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# Generative AI in Communication Design: Process, Agency, and Outcomes in a Single-Organisation Case Study

## IA Generativa en el diseño de la comunicación : proceso, agencia y resultados en un estudio de caso en una única organización

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**ABSTRACT:**

This paper examines how artificial intelligence (AI) is transforming the workflow, practices, and outputs of a communication design team. Through a case study at Scotty AI, an AI software startup, this study documents the integration of generative AI tools across the four phases of the Double Diamond (Discover, Define, Develop, Deliver). The analysis focuses on when and how AI accelerates, expands, and improves evaluation quality, as well as when it introduces issues such as overload, standardisation, or authorship ambiguity. The findings show that AI is most beneficial in the early divergence phases, where it enhances the speed and variety of concepts. However, in later stages, human integration and judgment are crucial for maintaining control and authorship. The study concludes that the decisive factor is not the presence of AI itself, but how teams structure human decisions around it. Designer agency is best preserved when AI is treated as a controllable material and a co-creator, whose proposals must be reviewed, edited, and attributed.

**KEYWORDS:** Generative AI, Human–AI Collaboration, Communication Design.

**RESUMEN:**

Este artículo examina cómo la inteligencia artificial (IA) está transformando el flujo de trabajo, las prácticas y los resultados de un equipo de diseño de la comunicación. A través de un estudio de caso en Scotty AI, una startup de software de IA, se documenta la integración de herramientas de IA generativa a lo largo de las cuatro fases del Doble Diamante (Descubrir, Definir, Desarrollar, Entregar). El análisis se centra en cuándo y cómo la IA acelera, amplía y mejora la calidad de la evaluación, y cuándo introduce problemas como sobrecarga, estandarización o ambigüedad de autoría. Los hallazgos muestran que la IA resulta más beneficiosa en las fases tempranas de divergencia, donde incrementa la velocidad y la variedad de conceptos. Sin embargo, en etapas posteriores, la integración y el juicio

humanos son cruciales para mantener el control y la autoría. El estudio concluye que el factor decisivo no es la presencia de la propia IA, sino cómo los equipos estructuran las decisiones humanas en torno a ella. La agencia del diseñador se preserva mejor cuando la IA se trata como un material controlable y como un co-creador cuyas propuestas deben ser revisadas, editadas y atribuidas.

**PALABRAS CLAVE:** IA generativa, Colaboración humano–IA, Diseño de comunicación.

## 1. Introduction

The role of AI in communication design has become a topic of increasing debate and experimentation. AI is actively redefining methodologies and introducing novel capabilities, ranging from automating repetitive tasks to generating complex, creative content. Understanding how these tools can be effectively integrated into design processes is crucial for their strategic and efficient implementation in design practice.

While conceptual and laboratory studies have mapped these possibilities and risks – e.g., opportunities for rapid divergence, alongside concerns about cognitive overload, dependency, and aesthetic homogenisation – the field still lacks practice-based evidence from live, production settings showing when and how AI genuinely amplifies design, and when it introduces friction or compromises authorship. In other words, there is a need for descriptions of situated workflows that connect human-AI collaboration principles to day-to-day design decisions (Amershi et al., 2019; Jarrahi, 2018; Windl et al., 2022). Although these foundational principles of human–AI collaboration remain a valid groundwork, they predate the current generation of generative models; more recent, practice-based studies have begun to document how generative AI is integrated across professional creative workflows, including their later production and post-production stages (Caballero et al., 2025; Gavran et al., 2025; Dueñas Mohedas & Jiménez Alcarria, 2025). This gap leads to the central research question of this study: *To what extent and in what specific ways do artificial intelligence tools reshape the workflow, practices, and outputs of a communication design team operating within an AI startup?* To address this, the document presents a single-organisation case study (Yin, 2018) conducted during a six-month internship within Scotty AI, a design-led software company focused on AI. Using the Double Diamond as a shared process vocabulary (Design Council, 2007), we document how generative tools were integrated across Discover, Define, Develop, and Deliver phases in communication-design projects, and we analyse the concrete decision points where AI contributed to speed, breadth, and evaluation quality, versus points where it produced overload, standardisation, or authorship ambiguity.



## 2. Theoretical and Conceptual Foundations

### 2.1 Perception of AI in the Design Community

In recent years, AI has evolved significantly. In 2024, AI could follow detailed instructions, such as transforming a list into an email or writing code from given information. By 2025, expectations had shifted towards more autonomous systems, with forecasts envisaging AI acting more like an agent or an employee than a mere assistant (Kokotajlo et al., 2025). AI is now a powerful tool used in many sectors, including industry, transportation, finance, and healthcare (Rashid et al., 2020). The design field has experienced similar changes. Since the introduction of AI, it has created both opportunities and challenges for design professionals (Liao et al., 2020). Some practitioners worry AI may replace designers (Kocaballi, 2023), while others believe AI cannot substitute for uniquely human contributions (Kalving et al., 2024).

With AI more present in creative workflows and these tools becoming progressively sophisticated, it has started to integrate the design process, from ideation to final product delivery (Nasir et al., 2024). Research by Guo et al. (2023) indicates that AI can serve as a tool for generating visual inspiration, but its effective use depends on designers' ability to guide and leverage the tool; it also indicates that the excessive use of

AI in the ideation stage can sometimes result in adverse outcomes, weakening design thinking and impacting the output of the design concept.

