

A UI-First Approach to Brand Identity Design

A Case Study of the TPIS System

UI-우선 접근법을 통한 브랜드 아이덴티티 디자인 연구

TPIS 시스템 사례를 중심으로

주 저 자 : 구지영 (Koo, Jiyoung) 이화여자대학교 에듀테크융합연구소 연구교수

공 동 저 자 : 최민수 (Choi, Minsoo) 영남대학교 예술대학 산업디자인학과 겸임교수

교 신 저 자 : 조일현 (Jo, Il-Hyun) 이화여자대학교 교육공학과 교수
ijjo@ewha.ac.kr

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Abstract

This study proposes a UI-first approach as a design methodology that reconceptualizes the relationship between User Interface (UI) design and brand identity development. Whereas prior research has largely adhered to a top-down “brand-to-user” paradigm, in which brand identity is established as a dominant concept upon interface design, this study proposes an integrated, bottom-up perspective that positions the user interface as a foundational source in the development of brand identity. Drawing on the development of the TPIS system, the study emphasizes the importance of continuous and reciprocal alignment between interface design and brand identity, addressing the consistency between the system’s visual expression and its functional objectives as a central concern. Furthermore, it supports the possibility of a system in which brand identity emerges from actual user interaction, thereby enabling visual identity to align with authentic user experience.

Keyword

TPIS Learning Analytics System (TPIS 학습 분석 시스템), UI-First Approach (UI-우선 접근법), User Interface Design (사용자 인터페이스 디자인), Brand Identity (브랜드 아이덴티티)

요약

본 연구는 사용자 인터페이스(User Interface, UI) 디자인과 브랜드 아이덴티티 개발 간의 관계를 재개념화하는 디자인 방법론으로서 UI-우선(UI-first) 접근법을 제안한다. 기존 연구들은 브랜드 아이덴티티가 인터페이스 디자인 위에 상위 개념으로 부과되는 ‘브랜드-투-유저’ 방식의 하향식 패러다임을 따르고 있었다. 이에 반해 본 연구는 사용자 인터페이스를 브랜드 아이덴티티 형성의 기초 입력값으로 삼는 통합적이고 상향식의 관점을 제안한다. TPIS 시스템의 개발 과정을 통해 인터페이스 디자인과 브랜드 아이덴티티 간의 지속적이고 상호적인 정합성 조정을 강조하며, 시스템의 시각적 표현과 기능적 목적 간의 일관성 확보를 핵심 과제로 다룬다. 더 나아가, 본 연구는 실제 사용자 인터랙션으로부터 브랜드 아이덴티티가 도출되는 시스템의 발전 가능성을 지지하며, 결과적으로 시각적 아이덴티티가 실제 사용자 경험과 정렬되도록 돕는다.

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1. Introduction

1-1. Research Background

The relationship between form and function remains a central topic in contemporary design circles, exploring the complex dynamics inherent in creating attractive products that consider aesthetic and utilitarian qualities. In such a relationship, the broader context of visual communication, information architecture, interaction design, as well as affective and cognitive dimensions, has influenced the development of design from both theoretical and applied perspectives. In the field of Human-Computer Interaction (HCI), Tractinsky et al. (2000) explored the relationship between visual aesthetics and usability, asserting that “what is beautiful is usable.”¹⁾ Their findings suggest that the visual appeal of a system contributes not only to its perceived usability but also to user satisfaction and engagement. Subsequent research, including the work by Desmet et al. (2001), has further emphasized the role of emotional engagement in digital interaction, demonstrating that visually appealing interfaces can elicit positive affective responses

1) Tractinsky, N., Katz, A. S., & Ikar, D. (2000). What is beautiful is usable. *Interacting with Computers*, 13(2), p.127.

5. Conclusion

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that enhance usability and overall user satisfaction.²⁾ Aesthetic considerations, at its core, contribute to delivering a more inclusive User Experience (UX) by employing visually appealing elements that support functional, perceptual, and affective dimensions. Additionally, aesthetic elements serve as a visual language for communicating a product's brand identity, involving its core values and personality.

