D5.1: Conceptual Framework and Guide

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Abstract
This document reports on the development of EMOTIVE's conceptual framework for the design of emotional storytelling at cultural heritage sites. We describe a step-by-step prototyping method, a set of proposed EMOTIVE Experience Types, and preliminary guidelines to inform the creative industries on developing EMOTIVE experiences. We conclude with an accompanying D5.1 Annex, describing tasks related to the implementation of the EMOTIVE framework. These include (1) a review of the EMOTIVE Design Cards, a first attempt to translate our conceptual framework into a simple tool for emotive experience designers; (2) early progress on the EMOTIVE Chatbot, a specific case of Experience Prototyping.

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LIST OF ABBREVIATIONS

AR: Augmented Reality
ATHENA: Athena Research and Innovation Center in Information Communication and Knowledge Technologies
IBR: Image-Based Rendering
IoT: Internet of Things
UGLA: University of Glasgow
VR: Virtual Reality
York: University of York

1 Executive Summary

This report represents the first deliverable of Task 5.2: Conceptual Framework for the Design of EMOTIVE experiences. The following pages outline a proposed EMOTIVE prototyping methodology, along with a definition of several preliminary EMOTIVE Experience Types. The report then reviews EMOTIVE's first efforts at defining a set of Guidelines to transform the EMOTIVE conceptual framework into useable and impactful emotive experiences at cultural heritage sites. An accompanying Annex includes further information on tools (EMOTIVE Design Cards) and design work (EMOTIVE Chatbot) that have informed Task 5.2 to date.

SUMMARY OF CONTENTS

A brief introduction, **Section 2**, contextualises the need for a conceptual framework around heritage-based emotional storytelling. **Section 3** presents a design workflow (or prototyping method) to support the creation of stories and an overview of four possible types of EMOTIVE experience, aimed at a range of heritage visitors. **Section 4** describes EMOTIVE's draft Guidelines, specifically tips for designers in creating resonant EMOTIVE experiences for cultural contexts. **Section 5** concludes the report, commenting on next steps and resources associated with the refinement of EMOTIVE's conceptual framework. The latter include a two-part **Annex**, comprising a report (Section 1) on efforts to extend the EMOTIVE Guidelines into marketable Design Cards, and the workflow (Section 2) associated with a specific case of Experience Prototyping: the EMOTIVE Chatbot.

METHODS OF RESEARCH AND ANALYSIS

The EMOTIVE conceptual framework and guidelines derive from previous experience and early collaborative work in the consortium, most of which is documented in D3.1 and D3.4, as well as **Annex: Section 1**. User workshops and prototyping activities conducted in various contexts, both pre- and post EMOTIVE's launch, have led us to evaluate (via focus groups, interviews, surveys and observations) users' engagements with the technical and social components of EMOTIVE experiences.

KEY FINDINGS SUMMARISED

Results of current and previous research allow us to encapsulate our design method for emotional storytelling in terms of EMOTIVEs "three Es": **Explore** the experience objectives and concept; **Express** the experience; deploy and **Evaluate** iteratively the experience prototypes. Based on various applications of this three-part method, the consortium has defined four Experience Types (Experience as Guided Tour, Collection of Short Experiences, Story-World Adventure, and Game) appropriate for specific cultural heritage sites and audiences. Equally, such applications have led us to articulate tips for developing these Experience Types and linking them to relevant Personas (i.e., visitor profiles), as well as guidance on six themes that EMOTIVE considers essential for the design of its experiences: Story, Emotions, Mechanics, Social Interaction, Aesthetics, and Technology. Our tips for Technology provide especially detailed consideration of the strengths and limitations of novel digital tools and approaches, with a focus on 3D and Virtual Reality, Mini-Activities, Location Awareness, and Social Interaction. These offer the baseline for the emotive experience design that will be supported by our technical team and push the boundaries on storytelling and interpretation in cultural heritage.

CONCLUSIONS AND RECOMMENDATIONS

D5.1 is a living document that will grow and change as EMOTIVE advances and as user testing begins. It presents a larger project vision that we are consolidating internally amongst the consortium. From here, a more accessible EMOTIVE Guide and, ideally, simple and playful Design Cards for external users will be produced for D5.5.

We move now into a phase of alpha and beta-level experience development with our partner sites (Çatalhöyük and the Hunterian Museum's Antonine Wall display). This work ultimately aims at the production of high-quality emotive storytelling for our partners' cultural heritage visitors, alongside usable tools for heritage professionals to design such stories themselves.

2 Introduction

Employing storytelling in the context of cultural heritage is a unique form of art, with distinct differences from other art forms, such as movies, books, or video games. Heritage sites have tended to rely on didactic presentation of information and conventional publication media (physical signage, printed brochures and maps, etc.) to engage their audiences. However, when confronted with the opportunity to push beyond these traditions - to deploy personal, emotive narrative that is delivered via various means, including digitally - their promise for attracting and retaining visitors, and for reshaping our understandings and appreciation of the past, seems vast. Through storytelling, visitors are able to interact with the site's interpretation, change it and move it in the direction they want. The significance of such an approach for facilitating engagement, resonance, care and commitment to cultural heritage cannot be overestimated.

Yet visitors also have limited resources of attention, especially when they have to navigate an extensive virtual or physical space, where their attention must be directed from the exhibits to the device to the physical or virtual space around them. In EMOTIVE, we aim to address each of these unique challenges, articulating a field-tested methodology for the design and implementation of emotive experiences at heritage sites. Growing out of a larger conceptual framework that is detailed across the following pages, we are working to refine a set of specific guidelines for the creative industries and other stakeholders to achieve engaging, collaborative, multi-sited, multi-device, storytelling-inspired experiences in cultural contexts.

Accordingly, this document begins by describing EMOTIVE's overall approach, including our proposed design workflow and experience types, and moving from there into a detailed but still preliminary set of Guidelines for authors who may wish to create their own emotive experiences in cultural heritage contexts. We also present an accompanying D5.1 Annex, comprised of two sections. Section 1 documents our first efforts to extend the Guidelines into a usable and marketable form - the EMOTIVE Design Cards - reflecting on the cards' inspiration, their composition, and their application and reception at the 1st EMOTIVE User Workshop in Glasgow (see D.3.4). Section 2 sketches out the workflow for a specific case of Experience Prototyping; namely, the development of the EMOTIVE Chatbot.

What is presented here represents the first version of EMOTIVE's conceptual framework, a living resource that will grow and undergo refinement as the project develops. In its current form, this document therefore records the concepts and recommendations that the consortium brings to EMOTIVE from partners' previous experience and from our collaborations over just the first few months of the project. Our objective here, then, is to consolidate a common vision and approach internally, leading to further iterations of both the framework and the Guidelines. The latter will culminate in D5.5 with the publication of an accessible EMOTIVE Experience Guide for external experts in the creative industries.

3   General Approach

3.1   EMOTIVE Experience Prototyping – A Step-by-Step Approach

The creation of emotive experiences for cultural heritage settings involves a certain complexity because designers need to take into account the intended visitor personas, the archaeological information, the goal of the experience, the physical context, and the technological capabilities/restrictions. To help successfully conduct such a design process, and based on previous design experiences, EMOTIVE has defined a design workflow, comprising three phases based on our EMOTIVE three "Es": Explore, Express, Evaluate.

3.1.1   Phase 1 – Explore **the Experience Objectives and Concept**

This is the first, preparatory phase of the methodology wherein the design team is put together to identify the experience objectives, targeted personas, and available technologies among other things. The **Explore** phase sets the ground for the rest of the work.

