

Metadata Representation and Risk Management Framework for Preservation Processes in Audiovisual Archives

Werner Bailer¹, Martin Hall-May², Galina V. Veres²

¹JOANNEUM RESEARCH
Forschungsgesellschaft mbH

DIGITAL
Institute for Information and
Communication Technologies

Steyrergasse 17
8010 Graz, Austria

Tel. +43 316 876-5000
Fax +43 316 876-5010

digital@joanneum.at
www.joanneum.at/digital

² University of Southampton
IT Innovation Centre

Gamma House, Enterprise Road
Southampton SO16 7NS
United Kingdom



Introduction

- Preservation processes for audiovisual content consist of complex workflows
- Activities are performed by different tools and devices

- Planning and improving workflows requires assessment of related risks
- Interoperable metadata is a key prerequisite for performing, monitoring and analysing such workflows

Metadata Representation

Two types of metadata are crucial

- Structural metadata: technical metadata
- Preservation metadata: assessing fixity, integrity, authenticity and quality, documentation of the preservation actions

DAVID metadata model

- Focus on documenting preservation activities applied to (digital) items
- Tools and agents involved, their attributes
- Represent data needed for risk assessment
- Compatibility with business process models (e.g. BPMN)
- Contributed to MPEG Multimedia Preservation Application Format (MP-AF)

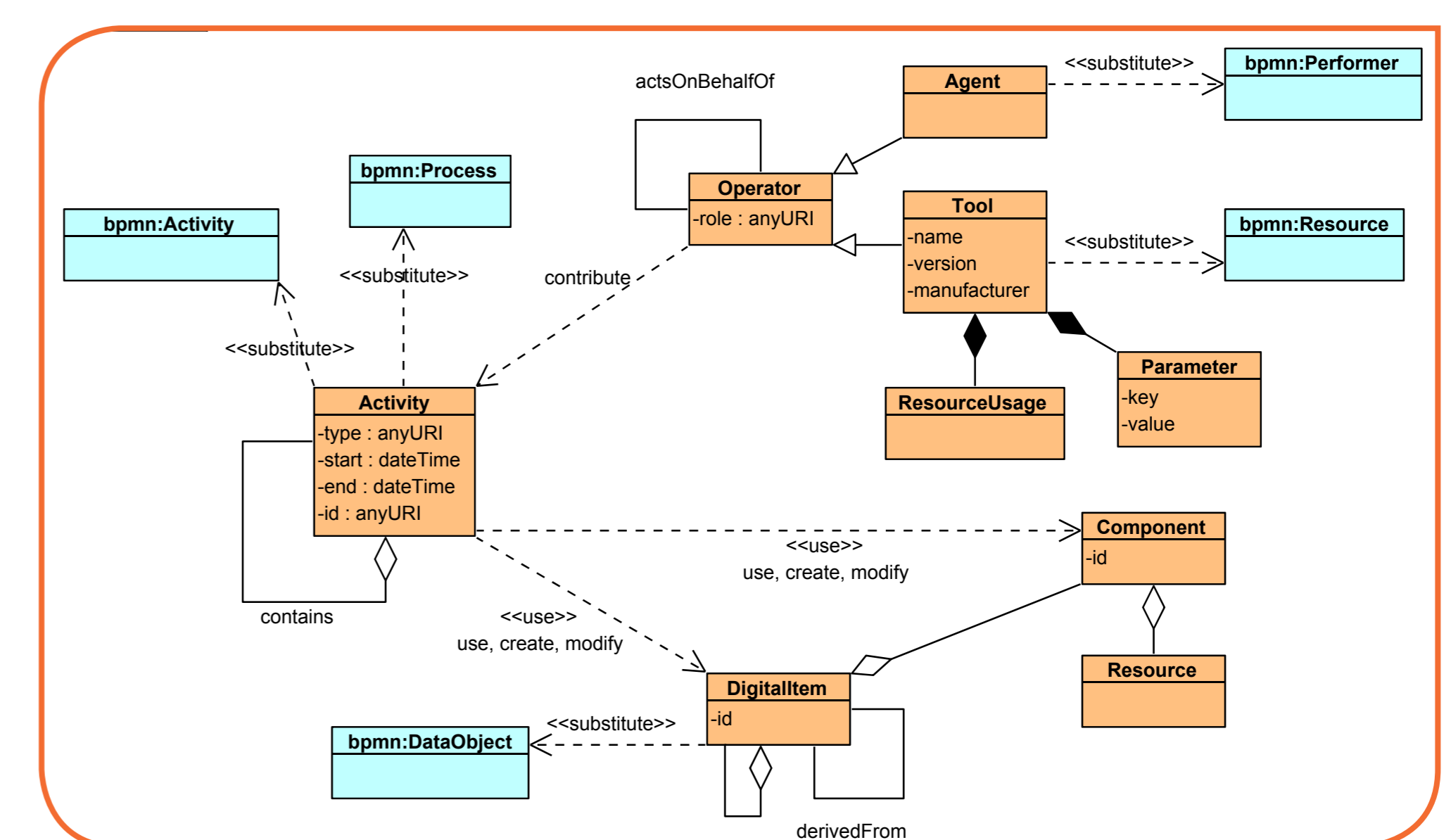


Figure 1: Entities of the preservation data model.

