Exploring the Interaction of Cinema and City through Technology: The Case of Cinemapp in Valladolid

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Abstract

This study examines the interplay between cinema, architecture, and emerging technology, focusing on the web application *Cinemapp.net* and its impact on the city of Valladolid. The application enables users to explore the cinematic ecosystem and architectural heritage of Valladolid, facilitating an interactive approach to experiencing the city's rich cinematic history and architectural legacy. We analyze how digital technologies, such as augmented reality and graph-databases, reconfigure urban experiences and the perception of cinematic spaces.

The social and urban impact of *Cinemapp* is assessed in terms of its contribution to the public perception of Valladolid and its influence on tourism and urban planning. Additionally, this work explores how *Cinemapp* serves as a digital historical archive, preserving and documenting the cinematic and architectural heritage of Valladolid, underscoring the importance of digital platforms in cultural heritage conservation.

Our analysis suggests that the integration of digital technologies into the cinematic representation of cities not only alters the aesthetic and cultural experience of urban space but also provides new tools for urban regeneration and cultural tourism, creating a living archive that evolves alongside the city.

Keywords

Digital Technologies; Cinematic Heritage; Cultural Conservation; Urban Perception; Cinematic Tourism; Digital Archive

1. Introduction

Who hasn't embarked on an adventure guided by a treasure map at least once? Many have even drawn their own maps, integrating topographical information or references to provide clues to follow a path. Every treasure map originates from the necessity to encode a journey towards a goal using geolocation-based methods. In today's era of Information and Communication Technologies (ICT), this game has evolved into geocaching, a contemporary version conceived by Dave Ulmer, utilizing the improved accuracy of GPS satellites implemented by the United States government on May 1, 2000. Since then, geolocation has permeated our daily lives, transforming our experience of the world, especially in complex environments saturated with underlying information such as a city. The success of geocaching undoubtedly lies in the final discovery of the treasure, typically a physical object, but it can also involve uncovering information related to a point of interest (POI). Building on this concept, the web app *Cinemapp.net*, or simply *Cinemapp*, was created.

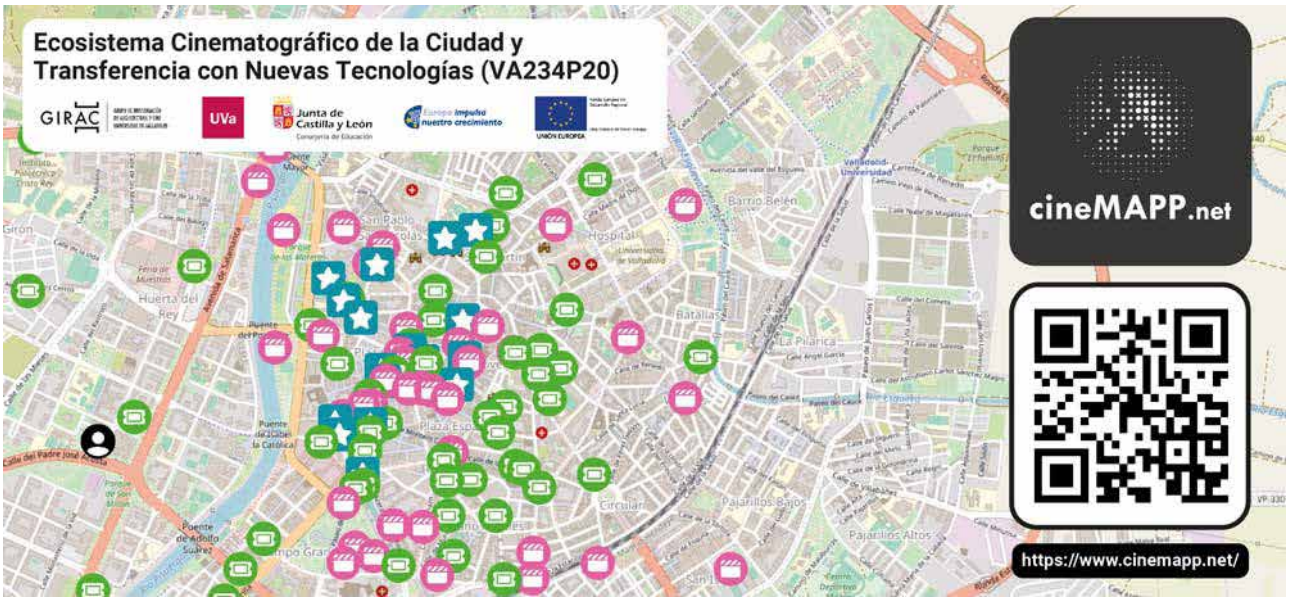

Figure 1. Cinemapp.net. Project research presentation image, logo, and QR code. Source: the authors.

Cinemapp introduces a comprehensive Cinematic Ecosystem unique to the city of Valladolid. This ecosystem encompasses both the cinemas, many now defunct, and the films that have been shot in the city. It symbolizes a fusion of architectural and cinematic heritage, intertwining the city's rich history of tangible and intangible cultural assets with the realm of cinema. Cinemapp acts as a tool for memory retrieval. The application aims to offer users an interactive platform to explore and appreciate the cinematic heritage of Valladolid, while also contemplating cinema, media, and modern technologies. To fulfil this aim, the project backing Cinemapp, titled the *Cinematic Ecosystem of the City and Transfer with New Technologies*, compiles a diverse array of information, including texts, blueprints, maps, renders, infographics, edits, restored images, film clips, and interviews. This data is integrated into a graphical database known as *FilmcityDB*, which forms the foundation of the mobile application. By amalgamating these resources and using Valladolid as a prototype model, users can navigate various routes within the cinematic ecosystem, immersing themselves in the city's extensive film history over the past century.

The experience offered by Cinemapp fosters contemplation on various subjects, including the interaction between physical and virtual realms, the understanding of temporal dimensions, the dialogue between past and present, intangible culture, and advancements in new technologies. It also emphasizes the revival of historical moments through film and information technologies. By digitizing this architectural and cinematic memory, Valladolid is transformed into an expansive educational environment, enhancing the technological literacy and development of its citizens. This initiative unveils Valladolid's cinematic heritage, providing a distinctive method to explore it interactively and thoughtfully, engaging with cinema, media, and new technologies in a modern context (Figure 1 and 2).