Within the domains of user experience and branding, aesthetics are no longer regarded as peripheral enhancements but as integral components that facilitate meaningful interaction with users and support the formation of brand identity. It is particularly prominent in User Interface (UI) design, where elements such as typography, colour schemes, and logo design contribute to the construction of a clear and distinct visual identity. In practical contexts, however, the development of the user interface does not always follow a sequential progression from branding to visual design. It may be initiated prior to the articulation of brand identity, particularly in contexts where the user

2) Desmet, P. M. A., Overbeeke, C. J., & Tax, S. J. E. T. (2001). Designing products with added emotional value: Development and application of an approach for research through design. *The Design Journal*, 4(1), pp.32–47.

interface serves as a foundational source in the development of the brand.

The TPIS system exemplifies this case by utilizing pre-defined low-fidelity prototypes to validate the technical feasibility of the system before establishing an aesthetic standard and brand identity. With a foundation in learning analytics, the TPIS system supports the collection and analysis of multimodal data derived from teaching-learning processes, including learners' gaze-tracking, voice analysis, and facial expression recognition, to deliver personalized feedback and information. By leveraging these data, particularly learners' gaze patterns, the system aims to not only enhance learner flow but also to facilitate interaction among learners within teaching-learning environments, thereby supporting the improvement of learning outcomes. Accordingly, the effective advancement of the TPIS system necessitates prioritizing the systematic development of both the user interface and brand identity. As the technical functionalities were validated in the initial phases, this study focuses on the integration of aesthetic design and brand identity, placing particular emphasis on visual coherence and the delivery of a consistent user experience.

1-2. Research Scope and Objectives

This study explores the contribution of user interface design to the formation of brand identity in contexts where branding emerges as a consequence of interface development. This study is guided by the following research questions, aimed at investigating the dynamic relationship between user interface design and brand identity.

(1) How can user interface design enhance the development of brand identity within the TPIS system, particularly in the absence of formal branding (brand identity)?

(2) How critical is it that the foundational,

top-down process of brand identity guides the user interface development before the bottom-up approach, in which the user interface contributes to the establishment of brand identity? Alternatively, can interface design effectively facilitate brand identity formation when initiated from the outset?

(3) What design principles or strategic frameworks support the development of a cohesive and effective brand identity when user interface development precedes the formal creation of branding?

2. Literature Review

2-1. The Traditional Brand-to-User Process

Branding has traditionally followed a predominantly top-down paradigm,³⁾ wherein an articulated brand identity—encompassing physique, personality, culture, relationship, reflection and self-image,⁴⁾ as conceptualized in Kapferer's (2004) *Brand Identity Prism*—is established at the strategic level and subsequently implemented across tangible and intangible user-facing elements, including product aesthetics, user interfaces, communication assets, and the overall user experience.⁵⁾

This approach, commonly referred to as the *Brand-to-User* framework, positions brand strategy as the foundational basis of all subsequent design decisions. Within this conventional framework, a brand's basic identity system, comprising elements such as logos, colour palettes, typography, and tone of voice,⁶⁾ is conceptualized, designed, prototyped and

3) Aaker, D. A. (1996). Measuring brand equity across products and markets. *California Management Review*, 38, pp.102–120.

4) Kapferer, J.-N. (2004). *The new strategic brand management: Creating and sustaining brand equity long term* (3rd ed.). Kogan Page.

5) Olins, W. (2008). *The brand handbook*. Thames & Hudson.

implemented across all user touchpoints to evaluate its usability. This methodology seeks to anticipate the effectiveness of brand identity in real-world contexts, operating under the assumption that brand coherence can be deliberately designed and systematically implemented in a top-down logic—from brand to user.

