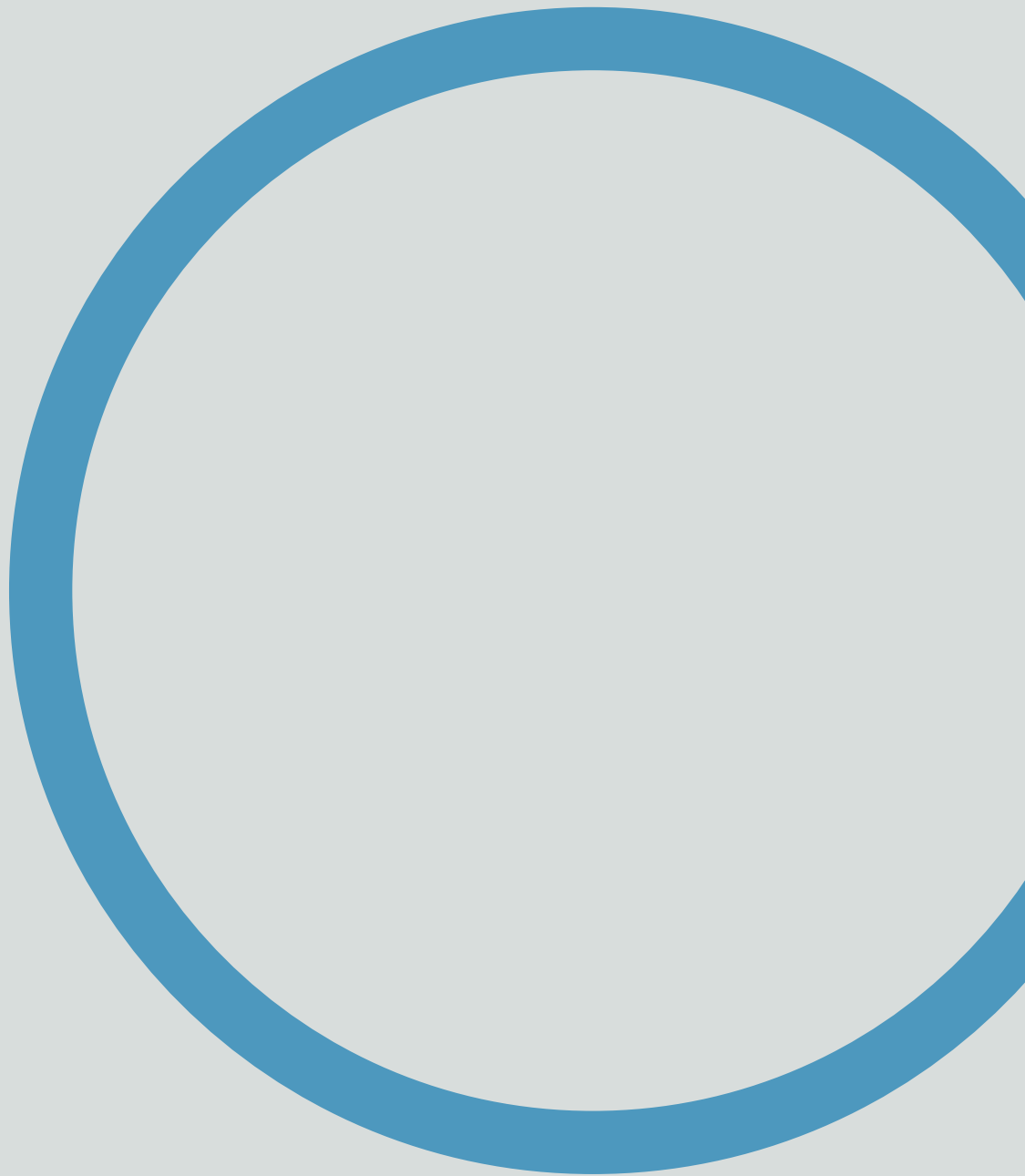# Planets

Tools and services for digital preservation

planets

Effective action to preserve and provide long-term access to digital content is a key priority for many organisations. Planets is a four-year €15 million project co-funded by the European Commission under the Information Society Technology priority of the 6th Framework programme. Planets tools and services help organisations to ensure access to older digital material today and today's material far into the future.

Planets makes it possible to

- Define your preservation goals and policies
- Assess the preservation needs of your organisation, collections and users
- Identify areas where preservation of your collections does not meet your policy requirements
- Build, evaluate and execute plans to address any problem areas
- Analyse and verify the results

The Planets tools and services are highly relevant to major libraries and archives and in sectors such as government, industry, media, healthcare, professional services and even individual consumers. Planets draws on expertise from 16 European partners with long-standing experience in addressing the challenges of preserving digital content. These include: national libraries and archives, leading research universities and technology companies.

For more information about Planets, visit: www.planets-project.eu. To register for electronic updates about the project, please visit: www.planets-project.eu/community.

Define organisational digital preservation requirements and goals

Planets uses a proven approach and gives you the terms you need to define and describe digital preservation policies and goals.

Use the **Organisational Policy, Strategy, and Usage Models** to create preservation plans that take into account organisational strategy, the characteristics of content and needs of end-users.

Use specialised **metadata** to support your preservation planning process.

Build plans to ensure digital preservation goals are met

Preservation planning tools help you to develop and articulate your digital preservation requirements.

The **Plato** Planning Tool guides you through the process of building a preservation plan and workflow. Identify preservation actions, evaluate them and select the best option. In many cases Plato can then automatically execute the preferred course of action. It can always produce detailed documentation of your plan and decision-making process.

Learn about the properties of digital objects and the tools that apply to them

Preservation planning requires a detailed knowledge about digital object formats and tools.