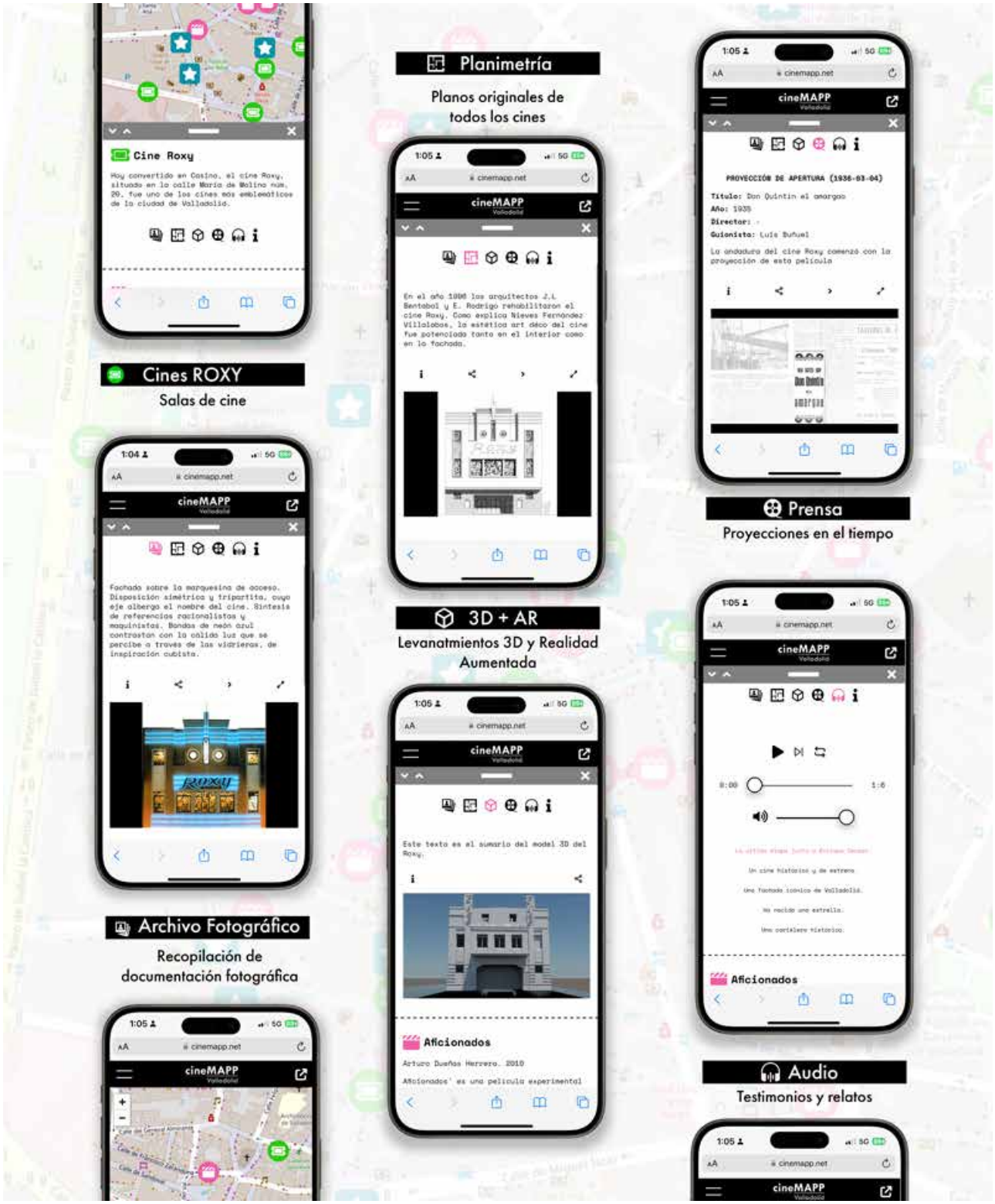

Figure 2. Cinemapp.net. General information. Source: the authors.

2. Background and State of the Art

2.1. New Data, Digital Experiences, Concepts, and LOD

The 21st century has seen the emergence of numerous applications in the form of digital travel guides, driven by the widespread use of smartphones and the internet. Although the idea of a travel guide is not new, the digital access and potential it offers, particularly in relation to architectural travel, have proven to be notably successful.

Ángel Camacho Pina (2023) reviews several guides, comparing them with *Archimaps*, launched in 2013 and featuring content on various cities with a database of 2800 architectural works. Preceding *Archimaps* was MIMOA, started in 2007, which allowed users to upload modern architecture references but lacked rigor. Recent notable apps include *ARCHiTRACKER* (2017), London Architecture Guide (2017), and AIA Guide to Boston (2021), with the latter being the most successful due to its extensive categories and filters. A recent, promising initiative is *LOD4Culture – World Cultural Heritage Just One Click Away*, developed by the GSIC/EMIC at the University of Valladolid in 2022 (Vega-Gorgojo, 2022). The strength of this system lies in its real-time database using linked open data from (LOD) sources like *Wikidata* and *DBpedia*, enhancing content accuracy, variety, and global growth potential, rather than in its interface, which still emphasizes maps and POIs.

In the cited examples, combining maps with POIs and filter lists is crucial for an optimal user experience. Most mobile architectural guides follow this model with minimal changes, focusing on existing architectures to aid visits. Cinemapp, however, distinguishes itself by including not only architectural content but also film locations in the city, even those no longer standing, thus engaging the collective memory of residents. Cinemapp serves as both a travel guide and a repository of memories.

One of the pioneering projects to connect cinematic memory with urban environments, and closely related to Cinemapp, was 'Cinematic Geographies of Battersea: Urban Interface and Site-Specific Spatial Knowledge' (Penz et al., 2013). Developed by The Centre for Architecture and the Visual Arts (CAVA) in collaboration with the universities of Liverpool, Cambridge, and Edinburgh, and The Survey of London, the project explored how cinema and moving images enhance the understanding of cities. Focusing on Battersea, it examined the intersection of cinematic culture, geography, and architecture, highlighting cinema's influence on daily urban experience and perception. The project culminated in the Ghost Cinema App for iOS in 2013, which aimed to create a sense of temporal ubiquity by using historical cinematic material related to Battersea's rich film history, including 27 cinemas and over 600 films. Through geolocation, users could access digital media specific to their location, offering a new perspective on Battersea's evolution over time. Although the Ghost Cinema App did not advance to public release, making this a priority for Cinemapp.

2.2. Fundamental Aspects Among Cinema, Architecture, and Digital Content

Examining the connections between architecture and film to analyse contemporary visual culture has become more prevalent. Research centres that integrate Architecture and Visual Arts demonstrate the coexistence of these disciplines, employing tools once regarded as independent (Pérez-Barreiro et al., 2022). Moving images and new audiovisual technologies introduce novel conceptions of public and private space in modern architectural practice and other fields (Cairns, 2007; Koeck, 2013), which is the focus of the current research.

Although this study does not aim to cover the entire range of research and perspectives linking architecture and cinema, it is important to highlight some relevant viewpoints that shape the concept of Cinemapp. For example, Juhani Pallasmaa (2001) and Jorge Gorostiza (2007) have examined in detail how classic directors like Alfred Hitchcock, Michelangelo Antonioni, Andrei Tarkovsky, Ernst Lubitsch, and Stanley Kubrick utilize architectural space and the camera to create spatial and narrative tension, demonstrating how the camera navigates and conveys the virtual space of the drama. Specifically, Juhani Pallasmaa has explored the idea of existential space, which pertains to how we perceive and experience everyday life. According to Pallasmaa, both cinema and architecture frame this human experience, with architecture being a more physical

experience. The Finnish architect posits that films can offer valuable lessons to architects, emphasizing how both fields can complement each other—a foundational aspiration of Cinemapp to enhance our understanding and experience of space (Pallasmaa, 2001).

Beyond examining architecture depicted in films, it is essential to consider the architecture of the cinemas themselves, a typology that is gradually vanishing but remains significant to the Modern Movement and the early 20th century. Consequently, Cinemapp has concentrated on the architecture of cinemas beyond the screen, adding another layer of memories onto the urban landscape. This aspect has been extensively developed by its creators from the Recognized Research Group of Architecture and Cinema at the University of Valladolid (GIRAC) (Villalobos et al., 2016; González et al., 2016a; González et al., 2016b; González et al., 2016c).