Step 1 - Define and gather the design team. The ideal is to combine different skills in the design team (e.g. domain expert, educator, designer, computer scientist).

Step 2 - Reply together to the following questions:

- What is (are) the experience objective(s) for the cultural institution? What would we like the visitor to take away?
- What are the target visitors?
- What are the main cultural heritage themes/topics/materials we will focus on?
- What technologies are available to us?
- How do we evaluate if the objective has been achieved?

Step 3 - Explore and define visitor profiles (personas) (Figure 1). They will help throughout the design process.

Figure 1: Çatalhöyük personas used together with the EMOTIVE Design Cards at the 1st EMOTIVE User Workshop in Glasgow, February 2017 (for more details on the personas see D3.1)

Step 4 - Define the overall experience type and concept.

Output: The outputs of this phase should be 1) a set of persona cards; and 2) a draft/summary of the experience. This draft can kickstart the iterative process that will lead to the fully-fledged scenario.

3.1.2 Phase 2 – Express the Experience

During this phase, the first prototype of the experience is created, based on the interpretation material provided. The experience scenario is formed and then produced with the appropriate digital assets.

Step 1 - Gather the archaeological information and objects / exhibits that are relevant for the experience.

Step 2 - Define how the experience concept will unfold at different locations and/or with different exhibits.

Step 3 - Define how the experience will specifically unfold for different visitors (individual and group personalization).

Step 4 - Define the visitor's individual actions and their social actions with others (what they need to do for the experience to go on) (Figure 2).

Figure 2: Members of the Çatalhöyük Research Project present preliminary group-authored stories, designed for visitors to the site. This work, conducted in 2014 and 2015, went on to inspire aspects of the EMOTIVE project.

Step 5 - Define what assets are needed for the experience.

Output: The outputs of this phase are 1) interpretation or experience cards; 2) a fully-fledged scenario.

3.1.3   Phase 3 – Deploy and Evaluate **Iteratively the Experience Prototypes**

Experience prototyping and evaluation is a crucial step to confirm that the choices made in the previous steps are valid and effective.

Step 1 - Deploy the experience with the authoring tool or relevant technologies.

Step 2 - Choose a suitable set of users that match your personas.

Step 3 - Go on site whether that be the physical (Figure 3) or virtual site (although "laboratory" conditions or expert evaluations can be also very useful at a formative evaluation stage) and have your users participate in the experience.

Figure 3: Evaluating first ideas for EMOTIVE experiences in the physical site of The Hunterian Antonine Wall display at the 1st EMOTIVE User Workshop, Glasgow, February 2017

Step 4 - Gather the data: observe, take notes about what happens and interview the users later on about their experience to confirm your conclusions.

Step 5 - Reconvene with the whole design team to see how these conclusions help refine the experience.

Step 6 - Make suitable changes and repeat from step 1 as many times as needed. This process gradually leads to the development of the final story.

Output: The outputs of this phase are 1) the final EMOTIVE experience, and 2) a series of evaluation results from the various stages of the development cycle.

Please see Annex: Section 2 for details of the in-progress development of an EMOTIVE experience: the EMOTIVE Chatbot.

3.2 EMOTIVE Experience Types

As the work within D3.1 User Requirements and Scenarios has shown, there is no single experience type that can cater for the preferences of every visitor. To this end, we have identified four main types for cultural heritage experience that are relevant to a variety of cultural sites and to our approach. These experience types are presented below, although we note that they are preliminary and not necessarily representative of the full range of EMOTIVE experiences that will result from the project.

3.2.1 Experience as a Guided Tour

DESCRIPTION

A storytelling narrative functions as a guided tour of the museum or site, under the pretext of a story plot. There are one or more characters and a plot that the visitor follows. The plot makes frequent references to various exhibits and points of interest (Figure 4).

APPROPRIATE FOR

- Exploring the museum/site as a whole and introducing its main areas and exhibitions

- Presenting multiple exhibits that are not strongly related with each other; i.e., they are not part of a common story but may be related under a more loose theme (e.g., common historical period)

Figure 4: Two visitors experiencing a guided tour storytelling approach in the History Museum of the University of Athens

3.2.2 Collection of Short Experiences

DESCRIPTION

A collection of short, unrelated experiences (although they can all follow a common theme). Each experience targets specific exhibits and points of interest in the site that are strongly related as part of an interesting experience. The author dramatises this experience by using characters, dialogue, inner monologue, multimedia, background music, etc.

APPROPRIATE FOR

- Exhibits that already have a very interesting story to tell that is amenable to dramatisation

- After the visitor has been acquainted with the museum through a 'story as a tour approach', she may want to explore some exhibits further. This can be supported by multiple short experiences that target specific exhibits & themes and bring out their dimensions in a dramatised way.

3.2.3 Story-World Adventure

DESCRIPTION

The visitor is part of an adventure. She is the main character of the experience and has objectives that she needs to accomplish in the museum. The experience describes what the visitor sees and through this description a new world is created in the museum/site space where other characters exist and interesting events take place. The visitor moves around in this experience world by moving around in the real (or virtual) world. She interacts with the characters and the exhibits and experiences events as if they are part of the real space around her.

APPROPRIATE FOR

- Museums/sites that take up a large area and have their exhibits appropriately placed to allow for the creation of a story world.

3.2.4 Game

DESCRIPTION

The visitor plays a game that involves exploring the cultural site and taking certain actions under established rules. The visitor can succeed or fail and is generally challenged by the game. As part of the game, the visitor needs to look at the exhibits or consider aspects of the site and its history, processing and organising or responding to important details about them in order to do well.

APPROPRIATE FOR

- Exhibits that are not necessarily of interest to a majority of visitors or that may not be involved in other experiences that are amenable to dramatisation.

4 Guidelines

The user requirements elicitation work in the context of WP3 and deliverable D3.1 has led to the identification of a tentative set of guidelines that are relevant for the development of effective EMOTIVE experiences, to be evaluated and updated during the duration of the project. These guidelines aspire to form part of a Guide for Authors that will support both novice and experienced designers in creating resonant EMOTIVE experiences for cultural heritage. We also aim to translate them into simple, intuitive design cards (the EMOTIVE Cards – see Annex: Section 1) for use in applied situations: with students, clients, curators and other stakeholders working on the development of emotive experiences for cultural sites.

The guidelines are grouped into the following categories:

- **Story**. This category encompasses the experience type and guidelines related to the way the narrative of the experience is constructed.
- **Emotions**. Managing the emotional aspect of the experience is crucial in the context of emotive.
- **Mechanics**. This category encompasses issues like trade-off between the mobile screen and space.
- **Social interaction**. Social interaction amongst visitors, on-site, virtual or hybrid is a strong requirement and one that EMOTIVE aims to focus on given its impact on a visitor's emotional state.
- **Aesthetics**. Aesthetics are vital to offer the visitor an overall high-quality user experience.
- **Technology**. Technological solutions affect the experience design as they are closely related to the budget for the experience.

The rest of this section presents EMOTIVE's proposed guidelines, beginning with tips for developing Experience Types and Personas, and moving from there into the six EMOTIVE categories highlighted above.

4.1 Experience Type and Personas

4.1.1 Tips for… Experience Type

Think about your cultural site and its exhibits. What experience type is most appropriate in your case?

