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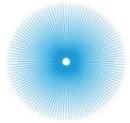
THESIS INCUBATOR STUDIO

SMOOTH ROUGHNESS: INTERIOR
SURFACE MIMICS THE ESSENCE
OF THE EGYPTIAN CONTEXT



**POLITECNICO
MILANO 1863**

SCUOLA DEL DESIGN



POLI.DESIGN
FOUNDED BY POLITECNICO DI MILANO

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Project developed within the Thesis Incubator Studio - Politecnico di Milano
in partnership with Cleaf company

CORSO DI LAUREA MAGISTRALE IN INTERIOR AND SPATIAL DESIGN
THESIS INCUBATOR STUDIO | A.Y. 2019-20

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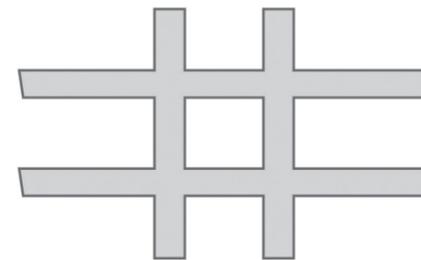
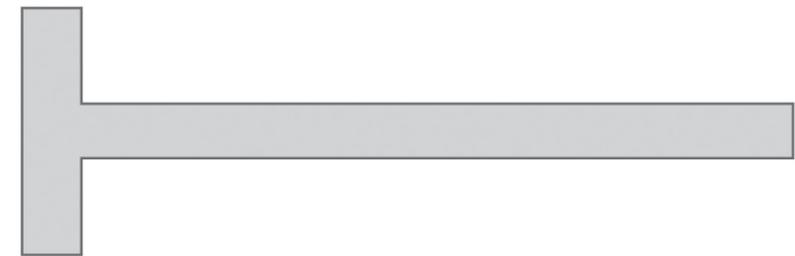
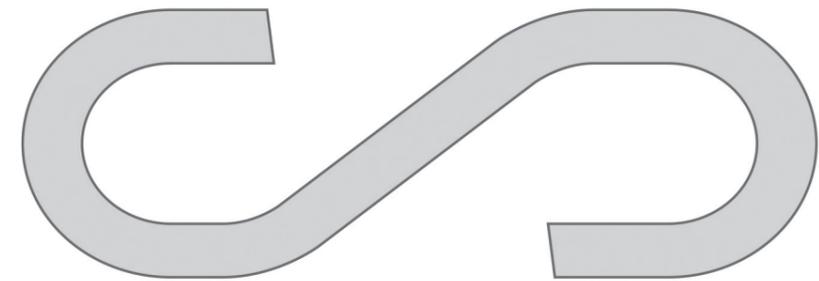
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SURFACE MIMICS THE ESSENCE
OF THE EGYPTIAN CONTEXT

‘The tactile sense connects us with time and tradition: through impressions of touch we shake the hands of countless generations.’

Juhani Pallasmaa

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HOW

Does an Interior Surface
Mimic the Essence of
Egyptian Context

?

The main objective is to translate the Egyptian culture into a material to be used as a design language in the interior spaces.

CHAPTER **1**

TOUCH-BASED SURFACE DESIGN

Introduction

Touch occupies a complex, shifting, and sometimes, contradictory position in the representation of the five senses in Western culture. As M. Paterson writes,

“Touch is the most diffuse and somatically dispersed, because the organ, the skin, covers the whole body and it is closely associated with corporeality”¹.

It has been largely neglected in today’s visual cultures so and when we look at the cultural, historical and philosophical treatments of touch, we can see why: from Plato, Aristotle, to the Enlightenment, vision is dominant in the hierarchy of senses. In addition, tactile contact is central to religious representation, from doubting Thomas touching Christ’s wounds to the figuration of religious healing, signifying the close relationship between materiality and resurrection, between physical and spiritual, downgrading its scientific value by attaching it to metaphysical concepts.

Whereas, in the scientific world, the sense of touch is associated with pain, infection and the healing as a result of the physician, and the epistemology shifted by increasing the ocular. For example, we tend to use technology that measure and examine us, and the doctors no longer have to touch us in order to get a diagnosis. This is just a case of how sensation can shape our collective cultural values: “the history of touch involves not just a search for experience, but for meaning”².



The Incredulity of Saint Thomas by Caravaggio.³

1 Paterson, Mark. “The Senses of Touch: Haptics, Affects and Technologies.” (2007).

2 Harvey, Elizabeth. “Sensible Flesh: On Touch in Early Modern Culture. .” (2003).

3 Image source: <http://www.caravaggio.org/>

Yet touch is crucial to embodied existence. It does not correspond to a single organ so it is not a singular sense. It is a modality “resulting from the combined information of innumerable receptors and nerve endings concerned with pressure, temperature, pain and movement”. But touch is also a sense of communication:

“It is receptive, expressive, can communicate empathy, it can bring distant objects and people into proximity”⁴.

So, while eye is the organ of distance, touch is the sense of nearness, intimacy and affection. The hands feel when the eye observes. Materials and surfaces have a rich complex language of their own which evolves and changes over time. It can give us information about texture, weight, density and temperature, while it can also reveal the history and origin of the matter: “a pebble polished by waves is pleasurable to the hand, not only because of its shape, but because it expresses the slow progress of its formation; a perfect pebble on the palm materializes duration, it is time turned into shape”⁵. Touch also provides us with three-dimensional information of material bodies and guides us through the topography of a space or an object.

For Pallasmaa, who celebrates the primacy of the haptic territory, “all senses, including vision, are extensions of the sense of touch”⁶. Peter Zumthor proclaims:

“While the tactile space separates the observer from the objects, the visual space separates the objects from each other (...) the perceptual world is guided by the touch, being more immediate and welcoming than the world guided by sight ”⁷. According to medical evidence, the skin is “the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient protector [...] Touch is the parent of our eyes, ears, nose and mouth. It is the sense, which became differentiated into the others, a fact that seems to be recognized in the age-old evaluation of touch as the mother of the senses”⁸.

What is more, the act of touch is not a private and personal affair; it is always mediated “by our continuous interactions with other human and non-human bodies”⁹. The emphasis in this embodiment can also be found in Merleau-Ponty’s work ¹⁰ where he considers the reversibility of touch:

4 Paterson, Mark. “The Senses of Touch (Haptics, Affects and Technologies).” (2007).

5 Pallasmaa, J. “The Eyes of the Skin. Architecture and the Senses.” (1994).

6 Pallasmaa, J. ““Hapticity and Time: Notes on Fragile Architecture” in Architectural Review.”.

7 Zumthor, Peter. “Thinking Architecture.” (1999).

8 Montague, Ashley. “Touching: The Human Significance of the Skin.” (1971).

9 Ahmed, Sara & Jackie Stacey “Thinking through the Skin “. (2001).

10 Merleau-Ponty, Maurice. “Phenomenology of Perception.” (2003).

“While each monocular vision, each touching with one sole hand has its own visible, its tactile, each is bound to every other vision, to every other touch; it is bound in such a way as to make up with them the experience of one sole body before one sole world, through a possibility for reversion, reconversion of its language into theirs, transfer and rehearsal... Now why would this generality, which constitutes the unity of my body, not open it to other bodies? The handshake too is reversible; I can feel myself touched as well as and at the same time as touching”¹¹.

So skin opens our bodies to other bodies: through touch, “the separation of self and other is undermined in the very intimacy or proximity of the encounter”¹². Skin is a border that feels. Skin can have a testimonial function, “the act of bearing witness to trauma, injustice, violence and the pain of others”¹³.

*The Physiology, Psychology and
Phenomenology of Touch*

11 Ibid, p.142.

12 Ahmed, Sara & Jackie Stacey “Thinking through the Skin “. (2001).

13 Ibid, p.7

THE PHYSIOLOGY OF TOUCH

Every day of our life we collect and process an immense amount of sense stimuli. We are only aware of a small part of what our body senses. Before we become aware of being touched the stimuli has been through a long register of somatic (bodily) filters. What happens when our skin is touched? How does the skin actually sense? Does touch happen in the epidermis that is outer layer of the skin, or deeper down inside the body? For working for an interior coating surface using touch, it is of interest to look at what we can sense and how the body both registers, processes and forwards signal from skin to the brain.

In Ashley Montagu's view, based on medical evidence, the primacy of the tactile realm is confirmed: '[The skin] is the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient protector. Even the transparent cornea of the eye is overlain by a layer of modified skin. Touch is the parent of our eyes, ears, nose, and mouth. It is the sense which became differentiated into the others, a fact that seems to be recognized in the age-old evaluation of touch as 'the mother of the senses'¹⁴. The skin is not just the largest organ of our body, covering almost two square meters, but it also has an incredible sensibility and resolution.

Think of how we easily can discriminate between feeling the crackle of broken glass versus the warmth of a hand gently touching another versus a violent blow? Or how the deaf blind can understand conversations in almost real time through the tactile communication system Tadoma. Tadoma is a haptic language for the deaf and blind where the deaf-blind places their hands on the face of the speaking person to interpret the speech through the vibrations felt in their hands¹⁵. From the onset of a tactile stimuli onto the skin until the resulting perception, the user undergoes a range of complex mechanical, perceptual and cognitive phenomena¹⁶. It is beyond the scope of this thesis to explain in detail what happens. However, it is important to have a basic understanding of how tactile information is physically formed, transmitted and understood.

Physiological functionality of the skin

The body's perception of touch is a complex process involving neurological, chemical and mechanical elements. Through touch we perceive impressions such as pressure, vibration, temperature, pain and position. Through the skin alone we can also easily discriminate between sharp and dull objects, rough or smooth textures etc. Just as the number of our senses can be reduced to the extero- and interoceptive, the senses of touch can also be

14 Montagu, Ashley. "Touching: The Human Significance of the Skin." (1971).

15 Grunwald, Martin. "Human Haptic Perception: Basics and Applications." (2008).

16 Pasquero, Jérôme. "Survey on Communication through Touch." (2006).

divided in two sub-systems¹⁷. The cutaneous –or tactile- system deals with the outward-oriented, exteroceptive senses of pressure, vibration, pain, temperature and the kinesthetic system that deals with the inward-oriented, interoceptive sensations like movement and bodily positions in time and space. Together these two dimensions create the haptic perception, which is experienced as both tactile and kinesthetic. Kinesthetic movement of the body causes cutaneous issues such as stretching and pulling of the skin, and vice-versa. Therefore there cannot be a strict division between these two systems, but such a conceptual breakdown of touch into sub-systems and sub-elements is helpful in analyzing and understanding how touch functions.

The tactile senses of touch

The skin is commonly thought of as one flexible, sensuous, outer layer of the body. In reality it is composed of several layers and elements with various functionalities. Simplified the skin can be described as a layered structure composed of a variety of components like ridges, epidermis, dermis etc. These structures comprise of diverse and various biomechanical characteristics¹⁸. The focus on touch is here on the perceptual impressions caused and conveyed via the outer skin. There are general perceptual modalities of the human skin i.e. pressure, temperature and vibration. These three modalities constitute the organ, constantly detecting and reacting to environmental realities. Jill Scott adds proprioception as a fourth modality¹⁹.

Proprioception describes how we know how we are moving and which position our bodies are in. It has therefore also been called 'depth sensibility'²⁰. Proprioceptive embodiment provides us with information about three conditions: i) the state of our deep tissue, ii) our movements and activity, iii) the effects of displacement in space²¹. Even if parts of the proprioceptive sense necessarily involves receptors in the outer skin like stretching caused by movement, it is debatable as it is primarily muscular as well as belonging to the interoceptive system. As both the sense of kinaesthesia and proprioception relates to the 'muscle sense', they were often confused with each other in the early 19th century, but has subsequently become differentiated. One artistic example of the use of the proprioceptive sense is Stelarc's Ping Body project²². The audience induces various proprioceptive positions to his body through a computer-interfaced muscle-stimulation system²³.

17 Antal Haans, Wijnand A. IJsselsteijn. "Mediated Social Touch: A Review of Current Research and Future Directions." (2006).

18 Pasquero. "Haptics: Perception, Devices and Scenarios." (2006).

19 Hauser, Jens. "Sk-Interfaces : Exploding Borders : Creating Membranes in Art, Technology and Society." (2008).

20 Grunwald, Martin. "Human Haptic Perception: Basics and Applications." (2008).

21 Geurts, Kathryn. "Culture and the Senses (Bodily Ways of Knowing in an African Community)." (2003).

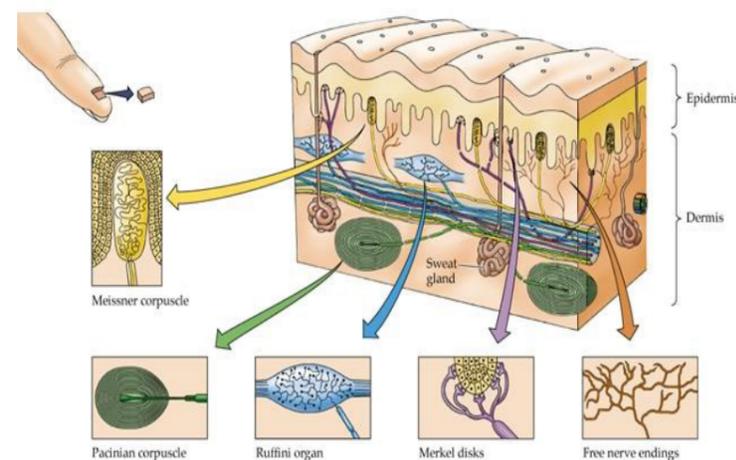
22 <http://www.medienkunstnetz.de/works/ping-body/>

23 Paterson, Mark. "The Senses of Touch (Haptics, Affects and Technologies)." (2007).

Skin receptors

As mentioned, there are several touch senses in the skin, each of which is associated with a different type of receptor embedded at a different levels. Some are sensitive to a light touch, others respond to pressure, thermoreceptors to temperature and others like the nociceptors signal pain. A nociceptor is a sensory receptor in both cutaneous and visceral tissues that signals when damage to the tissue and body occurs. It reacts by sending nerve signals to the spinal cord and brain. The perception of pain occurs through this process and is called nociception. Likewise, also the other kinds of receptors convert the mechanical or thermal stimuli into electrical signals that are then transmitted through nerves to brain. This process is called sensory transduction. There are also some motor nerve fibres that carry impulses to dermal muscles and glands, causing these structures to react.

The four main types of skin mechanoreceptors of interest to haptic sensations are the Pacinian corpuscle, the Merkel disks, the Meissner corpuscle and the Ruffini organ. According to Pasquero (2006), the Pacinian corpuscles are encapsulated receptors found in the most superficial layers of the skin and transmit information about light pressure. This plays an important role in the discrimination of shapes, edges and texture. The Merkel disks are mainly responsible for the detection and identification of spatial patterns. These let humans recognize patterns such as the Braille dots and sharp edges. The Meissner corpuscle are densely packed in the human finger (150 units/cm²) and are only, but highly sensitive to dynamic skin deformations. This is important of detecting skin motion which again is useful for the accurate control of grip forces.



Skin layers: epidermis, dermis (above the subcutis) and placement of mechanoreceptors of the glabrous skin, image source²⁴

²⁴ http://grants.hhp.coe.uh.edu/clayne/6397/Unit4_files/image019.jpg

Other receptors like the Pacinian corpuscles are located deeper and are optimized for detecting vibrations and, for example, moving a finger on rough material. These are quick and do not respond to steady stimuli. They have a much higher sensitivity to skin motion (200-300Hz) and therefore probably account, for example, of the remote perception of an object via a tool²⁵. So they provide information about dynamic qualities of stimulation as shown in the image on the left side.

The sensation of pain is in general associated with the free nerve endings, but it appears that other receptors can function as nociceptors too²⁶. An interesting aspect of this phenomenon is that pain does not happen in the nociceptors. Pain is a perceived phenomenon when the signals from the nociceptors reach the brain. Also in medicine and neural science, perception is conceived as 'a product of the brain's abstraction and elaboration of sensory input'²⁷. A consequence of this is that 'there are no 'painful stimuli' – stimuli that invariably elicit the perception of pain in all individuals' (ibid). A question of interest to the development of haptic expressions is which impressions can be perceived as painful by more people. Since the perception of pleasure also arise through the same neurological processes, it is reasonable to expect that the same perceptual mechanisms cause sensations of the classical pair of pleasure and pain. As described, the somatosensory system has specific instrumental characteristics. This also implies limitations.

One consequence of the receptors' limited capacity to register frequencies is that for instance that the skin cannot be used to hear human voices²⁸. It is simply not built for that. To translate sounds like alarms and simple signals into vibrations that again are perceivable through the skin is not a problem. A typical vibrator used to affect the skin, such as pager- and mobile phone motors, operate at sound levels between 0 and 200 Hz (rotational speed up to 12.000 rpm). This fits well with the described abilities of the mechano-receptors and shows that a basic knowledge of the possibilities as well as limitations of the sensory abilities of the different receptors is important in the design of a future haptic language for the skin. However, vibration-based languages like Tadoma are perceived through vibrations on the skin.

This appears as a contraindication to the skin's inability to hear. The explanation why Tadoma can be 'heard' through the skin and the hands is due to learned skills of associating certain vibrations and vibrational patterns with sounds and language. Although it is not at the centre of this discussion, Tadoma is as such an indication of how tactual communication can be constructed and even function on the level of a spoken language.

²⁵ Pasquero. "Haptics: Perception, Devices and Scenarios." (2006).

²⁶ Lggo. "Handbook of Sensory Physiology. Volume II. Somatosensory System." (1974).

²⁷ Kandel, Eric R. "Principles of Neural Science." (2000).

²⁸ Pasquero. "Haptics: Perception, Devices and Scenarios." (2006).

THE PSYCHOLOGY OF TOUCH

The psychology of touch examines the mechanisms of how touch is perceived. It looks at what happens when the signals and sensations (e.g., pressure, pain, warmth) from the somatosensory systems have reached the brain. This involves, for example, the cognition of touch: how do we know that what we touch is hard, sharp, pointy, warm, soft, good etc. When entering an exhibition space and an artistic installation, how does touch influence our perception of it? As the senses can be divided into different systems and subsystems, also the cutaneous touch can be divided into categories. One model is, for example, to emphasize a difference in the tactile versus the tactual touch. Tactual touch refers to active exploratory action of touching and manipulative touch. Tactile touch refers to passive touch, like being touched through the stimulation of the skin by some outside agent²⁹.

This way of categorizing touch has been much debated. One question is whether or not the factual reception of touch is more important than categorizing it as active or passive. This is because, as nociceptors shows, sensations do not happen in the various receptors, but in the brain. Perception of touch appears as an activity that is primarily in the head, not in the body. Various theories also show that there is no agreement about the mental perception of active versus passive touch. Vega-Bermudez assert that there is no difference between active and passive touch in form recognition, when the stimuli pattern is smaller than a finger pad³⁰. Shimoga (1992) identified five main approaches for finger touch feedback through visual, pneumatic, vibro-tactile, electro-tactile and neuromuscular stimulations³¹.

Effects of the psychological perception of touch are many. One is masking, which is the phenomenon when the sensation of a first tactile stimuli makes it hard to perceive a second and different physical stimuli. The first perception masks the second out. Secondly, the phenomenon of vibrotactile adaption describes how we get corporeally habituated to a repeated stimuli. With the same vibrotactile stimulation in the same spot over a longer period, users appear to become numb to that sensation. We adapt to the sensation, internalizing and normalizing it.

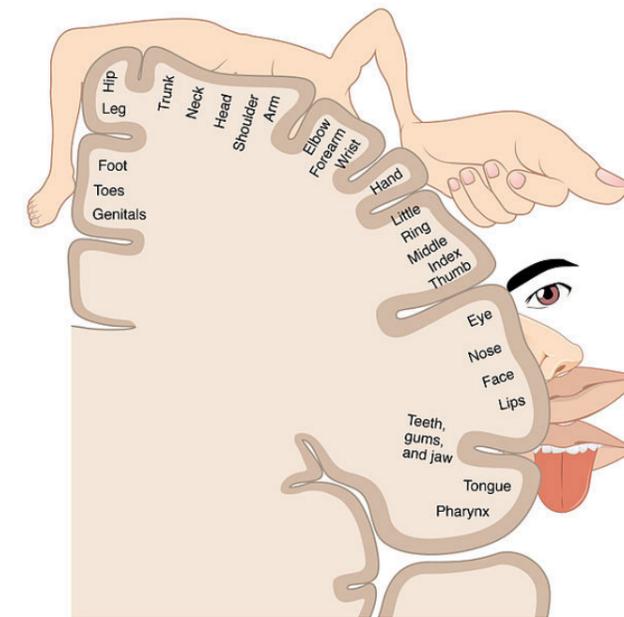
29 Pasquero. "Haptics: Perception, Devices and Scenarios." (2006).

30 F. Vega-Bermudez, K. O. Johnson, S. S. Hsiao. "Human Tactile Pattern Recognition: Active Versus Passive Touch, Velocity Effects, and Patterns of Confusion." (1991).

31 Coiffet, Burdea and. "The Virtual Reality Triangle." (1994).

This has its neurological explanation in observed decrease of firing rates at the mechanoreceptors level. Thirdly vibrotactile enhancement can occur as a consequence of a conditioning stimuli. If a user is 'warned' with a short vibrotactile burst ahead of the main stimuli, then the main stimuli can be sensed more strongly. This is the so called enhancement effect³².

As briefly discussed in this section, there are many ways to touch and be touched. As most psychological theories of touch sees it as a phenomenon happening in the brain and because of all evidence that touch can both be conditioned and channeled through contextual information. However, to see the perception of touch as such a brain dependent experience lures us into the 'homunculus' model of understanding perception. According to the homunculus model there is a small man inside our head that perceives, digests and controls the signaling and perceptive processes.



Cortical sensory homunculus, body map on the correlation between brain 'size' and touch sensation. image source

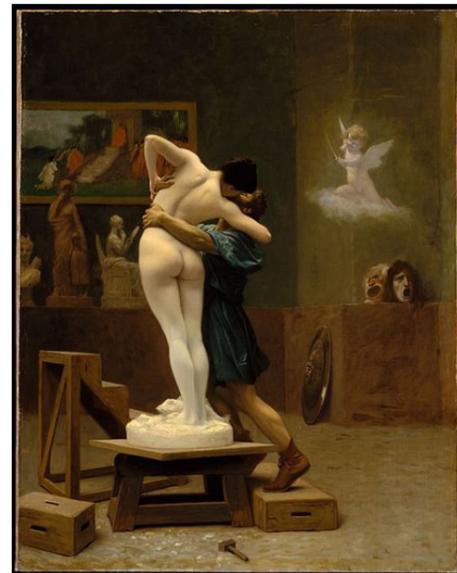
32 Verrillo, Ronald T. "When Feeling Is Failing: The Effects of Aging on the Sense of Touch." (1993).

Touch, affects and emotions

The life of the senses is intimately linked to the life of the emotions³³. Touch and affect are ambiguous and closely interrelated³⁴. To haptically -and actively- reach out and touch someone can cause affect in others. Tactile –and passive- touch implies one is being affected. A working definition for affect would be referring to the experience of feeling or emotion. Emotions are often, but not necessarily caused by some kind of physical influence. Both the definitions as well as the differences between affect and emotion are many and often unclear³⁵.

The presence as well as the absence of touch -as Aristotle said- can have a huge affect on living beings. The significance of touch can be overwhelming: 'A short touch by another person can elicit strong emotional experiences; from the comforting experience of being touched by one's spouse, to the experience of anxiety when touched by a stranger'³⁶. Touch as experienced through direct contact with other humans and in a social context is different from the touch an individual experiences when exploring objects and environments.

In relation to aesthetics: how can touch affect us? What are the affectual relations between bodies and artworks? Can we sculpt with affects? Ovid's classical story of Pygmalion and Galatea portrays how emotions bring life into the arts. This timeless romantic story is a foundational myth for all sculptors and tells how the artist Pygmalion falls in love with the sculpture of the woman Galatea that he is making. The goddess of love, Aphrodite, seeing how much in love he is, breathes life into the sculpture. As Mirzoeff notes, Pygmalion has reproduced the ultimate narcissistic object: himself in a female form³⁷. This provides an interesting material for a psychoanalytic analysis.



Pygmalion and Galatea, Jean-Léon Gérôme, 1890 (image source³⁸)

33 Howes, David. "Empire of the Senses (the Sensual Culture Reader)." (2005).
34 Paterson, Mark. "The Senses of Touch (Haptics, Affects and Technologies)." (2007).
35 Michael Lewis, Jeannette M. Haviland-Jones, Lisa Feldman Barrett. "Handbook of Emotions." (2008).
36 Antal Haans, Wijnand A. IJsselsteijn. "Mediated Social Touch: A Review of Current Research and Future Directions." (2006).
37 Mirzoeff, Nicholas. "Silent Poetry." (1995).
38 [https://en.wikipedia.org/wiki/Pygmalion_and_Galatea_\(G%C3%A9r%C3%B4me_painting\)](https://en.wikipedia.org/wiki/Pygmalion_and_Galatea_(G%C3%A9r%C3%B4me_painting))

Here, however, we are concerned with the subjective issues of touch. And if we cannot - as Pygmalion's touch literally did - bring a lump of dead material into life, how can the passion and emotionality that I have observed in encounters with haptic works of art be explained? Again, this could be another trick of anthropocentrism, and an anthropomorphosis: turning dead material into living human flesh³⁹.

For Deleuze' and Guattari sensations appear tied to the work of art, but must not be seen as the artwork itself. It is a block of perceptions, but at the same time inseparable from the human experience. Deleuze and Guattari write this with reference to the work of art itself. But what happens when the flesh become the work of art? In relation to haptic installations the body of the user becomes a canvas and an artwork in itself. The user's body becomes a sensual body, a canvas for (aesthetic) touch. In this case, and following Massumi, Deleuze and Guattari's aesthetics cannot be reduced to a theory of the art object per se. They appear to understand aesthetics to be concerned with the dynamic of sensible assemblages. This is relevant for the context of haptic experience. Further, 'whenever an assemblage of affects and percepts appears, we have evidence of art differentiating itself as it develops an internal coherence of sensation'⁴⁰.

Percepts and affects 'displace all fixed notions of identity to make room for a rich community of creative intensities' (ibid). Deleuze was inspired by Nietzsche and the passion he showed as an art-philosopher: '... What is required ... is to stop courageously at the surface, the fold, the skin, to adore appearance, to believe in forms, tones, words ... to be superficial - out of profundity.'⁴¹. Such an approach to aesthetics, to stop at the skin, appears superficial, but the senses are not at all that superficial and shallow. As noted by Game and Metcalfe (1996) and Paterson (2007), they can ground our perceptions through the skin: 'we feel meanings, a term that indicates the intimate association between bodily senses and emotion'⁴². A critical question towards the feeling of meanings is to which degree this is influenced by a culturally tuned perception.

39 Paterson, Mark. "The Senses of Touch (Haptics, Affects and Technologies)." (2007).
40 Massumi, Brian. "Parables for the Virtual (Movement, Affect, Sensation)." (2002).
41 Genosko, Gary. "Deleuze and Guattari: Critical Assessments of Leading Philosophers." (2001).
42 Ann Game, Andrew W. Metcalfe. "Passionate Sociology." (1996).

THE PHENOMENOLOGY OF TOUCH

As psychophysics shows, touch cannot be explained by neural data alone. In combination with psychological mechanisms a seemingly functional psychophysical approach is possible, however what is lacking is an overall explanation why touch functions. As an expression of the relative complexity making up our skin, is the following statement issued for the SK-interface conference and exhibition in 2008:

“Skin represents a place where art, science, biopolitics, philosophy and social culture inter-face. Materially and metaphorically, artists replace borders that tend to separate by membranes that need to be negotiated; between spaces, species, gender, senses, disciplines and genres”⁴³.

In phenomenology the object of study is our experience⁴⁴. It is a field trying to understand how we experience overall. Phenomenologically, the physical origin of experience becomes central. This is in line with Merleau-Ponty's view on embodied experiences. As the phenomenology of touch necessarily also deals with the construction of meaning through touch, how do we make touch become meaningful? How precisely can psycho-physiological combinations of touches create and recreate meaning? These questions are not just instrumental in nature, but concerns a long chain of interacting issues and aspects of life that influence our perception.