Furthermore, it is increasingly understood that integrating AI transforms conventional design by shifting it from a linear to a more dynamic and iterative process (Yu, 2025), and that designers are adapting their methodologies to incorporate AI tools, leading to new forms of human-AI collaboration (He & Do, 2025). This evolving relationship, however, introduces new frontiers. For instance, there is a recognised need for designers to develop new skills and cultivate a deeper understanding of the limitations and capabilities of AI technologies (Yu, 2025). Moreover, the effective integration of AI into design workflows requires the development of new industry standards and best practices to address issues of authorship, intellectual property, and the potential for cognitive overload and dependency (He & Do, 2025). Many designers believe that, in order to survive in the industry, they must adapt by using AI ethically and embracing it as a collaborator (Kalving et al., 2024).

### 2.2 Challenges of Human-AI Co-Creation

The burgeoning field of AI has sparked a new era of collaboration, with co-creation representing a paradigm shift in the relationship between humans and AI. As Figoli et al. (2022, p. 28) stated, AI is often perceived as a replacement for human work, yet it maintains a relationship of complementarity in which humans and machines cooperate to compensate for each other's deficiencies and improve the final output. Initially, AI's purpose was to automate repetitive tasks, aiming to optimise efficiency with minimal human intervention (Kadenhe et al., 2025). However, with the development of a class of algorithms capable of creating new content – generative AI (McKinsey & Company, 2024) – designers now have the opportunity to incorporate these tools more collaboratively into the creative steps of the design process (Guo et al., 2023). This means not only incorporating AI into the idea-development phases, but also using it as a means of enhancing creativity (Figoli et al., 2022). In experimental studies, generative AI tools such as *Midjourney* and *ChatGPT* have been found to be particularly effective in the early stages of conceptual design, such as problem definition and idea generation, by providing suggestions, synthesising design elements, and generating visual representations that inspire further creativity (Chen et al., 2023). Beyond these early stages, recent practice-based research documents the integration of generative AI deeper into the workflow — in audiovisual production and editing (Gavran et al., 2025), in cinematic narrative and aesthetics (Caballero et al., 2025), and in the post-production pipeline of professional television (Dueñas Mohedas & Jiménez Alcarria, 2025) — indicating that its role is no longer confined to ideation but extends across the entire creative process.



This transition from using AI as a tool to an AI co-creation model is not without difficulties. Its integration as a creative partner introduces challenges in technical, cognitive, and ethical domains, requiring careful awareness to foster a truly effective partnership. Trust and transparency are two of the most significant issues designers face in understanding how AI generates creative outputs, often described as a "black box" phenomenon. This lack of transparency stems from the complexity of machine-learning algorithms, which are not easily interpretable by humans (Yu, 2025), leading to a reluctance to accept the AI's suggestions, especially in critical applications (Figoli et al., 2022). Cognitive challenges also play a crucial role: while AI tools have been shown to reduce cognitive load and stimulate innovation, over-relying on them poses a risk to creativity by constraining creative thinking (Chandrasekera et al., 2025). Singh et al. (2025) warned of the potential risk of AI over-scaffolding, which occurs when AI systems provide too much structure, direction, or predefined solutions, thereby stifling the user's ability to explore, experiment, and generate independent ideas. The ethical domain is equally significant: as indicated in a 2023 survey by Kalving et al. (2024), almost all participants expressed concerns about ethical issues surrounding the use of AI as a tool, with copyright and security issues noted by half of the participants. The survey also showed that, although many participants appreciate the seamless integration of AI in these tools, some tools may hide their presence, thereby increasing doubts about their trustworthiness (Kalving et al., 2024).

On a practical level, we increasingly see an iterative workflow with multiple human and AI contributions. Figoli et al. (2022) describe this as a process of realignment, where a concept born from human creativity must be submitted to and adapted for AI's specific limitations and functionalities, leading to a fracture in the creative process if the human's idea is incompatible with the AI's capabilities. Furthermore, authorship and ownership issues are being raised, as the boundaries between human creativity and AI-generated contributions are often blurred (Kadenhe et al., 2025). This issue is amplified by the lack of legal guidance on implementing ethical principles in human-AI co-creation, forcing teams to navigate these ambiguities without established guidelines, which can create significant risk to the project (He & Do, 2025). Therefore, ethical frameworks must not only be developed but also integrated with existing and emerging regulations, such as the EU AI Act, in a manner that ensures adherence to legal standards (União Europeia, 2024).

### 2.3 Conceptual framework

To translate the foregoing literature into an analytic lens, we adopt two complementary and well-established perspectives on the role of AI in design practice. First, following Yu (2025), we consider AI as a *co-creator*: a system that participates in ideation and evaluation by proposing alternatives, synthesising cues and reframing options alongside human designers, in a relationship better described as mixed-initiative collaboration than as automation (Guo et al., 2023; Zhou et al., 2024). Second, drawing on the tradition that treats emerging computational technologies as *design materials* (Dove et al., 2017; Holmquist, 2017) and its recent extension to generative AI (Yu, 2025), we treat AI as a *design material*: datasets, prompts, parameters and constraints function as a manipulable medium whose affordances and limitations must be learned and shaped in practice. These perspectives are not mutually exclusive; rather, they let us describe when the system is engaged as an active partner and when it is handled as a material under design control. The analytic value of the distinction is that it separates two governable questions — how much initiative the system is granted, and how tightly its outputs are constrained — which the case will show to be the levers of designer agency.