Another significant perspective that Cinemapp embodies is the urban dimension of the interplay between cinema and architecture. As explored by Antonio Pizza (2022), both cinematography and architecture are disciplines that transform reality through their interactions, manipulating elements like space, light, and movement. While architecture evolves over time, cinematography captures the dynamics of time and space. Cinema's influence on the city is visible through cinemas, film studios, and urban advertising, with cities often playing a central role in films, almost as a character themselves. There is a distinct connection between urban reality, manifestations of modernity, and cinematic techniques, which have become crucial for interpreting various aspects of architectural and urban culture since the 20th century.

Despite the value of these studies, cinema and moving images offer a spatial experience that has broadened in the digital era. The interplay between physical and digital realms has gained increasing importance in architectural design, public spaces, and daily urban life. Cities are viewed as networks of interrelations, with new media meeting informational needs that enhance social interaction within urban environments. Technological advancements have introduced their own terminology; for example, the concept of the "media city" (McQuire, 2008, p. 203) signifies a distinct urban form unique to our contemporary age. Digital culture has thus infiltrated various aspects of human experience (Negroponte, 1995), from individual perception to private spaces, public buildings, and the urban landscape (Colomina, 2001; Townsend, 2004). In recent years, advanced architecture has utilized the insights from these studies (Rincón-Borrego et al., 2022a; Rincón-Borrego et al., 2022b). However, many studies warn against the risks of using technology solely for spectacle, advocating instead for responsible application (Debord, 1976). Additionally, the educational and social aspects of technology have been examined (Echeverría, 1999; García-Carrizo, 2016), along with the social opportunities it presents (Lipovetsky & Serroy, 2009; Gorostiza, 2018).

The interconnections between architecture, digitization, communication, and education have been explored in conferences and specialized publications, emphasizing how these concepts are integrated into the development of media and digital technologies (Amps, 2020; Gutiérrez-Martín and Tyner, 2012). This integration necessitates ongoing literacy in these emerging fields, transforming the city into an educational space. Considering that learning takes place in various formal and informal contexts, both physically and virtually, throughout life (Banks et al., 2007; Erstad et al., 2016), ICT can help blur the barriers to learning and create more flexible, contextualized, and interdisciplinary training scenarios. Given the multifaceted reality of cities as indicated by Duch (2015), if we focus on the benefits the city can provide as a facilitator of different types of learning through its spaces, we can confirm its potential educational character. These ideas point to the concept of the *Educating City*, popularized in the 1970s and formalized at *the International Congress of Educating Cities* in 1990 in Barcelona, which emphasizes the role of the city as a dynamic learning environment. Digitization has significantly altered the relationship between humans and images, creating new forms of socialization (Cubitt et al., 2021, p. 68). The digitized image, now viewed as both photography and data, plays a crucial role in the development of mobile applications like those previously mentioned. Mobile applications for nomadic museography and heritage tourism, introduced a decade ago, utilized

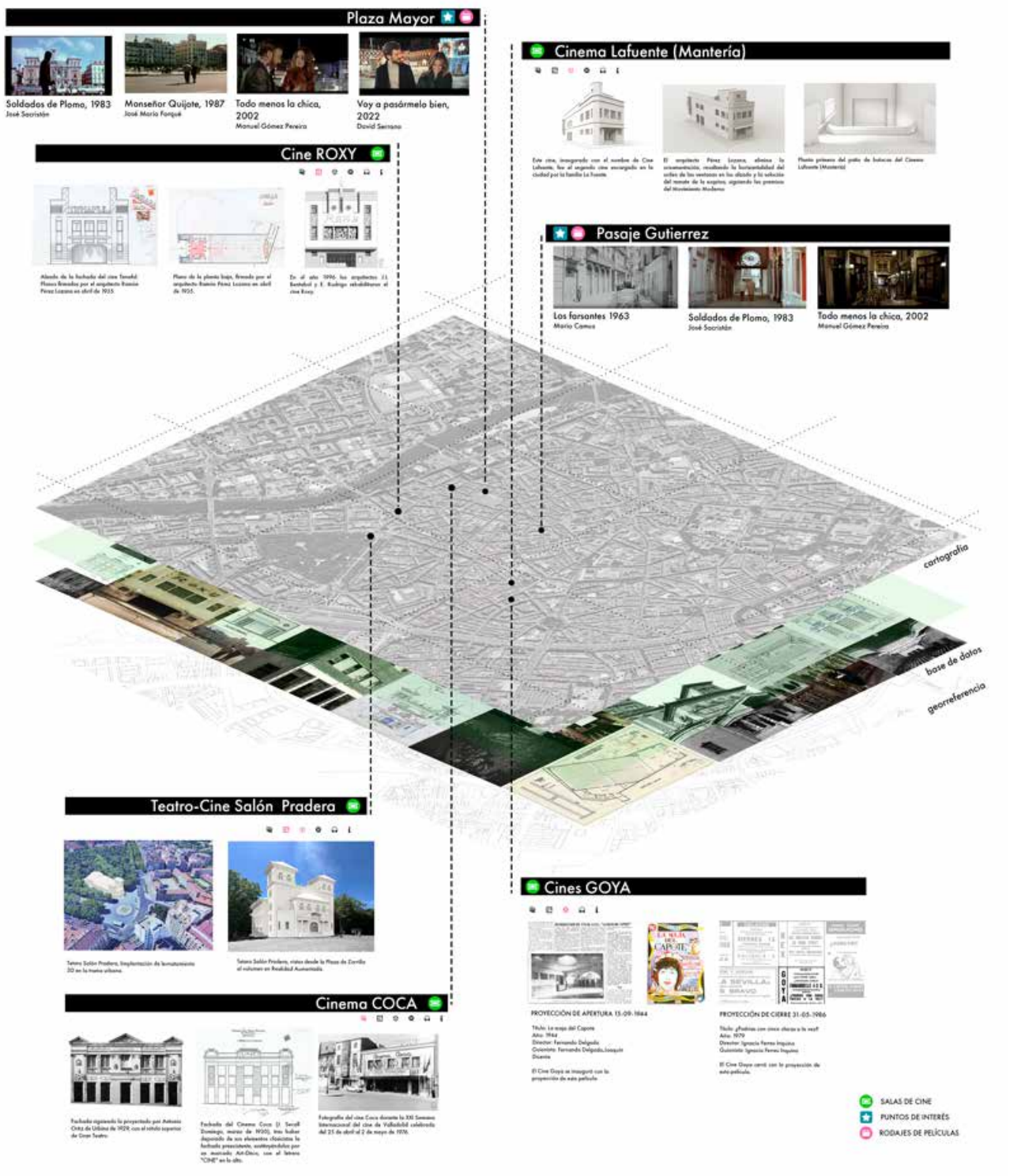

Figure 3. Conceptual educating palimpsest in Cinemapp.net. Source: the authors.

basic resources such as POI localization, visualization of non-existent buildings, graphic reconstructions of the past, and interactive virtual simulations, combined with social networks and gamification (Imbert-Bouchard et al., 2013). The International Congress *Amps. Architecture, Media, Politics, and Society*, held in Canterbury in 2020, examined the broad applications of digitization, acknowledging its pervasive influence and the interconnections it creates in urban life. The focus was not only on cataloguing tangible realities like architecture, art, and design but also on linking these landmarks with the layers of memory they represent as a palimpsest (Amps, 2020). (Figure 3)

Interactive practices in architecture, driven by new technologies, further blur the lines between virtual and physical spaces, a key aspect that Cinemapp aims to capture. The proposed experience, encompassing both cinematic and architectural elements in a digital setting, offers the potential for flexible and immersive engagement in both public and private spheres (Bullivant, 2005, p. 7). This interactive spatial experience centres on the user, engaging their memory and relegating the physical object to a secondary role. Thus, while the introduction of digital technologies is often linked to the technological advancements themselves, it is crucial to focus on how these technologies facilitate new forms of communication (Saggio, 2005). Consequently, the content of Cinemapp—including data types, information structures, formats, and memories—becomes more significant than the technology that enables its dissemination.