There is therefore a strong relationship between psychophysical experimentation and phenomenological experience. The psychophysical dimension prepares the ground for phenomenological experiences. Phenomenology here becomes a reflective tool useful to me as an artist and practitioner both in terms of conceiving, constructing as well as understanding the artistic experience.

⁴³ From the FACT press release for the Sk-interface exhibition, downloaded from <http://www.fact.co.uk/news/?id=143> on November 22nd 2009.

⁴⁴ Smith, David Woodruff. “Phenomenology.” (2005).

Culture and touch

Is it, that the body, as we have come to understand it, no longer exists? - William A. Ewing, 1994. How do we learn to understand touch? As Ewing's question above implicitly suggests, touch has a strong cultural, learnt component. The body can be seen as a construction that we have to learn. If we learn to see the body as something else, then the body as we knew it ceases to exist. It is replaced by a new, learned body that filters and affects our perception differently from the old one.

The extreme plasticity of the body percept is reflected in Merleau-Ponty's claim that the body is ‘an historical idea’ rather than ‘a natural species’. Inspired by this Simone de Beauvoir claims in her book *The Second Sex* that being a woman, and by any extension, any gender is an historical situation rather than a natural fact⁴⁵. Cultural comparisons between US and India have found that ‘cultural context constructs unique forms of mental states and strongly influences which experiences are normal and which are pathological’⁴⁶. This connects to cross-cultural constructions of the body. As such it is relevant in terms of setting the psychophysical framework of artistic, multimodal and computer-based environments.

There is strong evidence showing how our interpretation of touch is strongly influenced by cultural elements. Cross-cultural anthropological studies confirm how culture affects perception⁴⁷. One is the wide register of cultural differences in the amount and type of touching. In relation to social contact, anthropologists have distinguished between so called contact- and non-contact cultures⁴⁸. That human's way of touching apparently easily can be recognized and divided in two is in itself an indication of the cultural component of touch.

One example is the Cashinahua Indians of Eastern Peru ways of seeing the body as composed by different bodily intelligences and where their skin knows. In their everyday setting they let their bodies merge with the environment in a quite different way compared to an ordinary, design-oriented workspace in the western world. The Indian way of understanding their bodies influence their perceptions. In their everyday environment, smells, colours, and the texture of the ground they walk upon afford different perceptions from an office worker.

⁴⁵ RIAÑO, Yvonne. “Migration of Skilled Latin American Women to Switzerland and Their Struggle for Integration.” (2003).

⁴⁶ Mezzich, Juan. “Culture and Psychiatric Diagnosis: A Dsm-iv Perspective.” (2002).

⁴⁷ Constance Classen, David Howes. “The Book of Touch.” (2005).

⁴⁸ Argyle, Michael. “Bodily Communication.” (1988).

The culture evolving around their everyday conditions seem to have further refined their bodily 'directedness' towards specific touch phenomena. Geurts describes the African Anlo speaker's term *seselame* that describes hearing or feeling with the body, flesh or skin⁴⁹. This is similar to the Cashinahua Indians and is another indication of how the body becomes 'the existential ground of culture and self'. In the history of perception, touch has delivered 'raw' data and information to philosophy and philosophical thinking about touch.

Feelings and affects have strong neurological origins, but can also be read as learned experience in line with Bourdieu's notion of cultural knowledge⁵⁰. In Bourdieu's view we possess a certain cultural background that enables us to experience something as something. This becomes a referential backdrop for our culturally coded interpretation. According to Bourdieu, aesthetics is not a universal human faculty, but a taste that has evolved as a result of and as a complex marker of social position⁵¹. It therefore appears that our perception of touch changes as a result of changes in culture.

Culture forms an instrument that focus how we interpret touch. In all its immediacy and through all its complex factors, touch can be seen as a situated concept, existing there and then as a consequence of a specific matrix of interrelated phenomena: 'a situated concept is formed by a particular activity, a predicted context and an interpretative culture'⁵². It here appears that culture frames our interpretation of stimuli, and if the artistic goal is, like Bode /Schmidt, 'to make relevant statements about the world' (ibid, p.13), then cultural factors must be taken into consideration. According to Bourdieu, artworks are products of a reciprocal process of production and reception in history⁵³.

Understanding art means deciphering it on the basis of some code that the viewer masters. One implication of this is that 'the work of art exists as such to the extent that it is perceived'⁵⁴. This outlines Bourdieu's 'sociological theory of art perception'⁵⁵ and implies that art is dependent on culturally coded perception.

Sense of Touch in Architectural Design

49 Geurts, Kathryn. "Culture and the Senses (Bodily Ways of Knowing in an African Community)." (2002).

50 Levinson. "Education and Sociology: An Encyclopedia." (2002).

51 Thomson, Alexander. "Adorno: A Guide for the Perplexed." (2006).

52 Schmidt, Bode &. "Off the Grid." (2008).

53 Robbins, Derek. "Bourdieu and Culture." (2000).

54 Bourdieu, Pierre. "Outline of a Sociological Theory of Art Perception." (1968).

55 Tanner, Jeremy. "The Sociology of Art: A Reader." (2003).

Touch as a stimulus for the other senses

The tactile sense should not be underestimated in the creation of meaningful and memorable spaces. Feeling a smooth or a rough surface, judging the weight, the density, the texture, or the temperature of an architectural space is connected to the sense of touch. The sense of touch inspires intimacy and affection while vision is the tool for distance. Vision observes whereas touch approaches creating feelings and emotions. As Pallasmaa says, the oldest organ of our body is our skin which protects us and guards us more effectively than any other organ.

Touch is more accurate than vision and is less likely to make a mistake. Vision can touch distance but tactility can see the closeness. Therefore the sense of touch can be regarded as the dominant sense which is in control of all our senses. This is contrary to the belief of modernist artists who considered vision to be the dominant sense of all. Yet, all great modernist architects had a great sense of plasticity, materiality and gravity in their work. In Le Corbusier's drawings and sketches there was a strong presence of the element of tactility, a characteristic which he incorporated in his regard for architecture. Therefore the touching experience has got a powerful impact on a particular space because it acts as a stimulus on all the other senses, including our vision.⁵⁶

Touching space

But how do we touch a space we are found in? The most spontaneous answer would be with our hands. It is true that we use our hands to find out about the properties of a material – shape, texture, weight etc. Besides, the hand is the primary part of our body that we use to perceive our surroundings. The hand has a history, a culture and a unique beauty. With every movement the hand goes through a thinking process. It is an organ which can grasp and hold. Yet, we can use other parts of our body to interact with space in many ways. With our whole body we can sense if there is bright sunlight in a particular space or if there is little sunlight.

⁵⁶ Pallasmaa, J. "The Eyes of the Skin. Architecture and the Senses." (1996).

When we open the door the weight of our body touches the weight of the door, our legs feel the steps as we go up the staircase. Our whole body is involved in this promenade in space. Therefore, touching space causes our body to interact with all the elements that compose an architectural setting creating a stronger experience than the mere gaze of the elements. So architecture ought to focus on an architectural scale and context in which the body feels relaxed and free.⁵⁷

'We feel pleasure and protection when the body discovers its resonance in space.' Juhani Pallasmaa.

Alban Guého Architecte has constructed 'medusa', influenced by greek mythology, the design team believed that the idea of sensuality was embodied by the divine character, who was the granddaughter of the union between the earth and the ocean. as a femme fatale, she continuously used her long flowing hair and blue eyes in order to attract and condemn her suitors. these physical characteristics were taken into consideration during the development phase, as it was proposed that they could be recreated in the form of an installation. the final product forces hotel visitors to confront the 'floating heads,' which are represented eight black umbrellas suspended by thin white strings, and interact with the dangling, thick wool fibers that add a tactile element to the project.



'Medusa' floats heads by Alban Guého Architecte at festival des architecture vives, France, 2014⁵⁸

⁵⁷ Pallasmaa, J. "The Eyes of the Skin. Architecture and the Senses." (1996).

⁵⁸ Images source: <https://www.designboom.com/art/alban-gueho-festival-des-architecture-vives-medusa-06-21-2014/>

Touch can read texture, weight, density and temperature

Various structures have an effect on our vision but when we touch them we can feel their elements of construction. Our skin has the ability to read the density, the texture, the temperature and the weight of materials which may not look different visually. By touching them we find out more about them than by just looking at them. We can experience the floor under our feet, feeling its smoothness or roughness. We trace the texture of it with our soles, with our knees when we kneel, with our whole body when we lie down. In fact, we begin to have an immediate experience of a specific space from the instant we touch the handle of the door to go into it, although we are not conscious of it at that moment. By touching the handle of the door we shake hands with the building and start a conversation with it. The smoothness of its touch, its size or the shine of the material can create a connection between us and the building.⁵⁹

Hazelwood School was designed specifically for children who are “dual sensory impaired”. Architect Alan Dunlop developed a meandering plan that allows children to follow a linear route through the building, avoiding maze-like conditions. Furthermore, the interior walls are clad with multiple textured materials, which pupils can follow with their hands to make sense of their whereabouts within the school. This means that they can make their way from classroom to classroom with minimal help, increasing the children’s confidence despite the challenges they face.



Hazelwood School, Glasgow, Scotland
by Alan Dunlop Architect Limited⁶⁰

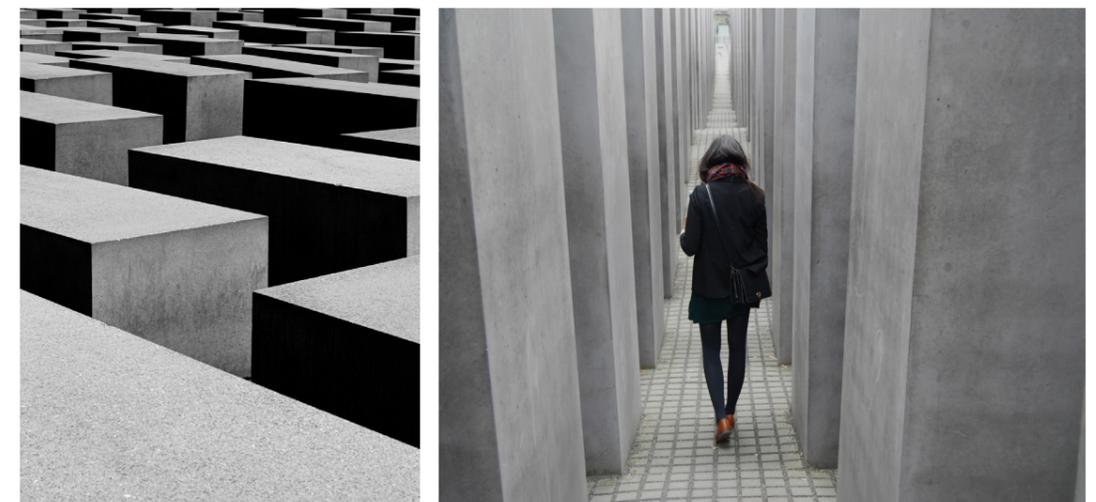
⁵⁹ Pallasmaa, J. “The Eyes of the Skin. Architecture and the Senses.” (1996).
⁶⁰ Images source: <https://www.arch2o.com/hazelwood-school-alan-dunlop-architect-limited/>

Touch connects us with history and tradition

In fact, tactility connects us with history and tradition. By touching a pebble lying on the sand which has been polished through time by the water of the sea, does not only have a pleasing effect to the touch but the contact between our hand and its surface also reveals the process and the time needed for its formation. Its shape and texture reveals time. Therefore, touching materials that are genuine and true does not only create an atmospheric mood in the architectural space but it also reveals the past offering a unique experience.

An architectural example of this is the holocaust memorial in Berlin designed by Peter Eisenman. It consists of 2,711 concrete blocks of charcoal colour, representing the six million Jewish people who lost their lives during the Second World War. The cold and confusing atmosphere of the space, makes the visitors want to explore the place more. Walking between the blocks, feeling the rough concrete under their feet, hiding or getting lost behind the stones, is a disorienting and unpleasant experience which gives them a very small idea of the feelings of the Jewish people and the tragic experience they went through during the Second World War.

By actually touching the cold stones, the emotions are more powerful, as one can feel on the skin the coldness and smoothness of the concrete and the sprayed foam which feel like tombstones in a graveyard. It is one of the most sensory and overwhelming experiences, evoking the memory and creating an appropriate mood or ambience. Therefore by touching material, our experience is more intense and it relates us to the past evoking feelings and emotions.⁶¹



The Holocaust memorial, Berlin, Germany
by Peter Eisenman, 2005⁶²

⁶¹ Pallasmaa, J. “The Eyes of the Skin. Architecture and the Senses.” (1996).
⁶² Images source: <https://issuu.com/anawino/docs/dps>

Haptic Technologies

Touch-based interactions with computing technologies have become commonplace in the last few years. Touchscreens embedded in consumer products have brought about a new paradigm of interaction centred around the pointing, swiping and pinching gestures of the fingers of the hand.

In architecture, researchers are investigating the potential of interactive surfaces for future architectonic elements, such as walls, floors and ceilings. Apart from the traditional focus on the visual and spatial design considerations of such elements, tactile interaction with interactive surfaces is of growing interest. The sensual and experiential aspect of tactile interaction with surfaces takes on a new context when surfaces are designed with interactive, programmed behaviours.

Interactive Architecture

Architecture has traditionally dealt with the design and construction of static structures in the built environment. The notion of interactive architecture introduces temporal and dynamic concerns through embedding kinetic and interactive behaviours into materials and surfaces. Researchers are exploring how to include the body and the sense of touch in the design of novel interactive surfaces⁶³.

In HCI and engineering, haptic interaction has been concerned with the problem of how to simulate the realworld forces that provide us with information on our actions in the world⁶⁴. Simulated forcefeedback on operations that occur in virtual space need to provide a sense of the simulated material and mechanical properties of the virtual objects encountered. For example, the Phantom Haptic Device tracks the motion of the user's finger tip and can actively exert an external force on the finger, creating compelling illusions of interaction with solid physical objects⁶⁵.

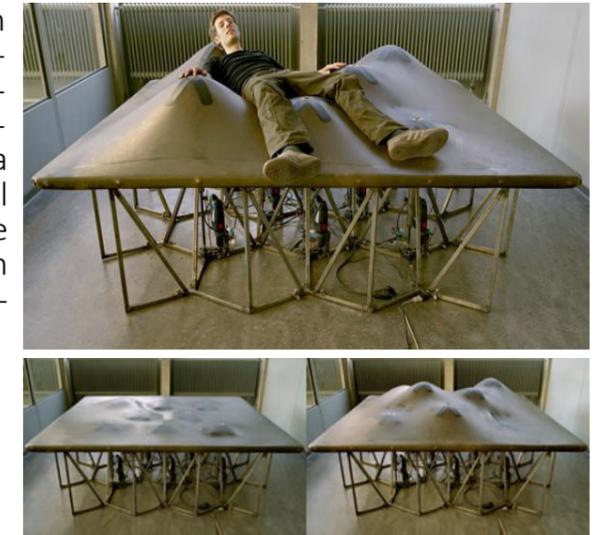
In architectural design however, the main focus does not lie on simulating a physical phenomenon but rather on experimenting with different haptic stimuli, their perceptual and aesthetic effects, to create a haptic atmosphere. The following examples of architectural interactive surfaces provide an outlook on how this interaction with architecture could look, or rather feel like.

63 Pallasmaa, J. "The Eyes of the Skin. Architecture and the Senses." (2005).

64 Kern, T. A. "Engineering Haptic Devices." (2009).

65 Salisbury, T. H. Massie and J. K. "The Phantom Haptic Interface: A Device for Probing Virtual Objects." (1994).

'Dynamic Terrain' by Janis Pönisch is an interactive floorlike structure. The horizontal surface is responding in real-time to user preferences and can be controlled via a graphical interface. This digital manipulation of the physical space gives users the possibility to design the geometrical shape of their surroundings in a direct way.



'Dynamic Terrain' by Janis Pönisch ⁶⁶

The project 'Slow Furl' positions itself outside the tradition of static representations of architecture⁶⁷. The dimension of time in relation to action was a key concept in the design of this interactive wall. A membrane, loosely attached on a wooden, kinetic framework, is forming the wrinkled surface. In the membrane, sensors are embedded, detecting the touching user. While the user can touch or sit between the folds, the wall also detects and interacts with itself. Therefore a continuous cycle of slow pulse and movement is created, involving the user in its tangible and delicate interaction process.



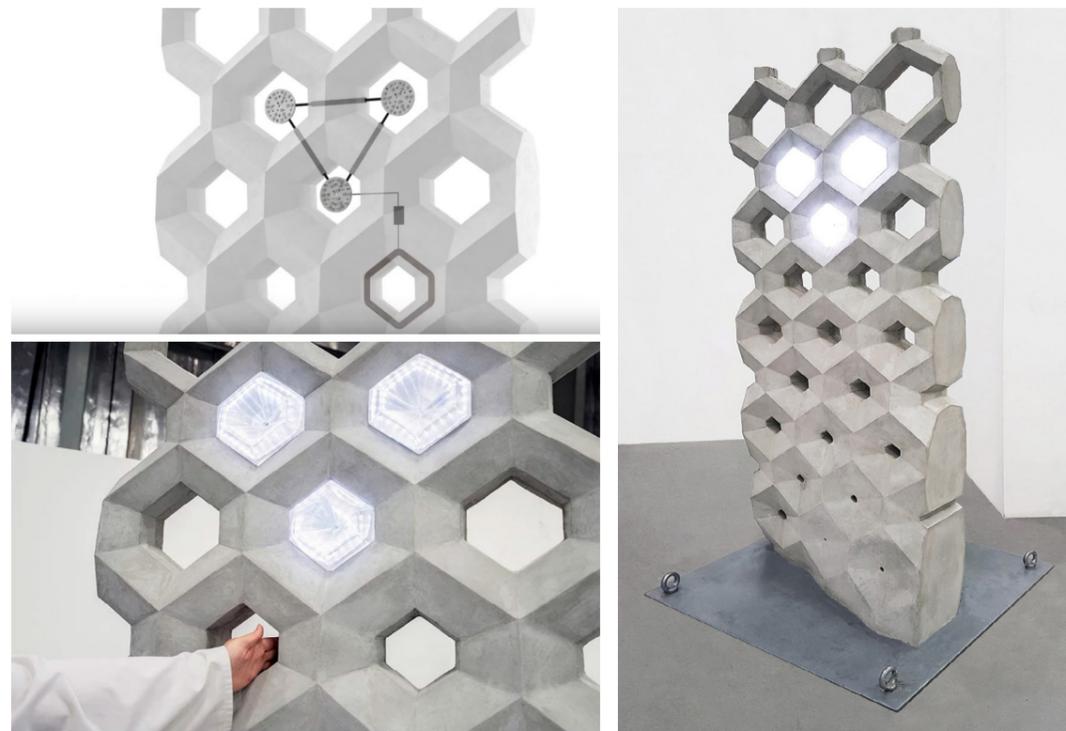
Slow Furl, research project by CITA, 2008⁶⁸

66 Image source: <https://pruned.blogspot.com/2008/07/cross-bedding-bedforms-and.html>

67 Thomsen, M. Ramsgard. "Textile Logics in a Moving Architecture. (Transitive Materials Workshop)." (2009).

68 Images source: <https://bipmistry.wordpress.com/2008/07/05/slow-furl-for-light-house/>

Another example is the world's first 'smart concrete wall' which combines digital design with digital fabrication to reinstate materiality in architectural design thinking. The project involves the production of large-scale 3D-printed formwork, enabling an adaptive surface through embedded capacitive sensors in the concrete structure. The wall's sensorial aspect is activated by a hand's touch on its outer surface. This triggers an embedded sensor that was made possible through the combination of different 3D printed elements within the structure. Hexagonal light fixtures fill the adaptive hexagonal grid, the form of which was derived from ancient arabic tiling logics.



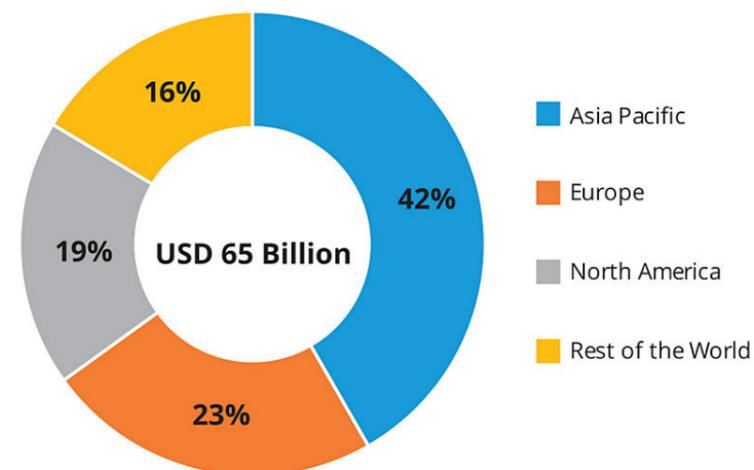
'Smart Concrete Wall' by NOWlab, 2018

The Decorative Coating Market

The global decorative coatings market was USD 65 billion in 2018 and is projected to reach USD 82 billion by 2023, at a CAGR of 5%, between 2018 and 2023. Decorative coatings are applied to the interior and exterior surfaces of residential, commercial, institutional and industrial buildings. These coatings are used at room temperature. On the basis of their usage for aesthetic and protective purposes, decorative coatings can be categorized into surface preparatory products such as putty and primer; and paints used for aesthetic and protective purposes, namely, top coat and base coat. The top coat and base coat impart aesthetic properties, as well as weather resistance, washability, anti-fungal and anti-dampening properties to the surface.

Increasing Construction Activities Boost Market in Asia Pacific (APAC)

Growing construction activities are leading to the increasing demand for decorative coatings in APAC. In addition, the eco-friendliness of decorative coatings and rising per capita consumption are acting as major drivers for the market in the region. This scenario is providing many opportunities for the industry players that are willing to invest in the APAC decorative coatings market. APAC is taking insights and ideas from the developed regions such as Europe and North America to keep abreast with the changing regulations related to health and safety. R&D trends and strategies that are prevalent in Europe and North America with respect to the decorative coatings market can also be witnessed in APAC. For example, green coatings (low VOC) are expected to be one of the leading technology trends in the region.



Note: Rest of the World includes South America, the Middle East and Africa.

APAC accounted for the largest share of 42.0%, in terms of value, of the overall decorative coatings market in 2018. Factors such as huge and increasing addressable population base and rapidly growing construction activities are driving the APAC decorative coatings market. The APAC decorative coatings market is fragmented and competitive, with a large number of small players, especially in China. Compared to the mature markets, the market in APAC is projected to register a higher CAGR of 6.6% between 2018 and 2023.

Waterborne Coatings Segment to Dominate the Market

The shift from solventborne to waterborne coatings has been a trend mostly witnessed in the decorative coatings market. The increasing demand for green products has created the need for supplies of green raw materials for coatings, most notably, waterborne resins. For instance, advancements in waterborne alkyd technologies have enabled the production of almost zero-VOC alkyd resins with the same performance as that of solventborne alkyds.

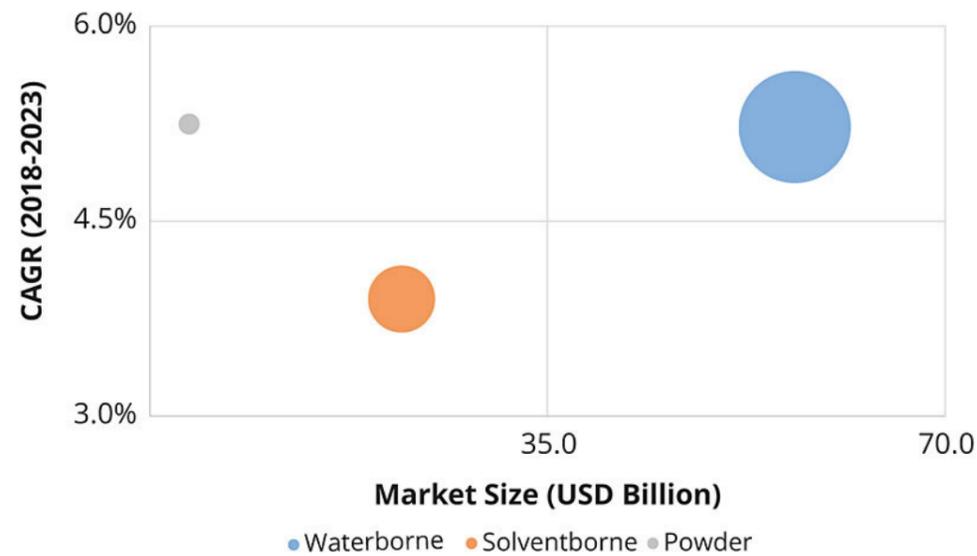
The majority of decorative coatings are waterborne, and include:

- Wall primers and sealants;
- Interior flat and semi-gloss wall paints;
- Interior and exterior trim finishes;
- Exterior house paints.

In addition to reducing VOC emissions, waterborne decorative coatings reduce the risk of fire hazards, are easier to clean up (creating less hazardous residues) and result in lower exposure to organic vapors. However, special equipment might be required for the application, as water in the formulation can cause corrosion on the equipment. For instance, waterborne paints can corrode plain steel and aluminum. Humidity needs to be controlled to achieve the best film formation.

Higher Economic Growth and Growing Incomes Boost Demand

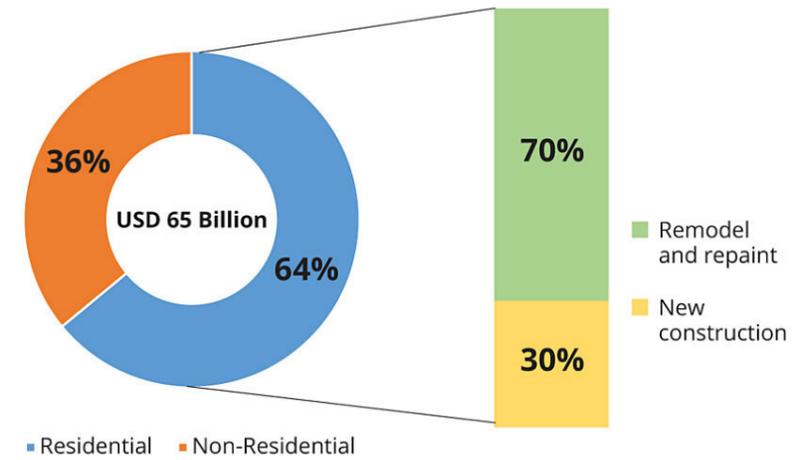
Decorative coatings are usually applied to surfaces of stationary structures such as buildings, bridges and roads, or parts of the stationary structures that include facades, pavements and pre-fabricated materials. These coatings can be used for protection as well as aesthetic purposes. The use of coating resins determines properties such as water, corrosion and scratch resistance, and gloss or matt finish, and the overall performance of the coating product.



Decorative coatings market size by technology, 2023.

Higher economic growth and increasing incomes over the last few years have resulted in the construction of many new houses and the remodeling of old ones. Decorative coatings for residential construction application include new paint and repainting. These coatings mainly include decorative and functional products such as paints, stains, lacquers, primers and cleaners. New paint and repainting have both interior and exterior applications.

Non-residential construction includes all commercial and industrial buildings, and public and private infrastructures. Recent innovations in building material composition and technology have enhanced the durability, wearability and resistance of decorative coatings from fading. Owing to the increasing number of commercial buildings and consumer awareness about environment-friendly coatings, the demand for decorative coatings is increasing globally.



Decorative coatings market size by application, 2018.