Risk Management Framework

Proposed cycle of continuous process improvement:
plan, do, check, act

- Define objectives of risk management for digital preservation in archives
- Identify controls dealing with risks and any associated costs and time
- Analyse and classify risks according to an impact model (SPOT model)

Risk measures

- Expected loss (E): average magnitude (mean) of negative consequences
- Value at Risk (VaR): minimum negative consequence incurred in $\alpha\%$ of worst cases
- Conditional Value at Risk (CVaR): expected negative consequence incurred in $\alpha\%$ of worst cases

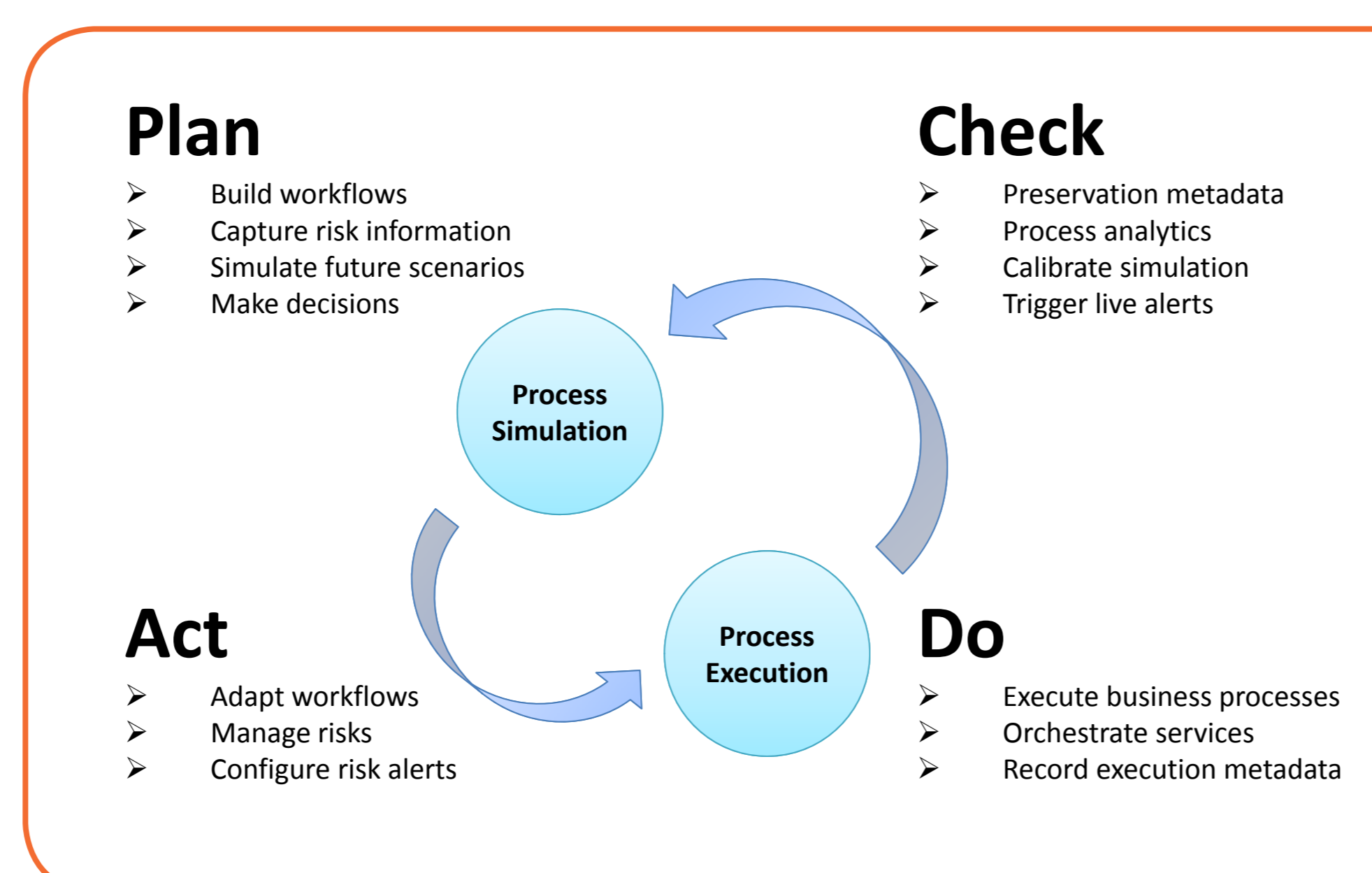


Figure 2: Continuous business process improvement through monitoring and simulation.

