

## **A SYNERGETIC DESIGN PROJECT TO FORTIFY THE UNIVERSITY-COMPANY COLLABORATION**

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### **Abstract**

On a global scale, universities have recently emerged from the lingering impact of the pandemic. However, as university campuses gradually reopen, university administrators must acknowledge the inherent challenges of reverting to a pre-pandemic situation. Universities today face mounting expectations to revitalize their curricula by emphasizing real-world learning. This paradigm not only entails heightened classroom engagement but also imparts an essential contextual framework for nurturing enduring social competencies, the capacity for critical analysis and decision-making, and the proficient articulation of ideas. Over the years, the establishment and fortification of collaborative ties between universities and companies have been the subject of thorough discourse, and there is a widespread acceptance of the notion that companies can genuinely contribute to teaching content by sharing cutting-edge knowledge, expertise, and resources. According to a study conducted by Deloitte in 2017, it is evident that designers will only be partially characterized by their creative and innovative capabilities shortly. Business acumen is increasingly considered a precious attribute for professionals in this field. Integrating design and business principles has emerged as a pivotal determinant of achieving superior dynamic performance in diverse industries. Consequently, augmenting the synergistic relationship between university and company and ensuring constant and constructive long-term dialogue has become an urgent need in contemporary education. This paper investigates the disparity between universities and companies within the realm of design, aiming to shed light on potential solutions for fortifying the collaborative bonds between these two sectors. The authors introduce a design project executed in collaboration with a prominent global high-technology company, featured consistently on the Fortune Global 500 list for the fifth consecutive year, as a case study to demonstrate the efficacy of such endeavors in bridging the university-company divide. Drawing upon their distinct vantage points, the authors offer innovative insights into the interrelationship between academic research and design application. They delineate strategies for seamlessly integrating these domains to stimulate innovation and advance scholarly knowledge. The authors aspire to furnish fellow researchers in cognate fields with a valuable reference point, informed by the experiences gained from this project, to explore further and enhance design practice, achieving more substantial and consequential outcomes.

**Keywords:** *Design education, university-company collaboration, design practice.*

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### **1. Introduction: University-company collaborations**

The global higher education landscape has recently navigated the challenges posed by the pandemic, prompting a return to pre-pandemic norms. However, this transition is not without substantial challenges, as the academic realm undergoes a paradigm shift driven by the imperative for business reinvention, heightened workplace requirements, and evolving student aspirations (Euromonitor International, 2022). A discernible emphasis has emerged in recent years on fostering stronger linkages between university and company, particularly within the dynamic design sector, necessitating effective collaboration to prepare a competent workforce capable of sustaining internal company capabilities (Burnside & Witkin, 2008). Oliver et al. posited that the innovative university-company partnership is based on "interactions between university and industry scientists working on translating academic science with commercial potential towards market applications" (2019). Deloitte's research (2017) also emphasizes that, shortly, business acumen will be deemed an invaluable proficiency alongside creativity and innovation for designers, identified as a critical success factor for dynamic performance across industries. McKinsey & Company (2018) further asserts that companies with optimal financial returns embrace a design-centric vision, highlighting the urgency of enhancing the interconnectedness of design

and business in contemporary education. Traditionally, the university prioritizes theoretical knowledge dissemination, while the company focuses on profit-driven product development. Nevertheless, recognizing the potential synergies when these distinct spheres converge is crucial, offering mutually advantageous outcomes that address pressing needs fostering socio-economic growth and development.

This paper introduces a design case study, illustrating effective solutions to fortify the university-company ties. The authors provide insights into the interplay between academic research and design practice through unique perspectives, offering strategies to integrate these domains for innovation and knowledge advancement. The authors anticipate that the experiences shared in the case study will serve as a valuable reference for fellow researchers, encouraging a comprehensive exploration of design practices and yielding more impactful outcomes.

## 2. A synergetic design project with Midea

### 2.1. Midea: Humanising technology makes life better

Midea, situated within the home appliance sector of the Midea Group, an eminent global high-technology enterprise holding the 245th position in the 2022 Global Fortune 500 ranking, encompasses a diverse portfolio of over ten brands. Aligned with the overarching ethos of "Humanising Technology" shared across all Midea Group businesses, Midea's operational philosophy prioritizes consumer-centricity and proactive problem-solving. The company is committed to exceeding current expectations while anticipating and addressing evolving consumer needs through continuous exploration and innovation. Under the Midea Home Appliances brand, the company presents an extensive array of products within the home appliance industry, specializing in air treatment (encompassing both commercial and residential air conditioning solutions), refrigeration, laundry, large kitchen and cooking appliances, small kitchen appliances, water appliances, floor care, and lighting. This comprehensive product range underscores Midea's dedication to offering multifaceted solutions to the dynamic requirements of consumers, thereby positioning itself as a significant player in the global market (Figure 1).