Rather than fixed operational variables, the framework is completed by a set of *sensitizing concepts* (Blumer, 1954): orienting notions, drawn from the literature reviewed above, that guided what to attend to in the fieldwork and that were specified and refined through the empirical analysis (their operationalisation is detailed in Section 3.1). These concern the *speed* and *breadth* of exploration associated with early divergence (Chen et al., 2023; Guo et al., 2023); the *evaluation quality* of design decisions; the risk of cognitive *overload* and over-scaffolding (Chandrasekera et al., 2025; Singh et al., 2025); *standardisation/homogenisation* toward generic styles; *authorship ambiguity* (Kadenhe et al., 2025; He & Do, 2025); and *designer agency*, understood not as a fixed attribute but as a practice of control and curation (Guo et al., 2023). Treated as sensitizing concepts rather than predefined metrics, these notions connect theoretical claims about mixed-initiative collaboration and human intentionality (Amershi et al., 2019; Jarrahi, 2018) to observable traces in professional work, while their precise meaning in this study is established empirically rather than presumed.

### 2.4 Research questions and propositions

Within this framework, the study examines three questions. **RQ1 (Process):** How does AI enter each phase of the Double Diamond (Discover, Define, Develop, Deliver) in the focal projects, and through which integration approaches? **RQ2 (Outcomes):** Under what conditions does AI increase speed, breadth and evaluation quality, and under what conditions does it introduce overload, standardisation or authorship ambiguity? **RQ3 (Agency):** Which practices preserve designer agency when AI is treated as a co-creator compared with its treatment as a design material?

Consistent with an exploratory, theory-informed case study, the analysis is oriented by four working propositions (Yin, 2018) that translate the sensitizing concepts introduced above into expectations to be examined against the evidence, rather than hypotheses to be tested statistically. We expect that (i) gains in

speed and breadth will be most pronounced during early divergence, with diminishing returns in final delivery; (ii) perceived agency will be higher when AI is handled as a constrained material than when it is allowed to act as an unguided co-creator; (iii) risks of homogenisation will grow when prompts lean on uncurated, generic styles; and (iv) evaluation quality will improve when AI-assisted comparisons are paired with human-readable rationales at decision gates. Following Yin (2018), these propositions focus data collection and structure the presentation of results; they remain open to confirmation, refinement, or rejection.

## 3. Scotty AI Case Study

To comprehensively understand and deeply analyse the impacts of AI on design, this research focuses on projects developed within a six-month curricular design internship (October 2024 – April 2025) undertaken at Scotty AI, a startup specialised in the development of AI software. This context provided a privileged environment for integrating generative artificial intelligence tools into the various projects undertaken, as the company's product falls within this area of expertise.

Throughout the internship, numerous communication projects were developed, ranging from digital artefacts for social media and institutional presentations to communication materials for various company campaigns. For this research, two major visual-identity projects were selected: AI Agents generation and GIF generation. Their choice is justified by the prominent and strategic use of diverse generative AI tools at crucial stages of their development, enabling an in-depth exploration of their efficacy, the opportunities they present, and the challenges they pose to traditional communication-design workflows, thereby providing empirical evidence of how AI can transform the practices and outputs of a design team operating within the ecosystem of an AI startup.

### 3.1 Methodology and AI usage



We employ a single-organisation, embedded case study design (Yin, 2018). The unit of analysis is the project episode, nested within two focal projects selected for their high intensity of AI use and strategic relevance to the brand.

**Research design and rationale.** This is a descriptive–exploratory, embedded single-case study (Yin, 2018): a single organisation (Scotty AI) is the case, and two project episodes (AI Agents and GIF generation) are the embedded units of analysis. The single-case design is appropriate because the site is a *revelatory* one — a design-led AI company in which generative tools are used in genuine production — allowing observation of phenomena rarely accessible in laboratory settings. The two episodes were selected through purposive, criterion-based sampling: (i) intensive and diverse use of generative AI; (ii) strategic relevance to the brand's visual identity; and (iii) coverage of different phases of the Double Diamond.

**Participants and setting.** These projects were developed within the Marketing team, which comprises three members. The Head of Marketing organises the projects, defines their objectives, and provides overall supervision; the Visual Content Creator concentrates on producing the various materials required, predominantly external in nature (that is, intended for clients and partners); and the first author, working as a design intern, focused on internal materials. The projects examined here were carried out mainly by the first author, under the supervision and guidance of the Head of Marketing, in order to maintain the closest possible consistency with the company's objectives and brand guidelines. The Sales team was also involved, helping to define the objectives of these projects and to anticipate their possible outcomes. Decisions were therefore always taken by the first author and subsequently approved by the Head of Marketing.

**Data sources.** The study draws on three complementary streams of evidence: (a) design *artefacts and deliverables* — the intermediate and final outputs of both projects; (b) *prompt and parameter logs* generated while operating the AI tools, including prompts, seeds and negative prompts, and the tool and version used; and

(c) *recordings and transcripts of the team meetings* in which the projects, their objectives and their possible outcomes were discussed.

**Data collection procedures and period.** Data were collected throughout the six-month internship, between October 2024 and April 2025. Artefacts and logs were archived as the projects progressed, both in the company database and in the conversation histories of the various large language models used. This collection includes prompt tests as well as the failed and successful generations for the image work (AI Agents) and the video work (GIF generation). In addition, all team meetings in which the projects, their objectives, and their possible outcomes were discussed were recorded and transcribed with the participants' consent.

Under a confidentiality agreement with the company, the meeting recordings and transcripts, together with certain internal materials, cannot be reproduced here; we therefore report them in aggregated and paraphrased form, while the prompts, parameters and resulting artefacts that could be disclosed are presented directly.

