

Cultural Game Jam Model: A Quadruple Helix Intervention

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Abstract: The EPIC-WE Cultural Game Jam: Óbidos UNESCO City of Literature (CGJ) was a purposeful game jam, and part of the EPIC-WE Horizon-Europe project. CGJ empowers youth to participate through ideating cultural worlds, by creating and exchanging cultural values and heritage through game-making (game jams experience), within the Quadruple Helix (QH) Cultural Innovation Ecosystem. The study is focused on the specific presence of jammers at the game jam venue, within the cultural spaces and cultural agents. Describing the development of unique Game Jams applying the QH model, linking a municipality region, a games company, university researchers, and a youth focus group to foster the production of games for culture and games through culture. With extensive experience in organising game jams since 2014, the researchers confronted the literature review study focused on youth empowerment and cultural game jams (Costa, *et al.*, 2024), ensuring the project research protocols to define a model for 4 game jams to be held from 2024 to 2025. The ongoing research demonstrates the creation of a research protocol for the 1st CGJ model: student recruitment; Pre-Game Jam with the theme reveal and ideation; Game Jam activities and conditions; Reflection Day; Data collection; Post-Mortem analysis; CCI games evaluation; and future outcomes. 8 games produced on the 1st CGJ demonstrated the effectiveness of the CGJ model for cultural purposes. Besides the cultural theme limitation, participants (N=26) evidenced a high level of satisfaction evidenced in the final survey. Several recommendations for improvement were given (survey reflection 2) and outlined so that future CGJs can produce games that delve more deeply into the topics covered.

Keywords: Game Jams, Cultural Games, Quadruple Helix, Cultural Game Jam

1. Introduction

Game Jams have gained a lot of prominence in recent years, being events where the gamedev community and other enthusiasts from a wide variety of fields come together in a playful environment to create games. It's an experimental space for ideas and rapid prototyping where people participate freely under a specific theme within a predefined time frame (Kaitila, 2012).

Jam sessions are a spontaneous, unrehearsed gathering of musicians who don't have prior history as band members, often having very diverse backgrounds, value systems, and musical ability but nonetheless being able to come together as a unit capable of achieving a successful music performance (Katz & Longden, 1983). Similarly, in a game jam, people with know-how from diverse disciplines, traditionally programming, game design, art, and sound, convene to collaborate (Grace, 2016) and playfully develop games, adhering to a predetermined theme and time limit, commonly set at 48 hours (Kultima, 2015; Goddard, 2014).

These types of events have officially existed for over 20 years, starting in March 2002 with the Indie Game Jam, closely followed by Ludum Dare, in April 2002 (Lai *et al.*, 2021). The latter event remains popular and active to this day. According to Lai *et al.* (2021) we can categorise the earlier game jams in different waves in order to better understand the evolution of the format: 1st generation - events were mostly held online with a technical focus and games being developed by a single programmer; 2nd generation - began in 2006, events were in-person and the focus shifted to games created by a team with varied skill sets. Another important highlight from this generation is the appearance of the Nordic Game Jam, responsible for introducing the game jam model most commonly used today; 3rd generation - started in 2009 with the advent of the most popular game jam to this day, Global Game Jam (GGJ), an internationally synched game jam that takes place worldwide at the same time, across different countries and locations such as schools, universities and companies that welcome professionals, amateurs, students and everyone who might want to participate (Kultima, 2021). Since it began, the growth of locations, participants and games resulting from the GGJ has been exponential (Fowler *et al.*, 2015), with the trend continuing. What began with 23 countries and 370 games, has since expanded to 131 different participating countries and more than 79182 games created just in 2024 (Global Game Jam, n.d.); lastly, 4th generation - introduces the concepts of moving game jams, such as the Train Jam (hosted on a moving train), and unique locations such as castles or more remote locations. These new formats introduce additional constraints, such as limited internet access or power sources just to name a few, and offer singular experiences to participants.

