

Storifying Data for Museum Audiences

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Abstract. Recent years have witnessed an increased development and adoption of digital technologies in the cultural heritage sector. Besides helping promote wider accessibility and participation, it has also enabled museums and heritage institutions to gain access to cultural heritage data and unique insights on visitors' experiences with cultural heritage. However, while these resources hold the potential in helping facilitate the sharing of knowledge, and support engaging diverse perspectives, there still exists limited research on methods and tools that could aid museum professionals and educators in effectively communicating derived insights to their audiences. By recognizing narratives as a basic mode of communication and sensemaking, this paper explores methods and approaches for designing data-based narratives in the cultural heritage domain. Building on the practice of data narration, the notions of narrative identity and the semiosphere, we suggest a framework for building data stories that can eventually be implemented and used by museum staff with their audiences. The framework is illustrated in the context of the EU Horizon 2020 project SPICE (Social Cohesion, Participation, Inclusion through Cultural Engagement) and the findings will be discussed in relation to citizen engagement for social cohesion initiatives in the cultural heritage domain.

Keywords: Data Narration, Cultural Heritage, Interactive Digital Narrative, Data storytelling, Data stories.

1 Introduction

In this paper, we examine theoretical and empirical studies related to data storytelling and explore possibilities for adapting the data narration process, i.e., linking traditional narrative “components” (e.g., setting, characters, events, plot) [1, 2] in the context of museum practice. As a “fundamental human cognitive mode for organizing experience” [3], narratives have been demonstrated as some of the most effective tools for communicating abstract concepts and complex insights [4, 5, 6, 7]. With the increased adoption of digital tools and technologies, a growing number of museums and cultural institutions now have access to data, facts and insights on visitors' perspectives and experiences. For museum professionals and educators, these resources can potentially serve as useful instruments for building rich narratives for diverse

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museum audiences. We can define *data narration* as the process of building narratives based on facts and insights derived from data analysis [8]. *Data stories*, on the other hand, have been described as “artifacts for revealing and communicating insights gained from the analysis of data-sets obtained from the public domain, crowdsourcing or big data sources.” [9]. Although data stories are frequently used synonymously with *data visualization*, data stories do not necessarily entail visualization as they can also be designed based on textual or numeric basis [10]. To date, much of the research on data narration and storytelling has been in the field of data journalism [8, 9, 10, 11, 12]. After reviewing the peer-reviewed literature relating to our research focus published in the last decade, we noticed that only few studies have explored data narration in museum context.

2 Methods and Approach

Based on our review and by recognizing narratives as a basic mode of communication and sensemaking [3], we propose a framework that brings together Ricoeur’s notion of *narrative identity* [13] and Lotman’s theory of the *semiosphere* [14] for contextualizing the analysis and development of data-driven stories for museum audiences. Within this framework, we characterize and describe the different phases of the data narration process, including (1) data exploration, (2) motivational and thematic contextualization, (3) story development (4) plot development, and (5) story realization. The framework will be demonstrated in the context of the EU Horizon 2020 project SPICE and the SPICE case studies. Additionally, we discuss the possibilities for implementing such stories in the form of interactive digital narratives (IDN).

3 Results and Discussion

Our findings outline a framework and a pipeline that aim to facilitate an iterative process to guide curators, museum workers and educators in the analysis and development of data-driven stories and narration in museum context. This contributes to the understanding of the central role of heritage institutions in mediating and assisting citizens in participating in cultural activities. Furthermore, our examples from SPICE illustrate how to make the narration process converge towards a normative goal of interest for the community, in this case *social cohesion*. In conclusion, we examine potential limitations and challenges that may arise in the implementation of the framework and suggest future research directions in this area.

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