Focus especially on material that:

   (a) brings out the interpretation of on-site exhibits and the locale overall

   (b) has an inner quality that will allow for emotional storytelling

   (c) involves displays and views that the visitor can actually see at the site

4.1.2 Tips for… Visitor Persona

Before you start writing an EMOTIVE experience, think of the visitor persona it addresses: a concrete person or group who you think will like your experience. Not all stories and all experience types are appropriate for all audiences. Pick your target, flesh her (or them) out, and make sure that everything in your experience matches your persona's tastes and preferences.

4.2   Story

4.2.1   Tips for… A Good Story

CHARACTERS

(1) Each character must play a **well-defined role** in the overall plot. Do not add a character to the main plot just to transition to an exhibit or point of interest that involves that character.

(2) Each character must have a **past and a personality** that consistently informs his/her present actions. Make an effort to flesh out each character and inform the visitor on the character's past and personality. Then, make sure that each action this character takes is logically consistent with her past/personality. If you cannot develop a character without the story becoming too extensive, think twice if you truly need this additional character in your plot.

(3) Ideally the story should involve **more than one character** who each play active roles in the plot. Otherwise it is in danger of becoming a monologue by the main character.

(4) Stories are about people, not necessarily about things. This is why some games may incorporate storytelling in a mechanical and forced manner and why cultural heritage needs to leverage good storytelling while also focusing on objects and environments.

(5) Stories concern choices that characters make, either dramatically salient ones or less obvious ones that establish character.

PLOT

(1) There are many ways to create an interesting plot, but there is one unbreakable rule: **The plot must be interesting**. Do not make a veneer plot that only serves to move the visitor around the cultural site (although it should take care of navigation as well). One template for an interesting plot is the [Freytag Pyramid](#). The main idea is to have a central character that wants something. The character tries to achieve it but she runs into considerable and continuous obstacles. At the point of deepest despair, she manages to overcome these obstacles in a remarkable feat of strength.

(2) There should be **interaction among the characters** in the plot with dialogues between the characters themselves or even a character and the user. These dialogues will make the story more direct and interactive.

(3) The **interaction or the illusion of interaction** can make the story more engaging. Rhetorical questions towards the visitor are one among a variety of tools to that end.

(4) **Remind the visitor frequently of the overarching plot** or objective of the story/experience (if there is one). Visitors may be easily overloaded by information, by the space around them, and by interaction with other visitors, so it is easy to forget important plot objectives if not reminded. Do not rely on very subtle cues that are presented only once. And avoid overly complicated plots.

(5) Providing frequent choices that impact the plot means that the story structure becomes complex. Keep the story short to manage the complexity, but make it interesting and make each choice count.

(6) Stories are about conflict, most commonly social conflict.

SHOW, DON'T TELL

(1) Don't rely on narrative summary and detached descriptions to move the plot forward. Get into your characters' heads, see the world through their eyes and senses, feel their feelings and describe them in detail. Make the visitor feel what the characters feel.

(2) Most importantly, don't rely on narrative summary and detached descriptions for the exhibits. Make them part of the plot and give key information for them as part of the plot.

(3) "Spectacle" does not make stories and should not dominate storytelling, especially in a cultural heritage context. Impressive animation or videos, sound, multimedia in general should be considered as options to serve and convey a particular interpretation and not to simply impress the visitor. Focus should be given on how audio-visual techniques can promote the story plot and information content and not solely to use them to boost visitor engagement.

4.2.2   Tips for… Overall Length

(1) Keep in mind that the visitor participates in the experience on-site standing up and moving in physical space. There is only so much time before she gets tired, physically or mentally.

(2) For experiences that are designed to be done only on-site, it is imperative that the experience is short enough to be completed in one visit. The visitor does not want to have to get to the site again and pay the entry ticket just to finish a lengthy experience. Having said this, the experience could be initiated before the visit or added on to afterwards via remote or virtual means.

(3) Beware of information overload; the visitor should be the one to decide if she wants to learn more about a particular exhibit. Don't make these details part of the main experience, but do give the visitor the chance to delve deeper into anything that she finds interesting.

(4) Plan carefully and calculate the experience length. In a branching story, with different options, calculate the shortest and longest duration.

(5) Provide explicit information to the visitor about the length of the story.

(6) Provide options, possibly different versions of the same story, to accommodate for visitors with different availabilities in time.

4.2.3   Tips for… Staging

(1) Think of the experience/site objectives: Is the site, the physical space, important in itself? Or is it mostly an exhibition space for objects? In the former case, the space itself can become an "exhibit".

(2) Think of your cultural site. Where are the exhibits placed in the physical space? Does your experience move the visitor around too much or too little? Does she have to double back, covering a long distance? Does she have to move up and down stairs or slopes too frequently? Does she need special access to certain areas that would require extra cost, effort or special mobility?

(3) Does your experience work if the cultural site is busy? What if other visitors block the spots mentioned in your experience? What if they obstruct the view and your visitor cannot see where she has to go? What if your visitor gets lost at some point?

(4) Make sure that the visitor does not have to stand still at the same spot, experiencing a particularly lengthy part of the plot that has no relation to the space, especially if she is standing at a particularly "busy" part of the site.

(5) Avoid having important content presented to the visitor while she has to navigate inside the site. It is not possible to focus equally on wayfinding and understanding the offered content.

(6) Take care to design competitive activities, especially ones that involve movement in space, taking into account if the movement of the visitors could potentially become dangerous to themselves or other visitors. Do not make the visitors run through crowded spaces, around sensitive objects, or up and down stairs, slopes or other steep, unstable or potentially dangerous terrain, to reach a checkpoint quicker than their friends.

(7) Avoid providing information on an object or location before the visitor reaches it.

(8) Spatial thinking is not necessarily important: Stories take place on stages, not maps. However, as with the importance placed on objects/exhibits, the fact that space is crucial in an on-site experience may be a disrupting factor to good storytelling. If special navigation around the landscape is required, or

if extra guidance is needed within the physical space of a museum or cultural institution, immersion in the story may be negatively impacted. Navigating through a virtual experience also necessitates consideration: should we focus on a detailed representation of a space in terms of navigation or rather provide the impression/feeling of the space to the visitor of the virtual cultural site?

4.3 Emotions

The ultimate goal of a cultural heritage institution in relation to its visitors is usually to offer them a memorable experience that can potentially enhance their perspective on the site and the historical period it represents. Yet all cultural sites, regardless of age, location, and state of preservation are seedbeds not necessarily of knowledge alone, but of human connection, introspection and collective future-building, made possible via shared and engaging encounters. EMOTIVE experiences are based on the principle that emotional engagement can support all of these objectives, enhancing understanding and appreciation for a site, while simultaneously building camaraderie, care, concern and lasting personal links amongst the world at large.

A longstanding body of scholarship on cultural institutions and heritage places testifies to the power of 'resonance', 'wonder', 'provocation' and 'feeling' for creating attachment to and appreciation of these sites and their exhibits (Greenblatt, 1990; Poria et al, 2003; Tilden, 1957). Related evidence indicates that personal experiences at such sites lead them to be more lastingly remembered (Park and Santos, 2017), restorative (Packer & Bond, 2010) and sometimes transformative (Smith, 2015). Major, representative national studies also confirm that people's concerns for heritage derive from personal connections and interactions: as McDonald (2011) describes it, "Once personally connected, people develop an ongoing interest in protecting and preserving what is important to them."

Despite these findings, emotion has mostly been avoided in discussions of heritage and museums until relatively recently (Smith & Campbell, 2015). Even where such discussions have been initiated, they regularly amount to purely theoretical reflections (e.g., Crouch, 2015). When experienced, their impacts seem to be oriented towards the individual visitor. And when developed, they are usually directed at sites from recent or historic times - especially 'difficult' or 'dark' sites - which have relatively robust material and ethnographic data to support them, and highly-charged subject matter that still falls within living memory.

