

Position document Institutt for Produktdesign 2007-2012

The **aim** of this document is twofold.

- Section 1 aims to communicate the current position of IPD in its internal and external environments (*to make clear who we are and what we do*)
- Section 2 aims to explain what will be the focal areas for research in the short and medium term (*to make clear where we want to be*)

1 Current position of IPD

1.1 Product Design as a multi- and trans-disciplinary academic field.

IPD is a well-known renowned academic institute that has the ambition to 1) provide attractive education for students to become product designers ready for a challenging professional life, and 2) perform societally relevant, internationally recognized academic research in a number of selected areas strongly related to industrial product design, while embedded in an NTNU context. NTNU strives for innovative and creative research that aims for far-reaching social and economic impact. This is to be achieved through cross-disciplinary activities, where the arts, the natural and social sciences, and technology are interwoven. Product Design as a scientific discipline embeds all of these, first and foremost grounded in a true understanding of the human being as a product user, both as an individual and as a group. Product design is unique in its intermediating role of bridging technology research with the end-users of technology, providing valuable feedback loops necessary for true innovation in both a product and a technology context. For example, only through testing them in innovative product concepts, fuel cells and solar cells can mature as a potential power source for consumer products in the future. The feedback of product designers and end users to photovoltaic technology specialists has created the flexible solar panels available today that provide the necessary degrees-of-freedom for product designers to design products that consumers want to use and that can be commercially successful.

In order to maintain and even improve the status of an internationally leading academic institute in its field, IPD needs to predict and adapt to ever-changing contextual developments. In a global context, these technological, societal and economical developments succeed each other with increasing speed. At the same time, people rely on traditional values and attainments. This causes an increasing diversity in life styles and material environments. Using their understanding of changing contexts of individuals and groups, and knowledge and understanding of technical, aesthetical, ergonomical and business managerial principles, product designers will develop

products and services that will be cherished by users, and enable companies and institutions to reach their goals.

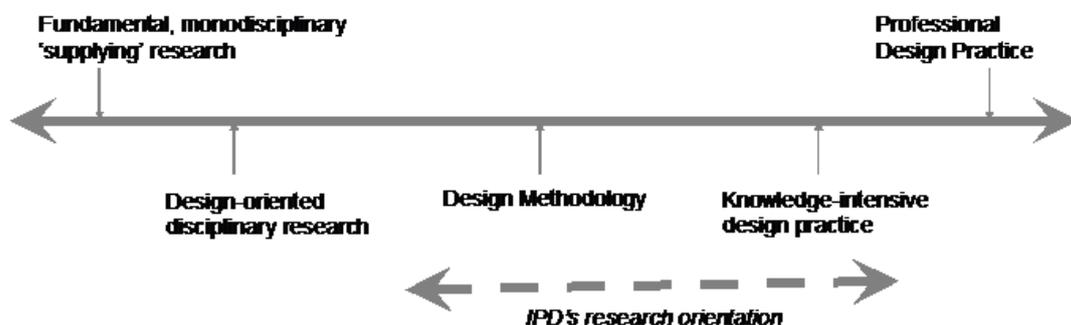
More than before, product designers will be involved in defining and developing knowledge-intensive concepts that will go beyond traditional products, and as such address product-service combinations, introduction strategies, interfaces, websites, identities, environments, et cetera. The Design Council (2005) has found that UK firms use design not only for product development, but for advertising, packaging, R&D, marketing, production engineering, marketing research, sales and marketing, and strategic planning as well.

Being able to organise chains of involved stakeholders, and interact with teams of specialists in various parts of the world will increasingly become a key quality. This requires, foresight, hindsight, overview, prediction, and matching, which makes product design emphatically an intellectual and academic activity. The product designer develops, selects and uses knowledge, methods and tools that are relevant for both general and specific design problems.

1.2 Product Design Research at IPD

Product design spans a spectrum encompassing, at one end, so-called 'supplying' academic disciplines, including social and engineering sciences, and at the other end, the prevalent industrial design practice, where many of our students have their professional careers. In between, three forms of research can be distinguished:

- design-oriented disciplinary research, creating knowledge that is of a fundamental nature to product design,
- design methodology, creating tools and methodologies in order to make this fundamental knowledge available and manageable to designers,
- knowledge-intensive design practice, where these tools and methodologies are applied in product design.