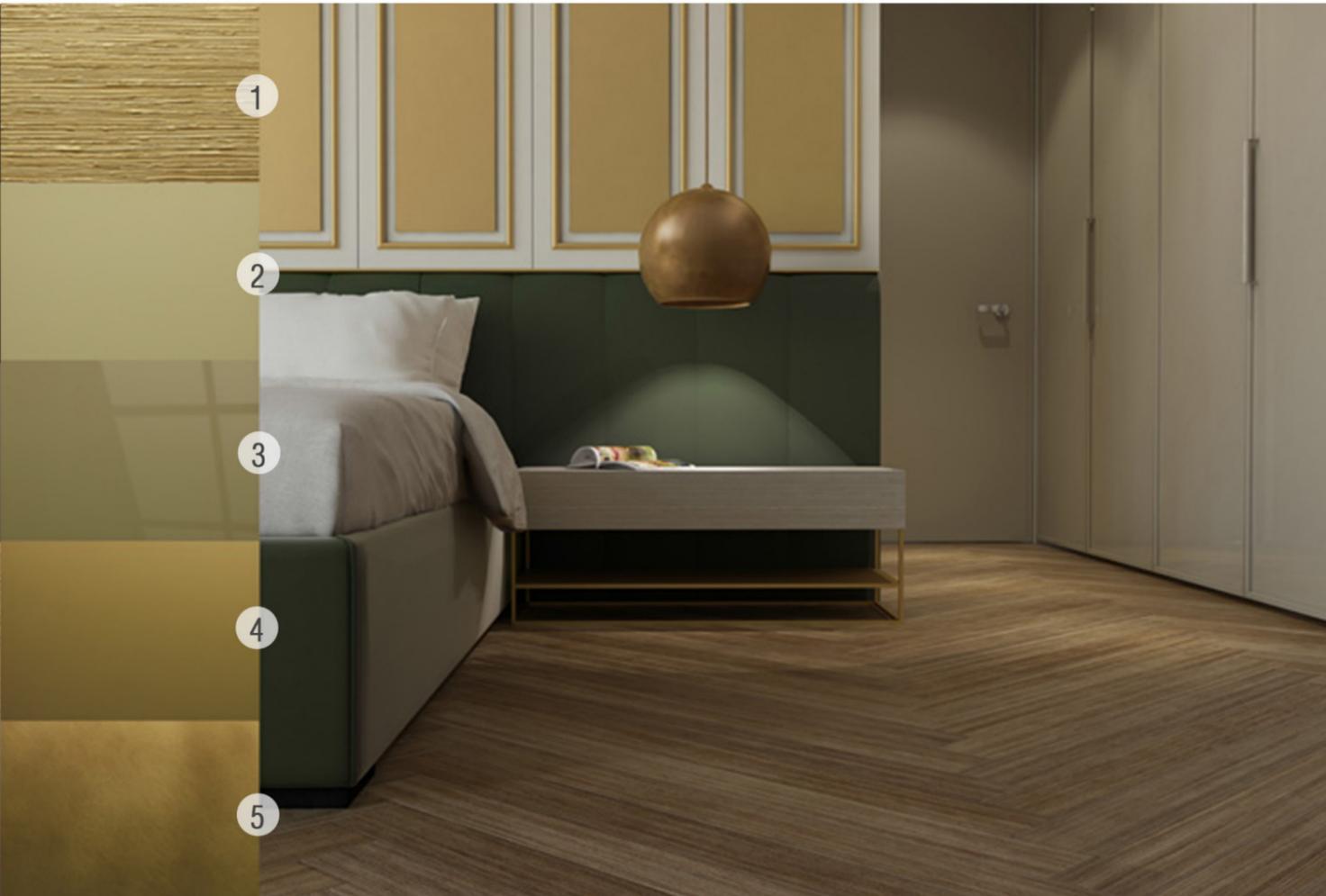
Environment-Friendly Coating Systems Gaining in Popularity

Environment-friendly characteristics have been one of the most important trends witnessed in the coatings industry in the last 10 years, mainly influenced by stringent EU regulations related to factors such as the reduction of VOC emissions. This has shifted the demand from solventborne coatings to environment-friendly products such as waterborne and powder coatings.

New rules and regulations such as the Eco-product Certification Scheme (ECS) are managed and delivered by Green Council (GC) and set by the European Commission and Federal Government agencies. These regulations ensure a green and sustainable environment with minimum or zero harmful VOC emissions. In addition, the regulations on lead control in household and decorative paints were implemented in 2016, after the Quality Council of India (QCI), Pollution Control Board Authorities and the National Referral Centre for Lead Projects in India (NRCLPI) made a strong recommendation to Gazette of India (GOI) to fix lead content below 90 ppm for all decorative and household paints. These regulations encourage decorative coatings manufacturers to invest in bio-based raw materials. In addition, the government regulations regarding air pollution in the United States and Western Europe will continue to drive the adoption of new, low-polluting coating technologies.⁶⁹

⁶⁹ <https://www.marketsandmarkets.com/Market-Reports/architectural-coatings-market-186634159.html>

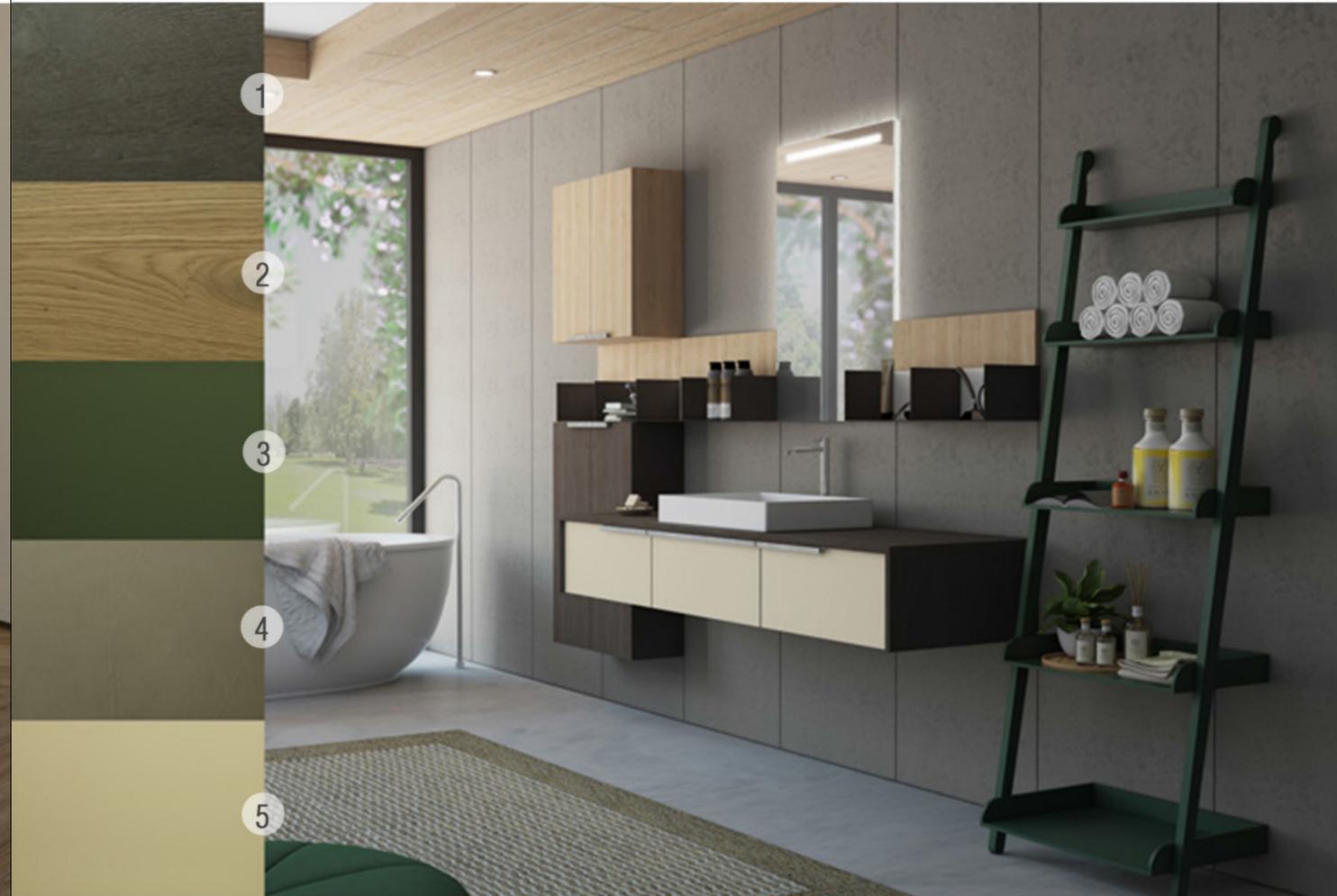
The style is dictated by a historical building, an intimate and supremely elegant atmosphere that evokes the charm of bygone days without relinquishing contemporary materials and surfaces. The existing oak floor is redefined with character by refined colors, gloss and matte lacquers, and sophisticated finishes.



Contemporary Mood

- 1- Light brown wood effect
- 2- Cream color lacquered
- 3- High gloss lacquered
- 4- bronze-like effect
- 5- Antiqued bronze effect

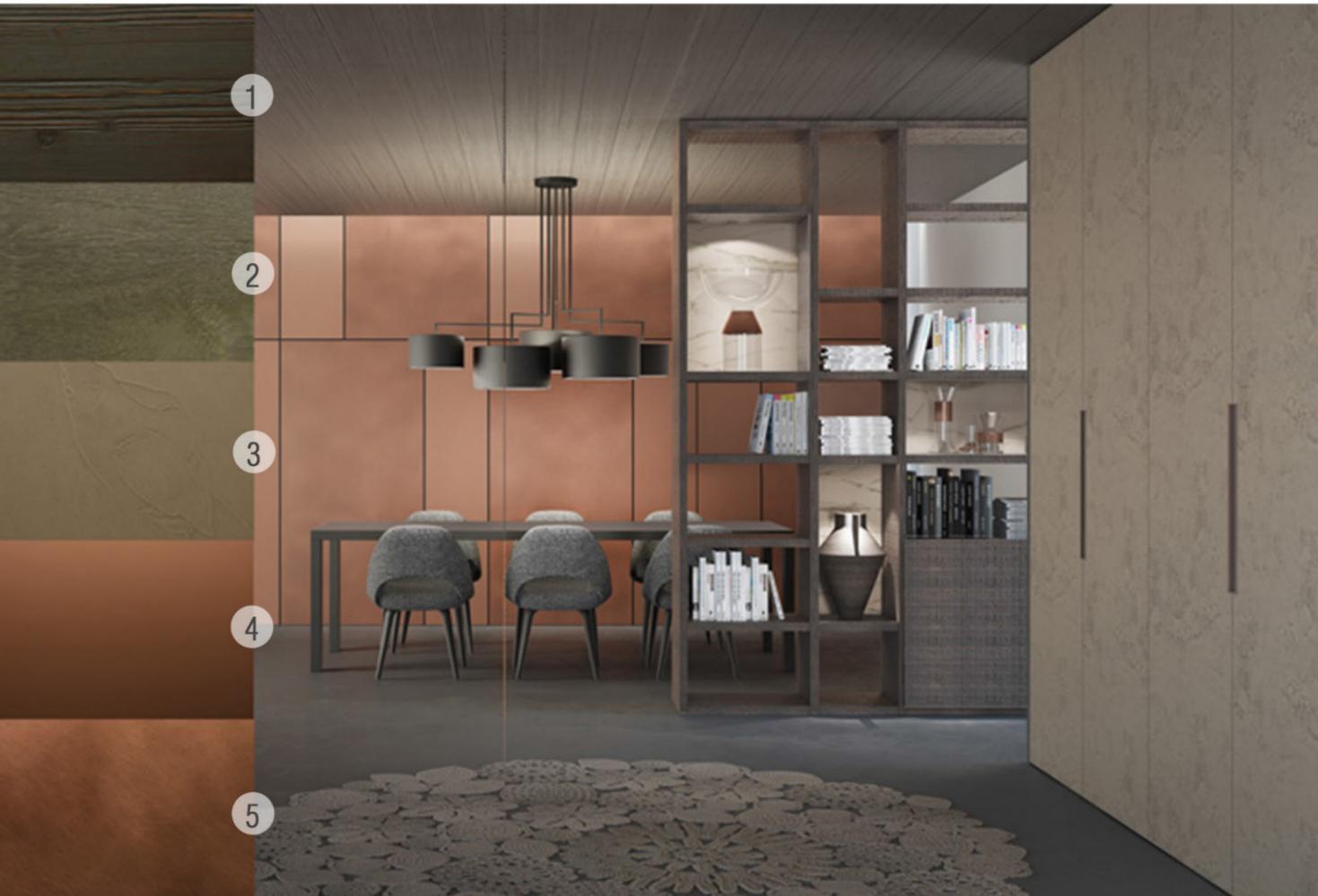
Nature as a source of inspiration that enhances the pleasure of home living with natural wood, mortar, white and green lacquered wood. Sober and linear forms, harmony as a reference value.



Natural Décor Mood

- 1- Dark wood effect
- 2- Light brown wood effect
- 3- Lacquered green
- 4- Aged Malta cement effect
- 5- Sand-like effect

The interior is warm and elegant: light bathes the objects making them come alive and enhancing their appeal. Satin-finish copper, dark wood, mortar, and matching lacquers create a novel atmosphere in the home.



Modern Classic Mood

- 1- Dark brown wood effect
- 2- Light brown wood effect
- 3- Aged Malta cement effect
- 4- Copper-like effect
- 5- Antiqued-like effect

Industrial Loft proposes dark and metropolitan colors, revisited vintage objects used in an unprecedented way, a clearly defined, attentive industrial recovery project featuring a succession of spaces awaiting to be transformed. The area of style emerges with brick walls and a cement floor, textured woods, oxides, and metallic effects.

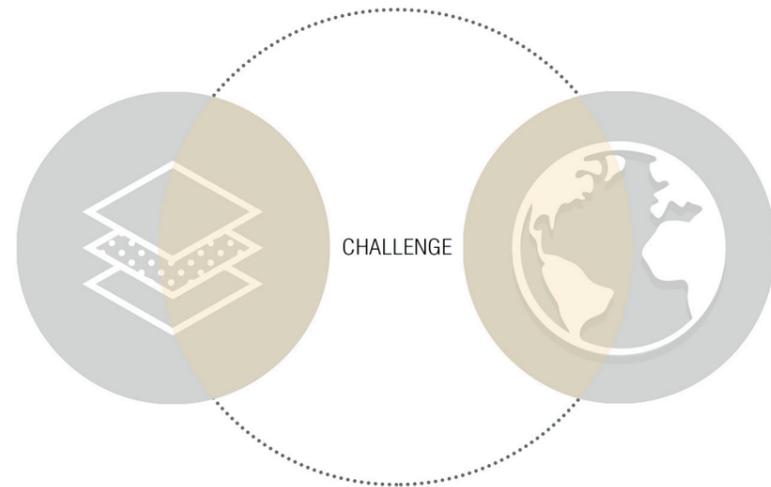


Industrial Loft Mood

- 1- Dark wood effect
- 2- Antiqued bronze effect
- 3- Chamois effect
- 4- Light wood effect
- 5- bronze-like effect

WHAT

Corporate DNA
Current Production Process



The challenge is how to connect Egyptian culture with an interior surface, in which an innovative coating surface will be the result of this connection. Sense of touch is the key for achieving the new experience that users would perceive through the interior surface.

WHAT

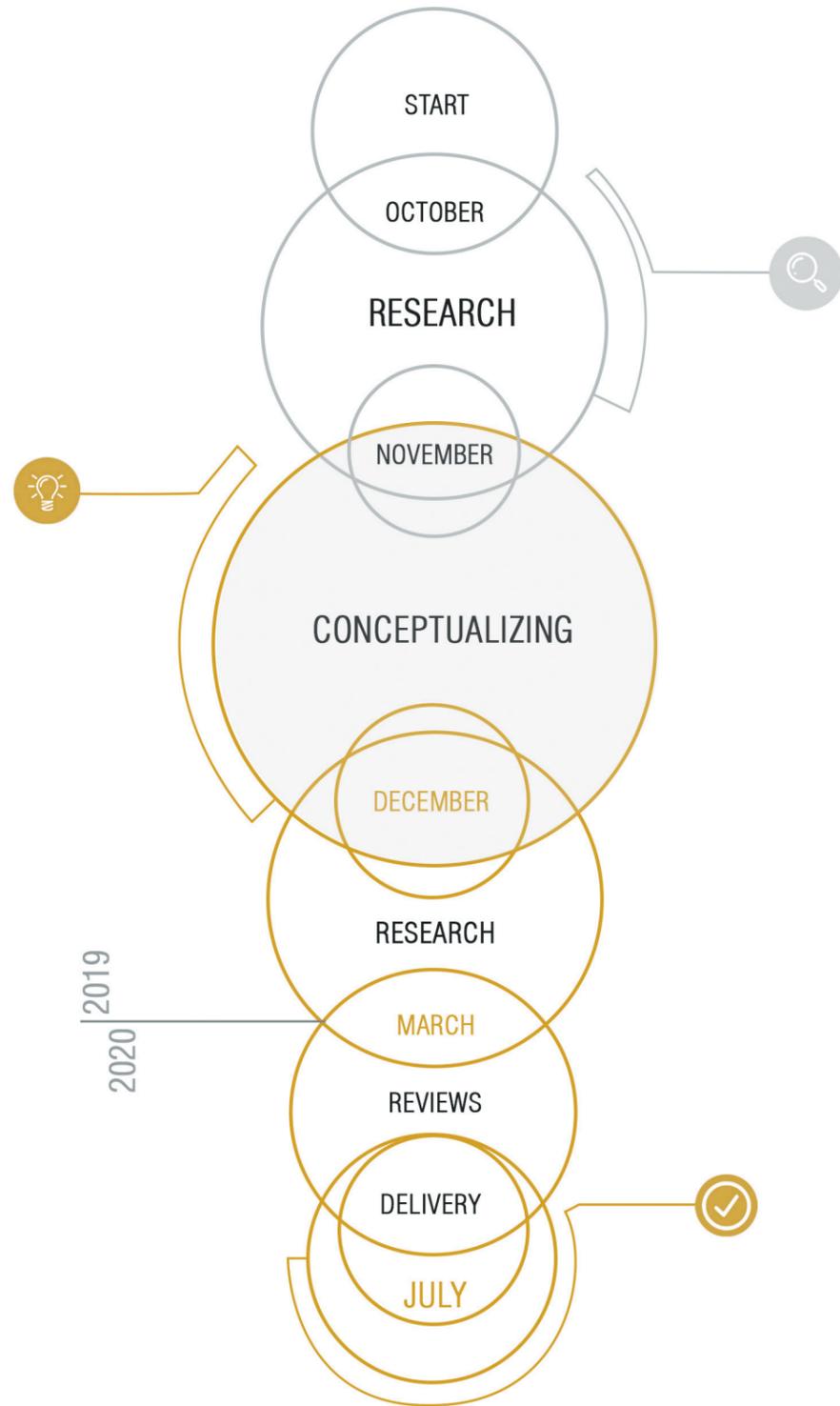
Corporate DNA
Proposed Process



The proposed surface follows Cleaf product implementations which consist of five main functions as shown in the diagram below, which are applied on different types of interior spaces such as residential, retail, hospitality and etc.

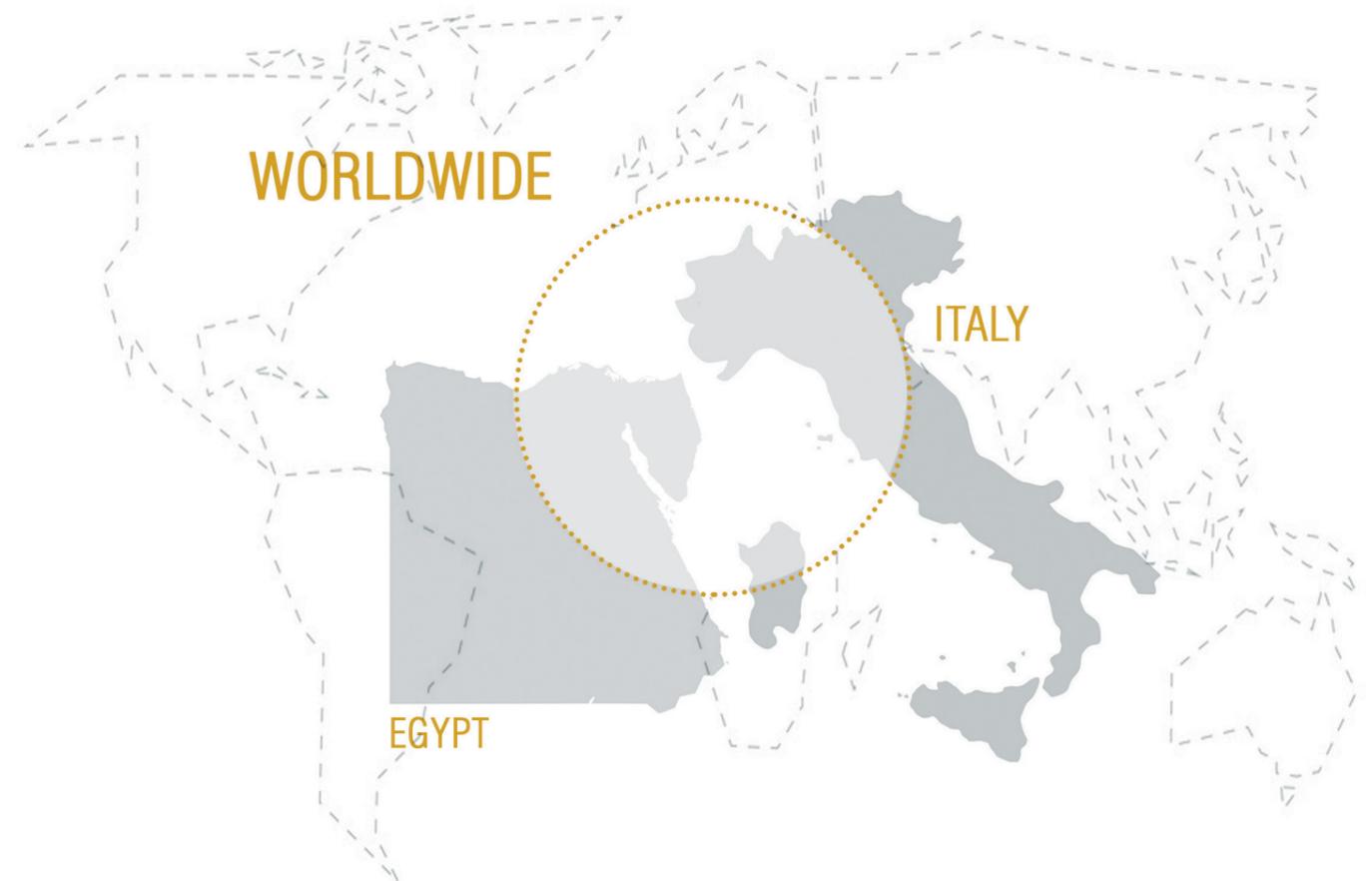
WHEN

Corporate DNA
Project Timescales



WHERE

Corporate DNA
Localization



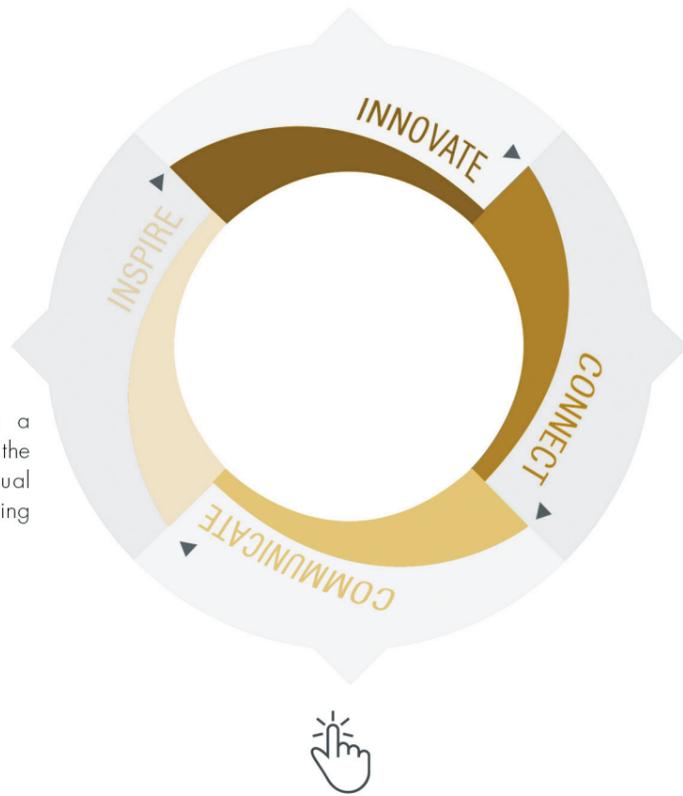
The starting point is Egypt as a source of inspiration for the innovative surface, meanwhile Italy is the host for it that will make it spread worldwide through Cleaf company.