3. The Opportunity of Cinema as Collective Memory: the case of Valladolid

Cinema embodies both the historical, cultural, and social memory of tangible events and the intangible human memory that provides context to the history of cinema itself. Maurice Halbwachs elucidates the role of collective memory in societal reconstruction, highlighting its social nature as recollection arises through interactions with people, groups, places, languages, and dates within the societies we inhabit (Halbwachs, 1994, p. 38). In this regard, Cinemapp plays an active role in creating such collective memory, viewed as a social process of reconstructing the past experienced by a specific community (Halbwachs, 1991/2002). Cinemapp aims to highlight a type of past distinct from traditional history, focusing on the identities of groups that experienced now-defunct cinemas and films. Thus, the collective memory promoted by Cinemapp is communicative, shared, transmitted, and fundamentally built by the community to which it belongs.

While historical memory comprises a blend of historical endeavours and present realities, collective memory is shaped by lived experiences, though it is not static over time (Barrenetxea, 2008, p. 8). Cinema, along with its audiences, the film industry professionals, exhibition spaces, and filming locations, forms part of a community's collective memory, aiding in the reconstruction of society. In this context, cinema's role in reconstructing a city's cultural past is especially significant for Cinemapp. As cinema creates memory, so do its participants, from viewers to professionals. To recover part of this collective memory, the project includes an interview campaign. It is conducted through Municipal Civic Centres, aims to gather cinematic memories from citizens, though it was unfortunately interrupted by the 2020 pandemic[1]. (Figure 4)

Cinema goes beyond being merely a spectacle, building, or industry. As a mass phenomenon, it is deeply connected to its audience, reflecting the social realities of various eras since its inception (Martín de Uña, 2002, p. 15). Valladolid was one of the first cities to adopt the Lumière brothers' invention (Villalobos, 2020, p. 15). On September 16, 1896, the city held its first public screening, described

1 - This campaign, suspended due to the pandemic and, therefore, we will have to resume, opened with the following notes addressed to the invited residents: Is cinema part of your life? You surely have many experiences and memories to share with us: your first movies on the big screen, the inauguration of the cinema in your neighbourhood, which was a significant event, film screenings at your school. Perhaps you have kept old cinema tickets, old photos related to this art, movie posters, newspaper clippings. Or maybe you have participated in some film shoots that have taken place in Valladolid. Your memories are invaluable, and your memories are important. Share them with us. We are waiting for you. Come and share your cinema memories with us.

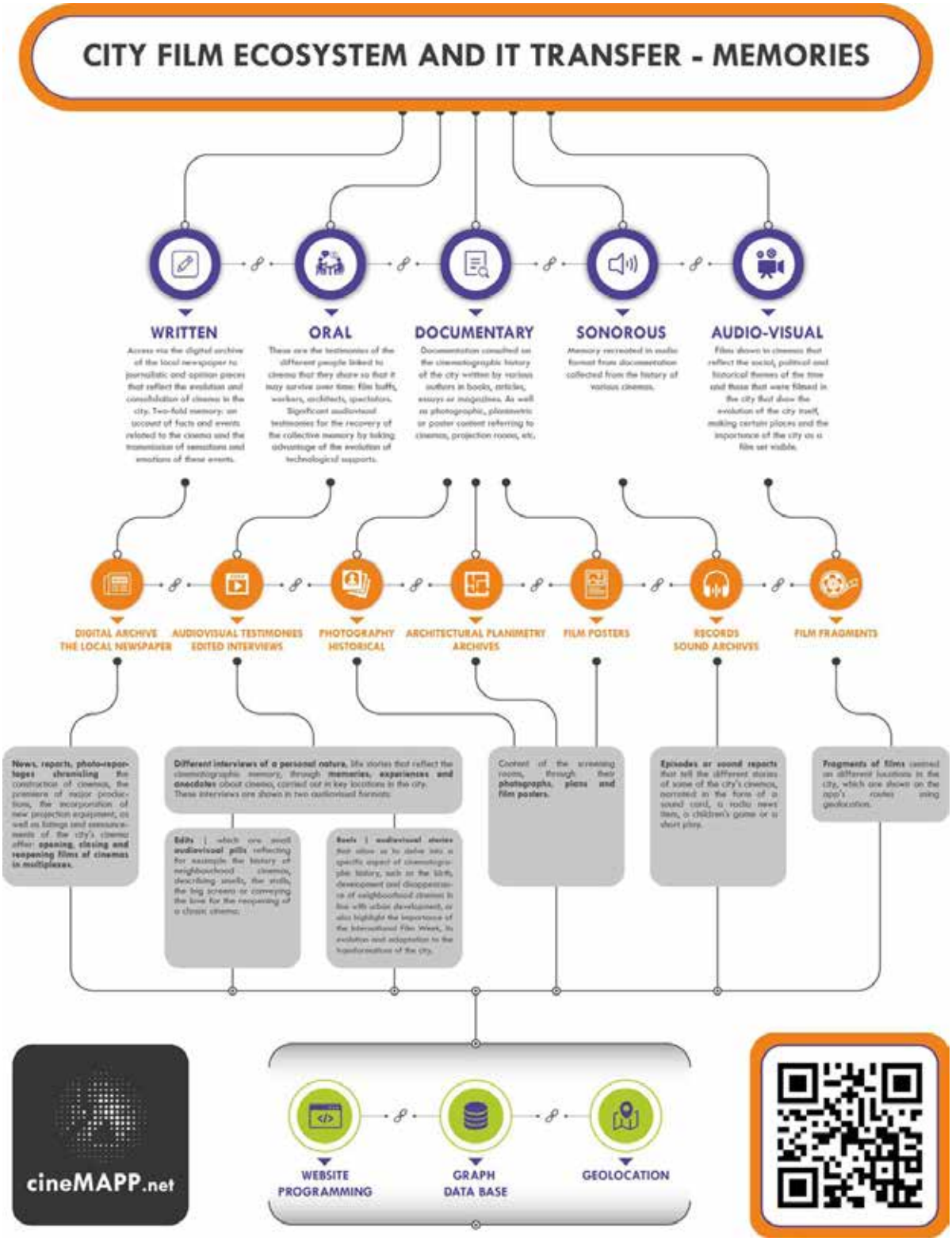

Figure 4. Structure and schema of the memories of the cinematographic ecosystem contained in Cinemapp. Source: the authors.

as “wondrous” in the local press (Martín de Uña, 2002, p. 24). The warm reception from the public facilitated the early introduction of cinema. Subsequently, film forums and cinema clubs emerged, eventually leading to the establishment of the first university chair of History and Aesthetics of Cinematography in Spain in 1962. Additionally, the promotion and evolution of cinema were furthered by the Valladolid International Film Week, known as SEMINCI. Considering these factors, along with the urban expansion of Valladolid during the 60s and 70s, when cinemas and neighbourhoods even shared names, the city presents itself as a rich and potential cinematographic ecosystem. Cinemapp aims to make all this information and more accessible to anyone interested.