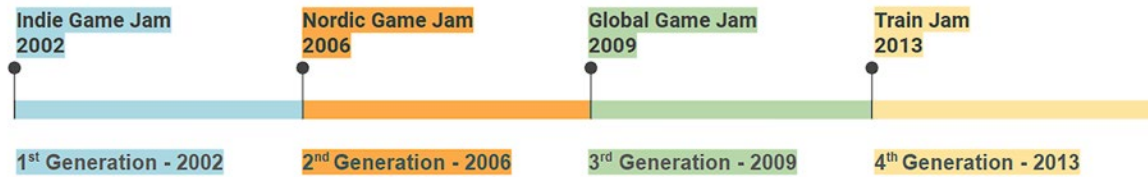


Figure 1: Game jam generations timeline.

Today, multiple game jams are taking place around the world at any given time, as can be attested through Itch.io, the most popular platform used to host and track many of these events.

Nordic Game Jam's model, first designed and applied in 2006, remains to this day the most widely used game jam format. The Global Game Jam, as the biggest and most popular game jam in the world, contributed significantly to the popularity of this model.

According to Lai et al. (2021) the most common agenda for this type of event is defined by: (1) a 48-hour duration; (2) starting with an Ice-breaker activity to involve all participants and jam organisers; (3) being followed by a Theme reveal; (4) a Pitch session, (5) Group forming and (6) Game presentations. Between steps 5 and 6, the games are developed during the event and disseminated on the game jam's website page at the last minute.

1.1 Meaningful Game Jams

Given the success, proliferation and recognised creative potential of game jams in creating and testing speculative ideas on specific themes, various game jams have been created for specific purposes. Goddard *et al.* (2014) propose guidelines to facilitate the design of game jams, providing means to balance between playfulness and gamefulness in relation to desired outcomes such as innovation in games or participant experience. Game jams oriented towards inclusion, the dissemination of meaningful themes, cultural themes and others, are today a very useful tool for participants to express themselves culturally through games (Wirman & Rhys, 2019) while at the same time being challenged to reflect on particular themes (Kultima, 2015).

In this context, when a game jam is developed in a specific environment, with a presentation of the Jam's theme and ongoing support by facilitators, the participants become fully involved and free to express themselves artistically (Kultima, 2018; Park et.al, 2023). When jammers are challenged with meaningful themes, the empathy generated and understanding of others' perspectives, such as different cultures, cultural heritages, people's feelings, climate change, health and others, are evident (Preston, 2014; Goddard, Byrne & Mueller, 2014), and the results of the games developed by teams of facilitators (educators), game designers, programmers, artists and sound designers, demonstrate the additional value of these "Serious" Game Jams (Ramzan & Reid, 2016; Abbot et al., 2023).

The present research is the culmination of a recent experience organising a cultural game jam, supplemented by prior involvement in numerous game jams dating back to 2014. Noteworthy among these are game jams focusing on neuroscience (Neuro Game Jam 2018), understanding the Sustainable Development Goals (SDG Game Jam 2021), and social impact (Games for Good 2017, 2018, 2019). These past experiences highlighted the extreme relevance of having facilitators in the game jams, both to guarantee an enriching approach to the topics covered and to ensure openness and a playful jamming experience (Goddard, Byrne & Mueller, 2014). This study introduced a fresh perspective to the team responsible for orchestrating an event that involves various stakeholders, including government officials, representatives from cultural and educational institutions, and industry professionals, all coming together to host a cultural game jam.

