Title: Aligning OAIS with the Enterprise.

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Topic:
The OAIS reference model provides a “framework for understanding significant relationships among the entities” involved in digital preservation. However, it also details on structural and behavioral issues. In order to better decouple fundamental processes (required to be OAIS compliant) from optional processes, and avoid the risk of subjective interpretations on non-formal models, we propose to align OAIS with the Enterprise Architecture approach, providing a formalization of the OAIS “Functional Model” using the Business Process Modeling Notation. We propose this approach as an effective advance to better assess OAIS and its future revisions.

Content:
Reference models can be used as basic conceptual structures to solve complex issues. The OAIS reference model also details on structural and behavioral issues. This would not be forcibly negative, but the problem with OAIS is that such details are neither always properly aligned with the high-level concepts or its relevance is not evident, as we’ll prove in this paper. In order to contribute to clarify this, we need to better decouple the generic from the specific concepts of OAIS. For example, the OAIS “Functional Model” describes processes that manipulate entities described in the “Information Model”. Even though conformance to OAIS does not require adherence to the “Functional Model”, mandatory responsibilities are performed by “Functional Entities”. We need to decouple fundamental from optional digital preservation processes described in the “Functional Model”.

Furthermore, the OAIS “Functional Model” does not use any standard modeling notation, and ordinary language is used to describe the model, which makes it subject to subjective interpretation. For instance, a “Functional Entity” is a vague and subjective term, which is both used to refer structure and behavior.

This motivates us to re-address the problem of what really should be part of a reference model for digital preservation, assess how actually OAIS really accomplishes that, and how could the model be improved. In fact, we should recognize that it is crucial to better consolidate the perspective of the engineer (responsible for specific systems’ design and deployment) to the perspective of the business architect (responsible by the business specifications, considering multiple systems, processes, and roles). Those concerns are addressed by the Enterprise Architecture approach, where one of the first and most comprehensive tools is the Zachman framework¹, which clearly separates the business (in this case, digital preservation) from architectural designs and implementations (as intended by OAIS).

Using the Zachman framework as reference, we can conclude that OAIS stresses the Business Model level, willing to provide the unifying concepts and common understanding of the digital preservation business. Hence, in this paper we propose to revisit the OAIS “Functional Model”, identifying the fundamental digital preservation processes, that is, the processes that are fundamental in digital preservation environments. In order to avoid the potential subjective interpretations of the “Functional Model”, we present a set of BPMN – Business Processes Modeling Notation² diagrams, which make it possible to formally detail business processes by representing sets of activities and their contexts of

¹ http://www.zifa.com
² http://www.bpmn.org/
execution, making it possible to describe behavior, abstracting from the systems’ architecture.
The motivation for this work comes from the projects GRITO$^3$ and SHAMAN$^4$, where OAIS is being faced to the challenges posed by multiple domains.

**Key words:** Digital preservation, Enterprise Architecture, Reference Architecture

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$^3$ http://grito.intraneia.com/
$^4$ http://shaman-ip.eu
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