

Development of an Additive Manufacturing Potential Check System (DynAMiCS)



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From the very first invention to broad-scale application, technologies usually undergo a diffusion process. The antecedents of modern AM machines date back to the 80s. However scholars are still waiting for the industrial revolution, which is present in the subtext of our media. As of today, the DMRC has been working on propelling the technology from Rapid Prototyping to Direct Manufacturing for more than five years. The DMRC's competences enables it to act as a technology mediator: It can draw accurate estimations of whether AM makes sense in a case or not. Therefore, the aim of this project is a systematic technology-diffusion concept. In the course of the project we endeavor to explore the resentments

against AM which hinder its broad acceptance and an answer to the question: Is AM different in its diffusion process?

Before even thinking about the additive construction of parts, companies will have to check the suitability of AM in a business case. Depending on a company's prior degree of exposure with AM, it is going to be interested in answering different questions (see figure 1 – corresponding work packages of the project).

In the project, we want to develop a systematic framework that will help our partners and other companies in answering the above questions and deduce the desired result. As outlined in

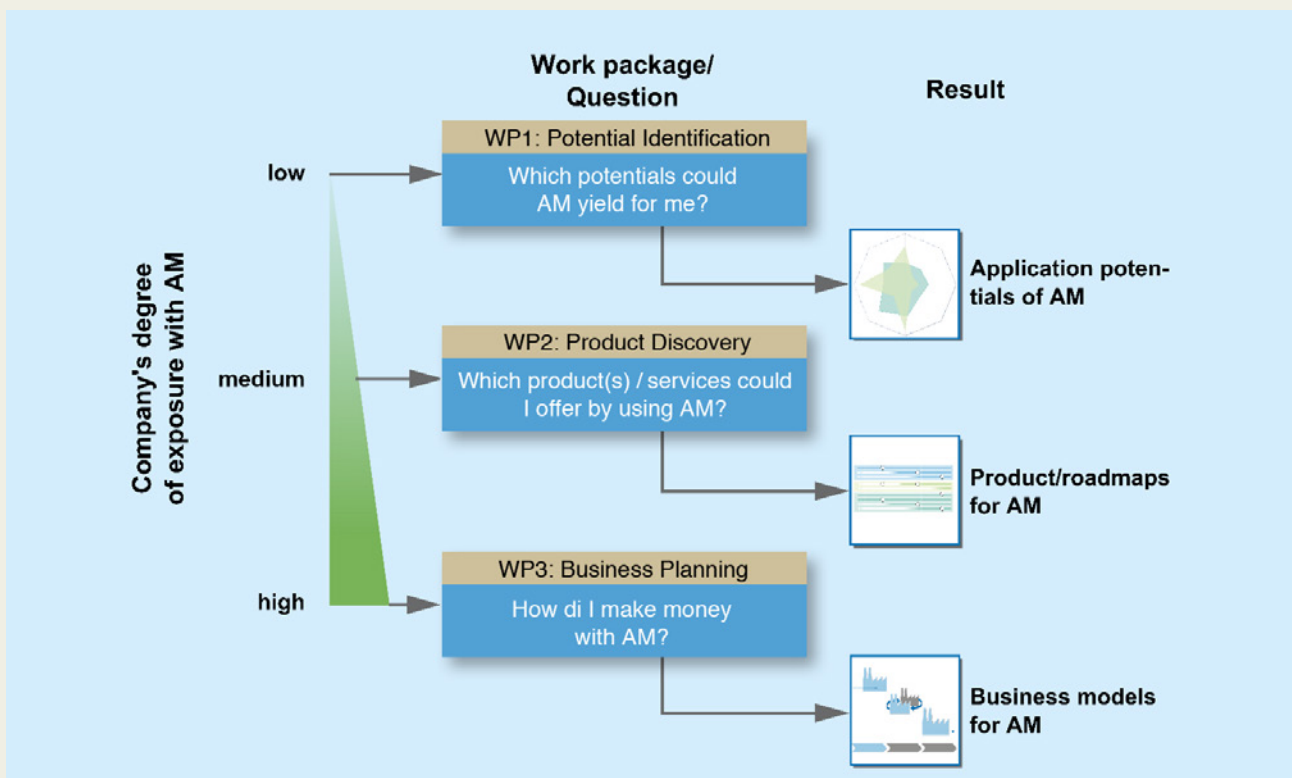


Figure 1: Logic behind the project

figure 1, the project is structured into three major parts: potential identification, product discovery and business planning.

Potential Identification

In the first phase of the project, a framework for companies with little to no knowledge of AM will be developed. Their goal is obtaining a first impression of the benefits AM could provide for their business. To identify potentials, applications fields (in terms of market segment and product category combinations) are determined and assessed with regard to their respective AM potential. The criteria used to tell apart attractive from non-attractive application fields are determined in workshops with our partners and then validated (see exemplarily figure 2). As a consequence, the DMRC is going to be equipped with a tool to answer the question “Which potentials could AM yield for me” (figure 1).

Product Discovery

In the second phase of the project, a framework for product discovery will be developed. Once a company knows it would like to apply AM (for either production or service provision), it will be confronted with the challenge “Which products and services could I offer by using AM”. The main task is not merely to find creative product ideas, but rather selecting the right ones. On the one hand, product ideas have to be judged from a technical standpoint. In doing so, the DMRC can draw on the technical know-how of its engineering staff. On the other hand, product ideas have to be auspicious with regard to a com-

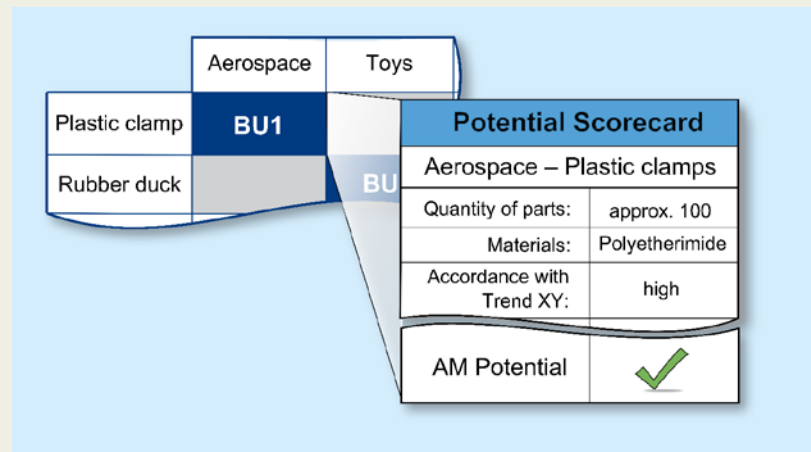


Figure 2: Criteria-based selection of market segment and product category combinations.

pany’s business of the future. The project will yield a framework to generate and select promising, feasible product ideas.

Business Planning

As a matter of fact, there is more to additive manufacturing than the plain production of parts – it changes value chains, manufacturing complexity, competitive relationships and will drastically alter a company’s competence base. Therefore, in a third step, a guideline for the generation of AM-business models will be developed. To yield the full potential of AM, companies will have to revert to specific AM business models. A business model is an abstract representation of a company’s way to make money. Recently, the concept of business models has gained ample attention among scholars. We aspire to extend the current understanding of business models and enable the DMRC to develop specific AM business models.