This is critical because many heritage sites and their artefacts have few remnants that are either visible or relatable to the broad public. As such, they may not have enough resonance to engage visitors on their own or through standard interpretational means. Even those conceptual frameworks which have been established specifically to enable emotive storytelling in cultural heritage (e.g., Uzzell and Ballantyne's (2008) 'hot interpretation') appear hostile to the possibility that such sites might be tailored for intimate emotional encounters.

Most importantly, a coherent framework for designing emotive experiences - which is grounded in a robust understanding of the triggers and impacts of human empathy, affect, emotional activation, embodiment, awe and wonder - has yet to be defined. In light of the growing attention to emotional engagement at heritage sites, this is an obvious and problematic gap in knowledge that EMOTIVE aims to address. Various models or sources of inspiration appear to be available, growing out of, for example, Massumi's (2002) notions of felt bodily intensity or Bloch's (2013) field methods for measuring how people experience others' minds. Recent projects such as meSch have also attempted to measure visitor mood and emotion through 'affective impact' questionnaires (Damala et al., 2016). Accordingly, our focus is on defining a methodology for generating affect, emotional activation and arousal in cultural heritage contexts in order to engage visitors with space, artifacts and people (of the past and present), making them more receptive to and reflective on the experience.

EMOTIVE has initiated this work by exploring how the psychology principles of arousal and activation can be applied in the cultural heritage context. Arousal is involved in the detection, retention, and retrieval of information in the memory process. Emotionally-arousing information can lead to better memory encoding, influencing better retention and retrieval of information. Arousal is related to selective attention during the encoding process, showing that people are more subject to encode arousing information than neutral information (Sharot and Phelps, 2004) and that arousing stimuli produce better long-term memory results than the encoding of neutral stimuli (Steinmetz et al., 2012). In other words, the retention and accumulation of information is strengthened when exposed to arousing events or information. Arousing information is also retrieved or remembered more vividly and accurately (Jeong and Biocca, 2012). Yet while arousal improves memory under most circumstances, it had been found that different personality types are affected in different ways. For example, Eysenck found an association between memory and the arousal of introverts versus extroverts (according to the Big 5 personality model) (Revelle and Loftus, 1992).

To date, EMOTIVE's research into such topics has centred primarily around their relation to memory retention. However, this is just one of a series of possible outcomes of engaging with affect, embodiment, and emotion. We seek, next, to extend our investigation of the subject matter, drawing on cultural and anthropological studies as well as cognitive science to build a solid framework for generating emotive experiences in cultural heritage contexts.

4.4   Mechanics

4.4.1   Tips for… Screen & Space

(1) The visitor should always know where to look: the screen, the space, the exhibit. This should not necessarily be an explicit direction to the visitor, but rather a natural choice coming from the content offered by the experience at the relevant points.

(2) If the visitor should be looking at the exhibit or their surroundings, do not offer content on screen. Even a photograph of the exhibit will absorb the visitor on screen.

(3) Offer visual material of the exhibit only if its role is to enhance it. For example, provide a photo of a detail which is not easily visible on the real object or a virtually re-constructed monument, presented whole on screen.

(4) When presenting parts of the plot that are not related to the surrounding space or objects, make sure to engage the visitor on screen.

(5) Don't make the visitor look at the mobile screen for too long. The experience must make frequent reference to the actual space and exhibits and let the visitor inspect the exhibits at her own pace. As a rule of thumb, aim for an 80-20 mix: 80% of time the visitor should spend looking at the actual space and the exhibits, and 20% may be screen-based. On top of that, try not to have long periods of time that the visitor is only looking at the screen passively. Construct your experience and plot around this rule of thumb.

(6) Let the visitor know that she can look at the exhibit without any anxiety of missing something in the mobile screen. Use an audio-only approach to talk about the exhibit when the visitor's attention is guaranteed to be on the exhibit.

(7) Let the visitor know, clearly and explicitly, when she needs to move from one point in space to another, when she needs to look for an exhibit, and where to find it. Make sure that, when a specific exhibit is the focus of an experience, the visitor is clearly informed of it.

(8) The experience should bring out interesting details and context that the visitor cannot infer by labels or standard guidebooks alone.

(9) Provide interesting activities for the visitor that involve looking for details on the exhibit. For example, ask her what the date on a document is and then have her enter the date on her phone. Use various such activity types to promote targeted, in-depth examination of an exhibit. But be careful to not make it a chore. For instance, make it a game by balancing the challenge and providing a good reason, inside the plot, for the visitor to look at the exhibit's details.

(10) Provide a function for the exhibit in the main plot. Have the characters interact with the exhibit.

(11) Make sure to give clear navigation directions to the visitor. Try to make them part of the plot, but always prioritise clarity above drama if such a trade-off needs to be made.

(12) Make sure that your navigational cues do not include directions related to what is assumed to be the visitor's current position at the time ("move to the showcase to your left"). Always make sure to provide directions in relation to absolute points in space.

(13) In a relatively small cultural space there is no need to provide overly detailed navigational cues. Visitors normally enjoy a little bit of exploration.

4.4.2   Tips for… A Game

(1) Look at the Game Experience type and develop a game that involves multiple players.

(2) Make sure the game objectives and mechanics do not "compete" with the cultural space: The main objective is not necessarily to have fun playing the game but rather to experience the space and objects through it. For example, a game where the visitor has to locate 3 particular objects faster than his co-visitors may result in the visitors having minimum interaction with the objects themselves, who are in this context mere checkpoints in a competitive race.

4.4.3   Tips for... Interactivity

(1) The overall quality of interactivity (human-with-human or human-with-computer) depends on the product, rather than the sum, of the individual qualities of the following three steps: You must have good **listening** and good **thinking** and good **speaking** to have good interaction (Crawford, 2004).

(2) "Second person insight": The ability to think primarily in terms of how an expression will be perceived by the audience (Crawford, 2004).

(3) "Ego control": Taking into account that our ultimate objective is to create experiences that evoke emotion in visitors to enhance their perception of the cultural site and the concepts it conveys, the artistic quality of the experience offered is just one of a series of important objectives. Storytelling artists should take this fact into account when working on the design of EMOTIVE stories: artistic quality is very important but not the only priority (Crawford, 2004).

(4) Degrees of interactivity:

- Speed: Fast turnaround is always better than slow turnaround
- Depth: The overall quality of an interaction depends on its depth as well as its speed.
- Choice: Richness depends on the functional significance of each choice at the plot level and the perceived completeness of choices offered.
- Always ask, what does the user do? What are the verbs? (Crawford, 2004)

4.5   Social interaction

Most visitors are members of a group. Use one or more of the following tips to create a collaborative experience.

4.5.1 Tips for… A Common Device

In the case where the story plays out on a single device that is shared by the group members:

(1) Refrain from using too much audio when possible. It may be difficult to hear through speakers and tying everyone up in headphones on a single device is messy.

(2) Give frequent and meaningful choices as part of the plot. Make the group think and explore, give them challenges, make their choices have moral weight. Ensure that their actions influence how the story unfolds and its outcome.

(3) Include activities that promote social interaction and collaboration. Every member of the group should have a role to play.

4.5.2 Tips for… Multiple Devices

In the case where each member of the group has her own device and headphones:

(1) Each visitor is likely to experience the story on her own. Make sure that frequent chances for social interaction / collaboration occur.