2. EPIC-WE Cultural Game Jam: Óbidos UNESCO City of Literature (CGJ)

The CGJ is one of the first outputs of the Horizon Europe EPIC-WE project, which aims to empower young people with social and cultural values through the development of games in cultural Game Jams. The project is being carried out by 13 European institutions from different fields of intervention (research/education, cultural heritage/museums, governance/citizenship/public, and game/creative industries), and presents a participatory framework based on the Quadruple Helix (QH) model which involves omnidirectional interactions of knowledge and technology (Aggarwal and Sindakis, 2022), for creating methods and a specific format for cultural game jams for culture and value-sensitive game-making. Since EPIC-WE engages in CGJs to create games through and for culture inspired by cultural heritage, the present project demonstrates how the QH empowers three EPIC-WE

partners, namely the Óbidos' Municipality, the Battlesheep games company, and Lusófona University, to converge in cultural research and innovation.

Regarding previous experiences where research included societal-based innovation through the QH, identifying key themes and future agendas requires a proper integration between different stakeholders (Wilson, 2012). This process will intensify existing challenges but also promote new ones (Miller, McAdam & McAdam, 2016). The QH interventions are an innovation-push model through the interaction of local and regional stakeholders into economic and technological development (McAdam, *et al.*, 2012; Bercovitz and Feldman, 2006). This collaboration enhanced the movement between stakeholders toward the most valuable societal aspects (Höglund & Linton, 2017). Thus, EPIC-WE's QH model fostered these diluted borders between public authorities and organisations, industry, academia, and citizens (Nørgård & Holfold, 2024).

The EPIC-WE project has three cultural Hubs: (1) Aarhus - contributing to societal challenges of young people feeling foreign to, disempowered in, or excluded from game-making and culture; (2) Hilversum - centred on societal issues like the impact of colonial legacies and online anti-democratic threats; and (3) Óbidos - exploring the cultural heritage awareness of young people within European Union values of inclusive quality education and sustainable economic growth.

In the context of this research, EPIC-WE Game Jam was the initial result of applying QH to create games with cultural significance. The Municipality of Óbidos suggested the theme of Óbidos Literary Village, due to the fact that Óbidos is a UNESCO-certified mediaeval literary village, and therefore, it is on the political agenda to disseminate this cultural mission. Battlesheep, the company from the creative sector with the role of providing inputs from the games industry, suggested that the game jam be oriented mostly to digital games, to foster this games' sector within the Portuguese game ecosystem.

Focused on research activities, Lusófona University contributed to the organisation of the event throughout the introduction of meaningful themes in the games to be developed. Thus, this educational perspective aims to raise the students awareness and reflection on the impact of their work as a form of artistic expression, as a form of design activism, and as game development educational empowerment. Finally, the participants were able to choose what game they wanted to develop within the scope of digital games through culture, giving them a voice to reflect on the particularities of the game jam's location site and express themselves artistically through digital games.

3. Game Jam Methodology and Procedure

This study adopted different methodologies and processes to: (1) produce games that relate to the culture of Óbidos; (2) guarantee the involvement of students in the creative process; and (3) analyse the games developed and student questionnaires. Quantitative methods were used with individual questionnaires being conducted before and after the game jam. For qualitative methods, face-to-face interviews during the game jam, and a final post-mortem at a round table with all participants and facilitators. These processes guarantee different levels of evaluation, whether it's recording the participants' perception of the game jam or using conceptual models to formally analyse the games created (Lankoski & Björk, 2015).

Thus, the CGJ methodology and procedure are summarised as follows: (1) student recruitment; (2) Pre-Game Jam; and (3) Game Jam, discussed below. Since the EPIC-WE project requires the qualitative evaluation of the games created, the researchers disseminate to students with experience in game development, namely at Lusófona's Master studies in Game Design and Playable Media and at the Videogames undergraduate studies. To recruit those students (1), sessions were held to present the EPIC-WE project and the CGJ in face-to-face informative sessions with the Videogames classes at Lusófona University. Registration forms (Google Form), a digital booklet with information about the project, the themes of the CGJ and the Game Jam Discord channel, were made available.