**Analysis strategy.** We applied a thematic, template-based qualitative analysis with an abductive orientation: the sensitizing concepts defined in Section 2.3 provided an initial orienting structure, which was then specified and revised against the data. Each sensitizing concept was made tractable through observable indicators: *speed* — iteration cycle time and time-to-first-acceptable concept; *breadth* — number of non-redundant alternatives explored per sprint; *evaluation quality* — alignment with the brief and the clarity of recorded decision rationales; *overload* — subjective cognitive load and the proliferation of abandoned branches; *standardisation/homogenisation* — convergence toward generic styles or drift from brand DNA; *authorship ambiguity* — moments where credit or ownership was unclear; and *designer agency* — perceived control together with observable curation, for example the extent to which AI outputs were edited or rejected rather than accepted directly.



**Triangulation.** Interpretive claims were cross-checked across the three evidence streams — artefacts, logs, and the transcripts of team meetings — so that no single interpretation rested on one source alone. Convergence, or divergence, between what the logs showed, what the artefacts revealed, and what was discussed in the meetings was used to corroborate the findings. For example, the controllability gap identified in the AI Agents project was not inferred from the final artefacts alone: the prompt logs showed repeated attempts to add small features such as a moustache or to adjust a smile, the resulting artefacts displayed the inconsistencies that these attempts produced, and the meeting transcripts recorded the decision to resort to Adobe Photoshop in order to resolve them. Likewise, the decision to abandon Adobe Firefly for video generation was triangulated across the logs of the failed generations, the low realism visible in the artefacts themselves, and the discussion in which the team agreed to adopt a hybrid pipeline.

**Reflexivity and positionality.** Because the first author was embedded in the team, proximity to the field afforded rich, situated access but also introduced a risk of confirmation bias. This was mitigated through three measures: maintaining an auditable trail of prompts, parameters, and decisions; keeping descriptive records separate from their interpretation; and conducting peer debriefing with the second author, who was external to the day-to-day work and with whom the interpretations and conclusions were discussed and refined. These measures reduce, without eliminating, the biases inherent to an insider position.

The process vocabulary is provided by the Double Diamond (Design Council, 2007), which we use descriptively to map activities and decision points without presuming strict linearity. This model synthesises diverse design methodologies into an easily understandable and communicable structure, encompassing principles of divergent and convergent thinking, iterative development, and user-centred design. Its strength lies in its ability to visually represent the cyclical and non-linear nature of design, moving beyond the simplistic linear models often found in engineering or project management (Bridges, 2023). The Double

Diamond is characterised by four distinct stages — Discover, Define, Develop, and Deliver — structured around two iterative phases of divergent and convergent thinking, serving as a conceptual guide for designers navigating the inherent complexities and ambiguities of the creative process (Design Council, 2007) (Chart 1).


**Chart 1:** Representative diagram of the Double Diamond as a methodology in the design process. Adapted from the basic model by the Design Council (2007).

These phases were systematically integrated into the methodological framework for each internship project, particularly in conjunction with the strategic application of AI tools. The selection of AI tools was primarily driven by project-specific requirements, the existing industry prominence of generative AI solutions, and their potential to address various design tasks. Each tool was integrated into the Double Diamond model, serving different processes across its stages (Chart 2).

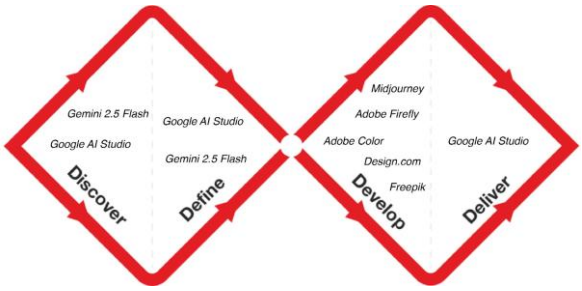


**Chart 2:** An adapted representation of the Double Diamond design process, showcasing the strategic integration of AI tools according to their specific functions in each stage. Adapted from the basic model by the Design Council (2007).

For the Discover and Define stages, tools such as *Gemini* and *Google AI Studio* supported rapid information synthesis, identification of communication objectives, and brainstorming of initial concepts. During the Develop phase, generative AI platforms such as *Midjourney*, *Adobe Firefly*, *Freepik AI Image Generator*, *Design.com*, and *Adobe Color* were used for the rapid generation of images and the automation of repetitive tasks. In the final Deliver stage, *Google AI Studio* was used to analyse the created content, helping to assess its alignment with the initial brief and the defined objectives.

### 3.2 AI Agents Project

The account below draws on project artefacts, prompt and parameter logs, and meeting notes, with interpretive claims cross-checked across these sources (see Triangulation, §3.1).

One of the projects developed was the visual representation of the AI Agents (defined here as intelligent software systems that work autonomously to achieve goals and complete tasks for users; Google Cloud, n.d.). Creating a consistent image was crucial given the often negative connotation and immediate association of AI with robots or impersonal entities. To foster a more empathetic and familiar relationship with the public, a playful inspiration was chosen: the generation of the AI Agents was based on LEGO

bricks. This strategic choice conferred a fun, playful, and recognisably familiar dimension to the agents, demystifying the traditional perception of AI and bringing it closer to people's daily lives.

For the creation and development of these agents, two distinct platforms were used. The initial conceptualisation was carried out using the *Freepik AI Image Generator*, which allowed the exploration of diverse approaches and forms (Image 1). The first prompt submitted was the following: "The style is a 3D model with octane render, volumetric and highly detailed, for video game design. A small, blocky, orange robot figure with a square head and a black face. The body is composed of simple geometric shapes, including rectangular arms and legs. The figure stands upright against a light, neutral background." This initial generation served as the foundational starting point for the diverse array of agents (Image 2), establishing the base model that would subsequently be refined in terms of face, body, clothing, and accessories.