Cinema was invented with a social purpose, aimed at depicting, and preserving reality as a documentary medium. Initially, the cinematograph was set up temporarily in fair booths in large cities, gaining popularity. In Valladolid, it was introduced on September 16, 1896, during the popular Fairs and Festivals as “The Cinematograph”, which helped democratize it as an amusement accessible to all social classes (Martín Arias & Sáinz Guerra, 1986, p. 5; Villalobos, 2020, p. 13). By around 1908, cinema had become a popular pastime in Valladolid, especially among the less privileged, many of whom were illiterate and lived in precarious conditions. For these individuals, cinema was a unique and immediate form of entertainment, not just an exotic novelty (Martín Arias & Sáinz Guerra, 1986, p. 12).

The swift progression of cinema, evolving from fairground booth projections to the creation of narrative films, led to the establishment of dedicated film exhibition spaces[2]. By 1939, Valladolid’s urban centre boasted 16 projection venues, both permanent and temporary, making cinema widely accessible as mass entertainment. Attending a screening was, and remains, an experience that combines the ritual of lights, colours, music, and the spectacle itself within a specially designed architectural space (Martín de Uña, 2002, pp. 20-22). These factors collectively position Valladolid as an ideal case study for the prototyping and development of Cinemapp.

4. Cinemapp: An Extrapolatable Experience

Cinemapp is created using a project resolution methodology that includes analysing needs, studying responses, preparing content, and designing both virtual and physical information support through targeted technological development. The methodology for developing Cinemapp is multidisciplinary, encompassing methods and techniques ranging from data analysis and management to user-centred experience design, content generation, historical archival comparison, community collaboration, and evaluation of the entire process. The formulated objectives lead to Design Science principles, such as the Design Science Research Methodology (DSRM) (Peffers et al. 2007), which propose to “create things that serve human purposes” from a research-oriented perspective (Kuechler & Vaishnavi, 2008). This methodology is directed by a general objective (GO) outlined in the project title, which is broken down into three specific objectives (SO): SO1 - *Content Development*; SO2 - *Content Transfer and Technological Development*; and SO3 - *The City as an Extensive and Everyday Medialab*. (Rincón-Borrego et al., 2024).

The experience provided by Cinemapp incorporates the technical paradigms of media architecture as defined by Anthony Townsend (2004, p. 102), including “visualization” through the proliferation of screens in urban environments; “communications” via wireless networks that alter user interaction with the built environment; “positioning”, which leverages mobile technologies and their vast possibilities; and “documentation”, referring to the computerized mapping of the city through geographic information systems (GIS). To address these attributes, the web app is designed as a prototype tested in Valladolid but adaptable to any environment. It is accessible in two modes via a web browser. The first is walk mode, where users navigate their path using a mobile device with active geolocation, receiving inputs based on their location. The second is *ubiquitous mode*, accessible from any internet-connected device. (Figure 5)

2 - Since 1896, George Méliès has been a pioneer in this regard, transforming cinema into a narrative spectacle, surpassing simple everyday scenes, and turning the cinematograph into a more elaborate form of entertainment.

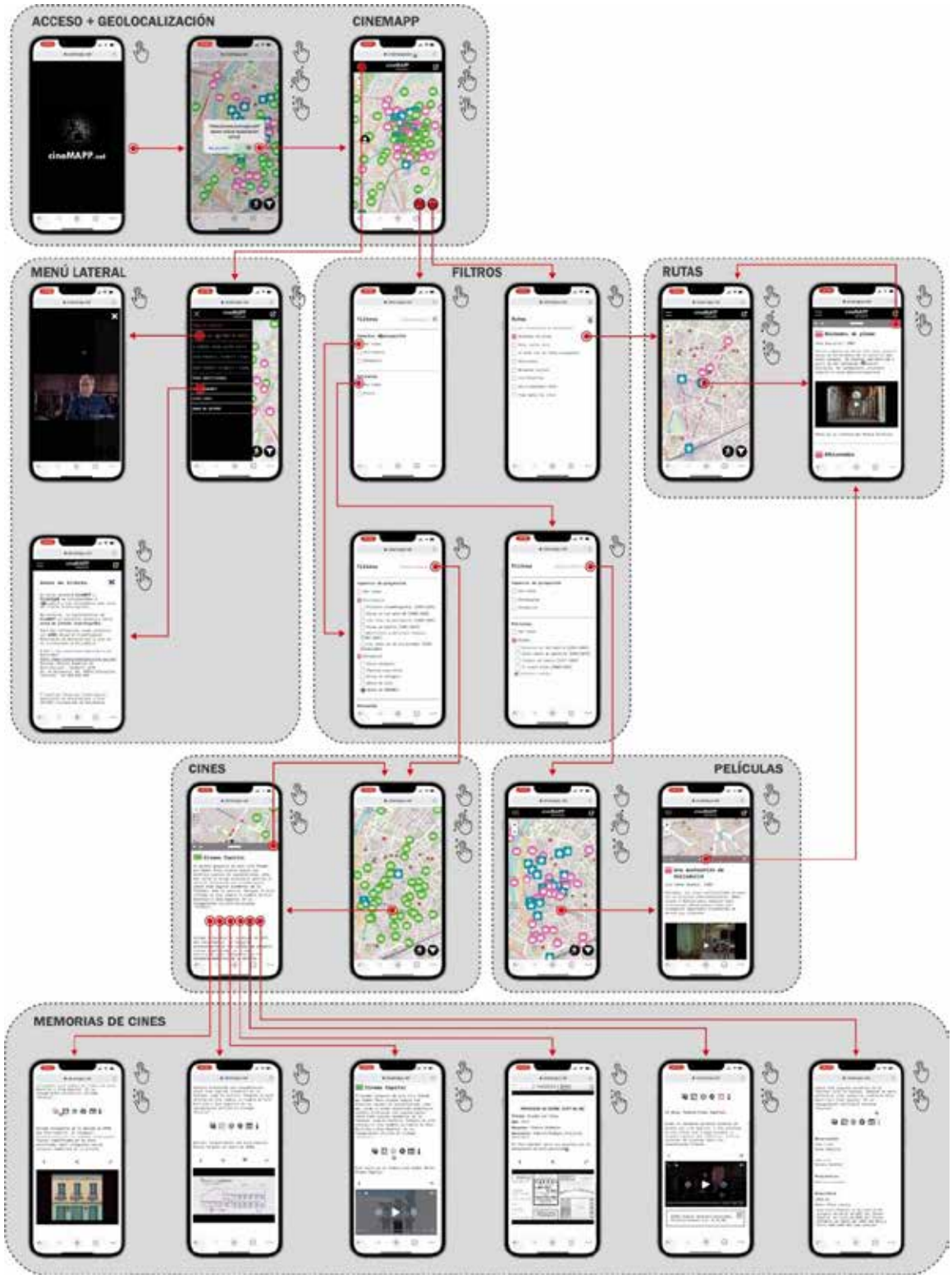

Figure 5. Information access flows in Cinemapp from the mobile front-end. Source: the authors.

