

From hand sketch to AI visuals: scales of the design process examined through consumer neuroscience

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This paper presents results from a consumer-neuroscience (neuromarketing) study developed alongside the Erasmus+ AI:nterior workshop on universal design (UD) (RISEBA FAD, Riga). It examines “scale” in the design process by tracking how hand sketches—an embodied, “XS” mode of thinking—translate into AI-generated interior visuals, and whether this translation preserves design intent. Treating “fitting” as the measurable alignment between design intention and received perception, the study asks whether small-scale design cues (sketch decisions and UD micro-interventions) survive, drift, or are amplified when converted into image-based outputs.

The workshop focused on a university entrance lobby, where UD is often composed of easily overlooked XS interventions (step-free thresholds, legible wayfinding, turning radii, tactile cues, low-effort controls). Student teams produced sketch sets across speed tiers (napkin, development, decision), two representational modes (plans/sections and experiential viewpoints), and two modifiers (diagram overlays and annotations). Selected sketches were then used to generate corresponding AI visuals, enabling a controlled comparison across media. Methodologically, the consumer neuroscience study focuses (N≈25) combining (1) webcam-based eye tracking with UD areas of interest and metrics including time-to-first-fixation, dwell proportion, and fixation counts; (2) Implicit Association Tests contrasting accessible/welcoming versus excluding/unwelcoming, administered at baseline, post-sketch, and post-AI stages; and (3) a short qualitative survey on perceived continuity between sketches and AI images.

The analysis tests whether attention patterns and implicit associations observed for sketches predict those for their AI outputs, and which sketch modes/modifiers best preserve design intent through the pipeline toward AI images.