(2) Social interaction may be promoted by providing each group member with the opportunity to experience a different story. For example, they may follow a different central character that has a different point of view and information to share. Visitors can be prompted to exchange information in order to complete activities (e.g., using the 'information gap' technique, as described below).

(3) Make sure that the group members stay close so that collaboration can occur more easily (Figure 5).

Figure 5: Two users at the site of Çatalhöyük work together to test a prototype interactive experience. EMOTIVE team members observe their interactions from the sidelines.

(4) The Information Gap technique may be used to promote social interaction. Here visitors are prompted to exchange points of view on the story and other information in order to piece together a bigger picture.

4.6   Aesthetics

(1) The experience's general visual layout/design/aesthetics should be taken into account at the production phase of the story. The image of the cultural institution is important and should be reflected in the design of the overall experience.

(2) Production matters in the visitor experience. The same wonderful concept and script implemented as a draft with text-to-speech voices will be perceived as significantly inferior to the same script implemented with actors recorded in a studio.

4.7   Technology

EMOTIVE intends to push the boundaries on the state of the art with respect to technological engagement at cultural heritage sites. Current applications that the project seeks to extend - in the sense of innovating with, then honing their dimensions and facilitating wider distribution and usage across the cultural heritage sector - are discussed below.

4.7.1   Technology for 3D and Virtual Reality (VR)

IMAGE-BASED RENDERING (IBR)

Using image-based rendering we can create photo-realistic 3D environments using photos of archaeological sites. These environments can be populated with 3D and 2D objects and interactive hotspots.

Limitations to IBR:

(a) Currently only outdoor environments can be captured. Support for indoor environments may be considered in the future (please see below).

(b) Navigation in the 3D environment is mostly based on a linear, side-scrolling path. It is possible to move around, but one still needs to stay relatively close to the original viewpoints.

(c) Additional 3D objects that populate the scene must be created using the traditional 3D object production pipeline, so it is a time-consuming process. However, there is a possibility to create 3D textured objects using an image-based *modeling* approach, but the models are not always of very high quality, and some manual edition is required in post-processing.

OBJECT FABRICATION

It is possible to create multiple physical copies of a real object starting from its 3D model using molding techniques. These replicas can serve as short lived exhibits (the visitors can touch them if the real exhibit is fragile or not present at the cultural site) or as limited number souvenirs (the visitor can order a 3D-printed object from a collection of items and receive it at the end of the visit).

Limitations to object fabrication:

(a) The 3D model should be printable. This can be rather complex, as the shape should be "not too complicated": a statue or a vase would be acceptable; a hairy ball would not.

(b) The physical replicas should have dimensions that can promote the manipulation of the replica using your hands. This means the real object size may need to be scaled in order to fit into the workspace of the visitor's hands and arms.

AUGMENTED REALITY (AR) ON A 3D PRINTED OBJECT

The visualisation of a 3D-printed replica of a real object may be improved by virtual projection of a more realistic texture using AR methods. Here, the replica is used as a physical manipulator in the VR experience. The projection of the appearance improves the perception of the replica as an authentic

object. During the VR experience, the visitor's hands could also be represented virtually to improve the quality of the experience of 3D manipulation. In other words, through visualising that the visitor is holding the object in her hands, she is exposed to a seemingly more realistic representation of the handling experience and of the object itself.

Limitations:

(a) The appearance attributes of the object must be created by a digital artist.

(b) The physical replicas should have dimensions that promote the manipulation of the replica using a visitor's hands. This means the real object size may need to be scaled in order to fit into the workspace of the visitor's hands and arms.

(c) Requires a VR headset.

(d) This is a single person experience, making social interaction very tricky.

DOCUMENT BROWSING AND INTERACTION

Often interesting documents in museums are behind glass showcases, so they cannot be browsed by visitors. By scanning each page in a document, we can create a browsable digital document on the visitor's device. The pages can also include certain interaction hotspots. Different documents with different page dimensions can be incorporated.

Limitations:

(a) If the document is fragile, special scanning techniques may need to be employed.

AUGMENTED REALITY WITH CARDS

AR with specially printed cards can be used as follows: A card with a certain pattern is associated with a 3D object. When the visitor points her device's camera to the card, a 3D object is overlaid on the card. This may be interesting in offsite scenarios, or on-site for exhibits that are not physically present, or even to allow visitors to interact with objects they are not otherwise allowed to manipulate (Figure 6). Note that the same card can be used to show something different to different visitors, which may enable social interaction and collaboration scenarios.

Figure 6: Young student interacting with an augmented reality application allowing them to manipulate a 3D alphabetic telegraph

We can use 3D scanning techniques to create accurate 3D models of exhibits. Advantages and disadvantages of this methodology mostly depend on the technologies used. For example:

Active Scanning (laser/structured light triangulation)

- Pros: high quality; wide range of surface admitted
- Cons: costly; highly skilled personnel required

Passive (multi-view stereo/photogrammetric)

- Pros: low cost; easy to use
- Cons: variable quality (depending on material, equipment quality, skill of the operator)

4.7.2   Technology for Mini-Activities

Here we are interested in technologies that can deliver various mini-games and other activities aimed at encouraging the visitor to look closer at a cultural site and its exhibits. For example, the experience might ask a visitor to answer questions which involve looking in detail at a component of an exhibit.

IMAGE WITH HOTSPOTS

An image may be tagged with (possibly hidden) interaction hotspots. These hotspots can show any type of content when selected (audio, text, video, or link to other types of supported content). They can be used to show an image of an exhibit or area of a site and the visitor can search for a hidden detail in it, or choose hotspots to investigate in more depth. They can also be used for navigation or to enable the visitor to select an exhibit from a showcase.

QUIZ

A quiz can be used to ask the visitor to look for something within a site or exhibit, then answer related questions (Figure 7). For example, in the simplest of circumstances, the visitor may have to read the date on a document and fill it in within a text box. A different response may be given for the correct answer and the various possible incorrect answers.
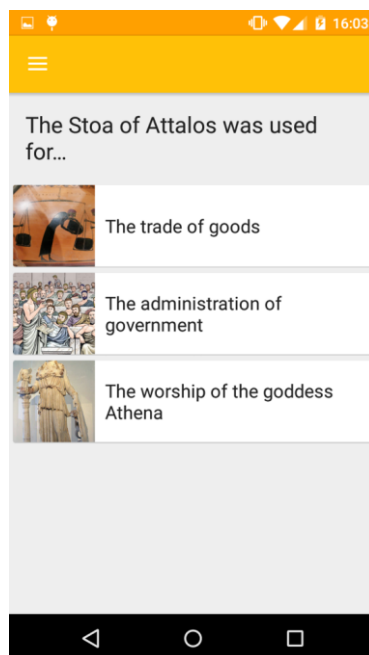

Figure 7: The use of a simple quiz in the Athens Ancient Agora storytelling experience

MATCHING BETWEEN TWO COLUMNS OF ITEMS

In the simplest of circumstances, this activity might include the display of two columns of items, with the items then matched into pairs by the visitor.

PHOTOSPHERE

A 360 degree photo is shown and the visitor can move her device around to explore it. The photosphere can be matched to a real environment, showing it as it was in the past (by using sketches or other techniques). Note that the visitor must be at a specific spot so that the photosphere matches the actual environment around her.

SORT A SET OF ITEMS

A set of items is shown and the visitor is tasked with putting them in order. For example, she may see a set of 19th century tools for creating medicine from herbs, and she is asked to put them in the correct order for the medicine to be created.

