Preservation and Long-term Access via NETworked Services

IST Framework 6

The Planets Project brings together European National Libraries and Archives, leading research institutions, and technology companies to address the challenge of preserving access to digital cultural and scientific knowledge.

FURTHER INFORMATION

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Planets is a four year project, co-funded by the European Commission Information Science and Technologies Framework Programme 6 Call 5. The Project began on 1 June 2006, and has a total spend of €14m.

"...information conservatively valued at around 3 billion Euros currently languishes in endangered formats."

The Planets consortium estimates that EU member countries produce around 5 billion documents per year; of this total, around 2% (100 million documents per year) comprise information that is worth archiving. Around 2 million documents out of this sub-total are held in formats that constitute a long-term preservation risk. Taking into account the production costs of these documents - along with estimated worth of the information to others – experts at Planets have calculated that information conservatively valued at around 3 billion Euros currently languishes in endangered formats.

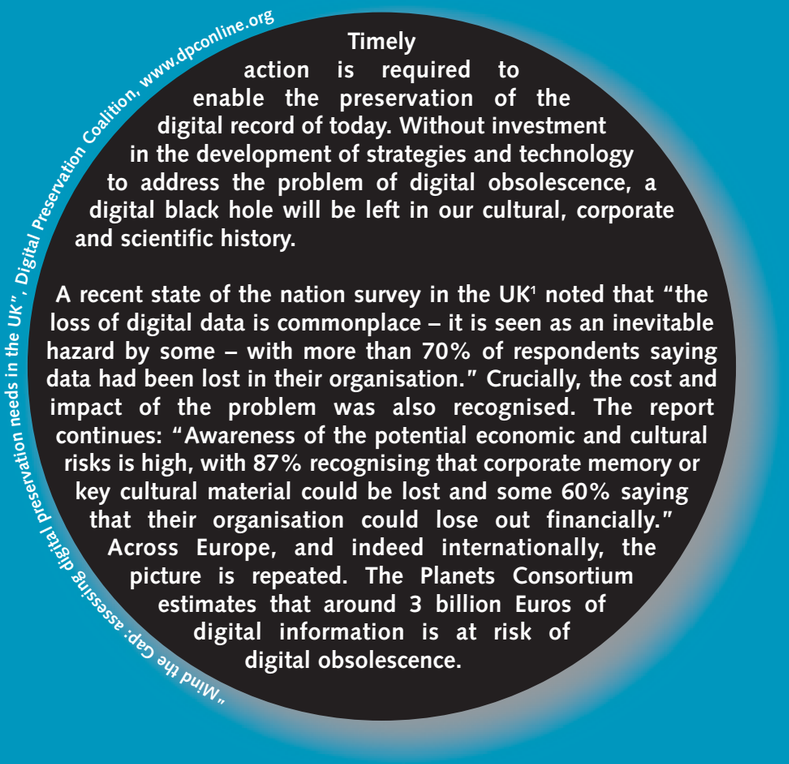
The Planets Consortium

The rapid advance of information technology is putting our digital heritage at risk. As past and current computer hardware and software becomes obsolete, digital information reliant on this technology becomes increasingly hard to find, view, search and re-use. There is a growing consensus on the need to act now to avoid a gaping hole in our cultural and scientific record.

Funded through the Information Society Technologies (IST) R&D Programme, the Planets Project aims to reduce the loss of digital information and improve our ability to provide access to digital information over the long term. It will provide methods, tools, and services that will help close the gap.

Adam Farquhar

The Digital Black Hole



While organisations within the cultural and heritage sectors have typically taken the lead in recognising and beginning to address the problem, the impact goes far wider as the examples opposite indicate:

Corporate and legal responsibilities and liabilities

Legal and financial laws and regulations typically require the preservation of records for decades. As several high profile legal cases in the US have highlighted, the financial cost of failing to meet these requirements can be severe.

Record of government

As with the corporate world, much of the governmental record both nationally and at European level is now in digital form. Preserving and ensuring access to this record for the ordinary citizen remains a key challenge if transparency and democratic accountability is to be maintained.

Nuclear industry and safety

The timescales over which nuclear waste must be safely stored are considerable, requiring technical information to be preserved for possibly hundreds of years. Plans and designs for new nuclear power stations will also have to be preserved for decades in order to facilitate safe and effective decommissioning.

Personal digital possessions

The rise of the internet, digital photography and digital music has placed the personal records, history and valued digital possessions of European citizens at risk.

Internet longevity

For many, the World Wide Web has become the information source of first resort. Despite our apparent dependence on this medium, little attention has been paid to the long-term preservation of websites. The life of an average website is estimated to be around 44 days.

