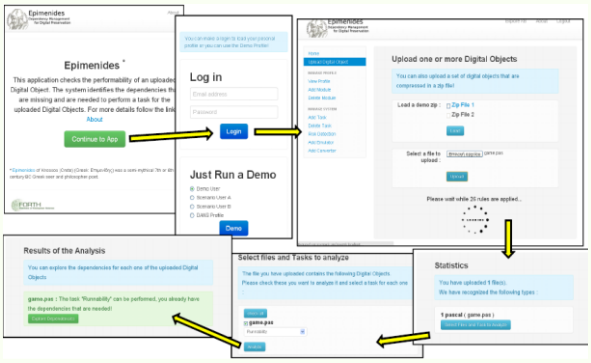
Epimenides: An Information System offering Automated Reasoning for the Needs of Digital Preservation

Overview

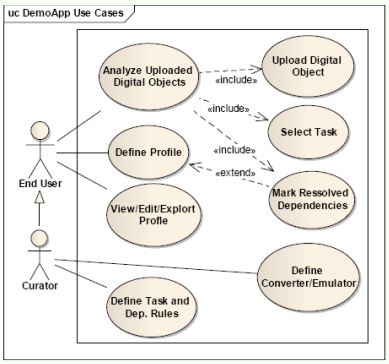
Digital material has to be preserved not only against loss or corruption, but also against changes in its ecosystem. A quite general view of the digital preservation problem is to approach it from a *dependency management* point of view.

Epimenides is a system that offers novel dependency management services for digital preservation. A distinctive feature is that it can model also *converters* and *emulators*, and the adopted modelling approach enables the *automatic reasoning* needed for reducing the human effort required for checking (and monitoring) whether a task on a digital object (digital collection in general) is performable.

Epimenides is based on W3C standards, and its Knowledge Base (expressed using RDF/S) contains information about all MIME types and the modeling of various quite common tasks (currently it contains around 2,225 RDF triples). Since it is based on Semantic Web technologies, it can be straightforwardly enriched with information coming from other external sources (i.e. other SPARQL endpoints).



Checking the performability over a digital object



Use Case Diagram of Epimenides, providing an overview of the supported use cases

Target Domains

Epimenides can be used by digital archives and digital libraries to help archivists in checking whether the archived digital artifacts remain *intelligible* and *functional*, and in identifying the consequences of probable losses.

Epimenides could also be used by providers of virtualization services.

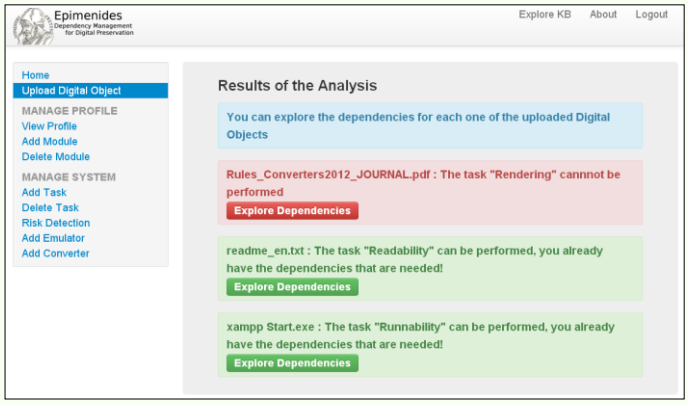
Epimenides
Dependency Management for Digital Preservation

www.ics.forth.gr/isl/epimenides/

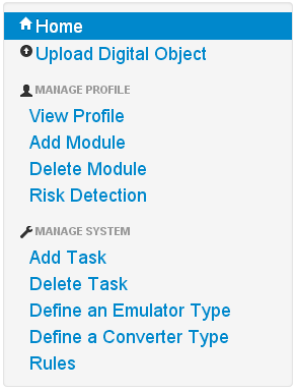
Description

Since *conversion* (else *migration*) and *emulation* are fundamental preservation strategies, a dependency management approach should allow modelling explicitly converters and emulators, and also *exploit* their capabilities. This is of paramount importance since a sequence of conversions and emulations can be sufficient for vanishing the gap that prevents performing a task on a digital object. Since there is a plethora of emulation and migration approaches that concern various layers of a computer system (from hardware to software), or various source/target formats, it is beneficial to use advanced knowledge management techniques for aiding the exploitation of all possibilities that the existing and emerging emulators/converters enable, and assist *preservation planning*. This is crucial since the scale and complexity of information assets and systems evolve towards overwhelming the capability of human archivists and curators (either system administrators, programmers or designers).

Epimenides is the first system that offers automated reasoning for (a) *Task-Performability Checking*, (b) *Consequences of a Hypothetical Loss* and (c) *Identification of Missing Modules*.



Results of analysis of three uploaded digital objects



Main menu of Epimenides

Additional Information

Epimenides was partially supported by the APARSEN Network of Excellence.

More information is available at the website of Epimenides:
http://www.ics.forth.gr/isl/epimenides/

Epimenides website

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