Held at Lusófona University site, the Pre-game Jam (2) happened three weeks before the actual EPIC-WE CGJ in the main University's campus, with the duration of four hours. The jam's theme was presented by a facilitator from the Municipality of Óbidos, and an ideation process model was carried out by two facilitators from the university while five observers assessed the effectiveness of the activities and classified the ideas generated. 27 participants (aged between 18 and 25) individually filled in informed consents and an individual survey with demographic and theme evaluation questions.

The EPIC-WE game jam (3) was attended by 26 students (one withdrew for health reasons), counting four observers and seven facilitators. As the aim was to make games through culture for culture, all students were

transported to the environment of the mediaeval village of Óbidos. Installed in four houses inside the castle, they could be among peers, experiencing the local atmosphere, and accidentally discover creative elements for their games. Because traditional 48-hour game jams require more intense game development activity, which is usually conducive to crunch time, the team of researchers decided to expand the development phase of the jam by one additional day (56 hours) to provide a cosier atmosphere and give the students the opportunity to also experience the village of Óbidos. Thus, a fourth day was dedicated to research activities, namely to the necessary "serious" load of the EPIC-WE research project (completing questionnaires, pitch evaluations, and post-mortem sessions). As illustrated by figure 2, the colour cells highlight those 'serious' moments (observation/research activities).

	Jam First Day:	Jam Second Day:	Jam Third Day:	Jam Forth Day:
10:00 AM	Visit to Cultural Institutions	Morning Pitch Session and Jamming	Day 3 Team Check In and Jamming Status report	Game delivery and submission
12:30 AM	Lunch	Lunch	Lunch	Lunch
3:00 PM	Jamming	Jamming	Jamming	Round Table Post-Mortem Survey
7:00 PM	Day 1 Team Check In Game Ideas Pitch	Day 2 Team Check In Participant Interviews	Showcase Game Presentations	
8:00 PM	Dinner	Dinner	Dinner	
9:00 PM	Jamming (Optional)	Jamming (Optional)		

Figure 2: Game Jam (activities and conditions).

4. Results

A qualitative analysis targeted participants' answers to the pre-jam questionnaire, along with their opinions regarding the jam's ability to meet their expectations and additional comments made about different aspects of the jam. A quantitative analysis was also conducted to assess the participants' grading of several aspects of the game jam. All the participants of the game jam (N=26) answered the questionnaires.

4.1 Pre-Game Jam Survey (Vox-Popping)

Before conducting the game jam, participants were given a survey with two open questions where they were asked about their motivations and expectations for the game jam.

4.2 Motivations

The participants' main motivations could be separated into three main categories. One of these was to learn more about how to develop digital games. 14 participants stated their ambition to create a project they could add to their portfolio and gain experience while developing games as part of a team with their classmates and friends. Another common motivation for participants (n=15) was their stated interest in 'new experiences', referring both to the uncommon plan of the game jam, involving the visit to the village of Óbidos (see section 3), and to the opportunity to participate in a game jam in general - as several of the participants (n=16) were first-year students who had little to no experience with game jams. Lastly, 10 participants specifically highlighted the possibility of visiting and learning about the village and exploring it with their classmates and friends while experiencing the local culture. A frequent comment about the visit to the village was its direct connection to the theme of the game jam ("*I want to learn about Óbidos culture and get new experiences*", participant n.14) as it allowed them to encounter a "*unique cultural experience that actually relates to the theme*" (participant n. 18) of the game jam.

4.3 Expectations

Regarding expectations for the game jam, participants shared similar ambitions for a playful experience and a learning environment. While there was a small number of participants that highlighted the possibility of improving their soft-skills and creating new contacts (n= 4), a large group of participants (n= 14) stated their expectations for a fun, and entertaining time developing games with other people. Comments such as "To learn and have fun. Also leave with a cool game for the portfolio." (Participant n.6) were common answers; Participant 11 mentioned a similar answer and specified that they were interested in the possibility of making a "functional" game, indicating that they might have been one of the first-year students for whom the game jam was their first game-development experience. The third popular answer was that participants were excited to learn more

about game development ($n=9$). These three elements - learning how to (better) make a game, making a game, and having fun doing it - are common for participants in game jams (Meriläinen & Aurava, 2018; Reng, Schoenau-Fog & Kofoed, 2013) and can also be observed in these results. Lastly, while these were the majority of the answers, there was still a minority of participants that stated expectations directly related to the specific program of the game jam, including the opportunity to explore the village of Óbidos, having fun and learning while doing so, and then making a game about the culture surrounding it.