The Planets Consortium

The Planets consortium brings together the unique experience required to research, develop, deliver and productise practical digital preservation solutions. Coordinated by the British Library, the partners are:

Libraries
The British Library
The National Library of the Netherlands
Austrian National Library
The Royal Library of Denmark
State and University Library, Denmark

Archives
The National Archives of the Netherlands
The National Archives of England, Wales and the United Kingdom
Swiss Federal Archives

Universities
University at Cologne
University of Freiburg
HATII at the University of Glasgow
Vienna University of Technology

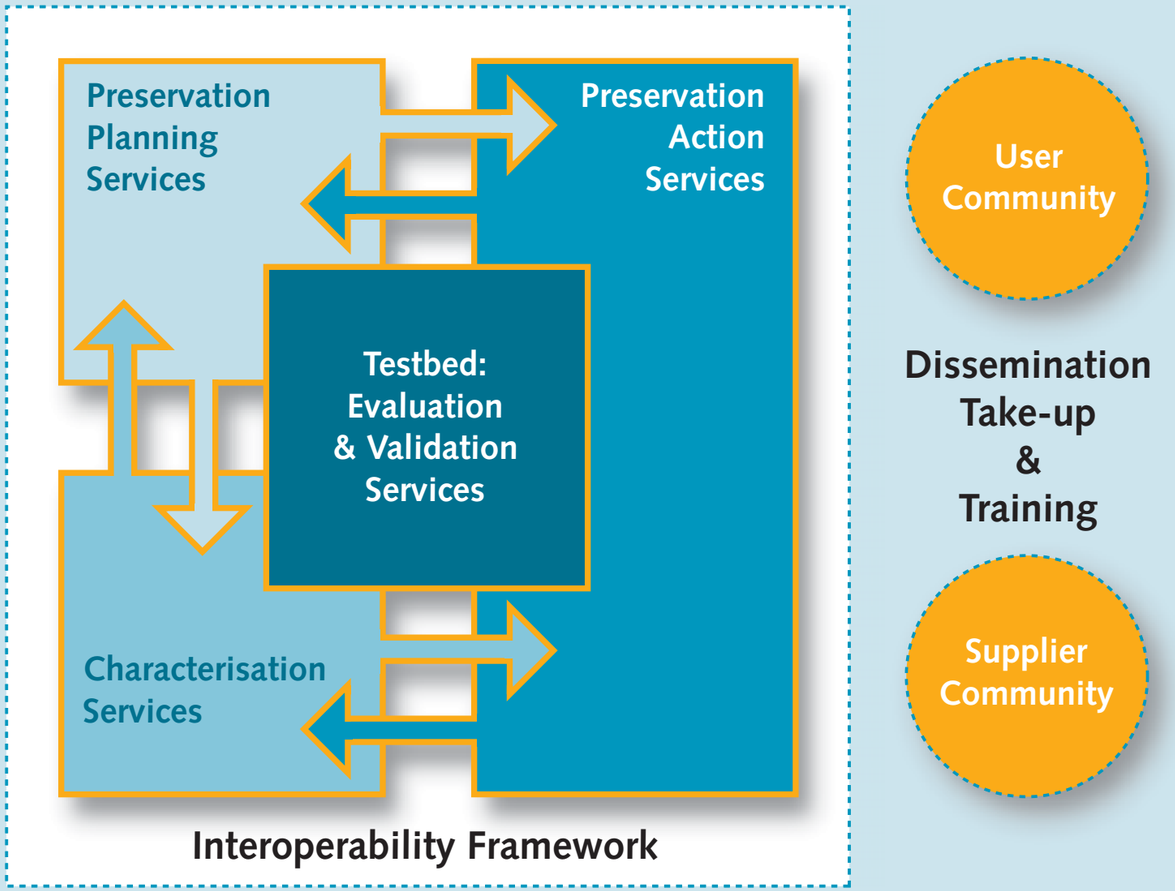
Technology companies
Austrian Research Centers GmbH
IBM Netherlands
Microsoft Research Limited
Tessella Support Services Plc

The Planets Project

The Planets Project (Preservation and Long-term Access through NETworked Services) will deliver a sustainable framework to enable long-term preservation of digital content, increasing Europe's ability to ensure access in perpetuity to its digital information
Planets will deliver:

- **Preservation Planning** services that empower organisations to define, evaluate, and execute preservation
- Methodologies, tools and services for the **Characterisation** of digital objects
- Innovative solutions for **Preservation Actions** tools which will transform and emulate obsolete digital assets
- An **Interoperability Framework** to seamlessly integrate tools and services in a distributed service network
- A **Testbed** to provide a consistent and coherent evidence-base for the objective evaluation of different protocols, tools, services and complete preservation plans
- A comprehensive **Dissemination and Takeup** program to ensure vendor adoption and effective user training.