WHY

Corporate DNA
Main Goal

The main goal is innovation, in which the surface is considered as an original addition for Cleaf collection in specific and interior surfaces market in general


The proposed surface is a source of inspiration for the users who will have a sensual experience by communicating with the surface

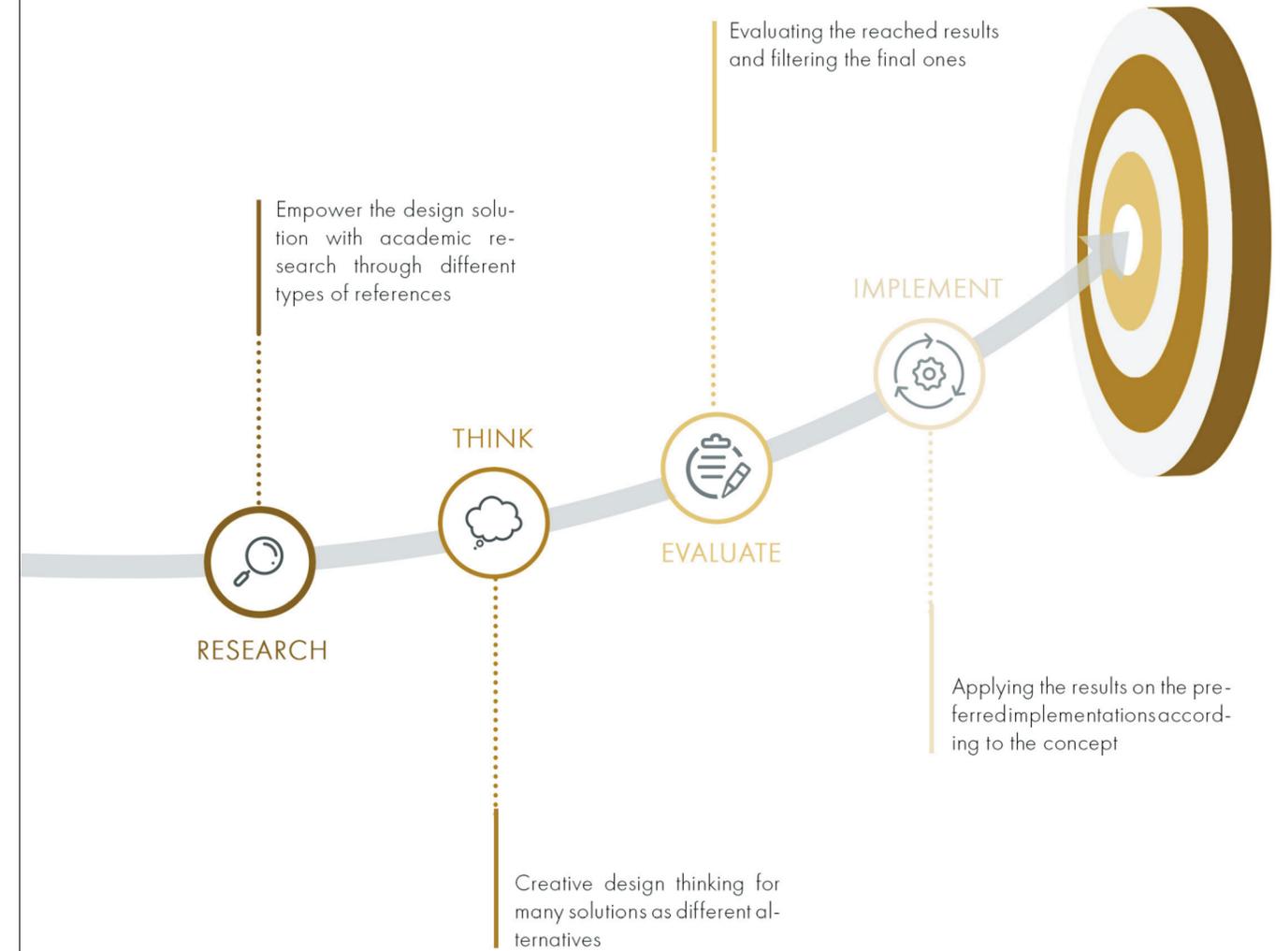


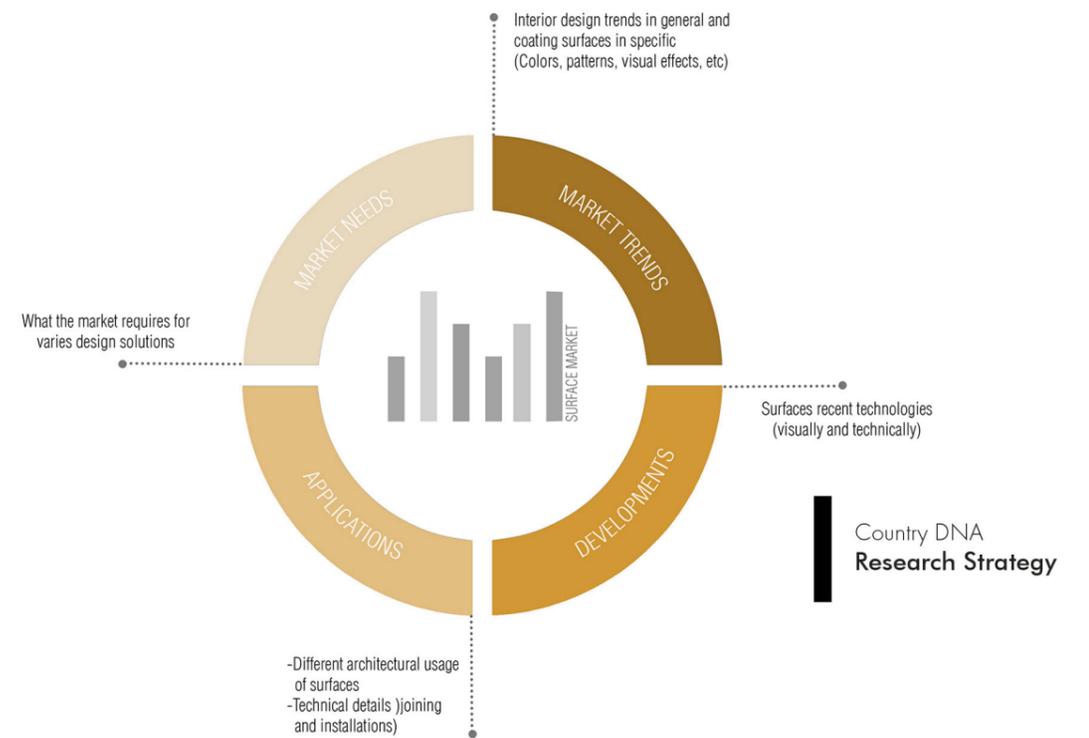
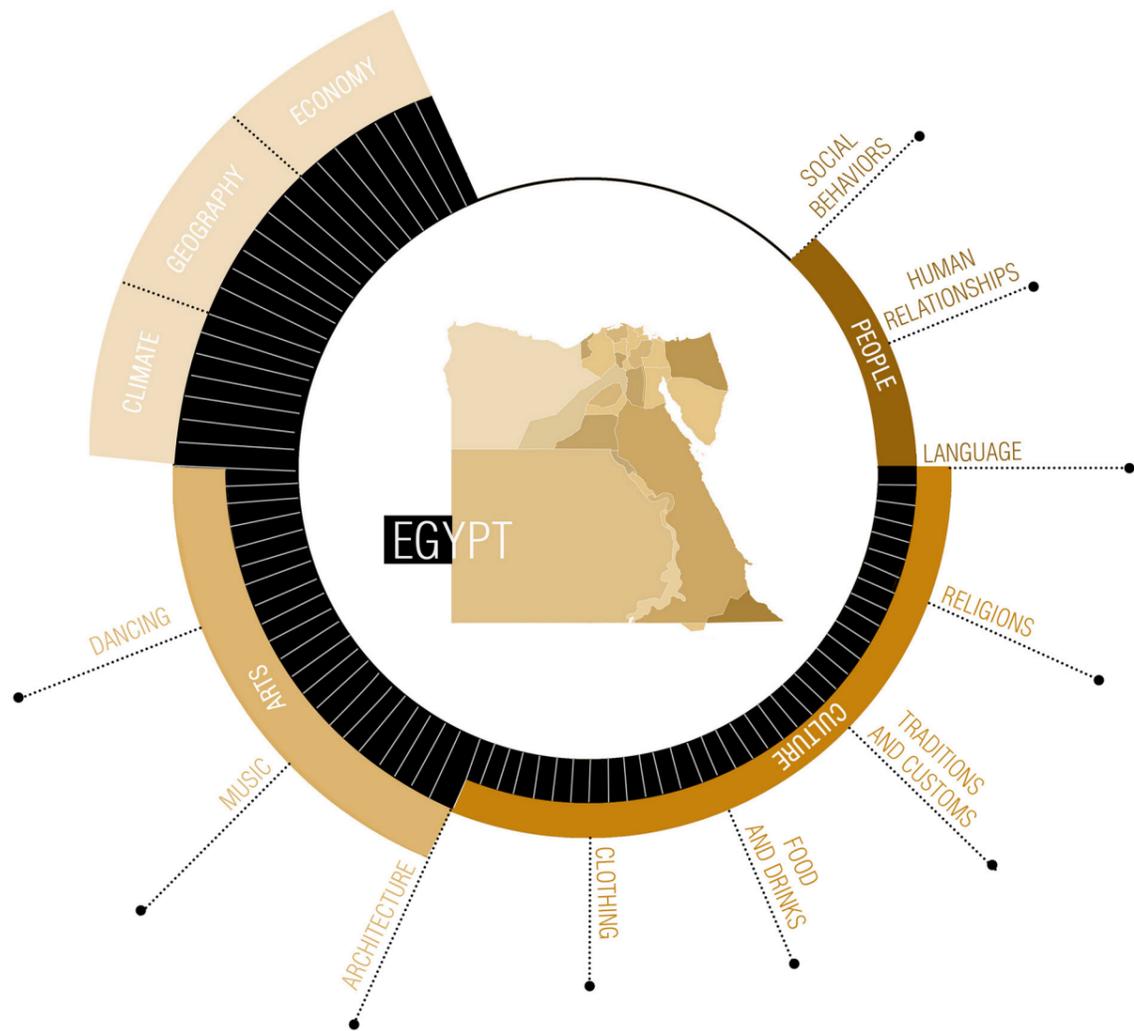

Culture connection is the theme of the design thinking that the surface reflects Egypt culture for users from diverse cultures and backgrounds

Communication between the user and the surface is considered as the main focus in which touching sense is the key for achieving it

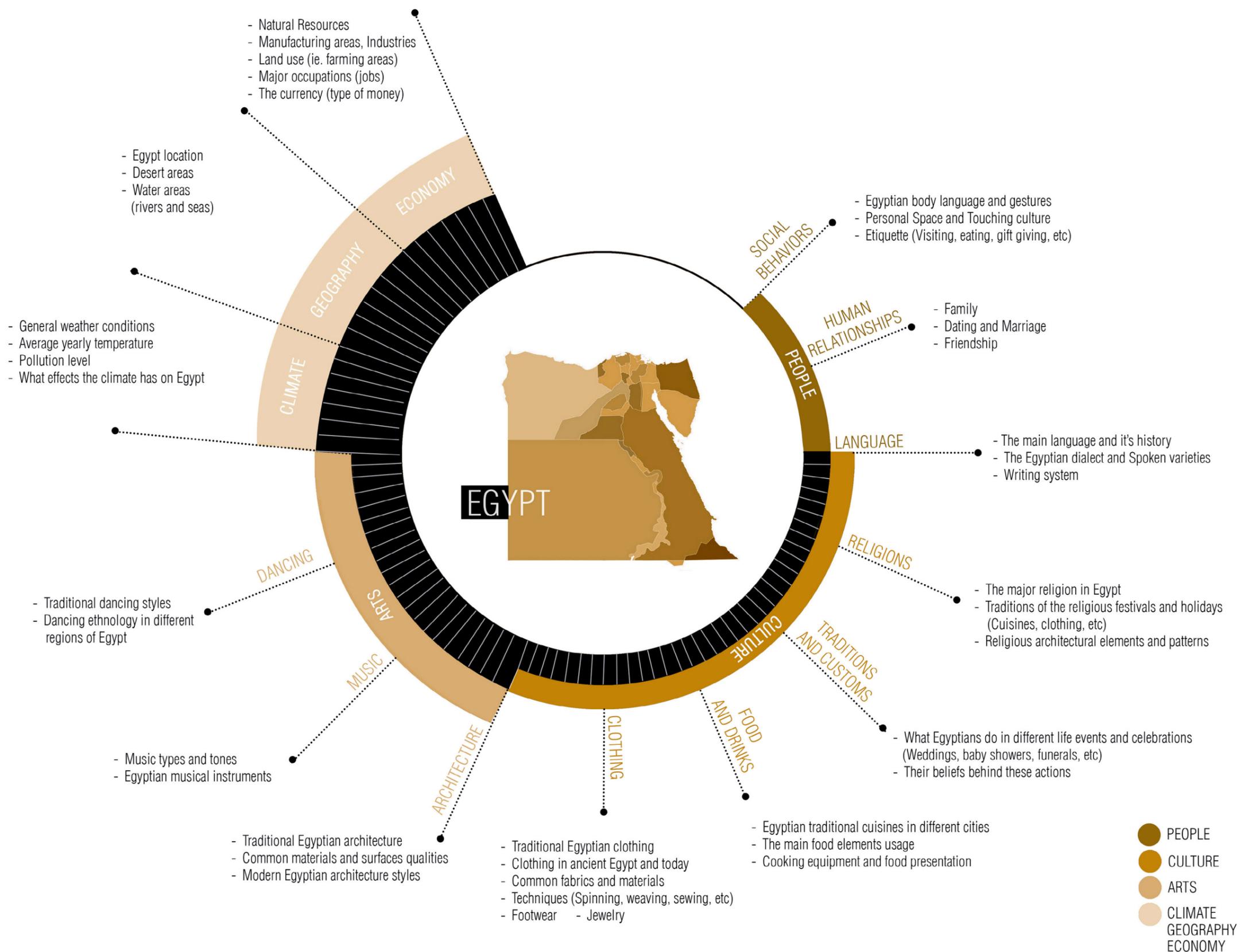
HOW

Corporate DNA
Solutions Implementation





The core of the research strategy is the connection between 3 domains which had been studied in parallel: the country which is Egypt, Cleaf company and coating surface market.



GESTURES



HUMOUR



TELLING STORIES



WAIT



SMALL AMOUNT

EXPRESSIVE



Egyptians often use humour in their conversations and find it encouraging when their jokes are appreciated. When meeting an Egyptian for the first time, it is common for them to say a joke or two. They are quite expressive and passionate when they converse. They have a tendency to be evocative and verbose by telling stories and using wordplay and jokes. They are generally open and emotive, displaying happiness and gratitude freely.

FAMILY



FRIDAY GATHERING



DATING

Good friends of the same gender may hold hands or kiss when greeting in public. On the other hand, there is little to no public display of affection between opposite genders during conversation or when in public places, with the exception of married couples who walk arm in arm.

Families tend to be close to one another, both emotionally and physically. It is the norm for Egyptians to live with their extended family and often one will find three generations living together. Moreover, grown-up unmarried children tend to stay with their parents until they marry. Dating is not a widespread practice, although the attitudes among some Egyptians, particularly in urban areas, are becoming more Westernised. The idea of 'purity' (virginity), especially for women, is an important value in marriage arrangements.

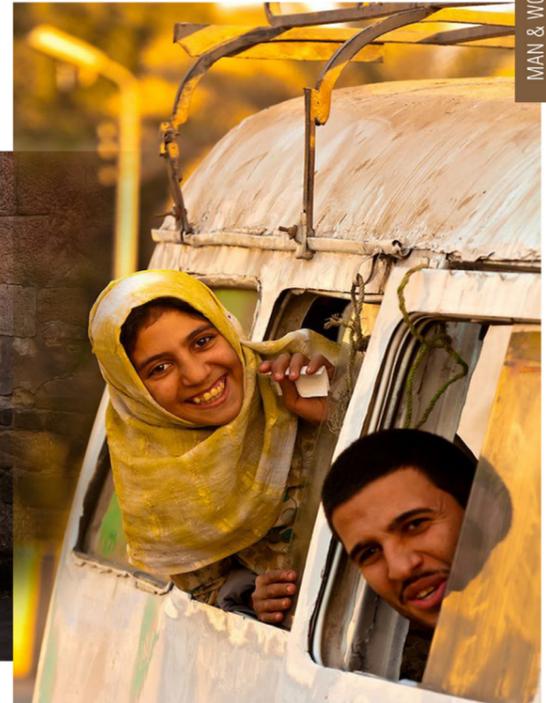


SHAKING HANDS

GREETING

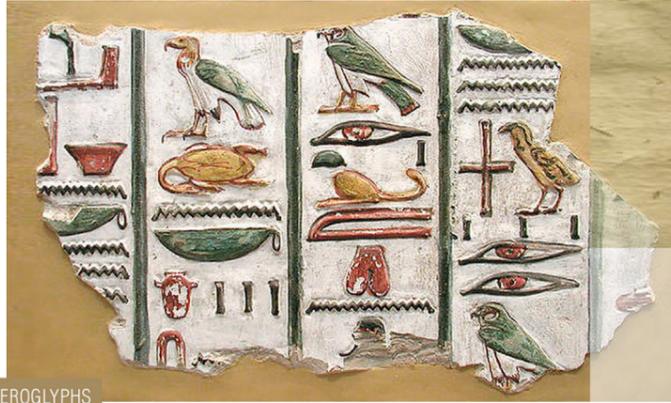


SAME GENDER



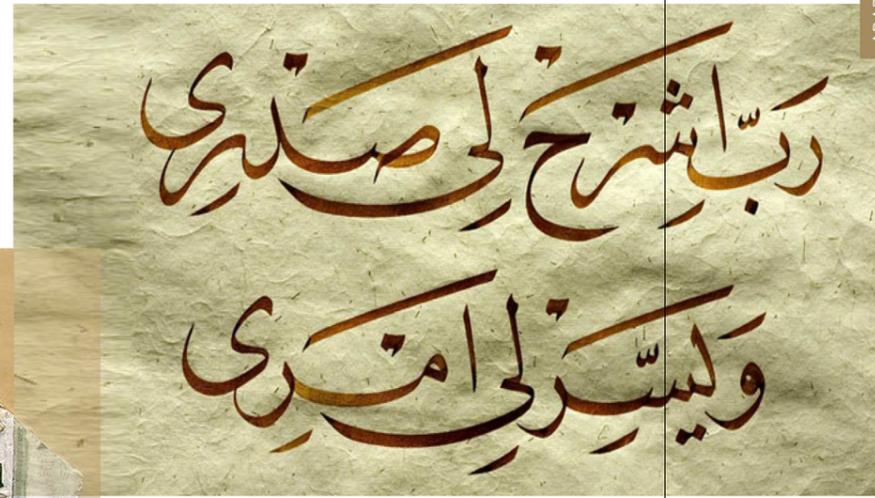
MAN & WOMAN

ANCIENT EGYPT

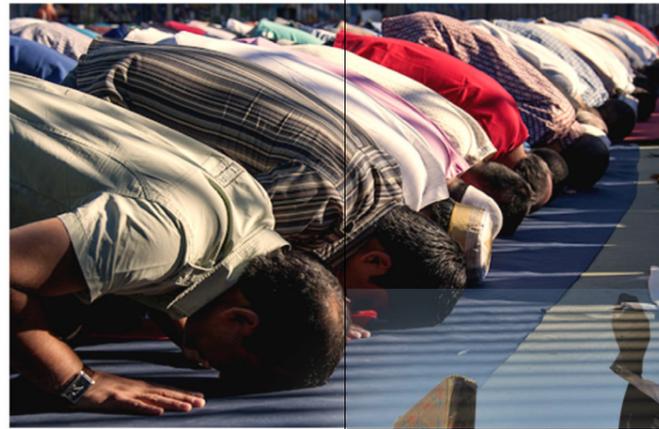


HIEROGLYPHS

Standard Arabic is the official language and the most widely written; additionally, it is the liturgical language of Islam, the majority religion and state religion of Egypt.



ARABIC



ISLAM



CHRISTIANITY

MINORITY



Coptic Christians believe that touching saints' images blesses their lives.

WEDDING



CHRISTIAN



ZAGHAREET



ISLAMIC

SHARBAT DRINK



HENNA PARTY

CELEBRATIONS



STREET WEDDING

The wedding is usually held in a local hotel or sometimes in the street especially in the rural area in Egypt. Like in other parts of North Africa and Middle East, it is common for women to express their joy by “zaghareet”), in which woman creates a special sound by moving her tongue from side to side. A traditional sweet drink called “sharbat” is drank; it is prepared from various fruits and herbs.

BABY SHOWER



COPPER PESTLE



MOGHAT DRINK



The Copts, Egypt's Christians, and Egyptian Muslims, have a tradition of mourning intensely for 40 days after the death of a loved one. The belief that mummification took 40 days is the origin of the modern tradition of the 40-day mourning period.

MOURNING



STRET SHADER



FUNERAL

AZZA FAHMY



GOLD



SILVER



Azza Fahmy Jewellery trademark combines cultural inscriptions and intricate craftsmanship, uniquely handcrafted Jewellery inspired by 7000 years of history & modern cultural references to the world. Passionately engaged in story telling with timeless jewellery to the Modern eclectic cultural curators. Azza's works have become part of the fashion palette, with unique designs, handmade to perfection using and preserving ancient techniques.

DANCING

TANOURA DANCE



BELLY DANCE



SAUDI DANCE

CUISINES

MOLOKHIYA



FUL MEDAMES



EISH BALADI



KAHK



BAQLAWA



TEA



DESSERTS

BASBOSA



Egyptian cuisine makes heavy use of legumes, vegetables and fruit from Egypt's rich Nile Valley and Delta. It shares similarities with the food of the Eastern Mediterranean region, such as rice-stuffed vegetables, grape leaves, shawerma, kebab and kofta. Tea is the national drink of Egypt and popular desserts in Egypt include baqlawa, basbousa, and kunafa. Common ingredients in desserts include dates, honey, and almonds.

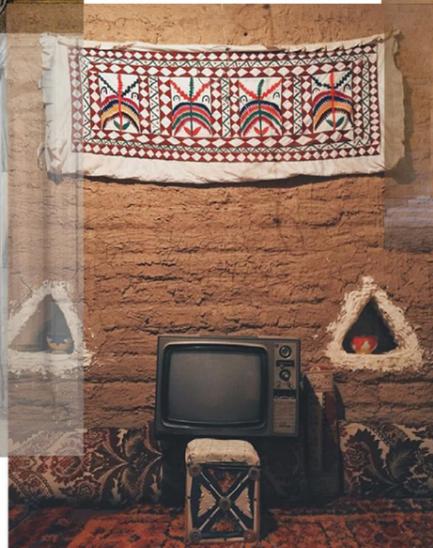
ARCHITECTURE



PHARAONIC



ISLAMIC

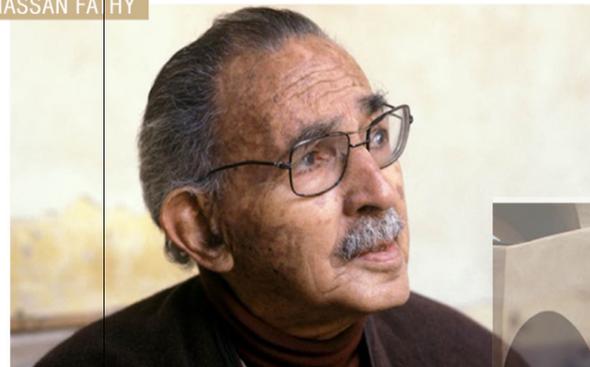


NUBIAN



CONTEMPORARY

HASSAN FATHY



MUD BRICK

Hassan Fathy utilized ancient design methods and materials. He integrated a knowledge of the rural Egyptian economic situation with a wide knowledge of ancient architectural and town design techniques. He perceived that a connection could be made between the continuing viability of mud brick construction and the desperate need of Egypt's poor to be taught once again to build shelter for themselves.



WHITE DESERT



GREAT SAND SEA



The red land of Egypt features six deserts -- four major deserts, and two smaller deserts that boast colored sands. Egypt's deserts encompass regions on either side of the Nile, covering more than 90 percent of the country's land surface.



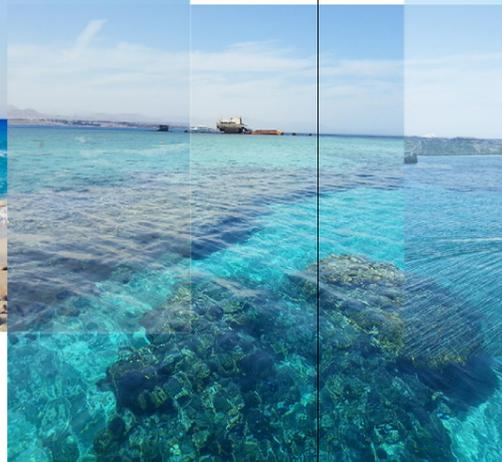
BLACK DESERT

DESERTS

WATER AREAS

The major rivers and waterways in Egypt are the Nile River, Lake Nasser, the Alexandria-Cairo Waterway, and the Suez Canal (a 193.5 km long man-made waterway which connects the Mediterranean Sea to the Red Sea)

MEDITERRANEAN SEA



RED SEA

NASSER LAKE



NILE RIVER



WHO

Corporate DNA
Mission and Vision

FACED PANELS

COLLABORATIONS

EDGES

CLEAR

SOLID COLORS

ABSTRACT

ESPRESSO

LAMINATES

METALLIC

STONE

WOOD ESSENCE

Past

Luciano Caspani, together with his brother Fausto and his father Agostino, in 1975 founded Cleaf, today a reference company for innovative surfaces and solutions for the furniture and interior design industries. Cleaf company passed by four main steps through its initial body till now as shown in the diagram below.

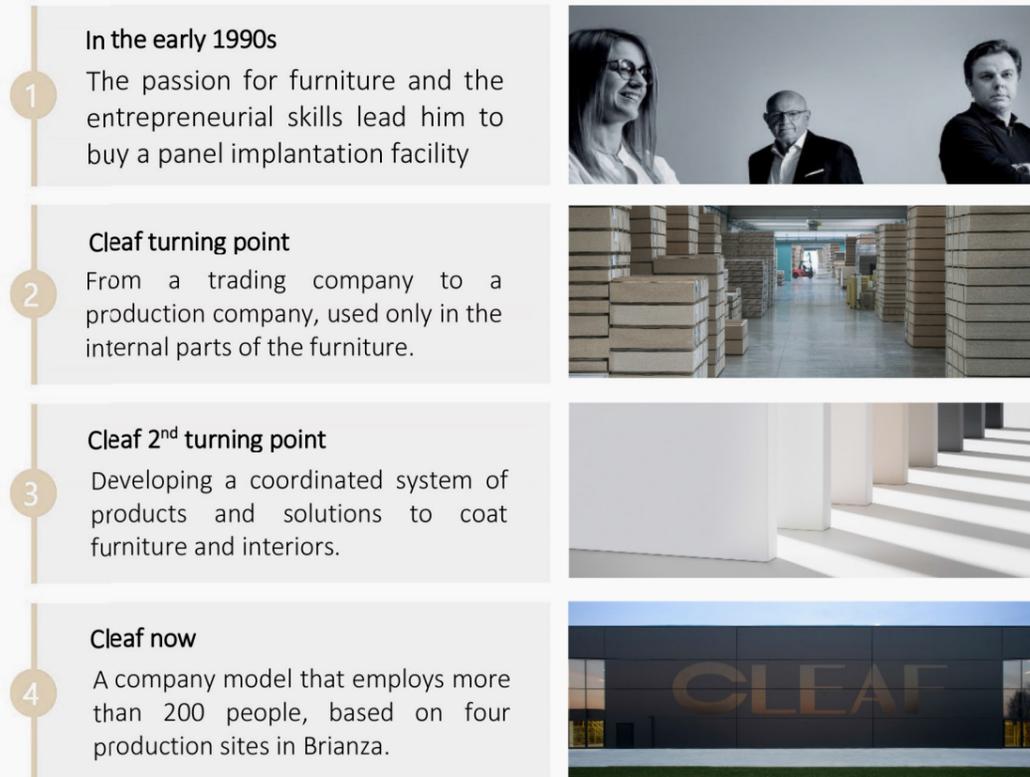


Diagram shows Cleaf Company since early 1990s until now (by the researcher)

Awards

- 2009**
Interzum Award for Shanghai and Surf
- 2011**
Interzum Award for Yosemite, Spigato and Nadir
- 2013**
Interzum Award for Fusion
- 2015**
Interzum Award for Quidyl
- 2019**
Interzum Award for Mosaico

Previous remarkable achievements

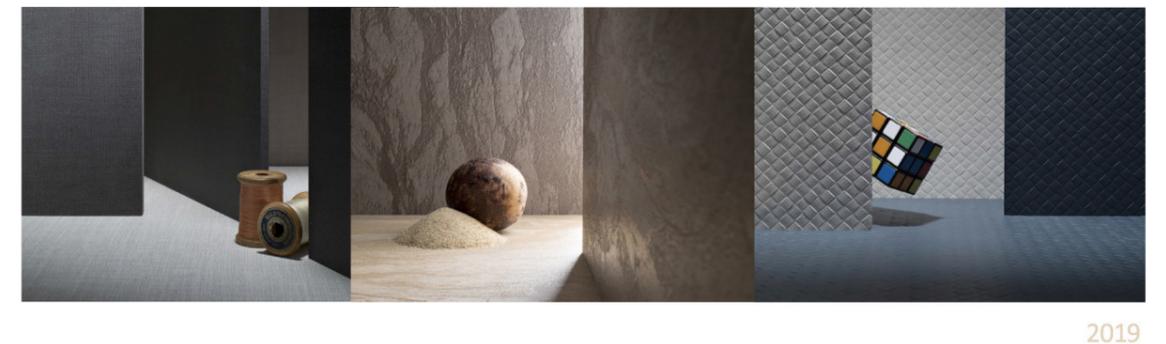
Architect@Work Participation



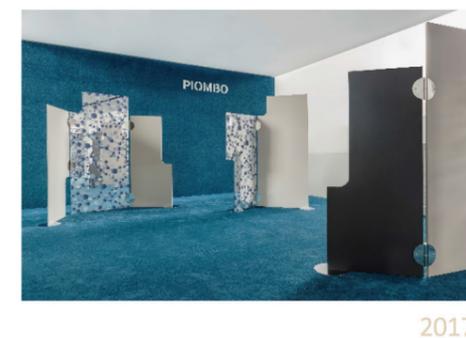
SICAM Participation



Salone Del Mobile Participation



Cleaf's Hyper Materials collection



Piombo is innovative acrylic resins applied through the Electron Beam Curing process, is an opaque, anti-fingerprint surface, soft to the touch and with a low light reflectivity, in which it is suitable for vertical and horizontal use. It is composed of original solutions, a synthesis of technique, materials, style and sustainability.

Present

Cleaf is specialized in the manufacturing of 5 main features which are the faced panels, laminates, edges, door kit and hyper materials. It offers variety of choices regarding textures, colors and touching-visual sensations. Cleaf collections are confirmed by many architects and companies to build inspirational spaces for living and working.



