FC think! tank. Moreover, if think!project is to maintain its individual and customized approach, FC think! tank should further attempt to enhance *think!ubate* and *think!process* program setup. This way, as mentioned above, ideally, the two programs would be able to support more innovation projects at the same time with their standardized approaches, allowing for scaling and leading to a reduction in the need of more time and resource intensive individualized support. For think!ubate and think!process this would entail early stage involvement by including idea generation and primary screening activities in the scope of the programs. Further, through the analysis of a more detailed business case before turning to MVP or prototype development, the programs could benefit from a more thorough appraisal of ideas before committing time and resources to possibly non-feasible ideas. The prospectively planned traction program would imply an enhancement of the current program designs, taking the development and testing stage a step further to pilot production and include launching activities in the scope of following roll-out. This is considered beneficial for the overall quality of the innovations and their successful implementation, as it provides the teams with a guiding structure.

On a different note, one additional recommendation relating to all three programs concerns efforts of success measurement, since to date no specific measures exist for the programs. By developing effective measures of the innovation programs' success, the programs and FC think! tank in general would be able to illustrate and present the added value within the company. While further elaborations would go beyond the scope of this work, this could uncover additional potential for program improvement.

5.2 Limitations and Suggestions for further Research

It is generally believed that this work provides Daimler FC think! tank with valuable insights, nevertheless some limitations have to be taken into account. Firstly, as has been mentioned throughout this work, most innovation process models found in the literature are related to new product developments and are either specified as such from the beginning or are introduced as innovation process model and then over the course of the paper start referring to new products. While Tidd and Bessant (2005) argue that much of the knowledge about new products is also relevant for process innovation, research could without doubt benefit from further studies investigating the innovation process with regard to different types of innovations. Second, the example of Daimler FC think! tank shows a rather special case of company internal innovation programs, whereas most innovation literature addresses innovations to be launched into external markets. Thus, it would be interesting to further study if and how such internal programs exist in other companies in order to be able to perform some kind of benchmarking. And finally, the level of analysis of the innovation process was limited to the steps and activities undertaken in successful innovation processes but did not include further considerations regarding, for instance, personal or departmental collaboration.

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Appendix

Appendix I: Overview of Process Models

Generation	Innovation Model	Period	Key Feature
1	Technology push	1950s - 1960s	Simple linear sequential process, source of innovation is R&D
2	Market pull	1960s - 1970s	Simple linear sequential process, source of innovation the market
3	Coupling / Interactive model	1970s - 1980s	Interaction of different functions, combinations of pull and push
4	Integrated model	1980s - 1990s	Simultaneous process with feedback loops
5	Networking model	1990s	System integration networks, focus on external networks and knowledge accumulation
6	Open innovation	2000s	Innovation collaboration, externalization of the innovation process, outside input to the innovation process

Own representation, adapted from Rothwell (1994), Trott (2012, 26)

Appendix II: Types of Innovation

Type of Innovation	Definition and Description
Product Innovation	The introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. - Product innovations can utilize new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies. The term “product” is used to cover both goods and services. - Product innovations include both the introduction of new goods and services and significant improvements in the functional or user characteristics of existing goods and services. - New products are goods and services that differ significantly in their characteristics or intended uses from products previously produced by the firm. - Significant improvements to existing products can occur through changes in materials, components and other characteristics that enhance performance.
Process Innovation	The implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. - Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products. - Process innovations include new or significantly improved methods for the creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services. - Process innovations also cover new or significantly improved techniques, equipment and software in ancillary support activities, such as purchasing, accounting, computing and maintenance.
Marketing Innovation	The implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. - Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm’s product on the market, with the objective of increasing the firm’s sales. - The distinguishing feature of a marketing innovation compared to other changes in a firm’s marketing instruments is the implementation of a marketing method not previously used by the firm.
Business Model Innovation	Novelty in the “drivers” of an organization’s activities or strategy

Own representation based on OECD and Eurostat (2005, 47–52), Conway and Steward (2009, 14)

Appendix III: Interview transcripts

20.11.2017 – Head of think!project (translated from German)

