



THE WHITE ROSE GRID e-Science Centre



Preservation of Interactive Multimedia Performance with 3D Motion Data

“Digital information is more and more ubiquitous, more and more indispensable. Yet digital information is extremely fragile.”

Introduction

CASPAR – Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval – aims to build a pioneering framework to support end-to-end preservation lifecycle for scientific, artistic and cultural information. It is co-supported by the European Commission, under the Information Society Technologies (IST) Sixth Framework Programme. The project consortium consists of 17 research institutions and laboratories from academic and industrial sectors across Europe.

These components will be the building blocks of the CASPAR Framework;

- creating the CASPAR framework: the software platform that enables the building of services and applications that can be adapted to multiple areas.

CASPAR Framework

CASPAR framework (Fig. 1) is based on the Open Archival Information Systems (OAIS), which is an ISO standard. OAIS provides a consistent set of concepts, terminology and framework for the development of archival information systems and related standards. CASPAR adds to these a high-level model of virtualization and a number of high-level components. The components of infrastructure that CASPAR will produce must themselves be preservable.

The focus of CASPAR is specifically on preserving knowledge for future archive intelligibility and information system/services interoperability. Preserving information and knowledge – not just ‘the bits’ – allows the keeping of archives alive through time. In addition to simple data syntactic of data objects, CASPAR will also capture their higher-level semantics.

CASPAR Testbeds

Three testbeds are developed to instantiate the generic CASPAR framework functionalities into real domains, which present complementary requirements in terms of preservation: (i) a Scientific testbed for very-high volume, complex digital data objects, oriented towards processing; (ii) a

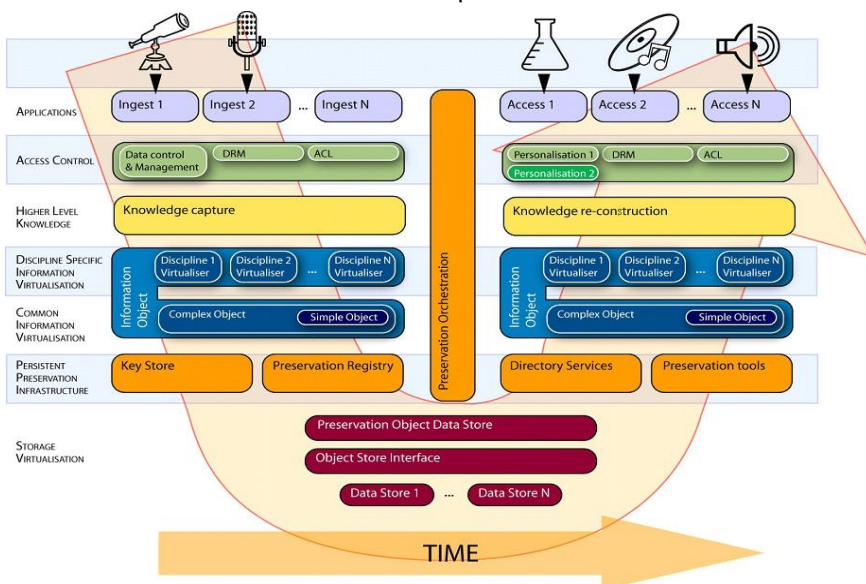


Figure 1: CASPAR preservation framework

CASPAR main objectives include:

- establishing a foundation methodology applicable to an extensive range of preservation issues;
- researching, developing and integrating advanced components to be used in preservation activities.





Contemporary Arts testbed dealing with dynamic interactive digital objects, oriented towards presentation and replay of artistic contents; (iii) a Cultural Data testbeds for virtual digital objects, spanning between processing and display.

Preservation of Interactive Multimedia Performances

Preservation of interactive multimedia performances is a part of the Contemporary Arts testbed for the CASPAR framework. In this research, interactive multimedia performances using gesture control systems such as the Music via Motion (MvM, see <http://www.kcng.org/mvm>), which translates human motions into multimedia content, e.g. music are of particular interest. Another application area also under consideration is in interactive music learning and teaching.

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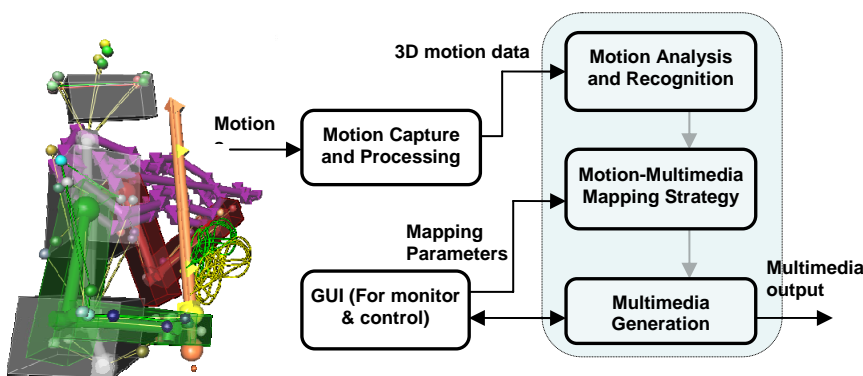


Figure 2: Preservation of interactive multimedia performance

In the context of CASPAR, preservation of the performance is not only a digital recording (e.g. audio, video, etc) of the act of the event at the time but we are also interested in the preservation of the source/input together with the software and settings used for the creation of the performance.

A generalised version of interactive multimedia performance typically includes the controlling motion of the performer, processing software, configuration and settings for the software and of course the output. As it is not sufficient to preserve the performance for digital replay, we aim to preserve the *operation* of the performance in order to have the knowledge to *recreate* the performance.

Preservation Scope

The preservation will include primarily motions of performer(s) during a performance captured in 3D, mapping parameters, which are used to translate motions to multimedia content, the software used to generate the content and the multimedia output content (Fig. 2). Related operating systems, on which the software can run and hardware might also need to be preserved.

Approaches

Following OAIS we will produce Representation Information of preserved contents. This will allow the preserved content to be described uniformly from bit stream level to the knowledge that is encoded by the bits. We will use semantic web techniques and ontologies to enable the preservation of community knowledge at the time preservation and migration of this knowledge to the context of designated communities so that the reconstruction of the preserved contents, e.g. by migration, emulation or re-interpretation, will be easier.

Summary

The CASPAR testbed on Contemporary Arts is currently being developed with in the CASPAR preservation framework and OAIS reference model. It forms the basis of a continent-wide preservation infrastructure and will benefit both current and future users. We welcome contributions on the test cases and comments to widen the scope of the development to better preserve the invaluable artistic creation and contents, knowledge and understanding, for the future generations.

Further Information

For further information please contact Dr Kia Ng, Director of ICSrIM (kia@icsrim.org.uk) or visit the project's website: <http://www.casparpreserves.eu/>.



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