Faced panels

Faced panels are wood-based panels whose sides have been covered with decorative papers or polymeric foils. The avant-garde of the Cleaf's faced panels collection is given by the exceptional care in the combination of decorative and texture, as well as the depth of the latter



Laminates

Laminates are hot pressed impregnated papers. The company laminates collection is given by the various typology (HPL – CPL – Hyperflex), sizes and thicknesses available in the same textures and decoratives of the faced panels.



Edges

Cleaf has the perfect matching concept between the ABS edges and the faced panels collection to achieve high quality of finishing

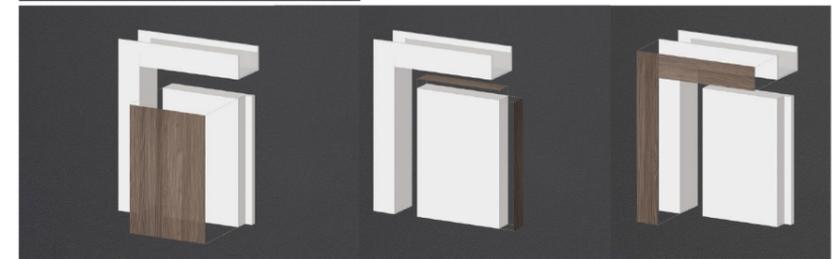


Door Kit

It is an integrated solution for the coating of doors in which the client can select the panel coating and the matching solution for edge and casing with the perfect compatibility between them. In addition to the possibility to create "tailor-made coatings".



Door Kit Components
01. Door Panel
02. Door Edge (straight edge)
03. Casing



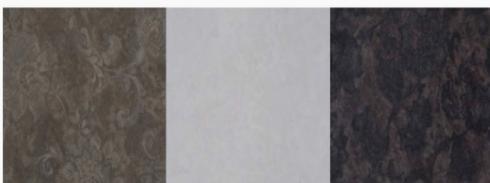
Hyper Materials

A surface is the result of an accurate and meticulous research. Original solutions, a synthesis of technique, materials, style and sustainability.



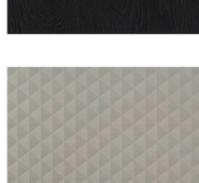
Decoration Paper types

The company has seven different appearances for its coating surfaces

Abstract		<p>It is represented in the minimal lines and shapes the surfaces have.</p>
Concrete/Stone		<p>It is inspired by the urban features such as stones textures and tactile characteristics</p>
Wood Essence		<p>It includes Pino, Maple, Cherry-Tree, Exotic, Ash, Larch, Walnut, Elm And Oak woods</p>
Floral		<p>It makes the surface particularly fascinating, both emotionally and aesthetically.</p>
Fabric/Leather		<p>The texture of this type is depending on the type of fabric or leather that is implemented</p>
Metallic		<p>It shows the metal effect appearance on both the solid and textures surfaces</p>
Solid Color		<p>It is a surface with one color that can be adopted to different types of surfaces</p>

Culture as a source of inspiration for Cleaf products

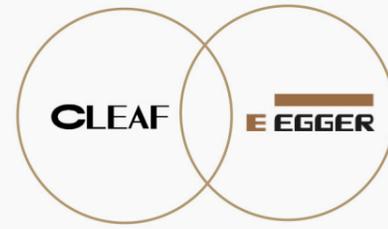
Many of the company's product are inspired by different cultures features, below are some selected examples of them.

	<p>Aldany- East Culture</p> <p>The Aldany texture reproduces a vertical and rhythmic movement that recall the East and the constant movement of water.</p>
	<p>Alpaca – South America</p> <p>The Alpaca texture reproduces the silky effect of the precious natural fiber once used for the clothing of the Inca emperors</p>
	<p>Bruciato – Japan</p> <p>Shou Sugi Ban is the ancient Japanese technique of burning wood to preserve it over time. Besides being a conservative and eco-sustainable practice it gives an aesthetically pleasing "burnt wood" effect. The Bruciato texture is the representation of this effect on an ash essence.</p>
	<p>Cheope – Egypt</p> <p>Cheope is a geometric texture inspired by the perfect lines of pyramids seen from a zenithal point of view. The shape is interpreted in its three-dimensionality, in order to create plays of light and shadow.</p>
	<p>Fronda– Italy</p> <p>Fronda reproduces the elm wood, a plant widespread in the Italian countryside until the middle of the 20th century. Its luxuriance is glorified by the Latin poet Virgilio in the Bucoliche. The grains are similar to those of oak but the color of the essence is brighter.</p>
	<p>Shamal—Middle East</p> <p>A texture inspired by the summer breeze of the Middle East, it's characterized by a pronounced depth</p>

Recent Collaborations



The Solid Colors collection developed in collaboration with Studio MILO consists of 90 colors in two families: Still and Sparkling. 90 decorative papers pigmented and impregnated with water-based thermosetting resins that can be combined with the 60 Cleaf textures.



CLEAF and EGGER have signed a sales agreement for the distribution of 27 CLEAF products - faced panels, laminates and ABS edges - in six countries: Germany, Austria, Switzerland, Poland, Czech Republic and Slovakia.

Cleaf clients' category



Rather than Italy, Cleaf has many other distributions in almost all the world countries in Europe, America, Asia, Africa and Oceania. In addition, the company offers a fast production service called Cleaf espresso in which a selection of products from the collection available in seven working days that can be ordered in bundles or single items.

Applications

Interior design panels (walls and floors)



Bruno As Petrol Station, Belgium, Studio 5802



Meeting Room Ukraine



A For Athens Hotel Athens, Greece

Door coatings



Glam Hotel, Milan, Italy, Aldo Cibic Workshop



St. George Hotel Athens, Greece

Furniture coatings



Cleaf GCUBE showroom, Lissone, Italy



City Hall Groesbeek Holland, Pieter Oosterhout



Coex, Proposte 2017 Calvi Brambilla Architetti

Future

Cleaf is an Italian company with an international reputation that offers a variety of products that suit distinctive client types. The research on Cleaf vision and goals has been developed through Politecnico di Milano activities including the visit to the company and their visit to the university, in addition to attend one of the company's events for launching it's new collection.

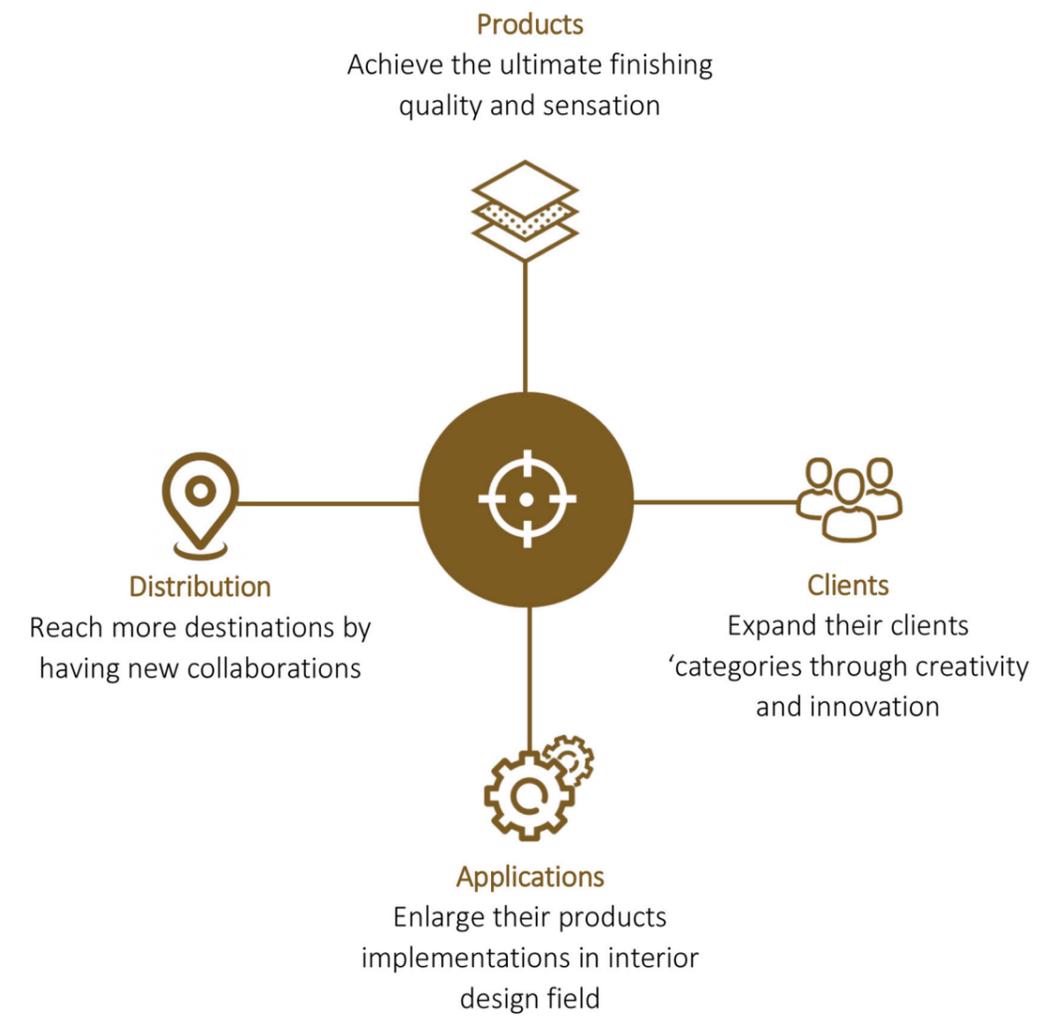


Vision

Cleaf vision is to create innovative inspiring interior panels with high quality products that suit distinctive design solutions with various applications.

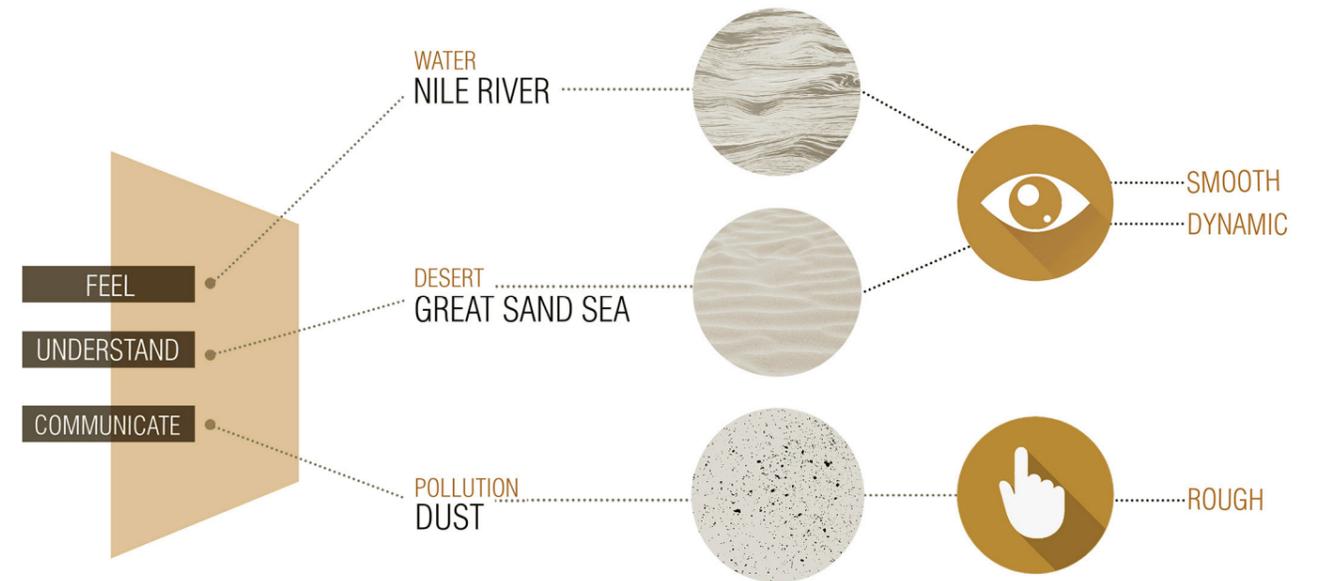
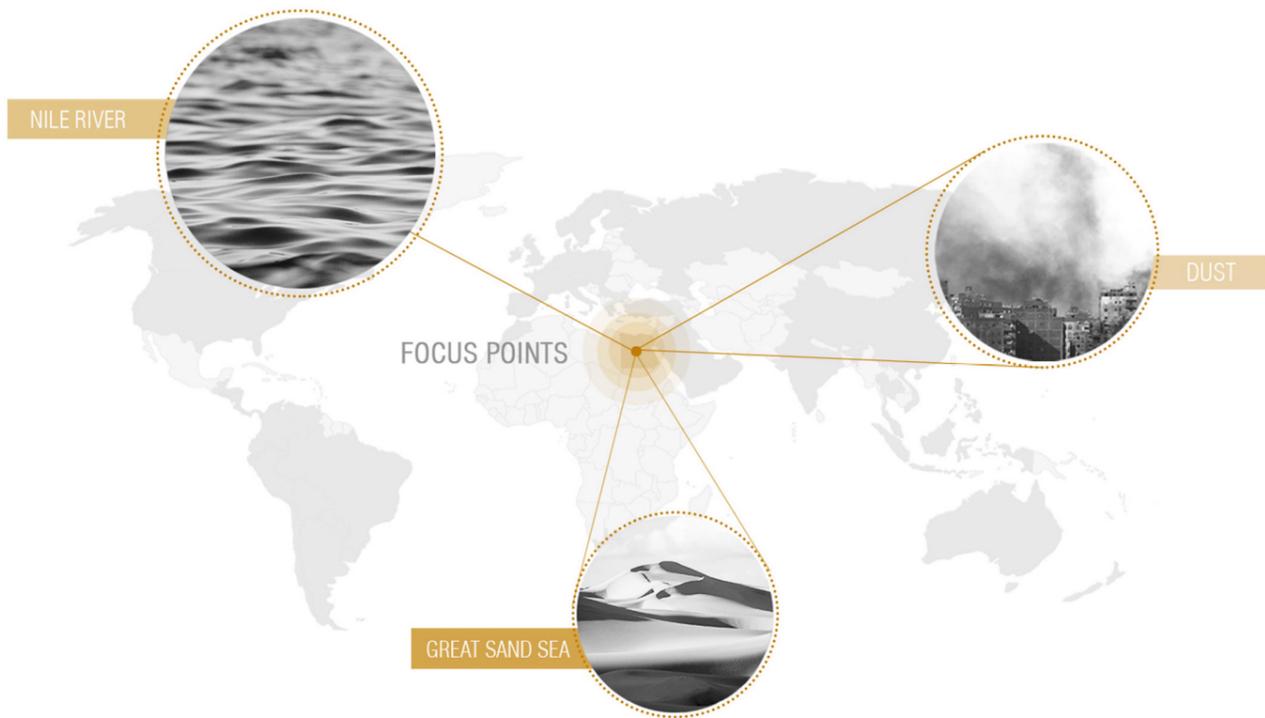
Goals

Cleaf goals are including the company four main features, which are products, distributions, applications and clients.



CHAPTER 3

PROJECT IMPLEMENTATION



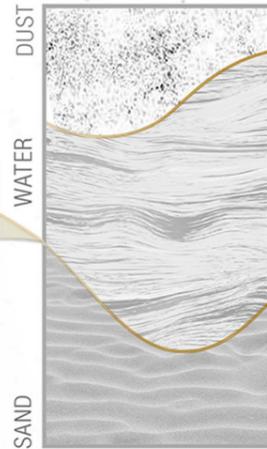
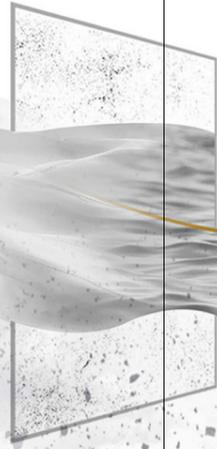


IN IN IN
VISIBLE
VISIBLE
VISIBLE



DYNAMIC

TOUCH TO SEE



DUST
WATER
SAND

STATIC



TOUCH

TO SEE
TO SEE
TO SEE
TO SEE

THE INVISIBLE



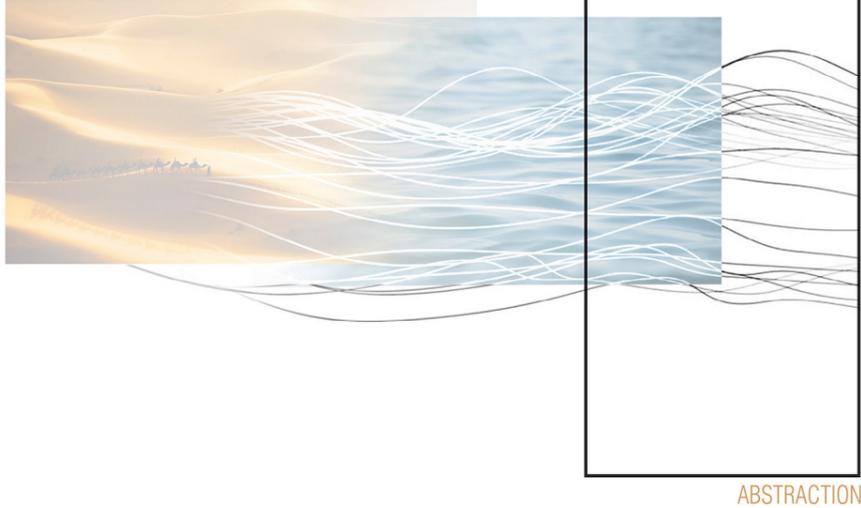
The strong connection of Egypt's water, land and air that is defined through the contextual harmony between the Nile River and the fluidity of the Great Sand Sea, establishes a constant flow in Egypt's topography. Referring to the fact that dust represents another type of flow that fills Egypt's air as its vast majority is desert. Daring not to obscure Egypt's bold past, a slick-tech yet progressive impact is needed. The use of visually dynamic surface that mimics the geometric nature of sand and water, in addition to its physical roughness that imitates the dust grains, illustrating the paradox and the dialogue that the user would experience, in which the tactile perception is the invisible aspect of the surface that can be seen only by touching it. The Invisible coating surface role is vital, as it reflects the rhythmic relationship between the three elements of the Nile River, Great Sand Sea and dust through the tactile-visual perception.

MATERIALS DEVELOPMENT

PROPOSAL 1 INSPIRATION



PROCESS

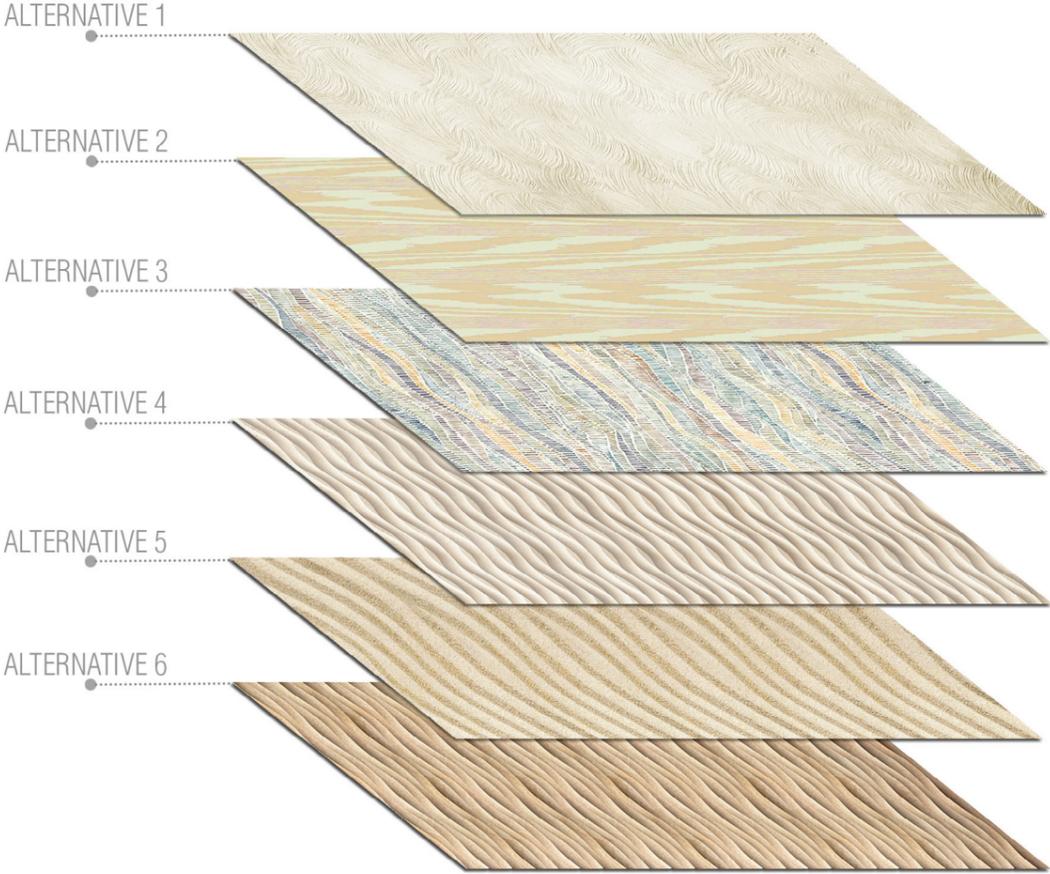
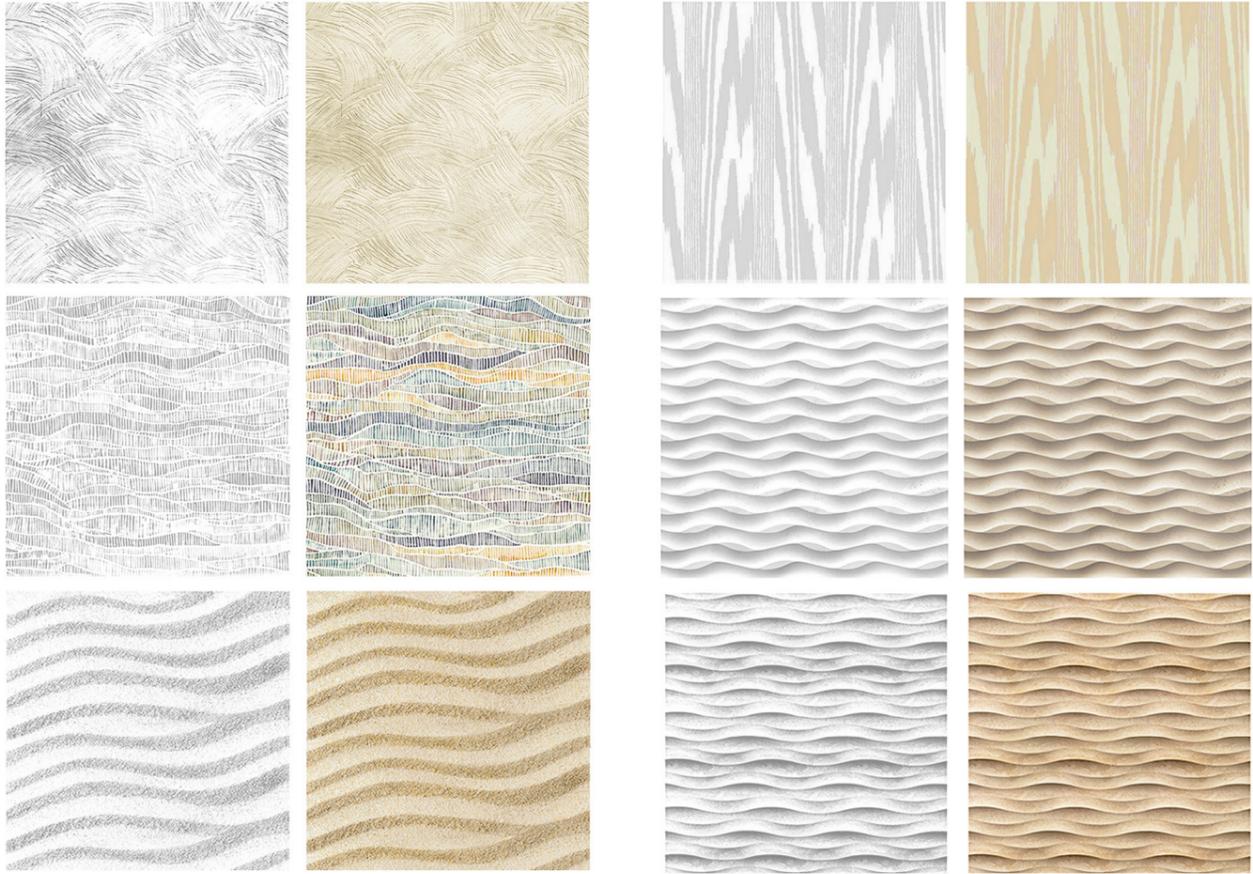
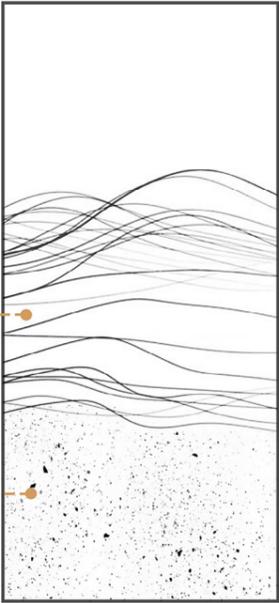