2-2. User Experience: Conceptual Foundations and Design Methodologies

In contrast to conventional top-down, brand-driven methodologies, user experience research over the past two decades has prioritized participatory and *User-Centered Design* (UCD) approaches. Hummels (1999) advocates for user engagement as a foundational starting point in the design process, rather than adopting a market-driven and goal-oriented approach.⁷⁾ Beyer and Holtzblatt's (1998) seminal work on *Contextual Design* philosophy exemplifies much of this, emphasizing a user-centered approach by grounding design decisions in a comprehensive understanding of users' real-world contexts and behaviours.⁸⁾ This method involves aggregating ethnographic data, analyzing user requirements, and iteratively refining prototypes through user testing and feedback. Unlike the Brand-to-User framework, which promotes a top-down brand approach, Contextual Design adopts a bottom-up, structured, systematic, and empirical method to uncover users' underlying intents, desires, and motivations. Sanders (1999) proposed a similar approach, introducing *Postdesign* as a paradigmatic shift from

conventional, product-centered design to an experience-oriented, participatory method,⁹⁾ which emphasizes co-design and active stakeholder involvement in response to users' evolving needs and experiences. Hekkert et al. (2000) elaborate on user-centered approaches by emphasizing that "design research must have an eye for the full experience of the user. This experience not only covers the often studied perceptual-motor and cognitive skills of the user, but also emotional reactions."¹⁰⁾ They emphasize the importance of placing users at the forefront of the design process by introducing a comprehensive view of user experience that involves users' perceptual, cognitive, and emotional aspects. Complementing these theoretical perspectives, Norman (2013) further advocates for iterative, UCD processes that emphasize sustained engagement with end users through observation, prototyping, and feedback. This theoretical position is further substantiated by Hartson and Pyla (2019), who critically examine the inherent limitations of top-down design strategies in response to accommodating the variability of users. They promote bottom-up approaches that systematically incorporate empirical user data throughout all phases of the design process. This approach has played a critical role in their study by employing empirical techniques to simulate authentic usage contexts and generate evaluative data reflecting users' experiences, leading to enhanced contextual relevance and overall usability. Moreover, Hartson and Pyla proposed an interactive synthesis of this approach, suggesting that effective UX design emerges from a reciprocal cycle where strategic objectives and tactics establish the initial framework and continuous user feedback and

6) Wheeler, A. (2017). *Designing brand identity: An essential guide for the whole branding team* (4th ed.). Wiley.

7) Hummels, C. (1999). Engaging contexts to evoke experiences. In C. J. Overbeeke, & P. Hekkert (Eds.), *Proceedings of the international conference Design and Emotion*, pp.39–45.

8) Beyer, H., & Holtzblatt, K. (1998). *Contextual design: Defining customer-centered systems*. Morgan Kaufmann.

9) Sanders, E. B.-N. (1999). Postdesign and participatory culture. In *Useful and critical: The position of research in design*. University of Art and Design Helsinki.

10) Hekkert, P., Keyson, D., Overbeeke, K., & Stappers, P. J. (2000). Research through and for design. TUE/Design Systems Report 2000/1, pp.95–103.

observation guiding progressive refinements and adaptations.

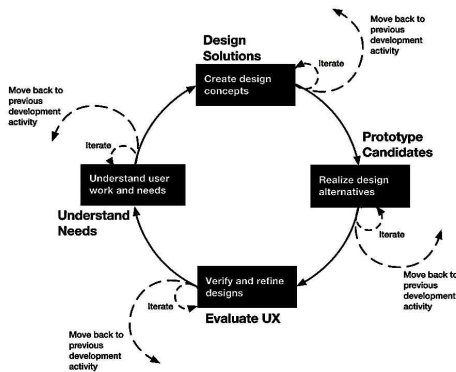


Figure 1. The UX design process, adapted from Hartson and Pyla (2019).