1. What is the aim of think!project? • The aim is among others to generate innovations – it's more the overall the end goal • What we follow, an innovation is only an innovation if its launched into the market, so ideally the innovation targets the needs of the end consumer
2. Which types of innovations does it target? • The program targets product, process, business model and social innovations • It follows a holistic approach, which means that you can be accompanied from strategy to implementation and it can be different types of innovation. • The goal or focus of think!project is the holistic individual character, which means individually considering the needs of the projects and develop a customized concept.
3. So the goal of the program is to produce implementable innovations? • Yes, but the project can come to us at different stages / degrees of value. It can be at the beginning where it needs a strategy and vision – the end goal is innovation but the concept has to be developed individually
4. Which steps does think!project follow? • Projects can enter the program in three stages: beginning, middle, and end. • Beginning: strategy phase – vision, strategy, understanding phase, • Middle: Ideation, Prototyping, Testing • End: Implementation, Realization (Piloting, UX design, Business and Technical requirements how can we create an implementation road map) • Last phase is included in the program but is not offered yet
5. How are projects chosen that enter the program? • The innovation manager from the different divisions have a innovation criteria catalogue; they are the collection pool in the divisions. When a project contacts them, the innovation manager decides if it's an innovation project or not. • It is like a decision tree, either it is rejected, or more information is required, or the project is directly accepted • Criteria: does the project fit to the general vision of overall finance and controlling, does it fit to the vision of best finance, does it fit to the actual division it comes from? • 99% of all projects always get directly accepted, it is more a test if they are only looking for an internal team workshop or organizational development, which is not wanted since innovations should be generated.

6. Are measures or actions performed for generation ideas or selecting ideas (business case analysis / concept check) • It differs, depending on the expectation of the project. If the project wants an ideation phase in their workshop then it is included. If they want to generate ideas as quick wins, it has more of an improvement character. If the expectation is to do disruptive things, we have completely different ideas, as well as more crazy ideas. It always depends on the expectations. The ideas are followed up on and or driven and it is also considered how they could be implemented.
7. With regard to prototyping / testing – at the end is there a finished product or process or a prototype? • Everyone understands something differently when considering prototypes – here it's really high-level prototypes meaning we might have a storyboarding aiming at making an idea come alive with e.g. paper prototyping or rapid prototyping and the management doesn't only see the idea on an onepager but it is experienceable in the world of the customer for whom the idea is meant to be. From process beginning to process end.

22.11.2017 – Head of think!ubate (translated from German)

1. What is the aim of think!ubate? • The aim is to develop internal ideas which might someday be able to be launched into an external market • The aim is also cultural, to provide the employees with a bit of innovation culture • But the main goal is to develop ideas -> to generate MVPs
2. Which types of innovations does it target? • The ideas can be related to products but also business models
3. Are the ideas already present or does some kind of ideation take place? • The ideas originate from an innovation challenge in a certain department. The department writes out a question and employees can submit their ideas. The best ideas are selected based on a crowdfunding logic, where the ideas receiving the most votes enter FC think! tank • Most often you realize in the course of think!ubate that there is a project which doesn't make sense
4. But the ideas that do enter are all included and not questioned in the beginning? • Yes, exactly
5. Which steps does think!ubate follow? • There are different steps: first is the problem validation: we find out who the actual customer is and we talk to him and find out if the problem actually exists and if it is feasible to solve it • If the teams realized this, they build a MVP of their product and test it with the customer, if it represents the right solution to their problem (solution testing) and then