The project will enable organisations to improve decision-making about long term preservation, ensure long-term access to their valued digital content and control the costs of preservation actions through increased automation and scaleable infrastructure. Intensive Dissemination and Take-up activities will ensure the widest possible adoption of results in the user community and enable commercial tool and service providers to compete in a new market place for differentiated preservation services and tools.



Preservation Planning

"Preservation Planning tools will dramatically enhance the ability of institutions to plan for the preservation of their digital assets without the expense of lengthy analysis from specialist digital preservation staff."

Hans Hofman | The National Archives of the Netherlands

Planets developments in Preservation Planning will enable organisations to formulate high quality preservation plans which will describe when, where and how action should be taken to preserve their digital content. These plans will take into account the organisation's policies and preservation strategies, the content in the organisation's repositories, and the ways in which the content is used. They will reflect the technical infrastructure, tools, and services that are available. The planning activity will be based on risk assessment and ensure consistent decision support. It will provide a coherent set of models, tools, services and templates that empower organisations to efficiently and effectively plan for the preservation of their digital content.

Planets will move substantially beyond the current state-of-the-art by providing a high level of automation for generating, evaluating, and in many cases executing preservation plans. The Preservation Planning Service will employ Characterisation and Preservation Action services in order to identify appropriate actions. It will use the Testbed to provide empirical evaluations of the execution of a preservation plan on sample content.

The challenge is for Planets to provide the technology to match the requirements for preserving digital objects in different business contexts (eg. archives, libraries, museums, government organisations, and commercial organisations) with available and potential preservation strategies. This requires not simply a thorough understanding of the requirements and of the available preservation strategies, but also of the state of the art of technology. All of these will certainly change over time and therefore require the continuous attention of the preserver (or the preserving institution).

Preservation Action

"Preservation Action tools form a core component of the Planets digital preservation solution. Planets will wrap existing tools, and plug gaps in current provision to ensure yesterday's and today's digital resources can still be used."

Frank Houtmann | The National Library of the Netherlands

Planets will provide the tools and services to ensure the continued accessibility of digital content. It will explore the development of both existing and innovative new preservation strategies. Current approaches can be viewed as modifying the objects themselves (migration), or modifying the environment in which users interact with the object (emulation). Planets will explore innovative methods that combine and go beyond these existing approaches or combine existing methods to deliver more effective preservation actions.

A broad range of different kinds of digital objects will be addressed. These include: documents, images, datasets, (interactive) programs, relational and non-relational databases, web resources and an array of complex/compound objects.

Planets will assess the market for preservation action tools in order to identify the best existing tools to be wrapped and delivered as Planets services. Planets will develop innovative new preservation solutions to fill the gaps in support provided by existing tools. These services will be evaluated using the Planets Testbed, and will be categorised and described in detail in the Preservation Action Registry. This will provide Preservation Planning services with the metadata required to facilitate the choice of an appropriate Preservation Action service.

Preservation Characterisation

"Understanding the risks associated with particular digital assets is a key challenge for preservationists around the world. Planets will build on existing work to automate the process of identifying the characteristics of digital materials we wish to preserve."

Adrian Brown | The National Archives of England, Wales and the United Kingdom

The ability to preserve a digital object is dependent upon a detailed understanding of both its technical and intellectual characteristics. The practical application of characterisation techniques to real-world digital collections demands a high degree of automation, without which the cost of manually analysing content would be prohibitive. Planets will develop methodologies, tools and services for characterising the significant properties of digital objects, to enable the development of preservation plans and validate the results of preservation actions. It will deliver a methodology for describing these significant properties, a suite of tools and services for automatically characterising a range of specific object types in accordance with this methodology, and a supporting registry of characterisation information.

Although the need for characterisation services has been recognised, this has taken place in the absence of any clearly articulated conceptual model or standards for interoperability. Furthermore, the number, nature and scope of the tools available are insufficient to meet the needs of long-term preservation. Planets will address these issues and significantly advance the state of the art by developing a conceptual framework defining a standard interface for interoperability, identifying detailed technical requirements for characterisation tools, and developing a number of innovative new tools and services. By defining standards for characterisation, the Planets Project will also support and encourage the independent development of both commercial and non-commercial tools and services.

"The Planets Testbed will provide a preservation laboratory for the evaluation and testing of tools, services and preservation plans. The first iteration will provide support for Planets partners. Later releases will offer a service to the wider preservation community."

Max Kaiser | The Austrian National Library

The Testbed will provide a hardware and software environment for the evaluation of tools and services at a number of levels. Individual Characterisation and Preservation Action tools will be assessed and evaluated against a range of performance metrics. The Testbed will also support the testing of the execution of preservation plans.