As depicted in Figure 1,¹¹⁾ the UX design process comprises four distinct yet closely interrelated phases: analysis, design, prototyping, and evaluation, with each phase involving iterative refinement as part of a continuous improvement cycle. This notion aligns with Karat's (1997) foundational characterization of user-centered design as a reflective and cyclical process that begins with a grounded understanding of users' practices and contexts. This process continues through the phases of ideation, prototyping, and refinement, each guided by empirical data and iterative evaluation.¹²⁾

The user interface represents the most palpable outcome of this process, serving as the point at which user requirements are translated into visual and functional forms. In the user-centered design process, the role of the

interface is not merely a function of access, resources, and systemic bias but rather a vital conduit for communication, meaning-making, and brand interaction. From this perspective, UI design becomes instrumental in translating a brand's visual identity into meaningful interactive experiences.¹³⁾¹⁴⁾ As such, user interface design is recognized not only as a concern of usability aspect but also as a medium for brand expression, particularly salient in the design of products where user experience and brand experience are deeply intertwined.

2-3. Alternative Branding Methodology

The traditional top-down and linear approach to brand identity reveals significant limitations, particularly in the context of user experience. A brand can no longer remain static; it must be responsive and evolve in parallel with users and their feedback. Elements such as colour and typography alone are no longer adequate to define a brand's identity; rather, a brand requires its comprehensive universe, comparable to a living entity. According to Choi (2025), shifting the focus from the nouns associated with a brand to its verbs exemplifies the evolving nature of brand identity development, a perspective that aligns closely with the emerging notion of brand cosmology.¹⁵⁾

11) Hartson, R., & Pyla, P. (2019). The Wheel: UX processes, lifecycles, methods, and techniques. In *The UX book: Agile UX design for a quality user experience*, pp.27–48.

12) Karat, C.-M. (1997). Evolving the scope of user-centered design. *Communications of the ACM*, 40(7), pp.33–38.

13) Desmet, P. M. A., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, 1(1), pp.57–66.

14) Hassenzahl, M. (2010). *Experience design: Technology for all the right reasons*. *Synthesis Lectures on Human-Centered Informatics*, 3(1), pp.1–95.

15) Choi, M. (2025). A study on methodology of designing. *International Design of Advanced Studies*, Hongik University, Doctoral Dissertation, pp.174–176.

3. Research Methodology

3-1. UI-First Approach: A Bottom-Up Process from User Interface to Brand Identity

This study introduces the *UI-first approach*, a methodology that positions the development of the user interface as the foundational phase of the design process. This method begins with the development of practical and concrete prototypes, which are further examined for their adaptability within the basic brand identity system. It inverts the conventional top-down sequence by shifting the direction from user to brand, wherein the interface functions as the starting point for brand identity formulation.

This approach supports the design of user interfaces that reflect user-centered principles, ensuring that users' perspectives guide the development process of interfaces that embody brand identity. It prioritizes addressing the ambiguity of usability of the product by initially specifying the user experience and developing functional user interface prototypes. Therefore, rather than applying a predefined brand identity through a top-down sequence, the UI-first approach enables a bottom-up process in which brand identity is derived and constructed through user engagement and interpretation. Throughout this strategy, the method enables interpretation and empirical validation of whether brand elements perform effectively within the interface. This phase is subsequently abstracted and synthesized into a cohesive brand identity system and conceptual framework of the product.

3-2. Integrated Process of UX/UI Design and Brand Identity Development

As illustrated in Figure 2, the study was conducted through a structured process that proceeded sequentially and in parallel tracks: UI development and brand identity formation. It encompasses the entire spectrum of research in UX design, development of prototypes, implementation of the UI, and formation of the brand identity.