they iterate or start over or change. Afterwards they create a pitch deck (very high-level and more marketing focused) and are supported with pitch preparation to pitch their ideas in the shark tank, which is the last step in the program.
6. You mean problem in the sense that the idea is a solution to a problem? • Yes, exactly. We ask if there is an existing problem which the team wants to solve with their idea. This can be seen as a kind of selection. If the result is that there are no customers for it, it will not be pursued further. Then they must think of something new or adapt it until it makes sense.
7. And from the solution they build a MVP and validate it with the client? • Yes, exactly
8. What is the “end product” of this phase? A MVP but not a finished product? • Correct. In the design of the program one test loop is included, because afterwards the MVP goes into the shark tank then it would have to turn from MVP to product at some point
9. Who is in the shark tank? • Sharks are always those who “own” the innovation challenge, so they are from the department from which the innovation challenge was initiated. But they are always high-level management so necessarily experts • Sharks decide whether an idea is to be pursued further or not: if the team doesn’t receive
10. And what happens after the shark tank? • Up to now the teams go back into their departments and they work self-reliant. The think!ubate team does sometimes check up on them but we are no longer really involved. But in the future they should be actively accompanied, in the scope of a new traction program that is currently being planned.
11. This traction program, do you already know what it will look like? • The idea is that every project team is assigned an own mentor and coach who can also support them methodologically. Planned are different steps: find a pilot, build the pilot, and roll-out. • We are still arguing if it is always a pilot, perhaps it’s rather a MVP, the terminology is unclear • But in essence the first phase is supposed to test something and the second to roll it out.

22.11.2017 – Head of think!process (translated from German)

1. What is the aim of think!process? (2. Which types of innovations does the program target?) • The aim is to innovate and improve processes with agile methods whereby the process owner himself (normal employee working in the process) changes and optimizes it. Unlike common cases where consultancy firms are involved
3. Which steps does think!project follow? • It consists of three phases • Discovery / bootcamp phase: Current process analysis, the teams examine the current process, how it currently is designed. Most processes already exist graphically. • After looking at the current process, the focus is shifted on the target process, without taking the other into account. How would the process ideally look like?

4. Does some form of ideation and selection take place in this phase? • Ideation is to find / identify the target process • Commonly the participants already bring the ideas for process improvement since they already work in the process for a long time. Our task is to help working out the truly optimal process which makes most sense by applying different methods (e.g. poc, impact analysis, change curve ...)
5. How does the further process look like? • Next is the roadmap phase: a prototype of the target process is built. Different methods to graphically visualize the process (e.g. swim lane) or paper prototypes are used. Here it is important to inform and take into account all stakeholders that are involved in the process (including management) and to question customers if they agree or not. • As a next step a business case is calculated to answer the question “what is the output?” Related to process the question is rather, which resources and capacities are saved, how many employees does it require less or efficiencies, e.g. I need 3 days instead of 5. • Then the pitch is prepared and pitched to the sharks in the shark tank
6. What is at the end of the program, a ready to implement process or a process prototype? • That depends, in some cases it was a ready to implement process and in other a prototype which needed to be adjusted • The process or prototype is then presented in the shark tank and then the implementation should start
7. Is the implementation or launch supported by think!process or does it take place back in the respective department? • The implementation is back in the departments, every process owner is responsible for his process and the implementation of it • But once the traction program is set-up this should be included in the FC think! tank offerings, but I am not sure how the exact design will be
8. The last step in the current think!process setting is consequently the shark tank? • Yes, the shark tank where the sharks decide if the process should be implemented or not.

23.11.2017 – Assistant Team Lead (translated from German)

1. When was FC think! tank initiated and with which objective? • The FC think! tank was initiated in the beginning of 2016 with the objective to enable and drive innovation in the Daimler AG finance and controlling department.
2. How is FC think! tank set in the company structure? • It is part of the best finance strategy program, which is dedicated to create a future-oriented strategy for the finance organization of Daimler AG. • The idea in its roots initially arose from the CFO of Daimler AG
3. How has FC think! tank developed since its initiation? • It started with three employees in the beginning and has since grown in numbers to 10 employees. The team moved to a new creative space, with moveable panels and writable walls to facilitate innovation.

4. Which programs does FC think! tank offer? • FC think! tank has four innovation programs. Think!impulse, think!project, think!ubate and think!process. The program leads will give you more information on that.
5. What is the mission or vision of FC think! tank? • It is best described with our anchor sentence: • <i>“Your partner for future ideas: With innovative methods, acknowledged specialists and an inspiring environment, we at the FC think! tank accompany our colleagues and their ideas on the way to structured, sustainable and convincing results.”</i>

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Stuttgart, January 3rd 2018

A handwritten signature in black ink, appearing to read 'C. Strüder', written in a cursive style.

Carolin Strüder