A novel management model for historical information

Isto Huvila based on peer reviews by Leandro Sánchez Zufiaurre and 1 anonymous reviewer

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The paper "HORAI: An integrated management model for historical information" presents a novel model for managing historical information. The study draws from an extensive indepth work in historical information management and a multi-disciplinary corpus of research ranging from heritage infrastructure research and practice to information studies and archival management literature. The paper ties into several key debates and discussions in the field showing awareness of the state-of-the-art of data management practice and theory. The authors argue for a new semantic data model HORAI and link it to a four-phase data management lifecycle model. The conceptual work is discussed in relation to three existing information systems partly predating and partly developed from the outset of the HORAI-model.

While the paper shows appreciable understanding of the practical and theoretical state-of-the-art and the model has a lot of potential, in its current form it is still somewhat rough on the edges. Many of the both practical and theoretical threads introduced in the text warrant also more indepth consideration and it will be interesting to follow how the work will proceed in the future. For example, the comparison of the HORAI model and the ISAD(G): General International Standard Archival Description standard in the figure 1 is interesting but would require more elaboration. A slightly more thorough copyediting of the text would have also been helpful to make it more approachable.

As a whole, in spite of the critique, I find both the paper and the model as valuable contributions to the literature and the practice of managing historical information. The paper reports thorough work, provides a lot of food for thought and several interesting lines of inquiry in the future.

References:

Del Fresno Bernal, P., Medina Gordo, S. and Travé Allepuz, E. (2024). HORAI: An integrated management model for historical information. CAA 2023, Amsterdam, Netherlands. https://doi.org/10.5281/zenodo.8185510

Reviews

Evaluation round #2

DOI or URL of the preprint: https://zenodo.org/records/10218406
Version of the preprint: 2

Authors' reply, 13 March 2024

We sincerely appreciate the insightful comments provided by the recommender. The second review of the manuscript has addressed its main concerns:

1. The few references to Horai as a platform in the text have been changed to a model.

2. A deeper revision of grammar and style has been carried out.

3. We agree that the first figure requires further development, especially regarding the conceptual equivalence between the ICA model and the Horai model. However, addressing this matter is beyond the scope of this article. Moreover, an effective response would require a significantly broader discussion within the paper, starting with an examination of the concepts covered by the ICA model, followed by exploring their connection with the Horai model. Due to the length restrictions of the text, we have chosen to leave the matter open for future work.

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Decision by Isto Huvila, posted 13 December 2023, validated 13 December 2023

Some additional clarifications would make the text more approachable

The major concerns of the reviewers have been addressed in the revisions. The conceptual change of referring to HORAI as a model rather than platform should be checked to make sure that the relationship of HORAI model and the digital system developed by the authors is clarified in the text. There are a few references to the platform left in the text and they are confusing without additional clarification.

In addition, the text would benefit of proof-reading for style and grammar to make sure that the text expresses clearly authors' intended message, and to make it easier to read as a whole. In most cases I an confident that I could follow the text but sometimes I was unsure what the text is refering to e.g. what is the scale in "a scale of knowledge representation", what is UT and US etc.

There are also some more fundamental issues that might warrant some consideration like the side-by-side comparison of the HORAI model and the ICA model of archival description where to me, there seems to be conceptual discrepancies between the two models. However, as these issues reflect the considerations underpinning the work as it was done described in the paper, the authors might naturally decide to leave them open for future criticism.

Evaluation round #1

DOI or URL of the preprint: https://doi.org/10.5281/zenodo.8185511
Version of the preprint: 1

Authors' reply, 01 December 2023

Decision by Isto Huvila, posted 25 September 2023, validated 25 September 2023

Revision

The both reviewers find the paper interesting but also give useful suggestions for revisions that merit consideration for improving the paper.

Reviewed by Leandro Sánchez Zufiaurre, 17 September 2023

The article is well written, and is relevant to the topic it discusses.
The methodological proposal that is made is powerful from the point of view of archaeological study and concerning the durability of the data.
The topic is explained correctly, although due to the length of the text some specificity is missing in the type of technological solution adopted.
The proposal is important from the perspective of interoperability and the use of data from different platforms, although it is not explained how this would be done. We assume, again, that this is an extension issue.
In any case, this is a significant contribution and we believe it deserves to be published.

Reviewed by anonymous reviewer 1, 11 August 2023

This preprint introduces HORAI as a "semantic-based integration model" to support and inform the other systems used by Historical Sciences scholars. The below review is informed by having read the Guide and Questionnaire for Reviewers, so it will point out some strengths, flaws, gaps, suggestions, and significances of the preprint, which seems to have been presented at the recent April 2023 CAA: Computer Applications…in Archaeology conference. The paper explores HORAI's premise of "integrated management processes" (line 118) that build on interoperability (achieved) between the systems and repositories used by a project team members. HORAI's model uses the three units of topography (UT), stratigraphy (US), and actor (Ac) and this paper connects the three to archival processes which do for archival arrangement what HORAI would do for archaeological interpretation - that is, for the latter-the work of an archaeologist. The first half of the paper provides a justification for HORAI in an archaeological environment comprised of "one or more disciplines" that needs its solution in "data modelling" (lines 72-3). Therefore the HORAI model aligns and "bridges our databases" (line 138) in a way that allows each to retain its disciplinary origins and contributions while allowing them to be in dialogue for the purposes of archaeological scholarship. I thought the second half (from Lucas on line 141) of the second section on "integration" got a little far from the stated focus on HORAI itself, but somewhat understandable given the later reiteration that this paper presents "the elements that help us understand the [processes and dynamics] within the context in which they are developed, not … the technical aspects" (line 242). Still a suggested improvement would be to further organize or add subheadings to the conceptual Integration section. —– The third section compares the ISAD-G (line 188) archival processes with those used in HORAI, which I found to be a helpful section with its orderly explanations of four adjacent "management phases" but there is room to be more explicit about their relationship with Figure 1. Does all of Figure 1 happen during phase 3 "data processing" e.g. which ISAD-G - which otherwise drops out entirely from the rest of the paper! - might suggest? Given the frequent mentions of Archival Science as an informative foundation for the development of HORAI and the "three tools" (line 235) further developed from HORAI, a current gap to be addressed would be more archival description-within Archival Science citations and detailing of them, so that the reader clearly sees where HORAI differs and adapts *from* *them* to attend to the needs of archaeology. That would further emphasize the comparison focus of the third section. —– The fourth section

reports on three tools / systems collaboratively and cross-institutionally developed to achieve research goals. They articulate the advancements HORAI makes to the shared goals of data "conceptual reconciliation and efficiency" (line 304) and "define traceability in our work with information" (line 310). —– I'd like to see much more said about the next step aim of "decelerate methodological processes characterized by streamlining and simplification of information" (line 313) - this seems like a refreshingly honest pressure point that needs some grounding to make it be more than words. I like the idea that data modeling is a "simplification of information" that might tie well into information visualization efforts employed in a range of information and heritage institutions and even taught to information students, so there is room please to explain and make that outward connection in the fifth section: Discussion. Figure 2 is great, as are the footnotes linking to its website, concluding parts, and fresh references. The title does suggest a more "technical" (line 242) kind of paper that the authors immediately disabuse the reader is not what's here, so adding the word 'model' or 'modeling' to it, is a constructive suggestion. Do consider mentioning the Spain context of all this work in the abstract at least, as it gives coherence to some spots in the text. A well-written and accomplished paper.