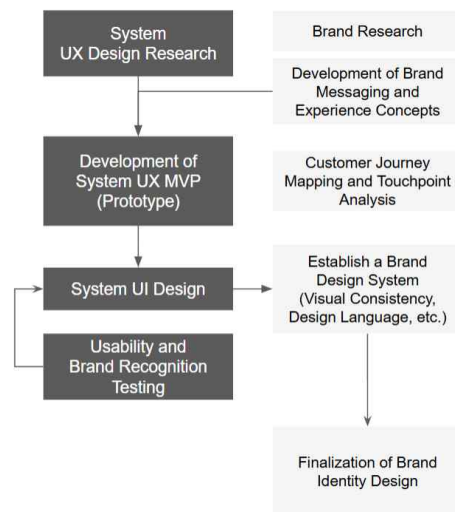


Figure 2. Framework for iterative UX/UI and brand co-creation

The research process began with an in-depth UX analysis from a prior study, aimed at identifying user requirements and developing insights to inform and suggest opportunities for system improvement. These insights led to the subsequent development of the system's minimum viable product (MVP) through the creation of low-fidelity prototypes. Following the prototypes, the user interface was designed with an emphasis on visual and interactive aspects that contribute to the development of a brand design system. Usability and brand recognition testing will be conducted in a subsequent study, involving an assessment of the interface in terms of both functional usability and its capacity to communicate and support brand recognition.

Concurrent with interface-focused development, the brand identity evolved through a structured and interrelated sequence of phases. This process began with a comprehensive brand research, encompassing systematic reviews of comparable systems, trend analysis, and a detailed evaluation of the competing brands. Building on these insights, brand messaging and experiential concepts were developed to create overarching brand elements such as brand personality and brand narrative. These concepts

were subsequently translated into a brand design system and its corresponding substantial design outputs, including brand visual concepts, logo design, colour palettes, and typography. This practice led to the development of the TPIS system's brand identity through the integration of visual and experiential elements. The alignment and sequential progression from user experience through user interface to brand identity demonstrate the viability and efficacy of a UI-first approach in establishing an integrated UI/BI design framework.

4. Results

This chapter presents the outcomes of implementing the UI-first approach in the development of the TPIS system, highlighting how user interface design served not as a medium for pre-established brand elements but as the generative ground for a living brand cosmos—an emergent and responsive identity system defined by user interaction and functional logic. In place of brand creation and application processes, this approach allowed the brand to be discovered, assembled, and evolved from within the system.

4-1. From Interface to Ecosystem: UX/UI Design in TPIS

4-1-1. Interface as Origin: Early Concept Prototypes

The study presented three interface concept directions, conceived purely from functional and experiential perspectives and devoid of visual or symbolic branding. As illustrated in Figure 3, these prototypes were designed to test usability logic, navigational clarity, and structural scalability.



Figure 3. Three distinct UI concept prototypes

4.1.2 Wireframing as Structural Cosmogenesis

A high-fidelity wireframe was developed to establish the system's overall structure. Information flows, interactive pathways, and user tasks were visualized and evaluated within real-world use scenarios. Figure 4 presents the detailed wireframes, which were developed from a user flow created in the prior phase of the design process.