Figure 1. Left: Midea logo. Right: A Midea water dispenser product for the Chinese market.



### 2.2. Midea design workshop: Soda and water dispenser for the EU market

The product/platform under consideration represents the latest development by Midea, featuring a distinctive attribute known as ICE-BANK, facilitating an uninterrupted supply of chilled carbonized water. The primary functionality of the product lies in delivering purified water, chilled purified water, and chilled carbonized water. It is important to note that the platform is fixed and immutable. The company must enhance its market standing in Europe, incentivizing consumers to adopt the SODA water dispenser. This strategic move aligns with the growing significance of SODA and purified water dispensers in mitigating the environmental impact associated with plastic bottle consumption, transportation, and storage.

Given the escalating popularity of water purification systems and evolving perspectives on SODA utilization in various contexts (e.g., social gatherings, culinary activities, health-conscious practices), the workshop sets forth the following objectives:

- Collecting pertinent data and information concerning the European market to identify potential innovative scenarios.
- Propose design solutions that capture customer attention by enhancing visual engagement with the SODA function.
- Strengthening the overall user experience associated with the SODA water dispenser.

- Augmenting the visualization and perception of the dispensing process, mainly focusing on the user interface (UI) aspects.

Specifically, the workshop aims to address the following thematic areas:

#### Visual Engagement:

- Strategies for effectively communicating and showcasing the SODA function in retail settings.
- Design expressions that convey the SODA function and emotionally engage potential customers.
- Techniques to evoke interest and prompt purchase decisions.

#### User Experience (UX) Physical Interaction:

- Improving the overall user experience during the SODA dispensing process.
- Enhancing interaction aspects during maintenance operations.
- Addressing considerations such as the type of vessels used, timing of usage, and diverse user needs.

#### UX Interface-UI:

- Exploring methods to engage users emotionally in the SODA process.
- Enhancing user interface design to improve the overall utilization of the SODA dispenser.
- Encouraging users to perceive SODA as a compelling beverage choice through thoughtful interface design and interaction.

### 2.3. Design team structure

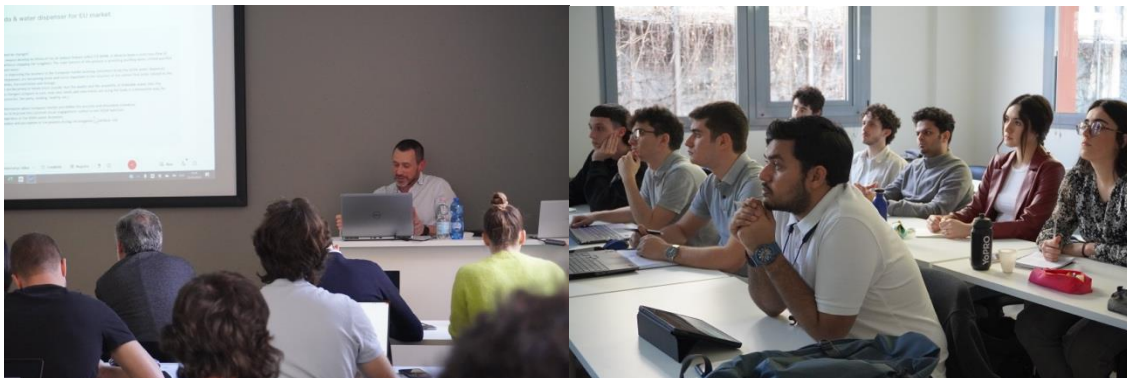
The design team comprises a diverse and multi-disciplinary group of professionals with varied design expertise. Senior professors with substantial knowledge in the relevant field oversee the scientific direction. Complementing their leadership, mentors, junior designers, and structured researchers contribute with their distinct perspectives and approaches to the project. The six operational groups consist of 19 master-level students of international origin, hailing from different countries and possessing diverse design backgrounds. These students were selectively chosen from the School of Design at Politecnico di Milano and POLI.design, the consortium established by Politecnico di Milano. In addition to the academic constituents, corporate partners affiliated with Midea play a pivotal role by imparting invaluable contributions to the project. This contribution involves sharing technical specifications, offering suggestions, and infusing artistic and creative inputs. The collaboration extends beyond academic boundaries, fostering an international and interdisciplinary environment that facilitates the generation of innovative and cutting-edge ideas within the design team. This collaborative effort provides a unique learning opportunity for students and enables them to glean insights from experienced professionals in the field.