**Image 1:** Base image for the generation of the various agents.

**Image 2:** Compilation of AI Agents generated.

To construct a variety of agents representing distinct departments and functions (e.g., Human Resources, Marketing, and Sales) while ensuring each possessed a unique and recognisable visual identity, the *Midjourney* platform was used. *Midjourney* enabled the addition of specific visual elements — eyeglasses, moustaches, hats, or attire such as Hawaiian shirts or formal suits — to denote their respective roles or personalities (Image 3).

**Image 3:** Screenshot of the different agents being created in Midjourney.

This was an iterative and time-consuming process, requiring multiple attempts and continuous adjustments to the prompts. While positive and creative outcomes were frequently achieved, precisely manipulating specific elements of the agents' bodies — such as consistently adding a moustache or altering a smile —

often presented a considerable challenge. Maintaining aesthetic coherence with the base agents while achieving precision in the editing of bodies and accessories proved to be one of the most significant obstacles, occasionally requiring assistance from image-editing software (*Adobe Photoshop*). The AI Agents' creation culminated in six distinct visual identities, each assigned a specific colour to represent the company's diverse areas of operation. These agents were later integrated into the website's rebranding, focusing on showcasing how they work, thereby bringing proximity and clarity to the user.

### 3.3 GIF Generation Project

As in the previous project, the account draws on artefacts, prompt/parameter logs, and meeting notes triangulated as described in §3.1.

In addition to the static figures, various animated GIFs were developed. These dynamic elements enrich the user's visual experience and help communicate the agility and interactivity of the AI Agents in action.

The initial conceptualisation and storyboard definition were supported by *Gemini 2.5 Flash*, which was crucial for ideation of the GIF storyboards. A detailed prompt was submitted to the tool, explaining the objective of each video and specifying the visual elements to be represented. The primary purpose was to illustrate AI Agents collaborating and interacting with humans, demonstrating their functionality. A practical example was the storyboard for the "Build Your Own Workforce" GIF: the prompt outlined that the video should depict a user creating a personalised AI Agent, selecting its personality and skills, and then show the agent integrating and interacting with various tools and platforms, culminating in the workflow performed by the newly created agent. Through iterative prompt refinement, *Gemini 2.5 Flash* proved effective in the ideation phase, allowing a rapid and precise representation of the AI Agents' workflow and capabilities.



**Images 4 & 5:** Results obtained from video generation in Adobe Firefly.

After this phase, an attempt was made to generate video using *Adobe Firefly*. The purpose was to create a visual representation of an individual working in a café environment, in order to simulate usage scenarios or moments of relaxation. A detailed prompt was formulated, and the options for resolution, framing, angle, and movement were adjusted. The prompt submitted was the following: "A high-resolution, medium shot of an intellectual middle-aged man with thick, textured grey hair and a neatly trimmed short beard, wearing glasses. He is sitting in a cosy, slightly rustic café with warm ambient lighting, looking down at his open space-grey laptop screen with a subtle, focused smile. He is wearing a blazer over a black turtleneck sweater. In his right hand, he holds a coffee mug, lifting it slightly as if about to take a sip. The café background features a shallow depth of field bokeh, softly blurring exposed wooden shelves filled with glass jars of coffee beans and the out-of-focus silhouette of another patron sitting in the distance. Soft afternoon natural light streams in from a large window on the left, casting a warm glow on his skin and hair." This generation resulted in two short videos of five seconds each (Images 4 and 5). These initial outputs showed a representation of the human form with notably artificial characteristics, including somewhat deformed eyes and a general lack of realism. Given the need for multiple iterations to achieve acceptable quality, the cost–benefit of this tool was considered prohibitive, and the approach was discarded. Consequently, the strategy

for GIF production was adjusted: the videos required for these animated elements were selected and acquired from a stock image and video library, ensuring quality and visual suitability for the project.

### 3.4 Critical analysis of the deliverables in the design process

To ensure the effectiveness of the communication materials developed for the brand's new visual identity, a critical analysis phase was implemented using *Google AI Studio*, an experimental platform that provides access to large-scale language models and generative AI tools. The various visual materials embodying the brand's identity were subjected to a detailed evaluation whose objective was to identify potential gaps in communication, elements whose clarity might be insufficient, or aspects that could be improved, in order to enhance brand cohesion, message legibility, and aesthetic resonance (Image 6).

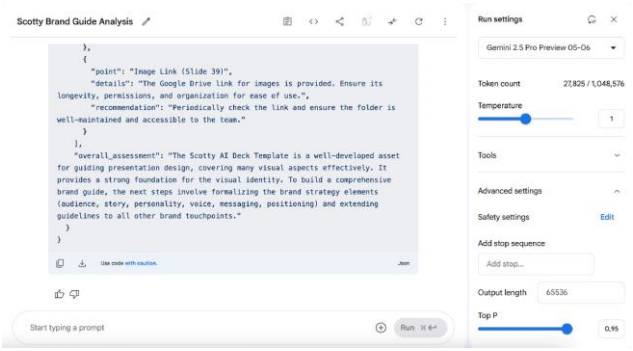


**Image 6:** Screenshot showcasing the Google AI Studio interface, illustrating the evolution of Scotty AI's brand-guide assets.