4.4 Did the Game Jam Meet the Participants' Expectations?

Participants were asked to answer whether the game jam underperformed, met, or surpassed their expectations, also having an open-text space to further explain their answers. The answers provided by the participants reveal that the game jam appears to have generally matched or exceeded participants' expectations. Specifically, 12 participants (46%) felt that the game jam exceeded their expectations, while another group of 12 participants felt that the jam successfully delivered on their expectations. Two participants answered that the jam's experience underachieved, considering their expectations, although one of them explained it was because most of the work they did was not included in their group's game. Participants who felt their expectations were matched by the event, mainly highlighted the learning opportunity that the game jam provided. Some of these, being first-year students, stated that they were not expecting to complete a functional game but instead learn how they might make one in the future. On the other side, this group also featured comments regarding the residences where the participants were housed - which may have tempered their overall assessment of the game jam. For the 12 participants for whom the game jam exceeded their expectations, the main highlights they gave were the possibility to have fun while making - or learning how to make - games. Some also specifically referenced the possibility of visiting the village of Óbidos and learning about its culture: *"Initially, I wasn't really captivated with the idea of basing our project in Óbidos' culture and thought it would be limiting in the ways we could develop this project, but after this experience I not only got to know new cultures and get new experiences but also I found my initial thoughts to be wrong."* (Participant n.9)

4.5 Participants' Assessment of the Game Jam

Having been given the opportunity to grade the game jam on a variety of factors from 1 to 7, the results indicate that the participants regarded the game jam and the program surrounding it as highly positive. The average score given to their overall experience at the game jam was 6.12 ($SD = 0.71$). Similarly, the venue of the event ($SD = 0.63$) and its conditions ($SD = 1.23$) were graded at 6.35 and 5.65, respectively. The lowest grade was given to the residences where participants were allocated: 3.81 ($SD = 1.55$), as participants complained that the homes were not fully prepared to host the number of participants allocated to them and that there was a lack of proper internet connection. Regarding the meals afforded by the event for the participants, similar positive evaluations were given for lunch (6.27, $SD = 0.72$) and dinner (5.54, $SD = 1.30$). Participants scored the overall organisation of the event at 6.19 ($SD = 0.63$). Lastly, participants were asked through a 5-point Likert scale how likely they were to recommend the game jam to friends and classmates, and the result was 4.77 ($SD = 0.51$).

4.6 The Developed Games

Participants developed a total of eight games as part of the game jam. As most participants consisted of first-year students in the Videogames BA, they generally had little experience developing digital games. In some groups, this meant that successfully developing any game at all was the main priority, attempting to deliver a playable product by the end of the game jam - with the topic of the jam applied on top of it, as was the case with "Literature Defense: Guardian of Óbidos".

Table 1: Games developed at EPIC-WE Game Jam.

