

## Preface

*„Die rasch fortschreitende Spezialisierung auf allen Gebieten der Naturforschung erschwert es dem Einzelnen, sich auch nur auf seinen Nachbargebieten zu orientieren. Geradezu unmöglich wird ihm die Orientierung aber auf den ferner liegenden Gebieten. Andererseits muß sich jedem das geistige Bedürfnis um so fühlbarer machen, den Zusammenhang mit dem Ganzen nicht zu verlieren, je mehr er gezwungen ist, das Feld der eigenen Arbeit einzuengen – ist er doch meistens auf die Hilfe von anderen Zweigen der Naturwissenschaft angewiesen.“<sup>1</sup>*

<sup>1</sup> *“The rapidly proceeding specialisation in all areas of natural sciences makes it difficult for the individual to find orientation even in his neighbouring fields. It is further almost impossible to find orientation in the more distant fields. But then again, the individual must feel the intellectual need to understand the context of the whole, and even more so when he is forced to localize his own area of research – as he is mostly dependent on the assistance of other branches of natural sciences”*

Arnold Berliner. Die Naturwissenschaften (The Science of Nature). Vol.1/1, Springer, Berlin (1913).

Keeping track of the whole context in spite of further specialisation, the chance and the necessity to cooperate with other disciplines, to learn from them and to get inspiration from them is not only true for the natural sciences but also for engineering sciences. For the introduction of this year's conference let us take a look into ecology. A well-known phenomenon in ecology is the edge effect. The edge- or transition zone between two habitats enables the exchange of energy, organisms and organic material. Those edge- or transition zones are often characterised by a high structural diversity. Large edge- or transition zones are also named ecotone. Ecotone is a combination of the word eco(logy) and tone, where tone comes from the Greek word tonos (engl. tension), expressing a place where ecologies are in tension. The contact zones in ecotones may take very different shapes, starting from simple ecotones with equal and homogeneous surfaces to more complex ones.

Analogous to ecotones, tangible product(s) and intangible service(s) meet in Product-Service Systems (PSS). They are interlocked or tensed (braced to one another). Service(s) can be defined as a series of activities designed to enhance the level of customer satisfaction. Product and service are equally important for the function fulfilment, but the relation between physical product and service varies, similar to that of ecotones, from simple combination of one product and one service to more complex models. Whereas PSS as a first priority include consumer products in the range of services, Industrial Product-Service Systems (IPS<sup>2</sup>) focus on industrial customers and on their associated demands. Thus, IPS<sup>2</sup> is defined as “an integrated industrial product and service offering that delivers value in use”. The customers expect comprehensive solutions, which are adapted to their individual needs. IPS<sup>2</sup> offers the possibility to stand out from competition and for long-term customer loyalty. Particularly in times of economic crisis it becomes apparent which producing companies understand to satisfy the needs and requirements of their customers. Or in terms of ecology: The success of IPS<sup>2</sup> is limited by its range of tolerance for local environmental factors or is rather dependent on how fast and reliable the system can be adapted to changing factors.

After Cranfield in the year 2009 and Linköping in 2010, this year's International CIRP Conference on Industrial Product-Service Systems takes place in Braunschweig. The topics of this year's conference are amongst others planning and design of IPS<sup>2</sup>, planning- and design methods, IPS<sup>2</sup> business models as well as case studies from different industries. Particularly in this relatively new domain IPS<sup>2</sup> it will be important to keep track of the whole context and to seek cooperation with other research fields and disciplines.



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