This evaluation revealed specific topics requiring enhancement. For example, some suggestions involved greater visual consistency across the GIFs: the colour associated with one agent was yellow, yet that agent's chat boxes were blue; and the speech bubbles' rounded tips were inconsistent across elements. Accordingly, *Google AI Studio* suggested creating a rule so that all elements shared a consistent appearance. The analysis of these results led to the integration of key feedback and necessary adjustments to optimise overall coherence, legibility, and alignment with the brand's identity.



## 4. Discussion

This section interprets the Scotty AI episodes through the analytical lens defined in Section 2.3 and in light of the research questions posed in Section 2.4. Across both focal projects, AI was present in every phase of the Double Diamond, but its function varied significantly by phase and integration approach. In Discover and Define, *Gemini* and *Google AI Studio* were used to synthesise briefs, surface candidate framings, and sketch concept territories. In these moments, the team engaged the system primarily as a co-creator, using it to propose options that were then judged against audience and scope, while the process remained competence-centric in the sense that human skills and constraints set the bounds for what was admissible. In Develop, *Freepik AI Image Generator* and *Midjourney* quickly expanded the breadth of alternatives, which proved valuable for the LEGO-inspired agent family. Here, the systems oscillated between co-creator and design material: surprising variants seeded new directions, while prompts, seeds and negative prompts were treated as tuneable parameters to keep outputs inside a brandable space, and *Adobe Photoshop* edits bridged a recurring controllability gap for small features (e.g., moustaches, smiles). In Deliver, *Google AI Studio* was used in an evaluative capacity — operationally, as a "second reader" — flagging wording and layout issues; this use falls within the design-material lens rather than constituting a separate analytical role. Final decisions rested with designers and stakeholders, who recorded brief rationales at decision gates. This distribution — AI amplifying early divergence and assisting evaluation, humans retaining convergence and authorship — aligns with mixed-initiative accounts of creative work (Amershi et al., 2019; Jarrahi, 2018) and with the dual framing of AI as co-creator and design material (Zhou et al., 2024; Yu, 2025).

Regarding outcomes, the most notable benefits emerged in terms of speed and breadth during the early exploration phase. Time-to-first-acceptable concept shortened, and the number of non-near-duplicate options per sprint increased markedly. Those gains, however, did not obviate the need for pruning: without deliberate curation, the team risked choice overload, with abandoned branches accumulating in the repository. Evaluation quality improved when AI-assisted comparison was coupled with human-readable rationales: suggestions from Google AI Studio helped structure trade-offs, but it was the brief note explaining why an option advanced that anchored consensus and prevented the re-opening of closed decisions. By contrast, AI suggestions accepted without rationale tended to be revisited later, slowing convergence and diminishing confidence in the outcome. Aesthetic homogenisation emerged as a tangible risk whenever prompts leaned on generic descriptors or uncurated presets. Here, treating the prompt space as material proved effective: anchoring exploration in a brandable metaphor (LEGO), enforcing a colour system, and using negative prompts reduced stylistic drift and preserved distinctiveness. Finally, tool-specific trade-offs mattered: for motion, Firefly's short clips and limited realism did not meet production needs at an acceptable cost, so a hybrid pipeline — AI for storyboards, licensed stock footage, and manual compositing for the finish — outperformed a fully generative approach. Periodic re-validation of model-centric choices against team competence and production feasibility was therefore essential (Windl et al., 2022).

Designer agency was strongest whenever the team made AI's role explicit and inserted lightweight curatorial gates. Declaring at the outset whether a given phase would treat the system as co-creator or as material clarified expectations and prevented an unguided accumulation of outputs. Keeping prompt and parameter logs (including seeds and negative prompts) enabled intentional re-runs rather than opportunistic fishing for a "lucky" image, and made the human decision trail auditable. Starting from constraints — brand metaphor, palette, typography, and explicit "dos and don'ts" — and only then exploring variations helped retain narrative and identity. Human edits and vetoes operated as gates before promoting an asset to the next stage, and provenance checks reduced downstream IP risk. In practical terms, agency was less a matter of refusing AI than of bounding its contribution and demanding that each machine-generated suggestion be legible, revisable, and attributable within the project's logic.



These observations invite a brief theoretical clarification. This study adopts a pragmatic, human-centred analytic stance: its focus is on how a human team organises, bounds and justifies decisions around AI, and agency is treated as a practice of control and curation rather than as a fixed property. We nonetheless recognise relational and post-human accounts that locate creative agency in distributed socio-technical networks rather than in individual human actors (Celis Bueno et al., 2024; Chow & Celis Bueno, 2025). Read through that lens, the practices we describe — role declaration, constraint-first prompting, rationale notes, provenance checks — are not only safeguards of individual authorship but also ways of rendering a distributed process accountable. They also speak to a structural risk these authors foreground: when generative tools are framed merely as productivity multipliers, creative labour can be reorganised and homogenised, and craft commodified. The case suggests that the same curatorial gates that preserve agency also temper this drift, by keeping human judgement — and its rationale — legible at each decision point.

Revisiting the working propositions, the evidence supports P1: gains in speed and breadth were concentrated in early divergence and diminished towards final delivery, where human integration work dominated. P2 also holds: perceived and observed agency increased when AI was handled as a constrained material rather than an unguided co-creator, particularly once negative prompts and seed control became routine. P3 is supported insofar as homogenisation rose with generic prompting and was mitigated by constraint-first strategies. P4 is partially supported: evaluation quality benefited from AI-assisted comparison, but only when paired with human rationales at decision gates; absent those notes, convergence slowed.