	Name of Game	Genre	Game Engine
1	Literature Defense: Guardian of Óbidos	2D TopDown Tower Defense	Unity
2	Lost in Words	3D First-Person Adventure	Unreal
3	Tsundoku	2D Sliding Puzzle	Game Maker
4	storyteller	2D TopDown Stealth	Game Maker
5	In Search for Words	2D Puzzle Platformer	Unity
6	BookDweller	2D TopDown Roguelike	Unity

	Name of Game	Genre	Game Engine
7	Puss in Book	2D Puzzle Platformer with Typed Commands	Unity
8	Paredes de Cor	2D Arcade	Unity

One aspect some groups of participants highlighted was how the theme of their games was directly inspired by their stay at the village of Óbidos. “In Search for Words” revolves around a typography workshop, being inspired by one such workshop that they visited as part of the jam’s program. “Puss in Book” stems from its developers’ own observations that there was an uncommonly high number of cats living in the village. Lastly, “Paredes de Cor” references a highly specific and local concern surrounding tourists finger-painting on the outside walls of the houses in Óbidos by using the specific paint that coats them. These games are direct results of the participants’ stay at the CGJ’s location, and had it been hosted at the university campus, it would have been highly unlikely that such specific - authentic - topics could have emerged. The immersive experience of being there was undoubtedly an essential element for the creative trigger.

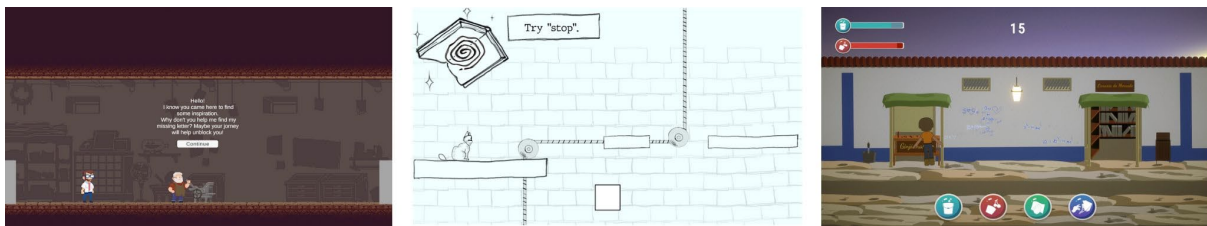


Figure 3: Games “In Search for Words”, “Puss in Book”, and “Paredes de Cor”.

5. Conclusions

The EPIC-WE Game Jam was a cultural game jam (CGJ) that utilised the cooperation of the Quadruple Helix (QH) model with the aim of providing a jamming experience that allowed participants to improve their skills and develop games immersed in the cultural setting of a mediaeval village. The results showed that the collaboration between the relevant parties (QH cooperation) allowed for a game jam where participants were able to fulfil their learning and playful goals of making their games while being in contact with the source of the jam’s theme (cultural topic). This effort allowed for the creation of culturally specific games that reflect and emulate the cultural village of Óbidos, leading to results that would not have been possible without the program of the jam and the collaborations behind it.

The game jam successfully provided a standard jamming experience while integrating the cultural goals it set out to support, with the participants’ projects reflecting the culture of the village and participants being satisfied with the overall experience.

During the CGJ, a group of facilitators (n=7) from Lusófona University provided constant game dev support, which ensured the event's goal of producing 6-8 games. Besides in the pitching sessions, the facilitators were not featured in the participants' answers to the questionnaires. However, participants were only supported with regards to the jam’s main theme - Óbidos City of Literature - during the first day, which inevitably led to the games not focusing on the subject matter. The developed games featured a more superficial approach to the topic, which should be more closely monitored in the future to incentivize greater engagement with the theme of the jam. The role of cultural facilitators, among the Game Jam facilitators, should always be reinforced when a game jam targets games with a specific cultural or meaningful impact.

6. Future Research

The discussion introduced here, based on the experience of the 1st CGJ that integrates various agents through the QH model, serves as a reflection for the planning of three more game jams expected in this project (scheduled for May 2024, December 2025, and May 2025), which could allow for evaluation in the medium term. Regarding the fact that some of the participants will be taking part in the next game jams, a lot of information will be gathered about the students' involvement in the process of designing these games, how they reflect on the cultural themes of each Game Jam, and how the various QH agents perceive the games created. The valuable data that will be collected will allow researchers to evaluate the perspectives generated by these cultural game jams through active participation with the QH model.

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