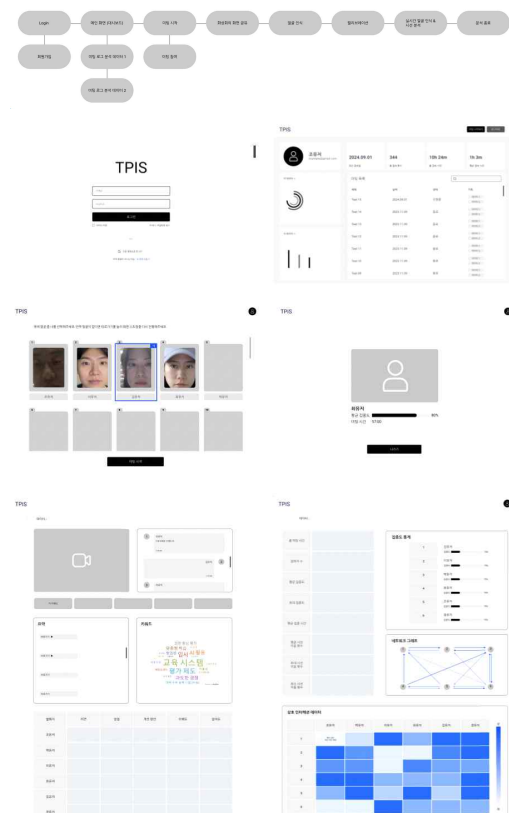


Figure 4. User flows with high-fidelity wireframes

4-2. Discovering the Cosmos: User Experience as Narrative Terrain

User experience testing and analysis identified the interaction patterns that exhibited both functional efficacy and semantic significance. The essential user experience of navigating users enabled the identification and observation of interaction patterns, which revealed dominant constructs such as clarity, predictability, and systematic rhythm. This set of emergent patterns and associated characteristics constitutes the foundational cosmological framework for shaping the brand's personality and values. Instead of branding leading user experience, this approach allowed user experience to establish the foundational conditions for brand meaning. In this context, users interacted with a system that progressively revealed its inherent personality through behaviour rather than surface design.

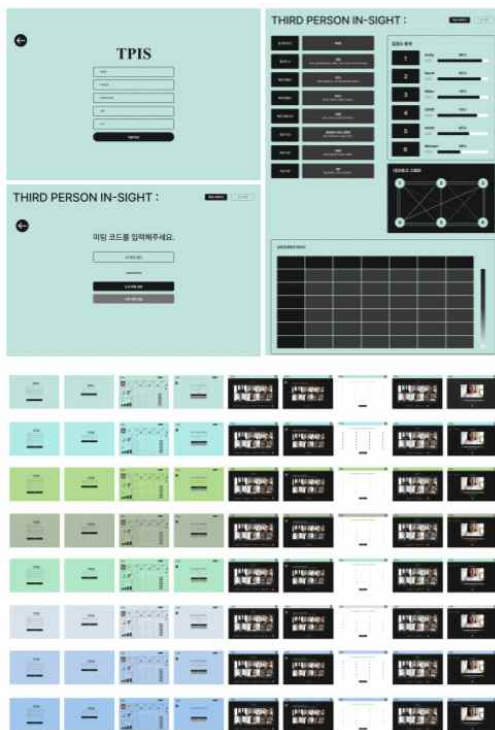


Figure 5. Prototypes and colour variations

Drawing upon the three preliminary design concept proposals, the final design concept for the TPIS system was determined. The implemented concept, along with the corresponding mock-up prototypes featuring colour variations, is presented in Figure 5.

4-3. The Birth of a Brand Cosmos: From Traits to Living System

4-3-1 Message and Mythos

Rather than being defined by imposed descriptors or static guidelines, the TPIS brand was excavated from systemic behaviour—a process of ontological emergence grounded in practical use. The cosmology of the brand was subsequently articulated through:

(1) Core narrative: “A system you can trust by how it behaves.”

(2) Cosmic constants (vales): clarity, precision, redictability.

(3) Personality forces: calm, rational, instructive, non-interfering.

This ecosystem was concerned not only with visual harmony but also with experiential alignment—that is, what the system does and how it influences users' feelings. The result is not a static identity, but a living structure characterized by internal consistency and external responsiveness.

BRAND PERSONALITY



Figure 6. Brand personality

4-3-2 Visual Identity as Surface of the Cosmos

The visual system was built upon a behavioural foundation. In this context, branding functioned not as mere decoration for the interface, but as the external layer of a living system whose structural framework and functional components were established by UX and UI principles. The visual identity system comprises the following elements:

- (1) Brand visual grammar: Grids, repetition, modularity.
- (2) Colour palette: Muted confidence, soft contrast
- (3) Typography: Functional geometry, no flair
- (4) Logo: Derived from the system's navigational logic.
- (5) Application to UI: Subtle, integrated, not dominant.