Figure 6. Augmented Reality research process in Cinemapp. Source: the authors.

The information perception in Cinemapp offers various levels of use and access to multiple formats. The most immediate access is through the initial map, where POIs are located, identifying two types of places of interest: screening spaces and filming locations. Selecting a POI reveals an interactive scrollable tab at the bottom of the screen with information related to that point. This vertical dropdown provides a variety of content, including interviews, newspaper clippings of historical film listings, floor plans, 3D reconstructions of cinemas, audio clips, and clips of movie scenes that can be visited on-site, among others. Future plans include integrating Augmented Reality (Figure 6 and 7). All these elements form a collection of memories within the web app, enabling users to observe Valladolid's urban development through cinemas connected to its neighbourhoods in the 1960s, identify different moments and territorial boundaries, verify the pioneering nature of the city's first cinema, compare relationships and time periods between cinemas and films, or follow one of the nine defined routes to explore the urban settings of film shoots.

Additionally, in the lower right corner of the map, there are buttons for cross-filtering POIs by categories, chronologies, and stages, and for activating route mode, which guides users to urban settings based on the movies filmed there. The interface also includes a side menu offering a variety of content, from reels to legal information, and a share button in the upper right corner.

In today's technological era, the dissemination and preservation of memories necessitate technical advancements, leading to the creation of new media and storage devices. Concurrently, new methods for displaying and visualizing these memories emerge. Cinemapp leverages these new audiovisual formats to share and communicate collective architectural and cinematic memories through content designed specifically for web platforms. This includes podcast formats, offering new audio content that recreates cinema-related stories, and short audiovisual capsules that capture cinematic testimonies and memories. Additionally, reels serve as longer audiovisual narratives, exploring specific topics

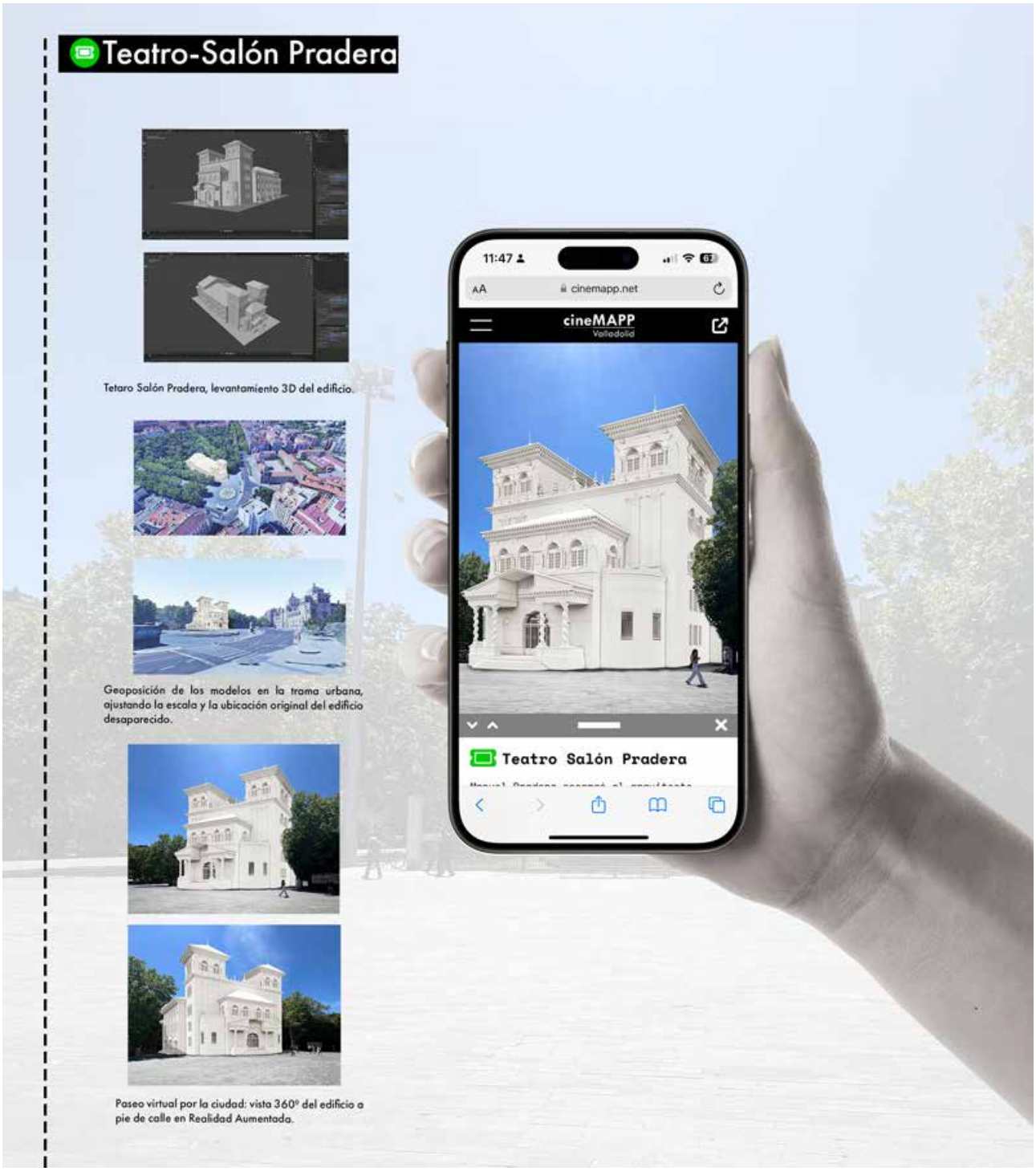

Figure 7. Future Augmented Reality of *Pradera Theatre* in Cinemapp.net Source: the authors.