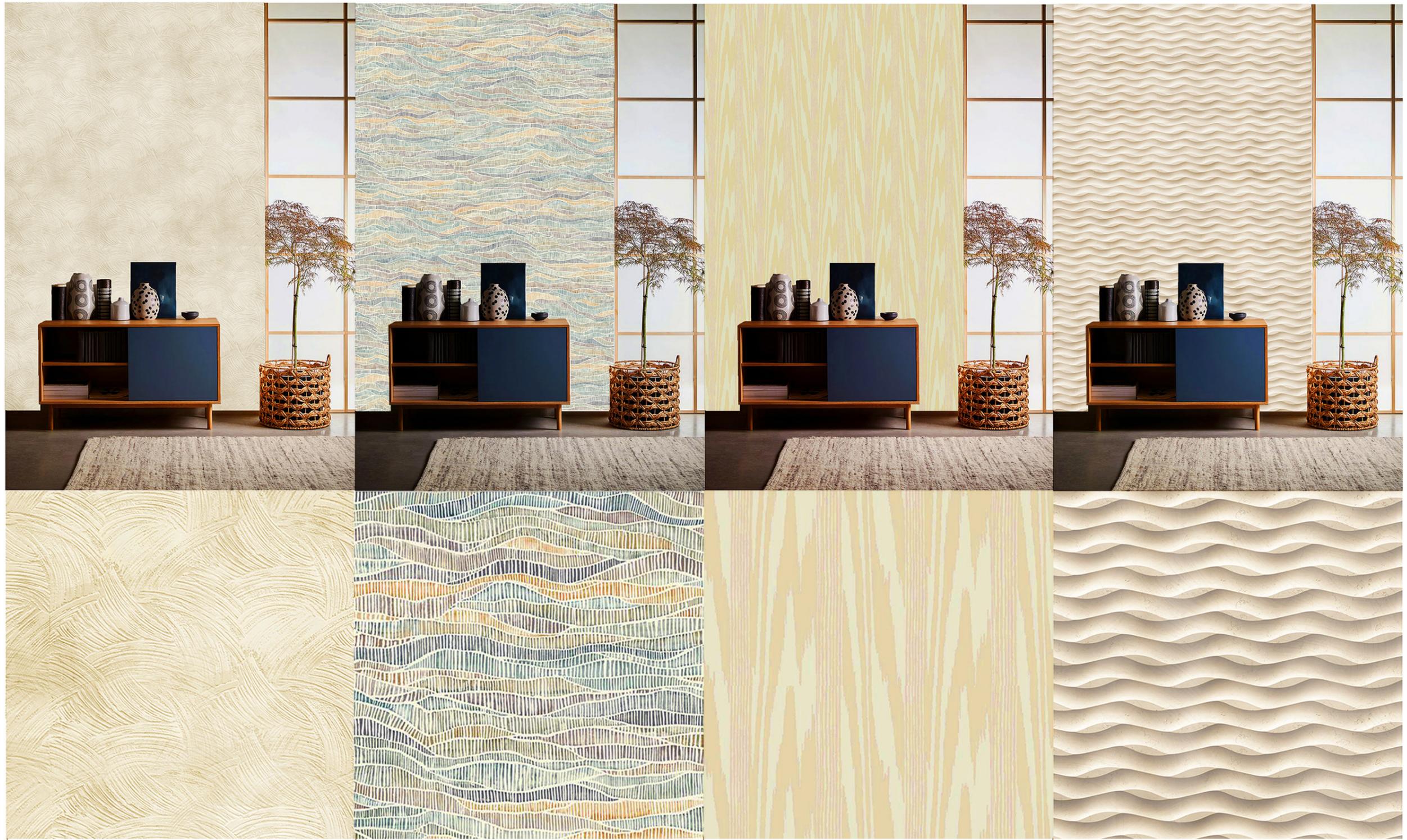
DESERT-NILE WAVY LINES

SMOOTH APPEARANCE

SAND GRAINS

ROUGH TACTILE





Alternative 1

Alternative 2

Alternative 3

Alternative 4

PROPOSAL 2
INSPIRATION



INSPIRATION

NILE RIVER LAYERS



EGYPT'S WHITE DESERT

PROCESS



OVERLAPPING

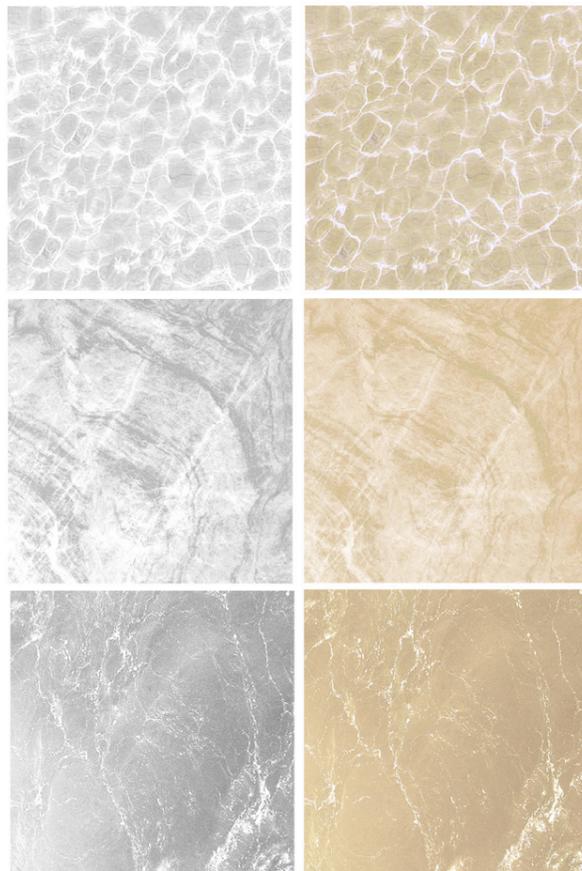
WATER SURFACE LINES

SMOOTH APPEARANCE

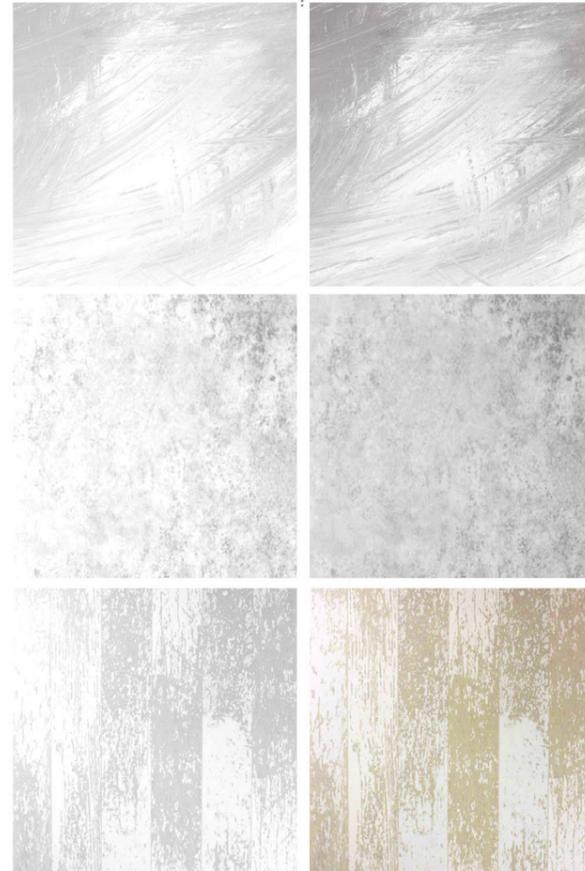
MUDDY BOTTOM

ROUGH TACTILE

PROPOSAL 3



PROPOSAL 2



PROPOSAL 3

PROPOSAL 2
ALTERNATIVE 1

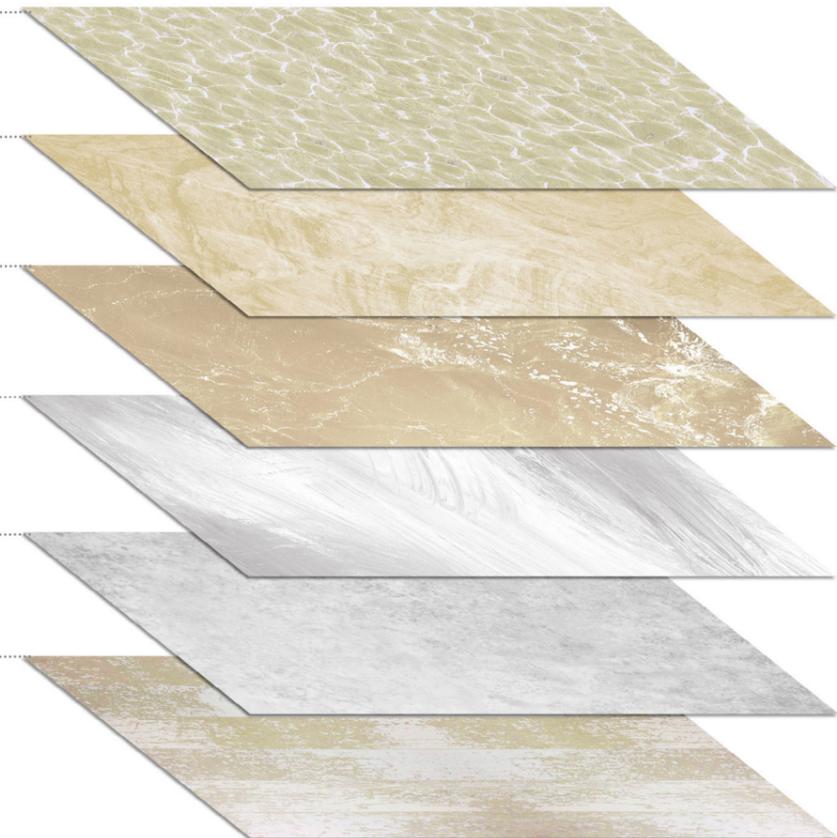
ALTERNATIVE 2

ALTERNATIVE 3

PROPOSAL 3
ALTERNATIVE 1

ALTERNATIVE 2

ALTERNATIVE 3





Alternative 1



Alternative 2



Alternative 3



Alternative 4



RETAIL SPACES IMPLEMENTATION



CONCEPT

WARM
NATURAL
DUSTY
ENDLESS
CLEAN

NATURAL LIGHTING
RAW MATERIALS
UNFINISHED FORMS
POWDER TACTILE
SMOOTH CIRCULATION
MINIMAL STRUCTURE

MINIMAL STRUCTURE



UNFINISHED FORMS



POWDER TACTILE



NATURAL LIGHTING

Moodboard

MULTI-BRAND



DESERT TOPOGRAPHY

The multi brand store is consists of food, furniture and fashion spaces, the concept is depicting the sand dunes movement in creating the exterior form that affect also the interior configuration and leveling of the space. The concept has been enriched by adding more inspiration sources like Egyptian deserts color tones for defining the space mood, the Egyptian souk creating the space circulation, traditional Egyptian patterns for each the 3 aspects for the interior configuration and Egyptian Mashrabiya for the opening of the space.

Concept Development

Egyptian Deserts



FURNITURE FASHION FOOD

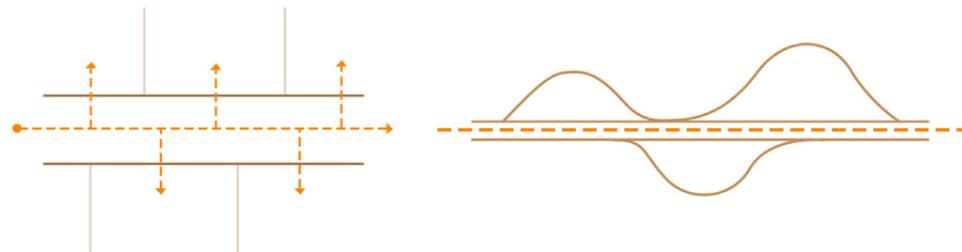
ARCHITECTURAL FORM

SAND DUNES MOVEMENT



CIRCULATION

EGYPTIAN SOUK



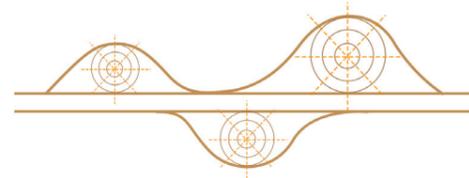
INTERIOR MOOD

EGYPTIAN DESERTS TONES

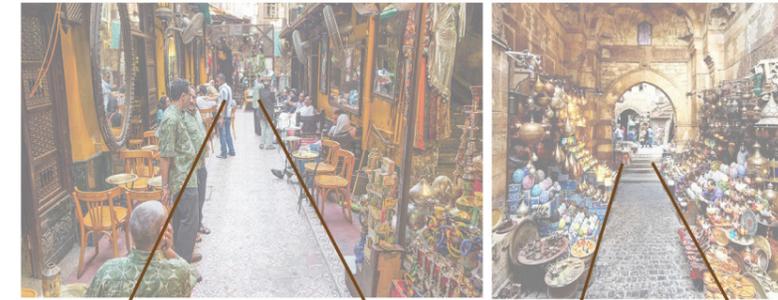


INTERIOR CONFIGURATION

EGYPTIAN PATTERNS (3F)

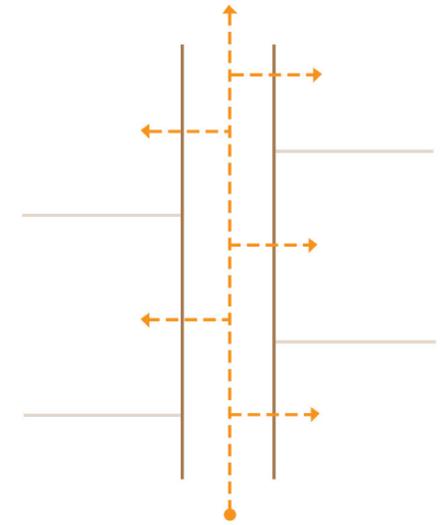


EGYPTIAN SOUK



EGYPTIAN MASHRABIA

STREET CHAIR



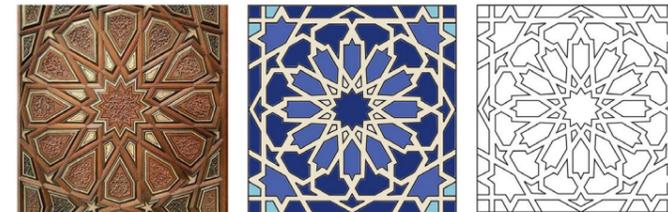
— MAIN PASSAGE
— STORES
— CIRCULATION

FASHION, FURNITURE & FOOD EGYPTIAN PATTERNS

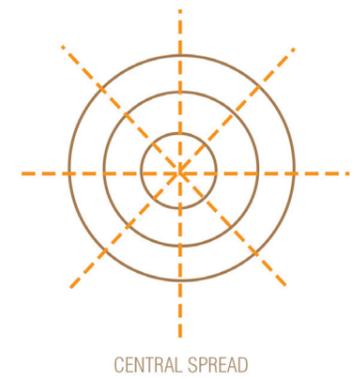
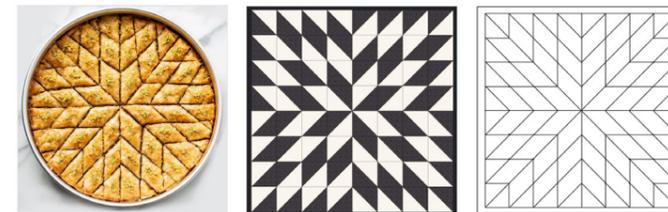
FASHION
KHAYAMIYA FABRIC



FURNITURE
ISLAMIC DESIGN



FOOD
BAKLAVA DESSERT





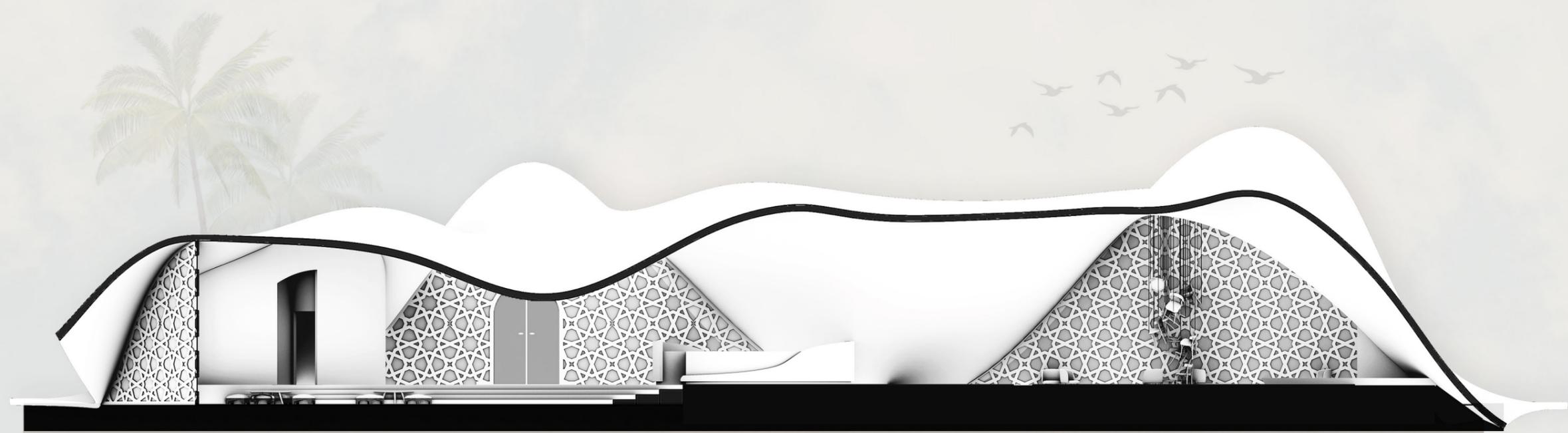
SIDE-VIEW



ELEVATION

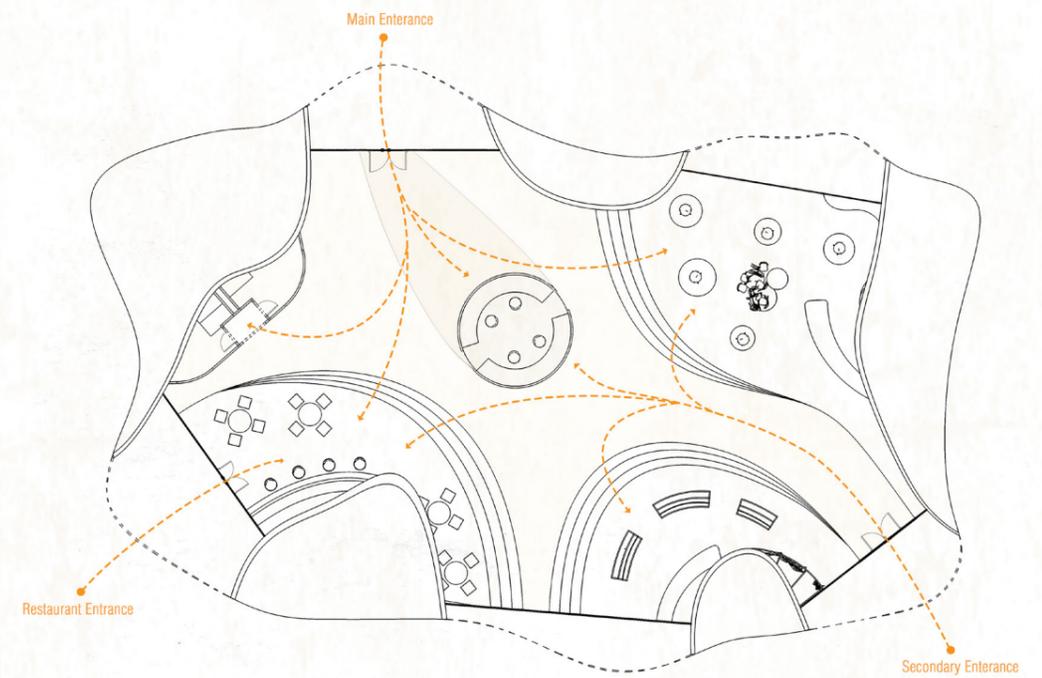
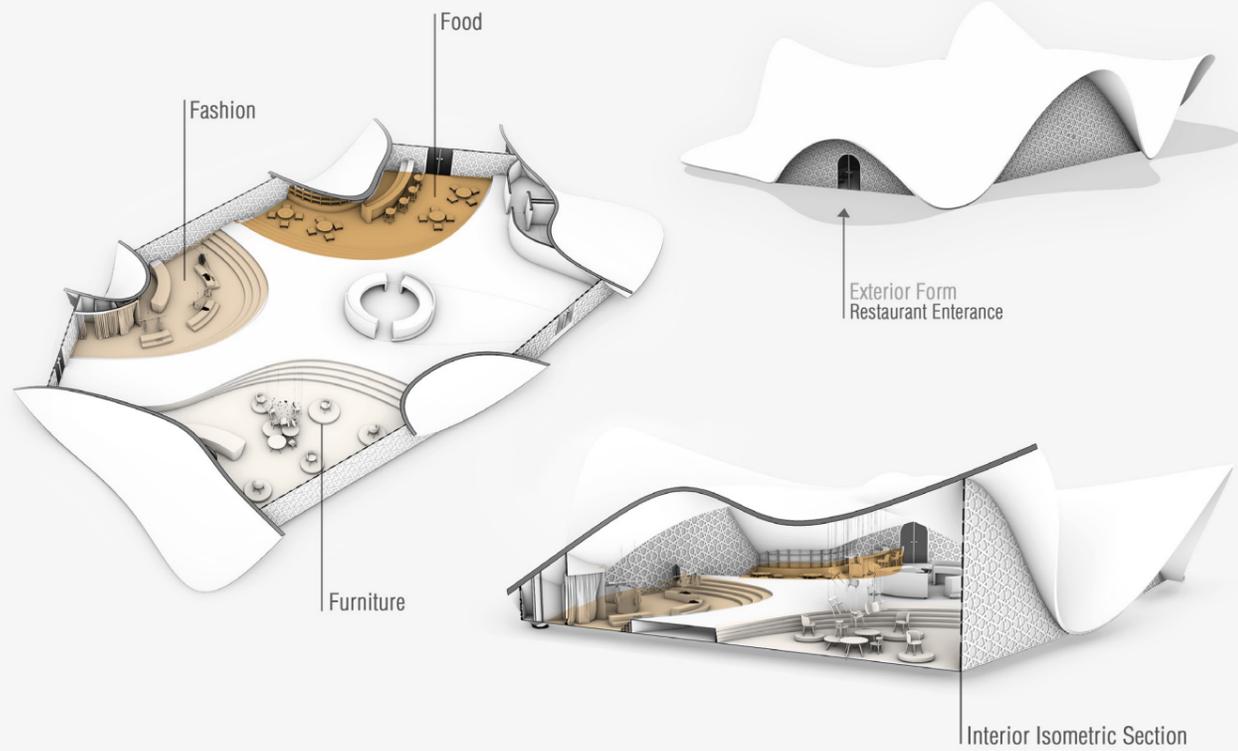
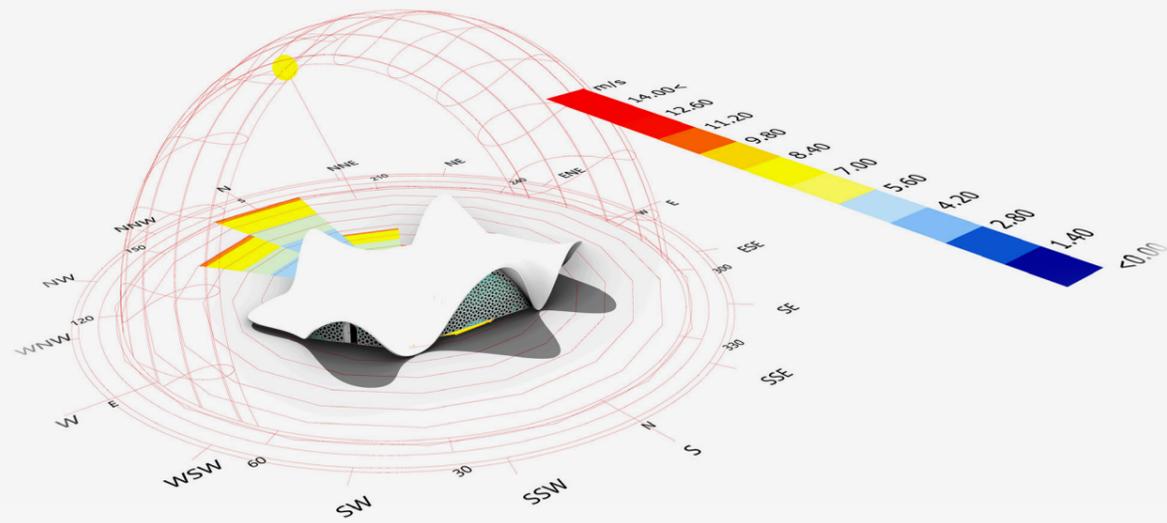


SIDE-SECTION



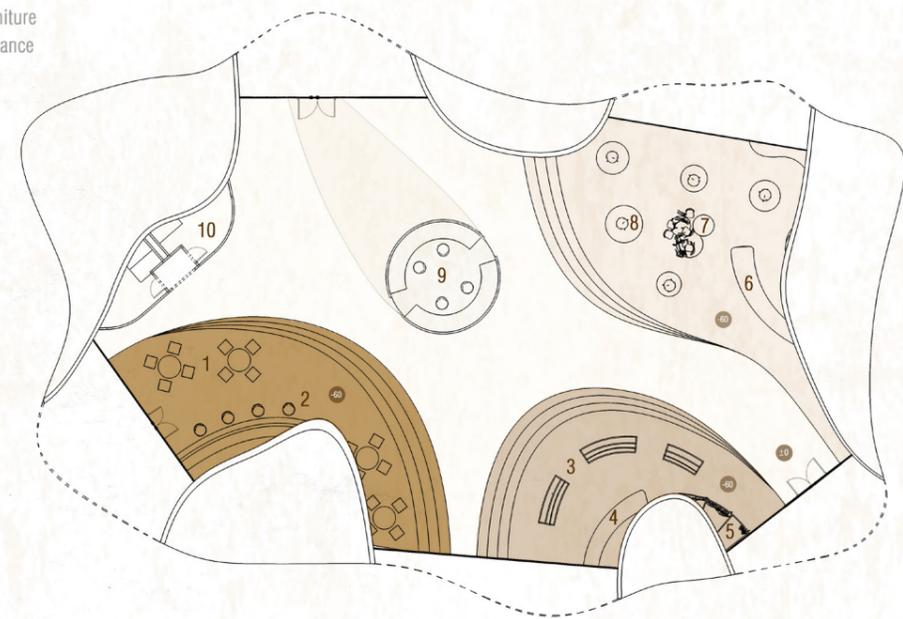
SECTION

Sun Path Diagram



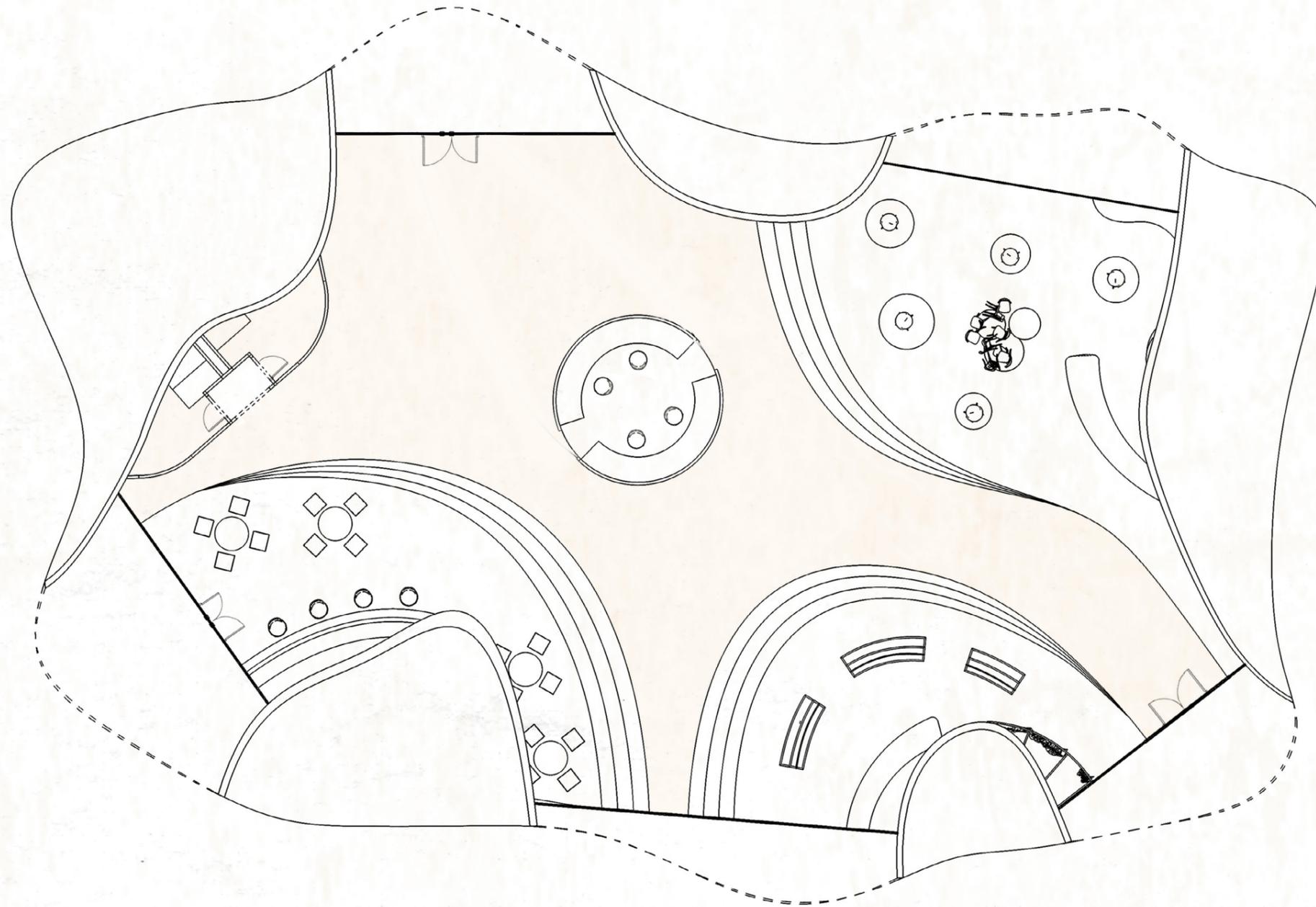
Circulation Plan

- Food
- Fashion
- Furniture
- Entrance



- 1. Arabic Seatings
- 2. Bar
- 3. Display Units
- 4. Counter
- 5. Fitting Rooms
- 6. Counter
- 7. Chairs Installation
- 8. Display Units
- 9. Reception Desk
- 10. Bathrooms