4.7.3 Technology for Location Awareness

NFC TAGS / QR CODES

NFC tags and QR codes can be used to allow the visitor to 'check-in' at a certain location. This check-in can be used as a way to verify the visitor's location at a certain point in time. It can also be used to determine that multiple users are together without knowing their location, by bumping phones (NFC) or displaying a QR code on a phone and scanning on another.

Limitations:

    (b) NFC tags and QR codes can be intrusive, i.e., they need to be placed on or near exhibits or points of interest.

    (c) Not all phones support NFC.

    (d) QR codes are intrusive in the user experience because they require a visitor to start the phone's camera in order to proceed with the activity.

BEACONS

Beacons make their position known to any device that passes near them

Limitations:

    (a) Beacons are less intrusive than NFC tags and QR codes, but they don't allow for great precision: usually 20-30m or more, and their signal can be obstructed by walls and other obstacles.

MAGNETIC FINGERPRINTING

This technique relies on establishing the magnetic fingerprint of a building to provide the user's real time location indoors with only standard sensors. It can offer great accuracy (<2m) and requires no infrastructure.

Limitations:

    (a) This a relatively new technology and needs further research.

    (b) It works better when the user is moving so it might be most effective in supporting visitor navigation.

    (c) It requires redoing the mapping when layout changes (meaning that the fingerprint is altered).

    (d) Some implementations require internet connectivity.

GPS

GPS can give fair accuracy on a user's real-time location.

Limitations:

    (a) It cannot be used indoors.

IMAGE MATCHING

A user takes a picture and it is matched with a database of known images. This might be used to enable an experience that requires distinguishing between different exhibits and spots.

Limitations:

    (a) May be easily confused by lighting conditions and camera angles, especially if different exhibits look a lot like each other (e.g., different documents).

4.7.4 Technology for Social Interaction

COORDINATED USER INPUTS

An experience might be designed to force synchronisation between visitors and their devices, wherein each must wait to progress until all others have clicked a confirm button on their corresponding devices. Other more sophisticated inputs can also be handled, for example waiting until a full mini-activity is completed before progression. Possibly, we can also offer more fine-grained device synchronization. For example, one visitor can spy on the other's progress in a mini-activity and influence it directly and in real-time on her own device.

COORDINATED USER LOCATIONS

A special condition for coordination can be that visitors are in specific positions in space before the experience can continue. Each visitor position in space will have to be indicated using one or more of the techniques described above in the "Technology for Location Awareness" section.

LOW-TECH INTERACTION

There isn't always the need for sophisticated technology to get people to interact. We might simply ask them a question and let them work together on answering it, or use information gap techniques and let them know that their peers know something they do not (Figure 8). We might also provide incentives to visitors to collaborate in order to progress in their experience (e.g., they must discuss something to successfully complete a quiz).
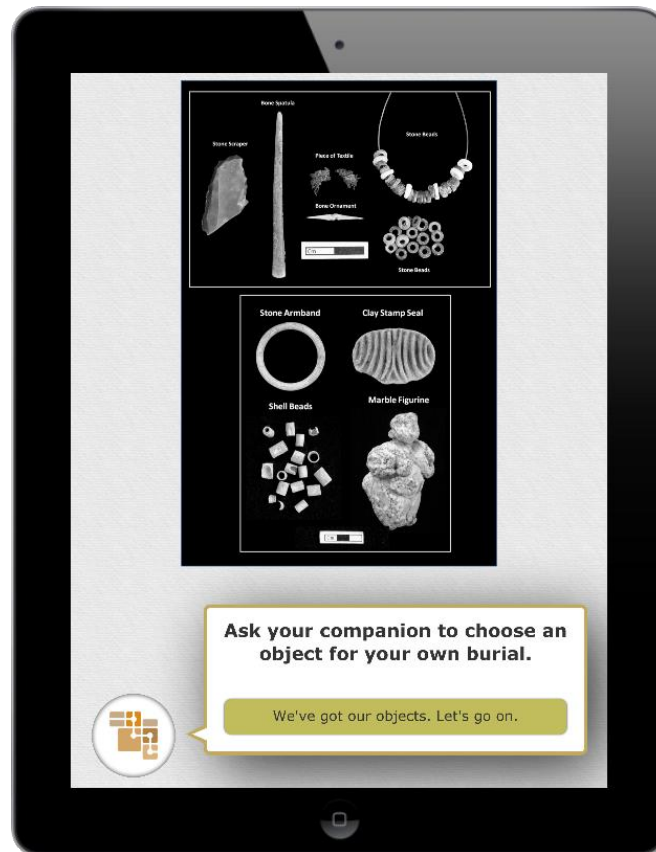
Figure 8: Screenshot of an early prototype EMOTIVE experience designed for the site of Çatalhöyük: interaction is promoted here through simple prompts for two users on separate devices

ITEM TRADING

A visitor can trade an item that another visitor has and learn something new or unlock a possibility in her own experience. These items may have NFC tags / QR codes on them so that the visitor's device can identify them instantly.

ITEM SHARING

A visitor can share an item with the team by placing it into the team's inventory, accessible by multiple participants.

INTERNET OF THINGS (IOT) CONNECTIVITY

Parts of the experience can take place on a shared smart-screen. There is also the possibility to investigate other IoT devices such as: connected lights (which can be manipulated remotely by the visitor or automatically as part of the story), web cameras (that can be used to take pictures of the visitors at fixed points), etc.

CHATBOT

Often visitors have questions about the exhibits or the cultural site in general. A visitor experience cannot provide the user with every detail they may want to know. The chatbot allows a visitor to write a question in natural language and get an answer back in (near) real-time, either from a museum expert or from an artificial source - a chatbot (which has been developed for the purpose of answering such questions). More practically a "chat-robot" or "chatbot" can:

- Detect one of a fixed number of user intents and engage in conversation, providing curated information that has been prepared by experts for each of the intents. These may range from information about the site to information about individual exhibits or parts of exhibits.

- Under certain circumstances, e.g., when none of the fixed intents is detected or when it is detected that a visitor is not happy with their interactions, the conversation may be delegated to a human expert.

LEADERBOARDS / ACHIEVEMENTS

Leaderboards can be a way to stimulate constructive competition between visitors, as well as cooperation if an experience is meant to be completed by more than one visitor. They can also motivate a visitor to come back for another tour, as they aim to achieve better results the next time around and move higher up the leaderboard.

SOCIAL NETWORK FRIENDS

Visitors could, by signing into their social network account, request assistance from their friends on said network. This could induce dissemination and be a starting point for hybrid experiences where on-site and off-site visitors are given a chance to interact through a common experience. Such a strategy is already widely used in some games (e.g. Candy Crush).

EXPERIENCE CREATION / INVITATIONS

Visitors can start a multiplayer experience and invite other users (possibly from their social network) to join their created session. A menu screen is presented (effectively a lobby) displaying the connected users and providing necessary controls to start the game after a number of participants have joined.

5 Conclusions

The EMOTIVE project is well on its way to defining not only a coherent conceptual structure (the EMOTIVE framework) for developing emotionally-resonant digital experiences at cultural heritage sites, but also practical tools (the EMOTIVE Guidelines and eventually the EMOTIVE Cards - see Annex: Section 1) aimed at sharing this structure with other interested users. Our preliminary experiences show that these outcomes have promise for transforming the nature of storytelling, of visitor experiences, and of the design of such visitor experiences within cultural spaces. The EMOTIVE team is now articulating a programme of beta experience development at our partner sites (Çatalhöyük and the Hunterian Museum's Antonine Wall display) through which the Guidelines and any associated resources will be further elaborated. Once perfected, and looking ahead to D5.5, these resources may then be published as user-friendly, accessible products -- the first ever aimed at generating high-quality emotive storytelling at cultural institutions around the world.