BRAND VISUAL CONCEPT

Half-tone Design



Fade Design



IN . SIGHT

Figure 7. Brand visual concept

BRAND KEYWORDS



BRAND COLOR

[MAIN COLOR]



[COLOR COMBINATION]



LOGO DESIGN DEVELOP

TPIS

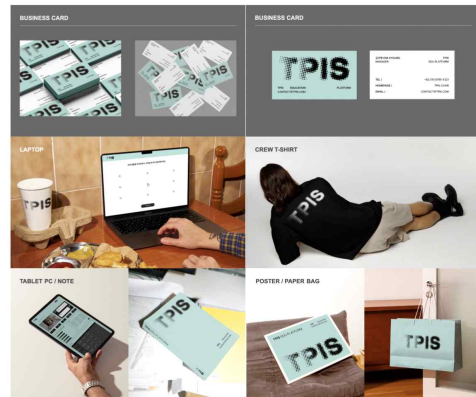


Figure 8. Brand attributes: keywords, colour scheme, and logo design

The brand cosmos was thus formed as an ecosystem, not merely a set of symbols, but a system of forces, aesthetics, and behaviors working in internal harmony. Through a methodical and systematic brand development process, the final design of the TPIS system was

established. This design encompasses the overarching design concept alongside the integrated components of brand identity, including brand personality, brand keywords, visual identity, and the brand logo.

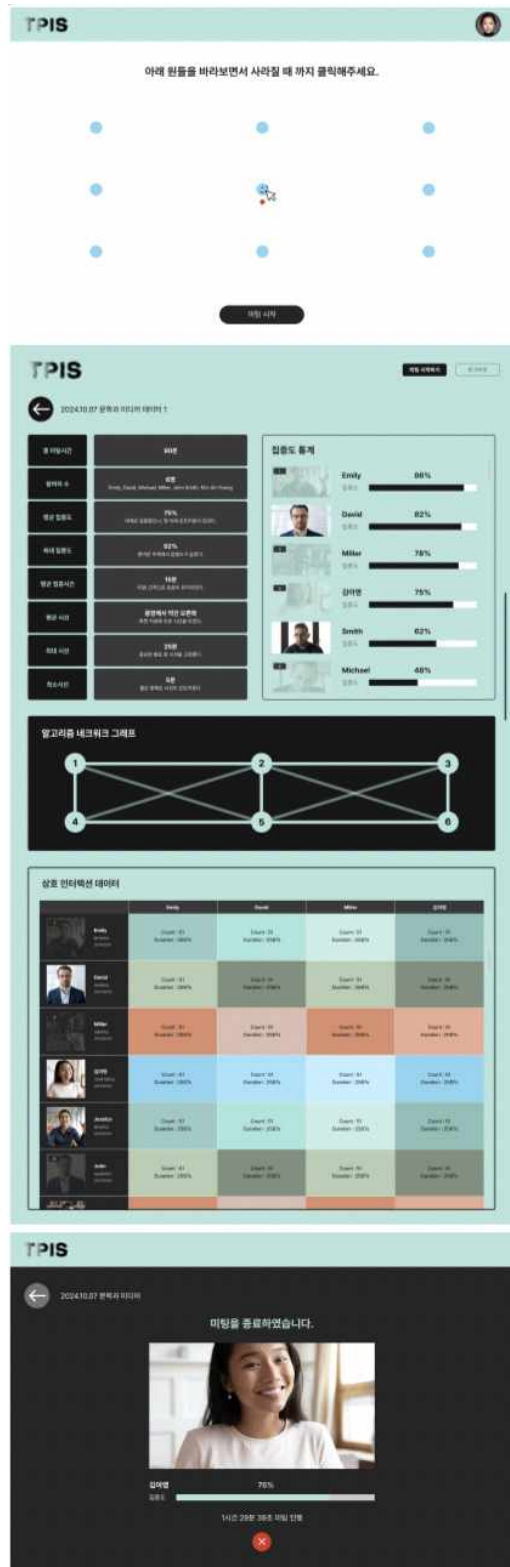


Figure 9. Finalized UI of the TPIS system with integrated BI elements

4-4. Systemic Alignment: From Interface Structure to Cosmological Identity

The system alignment outlined in Table 1 validates the UI-first approach as not merely efficient but ontologically generative—capable of producing a brand that lives, adapts, and communicates through use.