These findings carry implications for practice, pedagogy and policy. For practice, teams should declare AI's role per phase, adopt constraint-first prompting with basic prompt/seed logging, institutionalise short rationale notes at decision gates, and favour hybrid pipelines when generative video remains cost-inefficient or aesthetically brittle. For pedagogy, curricula should cultivate the dual identity of designer-as-arbiter (critical curation and justification) and designer-as-integrator (material literacy around datasets, parameters and editing pipelines). For policy and studio governance, lightweight guidelines on disclosure, dataset/licensing checks and escalation paths for authorship ambiguity will help teams anticipate regulatory change without paralysing experimentation.

The study's limitations must be acknowledged. It reports on a single organisation and two focal projects in a defined time window, which constrains generalisation and exposes the findings to tool-version drift. Researcher proximity brings risks of confirmation bias, which we mitigated through triangulation and peer debriefing but cannot eliminate. Future work should pursue cross-case comparisons, incorporate objective measures for cognitive load and stylistic distance, and track how evolving model capabilities alter the balance between model-centric and competence-centric choices over time. Even within these limits, the case provides a granular view of when and how generative systems enhance communication design and when they commodify it, underscoring that the decisive variable is not the presence of AI per se, but the structure of the human decisions surrounding it.

## 5. Conclusions

This paper examines how generative AI has reshaped the workflow, practices, and outputs of a communication-design team embedded in an AI-focused company. Using the Double Diamond as a shared process vocabulary and a dual lens of AI as co-creator and AI as design material, we showed that the most reliable benefits of AI accrued in early divergence — shorter time-to-first concept and a wider range of non-redundant alternatives — while later phases depended on human integration, editing and judgement. Crucially, the quality of convergence improved not solely through model capability, but also through bounded roles for AI, constraint-first prompting, and documented human rationales at decision gates.



Across the two focal projects, generative tools amplified exploration yet also surfaced familiar frictions: controllability gaps for fine-grained edits, aesthetic homogenisation when prompts leaned on uncurated styles, and tool-specific cost/quality ceilings (particularly for short video). Treating prompts, seeds and negative prompts as material constraints — rather than letting the system freewheel — helped protect brand distinctiveness and narrative coherence. Where realism and cost were misaligned with needs, hybrid pipelines (AI for storyboarding and exploration; licensed assets and manual compositing for production) outperformed fully generative approaches.

The study contributes, first, a process-level account of where AI enters a live design pipeline and how its role shifts by phase; second, empirically grounded conditions for amplification versus commodification, specifying when AI broadens exploration without eroding authorship or brand; and third, a set of pragmatic practices that operationalise human–AI interaction guidance in professional communication design: declaring AI's role by phase, logging prompts and parameters, starting from explicit brand and ethical constraints, inserting lightweight curatorial gates with written rationales, and maintaining IP/provenance hygiene.

Several limitations temper these claims: this is a single-organisation case with two projects in a defined time window, and tools evolve quickly. Nonetheless, triangulation across artefacts, logs, and team-meeting transcripts, plus peer debriefing, provides a credible basis for the patterns reported. Future work should extend the analysis with multi-site comparisons, controlled studies of prompting strategies, objective measures of cognitive load and stylistic distance, and longitudinal tracking as models and studio policies change.

More broadly, the findings suggest that the decisive variable is not whether AI is present, but how teams structure human decisions around it. When AI is handled as a constrained, inspectable material and as a co-creator whose proposals must be interpreted, edited and attributed, designers retain agency while gaining speed and breadth. When these bounds are absent, the same tools risk accelerating sameness, obscuring authorship and displacing professional judgement. Designing with AI, then, is less a question of adopting new software than of instituting processes that keep human intentionality legible — so that scale and efficiency do not come at the expense of meaning.

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## 7. Author's Note on AI Assistance

Portions of this article were prepared with the assistance of generative AI tools (OpenAI, 2025), which were used to support the synthesis of the literature review, refine the language, and draft preliminary text. All content was subsequently reviewed, edited, and validated by the authors, who take full responsibility for the accuracy, interpretation, and originality of the final version. AI tools were not used to generate empirical data, analysis, or research findings.

## 8. Bibliography

Amershi, S., Weld, D., Vorvoreanu, M., Fourney, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). Guidelines for human-AI interaction. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–13. https://doi.org/10.1145/3290605.3300233

Blumer, H. (1954). What is wrong with social theory? *American Sociological Review, 19*(1), 3–10. https://doi.org/10.2307/2088165

Bridges, M. (2023). *Double Diamond model*. Flevy. https://flevy.com/blog/double-diamond-model/

Caballero, J., Sora-Domenjó, C., & Codina, L. (2025). Implicaciones de la inteligencia artificial generativa en la narrativa y la estética cinematográfica: Un estudio sobre las convocatorias OpenDocs y +RAIN Film Festival. *Anàlisi, 71*, 55–76. https://doi.org/10.5565/rev/analisi.3773

Celis Bueno, C., Chow, P.-S., & Popowicz, A. (2024). Not "what", but "where is creativity?": Towards a relational-materialist approach to generative AI. *AI & Society*. Advance online publication. https://doi.org/10.1007/s00146-024-01921-3

Chandrasekera, T., Hosseini, Z., & Perera, U. (2025). Can artificial intelligence support creativity in early design processes? *International Journal of Architectural Computing, 23*(1), 122–136. https://doi.org/10.1177/14780771241254637

Chen, V., Liao, Q. V., Wortman Vaughan, J., & Bansal, G. (2023). Understanding the role of human intuition on reliance in human-AI decision-making with explanations. *Proceedings of the ACM on Human-Computer Interaction, 7*(CSCW2), Article 370, 1–32. https://doi.org/10.1145/3610219