During the first phase of the project, the Testbed will provide basic services for Planets components. The Testbed will provide a controlled environment for preparing, executing and evaluating experiments testing preservation and characterisation tools and documenting experiment results in a Testbed Database.

In a later phase of work, the Testbed will interact with external organisations from the user community and with suppliers of software products. This will enable institutions to assess their preservation plans and allow third-party vendors to evaluate the suitability of their tools within specific preservation scenarios.

The Testbed design will profit from work undertaken by the Dutch Digital Preservation Testbed Project and from the Testbed Research Framework developed by the Testbed Project of the Delos Digital Preservation Cluster.

Dissemination and Take-up

"Planets will actively promote its project results with the aim of fostering a commercial market for preservation tools and services."

Karen Williams | State and University Library, Denmark

The Planets Consortium will support the development of a commercial market place for digital preservation through a set of specific awareness building and training activities, as well as making available exemplary implementations to act as showcases and reference sites. It will engage with major solution and service providers, as well as with the many smaller providers of tools and services, to encourage the commercial take-up of the Planets Interoperability Framework.

The Planets Consortium will establish contact with existing user communities as well as individuals with special insight into future trends, to ensure the tools developed by Planets meet the needs of its future users. These relationships will be supported by the means of workshops, online discussions, research publications and field studies. Planets newsletters and other publicity materials describing project results will encourage interaction and involvement with potential users. Planets will target a variety of groups ranging from content producers within the Museums, Libraries and Archives sector, to software developers, vendors and service providers.

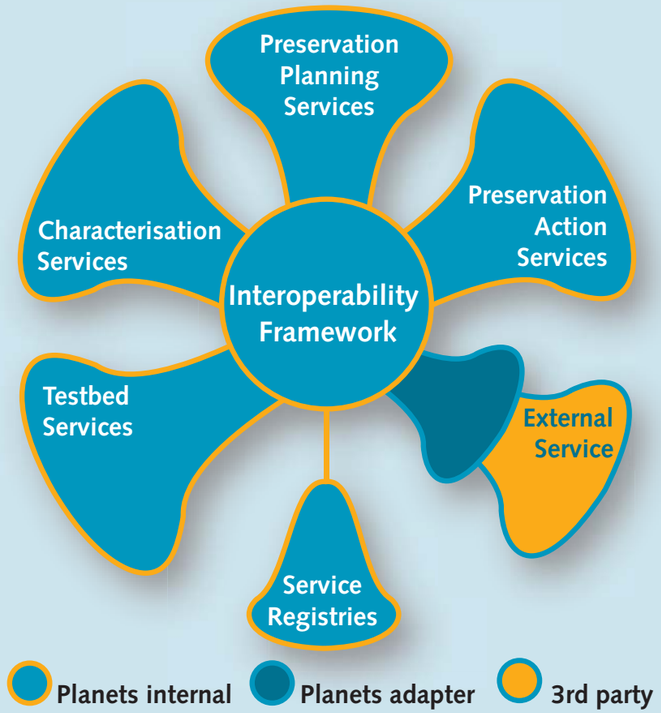
Planets will develop a training programme which will educate preservation specialists within both industry and cultural organisations, starting within Planets' own immediate community (libraries and archives), but expanding to cover the whole range of digital stakeholders, including small and medium-sized enterprises.

"The Planets Interoperability Framework will unite tools and services from across the spectrum of digital preservation solutions into one easily managed preservation system."

Ross King | Austrian Research Centers GmbH

Over recent decades, archives, libraries, and software vendors have independently been developing tools to fulfil specific preservation tasks (for example, the migration of file formats). Results from Planets will add to this pool of tools that are necessary for digital preservation. Tools and services implemented in a given environment often cannot be "transferred" to other environments. Planets will solve this problem by developing a service-oriented architecture for long-term preservation systems: the Planets Interoperability Framework.

A service-oriented architecture decouples tools from their original implementation environment, making them available in a platform and hardware independent manner, while allowing the re-use of existing components. As an added benefit, vendors can develop and provide third-party services with minimal integration effort. The typical operational functions (Preservation Planning, Preservation Action, Characterisation) of a long-term preservation system will be highly interoperable when wrapped as Planets services and will no longer exist only as isolated software components. As a result, the Interoperability Framework will allow the Planets Preservation Planning tools to choreograph Characterisation and Preservation Action tools in a structured and organized manner.



The Interoperability Framework will facilitate the integration of services provided not only by Planets but also by third party vendors, and make them available in a well-defined and platform-independent manner.

planets

digital preservation, research and technology