Zoning Plan





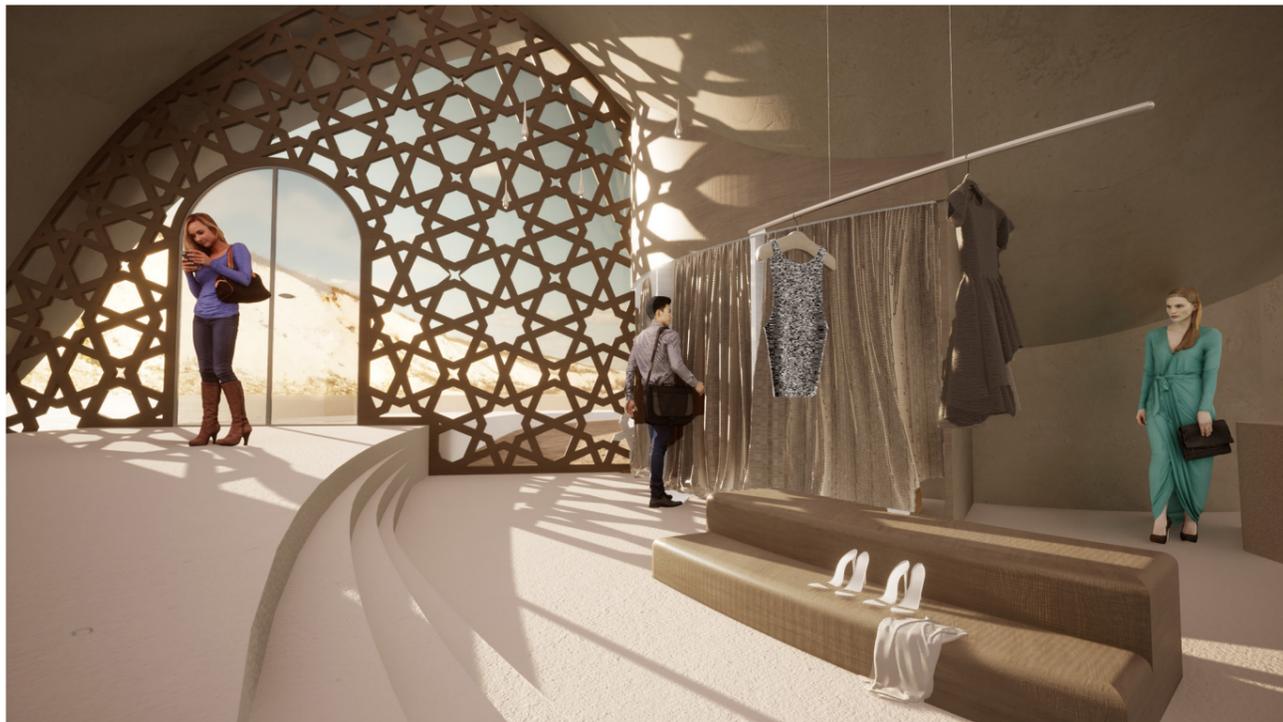
Exterior View



Furniture Space



Food Space



Fashion Space

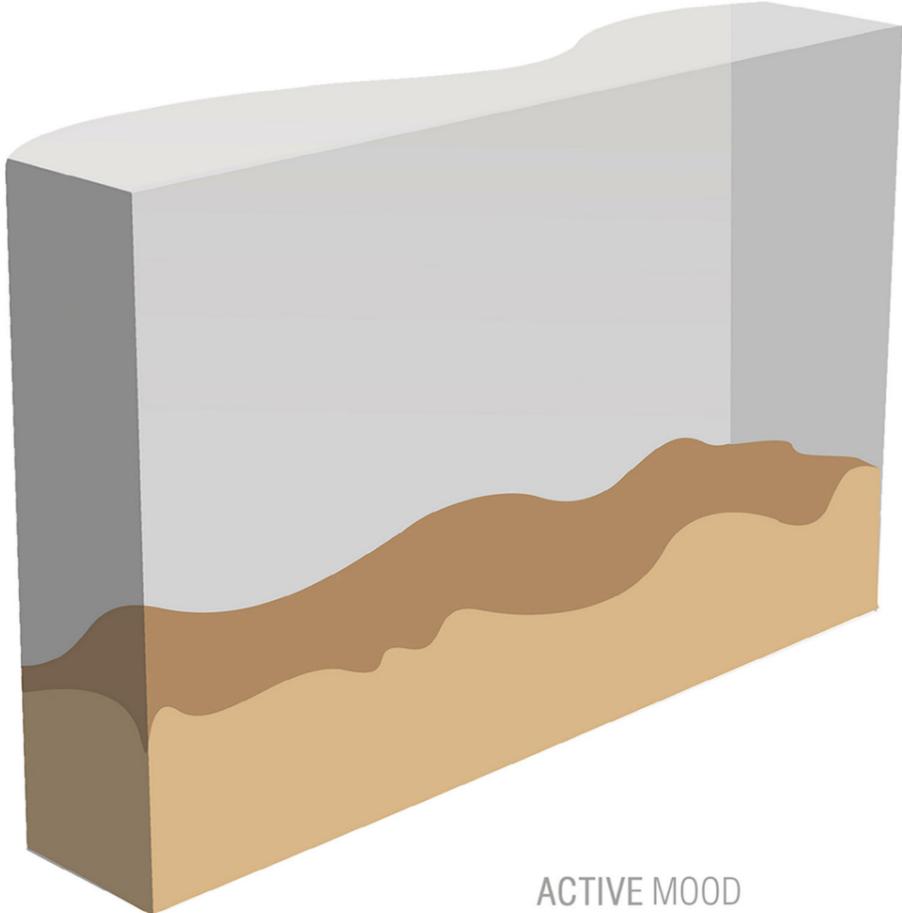


WINDOW DISPLAY

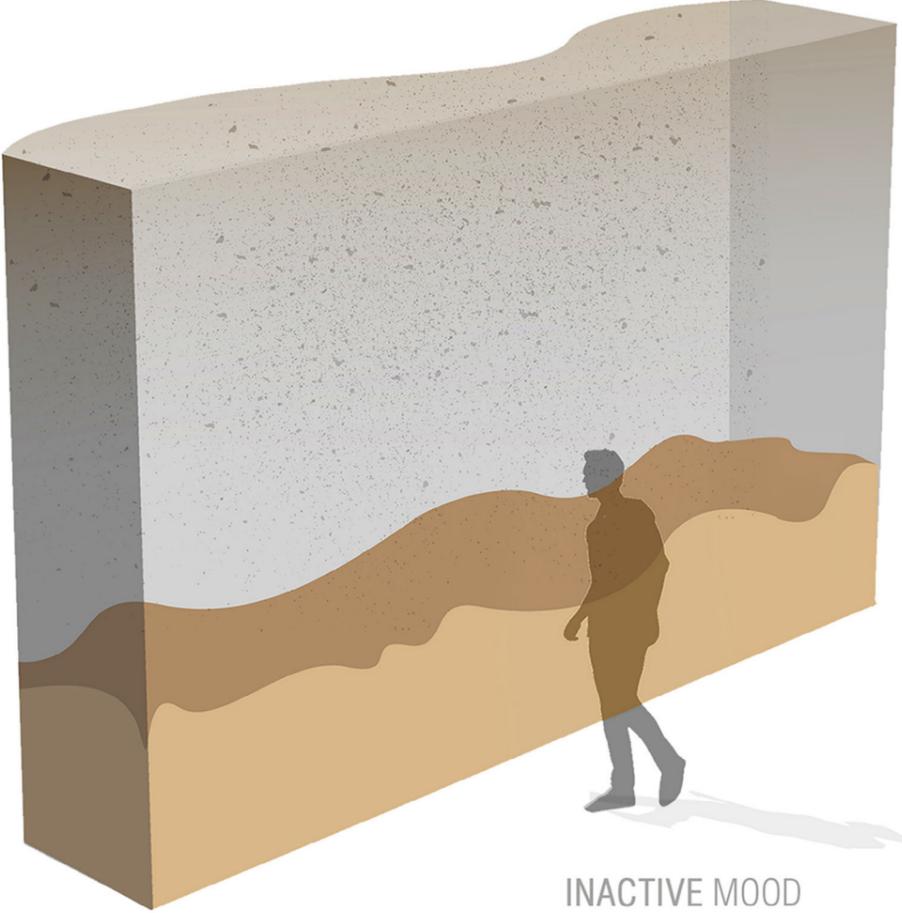


SAND CONTAINER

The window display acts as a sand container in which it will be like a glass container filled with a real sand with hanged fabrics, the idea is that the window display is not static but dynamic by having sensors so when somebody comes closer to it the sand start to fall down from above like a sand shower and fill the container. Technically in order not to make the falling sand remains, the suggestion is to have what called air blower that take the sand from the bottom and push up to make as a cycle.

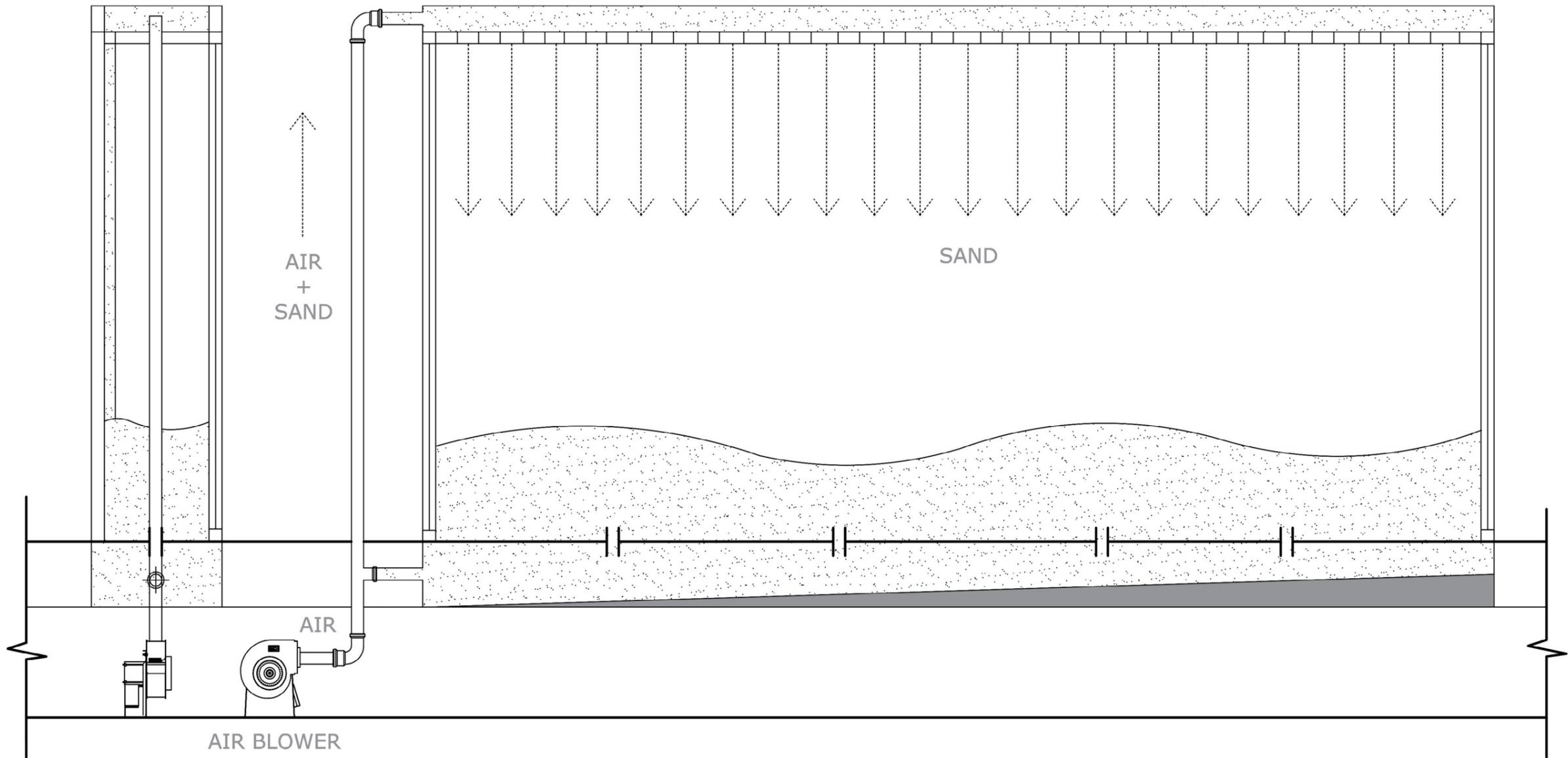
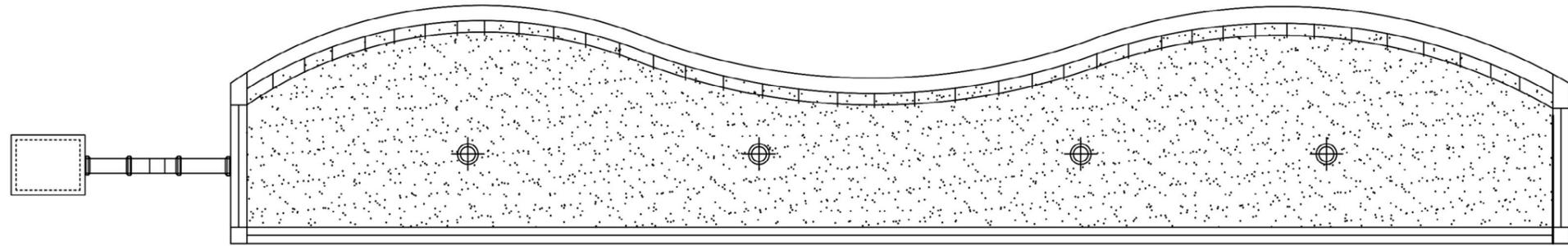


ACTIVE MOOD



INACTIVE MOOD

TECHNICAL DRAWING





PLAN

SIDE-VIEW

ELEVATION



Exterior View

Glass

Proposal 1 - Alt.1

Sand

Proposal 2 - Alt.3

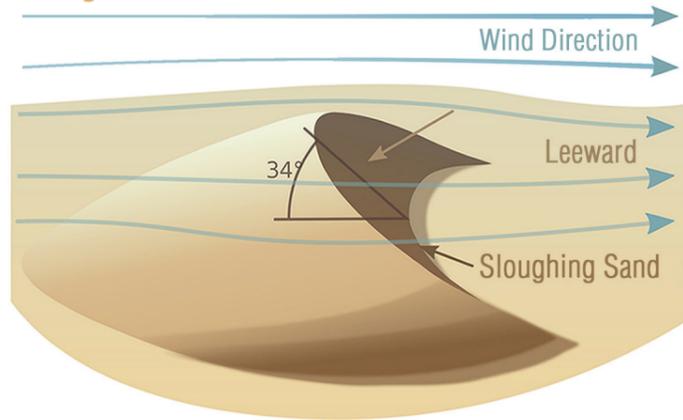
SINGLE-BRAND



CONTOURED DUNES

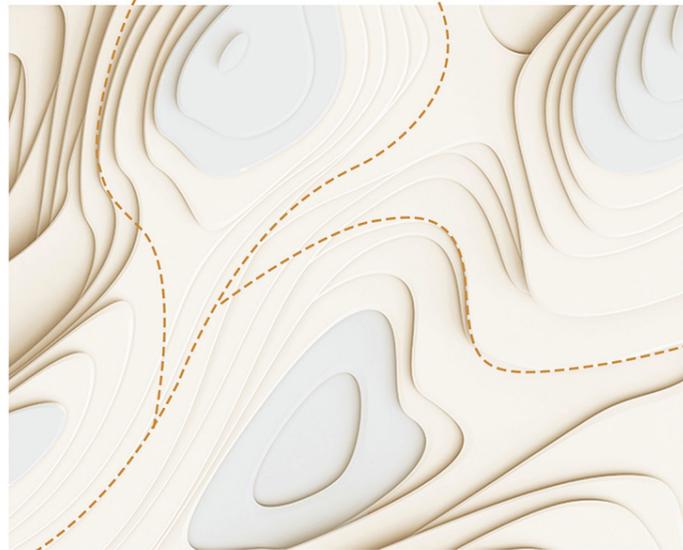
The used strategy for the single brand store is contouring in which the sand dunes topography will be sliced into layers and shapes defining the interior forms and circulation. so, the process started from solid plain form, then deformation of the form and finally the contouring process that you can see in the section as well. According to the analysis a ramp is used for the entrance instead of stairs to give this feeling like you are walking in the desert and by going inside the user will walk on different levels with different experience.

Design Process



Movement of sand dune

Diagram showing barchan dune formation, with the wind blowing from the left



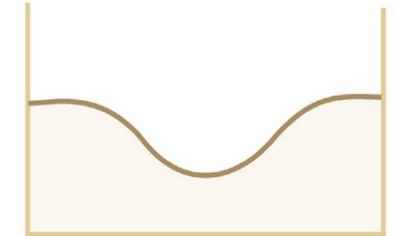
Sand Dune Topography



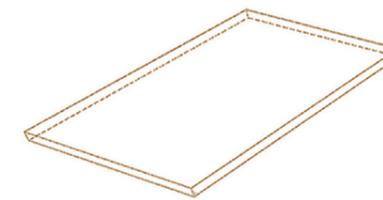
Fluid Forms



Ramps instead of stairs

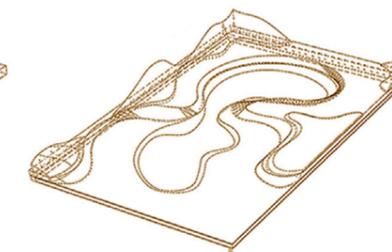


Different Levels



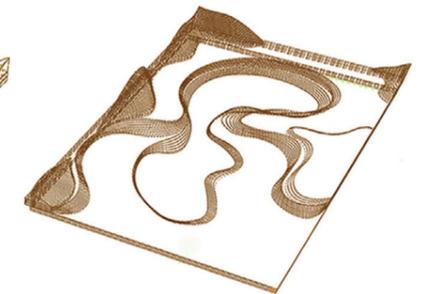
Solid Form

1



Deformation

2

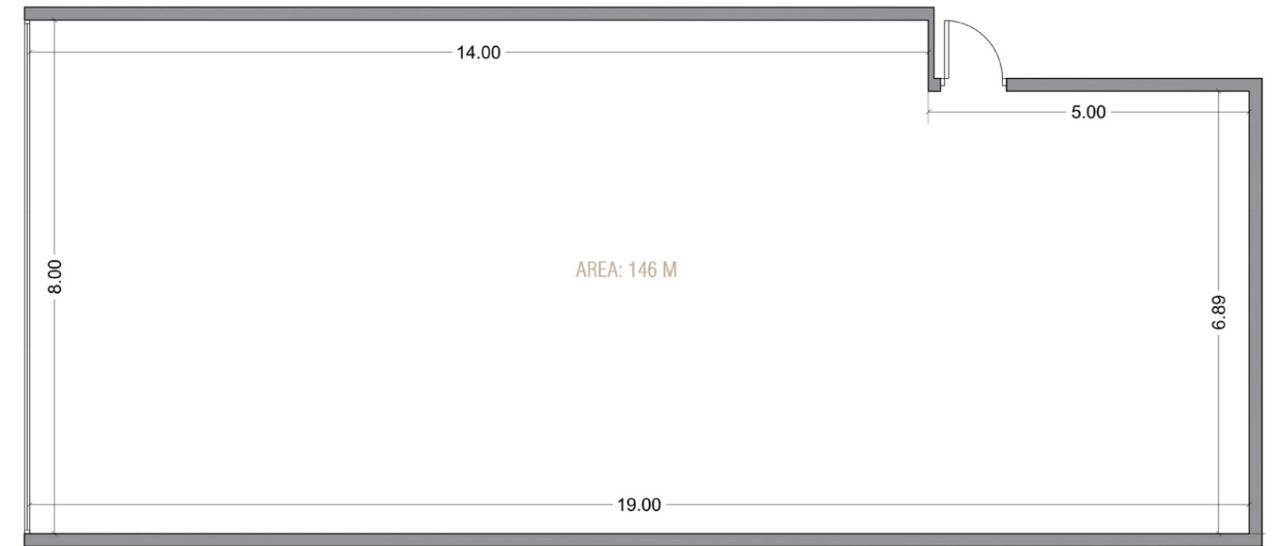
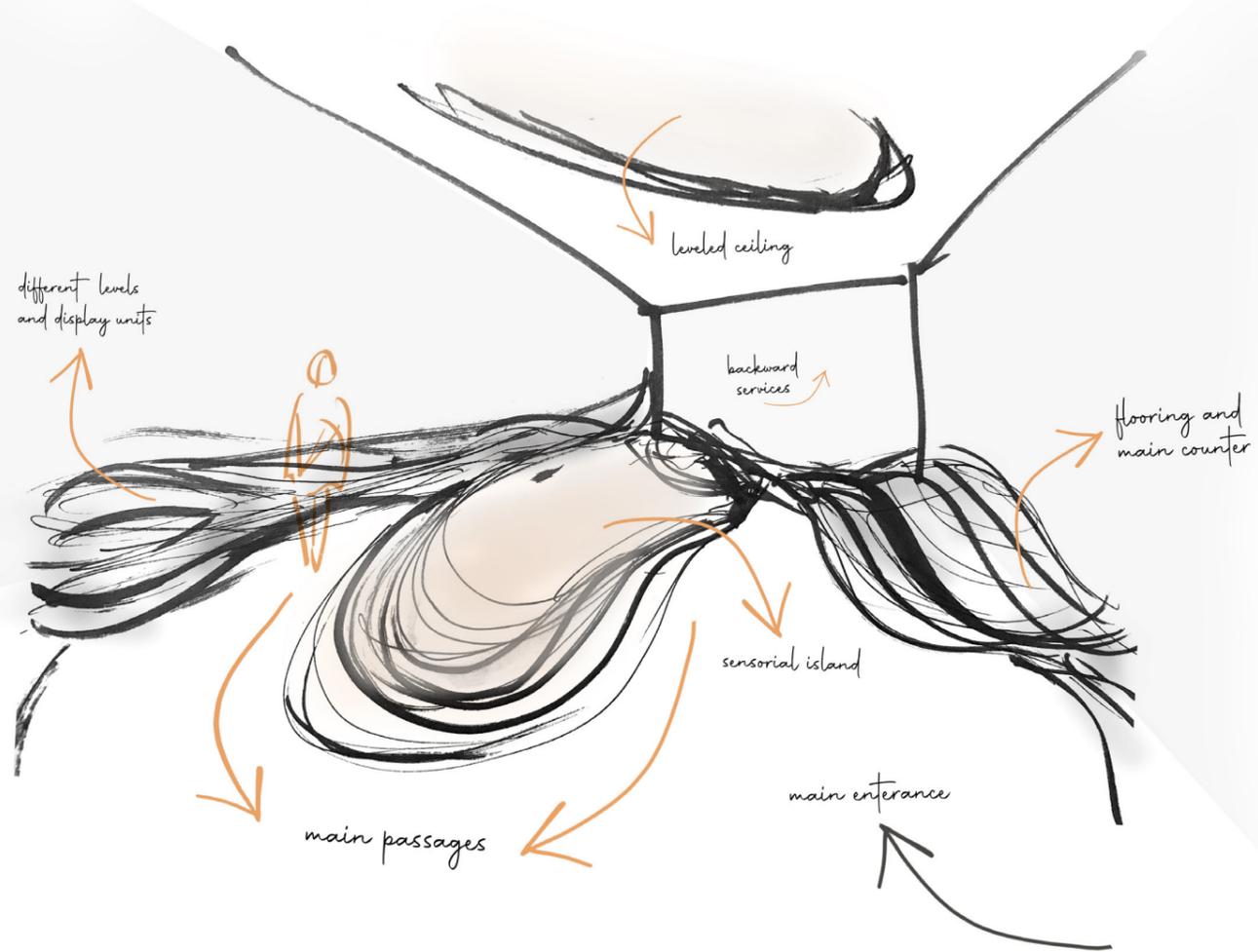