[Table 1] Systemic identity layers

Layer	Role	Output	Function
UX	User narrative	Interaction patterns	Reveals emotional gravity
UI	Physical laws	Structural prototypes	Enables system behaviour
BI	Cosmic surface	Visual identity system	Embodies internal logic visually

This three-layered framework illustrates a progression in which user experience reveals emotional connection through user narratives and interaction patterns; the user interface defines system behavior through structured, functional prototypes grounded in physical principles; and brand identity is formed as the visual expression of the system's internal logic, symbolizing the brand's cosmic surface. Collectively, these layers constitute an ontological continuum that extends from interaction to identity.

4-5. Reflection: Designing a Living Brand Beyond Visual Template

The interface, initially neutral, evolved into an expressive and recognizable brand presence without compromising its original functional integrity. This chapter demonstrates that when branding is conceived not as a process of predefinition but as one of emergence, it acquires greater depth, coherence, and long-term adaptability. A brand cosmos, analogous to a living system, must be discerned, nurtured, and sustained through experience.

5. Conclusion

This study examined the convergence of two distinct yet interrelated domains: user interface design and brand identity. While prior research has often addressed these domains separately—focusing either on the functional dimensions of UI or the symbolic and communicative aspects of branding—this study sought to integrate these perspectives through the introduction of the UI-first approach, with the TPIS system serving as a concrete instantiation of this framework. This study proposed this approach as a compelling design paradigm that reorients the development of brand identity around empirical user experience, positioning interface design not merely as a medium for brand expression but as a critical driver in the construction of brand meaning.

5-1. UI-First Design as a Cosmological Turn in Brand Thinking

This study has examined how brand identity may emerge not through imposition but through experiential processes. By adopting a UI-first approach, it has been demonstrated that a brand can be constructed from the bottom up—not as a static collection of symbols, but as a living, dynamic cosmos shaped by the interplay of function, interaction, and perception. The development of the TPIS system was initially guided by interface behaviour rather than by commencing with a predefined style guide. From this behavioural foundation, user experiences shaped a brand identity—not in the form of an antecedently designed logo or slogan, but as a responsive ontological structure; one that held meaning for users by reflecting their needs, actions, and affective responses. This reconceptualization of brand identity as a cosmological process—a system that evolves, adapts, and self-organizes—represents a significant paradigm shift within design strategy. Rather than conceiving branding as the visual manifestation of predetermined values, this study

proposes branding as a structural consequence of lived interface experiences. This perspective collapses the conventional hierarchy between meaning and form, privileging instead the alignment between systemic behaviour and symbolic expression.

From a theoretical perspective, this study contributes to an evolving discourse that challenges linearity inherent in design logic. The findings indicate that the brand coherence does not necessitate predefinition, but rather emerges through situated, iterative interactions. In practice, this implies that early-stage interface development—when approached with careful attention to behaviour, flow, and clarity—can function not only as a usability scaffold but also as a formative environment for identity development. This mode of practice is termed ontogenetic branding, wherein identity is not imposed but evolves naturally.

5-2. Toward an Ecology of Brand Experience

A brand is no longer a static entity projected outward; it is an ecosystem of forces that must resonate inward, forming a coherent universe of interactions, meanings, and responses. This necessitates a shift beyond semiotic interpretation toward an experience-driven cosmology—a mode of thinking in which interface logic, user emotion, and aesthetic expression co-evolve. The UI-first methodology is not merely efficient; it is epistemologically generative, enabling designers to listen before defining, trace before labeling, and construct experiential worlds rather than convey messages.

5-3. Future Directions

The implications of this research open multiple avenues for further study:

(1) To what extent can the UI-first model be generalized across large-scale service ecosystems?

(2) How might AI-integrated interface systems

dynamically co-construct brand cosmologies in real time?

(3) What ethical structures emerge when brands are allowed to evolve naturally rather than being artificially imposed?

These considerations prompt a reconceptualization of branding, not as static communication but as a cognitive phenomenon that co-evolves with user interaction, informing how individuals engage with systems and how those systems reciprocally reflect a world they recognize.

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