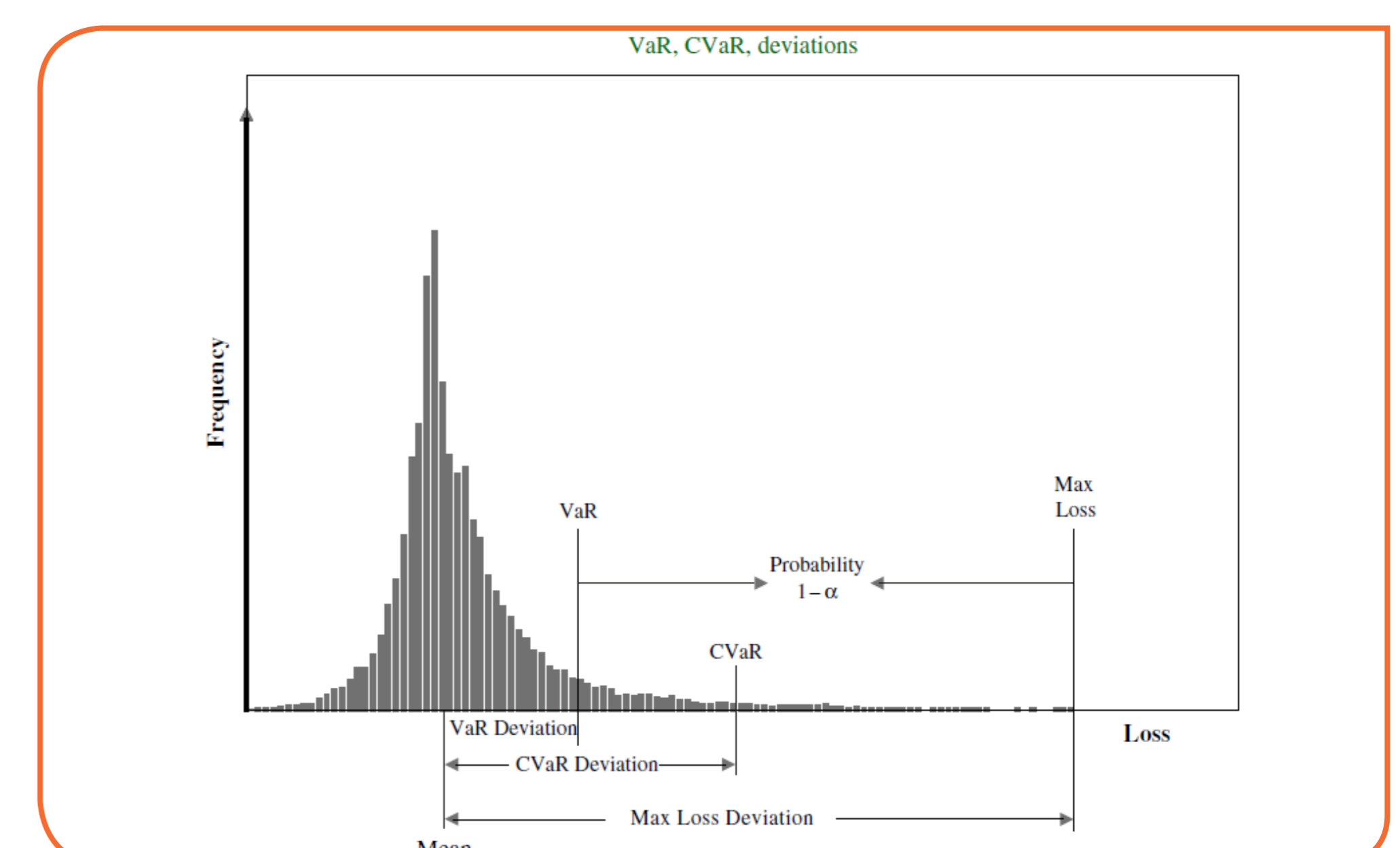


Figure 3: VaR, VaR deviation, CVaR, CVaR deviation, Maximum Loss and Maximum Loss Deviation (from [Sarykalin et al., 2008]).

Data Gathering

- Use the proposed metadata model as an interoperable representation of information from different tools
- Gather data from configuration, workflow engines and logs

- Include data about choices in workflow, exception handling and planned but not executed activities

Acknowledgements:

This work has been funded partially under the 7th Framework Programme of the European Union within the ICT project "DAVID" (<http://www.david-preservation.eu>, ICT FP7 600827).