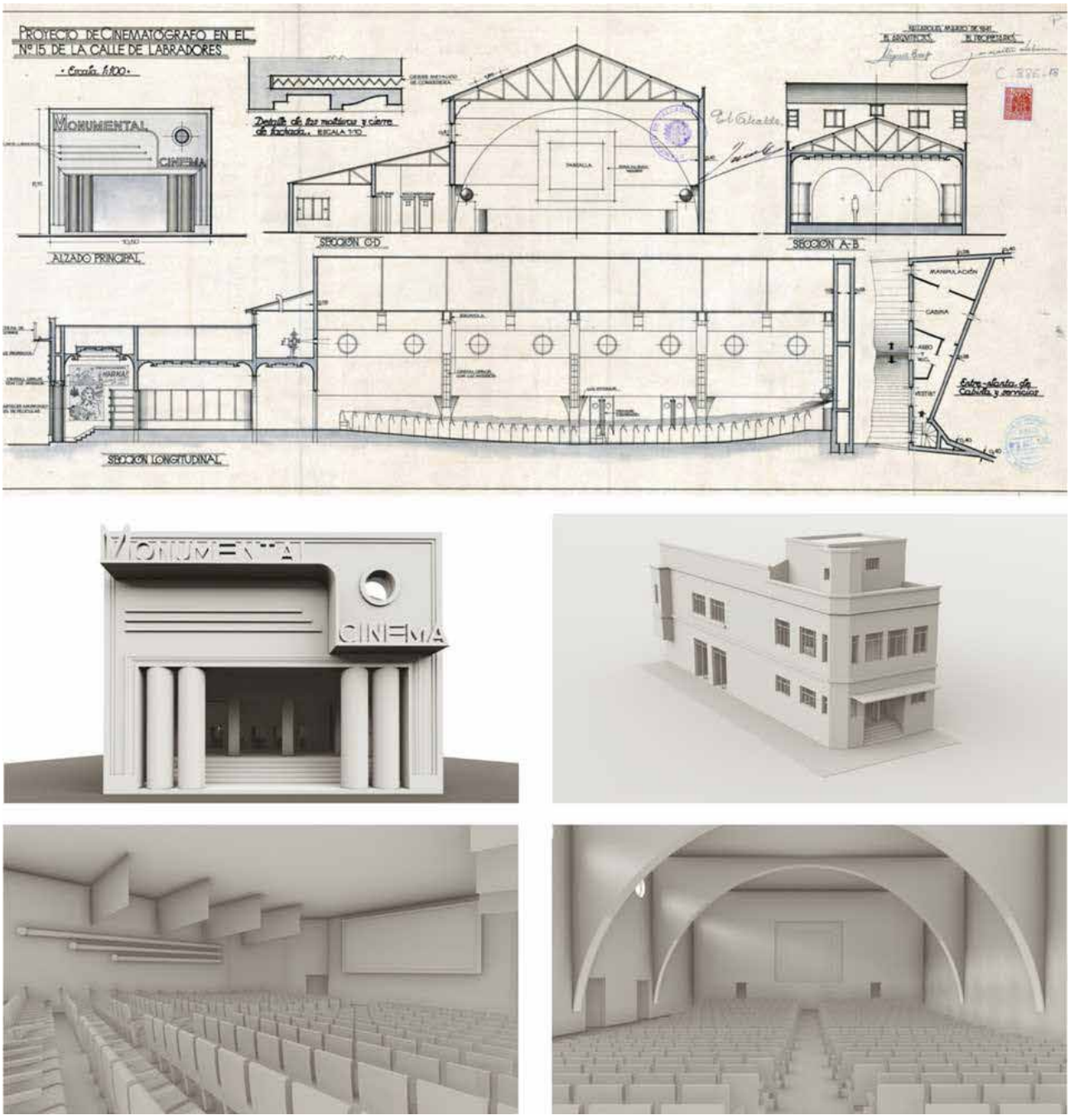

Figure 8. Content in Cinemapp. (Top) Section and elevation of Cine Goya. Miguel Baz García. April, 1941. Source: Municipal Archive of Valladolid. (Bottom) 3D models of modern cinemas in Valladolid. Source: the authors.

in greater depth. This comprehensive approach allows Cinemapp to function not only as a tool for individual or group tourism but also as a foundation for research and analysis, utilizing its diverse contents and media (Figure 8).

4. Conclusions

Since Cinemapp's launch in December 2022, the results have been impressive, with nearly 10,000 unique visits, particularly notable given that its primary audience is based in Valladolid. Even more remarkable is the reach across 17 countries, which is an excellent outcome considering that the English version has not yet been released[3].

Beyond the quantitative metrics, Cinemapp yields significant qualitative results. This web app uniquely connects users to the city's spaces, but more importantly, it offers a perspective on the dimension of time by showcasing places and buildings that no longer exist and portraying the urban landscape as seen in various films. Cinemapp allows us to compress time at will, as Yourcenar (1951, p. 248) noted: "I am always amazed that my contemporaries, who believe they have conquered and transformed space, ignore that the distance of centuries can be reduced as we wish". This qualitative value has earned Cinemapp the *International Honour Mention* (Research Category) in *the HERSUS Prize on Modern Built Heritage* in 2023 (Alonso et al., 2023), co-funded by European Funds.

In conclusion, Cinemapp was designed as a repository of accessible and visible film memories, linked with the city as an educational environment, free and open to all. It provides access to and visualization of both individual and collective memories, as well as the opportunity to uncover new ones through the application. It even enables users to audibly travel back to 1910 to experience the history of the *Pradera Theatre*, a significant landmark in Valladolid's history.

As mentioned, Cinemapp's purpose was to communicate and educate others about Valladolid's cinematic ecosystem through the digitalization of information, a goal that has been successfully achieved. However, the project now aims to expand to other cities. This, combined with the continuous updating of information and data, is seen as an ongoing improvement process that invites interaction from each local community. A promising future development would be to integrate its database with the network of linked open data, significantly enhancing functionalities such as multilingual support and scalability.

To date, the project has successfully compiled a diverse array of film memory content and formats into a digital platform, ensuring their visibility and preservation. Cinemapp portrays the city as an extensive space for learning and memory, where citizens can explore the inherited cinematic ecosystem. It allows visitors to engage in sustainable screen tourism, enabling everyone to uncover a shared cultural treasure.

Funding

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References

Alonso, E., Rincón, I., Pérez, S., Villalobos, D., Jové, J. M., Vega, R., Gallego, M. del C., Cebrián, S., López, A., y Aparicio, B., 2023. Valladolid Film Ecosystem and IT Transfer. *HERSUS Sharing Platform*. https://hersus-sharingplatform.org/content/vfe-tit/.

Amps, 2020, junio 29-30. *Architecture, media, politics and society Amps*. [Invited talk]. International Conference, Canterbury, Inglaterra. https://amps-research.com/conference/canterbury-2020/

3 - The tracking of these results is carried out through Google Analytics. The list of countries by number of visits is as follows: Spain, Netherlands, USA, Finland, Austria, France, Ireland, China, Canada, Sweden, Bosnia Herzegovina, Brazil, Hungary, India, Iran, Russia, and Uruguay.

Banks, J. A., Au, K. H., Ball, A. F., Bell, P., Gordon, E. W., Gutiérrez, K. D., & Zhou, M., 2007. *Learning in and out of school in diverse environments*. Seattle, WA: The LIFE Center (University of Washington, Stanford University, and SRI) & the Center for Multicultural Education, University of Washington.

Barrenetxea Marañón, I., 2008. ¡Nada de olvidar! El cine y la memoria histórica. *Quaderns de cine*, 3, 7-14. https://doi.org/10.14198/QdCINE.2008.3.01

Bullivant, L., 2005. Introduction. *AD Architectural Design*, 75(1), 5-7.

Cairns, G., 2007. *El arquitecto detrás de la cámara: La visión espacial del cine*. Abada Editores.

