



# PhD in DESIGN - 38th cycle

## PNRR\_352 Research Field: NEW PRODUCT DEVELOPMENT DESIGN FOR SUSTAINABLE INNOVATION

Monthly net income of PhDscholarship (max 36 months)
<b>€ 1400.0</b>
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
<p><b>Motivation and objectives of the research in this field</b></p>	<p>Society, in particular the younger generations, are facing up to their impact on the planet and have realised and gained awareness that a change in behaviour and lifestyle is essential to create the conditions for a sustainable future.</p> <p>The willingness to change direction has now become concrete and urgent, and here design and industry have the power to act.</p> <p>There are several strategies that can be implemented to reduce the environmental impact of a product.</p> <p>We can divide them into three concentric areas:</p> <ul style="list-style-type: none"> <li>- The first level, which concerns the product and production, is the one on which we can easily envision and understand the immediate effects of our strategies and possible actions. These may involve the use of recycled materials, reducing waste, optimised processes that consume less energy for production, etc. Today these variables are affecting the definition of CMF for SDA when recycled plastics are utilised. A consumer-centric approach would enable potential new solutions to address cost/ material availability challenges and, ultimately, desirability.</li> <li>- The second, somewhat broader level is that of the ecosystem in which the product will be integrated during its life cycle and the agents with whom it will interact. Extending product life and implementing smart disposal strategies could be some ways to bring impact in this dimension.</li> <li>- The last and third level, the broadest dimension, deals with the effects that the use of and interaction with</li> </ul>



	<p>products generates on society. These effects concern people's behaviour and attitudes, fundamental levers for long-term, conscious and impactful positive changes. As products become more and more complex and connected, as in the case of smart products, we need to consider this third and evolving dimension of sustainability that lies beyond the product itself.</p> <p>Thus, this research aims to build a solid analysis of the connection between design approach, product user experience (UX) and sustainable behaviour (society) to redefine a new dimension of sustainability with a broader impact that can be effectively implemented on an industrial level.</p> <p>Starting from a solid industrial perspective: How can we rethink the logic behind today's product development from scratch? It is essential to analyse and understand the new (real) needs of people and the planet's needs, which becomes one of the agents to be considered in a holistic process of rethinking. Which processes and user experiences should be adopted to design smart products towards an evolved sustainability dimension that guides and supports the user through sustainable behaviour? How can drivers enable conscious and sustainable patterns through a positive product experience?</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The research methodology will be based on an <b>action research</b> perspective, adopting <b>research through design</b> methodologies.</p> <p>Starting from an in-depth <b>literature review</b> and desk research, the research will include a careful <b>analysis of the state of the art</b> of sustainability logics, methods and tools applied to different design and NPD departments within the company partner (covering several brands).</p> <p>An open and shared <b>co-design approach</b> will be adopted, focusing on enhancing the collaboration of different company layers such as R&amp;D, innovation, design, marketing, management, and sales departments.</p> <p>The research, following a <b>Design Thinking</b> perspective, will be divided into several steps that will follow a spiral process that alternates between action and critical reflection:</p>



	<ul style="list-style-type: none"> <li>- Literature and state-of-the-art analysis of sustainability in industrial processes related to design methods, user research and behaviour</li> <li>- Observational and comparative 'on-site' analysis of different brands to gather information on the processes adopted in sustainability (current methods, resources used, supply chain, materials used, production processes, etc...)</li> <li>- Identification of best practices and methods, actively including different stakeholders in the research</li> <li>- User experiences validation through panel tests and other similar methodologies</li> <li>- The research process and findings in its various outputs will be shared with the company and all departments involved. As a side but relevant effect, these will generate a learning-by-doing practical approach for the organization in dedicated collaborative workshops.</li> </ul>
<p><b>Educational objectives</b></p>	<p>The training objectives of the project concern the training of a reflexive and professional profile capable of combining the practical and methodological dimensions in the development of new sustainable products and processes.</p> <p>The research process and the generated outputs will help build new elements to prepare and support designers for the latest contemporary challenges.</p> <p>It is essential, especially in training new professionals, to give a broader and more practical dimension to the application of sustainability in design methods and the development of new products and to understand how new sustainability practices will impact the next generation of designers.</p>
<p><b>Job opportunities</b></p>	<p>The design process has become more prevalent and demanded in companies as an operational approach and Design Thinking as a mindset, as they can bring innovation to different business processes.</p> <p>Managing today's complexity requires multidisciplinary hybrid professional profiles to create innovation in our evolving society.</p> <p>There is a growing demand for strategic design and people who can handle this complexity.</p>



	The overall figure will be able to coordinate different departments within the company and other areas of innovation, hybridising the characteristics of an innovation manager, a design researcher and a sustainability manager.
<b>Composition of the research group</b>	1 Full Professors 2 Associated Professors 0 Assistant Professors 2 PhD Students
<b>Name of the research directors</b>	Venanzio Arquilla

<b>Contacts</b>	
email: venanzio.arquilla@polimi.it, phone: 02.23995919	
<a href="https://dipartimentodesign.polimi.it/en/staff/show/5601">https://dipartimentodesign.polimi.it/en/staff/show/5601</a>	

<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	977.8 €
<b>By number of months</b>	6

<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	DE LONGHI APPLIANCES S.r.l.
<b>By number of months at the company</b>	12
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	Imperial College London
<b>By number of months abroad</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p>Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences):</p> <p>financial aid per PhD student max 5.707,13 euros per student (total for 3 years)</p> <p>Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD student there are various forms of financial aid both for research and teaching activities. The PhD student is encouraged to take part in these activities, within the limits allowed by the</p>



regulations.

Computer availability: 1st year, 2nd year and 3rd year: Each research group will supply PhD student with a computer, if necessary.

Desk availability: 1st year, 2nd year and 3rd year: Each research group will supply phd student with a desk