At IPD, in particular the second and third type of research, and the feedback loops that interlink them, are the focus of research (see figure). Design in itself is a valuable knowledge creating activity; knowledge in both the form of solutions to design problems, as well as the tools and methods to inspire and create those solutions.

2. IPD's proposed research focus 2007-2012

2.1 Focal research areas

With its staff complement complete for the first time since many years, IPD has committed itself to a research program for the 2007-2012 period, focusing on two research areas that are of common interest:

1. User-centred Product Design, understanding the role of the user as a driver and enabler for product innovation, and how to apply this understanding in design practice;
2. Design for Innovation (Strategic Design), understanding and supporting the needs of those industrial partners that are key to the transformation of innovative product concepts to commercially successful product innovations.

Within both focal areas, specific attention will be paid to sustainable product design. This means that with respect to user-oriented product design, it is the aim to strengthen research efforts that contribute to understanding the role of the user in sustainable use of products and the use of sustainable products. With respect to strategic design, this means that the aim is to strengthen research efforts that contribute to understanding how companies can successfully generate ideas for sustainable innovation, and transform these to commercially successful product innovations.

Sustainable product design also explicitly involves collaborative design and its reflection in tools and methods, referring to collaboration among scholars from different disciplines, collaboration between academia and industry, as well as collaboration between different actors and stakeholders in industrial value chains.

It should be noted that research activities at IPD will not exclusively focus on sustainability issues; rather, it is the aim to understand how sustainability can be treated as *one of many* relevant criteria for product development and design, and become a source of inspiration and creativity for product design and innovation.

2.2 Motivation of IPD's research focus

The focus of IPD's future research activities is motivated by a number of IPD's strengths in combination with specific opportunities.

Opportunities:

The social environment in which products fulfil their – material and immaterial – functionalities, is of growing importance. This is partly due to increased levels of products and environments being connected with each other, partly because of a growing world population, and because of fast changing social contexts in which products are used. Some large companies (like Apple, Microsoft, Philips) have developed and implemented user-centred design techniques, but in particular small

and medium-sized companies find difficulties in keeping up with these developments, although needs are recognized. Academic institutions may play an important role in developing user-centred design techniques for SMEs.

A similar observation applies with respect to the determination of product innovation potential within SMEs. Companies increasingly act in complex systems which include clients, design offices, technical specialists, interest groups, authorities, assembly and production companies, suppliers, strategic partners, etc. Multinational companies are usually equipped and experienced with managing such interactions, while SMEs often lack resources, expertise and experience to become part of such networks. Academic strategic design research will contribute to support SMEs in their search for development of competitive, innovative product portfolios and in managing these. Also from the perspective of sustainable product design, current tools and methodologies strongly focus on fulfilling certain functionality in a sustainable way. Based on current methodologies, especially small and medium-sized companies have little guidance in considering and finding opportunities to solve or reduce third party environmental or social problems by providing sustainable-function products or services, in particular from an industrial chain perspective

In societal discussions, environmental and sustainability problems and challenges are playing an increasingly important role. This is reflected in a development where industry is increasingly addressing corporate social responsibility (CSR). Like companies, also individual designers will need to determine their own engagement towards sustainability questions, and how this may or should reflect in their contribution to design projects. Next to economical considerations, also ethical and moral questions play a role. There is a need for sustainable products, even when this need is not explicitly articulated by end users. In combination with their own visions towards aesthetics, designers will need to be trained to make coherent and motivated design choices that affect both products, and product life cycles. A sustainability focus in IPD research will greatly contribute in stimulating IPD students to develop their personal engagement towards these important, global issues.

Strengths:

IPD has an excellent tradition in strong and lasting relationships with industry, both national and local. These are often small and medium-sized enterprises, designing and producing innovative product concepts. Even though IPD is a small institute, it has produced a close network of alumni that functions as a probe for new developments and opportunities. The limited size of the IPD staffs ensures a breeding ground for cross-fertilisation of knowledge and ideas, with no place for stereotypical academic ivory-tower islands. With many tenured staff members strongly involved in education, IPD can profit easily from cross-fertilisation between education and research. Guest lecturers and researchers from the aforementioned industry partners strengthen the industrial and societal relevance of activities. At the same time, PhD candidates on a number of topics ensure an academic research atmosphere as well.