Camacho Pina, A., 2023. ArchiMaps: desarrollo de una aplicación móvil de guías de arquitectura. *SOBRE. Prácticas Editoriales En Arte Y Arquitectura*, 9, 21-29. https://doi.org/10.30827/sobre.v9i1.27016

Colomina, B., 2001. Enclosed by Images: The Eameses' Multimedia Architecture. *Grey Room*, 2, 7-29. http://www.jstor.org/stable/1262540

Cubitt, S., Lury, C., McQuire, S., Papastergiadis, N., Palmer, D., Pfefferkorn, J., y Sunde, E. K., 2021. Ambient Images. *The Nordic Journal of Aesthetics*, 30(61-62), 68-77. https://doi.org/10.7146/nja.v30i61-62.127861

Debord, G., 1976. *La sociedad del espectáculo*. Castellote.

Duch, L., 2015. *Antropología de la ciudad*. Barcelona: Herder.

Echeverría, J., 1999. *Los señores del aire: Telépolis y el Tercer Entorno*. Destino.

García-Carrizo, J., 2016. *Ciudad y pantallas digitales publicitarias: Motivos, funciones y efectos de su implantación*, in: Chaves, M. A. (Ed.), *Ciudad y comunicación*, Universidad Complutense, Madrid, pp. 281-291.

González, M. J., Pérez, S. y Villalobos, D. (Eds.)., 2016a. *Interiores urbanos y domésticos. Fotograma 007*. Fundación Internacional DOCOMOMO Ibérico, Grupo de Investigación Reconocida de Arquitectura y Cine de la Universidad de Valladolid.

González, M. J., Pérez, S. y Rincón, I. (Eds.)., 2016b. *Espacios urbanos. Fotograma 008*. Fundación Internacional DOCOMOMO Ibérico, Grupo de Investigación Reconocida de Arquitectura y Cine de la Universidad de Valladolid.

González, M. J., Pérez, S. y Alonso, E. (Eds.)., 2016c. *Objetivo: la casa*. *Fotograma 009*. Fundación Internacional DOCOMOMO Ibérico, Grupo de Investigación Reconocida de Arquitectura y Cine de la Universidad de Valladolid.

Gorostiza, J., 2007. *La profundidad de la pantalla: Arquitectura + cine*. Colegio Oficial de Arquitectos de Canarias, Demarcación de Tenerife. La Gomera y El Hierro.

Gorostiza, J., 2018. Fachadas y pantallas. Lo real transformado en ficción. *Collectivus, Revista de Ciencias Sociales*, 5(1), 40-62. https://doi.org/10.15648/Coll.1.2018.4

Gutiérrez-Martín, A., y Tyner, K., 2012. Media literacy in multiple contexts. [Alfabetización mediática en contextos múltiples]. *Comunicar*, 38, 10-12. https://doi.org/10.3916/C38-2012-02-00

Halbwachs, M., 1994. *Les Cadres Sociaux de la Mémoire*. Albin Michel.

Halbwachs, M., 1991/2002. Fragmentos de la memoria colectiva. Selección y traducción Miguel Ángel Aguilar. *Revista de Cultura Psicológica*, 1(1), 1-11. https://doi.org/10.5565/rev/athenead/v1n2.52

Imbert-Bouchard Ribera, D., Llonch Molina, N., Martín Piñol, C., y Osàcar Marzal, E., 2013. Turismo cultural y apps. Un breve panorama de la situación actual. *Her&Mus. Heritage & Museography*, 13, 44-54. https://raco.cat/index.php/Hermus/article/view/313393

Koeck, R., 2013. *Cine-Scapes: Cinematic Spaces in Architecture and Cities*. Taylor & Francis.

Kuechler, W., Vaishnavi, V., 2008. On theory development in design science research: anatomy of a research project. *European Journal of Information Systems* 17(5), 489-504.

Lipovetsky, G., y Serroy, J., 2009. *La pantalla global. Cultura mediática y cine en la era hipermoderna*. Editorial Anagrama.

Martín Arias, L., y Sáinz Guerra, P., 1986. El cinematógrafo (1986-1919). *Cuadernos Vallisoletanos*, 14.

Martín de Uña, J., 2002. *Historias de una ciudad y el cine*. Fancy Ediciones.

Mcquire, S., 2008. *The Media City. Media, Architecture and Public Space*. SAGE Publications.

Negroponte, N., 1995. *Being digital*. Vintage Books.

Pallasmaa, J., 2001. *La arquitectura de la imagen: El espacio existencial en el cine*. Editorial Gustavo Gili.

Peffers, K., Tuunanen, T., Rothenberger, M., Chatterjee, S., 2007. A design science research methodology for information systems research, Journal of Management Information Systems 24(3), 45-77.

Penz, F., Koeck, R., y Speed, C., 2015. *Cinematic Geographies of Battersea: Urban Interface and Site-Specific Spatial Knowledge* (AHRC, 2012-13). http://www.cava-research.org/research-projects/project-page

Pérez-Barreiro, S., Rincón-Borrego, I., Alonso-García, E., y Villalobos-Alonso, D. 2022. A Dios pongo por testigo que la forma sigue a la función. Aprendizaje de la arquitectura a través del cine, in: Pizza, A., (Ed.), La ciudad en el cine: Recorridos, encuadres, secuencias y montajes, Ediciones Asimétricas, pp. 224-239.

Pizza, A. (Ed.)., 2022. La ciudad en el cine. Ediciones Asimétricas.

Rincón Borrego I. I., Pérez Barreiro S., Alonso García E., Villalobos Alonso D., Jové Sandoval J. M. y Cebrián Renedo, S., 2022a. La imagen como materia y material. Arquitecturas avanzadas y experimentación audiovisual desde la mirada inclusiva de Herbert Bayer. Arte, Individuo y Sociedad, 34(1), 335-350. https://doi.org/10.5209/aris.74210.

Rincón Borrego, I. I., Alonso-García, E., Pérez-Barreiro, S., & Villalobos-Alonso, D., 2022b. Screen architectures in the information age. Notes on media walls and new paradigms. Estoa. Journal of the Faculty of Architecture and Urbanism, 11(21), 127-140. https://doi.org/10.18537/est.v011.n021.a11.

Rincón-Borrego, I., Alonso-García, E., Pérez-Barreiro, S., 2024. Memorias Entre Arquitectura Y Cine: Una Mirada a La Webapp Cinemapp.Net. SOBRE 10, 83-96. https://doi.org/10.30827/sobre.v10i.28397.

Rippon, M. y Griffith, S., 2019. Full Stack JavaScript Development with MEAN: MongoDB, Express, Angular, and Node.js. Packt Publishing.

Saggio, A., 2005. Interactivity at the Centre of Avant-Garde Architectural Research. AD Architectural Design, 173, 23-29.

Townsend, A., 2004. Digitally mediated urban space: New lessons for design. PRAXIS: Journal of Writing + Building, 6, 102.

Vega-Gorgojo, G., 2022. LOD4Culture – Patrimonio cultural mundial a un solo click. GSIC/EMIC. Universidad de Valladolid. https://lod4culture.gsic.uva.es/es/

Villalobos, D., 2020. Arquitectura de cines en Valladolid. Universidad de Valladolid.

Villalobos, D., Pérez, S. y Rincón, I. (Eds.)., 2016. Arquitectura de cine. Fundación Internacional DOCOMOMO Ibérico, Grupo de Investigación Reconocida de Arquitectura y Cine de la Universidad de Valladolid.

Yourcenar, M., 1982. Memorias de Adriano. Edhasa.