Chow, P.-S., & Celis Bueno, C. (2025). The cloak of creativity: AI imaginaries and creative labour in media production. *International Journal of Cultural Studies*. Advance online publication. https://doi.org/10.1177/13675494251322991

Design Council. (2007). *Eleven lessons: Managing design in eleven global brands. A study of the design process*. https://www.idi-design.ie/content/files/ElevenLessons_Design_Council_2.pdf

Dove, G., Halskov, K., Forlizzi, J., & Zimmerman, J. (2017). UX design innovation: Challenges for working with machine learning as a design material. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 278–288. https://doi.org/10.1145/3025453.3025739

Dueñas Mohedas, S., & Jiménez Alcarria, F. J. (2025). La integración de inteligencia artificial generativa en el flujo de trabajo de postproducción audiovisual: El caso de La Mesías (Movistar Plus+, 2023). *Revista Prisma Social, (48)*, 96–121. https://revistaprismasocial.es/ps/article/view/5680

Figoli, F. A., Mattioli, F., & Rampino, L. (2022). *Artificial intelligence in the design process: The impact on creativity and team collaboration*. FrancoAngeli.

Gavran, I., Honcharuk, S., Mykhalov, V., Stepanenko, K., & Tsimokh, N. (2025). The impact of artificial intelligence on the production and editing of audiovisual content. *Preservation, Digital Technology & Culture, 54*(3). https://doi.org/10.1515/pdtc-2025-0022

Google Cloud. (n.d.). *What are AI agents?* Retrieved August 29, 2025, from https://cloud.google.com/

Guo, X., Xiao, Y., Wang, J., & Ji, T. (2023). Rethinking designer agency: A case study of co-creation between designers and AI. *IASDR 2023: Life-Changing Design*. https://doi.org/10.21606/iasdr.2023.478

He, J., & Do, H. J. (2025). *Exploring industry practices and perspectives on AI attribution in co-creative use cases*. Joint Proceedings of the ACM IUI Workshops 2025. https://doi.org/10.48550/arXiv.2402.08855

Holmquist, L. E. (2017). Intelligence on tap: Artificial intelligence as a new design material. *Interactions, 24*(4), 28–33. https://doi.org/10.1145/3085571

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons, 61*(4), 577–586. https://doi.org/10.1016/j.bushor.2018.03.007

Kadenhe, N., Al Musleh, M., & Lompot, A. (2025). Human-AI co-design and co-creation: A review of emerging approaches, challenges, and future directions. *Proceedings of the AAAI Symposium Series, 6*(1), 265–270. https://doi.org/10.1609/aaaiss.v6i1.36061

Kalving, M., Colley, A., & Häkkilä, J. (2024). Where AI and design meet—Designers' perceptions of AI tools. *Nordic Conference on Human-Computer Interaction*, 1–8. https://doi.org/10.1145/3679318.3685388

Kocaballi, A. B. (2023). *Conversational AI-powered design: ChatGPT as designer, user, and product*. arXiv. https://doi.org/10.48550/arXiv.2302.07406

Kokotajlo, D., Alexander, S., Larsen, T., Lifland, E., & Dean, R. (2025). *AI 2027*. https://ai-2027.com/ai-2027.pdf

Liao, Q. V., Gruen, D., & Miller, S. (2020). Questioning the AI: Informing design practices for explainable AI user experiences. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–15. https://doi.org/10.1145/3313831.3376590

McKinsey & Company. (2024). *The state of AI in early 2024: Gen AI adoption spikes and starts to generate value*. https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-2024

Nasir, M. N. F., Jaapar, I., Effendi, W. M. S., Sharif, F. M., Mamat, K., & Nasir, N. F. (2024). Exploring the role of artificial intelligence in the design industry: Client satisfaction through enhancing quality while preserving human creativity. *International Journal of Research and Innovation in Social Science, 8*(IIIS), 4538–4543. https://doi.org/10.47772/IJRISS.2024.803331S

OpenAI. (2025). *ChatGPT* [Large language model]. https://chatgpt.com/

Rashid, M. A. N., Mullah, M., & Zain, Z. M. (2020). Application of artificial intelligence: A review. *International Journal of Advanced Engineering Research and Science, 7*(3), 316–321. https://doi.org/10.22161/ijaers.73.47

Singh, S., Hindriks, K., Heylen, D., & Baraka, K. (2025). *A systematic review of human-AI co-creativity*. arXiv. https://doi.org/10.48550/arXiv.2506.21333

União Europeia. (2024). *Regulamento (UE) 2024/1689 do Parlamento Europeu e do Conselho, de 13 de junho de 2024, que cria regras harmonizadas em matéria de inteligência artificial (Regulamento da Inteligência Artificial)*. Jornal Oficial da União Europeia, L 2024/1689, 1–144.

Windl, M., Feger, S. S., Zijlstra, L., Schmidt, A., & Wozniak, P. W. (2022). 'It is not always discovery time': Four pragmatic approaches in designing AI systems. *CHI Conference on Human Factors in Computing Systems*, 1–12. https://doi.org/10.1145/3491102.3501943

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE.

Yu, W. F. (2025). AI as a co-creator and a design material: Transforming the design process. *Design Studies, 97*, 101303. https://doi.org/10.1016/j.destud.2025.101303

Zhou, J., Li, R., Tang, J., Tang, T., Li, H., Cui, W., & Wu, Y. (2024). Understanding nonlinear collaboration between human and AI agents: A co-design framework for creative design. *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*, Article 170, 1–16. https://doi.org/10.1145/3613904.3642812