The Planets **Core Registry** provides a searchable database of technical information about different object types (formats) and their properties, as well as the preservation action tools that might apply to them. It extends the well-known PRONOM registry and contains detailed information, drawn from the Planets **Testbed**, about how tools perform on various types of objects.

You can identify, compare and deploy the most appropriate tool or service to preserve your content. You can combine services into a workflow that deals with objects of a specific type, groups of related objects (e.g. PDF with embedded video), or even sequences of actions (e.g. convert DOS Word to Open Office XML to PDF).

Extract the significant properties of a particular object

Planets has developed technology to describe and extract characteristics from a digital object.

The **eXtensible Characterisation Description Language** (XCDL) describes properties of digital objects such as colour and depth of an image. The **eXtensible Characterisation Extraction Language** (XCEL) describes how properties are encoded and makes it possible to extract them automatically.

The **Extractor** extracts characteristics from your digital objects. The extensible **framework** also supports third-party tools such as **DROID** (Digital Record Object Identification) to automatically identify object types and **JHOVE** to check if an object conforms to a format specification.

Understand the characteristics of a collection

Planets **Collection Profiling Service** provides reports on the content within your collections, summarising the types of objects and their characteristics.

Convert objects from formats that do not meet your needs to new ones that do[*]

Planets incorporates a suite of custom-built and wrapped third-party preservation action tools that convert digital objects into accessible formats.

The growing set of integrated conversion or migration tools considered by Planets includes: Dvips, PS2PDF, PDF2PDFA, BullZip, PDF/A Converter, PDF2Text, Pdftohtml, Pdfinfo, Ghostscript, GIMP, JMagik, Sanselan, Dia, JTidy, HtmlCleaner, MsgText, SIARD, Xena, Sox, MEncoder, NETPBM.

Supported Input formats include: CGM, DOC, DOCX, DVI, DXF, EPS, GIF, HTML, JPG, MDB, ODP, ODS, ODT, PDF, PNG, PPIX, PPT, PS, SVG, TIFF, VDX, WMF, WPD, XCT, XLS, XLSX and MS SQL Server, Oracle, SIARD

Supported output formats include: CGM, DOCX, DXF, EPS, GIF, HTML, JPG, JP2, ODP, ODS, ODT, PDF, PDF/A, PNG, PPTX, PS, SVG, TIFF, TXT, VDX, WMF, XENA, XLSX, XML and MS SQL Server, Oracle, SIARD.

Planets partner, the Swiss Federal Archives, has developed an open storage format for relational databases (Software Independent Archiving of Relational Databases) and a related set of conversion tools called the **SIARD** suite. These enable you to convert relational databases into the archival SIARD format.

Run software on earlier operating systems

In order to meet your goals, it may be effective to run software or provide access to content in its original hardware or software environment – even if this is decades old. This is especially important for dynamic content.

Planets provides an integrated **Emulation Framework** that allows users to run operating systems and application software dating back to the 1980s. The look and feel of content on these obsolete systems is available in a modern environment by emulating the original hardware. **GRATE** (Global Remote Access to Emulation Services) allows users to run emulation services remotely on a central environment using a web-browser. The **Dioscuri** emulator supports systems based on Intel x86 hardware and enables you to run application software on earlier operating systems such as MS DOS 4.0, 5.0, 6.22, MS Windows 3.0 and ELKS 16-bit Linux. **QEMU** emulates x86, ARM, SPARC, MIPS, MIPS64 and N68k (Coldfire). **UVC** (Universal Virtual Computer) is a platform-independent solution that allows digital objects such as text, documents, spreadsheets, images and sound to be reconstructed in their original appearance.

The emulation services can also be integrated into object conversion plans.

[*] Planets tools and services, and the input and output formats they support, will evolve and be subject to change over the lifetime of Planets' development.

Test treatment plans and preservation action tools

The Planets **Testbed** enables users to conduct characterisation, migration and emulation experiments in a controlled environment using sample or pre-defined content. As a Testbed user, you are guided through a six-stage **Testbed Workflow** that allows you to gather information scientifically and helps you to select the most appropriate tool or preservation strategy. By using pre-defined content, your holdings are not placed at risk of corruption or loss.

Users can deploy the central instance of the Testbed or download and install a configurable local version. Results are documented and reproducible. Results from tests conducted in the central instance of the Testbed are stored in the Testbed database and used to update technical information contained in the Planets Core Registry.

Verify actions have been successful

The Planets **Comparator** measures differences between digital objects before and after treatment. This helps to determine whether the treatment has been successful and policies have been successfully implemented. The comparator uses an extensible set of difference measures that can be applied to the properties you identify as significant.

Integrate Planets with current IT systems

Planets platform-independent and service oriented **architecture** makes it easy to extend with new capabilities and integrate into your environment. The architecture is **scalable** and can be deployed on a single machine, multiple servers, a company-wide network, or even a multi-organisational grid. It provides features to support security, authentication, authorisation, logging, messaging, user management, metadata handling and workflow execution.

The open architecture makes it possible to integrate third-party tools and services into the Planets framework. Once they have been registered with the Planets **Service Registry**, you can employ them in your preservation workflows.

Adaptors make it possible to integrate Planets or its components within digital library, archiving, and repository systems. You can build new adaptors for systems that are not currently covered with the support from the Planets community.

Identify external changes which threaten your preservation and access goals

The Planets **Preservation Watch Service** monitors the digital world for changes that might impact your preservation plans and decisions. Know when a new tool or technique is available; be alerted when a new compression algorithm could help reduce your storage costs; find about new security threats to your system; learn about changes in software, operating systems, or hardware that might make it harder to access your content. Learn about problems first – before your users do.