Contouring

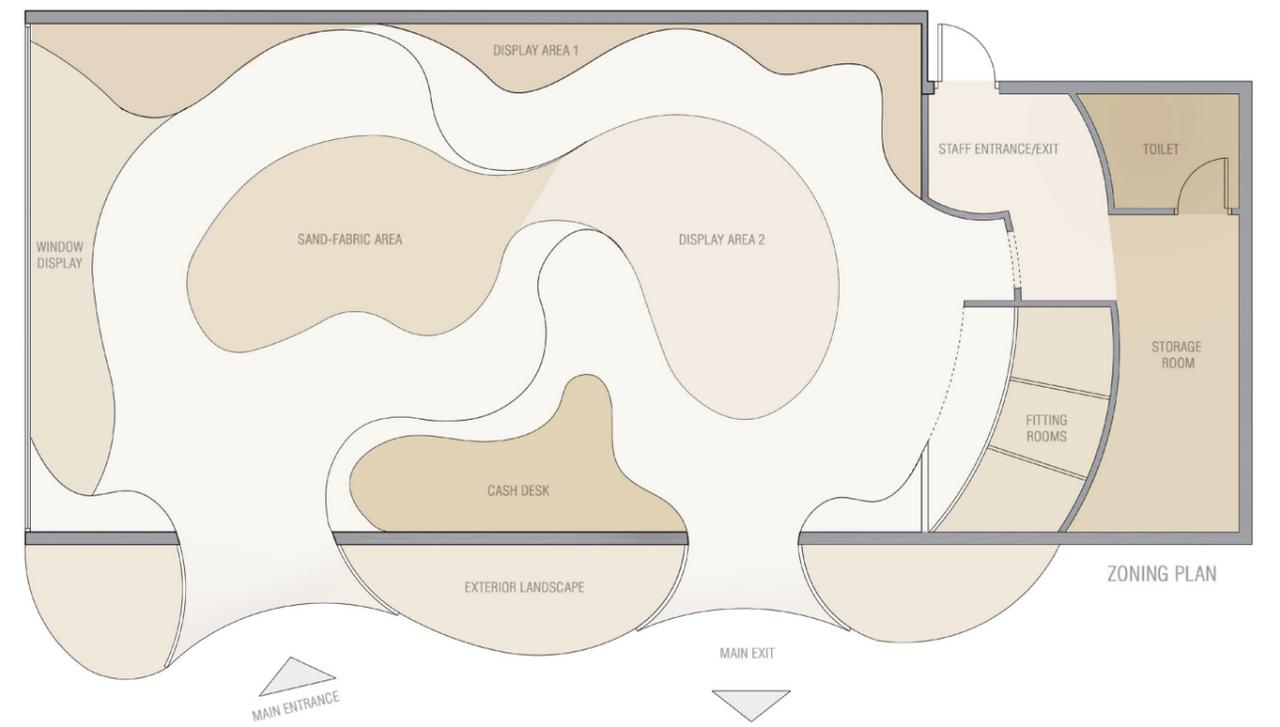
3



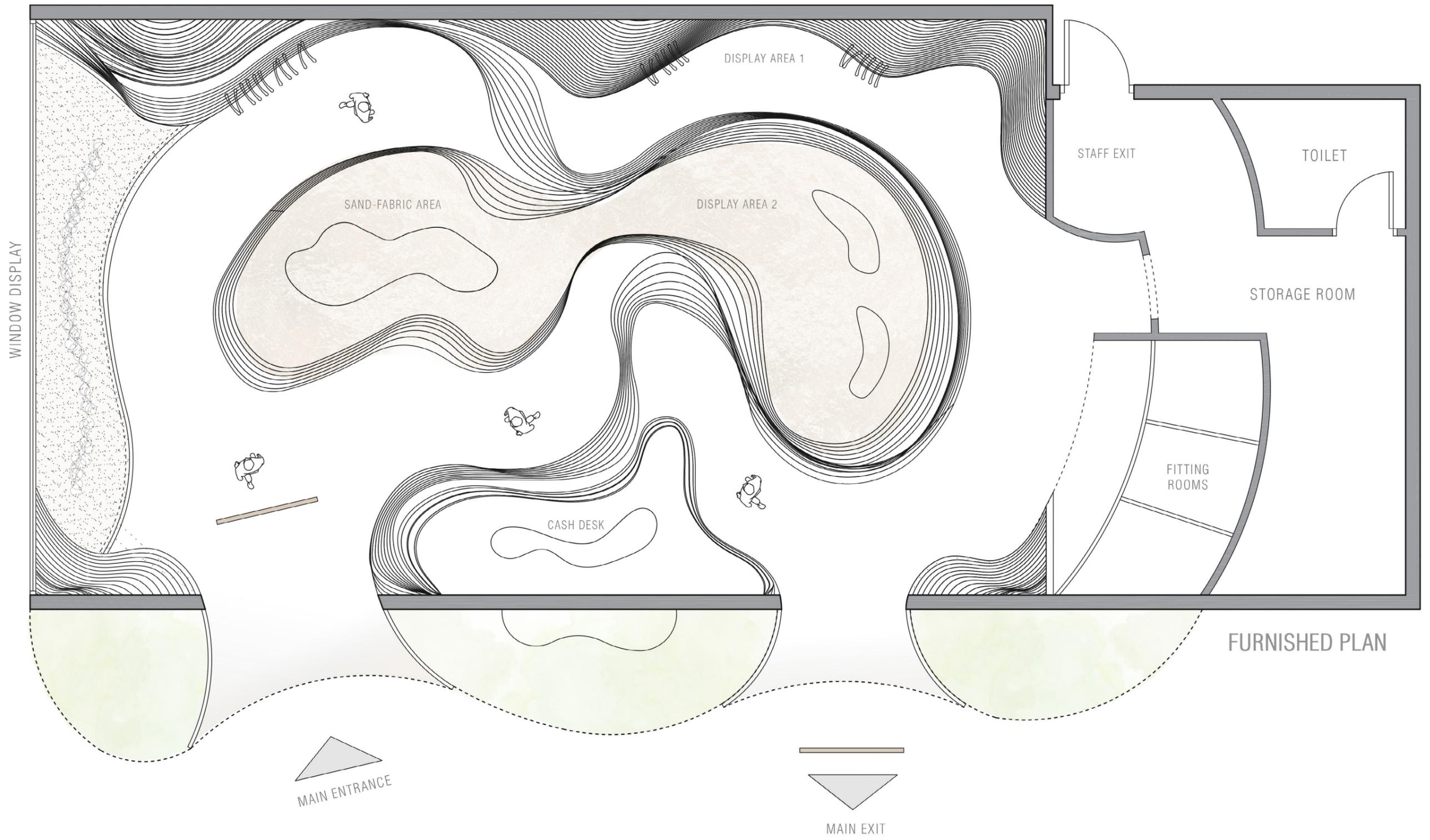
Space Sketching

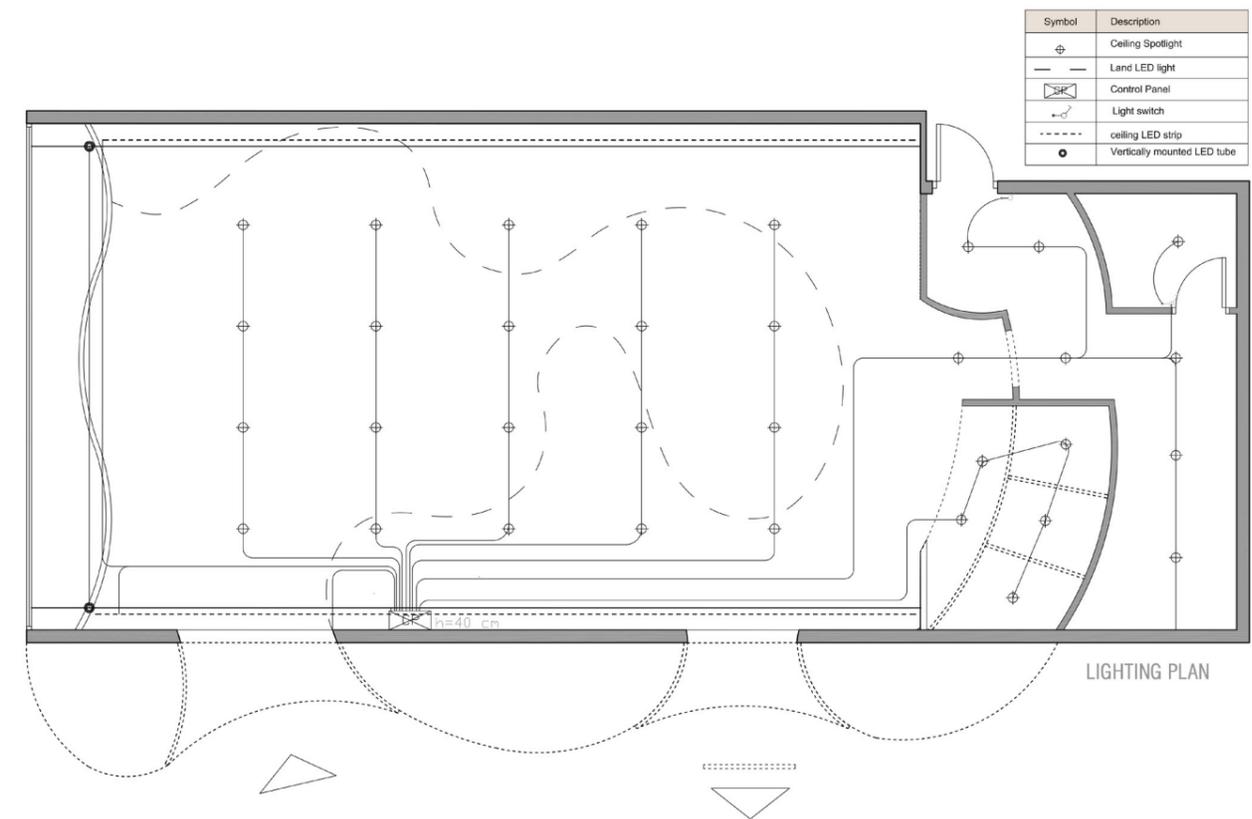
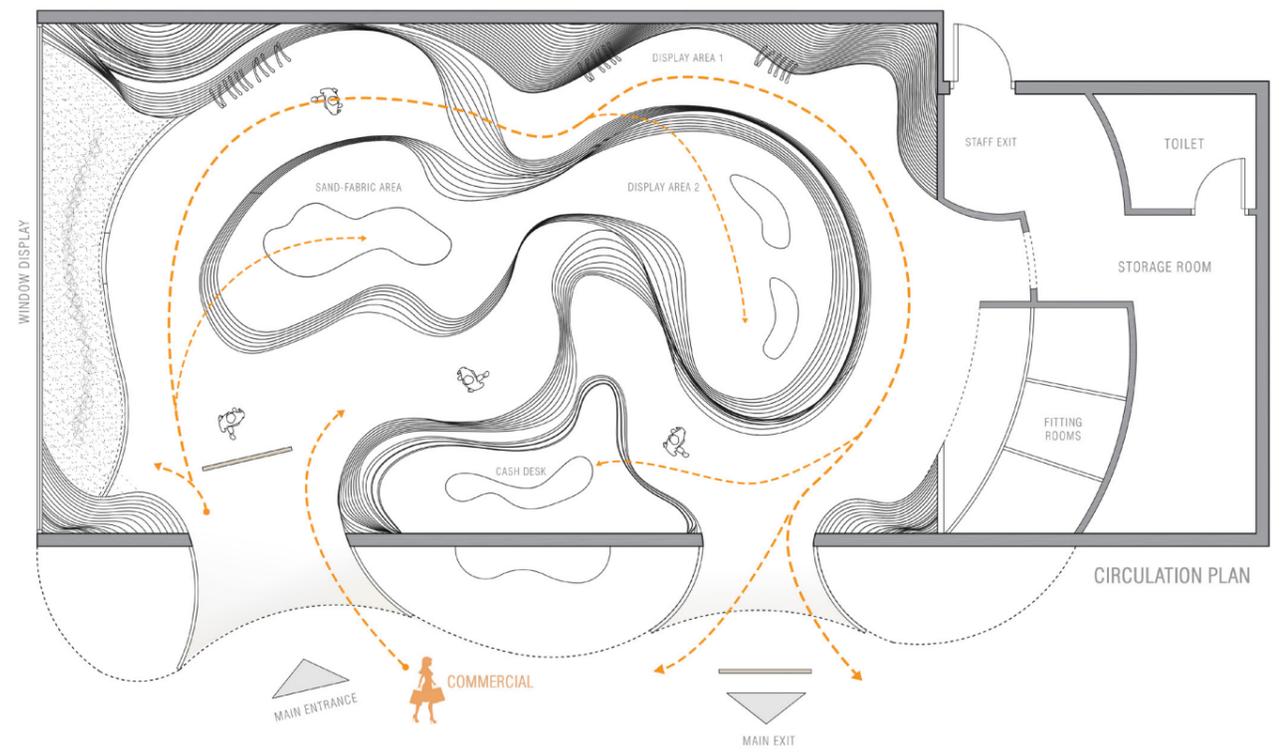
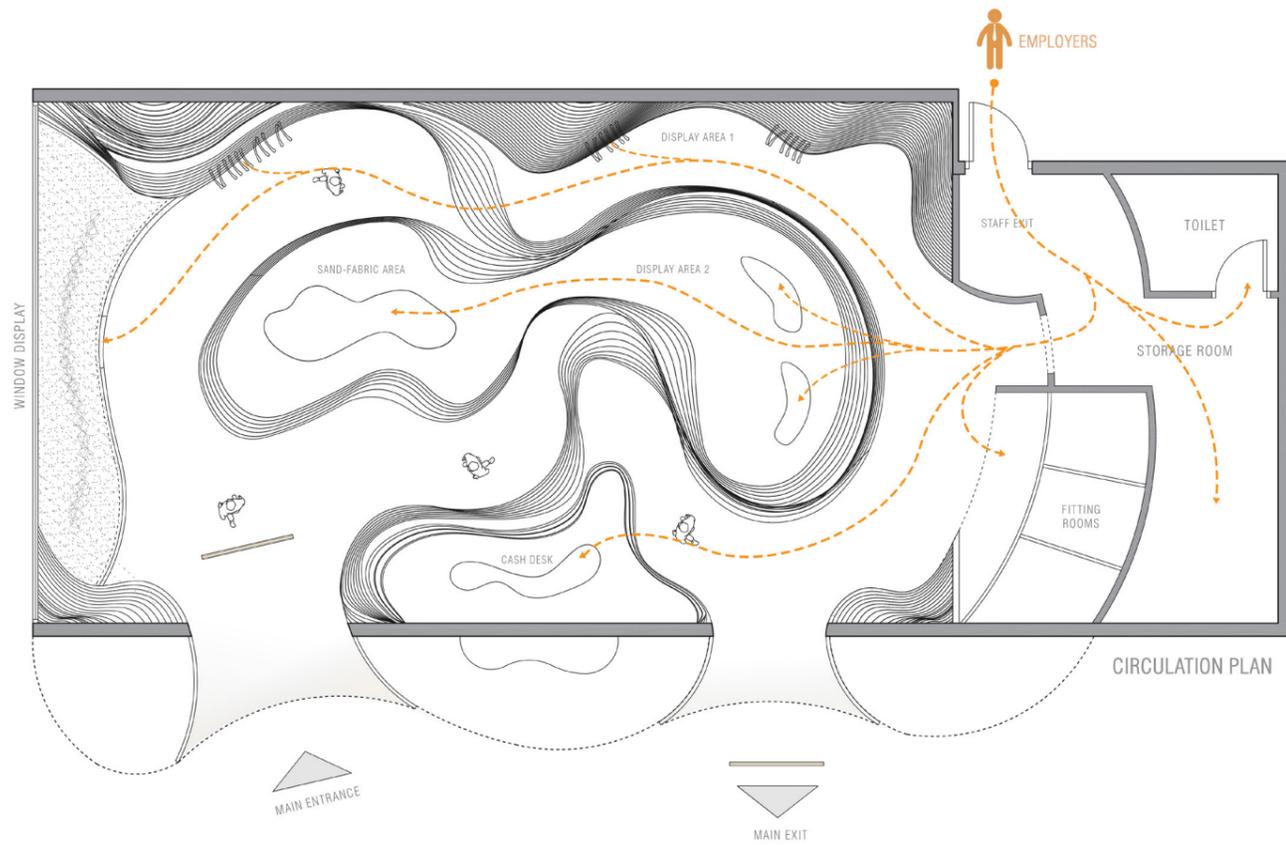


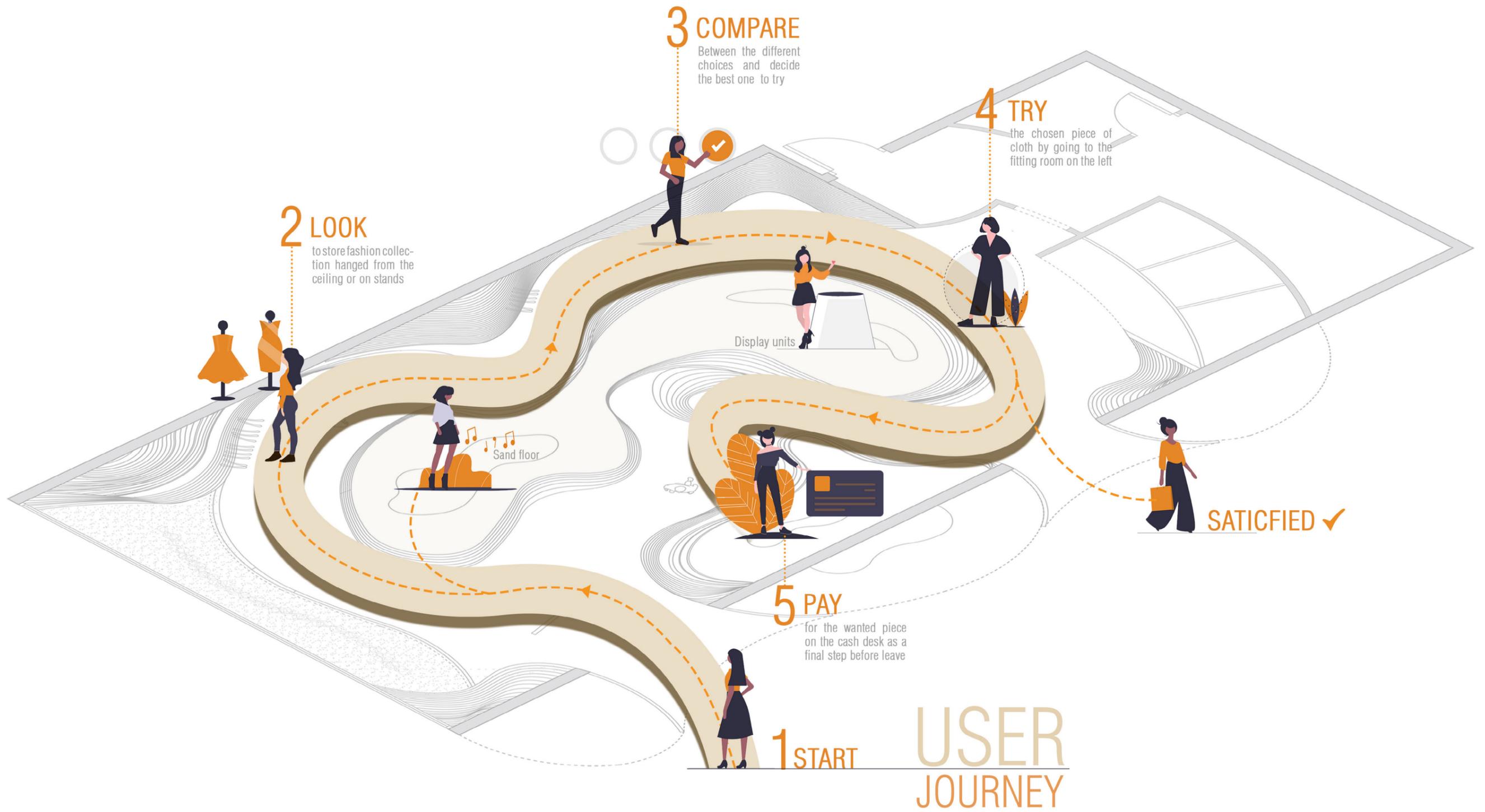
ARCHITECTURAL PLAN



ZONING PLAN

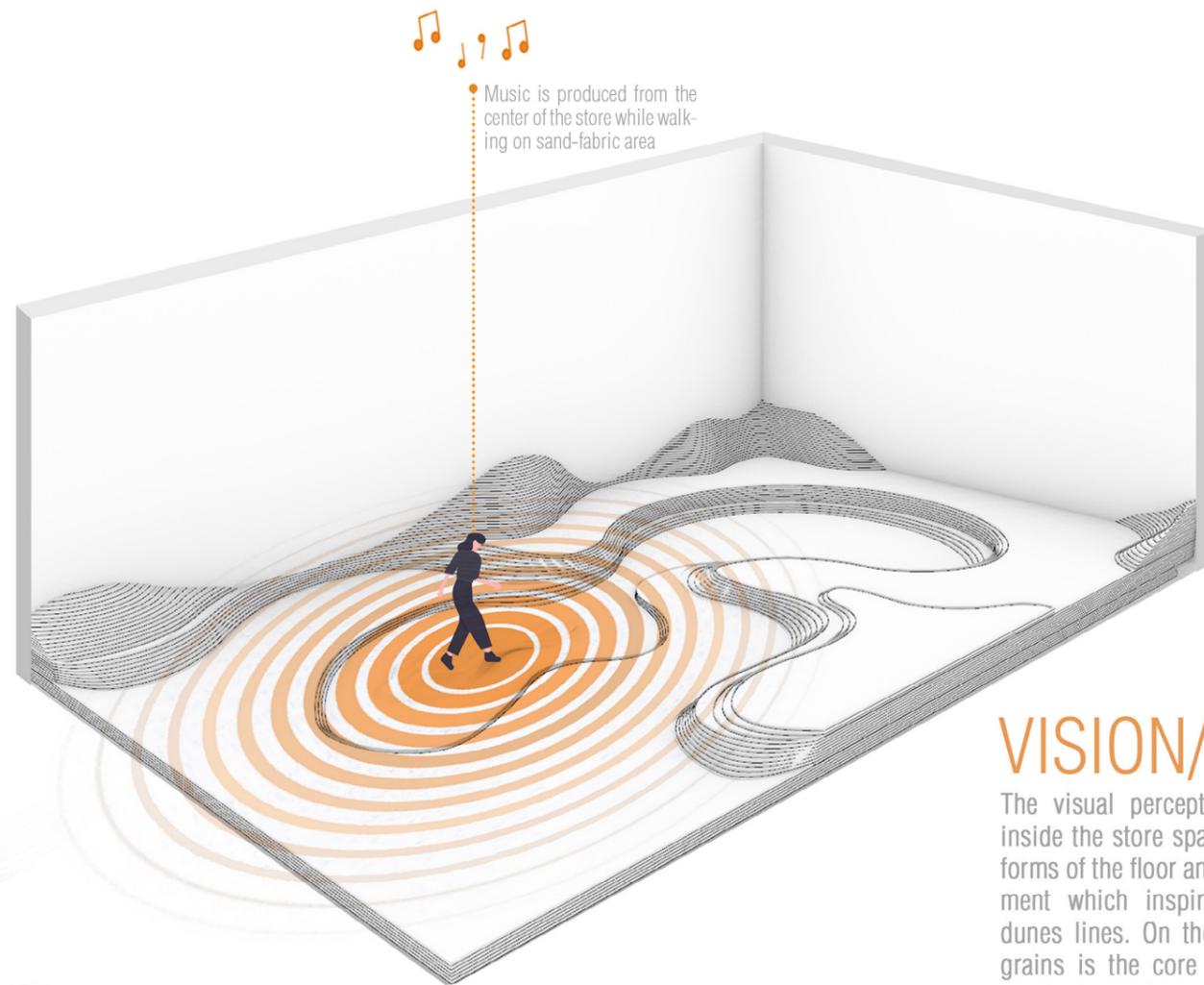






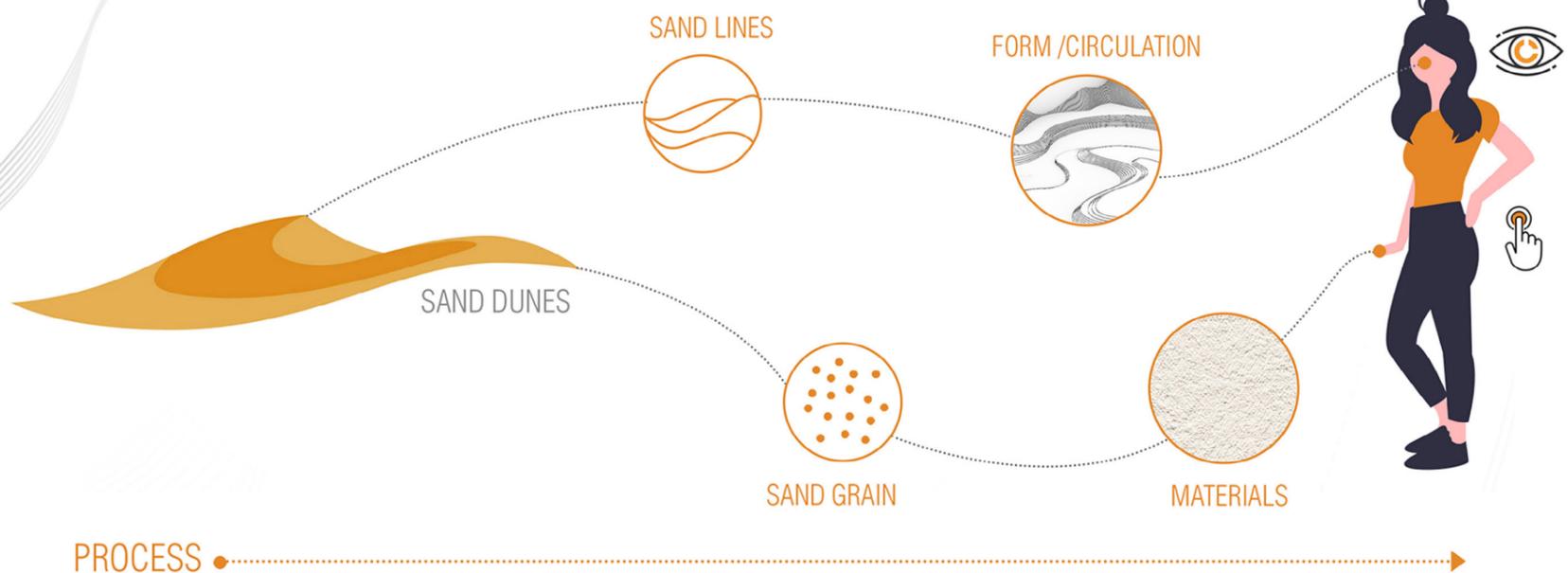
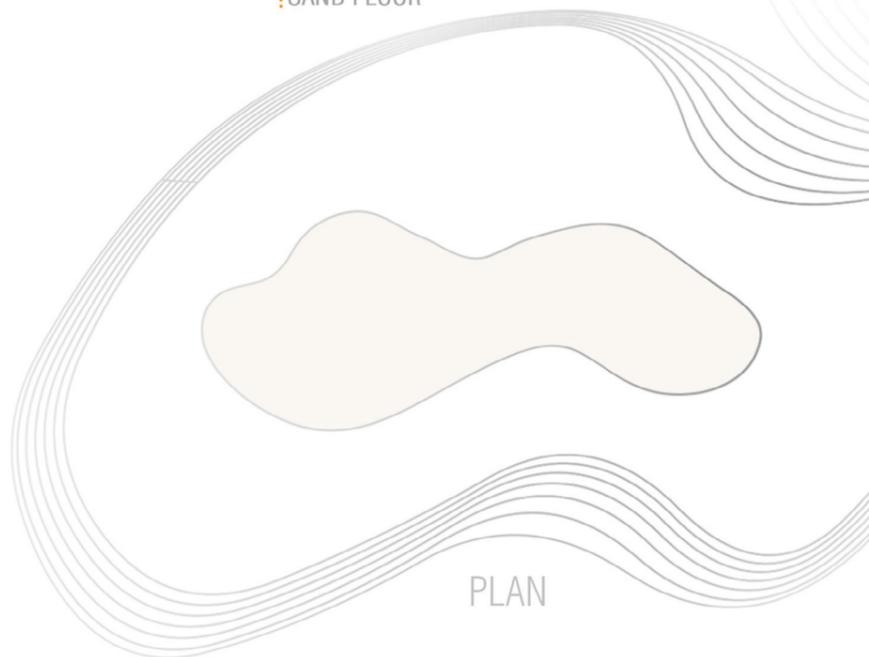
SOUND MAP

sound will be generated inside the store space through embeded sensors beneath the sand-fabric area as shown in the plan, these sensors detect the person move on the floor surface and react to it by producing traditional Egyptian music while users are walking.



VISION/TOUCH

The visual perception is represented inside the store space through the free forms of the floor and circulation movement which inspired from the sand dunes lines. On the other hand, sand grains is the core of users' sense of touch by using rough coatings to express the idea.





Display Area

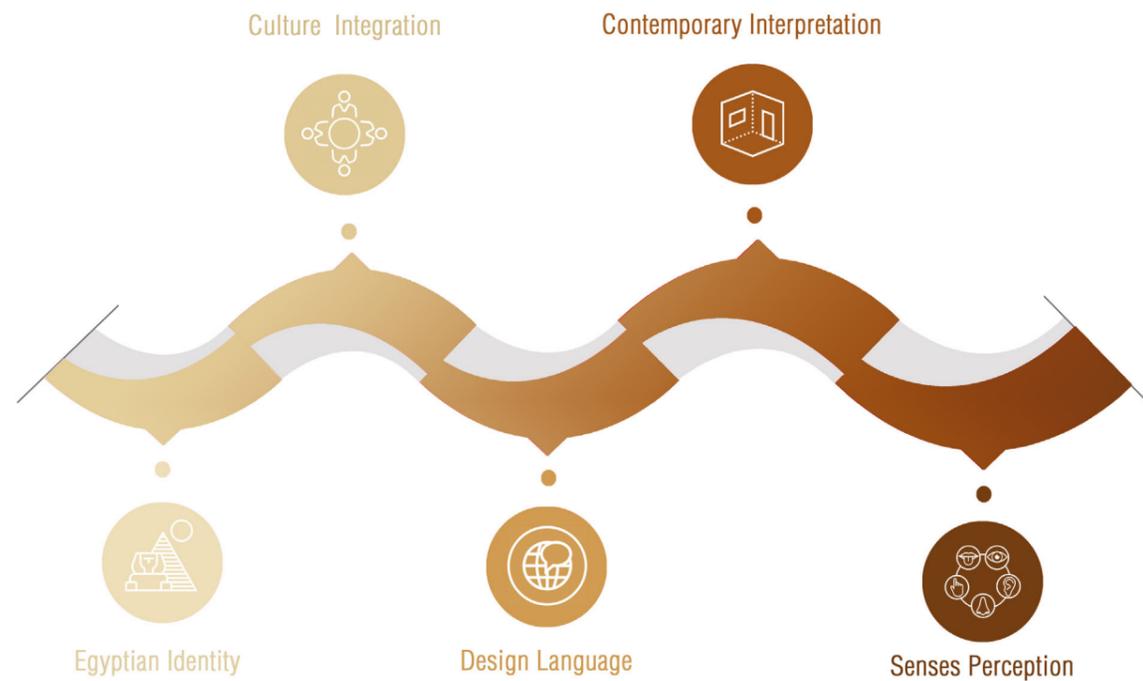
Proposal 2- Alt.3

Proposal 1- Alt.1

laminated glass

Copper

Conclusion



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