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ANNEX: SECTION 1

The EMOTIVE Guidelines in Card Format

Recognising that the Guidelines described above (Part 4 of D5.1: "Guidelines") are extensive and might require a significant investment in time and attention to review in full, EMOTIVE team members explored options for translating them into a more succinct and usable toolset. Inspired by the work of design-conscious practitioners in other disciplines, we settled on the concept of EMOTIVE Cards. These are, literally, a deck of cards for use by cultural heritage stakeholders (including students, curators, clients, etc.), which can be 'played' to develop emotive experiences according to our good practice guidelines.

Design Cards are a common tool in Human-Computer Interaction and Coaching (e.g., Bekker and Antle, 2011; Hornecker, 2010; Lalioti, 2016; Lucero and Arrasvuori, 2012; Schell, 2008; Seventhinkers, 2016; Wetzel et al., 2016). They can be used for different purposes (e.g., to define groups, inform a knowledge domain, support creative design, foster collaboration); in different design phases (front-end, idea generation, idea development, documentation, and evaluation); and with different "play" rules (e.g. randomly, by turn-taking). The scholarship on these cards stresses several advantages of using such a tangible, playful approach to design: cards help kick off and structure discussions; support focus shifts; constitute physical props for conversation; provide a common vocabulary; allow an open-ended rather than prescriptive approach; bridge gaps between theoretical frameworks and design; facilitate equal participation; encourage risk-taking; enhance motivation; and reduce awkwardness in groups of unrelated people.

The Deck

Given the above, EMOTIVE attempted the elaboration of a card-based methodology, linked to the EMOTIVE Guidelines, to support creative processes in cultural heritage institutions in a complementary way to the Guidelines (Figure 9).
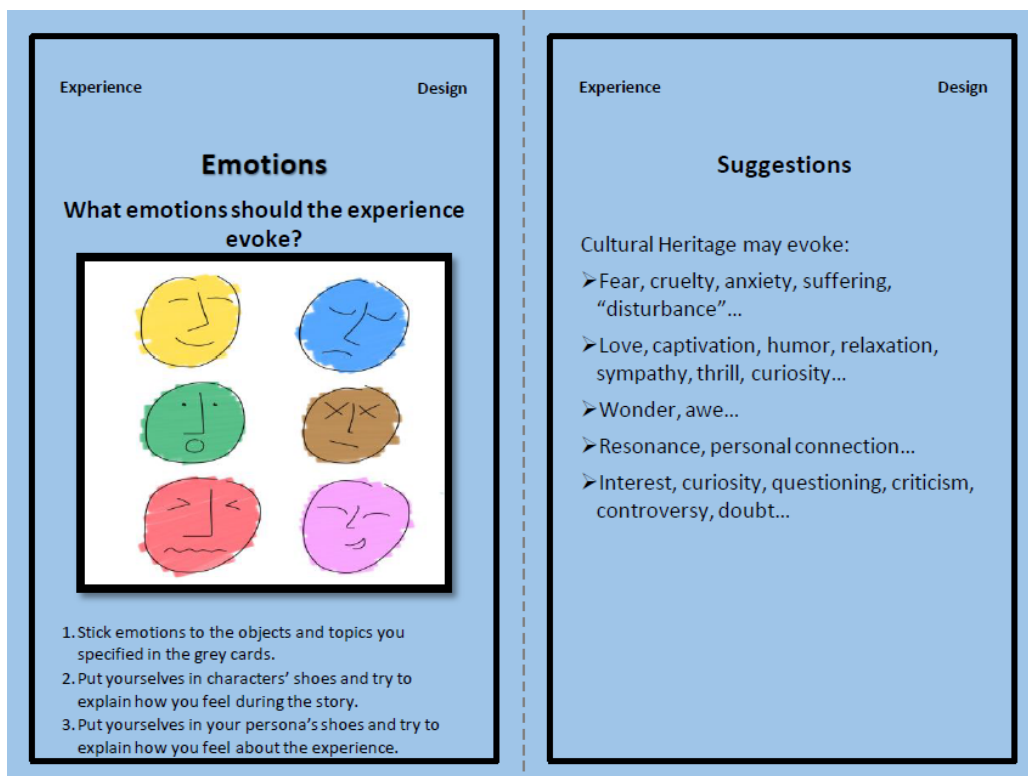

Figure 9: An example of an 'emotions' card related to the design of an EMOTIVE experience

The deck aims to foster collaboration within interdisciplinary design teams (of 6-8 "players") and inform them about different knowledge areas.

A set of 94 cards divided into 4 suits and 7 categories was designed and printed by EMOTIVE's WP3 partners (York and UGLA). The instructions included in the deck described the cards and how to use them as follows:

- **Authoring setup (Suit 1).** 3 shades of orange (cards 1-5, 6-7, 8-9) for 3 sets of issues to consider successively. Shuffle all cards together and deal an equal number to each player. Draw card n.1 and read it aloud. Follow the card's instructions. Put it on the table and draw card n.2 next to it. Follow the instructions. Repeat for all cards in numerical order, creating a new line of cards for each shade of orange. Cards 6 and 9 have just icons, to indicate they can be used in any order. Recommended time: 30 minutes.

- **Personalizable cards (Suit 2).** Grey cards to fill in based on the unique situation of the cultural site or stakeholders.

- **Design (Suit 3).** 3 shades of blue (categories) for 3 sets of issues to consider successively: 1) Experience, 2) Mechanics, 3) Interface. Shuffle all cards together and deal an equal number of cards to each player. Select one persona card to "build" the experience around it. Start with "Experience" cards. Taking turns, each player draws a card, reads it aloud, justifies its relevance, and the group debates if the card is or is not kept. New cards will be put close to the previous ones forming clusters. When all cards are drawn, do the same with "Mechanics" and then with "Interface". Repeat the process for each "persona". A picture for documentation is taken at the end. Recommended time: 90 minutes.

- **Evaluation (Suit 4).** Red. Shuffle all cards and deal an equal number of cards to each player. Taking turns, each player draws the card they consider most relevant and puts in over the corresponding Design or Setup card. Debate its recommendations. Repeat the process until all cards are drawn. Recommended time: 30 minutes.

Evaluation

The cards were evaluated during the first day of the 1st EMOTIVE User Workshop in Glasgow (see D3.4). The goal was to create interactive EMOTIVE experiences for Building 52, a well-documented architectural structure at the urban Neolithic settlement of Çatalhöyük (see more about the site below). The design cards would be used as a means to structure and guide the creative process in multidisciplinary teams of professionals who may not have previously known one another.

Groups (5 in total, composed of 5 to 6 people) were allocated based on diversity in terms of gender and expert speciality, including at least one EMOTIVE member per group, one technical team member, as well as one Çatalhöyük site specialist. Each was randomly assigned a package of information about Çatalhöyük which included imagery and a specific persona representing a known visiting group demographic for the site.

After lunch, the groups sat at different tables, where a set of resources had been placed (Figure 10). The set included: two decks of cards (design-oriented and Çatalhöyük Building 52-oriented); persona files; and office material (paper, pens, markers, post-its). From there, leaders of the session (York) reminded participants of the goals of the session and recommended a structure for the development of the activity: (1) getting familiar with the assigned personas, (2) reading the basic information about Çatalhöyük provided in the site-specific cards and the imagery, (3) playing with the design card deck, and (4) engaging in the design activity with the help of the aforementioned materials. The session lasted 1 hour and 30

minutes. Coffee break (15 minutes) was used to prepare for reporting. Following this, participants presented in turns their designed experience and then together reported on the design process (e.g., choices, challenges) and the different tools/materials available to them (personas, subject information, cards) (45 minutes).

