

## **Abstract**

### **Simulation modelling in preservation management: Moving from single measures to complex systems models**

This project explores the use of System Dynamics and related computational modelling to evaluate the effect of preservation actions during the lifetime of archive and library collections. The novelty of this research lies on its approach to preservation management not as single, independent measures but as a process that is part of a complex system: preservation management is not seen in isolation, but in relation to the other archive and library functions in the broader context of collections management. This approach will enable us to explore whether decisions made in one part of the system might affect the output of another part of the system. The model seeks to find the potential synergies as well as counter-intuitive results of decisions which otherwise might have not been identified.

This poster will focus on the methodology used to elaborate the model.

First, a casual loop diagram was elaborated in collaboration with professionals working in archives and libraries. During participatory workshops the key variables as well as the dynamic complexity of the system were identified. The causal loop diagram provided a qualitative approach to the model and it was used as the starting point for the formulation of the mathematical model.

For the mathematical model, two simulation paradigms are combined in an hybrid model: whereas preservation management decisions are modelled using System Dynamics (SD), the heterogeneity of the archive records and their behaviour are captured using agent based simulation (ABS). This poster is an introduction to the architecture of the model, the mathematical formulation, and the challenges of developing complex systems models based on data from disparate data sources.