### 2.4. Design workshop process

The workshop began on the 24th of March 2023 and concluded on the 15th of May 2023, followed by three stages.

Initiation and briefing: The first stage of the design process involves comprehensive project initiation and briefing. The design team thoroughly examines the project's requirements, objectives, and contextual constraints at this step. A clear understanding of the company's expectations and the broader socio-cultural context is established. This stage necessitates effective communication between the scientific team, corporate partners (experts from Midea), and design students to ascertain project goals, constraints, and any specific considerations that may inform the subsequent design phases. Empowered with this foundational knowledge, participants embarked upon the critical step of discerning and delineating the fundamental problem statements inherent to the project.

*Figure 2. Project initiation and briefing with Midea representatives.*



**Design development:** After the briefing phase, the design process advances into the conceptualization and design development stage, marked by synthesizing ideas, exploring design possibilities, and formulating preliminary design concepts. In the second phase of the workshop, a studio-based collaborative approach is systematically employed to assess the quality, feasibility, and alignment of design concepts with the specified project objectives. This pedagogical strategy is rooted in an intersubjective exchange between students and their academic mentors, embodying a democratic and open collaborative ethos. It fosters the seamless transmission of knowledge while concurrently catalyzing the emergence of innovative pathways toward expertise cultivation. Within the studio-based framework, students are actively encouraged to participate in experiential learning, applying theoretical knowledge to practical design challenges. This pedagogical environment facilitates an iterative process wherein the initial, ambiguous understanding of product requirements gradually transforms into refined and superior outcomes, aligning with the observations of Green and Bonollo (2003). A critical stage of this phase entails the active involvement of Midea representatives, who are invited to participate in the mid-term presentations. Within this collaborative context, students have the distinctive opportunity to articulate and present their evolving design proposals, thereby opening themselves to constructive critique and invaluable feedback from industry professionals. Collaboration and feedback loops among team members and stakeholders throughout this stage are crucial in refining the design concept before the finalization phase.

**Final delivery:** The design workshop's conclusive phase involves refining the proposal and developing comprehensive design specifications. Students are responsible for presenting their finalized design concepts to a discerning audience of company representatives (Fig. 3). This ultimate stage represents a valuable opportunity for students to subject their work to the criticism of industry professionals and mentors. The feedback during this evaluative process prompts profound self-reflection among the students, facilitating a methodical dissection and evaluation of their designs' inherent strengths and weaknesses. Following an intensive discussion and assessment, Midea representatives selected a singular proposal that most closely aligns with the stipulated objectives of the project. This chosen proposal is earmarked for further development, ultimately culminating in its finalization.

*Figure 3. The final presentations of the project.*



### 3. Observation and conclusion

Ensuring the alignment of university curricula with industrial needs is critical to addressing the mismatch of students' skills. This involves adopting a flexible delivery model, accommodating contemporary study and work responsibilities, as highlighted by Spang (2014). Departing from the prevailing design education model, this paper advocates for a paradigm shift, fostering a dynamic relationship among academia, associations, companies, and professionals to cultivate an environment conducive to design culture. Facilitating students' desired outcomes can be achieved through collaborative partnerships within educational pathways, emphasizing participatory teaching and learning, where students actively shape their learning process, encouraging experimentation and interdisciplinary perspectives.

In the academic context, the role of a company partner extends beyond collaboration to that of a trained instructor, possessing the necessary skills and knowledge to facilitate active student participation. Through engagements such as meetings, visits, and presentation critiques, students gain a mutual understanding of the subject matter, enhancing their overall educational experience. Intermediate facilitators are pivotal in university-company collaboration, acting as intermediaries between internal teams and external partners. These facilitators foster communication and cooperation, translating diverse

perspectives into a common language, thereby promoting the exchange of knowledge and expertise between academia and industry.

As businesses undergo reinvention in response to changing workplace demands and evolving student expectations, enhancing collaborations between design and industry becomes crucial in the globalized era. This paper presents a representative case study as an illustrative solution to fortifying university-company synergy. The authors contribute unique perspectives on the interplay between academic research and design practice, offering insights into their effective integration to foster innovation and advance knowledge. The authors aspire to furnish fellow researchers in cognate fields with a valuable reference point, informed by the experiences gained from this project, to explore further and enhance design practice, achieving more substantial and consequential outcomes.

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