Figure 10: One group at the 1st EMOTIVE User Workshop in Glasgow (February 2017) designing experiences for Çatalhöyük with the help of the EMOTIVE cards

Information about the usefulness of the EMOTIVE cards as a design methodology was obtained in two ways: through direct observation of group dynamics during the activity, and as feedback provided during debriefing sessions at the end of Day 1 and Day 2. Both the activity session and the debriefings were video and audio-recorded for in-depth analysis.

Observations during the design session suggested the following conclusions:

- Participants spent most of their initial time familiarising themselves with Çatalhöyük's personas and basic information about the site. This was to the detriment of the exploration of the design cards.

- The cards provided a tangible referent to basic information (about the knowledge domain).

- Cards helped structure some of the design process and/or focus on the issue at hand, but in variable and unintended ways. Those cards which defined the goal of the experience were used in quite a systematic, almost prescriptive way. Subsequently, cards focused on interface, experience and mechanics were played in a more random way. Some players would keep cards for later, to bring issues into the discussion. In some cases, a card was discussed and discarded because it was considered irrelevant. As participants came to talk naturally about the different aspects of their proposed experience, the cards were increasingly disregarded. This was exacerbated when instructors were informed about the remaining time.

- "Players" (group members) mostly used an individual card's title and inspiring question to guide their work. It is unclear how much the illustrations on each card were used. Support elements on

the flip side of each card (concerned with design methodology and suggestions) were less used and in many cases disregarded completely.

The final debriefing on Days 1 and 2 of the Workshop was also used to gather more in depth feedback on the cards, as it could be compared to a different approach used during Day 2 without use of the cards (see D3.4). According to this debriefing, during the Workshop the cards helped: (1) structure discussion in an easy manner, especially given the fact that team members did not previously know each other; (2) start conversation and/ or resume it when there was silence; (3) focus on specific things and remember them during the design process.

Yet, given the timeframe, the cards were considered overwhelming because there were too many. Participants felt a couple of cards per person would have been sufficient to help initiate conversation, and did not want to be bound to 'playing' the whole deck. In any case, participants felt they needed more time, even before the meeting, to become familiar with the cards and their mechanics of use.

Groups contained skilled, experienced professionals and therefore issues were discussed naturally; as a result, participants felt stressed because they had not used the cards, yet at the same time many felt they did not need the cards. Participants reported that Day 2 of the Workshop (see D3.4) proceeded more smoothly because they only had to contend with personas and could physically see the museum exhibition space and its exhibits. In other words, they had fewer resources (and fewer inputs with which they were not familiar) to take into account.

The cards themselves were structured in a two-sided fashion, with suggestions for possible experiences outlined on the reverse side. Participants felt these were confusing because they compelled them to spend a lot of time thinking about how to manage the suggestions 'correctly'. A compromise needs to be found between openness to allow creativity and structure/suggestions to guide the process and to keep it within the limits of effectiveness. It is proposed that the final outcome of this resource might be a deliverable that helps keep focus but is still flexible.

Finally, participants also gave their opinion about the potential target users. They considered cards might be more useful for more advanced phases of design, to develop and refine experiences, or conversely for meetings between design companies and museum clients, to help focus and structure their initial discussions. The cards might also be better suited for a particular target audience: those who are less expert in the relevant knowledge domain.

Preliminary Conclusions on the EMOTIVE Cards

Given the timeframe of the 1st EMOTIVE User Workshop, the EMOTIVE cards were probably not the most appropriate tool to meet the event's goals. Such cards aim at a more open, long-term design process, whereas participants in the 1st Workshop felt they needed to complete a quite complex task in a very limited amount of time. As such, the cards were primarily applied in a checklist fashion, and while they may have structured the activity for some, they were also perceived as overwhelming. Indeed, they tended to be considered as simply another resource requiring study (along with site-specific cards/information and personas) when experts would already, naturally raise the relevant issues. However, the fact that experts had the impression that they had already tackled many of the issues in the cards seems to validate, at least preliminarily, their suitability, especially for less knowledgeable or focused users. Also, comments about the need to become familiar with the team and to designate a moderator, confirm the preliminary validity of some of the cards (those we eliminated from the deck in order to speed up the design process). The deck, therefore, needs further validation with users in other contexts.

ANNEX: SECTION 2

EMOTIVE Experience Prototyping: The Example of the EMOTIVE Chatbot

One of our first EMOTIVE experience design efforts has entailed the planning of a Chatbot (see definition above) for the site of Çatalhöyük. Following the EMOTIVE three 'E's of design, the process (begun in M5) is anticipated to roll out as described below, beginning with a design problem which site curators have long wanted to resolve.

(1) Design problem to solve: remote site, experts hard to access, many interesting finds and ideas about the past at Çatalhöyük, but little means of answering questions and exploring issues because of its remoteness and lack of expert access.

(2) Brainstorm possibilities: a sub-team amongst the larger EMOTIVE project team comprised of three technical members (ATHENA), and two user-centred design members (YORK) meets to discuss options to resolve the identified design problem. In this case, digital chatting was considered an ideal means to manage the situation.

(3) Establish expertise/capacity: Within EMOTIVE's technical team (ATHENA), the necessary technological capacity was identified and the chatbot confirmed as an EMOTIVE experience option.

(4) Site research: EMOTIVE team members or affiliates of the cultural heritage site research current visitor behaviour in an effort to develop an informed experience. In this case, YORK partners study engagements with Çatalhöyük's social media (particularly Facebook): the questions being asked, common interests that define users of the site's social media, and popular themes presented and discussed on the social medium.

(5) Technical State of the Art (SOTA): What is the SOTA as regards the proposed technology? How can we push beyond it? In this case, ATHENA's Chatbot expert presents research on chatbot experiences to the sub-team to familiarise them with the technological SOTA.

(6) Cultural heritage SOTA: What is the SOTA as regards the proposed audiences, emotions, experiences to be engaged via this EMOTIVE design? How can we push beyond it? In this case, YORK's team members explore the SOTA with respect to chatbots, chatting and social experiences in cultural institutions more generally.

(7) Decide on evaluation approach & ethics: For beta versions of EMOTIVE experiences, this is most likely to entail a closed evaluation with users we select and invite; in specific, user impressions would be assessed via a questionnaire and/or interview, and metrics would be automatically logged while the user interacts with the chatbot. This logged information might include such matters as how much time the user spent with the chatbot, if the user explored all themes, etc. The evaluation process for the Chatbot in its first iteration would involve inviting users to try the Chatbot and then being interviewed by the WP9 team. Users must be informed that their interaction with the Chatbot, and their responses in the interview, will be recorded and used for research purposes.

(8) Co-design process: sub-team works together to define the dimensions and proposed content of the experience. In this case, a series of example mini chats are produced around particular themes.

(9) Alpha version: Development of a first draft of the EMOTIVE experience. In this case, the ATHENA Chatbot team sets up the material to explore different chatbot options.

(10) Beta version: Demo experiences are prepared with an aim of testing their efficacy in various EMOTIVE-specific contexts (e.g., plenary meetings, workshops).

(11) Evaluation: Continuous through the process, based on the evaluation approach defined in step 7 (above), with a specific focus on the Chatbot's utility in creating activation and emotional engagement.